

## **Input Vision EU2020**

International Business Machines (IBM)  
Register ID number: 77 21 35 99 44 - 96

### **I. Introduction**

IBM welcomes the European Commission's public consultation and the focus of the first outline for the EU2020 strategy. We agree with the opinion that this is a time of deep transformation, and welcome the vision the European Commission proposes and its focus on the three objectives: (a) creating value through knowledge; (b) empowering people in inclusive societies; and (c) creating a competitive, connected and greener economy. Our response and recommendations are structured around these topics.

Changing demographics, environmental concerns, increasing automation, the growth of the Internet and its "next generation" are key factors influencing the set up of a services and device driven world at a scale and pace never before seen in history. These trends are also establishing the "grand social challenges" of our century.

Meanwhile, globalisation has significantly changed our business models and transformed how and where work is done in the value creation chain. The world has become smaller and much more interconnected. Today, there are four billion mobile phone subscribers; that's more than one phone for every two people on the planet. Already two billion people are using the Internet.

The world is also becoming flatter in the sense that emerging nations are now taking their place at the global economic table. But in addition to getting smaller and flatter, something else is happening: our world is becoming smarter. Technology now offers us the opportunity to build more smartness into everything we do; into every decision, every relationship and every institution. By using new and affordable computing models like "software as a service" or technologies like "cloud computing"<sup>1</sup>, and applying advanced analytics and powerful super computers, the vast amount of data coming from today's complex processes can be digested and turned into useful intelligence.

Actions based on this intelligence can make the systems, processes and infrastructures that run our world operate more efficiently, and more productively, but in a sustainable way. Simply put they are "smarter" by being instrumented, interconnected and intelligent.

- With so much technology and networking abundantly available at such low cost, where wouldn't you use smart technology?
- What service wouldn't you provide to a customer, citizen, student or patient?
- What wouldn't you connect?
- What information wouldn't you provide for insight?

---

<sup>1</sup> Cloud computing is the provision of dynamically scalable and often virtualised resources as a service over the Internet on a utility basis. Users need not have knowledge of, expertise in, or control over the technology infrastructure in the "cloud" that supports them. Cloud computing services often provide common business applications online that are accessed from a web browser, while the software and data are stored on the servers.

The answer is, we can do all of these things. Technology is both available and affordable. But there is another reason why we should make our companies, institutions and industries smarter; because we must. Not just at moments of widespread shock and global crisis, but integrated into our day-to-day operations. Obviously all of that needs to be embedded in an adequate legal and social framework.

Advances in ever more capable network-based technologies are driving social and economic transformation around the globe. They are reshaping the way we do business, spend our free time, communicate, socialise, work and collaborate. A new economic and employment landscape is emerging:

- The shift in employment from the primary and manufacturing industries towards business and personal services and the knowledge-intensive sectors;
- A blur in the divide between manufacturing and services sectors, as once traditional manufacturing firms are gaining ever higher proportions of their turnover from selling services that add value to their manufactured products;
- The emergence of new labour pools around the globe that provide new sources of skills and that sway investment location choices;
- New technologies enabling smart solutions that improve the efficiency and capability of infrastructures;
- New development practices around open innovation leveraging community approaches;
- The development of new services offerings that can be broken down into distinct tasks and flexibly delivered to clients from multiple, diverse locations.

Governments, businesses, organizations and citizens are amassing unimaginable amounts of data. We're capturing data about temperature, soil condition, water flow, vibration and location. And then there's the growing torrent of information from billions of individuals, through so-called social media. Millions of people are sharing what they think, what they like and want, what they're witnessing. In just three years, IP traffic is expected to total more than half a zettabyte. (That's a trillion gigabytes—or a 1 followed by 21 zeroes.) And, all this data is far more real-time than ever before.

What does that mean? No longer do we need to make decisions based on information that is backward-looking and limited in scope. We now have the capability to collect data and more importantly to extract value from data—to see the patterns, the correlations and the outliers. With instrumented, intelligent and interconnect systems we create value through knowledge, which is one of the objectives of the EU 2020 strategy.

