



Global Review of Innovation Intelligence and Policy Studies

Mini Study 05 – Design as a tool for Innovation

(Pierre Bitard, Julie Basset)

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EXECUTIVE SUMMARY

The primary purpose of this mini study on design is to serve as an input for policy development in the Commission. Secondly, it is meant to serve as an input for an innovation policy workshop on *design as a tool for innovation* on 26 and 27 June 2008 in Marseille. In particular, the study intends to set the scene for the workshop by giving an update of the latest research, policy developments and evidence in the area.

The mini study provides a global review of relevant literature on a specific emerging theme of interest for the European Commission, namely design. Hereafter are presented the main findings.

After the introduction, **Section 2** covers definition and cross-cutting issues.

1. *First*, we find three main complementary approaches to *definitions of design*. *According to businesses*, design is now considered as one of the principal competitive factors; each firm's actual definition of design is embedded into both the organisation of design activity and into its design teams' composition. *According to researchers*, differentiating design activity from R&D activity is a crucial step to better understanding and managing innovation itself. *In policy oriented documents*, definitions are often too vague for measurement. Measurement is the crux of the matter: without a clear operational definition of design activity, which translates into an effective official statistic system (such as the European Community Innovation Survey, CIS), policies in support of design lack fundamentals. This implies reconsidering definitions of R&D activities.
2. *Second*, we propose gauging the weight of design through two main means. Approaching *design as a sector* is tricky since designers are employed in all economic sectors. As design professions are especially represented in creative industry, the latter industry is often used as a proxy of the former (cf. UK reports). Another approach is *via* designers associations and groupings' memberships. Key benchmark European countries are UK and Denmark, where the design sector represents between 1% and 1,5% of the active population. There is great variety in the use of design. *At a firm level*, the size and sector explain most differences in use. The larger the companies, the greater are generally both the maturity and the use of design, with the notable exception of gazelles. *At a country level*, large gaps in terms of national uses of design are explained by business culture in relation to design and design rights, together with national policies.
3. *Third*, we give micro and macro levels evidence of economic impacts of design. Measured with various indicators and methods over the last fifteen years, solid evidence *at firm level* suggests a significant and positive impact of uses of design in companies. At macro level, a positive relation between design maturity and global

competitiveness can be suspected. Methodological difficulties prevail though. Provision of an operational definition at OECD or EU levels together with statistical device would be of great consequence.

4. *Fourth*, we provide an overview of the notion of *globalisation of design*. None of the three innovation communities doubts that design is part of the globalisation process. Globalisation of design is understood as threefold. *Design tends to become a merchandise*, when the design process is gradually bundled in and off-shored with manufacturing. Incumbent and new comer countries in the design-based competition claim that *design activity is the last defensible knowledge territory*. *Design processes tend to be globally distributed among communities and networks* (through the use of the Internet and ICT devices but not only).
5. *Fifth*, we consider the issue of skills for design through two main lenses. Neither a single discipline nor a single profession is able to solve the complex problems addressed by design today. *Interdisciplinarity is therefore a must* in efficient design teams. Partly for the latter reason, identifying and assessing the *availability of design skills* in Europe in comparison with other regions pose tricky problems. Linking availability of skills measures with *market demand* is even more difficult. We propose to use the proportion of education domains 'Arts and craftwork' and 'Architecture and building' in total tertiary education as a proxy to compare the designers' population between countries. Again variety prevails in space and in time; European average is about 7% as compared below 3% in Japan and 6% in the US. These figures, weighed up against those of design sector employment, indicate that not all qualified designers actually work as designers. In terms of the designers' world employment market, European design schools qualifications would represent one fourth of the world companies' favorites. Again, this calls for an improved policy attention to design education.

Section 3 uses a limited number of business cases to illustrate emerging trends in design-driven innovative companies.

1. Sources show that successful innovative companies pay close attention to the customers' needs; the design process turns out to be the locus of this co-creation process.
2. The cases proposed are meant to illustrate remarkable emerging design-driven innovation practices. Businesses examined –Fiat 500, Apple's iPod, Kone, Philips and Nokia– are undisputed champions in their integration of design into business strategy; their profitability is intertwined with user-centred design processes. Each case alone exemplifies a given composition of innovative features of design-driven companies.
3. An evidence-based understanding is critical to improve future innovation policies and instruments. Anecdotal evidence addresses critical messages to the whole design community, including policy-makers, such as: to be fully efficient, design strategies should be

endorsed at higher executive levels; users shall be involved on an early basis as co-designers. In a context where 'crowdsourcing' and trustworthy relations with public research play an increasing role, open innovation is gaining relevance. In this latter instance, key dimensions of policy encompass: better support to internal and external collaborations in design; better learning processes for companies and universities to manage design IPR issues.

Section 4 provides a comprehensive analytic review of evidence on policy initiatives in support of design, in the world.

1. *First*, historic (and geographic) development of design supportive organisations and initiatives shows emergence of design policies and instruments. This movement started around the beginning of the 20th century in Europe and the US to diffuse to the rest of the world, and gained complexity up the design maturity ladder; the early 21st century witnessed the birth of strategic design. This account also reveals how wide-ranging understandings of design are.
2. *Second*, the review analyses the common features of design policies and initiatives. A clear distinction has to be made between design policies and design support programmes, more frequent. In terms of the main objectives, most countries have adopted a comprehensive definition of design, the supportive policies of which address both competitiveness and social equity/life improvement objectives.
3. *Third*, design support policy types take seven major forms: "awareness raising and promotion", "education and training", "research and networking", "services to the private sector", "public consultation and open democracy mechanisms", "grants and tax incentives" and "regulations". Some countries use them all, whereas "grants and tax incentives" and "open democracy" are implemented into a limited number of countries only.
4. *Fourth*, evaluations carried out to assess the impacts of initiatives in support of design are scarce; they nonetheless lead to interesting conclusions. Where implemented, the results of actions aiming at raising awareness and use of design can be deemed satisfactory. Target businesses claimed they would consequently consider using design. National programmes aiming at the emergence/strengthening of research communities are also judged effective. Results of actions in favour of design education depend on the country maturity in terms of design education: marginal improvements are problematic when design is already a well-established discipline.

Section 5 concludes by suggesting opportunities for an EU design policy.

1. *First*, numerous initiatives in support of design exist at EU level; these however do not form a coherent, global European design policy. Improving European competitiveness is not the primary objective of these initiatives, which often address life improvement objectives.

2. *Second*, main lessons from business cases and policy review can be interpreted in the same way as pillars to a future EU design policy: fully endorsed, shared structured vision at higher level as regards the importance of innovation by design ; operational definition in-use of design, supported by implementation of a lasting EU appropriate statistic system (evolution of CIS); operationalisation and implementation of 'open innovation' in design so as to favour exchanges between public institution researchers (including social management sciences) and in businesses.
3. *Third*, some insights from the Innovation Policy Workshop "design as a tool for innovation" are presented. Essential ingredients of an inspiring European design policy are proposed: a vision for design for Europe together with practical actions to make this vision come true.
4. *Fourth*, elements of an economic rationale for an EU innovation by design policy are suggested. We present both arguments of market failures which relate to design spill-overs, and of systemic failures which related to ecosystems interfaces needed for design to percolate into companies and society.
5. *Fifth*, drawing on previous arguments, an "Innovation by design Initiative" could be progressively proposed by the European Commission, bridging from design concepts to a comprehensive attention to details to improve life.

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1 Introduction

The primary purpose of this mini study on Design is to serve as an input for policy development in the Commission. Secondly, it is meant to serve as an input for an innovation policy workshop on *design as a tool for innovation* on 26 and 27 June 2008 in Marseille. In particular, the study intends to set the scene for the workshop by giving an update of the latest research, policy developments and evidence in the area.

The mini study provides a global review of relevant literature on a specific emerging theme of interest for the European Commission, namely design as a tool for innovation.

The study covers the following questions:

- definition issues, including variety of understandings of the concept;
- importance issues, comprising quantitative and qualitative evidences;
- impact issues;
- globalisation issues, as it is affecting design sectors and firms' strategies;
- skills issues;
- emerging significant trends in terms of integration of design in companies' practices;
- design supportive policies, worldwide, at local, regional or national levels, from relevance and consistency perspectives;
- evaluation of effectiveness of those design supportive policies; ability of design policies to address societal challenges.

The study is structured along the following sections:

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2 Gauging design by the books

In this section, we will provide a structured review of the significance of design by successively considering the issues of definition, importance, impact and globalisation of design and skills for design.

2.1 Definitions and meanings

About half of the texts compiled and analysed for this study contain explicit attempts to define design. We therefore found a wealth of approaches to design. For the sake of simplicity, the definitions found in the texts pertain to three main types of purpose:

1. First, definitions of design are devised to define a firm's attitude to design, for firms to differentiate from each other.
2. Second, definitions can be formulated to provide a better understanding of design activities from a management theory viewpoint.
3. Third, another class of definitions aims to help measure the importance of the activities with a view to preparing for policymaking.

Design as a firm's competitive distinctive feature

Conventional firms' attitudes vis-à-vis design have always been twofold. On the one hand, one comes across the perception of design as a question of "aesthetic considerations, such as style and appearance"¹. Design is considered costly and risky in many industries, and is used only when absolutely required (ergonomics, easiness of use). On the other hand, industrial mass production firms have always been relying on specialist designers (industrial product designers). No firm could ever doubt the seriousness and technical ability of engineers in charge of designing new products (or components) or new machines, or new buildings (or new buildings' interiors). However, explicit connection between designers as stylists and industrial designers was often more of an exception than a rule. Moreover, irrespective of the variant considered, the underlying convention was that design did not play a key role in the firm's competitiveness.

Only since the last fifteen to twenty years did design become considered as a major influence to firms' economic performance. Since the mid-eighties, firms have begun to define design their own ways and place a particular emphasis on this very process. A few excerpts from companies' annual reports are given hereafter to illustrate the new accent put on design. In **3.2**, cases are elaborated with the purpose of enabling learning from the more advanced companies in terms of integration of design.

¹ Cf. Cox review (2005), p. 5.

Exhibit 1 – How design is approached by some major design-driven companies (excerpts from Annual reports 2007)

► *Amazon.com*

The first pages, written by Founder and Chief Executive Officer Jeffrey P. Bezos and entitled "To our shareowners" are dealing with design. It is all about Amazon new product, the Kindle.

"Many of you may already know something of Kindle—we're fortunate (and grateful) that it has been broadly written and talked about. Briefly, Kindle is a purpose-built reading device with wireless access to more than 110,000 books, blogs, magazines, and newspapers. The wireless connectivity isn't WiFi—instead it uses the same wireless network as advanced cell phones, which means it works when you're at home in bed or out and moving around. You can buy a book directly from the device, and the whole book will be downloaded wirelessly, ready for reading, in less than 60 seconds. There is no "wireless plan," no year-long contract you must commit to, and no monthly service fee. It has a paper-like electronic-ink display that's easy to read even in bright daylight. Folks who see the display for the first time do a double-take. It's thinner and lighter than a paperback, and can hold 200 books."

(...)

"We started by setting ourselves the admittedly audacious goal of improving upon the physical book. We did not choose that goal lightly. Anything that has persisted in roughly the same form and resisted change for 500 years is unlikely to be improved easily. At the beginning of our design process, we identified what we believe is the book's most important feature. It disappears. When you read a book, you don't notice the paper and the ink and the glue and the stitching. All of that dissolves, and what remains is the author's world." (p.3)

List of the Kindle's design characteristics: Paper-like Screen; Wireless Access with Whispernet™; Carry Your Library in 10.3 Ounces; Ergonomic Design; Shop the Kindle Store Right from Your Device; Search; Keyboard; Bookmarks and Annotation; Built-in Dictionary; Wireless Access to Wikipedia; Adjustable Text Size; Long Battery Life.

► *Apple*

"The Company's business strategy leverages its unique ability to design and develop its own operating system, hardware, application software, and services to provide its customers new products and solutions with superior ease-of-use, seamless integration, and innovative industrial design." (p.1)

Digital Lifestyle

The Company is the only participant in the personal computer industry that controls the design and development of the entire personal computer—from the hardware and operating system to sophisticated software applications. This, along with its products' creative industrial designs, intuitive ease-of-use, and built-in graphics, multimedia and networking capabilities, positions the Company to offer innovative integrated digital lifestyle solutions." (p.1)

Competition

The principal competitive factors include price, product features, relative price/performance, product quality and reliability, design innovation, availability of software and peripherals, marketing and distribution capability, service and support, and corporate reputation." (p10)

► *Nokia*

Design-Devices

We take a human approach to designing mobile devices, with the goal of creating stylish products that work just the way people like them to. This ethos is central to our design work and brand.

Our design process is influenced by the consumer and their behavior – how they want the mobile to look, function and fit into their lifestyle. We focus on beautiful simplicity –sleek design and ease of use, relevance for specific consumers and local tastes and creating a joy of use." (p.37)

The remaining of the rationale about design within the annual report is very similar to that of Apple so that we do not add it. It should nonetheless be noted that, unlike other companies, a 5-page brochure entitled "Nokia Design Backgrounder" complements the Annual report and details Nokia's design philosophy, organisation and achievements.

► *Philips*

" Philips taps teams of futurists, cultural anthropologists, designers and scientists to develop user centered products and services." (First sentence of the annual report, p.2)

Simplicity Event 2007

Philips' Simplicity Events use simplicity led design concepts to provide an insight into possible solutions three to five years ahead. The 2007 edition in London showcased how the inventive use of

technology, coupled with intuitive, personalized design, can enhance care for people's well-being at home, in the hospital and on the move. (p.2).

"We also continued to invest heavily in the things that really set Philips apart – our brand and our end-user driven innovation and design (...)."Message from the president (p.10)

Consumer Lifestyle

Combining CE and DAP's complementary strengths will boost Philips' consumer lifestyle proposition as a whole, creating a new business sector based on deep end-user insight, cutting-edge design and rich consumer experiences, rather than product categories." Message from the president (p.15)

► *Procter & Gamble*

Report subtitled "Designed to grow", after which main chapters entitled "Designed to grow", "Designed to Win", "Designed to Deliver" and "Designed to Lead".

"Innovation is P&G's lifeblood. The Company has competitive advantage from our depth and breadth of expertise in about a dozen core technologies. We multiply the power of our internal innovation capability by connecting it to our vast external network of scientists, inventors and technology problem-solvers. P&G is getting greater productivity from its R&D investment by treating innovation as a process that can be continually refined to make it more robust, reliable and systematic." (p.16)

"Getting Stronger"

We are extending our competitive innovation advantage by "innovating how we innovate." We are focusing on how we can create winning holistic consumer experiences, not just products that perform better." (p.16)

Innovation research's definitions: improving our understanding of design

Until quite recently design did not receive much attention from the innovation research community. Apart from the pioneering work developed at the Design Innovation Group (DIG, UMIST-Open University) formed at the beginning of the eighties (DIG, 1991), design has long remained a topic for designers and engineers. The evolution of DIG's research themes provides a good illustration of the general tendency; beyond costs/benefits analyses, societal concerns, such as environment related issues, have gained importance. More often now, as the topic gets higher on the policy agenda, researchers address design as a major and ill-understood part of the innovation processes (cf. Hidden Innovation in the Creative Sectors², 2007).

Le Masson *et al.* (2006) clarify the intensifying need for understanding design. Their core assumption is that understanding design is the next step towards a better understanding of innovation itself. In their view, R&D is mainly a statistic and economic aggregate created for measurement purposes. Furthermore, it is a measure of inputs to innovation whereas design implies in a description of both the activities performed by people involved in design and of their capabilities. According to this approach, design has three specific features, which set it apart:

1. it involves a collective process, neither the whole set of ideas nor the actors of which are known from the start;
2. it is a complex and uncertain learning process;
3. it requires mapping, guiding patterns or framing.

² Hidden Innovation in the Creative Sectors. Interim Report for NESTA. Manchester Institute for Innovation Research Lawrence Green, Ian Miles, Jason Rutter. September 2007.

Also, design is an activity where the identity of the objects that are handled is uncertain. On the whole, as studied by H. Simon (1986)³ design basically pertains to solving ill-structured problems.

Le Masson *et al.* further demonstrate that progressing towards a better understanding –and management– of the design process entails identifying and analysing the specific organisation of design activities behind innovation, often labelled design “models” or “modes”. And, because firm’s practices place a growing emphasis on users and customers so does innovation research. A wealth of books and articles were published in the last 5 years which correspond to this new trend (von Hippel, 2005). As stated by Von Hippel in “An Emerging Hotbed of User-Centred Innovation ” (2007)⁴: “In an array of industries, *producer-centred innovation is being eclipsed by user-centred innovation – the dreaming up, development, prototyping, and even production of new products by consumers. These users aren't just voicing their needs to companies that are willing to listen; they're inventing and often building what they want.*”

Policy-oriented definitions of design

First, surprisingly enough, a non-negligible proportion of the policy-oriented documents that aim at paving the way for design-oriented innovation policies do not use precise and practical definitions of design. Instead, vague statements prevent measurement (Mollerup Designlab A/S, 2006; Beda 2004; Asia Pacific Foundation of Canada, 2007). For instance, they read: “Design is defined here as the first step by which ideas become reality and concepts take form” or “design is a means to reach a goal”. The Cox Review (2005) has paved the way for launching high-level government design policies; its general definition has to be recalled:

“Design’ is what links creativity and innovation. It shapes ideas to become practical and attractive propositions for users or customers. Design may be described as creativity deployed to a specific end.”

