



## **A STUDY ON THE INTERNET CORPORATION OF ASSIGNED NAMES AND NUMBERS**

---

### Study team

Jacques H.J. Bourgeois  
Professor at the College of Europe (Bruges)

Jacques Crémer  
IDEI, GREMAQ, University of Toulouse  
IDEI Director  
Professor at the Ecole Polytechnique

Pierre Marsal  
Avocat, member of the Brussels and Paris Bars

### Experts Consulted

Francis Behr  
Consultant

Christophe Bisière  
IDEI, GREMAQ, University of Toulouse  
Professor at the University of Toulouse

Katrin Burchell  
Trade Mark Attorney

Dr. Jeanette Hofmann, Nexus / WZB

Michel Lebreton  
IDEI, GREMAQ, University of Toulouse  
Professor at the University of Toulouse

Luciano Morganti  
Cand. PhD (College of Europe, Bruges)

Dr. Helmut Schink  
Consultant

## **EXECUTIVE SUMMARY**

The study commissioned by the European Commission deals with the Internet Corporation for Assigned Names and Numbers (hereinafter: ICANN), which forms part, and is charged with some aspects of the oversight, of a network of bodies, entities and organisations that are involved in the management of arrangements designed to allow the global Internet system of unique identifiers to function properly.

Part I dealing with ICANN's status, mission, functioning and decision-making process, assesses ICANN's performance so far and the likelihood that the reform of ICANN will be implemented successfully, and examines other changes that might be necessary. In difficult circumstances ICANN managed to reform itself. It created a rather stable environment, which inter alia allowed a RIR to be set up in Latin America, adopted rules for "sponsored" gTLDs and generally achieved greater support by the governments for the way in which it performs the tasks assigned to it. It is still seen as bureaucratic, difficult and non-transparent by most constituencies. The IANA service is frequently criticised for its low performance. The at-large participation does not appear to be arranged satisfactorily.

Part II carries out an economic analysis of the various components. It concludes that the current allocation procedure for IP addresses is essentially satisfactory, while the situation with regard to the domain name industry is more contrasted. The market for registration services in gTLDs and in many ccTLDs is increasingly competitive. Profits in the market for registry services are significant. Being natural monopolies, registry operators must be properly regulated.

Part III deals with a number of legal aspects. From the point of view of accountability, representativeness and transparency, the reform process led to substantial improvements. ICANN's structure and decision-making process are still too complex and opaque and the oversight of ICANN's public policy functions remains inadequate.

Part IV sets out five main conclusions and puts forward five recommendations. Recommendation 1 deals with the structure of ICANN under its current bylaws and proposes amendments. Recommendation 2 elaborates more in detail those functions where government involvement should be enhanced. Recommendation 3 deals with an enhanced role of the Government Advisory Committee. Recommendations 4 and 5 offer possible scenarios for increased internationalisation of ICANN.

The opinions expressed in this study are those of the authors and do not necessarily reflect the views of the European Commission, nor does the Commission accept responsibility for the accuracy of the information contained therein.

## **TABLE OF CONTENT**

<b><u>PART I: ICANN Status, mission, functioning and decision making process</u></b> .....	7
<b><u>1. Introduction</u></b> .....	7
1.1. <u>ICANN mission and “core values”:</u> .....	7
1.2. <u>IP Addresses Allocation</u> .....	8
1.3. <u>Domain registration principles</u> .....	10
1.4. <u>gTLDs Management:</u> .....	11
1.5. <u>ccTLDs Management</u> .....	12
1.6. <u>Other constituencies of the former DNSO:</u> .....	14
1.6.1. <u>Business Constituency:</u> .....	14
1.6.2. <u>Non-Commercial:</u> .....	14
1.6.3. <u>ISPs:</u> .....	14
1.6.4. <u>Registrars:</u> .....	14
1.6.5. <u>At large:</u> .....	14
1.7. <u>Internationalized domain names (IDN)</u> .....	15
1.8. <u>Protocol port and parameter numbers</u> .....	18
1.9. <u>Root server operation</u> .....	20
1.10. <u>ORSN</u> .....	25
1.11. <u>The IANA (Internet Assigned Numbers Authority)</u> .....	26
<b><u>2. Reasons for Reform</u></b> .....	30
2.1. <u>Incomplete transition tasks</u> .....	30
2.2. <u>SO structure dysfunctional and unbalanced:</u> .....	32
2.2.1. <u>DNSO</u> .....	32
2.2.2. <u>PSO without function</u> .....	33
2.2.3. <u>Problematic division of labor between ICANN Board and management</u> .....	33
2.3. <u>New TLDS:</u> .....	33
2.4. <u>Criticism of IANA Service</u> .....	34
2.5. <u>ICANN’s Authority Disputed</u> .....	35
2.6. <u>Proposal for Reform</u> .....	35
<b><u>3. The structure and processes of ICANN after the reform</u></b> .....	36
3.1. <u>Supporting Organisations and Constituencies</u> .....	36
3.1.1. <u>Supporting Organisations</u> .....	36
3.1.2. <u>The GNSO</u> .....	37
3.1.3. <u>The ASO</u> .....	39
3.1.4. <u>The CCNSO</u> .....	39
3.1.5. <u>The At-Large Advisory Committee (ALAC)</u> .....	40
3.2. <u>The Board</u> .....	42
3.2.1. <u>ICANN is governed by a Board, consisting of 15 directors and six so-called ‘liaisons’.</u> 42	

3.2.2	<u>The ‘Liaisons’</u> .....	43
3.3.	<u>The Nominating Committee</u> .....	43
3.4.	<u>Processes</u> .....	44
3.4.1	<u>GNSO Policy Development Procedures (PDP)</u> .....	44
3.4.2	<u>Review and Complaints</u> .....	45
3.4.3.	<u>Ombudsman</u> .....	45
3.4.4.	<u>Reconsideration Committee</u> .....	45
3.4.5.	<u>Independent Review</u> .....	45
3.4.6.	<u>Advisory Committees</u> .....	46
3.5.	<u>The Government Advisory Committee (GAC)</u> .....	46
3.6.	<u>The Root Server System Advisory Committee (RSSAC)</u> .....	47
3.7.	<u>The Technical Liaison Group (TLG)</u> .....	47
3.8.	<u>The Security and Stability Advisory Committee (SAC)</u> .....	47
4.	<u>Key stakeholders' views on ICANN after the reform</u> .....	48
4.1.	<u>DNSO/GNSO</u> .....	48
4.2.	<u>RIRs</u> .....	50
4.3.	<u>ccTLDs</u> .....	51
4.4.	<u>Technical standard bodies (former PSO)</u> .....	52
4.5.	<u>Governments update according to Montreal results</u> .....	53
4.6.	<u>US Government</u> .....	54
	<u>PART II - ECONOMIC ASPECTS</u> .....	57
	<u>1. The value of domain names</u> .....	57
	<u>1.1 The usage of domain names</u> .....	57
1.1.1	<u>Rationale for naming</u> .....	57
1.1.2	<u>Naming computers</u> .....	58
1.1.3	<u>Naming web sites</u> .....	59
1.1.4	<u>Consequences on domain name valuation</u> .....	59
1.1.5	<u>Naming email servers</u> .....	60
	<u>1.2 Valuing web site names</u> .....	60
1.2.1	<u>Classification of domain names</u> .....	60
1.2.2	<u>Domain names subject to extrinsic property rights</u> .....	61
1.2.3	<u>Meaningful domain names</u> .....	62
1.2.4	<u>Motives for purchasing a domain name</u> .....	63
1.2.5	<u>Competing technologies</u> .....	64
	<u>2. The domain name industry</u> .....	65
	<u>2.1 The resource</u> 66	
2.1.1	<u>Domain names as an exhaustible differentiated resource</u> .....	66
2.1.2	<u>Is there a shortage of domain names?</u> .....	67
2.1.3	<u>Allocation methods</u> .....	67
2.1.4	<u>Historical perspective</u> .....	68
2.1.5	<u>IDNs</u> .....	70
2.1.6	<u>New TLDs</u> .....	71

2.2	The market for registry service .....	72
2.2.1	Current organisation .....	72
2.2.2	Registries as natural monopolies .....	73
2.2.3	Entry and operations in the market for registry service .....	74
2.2.4	Opportunities for new entrants .....	75
2.3	The market for registration service .....	75
2.3.1	The transition process .....	76
2.3.2	Have barriers to entry hindered the transition process? .....	77
2.3.3	Is the CNO market competitive today? .....	79
2.3.4	Opportunities for new entrants .....	80
3.	The allocation of IP addresses .....	80
3.1	Economic analysis .....	80
3.1.1	Homogeneity of the resource .....	80
3.1.2	Potential exhaustion .....	81
3.1.3	Allocation procedure .....	81
3.2	Historical perspective .....	82
3.2.1	From abundance to the threat of shortage .....	82
3.2.2	Technical changes and organisational reforms .....	84
3.3	Possible lessons .....	85
<b>PART III - LEGAL ASPECTS</b> .....		<b>87</b>
1.	<u>ICANN as it stands after the reform process.</u> .....	87
1.1.	The proper functioning of ICANN as an organisation .....	89
1.2.	ICANN's contractual relationship with key stakeholders. ....	93
1.2.1.	The US Government's control over ICANN. ....	94
1.2.2.	ICANN's relationship with the root servers community. ....	97
1.2.3.	ICANN and the Registries /Registrars. ....	97
1.2.4	ICANN's relationship with alternate roots. ....	108
1.2.5	Competitive conditions on the registries/registrars markets. .	110
2.	<u>ICANN's public policy functions and possible organization models.</u> .....	110
2.1	ICANN policy functions and international disciplines .....	111
2.2	Alternative organisation models .....	120
2.2.1	The concept of public private partnerships .....	120
2.2.2	Possible organisation models .....	123
<b>PART IV - CONCLUSIONS AND RECOMMENDATIONS</b> .....		<b>129</b>

## **INTRODUCTION**

The Internet Corporation for Assigned Names and Numbers (ICANN) established in 1998 is a unique phenomenon. It forms part, and is charged with the oversight, of a network of bodies, entities and organizations – some of which predate ICANN – that are involved, or play a role, in the management of arrangements designed to allow the global Internet system of unique identifiers to function properly.

Yet, while being in charge of coordinating at the overall level these global systems and of ensuring their stable and secure operation, ICANN is a not-for-profit corporation under the laws of California.

ICANN's bylaws define its "mission" and "core values" reflecting a Memorandum of Understanding entered into between the US Department of Commerce and ICANN in 1998.

As a not-for-profit corporation, ICANN performs its coordinating and oversight functions by a combination of associating in one form or another the various stakeholders in formulating its policies and of entering with them in contractual arrangements.

Part I analyses ICANN's status, its mission, functioning and decision-making process. It discusses the main bodies, entities and organisations that are involved, and play a role, in the management of the global Internet system of unique identifiers. After describing the reasons leading to ICANN's reform, it describes ICANN's structure and processes after the reform. It deals with the main elements of this reform concerning the Supporting Organisations and Constituencies, advisory and review bodies and the key stakeholders views on ICANN after the reform process.

Part II carries out an economic analysis of the various components. It assesses the value of domain names, describes the domain name industry – its resources, the market for registry services and the market for registration services – and discusses the allocation of IP addresses.

Part III deals with a number of legal aspects. It addresses the question of how representative, accountable and transparent ICANN is after the reform process and how its relations in these respects with key stakeholders are now organised. While the reform process has led to substantial improvements, shortcomings remain: the structure and decision-making process are still too complex and opaque and the oversight of ICANN's public policy functions thrust upon it is sufficient. It explores whether lessons can be drawn for certain organisation models with respect to these public policy functions.

Part IV sets out five main conclusions and makes five recommendations.

# **PART I: ICANN Status, mission, functioning and decision making process**

## ***1. Introduction***

This section presents background information on the technical aspects of ICANN, i.e. an introduction to those elements, that fall under ICANN's mission such as the IP addresses, the domain name system, the protocol ports and parameters and the root server system, plus some information on the perception and feedback from major stakeholders on ICANN's role in this context.

As ICANN has been reformed, this study then focuses on the reformed organisation (usually referred to as ICANN 2) as a basis.

### **1.1. ICANN mission and “core values”:**

The mission of ICANN was amended as one of the first elements of the ICANN reform to ensure that the structure of ICANN and the procedures focus in the right direction. In the course of this study we also have to keep this mission in mind, since any deviation from or extension of the mission is outside the scope of this study.

If areas are identified which need amendment to the mission, this will be clearly indicated but in depth analysis will be left to future work.

The mission can be found at <http://www.icann.org/general/bylaws.htm> and mainly consists of two elements: the mission itself and the so called “core values”. The mission is a very brief definition of the aspects that are covered by ICANN. It is based on technical terms which are defined mainly in the IETF<sup>1</sup> and are elaborated in more detail in the upcoming chapters. The mission as it stands right now does not reflect any change as compared to previous versions but is couched in a more precise language. By giving ICANN's mission a very prominent place, the bylaws clearly indicate that ICANN is dedicated to be restricted to this mission.

Mission creep, i.e. the attempt or tendency, to cover additional topics, has been frequently criticized in the past years, but since the publication of the new bylaws this criticism has stopped. As we will see in the further debate, some of ICANN's functions are more or less accepted and others, especially the policy development functions, are debated. This debate is also called “thick vs. thin ICANN”, “thin” meaning, that ICANN should restrict its functions to technical operations of certain repositories, esp. the IANA function, “thick” in its various flavours means the inclusion of policy development up to general debates on freedom of speech, privacy protection etc.

ICANN itself and especially its CEO<sup>2</sup> and the chairman of the Board have frequently stated, that technical functions cannot be satisfactorily separated from the policy development functions. At least both functions have to be implemented somewhere on the global scale and a separation would increase the overall resources required.

The mission itself as given in ICANN's web page is:

The mission of The Internet Corporation for Assigned Names and Numbers (“ICANN”) is to coordinate, at the overall level, the global Internet's systems of unique identifiers,

---

<sup>1</sup> Internet Engineering Task Force, the key “standards body” for Internet Protocols

<sup>2</sup> Chief Executive Officer, also called President of ICANN

and in particular to ensure the stable and secure operation of the Internet's unique identifier systems. In particular, ICANN:

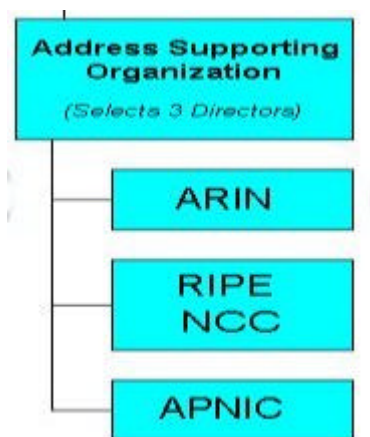
1. Coordinates the allocation and assignment of the three sets of unique identifiers for the Internet, which are
  - a. Domain names (forming a system referred to as "DNS");
  - b. Internet protocol ("IP") addresses and autonomous system ("AS") numbers; and
  - c. Protocol port and parameter numbers.
2. Coordinates the operation and evolution of the DNS root name server system.
3. Coordinates policy development reasonably and appropriately related to these technical functions.

A detailed description of the set of identifiers that come within ICANN's mission is provided in Annex I.

## 1.2. IP Addresses Allocation

Who has the authority to allocate public IP addresses over the Internet ?

In its organisation chart<sup>3</sup>, the ICANN claims that it had the role of allocating addresses through the ASO: addresses supporting organisation<sup>4</sup>.



**Figure 1 Addresses supporting organisation**

There really were two different periods :

- Historically, the late Jon Postel (who died in 1998) was in charge of allocating addresses while he was on top of INTERNIC, then after the creation of IANA

---

<sup>3</sup> Figure 3 is an excerpt of the former organisation chart of the ICANN. There has been no updated chart published after the on-going reform.

<sup>4</sup> Again, Figure 3 does not show the new "LACNIC" RIR discussed on the following page: no update chart is available for ASO at this time. Nor does it mention the future AFRINIC, which will service Africa after ARINC and RIPE – NCC.

(Internet Assigned Numbers Authority<sup>5</sup>). The process was very informal and easy going. End users just needed to exchange a couple of mails to get a "/16 allocation" (i.e. a provision for 216 publicly addressable machines !). This facility was highly used by "blue chip" companies to accumulate addresses they did not really need. At that time, everyone clearly hoped that the Internet would develop rapidly; therefore, requests for high numbers of IP addresses were welcome, encouraged and quickly fulfilled. The result was that roughly 50% of the IPV4 addresses were allocated during that "informal" period.

- Then, when Internet began to grow, the allocation and management task was too big for a small team. Gradually, three, then four "RIR" (Regional Internet Register) were created to allocate IP addresses:
  1. APNIC (Asia Pacific Network Information Centre): Asia/Pacific
  2. ARIN (American Registry for Internet Numbers): Americas and Sub-Saharan Africa
  3. RIPE NECC (Réseaux IP Européens): Europe, Middle-East, Central Asia, and African countries located north of the equator.
  4. LACNIC created in 2002 (Regional Latin-American and Caribbean IP Address Registry): Latin America and some Caribbean Islands.

The RIRs were given the remaining address blocks for them to allocate to the different ISPs and individual registrants (businesses).

How do people evaluate the ICANN's ability to manage the addresses allocation over time ?

Clearly, the first period discussed above may have encouraged a waste of resource: nobody had ever thought that there would be an Internet address shortage. Then it became clear that the address resource was running low. Today, the RIRs are just in charge of managing the shortage and trying to find their efficiency doing so. It is commonly known that the ICANN did not even try to manage the IPV4 shortage situation: the ICANN never tried to ask the US corporations to return their unused addresses<sup>6</sup>.

Conversely, some of the RIRs tried to re-allocate some blocks of addresses: for example, RIPE-NCC initiated a significant effort among the European universities (more specifically Swedish, German and French) in order to identify the existing gaps between their address blocks, then managing the exchange between them to let them have contiguous spaces of addresses. At the end of the process, RIPE-NCC could get back a significant number of addresses. Somehow, this process is very similar to the "defrag" procedure used by all PC users to recuperate disk space improperly used.

ASO never really managed nor coordinated the four RIRs (three at the beginning), to the point that the RIRs created their own coordination body: NRR, the "Number Resource Registry". Details about this new body can be found at the URL <http://www.arin.net/nrr-blueprint/>.

---

<sup>5</sup> It should be understood that the word authority is here taken as "control" more than command.

<sup>6</sup> It is well known that number of blue chip companies retain /8 blocks leaving 24 bits to address their machines, i.e. they keep a provision to address 16 million different proprietary machines, e.g., General Electric, BBN (2 "A" classes), IBM, AT&T, Ford, CSC, Eli, Lilly, etc. The allocation of Internet Protocol version 4 (IPv4) address space to various registries is listed in Appendix 1

Throughout the evolution and reform process of ICANN, the RIRs have consistently had two concerns:

A. The reforms that from the RIR perspective are needed to make ICANN a much more effective organisation in the Internet number resource area.

The RIRs indicated in this submission that there was no absolute requirement for a two-tier process of allocation of number resources from ICANN to the RIRs and from the RIRs to local registries.

B. The reform process itself.

All details on the concerns posted by the RIRs can be found on the RIPE website<sup>7</sup>.

### 1.3. Domain registration principles

There are several requirements that must be met to establish a domain<sup>8</sup>. In general, it must be responsibly managed. There must be a person responsible for serving as an authoritative coordinator for domain related questions. There must be a robust domain name lookup service, it must be of at least a minimum size, and the domain must be registered with the central domain administrator (the Network Information Center (NIC) Domain Registrar).

Responsible Person:

An individual must be identified who has authority for the administration of the names within the domain, and who takes on the responsibility for the behavior of the hosts in the domain, plus their interactions with hosts outside the domain. This person must have some technical expertise and the authority within the domain to see that problems are fixed.

Domain Servers:<sup>9</sup>

A robust and reliable domain server must be provided. One way of meeting this requirement is to provide at least two independent domain servers for the domain. The database can, of course, be the same. The database can be prepared and copied to each domain server. But, the servers should be in separate machines on independent power supplies, et cetera; basically as physically independent as can be. They should have no common point of failure."

As one can see, most of the characteristics of the Domain Names were stipulated in this RFC 920. How was it applied through the years?

IANA, then ICANN concentrated on gTLDs management (those TLDs called "Categories" in the RFC 920).

IANA kept the archives relating to the creation of the ccTLDs. It would be most valuable to take a look at IANA archives in order to see useful information on initial ccTLDs' registration.<sup>10</sup> The story of ccTLDs is the history of Internet deployment all over the world.

In RFC 920, there is very little about TLDs registration policies. Yet, number of undesirable practices took place, among others:

- Heterogeneity of various "whois" databases, and most importantly, lack of awareness of the general public about the exact content of these databases.

---

<sup>7</sup> "RIR Blueprint for Evolution and Reform of Internet Management".

(<http://www.ripe.net/ripencc/about/regional/nrr-blueprint-200210009.html>)

<sup>8</sup> See e.g. RFC 920, [www.icann.org](http://www.icann.org).

<sup>9</sup> The DNS (Domain Names System) will be thoroughly discussed in the following pages.

- ures; a number of companies had to fight to get their business identity on the Internet back,
- Delocalisation of servers, with the result of diluting responsibilities of registrants

#### 1.4. gTLDs Management:

Before ICANN, NSF handed out responsibilities to IANA, the legitimacy of which was readily accepted by the Internet community.

This period saw the emergence of new TLDs, reported in 1997. Then the USG issued the "green paper" and the "white paper".

This was also the time when it was decided that TLDs, and ".com", more specifically registration would be payable (\$35/year). The whole Internet community was shocked,<sup>11</sup> but it was applied. Furthermore, the USG added a \$15 tax on all registrations, to help pay for the network infrastructure. Interestingly enough, this tax was only paid by non-American registrants.

In the 1998 MoU, the framework for ICANN missions, only gTLDs were discussed. One of the main purposes was to put a stop the monopoly of NSI, and create competition on these TLDs, and bring up new contracts.

Nonetheless, the ICANN created the DNSO, as shown on Figure 2.

As one can see, there were numerous constituencies: Business (BC), Non-Commercial (sometimes referred as at large), ccTLD registries, gTLD registries, ISPs, Registrars, Intellectual property.



**Figure 2 DNSO organization**

<sup>10</sup> This is the issue discussed in a communication presented by Mrs. Elisabeth Porteneuve at the ITU meeting (ccTLD workshop) held in Geneva in early March 2003.

<sup>11</sup> People were shocked that registering a name which is their's should become payable.

At that time VeriSign acquired NSI, and put out its new policies:

- Accreditation of new registrars
- Development of ICANN business on registries and registrars. Under this authority, VeriSign offered to "pre-reserve" more than 1 million so-called "internationalised" domain names at the individual rate of \$6 . These names were never usable, as no mechanism was deployed to use the non-ASCII characters in domain names.

Eventually, the ICANN succeeded in ending VeriSign's monopoly on gTLDs and opened the industry of registrars.

### 1.5. ccTLDs Management

Some 240 ccTLDs are currently registered: these registrations were established between 1985 and 1999.

Table 6 describes the incremental growth of ccTLDs year after year.

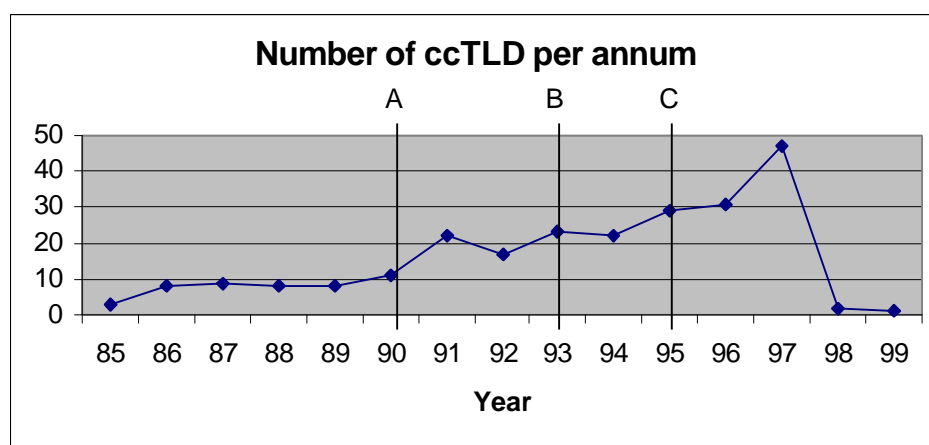


Figure 3: Growth of ccTLDs per year

Three breakpoints are represented on this figure.

A: 1990 was the year of international connections for NSFNET

B: 1993 InterNIC was created by NSF (NSI provides the registration services).

The registration of domain names was subject to fees, amounting to \$35 per year.

C: The NSFNET Backbone Project was terminated.

The ccTLDs were never managed either by IANA or ICANN.

- At the beginning of the ccTLDs delegation, (i.e. before 1993 and RFC 1591), already 110 TLDs were created. At that time it was a very costly decision to make for a given country: network infrastructure had to be provided by the newcomer.
- Attribution of territories was more than surprising: they were considered potential markets more than geopolitical areas.
  - i. For example, France<sup>12</sup> obtained delegation for the following TLDs: .fr, .re (Réunion), StPierre et Miquelon (.pm), Wallis et Futuma (.wf), Mayotte (.yt) which were part of the French national geopolitical territory.

---

<sup>12</sup> These details are extracted from a report brought up by the French government during the ITU meeting held in March 2003.

- ii. However, all these TLDs (but .fr) were frozen in 2001 as the French registry was denied the right to open registration in these domains. The French government opened discussions which resulted in opening registration for .re in June 2001. Conversely, .pf (Polynésie) and .nc (Nouvelle Calédonie) are currently open and administered by public local authorities. Other domains are administered by private companies, among them .tf (Terres Australes et Antarctiques). France has repeatedly asked to be delegated administration for .tf since 2000. ICANN appeared to agree with this request, but no decision was ever made.
- iii. Conversely, Norway was more successful in getting the delegation of Spitzberg within Norway.
- iv. Some "independent" individuals obtained the representation of country codes such as ".nu" which is for Niue, a very small territory (an island located in South Pacific). It was for the owner (a Swedish man by the name of Bill Semmick), an opportunity to market the TLD among French speaking communities, since "nu" means naked in French. The issue has still not been settled.
- v. Likewise, VeriSign got the delegation for ".tv" (Tuvalu Islands) and for ".cc" (Coco Keeling Islands) at a given point in time. In these situations, the governments of the corresponding territories did get the delegations back. The government of Tuvalu subsequently sold the rights over the .tv ccTLD to a private foreign operator..
- vi. TLD ".la" was first delegated to the Laos government, and then bought from a non-authorised person by Los Angeles to market the city. Up to a couple of weeks ago, there was still a discrepancy between the official list of ccTLDs posted by IANA, and the home page for <http://www.nic.la>. Apparently, the issue was very recently settled, since this URL is not resolved any more.

These decisions were "one man's" decisions, namely Jon Postel's, without oversight from any official body. European ccTLDs have created their own supporting organisation (CENTR: Council of European National top-level domain registries)<sup>13</sup>. Right now, these ccTLDs want three things clearly established for the future:

- A real IANA function, with rules and procedures<sup>14</sup>
- A dedicated forum to discuss business issues,
- A periodical meeting with gTLDs in order to have follow-ups on root servers and associated issues.

There are 39 members in this organisation, also open to non-European registries, which meets periodically and produces position papers.

For example, CENTR issued a position paper on the "Future Management of the IANA function" in December 2002, which expresses all the concerns of ccTLDs and the issues that they would like to see settled. This paper, as well as the outcome of the discussions on ccTLDs held at the ICANN meeting in Rio de Janeiro in March 2003 will be discussed below in the IANA section.

---

<sup>13</sup> CENTR comprises 32 members; although most of them are European, some are not.

<sup>14</sup> See below the discussion on the IANA function

## **1.6. Other constituencies of the former DNSO:**

### **1.6.1. Business Constituency:**

The registrants (companies) need to be visible on the Internet, so that they are sure they will keep their business identity. To that extent, the IDN issue (Internationalized Domain Names)<sup>15</sup> is important to them. In a sense the BC likes to bring a different sensitivity to academics.

The constituency meets every 3 months at the same time as the general ICANN meetings. A number of participants between 20 and 50 attend these meetings. Most participants belong to trade associations, (like the French MEDEF). Very few individual corporations are represented, except large US corporations like AT&T, the representative of which is also the chairperson of the constituency.<sup>16</sup>

When companies register in ccTLDs, the problem is to determine who has the right to use a domain name or not. Given that ccTLDs use different languages, the words have different meanings. Transferring a domain name from one NIC to another may bring up different issues.

Now that the sunrise period is behind us, there is much less speculation on domain names than there used to be in the past. The only remaining problem is to rule on the past accumulated difficulties. New concerns can be brought up by IDN (see below), as several IDN names can boil down to the same basic form (the canonical form).

More companies should be represented at the Business Constituency. More specifically, a suggestion would be for the European Commission and the European Member State governments to encourage the representation of European companies at the Business Constituency.

### **1.6.2 Non-Commercial:**

This is not a big issue. They did not show a significant activity within the DNSO, and did not express particular wishes.

### **1.6.3 ISPs:**

The only significant issue about their business was the question of their responsibility on the content of the sites, as most of ISPs also offer hosting services in addition to access service. This issue has been particularly exemplified with the Yahoo case which did not get a proper international settlement. In a 2000 ruling, a French Court held that the owners of websites are responsible for their website content under the law of the country where that content can be accessed. As a result, the US based Yahoo was ordered by the Court to restrict access to a site that contains Nazi related material and speeches. The ruling was challenged with a US Court which refused to enforce the French judgment.<sup>17</sup>

### **1.6.4. Registrars:**

These are very active. They are very anxious that the new organisation does not impose new obligations on them: they appear as having a very fragile business model, as recent economic trends in the Internet have demonstrated. So, they are very concerned about the impact of the IETF projects on their business plan (for example, deployment of EPP).

### **1.6.5 At large:**

This project, consisting in trying to elect, on a worldwide basis and in a democratic way, several representatives of Internet citizens was a generous ambition. However, there was no awareness of the interest of that representation, the process and the possibility to be an elector, nor the possibility to apply as a candidate. Also, the very low total number of

---

<sup>15</sup> See further down

<sup>16</sup> European corporations directly represented are Alstom, Bolloré, Chanel, Danone, Deutsche Telekom, and LVMH.

<sup>17</sup> <http://www.pcworld.com/news/article/0,aid,98804,00.asp>

electors per country (in Europe, for example) was the key parameter for the final result of the vote.

### **1.7. Internationalized domain names (IDN)**

Internationalized Domain Names are defined by the RFC 3490. This RFC was approved by the IESG (Internet Engineering Steering Group) which has to endorse the work conducted by the IETF (Internet Engineering Technical Force).

Until now, domain names would use characters of the USA-ASCII repertoire, also referred sometimes as Roman characters or ACE (ASCII compatible encoding).

An "internationalized domain name" (IDN) is a domain name in which every label is an internationalized label. This implies that every ASCII domain name is an IDN (which implies that it is possible for a name to be an IDN even if it does not contain non-ASCII characters).

This section discusses internationalized domain names (IDNs), i.e. domain names using non-Roman alphabets, and a mechanism called Internationalizing Domain Names in Applications (IDNA) for handling them in a standard fashion. IDNs use characters of a large repertoire (Unicode), but IDNA represents the non-ASCII characters in a code using only the ASCII characters already allowed in the so-called host names (domain names) today.

This backward-compatible representation is required to keep compatibility with existing protocols like DNS<sup>18</sup>, so that IDNs can be introduced with no changes to the existing infrastructure of the Internet. IDNA's scope covers only for domain names, not free text. IDNA works by allowing applications to use certain ASCII name labels (beginning with a special prefix) to represent non-ASCII name labels. Lower-layer protocols need not be aware of this; therefore IDNA does not depend on changes to any infrastructure. In particular, IDNA does not depend on any changes to DNS servers, resolvers, or protocol elements, because the ASCII name service provided by the existing DNS is entirely sufficient for IDNA.

The IDNA specification solves the problem of extending the repertoire of characters that can be used in domain names to include the Unicode repertoire (with some restrictions). IDNA uses the Unicode character repertoire, which avoids the significant delays that would be inherent in waiting for a different and specific character set be defined for IDN purposes by some other standards developing organisation.

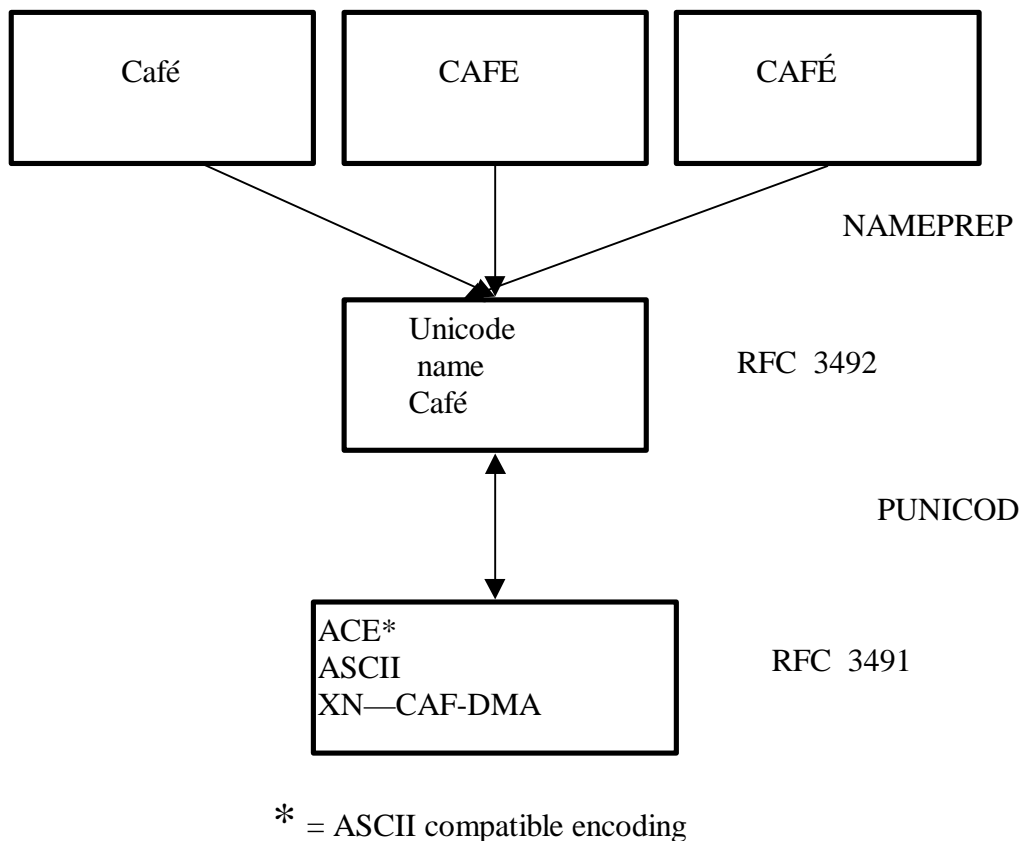
The IDNA protocol does not solve all linguistic issues with users inputting names in different scripts. Many important language-based and script-based mappings are not covered in IDNA and need to be handled outside the protocol. For example, names that are entered in a mix of traditional and simplified Chinese characters will not be mapped to a single canonical name. Another example is Scandinavian names that are entered with U+00F6 (LATIN SMALL LETTER O WITH DIAERESIS) will not be mapped to U+00F8 (LATIN SMALL LETTER O WITH STROKE).

Figure 4 illustrates the mechanism of IDNA on a small example.

The example is taken from the French language with the "é" character. Another example could be made with "théâtre", "théatre", "theâtre" and "theatre" The same type of logic would equally apply for German words similar as "weiss" and "weiß", or with the set of words like "führen", "fuehren", "FUEHREN", or "FÜHREN".

---

<sup>18</sup> Domain Name server (see below)



**Figure 4 Mechanism of the IDNA process**

The NAMEPREP (Name Preparation) step is not biunivocal. This means that several initial internationalized domain names can be resolved into the same Unicode name. Conversely, the PUNICODE process is biunivocal, i.e. it will be possible to reconstruct the Unicode name starting from the ACE ASCII name.

In a simplified way, the "ToUnicode" operation (also called NAMEPREP) takes a sequence of Unicode code points that make up one label and returns a sequence of Unicode code points. If the input sequence is a label in ACE form, then the result is an equivalent internationalized label that is not in ACE form, otherwise the original sequence is returned unaltered.

The ToUnicode operation never fails. If any intermediate step fails, then the original input sequence is returned. The ToUnicode output never contains more code points than its input. Note that the number of octets needed to represent a sequence of code points depends on the particular character encoding mechanism used.

The "ToASCII" operation takes a sequence of Unicode code points that make up one label and transforms it into a sequence of code points in the ASCII range (0..7F). If ToASCII succeeds, the original sequence and the resulting sequence are equivalent labels.

It is important to note that the ToASCII operation can fail. ToASCII fails if any step of it fails. If any step of the ToASCII operation fails on any label in a domain name, that

domain name MUST NOT be used as an internationalized domain name. The method for dealing with this failure is application-specific.

As of today, the decision to implement was made. The ICANN Board recommended the Guidelines<sup>19</sup> in its resolution 03.48 to the registries. Broad encouragement was made to registries to participate, as well as languages experts, and other players in order to study and develop appropriate language-specific IDN registration rules and policies.

What will be the impact of the deployment of IDN ?

Given that IDN is meant to protect the Internet infrastructure, all the transitioning difficulties and costs have to be carried by the Internet Industry, i.e. the registries, registrars, end-users.

Registries: they will have to keep track of both the internationalized domain names and their corresponding Unicode name, as the relationship between them is not biunivocal. It is likely that multiple registrations will be made, this leading to lists of "equivalent IDN names", i.e. transformed into the same Unicode name.

Applications servers: they will have to reconfigure their systems to accommodate the IDN. Right now, the RFC recommends that they implement IDN for the web applications. Very soon, it is likely to be extended to the electronic mail: people would not understand that they can type an "IDNed" domain name when they surf, and cannot write their own name with all the genuine and vernacular accents and the true spelling. This process may be implemented in two steps: one step to take care of the right part of the mail addresses (the server address) and later another step to allow non Roman characters in the individual addresses of people in the left part.

A similar process took place ten years ago, or so. At that time, the content of an e-mail could only be Roman characters. In order to allow non-Roman characters in e-mails, the servers and the applications (e.g. Outlook) had to be reconfigured to accommodate the new character set (8-bit alphabet instead of 7-bit).

Registrants : they will have to register more domain names if they want their brandnames to be protected against speculative registrations. In other words, deploying IDNs could result in triggering a new wave of cyber-speculation on domain names and cyber-squatting. In addition, typo-squatting which can be defined as a spelling deviation from a domain name and which already exists for certain misspellings of well-known words and brands, is likely to increase as a result of deploying IDNs. There are a lot of those situations in all languages where such deviations build an impressive list of spellings close to a given name. A thought which is actually explored would be to build in advance lists of variants by names in order to grant the owner of a given domain name (today spelt in Roman characters) the right of first refusal for the ownership of the domain names of the list. Another way to go would be to automatically grant ownership of those names, the job then would be on the registries, and no extra money would be spent by the registrants.

Note: This issue will be particularly important for all geopolitical spaces in the future, and more specifically for "eu.NIC." Clearly, the number of languages used in Europe is going to trigger a huge multiplication for the number of entries in those lists. To this extent, the legal texts (property) will have to be adjusted to this new era. In this particular situation, the concern is that, once again, technical reasons are driving the change with no legal frame established. The danger could be that registrants will have to face problems and costs, particularly during the start-up period of .eu. Obviously, some options are subject to the decisions by governments, e.g. the decision to admit a given vernacular language in the basket of languages for .eu and IDNA.

---

<sup>19</sup> <http://www.icann.org/general/idn-guidelines-20jun03.htm>

## 1.8. Protocol port and parameter numbers

As part of the standardisation process a variety of parameters have to be agreed on to ensure, that all network elements, like routers, network terminations, bridges etc. understand the information they need to act properly. This element in ICANN's mission was the main reason for the establishment of the PSO, the Protocol support organisation. In this context standardisation does not only mean the work of officially recognised bodies like IETF, ITU, ETSI, W3C but also parameters which are defined by companies or informal groups and are used as a de-facto standard.

In the past IANA has played the role of a repository, where all those protocol ports and parameter numbers have been "registered", i.e. the bodies, companies etc. informed Jon Postel about the agreement and he posted the result on the web as a living document. This procedure was identified as superior to the previous method, where RFCs have been issued from time to time. Today ICANN performs this task within the IANA function, which is explained in more detail further below. The change in procedure is documented in RFC 3232 <http://www.rfc-editor.org/rfc/rfc3232.txt>. IANA will publish further RFCs for archival purposes to document which protocol ports and parameters were assigned at points in the past.

This kind of registration is not contiguous, there is no scarce resource; the allocation of the parameters is done by the standards bodies. Consequently there has not been any great debate about this function; somebody has to do it, it needs to be stable, reliable, traceable and have a good performance for registration and changes.

In making assignments as the IANA, ICANN follows various considerations set by the organisation sponsoring the particular registry in which the assignment is made. Those considerations are expressed in various ways, and with various degrees of specificity. In recent times, the IETF has put "IANA Considerations" sections in RFCs providing this guidance to the IANA on how the assignment function is to be performed. The IANA function involves applying these considerations to particular requests for parameter assignment. This is a highly co-operative process between ICANN and the organisation sponsoring the particular registry, in general a standards developing organisation. The IANA does make various decisions in the assignment process, but those decisions are consistent with the guidance that the standards body specifies.

During the reform process, it was concluded that the PSO was not required any longer. This function will be taken over by the TLG, the Technical Liaison Group which will send a non-voting liaison to the Board.

The IETF/IAB have also stated, that for them it would be easy to establish an alternative organisation to perform this task, but so long as ICANN performs it, it will be respected and used.

The current list of registered protocol port and parameter numbers can be found at <http://www.iana.org/numbers.html> and in the following some examples are given.

SUN RPC Numbers: This is an example of a company specific set of parameters which have never been discussed in any specific body but have, at this point in time, been relevant enough to get registration. RPC specifies and describes the Remote Procedure Call, a technology developed by SUN Microsystems, and its parameters, the RPC numbers, are registered by IANA.

Megaco/H.248 Packages: The Media Gateway Control Protocol has been jointly developed by the IETF and ITU and the packages published as RFC 3015 and ITU-T Rec. H.248.1. The policy to assign the parameters have been developed by IETF and ITU as well and given to IANA.

"The IANA will assign a serial number to each package meeting the conditions of registration (except for an update of an existing package, which retains the serial number

of the package it is updating), in consecutive order of registration. The serial number will be used to identify the package in the binary-coded version of the Megaco/H.248 protocol. Serial number 0 is reserved, and the initial tabulation of public packages is given below. Public packages MUST be given serial numbers in the range 0x0001 to 0x7fff. Private packages MUST be given serial numbers in the range 0x8000 to 0xffff. IANA will maintain the currency and public availability of the tabulation of public and private packages. Packages will be listed in increasing order of serial number. Updates to packages will be listed in increasing order of version number.

Tabulation Of Public Packages

Serial	Text Name	Ver	Extends		Status*	Reference/Contact
-----	-----	---	-----	-----	-----	-----
			Ser	Ver		
			-----	---		
0x0001	g [RFC3015] or	2	-	-	Final	Annex E of  ITU-T Rec. H.248.1  ITU TSB  Place des Nations  CH-1211 Geneva 20  tsbmail@itu.int
0x0002	root	1	-	-	Final	ditto
0x0003	tonegen	1	-	-	Final	ditto
0x005b	Itultntt Line Test	1	-	-	IP 11/02	ITU Noise Test Tone  ITU-T Rec. H.248.17  ITU TSB  At above address."

Port Numbers: The port numbers are divided into three ranges: the Well Known Ports, the Registered Ports, and the Dynamic and/or Private Ports. The file <http://www.iana.org/assignments/port-numbers> contains the listing of all registered port numbers. The System (Well-Known) Ports are those from 0 through 1023. The User (Registered) Ports are those from 1024 through 49151. The Dynamic and/or Private Ports are those from 49152 through 65535.

The Document <http://www.iana.org/assignments/port-numbers> states:

"Ports are used in the TCP [RFC793] to name the ends of logical

connections which carry long term conversations. For the purpose of providing services to unknown callers, a service contact port is defined. This list specifies the port used by the server process as its contact port. The contact port is sometimes called the "well-known port".

It also provides a long list of the registered port numbers and is frequently updated. Port numbers have not only been assigned for standardised applications, such as access to the World Wide Web, WWW via http, the hypertext transfer protocol, or access to the mail via the Post Office Protocol, POP.