As this data knows no boundaries and has its value enhanced from greater collaboration (enabled by open standards based architectures) so must our policies be embracing of these new dynamics. We should invest in smarter, and greener, systems, foster innovation through research, develop a skilled populace and ensure adaptability and mobility of our workforce.

## **II. The Crisis as an Opportunity**

We support the European Commission's opinion that the exit from the crisis should be the point of entry into a sustainable, smarter and greener economy . Moreover, the decisions needed to navigate out of the financial crisis allow governments to set investment and policy strategies that will enable prosperity for the longer term.

However, many governments face the challenge of trying to reconcile the need for economic recovery plans with a lack of fiscal resources. Most also face pressures from stakeholders to defend the status quo, particularly in areas such as jobs and government services. Attempts to erect barriers to change, though well -intentioned, will achieve little at best, and more likely will fail.

### *Smart policies and investment can drive growth and new jobs*

IBM's experience of operating as a globally integrated business tells us that job creation and economic performance can be boosted by productivity growth driven by improved economic dynamism and adaptability. Economies with these characteristics are best equipped to succeed in today's shifting economic conditions , as they can adapt to change with less friction. Resources can be more easily deployed to greatest advantage, and new products and ideas can be more quickly acquired and applied.

The contribution to economic growth and job creation from investments in IT networks and solutions is well documented. Investments in IT enable both the improved productivity of other sectors of the economy, and the creation of whole new industries that spur new job creation. Governments looking beyond the crisis now have a unique opportunity to make the smart investments that will lift economic performance , grow jobs, and make societies more sustainable.

### *Policy Development Has a Context*

We also agree with the European Commission that prosperity in the EU will come from innovation, and from better usage of resources, and that the key input will be knowledge. Leaders in economics and business believe that growth is occurring where there is a wide technological space for innovation, and an adequate social and institutional context to advance it. Knowledge and the ability to develop and adapt have become the key attributes in securing continued prosperity. In the EU 2020 strategy the European Commission rightly considers how, in a globally integrated world, the EU can attract work and investment, how it will be differentiated and create a unique value proposition, and how to build the skills necessary to support growth.

In considering economic policy and investment choices, the Commission is well-served to consider the importance of the economy's capacity to develop and to adapt against the backdrop of rapid technology change and global integration . The responsiveness of structures such as education systems, labour markets, and tax and social security systems will affect the economy's ability to reap prosperity gains inherent in these new conditions. The competitiveness of markets and the innovation capacity of businesses are also critical factors.

### The Response from Business

Companies wanting to adapt and to succeed have to react in real time to more demanding, diverse, better-informed, and less brand-loyal consumers. Being responsive to customers' needs means constant innovation to stay competitive.

The overriding challenge is to find and deploy the right talent and skills at the right time and place in the most efficient way possible. Business model innovation and new workforce management approaches are essential to meeting this challenge. For example, finding the right human resources today means growing skills locally but in some situations may also involve looking outside your local business. Such an extended search may involve a temporary transfer of specialist employees from another part of the business, perhaps located in another city or country, or exploring the option of sourcing through a temporary work agency.

At IBM we are now addressing workforce effectiveness more strategically through an integrated expertise management process with three components:

The Workforce Management Initiative (WMI): A global set of processes and tools that allows IBM to deploy the right person, with the right skills at the right time, place and cost.

The Market Valued Skills Initiative: This program identifies skills and job roles that are in high demand among our clients. The results influence decisions on recruitment, redeployment, and employee development and learning programs.

The CareerSmart Initiative: This career development initiative aims to rapidly develop employees to meet changing business conditions. CareerSmart includes:

- An employee profile and expertise assessment that can help managers and project leaders to locate the right professional.
- A Development Plan for each employee to identify career options and pre-requisite learning programs.
- A Learning Management System that provides structured learning paths including over 20,000 e-learning programs
- An Opportunity Marketplace for global job search and recruitment within IBM.
- A Personalised Job Matching Tool empowers employees to model the time, cost and development impact of changing their job from one that may be under threat to one that is in demand.

Technology allows businesses to make use of the best available talent wherever it may be located and to connect these skills. Companies therefore have an incentive to analyse the cost and productivity of each component task of business processes and of service offerings with a view to optimizing location choices at the task level. In addition, projects can be executed in sequence across time zones, using global teams.