In parallel with the Cox Review, the British Department of Trade and Industry published an economics paper⁵ which provides a relevant definition of design, in line with our study:

“Design is a structured creative process. Design is readily associated with industrial product design for manufactured products – specifically the ‘look’ of a product. However, the application of design is much broader, for example designing for function; for aesthetic appeal; for ease of manufacture; for sustainability; and designing for reliability or quality and business processes themselves. Service design affects how customers will

³ Research Briefings 1986: Report of the Research Briefing Panel on Decision Making and Problem Solving ; National Academy Press, Washington, DC

⁴ E. Von Hippel. 2007. An Emerging Hotbed of User-Centered Innovation. Harvard Business Review. February.

⁵ Creativity, Design and Business Performance. DTI Economics Paper No.15 November 2005.

experience the delivery of a service, such as a bank or a fast food restaurant. Elements of design, particularly graphic design, will form part of product, service and company branding and advertising strategy."

Second, unavailability of comparable official data on the topic at European level must be stressed. The harmonised Community Innovation Survey questionnaire does not give an adequate place to design yet.

In the current version, design is referred to with a narrow approach, only twice. First, it appears as a specific intellectual property right issue, i.e. an industrial design that can be registered. Second, it appears explicitly as an emblematic form of marketing innovation, i.e. *"a marketing innovation is the implementation of new or significantly improved design or sales methods to increase the appeal of the company's good and services or to enter new markets."*

Slight improvements to the questionnaire are envisaged but foreseen changes remain in line with this very narrow perspective. The only exception to this rule is the British CIS, which is the most advanced on the topic. It still deserves some criticism (Tether-DTI 2006). As Tether explains, in the UK in recent years, specific emphasis and attention have been put on design as an instrument for enhancing the firms' competitiveness and therefore nation's economic growth. As a consequence of the raised awareness on design as a policy tool, the 2005 UK Innovation Survey contains three questions which relate directly to design as a specific set of innovation activities. In one instance, design is considered as a specific form of protection to innovations. In the other two, design is explicitly excluded from R&D. Tether notices that this peculiar exclusion implies that part of the design activities will therefore be 'hidden' in R&D.

As a result of the data analysis and methodology discussion, Tether suggests a new categorisation, which notably differentiates between "research", "design and development", and "ancillary design" (pp. 26-27):

Research – i.e., experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts. It may or may not be directed towards a specific practical application or objective.

Design and Development – i.e., systematic creative or experimental work, carried out on an occasional or regular basis, that draws on knowledge from research and/or experience, that is directed to producing products (including materials and services), to installing new processes and systems, or to improving substantially those already produced or installed.

Ancillary Design – i.e., design activities engaged in to support the introduction of product or process innovations. This includes product styling, the design of promotional material and packaging, and the design of any web-sites intended to support innovations. Ancillary design activities undertaken within experimental design and development should not be included.

Training of personnel directly related to innovation activity.

Marketing of Innovations – i.e., activities other than those identified as ancillary design aimed at the introduction of your enterprise's innovations. Marketing activities include market research and advertising of new innovations, but exclude routine marketing activity."

A third category of policy documents proposes clear-cut definitions but so comprehensive that frontiers with neighbour concepts are made fuzzier. For instance, in NZ Institute Of Economic Research Inc. (2003), design is regarded "as a process that encompasses every stage of product development, from inception through to marketing. As such, design comprises the following distinct elements:

- Research: assessment of customer requirements.
- Concept development: translation of customer requirements into product or service, utilising (amongst other things) innovation.
- Concept validation: assessing concepts in light of customer requirements, competing products, and manufacturing considerations.
- Design resolution: testing and refinement of prototypes, with consideration of fitness for purpose, aesthetic appeal, and intellectual property issues.
- Productionisation: maximisation of production quality and reliability, while minimising production and distribution costs.
- Communication: development of marketing and branding to support the underlying product."

Fourth, design can be approached as an economic sector of activity. Basically, design definitions are based on design professions with the following four main ensembles: fashion design, graphic design, interior design and product design (cf. Kea, 2007; Ministère de l'économie, des finances et de l'industrie, 2002). A more detailed definition encompasses industrial design, product design (furniture, toys, jewellery), visual, communication, advertising, packaging, fashion design, architecture design, landscape design, interior design, urban design, etc. (Asia Pacific Foundation of Canada, 2007).

Fifth, there are *ad hoc* groupings originating in standards codings for industry classifications (e.g. NACE or ISIC). It should be noticed that NACE rev.2 classification (2008) incorporates significant changes from NACE rev 1.1. As a matter of fact, a range of design activities are now identified and have specific class codes, which was not the case in previous versions of the classification. In NACE Rev2 (2008), classes which directly cover design activities are the following;

74.10 Specialised design activities

This class includes:

- *fashion design* related to textiles, wearing apparel, shoes, jewellery, furniture and other interior decoration and other fashion goods as well as other personal or household goods
- *industrial design*, i.e. creating and developing designs and specifications that optimise the use, value and appearance of products, including the determination of the materials, mechanism, shape, colour and surface

finishes of the product, taking into consideration human characteristics and needs, safety, market appeal in distribution, use and maintenance
 - *activities of graphic designers*
 - *activities of interior decorators*

62.01 – Computer programming activities (which covers design and programming of web pages)

71.11 Architectural activities (i.e. architectural design)

71.12 Engineering activities and related technical consultancy (which covers engineering design, i.e. applying physical laws and principles of engineering in the design of machines, materials, instruments, structures, processes and systems)

We are very close to broader approaches that attempt to identify and determine the size of industries at large like culture or creative industries (Kea, 2007; British Department for Business, Enterprise and Regulatory Reform, 2008). At any rate, measuring the importance of design (cf. below) as a sector or a branch implies an ad hoc process of construction of the ensemble to be evaluated.

2.2 The importance of design

Collecting –and analysing– evidence on the current status and role of design is an indispensable but complex and risky route in the context of this study. Caution must therefore prevail. First, the existence of most documents compiled for this study is indeed justified by a presupposed importance of design in the current global business competition. At the same time, professional organisations are often key sources and disseminators of the relevant and up-to-date data on design. This can be considered as having a mixed effect on the measure; they provide the latest accurate assessment, but may not be objective.

Second, public access to serious data is extremely limited so that all studies propose more or less the same ones, with similar origins. Moreover, data-based justifications of the importance of design seem to become increasingly rare in recent years. Finally, countries of origin are also those which tend to develop design-oriented innovation policies. This is a limiting factor.

Design as a sector

Design is usually approached as the core of the so-called creative industries.

First of all, one shall start with the latest influential British reports of a whole series on the topic of creative industries⁶: “Creative Britain – New

⁶ Key references on design and innovation policies at government level dates back to 2004-2005 with “The Impact of Design on Stock Market Performance-An Analysis of UK Quoted Companies 1994-2003”. Design Council. February 2004; the “Cox Review of Creativity in Business”, DTI study on ‘Creativity, Design and Business Performance’.

talents for the New economy"⁷. It gives a broad definition of the creative industries "*The creative industries include advertising, architecture, the art and antiques market, crafts, design, designer fashion, film, interactive leisure software, music, the performing arts, publishing, software and computer services, television and radio.*"

This definition leads to the following size of the creative sector: "*Two million people are employed in creative jobs and the sector contributes £60 billion a year – 7.3 per cent – to the British economy. Over the past decade, the creative sector has grown at twice the rate of the economy as a whole (...).*"

The British Design Innovation Survey (2007) is the only industry wide survey that specifically focuses on the UK commercial design sector (4,500 firms, the third of which replied to the survey). Key figures are a turnover of £ 4 bn, 62,000 employees and overseas incomes £ 0.7 bn (all have decreased between 2006 and 2007)⁸.

A second typical indicative country to gauge the importance of the sector is Denmark⁹. In 2007, the Danish design sector represents about 15,000 designers¹⁰, 4,500 Danish design companies, with a total turnover of circa EUR 470 Million. The sector's structure is particularly spread and composed of very small companies (as compared with other countries): 9 design companies out of 10 have less than 2 employees (even amid the design companies that have been in business for more than 10 years, only 2 % employ more than 5 people). Despite its relative small size in terms of employment, the design sector is considered to account for about 16 % of the total of Danish exports¹¹.

The third typical indicative country against which the importance of design sector is measured is Finland. The Finnish Association of Designers indicates slightly less than 1200 members (plus 500 artists) to be compared with an active population of 2.7 millions¹².

In South Korea, design was quite recently recognised by policy makers as having a significant influence on economic development. 'Design Industry Development Planning Team' was formed in March 2004 with the purpose of successful and efficient implementation and refinement of the 'Design Industry Development Strategy of the Participatory Government' unveiled in December 2003. The total number of design studios in Korea was 1,215, with an average number of employees of 6.9¹³.

7 "Creative Britain – New talents for the New economy". British State Department for Culture, Media and Sport. February 2008.

⁸ I.e 0,26% of the active population.

⁹ Cf. The Danish Enterprise and Construction Authority. 25 July 2007.

¹⁰ I.e 0,5% of the active population, for qualified designers only.

¹¹ Danish Designers Manifesto. 2007

¹² I.e. 0,06% of the active population.

¹³ Compared with the active population, the design sector therefore represents 0.05%.

Intensities and variety in the use of design

At firm level

Studies¹⁴ show that firm size is the first explanatory factor when it comes to using design; a company's attitude to design depends very much on its size. As emphasised by Design Council (2007), recognition of design's contribution grows with the size of a business. 44% of small businesses, 56% of medium-sized ones and 77% of large businesses feel design has continued to contribute more to their competitiveness over the past ten years. The larger the company, the greater is the likelihood that the company uses or buys design and the greater the degree of design maturity. Moreover, rapidly growing companies are much more likely to rank design as the first success factor.

Attitude and use of design is also sector dependent. In the manufacturing sector, the furniture industry buys more design than any other industry; "Soil and stone industry" or "steelworks" still lag behind so that one may expect increases in the forthcoming years. In the service sector, investing in design is common in culture, entertainment and sport, retail, hotels and restaurants, and transport and communication. The Design Council (2007) stresses that in the past three years, manufacturers lead the way, 44% of them having increased their investment. They are followed by businesses in the *property, finance and business services sector* (39%), in the *retail, wholesale and leisure services sector* (24%) and in the *primary industry, construction, utilities and communications sector* (17%).

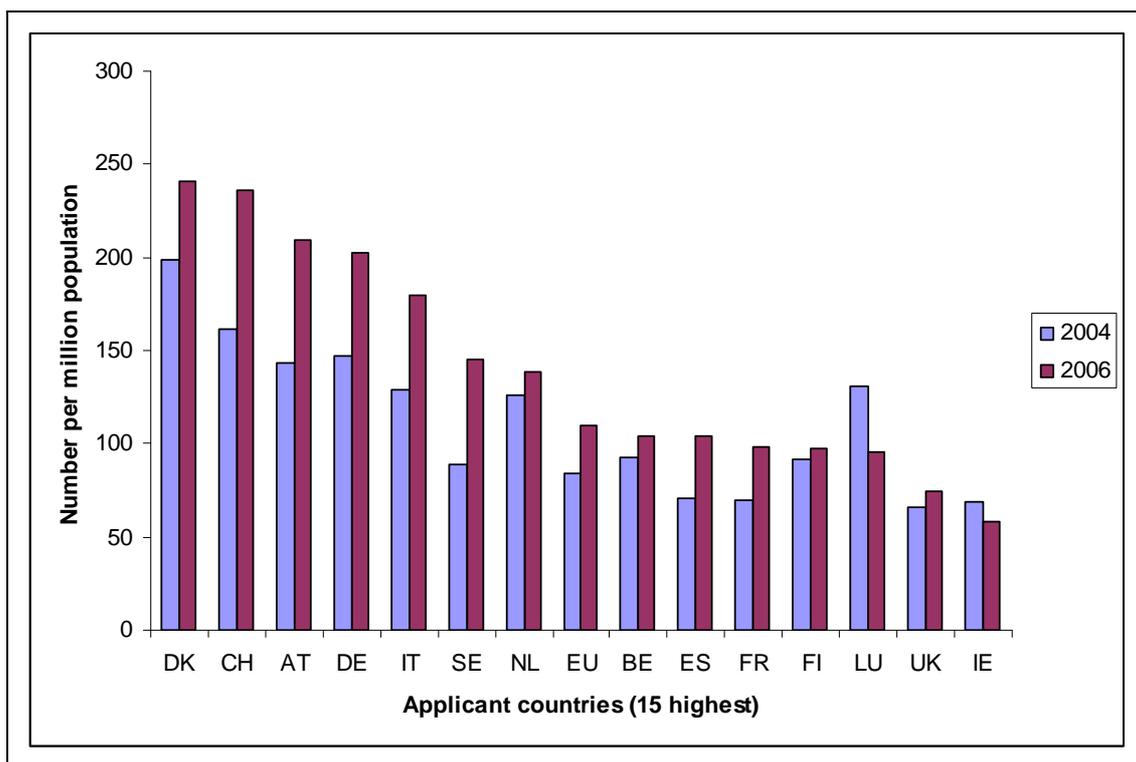
Section 3.2 provides an account of further specific features of the companies' own pathways of innovation and performance through design.

At country level

The Community industrial design registrations at the Office of Harmonization for the Internal Market (OHIM) can be used as a first proxy to demonstrate variety of country specific uses of design. Exhibit 2 shows the 15 largest applicant countries to European Community design protection (per million population). First, over the period considered, most countries increased their application to design protection. Second, attitudes vary a great deal, and range between UK and Ireland which seldom apply (whereas UK is often cited as an example in terms of design policy attention) to Denmark, another widely acclaimed design champion. Denmark hold five times more design protections than UK.

Exhibit 2 - Community industrial designs: OHIM Registrations of the 15 first applicant countries [number per million population, 2005 – 2007]

¹⁴ E.g. Design Council UK's *The value of design Factfinder 2007* or "10 points Attitudes, profitability and design maturity in Swedish companies, Swedish Design Industry study 2004.



Sources: Innovation Scoreboards 2005 & 2007. Own selection and presentation.

Further work would be needed to provide explanations, on a case-by-case basis. A combination of factors may contribute to clarify this link: the country's own industry ability to absorb design (design in business-to-business relations) combined with quality of the country's intellectual property protection system and attitudes towards IP, etc.

These figures may be complemented with a global picture of countries' strategies for the promotion of design, worldwide. Indeed, according to Raulik (2007)¹⁵, a few countries have developed a higher level of design strategy, coordinating promotion and support initiatives with a national policy or formal strategy. This level is only reached in countries where the government understands and endorses the value of design for economic development. These few countries are: Finland, Germany, India, Japan, New Zealand and The Netherlands.

2.3 Micro level evidence of the economic impact of design

The economic impact of design varies according to a range of factors but is always significant. Micro factors are: type of use, amount invested, size of the company, manufacturing vs service, the company's specific sector (exploitation of minerals vs culture); macro contextual elements also influence the power of impacts, such as consumption habits, regulations, norms and standards and existence of public support programmes.

¹⁵ National strategies for the promotion of design: 3 levels of maturity – Excerpts from G. Raulik's UWIC poster for Postgraduate poster Day - 13 September 2007

Solid and influential references are scarce on the topic. The major recent references, most of which are extensively cited, propose sound evaluations of the economic impact of design.¹⁶

Exhibit 3- Micro level impact of design - references

- *The benefits and costs of investment in design: using Professional Design Expertise in Product, Engineering and Graphics Projects*. Design Innovation Group. **1991**
- *The Economic Effects of Design*. Danish National Agency for Enterprise and Housing. **2003**
- *Design maturity in Swedish companies*. Swedish Industrial Design Foundation and the Association of Swedish Engineering Industry. **2004**
- *The Impact of Design on Stock Market Performance An Analysis of UK Quoted Companies 1994-2003*. British Design Council. **2004**
- *Creativity, Design and Business Performance*. DTI Economics Paper No.15. **2005** based on the *Creativity and Design Study for DTI using the Community Innovation Survey*. Haskel, J. Cereda, M., Crespi, G., Criscuolo, C. DTI Think Piece, Queen Mary, University of London, AIM, University of Sussex, OECD. **2005**.
- *The Value of DesignFactfinder report*. British Design Council. **2007**

The results of empirical evidence based studies on the link between design and firm performance are summarised in [Exhibit 4](#).