Also for a variety of company specific applications port numbers have been registered, like for SUN, IBM, DEC, Nvidia... and for research institutes like MIT.

Until now there was no lack of resources.

The port numbers are also used in the NAT (the Network Address Translation), mechanism, which is frequently applied to circumvent the shortage of IP addresses. The NAT and its associated issues are further discussed in a previous chapter.

### **1.9. Root server operation**

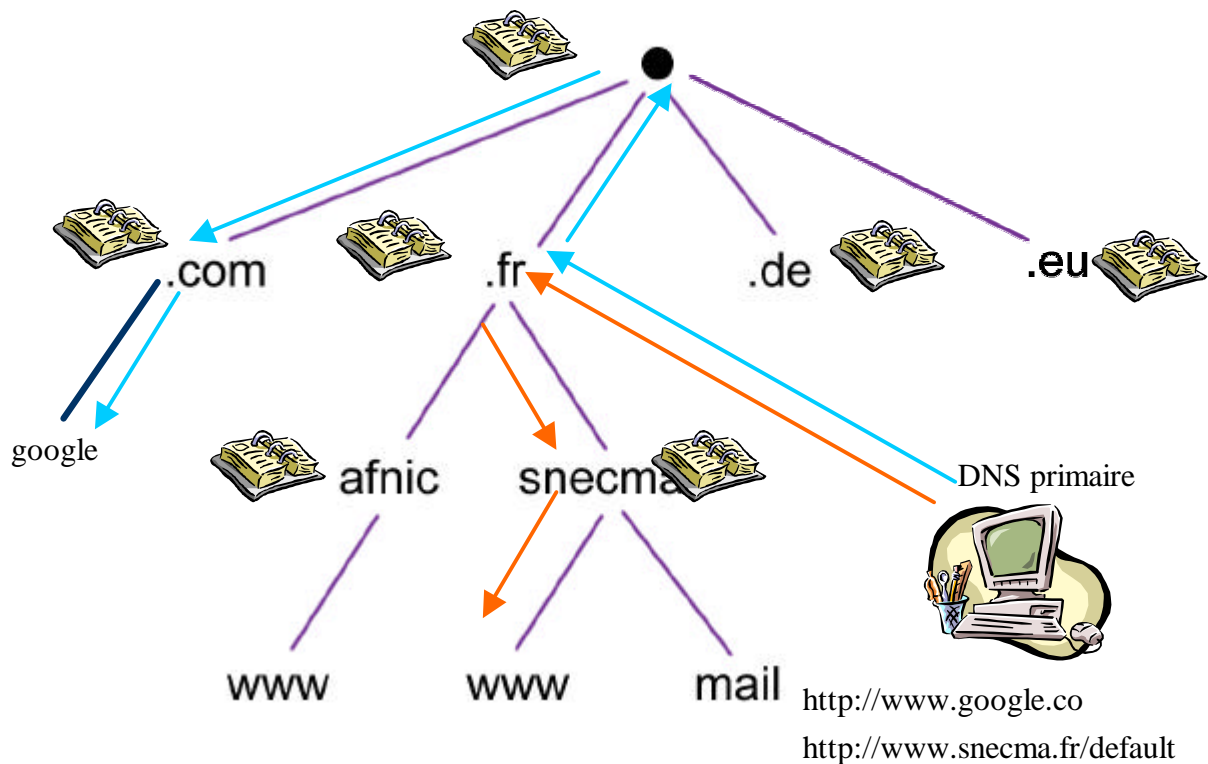
The Domain Name System is the system and the process that converts Internet host names (domain names) into IP addresses. It is implemented on computer systems known as Domain name servers.

The domain name system is a distributed database arranged hierarchically. Its purpose is to provide a layer of abstraction between other Internet services (web, email, etc.) and the numeric addresses (IP addresses) used to uniquely identify any given machine (host) on the Internet.

This has several advantages:

- It permits use of names instead of numbers to identify hosts (usually servers).
- It permits a server to change numeric addresses without requiring notification of everyone on the Internet, by simply retargeting a name to the new numeric address.
- One name can refer to multiple hosts, to share the load.

There are also more benefits of a more esoteric nature. This is all accomplished using resource records, which are organized into zones, which are in turn hosted by authoritative name servers for a given zone. Figure 5 shows the principle of the hierarchic tree of the DNS



**Figure 5 The Domain Name System**

The DNS is organized like an ancestor/descendants tree. The vocabulary itself, used to name the different entities, is the genealogical vocabulary.

- For example, the word "Ancestry" describes the zones and domain names.
- Root, written as "." is the ultimate ancestor zone.
- All top level domains like com, gov, and org are all its children.
- "example.com" is the child of com.
- "gomer.example.com" is the child of example.com, etc.
- Com is an ancestor of gomer.example.com, as is "."

Another way to think of children is as subdirectories (delegations) of parent directories, or as folders within folders.

The DNS is the biggest I/T application on earth. It is estimated that some 8,000 to 10,000 queries are resolved per second by the DNS. This does not take into account the number of quasi-official root servers maintained by certain countries which consider that they are too vulnerable to traffic interruption. For example, Taiwan maintains such a root server because it is located in an island. Therefore, it is impossible to evaluate the real daily total number of queries made to the DNS, also because the majority of queries are probably resolved even lower in the hierarchy by local name servers maintained by private and public organisations. There are many thousands of such machines. Very few DNS queries probably end up being directed to the top level of the Root server system. Up to now, the traffic is bigger on rootserver "A", since all the Microsoft traffic is automatically routed to "A". As for the other 12 rootservers<sup>20</sup> (B through M), they are equivalent in traffic.

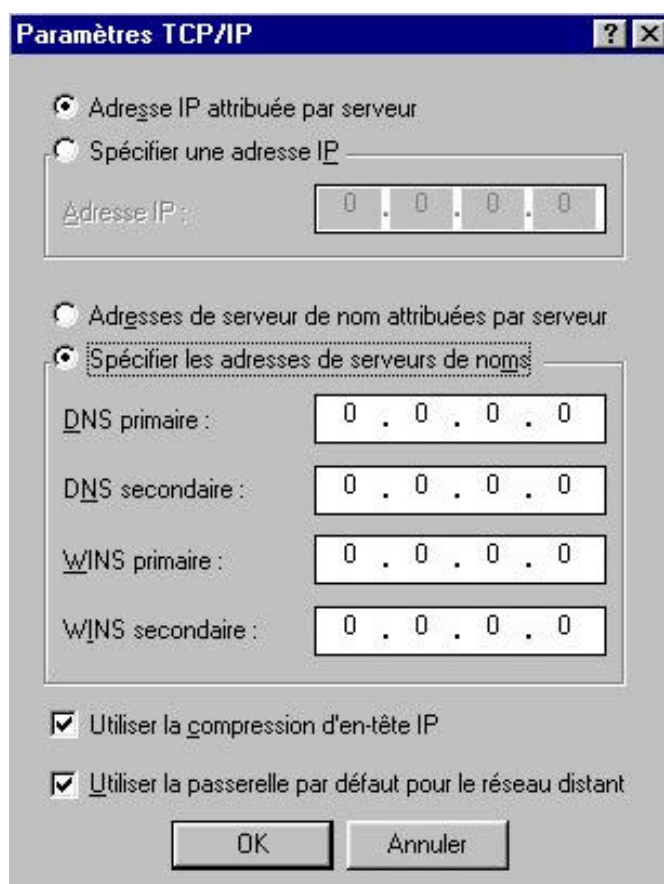
<sup>20</sup> "The current number of root servers is limited to 13 as that is the maximum number of name servers and their address records that fit in one 512-octet answer for a SOA record. If root servers start

Part of the IANA function (see below) is to update the root servers tables. Currently, IANA makes no such update without the explicit consent of USG (namely the Department of Commerce). After approval of the changes, "A" is updated, and all the changes get duplicated on the 12 others. Then, private copies can be made to update the root servers maintained by some zones or countries.

As shown on Figure 6, each hierarchical node, starting with the root, holds a list of the DNS servers of all the zones at the level immediately below it. For example, the root servers<sup>21</sup> hold the lists for all TLDs connected immediately under them on the tree.

Dynamically, the process starts from the PCs of the cyber-citizens.

Figure 6 shows that each individual PC is not only given parameters for its IP addresses, as explained above, but also for DNS addresses. These addresses are used by the DNS application to reach the first node of the tree.



**Figure 6 DNS assignment on a PC**

When a cyber-citizen strikes the "**Enter**" key after typing a domain name in the navigation bar of his(her) browser, the query to resolve the address of the site is immediately transmitted to the DNS known by the PC (either dynamically allocated by the ISP, or hard-wired in some companies). This DNS is the Primary DNS, or the Secondary DNS. The query is processed at that node:

---

advertising A6 or KEY records then the answer for the root NS records will not fit in a single 512-octet DNS message, resulting in a large number of TCP query connections to the root servers." *RFC3226: DNSSEC and IPv6 A6 aware server/resolver message size requirements*

<sup>21</sup> The logic of the application is explained in this paragraph using the word "the root server". Yet, it has to be understood that there are as many as 13 root servers (A – M).

- If the domain name is part of the zone for which the node is authoritative, the answer can be readily made and the query is resolved.
- If the domain name is not part of the zone for which the node is authoritative, the query is forwarded to the level immediately above and the same logic is applied.
- At the end of the process, the query gets resolved.

Figure 5 shows how two different queries (the blue one and the red one) were routed through the DNS and how they were resolved, at two different levels of the tree.

Server	Operator	Cities	IP Addr	Country
A	VeriSign Global Registry Services	Herndon VA, US	198.41.0.4	USA
B	Information Sciences Institute	Marina Del Rey CA, US	128.9.0.107	USA
C	Cogent Communications	Herndon VA, US	192.33.4.12	USA
<u>D</u>	University of Maryland	College Park MD, US	128.8.10.90	USA
<u>E</u>	NASA Ames Research Center	Mountain View CA, US	192.203.230.10	USA
<u>F</u>	Internet Software Consortium	Palo Alto CA, US; San Francisco CA, US; Madrid, ES; San Jose, CA, US; New York, NY, US; Hong Kong, HK	IPv4: 192.5.5.241 IPv6: 2001:500::1035	USA
G	U.S. DOD Network Information Center	Vienna VA, US	192.112.36.4	USA
<u>H</u>	U.S. Army Research Lab	Aberdeen MD, US	IPv4: 128.63.2.53 IPv6: 2001:500:1::803f:235	USA
I	Autonomica	Stockholm, SE	192.36.148.17	Sweden
J	VeriSign Global Registry Services	Herndon VA, US	192.58.128.30	USA
<u>K</u>	Reseaux IP Europeens - Network Coordination Centre	London, UK	193.0.14.129	UK
L	Internet Corporation for Assigned Names and Numbers	Los Angeles CA, US	198.32.64.12	USA
<u>M</u>	WIDE Project	Tokyo, JP	202.12.27.33	Japan

**Figure 7 The root servers<sup>22</sup>**

Figure 7 shows the 13 root servers (A through M). Out of these 13 servers, 10 are in the United States (concentrated in Maryland, Virginia and California). One is in London, one in Stockholm and one in Japan.

"As it appears, to remain a global network, the Internet requires the existence of a globally unique public name space. The DNS name space is a hierarchical name space derived from a single, globally unique root. This is a technical constraint

---

<sup>22</sup> After the recent electric power outage which occurred on the East coast of the US on August 14, one wonders whether keeping 6 root servers in a restricted area (Virginia, Maryland and Massachusetts) could be a threat to the stability of the DNS. It might be advisable to change the implementation of those root servers and distribute them around the world. More details about the outage can be found at: <http://www.renesys.com/news/>

inherent in the design of the DNS. Therefore it is not technically feasible for there to be more than one root in the public DNS. That one root must be supported by a set of coordinated root servers administered by a unique naming authority."<sup>23</sup>

"Deploying multiple public DNS roots would raise a very strong possibility that users of different ISPs who click on the same link on a web page could end up at different destinations, against the will of the web page designers."<sup>24</sup>

This does not preclude private networks from operating their own private name spaces, but if they wish to make use of names uniquely defined for the global Internet, they have to fetch that information from the global DNS naming hierarchy, and in particular from the coordinated root servers of the global DNS naming hierarchy."

"There are several distinct reasons why the DNS requires a single root in order to operate properly":

- Maintenance of a Common Symbol Set (for more details, see RFC 2826 issued by the IAB Technical Comment on the Unique DNS Root in May 2000
  - The existence of a common symbol set, and
  - The existence of a common semantic interpretation of these symbols.
- Coordination of Updates
- Difficulty of Relocating the Root Zone<sup>25</sup>

As of now (2003), the situation was modified in Rio. A "cache" server is now operated directly by ICANN/IANA. Its IP number is concealed. The updates are made on this specific machine under the DOC's control. Thereafter, the 13 rootservers (A through M) get the authorization to take copy of the tables. This mechanism is a protection against all "denial of service" aggressions. It is only after the completion of this process that anyone can take copy of the content of the tables of the rootservers.

### 1.10. ORSN

There may be a new attempt to break the Internet homogeneous structure. A new concept has emerged: the **ORSN** initiative (an abbreviation for Open Root Server Network and stands for a network of DNS servers in the European Union and/or neighbouring countries).

"The ORSN serves as a alternative for the existing root-server network since February 2002, which is coordinated by the ICANN. In contrast to the root servers of the ICANN, the ORSN servers should predominantly be placed in Europe. Until now, the administration is done by the USA and/or the ICANN. Therefore, a large number of root-servers are located in America. A loss or the modification of the root-server information could result in serious consequences for all other countries concerning their internet use. For example, it is possible to exclude a whole country from the internet<sup>26</sup>. In practice, this scenario did not happen so far but neither can it be excluded as a possibility. The ORSN is based on a private initiative. The project is not profit-oriented and will not be it in the future. The current root-server operators of the ORSN support the network by supplying resources such as server hardware and, if necessary, the administration of the appropriate server. The joined ISPs and operators administer and

---

<sup>23</sup> <http://www.icann.org/correspondence/iab-tech-comment-27sept99.htm>

<sup>24</sup> <http://forum.icann.org/uniqeroot/3B17B47C00000023.html>

<sup>25</sup> see RFC 2826, <http://www.faqs.org/rfc2826.html>

<sup>26</sup> On this subject, there has been a lot of comments suggesting that Afghanistan, as well as Iraq traffics (both incoming and outgoing) could have been totally choked on purpose. On this issue, more details at <http://news.zdnet.fr/story/0,,t235-s2134301,00.html>

use the ORSN by conviction and in the interest of the autarcy of the network in Europe."<sup>27</sup>

This ORSN initiative should be taken seriously. It is a clear signal suggesting the need for an international legitimacy of the governance bodies of the Internet in the future. The ORSN web-site states that "The network coordinated by the ICANN, consisting of 13 Root-servers distributed among almost the entire world, is as far as we are concerned a high-quality and sure solution". It also states that "This project does not represent an isolation from the "American" Internet, however, is supposed to limit the influence and control of the U.S.A substantially". This suggests the ORSN is intended to complement the ICANN root from a European perspective rather than act as an "alternative" as quoted above.

### **1.11. The IANA (Internet Assigned Numbers Authority)**

In the current structure IANA is still used as a label for a specific activity. Even if it is not a separate organisation, it is one of the functions that ICANN performs, and some say, it is the key function.

IANA was created as the Internet Assigned Numbers Authority (Postel's group at USC/ISI) and was never an established organisation. It was just Jon Postel's own office, there was never any organisation chart published. (It is sometimes said that "*Jon Postel became the "numbers Czar" and "RFC editor"*"); SRI International, under contract to DARPA, managed day to day assignment of names/addresses initially for ARPANET and later (after 1983 deployment of TCP/IP) for Internet.

In 1984/5, Paul Mockapetris and Jon Postel developed a distributed database system called the Domain Name System to accommodate much larger scale.

- Internet Assigned Numbers Authority (Postel's group at USC/ISI) managed top level assignments
- *Volunteers* were found to manage next levels.
- Postel managed .edu, .US
- SRI managed .com, .org, .net, .mil, .gov and .int

In 1993, NSF created "InterNIC" and awarded to AT&T, CERFNet, and NSI domain name registration for .org, .net, .com, .edu, .int; the latter two being subcontracted to IANA.

In 1996, Postel initiated the Internet Ad Hoc Committee with support from Internet Society to institutionalize the IANA functions, and opened top level domains to competitive registration.

In 1998, Ira Magaziner, upon a request from President Clinton, initiated an effort to facilitate formation of a neutral, industry-sponsored oversight organisation to continue the IANA functions performed in the past under US Government contract in a global, consensus building setting.

It is interesting to look at the name and the label of IANA: "Authority". Authority is defined in English as either "the power or right to enforce obedience" or "person whose opinion is accepted". It is the second definition which seems to apply to IANA, given that it proposes to offer authoritative (ie. reliable) data on TLDs. For some time, there was no contract between the Department of Commerce and IANA and the latter's role was accepted by the majority of the Internet community who provided the data in the first place. Historically, IANA (see below) was in charge of the addresses over the Internet. It is unclear why IANA has been keeping on its website<sup>28</sup> a paragraph untitled

---

<sup>27</sup> <http://european.orsn.net/faq.php>

<sup>28</sup> [www.iana.org](http://www.iana.org)

"IP Address Services" since this role is now clearly part of the ICANN mission, and further delegated to the RIRs. There is a real need for clarification about this function. Now that the RIRs are in charge of IP addresses for their own zone of authority, one mechanism remains obscure: the allocation of chunks of addresses to the RIRs for them to allocate. No process is described. Is it still a IANA function? Who defines the policy? It's worth reading some excerpts of the RFC<sup>29</sup> 1591 (establishing the TLDs) :

"The Internet Assigned Numbers Authority (IANA) is responsible for the overall coordination and management of the Domain Name System (DNS), and especially the delegation of portions of the name space called top-level domains. Most of these top-level domains are two-letter country codes taken from the ISO standard 3166."

While this applies to country codes, it denies any right to the governments of the countries to be on top of the geopolitical domain represented by their own TLD.

"The IANA is not in the business of deciding what is and what is not a country, nor what code letters are appropriate for a particular country. Instead, the IANA employs a neutral list of two-letter codes maintained by the ISO 3166 Maintenance Agency. The IANA's policy is to create new ccTLDs only when they are listed on the ISO 3166-1 list."<sup>30</sup>

Clearly, the ccTLD issue was perceived as a source of political problems: different claims to authority in a country, different countries contending for a single code after separation, etc. The ISO 3166 list was originally established long ago for postal services: one of the purposes was to minimize the back-and-forth legs to physically carry a letter or a parcel from one place to another all over the world. It was selected to list the ccTLDs for lack of a better tool, and because it was bringing some kind of legitimacy based on its past utilization. Nonetheless, routing an e-mail, or an electronic transaction does not have the same constraints and does not imply the same costs and delays as physically carrying a letter or a parcel. ISO itself continues to maintain the country codes but clearly disassociates with the issues associated with its use in the Internet, albeit ICANN is a voting member of the ISO 3166/MA<sup>31</sup> . .

In the FAQ they state<sup>32</sup>: The country coded Top-Level Domains (ccTLDs) in the Internet are identified by ISO 3166-1 alpha-2 codes (.jp, .fr, .zw). This does not mean that ISO is involved in the governance of the Internet. So for all questions on the administration of the Internet Domain Name System please ask either the Internet Assigned Numbers Authority (IANA) or the Internet Corporation for Assigned Names and Numbers (ICANN) for information.

As a specific example of the difficulties already mentioned during the discussion on ccTLDs (see above), Annex 4 illustrates the whole case about the .pn ccTLD (Pitcairn Island).

In its home page, IANA ([www.iana.org](http://www.iana.org)) posts the following entries:

---

<sup>29</sup> RFC: Request For Comments, the term used in the IETF, the Internet Engineering Task Force, for a wide variety of documents

<sup>30</sup> <http://www.iana.org/cctld/cctld-establishment-procedures-19mar03.htm>

<sup>31</sup> See <http://www.iso.ch/iso/en/prods-services/iso3166ma/04background-on-iso-3166/iso3166-ma-members.html>

<sup>32</sup> <http://www.iso.ch/iso/en/prods-services/iso3166ma/10faq/frequently-asked-questions.html#Q06>

- [Domain Name Services](#)
  - [IANA ccTLD Database](#)
  - [IANAWhois Service](#)
- [IP Address Services](#)
- [Protocol Number Assignment Services](#)

**Figure 8 IANA missions as stated in their home page**

We already discussed the IP address services: actually, they are not performed within IANA.

As for Protocol Number Assignment Services, it is but an ancillary service consisting in registering new protocols and giving them a number in the open-ended sequence.

The quality of service of the Domain Name Services is the subject of controversy and criticism:

- The IANA ccTLD database is a file keeping IP addresses of the Domain Name Servers of all TLDs, including the ccTLDs. This file is not always updated to the satisfaction of TLDs. But all TLD managers are queuing up since due to the nature of the DNS they rely on the fact, that this information is correct. Otherwise they risk becoming non-operational.
- Another file is kept by IANA: the WHOIS database. This database keeps the administrative and technical information about each ccTLD. Part of this information is publicly available in the WHOIS database, ([www.iana.org/cctld/cctld-whois.htm](http://www.iana.org/cctld/cctld-whois.htm)) and is made available through the port 43 WHOIS service at [www.ccwhois.org/ccwhois/iana/20020819.IANA-DB-scoop-remarks.html](http://www.ccwhois.org/ccwhois/iana/20020819.IANA-DB-scoop-remarks.html) CENTr (mainly representing the European ccTLDs), have issued a set of recommendations about "The Future Management of The IANA Function". These recommendations are mainly of two kinds:
  - Changing the IANA database schema, identifying the ccTLD manager through the registration under the IANA database schema, the ccTLD manager seen as a legal entity, clarification of the authority of the administrative and technical contacts in the IANA database,
  - Clarifying and bringing professionalism in the process for changes to entries in the IANA database, and establishing different processes for quick/medium changes:
    - Quick changes: (within 7 working days, if not sooner)
      - name server changes - check with ccTLD Manager or Registrant and Technical Contact;
      - URL changes - check with ccTLD Manager or Registrant and Administrative or Technical contact;
    - Medium Changes – (within 30 days)

- replacement of the Administrative Contact - check with the ccTLD Manager or Administrative Contact and the ccTLD Manager – the ccTLD Manager’s position is binding;
- replacement of the Technical Contact - check with the ccTLD Manager and the Technical Contact – the ccTLD Manager’s position is binding;
- update any address information - check with the ccTLD Manager and either the Administrative or Technical contact; as soon as all parties have made representations

There is a last recommendation in the CENTr list: "The need for an independent audit".<sup>33</sup>

"The IANA ccTLD function needs to be carried out by a body, which must have the complete trust of all parties concerned.

This body must not deal with any policy actions, because all policy questions, including the issue of change of ccTLD Registry Manager, need to be dealt with separately, perhaps on a local basis under local law.

The organisation supplying the cc IANA services must in the future institute and maintain a formal change control system in order to track and log changes to the IANA database, and the records that result must be easily accessible to ccTLD Managers and other interested parties, on the web.

The organisation and management of the organisation supplying IANA ccTLD services must incorporate some form of independent quality auditing and a complete audit-trail of all operations of the auditor, must be maintained."<sup>34</sup>

There is currently a discussion about the TLDs transfer zones files: each of the Top Level Domains keeps a Whois database of all domains registered in its zone where all registrants are identified. ICANN wants all ccTLDs to comply with its request to provide the identity of all registrants within their own zone upon signing their contract. A number of registries of ccTLDs contest ICANN’s right, and even feel this demand as a threat to their existence: ICANN could easily get all the administrative information about the specific registrants of a given zone, then rebuild a new registry with another DNS node, and cut off the traffic to the former one. While some ccTLDs have accepted this new situation and signed their contract (e.g. Australia and Japan), a number of ccTLDs are opposed to this new request: the United States, Canada and most of the European registries.

As a summary to this paragraph discussing IANA, it is worth remembering that IANA is but an administrative function embedded within ICANN. It is more like a marketing label for the different ancillary services involved. It is mainly a repository for all the protocols numbers and RFCs and so forth. RFC 1700 (now outdated) stipulates this very clearly. IANA does not have its own, transparent budget since ICANN’s budget does not provide that level of detail. This may be one of the reasons, why the services boasted in its home page (see above Figure 11) are poorly fulfilled. Clearly, this is not a unanimous view, some of the stakeholders like RIRs and rootserver operators are barely affected by IANA’s functioning, but it is a factor limiting the acceptance of ICANN in the ccTLD community. ICANN is addressing this problem as e.g. stated in the report submitted to the DOC in August 2003:

---

<sup>33</sup> This recommendation is probably going to be a source of many arguments. Yet, the mechanism seems justified: it is a common practice to audit public organisations on the fulfilment of their mission and the level of performance.

<sup>34</sup> <http://www.centri.org/meetings/ga-17/future-iana.html>

“ICANN is currently in the process of preparing appropriate documentation of IANA procedures for root-zone editing. An initial specification was submitted to the US Department of Commerce on 1 August 2003. This initial specification includes metrics for processing times. The next step includes discussing this initial specification with interested parties, including ccTLD managers<sup>35</sup>”

## **2. *Reasons for Reform***

ICANN has, since its inception in 1998, made a lot of progress. This is documented in the series of reports to the DOC<sup>36</sup>. This study is forward looking, and we should understand the issues and difficulties ICANN was facing before the reform. This gives a better understanding of some issues and also a basis to check after the complete implementation of the reform, whether all previous issues have been solved.

ICANN's then President, Dr Stuart Lynn, made a case for structural reform in early 2002<sup>37</sup>. All issues are portrayed from the perspective of ICANN stakeholders. Against the background of the organisation's problems, the outline of Lynn's reform proposal is sketched.

### **2.1. *Incomplete transition tasks***

The Memorandum of Understanding (MoU) between the US Government and ICANN has been extended yearly since its inception in 1998. ICANN has been unable to achieve several of the goals defined in the MoU, specifically the establishment of contractual relationships with the ccTLDs, the Regional Internet Registries (RIR) and the root server operators. Stable relationships with the root server operators are regarded as one of the core transition tasks. The Department of Commerce (DOC) has found, however, that ICANN has made only little progress in this area.<sup>38</sup> The same is true for agreements with the operators of ccTLDs registries and with the RIRs, which are also seen as "important components of securing the future stability of the Internet."<sup>39</sup>

Furthermore, ICANN has failed to devise an appropriate structure and process that would ensure sufficient and legitimate public participation in the policy process.<sup>40</sup> When DOC and ICANN signed the first MoU in 1998, there was no plan or agreement as to how the nine At-Large Board seats would be filled and what institutional form the At-Large membership would take. ICANN committed itself publicly to develop a workable membership structure that would elect Board members.<sup>41</sup>

---

<sup>35</sup> <http://www.icann.org/general/status-report-01aug03.htm>

<sup>36</sup> <http://www.icann.org/general/agreements.htm>

<sup>37</sup> <http://www.icann.org/general/lynn-reform-proposal-24feb02.htm>

<sup>38</sup> Memorandum of Understanding Between the U.S. Department of Commerce and the Internet Corporation for Assigned Names and Numbers, Amendment 5, 17/19 September 2002  
[<http://www.icann.org/general/amend5-jpamou-19sep02.htm>].

<sup>39</sup> Id.

<sup>40</sup> Id.

<sup>41</sup> "The bylaws now make it clear that the Board has an unconditional mandate to create a membership structure that will elect the At Large Directors of the Board (...) We will move directly to devise a workable membership structure and will seek broad input on how this can be best done. (...) Some remain concerned that the Initial Board could simply amend the bylaws and remove the membership provisions that we have just described above. We commit that this will not happen. (...) we fully expect that the creation of a membership and the transfer of authority to a fully elected Board will occur before that transition period ends." (Dyson, Esther: Letter to J. Beckwith Burr, Associate Administrator

While the Supporting Organisations (SOs), through which ICANN's prime stakeholders are represented, were formed through a process of self-constitution in 1999, decisions regarding the representation of internet users 'at large' were delegated to a membership advisory committee,<sup>42</sup> an At-Large Study Committee with Sweden's former president, Carl Bildt as chair<sup>43</sup> and finally an At-Large Advisory Committee Assistance Group.<sup>44</sup> None of these efforts led to a permanent membership structure as originally conceived and promised. Lynn's reform proposal, which brought the debate on proper At-Large Board representation to an end, was seen by some At-Large advocates as "a breach of faith with the founding principles and basic structure of ICANN as well as the fiduciary duty of the board."<sup>45</sup>

The independent review process designed to resolve potential conflicts with the ICANN bylaws is another transition task that could not be completed. The committee appointed to nominate the members of the independent review committee, the Independent Review Panel Nomination Committee, was unable to fulfil its function because the members could not agree on candidates and did not find a sufficient number of applicants.<sup>46</sup> The reconsideration process, which ICANN did set up as a mechanism for accountability and objection showed, according to the DOC, only "limited success".<sup>47</sup>

---

(Acting), National Telecommunications and Information Administration, on behalf of the ICANN Board, 6 November 1998 [<http://www.ntia.doc.gov/ntiahome/press/ICANN111098.htm>.]

<sup>42</sup> ICANN Membership Advisory Committee Appointed, 17 December 1998 [<http://www.icann.org/announcements/icann-pr17dec98.htm>].

<sup>43</sup> ALSC: Final Report on ICANN At-Large Membership, 5 November 2001 [[http://atlargestudy.org/final\\_report.shtml](http://atlargestudy.org/final_report.shtml)].

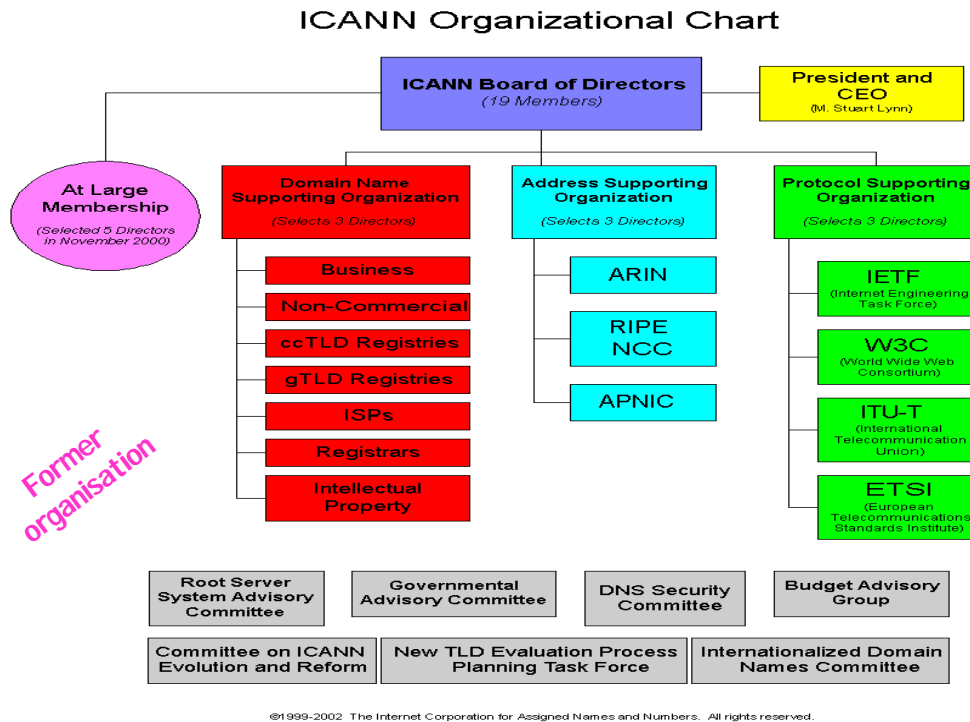
<sup>44</sup> ALAC Assistance Group: Report to the Evolution and Reform Committee, 19 August 2002 [<http://www.icann.org/committees/evol-reform/alacag-report-19aug02.htm>].

<sup>45</sup> Costello, Chuck, quoted from [<http://www.icannatlarge.org/statements.htm>].

<sup>46</sup> Fourth Status Report Under ICANN/US Government Memorandum of Understanding, 15 August 2002 [<http://www.icann.org/general/status-report-15aug02.htm>].

<sup>47</sup> Memorandum of Understanding Between the U.S. Department of Commerce and the Internet Corporation for Assigned Names and Numbers, Amendment 5, 17/19 September 2002 [<http://www.icann.org/general/amend5-jpamou-19sep02.htm>].

## 2.2. SO structure dysfunctional and unbalanced:



**Figure 9: Structure of ICANN previous to reform (ICANN 1)**

### 2.2.1. DNSO

The composition of the DNSO differed from that of other SOs as it aimed to accommodate an assembly of diverse stakeholders with conflicting interests. A fair representation of these interests in the framework of the DNSO's constituency structure proved to be very difficult, if not impossible. Concerns brought forth in the DNSO review report pertained to "the representation and procedures within a constituency and the overlap of constituencies and whether all stakeholders are represented by the current constituencies."<sup>48</sup> As a member of the Non Commercial Domain Name Holders Constituency (NCDNHC) put it, "the constituency structure has generated under-representation, because many interested parties cannot find a home in any of the approved constituencies; over representation, because other parties can participate in multiple constituencies; and misrepresentation, because the selection of constituency representatives obscures significant differences of opinion within the constituencies."<sup>49</sup> The ccTLDs decided to leave the DNSO and form their own SO because the composition and agenda of the Names Council focussed primarily on gTLD related matters: "In summary, members have felt that the DNSO structure, composition and work is devoted to gTLD issues (...) The absence of Board representation, and the unlikelihood of this occurring, despite the fact that cc domain names constitute approximately one third of all domain names and that members are expected to

<sup>48</sup> Report from the DNSO Review Task Force DNSO Review Report Version 3.0, 17 February 2001 [http://www.icann.org/melbourne/dnso-review-report-17feb01.htm#fn31].

<sup>49</sup> Weinberg, Jonathan, "Review of the Domain Name Supporting Organisation", (2001) [http://www.law.wayne.edu/weinberg/dnso\_review.htm]

contribute one third of the ICANN budget is a particular feature of the problems of the current relationship."<sup>50</sup>

The largest group of domain name holders on the Internet, the individual domain name holders, were not included in the DNSO's constituency structure. Attempts to establish an Individual Domain Name Owners' constituency were unsuccessful. Although the ICANN structure was theoretically open for the creation of additional constituencies, the DNSO consensus building procedure provided disincentives for integrating new stakeholders.<sup>51</sup>

#### 2.2.2. PSO without function

The PSO's area of responsibility, to "make recommendations regarding the operation, assignment and management of protocol parameters, such as port numbers, enterprise numbers, other technical parameters and related subjects" remained rather marginal among ICANN's duties. Unlike the DNSO, the PSO thus had basically no tasks. The IETF was the only Standards Developing Organisation (SDO) using the IANA service and also developed the associated policies themselves. A consulting role of the PSO was not requested by ICANN. The lack of functions is also reflected by almost empty archives of the PSO's mailing lists.<sup>52</sup>

#### 2.2.3. Problematic division of labor between ICANN Board and management

While the Board is ultimately responsible for ICANN's policy decisions, the staff does most of the work relating to ICANN's core functions. Discussion among Board members on pending policy decisions has been somewhat rare and not timely enough to allow for the Board to form independent opinions. The Board thus relied to a high degree on input by ICANN staff. As the Board member Abril i Abril has put it, "At the end of the day, we approve whatever comes from the staff (there all of the 'intellectual processes' take place, as we all know)."<sup>53</sup> It should be noted, however, that the staff is not accountable to the communities, which are affected by ICANN's decisions.

### 2.3. New TLDS:

The introduction of new TLDs has been the most controversial policy area in ICANN's initial years. The legal aspects are being discussed in detail in part 3. The DNSO, the SO formally responsible for developing policies regarding the creation of new TLDs, failed to generate consensus among the opposing interests represented on the Names Council.<sup>54</sup> The most important SO thus proved to be unable to fulfil its policy function. Crucial decisions regarding the application and evaluation procedures were therefore made by ICANN staff.

The evaluation and selection process of new TLDs also drew much criticism. A quarter of all applicants for TLD registries had an issue within some part of the procedure.<sup>55</sup> Subject of complaints were the perceived lack of opportunities to correct mistakes by the evaluation committee, and an alleged bias in the selection of the new TLDs. As Mueller

---

<sup>50</sup> Communiqué of the ccTLD Constituency, 1 June 2001

[[http://www.wwtld.org/communique/ccTLDStockholm\\_communique\\_01Jun2001.html](http://www.wwtld.org/communique/ccTLDStockholm_communique_01Jun2001.html)]

<sup>51</sup> The constituency structure proved to be discouraging to potential new members because additional constituencies would cause a shift in the DNSO's power balance.

<sup>52</sup> <http://lists.w3.org/Archives/Public/pso-discuss/>

<sup>53</sup> Abril i Abril, Amadeu: On Board elections: Some unsolicited advice (Email to GNSO Council from 20 February 2003) [<http://www.dns0.org/clubpublic/council/Arc12/msg00087.html>].

<sup>54</sup> Weinberg, Jonathan, "Geeks and Greeks", in *Info* 3 (2001) no. 4, 313 – 332, p. 323.

<sup>55</sup> See requests for reconsideration: [<http://www.icann.org/committees/reconsideration/>].

points out, the "winners were all established, politically connected insiders."<sup>56</sup> So it can be questioned, whether the goal to enhance competition was really achieved. As can be seen in part 2 under the economic studies, the registrar business seems to be competitive, but not so the registry business: most of the new gTLDs`registry operators are either "incumbent" registries or closely affiliated.

The contract negotiations between ICANN and the registry operators of the seven new TLDs led to further criticism. ICANN`s contracts were regarded as overly detailed and tailored specifically to the needs of open and large registries while neglecting those of the sponsored TLDs.<sup>57</sup>

The introduction of new TLDs was designed as a "proof of concept". Future decisions regarding future TLDs were to be based on the evaluation of the introduction of the seven new TLDs. While the evaluation procedures have been set forth in a report by the New TLD Evaluation Planning Task Force,<sup>58</sup> the evaluation itself has not been initiated yet.<sup>59</sup> What is more, a formal mechanism for the implementation of new TLDs has not been developed yet. The slow evaluation process has been criticised as an undue delay in the further rollout of new TLDs.<sup>60</sup>

#### **2.4. Criticism of IANA Service**

There have been complaints regarding the effectiveness and timeliness of the IANA service.<sup>61</sup> In particular, requests for changes of name server records have been deferred if the ccTLD operator refused to give IANA access to their zone files through AXFR requests.<sup>62</sup> IANA`s denial of name server changes has evoked criticism regarding IANA`s involvement in policy and administrative matters: "The IANA ccTLD function is essential for the technical stability of the DNS, and must be carried out by a body which has the complete trust and acknowledgement of all parties concerned. Such a body must not deal with policy, rather only maintaining the official record of the data connected to the management of the ccTLDs."<sup>63</sup>

---

<sup>56</sup> Mueller, Milton, Ruling the Root. Internet Governance and the Taming of Cyberspace (Cambridge/Mass.: MIT Press, 2002) p. 203.

<sup>57</sup> See Susan Crawford (ICANN Public Forum, 31 October 2002, Shanghai): "In my personal view, these contracts substantially overload the sponsored TLD with obligations that don't make sense and constrain their ability to work with their communities."

[<http://www.icann.org/shanghai/captioning-afternoon-30oct02.htm#EvaluationPlanforNewTLDs>] (9.12.02); compare also: Memorandum of Understanding Between the U.S. Department of Commerce and the Internet Corporation for Assigned Names and Numbers, Amendment 5, 17/19 September 2002 [<http://www.icann.org/general/amend5-jpamou-19sep02.htm>].

<sup>58</sup> New TLD Evaluation Planning Task Force: Final Report of the New TLD Evaluation Process Planning Task Force, 31 July 2002 [<http://www.icann.org/committees/ntepptf/final-report-31jul02.htm>].

<sup>59</sup> Fifth Status Report under ICANN/US Government Memorandum of Understanding, 8 January 2003: [<http://www.icann.org/general/status-report-08jan03.htm>].

<sup>60</sup> See: Department of Commerce Statement Regarding Extension of Memorandum of Understanding with ICANN, 19 September 2002

[[http://www.ntia.doc.gov/ntiahome/domainname/agreements/docstatement\\_09192002.htm](http://www.ntia.doc.gov/ntiahome/domainname/agreements/docstatement_09192002.htm)].

<sup>61</sup> Memorandum of Understanding Between the U.S. Department of Commerce and the Internet Corporation for Assigned Names and Numbers, Amendment 5, 17/19 September 2002 [<http://www.icann.org/general/amend5-jpamou-19sep02.htm>].

<sup>62</sup> CENTR, Comment on ICANN AXFR Requirement for ccTLDs, 25 June 2002 [<http://www.centri.org/news/ICANN-AXFR.html>].

<sup>63</sup> CENTR, About the Administration of the Internet Domain Name System, 28 February 2003 [<http://www.centri.org/docs/statements/CENTR-ITU-Submission.html>].

## 2.5. ICANN's Authority Disputed

Some of the reasons for its disputed authority have been mentioned above. Additional causes for a lack of trust can be found in the fact that four members of the interim Board did not resign as originally promised and in the frequent changes of ICANN's bylaws, several of which concerned the composition of the Board.<sup>64</sup> Stuart Lynn specifically discusses the lack of commitment of critical entities, such as ccTLD managers, IP address registries, and root server operators. Special attention is also given to his view that governments are too little represented<sup>65</sup>.

Indeed, in the final analysis, national governments are perhaps the most irreplaceable supporters of ICANN, in the sense that – notwithstanding the efforts or desires of other stakeholders – the backing of governments is necessary if private sector coordination of the Internet's naming and address allocation systems is to be feasible. If governments choose to take direct responsibility for the management of the name and address systems of the Internet, they have the power to do so although it is not clear that they can implement any such decision on their own initiative (especially regarding numbering) without international co-ordination. And even if they do not make that choice, given the importance of the global resource that ICANN has been established to coordinate, it is unrealistic to think that governments will simply sit by and allow ICANN's processes to work without their careful attention and review.

Today, the Governmental Advisory Committee is the only formal mechanism for governmental input into ICANN. Despite significant effort by many of its members, it has been only a minimally acceptable vehicle, partly because of a lack of adequate commitments by the world's governments and partly because of the Internet community's own ambivalent attitudes (reflected in the attitude of ICANN, which is a composite of that community) towards government involvement. In addition, while all governments are invited to participate, the existence of the GAC has not generated the scope of governmental participation and commitment that is necessary for ICANN's long-term success.

Lynn also states that an enhanced involvement of national governments would significantly change the setup of ICANN as a private organisation, but recognises, that *“Although governments vary around the world, for better or worse they are the most evolved and best legitimated representatives of their populations – that is, of the public interest”*.

## 2.6. Proposal for Reform

In February 2002, ICANN's president Stuart Lynn put forward a call for reform. The president's report responded to ICANN's slow progress in completing the transition tasks and it addressed some of the criticism expressed by ICANN stakeholders. Lynn identified three major sources for ICANN's problems:

- lack of participation by key stakeholders (governments, major [commercial] users, infrastructure providers, technical community);
- too much focus on process and representation and not enough focus on its core mission;
- lack of adequate funding and staff.

---

<sup>64</sup> All in all ICANN's bylaws have been amended 11 times before the reform process was initiated [<http://www.icann.org/general/archive-bylaws/>].

<sup>65</sup> Lynn, Stuart: President's Report: ICANN – The Case for Reform, 24 February 2002 [<http://www.icann.org/general/lynn-reform-proposal-24feb02.htm>].

Lynn's reform proposal was based on the conclusion that the "original concept of a purely private sector body, based on consensus and consent, has been shown impractical".<sup>66</sup> In order to improve ICANN's effectiveness, Lynn's proposal aimed to enhance the role of governments in the DNS management. Lynn expected that a stronger commitment and involvement by governments would help to solve several if not most of the problems ICANN had so far proved unable to master:

- public representation, legitimacy, accountability;
- funding (new category of core funding with governments as new funding source);
- authority: governments' participation to strengthen ICANN's authority towards ccTLDs, RIRs, root server operators.

Furthermore, Lynn suggested

- to replace ICANN's consensus orientation by a striving for more effectiveness;
- to shift the policy responsibility from the SOs to the Board;
- to introduce a NomComm;
- to abolish the concept of At-Large membership.

In response to Lynn's call for reform, the Board founded the Evolution and Reform Committee (ERC). The ERC's task has been to recommend a framework for the structure and functioning of a reformed ICANN, and a timetable for implementing that framework.<sup>67</sup>

During the discussion that followed the founding of the ERC, Lynn's ideas were substantially modified. At the moment this study is finalised, the basic outline of new structures has been defined. These are described in the following section.