The success of these business models that serve clients globally, and that use ecosystems of global partners or global value chains depends on frequent cross-border temporary transfers of employees. The ability to quickly deploy staff is of particular importance for services businesses and their clients.

These transfers are used to deliver offerings to clients, for training, knowledge transfer and development purposes, and to fill skills gaps. They enable companies to deploy the right talent to the place it is needed, and in a timely manner.

Clients benefit because particular skills may not be available locally, depriving businesses large and small of access to the innovation and ideas that underpin competitiveness and job creation. Absent access to such talent, businesses are now more able to simply shift work elsewhere, to a location where the skills are available.

### **III. Policy recommendations**

*(1) Creating value by basing growth on knowledge.* Opportunity and social cohesion will be enhanced in a world where innovation makes the difference in both products and processes, harnessing the potential of education, research and of the digital economy;

#### *Foster Innovation and Research*

If “invention” is the result of R&D, then Innovation is the intelligent adoption of invention, and its development into new business opportunities and commercial growth. By adapting and reinforcing its existing initiatives to promote both research and innovation the EU can considerably increase its weight in the global information society.

Over recent years the nature of innovation and R&D has changed. The classical model of lab-based research, leading to a standalone breakthrough technology is rarely the case any longer. Today, collaboration among complementary partners is key, and innovation is most often the result of combining many inventions (old and new). Increasingly, open standards and platforms are necessary to drive innovation and collaboration. Furthermore, innovation that meaningfully addresses any of the big challenges facing society requires global collaboration throughout the value chain, right from early-stage research through to commercialisation.

All of this challenges traditional notions of how we organise our innovation and research initiatives. What is clear is that the Framework Programmes need to be internationalised to a larger extent, so that the EU can benefit from skills from all over the world. As stated by Esko Aho in his report on Information Society Research and Innovation of May 2008 “Systemic change is needed to remove barriers to innovation and promote stronger interactions between users, researchers and business. If the best researchers from around the world participate in the Framework Programme, it will also become more attractive for the best European researchers.”

#### *Importance of innovation in services*

Government innovation policies, R&D budgets and programs have historically focused on hard sciences and manufacturing. This focus needs to be adjusted given the fact that services are the source of most jobs and economic activity.

The European Commission has many opportunities to facilitate service innovation research. We would invite the Commission to look at an expansion of research activity on services in the context of the 7<sup>th</sup> Research Framework Programme as well as taking a more comprehensive approach on service research in the forthcoming Framework Programme 8.

*(2) Empowering people in inclusive societies.* We fully agree that the acquisition of new skills, fostering creativity and innovation, the development of entrepreneurship and a smooth transition between jobs will be crucial in a world which will offer more jobs in exchange for greater adaptability .

A medium-term strategy is needed that shapes better functioning labour markets and supports worker transitions through “flexicurity” measures. The task is to foster new forms of employment security based on skills assets and temporary income support, while moving away from the restrictive paradigm of trying to preserve jobs for life and of protecting specific jobs against change. Providing more effective social safety nets and programmes that support worker transitions will be critical to building support for reforms.

#### *A Smarter Workforce is needed*

The creation and management of knowledge is growing as a core attribute of jobs in the new economy. These “knowledge jobs” place a premium on workers with higher skills, with vocational, post-secondary or higher education qualifications. If workers are to secure quality employment in this environment of rapidly shifting labour demand, they need the opportunity to improve and develop their skills .

In this environment the need for IT -related skills is greater than ever. The new, in-demand IT jobs tends to be at higher skill levels. However IT jobs are changing too. Technical skills now have a shorter shelf life. In mature economies, jobs that are easily automated or that are lower skilled and can be off -shored, are in decline.

Beyond IT-specific jobs, the rising significance of services in the economy is creating new job opportunities in roles that help to increase efficiency, quality and scale in services businesses. Talent is needed to bring innovation to service design, development, marketing and delivery. New curricula and recast priorities in education are needed to supply these new skills.

Feedback from IBM’s services sector clients makes it clear that prospective services practitioners need depth and breadth to meet the innovation need. Good communication and interpersonal skills and practical business experience are ideally complemented by deep knowledge in an area of science or management, or engineering or design, of “services systems”. These are dynamic configurations of people, technologies, organisations and shared information that create and deliver value to customers, providers and other stakeholders.