¹⁶ One reference only was identified in 2006, "Design and Competitive Advantage in Technology-Driven Sectors: The Role of Usability and Aesthetics in Dutch IT Companies". Gemser, G.; Jacobs, D.; Ten Cate, R. *Technology Analysis and Strategic Management*, Volume 18, Number 5, December 2006, pp. 561-580 (20)

Exhibit 4 – Review of main studies on economic impact of design

| Key Features Authors | Date | Method | Main results |
|---|-------------|---|--|
| Design Innovation Group –UK | 1991 | Three-year survey of 221 SMEs received a Government subsidy to employ a design consultant | <ol style="list-style-type: none"> 1. Around 90 per cent of the implemented projects made a profit. 2. Average sales increase of 41% -in comparison with previous, less design oriented products. 3. Additional benefits: reduced manufacturing costs, stock saving, increased profit margins and improvements in a company's external image |
| National Agency for Enterprise and housing - Denmark | 2003 | 1,000 telephone interviews survey of Danish companies (with a minimum of 10 employees) | <ol style="list-style-type: none"> 1. Companies that purchased design have registered approx. 22% above-average growth in gross revenue 2. Companies which have invested in design-related employee training or external procurement of design services achieved an additional 40% gross revenue increase – compared to companies where design activity is either constant or has decreased 3. Positive correlation between design and employment since job creation. |
| Swedish Design Industry – Sweden | 2004 | 10-question survey of 1,000 companies | <ol style="list-style-type: none"> 1. Most companies -(81%)- consider that there is a direct relationship between design and profitability 2. Influence depends very much on the company's sector 3. The higher the company is on the design maturity ladder, the higher the growth and profitability |
| Design Council – UK | 2004 | Statistical analysis of performance of 166 design-led UK FTSE quoted companies over the period [1994 and 2003] | <ol style="list-style-type: none"> 1. A group of 63 companies identified to be effective users of design outperformed the FTSE 100 index over the full period by 200% -and also beat their peers in the recent bull and bear markets. |
| Department of Trade and Industry - UK | 2005 | Analytical framework and literature review (less than ten references) for chapter on design and firm performance | <ol style="list-style-type: none"> 1. Firms with higher design intensity have greater probability of carrying out product innovation, but are not more likely to carry out process innovation. 2. Positive association between design expenditure and firm productivity growth (results from the CIS-based study from Haskel <i>et al.</i>). |
| Design Council – UK | 2007 | Surveys of the Design Council ("National Survey of Firms 2005" and "Added Value Research 2007"), over 1,500 telephone interviews with businesses with ten or more employees; representative sample. | <ol style="list-style-type: none"> 1. For every £100 best business design performer spends on design, turnover increases by £225. 2. Businesses that add value through design see a greater impact on business performance than the rest 3. Gazelles are nearly six times as likely as static businesses to see design as integral |

As visible in the above table, analyses converge to suggest a significant and positive impact of uses of design in companies.

2.4 Macro level evidence of the economic impact of design

Measuring the macro economic impact of design activity implies connecting a design (or design dependent) indicator with a competitiveness (or growth) indicator in an explicit manner. In any instance, identifying and assessing the influence of design activities on a country’s macro-economic performance is problematic. Design activity is one among many explanatory factors which altogether combined may explain macro performance. Moreover, measuring the intensity of design activity alone needs dramatic improvements of statistic systems (at regional, national and European levels).

Among the few attempts to provide such indicators are the World Economic Forum (WEF)’s. Until 2005-2006, WEF constructed and calculated a Design Competitiveness index, notably composed of “Extent of Branding”, “Capacity for Innovation”, “Uniqueness of Product Designs”, “Production Process Sophistication” and “Extent of Marketing”, with variations from year to year. In 2007, these features were aggregated into the “sophistication of company operations and strategy index”, used here as a proxy of a design index. Based on these indicators, on the following graph are plotted the national competitiveness ranking of leading countries against their design ranking to show the correlation between national competitiveness and levels of design.

Exhibit 5 – Linking “sophistication of company operations and strategy” ranking with the global competitiveness ranking [2007]



Source: World Economic Forum – The global competitiveness strategy, 2007. Own

presentation.

Essential facts that can be drawn from the graph are, without being conclusive about a causal link between design and macro-economic performance:

1. All leading countries according to the Global Competitiveness index are also those who lead the way in terms of design performance
2. Countries often show a design ranking which is very similar to that in terms of global competitiveness
3. Few countries are more competent in design than they are in terms of global competitiveness¹⁷.

To conclude, a country the competitiveness of which is dependant upon its companies innovative design is more likely to be also a leader in the world competition.

2.5 Design, a differentiating factor in a globalizing world

The innovation communities of researchers, policymakers and businesses acknowledge globalisation of design activities. Differences of meanings and intentions are certainly perceptible.

Firstly, design is identified as a key facet of the globalisation process in recent policy documents. They originate from high level government 'globalisation' committees which all consider design as a possible response to damaging effects of globalisation¹⁸. Secondly, globalisation is integrated into businesses' strategies and operations; questions associated with globalisation of design are seldom emphasised. This holds true mostly for multinationals where design is organised to maximise the benefits from a network of localised presence worldwide (see discussions on this in relation to Philips or Nokia cases in 3.2). Thirdly, innovation research community's documents which address the issue aim either at analysing the functioning and consequences of off-shoring of (part of) the design process or at proposing method to efficiently organise distributed design teams.

In general, the notion of "globalisation of design" is used with three different meanings:

1. *Design as a merchandise*

Notably for cost reasons, increasingly larger parts of the manufacturing are off-shored in Asia and design tends to become bundled in with the manufacturing process to a greater extent. T. Rynänen (2006) uses the term 'McDonaldisation of design', expressing the fear of a design which would become a culture-free merchandise.

¹⁷ As visible in the graph: below the regression curve are better placed in terms of global competitiveness than in terms of design (and conversally, countries above the curve have a better design performance)

¹⁸ Rapport pour le Président de la République sur la France et la mondialisation, de H. Vedrine, 2007; Innovation Nation, UK Government 2008; Knowledge driven Growth -An initial report by the Swedish Globalisation Council, 2007) and Progress, innovation and cohesion - Strategy for Denmark in the Global Economy, 2006

2. *Design activities as the last defensible knowledge territory*

With the above-expressed fear of losing control of design is simultaneously developed the idea that design activities and creativity have prominently to do with a nation/ region's identity. Design pertains to the notions of crafts and territory; it is embedded in culture and institutions, which translate into a series of systems of constraints. This intrinsic value of design is both claimed by incumbent countries such as Denmark¹⁹, Finland and Great-Britain but also by countries such as India²⁰ or Singapore, or China (cf. for chips design for instance).

3. *Design processes as globally distributed among communities and networks*

Worldwide, design companies and studios are SMEs (and most of the time, very small-sized companies). Their markets are local markets, mainly SMEs'; relationships with clients are based on proximity. At the same time, multinational companies organise their design processes so as to best learn from specific local differences. Adjusting their products to local markets and identifying local solutions which can meet a global market are the two facets of this learning process. Distributed design teams and processes pose specific problems in terms of knowledge management to multinational groups (cf. Pemberton-Billing et al., 2003).

2.6 Skills for design

The purpose of this brief section is to give an overview of the topic "skills for design". The issue is approached in more depth in sections 3 and 4. Section 3 illustrates how efficient design teams are organised in design-driven innovative companies; key finding is the variety of skills required to carry out effective design. Section 4 shows how public policies address the issue of building up design communities and improving the education of design; this type of policy has become increasingly implemented in recent years.

Interdisciplinarity: a must

It is trivial to say that the quality of the innovation process relies on the qualities of the people involved; the same holds true for the design process. As a consequence, formal and informal education as well as workplace management and training play a key role in the efficiency of the use of design. In terms of the skills required to perform high-quality design, evidence shows that interdisciplinarity in design teams is becoming a requirement (cf. notably 3.2 and 4.1).

¹⁹ The increasingly vital role of design. Danish Designers' Manifesto. February 2008.

²⁰ Cf. *India's Changing Innovation System: Achievements, Challenges, and Opportunities for Cooperation*. Committee on Comparative Innovation Policy: Best Practice for the 21st Century, Charles W. Wessner and Sujai J. Shivakumar, Editors, National Research Council; 2007; *Flying Under the Radar: Reflections on the Indian National Design Policy*. Ranjan M P, National Institute of Design, Ahmedabad, India, 2007; *Design in India...Design with India*. Regional Report for ICSID Board Meeting. Darlie O Koshy. 2008.

Interdisciplinarity is mainly twofold. Firstly, design teams are becoming more open to a wider range of social sciences disciplines, in addition to pure style designers and engineering designers; design project teams at Philips for instance encompass psychologists, anthropologists, ethnographers, cultural anthropologists or futurists. Secondly, design teams are gradually more integrating management and business skills. Successful design-driven innovative companies do efficiently both (cf. 3.2), so that their business model is design-driven.

Policy and business reports²¹ consider skills and hence education and research as the design-oriented innovation policy area par excellence. In this matter, keywords relate to improving the connectiveness between artistic, businesses and engineering skills: co-creation, multi-disciplinarity and creativity have to be organised and structured. No single discipline and hence no single profession is able to solve the complex problems addressed by design today. Put differently, successful innovation systems rely on a smart combined ability of cutting edge design, technologies and disruptive business models.

From design education to design skills: worldwide insights

International classifications do not allow for drawing a precise picture of design education. Design is not a defined domain. The most widely applied classification, UNESCO's ISCED97, is used for the Innovation Scoreboard (Science and Engineering graduates). For tertiary education, two domains can be used as a proxy for design education:

ISC 21 'Arts and craftwork' covers:

- Fine arts: drawing, painting, sculpture;
- Performing arts: music, drama, dance, circus;
- Graphic and audio-visual arts: photography, cinematography, music
- production, radio and TV production, printing and publishing;
- Design; Craft skills.

ISC 58 'Architecture and building' covers

- Architecture and town planning: structural architecture, landscape
- architecture, community planning, cartography;
- Building, construction;
- Civil engineering.

The following exhibit presents the proportion (in percentages) of education domains 'Arts and craftwork' and 'Architecture and building' in total tertiary education over the period from 1998 to 2005.

²¹ Design Council (2006) Lessons From America, Report on the Design Council / HEFCE fact-finding visit to the United States, September; Design Council (2007) Lessons from Europe - Report on the Design Council/HEFCE fact-finding visit to Netherlands, Denmark and Finland, September.

Exhibit 6 – Proportion (%) of education domains 'Arts and craftwork' and 'Architecture and building' in total tertiary education [1998-2005]

| Year | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|----------------------------|------|------|------|------|------|------|------|------|
| Country | | | | | | | | |
| Germany | 10,3 | 12,0 | 12,6 | 13,1 | 12,6 | 12,4 | 11,6 | 10,5 |
| United Kingdom | . | . | 9,5 | 11,2 | . | 10,5 | . | 10,5 |
| Austria | . | 10,0 | 10,3 | 10,6 | 10,8 | 10,1 | 9,5 | 8,8 |
| Portugal | . | . | 8,9 | . | . | 8,3 | 5,6 | 8,7 |
| Ireland | 4,7 | 12,4 | 19,8 | 10,6 | 10,6 | 13,6 | 11,4 | 8,4 |
| Finland | 9,0 | 8,6 | 7,9 | 7,1 | 7,2 | 6,7 | 7,7 | 8,0 |
| Belgium | . | . | 8,1 | 8,2 | 7,7 | 7,4 | 8,5 | 7,8 |
| Switzerland | 10,6 | 9,1 | 8,8 | 6,9 | . | 7,5 | 8,3 | 7,7 |
| Denmark | . | 5,3 | 5,6 | 5,7 | 6,0 | 6,7 | 7,0 | 7,7 |
| Spain | 6,0 | 6,2 | 6,8 | 7,6 | 7,9 | 7,4 | 7,5 | 7,6 |
| Netherlands | 6,4 | 7,3 | 7,6 | 7,1 | 7,3 | 7,4 | 7,4 | 7,5 |
| Italy | 5,4 | 5,6 | 5,7 | 5,5 | 7,6 | 5,8 | 6,5 | 7,3 |
| Czech Republic | 8,7 | 7,3 | 6,4 | 6,1 | 6,5 | 5,9 | 6,4 | 7,0 |
| Slovak Republic | . | 5,4 | 4,8 | 7,8 | 6,8 | 6,6 | 6,2 | 6,4 |
| Greece | . | . | . | . | . | . | 2,2 | 6,2 |
| France | . | 0,1 | 4,3 | 4,4 | 3,5 | 3,5 | 3,5 | 6,0 |
| Norway | 3,1 | 3,8 | 3,5 | 3,5 | . | 3,5 | 4,2 | 5,5 |
| Iceland | 1,3 | 0,2 | 4,1 | 5,6 | 4,7 | 4,2 | 4,5 | 4,9 |
| Sweden | 1,3 | 5,0 | 5,2 | 4,7 | 4,7 | 4,7 | 5,1 | 4,7 |
| Hungary | 4,9 | 4,0 | 2,9 | 3,2 | 3,5 | 2,8 | 2,9 | 2,8 |
| Poland | 1,0 | 2,1 | 1,9 | 1,6 | 1,8 | 1,9 | 2,1 | 2,4 |
| | | | | | | | | |
| Korea (Republic of) | 8,4 | 8,3 | 9,2 | 11,5 | 11,2 | 12,2 | 11,9 | 12,1 |
| Australia | 6,7 | 6,9 | 7,1 | 6,9 | 8,5 | 8,6 | 8,9 | 8,3 |
| New Zealand | 6,1 | 6,3 | 6,2 | 6,3 | 6,8 | 7,3 | 7,1 | 7,1 |
| Canada | 6,2 | 6,4 | 6,3 | . | . | . | 6,2 | 7,0 |
| United States | 4,3 | 4,4 | 4,6 | 4,7 | . | 7,2 | 5,8 | 5,9 |
| Japan | 2,5 | 2,6 | 2,6 | 2,5 | 2,6 | 2,6 | 2,8 | 2,7 |

Source: OECD 2008, Education scoreboard. Own calculations and presentation. Period signs indicate that calculation was not possible.

The table shows the diversity of the relative weight of tertiary education domains relating to design skills in various OECD countries. One cannot identify a global trend over the period; in some countries, design qualification tends to increase in importance whereas it decreases, or stay stable in others. In 2005, it ranges from about 2 percents in Japan or Poland to above 10% in Germany and UK. Most countries qualify between 6% and 8% of its tertiary educated population with a design related diploma. In Europe, in absolute figures, UK is far beyond with about 50, 000 newly qualified people per year while in France and Italy, they are just below 30,000 every year.

Business Week D-schools ranking 2007²² allows to be more specific about the quality of the qualification provided by the various education systems.

²² Business Week, 5 October 2007. See list in ANNEX.

Exhibit 7 – Business Week’s Design schools ranking 2007 - Methodology

“Innovation is a tough thing to measure. To compile this list, BusinessWeek turned to an international panel of 22 expert design and brand consultants and academics from both business and design schools. We also tapped six forward-thinking companies with expertise in design or innovation strategy. We asked all to recommend interdisciplinary design and business programs with curricula they respect and graduates they prefer to hire.

Then we conducted interviews with professors, students, and alumni from the recommended colleges, looking for design programs that incorporate business strategy—and business programs that teach design as a tool for strategic advantage. Here's a sortable list of the 60 schools that made the grade.”

Source: D-schools ranking 2007, *Business Week*, 5 October

One shall stress that the survey notably consisted in asking companies to recommend “interdisciplinary design and business programs with curricula they respect and graduates they prefer to hire”. The ranking can therefore be taken as a proxy of the global market demand for the qualification. The list (see [Exhibit 8](#) for a selection) is composed of 60 schools located in 17 countries; design schools that are located in the US account for about half of the selection (29 schools). Second country is UK with 4 schools, then Germany and China (3 schools) and France, Canada, Japan, Korea, India and Italy (2 schools).

It should be noticed that, on the whole, Europe is the location of 15 of 60 best design schools in the world. Compared with its weight in the world’s population, this can be considered as a good score. However, since the global competition is getting tougher, with new competitors like China and India, maintaining its rank in the hierarchy will be difficult in the long run.