### ***3. The structure and processes of ICANN after the reform***<sup>68</sup>

In the following the input mechanisms for those affected by ICANNs decisions is described.

#### **3.1. Supporting Organisations and Constituencies**

##### **3.1.1. Supporting Organisations**

The decision-making processes of ICANN take place on different levels. According to the new bylaws, the Board of Directors is ultimately responsible for all policies. The Board is advised e.g. by the ASO:<sup>69</sup> *"The Address Supporting Organisation (ASO) shall advise the Board with respect to policy issues relating to the operation, assignment, and management of Internet addresses"*, the role of the ccNSO (and similarly for the DNSO) being defined as: *"developing and recommending to the Board global policies relating to country-code top-level domains"*, by the various Supporting Organisations (SOs) on issues that are within their respective fields. The SOs also select some of the directors directly (each SO two of the 14 directors).

---

<sup>66</sup> *Ibid.*

<sup>67</sup> Preliminary Report ICANN Meeting in Accra, 14 March 2002, (Section on) Evolution and Reform Committee [<http://www.icann.org/minutes/prelim-report-14mar02.htm#EvolutionandReformCommittee>].

<sup>68</sup> Based upon the ICANN bylaws as of March 25, 2003: bylaws for the Internet Corporation for Assigned Names and Numbers, a California Nonprofit Public-Benefit Corporation, as amended effective 25 March 2003 [<http://www.icann.org/general/bylaws.htm>].

<sup>69</sup> *Ibid.* Article VIII, 1

After the reform there are three SOs:<sup>70</sup>

- The Generic Names Supporting Organisation (GNSO);
- The Country Code Names Supporting Organisation (CCNSO);
- The Address Supporting Organisation (ASO).

### 3.1.2. The GNSO

The Generic Names Supporting Organisation is concerned with all aspects of domain names in the so-called generic Top Level Domains (TLDs). Of these there now are 14,<sup>71</sup> with the largest being .com.

The GNSO consists of six constituencies. The constituencies are subgroups that select 12 out of the 15 voting members<sup>72</sup> of the GNSO Council. Both suppliers and institutional users are represented in constituencies: the suppliers in the Registries' and Registrars' constituencies, the users in the businesses, Intellectual Property interests, and Non-Commercial users constituencies. The sixth constituency, for ISPs (6), finds itself in some middle position, since ISPs are both users as well as suppliers of domain name services. As a rule, all six constituencies have an equal standing. There is a provision, however, that those constituencies whose members are under contract with ICANN (the Registries and Registrars) control half of the votes in the GNSO Council.<sup>73</sup>

Constituencies can lose their recognition, if they are deemed not to be representative any longer. Similarly additional constituencies can self organise and request recognition by the ICANN Board.

The number of members and the level of activity within the constituencies differ. The table below provides basic details for each of them in as far as the data could be ascertained.

---

<sup>70</sup> Before the reform the CCNSO was part of the GNSO (then called DNSO), from which it was already trying to gain more independence since 2001.

<sup>71</sup> .com, .net, .org, .edu, .gov, .mil, .int exist since 1985. In 2000 seven new ones were selected by ICANN, most of which are in the mean time operative: .biz, .info, .name, .pro, .aero, .coop and .museum.

<sup>72</sup> bylaws (...) ICANN (...) 25 March 2003 [<http://www.icann.org/general/bylaws.htm>]: Article X, 3, 1. The GAC and ALAC can send a liaison, who has no vote, to participate in the GNSO Council.

<sup>73</sup> *Ibid* Article X, 5.

Constituency	Potential membership	Members	Outside North-	In Europe	No. of messages to members mailing list Jan – April 2003
Business	[Unlimited ]	44 <sup>74</sup>	5%	55%	[No public archive]
Non-Commercial	[Unlimited ]	54 <sup>75</sup>	60% <sup>76</sup>	11%	583 <sup>77</sup>
Registries	13	9	0	33%	6 <sup>78</sup>
Registrars	164	50 <sup>79</sup>	8%	26%	1174 <sup>80</sup>
Intellectual Property	[Unlimited ]	34 <sup>81</sup>	?	?	74 <sup>82</sup>
ISPs	[Unlimited ]	38 <sup>83</sup>	23%	51%	[No mailing list]

**Figure 10: Overview on constituency membership**

The table shows that most constituencies have a rather small number of members in comparison with the total ‘user base’ they are speaking for within the ICANN structure. The level of activity on the mailing lists, the main vehicle for the development of opinions and policy statements, differs considerably. In the recent period covered by the figures in

---

<sup>74</sup> Several members of the Business Constituency are themselves membership organisations. If all members of these are counted, the constituency represents, according to its own figures, up to 1.5 million companies. [<http://www.bizconst.org/members.htm>]. The percentages for the geographical distribution of the membership are based on the 44 actual (direct) members.

<sup>75</sup> [<http://www.ncdnhc.org/members/2002members.htm>]

<sup>76</sup> The Non-Commercial Users’ Constituency is particularly strong in Asia (24 members), and within that region especially in Korea.

<sup>77</sup> [<http://www.icann-ncc.org/pipermail/discuss/>]

<sup>78</sup> [<http://www.gtdregistries.org/mailling/gtld/>]

<sup>79</sup> [<http://www.icann-registrars.org/>], link to a membership list of 2001. This lists 50 members and an additional eight, whose membership dues had not been paid at the time. More recent data were not available.

<sup>80</sup> [<http://www.dnso.org/clubpublic/registrars/Arc02/maillist.html>]

<sup>81</sup> The website of the constituency does not mention a list of members. The number is derived from the results of the elections held by the constituency in 2002 [<http://ipc.songbird.com/election2002.html>]. There are also “category 1” members, which don’t represent an intellectual property organisation. They do not have voting rights. Their number is unknown.

<sup>82</sup> [<http://ipc.songbird.com/members-archive/>]

<sup>83</sup> [<http://www.dnso.org/constituency/ispcp/ISPCP.Members.html>]: an outdated list from 2000. A more recent one is not available.

the list, only the NCUC and the Registrars' constituency have significant activity on their lists.

### 3.1.3 The ASO<sup>84</sup>

The Address Supporting Organisation (ASO) membership consists of the Regional Internet Registries (RIRs), which distribute the unique Internet Protocol (IP) Numbers to ISPs and other companies. At present there are four RIRs.<sup>85</sup>

With only four members, the structure of the ASO is simpler and flatter than that of the GNSO with its constituencies. The ASO Council consists of 12 members, three representatives of each RIR. The RIRs themselves are governed by their members, basically ISPs and companies and organisations that use large numbers of IP numbers. As yet, there is no new article on that ASO in ICANN's revised bylaws. The article of the ICANN bylaws on the ASO, indicates that further discussion with those represented through the ASO is needed.<sup>86</sup> Underlying this delay are differing opinions regarding the policy authority of the IP number space. The RIRs see for ICANN a more "lightweight" role,<sup>87</sup> of merely reviewing the policies adopted by the RIRs. and "*to coordinate the allocation of Internet Number Resources to the RIRs in accordance with global policies pertaining to the management of these resources and to protect the unallocated pool of these resources to which the RIRs must have free access, through established procedures at all times*".<sup>88</sup>

### 3.1.4 The CCNSO

To date the CCNSO has not been formed yet. As stated at ICANN's home page "The Country-Code Names Supporting Organization (ccNSO) is not yet implemented, but will be concerned with issues that relate to the two-letter country-code top-level domains such as .au, .cl, .de, and .jp"<sup>89</sup>. Nevertheless ICANN made significant progress and adopted changes to the bylaws concerning the ccNSO and started a ccNSO Launching Group<sup>90</sup>, a first meeting of which took place in Carthage on 28 October 2003 and which discussed the election of the ccNSO Council members"<sup>91</sup>. No agreement between ICANN Board and the ccTLDs has been reached with regard to their respective roles and authority. The European ccTLD managers (CENTR) would prefer an ICANN structure that leaves policy decisions to the local level.<sup>92</sup>

On April 22, 2003 the ICANN Reform Committee published a draft version of the article covering the CCNSO in the new bylaws.<sup>93</sup> The draft proposes a Council of 18 members, three from each of the regions of the world, chosen by the CCNSO members of that

---

<sup>84</sup> [<http://www.aso.icann.org/index.html>]

<sup>85</sup> ARIN (for North America); RIPE (for Europe and part of Africa); APNIC (for Asia and the Pacific); LACNIC (for Latin America and the Caribbean).

<sup>86</sup> bylaws (...) ICANN (...) 25 March 2003 [<http://www.icann.org/general/bylaws.htm>]: Article VIII.

<sup>87</sup> Regional Internet Registries: Communiqué to the Government Advisory Committee of the Internet Corporation of Assigned Names and Numbers, 24 March 2003 [<http://www.aso.icann.org/news/news-docs/rir-to-gac.pdf>] 5.

<sup>88</sup> [http://www.ripe.net/ripencc/about/regional/RIR\\_Communique\\_to\\_GAC.pdf](http://www.ripe.net/ripencc/about/regional/RIR_Communique_to_GAC.pdf)

<sup>89</sup> <http://www.icann.org/general/support-orgs.htm>

<sup>90</sup> <http://ccnso.icann.org/>

<sup>91</sup> <http://ccnso.icann.org/applications/why.shtml>

<sup>92</sup> CENTR position on ccSO Policy-Development, 25 November 2002

[<http://www.centri.org/docs/statements/CENTR-Position-on-ccso.html>].

<sup>93</sup> Fifth Supplemental Implementation Report of the Committee on ICANN Evolution and Reform, 22 April 2003 [<http://www.icann.org/committees/evol-reform/fifth-supplemental-implementation-report-22apr03.htm>].

region, and an additional three members appointed by the NomComm. According to the draft, only ccTLD registry operators that recognise the policy authority of the CCNSO as binding can be members. The draft proposes procedures for policy development very similar to those for the GNSO. Policy development processes are initiated by "Issue Reports", which can be requested by the Council, the board, an Advisory Committees or SO. The Council is to appoint an "Issue Manager", who creates an Issue report. The report includes recommendations regarding a PDP, and as to whether an issue is within the scope of ICANN's mission and the CCNSO scope matrix. The draft article also details mechanisms for resolving disagreements between the ICANN Board and the CCNSO Council regarding policies. E.g. it states, that: *"The Board shall adopt the ccNSO Recommendation unless by a vote of more than 66% the Board determines that such policy is not in the best interest of the ICANN community or of ICANN."*<sup>94</sup>

### 3.1.5. The At-Large Advisory Committee (ALAC)

Participation of individual users is planned to take place under the supervision of the ALAC.<sup>95</sup> This committee is responsible for recognising organisations that want to participate, called At-Large Structures (ALSs). These ALSs will be organised in five Regional At-Large Organisations (RALOs). At present the interim ALAC is seeking comment on the proposed accreditation rules for organisations that would like to be part of a RALO. Participation on an individual level is not envisaged.<sup>96</sup>

Each of the five RALOs will elect two members of the ALAC. Five others will be appointed by the Nominating Committee. The ALAC in turn sends five members to the Nominating Committee. The ALAC can advise the Board on any topic related to ICANN's mission. It can also initiate a PDP by asking the GNSO or CCNSO for an Issue Report.

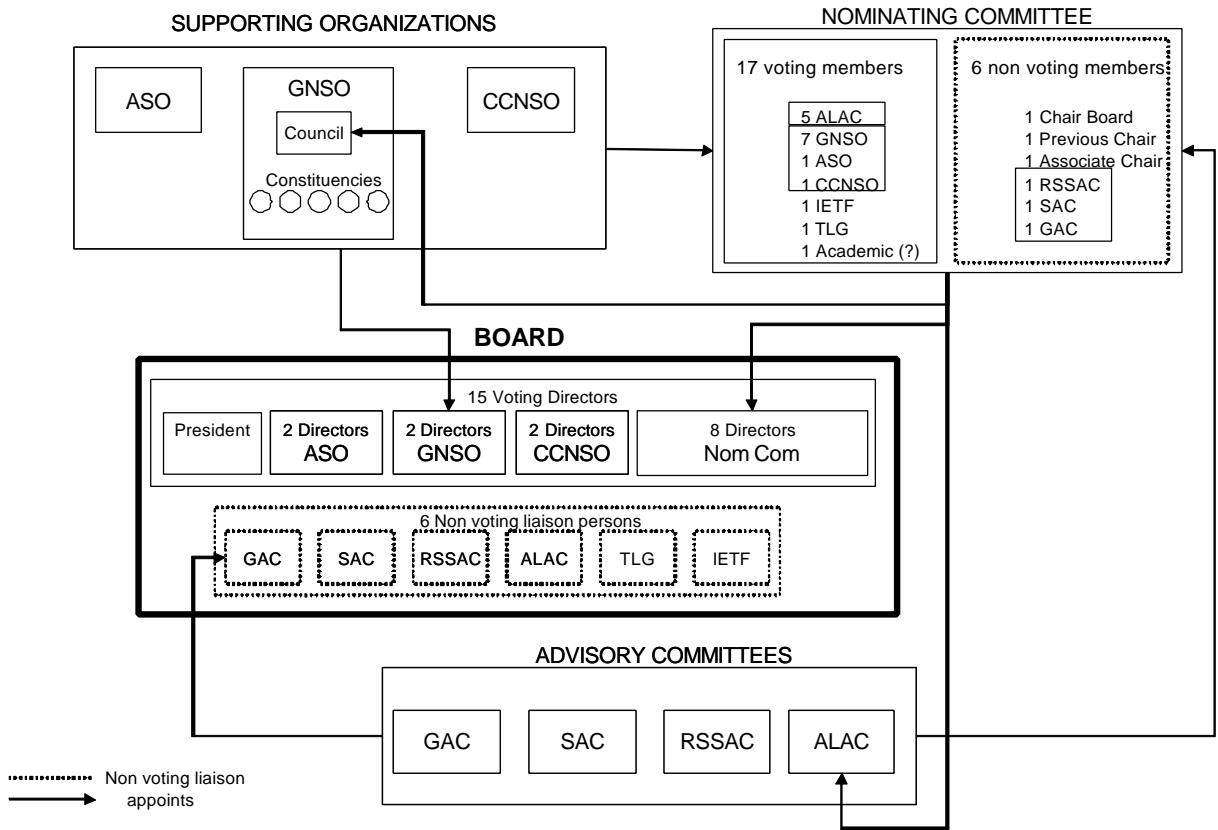
---

<sup>94</sup> <http://www.icann.org/general/bylaws.htm> , Annex B, para 15

<sup>95</sup> bylaws (...) ICANN (...) 25 March 2003 [<http://www.icann.org/general/bylaws.htm>]: Article XI, 2, 4.

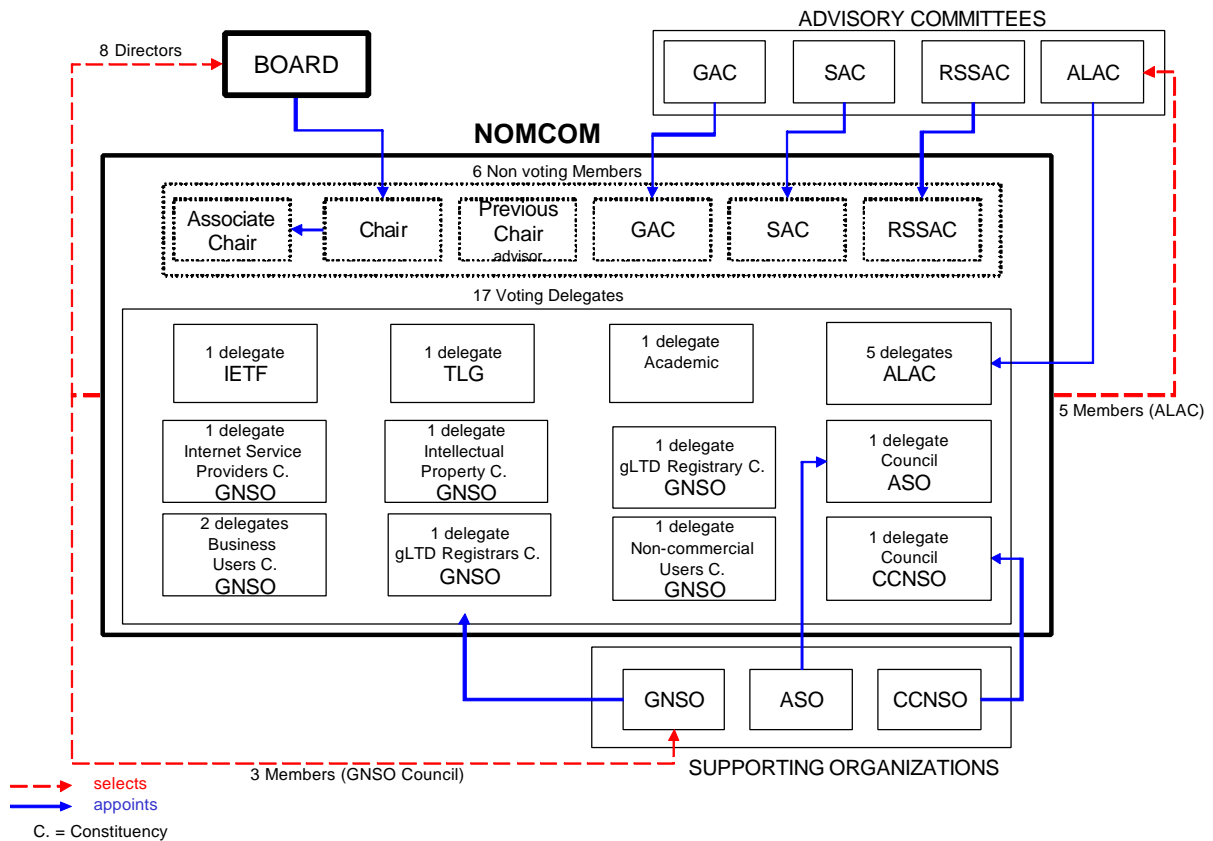
<sup>96</sup> ALAC: Proposed Criteria and Accreditation Process for At-Large Structures, and Proposed Guidelines for Regional At-Large Organisations' (RALOs) Memorandum of Understanding (MOU) with ICANN, Draft for Public Comment, 9 April 2003 [<http://alac.icann.org/drafts/draft-als-ralo-9apr03.htm>].

# ICANN



**Figure 11: ICANN's Board selection Procedure**

## NOMCOM organizational chart



**Figure 12: Overview NOMCOM**

### 3.2. The Board

#### 3.2.1 ICANN is governed by a Board, consisting of 15 directors and six so-called 'liaisons'.<sup>97</sup>

Of the 15 directors, eight are elected by the Nominating Committee (NomComm). Six others are selected by the three SOs. The Address Supporting Organisation (ASO), the Country-Code Names Supporting Organisation (CCNSO) and the Generic Names Supporting Organisation (GNSO) each select two directors. The 15<sup>th</sup> director is the President, who sits on the Board *ex officio*.

Directors serve for a period of three years, after which they can be reappointed, for a maximum of three terms.<sup>98</sup> There can be no more than five directors from any one of the five regions.<sup>99</sup> From each region there must be at least one director. No SO can appoint two directors from one and the same region.<sup>100</sup>

<sup>97</sup> bylaws (...) ICANN (...) 25 March 2003 [<http://www.icann.org/general/bylaws.htm>]: Article VI, 1.

<sup>98</sup> bylaws (...) ICANN (...) 25 March 2003 [<http://www.icann.org/general/bylaws.htm>]: Article VI, 8.

<sup>99</sup> ICANN divides the world into 5 regions to ensure geographical diversity: North-America; Latin-America and Caribbean; Europe; Africa; Asia, Australia and Pacific. Compare bylaws ICANN: Article VI, 5.

<sup>100</sup> *Ibid.* Article VI, 2, 3.

### 3.2.2 The 'Liaisons'

In addition to the 15 directors, the ICANN Board has six non-voting 'liaisons'. They serve in an advisory capacity. These six liaisons are appointed, one each, by:

- The Governmental Advisory Committee
- The Root Server System Advisory Committee;
- The Security and Stability Advisory Committee;
- The Technical Liaison Group;
- The At-Large Advisory Committee;
- The Internet Engineering Task Force.<sup>101</sup>

The liaisons have the right to participate in Board meetings. They also have access to the materials that directors receive in preparation of meetings and discussions. They do not have any of the other rights of directors, such as the right of inspection of all books and records.<sup>102</sup> Financially liaisons are on an equal footing with directors, as their expenses, e.g. to attend meetings, will be reimbursed.<sup>103</sup>

### 3.3. The Nominating Committee

The Nominating Committee consists of 17 voting members, and five or six non-voting members (three liaisons, the chair, who is appointed by the Board, associate chair, if any, appointed by the chair, and the chair of the preceding NomComm).<sup>104</sup> Most voting members are appointed by the ALAC (5) and the constituencies of the GNSO (7)<sup>105</sup>. ICANN's two other Supporting Organisations (ASO and CCNSO) appoint each one voting member of the NomComm. Two voting members are sent by standard body organisations to sit on the committee.

The indirect path of selecting directors through a NomComm is intended to ensure a varied and balanced Board. Criteria such as equal geographical representation, diversity of skills, viewpoints and perspectives are less likely to be achieved through appointments by ICANN stakeholders. The element of continuity in the Board is guaranteed by differentiation in the ends of the terms. In addition to directors, the NomComm also selects three members for the GNSO Council and five for the ALAC.<sup>106</sup>

Each year a new NomComm will be constituted. The bylaws specify a maximum of two consecutive terms for NomComm members, and an interstice of two years before reappointment. Members of the NomComm cannot be appointed to bodies for which the NomComm selects members.<sup>107</sup> This rule constitutes a safeguard against the risk of capture.

The first NomComm<sup>108</sup> started its work in March 2003 and concluded it in June 2003 with the announcement of nominees, most of them have been seated at the Montreal meeting in June 2003, although some will be seated at the annual meeting October

---

<sup>101</sup> *Ibid.* Article VI, 9, 1.

<sup>102</sup> *Ibid.* Article VI, 21.

<sup>103</sup> *Ibid.* Article VI, 22.

<sup>104</sup> *Ibid.* Article VII, 2.

<sup>105</sup> There will be eight, if and when the academic organisations form a constituency. Compare bylaws ICANN Article VII, 2, 8, g. Compare also: ICANN: Preliminary Report Special Meeting of the Board, 12 March 2003 [<http://www.icann.org/minutes/prelim-report-12mar03.htm>].

<sup>106</sup> bylaws (...) ICANN (...) 25 March 2003 [<http://www.icann.org/general/bylaws.htm>]: Article X, 3; Article XI, 2, 4, b.

<sup>107</sup> *Ibid.* Article VII, 8.

<sup>108</sup> <http://www.icann.org/committees/nom-comm/>

2003.<sup>109</sup> The general perception of the outcome was quite positive, as the NomComm has applied strict rules and procedures<sup>110</sup> to achieve its objectives<sup>111</sup>

### **3.4. Processes**

As far as possible, development of policies has been delegated to the constituencies, who advise the Board or recommend specific actions to the Board. Only in specific cases when the overall stability of the Internet is at risk, may the Board not follow such advice or recommendations.

#### **3.4.1 GNSO Policy Development Procedures (PDP)**

The GNSO is the only SO for which policy development procedures have so far been defined.<sup>112</sup> The rules for the PDP are detailed with a particular care for obtaining timely solutions, further for ensuring that minorities within the GNSO can raise issues, and for dealing with disagreement between the GNSO Council and the ICANN Board.

An issue can be raised for consideration by the Board, by the GNSO Council or by an advisory committee. Within the GNSO Council itself a 25% minority is sufficient to request a PDP. Upon receipt of a notification of the issue raised, a ‘staff manager’ (an ICANN staff person) has to create an ‘Issue Report’ within 15 (calendar) days. This Report should contain the opinion of ICANN’s General Counsel on whether or not the issue is within the scope of ICANN’s mission, and is of sufficient relevance to warrant a PDP.

The GNSO Council should within 15 days after receiving the report decide whether to pursue the issue, unless it was raised by the Board, in which case the PDP always has to be initiated. For issues raised by other bodies than the Board, the votes of 33% of the Council members in favour of a PDP on the issue are sufficient, unless the staff manager’s report states that the topic is not within the scope of ICANN’s mission or the tasks of the GNSO. In that case a supermajority<sup>113</sup> within the Council is needed for a PDP. After the formal initiation of the PDP by the Council there will be an announcement on the ICANN website and a public comment period of 20 days.

In case a PDP is initiated, the Council decides at the same time how to address the issue. The Council can either constitute a task force for in depth review of the issue or directly solicit statements from the constituencies. In the latter case each constituency has to appoint a representative to collect the constituency’s position and report it to the staff manager.

If a task force is formed each constituency will be requested to appoint a representative within 10 days. The Council can appoint external members to the task force but no more than three. The Council shall also within 10 days formulate a charter or terms of reference for the task force. The members of a task force have 35 days after the start of the PDP to send in their statements and further relevant information.

When the charter is in place the staff manager is to organise the first meeting of the task force within five days. At this meeting the task force will elect its chair. The chair of the task force and the staff manager are responsible for compiling the statements from the constituencies’ representatives and, if appropriate, from others, together with the public comment received into a preliminary report no later than 40 days after the PDP was started. The task force is to subsequently convene to decide on the final report within

---

<sup>109</sup> <http://www.icann.org/announcements/announcement-16jun03.htm>

<sup>110</sup> <http://www.icann.org/committees/nom-comm/procedures-10apr03.htm>

<sup>111</sup> <http://www.icann.org/committees/nom-comm/#CommitteesCharge>

<sup>112</sup> bylaws (...) ICANN (...) 25 March 2003 [<http://www.icann.org/general/bylaws.htm>]: Annex A, 1-16.

<sup>113</sup> A ‘supermajority’ is defined as 66% of the members present.

five days. No more than five days later the final report should be finished and published on the ICANN website for comment. The public comment period takes 20 days. The staff manager is to add those comments that merit inclusion to the report and send it to the Council within 10 days. The Council should hold a meeting to discuss the findings within 10 days. The results of the Council's deliberations (including any votes) are to be incorporated into the report by the staff manager, which will then be forwarded to the Board.

For issues that are dealt with without a task force, similar timelines apply. The total number of (calendar) days from raising an issue until the final GNSO Council advise to the Board is 120 at most.

The Board is to discuss the report "as soon as feasible". In cases where the Council reached a position on the issue by a supermajority, the Board must accept it, unless more than 66% of the Board decides against it. In that case the Board has to explain the reasons for rejecting the report in a statement to the Council, which then has 20 days to review the Board's position. Board and Council subsequently discuss the statement. The Council then meets to review its position and sends the conclusion of that process to the Board. If the Council's position is adopted by a supermajority, the Board can again only reject it by a majority of 66%. A simple majority of the Board is sufficient to reject the GNSO recommendation in case the Council's position is adopted by a simple majority.

#### 3.4.2 Review and Complaints

For the spectrum of possible complaints to the Board, ICANN has implemented a three-level review and complaint process. Each of these processes includes publication of the requests and the decisions on the ICANN website.

#### 3.4.3. Ombudsman

The bylaws provide for a full-time position of an Ombudsman,<sup>114</sup> who will evaluate complaints about actions or the lack thereof of the ICANN Board, other ICANN bodies or the ICANN staff. The Ombudsman can take on all issues raised by parties affected by an ICANN decision, action or omission, except those that have already been raised using one of the two other review mechanisms, described below. Issues of employees or suppliers of ICANN are outside the scope of the Ombudsman. The Ombudsman is expected to work through "shuttle diplomacy". So far no Ombudsman has been appointed.

#### 3.4.4. Reconsideration Committee

The Reconsideration Committee<sup>115</sup> consists of at least three directors. It makes recommendations to the Board. It also has the right to suspend a Board decision pending the reconsideration process.

Reconsideration requests can be made by anyone affected by action or inaction of ICANN staff violating ICANN policies, or by Board action or inaction without consideration of material information. The scope of the Reconsideration Committee is much more limited than that of the Ombudsman. Costs for the process are usually covered by ICANN, unless they are considered to be extraordinarily high, in which case the Committee is to consult with the complainant to see whether he/she is willing to bear these costs.

#### 3.4.5. Independent Review

The independent review<sup>116</sup> can only be invoked by parties suffering from actions of the Board that are alleged to be inconsistent with the ICANN bylaws or the Articles of

---

<sup>114</sup> op. cit.: Article V.

<sup>115</sup> op. cit.: Article IV, 2.

<sup>116</sup> op. cit.: Article IV, 3.

Incorporation. The independent review process is handled by a third party international arbitration provider, appointed by ICANN. This provider assigns a panel of arbitrators to each case, or constitutes a standing panel, if ICANN wishes so. The procedural rules for the arbitration are similar to those for the UDRP,<sup>117</sup> except that the party that loses the case, shall normally bear the costs.

#### 3.4.6. Advisory Committees

Apart from the At-Large Advisory Committee (ALAC), there are several other committees and advisory bodies that are either appointed by external bodies or consisting of members (mainly) not selected by the Board (1) or fully appointed by the Board (2).

### 3.5. The Government Advisory Committee (GAC)<sup>118</sup>

The GAC consists of government representatives. In addition multinational governmental and international treaty organisations as well as "distinct economies" can ask to participate in the GAC.

The GAC constitutes the communication channel between ICANN, international governments and multinational treaty organisations. The GAC deals with policy issues on ICANN's agenda that touch upon national laws, international treaties and other public policy related matters.<sup>119</sup>

The GAC sets its internal rules and procedures itself. The ICANN bylaws limit GAC membership to elected officials or civil servants that serve in a policy setting capacity within their own government or related organisation. Furthermore, the advised bylaws determine how differences of opinion between the GAC and the Board are dealt with through consensus development and negotiation.

At its meeting in Rio de Janeiro (March 23-25, 2003) the GAC implemented new working procedures. In addition to the links of communication provided by the new liaisons from the GAC to the Board, the Nominating Committee, the councils of the SOs and the standing committees, the GAC has set up a system of working groups<sup>120</sup>. The purpose of these procedures is to accelerate GAC's work and to facilitate communication between the GAC and constituencies and SOs of ICANN.<sup>121</sup>

The GAC consists at present of 87 representatives<sup>122</sup>. At its Montreal meeting (June 22-24, 2003) the GAC confirmed its earlier decision to involve more countries and to conduct an outreach to this end<sup>123</sup>.

---

<sup>117</sup> For the UDRP, see: [<http://www.icann.org/udrp/udrp.htm>].

<sup>118</sup> bylaws (...) ICANN (...) 25 March 2003 [<http://www.icann.org/general/bylaws.htm>]: Article XI, 2, 1.

<sup>119</sup> *Ibid.* Article VI, 4, 1.

<sup>120</sup> GAC Communiqué Rio de Janeiro, Brazil, 23, 24 and 25 March 2003, [<http://www.gac-icann.org/web/meetings/mtg15/CommuniqueRioDeJaneiro.htm>]

<sup>121</sup> GAC Communiqué, Montreal, Canada, 22-24 June 2003 [<http://www.gac-icann.org/web/meetings/mtg16/MontrealGACCommuniqueFinal.doc>]

<sup>122</sup> [<http://www.gac-icann.org/web/contact/representatives/index.shtml>]

<sup>123</sup> GAC Communiqué, Montreal, Canada, 22-24 June 2003, [<http://www.gac-icann.org/web/meetings/mtg16/MontrealGACCommuniqueFinal.doc>]; GAC Communiqué Rio de Janeiro, Brazil, 23, 24 and 25 March 2003 [<http://www.gac-icann.org/web/meetings/mtg15/CommuniqueRioDeJaneiro.htm>]

### **3.6. The Root Server System Advisory Committee (RSSAC)<sup>124</sup>**

The operators of the 13 root servers form the core membership of the RSSAC. The ICANN Board can appoint additional members. The Committee advises the Board on technical aspects of the root server operation and thus performs a crucial task in ICANN's mission. However, the activities of the RSSAC remain largely invisible to the general public.

The Board has never taken any action or decision on root server system issues except to establish the RSSAC. This is partially due to the fact, that ICANN does not have a formal relationship with the rootserver operators, partially also due to the fact, that security issues, incl. Information on geographical and organisational location, implementation etc. are not discussed in public to add to the security. Further, internationalisation of the rootserver system was of relatively low priority to the Board.

### **3.7. The Technical Liaison Group (TLG)<sup>125</sup>**

The former Protocol Support Organisation (PSO) is replaced by the TLG.<sup>126</sup> The members of the TLG are the European Telecommunications Standards Institute (ETSI), the International Telecommunications Union's Telecommunication Standardization Sector (ITU-T), the World Wide Web Consortium (W3C) and the Internet Architecture Board (IAB). The TLGs representatives on the NomComm and its liaison to the Board are appointed by the different member organisations on a rotational basis.

The TLG enables communication between ICANN and technical standard setting bodies with tasks, missions and authorities potentially overlapping with those of ICANN. Unlike the GAC, the TLG is not expected to provide policy advice but it will act as a responsive and active watchdog. It has no officers and holds no meetings, and issues statements only on specific issues if required.<sup>127</sup>

Within the majority of the ICANN community the IETF is seen as the dominant, if not the only, player in the area of Internet related standards which may impact ICANN's work, like versions of the Internet protocol, protocols to support the DNS and the rootserver system. This view is accepted by the other SDOs, but since the Internet and the telecommunications networks are currently merging issues may arise. An example here is ENUM<sup>128</sup>, the protocol jointly developed by the ITU and IETF to map E.164 Telephone numbers into the DNS. As became apparent at the Rio meeting in 3/2003 ICANN currently sees no need to get involved in policy matters associated with ENUM, but wants to keep informed so that, if ICANN's responsibility is affected, ICANN can act as fast and qualified as required.

### **3.8. The Security and Stability Advisory Committee (SAC)<sup>129</sup>**

The SAC is charged with the task to consult with the technical internet community on matters relating to the security of the DNS and IP numbers, and to communicate its findings to the Board by way of periodical reports and policy recommendations. The SAC sends a non-voting liaison to the Board. The Board appoints the chair and all members of the SAC.

---

<sup>124</sup> bylaws (...) ICANN (...) 25 March 2003 [<http://www.icann.org/general/bylaws.htm>]: Article XI, 2; [<http://www.icann.org/committees/dns-root/>].

<sup>125</sup> *Ibid.* Article XIa, 2.

<sup>126</sup> [<http://www.icann.org/general/support-orgs.htm>]

<sup>127</sup> This is due to a specific request by the IAB, compare [<http://www.iab.org/Documents/icann-response-3.html>].

<sup>128</sup> [<http://www.icann.org/riodejaneiro/captioning-public-forum-25mar03.htm>]

<sup>129</sup> bylaws ICANN, Article XI, 2, 2.

#### **4. Key stakeholders' views on ICANN after the reform**

The ICANN stakeholders formulated comments at different stages of the reform process. Since this section does not focus on describing all the minute details of changes in the reform plans over time, but looks at the comments and opinions from a perspective of “legitimacy” which is discussed in more detail in part 3, the development of positions over time has not been detailed in what follows.

##### **4.1. DNSO/GNSO**

###### ***Names Council***

The Names Council, the precursor of the GNSO Council, issued recommendations "on issues of high level principle".<sup>130</sup> These do not touch upon the question of legitimacy.

###### ***Business Constituency***

The BC did not indicate that it had any issues with the reform as such from a perspective of legitimacy. It expressed its belief in the need for representativity but did not elaborate or give any details on how it thought this aspect was safeguarded in the reform plan. At a later stage (in September 2002) the BC's concerns focussed on the representation of the constituencies in the GNSO. The BC objected to the proposal by the Registries and Registrars according to which the suppliers, who are bound by ICANN policies should have more votes. Further the BC suggested to have more Board members elected directly by the SOs and less indirectly by the NomComm. Also, the BC felt that one delegate from the ccTLDs on the NomComm was not sufficient, given that the NomComm appoints three members of the CCNSO Council. The BC was satisfied with its own double representation on the NomComm, one seat for small and one for large businesses. The BC welcomed a stronger role for the GAC.<sup>131</sup>

###### ***Intellectual Property Constituency***

The IPC's perspective on the reform process is based on the overall approval of ICANN. The IPC welcomes the fact that ICANN has replaced the ad hoc structures reigning in the administration of names and numbers before 1998. The IPC stresses its own 'natural' place in the structures, referring to the White Paper, in which the violation of intellectual property rights was one of the problems identified. In an additional comment on the constitution of the CCNSO the IPC expressed its concern about the possible exclusion of all but the ccTLD managers in making decisions within that body.<sup>132</sup> The IPC applauded Lynn's initiative and plan, but doubted whether governments should actually be involved on the level of Board membership.<sup>133</sup>

###### ***ISP and Connectivity Providers Constituency***

The ISPCPC expressed serious concern about the fact that despite general disagreement with certain aspects of the reform plans the ERC pushed ahead without much adaptation.

---

<sup>130</sup> Names Council: Interim Names Council Recommendations on ICANN Evolution, May 2002 [<http://forum.icann.org/reform-comments/general/pdf00014.pdf>].

<sup>131</sup> Business Constituency: Position on the ICANN Evolution and Reform Process, September 2002 [<http://www.bizconst.org/positions/BCpositionERC9-2002.doc>].

<sup>132</sup> [<http://ipc.songbird.com/IPCccNSOcomments.html>]

<sup>133</sup> Intellectual Property Constituency: Submission of DNSO Intellectual Property Constituency to ICANN Evolution and Reform Committee, 29 April 2002 [[http://ipc.songbird.com/IPCEval\\_cmte\\_input.html](http://ipc.songbird.com/IPCEval_cmte_input.html)].

The ISPCPC argued for a larger number (nine in stead of six) of Board members elected by the SOs in order to foster representativity. The constituency was not in favour of several liaisons sent to the Board from other organisations, except from the GAC. Other experts could be consulted on an ad hoc basis.

Like the Intellectual Property Constituency, the ISPCPC objected to the proposal to increase the voting power of the Registries and Registrars constituencies within the GNSO:

"The proposed change which elevates the voting power of those parties who have ICANN contracts, at the expense of those who don't, adds much weight to arguments that ICANN only pays lip service to the wider community it claims to involve in a bottom up consensus process."<sup>134</sup>

The ISPCPC opposed the introduction of a Nominating Committee to populate the Board on the grounds that this selection process lacks openness and transparency.

#### *Non-Commercial Users Constituency (NCUC)*

The NCUC (before the reform called NCDNHC, Non-Commercial Domain Name Holders Constituency) did not issue an official position paper on the reform process. From the messages on the constituency's mailing list it can be established that most members were opposed to the reform plan. The plan also caused a certain fatigue in the constituency, which has been the most critical body in the DNSO/GNSO. The general feeling in the NCUC is reflected in an email from a Korean member to the NCUC's mailing list:

"[Lynn's] proposal is based on the complete denial of "bottom-up process", which has been the central principle of ICANN. It looks very ironical for this document to take on the form of proposal for discussion. Basically, his proposal lacks the willingness of hearing people's opinion in this community."<sup>135</sup>

The reform process was perceived as an act of exclusion and the willingness of active NCUC members to participate, was low, for reasons described by a (then former) member of the Names Council from the NCUC:

"Some of you may have enough good will toward ICANN to volunteer input into its process, just as some of you might respond to an appeal by me to provide detailed technical advice on how to configure our local LAN. If so, that's fine, do it. But don't have any illusions about your standing in the process."<sup>136</sup>

#### *gTLD Registries Constituency*

The gTLD Registries supported the notion of the reform plans that those under contract with ICANN should have half of the votes within the GNSO, because, as they put it: "Not all stakeholders are equally affected". Those who sell domain names are potentially more affected by ICANN's policies than the 'users' of domains, they argued. The gTLDs strongly opposed the suggestion to grant them the same weight in the elections of the GNSO directors as the other constituencies.<sup>137</sup> In general the Registries expressed the view that they see the ICANN consensus processes to date as too much of an

---

<sup>134</sup> ISPCPC: Comments on ICANN Reform [May 2002]

[<http://forum.icann.org/reform-comments/general/pdf00017.pdf>]; ISPCPC: ICANN ISPCP Constituency Statement on Evolution and Reform [September 2002] [<http://www.ispcp.org/020925reform.html>].

<sup>135</sup> [<http://www.icann-ncc.org/pipermail/discuss/2002-February/004766.html>]

<sup>136</sup> [<http://www.icann-ncc.org/pipermail/discuss/2002-April/005136.html>]

<sup>137</sup> [<http://www.icann.org/correspondence/neuman-to-cerf-24feb03.htm>]

interference with their business. The Registries introduced the concept of 'Affected Parties' to indicate that matters of concern to the gTLDs should be decided by them.<sup>138</sup> At a certain stage in the reform process, the Registries proposed a separate SO for Registries and Registrars. The Registrars, however, did not support this idea.<sup>139</sup> The registry for .edu, Educause, which does not participate in the Registries Constituency, sent a letter of support to the Department of Commerce, in which it emphasised that "ICANN, through community based policy development, is the best means to accomplish the necessary work to maintain stability and promote continued innovation".<sup>140</sup>

#### *gTLDs Registrars Constituency*

The Registrars also sent a letter of support for the reform to the US Department of Commerce.<sup>141</sup> Within ICANN they argued for extra votes for themselves, being under contract, unlike 'users'. Also they expressed concern about the plan to increase the influence of the GAC, without, however, giving specific reasons.<sup>142</sup>

#### *Conclusion*

Except for the ISPs, the constituencies were primarily concerned with their own representation within the new ICANN structure. The discussions centred on the amount of votes the suppliers of domain name services, the Registries and Registrars, should have. Whether or not the reformed ICANN would be a legitimate organisation was of no obvious concern to the GNSO constituencies. Stuart Lynn's idea to enhance the role of the governments to increase the legitimacy of ICANN found little resonance within the GNSO.

## **4.2. RIRs**

The RIRs saw no need for an ICANN that would assume more authority over the tasks of the RIRs. If there is to be an oversight body 'above' the RIRs, it does not necessarily have to be ICANN, or any other organisation that fulfils all of ICANN's functions. Oversight functions regarding IP number allocation policies should be exercised in a more lightweight way.<sup>143</sup> Some policy tasks could be fully handled by the ASO, which would then also need less seats on the ICANN Board.<sup>144</sup> The RIRs declare explicitly that the question of an At-Large membership is not relevant for them, since those

---

<sup>138</sup> [<http://forum.icann.org/reform-comments/general/pdf00015.pdf>]

<sup>139</sup> [<http://www.icann-registrars.org/pdfs/bucharestminutes.PDF>]

<sup>140</sup> [<http://www.icann.org/committees/evol-reform/educause-internet2-to-usdoc-22aug02.htm>]

<sup>141</sup> [<http://www.icann-registrars.org/html%20docs/DoC-LetterOfSupport.htm>]. The registries for the new TLDs, which owed their existence to ICANN, sent a similar letter:

[<http://www.icann.org/committees/evol-reform/new-tld-registries-to-usdoc-09aug02.pdf>].

<sup>142</sup> [<http://www.icann-registrars.org/pdfs/bucharestminutes.PDF>]. Compare, however, a remark made at the Shanghai meeting of the Registrars: "Stubbs (Names Council): The governments of the world are ready to step into the void and regulate how our businesses work. Registrars are perceived as a group of self-serving businesses, aimed at retaining their clientele."

[[http://www.icann-registrars.org/html%20docs/Minutes%20and%20Notes\\_files/ShanghaiRecord.htm](http://www.icann-registrars.org/html%20docs/Minutes%20and%20Notes_files/ShanghaiRecord.htm)].

<sup>143</sup> RIRs: Joint Statement on ICANN Evolution and Reform, 8 May 2002

[<http://www.icann.org/committees/evol-reform/first-joint-rir-statement-08may02.htm>]; RIRs:

Submission to the Committee on ICANN Evolution and Reform, 20 June 2002

[<http://www.icann.org/committees/evol-reform/second-joint-rir-statement-20jun02.htm>];

RIRs: Blueprint for Evolution and Reform of Internet Address Management, October 2002

[<http://www.ripe.net/ripenc/about/regional/nrr-blueprint-20021009.html>].