With employers’ seeking out workers with greater skills, initiative and creativity , they are also able to adopt more flexible working environments. Frontline workers are more empowered, there is greater interdisciplinary cooperation, and in the knowledge-intensive company self-managed cross-functional teams are more the norm. For the individual employee, language skills, the ability to change tasks, and problem solving are important differentiators.

In summary, the new economy, with its dynamic structural and market shifts, new business models and global labour pools, has brought dramatic change to workforce organisation,

employees' careers, and to the demands for skills and learning. Policy and programs need to accommodate these changes if we are to achieve the goals of EU2020.

#### Addressing contemporary skills needs

The role of skills in supporting competitiveness in the new economy is undisputed. Now, as governments and businesses scramble to cut costs, the ability to grow in-demand skills is under threat. Without sustained focus on investments in education and learning, the outcomes of the best intended growth policies could be sub-optimized. Therefore to address changing skill demand and the growing skills gaps, the European Commission together with Members States should:

- Set a target and timeline for improving European performance on key skills indicators.
- Support re-design of education and vocational training systems to better accommodate life-long learning.
- Bring a more multi-disciplinary and student-centric focus to education and training, linked across schools, tertiary institutions and workforce training.
- Support the creation of adaptive learning programs, using collaborative, open-standards based technologies and digital learning resources for both teachers and students.
- Improve availability of online learning resources.
- Champion curricula for new, multi-disciplinary qualifications that would address emerging technology trends as well as developing soft-skills.
- Provide funding for Service Science education and research.
- Encourage cooperation among businesses, public authorities and universities to identify emerging skills needs.

Even as we improve learning frameworks, globalisation, shifting client demand, and technology change combine to make business success dependent on access to a skills pool with a breadth and depth well beyond the means of any single employer. As we have pointed out, timely sourcing of the right skills can involve looking beyond the local business to corporate affiliates in other countries to supply those skills.

Unfortunately the current arrangements within the European Union for the admission, work and residence of third-country intra-corporate transferees are not totally consistent, are at times bureaucratic and do not tend towards reaping the economic benefits of an efficient, streamlined and controlled process.

The European Union should adopt new rules that facilitate the rapid deployment of professionals to enable companies to acquire and sell new technologies and know-how. In particular, rules should address three key business concerns:

- Speed – for more responsive deployment
- Cost – for cost-effective transfers
- Predictability – for planning purposes

**(3) *Creating a competitive, connected and greener economy.*** The EU should compete more effectively and increase its productivity by a lower and more efficient consumption of non-renewable energy and resources in a world of high energy and resources prices, and greater competition for energy and resources.

### Green and Smarter Economy

We fully agree with the goals stated above. However, missing is any explicit mention of how IT can play an instrumental role in saving energy throughout the economy (products, but mainly processes and more efficient services). While the IT sector will address its own energy efficiency, a greener strategy should also include a focus on how IT can help reduce the carbon footprint of other industrial sectors.

Today, we can enhance economic dynamism and environmental efficiency by adding intelligence, instrumentation, and connecting infrastructures and other existing large systems. Linkages with powerful, new computer systems enable the processing of the resulting huge volumes of data, and advanced analytics can turn the data into real insight, in real time.

Roads and highway infrastructures provide a practical example. Cities such as London and Stockholm are introducing IT-enabled traffic management systems that charge drivers more during peak usage periods in order to manage congestion and reduce pollution. Data gleaned from such systems can provide insights that guide further improvements in efficiency and quality of life by identifying demand for new services and public transport.

Even IT-intensive systems such as the global financial markets can be improved through strategic investments. Our capacity to infuse the financial system with new intelligence offers improved transparency, with potentially greater ability for regulators and market participants to manage destabilizing trends.

Government services can also be improved. When combined with reform at the microeconomic level, there is the potential for more informed decision-making by business, individual consumers and governments alike. In Australia for example, against a backdrop of rising unemployment, the effective deployment and adoption of smart technologies such as electricity, irrigation, health, transport and broadband are forecast to add an estimated 1.5% to GDP within a few years. Advances in IT are already enabling social support programs delivery to become more personalized for citizens, so they can obtain more tailored government assistance.