Exhibit 8 – Best design schools (Business Week 2007 ranking) – US (a selection) and Europe

| | School | City | State/ | Country | Specialization | Undergra d/Grad/B oth | Students |
|---|---|-------------|--------|----------------|-----------------------------------|-----------------------------|----------|
| EUROPEAN BEST | Royal College of Art | London | | England | Art and Design | G | 861 |
| | Central Saint Martins College of Art & Design | London | | England | Art and Design | B | 3789 |
| | University of Oxford, Saïd Business School | Oxford | | England | Business | G | 225 |
| | London College of Communication* | London | | England | Art and Design | B | 1000 |
| | Hochschule Pforzheim* | Pforzheim | | Germany | Design | B | 75 |
| | Köln International School of Design | Cologne | | Germany | Design | B | 460 |
| | Zollverein School of Management and Design | Essen | | Germany | Design and Business | G | 46 |
| | Strate Collège* | Paris | | France | Design | B | 400 |
| | ENSCI Les Ateliers* | Paris | | France | Design | B | 215 |
| | UMEA Institute of Design | Umea | | Sweden | Design | B | 224 |
| | KaosPilot International* | Aarhus | | Denmark | Design and Business | B | 135 |
| | University of Art and Design Helsinki | Helsinki | | Finland | Art and Design | G | 1700 |
| | Polytechnic University of Milan | Milan | | Italy | Design | B | 38000 |
| | Domus Academy | Milan | | Italy | Design | G | 200 |
| Oslo National Academy of the Arts (KHIO)* | Oslo | | Norway | Art and Design | B | 150 | |
| US (15 among 29) | Arizona State University, College of Design | Tempe | Ariz. | U.S. | Design, Engineering, and Business | B | 2 480 |
| | North Carolina State University College of Design* | Raleigh | N.C. | U.S. | Design | G | 750 |
| | Rensselaer Polytechnic Institute* | Troy | N.Y. | U.S. | Engineering and Design | B | 7433 |
| | Rochester Institute of Technology | Rochester | N.Y. | U.S. | Design | B | 700 |
| | U. of Illinois, Chicago* | Chicago | Ill. | U.S. | Design | B | 620 |
| | Cleveland Institute of Art | Cleveland | Ohio | U.S. | Art and Design | B | 500 |
| | Pratt Institute | Brooklyn | N.Y. | U.S. | Art and Design | B | 4762 |
| | U. of Michigan, Integrated Product Development Program | Ann Arbor | Mich. | U.S. | Business and Engineering | B | 40 |
| | Parsons The New School for Design | New York | N.Y. | U.S. | Art and Design | B | 3598 |
| | Babson College* | Babson Park | Mass. | U.S. | Business | B | 3300 |
| | Dartmouth College, Thayer School of Engineering* | Hanover | N.H. | U.S. | Engineering | B | 305 |
| | Stanford University: Hasso Plattner Institute of Design, and the Product Design Engineering Program | Palo Alto | Calif. | U.S. | Design | B | 300 |
| | U. of Cincinnati, Design, Architecture, Art & Planning Program | Cincinnati | Ohio | U.S. | Design | B | 2300 |
| | NYU Interactive Telecommunications Program | New York | N.Y. | U.S. | Arts | G | 230 |
| | Rhode Island School of Design (RISD) | Providence | R.I. | U.S. | Art and Design | B | 2258 |

3 Emerging trends in design-driven innovative companies

3.1 The design maturity ladder

Companies, and government bodies alike, use design in a variety of ways. The extent to which design is integrated in the firm's practice varies.

The 'design maturity ladder'²³ presents in a practical and condensed manner four degrees of intensity of design use in companies. It has been developed by the Danish Design Centre in 2003 and was subsequently used by Sweden (The Association of Swedish Engineering Industries and Swedish Industrial Design Foundation) in 2004 and by Denmark again in 2007 (Danish National Agency for Enterprise and Housing). Such an approach allows for a clear case selection (cf. 3.2).

Level 1: Non-design

Design plays only a tiny part of the product development process and professional designers play no part in the process

Level 2: Design as styling

Companies use design as the final touch in the product development process. Design services may be provided by a professional designer or they may be provided by others.

Level 3: Design as a process

Design is integrated into the product development process at the first stage of development.

Level 4: Design as an innovation strategy

Design professionals work together with the owner, managers or high level executives to renew the company, or to deepen, expand or renew large parts of the company's business ideas.

Higher level uses of design are observable in those companies where design is considered as a very important aspect of the business (design as a process) and where it is an indispensable dimension of the firm's activities (design as an innovation strategy).

3.2 Case-based evidence of emerging trends in design-driven innovative companies

Sources show the focus on users –or people– as the core of the firms' design thinking and practices. Effective, successful innovations stem from a specific attention to the customers' - sometimes even unknown - needs and dreams. Bridging with, creating a sense of community, bringing outsiders in the company and involving them in the creative process is what is at stake. This paradigm shift is therefore manifold.

The cases examined hereafter were chosen because they correspond to the design maturity ladder's fourth level and are meant to illustrate the

²³ National Agency for Enterprise and housing; Denmark, 2003; DesignDenmark, 2007.

key emerging practices in the literature studied. They are not representative of all the possible uses of design in innovative companies. Each case alone exemplifies a specific composition of innovative features of design-driven companies which otherwise tend to be distributed among various firms.

These are undisputed champions in their integration of design into business strategy; they are at the forefront of what a successful design strategy can be: all of them are both design-driven and profitable.

Each case starts with illustrating the role of the company's design activity on the business performance, then we analyse reasons for success and we draw a few key lessons.

The Fiat 500: consumers as style designers and marketers

A design-based success...

"On July 4, the Group launched its icon car, the Fiat 500, which is also destined to be a cornerstone for the Fiat of the future. The Fiat 500 has been a sensational success, as testified by the 140,000 orders received from its introduction through the end of January 2008 and its winning major international awards. Fiat 500 was elected "Car of the Year 2008", making Fiat the only carmaker to win this title twice with an A segment car (...), and it also won the "Auto Europa 2008" and "EuroCarBody 2007" awards. The Fiat 500 was also the first car in the world shorter than 3.6 metres to garner five stars for safety from Euro NCAP."

The company further stresses that "1.36 million units [of Fiat cars] were delivered in Western Europe, for an increase of 5.2% (...). The positive sales performance is explained by the growing success of the models introduced during the year, particularly the Fiat Bravo and the Fiat 500 (...)."

Put plain, the new Fiat 500 is much more than just a new model. It is both an "icon" and a "cornerstone for the Fiat of the future." On 28 January 2008²⁴, CEO of Fiat Group Automobiles Sergio Marchionne proudly explains:

"We have really come a long way in a short space of time. And I am proud to be able to say that, last year, Fiat was the car manufacturer with the fastest growth in Europe. The 500 is not the brand's final destination, but rather is only the first stage in the development of the new Fiat. That is why, for us, the 500 is not simply a car, but rather a manifesto on wheels for what we want to achieve".

Capitalising on the 500's forthcoming success, mid-April 2008, the new slogan for Fiat Automobiles advertising campaign was launched: "Every Fiat is 500% Fiat".

²⁴ Date when the 500 was awarded the 'Car of the Year 2008' prize.

So, what would it take to be a 'manifesto on wheels'? It would comprise at least the following four characteristics, pertaining to security and environment-friendly design:

- EuroNCAP 5-star safety rating (which is unique for such a small car, i.e. 3.55 metres long)
- First super-compact with 7 airbags as standard
- ESP is available on all versions
- Euro 5 limits on emissions compliant

But these are just a start. The true novelty, the one the company is really proud of, the one that is supposed to place the car far ahead of any competitors is the vast range of equipment and options: 500,000 various types of customisations for the customer to decide and choose from. These are the options (interior and exterior trims, engine, colours, wheels, stickers) the Fiat 500 website allows the future user (or is it the current customer?) to play with, in real time. The most advanced option is the multi-function portable navigator (dubbed the "Blue&Me Map"). The user is eventually proposed to engage in the experience of building his own personal version of the car, the car of his dreams.

...with more than a person behind

The designer behind the reinvention of Fiat 500 is Roberto Giolito, recently promoted Head of Design. On 4 July 2007 in Turin was unveiled the Giolito version of the 500, coinciding with the 50th anniversary of the people's car. Giolito, who previously held the position of Head of Fiat's Advanced Design Studio, is also the creator of the Trepino concept car (Geneva Auto Show 2004); the latter was to be the precursor to the New 500. The Trepino was designed by the Fiat Style Centre to represent the theme of 'back to the future'. It turned out to be widely acclaimed, which was a favourable indication of the appetite for the company's future car. With a proper and early consumer test strategy, the new 500 would take over the original 500 –which sold about 3,7 million units between 1957 and 1975.

This (incomplete) account would tend to show that succeeding through design is but a matter of style and marketing technique: a beautiful Italian car, with a touch of nostalgia. A large part of the strategy indeed aimed at stressing the pleasure one can find in souvenirs of good old days. Hence the visible influences from Italian cars of the Sixties and Seventies and expressions of Italian culture, e.g. fashion.

However, on this step of the design ladder, design is never only skin-deep, and a successful design strategy is never a 'simple' matter of well-marketed aesthetics. In our case, the real test is the customer's. And the success relies on the firm's ability to actively use the customer's needs and desires in connection with the product-to-be. Fiat has been a master in that too, through the animated Fiat 500 dedicated website. Since both design and style were frozen about three years before the official launch

of the car, the proposals collected on the website were meant to serve as inputs for options.

Exhibit 9 – Key lessons from the Fiat 500 case

- ▶ The Fiat 500 successful design model is composed of the following two main components where user is placed at the very core:
 - Style with an aesthetics based on revival of a happy and authentic both individual and collective past;
 - Making best use of information gathered at the very source, i.e. the future purchaser. This meant extracting more value from interactions with customer-users.

The Fiat 500 case teaches us that design may go up to gaining power on the consumer by having them committed to the product and services even before it is purchased.

Apple and iPod: beyond the simplicity of a product design

A design-based success...

The iPod® is a brand name of a portable media player designed and marketed by Apple. It was first launched on the market in October 2001. Up till March 2008, Apple sold slightly more than 150 million units of the iPod. The best quarter revenue and earnings in Apple's history was reached in January 2008, with revenue of \$9.6 billion and net quarterly profit of \$1.58 billion. By far, the lion's share goes to the iPod which represent 42% of Apple's revenue for the First fiscal quarter of 2008.

As it reads in the 2007 annual report, the iPod product-line is composed of four main devices (iPod® shuffle, iPod® nano, iPod® classic and iPod® touch (p.5). But the iPod does not come alone: "iPods work with the iTunes® digital music management software ("iTunes software") available for both Mac and Windows-based computers. The Company also provides an online service to distribute third-party music, audio books, music videos, short films, television shows, movies, podcasts and iPod games through its iTunes Store. In addition to the Company's own iPod accessories, thousands of third-party iPod compatible products are available, either through the Company's online and retail stores or from third parties, including portable and desktop speaker systems, headphones, car radio solutions, voice recorders, cables and docks, power supplies and chargers, and carrying cases and armbands." Some even talk about the "iPod ecosystem" to characterize the markets around the iPod.

So impressive is the success that it is even trivial to say. And, most of the time, the triumph is attributed to the product's design. As evoked by J. Scanlon in his article "Apple sets the design standard"²⁵: "It's the

²⁵ Apple Sets the Design Standard. Business Week. January 8, 2007.

question every designer has heard to many times to count: can you make me the iPod of [insert the product name here]?”

...with more than a person behind

In the beginning, there was a whole tradition of design at Apple. But then, if there was to be a single person behind the invention of the iPod, this would probably be Anthony Michael Fadell. In January 2001 Fadell, 32, was hired for an eight-week contract “to do something” by Jon Rubinstein Apple's vice president of hardware engineering. Due the extreme confidentiality of the project, even for insiders, only after agreeing did he learn that the job was to put together an MP3 music player that would work with Apple's existing iTunes application. Apple wanted Fadell because of his reputation and expertise in the promising domain of handheld products.

Fadell delivered on time and presented a few models of what an Apple MP3 player might ideally look like: a box slightly bigger than a cigarette case with a sharp screen toward the top end and navigational buttons below. But navigating through at least 1,000 songs with ‘plus’ and ‘minus’ buttons is not an easy thing as Apple's worldwide marketing vice president, Phil Schiller noticed; a scroll wheel would be much more appropriate. Fadell was then asked by Steve Jobs to build something like Schiller's scroll wheel. In addition to the Fadell-Rubinstein duo, with Fadell in charge of the actual workings of the device, developing the iPod involved Jeff Robbin, VP responsible of the software and interface team, Jonathan Ive doing the industrial design, Rubenstein overseeing the project, and last but not least Steve Jobs. It should be noticed that Apple did not do it alone. For specific tasks, Apple drew on experts working elsewhere in the company and on external competences also, with SMEs like PortalPlayer and Pixa.

Again style is involved, as exemplified by the much copied minimalist touch, so innovative while so identifiable. Heavy efforts have been done by the company, whose savoir-faire on this front is renowned, in order to valorise the brand's ‘genetic’ difference. Unprecedented marketing and advertising exposures was given to iPod. Nothing to do with an MP3 player: the iPod was meant to become an icon instead. This strategy is similar to that of Fiat and its 500 car. It pertains to creating a sense of community, the iPod communities. To push this logic too far, the iPod is more than a social marker, it tells who the happy owner really is.

But again, style is only the visible part of the iPod iceberg. Apart from a partial outsourcing of talents during the development process, the iPod design model involves a number of other ingredients. The first complementary design component is the bundle nature of the product, the very best and most simple use of which implies the iTunes software (and on-line store). This system interface allows an immediate on-line access to a whole library of tunes, thanks to the efficient agreement Apple reached with music companies. The software platform design is still evolving and becoming more user-friendly, making it even easier for user

to buy the music they like, with amazon-like options. And last but not least, songs can be bought by the unit for about less than 1 unit of local money.

Exhibit 10– Key lessons from Apple’Ipod case

► **The Apple’s iPod case** teaches us that a complete design strategy encapsulates both the brand identity and the associated business model. Efficient product differentiation through design covers the associated services. The product must be considered as a hub for the company’s other product and services. This can be evidenced by the fact that for each dollar spent buying an iPod, the customer buys at least 30 c. of services (read music tunes); and this holds without taking into account neither Mac computers which were purchased to facilitate the use of the iPod nor the iPod accessories on which Apple collects fees (cf. ‘partners’ companies paying to add the "Made for iPod" logo to their products).

Kone: more than transport, an engaging experience

A design-based success...

Contrasting with Fiat (and its 500) or Apple (and its iPod), Kone, the near 100 year-old Finnish elevator company, is not a passage oblig  when it comes to analysing design-driven firms. Few of us know more than the company name, which often provides us with daily transport services. Operating in about 50 countries, Kone serves over 250,000 customers and maintains roughly 650,000 elevators and escalators. On the whole, hundreds of millions users are transported by Kone. 2007 net sales amount to EUR 4.1 billion, 55% of which comes from service and about 45% from new equipment sales. Kone is in the top four of the world’s largest elevator manufacturers (behind Otis, Schindler and ThyssenKrupp).

The company proudly stresses that it became the market’s innovation leader with the introduction of the machine-room-less elevator in 1996. Today, its main competitors also offer such a product. This innovative concept – now a patented trademark labelled “Kone MonoSpace” –, has since then been further improved with added features like eco-efficiency for instance. It is but one among many design-driven dimensions of Kone long-term development strategy. Kone praises itself as open-minded regarding R&D and innovation; it has no less than six R&D centres worldwide (in China, India, Italy, Germany, Finland United States) and closely works in cooperation with various customer groups, suppliers, strategic partners and research centres. As it reads in the 2007 annual report, its R&D totalled EUR 50.7 million (1.2 percent of net sales). Products (or “solutions”) are packaged in a user-friendly way as specific custom-built platform-based products. Each solution is based upon either the MonoSpace® or the MiniSpace™ (or the Alta™ platform for super-tall buildings).

...with more than a person behind

At Kone, two high-level executives represent the firm's focus on design and design issues: vice-president Design Anne Stenros and vice-president Marketing & Quality Tuomas Kahri. Kone design-driven strategy, as visible in its products and services result from a special attention to interactions with customers. User-driven design at Kone can be illustrated hereafter by three key aspects.

First, in line with growing energy and environment clients' concerns, both MonoSpace® and MiniSpace™ platforms can feature the EcoDisc® system, i.e. the energy-efficient specifications of the solution. Its key characteristics are: low friction and compacted gearless construction, oil-free and inverter drives and regenerative systems. With these characteristics, the elevator consumes 70 percent less energy than a hydraulic drive and 50 percent less than a geared traction elevator drive. Additional all-inclusive design features allow reduction of carbon footprint and important standby energy savings.

Second, simply by ticking in boxes through an on-line interface named the Monospace Design Toolbox, future users can customise CAD drawings and CSI building specifications for the MonoSpace elevator. Once the on-line form is completed, the client benefits from a detailed specifications configuration which enables fruitful and quicker interactions with the vendor.