<sup>144</sup> RIRs: Submission to the Committee on ICANN Evolution and Reform, 20 June 2002

[<http://www.icann.org/committees/evol-reform/second-joint-rir-statement-20jun02.htm>].

stakeholders that should be represented within the RIRs already are.<sup>145</sup> The RIRs objected to the assertion of the ERC that the RIRs "are, by their very nature, not suitably structured to receive, evaluate, and develop consensus positions on those address policies that truly take into account all interests affected by global concerns". Furthermore, the RIRs assert that far from being unsuited to the role, this precise function of hosting the open policy process for the broader address community has been an RIR role since the inception of the RIRs."<sup>146</sup>

### 4.3. ccTLDs

Few of the ccTLDs acknowledge an important role for ICANN as regards their own operation beyond coordination of technical standards and the maintenance of the root zone. The ccTLD registries took the opportunity of the proposed re-awarding of the IANA-contract to ICANN to bring the "general disagreement over how the function should be run" to the attention of the US Government. According to the ccTLD registries, the IANA-function should be exercised separately from policy setting or enforcing policies.<sup>147</sup> Only nine ccTLDs have a contract or MoU with ICANN,<sup>148</sup> of which only two (Japan and Australia) are among the sizeable ccTLDs.<sup>149</sup>

In the past many ccTLDs have refused to pay the (full) financial contributions that ICANN asked for. These were seen as dues imposed on the ccTLDs for which there was no basis in contractual or other relations between ICANN and the ccTLDs. Payment of the dues would have implied a recognition of ICANN's authority beyond what the ccTLDs found appropriate.<sup>150</sup> Negotiations on contracts between ICANN and ccTLDs, which would form a basis for financial contributions, have not been completed yet. The ccTLDs saw such contracts from a different angle than ICANN, which in the words of its then President, is quoted as stating that "ICANN will never sign a contract for services".<sup>151</sup>

The European ccTLDs, organised in CENTR, who account for 90% of all ccTLD name registrations world-wide, emphasised local responsibility in ccTLD management: "ICANN's function is to act as a central depository for information about, and provide coordination among those who operate, the technical infrastructure of the Internet, most notably in the domain name and IP numbering systems. The function of regulation remain within governmental prerogatives, whether it be of prices, services, business practices, or

---

<sup>145</sup> RIRs: Joint Statement on ICANN Evolution and Reform, 8 May 2002

[<http://www.icann.org/committees/evol-reform/first-joint-rir-statement-08may02.htm>].

<sup>146</sup> [<http://forum.icann.org/reform-comments/implementation/msg00020.html>]

<sup>147</sup> [<http://www.centr.org/docs/press/20030211.html>]; see also CENTR: The Future Management of the IANA Function, 23 December 2002 [<http://www.centr.org/news/Letter-future-IANA.pdf>]; CCTLD Managers: Communiqué of the Country Code Top Level Domain Managers meeting in Rio De Janeiro, Brazil, 23-25 March 2003

[[http://www.wwtld.org/meetings/Rio/ccTLDRio\\_communique\\_26Mar2003.html](http://www.wwtld.org/meetings/Rio/ccTLDRio_communique_26Mar2003.html)].

<sup>148</sup> Real contracts, called sponsorship agreements, exist with: Australia (.au), Japan (.jp), Kenia (.ke), Sudan (.sd) and Uzbekistan (.uz). MoUs are established between ICANN and the ccTLDs of Afghanistan (.af), Burundi (.bi), Laos (.la) and Malawi (.mw).

<sup>149</sup> Most contracts were part of a redelegation of a ccTLD. None of the European ccTLDs have a contract with ICANN.

<sup>150</sup> [<http://www.dnso.org/clubpublic/ga/Arc04/msg00476.html>]

<sup>151</sup> [[http://www.wwtld.org/communique/ccTLDMdR\\_communique\\_12Nov2001.html](http://www.wwtld.org/communique/ccTLDMdR_communique_12Nov2001.html)]

open competition in general."<sup>152</sup> CENTR's position can be compared to that of the RIRs, in that it also favours a lightweight ICANN, that leaves the ccTLDs to their own devices, and let national laws and governments take care of the legitimate oversight. How light this envisaged lightweight role is, can be seen from the specific suggestion on the way redelegations of ccTLDs should be handled: "If a relevant government has the potential for legal authority over a ccTLD operator and has the procedural means to address re-delegation issues using its own national jurisdictional tools (laws, regulations, courts), re-delegation questions should be dealt with within the local community and should not be directed to an international technical coordinating body like ICANN".<sup>153</sup>

ccTLDs from other parts of the world have also issued statements indicating that they prefer a more limited role for ICANN regarding ccTLD namespace than the reform plan suggests.<sup>154</sup> In Rio de Janeiro at the ICANN meeting in March 2003 the representatives of 54 ccTLDs reiterated "their view that any global policy role for the ccNSO or ICANN is very limited in scope, and the majority of policies are matters of local concern. Also, it was considered that when policy is developed and proposed to the board, the policy may only be approved or returned to ccNSO for further revision." This would mean that the ICANN Board has no authority over the ccTLDs.

The ccTLDs, like other bodies surveyed above, do not address the question of the overall "legitimacy" of ICANN. They focus instead on preserving proper boundaries between ICANN and themselves, and indicate that most of the oversight is exercised by their governments and not by ICANN. One could summarize the ccTLDs' position as: The legitimate authority for a ccTLD is the legitimate government of the country of that ccTLD, in situations where the governments have decided to seek such authority and have obtained it.

#### **4.4. Technical standard bodies (former PSO)**

The technical standard bodies were represented in ICANN through the PSO. Their comments on the reform plan are primarily concerned with the boundaries of authority between ICANN and themselves<sup>155</sup> and with the number of representatives of the standard bodies on the successor to the PSO, the TLG.<sup>156</sup>

The International Telecommunication Union Telecommunication Standardization Sector (ITU-T), also a member of the former PSO and in addition represented on the GAC, issued a personal statement from its director in response to Lynn's "Case for Reform". In this statement it is argued that ITU-T had the structure and experience to tackle many of the issues Lynn described,<sup>157</sup> including that of user representation.

---

<sup>152</sup> CENTR: Statement on ICANN, 30 July 2002 [<http://www.icann.org/committees/evol-reform/centr-to-usdoc-01aug02.htm>].

<sup>153</sup> op. cit.

<sup>154</sup> APTLD: AGM's Response to the ccNSO Assistance Group's Recommendations, 24 February 2003 [[http://www.aptdl.org/newsite/documents/2\\_1/Response\\_20030224\\_APTLD.htm](http://www.aptdl.org/newsite/documents/2_1/Response_20030224_APTLD.htm)].

<sup>155</sup> See [<http://www.iab.org/Documents/icann-response-3.html>]

<sup>156</sup> [[http://www.etsi.org/icann/ETSI\\_Statements/ETSI\\_response\\_to\\_ICANN\\_ERC\\_Second\\_Interim\\_Report.htm](http://www.etsi.org/icann/ETSI_Statements/ETSI_response_to_ICANN_ERC_Second_Interim_Report.htm)]

<sup>157</sup> Zhao, Houlin: ITU-T and ICANN Reform

[<http://www.itu.int/ITU-T/tsb-director/itut-icann/ICANNreform.html>], supplemented by: Hill, Richard: Clarifications on the paper "ITU and ICANN Reform"

[<http://www.itu.int/ITU-T/tsb-director/itut-icann/clarifications.html>].

#### 4.5. Governments update according to Montreal results

A stronger commitment and involvement by governments constituted a major pillar of Stuart Lynn's reform plan. In the "Blueprint", the ERC suggested non-voting liaisons to the Board, the Nominating Committee, the SO Councils and several committees as a means to strengthen the GAC's integration into ICANN. In the context of ICANN's core values that should guide the decisions and actions of ICANN, the ERC's Blueprint specified the relationship between ICANN and governments in the following way: "Act with sensitivity to the public interest and related governmental concerns, so that the need for direct governmental action is minimized."<sup>158</sup>

The majority of GAC members did not regard this wording as adequate to portray the relationship between ICANN and the governments. The GAC proposed instead to emphasise the governments responsibility for all matters related to public policy: "The majority of the GAC considered that this Core Value should read: While remaining rooted in the private sector, recognise that government or public authorities are responsible for public policy and duly take into account governments' or public authorities' recommendations. The U.S. believes that the language in the ICANN: A Blueprint for Reform document, posted 20 June 2002, is sufficient and does not need to be amended."<sup>159</sup>

The majority of GAC members agreed with the notion of ICANN as a private-public partnership<sup>160</sup> and views it as central for the implementation of ICANN's mission. However, the GAC unanimously declined to accept any funding obligations for the public sector. Instead the GAC recommended the principle of payment by beneficiaries. A majority of GAC members supported the idea of the Chair of GAC becoming a non-voting ex-officio Board liaison. Several European countries did not support any form of representation of the GAC on the Board because it entailed the risk of undermining the GAC's independence and creating problems for the GAC in cases where its members disagreed on certain topics. However, the GAC underlined the "utmost importance" of "internationalization, transparency and fairness and to maintaining the principle of geographic diversity and representation" in the selection of Board members. In the first half of the year 2003 GAC liaisons have been appointed to the Board, SOs and several committees<sup>161</sup>.

While most GAC members had no objection to the introduction of a Nominating Committee, a minority expressed doubts on the legitimacy of a Nomination Committee and its selection procedures. The concern was voiced that, due to the NomComm, ICANN's bottom-up principle might be replaced by a top-down principle. With regard to the policy development process, the GAC expresses the "expectation that all policy proposals would be circulated to, and get comments from, all constituencies before Board consideration". Likewise, the GAC wished to be consulted in all public policy matters and asked for a procedure that would give the GAC the right "to put

---

<sup>158</sup> Committee on ICANN Evolution and Reform ICANN: A Blueprint for Reform

[<http://www.icann.org/committees/evol-reform/blueprint-20jun02.htm>].

<sup>159</sup> GAC: Statement on ICANN Reform, 26 June 2002, Bucharest, Romania

[<http://www.icann.org/committees/gac/statement-on-reform-26jun02.htm>].

<sup>160</sup> Germany and France, however, stressed the "evolutionary nature of ICANN's mission" and point out that in future, "a different organisation of government participation, on a different legal basis may be contemplated" (*Ibid.*, annex).

<sup>161</sup> GAC Communiqué Rio de Janeiro, Brazil, 23, 24 and 25 March 2003

[<http://www.gac-icann.org/web/meetings/mtg15/CommuniqueRioDeJaneiro.htm>]

issues to the Board directly". In addition, the GAC recommended that the Board consult with the GAC on the appropriate sources for external expertise in policy matters. Despite the fact that the GAC refused to assume formal policy responsibility in ICANN, it has significantly extended its potential influence on the policy process. For one, the GAC participates through its liaisons in all important SOs and committees, for another it has obtained the right to put issues on the Board's agenda. In particular, GAC asks to be consulted with regard to ccNSO's policy processes and the development of ccNSO-related bylaw provisions.<sup>162</sup> As a result the final version of this part of the bylaws does "adequately reflect GAC's Advice"<sup>163</sup>. In accordance with its new role, the GAC has founded six working groups that more or less cover ICANN's policy areas. While the GAC seems to get more involved with ICANN's core functions, GAC did not make public its comprehensive views of what ICANN as a new public-private partnership model should look like in the future.

#### **4.6. US Government**

The US Government has for historical reasons a special role in the governance of the Internet. The packet switching technology was developed and first implemented in the US as part of US military research projects. The development of the DNS was funded as part of a long-term contract between DARPA (Advanced Projects Research Administration, US Department of Defence) and ISI (Information Science Institute). The operational services were performed by the Stanford Research Institute (SRI) under contract to the US Defence Communication Agency. Beginning in 1987 the SRI also coordinated the IP address assignment.<sup>164</sup> At the moment ten of the 13 root servers are in the US. In 1997 the USG decided to privatise the administration of IP numbers and domain names of the internet. After broad consultation, the USG entrusted ICANN in 1998 with the tasks.

ICANN's authority and tasks are founded in its contract with the United States Government's (USG) Department of Commerce (DoC). This contract, or Memorandum of Understanding (MoU), describes the technical tasks ICANN is authorised to perform. The main ones are:

- develop an enhanced architecture for root server security;
- operate the authoritative root once (1) is completed;
- pursue agreements with RIRs, ccTLDs and root server operators;
- test methods to implement new TLDs.<sup>165</sup>

The relation of ICANN with the USG is enhanced by the IANA function, which ICANN performs under a separate contract with the USG. The IANA function is largely administrative and includes the following tasks:

- coordinate the assignment of technical protocol parameters (port numbers);
- maintain the root zone and the contact database for ccTLDs;<sup>166</sup>

---

<sup>162</sup> *Ibid.*

<sup>163</sup> GAC Communiqué, Montreal, Canada, 22-24 June 2003, [<http://www.gac-icann.org/web/meetings/mtg16/MontrealGACCommuniqueFinal.doc>]

<sup>164</sup> Mueller, Milton: *Ruling the Root. Internet Governance and the Taming of Cyberspace* (Cambridge/Mass.: MIT Press, 2002) p. 81 - 82.

<sup>165</sup> MoU of 2000 [<http://www.icann.org/general/amend2-jpamou-07sep00.htm>]. The first version of the MoU of 1998 [<http://www.icann.org/general/icann-mou-25nov98.htm>] contains additional tasks, which have in the mean time been accomplished.

<sup>166</sup> The root zone file is still maintained by VeriSign, formerly Networksolutions. Any changes have to be approved by the USG [<http://www.ntia.doc.gov/ntiahome/domainname/nsi.htm>].

- investigate requests for redelegation of ccTLDs in preparation for decisions made by the USG;
- have overall responsibility for the allocation of IP addresses to the RIRs, and for special purposes.<sup>167</sup>

The USG's intention in 1998 to withdraw from the governance of names and numbers has been welcomed by other countries. However, there were different opinions with regard to the legal form of the new organisation. The European Union, Australia and Japan in particular emphasised the need for a truly internationalised body. Furthermore, the European Union has repeatedly pointed out that "the important issue of the transfer of powers relating to the management of the root server system from the United States' Department of Commerce to ICANN, under appropriate supervision, remains unresolved. Governments, in cooperation with the stakeholders concerned, should work towards internationalising the oversight role currently exercised by the United States government."<sup>168</sup>

## **CONCLUSIONS**

ICANN has a very narrowly specified mission within the Internet concerning the unique identifiers Domain Names, IP Addresses, Autonomous Systems Numbers, Protocol Port and Parameter Numbers. Its functions within this system of identifiers vary depending on the topic and cover operation e.g. for root servers, administration e.g. for IP addresses, development of policies including the development and enforcement of technical criteria e.g. for the adoption of new gTLDs. Even if those functions can be separated, they are all required and need to be performed, either in close alignment with ICANN or within ICANN.

ICANN has now existed for approximately 5 years and was created in a situation, where the Internet "exploded", some companies had a monopoly e.g. on the registry business and Jon Postel, who had coordinated those identifiers himself in agreement with the USG died. At that time some of the structures around ICANN already existed, this is the case e.g. of RIRs and ccTLD managers. This situation contributed to difficulties in ICANN's acceptance since it is perceived as deteriorating business perspectives and entering an area which worked before its existence.

Given these difficult circumstances ICANN has made much progress which is also recognized by the US Government, ICANN's sole source of formal legitimacy. The reform led to ICANN 2 with some modifications especially in the area of procedures, such as the policy development, election of the board members, composition of the constituencies and governmental influence. ICANN created a rather stable environment, which allowed inter alia a RIR to be set up in Latin America, adopted rules for "sponsored" gTLDs, transferred some ccTLDs to new managers and achieved greater support by governments for the way in which it performs the tasks assigned to it. Still ICANN is seen as very bureaucratic, difficult and non-transparent by most constituencies, the RIRs and the ccTLDs being the most outspoken. The IANA service is frequently criticized for its low performance, the at-large participation does not appear to be satisfactorily arranged. Some of the elements of the reform have just been

---

<sup>167</sup> IANA Contract [<http://www.icann.org/general/iana-contract-17mar03.htm>].

<sup>168</sup> Council Resolution of 18 June 2002 [<http://www.dns0.org/clubpublic/ga/Arc10/msg02338.html>]. See also the Council Resolutions of 3 October 2000 [[http://europa.eu.int/ISPO/infosoc/telecompolicy/press/tcncl2293en.htm#\\_Toc495725645](http://europa.eu.int/ISPO/infosoc/telecompolicy/press/tcncl2293en.htm#_Toc495725645)].

implemented, e.g. the new board has just been seated in June 2003, so that the full implications will only be seen in the future.

## PART II - ECONOMIC ASPECTS

### 1. *The value of domain names*

How much is a domain name worth?

Relying on the straightforward intuition that the value of domain names derives from the services they provide to buyers, we study the expected and actual usage of domain names. The most important usage today being the naming of web sites, the value of domain names relies on the actual use of domain names by web users. This justifies differences in value for domain names. However, for a specific subset of domain names, ownership does not rely on market allocation but rather on property rights defined outside (e.g. intellectual property rights). Thus, differences in values may not reflect into prices. Accordingly, we divide the domain name space into categories, and study each of them in turn.

#### 1.1 The usage of domain names

##### 1.1.1 Rationale for naming

Why do we need domain names?

The now obsolete RFC 882<sup>169</sup> presents the domain name space as a tree-like naming system allowing referring to resources in a consistent way. To preserve generality, RFC 882 explicitly states that domain names are not required to have a one-to-one correspondence with host names or host addresses. Furthermore, the system does not even require resources to belong to IP networks.

However, in practice, the primary usage of the domain name space has been to assign unique names to computers on the Internet.

But since one unique IP address is already assigned to every host on the Internet, unique identification cannot ground the rationale for using the domain name system. Otherwise, it would represent a useless additional layer on top of IP addressing system. Indeed, domain names have two features that IP addresses do not have: stability and human-friendliness.

#### 1) Stable identification

The first reason for naming is assigning stable identifiers to hosts.

Since IP addresses rely on the underlying physical network topology, changing the topology requires an update of IP addresses. Suppose that the IP address of a host has been modified because, for instance, the host has been moved from one subnetwork to another subnetwork within the same company. Then, it is mandatory that every hard-coded reference to this address present on the Internet be updated accordingly. Hence, being insufficiently abstract, the IP address system is not a good candidate for dense cross-referencing across the Internet.

IP addresses cannot provide stable identification of hosts, and a higher layer of abstraction is thus required. The domain name system provides this layer.

Still, identification does not require names to have any useful semantic content. If stable identification were the true rationale for naming, domain names could well have been just numbers, or random strings of letters.

Meaning is an important feature of domain names, and the mere source of disparity in valuation.

---

<sup>169</sup> Published in November 1983. See <ftp://ftp.rfc-editor.org/in-notes/rfc882.txt>

## 2) Meaningful naming

The second reason for naming is assigning human-friendly identifiers to hosts. Essentially, an identifier is human-friendly when it is easy to remember. Using easily remembered identifiers for resources saves time during management tasks. By facilitating communication and reducing potential mistakes, it significantly lowers management costs.

To be easy to remember, a domain name must be meaningful, rather short and easily to pronounce. With this respect, `headquarters.mycompany.com` is obviously much better than `z0f56.fg56hz9.com`.

Hence, some names are better than others. Fundamentally, this introduces vertical differentiation<sup>170</sup> in the domain name space.

### 1.1.2 Naming computers

The naming system was originally designed in the early eighties. At that time --almost ten years before the take off of the World Wide Web-- the expected usage of the DNS was mainly the naming of hosts on computer networks.

Naming computers has two usages, which, in the beginning, were similarly weighted. First, being designed as a globally consistent naming scheme, the DNS provides external visibility for any hosts connected to the Internet. Facilitating connections between distant hosts is indeed a central feature of DNS. However, in the beginning, this feature was merely expected to serve the purpose of intermittent and infrequent transactions. In the eighties, ftp and email services accounted for most of the Internet traffic.

Second, in addition to external visibility, naming conventions have been used internally by organisations. By setting up a meaningful naming scheme, an organisation facilitates administration of computer hosts. As an example, consider a company using the network name `mycompany.com`. Controlling the name server in charge of the corresponding zone, the company can freely design the name tree under its second level domain name. Thus, the company can choose a meaningful third level label for each host in its network, reflecting its location (`asia.mycompany.com`), technical function (`mail.mycompany.com`), responsible division (`marketing.mycompany.com`) or even its end user (`smith.mycompany.com`). This usage based on semantic content proved to be very useful for internal purpose of organisations.

However, due to the so-called e-commerce revolution, an unexpected large number of companies decided to be connected to the Internet. As a consequence, the number of hosts connected to the Internet really exploded in the mid-nineties. According to the last Internet Domain Survey conducted by Internet Software Consortium in January 2003, the number of hosts advertised in the DNS is larger than 170 millions.<sup>171</sup>

Is the DNS sufficiently flexible for the “naming hosts” usage?

With respect to this usage, a unique domain name is required for each organisation connected to the Internet. Naturally, an organisation is willing to choose as a domain name a string corresponding to its actual name. Thus, contentious cases occur when two organisations sharing the same name want to be connected to the Internet. At a worldwide level, contentious cases may be quite numerous, but solvable (at least in

---

<sup>170</sup> Economists say that different varieties of a products are “vertically differentiated”, when all (or nearly all) consumers prefer one variety over the other. For instance, economy class seats and business class seats on a transatlantic flight are vertically differentiated. By contrast, varieties are “horizontally differentiated” when different consumers have different preferences for one or the other. For instance, some customers will prefer a flight to Tahiti and others a flight to Las Vegas.

<sup>171</sup> Source: Internet Software Consortium (<http://www.isc.org/>). For detailed results, see <http://www.isc.org/ds/WWW-200301/index.html>

theory) thanks to the hierarchical structure of the domain name space. Two organisations sharing the same name can be separated on the name tree, by dispatching them on two different branches, using various criteria (type of organisation, country of origin, etc.) The generic top-level domains (gTLDs) serve this purpose (although in an somewhat uncontrolled manner in the case of the “open” gTLDs dot-com, dot-net, dot-org), as well as structured second level domain names in certain ccTLDs (like dot-fr, dot-uk, or dot-jp).

With regards to the value of domain names, naming hosts is a usage that does not confer any significant intrinsic economic value. The name *ibm.com* is valuable, but only because it derives from a well-known name. The economic value comes from outside.

### 1.1.3 Naming web sites

With regards to this expected usage, the actual usage of the DNS proves to be very different.

In 1991, the CERN introduced the World Wide Web (www). The adoption of this global hypertext system has been fast and massive. Only a few years later, in 1995, the protocol used to access resources on the www (http) started to generate more traffic on the Internet than ftp.<sup>172</sup>

More recently, in its April 2003 Web Server Survey, Netcraft<sup>173</sup> received responses to http requests from more than 40 millions sites. Obviously, the actual number of web sites is slightly different. On the one hand, an intraweb-only system cannot be counted. On the other hand, different sites may serve the same content. However, without doubt, tens of millions of web sites exist around the world.

This impressive growth of the www had a significant impact on domain name valuation. The reason is purely technical. The www is grounded on a new addressing standard, meant to locate any content (e.g. a web page, a script, a binary file) in a host. According to this addressing standard, resources on the Internet are located using Uniform Resource Locators (URL).<sup>174</sup> Here, the key point is that URLs use domain names as top-level directories. For instance, the URL pointing to the list of accredited registrars on ICANN’s web site is

<http://www.icann.org/registrars/accredited-list.html>

where *www.icann.org* is the domain name attached to the web server (usually, a computer host).

Given the tremendous success of the www, embedding domain names in URL had important consequences. From a technical point of view, this put an unexpected high pressure on the DNS, which has not been designed for this purpose. From an economic point of view, this radically impacted domain name valuation.

### 1.1.4 Consequences on domain name valuation

Originally, URLs were meant to be embedded in web pages, hidden behind hyperlinks. With respect to this intended usage, the meaning of a domain name does not really matter since it is invisible to the web user. Thus, the use of domain names in URLs could well have been neutral with respect to domain name valuation.

However, a web user needs appoint of entry point to the www. Hence, he is more likely to enter the www through a web site having a name easy to remember, or easy to guess

---

<sup>172</sup> Mueller, *op. cit. supra* n. 52, p. 107.

<sup>173</sup> <http://www.netcraft.com/>

<sup>174</sup> The standard for URL has been formalized in RFC 1738, December 1994.

<ftp://ftp.rfc-editor.org/in-notes/rfc1738.txt>

with regard to what he is seeking for. Usually, a web user does not memorize (or try to guess) complete URLs, but only domain names, because they are shorter and thus easier to remember. He knows that, after being connected to the web site, he will just have to follow hyperlinks to locate the resource he is interested in. Given our limited capacity of memorization, this is a fairly natural and rational behavior.

Thus, domain names being intended to be remembered or guessed by web users willing to enter the www, the web traffic to a web site appears to be an increasing function of the web site name's ability to be remembered or guessed. Since every domain name is not equivalent with this respect, this justifies, again, differences in valuation.

Since the early days of the e-commerce revolution, companies and other organisations progressively recognized the importance of external visibility through the www.

Moreover, during the so-called "dot-com boom", many companies were specifically created for e-business. The economic weight of the www became considerable.

Since the emergence of the www, the use of domain names as web site names is undoubtedly the most important factor grounding the economic value of domain names. In other words, "[...], the "Webification" of domain names was the critical step in the endowment of the name space with economic value." (Mueller 2000, p109).

### 1.1.5 Naming email servers

Another significant usage of domain names is to name email servers. In the email system,<sup>175</sup> an electronic mail address is of the form "account@host", where "host" is the name of a mail server and "account" the identifier of a mail account on this server.

As shown above, embedding domain names in URLs had an important impact on domain name valuation, through an effect of differentiation. However, despite the great success of email-based communication, the effect of embedding domain names in email addresses is likely to be much lower.

Unlike domain names in URLs, the host part of an email address is not meant to be guessed, but only remembered. Indeed, to send an email to someone, you have to know his address first. Guessing his address is unlikely to succeed, since there exist too many combinations of possible account names with existing email servers.

As a result, successful email services can be grounded on domain names related or unrelated to their function, provided they are just memorable names. With this respect, "hotmail" and "yahoo" are two good domain names. The later is not made from words like "mail", "email", "post", etc., but does not suffer from any major intrinsic disadvantage. In contrast, it is far more difficult to build a successful web based activity (e.g. cars rental) when all reasonable "entry points" corresponding to this activity have already been registered (cars.com, rent-a-car.com, etc.)

Thus, comparatively to the web revolution, the increasing usage of emails certainly had a smaller impact on domain name valuation.

## 1.2 Valuing web site names

### 1.2.1 Classification of domain names

To study the valuation of domain names used as web site names, it is useful to divide the domain name space into subsets. Two subsets are of special interest with respect to valuation.

---

<sup>175</sup> Originally, electronic mails were handled through dedicated FTP commands. RFC 524 (June 1973) offered a proposal for a mail protocol. RFC 733 (November 1977), RFC 822 (August 1982) and RFC 2822 (April 2001) defined three successive versions of the standard.

1. Domain names subject to prior property rights.

This category includes domain names whose ownership is likely to be challenged on the basis of external property rights. A domain name containing the name of a company (www.microsoft.com), a brand name (www.coke.com), or the personal name of a celebrity (juliaroberts.com), is subject to domain name dispute based on intellectual property. The category also includes domain names containing trademarked common nouns (www.monopoly.com).

The frontier of this subset is somewhat fuzzy, and depends on complex legal issues. By stating that a domain name dispute may be triggered on the basis that a domain name is “identical or confusingly similar” to a trademark or service mark, Uniform Domain-Name Dispute-Resolution Policy (UDRP) has considerably pushed the boundaries of the subset.

In most cases, UDRP Administrative Panel arbitrations have decided against satire and parody names, (guinness-sucks.com), typo-squatting (adaptac.com), phonetically similar names (zerox.com), abbreviations of mark (ewallstjournal.com), etc.<sup>176,177</sup>

The situation with regards to famous personal names is more balanced. A domain name embedding the name of a celebrity may be legally registered by a fan willing to set up a dedicated web site (edwardvanhalen.com). Moreover, worldwide notoriety must be sufficiently large to successfully claim a domain name used in good faith by a third party (karajan.com).

2. Meaningful domain names not subject to prior property rights.

This category includes meaningful domain names based on common words (business.com, buy.com, travel.com, sex.com, etc.) or personal names that are not exposed to claim of prior ownership from third parties. Additionally, the category includes domain names based on misspellings of common words (www.businnes.com).

With regard to these domain names, “first come, first served” is a feasible allocation procedure.

With respect to valuation, a name not in the above categories is analogous to a random string of letters. Such a domain name is meaningless and thus almost impossible to remember. As a consequence, its economic value only relies on its potential usage as a stable identifier. Given the (almost) unlimited number of domain names available in this category, meaningless domain names represent an (almost) unlimited resource.

Legal issues interfere with the valuation of domain names in the first category. As a result, economic value and market price are likely to be very different. On the contrary, valuation of meaningful domain names is much simpler.

### 1.2.2 Domain names subject to extrinsic property rights

The value of a domain name that includes, e.g., a well-known brand name is directly related to the economic value of the brand. This economic value in turn results from the various investments made in advertising or marketing activities.

---

<sup>176</sup> For a recent survey on typo-squatting, see Benjamin Edelman, *Large-Scale Registration of Domains with Typographical Errors*, last updated January 2003,

<http://cyber.law.harvard.edu/people/edelman/typo-domains/>

<sup>177</sup> An searchable database of WIPO UDRP Panel Decisions is available online:

<http://arbiter.wipo.int/cgi-bin/domains/search/SearchCaseCat?lang=eng>

One salient historical fact regarding domain names in this category is cyber-squatting. The principle of cyber-squatting is to register a domain name based on a brand name, and to try to sell the domain name to the owner of the brand at a higher price than its registration cost.

During the early years of the www, the status of domain names with regard to intellectual property laws was still unclear. Moreover, at that time, many companies had not yet realized the importance of the www. Many domain names corresponding to well-known brand names or companies were still available on a first-come first-served basis, for a low flat price. As a consequence, domain names in this category have been a major target for cyber-squatters for many years, until the legal situation was clarified in the late nineties.

Indeed, in recent years, many anti-squatting regimes have been set up to protect trademark holders. President Clinton signed the 1999 Anti-Cybersquatting Consumer Protection Act. During the same year, ICANN adopted its Uniform Domain Name Dispute Resolution Policy (applicable to dot-com, dot-net, dot-org.), and accredited WIPO as its first dispute-resolution service provider. UDRP has been subsequently applied to new gTLDs, and has been adopted by certain managers of ccTLDs (e.g., dot-nu, dot-tv, dot-ws) on a voluntary basis. A number of chartered ccTLDs (e.g., dot-fr and dot-uk) have implemented strong administrative rules to prevent cybersquatting. Some registry operators (for instance dot-info, dot-edu, dot-us and more recently dot-pro), introduced “sunrise periods”, during which owners of trademarks were allowed to register the corresponding domain names before the domain opened to the general public.

As a consequence, the practice of registration for purpose of profit sale to trademark owners has declined. Now that trademark owners benefit from a priority access to domain names, the secondary market for these names is vanishing. In a competitive market for initial registration, the market price for such a domain name has no reason to be different from any other name, since every name entails the same production cost.

### 1.2.3 Meaningful domain names

In comparison, a domain name based on common words is a much simpler economic object. Essentially, the economic value of such a domain name derives from its ability to attract potential buyers.

Before the registration, the value of a domain name in this category is purely intrinsic, in the sense that it only depends on its capacity to attract web users “by itself”. With this respect, high valued domain names have the characteristics to be easy to remember and easy to guess. However, valuation is mostly contingent to a particular activity: cars.com is a valuable web site name for a company willing to operate in the corresponding sector.<sup>178</sup>

After the registration, specific investments in marketing based on the domain name itself may take place, thus increasing its economic value.

How generic names are likely to be priced?

If the market for registration (the primary market) is monopolistic, the monopoly will seek to set the price at the highest reservation price among potential initial buyers. This reservation price being unknown, the monopoly will have to implement a pricing

---

<sup>178</sup> However, some sites offer content unrelated to their name. Indeed, a company may be willing to renew an expired domain name abandoned by another company. By doing so, the new owner seeks to benefit from earlier promotion works. See Benjamin Edelman, *Domains Reregistered for Distribution of Unrelated Content*, last updated February 2003, <http://cyber.law.harvard.edu/people/edelman/renewals/>

mechanism meant to set a trading price as close as possible. For instance, it may organize auctions, or set a high price and subsequently lower it until a buyer accepts to trade.<sup>179</sup> However, it should be underlined that a market for registration may be monopolistic within a certain TLDs, but competitive across TLDs. Thus, the domain name news.tv has some close substitutes within other TLDs (news.com, news.net, etc.). Registrars or existing registered owner of these substitutes may be willing to sell them depending on the price set by the monopoly. Moreover, a domain name has also many close substitutes within its own TLD (all-the-news.tv, info.tv, etc) that may be currently owned and willing to be sold on the secondary market. Thus, the monopoly only benefits from a local monopoly power on the domain name it intends to sell, and must take into account competition based on close substitutes.

In contrast, if the market for registration is competitive, many registrars are allowed to offer the same set of domain names. Prices will be pushed downward, close to the marginal cost of registration. This cost being the same for every domain name sold by a registrar, a registrar will set a single price for any name registered by him. Furthermore, if the competition is perfect, a single price will eventually prevail in the primary market. In this case, speculation will immediately appear. Indeed, for a certain number of domain names, market prices in the primary market are much lower than their economic value. It is thus profitable to register the name on the primary market and sell it on the secondary market.

Of course, who actually registers the domain name depends on the prevailing rationing method. A rationing method must be implemented in this case because domain names represent a resource in limited supply. Given the price structure that prevails on the primary market, the demand for highly valuable domain names is likely to exceed the offer.

Even if speculation has been historically indeed very active in the dot-com top-level domain, the actual story is slightly different from what this theoretical model suggests. Until the end of the monopoly initially granted to Network Solutions, a Cooperative Agreement with the US Government fixed a unique retail registration price. Network Solutions was allowed to charge \$50 per year for each domain name registered in dot-com, dot-net and dot-org, starting September 14, 1995. Through a revised agreement effective April 1, 1998, registration fees were reduced to \$35 per year.<sup>180</sup>

Thus, the difference with the theoretical model is that the retail price has been set by an authority regulating a monopoly and not within a competitive market. However, the fixed price was still much lower than many good domain names. In addition, early adoption of a fast and costless first-come first-served rationing method allowed anybody to quickly register the most valuable names. As a consequence, speculation flourished: in 1997, a Texas-based company purchased the domain name business.com for \$150,000.

#### 1.2.4 Motives for purchasing a domain name

A list of motives for purchasing a domain name can be settled, from the point of view of a company.

---

<sup>179</sup> The .tv corporation, a company owned by VeriSign, is an example of such a monopoly. As its name indicates, it sells domain names in the dot-tv domain, one of the country code TLD that has been marketed as a generic TLD. As of mid-May 2003, about 275 domain names are classified as premium names, and offered at prices above \$50 per year, the price for standard, non-premium names. Premium names are priced up to \$1,000,000, but potential buyers are invited to send an offer to the .tv corporation for any domain name priced over \$1,000.

<sup>180</sup> For more details, see Network Solutions' Annual Report, 1999:

<https://www.verisign.com/corporate/investor/reports/1999/annual1999f.pdf>

1. Attract online potential customers of the products offered by the company.  
This is the primary motive. Generic names are more likely to be selected by e-based commercial portals (cars.com, soda.com), and by new competitors in an industry.  
On the other hand, owners of well-known commercial names will tend to use their original names (ford.com, coca-cola.com). Additionally, they may also buy generic relevant names, and automatically redirect web users to their primary site.
2. Build an identity for the company.  
This is achieved by advertising the domain name (cnn.com). This entails the additional advantage to attract even more web users, since many will remember the name of the web site. However, investments in the domain name significantly increase the switching costs.
3. Authenticate a web site.  
Creating customer confidence is crucial. Thus, the web name should authenticate the web site as the genuine web site of the company. Buying a name of the form company.com provides a (somewhat naive) form of authentication.
4. Play a defensive strategy against cyber-squatters, speculators, and competitors.  
Even though trademark holders are now well protected against trademark infringements, disputes remain costly. Given the rather low market price of brand-based domain names, buying a wide range of similar or parody names may save costs.  
Buying a domain name corresponding to a brand owned by a competitor (as in the famous Sprint/Mci and Princeton/Kaplan historical cases) is impracticable today.  
In the case of generic domain name (cars.com), the problem is different: buying similar names protect the company against competitors willing to (legally) compete on the basis of name similarities (car.com, rentacar.com, etc). This defensive strategy may be costly if it implies to buy a generic name on the primary market of a TLD controlled by a monopoly.
5. Speculate or practice cyber-squatting.  
Some companies have been created for this purpose, but the playing ground has shrunk a lot. Unregistered good names are now virtually inexistent. Specific procedures aimed at preventing accidental loss of registration during renewals periods have been set up. Trademark protections have been enforced.

### 1.2.5 Competing technologies

DNS is a technology. As such, it is likely to be progressively challenged by alternative technologies. Since this process will impact the value of domain names, it must be considered.

With respect to its technical purpose, DNS is still solid. Assigning stable identifiers to hosts, or by extension to any resources located on the Internet, and allowing name resolution through a distributed database, is essentially unchallenged.<sup>181</sup>

Still, the economic value of domain names relies on an unexpected usage of the DNS: naming web sites in a meaningful way, in order to attract web traffic. Thus, how web users actually use domain names must be investigated.

For what purposes do web users use domain names?

First, a user seeking to locate the genuine web site of a given organisation (a state, a company, a brand, etc.) or a given person will try to guess the name of its web site. By

---

<sup>181</sup> However, the relative fragility of DNS, due to the central role played by root servers, has been widely discussed.

typing the conjectured name in the URL field of its browser, he expects to be directed to the right web site. One important aspect of this usage is that it entails a kind of authentication. The user seeking to locate the web site of, e.g., IBM, will probably try as a first guess [www.ibm.com](http://www.ibm.com), and will tend to acknowledge that the web site is the genuine site of IBM. This acknowledgement may be based on the fact that the web user knows that IBM would not allow anybody to operate a web site with that name. Since it is common knowledge that laws on trademark infringement protect trademark holders, the user will naturally conclude that [www.ibm.com](http://www.ibm.com) is very likely to be the name of IBM's web site.

With this regards, DNS is used as a kind of *directory engine*.

Second, a user searching for information on a service or a good to buy will use generic domain names as "natural" entry points on the www. If he seeks for, e.g., a car to buy, he may probably try [cars.com](http://cars.com) as a first guess.

With respect to this usage, DNS is used as a kind of *search engine*.

In both cases, DNS is not (and was never intended to be) an appropriate technology. Given the absence of any general naming convention in the domain name space, many attempts to locate the web site of an organisation by guessing the name of its web site will just fail. Attempts to locate a site using generic words are not likely to lead to better results. Moreover, the authentication scheme entailed in the usage of DNS as a directory service is obviously totally deficient.

To locate a resource on the www, an alternative technology exists: the Google search engine.<sup>182</sup> In a study conducted during June 2002, Ben Edelman provides evidence that Google finds a web site on the Internet with greater accuracy and reliability than does the DNS.<sup>183</sup> Furthermore, some specialized search engines (like e.g., Froogle) focus on products and services on line. These engines relieve prospective buyers from remembering or guessing relevant sites' name.

To authenticate a web site, digital certification based on Public Key Cryptography (PKC) is a reliable technology, far better than the deficient empirical method evoked above. In the future, the www may well increasingly exploit these two alternative technologies, thus relieving part of the technical and economic pressure that the emergence of the www put on DNS.

In this view, DNS will continue to provide a valuable technical service (IP abstraction). However, domain names being gradually hidden from users, their economic value will tend to converge to a low unique value: the value of a meaningless random string of letters.

## **2. The domain name industry**

The domain name industry is a complex economic organisation performing the allocation of domain names.

Different categories of players are directly involved. ICANN is a central authority ruling the game. Registries maintain authoritative databases of allocated domain names.

Registrars and resellers sell licenses to use domain names. Registrants buy licenses. In addition, a few operators run alternate root servers.

What is the size and dollar value of the activity of domain name registration?

---

<sup>182</sup> In early 2003, Google accounted for more than half of the queries sent to online search engines.

<sup>183</sup> Ben Edelman, *DNS as a Search Engine: A Quantitative Evaluation*, last updated June 2002, <http://cyber.law.harvard.edu/people/edelman/DNS-as-search/>

As of February 2003, around 50 millions second-level domain names are registered: around 30 millions are registered in 14 gTLDs (three-quarters in dot-com), and 20 millions in about 250 ccTLDs. On the basis of a roughly estimated average retail price of \$25 per domain name, the TLD market is worth \$1.25 US billions per year. The average retail price is lower in the market for gTLDs (especially in dot-com, dot-net and dot-org). At an estimated retail price of \$20, the gTLD market accounts for \$600 million. A central issue is to assess the economic performance of this industry with respect to social welfare.

To cover this issue, the economic nature of the resource allocated through the domain name industry must be first questioned. This will allow discussion of the potential and actual allocation methods, and the possibility to expand the availability of the resource through the introduction of new top-level domains or internationalized domain names. Then, within the context of the shared registry model, the market for registry service and the market for registration service will be examined in turn, with respect to competition and opportunities for new entrants.

## 2.1 The resource

### 2.1.1 Domain names as an exhaustible differentiated resource

From an economic point of view, what kind of animal is a domain name?

First of all, a domain name can be viewed as a resource. It is not desired for itself, but used as input in various (Internet-based) economic activities. Moreover, it is not produced as a commodity is. However, domain names have the special property to be software-based entities, created *ex nihilo* by a standard. The adoption of the standard simply “spawns” a set of resources to exploit. This special property offers the option to widen the resource space by modifying the standard. Of course, changing a standard entails switching costs (reconfiguration or renewal of hardware devices, etc.)

How to characterize the availability of this resource? It is a limited resource, since the current standard for domain names (RFC 1035) limits both the character set used to form domain names and the length of domain names. However, the size of the domain name space is utterly vast.<sup>184</sup> It is not that simple to compute the number of valid domain names, but it is definitely greater than the number of electrons in the universe.

With such abundance, one may wonder why its distribution is an economic problem at all. However, as stated earlier, not all names have the same value. In general, the value of a domain name will depend on its capacity to generate a profitable business through the creation of a web portal. In economic terms, domain names are differentiated.

It is worth mentioning that each good name has a number of close substitutes within the domain name space. Setting aside brand or corporate names, a generic domain names derived from a common word has many variants, both within and across TLDs. For instance, the word “travel” yields travel.com, travelnow.com, but also travel.net, and so on.

Since there is only a limited number of “good names”, the most valued part of the resource is exhaustible. This implies that a kind of rationing method is necessary to avoid depletion.

---

<sup>184</sup> The standard defines a domain name as a string of labels separated by dots. Each label is made of alphabetic characters, digits and hyphen characters (but cannot start or end with a hyphen character), and has a maximum length of 63 characters. The total length of a domain name must not exceed 254 (see RFC 882, November 1983, and RFC 1035, November 1987). In addition, domain names must obey a number of policy standards: in particular, there is only a limited number of TLDs, and mandatory naming conventions exist under certain ccTLDs.

### 2.1.2 Is there a shortage of domain names?

There is no shortage of domain names *per se*, but rather a shortage of good (memorable) names. Well-known brand or corporate names are clearly exhausted. Measuring the shortage of generic domain name is more difficult.

In 2002, Ben Edelman considered a list of the 2910 most commonly used English nouns provided by WorldNet).<sup>185</sup> He found that 98.1% of these names were already registered in dot-com, whereas 54.8% provided actual web content. The figures for dot-net and dot-org were similar.<sup>186</sup> The discrepancy between these two percentages probably results from defensive strategies or speculative behaviors.

Another piece of evidence showing exhaustion is the creation of the so-called Open ccTLDs. The conversion of three geography-based ccTLDs to “unofficial” generic TLDs has been motivated by the scarcity of generic names in the official unrestricted gTLDs.<sup>187</sup> In his abovementioned study, Edelman reports that roughly one-third of the sample of common nouns were registered in these ccTLDs. This confirms the existence of a pressure over good names in gTLDs.

### 2.1.3 Allocation methods

Being an exhaustible resource, domain names must be allocated among individuals. The necessity of a rationing method is reinforced by the unconditional requirement to maintain uniqueness. Thus, a central authority in charge of the resource management must select and implement a rationing method.

First of all, in a case of an infinitely durable but exhaustible resource, it is obviously better to distribute the resource under the form of temporary licenses rather than to transfer the ownership of the resource itself.

Many different rationing methods exist in theory. Following a standard cost-benefit analysis, each method is characterized by its properties in terms of transaction costs and social welfare. This analysis shows that a method is usually suitable for a particular class of resources. Of course, real-life implementations can combine several methods.

Some rationing methods are based on rules, involving no monetary payment.

Among the possible rules, “first come-first served” entails the lowest transaction costs, since a simple registration without any administrative verification is required. However, this rule must not be used as the sole method to allocate an exhaustible and scarce valuable resource. It would unavoidably trigger a rush, leading to rapid depletion. This outcome will occur even more rapidly in the case of a differentiated resource, where intense speculative behaviors will inevitably target the most valuable units of resource. Therefore, the rule “first come-first served” is best suited to an abundant, homogeneous and low-valued resource.