### Digital Internal Market

For Europe's competitiveness it will be absolutely crucial to reinforce the digital single market in order to achieve growth and foster innovation and new services.

Already today services account for 70% of GDP in most European member states. The future of Europe will be a service-based knowledge society, which will be at the heart of creating growth and jobs in high value-added sectors. But Europe risks falling behind – the future knowledge economy requires European action to provide companies with a digital single market especially for services.

Today, the regulatory framework applying to digital services such as the Services Directive or the Electronic Communications Directive is fragmented and its impact and constraints not well understood. There is a need to develop a strategy to unleash the potential of a digital market, starting by understanding the impact of the current regulatory framework. The European Commission should issue a study on the benefit of creating a digital single market, develop a clear shared European vision of the goals, and target a comprehensive legislative programme with a clear timetable in order to achieve those goals.

### *Focus on Trade Policy*

We support the European Commission's idea of setting the EU in the global context. The Commission rightly points out that to stay ahead of the curve, the EU needs to be quick in seizing opportunities and in anticipating and adapting to future trends. We are of the opinion that the trade policy can play an important role in promoting the smart, greener and connected economy. The necessary condition for that is that we are able to ensure that technological developments are reflected in trade policies and trade agreements. Therefore, it is necessary for trade agreements to be able to accommodate rapid technological changes as well as new ways to deliver products and services in the digital economy.

### *Require Interoperability and Open Standards*

Interoperability is a major requirement for fair competition and for ensuring customer choice by preventing vendor lock-in. Genuine interoperability allows technology providers to compete on fair grounds since it prevents single vendor dependencies and lock-in situations. And out of the user perspective interoperability enables the user to choose as well as replace technologies without tremendous impacts and exit costs.

Open Standards are at the core of interoperability. A standard is something like a building plan containing all relevant information for building a piece of technology. Open standards represent consensus amongst technology providers about the basic concept while the competitive differentiation takes part on the level of the implementation of the respective standards. Thus, open standards provide a trusted base for innovation on top of the standards.

Interoperability is essential for companies in order to effectively integrate, to scale without problems and to stay autonomous regarding the technologies they choose to implement and the business models they choose for running and managing their IT infrastructures. Open standards are at the core of achieving interoperability because they provide a trusted and transparent base on which to implement technologies and on which to innovate.

We are moving towards a 'system of systems'. This only works if all components are interoperable and access is given to Government data – not least among and between various Government departments! Currently, information may not be interoperable among different departments and agencies unless they all agree to use a common document format to represent that data. It is the open standard – vendor-neutral and implemented by multiple competing products, operating on different platforms (be it a cell phone, PDA, Kindle, laptop, desktop, web browser, etc.) -- that enables interoperability. It is vital that we encourage Governments the opportunity to build their systems on open standards, not closed-in proprietary systems.

The World Wide Web is a prime example for the importance and the inherent potential of open standards and interoperability. The internet and the World Wide Web are based on a couple of open standards that had been made freely available for everyone. In effect, this triggered the largest wave of innovation one can imagine. It has, in fact, transformed the way we live and work. Governments should clearly require open standards and demonstrated interoperability for the technologies they use and implement. Moreover, interoperability should be a priority in policies and public authorities should have improved means for requiring interoperability. IBM believes in a Smarter Planet – one that is intelligent, instrumented and interconnected. In this Smarter Planet, some problems can be prevented before they even become problems.

#### **IV. Closing Remarks**

There is a unique opportunity for Europe to get ahead of the curve and tackle the current and future grand challenges. The opportunity is real only if businesses and governments are quick in adopting a strategy of finding innovative, smart and often technology-based solutions to those grand challenges. Applying smarter technologies to drive cost out of our legacy systems and institutions — doing more with less — will be critical to our near-term and long-term economic prospects. We will need to extend our infrastructure's useful lifetime, and we will need to ensure that next-generation systems are inherently more efficient, flexible and resilient. Importantly, this is not only about technology but about leadership and the political will to implement the necessary changes and ensuring that key stakeholders will collaborate. Progressive political leaders will show the way.