Third, as of end 2006, as a result of an increasing attention placed on users and design, Kone launched a new offer, the Deco™ Design. To the basic specifications of the platforms based on innovative industrial design, this solution proposes elevator wall decorations (interior design). For this purpose, KONE signed an agreement with Finnish textile and clothing design company Marimekko to start cooperation under license concerning the decoration of elevator car interiors. As stated in the official announcement, *"the agreement provides an opportunity to apply Marimekko design to elevators by decorating the internal walls of an elevator car with a decorative laminate. Marimekko designs will be part of the Kone Deco™ solution, offering high-quality design alternatives."* The latter solutions comprise services from the decoration planning to material installation and replacement. Also, as part of its global design concept, Kone goes deep into its ability to adapt the offers to local contexts, proposing more than transport but an experience. This can be exemplified with the FourSeasons decoration specifically developed for the Indian market. The offer is composed of 24 options of car interiors. For the occasion, Kone contracted with a young local artist, Giriraj Kadia, who contributed to the creation of the colour scheme.

Exhibit 11 – Key lessons from Kone case

► **Kone's** lessons are that a comprehensive design strategy encapsulates more than extremely sophisticated engineering design when it comes to transport systems companies. Kone's focus on the user pushes the company to conceive multiple channels to develop with him/her a shared

understanding of the constraints of the solutions to be implemented. What Kone calls 'global design' covers ready-made platforms with easy customisations and inclusive eco-efficient features but leaves also room for the end-user to live a special experience. Kone successfully participates in the 'experience design' trend where companies attempt to create holistic experiences that emotionally engage their users.

Philips: design thinking in action

A design-based success...

As of September 2004, Philips' motto reads 'Sense and simplicity', which sounds like a design code of conduct more than anything else. And indeed, during the last few years, Philips has made dramatic progress to transform itself from a mass electronics manufacturer into a 'design-led company' as it constantly claims. When first formulated, the rationale insisted on the necessity to realign the company "to deliver intuitive end-user experiences". The new consumer-centred approach was explicitly structured around its three main markets: Healthcare, Lifestyle and Technology.

As Philips President Gerard Kleisterlee explains in his "Message to the shareholders" in the last annual report (p.10):

"We also continued to invest heavily in the things that really set Philips apart – our brand and our end-user driven innovation and design – moving us to 38th place in Business Week's ranking of the world's most innovative companies (up from 67th place in 2006) and further increasing our brand value by 15% (according to Interbrand)."

Among other success indicators, Philips stresses that in 2007 they received "over 45 design awards recognizing our commitment to people-focused solutions. These included 16 coveted iF awards. [They also] won two prestigious awards from the European Imaging & Sound Association (EISA). The 47PFL9732D FlatTV with Ambilight was named European Full-HD LCD TV 2007-2008, while the HTS8100 SoundBar DVD Home Theater with Ambisound technology was named European Home Theater Compact System 2007-2008." Last anecdotal evidence, in 2007, 56% of the company sales came from products introduced in the last three years. To conclude, Interbrand ranking of the top-100 global brands placed Philips as one of the ten fastest-growing brands in terms of total brand value. The brand value rose 15% to an estimated USD 7.7 billion, making Philips the 42nd most valuable brand in the world.

In 2007, Philips' gross margin of EUR 9,169 million represented an improvement of EUR 919 million compared to 2006. Research and development costs represented EUR 1,629 million –that is 6.1% of sales.

...with more than a person behind

The importance of design at Philips is observable in the way design is organised, personified and conceived as a key component of the firm's strategy and practice. In terms of the organisation, as of January 1, 2008, Philips' activities are organized on a three-sector basis, i.e. Healthcare, Lighting and Consumer Lifestyle, and two transverse sectors, i.e. 'Innovation & Emerging Businesses' (in which we notably find Philips Design) and 'Group Management & Services'. Philips Design alone comprises 7 branches (in more than 10 locations across 3 world regions). In terms of the staff, design is represented at the company's highest level and, on the whole, accounts for several hundreds persons. Stefano Marzano is the emblematic CEO and "Chief Creative Director"; there are also a 'senior creative director' and a 'senior design director', the involvement of Josephine Green as Senior Director of "Trends and Strategy", Murray Camens, Vice President Design Region Asia, Grant Davidson, Managing Director, Gus Rodriguez, VP Philips "Design Partnerships and Consulting" and Marco Bevolo Director "Foresight & Trends". All of those distinguished people call themselves a global community "committed to enriching the design process and delivering competitive value to our clients." The richness of the material which exposes and explains Philips design philosophy, thinking and practice is overwhelming; so are the articles, studies of all kind, including PhD dissertations. Any attempt to give a full picture of the multiple features of design at Philips within this MS would therefore be hopeless.

Philips' current 'mantra' is "Our approach is based on the premise that design can never be consistently successful unless it is research-based and people-focused." The two key intertwined dimensions of Philips' design philosophy-in-use are its focus on people and its multi-disciplinarity. In their view, a people-focused design means that Philips' solutions not only are based on the best available technologies but account for social, anthropological and personal facets of the use. Multi-disciplinary teams are always involved so as to reach this quality standard. They comprise psychologists, anthropologists, ethnographers, cultural anthropologists, futurists, designers and scientists. Managing interdisciplinarity in an effective way implies a solid structuring of the design process; theirs was labelled the 'High Design Process' by Stefano Marzano and encompasses 5 phases (namely the Initiation, Analysis, Concept, Finalization and Evaluation phases). Philips describes the type of deliverables that the interdisciplinary expert teams provide as three-fold: "Consumer Research & Trends" is a global overview of consumers' needs and desires; "Visual Trends Analysis & Culture Scan" is a global overview of emerging visual trends in the areas of materials, finishes, colours etc, as well as an insight into emerging cultural values with a scope of 0-24 months; and "Strategic FuturesTM" consists in a global overview of the more deeply rooted socio-cultural dynamics, with a scope of 2-5 years.

It should also be noticed that Philips' approach to design growingly relies on open-innovation model, multiplying collaborations with university and research centres, consulting companies and...clients. One of the very good examples of the latter type is the Eindhoven' HomeLab, where they can

test under real conditions their concept of "Ambient intelligence". Its aim is to benefit from the best possible consumer's feed-back for their forthcoming home technologies. This reality experience is supplemented by the use of the internet to gain further insights; hence the sophisticated blog-like website 'livesimplicity.net' to allow people to share ideas in all areas where Philips has products (travel, business, communication, health and wellness, and technology).

Exhibit 12 – Key lessons from Philips case

► **With Philips**, we first of all learn that design goes well beyond the usual boundaries of design per se: good design is people-centred, which implies a specific attention to lessons from social sciences. A global design-led company like Philips not only organises its activities around its distributed design centres, in order to learn from interactions with local level, but also theorises its approaches and the company's highest level and extensively communicates about it. Claiming its belonging to the design-driven and user-centred world imposes heavy pressure on the company to achieve its overarching goal: to make us forget that it is a techno-based company delivering mainly consumer electronics. As the Director of Trends and Strategy Ms Josephine Green questions in one of her articles: "Could socio-cultural relevancy and not technology breakthrough be the next big thing?" Fully integrating the meaning of such a diagnosis leads Ms Green to conclude that "certain functions in technology companies, such as design, will become more 'strategic' in their role as bridge between people and technology."

Nokia: user-generated design

A design-based success...

The Finnish Nokia likes to present itself as the "world leader in mobility"; it is also an undisputed leading competitor in the mobile phone sector, on a global scale. Indeed, economic results of the company could hardly be better since both sales and profit are steadily growing over the last three years (cf. table below).

Exhibit 13 – Nokia's net sales and operating profit [2005 to 2007]

| Years | 2005 | 2006 | 2007 |
|------------------|--------|--------|--------|
| Net sales | 34 191 | 41 121 | 51 058 |
| Operating profit | 4 639 | 5 488 | 7 985 |

Source: "About Nokia", Nokia, 2008. In EUR millions.

Compared with 2006, operating profit increased 47% in 2007 and gross margin is about 34%. Most of the profit comes from mobile phones sector, then multimedia. And, indeed, Nokia is the world's largest mobile phone manufacturer (with about 40% of the world's market share), the world's largest camera manufacturer and a leader in digital music too.

In order to become a world leader on a market as competitive as that of mobile phones, one may suspect that it takes a special ability to understanding and responding to –and most of the time preceding– the consumers’ needs and appetite for “beauty and novelty”. This is where design comes into play. In Nokia’s Design Backgrounder (2008), the company details its philosophy of design, which pertains to “beauty of use”: “*design has to deliver objects and services that are not only beautiful to look at but that also work just the way people want them to.*” And this philosophy has, over the years been validated and transformed in innovations. The Design Backgrounder proposes a history of design innovation, from 1982 to 2008. Over the last period 2007-2008 only, Nokia emphasises 7 successes of design innovation. The table below shows how wide is the range of design-driven notable innovations.

Exhibit 14 – Nokia’s design-driven notable innovations [2007-2008]

| | |
|------|---|
| 2008 | Nokia Remade concept –made out of metals from upcycled aluminium cans, plastics from drink bottles for the chassis, and rubber key mats provided by old car tires |
| 2008 | Nokia N96 –the latest Nokia Nseries multimedia computer truly optimized for video and TV with a large 2.8”screen and 16 gigabytes of internal memory |
| 2007 | Nokia 3110 Evolve –a mobile device with bio-covers made from more than 50% renewable material |
| 2007 | Nokia N82 –the first Nokia device to incorporate a Xenon flash, providing for remarkably vivid photographs even in low-light conditions |
| 2007 | Nokia 7900 Prism –the first Nokia device with OLED display and has a sleek, liquorice-black front and an anodized aluminium back cover, which is coin-stamped and laser-etched in Nokia Prism’s signature diamond-cut design |
| 2007 | Nokia 1208 –designed specifically for rural and remote areas with durable surfaces and shared address books, so the village or whole family can use it |
| 2007 | Nokia E65 –a stylish and slim slider with mobile business features. Won a Red Dot award for design quality |

...with more than a person behind

From an organisation viewpoint, it should be noted that Nokia’s design activities are carried out under the leadership of Senior VP Design, Alastair Curtis; other key design executives are Anthony Dalby, Head of ‘Focused Business Design’ and Rhys Newman, ‘Head of Design Strategic Projects’. In terms of the design maturity of the company, such a presence at the company’s higher levels is exceptional.

In 2008, the full team comprises more than 300 people (over 30 nationalities) distributed into ten different locations, including a handful of design studios in Espoo (Finland), London, Beijing and Calabasas (US), design teams in Copenhagen, Salo, Oulu and Tampere, and two satellite studios in design schools in hot new design capitals i.e. Bangalore, (India) and the newly opened one in Rio (Brazil). The design team includes designers, psychologists, researchers, anthropologists, engineers and technology specialists. Nokia’s global design community seeks to gather inspiration from around the world, “*spotting the very latest global and*

local trends and interpreting these into exciting product designs". (Nokia Design Backgrounder, 2008; p.3).

The second key characteristic of design innovation pertains to the forward-looking facet of Nokia's design. Looking ahead implies design practices which seek to both capture forthcoming novelties and to shape users' future trends. In terms of the design philosophy, this translates into three main operational concepts. Firstly, "emotional feedback" consists in inventing new means by which mobile users' senses are stimulated so as to give the product a specific 'emotional appeal' (texture, colour, etc.). Secondly, the 'design for the environment' notion encapsulates Nokia's enduring attention to sustainability, in terms of the materials, manufacturing processes, packaging and recycling. Last but not least of the design philosophy's approach features is 'digital design'. That is Nokia's most advanced design practice, as compared with other companies.

In line with that orientation, Nokia has developed online applications such as *Sports Tracker* and *Nokia Beta Lab* in order to collect customers' ideas from around the world. This experimental approach has started being implemented in April 2007²⁶ when Nokia's researchers posted a mobile phone application called Sports Tracker. The still work-in-progress programme was designed to let runners and cyclists take advantage of the global positioning capability included in some Nokia models. As it reads on Nokia website, "*Nokia Sports Tracker is a GPS-based activity tracker that runs on Nokia smartphones. Whenever you train, information such as your speed, distance, and time are automatically stored to your training diary. In addition, you are now able to store, share, and compare your workouts with friends at the new Sports Tracker Beta web service at sportstracker.nokia.com.*" And indeed responses to Sports Trackers were extremely favourable. The programme was downloaded by more than 1 million users who provided Nokia with a wealth of criticisms of all kinds. In "How Nokia users drive innovation" (2008), J. Ewing specifies Sports Tracker's feedback-based improvements: "*Developers added the capability to create online groups where users can share favourite routes and even photos they took along the way*". Nokia benefits fully from a user-generated content approach: "*People were misusing the application in creative ways,*" says Jussi Kaasinen, a member of the team at Nokia Research Center in Helsinki that developed Sports Tracker." On a larger scale, Beta Labs is an initiative that enables direct connection between customers and partners in innovation. Nokia Beta Labs' web platform allows users to share and rate applications they have created such as screen-savers or games. Over the last year, Nokia's designers have been so far as to ask users to draw the cell phones of their dreams. Not only did they gather ideas through internet but complemented the approach by a large world tour which visited the cities of Mumbai, Rio de Janeiro, and Accra in Ghana (cf. BusinessWeek.com, 4/30/08). Indeed, since more than half the world's population will live in urban areas by end 2008²⁷,

²⁶ Cf. Nokia's website: Sports Tracker, Published on Beta Labs: April 16, 2007 Latest update: Nov. 22, 2007.

²⁷ State of world population. United Nations Population Fund. 2007

understanding city inhabitants' desires in terms of mobile uses is a strategic issue.

Exhibit 15 – Key lessons from Nokia case

► **Nokia** adds to our knowledge of emerging trends in design innovation by pushing the approach of user-generated design to its limits. Nokia has implemented a truly distributed approach of design – online and onsite - whereby they are in a position to test new solutions, benefits from users' immediate feedbacks and integrate users' own tentative solutions, on a global scale. Nokia is paving the way in terms of 'design crowdsourcing'.

3.3 Lessons from the cases part 1: a summary

Exhibit 16 summarises the principal features of the case studies of innovative design-driven companies. These world and European champions as regards their ability to devise profitable design-driven strategies have common characteristics. However, a closer examination leads to the identification of specific user-centeredness pathways.

Exhibit 16 – Summary of distinctive features of emerging trends in design innovation strategy

| Cases | <i>Key distinctive features</i> |
|---------------------|---|
| Fiat 500 | <ol style="list-style-type: none"> 1. Specific effort on a 'style / quality/ brand identity' mix so that the product is considered an 'icon', 'a manifesto' 2. Clear product differentiation and industry's standard recognition 3. Early users feedbacks long before mass production for delayed customisation <i>via</i> dedicated interactive website |
| Apple's iPod | <ol style="list-style-type: none"> 1. Specific effort on a 'style / quality/ brand identity' mix so that the product is considered an 'icon', 'a manifesto' 2. Strong product differentiation and industry's standard recognition 3. Designing a 'hub-product': bundle nature of the product i.e. indispensable component of the business model (product + associated paying web-based services) |
| Kone | <ol style="list-style-type: none"> 1. Design represented at company's highest decision level (two VPs, i.e. one VP 'Design' and one VP 'Marketing and Quality') 2. Worldwide distributed design-teams, explicit role-sharing between centralised and decentralised design teams 3. Complex product-system requiring extreme customisation nevertheless packaged in a user-friendly way (including web-based product specification platform) 4. Specific attention to the customers' evolving concerns (sustainability of the product) 5. 'Global design' is ready-made platforms, inclusive eco-efficient features, experience designed product |
| Philips | <ol style="list-style-type: none"> 1. Design represented at company's highest decision level (CEO of Philips Design is also "Chief Creative Director", and at VP, "Design Partnerships and Consulting", Director, "Foresight & Trends" levels) 2. Claimed determination to be an '<i>end-user driven innovation and design company</i>' at the company highest level (CEO), plus VPs and directors in relation to design; heavy efforts to become recognised as such by main innovation rankings 3. A whole explicit design philosophy-in-use which relies on multidisciplinary in design teams and people-focused 4 Open-innovation, wealth of various collaborations, worldwide with universities, research centres, consulting and clients 5 Complementing reality-testing of new design concepts (HomeLab) with sophisticated dedicated website aiming at sharing ideas on life domains where the company has products |
| Nokia | <ol style="list-style-type: none"> 1. Design represented at company's highest decision level (Senior VP Design) 2. Worldwide distributed design-teams, explicit role-sharing between centralised and decentralised design teams 3. Explicit design philosophy based on 'beauty of use' with an emphasis on identifying and shaping future trends in mobile phones uses 4. Extended model of open-innovation i.e. a mix of 'design crowdsourcing' and 'user-generated design' |

3.4 Lessons from the cases part 2: policy hints from the emerging trends in companies

The case studies provide a better understanding of the emerging trends in design-driven innovative companies. Assuming that one lesson per case only was to be picked, the following findings may be emphasised:

1. Presence at the highest organisation levels of design representatives: to be fully efficient, design strategies and design policies shall be endorsed at executive levels.
2. Users are involved on an early basis as co-designers of companies' products and services; Denmark's Design User-centered Innovation Lab (DUCI lab) can be considered as a policy learning tool to draw lessons for the design innovation community.
3. Contributing to the definition of and complying with widely used standards remain a crucial step to impose new design settings; according to businesses, EU level is the relevant standardisation level which may favour European companies in the global competition. The EU level only can give an adequate IPR protection level.
4. In a context where 'design crowdsourcing' together with solid and trustworthy relations with public research play an increasing role, open innovation is gaining relevance and efficiency. Key dimensions of policy encompass: better support to internal and external collaborations in design; better learning processes for both companies and especially university to manage design rights.
5. The best strategies succeed in transforming their products and services into "manifestos" or "icons"; EU level would be the adequate level to communicate and impose on "a European design label".