An additional possibility is to filter the incoming demands through a set of administrative rules. To gain access to the resource, applicants may be selected on a set of nonsubjective, quasi-automatic, criteria (e.g. resources currently owned by the applicant, country of origin of the applicant, etc). In this case, transaction costs will be low.

Requiring that applicants prove their needs entails higher costs. A non-automatic discretionary procedure (as in a “beauty contest”), is better justified when the resource is high valued and scarce. In both cases, filter rules are supposed to meet policy objectives,

---

<sup>185</sup> Ben Edelman, “Registrations in Open ccTLDs”, Berkman Center for Internet & Society at Harvard Law School, July 2002 (available online at <http://cyber.law.harvard.edu/people/edelman/open-cctlds/>).

<sup>186</sup> The figures are respectively 91.2% and 42.6% for dot-net, and 87.1% and 45.4% for dot-org,

<sup>187</sup> These Open ccTLDs are dot-ws (Western Samoa), dot-cc (Cocos Islands), and tot-tv (Tuvalu).

such as welfare maximization. Thus, the benefits in terms of social welfare closely depend on the objective function of the authority.

Some other rationing methods are price-based.

A simple price-based method is to set up a fee policy, and to allocate the resource on a first come-first served basis at whoever is willing to pay the required price. With this respect, the simplest policy is to set up a flat fee. However, the fee level remains to be established.

In the case of a homogeneous resource, the flat fee must be set so as to encourage the usage of the resource, while preventing its depletion. In the case of a differentiated resource, the central authority faces a complicated problem: while fixing the flat fee at a high level prevents a rush on high valued resources but hinders its usage, choosing a lower level might trigger speculative behaviors leading to rapid depletion of the most valuable part of the resource. Thus, in the case of a differentiated resource the central authority will be tempted to set up a non-flat fee structure with better properties in terms of social welfare. By doing so, the authority is acting as a central planner trying to mimic a market. To be efficient, such a policy is known to require as input of far more information than a central authority usually has.

In contrast, market-driven approaches do not rely on omniscient authorities. By organizing a primary market for initial allocations and a secondary market for subsequent re-allocations, the authority fully decentralizes the price discovery process. The agents with the highest willingness to pay will eventually obtain the resource. In the absence of any strong externality, competitive market prices will reflect social costs. As a consequence, any resulting allocation will maximize social welfare.

The market-based rationing method appears particularly well suited to manage a differentiated exhaustible resource. However, organizing a fully decentralized market to allocate a large number of small units to many different agents is very costly. The resource being differentiated, a single stock-like auction market is not feasible.

Moreover, to be competitive, one may argue that the market must be colonized with a large number of specialized businesses, acting as brokers for the resource. The mere existence of these specialized firms represents an opportunity cost for the society, since they use some production factors that could be used elsewhere. Moreover, these brokerage firms must be numerous but nevertheless profitable. If the brokerage activity entails fixed costs, the competitive market solution is not feasible until the market reaches a certain critical size.

In the special case of domain names, the costs of such a market solution is even higher, since it is obviously very difficult to maintaining uniqueness of domain names when distribution is fully decentralized.

#### 2.1.4 Historical perspective

Which allocation method actually prevailed?

As domain style names were introduced at the beginning of the Eighties, the Stanford Research Institute (SRI) operated the registration process through its Network Information Center (NIC), under contract with the U.S. government. Until 1993, SRI-NIC performed registrations on an informal first come-first served, free of charge allocation method. At first glance, it seems to be the worst of the possible methods. However, during that time, the demand for domain name registration was quasi-insignificant. RFC 1296 reported that approximately 17,000 domains were registered in the DNS in January 1992. The perceived social value of a domain name was still very limited, and did not justify any rationing at all. It is worth mentioning that the slow rate of registrations allowed SRI-NIC to apply a minimal set of verifications for each

application. In particular, checking its conformance with the intended distinction between dot-com, dot-net and dot-org was still possible.

The situation changed in 1993, when the National Science Foundation eventually transferred the control of domain name registration from SRI-NIC to Network Solutions. Network Solutions operated through a collaborative project called InterNIC, under a cooperative agreement with NFS. As a cost recovery measure, this agreement explicitly stated that Network Solutions would be allowed to charge fees for domain name registrations. Under the pressure of the fast growth of the Internet, it eventually happened in September 1995. Through Amendment 4 of the cooperative agreement, Network Solutions was authorized to charge \$50 per year for each domain name registered in dot-com, dot-net, and dot-org, with a minimal subscription period of two years.<sup>188</sup>

However, following the opening of the Internet to commercial interests in 1991, a dramatic increase in domain name registrations occurred in 1992-1993, for the most part in dot-com. Quickly, under the flow of demands, any sort of administrative control was abandoned, to the point that registrations into the dot-com, dot-net and dot-org domains became completely unrestricted.

For several years, it was possible to register any name in these domains for free, in a totally uncontrolled manner, whereas the perceived value of domain names had yet radically changed. This reinforced the rush for the most valuable part of the resource, including trademarked names.

The flat fee regime was unable to stop this speculation, since a \$50 per day was still much lower than the perceived economic value of many domain names.

But was it really possible to do much better?

Fixing higher fees would have been possible. However, only a very high fee level could have significantly slowed down the speculation on the top valued part of the resource. With such high fees, the entire development of the Internet could have been hindered. Clearly, a fixed fee regime was not appropriate to allocate this kind of differentiated resource. But, was any another rationing feasible under the pressure of a flow of registration demands? Proper checking of possible prior property rights on a domain name is a lengthy process. Organisation of auctions is not feasible to allocate tens of thousands of domain names per month.

During the Nineties, many newly created registries of ccTLDs also introduced fixed fees. Though, facing a much lower rate of demand than dot-com, they still maintained administrative rules to filter the applicants. In France and Japan, strong rules meant to organize the domain name tree in a rational manner were enforced.

Network Solutions, as the sole registrar in the three major domains, largely benefited from the unexpected dot-com rush. On the other hand, the social costs of this speculation are well known: rents given to speculators at the expense of a common resource, numerous litigations due to conflicts on property rights, emergence of uncontrolled secondary markets, etc.

Lessons have been learnt from this experience. At the end of the Nineties, a long awaited reform implemented an innovative model, featuring a clean separation between registry and registrar functions.

According to this model, one unique registry maintains the database of allocated domain names in a TLD, ensuring uniqueness. Multiple registrars compete in a free-entry market

---

<sup>188</sup> These fees included a 30% Intellectual Infrastructure Fund contribution for the enhancement of the intellectual infrastructure of the Internet. This contribution was eliminated on April 1, 1998. Accordingly, the yearly registration fees were reduced to \$35.

to sell licenses on domain names. They connect to the central registry to check the list of available names, and to register new names into the database. One advantage of this organisation is that it places the burden of many administrative tasks on registrars, leaving to the sole registry the crucial responsibility to maintain the database. Moreover, being (at least partially) market-based, this allocation procedure is likely to conduct to a more efficient usage of the resource. Finally, market-driven solution was expected to be feasible at that time, given the large flow of registrations.

### 2.1.5 IDNs

Following the publication in March 2003 of RFC 3490, 3941 and 3942, ICANN announced in June 2003 the commencement of global deployment of Internationalized Domain Names (IDNs).<sup>189</sup>

By expanding to Unicode a formerly ASCII-centric system, IDNs are meant to allow every end-user to type domain names using his preferred language, in his native character set. The rationale behind IDNs is to facilitate web access to the growing number of non-English speakers.

To save costs, the new standard requires no change in the existing distributed infrastructure (domain name servers), and rather places on registries and end-users the main burden of standard compliance. Registries willing to implement IDNs have to develop language-specific registration policies. End-users have to upgrade their client-software (in most cases, by installing a plug-in in their web browser). This way, only agents who want to benefit from IDNs have to bear the costs of upgrading.

IDNs enlarge the domain name space, without introducing new top-level domains. IDNs are clearly valuable for non-native English speakers, and in particular for people using a language based on non-Latin characters (as, for instance, Arabic, Chinese, Greek, Hebrew, Indian, Japanese or Russian people).

For them, IDNs create a brand new set of easy-to-remember and easy-to-type domain names. Therefore, from the users' point of view, IDNs expand the availability of the most valuable part of the resource (even if, from a purely technical perspective, IDNs' implementation restricts the total number of available non-equivalent strings). Obviously, only Chinese speakers will attach a significant value to a domain name written in Chinese. But, symmetrically, from the point of view of a Chinese-only speaker, a domain name written in English has little or no value.

Nonetheless, IDNs have a potential drawback: they may increase cybersquatting by creating many new "invisibly different" variants of existing domain names (e.g. café.com besides cafe.com). This problem has been addressed by ICANN, through its Guidelines for the Implementation of Internationalized Domain Names.<sup>190</sup> Guideline 3 institutes the usage of "equivalent character variants". Applied on a given domain name, they define a set of variants considered as equivalent. Registries are encouraged to build their registration policy on these sets, rather than on individual domain names. A suggested rule is that registration of a domain name is blocked if someone else has already registered an equivalent name.

Introduced with caution, IDNs are welcomed, and may well alleviate the domain name exhaustion. Among country codes, dot-cn (China), dot-jp (Japan), and dot-tw (Taiwan) were the first to choose to switch to IDNs. Due to the sudden availability of a new valuable resource, these countries may experience a demand pressure similar to what

---

<sup>189</sup> <http://www.icann.org/announcements/announcement-20jun03.htm>

<sup>190</sup> See <http://www.icann.org/general/idn-guidelines-20jun03.htm> and <http://www.icann.org/riodejaneiro/idn-topic.htm>

happened during the dot-com rush. However, on the basis of the experience gained from history, the outcome will be certainly different.

### 2.1.6 New TLDs

Should there be new top-level domains?

This question has proved to be highly controversial in the nineties, partly because the debate also involved additional controversies about the whole design of the domain name industry. Some of the participants in this debate went further, arguing that the debate was about freedom in general. Today, arguments for new TLDs are more centered on an alleged domain name shortage.

In the context of the current organisation of the industry, and given the actual shortage of domain names, one may try to measure the net effect of introducing a new generic TLD.

A first effect comes from a dilution phenomenon.

As stated earlier, a good name (e.g. a memorable common English noun, or a well known brand name) exists in the domain name space in many variants, both within and across TLDs. Variants within a TLD are just small variations of the root word (travel.com gives travels.com, travelnow.com, etc), whereas variants across TLDs add a change of the top level domain name (travel.com gives travel.net, travelnow.net, etc.) A new gTLD, e.g. “dot-abc”, creates new variants of each second level domain name (xyz.abc, besides xyz.com, xyz.net, xyz.org, etc). This is a dilution phenomenon.

Two cases must be distinguished.

If the word “xyz” is subject to extrinsic property rights (e.g. “IBM”), the situation is probably worse than before. To avoid preemption, IBM will probably try to buy ibm.abc. If the new TLD has an agreement with ICANN, IBM will obtain the domain name for sure. However, even if the web site www.ibm.abc actually redirects to www.ibm.com, the consumer may be confused. In this case, dilution hinders the usability of the DNS as a directory service.

If the word “xyz” is a good generic name, the outcome is ambiguous. On the one hand, adding more variants to an existing set (e.g. adding travel.abc to travel.com, travel.net, etc.) just dilutes the economic value of the name “travel”. Since it does not create a new meaningful name, it does not create *per se* any additional wealth. On the other hand, it should be considered that owning a generic name in each existing TLD creates an entry barrier in electronic commerce for incumbent competitors. In this case, dilution will lower these barriers, and thus will reduce market power.

The net impact is, obviously, difficult to measure.

Nonetheless, it appears that creating new generic, all-purpose TLDs is not likely to alleviate domain name exhaustion. The shortage is not due to a limited number of TLDs, but rather to the limited number of good (memorable) names, which will stay true for any global naming scheme.

Another potential effect is related to the global structure of the name tree.

If “abc” is fairly generic (as “info”, “biz”, or “pro”), dilution may hinder the usability of DNS as a search service, since more possible entry points in the www will exist for a given activity.

In contrast, creating new restricted and highly specialized TLDs (as the newly created sponsored TLDs dot-aero, dot-coop and dot-museum) may be beneficial. Being unambiguous about their content, these TLDs may help to sort out the confusion currently prevailing in dot-com. In addition to reducing the likelihood of contention, structuring a name tree enhances the usability of DNS: within a cleanly structured name tree, a domain name conveys information about the entity operating the name.

It should be emphasized that keeping the name tree consistent requires a co-ordination procedure, to set up the layout of the tree, and to prevent domain name buyers from choosing wrong locations in this tree. Relying on purely market-based mechanism to maintain a clean tree is hazardous.

Beside the social desirability of new TLDs, another important issue is to know whether new TLDs can emerge without ICANN's consent.

Since the beginning of the DNS, the number of "official" gTLDs has always been restricted by the central authority in charge of the management of the domain name space. Currently, there are only 14 gTLDs. Among these 14 gTLDs, 3 (dot-mil, dot-gov and dot-int) are meant to house a very small number of domain names, reserved for specific purposes.

Over the past, this very conservative policy triggered many attempts to set up alternate DNS root servers, offering new "unofficial" TLDs.

From a technical point of view, setting up an alternate root server is almost costless, and can be achieved in only a few hours. Of course, the major difficulty is to attain the critical mass induced by strong network externalities.

To be successful, an operator of an alternate root server has to convince a significant number of major ISPs and/or end-users to modify their DNS configuration so as to point to the alternate server. Convincing the companies operating web search engines to cover the new web space is also an important point.

It is certainly very difficult to convince these players if the alternate server prevents users from accessing part of the "official" domain name space (as it would be the case if the alternate root server involves conflicting assignments of official top-level domains).

Thus, alternate root servers are more likely to propose the same content as the a-root server, plus additional TLDs.

Even in this favorable case, developing a successful business by operating an alternate root server remains very risky.<sup>191</sup>

## **2.2 The market for registry service**

Generally speaking, registry service refers to the service of maintaining a database of domain names allocated at a given location in the name tree. Zone files used by DNS to resolve names are created from these databases.

The issue covered here is limited to the organisation of the provision of registry service when a relatively large number of agents are willing to use the service, and are free to use it under relatively mild restrictions.

Thus, the discussion does not apply to the root of the current tree, but rather to second-level domain names, and possibly to a few more other levels in the case of structured domains.

### **2.2.1 Current organisation**

The model retained by ICANN to organize registry service within top-level domains is a based on regulated monopolies. Within each TLD, a single registry operates under agreement with ICANN. Through a time-limited but renewable agreement, a registry accepts to operate in conformance with a set of general policy objectives (e.g. stability of the Internet, prevention of domain names speculation, resolution of disputes, etc). Agreement also fixes the maximum price the registry is allowed to charge for registry service, and specify that any subsequent revision must be approved by ICANN.

---

<sup>191</sup> An economic analysis of competing roots is proposed by Milton L. Mueller, "Competing DNS Roots: Creative Destruction or Just Plain Destruction?", TPRC's 29th Research Conference on Communication, Information, Cabbages, and Kings, October 2001.

With the exception of dot-int and dot-org, unsponsored generic top-level domains are operated by private companies. This includes the historical dot-com and dot-net, and the new dot-biz, dot-info, dot-name, and dot-pro selected in November 2000, and introduced in 2001 and 2002. With the exception of dot-coop, sponsored TLDs are operated by not-for-profit organisations or governmental agencies.

In 10 out of 14 gTLDs, the market for domain names is organized following to a “shared-registry model”: all the registrars competing in the TLD enter domain names in a single database operated by the registry. This model applies to dot-aero, dot-biz, dot-com, dot-coop, dot-info, dot-museum, dot-name, dot-net, dot-org and dot-pro. As of September 2003, there exists 243 ccTLDs. They are operated by registries under various legal statuses. Mostly, these registries are not-for-profit organisations or agencies, a notable exception being the registries of the so-called Open ccTLDs.<sup>192</sup>

### 2.2.2 Registries as natural monopolies

In many cases, market mechanisms induce cost minimization, and give proper incentive to innovate. Does this apply to registry service?

In principle, a competitive market can be organized for second-level domain registry service within a single top-level domain. Starting from the current market organisation, let’s imagine that several new registries are allowed to –and choose to– enter a market for a particular TLD. In this TLD, several registries now compete in price and service quality to attract registrars. Suppose a registrar has some second-level domain names (SLDs) recorded in the database maintained by a particular registry. If the registrar becomes unhappy about the price or service offered by the registry, it will simply transfer the domain names to another registry. Through this prospect, registries receive good incentives to lower their price margin, to maintain service quality, and to innovate in cost saving technologies.

However, technical constraints prevent, or at least seriously hinder, the possibility of a competitive organisation of the market for registry service at a single point of the name tree.

The competitive model implies that every registry operating at a given location in the name tree bears the cost of managing its own database of domain names. This entails two difficulties.

First, the system must still be able to answer name resolution queries. In the absence of any “consolidated” database, a query has to be transmitted to each registry, in turn. On average, a successful query will be submitted to half of the existing competing registries. Second, uniqueness of domain names is a critical feature of the DNS and must be strictly enforced. As a consequence, these databases must be fully synchronized to avoid name duplication.

While hierarchical distributed database systems rely on mature technologies (the actual DNS being an obvious example), synchronizing several databases at the same level represents a far more difficult problem when uniqueness is imperative. Let’s imagine that one of the databases becomes unreachable due to technical or economical difficulties. Registration of domain names in all databases must be stopped to prevent fortuitous duplications. Synchronization by replication can alleviate the problem, but bears significantly higher cost: costs of maintaining several identical copies of the full database,

---

<sup>192</sup> A very interesting survey on domain name registries in Europe is presented in “ccTLD registries in Europe”, Marianne Wolfsgruber (CENTR General Manager), 6 February 2003, Prague. Slides of the presentation are available on line at <http://www.centri.org/docs/presentations/A-level-MW.pdf>

plus synchronization costs. Replication costs may be acceptable when reliability is crucial, but this mainly applies to small databases (as in the case of root servers). In summary, a fully decentralized competitive market for registry service, while technically feasible, will be both fragile and costly.

Within this view, a single database must be managed by a single entity at any given location of the name tree. In other words, registry service is a natural monopoly function.<sup>193</sup>

Since they involve social costs, natural monopolies must be regulated.

One may argue that competition among registries still exists in the shared-registry model, since agents willing to buy domain names can freely choose among available TLDs.

However, once this choice has been made, switching costs will increase over time. First, the domain name will be more and more referenced in URLs stored in other sites' web pages, users' bookmark files, and search engines' databases. All these items update rather slowly. Second, potential customers will be increasingly accustomed to the domain name. In this context, switching to another TLD may prove very damageable. The situation will be even worse if the second-level label is already registered in many other TLDs. Accordingly, registries will have strong incentives to raise their prices and to lower their quality of service.<sup>194</sup>

### 2.2.3 Entry and operations in the market for registry service

Entering the market for registry service in a gTLD supervised by ICANN means either to be selected to operate a new TLD through a call for proposals (as with the call conducted in 2000, that led to the introduction of seven new gTLDs), or replacing the registry of an existing TLD through a reassignment procedure (as with the procedure that led to reassign dot-org to Public Interest Registry on January 1, 2003).

To participate in these merit-based allocation procedures, an applicant must submit a detailed application, and is required to pay non-refundable application fees.

The selection criteria are publicly available and, to some extent, well defined. The evaluation methodology has been debated, and subsequently clarified. In the new call for proposals under preparation (targeting the creation of three or more new Sponsored TLDs), the evaluation methodology is based on weights attributed to selection criteria.<sup>195</sup> Evaluation reports on applications are publicly available.

These fees amounted to \$50,000 in the call for proposals conducted in 2000, and \$35,000 in the reassignment procedure conducted in 2002. However, in the later case, only \$29,000 was actually charged. In the new call for proposals, \$25,000 will be charged.

Among the 44 applications submitted in 2000, 7 were selected (16%). With 11 applicants, the rate of success in the reassignment procedure for dot-org was only 9%. The call for proposal under preparation is likely to be restricted to the applicants who submitted applications for sponsored TLDs in 2000, but were not approved at that time. In summary, new gTLDs are created at a very slow rate, following a merit-based procedure with relatively high non-refundable application fees and low success rate.

---

<sup>193</sup> Within unrestricted TLDs, only one registry is feasible. Within TLDs enforcing a particular structure at the second-level (e.g. dot-uk, dot-fr, dot-jp, dot-au), many registries may coexist without overlapping.

<sup>194</sup> This problem has been addressed by the gTLD-MoU Policy Oversight Committee, in a document entitled "The Economic Structure of Internet Generic Top-Level Domain Name Registries. Analysis and Recommendation", 23 July 1998, <http://www.gtld-mou.org/docs/eco-structure-registries.htm>

<sup>195</sup> <http://www.icann.org/tlds/new-stld-rfp/new-stld-evaluation-criteria-24jun03.htm>

Thus, entry in the market for registry service in gTLDs is clearly limited. Creating a company for the sole purpose of entering this market would appear as very risky. Once a for-profit company successfully entered the market, it must maximize profits subject to the constraints established by ICANN.

On the expenditure side, a major regulated account is the financial contribution to ICANN. In its 2003-2004 budget,<sup>196</sup> a “Tier 3 gTLD” is defined as a gTLD housing more than 50,000 domain names. This category includes all the for-profit registries of unsponsored gTLDs, as well as Public Interest Registry, the dot-org registry operator. For each of the four largest Tier 3 gTLD (dot-com, dot-net, dot-org, and dot-info), the registry is required to pay annual fixed fees (paid in quarterly installments) of \$115,000. For the three other gTLD, annual fees amount to \$92,000.

On the revenue side, registry agreements fix the maximum fee the registries may charge for each domain name registration. For the major gTLDs operated by private companies, it ranges from \$5 to \$6.

With more than 50,000 registrations, registries of Tier 3 gTLDs largely cover their financial contribution to ICANN by the registration fees paid by registrars. As of February 1, 2003, VeriSign houses more than 23 million domain names in dot-org, and around 4 million in dot-net. Afilias houses more than 1 million in dot-info, NeuLevel more than 800,000 in dot-biz. GNR is the smallest active registry in the Tier 3 category, with 87,000 domain names in dot-name.<sup>197</sup>

The technical infrastructure necessary to operate a shared registry database in a reliable manner is not negligible. However, the technology is standard, well known, and widely available. Moreover, once the installation costs have been paid, the marginal cost of entering a new name in the database is very low.

Being a registry in a successful gTLD is potentially a very profitable business. With millions of registrations, fees paid to ICANN and technical costs are very small per domain name, and average cost is close to marginal cost. If we consider a large registry with an average production cost in the range \$0.5 to \$1.5, selling registrations to registrars at \$5 per name, the profit per domain name is substantial.

#### 2.2.4 Opportunities for new entrants

Does the market for registry service represents a significant business opportunity for potential entrants, as, for instance, for European firms?

The analysis developed above indicates that, while operating as a registry is likely to represent a very profitable business, entry in the market is largely restricted by the central authority. At the current pace, no more than a few new TLDs per year can be expected to be created.

Therefore, opportunities may exist, but will be probably very rare, and subject to a merit-based allocation procedure entailing many uncertainties.

### 2.3 The market for registration service

Is the market for selling domain names a free-entry market?

Analyzing the opening phase of the DN market to competition among registrars offers evidence that free-entry has been a genuine characteristic of the new market structure. Moreover, analyzing the evolution of the market over the last two years as well as the current situation shows that the market is increasingly competitive.

---

<sup>196</sup> This budget, adopted 26 June 2003, is available at

<http://www.icann.org/financials/budget-fy03-04-14aug03.htm>

<sup>197</sup> See Appendix 1 of ICANN’s Fiscal Year 2003-2004 Budget:

<http://www.icann.org/financials/budget-fy03-04-14aug03.htm#Appendix1>

### 2.3.1 The transition process

The transition from monopoly to competition has been organized by ICANN through a test-bed Accreditation Program, which began on April 26, 1999.

The choice of a test-bed phase with a limited number of registrars can be justified by a technical reason: to operate, new registrars had to interact with the registry database, through an interface provided by a software system called the Shared Registry System (SRS). SRS has been developed by Network Solutions and aims at allowing multiple registrars to register names in the CNO TLDs. Since the SRS was still untested in real-life conditions, a testing phase was necessary.<sup>198</sup>

Moreover, many important political issues involving the relations between ICANN, NSI and the DoC were still unresolved at that time, thus offering only a fragile ground on which to build a market.

The design of the test bed phase was as follows: five registrars will be selected to enter the phase. Then, they will set up their registration system to communicate with the SRS, and start competing with NSI and among themselves. During the test bed period, new registrars would be accredited, but will not operate until the end of the test bed phase. The initial time frame was rather optimistic: the test bed program was initially scheduled to last until June 24, 1999. However, the five test bed registrars<sup>199</sup> experienced many technical difficulties in connecting to the SRS. The first accredited registrar to compete with NSI, register.com, inaugurated its service in the beginning of June. June 1999 is therefore the official birth date of the competitive market for domain names registration services in the CNO name space. However, the ending date of the test bed has been postponed several times.<sup>200</sup>

On September 28, 1999, ICANN, NSI and the DoC announced that they had tentatively reached a series of agreements.<sup>201</sup> In particular, the proposed agreements clearly stated that NSI agreed to totally separate its registry function from its registration functions, and to operate these functions in accordance policies established by ICANN. By operating its registration activity through a standard agreement signed with ICANN, NSI became a regular registrar in the CNO domain. As a consequence, NSI was allowed to freely set its own retail prices, so far regulated by its Cooperative Agreement with the DoC.

These series of agreements, implemented from November 1999, substantially clarified the relations between the major players in the game. From the point of view of new registrars and customers, such a stable environment, ruled by clear agreements between parties, is clearly favorable. A necessary condition for the emergence of a market has been fulfilled.

The new physiognomy of the market quickly emerged. In this market, a set of registrars, all bound by the same agreement concluded with the “regulator”, were competing in price and service quality for selling domain names.

Thus, the real take-off of the new competitive market for registration services in the CNO domain space should be dated to the end of the year 1999.

---

<sup>198</sup> NSI itself had to migrate its own registration process to this software.

<sup>199</sup> America Online, CORE (Internet Council of Registrars), France Telecom/Oléane, Melbourne IT, register.com.

<sup>200</sup> Three new dates have been successively announced by the DoC: July 16, September 10, September 30.

<sup>201</sup> <http://www.icann.org/nsi/tentative-agreements.htm>

### 2.3.2 Have barriers to entry hindered the transition process?

In order to assess if barriers to entry have hindered the transition process, it is worthwhile to consider the empirical evidence. Indeed, if barriers to entry have been effective, only a small number of incumbents would have entered the market.

Can we estimate how many entries of new competitors occurred?

Figure 1 shows the number of registrars accredited by ICANN, from the start of the test bed phase to March 2001. We do not know the exact number of companies that applied for an ICANN accreditation, but these numbers give us a lower boundary: no less than 177 companies have chosen to enter the market until March 2001, considering it as a potentially profitable market.

The actual number of competitors was certainly higher, at least for two reasons:

1. The counting did not take into account resellers, which entered private contracts with ICANN accredited registrars. Resellers are difficult to count. Nonetheless, a quick search on the web proves that they do exist in numbers.
2. CORE, one of the five test-bed registrars, is a not-for-profit membership association of Internet domain name registrars. To save costs, CORE members share a single SRS access as a technical resource, but compete in terms of price and service quality. Thus, being a not-for-profit association sharing a costly resource, CORE is rather transparent with respect to market competition. But since some of its members are not directly ICANN accredited themselves, this leads to underestimate the actual number of competitors.

Being accredited is just a first step to become an operational registrar. It may take some time before selling names, especially given the technical step imposed by the SRS. Thus, many of these 177 accredited registrars were not actively registering names at that time, and even may have just exited.<sup>202</sup> However, applying for accreditation is a voluntary economic act that reveals expectations that selling name in this market may be a profitable activity.

Barriers to entry in the market for registration services may stem from different factors: (i) the production cost structure in the industry is such that only a very limited number of registrars is viable at the same time; (ii) the various accreditation fees set up by the regulator are such that obtaining an accreditation or operating as accredited registrar is so costly that entry is deterred; (iii) behaving strategically, the monopoly currently operating on the market voluntarily raises barriers to entry.

Let's consider these three points.

(i) *Natural monopoly*. It seems highly unlikely that the production costs in the market for domain name registration is such that only a monopoly can survive. Indeed, being essentially a web-based activity, selling domain names entails limited fixed costs.

Additionally, we can expect variable production costs in this market to be rather low.

(ii) *Barriers of entry set by the regulator*. Let us consider the accreditation program during the test-bed phase. The following points provide evidence that the program has been set up to favor entry rather than to deter it:<sup>203</sup>

---

<sup>202</sup> In its March 2001 Registry Operator Monthly Reports, VeriSign states that, as of 31 March 2001, 81 accredited registrars in the CNO market were classified as Operational Registrars (i.e. with full access to the SRS), whereas 70 were not. This sums up to 154 registrars, corroborating the hypothesis of earlier exits.

<sup>203</sup> The fees reported here held from the beginning of the transition process to July, 1, 2001, where a revision occurred. See <http://www.icann.org/stockholm/fee-revision-resolution.htm>

1. *Application fee.* The fee for registrar accreditation applications has been as low as \$1,000, much lower than the actual cost of processing an application.
2. *Accreditation fee.* Accredited registrars have to pay to ICANN an annual fixed fee of \$5,000 for accreditation to register for the CNO registries. An additional annual variable fee of \$1 per registration has been proposed by ICANN. However, under the pressure of the DoC, this proposition has been eventually replaced by a quarterly fee based on a share of a part of ICANN's budget.<sup>204</sup> In practice, this variable fee proved to be quite small (about 10-12 cents per domain name registered).
3. *Registration fee.* The have a name registered in a registry, a registrar is required to pay an annual fixed fee to the registry operator (i.e. to NSI at that time). This price has been set in accordance to an amendment to the Cooperative Agreement between the DoC and NSI: \$9 until January 15, 2000, and \$6 after.<sup>205</sup>
4. *Software license fee.* Registrars must acquire a \$10,000 one-time fee license to NSI in order to use the SRS software package.
5. *Surety Instrument.* Registrars are required to have in place a \$100,000 in performance bonds, letters of credit or equivalent instruments.

These fees appear to be quite reasonable. After having paid up-front fee, annual fixed fee amounts to \$5,000. Annual variable fees (accreditation and registration) amount to about \$6.10 per domain name. We stated in (i) that both fixed and variable production costs are likely to be low in this industry. Given the retail price of \$35 per year established by the Cooperative Agreement since April 1, 1998, it seems to leave room for a profitable business, even for a small-to-medium-size company.

(iii) *Strategic barriers.* Incumbents may have been deterred by the threat of a possible price-war triggered by the current monopoly. NSI may well have gained from its historical monopolistic position the capacity to sustain such a war much longer than the incumbents. If the war is started soon after the entry of a new registrar, the new entrant will not have enough time to expand its market share and lower its average cost, and quick exit will occur. Thus, NSI's accumulated profits and low average costs may well have threatened incumbents.

Voluntary or not, such a possibility has been ruled out. Indeed, during the tested period, the activity of the tested registrars was supervised by ICANN, according to its standard accreditation agreement. This agreement allows each registrar to set its own pricing competitively. NSI, which had not yet signed such an agreement, were still ruled by its Cooperative Agreement with the US Government, which fixed NSI's prices at \$70 for an initial two-year registration and \$35 for one-year renewals. Therefore, it would have been just illegal for NSI to lower its prices.

As stated above, the fee structure established by ICANN and the US Government is such that a retail price much lower than \$35 appears to be sustainable for a new registrar, even with a relatively small initial market share. Therefore, an incumbent will expect to compete with a monopoly artificially stick to a relatively high retail price, thus increasing its market share and lowering its average cost accordingly, up to a point that open price competition becomes sustainable with the former monopoly.

Thus, this temporary protection against price war with NSI gave incumbent registrars a strong incentive to enter the market.

---

<sup>204</sup> <http://www.icann.org/minutes/minutes-26july99.htm>

<sup>205</sup> <http://www.ntia.doc.gov/ntiahome/domainname/agreements/nsi-rla-28sept99.htm>

### 2.3.3 Is the CNO market competitive today?

To address this question, a first point to consider is the number of competitors on the market. Figure 2 shows the number of active registrars in the CNO market over years 2001 and 2002.

At the end of 2002, about 120 registrars were competing in this market. In addition, non-accredited resellers are numerous. The number of active resellers is difficult to estimate, but, as a simple illustration, the registrar eNom.com claims more than 6,000 active resellers as of 2003-05-15.<sup>206</sup>

Figure 3, which shows the evolution of market shares of the 10 largest registrars, provides additional evidence that the CNO market is becoming increasingly competitive. Between 2000-Q4 and 2002-Q3, the market share of the former monopoly (Network Solutions) regularly shrunk, from 53% to 31%, despite the acquisition of one of the top-10 registrars (registrars.com) in 2001.

At the end of 2002-Q3, the situation is as follows: behind Network Solutions (31%), two registrars (Tucows, Register.com) have roughly a 10% market share, four are around 5% (Melbourne IT, BulkRegister, GoDaddy, eNom), and the remaining three are around 2% (DirectNIC, DotRegistrar, schlund.de). Behind the top-10, more than 100 registrars share the remaining portion of the market (about 23%).

Let us consider retail market prices of eight of these registrars (Tucows and BulkRegister being wholesale registrars). The services offered to registrants differ among registrars, and thus retail prices are not exactly comparable. However, with the notable exception of the probably costly 24/7 customer phone support service offered by registrars charging the highest prices, the set of services included into the retail price is roughly the same, and usually includes several of the following services: parking page, account management tools, site forwarding, email forwarding and DNS service. As of May 2003, considering the price of a one-year registration, the situation is as follows. Four registrars (Network Solutions, Register.com, Melbourne IT, Schlund.de) are still charging the historical yearly retail price of \$35.<sup>207</sup> Other registrars have retail prices almost equally distributed between \$30 and \$8.95.

The price range is large, and is probably partially justified by the 24/7 phone service. The retail price proposed by GoDaddy, the cheapest registrar among the top-ten, is remarkably low, since \$6 of this amount immediately goes to the registry. Charging rock-bottom prices is on the basis of GoDaddy's business model since its creation. This had a clear effect on its market share, which is constantly growing.

By looking at longer registration periods and at bulk registrations, one can even find lower prices. For a ten-year registration in CNO, GoDaddy is charging \$6.95 per year. For more than 1,000 names registered, DotRegistrar charges \$6.49 per domain name per year.

How have evolved the accreditation fees since the end of the test bed period? A change adopted July 1, 2001, has modified the fee structure.<sup>208</sup> Application fee for new registrars rose from \$1,000 to \$2,500, but are still estimated by ICANN to be lower than the actual costs of processing the application. Accreditation fees are also modified in the following way: rather than paying a yearly \$5,000 for accreditation in CNO, a registrar pays \$4,000 for the first TLD in which it is accredited to perform registrar services, and \$500 for

---

<sup>206</sup> <http://www.enom.com/statistics.asp>

<sup>207</sup> Schlund's retail price is €2.90 per month (€34.8 per year).

<sup>208</sup> <http://www.icann.org/stockholm/registrar-fee-topic.htm>

each additional TLD. Since all registrars will continue to register in CNO, this new fee structure amount to pay \$500 for accreditation in each new TLDs (BIN), which is not huge.

Hence, empirical evidence suggests that the variable costs in the market for registration service (on top of the \$6 registry fee) may be very small, and that fixed costs and fixed fee are also small. Using an aggressive pricing, a registrar can expect to gain significant market shares. Moreover, the former monopoly, charging a relatively high price, is constantly losing market shares.

These evidences indicate that the market for registration service is becoming more and more competitive.

#### 2.3.4 Opportunities for new entrants

Can a new entrant (e.g. a European firm) expect to develop a profitable business today in the market for registration service?

The analysis developed above suggests that profitable entry in the market is still possible. The fixed costs to operate being quite low, breakeven point can be reached on the basis of a reasonably small number of registrations.

However, the gTLD market is now quite competitive. Prices are driven down, to the point that highly profitable opportunities have probably disappeared.

Still, fast growing ccTLDs may well represent, but only for a limited time, a new set of opportunities.

### ***3. The allocation of IP addresses***

The main economic issue with respect to IP addresses is the design of the allocation procedure. This allocation procedure is both a coordination system meant to guarantee that each address on the Internet is unique, and a rationing method meant to prevent a total exhaustion of the address space.

A simple economic analysis of this problem is developed, and used to interpret the recent history of IP allocation procedures. Useful lessons are drawn from this history, in order to assess the current situation.

#### **3.1 Economic analysis**

With respect to welfare, the efficiency of the allocation procedure clearly depends on the economic nature of the resource.

##### **3.1.1 Homogeneity of the resource**

From an economic viewpoint, the common characteristic that IP addresses and domain names share derives from their usage as exclusive addresses on the Internet. Since an address must be unique, an address space represents a pool of exhaustible common resources. An allocation procedure is thus required to assign to economic agents exclusive licenses to use these addresses, and to keep track of the assigned and available addresses.

Nevertheless, IP addresses are very different from domain names. The fundamental point is that, unlike domain names, IP addresses are essentially invisible to end-users, thanks to the DNS. Indeed, to open a connection to a host or to a web site on the Internet, a user has the choice between specifying the IP address of the host, and entering the domain name of the host, relying on the DNS to find the corresponding IP address. Domain names being more stable and a lot easier to memorize than IP addresses, the former choice is clearly dominant, to the point that most users do not even know what an IP address is.

Thus, unlike domain names, end-users will not usually consider a particular IP address more valuable than another one: with this respect, the IP address space forms a pool of *homogeneous* exhaustible common resources. Nonetheless, it should be noted that this homogeneity is only approximate: for technical reasons, large organizations have a preference for managing *contiguous* blocks of IP addresses within the addressing space. Thus, when an organization needs additional blocks, it will value adjacent blocks slightly more than non-adjacent ones. Adjacent blocks may have been allocated to another organization. However, this effect is probably only minor. This quasi-homogeneity with respect to economic valuation has an important consequence, which greatly simplifies the design of the allocation procedure: contention on a specific address (an important issue with respect to domain names) is mostly irrelevant.

### 3.1.2 Potential exhaustion

Like domain names, IP addresses are potentially subject to exhaustion. In the absence of any rationing method, selfish economic agents will naturally tend to excessively withdraw addresses from the pool for their private usage, enjoying a private benefit --the economic value of the IP address-- at no cost.

However, addresses are a special kind of resource. They are purely immaterial resources, created *ex nihilo* by a technical standard. The relevant standard defines the size and the usage of the address space.

In the case of IP addressing, the standard sets up the theoretical size of the space, by fixing the number of bits used to represent an IP address in a computer machine.

Additionally, by defining routing protocols, it specifies how addresses are used to establish communications between hosts. Whereas a definition of the address space determines the amount of potentially available resource, a routing protocol determines the efficiency of its utilization: a parsimonious protocol will save IP addresses, another will waste many of them. Together, address space definition and routing protocols set the amount of actually exploitable resource.

Thus, the potential exhaustion is contingent to a particular version of the standard. In case of a shortage threat, it remains possible to update the standard in order to enlarge the address space, or to introduce new protocols in order to improve the efficiency of its usage. Of course, such a change may entail very high switching costs. But these technical costs have to be balanced with the economic costs of exhaustion, and in particular with the fact that some opportunities to develop profitable activities requiring IP connectivity may be lost.

In the case of IP addressing, it is worth noting that, unlike the domain names space, an enlargement of the address space does not lower the value of the existing addresses. It just creates new addresses of the same economic value.

### 3.1.3 Allocation procedure

The likelihood of a shortage depends on how is organized the allocation procedure required to distribute IP addresses while preserving their exclusivity.

As for domain names, a global coordination mechanism is required to ensure that two identical addresses will not be used at the same time. Thus, the cost of setting up a kind of centralized organisation will always have to be paid, whatever the selected rationing method will be.

Selecting a good rationing method requires a proper evaluation of its social benefit, net of implementation costs. With this respect, the fact that a centralized organisation is mandatory gives more weight to a centralized rationing method.

Two situations may be distinguished with respect to exhaustion.

First, when a homogeneous resource like IP addresses is abundant, a first come-first served assignment method, coupled with properly chosen administrative flat fees, is simple and relatively well suited. Furthermore, rather than selling the resources themselves, it is far better to sell renewable licenses to use them, in order to avoid abusive retention.

Such a method has the advantage of avoiding the high costs entailed by market pricing or merit-based methods, while still avoiding speculation. A crucial argument here is that speculation (or “rush”) is less likely to occur under a flat fee regime when the resource is homogeneous, since no individual piece of resource is intrinsically better than another one (there is no “good IP addresses”). Only a perspective of future shortage will trigger speculation.

The level of the fees is therefore a key instrument. On the one hand, it must be set sufficiently high to discourage waste of addresses (that is to say every usage with negligible economic value), such that exhaustion will be viewed as an improbable event. If exhaustion is improbable, no one will speculate on it. On the other hand, it must be set sufficiently low to promote a valuable usage of the resource.

Does a market-based solution could achieve the same goal? In theory, the optimal price (or fee) level is the one that exactly reflect the social value of the address space, ultimately related to the capacity to connect computers through the Internet (a valuable service). An initial attribution of IP addresses through auction mechanisms, followed by a fully decentralized market, could well discover the optimal price in an endogenous manner. However, when the undifferentiated resource is still abundant, the heavy transaction costs of such a market-based solution are probably higher than the expected benefit of a very precise valuation, provided that the fixed fees are set in a sufficiently reasonable manner, and regularly updated to correct for any deviation.<sup>209</sup>

Second, when a resource is scarce (possibly as a consequence of excessive usage), a significant cost will have to be paid in order to encourage an efficient usage. Market pricing in primary and secondary markets creates incentives to use the resource efficiently. Merit allocation through application procedure is another possibility. Both methods are very costly. Unavoidably, a black market will tend to appear, under the pressure of the agents with the highest reservation price.

In the case of the IP address space, if a shortage is threatening, an alternative possibility is to relax the constraint by expanding the address space or introducing new protocols. The switching costs are likely to be very high, but have to be compared with the setup costs of a new rationing method, plus the economic costs of scarcity.

### **3.2 Historical perspective**

The history of IP addresses allocation provides evidence in line with the economic analysis presented above.

#### **3.2.1 From abundance to the threat of shortage**

The first official specification of the IP addressing system (now known as IPv4) dates back to September 1981, with the release of RFC 791.<sup>210</sup> The design of the Internet Protocol includes a definition of the address space, as well as a specification of a class-based addressing scheme.

---

<sup>209</sup> RFC 1744 (“Observations on the Management of the Internet Address Space”, December 1994), by Geoff Huston, advocates for a market-based approach of IP addresses allocation. See also “Do Internet Addresses have a Value?”, January 1997, by the same author (available on <http://www.potaroo.net/papers/oti/ipaddr.html>).

<sup>210</sup> <http://www.ietf.org/rfc/rfc0791.txt>

By setting up the size of an IP address to 32 bits, the RFC fixes the amount of potentially available addresses to  $2^{32}$ , that is to say around 4.3 U.S. billions. At that time, this number could be considered as largely sufficient for any future needs. Thus, it appeared costless to set up a class-based addressing scheme meant to facilitate the distribution of host addresses, even if it implies a high rate of wasting.

The standard divided an IP address into two parts: the network prefix that identify a network, and the “rest”, a local address that identify an interface on a host within the network. Three classes (A, B, C) were defined, with a respective network prefix of 8, 16 and 24 bits. These numbers fix for each class a maximum number of networks, and a maximum of local addresses (say, hosts) per network. Approximately, this addressing scheme allows 128 networks of 16.5 million hosts (class A, 50% of the address space), 16,000 networks of 65,000 hosts (class B, 25% of the address space), and 2 million networks of 250 hosts (class C, 12.5% of the address space).<sup>211</sup>

Such a two-layer hierarchy naturally implies a two-level allocation procedure: a central authority allocates networks (i.e. blocks of addresses) to agents, possibly according to a rationing method; then, agents freely allocate addresses to hosts within their networks. The responsibility of ensuring the uniqueness of IP addresses follows the same path. This organisation is clearly cost saving, but the definition of the classes made it potentially a wasteful allocation policy: a company willing to connect, say, 3,000 hosts to the Internet is willing to ask the central authority for a class B network, thus wasting 62,000 addresses. If the authority discourages such a behavior by a proper rationing method, the company will ask for 12 class C networks. If many small or mid-sized companies decide to move to the Internet, it would quickly put the pressure on class C networks. On the other side, few companies or organisations need 16.5 million addresses, and allocation of such oversized blocks are very likely to lead to large wasting. What kind of allocation policy did the central authority implement?