4 Policy initiatives in support of design

4.1 Historical development of design oriented policies

In a nutshell, historical development of design oriented policies can be characterised by a movement from Europe and the US to the rest of the world, and up the "design ladder".

Although very few countries have developed a proper, dedicated design policy, an increasing number are considering the issue of design and are developing support and/or promotion programmes. Main actors in this domain are located in Europe (with East European countries recently catching up), North America, some Commonwealth members (Australia & New Zealand) and Asia (mainly South-East Asia)

In the above mentioned parts of the world, design has been identified as a tool for economic progress and innovation. More recently, design has also been identified as a tool to improve people's life, having an impact on health and accessibility, sustainability and energy dependency, urban development, etc. Each country nonetheless adopts a specific focus and gives a specific orientation to their support programmes and policies.

Analysing the evolution of the design organisations and of the roles and uses of design provide a picture of the current status of design in policies and support programmes. A systematic review carried out for our countries of interest on the websites of the organisations allows for a 6 step characterisation. See the annex volume "Review of Design Policies" for detailed data.

- ***Structuring the Arts and crafts sector at the turn of the 19th and 20th centuries.***

Arts and crafts organisations, funded as professional organisations, were the first to raise the issue of design as an economic asset. Their main objective was to provide a legal framework for design patenting and protection. Interestingly, some of these organisations also presented their action as aiming at the defence of "true" arts, as opposed to massive industrialisation.

Sweden and Finland initiated the movement at the end of the 19th century by creating the Swedish Society for Industrial Design (Svensk Form) and the Finnish Society for Crafts and Design, whereas the American Union of Decorative Artists and Craftsmen was founded in 1913 in the USA.

- ***1940s – 1960s: Birth and reign of industrial design organisations.***

This period is marked the integration of styling design in industry. This link was not considered as problematic anymore, but rather as the trend to be promoted. Professional organisations for 'industrial design' flourished, to promote the use of design in mass production and assess as an asset for trade and export. The movement was joined by new countries: Australia joined the movement in 1944, as well as the UK, Canada, France, Germany and Italy. Certainly drawing on its specific links with the UK and on its perspicacity, India was the first among all countries to articulate an 'industrial policy resolution' as soon as in 1953.

- ***From the 1960s on: An industrial issue brought to the general public***

Design had in the past decades been disseminated by the industry in the form of various consumption products. Attention to design was thus no more limited to the industrial context alone and it progressively benefited from a general public's consideration. It became part of a cultural identity (in the US with the creation of still existing famous brands, in the Nordic countries...) and this evolution corresponded to the opening of public spaces dedicated to design, the launch of promotion campaigns and educational initiatives. Design organisations adopted new names, taking their distance from a strict industrial understanding of design: the Norwegian Design Council was created, the British Council of Industrial design was renamed UK Design Council, etc.

In the meantime, an awakening movement happens in fast-developing Asia and South Korea and Japan overtly entered the industrial design scene, thereby marking the first steps of a broad Asian move.

- ***Design policies at crossroads in the 1980s-1990s***

These 20 years saw a new orientation of design policies. Public campaigns and large, general actions were considered too costly and inadequate with regards to the evolution of economy. Design organisations reconsidered their missions and started offering more flexible, company-oriented, consulting services.

Large, public design centres were thus sometimes dismantled (like in Canada and Singapore), whereas in the UK public campaigns were suspended, giving way to regionalised support services.

- **1990s: Emergence of the first dedicated design policies and of process design - clear Asian catch up**

The 1990s saw the elaboration and enforcement of the first dedicated design policies, with South Korea (1993) and Denmark (1997) being the main precursors. This period thus also saw a clear catch-up by Asian countries.

- **Early 21st century: Towards strategic design**

Most European countries recently published new design policies, and some Eastern Europe countries started working on the topic (Estonia, Czech Republic...). These initiatives still consider design as an economic asset from which competitiveness shall derive, but the value of design now relies on its supposed ability to improve life. As such, it is meant to help produce more valuable goods and processes; sustainability, accessibility, energy efficiency are understood as the new century's main trading assets. On the international competition scene, Europe bet on these new values, soon followed by Asia (Singapore, Taiwan). India, where design organisations are still active, has also prepared a national design policy²⁸.

These successive moves raise the issue of Europe's real comparative advantage in the use of design.

A key lesson from this historical account of design-oriented public initiatives is that the understanding of design has evolved over time, logically enough together with support actions. The term was born in the world of arts and crafts, has grown up during the industrialisation period and took its independence when it became a process and strategy notion.

The most accomplished definitions now present design as an inclusive process, in which all elements linked directly or indirectly with the process are taken into account from its inception. In doing so, one aims to get the best possible result (from the view point of all stakeholders) out of the least resources (in a broad sense). It can potentially be applied to any type of process (economic production, public services elaboration and implementation), hence the interest shown by public services.

4.2 Common features of design support models

Current design support policies show variety, but they still show some major convergence points, as regards their legal characteristics and main objectives.

Legal frameworks: policies and programmes

Considering design in policies can be done in many ways. Designium's Global Design Watch (2006) draws a list of national design policy initiatives in a selection of 17 countries. Among these initiatives, a distinction is made between design policies and design support programmes.

²⁸ Government of India, Ministry of Commerce & Industry, Department of Industrial Policy & Promotion (IPR-IV Section) (2005) Draft National Design Policy, October

In countries where a dedicated design policy is implemented, the initiative is taken at the national or regional level (depending on the country's institutional organisation) with a set strategy, defined objectives and means to achieve them, and a set time frame. This mainly concerns North European countries (Sweden, Norway and Denmark), South-East Asian countries (South Korea, Singapore...), Ireland, the Netherlands or Victoria State in federal Australia. Within this category of "design policy" countries, a further distinction can be made between those where the whole process is conducted by public actors (Asian model) and those where a public/private partnership is created to lead the design policy (Scandinavian model).

In Asia, most countries considered follow the "all public" scheme, with public actors initiating, financing and enforcing the design policy. This is the expression of the much centralised governance mode adopted in this region of the world.

Exhibit 17 - The example of South Korea

Korea is seeking to develop a design industry hub in the East Asian region, with the envisaged main actors being Korea, China and Japan.

The Korean government's effectiveness in creating the required infrastructure and knowledge base, and in increasing the quality and quantity of design education and the degree of design utilisation in industry, has resulted for example in high-quality consumer electronics products in the companies in question. For example, originally Samsung name was interpreted as a copier of Japanese firms. With the support of the Korean government Samsung's focus has changed to quality design within its own walls. In 2001 Samsung was ranked fifth in the world in generating new patents, behind IBM and Cannon, and ahead of Sony, Hitachi and Mitsubishi Electronics.

Source: Designium 2003

In most other countries, private actors intervene at one or several steps of the process: state initiative with mixed funding and implementation, or even elaboration of the design policy in cooperation with design private actors (Sweden, Denmark).

Exhibit 18 - The Danish design promotional model

Denmark provides a good example for a developed design support policy, based on a public / private cooperation.

The country's 2003-2006 policy, "Experience Economy", that comprised a Design section, was an initiative stemming from the four ministries of Culture, Business, Education and Research.

The Danish Design Centre (DDC), one of the main actors in terms of design promotion and support, is an independent organisation, although partially publicly funded. Its activities include networking activities, awards and events organisation, and it provides information about new government support programmes for firms and educational initiatives.

As regards enterprises, the DDC provides a range of direct support services to the design industry, in behalf of the National Agency for Enterprise and Construction. Besides, the Design:PARTNER programmes consists in partnership-building between experts and Danish companies that seek to invest in an aggressive strategy drawing on new methods for dealing with design as innovation.

The Centre for Design Research, opened in 2004, ensures a collaborative effort between the biggest design educational institutions under the Danish Ministry of Culture. Among other prerogatives, the Centre for Design Research is in charge of increasing the collaboration between the educational institutions and the industry.

A white paper, 'DesignDenmark' has been submitted in 2007 to the government, with the objective of setting the guidelines of Denmark's future design policy.

These cases of proper dedicated design policies are still rather scarce. Many countries have developed less centralised initiatives in support of design. Designium has dubbed "design support programmes" initiatives of this kind. They can still be launched at the global level, but are more targeted at precise needs and are most of the time very business-oriented. Actions are thus punctual and adapted to specific issues. Implementation is most of the time ensured at the local level and consists in assistance and support to enterprises, punctual problem-solving programmes... As far as these actions are more directed towards the private sector, funding and implementation are mostly ensured by private actors, although public funds are not excluded. The UK, Germany and Italy are good examples of this promotion model.

Exhibit 19 - The American design promotional model

In opposition with the Korean model, a very independent and private-rooted design promotion system has developed in the USA. Except on very specific matters (accessibility issues mainly), the government is not involved in design support and promotion.

Promotion is ensured by private, non profit organisations, composed of representatives of the private sectors. Their business-oriented actions mainly consist in organising national and international networking activities, developing business information, and leading business-oriented research and studies.

The Design Management Institute, the Corporate Design Foundation and the Industrial Designers' Society of America are the USA's three main actors in the field of design promotion.

DMI is particularly representative of this American model. The best evidence for its business orientation is probably that DMI is as active outside the USA as it is within the country. DMI is an international non profit promotion organisation that seeks to heighten awareness of design as an essential part of business strategy. It counts members in 44 countries over the world and organises 3 professional education conferences each year outside the US.

Main objectives: competitiveness and life improvement

Although some countries still base their action on a notion of design that is limited to product design (aesthetics, ergonomics...), most countries have adopted a more comprehensive definition of design. Design is now broadly understood as an inclusive process whose goal is manifold, including aspects of competitiveness and social equity. These goals are seen as mutually supportive.

Results through design: competitiveness and life improvement

The link between the use of design and competitiveness has been acknowledged by several studies. "According to *The New Zealand Institute of Economic Research (NZEIR)*, there is a clear linear relationship between the overall competitiveness of a country and the effective use of design" (Designium World Design Series 2003). Most countries considered generally admit such a statement. Since all major developed countries have acquired comparable

technical capacities, design is perceived as one of the main assets for innovation and competitiveness.

Reducing costs does not suffice to gain competitiveness. Anticipating the end-users' needs and making products more adapted and thus attractive are key to competitiveness. Providing adapted answers to emerging society needs contributes to improving life. These needs are various and can be personal (need for a specific medical device) or more global (need for reduced environmental impact of economic activities). In this sense, design can also contribute to tackling societal issues.

Public actors focus more specifically on the competitiveness objective, on the life improvement objective or combine both, depending on the country's or region's cultural background, on the features of the local economy, on political priorities and on available budgets. Actions undertaken are the result and expression of this choice. Actions in support of design include general information on design, technical support to concerned actors, financial incentives, creation of frameworks for discussions and actions, actions aiming at the development of a general 'design culture' among the population, promotion action of local design on the international scene, etc.

Aiming at competitiveness

Supportive design initiatives that aim at competitiveness directly affect the use of design in enterprises and indirectly impact on societal issues.

Because supportive actions can be directed towards each country/region's comparative advantages, many situations can occur as regards the use of design in enterprises. Indeed, the fight for competitiveness does not raise the same issues in e.g. Denmark as in China. Given labour market characteristics of their home markets, Western European and North American companies have difficulties competing on price and have to build competitive advantage on product quality and intangibles. As regards Asian economies, some of them still have a comparative cost advantage which favours exports, hence the focus of many Asian countries on support to product design.

Exhibit 20 – Supporting competitiveness through design in Asian countries

► Hong-Kong's, Singapore's and South Korea's activities in support of design use in companies

Hong-Kong Design Centre, services to HKDC members:

- Assistance in the selection of a suitable design company
- Brand and image improvement through design: assistance on products value adding and overall sales enhancement
- Information on design trends and business opportunities
- Exclusive design events and activities for businesses
- Design master classes, workshops and seminars

Hong-Kong's DesignSmart Initiative: design-business collaboration scheme

The DesignSmart Initiative includes a design-business collaboration scheme, providing funding support to SMEs in order to promote investment in design use. The objective is to help SMEs transform design activity into tradable deliverables.

► Singapore's Design Pioneer Programme (2004)

Design Pioneer is a promotion programme aiming at developing the capabilities of targeted local

enterprises to use design as a strategy. The programme provides seminars, workshops, assistance in the selection of designers, funding support.

► **South Korea: Capstone design programme**

This programme links companies and universities' design departments, in order to carry out joint projects.

Exhibit 21 – Supporting competitiveness through design in Norway, Spain and Australia

► **Norwegian business supporting actions**

Consultants are available for companies who wish to use design in various fields, as product and service development, market communication (packaging design, branding, corporate identity...). NDC also has an agreement with the Norwegian Industrial and Development Fund (SND) to promote design as a competitive tool through all regional SND offices. SND provides financial support to viable commercial enterprise projects in all parts of Norway. The agreement paves the way for companies throughout Norway to gain access to design and product development support.

► **Spain - Spanish public corporation for the development of design and innovation (ddi)**

(1) Promotion of design for SMEs

Set of actions forming an « itinerary towards innovation & design »

Objective: help SMEs get familiar with innovation issues in a strategic perspective, in order to attain effective design and innovation management.

(2) InnoEmpresa (2007-2013)

Support actions aimed at increasing SMEs' competitiveness.

Main support lines are:

1. Organisational Innovation and Advanced Management.
2. Technological innovation and quality
3. Innovation projects in collaboration or within Consortiums.

(3) Learning to export (DDI and the Institute for Foreign Trade - ICEX)

Sensitization and information actions, dedicated diagnostic and dedicated assistance to internationalisation.

► **Victoria State (Australia) - Design Victoria**

'Design ready' program

Help firms be Design Ready through seminars & workshops. Topics include:

- Best practice in the use of design within business
- Maximising export growth and competitiveness through design
- Best practice in working with designers

Business Immersion

Owners of Victorian-based competitive industries can experience practical, facilitated design services. A facilitator brings together a business and a designer to solve a business challenge and to provide hands-on design experience to SMEs in competitive industries.

Design Sector Events

Seminars and workshops for designers, in-house design teams and design firms, on:

- Best practice in working with clients to generate innovative design solutions and business results
- Best practice in exporting design services and working with international clients
- Business performance benchmarks for design consultancies and in-house design teams

Business Ready' Programme

Aims to increase the national and international competitiveness of Victorian designers, encourage greater engagement with industry and growth in design markets.

Aiming at life improvement

Most of the time, supporting competitiveness through design indirectly leads to life improvement. However, some governments and public actors set themselves the objective of tackling specific societal issues through design. In these cases, public support initiatives aim at supporting the use of design by various types of actors. It can be health institutions when issues are linked with ageing society for instance; citizens and local public actors when it comes to democracy issues;

schools, teachers and students on education matters; urban planning organisations as regards housing and accessibility...

Actions taken in this domain of course depend on the issue addressed. Some are long-known issues, like democracy participation or health, whereas some are more recent issues and induce new trends in policy responses. These last issues include notably environmental protection, and accessibility (due to ageing society, disabilities, etc...) The need to tackle such issues and the opportunity provided by design as a solving tool gave birth to new, specific, conception of design. Ecodesign consists in designing a product or a service with special consideration for the environmental impacts of the product during its whole lifecycle. "Universal design" or "design for all" aims at taking accessibility issues into account in the course of a conception and production process.

Several countries have developed a strong focus on design to improve life (see box below). Although they keep competitiveness as a major objective in design supportive programmes, some new types of actions can be observed, aiming at solving specific societal problems through design.

Exhibit 22 – Design to improve life, emerging trends in policy support

Environmental protection & Ecodesign: Ecodesign centre in Wales (UK):

The Ecodesign Centre Wales (EDC) has been established in September 2006 as part of the Welsh Assembly Government's commitment to sustainable development, to build capacity and capabilities in industry, public sector organisations and higher education so that effective ecodesign can happen in Wales.

Key activities include:

- Informing policy makers and related policy development on ecodesign
- Undertaking international best practice studies and applied research and pilot projects
- Providing advice and support to priority public sector organisations, in particular business support organisations, to enable effective ecodesign intervention
- Supporting the process of embedding ecodesign in mainstream education
- Disseminating findings and communicating and promoting the benefits of ecodesign
- Ongoing monitoring and evaluating the activities of the centre

Accessibility and universal design: the US Access Board:

The Access Board is an independent Federal agency devoted to accessibility for people with disabilities (notably under the « Americans with Disabilities Act »). Created in 1973 to ensure access to federally funded facilities, the Board is now a leading source of information on accessible design. The Board develops and maintains design criteria for the built environment, transit vehicles, telecommunications equipment, and for electronic and information technology. It also provides technical assistance and training on these requirements and on accessible design and continues to enforce accessibility standards that cover federally funded facilities.

Accessibility and democracy - RED programme (UK):

RED focuses on health, ageing, democracy, citizenship and transformation design. RED relies on an interdisciplinary team of designers, policy analysts and social scientists, who bring frontline workers, service providers & experts together to design, prototype and implement new types of public services.

In 5 years, RED has run projects focusing on preventing ill health, managing chronic disease, reducing carbon emissions from homes, strengthening citizen-ship, reducing re-offending by prisoners, and improving learning at school.

Design for all Europe:

EIDD - Design for All Europe is the joint European platform for social planners, architects, designers and others who believe in the potentials of their professions to play a vital role in the necessary transformation of our societies into more cohesive, innovative and sustainable ones. Design for All Europe is now a federation of National and Corporate Member Organisations in 20 European countries (and with more preparing to join). With a strong inter-disciplinary approach, the majority of members are professionals in design-related fields.

The aim of EIDD is to encourage active interaction and communication between professionals interested in the theory and practise of Design for All and to build bridges between, on the one hand, these and other members of the design community and, on the other hand, all those other communities where Design for All can make a real difference to the quality of life for everyone.

EIDD is the only design-led organisation in Europe focusing on the opportunities offered by design to overcome at source many of the obstacles that mankind has illogically created, in both mental attitudes and the resulting artificial environment, to enable all people to lead a full, pro-active part in an inclusive society.

Most countries' design strategies are based upon a mix of actions which aim at competitiveness *and* life improvement. Specific national strategies are designed in line with the countries' main economic characteristics.

German regional design councils for instance have developed a specific engineering-oriented design policy in line with the German economic focus. Support actions are managed at the regional level, by regional Design Councils, with the purpose of addressing companies' needs. This orientation gives a more precise idea of what can be the understanding of design in Germany. It is indeed broadly understood in its industrial dimension, as product and process design. The main associated advantages are performance and competitiveness.

The American model is also very business-oriented, but it favours business consultancy, irrespective of the concerned sector: networking services and technical assistance are provided to companies by organisations stemming from the private sector. The actions undertaken in the USA tend to indicate a strong interest in strategic, management design, although the styling and branding dimension is also strong.

Italian support programmes are very localised and centred on specific economic sectors (notably art, architecture, the automobile sector). The Politecnico di Milano has carried out studies and research on design at regional level (Lombardy) to drive support actions. Design here is broadly used in a styling perspective. Design is the basis to build on the Italian brand, perceived as one of the country's strongest comparative advantage.

The following section will detail the specific support measures that are implemented.

4.3 Main features of public support to design

Pursuing competitiveness and life improvement supposes the implementation of various types of operational initiatives. As stated, contexts and priorities differ. This section attempts to classify the diverse types of actions undertaken in design public support programmes and policies.

Awareness raising and promotion on the local and international scenes

As design is a broad notion, awareness raising, information and promotion are the usual first steps to take in order to encourage its effective use as an economic and social asset. And indeed, almost all countries that support design consider awareness raising and promotion as a priority. Actions in this domain can concern the general public, education, research, national and international economic actors as well as public services in general. Along the set priorities, this variety gives way to a whole range of promotion actions.

Contact & Information

In most observed countries, public spaces dedicated to design (often named design centres) have been created to help the general public gets familiar with the various approaches and features of design. Design Centres allow visitors to experience design through cafés and shops, libraries and museums. All these initiatives tend to make design accessible, but also and most importantly, to create or reinforce a public 'design culture'. Information initiatives, in the form of databases, libraries, papers and online publications can also be oriented towards a wide variety of actors (general public, private, public...) An interesting illustration of this trend is the new objective set to the Danish Design Centre to become a design knowledge centre.

National and international events

In addition to making design public, events additionally have a strong promotion component, on the national/regional or international scene. This type of action includes:

- *Exhibitions* promote the country's or region's design brand on the local and/or international scene.
- *Festivals and thematic events*, such as the 2005 Design Year when design was celebrated in Norway, Sweden, Finland and Denmark.
- *Seminars & conferences, shows & fairs* aim at encouraging networking within or amongst specific communities (researchers, business people).
- *Competitions and awards*. These initiatives aim at promoting design excellence within the region/country or on the international scene. Finland organises a Young Designer Award. The Pro-Carton award in Austria encourages eco-design. Singapore chose to organise a Design to Improve Life award.

Education and training

Actions which address issues related to education and training in design aim at adapting education to modern societal challenges, at all educational levels. These actions marginally involve educational first stages programmes: Singapore's "many ways of seeing" consists in awareness-raising programmes in schools. The

objective is to sensitise children to creativity. As regards higher educational stages, actions mainly focus on design studies and more general studies in Universities. Examples are: Danish policy, "greater business orientation in education", new research college on design in Sweden at the Royal Institute of technology in Stockholm. Lastly, a remarkable initiative is to be emphasised: the creation of the "Innovation University", also called "Aalto University", at Helsinki. It is a new university, a unique example of competence merger between Economists (Helsinki School of Economics), Art designers (University of Art and Design Helsinki), and technologists (Helsinki University of Technology). Aalto University's special national mission will be to employ research and education to support the success of Finland in the international economy. At the same time, the university will make a positive contribution to Finnish society, its technology, economy, culture and international appeal.

Research & networking

Strategic design is a rather recent notion. Encouraging the emergence of a research community in design, favouring international exchanges and networking on the topic and supporting the development of joint actions between academics and business actors are thus effort consuming. Actions in this domain include:

- Funding of research programmes and structures dedicated to design (Designium in Helsinki, new Design Research Centre in Denmark, International Research Meetings in Belgium - Flanders...)
- Joint universities/business sector research programme: Capstone design programme in Korea, Sweden's Summer Design office implying business actors and design students...
- Specific research competitions and awards (Wales' annual competition for design students...)

Free and fee services to the private sector

'Services to companies' is the most widespread design support programme to promote the use of design in companies, with a special focus on SMEs. Small companies are indeed less prone to take financial risk to test design's efficiency. Design support programmes inform companies about the value of design as a strategy, assist them in their first steps and encourage a perennial use of design within enterprises in general. Actions undertaken encompass:

- Directory services: Support organisations like DMI in the USA or the Hong Kong Design Centre assist companies in the selection of designers.
- Technical assistance and consulting programmes consists in direct and adapted assistance within the enterprise. Companies can benefit from these actions while enforcing their first design project, or in order to develop new management methods for example. Assistance can be technical, legal, managerial, etc.

Exhibit 23- The case of Wales, UK

Design Wales are funded by the Welsh Assembly Government since 1994 to encourage the effective use of design by Welsh SMEs. They do this via four core activities delivered by experienced designers acting as advisors:

- a general design enquiry line,
- regional brand workshops (they ran over 50 last year),
- focussed events to champion design in the specific sectors (e.g. food & drink, fashion & textile and wider manufacturing sectors) (over 1,000 people attend DW events last year)

- and one to one support from the advisory team (they helped over 400 businesses last year).

Design Wales also encourage an active and able design agency sector via an on-line directory (www.designdirectorywales.org), available for free consultation for all Welsh businesses.

Public consultations and open democracy mechanisms

When public authorities address a specific issue (improving public services, environment in a city, accessibility in schools...), it general implies consultative and participative mechanisms. The latter rely on the participation of different types of actors (citizens and public services, public services and experts) and take the form of workshops, surveys, and consultations.

Grants & Tax incentives

Design grants are targeting two categories of actors: students/ researchers and enterprises. On the one hand, students and researchers are proposed scholarships and research grants. The latter are meant to encourage the building of a knowledge base on design issues. On the other hand, enterprises are offered grants, aiming at supporting the integration of design in their activities and products. Business design grants contribute to fund first investments in design or original design projects.

As regards tax incentives, it is difficult to get a clear picture of all tax credits linked with design, as far as these are included within broader fiscal frameworks (notably R&D). However, design R&D tax incentives are sometimes distinguished from other R&D incentives. Besides, a certain number of countries have developed specific design tax incentives. The Quebec province in Canada even distinguishes between industrial design tax credit and fashion design tax credit system. In the USA, specific tax credits apply to "green" buildings design and construction. Some are included in the Disabilities Act, aiming at ensuring equal access to private and public services to all American citizens.

Regulation (norms and intellectual property)

Some countries like Hungary have developed specific regulations in order to give a legal framework to design, especially in terms of intellectual property.

Exhibit 24 – The case of Sweden, a diversified mix of actions

Under the '*Design as a force for development initiative*', 9 national programmes were enforced in Sweden. These programmes were dedicated to specific sectors or objectives, in addition to regional initiatives. Besides, Sweden has developed a framework that aims at solving problems related to environmental hazards. The whole programme draws on almost all types of actions detailed above.

Sectoral programmes

- Employees & companies in good shape
- Design for business enterprise
- Design for export of medical technology
- Design for small and large communities
- Design for services
- Design for the vehicle industry suppliers

- Packaging as a value creator
- The Summer Design Office
- The outdoor environment – design for the educational experience

Regional Development: 7 regional and 15 local offices provide guidance, information & different development projects to raise the awareness on the importance of design.

ICSID Interdesign in Sweden

InterDesign Workshops are international problem-solving workshops, using design as a tool. In the northern part of Sweden the mining industry continues to expand and, in certain areas, the ground is crumbling under entire cities. This poses enormous challenges to the survival of such communities and may force their residents to relocate - leaving behind their homes, workplaces, public spaces and local attractions. The City Move Interdesign will explore whether it is possible to relocate whilst safeguarding and transferring parts of, or entire societies, and how this can be done effectively. The project will look at socially responsible design methods to create new spaces for people by bringing international experts together.

The following table is an attempt to synthesise the use of the various instruments and measures presented above in the examined countries. It must be stressed that this table accounts for actions for which evidence has been found. Some measures might not appear in the table by lack of available information. Further details can be found in the global overview in Annex.

Exhibit 25 – Use of design-supportive actions in the observed countries
[see next page]

| | Public space dedicated to design (design centre) | Information and knowledge sources (databases, publications, studies...) | International events (seminars, conferences, shows, fairs, festivals, exhibitions) | Competitions and awards | Regulation (norms & patenting) | Grants & tax incentives | Design education programmes | Life long learning | Research & networking | Technical assistance & consulting services to companies & professional designers | Public consultations & open democracy mechanisms |
|--------------------------|--|---|--|-------------------------|--------------------------------|-------------------------|-----------------------------|--------------------|-----------------------|--|--|
| Australia – Federal | X | X | X | X | X | | X | X | X | | |
| Australia – Victoria St. | X | X | X | X | X | | X | X | | X | |
| Austria | X | X | X | X | X | | X | | X | X | |
| Belgium – Flanders | X | X | X | X | X | X | X | | X | X | |
| Canada | | | | | X | X | X | | X | | |
| Continental China | | | X | | X | | X | X | X | | |
| Czech Rep. | | X | X | X | X | X | X | | X | X | |
| Denmark | X | X | X | X | X | X | X | | X | X | |
| Estonia | X | X | X | | X | | X | | X | | |
| Finland | X | X | X | X | X | | X | | X | X | |
| France | X | X | X | X | X | X | X | X | X | X | |
| Germany | X | X | X | X | X | | X | | X | X | |
| Hong-Kong | X | X | X | X | X | X | X | X | X | X | |
| Hungary | X | X | X | X | X | | X | | | | |
| India | X | X | | | X | | X | X | X | X | |
| Ireland | | X | | | X | | X | X | X | X | |
| Italy | X | X | X | X | X | | X | | X | | |
| Japan | X | X | X | X | X | | X | X | X | X | |
| Netherlands | X | X | X | X | X | | X | | X | X | |
| New Zealand | | | | X | X | X | X | | | X | |
| Norway | X | X | X | X | X | X | X | X | | X | X |
| Portugal | X | X | X | X | X | | X | | X | X | |
| Singapore | X | X | X | X | X | X | X | | X | X | X |
| South Korea | X | X | X | X | X | X | X | X | X | X | X |
| Spain | X | X | X | X | X | | X | X | | X | |
| Sweden | X | X | X | X | X | X | X | X | X | X | X |
| Switzerland | | X | X | X | X | | X | | | | |
| Taiwan | X | X | X | | X | | X | | X | X | |
| UK | X | X | X | X | X | | X | X | X | X | X |
| UK–Scotland | X | X | X | | X | | X | | X | | X |
| UK–Wales | X | X | X | X | X | | X | | X | X | |
| USA | X | X | X | | X | X | X | | X | X | X |

4.4 Effectiveness of design support policies: Evidence from evaluations

The limits of evaluations

A proper evaluation implies a clearly defined design policy or programme and a centralised organisation of the evaluation. Few initiatives meet these requirements and design policy evaluation reports are scarce²⁹:

- National Design Policy evaluations in Sweden, Finland and Korea
- Designing Demand Programme evaluation in the UK
- National Accessible Design Policy annual report in the US.

Besides, design policies are mostly recent policies; so, their range of action is broad and their objectives of a qualitative nature, which makes it very difficult to assess their direct impact on a country's economy and society. Consequently, evaluation reports mainly detail the number of projects conducted under the evaluated policy, the number of participants involved and of sums spent.

The following exhibit presents the methodology used by the Swedish Industrial Design Foundation to evaluate the "Design as a Force for Development" programme.

Exhibit 26 - Evaluation objectives and process: the case of Sweden

Among the three countries where a national design policy has been evaluated, Sweden is the one that most explicitly present its evaluation process.

The Swedish Industrial Design Foundation (SVID) is the main organisation responsible for design policy implementation. It was also entrusted to appoint an evaluator and supervise the process. At the very start of the "Design as a force for development programme", a Professor at the Växjö University was appointed to conduct this process, which included a mid-term evaluation and a final report.

The approach adopted by the evaluator is detailed on the final report's summary by SVID. It included the following elements:

- "Simple analysis of the projects ability to reach the goals stated by SVID
- Fieldtrips, interviews and focus groups for a sample of the different projects
- Surveys to the participating companies and organisations
- Surveys to the participating design consultants
- Analysis of the programme from a venture-capitalist's perspective
- Partial implementation evaluation"

Implementation and results

General observations on implementation

Sweden, Finland and Korea have a common point worth being noticed, as far as actions towards the business sector are considered. All three countries have implemented national design programmes dedicated to businesses. Meanwhile, all three also have developed a local network of organisations or centres in

²⁹ Even when they exist, policy evaluation reports tend not to be fully available to the international community. Only executive summaries are available in English. As regards the UK Design Council's Designing Demand programme, results are given very briefly under a 'Questions & Answers' form.

charge of addressing local firms' needs in terms of design. National initiatives and local networks appeared to be efficiently complementary.

The Finnish evaluation report stressed that participant companies were large enterprises, often already familiar with design issues. This was considered a limitation of the programme. However, the report also underlines that smaller, inexperienced companies as regards design could anytime turn to the regional TE Centres for counselling and expertise services under the DesignStart initiative.

A key feature of initiatives to promote and use design as a tool to improve live shall usefully be emphasised: those initiatives have mostly been implemented at local level, implying local communities which could directly address the related issues, on a daily basis.

In terms of implementation, it is also worth noticing that the focus made on strategic design led the organisations in charge of managing the programmes to reconsider their traditional way of working. In national policies and programmes, the notion of strategic design induced a multi-disciplinary and open-minded approach. SVID (Sweden) and TEKES (Finland) notably, the organisations in charge, traditionally deal with industrial and/or technological topics. As a consequence of their new responsibilities, they had to modify their approach and services to fulfil their missions. For instance, TEKES was used to interacting with R&D departments within enterprise; they had to adapt to new needs and to new target participants. This aspect was deemed important enough in the policy process that it was emphasised in the final evaluation report. Korea stressed that an international cooperation with Italy and France was launched during the policy's second plan.

Overall, evaluators considered that the means enforced in order to reach the policies' objectives were adapted and produced satisfactory results. Although all countries do not overtly evaluate the efficiency of spending with regard to the results, it seems that these programmes have been considered as good investments. The Swedish evaluation report explicitly states that the financial success known by only 10% of the participating companies was sufficient enough to cover for the investments engaged for the whole programme.

Programmes' results

Public venues and events were opened and organised under these evaluated programmes and policies. As a key result of its second five-year plan for design (1998-2002), Korea created various design infrastructures: the Korea Design Centre, nationwide Design Innovation Centres, three Regional Design Centres and an International Design Trend Centre were opened. Completing the plan also led to the creation of an information portal, designdb.com. In the available documents, Korea³⁰ also stresses the organisation of international events during its second plan.