In 1981, the sole Jon Postel (ISI) incarnated the whole central assignment authority, as explicitly (still, informally) stated in RFC 790.<sup>212</sup> The allocation policy, although not official stated in the RFC, was implemented as a first come-first served, once and for all, free of charge, rationing method. This simply means no rationing at all.<sup>213</sup>

This kind of allocation ensures uniqueness and minimizes management costs, but is unsustainable except for an inexhaustible resource. In the context of a growing demand for a resource in fixed supply, it unavoidably leads to total exhaustion.

At the beginning of the Nineties, under the pressure of the expansion of the Internet, the threat of a complete exhaustion of the resource became evident. Network number statistics reported by various RFCs<sup>214</sup> provided evidence of a probable rapid exhaustion of class A and B networks (representing together 75% of the total address space). Few class C networks were yet allocated, being too small for most networks. As recognized by RFC 1519 (September 1993), a fundamental problem with the initial three-class scheme is the lack of a network class of a size suitable for mid-sized organisation.

---

<sup>211</sup> The remaining 12.5% of the address space, initially to an undefined “extended address mode” by RFC 791, has been subsequently attributed to class D (multicast addressing, defined in RFS 966 in December 1985) and class E (future addressing modes).

<sup>212</sup> <http://www.ietf.org/rfc/rfc0790.txt>

<sup>213</sup> Exactly 43 class A networks were assigned by RFC 790 in September 1981, about one-third of the available gigantic class A networks.

<sup>214</sup> As, e.g., RFC 1335 (May 1992), and the following “Guidelines for Management of IP Address Space” (RFC 1366, October 1992, RFC 1466, May 1993, etc.) RFC 1519 (September 1993) reports alarmist projections.

This critical situation appealed for a restructuring, both at the technical and organisational levels.

### 3.2.2 Technical changes and organisational reforms

To solve the crisis, deep technical and organisational changes have been proposed and progressively implemented during the Nineties.

It is worth noting that a tighter rationing policy would not have been sufficient to cure the problem alone, due to an additional technical difficulty: the increased number of networks connected to the Internet began to dangerously inflate the size of the Internet backbone routing tables. In 1993, their size began to overgrow the routers capacity. Thus, even if recipients were encouraged to use their network prefixes efficiently, the growing number of networks remained unsustainable within the current standard. A technical change was necessary to cope with the Internet expansion.

A set of new standard targeted a more efficient utilization of the resource, i.e. the available 32-bit IPv4 address space. In September 1993, the Classless Inter-Domain Routing standard (CIDR, also known as “supernetting”) allowed to completely bypass the wasteful old three class-based addressing scheme, paving the way for a fine-grained allocation of address blocks.<sup>215</sup> Moreover, CIDR enables “hierarchical routing aggregation” to minimize route table entries. In October 1993, Dynamic Host Configuration Protocol (DHCP) allowed ISP to dynamically assign reusable IP addresses to their customers at connection time, thus dramatically reducing the number of required addresses for a given number of customers.<sup>216</sup> In May 1994, Network Address Translation (NAT) allowed an entire network to be “hidden” behind a unique IP address, thus relieving the requirement for a host within this network to use an address different from every address used outside.<sup>217</sup>

The technical changes have been pushed further, by enlarging the address space through adoption of IPv6 in 1995.<sup>218</sup> By increasing the address size from 32 bits to 128 bits, IPv6 dramatically expands the addressing capabilities, to the point that the IPv6 address space appears as quasi-infinite (3.4 times  $10^{38}$  possible addresses). IPv6 seems to completely relax the constraint of limited resources.

On the organisational front, an important reform has been proposed in August 1990 (RFC 1174) to scale up the allocation system in line with the new size of the Internet. The principle is to operate allocation in a delegated manner, through the creation of multiple Internet address Registries (IR), while IANA, the sole IR throughout the history of IP assignment, would retain the primary authority. Discussions on the proposed organisation put emphasize on the requirement of uniqueness, but, yet, evoke the possible exhaustion of IP address space.

This process of decentralization has been pursued, to the point that several levels of hierarchy exist today: users obtain IP addresses from ISPs. ISPs obtain addresses from Local, National, or Regional Internet registries (LIR, NIR, RIR), depending on the number of hierarchical levels in its geographical zone. At the end of the chain, the RIR obtains IP addresses directly from IANA.

---

<sup>215</sup> See RFC 1517, 1518 and 1519. According to this new standard, the size of a network is any power of 2 between 13 and 27.

<sup>216</sup> RFC 1531.

<sup>217</sup> NAT is defined in RFC 1631. The hosts within the network are required to use private IP addresses, as defined in RFC 1918.

<sup>218</sup> RFC 1883 (December 1995), updated by RFC 2460 (December 1998), gives a full specification of IPv6.

Meanwhile, rationing policies have slowly evolved. A document entitled “Guidelines for Management of IP Address Space”, published in October 1992 (RFC 1366), and subsequently revised in May 1993 (RFC 1466), makes some recommendations to the IRs for IP assignment within the pre-CIDR, class-based allocation scheme. Comparing the successive versions of the Guideline reveals the progressive introduction of a strong requirement that any applicant for IP addresses must justify his needs. Later on, an “Internet Registry IP Allocation Guidelines” (RFC 2050), published in November 1996, describes (without officially endorsing) the current practices of the IP registries at that time with respect to address assignment. This document shows that IRs actually followed strong administrative-based conservative rules meant to preserve the resource.

Applicants were actually requested to justify their needs, and were subject to further verifications that they are effectively using (a large part of) their addresses. Requirement to demonstrate the needs spreads out through the chain, ruling out at every point the disastrous uncontrolled first come-first served allocation procedure. Another important point is that registries must approve any transfers of IP addresses between users, thus avoiding the emergence of a black market.

Later on, RIRs began to implement yearly administrative maintenance fees for address blocks.

These major changes in the rationing method represent a significant departure from the initial wasteful policy. By the mid Nineties, it is reasonable to say that the allocation rules followed by IANA and the RIRs gave appropriate incentives for an efficient usage of the IP address space.<sup>219</sup>

In conjunction with the new allocation policy, the newly introduced protocols proved to be very effective in reducing the wasting of addresses, to the point that RFC 1917 (February 1996) reported that allocations of class B networks dropped dramatically in 1994 and 1995.

At the end of the Nineties, the threat of a rapid shortage had been dissipated.

### **3.3 Possible lessons**

Several lessons can be learnt from this history.

First, it is clear that the initial allocation procedure of IPv4 addresses was wrong, being grounded on the implicitly assumption of an inexhaustible resource. Correction measures, both at a technical and at an organisational level, have been then successfully applied to improve the efficiency of what quickly appeared to be indeed an exhaustible resource. IANA and RIR’s statements make it clear that such an initial mistake will not be repeated for IPv6, despite its seemingly unlimited address space.

Second, unlike what has been chosen for domain names assignment, the economically appealing market-based solution has been discarded to the profit of a more administrative approach. Given the homogeneous nature of the resource and the high transaction costs usually entailed by market solutions, this may be viewed as a reasonable choice. Detailed justifications of needs (both ex ante and ex post), limited licenses, and periodical maintenance fees, have proved to be effective instruments in managing the address space.

Third, without a large secondary market, it is rather difficult for block owners to exchange them so as to form easy-to-manage contiguous blocks of IP addresses. In this situation, a large organization is induced to request more addresses (in continuous blocks), in order to lower the probability to own non-contiguous blocks in the long term.

---

<sup>219</sup> RFC 1917 (February 1996), entitled “An Appeal to the Internet Community to Return Unused IP Networks (Prefixes) to the IANA” is another attempt to fight the exhaustion. However, in the case of a valuable resource threatened by shortage, this kind of appeal gives rather weak incentives.

Finally, the adoption of IPv6 has probably been hindered by the effectiveness of the new protocols and rationing methods in promoting an efficient usage of the IPv4 address space. IPv6 will be adopted on the basis of the new valuable services it offers, not as an urgent move to abandon an exhausted space.<sup>220</sup>

## Conclusion

With the exception of the contiguous block issue, the analysis developed above suggests that, from an economic standpoint, the current allocation procedure for IP addresses does not appear to raise major concerns.

The situation with regard to domain name industry is more contrasted.

With an increasing number of registrars, the market for registration services in gTLDs and in many ccTLDs is increasingly competitive. New comers are challenging the large positions gained by historical registrars, through very aggressive pricing strategies. While the current diversity of retail prices suggests that this process is not fully achieved, high profits in this sector may well progressively disappear.

Today, profits in the market for registry service are certainly significant. Being natural monopolies, registry operators must be properly regulated. This area of the domain name industry deserves attention, and should be closely monitored by all parties concerned.

## Addendum

In October 2003, Verisign announced<sup>221</sup> that it was selling its registrar business, Network Solutions, to Pivotal Private Equity, a venture capital firm, for 100 million US dollars. This confirms the economic analysis of the report, that the registrar market has become very competitive. As the writer for CNET.com<sup>222</sup> puts it: “(Verisign is) giving up the registrar business, which has become essentially a commodity service in a field in which competition has been heating up. VeriSign rebranded the unit in January as Network Solutions after two years of operation under its own name and had been seeking a buyer for the business over the last several months. What it's keeping is the registry, recently renamed as VeriSign Naming and Directory Services—and which operates in a field where the company still has a relative monopoly. The registry business, according to VeriSign, is the backbone of a global .com and .net domain name infrastructure that handles over 10 billion interactions per day.”

This new development also reduces substantially the regulatory problems in the industry, as the problems of ensuring fair access to the registry by competitors of Network Solutions has disappeared. One can speculate that the fear of onerous regulation was a factor in Network Solutions decision.

---

<sup>220</sup> A recent study by Geoff Huston concludes that “...the IPv4 world, in terms of address availability, could continue for another two decades or so without reaching any fixed boundary.”. See Geoff Huston, “IPv4 - How long have we got?”, the ISP Column, July 2003, available at <http://www.potaroo.net/ispcolumn/2003-07-v4-address-lifetime/ale.html>

<sup>221</sup> See the announcement of the sale by Verisign “VeriSign to Sell Network Solutions Business to Pivotal Private Equity” at [http://www.verisign.com/corporate/news/2003/pr\\_20031016.html](http://www.verisign.com/corporate/news/2003/pr_20031016.html), last visited on 18/11/2003 at 16:52:39.

<sup>222</sup> “VeriSign sells off domain registrar”, Matt Hines, <http://news.com.com/2100-1025-5092316.html> (Story last modified October 16, 2003, 11:15 AM PDT), last visited on 9/10/2003 at 19:01:41.

## PART III - LEGAL ASPECTS

The specific nature of ICANN has been described above. It is a not-for-profit corporation under the laws of California, yet it manages the world-wide Domain Name System. It is a private organisation, yet, in addition to its technical functions, it also performs functions which some observers view as being primarily “public policy” functions. The US Government remains involved to a certain extent and the Memorandum of Understanding (MOU), signed with the US Government in 1998, is reflected in ICANN’s bylaws (via its “mission” and its “core values”). In addition there is machinery designed to allow input, from those affected, into ICANN’s decisions. Where ICANN performs “public policy” functions the current structure raises fundamental questions: to what extent can these functions be assumed by a private organisation? To what extent can these functions be disassociated from the technical ones? What is the organisation model being used by other entities assuming comparable tasks? To what extent should they be subjected to international disciplines (WIPO, ITU, etc.)? Before considering how ICANN’s governance should best be performed (2), we will examine to what extent ICANN, as it stands after the reform process, currently performs the functions assigned to it (1).

### *1. ICANN as it stands after the reform process.*

ICANN, as it stands, is a unique phenomenon. It performs functions which have been assigned to it in the bylaws. The underlying assumption, reflected in the Memorandum of Understanding (MOU) signed in November 1998 with the US Department of Commerce (DOC), was to create a contractual “self-regulatory” regime with a lean governmental oversight. The reasons for such an organisation model have been amply described: the concern of the USG to avoid international organisations, the need to create a decentralized regime that would handle conflicts between users and trademark holders on a global basis and avoid direct government involvement<sup>223</sup>. As a result, ICANN would enter into private contracts with all stakeholders rather than subjecting them to territorially based rules. The organisation was supposed to be consensus driven and based on a bottom-up approach, with all stakeholders represented in the Supporting Organisations (SO) having the primary responsibility for developing and recommending to ICANN policies relating to their areas of competencies<sup>224</sup>.

Yet, both from an organisational and policy formation standpoint, ICANN did not operate satisfactorily. As noted by the DOC itself, “ICANN’s reputation in the Internet Community has suffered”<sup>225</sup>. In short, ICANN has been criticized for its lack of representativeness, accountability and transparency. This led to the reform process resulting in ICANN 2.

---

<sup>223</sup> The US Administration proposed to create « a contractually based self-regulatory regime that deals with potential conflicts between domain names usage and trademark laws on a global basis without the need to litigate », A framework for Global Electronic Commerce, The White House July 1, 1997.

<sup>224</sup> See for example Article IX of the bylaws concerning the ccNSO: “The ccNSO shall be responsible for 1. developing and recommending to the Board global policies relating to ccTLDs .....”

<sup>225</sup> ICANN-DOC MOU, Amendment 5, 17/19 September 2002.

### **Representativeness.**

Three series of perceived shortcomings attracted particular consideration:

- The need for At-Large structures and representation. Under the original bylaws, the Board composition was intended to reflect an equal representation of the Supporting Organisations (SO) and the At-Large Community. 9 of the 18 Board members should be elected by the SO. As far as the 9 remaining Board members were concerned, ICANN was supposed to create an At-Large membership which would elect the 9 At-Large Board members and which would replace the initial self appointed Board: the at-Large members would choose members of an At-Large Council who would in turn elect 9 members to the Board. The Board eventually resolved that five At-Large members would be elected in five different regions (North, Central and South America, Europe and Africa) leaving four self appointed directors in place.
- The need to amend the election policies. The Nominating Committee in particular was criticized for its ties to the Board.
- The need to reform the Supporting Organisations (SO). Concerns were expressed about the public participation and lack of representation through the SO structures. The Constituencies system was in particular the target of criticisms as it led in some instances to over-representation or under representation of some interested parties.

ICANN's lack of representativeness affected in turn its ability to enter into contractual relationships with key stakeholders. Neither the relationship with the ccTLDs nor those with the RIRs or with the root server operators were firmly settled in spite of the objectives assigned to ICANN under the MOU with DOC. Only limited progress had been made, even according to DOC's standards<sup>226</sup>, in these areas.

### **Accountability.**

Concerns were expressed that the status of a non-for profit corporation under Californian law was not appropriate for an organisation controlling a significant part of Internet's Naming and numbering systems. . While a not-for profit corporation is designed to deliver a specific non-commercial service to a local or even national community, it appears less suitable in the case of a "common good" as the name and addressing space. A not-for-profit corporation in the traditional sense is basically only accountable to its founders. ICANN, however, should also be accountable to the public at large which is affected by its policies<sup>227</sup>.

### **Transparency.**

The decision-making process has been criticized for its lack of transparency. The notion can be dealt with under different angles. First, it relates to the decision-making process itself and to the possibility for an outsider to trace at reasonable costs the decisions' path and the specific inputs to individual decisions. An example is provided by the selection of new TLDs. This resulted in the intended consensus driven decision-making failing to materialize: as pointed out by NAIS<sup>228</sup>, "despite efforts to make ICANN a "bottom-up, consensus organisation" with decentralized policy development, the Board and staff

---

<sup>226</sup> ICANN-DOC MOU, 5th Amendment, 17/19 September 2002.

<sup>227</sup> According to ALSC's discussion paper of 12<sup>th</sup> July 2001, "ICANN should not just be accountable to those people whose daily work concerns ICANN activities but also those who are affected by its actions".

<sup>228</sup> Report of the NGO and Academic ICANN Study (NAIS), August 2001.

wield the most important influence and make decisions in a largely “top-down” approach”.

A further dimension of transparency is provided in the way ICANN implements its obligations resulting from the MOU on competition. In this area, ICANN, according to the by-laws core values, should introduce and promote competition in the registration of domain names. This would require adopting measures to prevent the occurrence of anti-competitive behaviour. Experience suggests that ex-ante measures are all the more necessary where there are one or more undertakings with significant market power. The question which then arises is whether a not-for profit organization under Californian law can really be charged with such a task.

In another area, e.g. the separation of ICANN’S functions, the bylaws are calling for increased transparency. Emphasis is laid in the core values to the need to achieve a better separation of functions by “delegating coordination functions to or recognizing the policy role of other responsible entities” (core value 3) and by recognizing that “governments and public authorities are responsible for public policy and duly taking into account government’s or public authorities recommendations (core value 11). Furthermore open and transparent policy development mechanisms that “(i) promote well-informed decisions based on expert advice, and (ii) ensure that those most affected can assist”.

In view of these shortcomings, we need to determine to what extent they have been addressed under the reform process. What are the outstanding issues and the drawbacks of the new structure? How are public policy issues decided upon? Is the bottom-up approach upon which the initial organisation was based still valid?

The functioning of ICANN after the reform process will be assessed from the dual perspective of its organisation and of its ability to build oversight over the registration process through a contractual framework.

### **1.1. The proper functioning of ICANN as an organisation.**

In assessing ICANN’s new organisation, one should bear in mind that it is not yet fully in place and that there is hardly any experience which may be drawn from the existing organisation (e.g. the NomCom). The actual impact of the new mechanisms which have been set up to improve accountability, transparency and representativeness, can thus be assessed only preliminarily.

Firstly, the issue of the Board’s accountability to all stakeholders relates inter alia to ICANN’s legal form. In this respect the White Paper directed the US authorities to ensure that ICANN should have a Board of Directors which should be accountable to its various stakeholders: the Board, accordingly, “should be balanced to equitably represent the interests of IP number registries, domain name registries, domain name registrars, the technical community, Internet services providers and Internet users from around the world”

Two mechanisms have been created under the new bylaws the objective of which would be to make the Board more accountable. Article IV of the new bylaws creates a Committee for Reconsideration and Independent Review of ICANN’s action and structure. ICANN is to have a procedure in place by which any person affected by an action by ICANN may request reconsideration by the Board (Article IV, Section 2 of the bylaws). This Committee is to make recommendations to the Board with respect to a reconsideration request. The Board, however, is not bound to follow the recommendation of the Reconsideration Committee.

In addition to the Reconsideration process, ICANN is to have in place a separate process for independent third party review of Board actions alleged to be inconsistent with the

bylaws. Requests are to be referred to an Independent Review Panel (IRP) which will be operated by an arbitration provider appointed by ICANN. The IRP has the authority to declare whether an action is inconsistent with the bylaws and to make recommendations to the Board which may delay action or take interim action, until such time it acts upon the opinion of the IRP.

It is too early to assess whether these two mechanisms will trigger adequate evaluation of the Board's performance and render it more accountable to all stakeholders..

Secondly, the issue of transparency has been addressed only indirectly in the context of the new Board selection procedure. The Nominating Committee (NomCom) is a novelty within the ICANN structure. Its practical impact will depend on how the Board selection process effectively works. In 2003, the NomCom has appointed eight Board members and every year thereafter will appoint two to three Board members for seats whose term has expired. As a result the present NomCom determines the composition of the Board to a much larger extent than in the past. The NomCom sets most of its procedures itself.<sup>229</sup>

The question has been raised whether candidates names together with statements of interest and the names of the person who recommended them, should be disclosed. From a transparency standpoint, a list of recommended persons with the names (or numbers) of those who recommended them, may be more important than a list of those who applied as this would show which candidates have support in the community. According to the NomCom, however, "recommendations do not influence the priority of individual candidacies, but they are important for the success of the NomCom candidate recruiting process."<sup>230</sup> The reason given is that "although appointed by Supporting Organisations and other ICANN entities, individual Nominating Committee members are not accountable to their appointing constituencies."<sup>231</sup> It seems accordingly that the underlying assumption is to enable the Board members who are supposed to represent all stakeholders to distance themselves from their originating communities.

NomCom members are appointed for a one-year term, which may be renewed once (Article VII, Section 3 of bylaws). Nomcom members are ineligible for appointment to the bodies for which NomCom selects candidates (Article VII, Section 8). The rule applies also to positions that are filled by other groups, e.g. Board members elected by the SOs. It remains to be seen whether and to what extent these two rules safeguard the NomCom and ICANN against capture.

Thirdly, the issue of ICANN's representativeness has received mixed responses. Two examples are worth mentioning in this respect: the At-Large representation and the Constituency structure.

The reformed ICANN structure has reduced the At-Large representation to a substantially lower level than ever considered before. Instead of the original nine Board seats for At-Large membership, there is now one non-voting liaison to the Board, and this position is appointed annually by the At-Large Advisory Committee (ALAC) and five voting delegates to the Nominating Committee where an absolute majority of votes is held by the SO. In addition, ALAC may designate a non-voting liaison to the GNSO Council. By contrast, the At-Large Study Committee has recommended to the Board in

---

<sup>229</sup> ICANN Nominating Committee: ICANN Nominating Committee Procedures, 10 April 2003 [<http://www.icann.org/committees/nom-comm/procedures-10apr03.htm>].

<sup>230</sup> ICANN Nominating Committee: Frequently Asked Questions, Version 2.1, 29 April 2003, Q. 3.8 [<http://www.icann.org/committees/nom-comm/faqs.htm>].

<sup>231</sup> [<http://www.icann.org/committees/nom-comm/>]

2001 that the number of At-Large directors should be reduced from nine to six.<sup>232</sup> The new At-Large structure should not be dismissed solely on the grounds that it is less representative. However, the participation mechanism is now shaped in a way that makes it difficult for individual users to have some influence in the ICANN policy-making process.

As far as At-Large membership is concerned, it was agreed that it should not be confined to “stakeholders” and should be broad based. Preference has been given in the new bylaws to individuals over organisations: according to Article X, Section 2.4, criteria for establishment of At-Large structures should be established in such a way that participation of individual Internet users will predominate.

It is expected that existing users organisations concerned with the Internet will apply to become At-Large-Structures<sup>233</sup> (ALSs). It is unclear though how individual users can have a voice and effectively participate in policy development through ALSs.<sup>234</sup> What is more, organisational membership bears the risk of capture.

From ICANN’s inception the community of Internet users was considered a special interest group. The consensus was to have an At-Large membership to represent the interests of the Internet users, leaving the SO to represent the interests of the supply side of the industry. Any representational model, however, was felt imperfect. Should there be an At-Large membership in the ultimate decision-making body, e.g. the Board? In the affirmative, how should the At-Large membership on which selection process is established be designed? Should it extend to all Internet users or should it be limited to key users industries? To what extent should At-Large representatives be allowed to participate in the decision-making process?

As part of the reform process, the original idea of a significant and direct Board representation for Internet users has been abandoned. However, some consider, as the ALAC Assistance Group has pointed out, that direct user representation on the Board is the only appropriate mechanism for full individual users involvement in ICANN and “they remain unconvinced that the ALAC approach is the appropriate course of action, or even the appropriate first step towards an organized and representative approach for user involvement in ICANN.”<sup>235</sup>

It is unclear whether the new structure will succeed in providing an effective communication channel for individual Internet users. Firstly, only a limited number of the former At-Large advocates seem to be willing to participate in ICANN through a body that lacks any formal power in the policy making process. Secondly, the proposed regional division of the At-Large organisation imposes an institutional structure on the individual users, which neither corresponds to their experience nor to existing networks. No other constituency in ICANN has adopted such an elaborate structure. The number

---

<sup>232</sup> [[http://www.atlargestudy.org/final\\_report.shtml](http://www.atlargestudy.org/final_report.shtml)]

<sup>233</sup> A LS: Participation of individual users is planned to take place under the supervision of the ALAC, which is responsible for recognising organisations that want to participate, called At-Large Structures (ALSs). These ALSs will be organised in five Regional At-Large Organisations (RALOs). At present the interim ALAC is seeking comment on the proposed accreditation rules for organisations that would like to be part of a RALO. Participation on an individual level is not envisaged.

<sup>234</sup> See: Proposed Criteria and Accreditation Process for At-Large Structures, and Proposed Guidelines for Regional at-Large Organisations’ (RALOs), Memorandum of Understanding (MOU) with ICANN, Draft for Public Comment, 9 April 2003 [<http://alac.icann.org/drafts/draft-als-ralo-9apr03.htm>].

<sup>235</sup> ALAC Assistance Group: Report to the Evolution and Reform Committee, 19 August 2002 [<http://www.icann.org/committees/evol-reform/alacag-report-19aug02.htm>].

of actively contributing members is too low in most of ICANN's stakeholders communities to make a division like the present one, in five regions, workable. It appears therefore difficult to design, as stated in the ICANN-DOC MOU, "a membership mechanism that foster accountability to and representation of the global and functional diversity of the Internet and its users". Conducting elections on a world wide scale to select representatives of the At-large community does not appear to be feasible. At best, the process will lead to the selection of representatives from the most technologically competent section of the population which is interested in DNS issues. There are indeed benefits of having voices speaking for the "elite" of users, but public policy should recognize that they are no substitute for representatives of the general interest.

The Constituency structure has not been dealt with in the context of ICANN reform. The GNSO follows basically the same organisational model as the DNSO, even though the constituencies' relative voting power has been changed. The new voting balance between constituencies "under ICANN contract" (in fact the gTLDs and the Registrars) and those not under ICANN contract is based on a different weighting, which is evidence of capture: pursuant to Article X, Section 5 of the bylaws, the number of votes that representatives of Constituencies "under ICANN contract" may cast is equal to the number of votes of representatives from other constituencies. The GNSO constituencies thus have not the same status anymore. As will be pointed out later on, legitimate, consensual decision-making through means of deliberation, mutual accommodation and compromise, require that all participants have equal voting rights. The new voting rule strikes a power balance, to be sure, but it fails to encourage trust and compromise between the GNSO Council members. It seems therefore rather unlikely that the GNSO will gain more legitimacy than its predecessor.

That being said, the representativeness of the ccTLDs in the new structure seems to have been enhanced.. The ccTLDs have consistently asked for their own SO since they claim their tasks differ substantially from those of the gTLDs. Comments received from the European ccTLDs (CENTR)<sup>236</sup> to the draft bylaws' relevant provision concerning ccTLDs<sup>237</sup> (e.g. ccNSO) suggest that policy issues should continue to be handled at the local level and that ICANN's policy-making role should be confined to the IANA services: while endorsing the concept of an SO, the European ccTLDs consider that only lightweight organisational structures are needed within ICANN (the ccNSO Council structure and the Policy development Process (PDP) are considered too heavy in their design). The role of the ccNSO should remain subsidiary and the Board's role should be confined to ratifying policies developed by the ccNSO or remit them for further work by the SO. In addition, concerns have been expressed about potential conflicts between ccNSO policies and national laws, customs or religion.

An important compromise, however, has been struck with regard to the relationship between the ccNSO and ICANN's Board. The new bylaws provide, under the Policy Development Process mechanism devised for the ccTLDs, that the Board shall adopt any recommendations issued by the ccNSO unless by a vote of 66% it determines that

---

<sup>236</sup> CENTR Response on ERC 5th Supplemental Implementation report, 12 May 2003

[<http://www.centri.org/docs/statements/CENTR-Response-ERC.html>]. The Asian and Pacific ccTLDs have issued a similar, though less critical, statement

[[http://www.aptdld.org/newsite/documents/2\\_1/response\\_20030506.htm](http://www.aptdld.org/newsite/documents/2_1/response_20030506.htm)].

<sup>237</sup> Fifth Supplemental Implementation Report of the Committee on ICANN Evolution and Reform, 22 April 2003

[<http://www.icann.org/committees/evol-reform/fifth-supplemental-implementation-report-22apr03.htm>]

this is not in the interest of the ICANN community<sup>238</sup>. In the event that the Board determines not to act in accordance with the ccNSO recommendation it shall submit the Board decision to the ccNSO Council which shall issue a new recommendation (“Supplemental recommendation”). In the event that the Board does not accept the ccNSO new recommendation, it is not entitled to set policy on this issue and the status quo is maintained until such time as the ccNSO makes recommendation that is deemed acceptable to the ccNSO. In other words, the SO recommendation cannot in this particular case be overruled by the Board.

The new bylaws have also taken into account the concern about potential conflicts with national laws. Pursuant to Article IX, section 4, policies may apply to ccTLDs provided they do not conflict with the law applicable to the ccTLD manager. The bylaws go on to state that implementation of a policy could even be waived in instances where such policy “would require the member to breach customs or public policies” (not embodied in the applicable law described above)

Support of the ccTLDs in favour of the reform process seems to gain momentum. The newly set up Policy Development Process (PDP), if implemented in full, is likely to increase the overall effectiveness of ICANN's policy making procedures. However, there is already evidence for mechanisms to circumvent the PDP.<sup>239</sup>

Overall, the assessment of ICANN's accountability, transparency and representativeness after the reform process remains mixed: while ccTLDs concerns have been taken on board, it remains to be seen whether this and the ccTLDs support of the reform process will translate into formal agreements with ICANN. The question of transparency of what remains a complex decision-making-process does not appear to have been properly addressed. In addition, the question of the most appropriate channels of communications with the At-Large community is still open.

## **1.2. ICANN's contractual relationship with key stakeholders.**

Arguably, one of the purposes of the reform process was to lift the obstacles which led key stakeholders to refuse to enter into contractual arrangements with ICANN. It is too early to assess whether the organisational changes will alter the situation in this respect. The review accordingly will focus on the contractual framework as it stands at the time of the reform process.

The main characteristic of the current DNS is that it is hierarchical. The name space is divided into TLDs, which are divided into second level domains and so on. At the top of the DNS are thirteen root servers listing the IP addresses of the zone files for each of the TLDs, which in turn list the IP addresses for the servers of the second level domains it controls.

The consequences of this structure, as underlined by Jonathan Weinberg<sup>240</sup>, are basically three-fold: firstly, it allows entities or persons controlling a domain space to adopt policies governing registration below it; secondly, control of the root at the top carries

---

<sup>238</sup> See bylaws effective as of 26 June 2003, Annex B, ccNSO Policy Development process (PDP), [www.icann.org/general/bylaws.htm](http://www.icann.org/general/bylaws.htm)

<sup>239</sup> The GNSO's Task Force on new TLDs did not follow the PDP procedure because, from the GNSO Council's point of view, the Board had asked for advice. "The Board has not initiated policy development under the new policy development process."  
[<http://www.dnso.org/clubpublic/gtld-com/Arc00/msg00017.html>].

<sup>240</sup> J. Weinberg, “ICANN, Internet Stability and the new Top Level Domains” draft paper dated January 30, 2002. [<http://www.law.wayne.edu/Weinberg/icannetc.pdf>]

considerable power (i.e. the power to decide which TLDs should be authorized to enter that space); thirdly, there are no legal or technical requirements to use the same DNS and a user may refer to alternative roots using a different set of TLDs, which may be or may not be recognized by the rest of the Internet.

The intention of the US authorities in 1998 was to transfer the management of the DNS system to the private sector. The White Paper of 5<sup>th</sup> June 1998<sup>241</sup> recommended to the US authorities to end direct support to the DNS system and to lay down the principles and policies to guide the transition of the management of the DNS system to the private sector. The whole system resulting from the White Paper implied firstly that the US government would gradually transfer to ICANN full control of the root, secondly that ICANN would have oversight of the registration process and enter into contractual relationships with key stakeholders and thirdly that competition would be introduced. The initial scheme, however, was implemented only in part, as a result, on the one hand, of the USG insistence to retain oversight responsibility over the DNS and policy control over the content of the A root server and, on the other hand, of NSI/ VeriSign resistance to be subordinated to ICANN's authority for the operation of its registries. The question of oversight responsibility over the whole registration process also raises questions from a competition standpoint: to what extent does ICANN represent a monopoly? Is there a possibility, and under which terms, to use alternative roots? What are the competitive conditions for the registries and registrars markets? . We will consider the relationship with US authorities and with the registries/ registrars before assessing the relationship with alternate roots and other competition related issues.

#### 1.2.1. The US Government's control over ICANN.

The USG control over ICANN is exercised through a contractual framework underpinned by the USG control over the content of the A root server. The contractual framework mainly consists of the MOU signed on November 1998 between ICANN and the DOC<sup>242</sup> and amended every year since then and the IANA Agreement entered into between ICANN and DOC<sup>243</sup> in 2000 and renewed twice since then<sup>244</sup>. In the MOU's initial version, only the gTLDs were covered, reflecting the central role played by the gTLDs constituency in its conclusion.

The ICANN-DOC MOU was intended to provide for the gradual transition contemplated by the White Paper of the management of the DNS to the private sector. The White Paper directed the US authorities to "enter into an agreement to establish a process to transfer current US government management of DNS to a new (private) entity". The White Paper further stated that this private entity should have the authority to "set policy for and direct allocation of IP number blocks to regional Internet number registries" and "always oversee operation of the Internet root server system".

---

<sup>241</sup> The US Department of Commerce statement of policy on the Management of Internet names and addresses, 63 Fed. Reg. 31741 (1998) – White paper (5 June 98).

<http://www.icann.org/general/icann-mou-25nov98.htm>

<sup>242</sup> Memorandum of Understanding between the US Department of Commerce and ICANN (25 November 1998).

<sup>243</sup> Contract between ICANN and the US Government for the performance of the IANA function, 9 February 2000, renewed on 21 March 2001. [<http://www.icann.org/general/iana-contract-21mar01.htm>]

<sup>244</sup> There is also the Co-operative Research and development Agreement (CRADA) signed between DOC and ICANN [[www.icann.org/committees/dns-root/crada.htm](http://www.icann.org/committees/dns-root/crada.htm)].

Furthermore this private entity should" oversee policy for determining the circumstances under which new TLDs are added to the root system".

The White Paper also called upon ICANN and WIPO to create a dispute resolution procedure and to implement a shared registration system that would open up the .com, .net and .org TLDs to competing registrars. This implied that, according to the White Paper, these TLDs were not open to competing registrars.

History of amendments to the MOU suggests that, while reaffirming the objective of privatising the DNS, DOC has backed away from its initial intention to transfer the management of the DNS to ICANN entirely. Third countries governments have been keen to point to DOC's failure to live up to its objective of a full privatization. More recently, with the increasing perception that some of ICANN's policy functions conflict with public policy functions which are normally carried out by public authorities, the pendulum has shifted and, increasingly, some of these governments are calling for a greater international oversight.

In its initial version, the MOU does not authorise more than a study on how the DNS system should be transferred to the private sector: the parties agree (see II.B Purpose and V Responsibilities) to "jointly design, develop, and test the mechanisms, methods, and procedures that should be in place and the steps necessary to transition management responsibility for the DNS functions now performed by, or on behalf of, the US government to the private sector not for profit entity" (see II.B Purpose and V Responsibilities).

ICANN's role, according to the MOU in its initial version, was merely to develop procedures for operation and technical management of the Internet system. The MOU clearly stated that the Department of Commerce retained responsibility (Section VB7 of the MOU) for "general oversight of activities conducted pursuant to this Agreement". More specifically the MOU provided (Section VB8) that DOC would maintain oversight responsibility of the technical management of the domain name system until such time as further agreements would be arranged for the private sector to take on the management. The MOU has been amended every year since then and its scope substantially expanded. In the first amendment to the MOU signed on 4th November 1999<sup>245</sup>, ICANN agreed not to amend the standard Registry Agreement without DOC's prior approval and not to make the agreements with a successor registry to NSI without DOC's approval. As will be further emphasised below this reflects the NSI/VeriSign direct relationship with DOC which runs counter to ICANN nominal oversight responsibility over the registration process. It also agreed, in case of termination of the MOU, to assign to DOC all rights in existing agreements with Registries and Registrars.

Amendment 2 (approved 30 August 2000) to the 1998 MOU<sup>246</sup> imposed on ICANN further obligations, including the obligation to pursue formal agreements with the Regional Internet Registries (RIRs) and the country code top-level domains and the continuation of the process of implementing new TLD's.

Under Amendment 3 (entered 25th May 2001)<sup>247</sup>, the three agreements (.com registry agreement, .net registry agreement and .org registry agreement) between ICANN and

---

<sup>245</sup> Amendment 1 to ICANN/ DOC MOU (10 November 1999)

[<http://www.icann.org/nsi/amend1-jpamou-04nov99.htm> ]

<sup>246</sup> Amendment 2 to ICANN/ DOC MOU (10 August 2000)

[<http://www.icann.org/general/amend2-jpamou-07sept00.htm> ]

<sup>247</sup> Amendment 3 to ICANN/ DOC MOU (25 May 2001)

[<http://www.icann.org/general/amend3-jpamou-25may01.htm>]

VeriSign replacing the registry agreement between ICANN and NSI were endorsed by DOC.

Amendment 5 (entered 19 September 2002)<sup>248</sup> reaffirmed the goal of privatising the technical management of the DNS, confirming that the process had not yet been completed. It further restates DOC's obligations in more details (i.e. to encourage the creation of agreements with the RIRs, to promote more effective governmental participation in the GAC).

Amendment 6 (entered 17 September 2003)<sup>249</sup> extends the term of the MOU for an additional three years until September 30, 2003. While acknowledging ICANN's progress in achieving the tasks set forth in the MOU, the Amendment highlights ICANN's responsibility to pursue formal legal agreements with the RIRs and to incorporate their policy-making activities into the ICANN process, to impose transparency, efficiency and timeliness, to continue to develop accountability mechanisms, to achieve stable agreements with ccTLDs. It further directs ICANN to implement an objective process for selecting new TLDs, to implement an effective strategy for multi-lingual communications and to develop a contingency plan to ensure continuity of operations.

The DOC, as a result, has retained control over the content of the authoritative root server: it has remained the ultimate authority for anyone wishing to create a new TLD or to update an existing TLD<sup>250</sup>.

DOC's oversight responsibility is confirmed by the so-called "IANA" agreement entered between the DOC and ICANN. Under the terms of this agreement, which were initially concluded with the Internet Assigned Numbers Authority (IANA), a function of the University of Southern California, ICANN is providing assistance in the administration of the Internet, including assistance on delegation and re-delegation related issues (see below). The first agreement between ICANN and the US Government for the performance of this "IANA" function was concluded on 9<sup>th</sup> February 2000. This agreement was updated on 21 March 2001 and further renewed on 21 March 2003<sup>251</sup>. The transfer to ICANN of the functions previously carried out by IANA takes the form of a purchase order issued by DOC to ICANN for IANA services, a purchase order that is made "without any cost to the United States government" (see Contract 2.1). ICANN, however, is allowed to "collect fees from third parties for the functions performed under this purchase order" provided the fee levels are approved by DOC, on the understanding that the fees reflect the actual cost of providing the services.

---

<sup>248</sup> Amendment 5 to ICANN/ DOC MOU (19 September 2002)  
[\[http://www.icann.org/general/amend5-jpamou-19sep02.htm\]](http://www.icann.org/general/amend5-jpamou-19sep02.htm)

<sup>249</sup> Amendment 6 to ICANN/ DOC MOU (17 september 2003)  
[\[http://www.icann.org/general/amend6-jpamou-17sep03.htm\]](http://www.icann.org/general/amend6-jpamou-17sep03.htm)

<sup>250</sup> Further evidence of this shift in position is provided by Amendment 11 to the Cooperative Agreement entered into between NSI and the US Government in 1992<sup>250</sup> which reaffirms that NSI retains responsibility for the management of the A root server: NSI "shall request written directions from an authorized USG [United States Government] official before making or rejecting any modification, additions or deletions to the root zone file".

<sup>251</sup> DOC apparently opposed to opening the contract for competitive bidding, some ccTLD operators having considered a counter bid.

The terms of the contract make clear that ICANN tasks only include receiving requests for changes to the A root server, not authorizing these changes<sup>252</sup>.

### 1.2.2. ICANN's relationship with the root servers community

There is not yet any formal relationship because the root server operators do not appear to be interested. The whole issue has been addressed in the White Paper process and has been reviewed as part of the formation of ICANN. Under the initial MOU with DOC, it was agreed that both DOC and ICANN would "... develop the mechanisms .... to carry out the following DNS functions:

.....

- Oversight of the operation of the authoritative root server system,
- Collaborate on procedures for operation of the primary root server (modification, additions or deletions).
- Collaborate on a study for making management of the root server system more robust and more secure.

As will be shown below, DOC has backed away from its initial intention to transfer the management of the A root server which is still administered by VeriSign pursuant to a co-operative agreement entered into in 1993 between the US Government and NSI, VeriSign' predecessor.<sup>253</sup>

A model MOU<sup>254</sup> between the root server operators and ICANN is under discussion since 2002. It addresses a certain number of issues, including the conditions under which the roots server operator may be authorised to publish the content of the root zone files. The relationship with ICANN is stable even without any formal contractual arrangement as long as the root server operators self-interest is maintained, which appears to be currently the case.

### 1.2.3. ICANN and the Registries /Registrars.

Prior to ICANN, the relationship with the registries was governed, on the one hand, by the Cooperative Agreement entered into in 1992 between the National Science Foundation (NSF) and NSI for the operation of the three gTLDs (.com, .net and .org)

---

<sup>252</sup> Section 12.3 of the original contract (section 2.1.1.2 of the updated contract) provides that ICANN shall perform the following IANA functions:

"Administrative functions associated with root management. This function involves facilitation and coordination of the root zone of the domain name system. It includes receiving requests for and making routing updates of ccTLD contact and nameserver information. It also includes receiving delegation and re-delegation requests, investigating the circumstances pertinent to those requests, and reporting on the requests.

This function, however, does not include authorizing modifications, additions, or deletions to the root zone file or associated information that constitute delegation or re-delegation of top-level domains. The purchase order award will not alter the root system responsibilities defined in Amendment 11 of the Cooperative Agreement [see below regarding Amendment 11 of the Cooperative Agreement]."

Section 12.5 of the original version or the IANA Contract (section 2.1.1.5 of the updated version) sets forth "performance exclusions": "The performance of administrative functions associated with root management does not include authorizing modification, additions, or deletions to the root zone file or associated information that constitute delegation or re-delegation of top-level domains. The purchase order award will not alter root system responsibilities as defined in Amendment 11 of the Cooperative Agreement."

<sup>253</sup> [www.cavebear.com/nsf.dns/nsf\\_nsi\\_agreement.html](http://www.cavebear.com/nsf.dns/nsf_nsi_agreement.html)

<sup>254</sup> [www.icann.org/committees/dns-root/model-root-server-mou-21jan02.htm](http://www.icann.org/committees/dns-root/model-root-server-mou-21jan02.htm)

and on the other, by guidelines RFC 1591 adopted in 1994<sup>255</sup> setting out general criteria for the operation of the ccTLDs.

With the creation of ICANN, the key substantive policy issue the new entity was faced with was the degree of control it would be able to assert over registries: the first test was the adoption in 1999 of a unified registration policy covering the dominant registry, NSI, which deviated somewhat from the system implied by the White Paper and the MOU (A). A further test was provided by the selection in 2000 of seven new registries and the conclusion of new registry agreements (B).

In addition, the requirement, under Amendment 2 to the MOU, to pursue negotiations of agreements with the ccTLDs led to potential conflict between the powers DOC and ICANN were asserting over ccTLDs and the sovereign rights expressed by some countries over their own ccTLDs (C).

ICANN's authority has further been challenged by the RIRs, which until now have been reluctant to enter in a formal relationship with ICANN (D).

(A) ICANN's contractual relationship with NSI/ VeriSign.

The whole system resulting from the White Paper and the MOU implied that ICANN would enter in contractual relationships with key stakeholders and have oversight of the registration process, and that ICANN would foster the introduction of competition and impose the separation of the registrar and the registry functions. ICANN would have authority over the registrars through an accreditation agreement and the registries would accept registrations only from ICANN accredited registrars.

The scheme implied that NSI, which became VeriSign in 2000, would relinquish its direct relationship with DOC and that it would be subject to ICANN's authority as any other registry. The chronology of events, however, reflects NSI's resistance to being subordinated to ICANN's authority.

Following the adoption in October 1998 of the MOU between DOC and ICANN, NSI and DOC (which by then had assumed the NSF role) entered Amendment 11 to the Cooperative Agreement<sup>256</sup> under which NSI agreed to create the Shared Registration System by which registrars may compete in entering registrations into the .com, .net, and .org registries.

In March 1999, ICANN issued a Statement of Registrar Accreditation Policy<sup>257</sup>, which came from the Draft Guidelines for Registrar Accreditation<sup>258</sup>, for the registrars willing to operate under the .com, .net and .org registries, the impact of which was to shift authority over registrars from NSI to ICANN.

During the same period, DOC concluded an agreement with NSI regulating NSI's economic relationship with the accredited registrars: registrars would pay a 9 \$ fee per registration per year and one-time fee of 10 000 \$ to NSI.

After protracted negotiations with DOC, two sets of agreements were eventually signed on 4<sup>th</sup> November 1999 between DOC, ICANN and NSI concerning the operation of the registries: firstly, an amendment (Amendment 19) to the DOC-NSI Cooperative Agreement<sup>259</sup> confirming that NSI will abide by ICANN policies has been entered into on

---

<sup>255</sup> [www.isi.edu/in-notes/rfc1591.txt](http://www.isi.edu/in-notes/rfc1591.txt)

<sup>256</sup> [www.icann.org/nsi/coopagmt-amend11-07oct98.htm](http://www.icann.org/nsi/coopagmt-amend11-07oct98.htm)

<sup>257</sup> [www.icann.org/registrars/policy\\_statement.html](http://www.icann.org/registrars/policy_statement.html)

<sup>258</sup> [www.icann.org/singapore/draftguidelines.htm](http://www.icann.org/singapore/draftguidelines.htm)

<sup>259</sup> Amendment 19 to Cooperative Agreement between NSI and the US Government, 4 November 1999. [[www.icann.org/nsi/coopagmt-amend19-04nov99.htm](http://www.icann.org/nsi/coopagmt-amend19-04nov99.htm)]

4th November 1999; secondly an agreement between DOC and ICANN was concluded on 10<sup>th</sup> November 1999<sup>260</sup> with a view to regulate the operation of the .com, .net and .org registries. Amendment 19 to the DOC-NSI Cooperative Agreement was attached to the DOC-ICANN agreement forming an integral part of this agreement.

While recognizing ICANN's authority, NSI did not give up its direct relationship with DOC.

NSI agreed to operate the registries in accordance with the 'Registry Agreement' developed by ICANN<sup>261</sup> and not to deploy an alternate root<sup>262</sup>. ICANN accepted to licence the operation of the three registries to NSI/ VeriSign for a term of four years. This term could be extended for a further four years provided NSI completed "the legal separation of ownership of its registry business from its registrar business by divesting all assets of one of those businesses" within 18 months after signature "to an unaffiliated third party" (Article 23). Upon expiration of the Agreement, ICANN would conduct a process for selecting a successor registry, in which NSI may compete on an equal basis. In view of this, ICANN was to adopt, not later than one year prior to the end of this Agreement an "open, transparent procedure for designating a successor registry". NSI also agreed to provide equivalent access to its Shared Registration System (SRS) to all registrars accredited by ICANN (including NSI acting as a registrar) and to ensure that the revenues and assets of the registry are not utilized to advantage NSI's registrar activities (article 17 of NSI-ICANN Agreement).

The economic relationship with accredited Registrars was also regulated: the fees charged by NSI/ VeriSign to the registrars were reduced from 9 \$ (under the previous terms of the Co-operative Agreement) to 6\$ per registration-year for the term of the Registry Agreement. The fee may be increased to cover increases in the registry's net costs resulting from ICANN policies. On the other hand, NSI's "retail price" charged as a registrar to the end user registrant was deregulated (from the 35\$/ name-year fixed by the Co-operative Agreement).

NSI Registrar fees of \$1.25 million will be pre-paid to ICANN and capped at \$2 million. ICANN's authority on the other hand was subject to certain limitations<sup>263</sup>. ICANN was contractually obligated to the registry and accredited registrars to comply with procedural requirements governing the exercise of its authority (definition of a consensus requirement for action by ICANN, etc.). The agreement explicitly defines the scope of ICANN's authority with respect to the registry and registrars. ICANN's authority to set policy for the registry may be terminated if it breaches the Registry Agreement and fails to remedy it or if DOC withdraws its recognition of ICANN.

Noteworthy is the leverage given to NSI over ICANN's financial policies as the fees imposed on registrars must be approved by the registrars that pay two thirds of the fees, which is the case of NSI.

In return, NSI's direct relationship with DOC was confirmed. NSI will continue to manage the A root server under the guidance of DOC. The possibility of transferring the

---

<sup>260</sup>ICANN- NSI Registry Agreement, November 10, 1999.

[[www.icann.org/nsi/nsi-registry-agreement-04nov99.htm](http://www.icann.org/nsi/nsi-registry-agreement-04nov99.htm)]

<sup>261</sup> See fact sheet prepared by DOC summarizing the key provisions of this agreement :

[www.ntia.doc.gov/domainname/agreements/summary-factsheet.htm](http://www.ntia.doc.gov/domainname/agreements/summary-factsheet.htm)

<sup>262</sup> Further evidence of this commitment is provided by the selection criteria for the introduction of new gTLDs published by ICANN on 15<sup>th</sup> August 2000 and referred to hereunder: one of the selection criteria relates to the commitment by the applicants not to deploy alternate roots.

<sup>263</sup> [www.ntia.doc.gov/ntiahome/domainname/agreements/summary-factsheet.htm](http://www.ntia.doc.gov/ntiahome/domainname/agreements/summary-factsheet.htm)

management of the root server to ICANN at some point in the future, however, was not excluded. This specific link was confirmed by Amendment 1 to the ICANN-DOC MOU signed on 10<sup>th</sup> November 1999 and which has already been referred to above: agreements by ICANN with NSI successor registries cannot be made without DOC's approval.

The registry agreements were complemented by a set of three documents defining the relationship with registrars:

- The Registrar Accreditation Policy Statement and Draft Guidelines<sup>264</sup>.
- The registrar accreditation model agreement between ICANN and all registrars registering names in the .com, .net and .org area<sup>265</sup>.
- The registrar license agreement between NSI and all registrars<sup>266</sup> active in the .com, .net and .org domains. The objective of this Agreement is to license to registrars the use of the relevant software that will enable them to register second-level domain (SLD) names through the Shared Registration System established by VeriSign.

These agreements establish basic registrar obligations that permit ICANN:

- to maintain durable and universal connectivity of names registered with accredited registrars (in case of failure by registrars)
- to protect consumers by setting forth standards for the protection of personal data
- to achieve fair competition. To achieve this goal, the DNS market has been segmented in registries, which are responsible for maintaining the TLD's zone files (containing the name of each second level domain in that TLD and each corresponding IP number) and registrars, which act as an interface between domain name holders and the registry. The introduction of competition is contemplated at the registrar level, the need of unified operations of the registry being put forward to exclude it at the TLD level.

The Accreditation Guidelines provide for eligibility criteria of prospective registrars: they are required to demonstrate their basic business and financial capabilities to act as registrars, they may not have been disqualified from accreditation due to past violation of ICANN standards.

The registrar accreditation model agreement subjects the registrar, in return for accreditation by ICANN, to the following obligations:

- (1) Submission, in accordance with Article II.E, of all registration data, including contact data, for each second level domain (SLD) registered to the registry. The Registrar must also maintain its own electronic copies of submitted data. The Registrar must also keep records concerning dealings with customers.
- (2) Public access, pursuant to Article II.F, to data on SLD registrations (Whois services). The question has been raised whether requiring accredited registrars to

---

<sup>264</sup> Statement of Registrar Accreditation Policy, adopted March 4, 1999 [[www.icann.org/registrars/policy\\_statement.html](http://www.icann.org/registrars/policy_statement.html)]; Guidelines for Accreditation and for the Selection of Registrars for the Shared Registration System for .com, .net and .org domains [[www.icann.org/Singapore/draftguidelines.htm](http://www.icann.org/Singapore/draftguidelines.htm)]

<sup>265</sup> Registrar Accreditation Agreement, November 4 1999 (applied to registrars accredited only in com, .net, .org). [[www.icann.org/nsi/icann-raa-04nov99.htm](http://www.icann.org/nsi/icann-raa-04nov99.htm)]. This agreement was complemented by the Registrar Accreditation Agreement, 17 May 2001, which applies to registrars in .biz, .info and .name, and to electing registrars in .com, .net and .org.

<sup>266</sup> Registrar license and agreement [[www.ntia.doc.gov/ntiahome/domainname/fla42199.htm](http://www.ntia.doc.gov/ntiahome/domainname/fla42199.htm)]

operate Whois services would raise fixed costs. Some have raise the concern that this would limit competition.

(3) Compliance with all ICANN adopted policies ("Consensus policies").

(4) Compliance with specific requirements in terms of competition. In Amendment 11 to the NSI-DOC Cooperative Agreement, NSI which was serving both as a registry and a registrar, agreed to provide all accredited registrars with equal access to its registry services, provided they have acquired the license from NSI for the Shared Registration System. The accreditation model agreement contains additional provisions requiring that, if the registry also acts as a registrar, it must abide by specific additional requirements to promote competition: two of these provisions preclude the registrar operating a registry from exploiting its superior access to registry data to its competitive advantage (it may not have access to data concerning the expiration date of registrations inserted in the registry by other registrars, or concerning the level of registry activity). A further provision requires that the registry treat registration submissions from the various registrars on an equitable basis. Specifically, available domain names should be initially registered by registrars on the first-come/first-served basis and domain name holders should be afforded the opportunity to renew their registration through the registrar of their choice.

(5) Adherence to ICANN's policy and procedure for resolution of disputes concerning SLD names.

(6) Application and accreditation fees: application fees which are non refundable and intended to reflect ICANN's costs of processing, may not exceed \$1 for each registration completed.

Three sets of conclusions might be drawn from this review. Firstly, NSI still enjoys a preferential regime, which, one must recognize, ICANN has been forced to accept. Secondly, while the selection of a successor registry ensures in theory that NSI competes on an equal footing, the fact that NSI has proprietary rights in the SRS makes it more difficult for ICANN to terminate its contract and select another registry; Thirdly, the implementation of the registry agreement has for a long time raised questions about the introduction of effective competition at the registrar's level. Only recently did NSI divest its registrar business<sup>267</sup>.

(B). The selection of new gTLDs and the conclusion of new Registry agreements. The question of the addition of new gTLDs was one of the most important issues facing ICANN as soon as it was created. The objective was to enhance competition among registries and to improve the utility of the DNS. In contrast to John Postel's earlier proposal to add hundreds of new gTLDs, the consensus which emerged within ICANN was in favour of adding only a limited number. This reflected the concerns of the business community and trademark holders which were seeking to prevent higher policing costs resulting from a large expansion of the name space<sup>268</sup>. Neither the decision on the principle of an addition nor the criteria for the selection of new gTLDs gave rise to an extensive debate within ICANN. The criteria were in fact proposed by ICANN's own staff, the DNSO, which had been instructed to formulate recommendations, failing to come up with a proposal.

---

<sup>267</sup> See [http://news.com.com/2102-1025\\_3-5092316.html](http://news.com.com/2102-1025_3-5092316.html) ( 16/10/2003)

<sup>268</sup> For a detailed description of the process leading to the selection of nex gTLDs see J. Weinberg., op. cit. *supra* n. 233.

The selection criteria were published by ICANN on 15<sup>th</sup> August 2000<sup>269</sup>. The applicants were required to submit information on their business model and technical capability, together with information on the policies and procedures they would apply to the new TLD (enhancement of competition; protection of intellectual property rights, etc.) as well as information on the TLD label (string of letters identifying the new TLD such as .com, .net). In assessing these different aspects due consideration should be given to the following criteria:

- The need to maintain the Internet's stability: "the introduction of the proposed TLD should not disrupt current operations, nor should it create alternate root systems, which threaten the existence of a globally unique public name space". ICANN's requirement that all applicants, for approval of a next gTLDs registry, first agree not to create alternate roots, is an exclusive dealing requirement which might be suspect under EC competition law.
- The enhancement of competition with other registration services. Examples of competitive issues that have been considered in evaluating the proposals are provided in the Guidelines.
- The protection of rights: due care should be taken by the applicant with respect to a number of specific issues .

The selection process gave rise to criticism. The criteria were considered not sufficiently explicit. It appeared in fact that they were not intended to be rigid rules, only guidelines to be followed by applicants and that the comparison between the different proposals proved necessarily subjective.

The awards went to a very limited number of market participants which had already close ties with ICANN. NSI/ VeriSign and Register.com, the second largest registrar after NSI/ VeriSign formed a consortium, Afilias, which successfully bid for .info.

Register.com also received the TLD .pro. The requirement to show expertise seems to have given an advantage to the incumbent operator.

Following the controversy which surrounded the 2000 selection process, an attempt was made to make the selection criteria more explicit. On 25<sup>th</sup> March 2003 amended rules of selection were published by ICANN . The rules would apply to "sponsored" TLDs only, i.e. specialized TLDs that have a sponsor representing a narrower community. As it emerges from ICANN's latest consultation document, the proposed selection criteria are more technically oriented and have been weighted. In addition evaluation would be referred to several external teams. Most salient criteria may be summarized as follows:

- (1). The need to maintain the stability of the Internet should be assessed in light of the technical capabilities of the applicant (performance level commensurate with standards of other TLDs, past experience with registry operation, ability to ensure continuity of operation in the event of business failure),
- (2). The need to conform with the requirements of a sponsored TLDs (definition of and responsiveness to the community it intends to serve),
- (3). The value the new TLDs would add to the DNS,
- (4). The demographic and economic reach of the community the TLD intends to serve, a preference being given to the broadest ones. The underlying assumption, as for the "open" TLDs, is that only a limited number of sponsored TLDs should be added.

---

<sup>269</sup> Criteria for assessing TLD proposals, 15 August 2000.[ [www.icann.org/tlds/tld-criteria-15aug00.htm](http://www.icann.org/tlds/tld-criteria-15aug00.htm)]

(5). The protection of Intellectual Property rights, with, inter alia, the commitment to adhere to ICANN's UDRP.

After the 2000 selection process, new Registry Agreements have been signed including with VeriSign, on 25th May 2001<sup>270</sup>. The Agreements concluded with VeriSign require it to give up control of the .org and the .net registries in 2003 and early 2006 respectively. In return VeriSign remains the sole operator of the .com registry for four years (Article 1 of the .com Registry Agreement) and has a preferential right for renewal of the agreement thereafter. Pursuant to Article 25 of the .com registry agreement, ICANN is to consider VeriSign's renewal proposal first before calling for competing proposals and is to award the new agreement to the incumbent registry "unless ICANN demonstrates that it is in breach of its obligations and has not provided a substantial service to the Internet community in its performance under the Registry Agreement". No similar provision exists in the case of other registry agreements the renewal of which is open to full competition: e.g. in the case of the .biz Registry agreement ICANN must consider the proposal of the incumbent operator first but it is not bound, as in the case of VeriSign, to accept it if it has performed satisfactorily.

VeriSign, as in the 1999 Agreement, agreed to provide registry services on comparable terms (Article 3) and to enter into agreements with any ICANN accredited registrar under the Shared Registration System. Further and more specific commitments compared with the 1999 Agreement have been entered into to ensure fair treatment of ICANN accredited registrars: VeriSign may not act as a registrar with respect to the TLD. This does not preclude, however, an affiliate of VeriSign from doing so. VeriSign may not use revenues to advantage registrars that are associated with it (Article 23).

As far as ICANN funding is concerned, VeriSign agreed to pay a fixed "Registry-Level Fee" of \$ 100 000 per year and a variable "Registry-Level Fee" based on the size of its business, with a cap on the total fees of \$ 5 500 000 the first year, increased by 15% each year thereafter (Article 7). Similar provisions with fees at the same level exist in other registry agreements signed in 2001. As a result of the fee cap, VeriSign pays a smaller proportion of its revenues in fees.

Concerning registry data, as in the previous agreement, up-to-date data concerning domain names and name server registrations maintained by Verisgn are to be made available to the public free of charge (Article 11). VeriSign may not impose terms and conditions on use of the data provided.

On 21 March 2002 VeriSign requested amendments to the Registry agreements to allow it to conduct a twelve-month trial of a proposed wait-listing service (WLS) for non-renewed domain names and to be offered through accredited registrars for an annual fee. The service will allow people who want a domain name that someone else owns to pay for the privilege of being first in line to snap it once it expires. The request was approved by the Board. It raises, however, concerns as it tends to eliminate competition in the market for non renewed domain names<sup>271</sup>.

To sum-up, the more favourable treatment which VeriSign continues to enjoy reflects a situation which, to a certain extent, ICANN has been forced to accept. This raises some questions from a competition standpoint: while competition, as reflected under Part II.A of the study, is increasing at the registrar level, some concerns remain at the registry level.

---

<sup>270</sup> .com, .net and .org Registry Agreements, 25 May 2001.[ [www.icann.org/general/agreements.htm](http://www.icann.org/general/agreements.htm)]

<sup>271</sup> On 15 July 2003, Pool.com filed a statement of complaint with the Superior Court of Justice, Ottawa, claiming that the Wait List System operated by VeriSign and approved by ICANN would affect competition among Registrars for dropped and deleted names.

(C). ICANN policy towards ccTLDs;

As indicated under Part I of the study, ccTLDs are mostly used for Internet addresses that are specific to a country and usually utilise two-letter codes that appear on a list prepared by the International Organisation for Standardization (ISO)<sup>272</sup>. ccTLDs have been the subject of particular attention in the ICANN's reform process, leading to the creation, under the reformed structure, of a ccNSO directed at matters of general policy affecting ccTLDs.

Unlike the gTLDs, which are operated under rules set by ICANN based on the registries agreement between ICANN and the registries, most of the ccTLDs are separately operated under rules of each ccTLD and are only subject to common basic policy and technical requirements for TLD delegation, re-delegation in a document prepared by Jon Postel in 1994<sup>273</sup>, known as RFC 1591, amended in 1999 by ICANN and referred since then as ICP-1<sup>274</sup>. It is only recently that ICANN, in accordance with the amendments to the MOU signed with DOC, has been attempting to conclude formal agreements with ccTLDs that would cover stricter and more detailed rules.

Some authors have expressed the concern that the power relationship between ccTLDs and ICANN is very unequal. E.g. according to von Arx and Hagen<sup>275</sup> "ICANN's powers threaten a ccTLD with annihilation and the potential re-delegation provides ICANN with a mechanism to ensure compliance with ICANN policies". It should be pointed out that "annihilating" a ccTLD would be very costly for ICANN, and the fact that ccTLDs have over the years refused to recognize ICANN's authority on some matters and refused to pay the fees, shows that the power might not be that un-equal.

The key issue USG and ICANN have been faced with is the concern of sovereignty expressed by some countries over their own ccTLD. The amended bylaws, as already indicated, have taken into account (Article IX, Section 4) the concern of potential conflict with national laws. It is unclear whether this will apply to cc delegations/re-delegations issues.

(C.1). The potential conflict between DOC/ICANN's authority and national States authority over delegation/re-delegation issues.

The US Government's powers over ccTLDs stem from its ownership of the A Root zone file<sup>276</sup>. The source of ICANN's powers over ccTLDs is its ability to make recommendations to DOC about delegations and re-delegations of ccTLDs. Although, from a formal point of view, DOC has control over ccTLD re-delegations, it appears that in practice it follows ICANN's recommendations.

Originally ccTLDs were delegated without a formal contract. ICANN's practice with respect to ccTLDs was based on ICP-1 which provides only a set of basic principles and says very little about the registry's technical operation.

---

<sup>272</sup> .uk is an obvious example of an exception. It is not on the ISO list and registration is open to any applicant regardless of geographic origin.

<sup>273</sup> RFC 1591 Domain Name System Structure and Delegation [[www.faqs.org/rfcs/rfc1591.htm](http://www.faqs.org/rfcs/rfc1591.htm)].

<sup>274</sup> ICP-1 : Internet Domain Name System Structure and Delegation (ccTLD Administration and Delegation). [www.icann.org/icp/icp-1.htm](http://www.icann.org/icp/icp-1.htm).

<sup>275</sup> "Sovereign Domains. A declaration of independence of ccTLDs from foreign control", IX Richmond J'l of Law and Technology, (Issue No. 1, Fall 2002).

<sup>276</sup> The last paragraph of ICP-1 reaffirms this authority: "The primary root zone file is currently located in the A root server, which is operated by Network Solutions, Inc. (NSI), under a cooperative agreement with the U.S. Government. Changes to the root zone file are made by NSI according to procedures established under Amendment 11 of that cooperative agreement."

Pursuant to ICP-1, each ccTLD needs to have a technical contact and an administrative contact (in a few cases they are the same person). ICANN can and does make recommendations to the DOC with regard to requests they have received for replacement of those contacts. ICP-1 further states that TLD Managers "are trustees for the delegated domain, and have a duty to serve the community. The designated manager is the trustee of the TLD for both the nation, in the case of ccTLDs, and the global Internet community. Concerns about 'rights' and 'ownership' of domains are inappropriate. It is appropriate, however, to be concerned about the 'responsibilities' and 'service' to the community".

ICANN's recommendations regarding requests they have received for the possible replacement of the managers of a ccTLD should be based on a number of factors that are designed to ensure the sound operation of the Internet (Identification of a TLD manager with the requisite skills and authority; fair treatment by the manager who must apply the same rules in a non-discriminatory way; revocation in case of misconduct or violation of policies). Although one of those factors is the wish of the government of the country involved, it has been made clear that under the current governance structure no foreign government "owns" its ccTLD or can order ICANN or the DOC to take any actions with respect to a ccTLD.

Best practices guidelines (dated 20 May 2001) on how to operate a ccTLD complement this policy statement.

In accordance with the MOU signed with DOC, ICANN is currently attempting to conclude agreements with the ccTLDs operators (II.C.7 Amendment 5 to ICANN-DOC MOU). Until recently most of the ccTLDs, however, did not arrive at a mutually acceptable agreement with ICANN. Divergence of views remains as to the level of the financial contribution to be made to ICANN and to the representation of ccTLDs within ICANN.

Only eight ccTLDs have so far concluded written agreements with ICANN<sup>277</sup>. Key provisions of one of the already concluded agreements may be summarized as follows:

- Recognition by ICANN of the ccTLD organisation as the manager of the Delegated ccTLD.
- Authoritative-Root Database: ICANN agrees to maintain and publish all relevant information about the ccTLDs in the Authoritative Root-Server System.
- ccTLDs obligations: to operate the ccTLD in a stable and secure manner and to abide by ICANN policies developed in connection with ccTLDs.

The compromise struck on ccNSO in the new bylaws, under which the ccNSO recommendations cannot be overruled by the Board should normally facilitate the conclusion of formal agreements with ICANN.

While aiming at common practices, ccTLD administration needs also to be in line with the legal requirements of the specific countries to which they are located. Policy comparison in ccTLD administration reveals different approaches<sup>278</sup>:

- Location and nationality requirements: within OECD countries, 17 ccTLDs impose nationality requirements and 12 local address requirements. Nationality requirements mean that applicants must have the same nationality of the country where they want to register a ccTLD domain name or, if the application is made by an organisation, the requirements may specify that the entity must be registered under relevant laws of

---

<sup>277</sup> Afghanistan, Australia, Burundi, Japan, Kenya, Laos, Malawi and Sudan.

<sup>278</sup> [www.itu.int/itudoc/itu-t/workshop/cctld/043r1.html](http://www.itu.int/itudoc/itu-t/workshop/cctld/043r1.html)

the country. Location requirements may raise questions of compatibility with the EC Treaty rules on intra-EC trade.

- Application limits: some 18 ccTLDs within OECD impose number restrictions on registrations.
- Trademark policy: all ccTLDs in the OECD provide for some trademark policy. In 2001, following the recommendations aimed at solving intellectual property conflicts in the gTLDs, WIPO adopted specific guidelines for ccTLDs administrators setting out minimum standards for the prevention and resolution of IP disputes in the ccTLDs.
- Information availability: though not directly subject to ICANN rules, registries usually provide the Whois service; there are however differences in the scope of information being made available.
- Privacy regulations: some countries do not allow personal data to be publicly available on the Whois.

More importantly, ICANN's policies might run into conflict with national policies, several countries claiming sovereignty over their own ccTLDs. Concerns over national sovereignty culminated with the issuance in 2000 by GAC of a communiqué establishing principles of delegation and re-delegation for ccTLDs<sup>279</sup>.

Several EU Member States claim that ccTLDs are a public resource subject to their national requirements and authority. These claims ignore that the ccTLDs are from a technical standpoint a sub-domain of the root domain administered by the US Government.

In the case of France, the ccTLDs for the French territories are considered a scarce resource subject to the authority of the Telecommunications Minister. A new draft legislation ("Projet de loi sur l'économie numérique") even considers that the ccTLD form an integral part of the French territory<sup>280</sup>. The consequences are two-fold: Firstly, the French authorities claim exclusive supervisory authority to appoint the ccTLD manager. Pursuant to Article 34-11, Code des Postes et Telecommunications, "The Minister for telecommunications shall designate the entity responsible for allocating the domain names within the top-level domains of the Internet domain names addressing system, corresponding to the national territory".

Noteworthy is the fact that the ccTLD is considered a telecommunication resource and as such is subject to the general conditions for allocation of telecommunication resources.

It is further provided that the entity responsible for allocating the domain names shall not confer any intellectual property rights over the domain names.

Secondly, in the event that the entity should cease its activities, the State has the right of use of the domain name database the entity previously managed. The Minister may also decide to withdraw the designation of an entity in the event that it is found not to comply with the Code des Telecommunications.

(C.2). Proposals for an internationalization of USG's oversight functions.

---

<sup>279</sup> Principles for Delegation and Administration of ccTLDs presented by GAC, 23 February 2000 [[www.icann.org/committees/gac/gac-cctldprinciples-23feb00.htm](http://www.icann.org/committees/gac/gac-cctldprinciples-23feb00.htm)]

<sup>280</sup> see contribution n° 34 to ITU workshop on ccTLDs, Geneva 3-4 March 2003. All texts of contributions may be found at following address:  
<http://www.itu.int/itudoc/itu-t/workshop/cctld/index.html>

Various proposals have been tabled with the common aim of enabling ccTLDs to reassert control over their own policy developments. With the new-bylaws now meeting some of these concerns the question remains whether and to what extent this would affect ICANN's delegation/re-delegation issues. The question of the oversight over the A Root server remains open.

Several proposals towards internationalization have been made or are conceivable. They propose to shift DOC's oversight function to an international body. This could be done in two stages: firstly, countries would assert control over TLDs within their own legal and constitutional frameworks; secondly, they would negotiate an international regulatory framework within which their sovereignty over the ccTLDs would be recognized. This would entail a form of internationalization of the A Root server.

Another proposal would be to enhance the country representation within ICANN. A first measure has been the creation of GAC. A number of questions arise: should GAC's role be strengthened and how? Can the issue of country representation be addressed within the existing structure with GAC only acting in an advisory capacity? Does it suffice for example to adapt the decision making process, for example by making GAC's opinion binding on the Board? Or is a more radical reform needed to ensure oversight of countries representation?

#### (D). The relationship between ICANN and the RIRs

The regional Internet registries (RIRs) distribute the IP address space they receive from IANA and allocate it further to local Internet registries (LIRs) who then assign address space to end users. The RIRs have been established following an initiative by IETF in 1992 (through RFC 1466, which proposes implementation of the recommendations RFC 1174, 1990). RIPE NCC and APNIC were established shortly afterwards, in 1992 and 1993 respectively. ARIN exists as a continuation of the original InterNIC. The establishment of these three RIRs therefore precedes that of ICANN.

The RIRs have been set up as not-for-profit organisations whose membership consists of ISPs and other stakeholders. Each RIR has an executive Board that is elected by the membership.

As far as RIPE NCC is concerned, the policy for allocating and assigning address space to LIR is described in a document dated June 14, 2002<sup>281</sup>. The address space is distributed according to the following principles:

- (1) Registration: provision should be made of public registry documenting address space allocation. As a result, each allocation and assignment (delegation of authority over a block of IP to an end enterprise) must be registered in a publicly available Whois database.
- (2) Utilisation: because the number of available IP addresses is limited the utilization of address space should be at least 25% and after one year 50% of the address assignment.
- (3) Reservation not supported: It is not permitted to reserve address space.
- (4). Common guidelines: the LIRs that receive the address space from RIPE NCC should adopt allocation policies that are consistent with RIPE's own policy.

The relationship between the RIRs and ICANN are governed by a Memorandum of Understanding (MOU)<sup>282</sup> entered into in the context of the Address Supporting Organisation (ASO MOU) on October 18, 1999 and which defines criteria for

---

<sup>281</sup> [www.ripe.net/ripe/docs/ir-policies-procedures.html](http://www.ripe.net/ripe/docs/ir-policies-procedures.html)

<sup>282</sup> [www.icann.org/aso/aso-mou-26aug99.htm](http://www.icann.org/aso/aso-mou-26aug99.htm)

administering the allocation of IP addresses and confirms ICANN's authority to approve new RIRs.

Further to the MOU, criteria for the establishment of new RIRs have been developed by ASO and adopted by ICANN's Board on 4<sup>th</sup> June 2001<sup>283</sup>. A broader based draft agreement has been released by ICANN on 9<sup>th</sup> April 2002<sup>284</sup>. Key provisions of the draft are as follows:

- Recognition of the RIRs and their rights: the authority of the three Recognized RIRs to allocate and assign Numbering Resources (definition) for their geographical area of responsibility is acknowledged. In addition, each of the Recognized RIRs exercises sole control over its relationship with its members.
- Global addressing policies: support will be given to the formulation of such policies pursuant to the MOU entered into between ICANN and the three RIRs in the context of the Address Supporting Organisation (ASO MOU) on October 18, 1999.
- Provision of Numbering Resources: numbering resources will be allocated by ICANN to the recognized RIRs in line with the Global Addressing Policy defined in the context of the ASO MOU. Upon request for allocation of numbering resources by any of the recognized RIRs ICANN must either allocate the requested resources within 15 days or provide an explanation in case of refusal.
- Financial contributions: the aggregate yearly contribution to ICANN is \$ 428 000 for each of the years commencing on 1 July 1999 and ending on 30 June 2002 and shall be adjusted thereafter.

- Approval of additional recognized RIRs; the parties agree that ICANN has the authority to develop requirements for the approval of additional Recognized RIRs. The RIRs have so far been reluctant to sign. Their views on how their relationship with ICANN should be structured significantly depart from that reflected in ICANN's draft criteria. In a position paper released in 2002 on ICANN's reform process<sup>285</sup>, they held the view that direct responsibility for the operation of the address management process, including but not exclusively IANA operational function (e.g. maintaining the IANA Address Registry) should be transferred to the RIRs and that ICANN's role should be confined to oversight of the ASO process. The underlying assumption is that, from policy, technical and operational standpoints, the address organisation is distinct from that of the names organisation. The oversight function, under the RIRs proposal, should be limited to ensuring that the RIRs and ASO adhere to their stated policy. The ASO, as a result, should be granted responsibilities far beyond those granted to it under ICANN's latest bylaws: it would be entrusted with the tasks of defining the RIRs global policy and would not be subject to ICANN's Board review unless the RIRs do not follow their own documented procedure. Recognition of new RIRs should be delegated to the ASO and the recognition of additional RIRs would become an ASO function.

#### 1.2.4 ICANN's relationship with alternate roots.

The question of competing roots has generated major controversies within ICANN. There are currently several alternative root providers which claim to represent 20% of

---

<sup>283</sup> ICP-2/ Criteria for Establishment of New Regional Internet Registries (4 June 2001).

[<http://www.icann.org/icp/icp-2.htm>]

<sup>284</sup> Draft ICANN-RIR Relationship Agreement, 9 April 2002.

[<http://www.icann.org/general/draft-icann-rir-agreement-09apr02.htm>]

<sup>285</sup> <http://www.ripe.net/ripencc/about/regional/nrr-blueprint-20021009.html>

the Internet users<sup>286</sup>. The questions we need to address are three-fold: What is the value of adding competing roots to the DNS? What has been ICANN's policy towards alternate roots? What forms does competition with alternate roots take? Why have alternate roots not really taken off?

The value of adding competing roots, according to some scholars<sup>287</sup>, is fuelled by the fact that ICANN has maintained rarity in adding only a limited numbers of gTLDs to the root.. However, as indicated under Part II of the study, creating new TLDs not necessarily reduces scarcity (some argue that only the addition of specialized TLDs would appear to be beneficial).

It has been further argued that the value of the service provided by an alternate root depends on the possibility to interconnect separate roots or at least to make them compatible. Uncoordinated root zones, it is claimed, would not be economically workable over the long term.

The next issue we need to address is ICANN's stance vis-à-vis competing roots. ICANN's policy is enshrined in a 1999 Internet Architecture Board's (IAB) statement, which has been endorsed by ICANN as RFC 2826 in 2000. The underlying assumption is that the DNS was designed with only one authoritative root zone file. It states that "it is not technically feasible for there to be more than one root in the public DNS". It does not provide guidance as to how ICANN should answer the question of compatibility with alternate roots.

In practice, it seems that root competition has not given rise to some sort of co-ordination. Alternate roots have added new TLDs that do not exist in the A root but would at the same time carry the A root zone and do not make assignments that conflict with it. ICANN on the other side seems to have ignored alternate roots by making, at least in one instance, an assignment that duplicates an existing alternate root TLDs. It seems that ICANN has approved the .biz TLD, while ignoring that an alternate root has already supported a .biz TLD<sup>288</sup>.

In light of this, why have alternate roots not really taken off? As there does not appear to be technical or legal constraints preventing the addition of separate roots, the main reasons seem to be that the alternate roots have failed to achieve critical mass as a result of the "network effect", their lack of financing and sound business practices. On the other hand the relative scarcity maintained by ICANN may have fuelled for a while the development of alternate roots.

It remains to be seen whether relations with alternate roots will continue on the same course, e.g. compatibility on the part of alternate roots and ignorance on ICANN's side. It is unlikely, absent some government's intervention, that it evolves into a mutual recognition of the respective roots contents, with ICANN coordinating its gTLDs assignments with those of the alternate roots, by adding their TLDs to its root zone. Even if it leads to mutual recognition, there is a need to develop criteria for resolving conflicts: one of such criteria might be that a right of first use be recognized. One must also develop methods for conflict resolution<sup>289</sup>. It is not clear whether this should be done through a regulatory mechanism or whether the conjunction of self-interest and the legal systems would be sufficient to manage conflicts.

---

<sup>286</sup> See for example [www.sci.newsfactor.com](http://www.sci.newsfactor.com); K. Kroeker, "Fracturing the Internet with alternate roots", Newsfactor Network.

<sup>287</sup> *Ibid.*

<sup>288</sup> See [www.newsfactor.com/perl/story/20076.html](http://www.newsfactor.com/perl/story/20076.html)

<sup>289</sup> E.g. there has been some talk of an .travel ICANN TLD, whereas New.net already sells .travel domain names.

### 1.2.5 Competitive conditions on the registries/registrars markets.

As has been shown in Part II, separate relevant markets have been considered for ICANN, the registries and the registrars, on which competitive conditions differ. While evidence suggests that the market for registration services is becoming increasingly competitive, some questions remain at ICANN and at the registries level.

At ICANN's level, a policy may raise concerns: the refusal to accredit registrars that are affiliated with alternative or competing roots.

The first question which needs to be addressed is to consider whether ICANN is immune from anti-trust action on account of its lack of autonomy vis-à-vis the USG. Even if this were the case under US law, this would not necessarily mean that it would not be caught by EC competition rules. It is settled case law that the EC competition rules do not apply only where anticompetitive conduct is required by legislation or if such legislation creates a framework which itself eliminates the possibility of competitive activity, placing enterprises under "irresistible pressure" to engage in anti-competitive conduct<sup>290</sup>.

Assuming that ICANN is not immune from anti-trust action, the next question to consider is whether it has had an anticompetitive conduct from an EC standpoint. In this respect, ICANN requiring, and new registries agreeing, not to deal with alternate roots is an exclusive dealing arrangement, which may create antitrust liability since it is entered into by an entity with a significant market power. The relevant market is the market for control of access to the root where ICANN has control of access to the dominant root. This feature coupled with the network effect makes the exclusive dealing entered into with new gTLDs effective. By refusing to accredit registrars which are linked to alternate roots, ICANN makes it more difficult for the latter to achieve critical mass. Further evidence of ICANN's treatment of alternate roots is provided by the handling of the .biz TLD referred to above.

The next step is to consider whether ICANN could escape potential antitrust liability in providing justification for its conduct. In this respect, the argument drawn from the need to ensure the stability of the Internet within the meaning of reliability and reactability is of doubtful value from an antitrust point of view.

At the registries level, the VeriSign "waiting list service", approved by ICANN, may affect competition on the market for non-renewed domain names. There is a market for the registration of domain names that expire and that are not renewed. The proposed WLS would offer to consumers at registry-level wait-list reservations that are guaranteed in the event the existing registration is deleted.

## ***2. ICANN's public policy functions and possible organization models.***

ICANN has been set up using a private sector model while engaging in policy-making and regulation that may in fact pre-empt, or impinge on, public policy functions of Governments. ICANN's mission of co-ordinating the assignment of the three sets of unique identifiers implies that it is not only involved in technical co-ordination but that it is also concerned with policy issues. Policy is usually referred to "as a set of ideas or plan of action followed by a business, a government, a political party or a group of people" (Cambridge Dictionary). It is most usually linked to the public interest and can also mean

---

<sup>290</sup> See in particular ECJ judgment of 11 November 1997, Commission and France v. Ladbrooke Racing [1997] ECR I-6265 and CFI judgment of 18 September 1996, Asia Motor France v. Commission [1996] ECR II-961. For an analysis under US law, see A.M. Froomkin and M.A. Lemley, "ICANN and Antitrust", 200 U.Ill.L. Rev. 1.

“general principles by which a government is guided in the management of public affairs” (Black’s Law Dictionary). ICANN’s technical co-ordination activities and policy related responsibilities are in fact closely intertwined. For example, the award of new gTLDs was an exercise in “discretionary policy making”<sup>291</sup>, not technical co-ordination. Discussions were not simply based on “how best to run a test of the introduction of new TLDs but rather which new domain names would best serve public interests”<sup>292</sup>. Signing on the other hand a standard contract on which consensus has been reached is a more operational task.

Dividing up ICANN’s functions into policy and technical functions is warranted by the fact that the decision making should be different in terms of accountability and transparency. Policy decisions would require public consultation prior to any decision, feedback from the public or all interested parties and reasoned determination. Where public interests are at stake some sort of governmental oversight of such public policy decision is needed to ensure the decision is being made correctly. Technical functions need not being disclosed before decision is taken but must be reported after they have been implemented.

Though in general satisfactory, ICANN’s performance has been criticized for having not carried out properly some of its policy functions. Two series of issues have been raised in this connection: firstly, the extreme complexity of ICANN’s structure which has affected its accountability and transparency and which requires simplification; secondly, public oversight by USG has appeared insufficient. As far as the former is concerned, due consideration have earlier been given to the simplification options which have already been considered. Only the latter issue will be considered below.

Before considering possible alternative organisation models to carry out the oversight function, we will begin by analysing ICANN’s policy functions and by determining whether and to what extent they should be subject to certain disciplines, including international ones, where they pre-empt, or impinge on, public policies..

## **2.1 ICANN policy functions and international disciplines**

The distinction between ICANN’s policy functions and technical ones has proved controversial. The review will be limited to policy functions where a public interest requiring protection is at stake. In this respect, in the preamble to its operating principles, the GAC has identified certain policy objectives<sup>293</sup> which ICANN should take into account:

- (1). Secure, reliable and affordable functioning of the Internet,
- (2). Robust development of the Internet in the interest of the public good,
- (3). Transparency and non discriminatory practices in the allocation of Internet names and address,
- (4). Effective competition at all appropriate levels of activities and conditions of fair competition,
- (5). Fair information practices, including respect for personal privacy and issues of consumer concerns,
- (6). Freedom of expression.

The next question is whether the exercise of these public policy functions should be subjected to some sort of oversight and under which form. Experience could be drawn in

---

<sup>291</sup> see NAIS study: [www.naisproject.org/report/final/1.1.3.shtml](http://www.naisproject.org/report/final/1.1.3.shtml).

<sup>292</sup> *Ibid.*

<sup>293</sup> [www.gac-icann.org/web/docs/operating\\_principles-english.htm](http://www.gac-icann.org/web/docs/operating_principles-english.htm)

that respect from the relationship already established by ICANN with some international organisations.

(A). ICANN's policy and technical functions:

Technical co-ordination carried out by ICANN consists notably of the maintenance of records in the root zone and the application of standard procedures defined by other bodies. A good example is provided by part of the IANA function.

ICANN performs the IANA function, as already indicated, under a purchase order from DOC. This function involves several activities. It consists first of administrative functions associated with root management: handling of cc delegation/re-delegation requests and update of the ccTLDs records in the root zone files. Another part of the IANA function is the maintenance of the protocol parameters, which is essentially clerical, for the Internet Engineering Task force (IETF.) IETF main task consists of creating the relevant standards for the Internet: most of the protocols used in the Internet, which are standards for the transmission of data over the network, have been developed by the IETF; the standard for IP addressing -IPv4- for example has been developed by this organisation . Under a Memorandum of Understanding (MOU) entered into with ICANN on 1 March 2000, IETF has appointed ICANN to perform a set of functions involving assignment of protocol parameters used in IETF standards: ICANN will assign and register Internet protocol parameters only as directed by the criteria specified by IETF. A third part of IANA concerns the allocation of IP addresses.

It is clear from this description that the assignment and the registration of protocol parameters according to predetermined criteria is technical by nature. IETF creates new protocols, each with different technical properties. The registration policies are set by IETF. The procedures are also defined by IETF, but in conjunction with ICANN. The application of procedures is made by ICANN.

The same holds true of the procedures aimed at providing back up of critical data or at ensuring that all data in the root files are accurate, which are also technical.

An example of policy making on the other hand relates to the admission of new TLDs, as indicated above, which is clearly a decision on substantive policies. Under a mere technical co-ordination approach, ICANN's role would have been confined to ensuring compliance with predetermined criteria and selecting all applicants meeting these criteria. Typically, the decision to select additional gTLDs as well as the selection criteria have competition implications and would require oversight by public authorities. It would be expected, in this respect, that the selection process be based on objective and non-discriminatory criteria.

Another example of policy-making requiring oversight is provided by the imposition of regulatory controls via the agreements signed with the registries. These agreements intend , among others, to enforce competition by imposing a vertical separation between registries and registrars. They also impose price controls on registries.

A further example consists of the UDRP which enforces a worldwide system for resolution of intellectual property disputes (UDRP). As has been described, the UDRP is imposed on the registries via the registry agreements and implemented through the registrar accreditation agreements that commit registrants to binding arbitration. Making a judgement on enforcing such a system and agreeing on its scope and content are in themselves substantive issues.

Classifying policy and technical functions may, as a result, be based on certain common features: applying to specific instances decisions based on predetermined criteria would resort to the technical category whereas regulating the use which is made of the domain names is a policy function, which is more discretionary and which applies to a large

number of users. The distinction is not always as clear cut as it appears at first sight- the performance of the IANA function with a mix of both functions providing a good example in that respect. In any case, oversight would be warranted notably in the few examples discussed above.

The next question is whether experience may be drawn from the relationship developed by ICANN with certain international organisations.

(B). ICANN and ITU.

Following the adoption of Resolution 102 by its Plenipotentiary Conference in Marrakesh (2002)<sup>294</sup>, the International Telecommunications Union (ITU) has offered ways to increase its current cooperation with ICANN. As a result, the ITU has convened on 3-4 March 2003<sup>295</sup> a first workshop in Geneva, whose purpose was to review and discuss ITU Members experience with ccTLDs. During this meeting suggestions were made by ITU of possible areas for future cooperation with ICANN.

ITU's potential contribution to the management of the DNS needs to be assessed in light of its competencies and current experience in collaborating with ICANN.

(B.1). ITU's competences and current experience in cooperating with ICANN.

ITU's claim to play a role in the management of the DNS is firstly based on its competencies in the allocation and management of numbering resources in the telecommunication area.

ITU's competencies derive from its Constitution and implementing regulations and resolutions<sup>296</sup>;

Pursuant to Article 1, paragraph 1 (a) of its Constitution, the purposes of the ITU are "to maintain and extend international cooperation among all Member States for the improvement and rationale use of telecommunications of all kind". Telecommunications is defined in the Annex to the Constitution as "any transmission, emission or reception of signs, signals, writing, images and sounds or intelligence of any nature by wire, radio, optical or other electromagnetic systems".

To this end (Article 1, paragraph 2), "the Union shall:

- (a) effect the allocation of bands of the radio frequency spectrum,..... in order to avoid harmful interference between radio stations of different countries,
- (b) co-ordinate efforts to eliminate harmful interference between radio stations of different countries..... ..
- (c) facilitate the worldwide standardization of telecommunication...

To fulfil its mission, ITU is divided into three sectors, the Radio communication sector, the Telecommunication standardization sector and the Telecommunication development sector.

The function of the Telecommunication standardization sector (ITU-T) is to develop non-binding standards covering all fields of Telecommunications and to act as a registration authority for certain numbering resources, for example international country codes for telephone numbers (Recommendation E.164).

ITU-T working methods and procedures are defined by Articles 13 and 14 of ITU's Constitution: a World Telecommunication Standardization Assembly shall set priorities and assign tasks to Telecommunication Standardization Study Groups, which shall develop recommendations concerning standards, a Telecommunication Standardization Bureau (TSB) headed by a Director shall provide secretarial support to the work of ITU-T.

---

<sup>294</sup>Resolution 102 by the Plenipotentiary Conference of the International Telecommunication Union, Management of the Internet domain names and addresses, Marrakesh 2002.

[www.itu.int/osg/spu/resolutions/2002/res102.html](http://www.itu.int/osg/spu/resolutions/2002/res102.html)

<sup>295</sup> ITU workshop on ccTLDs, Geneva 3-4 March 2003 (op.cit.). All texts of contributions may be found at following address:

<http://www.itu.int/itudoc/itu-t/workshop/cctld/index.html>

<sup>296</sup> see Collection of basic texts of the ITU Plenipotentiary Conference, 1999, ITU.

ITU-T's role with respect to the allocation and management of numbering resources is defined in Resolution 20 - first issued by the World Telecommunication Standardization Conference (Helsinki, 1993) and most recently adopted by ITU Member States at the World Telecommunication Standardization Assembly ("WTSA") in Montreal (2000): Resolution 20 states "that the assignment of international numbering and addressing resources is a responsibility of the Director of the TSB and the relevant Administrations"<sup>297</sup>.

ITU's offer to work with ICANN is also based on ITU's collaborative experience in Internet related areas, which it claims to be basically two-fold: firstly, it has contributed to the development of the Internet infrastructure with the adoption of a series of standards on which it is based (for example standards n° X.25, X.509, H.323, H.248, J.112) and where e.g. H.248 was developed jointly with the IETF secondly, as far as domain names and addressing issues are concerned, it has worked together with IETF to implement ENUM.

ENUM is a protocol which converts a telephone number into a domain name that will be recognized by the global domain names system<sup>298</sup>. The protocol relies on the E 164 telephone developed by the ITU as an assumed structure for all the telephone numbers. The telephone number becomes a universal address for any means of communication. The E.164 numbering standard consists of a country code (32 for Belgium), an area code (02 for Brussels) and a local number. ENUM's function would be to convert the E 164 number that will be recognized by the DNS system.

One of the prerequisite is to identify a "root" where all the names will be put. E164.arpa, which is administered by the Internet Architecture Board (IAB) is currently considered to be one possibility, among others.

The benefits of ENUM would be to achieve convergence of the different communications technologies and platforms and to allow the user to be accessible through a variety of communication means. This issue of convergence raises the question of the oversight of numbering and naming and more generally the role ITU might play in the management of the DNS.

#### (B.2). ITU's contribution to the DNS:

Resolution 102 calls for greater co-operation with ICANN in a certain number of areas:

- Development of internationally agreed principles for the administration of the int. domain (which is currently run by ICANN),
- Contribution to the development of general principles guiding the creation of new TLDs
- Contribution to the GAC's reform process with a view to have it formally established by the world's governments.
- Development, in close cooperation with the RIRs and IETF, of recommendations for IP address allocation.

---

<sup>297</sup> Resolution 20 furthermore stipulates that "the principles concerning future numbering and addressing plans to deal with emerging services and relevant number allocation procedures to meet international telecommunication needs will be studied in accordance with the on-going work programme approved by this Conference for ITU-T Study Groups" and that "the relevant Study Groups to provide the Director of the TSB with advice on technical, functional and operational aspects in the assignment, reassignment and/or reclamation of international numbering and addressing resources in accordance with the relevant Recommendations, taking into account the results of any ongoing studies."

<sup>298</sup> J. Hwand and M. Mueller, Economics of ENUM over Cable Broadband Access Networks, June 7, 2002. (The Convergence Center, School of Information Studies, Syracuse University).

ccTLDs re-delegations policy: contribute to the updating of ICP-1 and involve ccTLDs operators, not only governments, in this review process.

Cooperation on relevant Internet domain name and address management issues, such as the transition to IP Version 6 (IPv6), ENUM, and internationalized domain names (IDN);

Some of these suggested areas of cooperation appear to fall within the ambit of ITU, e.g. oversight of naming and numbering system, which assumes increasing importance in view of technological convergence. IN this respect, ITU's function may be paralleled with that of ICANN, which exercises policy control over the naming and addressing system.

In ITU's more traditional ambit of frequency administration, however, its role appears to be confined to technical co-ordination with policy regulation taking place at national level. As indicated by Mueller<sup>299</sup>, national authorities do not simply co-ordinate frequency use; they regulate the industry and attach conditions to the use of these frequencies. Control is exercised through licenses issued to users of a critical resource. In the case of ICANN, regulation of conduct is imposed on Registries and Registrars via agreements. ICANN and DOC's control of the root is used to define policies in several areas: rights over domain names are enforced via UDRP; the supply of domain names is regulated via price controls imposed on registries and the exploitation of data generated by the system (Whois data) is the object of a specific surveillance.

ITU's role clearly shows that they are commonalities with ICANN in term of competence and experience. With its competence in naming and numbering resources, it may provide an example for ICANN with respect to the way in which it carries out its public policy functions. It also demonstrates the advisability of involving the whole users industry in the shaping of decision. This suggests that ITU may offer the expertise it has built up in this respect.

#### (C).ICANN and WIPO.

The objective is to assess the institutional implications of the dispute resolution mechanism developed by ICANN to address conflicts between trademarks and domain names. These conflicts arise from the lack of connection between the system for registering trademarks, which is administered by a public authority on a territorial basis, and the system for registering domain names, which is administered by a non-governmental organisation without any geographical limitation (domain names are registered on a first come-first served basis).

The potential for conflicts has been exploited by persons who register, as domain names for themselves, the trademarks of other persons or enterprises ("cybersquatting"). In addition, conflicts between domain names and trademarks stretch the capacity of the ordinary judicial system which is territorially based and which cannot provide a solution to a conflict with global dimension: enforcement of a foreign judgement in a given country needs what is called an exequatur from a court in said country.- Furthermore, this procedure may be slow and expensive. For practical purposes, parties may feel compelled to bring proceedings in several jurisdictions.

Against this background and on the proposal of the US Government, WIPO issued in April 30,1999<sup>300</sup> a first set of recommendations to ICANN, including the adoption of a

---

<sup>299</sup> Milton Mueller, *Dancing the Quango, ICANN and the Privatization of International Governance*, Convergence on New Technologies and International Governance, John Hopkins University, Feb. 11 and 12, 2002

<sup>300</sup> Final Report of the first WIPO Internet Domain Name Process, April 30, 1999.

uniform administrative dispute resolution for domain names disputes in all open gTLDs. With the exception of the proposals relating to the famous and well known trademarks, ICANN adopted most of WIPO's other proposals into its Uniform Resolution Dispute Procedure (UDRP) on October 24, 1999<sup>301</sup>.

The UDRP appeared to be controversial from its inception. While the US Government called upon WIPO to initiate a process to resolve trademarks/ domain name disputes, there was considerable discussion about its scope and its mandatory character, reflecting the trademark owners objections that it would not serve to adequately protect their interests. The WIPO's final report issued on April 30, 1999 is a scaled down document from the ambitious agenda set in WIPO's Interim report published a year earlier.

ICANN imposed a mandatory dispute resolution procedure on all registrants in the open gTLDs and required that registries only accept registrations from registrants submitting to the UDRP (Paragraph 4 of UDRP). ICANN's insistence on registries/registrars adhering to identical dispute resolution terms raises concerns from a competition standpoint (see (4) above)<sup>302</sup>.

Like WIPO, however, the UDRP is meant to be non binding in that either party can seek judicial redress: pursuant to Paragraph 4 k ("Availability of Court Proceedings"), the mandatory administrative proceedings.... shall not prevent .... the complainant from submitting the dispute to a court of competent jurisdiction for independent resolution before such mandatory proceeding is concluded".

The UDRP further states that if an administrative panel decides that the domain name should be cancelled or transferred to the trademark holder, the decision will be implemented unless the registry receives within ten business days evidence that a lawsuit against the complainant has been initiated . If such evidence is received, the registry will not implement the panel's decision and will not take any further action until the case has been adjudicated.

The scope of the UDRP is limited to a small number of trademark infringements: firstly, it is limited to disputes between trademark holders and registrants (disputes between competing trademarks are excluded); secondly, it only covers cases where the registrant has obviously "no right or legitimate interest" in registering the domain name and thirdly where the registrant is using it in "bad faith".

Like WIPO, the UDRP sets out an indicative list of circumstances which "shall be evidence of the registration and use in bad faith":

- registration of the domain name "primarily for the purpose of selling, renting, or otherwise transferring the domain name registration to the complainant who is the owner of the trademark or service mark",
- registration of the domain name "in order to prevent the owner of the trademark or service mark from reflecting the mark in a corresponding domain name",
- registration of a domain name "primarily for the purpose of disrupting the business of a competitor",
- usage of the domain name to attract Internet users to one's website, "by creating a likelihood of confusion with the complainant's mark".

---

<http://wipo2.wipo.int/process1/report/summary.html>

<sup>301</sup> Uniform Domain Name Dispute Resolution Policy, October 24, 1999.

[www.icann.org/dndr/udrp/policy.htm](http://www.icann.org/dndr/udrp/policy.htm)

<sup>302</sup>for a complete analysis see Michael Fromkin, "ICANN's Uniform Dispute Resolution Policy- Causes and partial cures", 672, Brooklyn Law Review, (Nr. 3, 2002)

Unlike WIPO, the UDRP specifies defences that demonstrate the registrant's rights or legitimate interests to the domain name (Paragraph 4.c.):

- the use or the preparation to use, before any notice of the dispute, the domain name in connection with a bona fide offering of goods or services,
- the fact that the registrant has been commonly known by the domain name, even if he has acquired no trademark or service mark rights,
- the fair and legitimate non commercial use of the domain name, without intent of commercial gain to misleadingly divert consumers.

The remedies available under the UDRP procedure are limited to the transfer of the domain name from the registrant to the trademark owner and the allocation of the costs of the procedure (to the exclusion of attorney's fees) against the losing party. The suggestion by trademark owners that money damages or at least attorney's fees should be awarded was not ultimately adopted. The alternative remedy of requesting cancellation of the domain name is of little value since it frees the domain name for re-registration by other potential "cybersquatters".

A major consequence of the UDRP limitation in scope is that it excludes claims based on other identifiers, including personal names, geographical names, international non-proprietary names for pharmaceutical substances and names for international organisations.

These shortcomings have led WIPO to initiate a second process aimed at examining the bad faith and misleading registration and use of those other identifiers as domain names. A second report was released on September 3, 2001. While acknowledging the misuse of these identifiers in the DNS, WIPO considers that these shortcomings cannot be addressed by the current international legal framework and that it is for the international community to decide on the instruments to deal with these practices. These instruments include self-regulation, the deployment of the contractual system within the DNS (i.e. the extension of the scope of the UDRP to these new identifiers) and the more traditional instrument of the international treaty.

In general both trade mark owners and those with a genuine interest in the domain name have had positive experiences of the UDRP. From the trade mark owners point of view it is a quick and cheap way of either bringing the other party to a negotiating situation or of obtaining an arbitral decision without delay. Moreover, as an alternative to the judicial system operating on a territorial basis, it provides a resolution of disputes with worldwide scope. It allows a worldwide enforcement of arbitral awards and may obviate the need for an *exequatur*<sup>303</sup>

From the point of view of the registrant, the system may be seen as an opportunity for large organisations to overpower smaller organisations since the system calls on the registrant to defend his position in registering the domain name. Even though this potential problem was addressed to some extent by the speed and cost effectiveness of the system and by the possibility of a reverse hijacking decision there are still occasions where some of the more aggressive trade mark owners are challenging registration of domain names in circumstances where the decision would be better made by a court for example where all the facts could be addressed and examined by a more experienced judiciary. However it was clear that it was in neither the registrant's nor the trade mark owners interests for all cases of "cybersquatting" to be referred to the more lengthy and expensive court process and to this extent the UDRP has been a considerable success.

---

<sup>303</sup> An *exequatur* is an order given by a court to enforce a foreign judgment. It transforms a foreign judgment into a domestic one for enforcement purposes.

There are many trade mark owners however who hold strong views that the UDRP has not been a success because of the requirement for the domain name to have been registered and to be used in bad faith. This is a hurdle which it is difficult for trade mark owners to prove during an arbitral system where there is no possibility for disclosure of evidence. They believe that these requirements should be alternative and not cumulative. It is possible for somebody to register in good faith and later use the domain name in bad faith. The arbitration system would improve if it were allowed to deal with such cases. There is also the reality that in many cases the “cybersquatter” will do nothing with the domain name simply hold it or point it to an inoffensive site which restricts the number of domain name options available for the genuine trade mark owner to register and use. The huge volume of cases in the initial stages of the UDRP and the non precedent nature of arbitration meant that there was a huge volume of reported decisions. This was further complicated by the 3 different bodies who were authorised to appoint panellists and have cases referred to them. This has been addressed by the cases being made available by ICANN via its website. Notwithstanding that the UDRP is effectively a system of arbitration where no-one country’s laws apply and cannot therefore represent a body of precedent with the certainty for both trade mark owners and registrants that would bring, there has been over the years since the UDRP was introduced (1999) a considerable amount of clarity for all interested parties on what is acceptable to register and challenge as a domain name.

It should not be underestimated that many of the problems and criticisms of the UDRP system which were aired in the early days of its existence have reduced primarily as a result of the fact that “cybersquatting” of trade marks has reduced correspondingly. Clearly the introduction of the UDRP has had a significant effect on making “cybersquatting” less attractive and has therefore benefited trade mark owners considerably.

A further problem, although minor, is that there is no possibility for mediation before arbitration. Mediation has many advantages over arbitration often allowing for a win-win situation and as can be seen from the Nominet (.uk) system of dispute resolution allows for the prompt resolution of the majority of cases.

It has also been argued that an appeal system should be provided for the UDRP specifically provides an alternative to arbitration – ie to pursue the matter through the courts either before or after the panel decision and therefore an appeal process in UDRP does not seem to be necessary.

The first WIPO report which resulted in the UDRP was specifically addressed to deal with the problem of “cybersquatting” a practice that was, at that time, rife. Undoubtedly the UDRP process reduced the amount of “cybersquatting” but it was not designed nor able to deal with issues which surround the fundamental problems of the domain name addressing system which are

Trade mark rights are territory based whereas domain names are not. Conflicts over genuine-trade mark rights are a product/service specific whereas conflicts over domain names are not.

Quasi-trade mark rights (such as personality or celebrity names, geographical names, names of organisations or countries, pharmaceutical names) are not so easily addressed by an arbitration system and are better left to be considered and decided by courts or international agreements. However quasi-trade mark rights have been addressed by the WIPO second report

Whilst the WIPO second report has clearly addressed the interests of other specialised (non trade mark) identifiers (to a large extent as a result of effective lobbying from interested parties), it has not dealt with the fundamental problems of the existing UDRP.

Extending the existing principles to these other identifiers is only part of the solution, the other outstanding issues also need to be addressed.

During 2001-2002 ICANN tried to address the issues of criticisms of UDRP by setting up a task force as part of the Domain Name Supporting Organisation (DNSO). Whilst this Task Force carried out a survey, it never reported on its findings as a result of changes in chairmanship of the Task Force and the reform of ICANN which was taking place simultaneously.

To conclude, ICANN has made use of the existing international framework to implement the UDRP. This regime has proved useful but it has a number of shortcomings. It would seem advisable that a revised UDRP system should not be put in place until such time as proper research has been carried out and solutions found to all of the remaining issues.

## **2.2 Alternative organisation models**

Ample evidence has been provided of the dual nature of ICANN's functions, both of a technical as well as of a public policy setting nature, and the difficulties in establishing a distinction. As ICANN's current system requires better oversight, the point has been made of drawing from other organisational models elements which might be considered for adapting ICANN's structure.

Currently, ICANN is operating largely as a "self-regulatory" regime with basically a formal oversight by one government and an informal oversight by GAC, albeit that aside from the USG's involvement, some of ICANN's key agenda issues have been driven by international organisations (e.g. WIPO) and by the GAC which has been playing a leading role i.a. on the regulation of the ccTLDs.

Self-regulation may be defined as an industry-organised process to establish rules, enforce them and even in some instances adjudicate them. Historically, self-regulation has been considered in instances where, rather than market or government regulation, it would benefit society as a whole. Typical arguments that have been put forward to justify self-regulation include: industry's expertise in accessing information about technologies; the enhancement of industry's reputation and the design of industry-wide technical standards.

There are also a number of drawbacks in the self-regulatory approach. Indeed, as long as the self-regulatory approach followed for instance in a standard-setting process has limited effects on outsiders to the industry, which is the case in a purely technically driven process, it should remain the preferred option. Where effects on outsiders would be more substantial, then the argument of a governmental involvement becomes stronger. The lack of governmental oversight constitutes one of the major shortcomings of the self-regulatory approach.

The question has been raised in this respect whether experience may be drawn, in devising alternative models, from public-private partnerships which have been set up between public authorities and private organisations handling both policy and non-policy functions.

### **2.2.1 The concept of public private partnerships**

Public-private partnerships constitute governance arrangements between governments and profit-making firms or non-profit organisations that fulfil policy functions.<sup>304</sup> In fact, not all such partnerships fulfil policy functions. Formal and informal types of

---

<sup>304</sup> S.H. Lindner, & P. Vaillancourt Rosenau, Pauline, "Mapping the Terrain of Public-Private Policy Partnership" in P. Vaillancourt Rosenau (ed.), *Public-Private Policy Partnerships* (Cambridge/Mass.: MIT Press, 2000) 1 – 18, p. 5.

cooperation between public and private organisations are not uncommon at the national level: privatisation and deregulation of public services have contributed to a growing range of public-private partnership models particularly in the area of public infrastructure services such as transportation and public utilities. Public-private partnerships also exist in international and transnational settings. Well-known examples for cross-border relationships between public and private organisations are found in the field of financial services, environmental regulation, trade policies, labour standards or technical standard setting. In the context of these collaborative efforts, "a shift [...] within the United Nations from vertical representation to horizontal participation" has been observed.<sup>305</sup> Broadly speaking, three types of public-private partnerships in the international field can be distinguished: consultation and cooptation of private actors as the most common and "weakest" form of cooperation (1), delegation of governmental functions to private sector parties as, for example, in certain areas of technical standard setting (2), and co-regulation of public and private actors as "true joint decision-making" (3).<sup>306</sup> Consultative relationships between public and private bodies are likely to emerge if policy decisions require expertise and information held by non-state actors or if cooperation with the private sector is expected to increase compliance with policies. Commercial corporations and NGOs benefit from such consultative arrangements in terms of access to the policy process and opportunities to influence the policy outcome. Delegation of public functions covers a variety of models ranging from contracting out specific tasks implying tight performance control to modes of private self-regulation with the public sector merely formulating regulatory policies. Instances of formal co-regulation with public and private parties as equal partners are as yet rare in international policy making. Examples can be found in the field of trade and investment regulations. The EU "open method of coordination" between public authorities and business interests, the Transatlantic Business Dialogue and not least the World Bank provide fora for negotiations between public and private bodies.<sup>307</sup> There is widespread agreement on the potential strengths and weaknesses of public-private partnerships. The most important advantage ascribed to public-private cooperation is effectiveness in terms of increased problem solving capacity. Private actors are seen to contribute specific knowledge, experience and managerial skills to cope with complex problems in a given policy field or industry. The major drawback is the lack of legitimacy in involving private parties in international policy making. Preliminary evidence from case studies suggests that to date public-private partnerships don't "resolve problems with regard to equity, access, participation, and democracy. In fact, public-private partnerships may achieve cost reductions at the price of democracy and equity. The success of public-private partnerships thus depends on a set of crucial elements. Vaillancourt Rosenau finds that successful cooperation is more likely to occur if "clear lines of responsibility are indicated, achievable goals are set down, incentives for partners

---

<sup>305</sup> G. Walt, "Global Cooperation in International Public Health" in Merson, Black and Mills. (eds.), *International Health* (Aspen: Gaithersberg, 2000).

<sup>306</sup> T.A. Börzel, Tanja A. and T. Risse, , "Public-Private Partnerships: Effective and Legitimate Tools of International Governance?" (paper to be published in Grande and Pauly (eds.), *Complex Sovereignty: On the Reconstitution of Political Authority in the 21st Century*).

<sup>307</sup> *Ibid.*

are established, and process is monitored."<sup>308</sup> In more general terms, Vaillancourt Rosenau concludes that public-private partnerships are an appropriate approach when "cost considerations are the main concern, and when externalities are expected to be limited". However, when "accountability is critical, [...] and when societal normative choices are more important than costs, public-private partnering may not be the best approach to policy."<sup>309</sup>

Thus, according to this opinion, public-private partnership would not be suited to ICANN's situation.

However, as the analysis of ICANN's structure has shown, this problem can be dealt with by adopting, when engaging in public policy-making, representative structures, open and transparent procedures which would protect the interests of all parties concerned. The emergence of international policy networks or public-private partnerships now challenge traditional concepts of legitimacy and raise new questions.

Can transnational policy arrangements be legitimate even though they don't follow democratic principles of decision making. "Is 'legitimate *private* authority' conceivable at all?"<sup>310</sup> In other words, is effective policy making or "output legitimacy" able to replace formal elections and traditional concepts of representation? Although there is no agreement among experts on legitimacy, a majority holds the view that both input and output legitimacy are necessary in order to produce generally acknowledged, binding decisions.

Legitimacy is a shared expectation among actors in an arrangement of asymmetric power, such that the actions of those who rule are accepted voluntarily by those who are ruled because the latter are convinced that the actions of the former conform to pre-established norms. "Put simply, legitimacy converts power into authority [...] and establishes an obligation to obey and a right to rule."<sup>311</sup>

The obligation to obey and the right to rule are thus two interrelated properties of a legitimate policy arrangement. Legitimate norms ensure compliance even with decisions that are contested and may infringe individual preferences. A necessary requirement for legitimacy is therefore that relevant norms are acknowledged by all stakeholders.

Furthermore, legitimacy requires trust and mutual accommodation "between organisations that effectively represent more or less permanent social, cultural, economic or ideological divisions within the society."<sup>312</sup>

Based on this conception of legitimacy, Schmitter<sup>313</sup> outlines several principles that should guide the formation of trans-national public private partnerships, their composition and the rules they should follow in making their decision:

(1). Design rules: the establishment of such partnerships should be based on the presumption that specific functions are better handled by a public-private body than by government regulation only or by market competition alone. Such organisations should

---

<sup>308</sup> P. Vaillancourt Rosenau, "The Strength and Weaknesses of Public-Private Policy Partnerships" in P. Vaillancourt Rosenau, *op. cit.* supra n. 293, 217 at 232

<sup>309</sup> *Ibid.* p. 235.

<sup>310</sup> Wolf, Klaus Dieter, "Private Actors and the Legitimacy of Governance Beyond the State", (paper prepared for ECPR Joint Session of Workshops, Grenoble 2001) p. 3, emphasis by author [http://www.essex.ac.uk/ECPR/events/jointsessions/paperarchive/grenoble/ws5/wolf.pdf].

<sup>311</sup> P.C. Schmitter, What is there to legitimize in the European Union... and how might this be accomplished? (= IHS Political Science Series: 2001, No. 75) [http://aei.pitt.edu/archive/00000240/] p. 2.

<sup>312</sup> *Ibid* p. 6.

<sup>313</sup> *Ibid.* p. 8-13.

have a clear and circumscribed mandate delegated by the appropriate authority. They should not be chartered indefinitely irrespective of their performance. They should not be allowed to exceed the tasks originally assigned to them: if they cannot fulfil their initial mandate without taking on new tasks they should request a change in their mandate.

(2). Composition rules: Public-private partnerships should consist of all stakeholders and "knowledge-holders" with an interest in the issue and the capacity to deliver compliance of their followers to the decisions made. Participants should represent constituencies that have diverse interests.

(3). Decision-making rules: All participants should have the same status, and treated as equals, even if they represent constituencies of differing size, resources or status; no second and third class participants should be allowed; decisions should be made by consensus with "deliberation" as the preferable mechanism rather than by vote or imposition: deliberative decision making involves regular exchange of point of views, compromise and mutual accommodation;

At this stage, ICANN could probably not be considered as a public-private partnership as some of the conditions traditionally expected are not fulfilled.

### 2.2.2 Possible organisation models.

In view of this, several organisation models might be contemplated, which perform both technical and policy setting function and where oversight is provided for some of the public policy functions. This endeavour should be paralleled by a simplification of ICANN's structure, the complexity of which constitutes one of its major limitations. The first model would be to separate the technical functions from the public policy setting ones and to create, along the lines of the INTELSAT, INMARSAT and EUTELSAT organisations, an international organisation to which some of ICANN's public policy functions would be transferred.

The second model would be to achieve a gradual internationalization of the oversight function by working from within ICANN's existing organization: in the short run, GAC's role would be enhanced; in the medium term internationalization of the oversight function would be achieved by extended the MOU currently signed with DOC to other governments.

Each of these models has a number of advantages and drawbacks. The second model appears however more feasible in light of the inherent constraints of setting up a new international organization.

The first alternative might be to draw from the experience of INTELSAT, INMARSAT and EUTELSAT organisations and consider establishing a dual structure: a distinction would be drawn between ICANN's activities related to public policies and the others and an Intergovernmental Organisation (IGO) would be set up to which policy functions presently conferred to ICANN would be entrusted. Representation on the IGO should be based on specific membership criteria: access to the IGO would be open to every participating country but would be subject to certain requirements that ensure adherence to certain principles (e.g. the preservation of the free flow of information within the Internet).

All three organisations have undergone an almost similar privatisation process at approximately the same time (1999 -2001). INTELSAT was established in 1971 by 85 countries as a permanent intergovernmental organisation (IGO). Its objective was " to continue and carry forward on a definitive basis for design, development, construction, establishment, operation and maintenance of the space segment of the global commercial

telecommunications satellite system<sup>314</sup>. INMARSAT was set up in 1979, also as an IGO. Its purpose was to make provision for the space segment necessary for improved maritime communications and, in particular, for improved safety of life at sea communications and the Global Maritime Distress and Safety System (GMDSS).

EUTELSAT was created by 26 European countries as an IGO on 14 May 1982, with the new organisation starting its operations on September 1, 1985.

All three organisations were -first governed by a multiple-level structure reflecting the organisations' dual purpose as public international treaty organisations and commercial providers of satellite services. INTELSAT consisted of a four-level structure; firstly, the Assembly of Parties represented every INTELSAT member state and established and long-term objectives of the organisation. Secondly, just below, the Meeting of Signatories consisted of telecommunications entities designated by each member state and making the capital contribution necessary to finance the global satellite system. The Meeting of Signatories met annually to establish rules governing the rates and allotments of satellite capacity, adjust capital contributions, authorise new satellite earth stations and resolve complaints between member states. Thirdly, the Board of Governors was assigned the responsibility "for the design, development, construction, establishment, operation and maintenance of the INTELSAT space segment". Finally, an executive Director General served as the chief executive and legal representative and was directly responsible to the Board of Governors for the performance of all management functions. INMARSAT was structured with three principal organs: the Assembly of Parties (one State, one vote), which dealt with general policy matters and the long term objectives of the Organisation; the Council, composed of 22 Signatories, or groups of Signatories; It decided on all financial, operational, technical and administrative matters, and made provision for the space segment; the Directorate which was the executive body of the Organisation headed by a Director General who was the Chief Executive Officer and legal representative of the Organisation.

EUTELSAT was structured along similar lines. It comprised an Assembly of Parties<sup>315</sup>, which met annually, a Board of Signatories<sup>316</sup> consisting of representatives from the national telecommunications operators, which convened twice or three times a year, and an Executive body headed by a Director General<sup>317</sup>, representing the organisation. As competition on the international telecommunications market developed, the need for a public intergovernmental treaty organisation to provide telecommunications services was questioned.

The 24th INTELSAT Assembly of Parties in 1999 decided to transform INTELSAT from a public intergovernmental treaty organisation into a private cooperation providing international telecommunications services. The Assembly of Parties also resolved that the privatisation must preserve the organisation's core principles including the maintenance of global connectivity, the protection of lifeline users and the non discriminatory access to the global system. Hence, the proposal was made to divide INTELSAT into two components, a private corporation and a residual intergovernmental organisation. The private corporation, to whom the assets formally

---

<sup>314</sup> For a complete analysis see "Universal Global Interconnection after Intelsat" by K. Katkin.

Presentation at the 30th research Conference on Communication, Information and Internet Policy (TPRC2002), Washington D.C., September 29, 2002.

<sup>315</sup> Article VII, Convention des Parties portant création de l'Organisation Européenne de télécommunications par satellite, EUTELSAT.

<sup>316</sup> Article X, Convention EUTELSAT.

<sup>317</sup> Article XIII, Convention EUTELSAT

owned by INTELSAT's Signatories would be transferred, would no longer have the privileges and immunities enjoyed by the intergovernmental organisation and would be subject to the national licensing authority, as long as it, provided with the organisation's core principles.

In conformity with this decision, INTELSAT formed a new corporation called INTELSAT L.L.C. To ensure that privatisation was effective, INTELSAT was required by the US legislator to demonstrate that it has achieved "competitive privatisation". The successor corporation of INTELSAT must be organised as a shareholder owned cooperation. It must undergo a public offering in order to dilute the Signatory's ownership. On November 2000, the 25th INTELSAT Assembly of Parties confirmed the decision of the 1999 Assembly and set a target date of July 18, 2001 for the transfer of INTELSAT's assets to the private successor entity. The 25th Assembly of Parties also decided to leave in place a residual intergovernmental organisation to oversee the performance by the private organisation of its public service obligations.

The role of the residual intergovernmental organisation, known as the International Telecommunications Satellite Organisation (ITSO) is threefold.

- To act as the supervisory authority of INTELSAT L.L.C.,
- To maintain the continuity of international telecom services,
- To promote international telecom services.

In its oversight function, ITSO interfaces with INTELSAT L.L.C to ensure that the private corporation adheres to several core principles:

- (a).the global coverage and global connectivity of the privatised satellite system;
- (b). the obligation to serve the "lifeline" countries, e.g. the underserved member-states with low income.
- (c). the non-discriminatory access to the INTELSAT L.L.C fleet of satellites.

Finally, ITSO is also to promote competition and create a favourable environment for commercial satellite communications.

According to its constitution, ITSO is made up of three entities: first, the Assembly of Parties, which currently includes 148 member states and which meets once every two years; second, an executive body, managed by the Director General and responsible to the Assembly of Parties, which has maintained its activities in Washington in order to facilitate the supervision of the private company, Intelsat Ltd.; third, a panel of legal experts, elected by the Assembly of Parties and instituted with a view to making rulings on any disputes that may arise between the Parties concerning the constitution or between the ITSO and one or more Parties.

As an intergovernmental organisation ITSO is immune to national laws. In contrast, the privatised INTELSAT is subject to US law.

INMARSAT underwent a similar process. At its Twelfth Session in April 1998, the INMARSAT Assembly adopted amendments to the INMARSAT Convention and Operating Agreement which transformed the Organisation into a privatised corporate structure, while retaining intergovernmental oversight of certain public service obligations and, in particular, the Global Maritime Distress and Safety System (GMDSS). The Assembly and Council of INMARSAT subsequently decided to implement the amendments as from 15 April 1999, pending their formal entry into force. The restructuring of INMARSAT involved the incorporation of holding and operating companies, located in England and registered under British law on 15 April 1999. On the same day, the Headquarters Agreement between the UK Government and the new IGO (IMSO) was signed. The INMARSAT satellites and all other assets of the former IGO have been transferred to the privatised operating Company A Public Services

Agreement between IMSO and the privatised INMARSAT was also executed with immediate effect.

IMSO has been created to supervise the companies public service obligations as determined by the Assembly of the Parties. The first obligation relates to the continued provision of GMDSS services. This obligation is referred to in the amended Convention of IMSO, the Articles of Incorporation of the companies and the Public Services Agreement. The other basic principles are expressed in broader policy obligations and are also included in the amended Convention, the Public Services Agreement and the Articles of Incorporation. The peaceful purposes and fair competition obligations have never been put to a test and defined in precise terms.

The enforcement mechanisms of the new structure enable IMSO to ensure the observance by the companies of the basic principles. IMSO owns a special share giving it three powers: to veto changes in the Articles of Association that might adversely affect the basic principles; to demand a meeting with the Board to express its concerns about compliance with basic principles; to address the Annual General meeting or convene an Extraordinary general meeting to propose resolutions with respect to Board decisions of the kind referred to above.

IMSO operates through the Assembly of Parties, its Advisory Committee and a small Secretariat, headed by the Director who is the Chief Executive Officer and legal representative of the Organisation.

To facilitate its relations with international organisations, Agreements of Cooperation have been concluded by IMSO with the International Maritime Organisation on the one hand and with International Civil Aviation Organisation on the other hand. IMSO ensures that the private company. takes into account the applicable Standards developed by these two international organisations. Administrative Arrangements have also been signed between the Secretary-General of the International Telecommunication Union (ITU) and the IMSO Director. These provide the Organisation with direct access to the relevant bodies of the ITU.

Following privatisation in 2001, EUTELSAT now consists one the one hand, of a limited liability company, EUTELSAT (France)<sup>318</sup>, owning and controlling EUTELSAT's assets and activities and on the other hand, of a "residual" intergovernmental organisation (IGO), the activities of which are now confined to :

- (1) Ensuring that the following four Basic Principles are observed by EUTELSAT S.A.: public universal service obligation, pan-european coverage by the satellite system, non-discrimination and fair competition.
- (2) Ensuring continuity regarding rights and obligations under international law, in particular under the ITU Radio Regulations.

To fulfil these tasks a Secretariat with a limited staff has been established and an Executive Secretary elected in 2001.

An Arrangement stipulating the provisions for the relationship between the IGO and the EUTELSAT S.A. was signed and entered into force in 2001 at the same time at which all assets and activities were transferred to EUTELSAT S.A. To enable the IGO to ensure that EUTELSAT S.A. observes the four Basic Principles, a mechanism has been put in place, whereby EUTELSAT S.A. management provides information to the IGO Secretariat on the way in which the four principles are taken into account in the planning process of the company.

---

<sup>318</sup> EUTELSAT- France is 23,1% owned by France Telecom, 20.5%-owned by Telecom Italia, 17.5%-owned by British Telecom and 10.9%-owned by Deutsche Telekom.

Information gathered suggests that it is in the area of universal service obligation that most of the IGO's responsibilities have been exercised so far.

The intergovernmental organisation's responsibilities duplicate, at least in part, the control already exercised by the European Community, notably in the framework of the 'electronic services' directives and can be explained by historical reasons: emphasis was laid by certain Parties to the Convention, during the negotiation of the amended Convention, on the need to ensure compliance by the private organisation with universal service obligations.

Though there are differences in the context in which the three sets of organisations developed, there are a number of interesting aspects of the INTELSAT/ INMARSAT/ EUTELSAT models: firstly, the separation between technical (commercial in the case of EUTELSAT) and public policy functions and the creation of an Intergovernmental Organisation to which certain public policy functions have been transferred; secondly, the enforcement mechanisms which have been put in place by these organisations to ensure compliance with the core principles and public service obligations. However, in all cases it appears that compliance has not yet been put to a test.

In addition, EUTELSAT is of limited value as a model in one particular respect: its policy setting function is to a large extent pre-empted or taken over by European Community policies.

In view of this experience, setting up a specific IGO to which public policy functions currently assumed by ICANN has a certain number of advantages: firstly, the oversight function over a system, which is global in nature, by a governmental authority, which is still perceived to be necessary, is internationalised; secondly, it permits the public policy functions to be performed fully and systematically. E.g. one of the policy functions assigned to ICANN, the development of fair competition, could require the adoption of certain rules designed to prevent conditions likely to hinder effective competition among registries and registrars from arising; thirdly, it renders ICANN less vulnerable to actions of interest groups and of individual governments.

This alternative has also a number of drawbacks : firstly, it will obviously take time, as the setting up of any sort of international organization does; secondly, agreeing on a definition of policy functions and on their allocation to an IGO in a formal international agreement in this particular area will be a long and difficult process ; thirdly, certain governments and governmental entities currently involved in ICANN could have difficulties in joining an IGO; fourthly, conflicts are likely to arise between governments on the preservation of free flows of ideas within the Internet.

Thus, an alternative model should be pursued, which would achieve a stepwise internationalization of the public policy oversight function, with the GAC serving as a vehicle in this gradual process. Under this model, GAC's role would first be enhanced from an advisory capacity, as it is presently the case under ICANN's existing structure, to a role where it would be systematically consulted by ICANN's Board on public policy matters, which would entail amending the by-laws. In the event that the Board intends to depart from a GAC recommendation, the Board could only take the decision if it is supported by a very significant majority of stakeholders represented in the constituencies. To achieve this, the GAC's operating principles should put GAC in a position to fulfil these tasks. Moreover, the GAC should be put in a more formal legal footing.

This alternative has a number of advantages: firstly, it avoids some of the drawbacks of the first alternative; secondly, it allows changes to be gradually introduced by working from within the existing structure.

This alternative has also a number of drawbacks: firstly, it does not, as such, deal with the issues of transparency and representativeness, which the current reform is meant to

address; secondly, it creates an inconsistency and is a source of conflict in that the GAC takes a more active role in public policy functions of ICANN while the USG, which is represented in GAC, remains ultimately responsible for the oversight.

Thus, this alternative should be complemented by an effective internationalisation in the medium term of the public policy oversight function. This could be done by extending the MOU currently signed with DOC to third countries governments. The USG's oversight function would be shared with all participating governments. The MOU would be broader in scope than it is currently the case with DOC and could cover such issues as significant changes to technology and to ICANN's mission. Authority over the A root server would also be covered, which implies that changes to the root zone files will have to be approved by the MOU signatories or by their delegate.

This alternative would not solve the problem which arises from the fact that ICANN, as a private entity, is vulnerable to actions of the USG or important players in the Internet community.

Though there is an emerging consensus in favour of an increased governments' involvement in ICANN's policies, one must not lose sight of the fact that this government oversight and involvement must be carefully designed to preserve the free flow of information of the Internet.

## **PART IV - CONCLUSIONS AND RECOMMENDATIONS**

Our recommendations, which should be considered as a whole, are based on the following main conclusions of the study.

First, ICANN has performed most of its tasks in a way that has ensured the technical stability and the growth of the Internet. However, some aspects of its mission have not been achieved. The most significant shortcomings are in the area of co-ordination of IP address allocation (absence of formed agreements with RIRs), development of policies for ccTLDs, enhancement of competition at the registry level and internationalization of the root server system.

Second, a reform of ICANN's organization has been initiated, which goes in the right direction, but there is still a long way to go to implement all of its elements. ICANN still needs to establish stable relationships with some of its key stakeholders (ccTLDs, RIRs, Root servers operators). Since none of these groupings can be forced to support it, ICANN needs to gain the trust of all of them. ICANN's shortcomings have favoured "capture" by specific interest groups. Governments need to put in place procedures that ensure that the interests of society at large are taken into account in ICANN's decisions. It is questionable whether the reform of the At-Large representation and membership will solve this problem.

Third, ICANN produces economic effects through the domain name system, its regulation of intellectual property by the UDPR and IP address allocation. It is at this point impossible to measure the impact of ICANN with respect to the latter two elements. The registrar part of the domain name system is becoming more and more competitive, and the distortions created by historically dominant firms will most probably disappear over time. On the other hand, the registry part depends for its profits on regulatory decisions currently made by ICANN. At present, the fees paid by registries seem to be above cost which results in a non-negligible transfer of income from consumers to registries.

Fourth, ICANN assumes both technical and policy functions. ICANN's technical functions include for example the maintenance of records in the root zone and the application of standard procedures defined by IETF.. Other ICANN's functions such as regulating the use of domain names are of a public policy setting nature. Typical examples of regulating the use of domain names are provided by the enforcement of the UDRP system for resolution of intellectual property disputes on a worldwide basis and by the regulation of supply of gTLDs.

While the causes of ICANN underperforming on certain public policy matters are manifold, we believe that the main causes are the following ones: firstly, the ambiguities of the privatization process which was based on the idea of "self-regulation": organizational structures that are consistent with "self-regulation" and not unduly susceptible to the influence of special interests are very difficult to design; secondly, ICANN's structure and decision-making process which do not provide sufficient accountability, representativeness (e.g. through the unbalanced NomCom process) and transparency in order to generate acceptance of, and trust in, ICANN's policy decisions. Fifth, ICANN is not internationalized as it should in certain respects (legal standing, root servers operation, staffing, oversight by a single government, etc.).

The terms of reference of this study focus on ICANN's structure as such. and as a consequence we stress potential reforms of this structure in these conclusions. However, promoting the reform of ICANN's structure and processes is not the only means by which the European Union can seek to bring about a better functioning of ICANN. It can

also use its influence on ICANN and enlist the support of the USG. Recommendation 1 deals with the structure of ICANN within the current bylaws and proposes amendments. Recommendation 2 elaborates in more detail those functions where government involvement should be enhanced. Recommendation 3 deals with an enhanced role of the GAC. Recommendations 4 and 5 offer three possible scenarios for increased internationalisation of ICANN.

### **Recommendation 1**

As a first step towards achieving greater transparency and representativeness, ICANN must comply with, and fully implement, its newly amended by-laws. While it is clear that even fully implemented the ICANN reform would not remedy all the shortcomings of the previous structure, these improvements are at least already available and must be implemented. In particular, according to the newly-amended by-laws, there should be clearer separation of functions and responsibilities (see in particular ICANN's core values 3,7,8 and 11).

As a rule the separation of functions should be done along two coordinates: horizontally and vertically. Horizontal topics are e.g. setting of requirements, policy development, policy implementation/enforcement, technical operation of infrastructure. Vertical topics are e.g. protocol identifiers, port numbers, gTLDs, ccTLDs, IP addresses. It should also be understood that not all functions should be performed by ICANN but could be delegated or left to other organisations like RIRs as demanded by the core values. We recommend to develop a clear architecture for ICANN's organization and a simplification of its processes. This would in turn improve transparency and stimulate further simplification.

The GAC could and should play an important role here by submitting recommendations.

### **Recommendation 2**

In view of ICANN's shortcomings and the limitations of "self-regulation", there is a continued need for a better form of oversight of, and involvement of governments in, ICANN's policy making.

We feel that increased government oversight must be carefully balanced to preserve the free flow of information and the vibrancy of the Internet. Decisions should not serve political considerations but the common objective of an effective, continuous, stable Internet.

Moreover, government involvement should be limited to those functions that affect public policies, which are required to protect public interests. For other functions, "self-regulation" is preferable. In the light of the study this means that governments should be involved in the development of certain requirements, policy developments and the development and control of mechanisms for policy implementation and enforcement.

We recommend that governments more actively influence the policy development process, limited to public policy issues to the exclusion of day-to day business, with safeguards to protect the free flow of information.

### **Recommendation 3**

To that effect, we recommend that, in the short run, GAC's role be enhanced. This could be achieved by having the GAC systematically expressing its views early in the process to the Board, issuing recommendations on future priorities and by widening its membership. More specifically, GAC's oversight could be exercised by reference to its operating principles.

The study also recommends that GAC's position in the decision-making process be strengthened by providing that, in the event that the Board intends to depart from GAC's recommendations, the Board can take the decision only if it is supported by a very significant majority of stakeholders represented in the constituencies. To achieve this, the GAC's operating principles should enable it to fulfil these tasks. Moreover, the GAC should be put on a more formal legal footing.

#### **Recommendation 4**

We recommend that, in the medium term, the oversight of ICANN's functions that consist of public policy functions (e.g. where a public interest is at stake) should be internationalized. The fundamental legitimacy of ICANN as a manager of the Internet's unique identifiers system stems from the MOU it has signed with the US DOC. In the long run, this legitimacy cannot derive solely from the US government. We recommend that a MOU be also concluded by other governments. Instead of reporting only to DOC, ICANN would also report to other governments.

Such MOU should be broader in scope than the MOU with DOC and should cover issues such as significant changes to technology and to ICANN's mission. Authority over the A root server would also be covered, which implies that changes to the root zone files would have to be approved by the MOU signatories.

#### **Recommendation 5**

We recommend that internationalization be in priority pursued in the following areas: the root server operators for reasons of load balancing (e.g. to improve performance in fast growing areas and legitimacy), rebalancing geographic distribution of ICANN's staffing, greater European participation in the discussions and the decision making process. The European Commission and European Member State governments should also encourage participation of European companies in the registrar/ registry business.

Brussels, 14 November 2003