All evaluators provided the number of companies involved or the number of projects conducted. Data acknowledge the differences of approach adopted by

³⁰ KIDP (2003 ?) *Achievement of Korea Design Promotion Policy ('98-'02)*

the various countries. Finland has chosen to focus on rather large-scale and long-term projects involving 100 enterprises, while directing companies with short-term needs towards regional centres. Korea adopted a broader approach, accounting for more than 4000 projects conducted in 5 years.

Exhibit 27 – Appraisal of the number and type of participating companies in Finland, Korea, Sweden and the UK

► *Finland*

Finland's Design 2005! Evaluation report found 48 enterprise projects conducted during the programme's duration (i.e. 4 years), involving 100 companies.

► *South Korea*

Korea's report on the 2nd five-year plan accounts for 4 676 projects conducted with SMEs, which reflects a different approach in design support to enterprises and a preference for shorter, more superficial projects.

► *Sweden*

Sweden Design Initiative, according to SVID's evaluation report summary, has involved 498 businesses, 66 municipalities and municipally-owned businesses and 150 designers over 3 years.

► *UK*

The Design Council's Designing Demand has involved more than 600 businesses across the UK between 2002 and 2006 - according to a Questions & Answers document available on the website.

As regards research, available information again stresses the difference of approach adopted by these countries. Whereas Finland clearly integrated research into its design policy programme, Sweden used it as a knowledge tool in order to gain insights on companies' attitude towards design.

Exhibit 28 – Research initiatives' results in Finland and Sweden

► *Finland*

A hundred researchers were involved, approximately twenty doctoral dissertations were started (although not all were completed by the end of the programme), 25 projects were funded by TEKES (with a focus on technology) and 8 by the Academy of Finland (with a focus on human factors). This knowledge pool is estimated to have produced some international-level work, although not 'top-level' according to the evaluator.

► *Sweden*

Sweden has adopted a different attitude towards research. No specific research project aimed at external organisations was planned under the 'Design as a force for development initiative'. However, SVID and the Association of Swedish Engineering Industries jointly carried out a study among 1 308 companies to survey their attitude towards design and their experience thereof.

Measured impacts of policies and programmes

Impact on the competitiveness objective

This competitiveness objective can be detailed in various sub-objectives: awareness and information about design, interest concerning design use in companies, effective use of design in companies and, as a results profits gained from the use of design.

The achievement of all these objectives cannot equally be assessed, but some measured impacts of the design supportive programmes and policies can help highlight some main points.

The objectives of an increased awareness and use of design can be considered as achieved. Awareness of design has been increased over the operation period, both in the research and business communities, although with various operational results. In all three countries, participating businesses declare that they will at least consider the use of design in their future activities, if not definitely use it.

As a matter of fact, design awareness and interest for design implementation turn out to result from enterprises' participation in the programmes. All countries notice this, more or less precisely.

Exhibit 29 – Measurement of the increased design awareness and use among the private sector in South Korea, Denmark, Finland and Sweden

► *South Korea*

The share of SMEs having design workforces increased from 50.1% in 1997 up to 66.5% in 2002, as a result of the second 5-year plan. Consequently, Korea set as an objective for its 3rd plan to increase the number of SMEs having a design dedicated department from 39.6% (2002) up to 60% in 2007. Evaluation of this third plan is not yet available.

► *Denmark*

Early assessments dated back to 2004 (i.e. after one year of programme operation). accounted for an increased awareness of the existence of the Danish Design Centre in the national industry from 54% to 59%.

► *Finland*

The visibility of design is mentioned to have increased among businesses and as a branch.

► *Sweden*

The report states that two thirds of the participating companies declared they would increase their future use of design.

► *UK*

Firms involved in the UK Design Demand programme, 88% of the companies participating to the feedback process and carrying out strategic design projects asserted they were critical to success.

Exhibit 30 – Measurement of the participant companies' benefits in Finland, Sweden and UK

► *Finland*

All companies that have participate in Finland's Design 2005! Programme estimated that the project had an impact on their competitiveness, and that benefits resulted from the change in their products and production process. 80% of the respondent companies consider that their operating procedures improved, thanks to the project they took part in.

► *Sweden*

In Sweden, the total increase in sales related to the participation of companies in the national programme has been evaluated at 300 MSEK (approximately 32 million Euros). The programme is also assumed to have directly created 150 jobs. Among the 10 national projects developed under Design as a force for development, three have been particularly successful. 'Design for the vehicle industry suppliers' for example induced a turnover increase in the sector that accounted to more than 50% of the total increase induced by the whole programme.

► *UK*

UK's Designing Demand Q&As shows positive results in terms of competitiveness, without any precise data provided though. The effectiveness of participation is said to be confirmed by the

performances of the involved companies: increase in turnover and profits, as well as increased investment attractiveness. Besides, 88% of businesses carrying out strategic design projects under the programme said they had been critical to success.

In the field of research, national programmes have allowed the emergence of a research community and associated research topics. In Finland, a mid-term evaluation report noticed that the topic of user-oriented design seemed to be particularly interesting to researchers and recommended not to focus exclusively on this problematic, but rather to expand research themes to a wider customer relations perspective. Evaluators also considered whether or not a specific research community has developed in the country, and whether or not sufficient basic knowledge was produced in order to provide businesses and policy makers with relevant, up-to-date information. Satisfaction here is mitigated by concerns over the continuation of the actions undertaken.

Exhibit 31 –Measuring the (improved) quality of the design research community in Finland and Sweden

► *Finland*

By Finland national programme's completion, one of the main conclusions drawn by the evaluation report was that a research community on the theme of design had emerged, but also that the programme as a whole had benefited the business community more than the research sector. The main challenge identified by the evaluator was, by the end of the programme, to ensure continuity in this process as well as an efficient dissemination of the current and future results. One reason for this is probably that four years are a very short period of time, especially in the research domain.

When it comes to education oriented actions, evaluators stress that results are less evidential – except for Korea, where the rise in number of design students was a priority objective.

Exhibit 32 –Assessing the quality of the approach to design in education in Korea, Sweden and Finland

► *Korea*

Tradition did not include aesthetic and product design as was the case in Europe and the US, the constitution of a solid design graduate students basis is a priority. The number of people who graduated from design related universities and colleges increased from 28 583 in 1998 to 36 397 in 2002, which means up 27% over the 2nd national five-year plan.

► *Sweden*

One of the 10 national projects developed under the national programme directly concerned students, the evaluator states that the number of students with a degree in design has more than doubled within 5 years.

► *Finland*

On the opposite, where the programme focused on research and business, the impact on education is said to be negligible. Finland is one of the country where design is most part of history and tradition, which could explain this relative disinterest in design studies in quantitative terms.

Impacts on life improvement

Quantitative information is even scarcer regarding impacts of life improvement than it was for impacts on competitiveness. Moreover, policy results are particularly difficult to assess. Besides, although design to improve life is one of the asserted policy objectives, it is often dealt with in the framework of projects also involving the economic sector.

The available information in this domain is mainly descriptive and consists in explanation about individual projects; UK's Dtt07 and RED programmes are good examples of that. They did not give way to official evaluations but the programmes' websites provide lists of completed actions, which are presented as successful.

As regards the US access board, an annual report is issued, presenting the actions conducted in each domain of intervention. Outcomes are presented in terms of number of actions undertaken and technical inquiries answered and investigations closed, without comparing them to objectives or global federal data.

However, it seems clear that the use of design in companies can and will probably induce indirect positive effect on society as a whole: in terms of economic prosperity, of environmental protection, of product adaptation to the users' needs... As regards the constitution of a pool of knowledge in the field of design, it is also certainly socially beneficial: it means that the research community as a whole was expanded (especially in Korea) and that knowledge increased.

Evaluation conclusions – new needs and subsequent needs observed

The Finnish and Swedish evaluation reports emphasise two crucial dimensions: the necessity to further build on the dynamics and to disseminate the obtained results; and the need for a solid, permanent strategic design support system.

Limiting initiatives to durations of 4 to 5 years can be very convenient for actions targeted at businesses; however, when it comes to research, it is a very short period. In Korea, unlike in Sweden and Finland, a 5-year plan is immediately followed by another. Korean design policy programmes have allowed both the emergence of a new research community and dense design related works.

To be effective, efforts launched in the field of research have to be pursued and research results have to be disseminated. This issue is raised in the Finnish evaluation report, which stresses that policy framework corresponded to the end of financial support mechanisms, not allowing an efficient continuation of the efforts engaged.

The most striking conclusion as far as the business sector is concerned is best underlined by TEKES (Finland). Whereas the vast majority of impacted firms claim the importance of design for their competitiveness, dedicated support organisations are lacking; hence a need for information and knowledge on design – and especially strategic design. The report explains that design firms are not able yet to give advice on developing procedures and structures, since design has long been restricted to the notion of product design. SVID's report draws the same conclusion, stating that knowledge on design is growing while implementing strategic design remains problematic.

5 Conclusions - Opportunities for a design policy for Europe

The purpose of this section is to set the scene for making proposals about possible content and form of a design policy for Europe. This will be done in 5 stages. First, we will present a picture of some of the current design oriented initiatives at a European level, because this is the background against which further improvements may be reflected upon. Second, we will recollect the main lessons that can be drawn from this study. Third, insights stemming from the Innovation Policy Workshop “Design as a tool for innovation” will be presented. Fourth, elements of a rationale for a European design policy will be proposed. Eventually, a tentative proposal is made.

5.1 EU current design initiatives

Over the years, the European Commission has implemented a range of initiatives to promote the use of design. Initiatives fall into three main categories: regulations (incl. legal protection), label schemes and guidelines, and research programmes.

Exhibit 33 presents in a condensed manner a selective overview of some of the design oriented initiatives and regulations to date at EU level.

Exhibit 33 – Design oriented initiatives and regulations at EU level to date - a selective overview

| | References | Description |
|---------------------------------------|--|--|
| Regulations | 1. <i>EuP, 2005/32/EC : Eco-design of Energy Using Product Directive</i> | Framework that sets <i>Eco-design</i> requirements for all energy using products in the residential, tertiary and industrial sectors. Conditions and criteria as regards requirements of environmentally relevant product characteristics |
| | 2. <i>Directives 2004/18/EC and 2004/17/EC: Design For all – public procurement</i> | “Contracting authorities should, whenever possible, lay down technical specifications so as to take into account accessibility criteria for people with disabilities or design for all users”. “Whenever possible [these] technical specifications should be defined so as to take into account accessibility criteria for people with disabilities or design for all users.” |
| | 3. <i>Office for Harmonization in the Internal Market (OHIM)</i> | The OHIM is the European Union’s official body for registering designs and trade marks throughout the Member States of the European Union, notably via directive 98/71/EC. |
| Label scheme and guidelines | 1. <i>Eco-Management and Audit Scheme (EMAS) (REF.:Council Regulation 761/01)</i> | Voluntary instrument; acknowledges organisations that improve their environmental performance on a continuous basis. EMAS registered organisations are legally compliant, run an environment management system and report on their environmental performance. |
| | 2. <i>Regulation (EC) No 1980/2000 Eco-label Scheme</i> | Voluntary scheme designed to encourage businesses to market environment-friendly products and services and to allow an easy identification by European consumers (public and private) |
| | 3. <i>Green Public Procurement (GPP)</i> | Public contracting authorities and entities take environmental issues into account when tendering for goods or services. Aim at reducing the impact of the procurement on human health and environment. Provision of a Green Public Procurement Toolkit. |
| Grants and research programmes | 1. <i>Competitiveness & Innovation Programme (2007-2013)</i> | SME-specific scheme; Calls on <i>Eco-friendly design</i> and production of high quality consumer goods, <i>innovative building processes or products</i> that reduce environmental impact; <i>cleaner and more efficient processing of food and drink products</i> ; innovative quality assurance systems that enforce eco-compliance and approaches that follow the principles of Integrated Product Policy (e.g. eco-design, eco-label and life cycle approach). |
| | 2. <i>Design for All (DfA) – DG Infso</i> | Coordination Action DfA@eInclusion, FP6 project of IST Programme (1/1/2007 to 31/12/2009); notably aiming at supporting existing European initiatives to promote Design for All and in particular the European Design for All eAccessibility Network (EdeAN). |
| | 3. <i>Framework Programme for Research and Technological Development</i> | The 7th Framework Programme does not provide any specific support to research projects on design. However, projects where design play a key role can find support under almost each research areas. |
| | 4. <i>Pro-Inno Europe ‘Design Management Europe’ (ADMIRE)</i> | <i>Design Management Europe</i> is project financed by DG ENTR under the umbrella of Pro-Inno Europe; it aims at demonstrating to businesses the commercial benefits from good design management practices |

First, the exhibit demonstrates that limited initiatives in support of design exist, which do not form a coherent, global European design policy. Design matters in several domains of the life of European citizens, businesses and administrations so that the number of fields of actions where design plays a role is increasing.

Second, the exhibit shows that most initiatives primarily aim at improving the European quality of life and secondly at improving European competitiveness. Both dimensions are nonetheless complementary and part of the EU major ambitions: adapting to global competition and fighting for competitiveness while facing societal challenges.

5.2 Main lessons from the review

Two series of lessons can be drawn from the material presented in this mini-study:

First, evaluations of national design programmes –cf. section 4– lead to the following three insights:

1. Local and national levels are complementary. While local level appears relevant and efficient for undertaking business sector actions, national programmes set the main orientations for local networks to deal with specific support and counselling. EU level policies may logically seek an upper level complementarity too.
2. Strategic design is not efficiently promoted through adequate structures and frameworks. Strategic design however concerns both enterprises and public services and interactions between them. As a consequence, this lack would be usefully worth making a priority in the EU actions for design.
3. At national and local levels, actions dedicated to design for a better life are sparser, sporadic and therefore lack a global coherence and efficiency. At EU level instead, design for a better life initiatives could be more influential. Consequently, the European Commission would indeed make a difference in providing a structured vision for a European knowledge based economy accounting for the importance of design.

Second, lessons from the study of design strategies of advanced businesses –cf. Section 3– are the following:

1. Successful design strategies and practices are based upon the combined benefits of centralisation and decentralisation. All companies examined have implemented a globally distributed organisation of design while keeping a centralised office. Centralised offices are responsible for defining vision and global implementation plans; they benefit from local design offices as sensors, experimenters and implementers.
2. Higher executive levels' sensitivity and familiarity to design issues is a success factor of paramount importance. A reporting and evaluation tool is implemented, often in the form of an indicator based dashboard.
3. The focus on users is always present both in discourses and acts through the use of internet 2.0 while complementarity with real-life

approaches is always sought. This business focus on users goes along with a much greater emphasis put on cooperating with social sciences, including management sciences, on an open innovation format.

5.3 Essential ingredients of an inspiring European design policy: vision and actions

This section summarises some of the insights coming from the Innovation Policy Workshop “*Design as a tool for innovation*”, which was held in Marseille on the 26th & 27th of June 2008³¹. Experts from the business, academic and policy communities notably contributed by proposing elements of a vision that would leap Europe ahead of main competitors, together with possible means of action.

A vision for a Europe of design: main components

The main components of a vision that could form the background of a possible EU design policy are differentiation, vision and governance.

Exhibit 34 – Main components of a Europe of design – Innovation Policy Workshop

| Components | <i>Innovation Policy Workshop Ideas</i> |
|-----------------------------------|--|
| DIFFERENTIATION | <ul style="list-style-type: none"> - EU must go for high end design - A European design brand - Beyond branding, a “designer label” and make it much better - Authenticity as a strength of EU design: enhance features that competition would struggle to replicate |
| Heritage as an asset | <ul style="list-style-type: none"> - EU design image based on history and culture - Leverage Europe’s heritage of diverse cultures - Assist designers in their understanding of design for specific cultures and behaviours. |
| Diversity as a value | <ul style="list-style-type: none"> - Europe: a place where diversity and authenticity feed excellence - Social integration: market inside the EU and outside the EU - Sustainable social development - Community-centred design |
| Design supports businesses | <ul style="list-style-type: none"> - Favour a new innovation climate for businesses - A clear vision of how design thinking can improve business - A clear description of benefits of design understandable to business and public procurement |
| Design improves well-being | <ul style="list-style-type: none"> - Design as a crucial element for competitiveness <i>and</i> well-being - Design services are potentially key to reforming the EU welfare sector |
| GOVERNANCE | <ul style="list-style-type: none"> - Highly visible council of EU design leaders – inspiration, collaborative - A body / group of “thinkers” to continue develop and improve the policy/programme - Develop design thinking in EU structure - Design should be visible in all the policy instruments |

³¹. Further details are available on Inno-Grips website.

| | |
|--|---|
| | <ul style="list-style-type: none"> - Horizontal tool supporting other EU objectives - Procurement |
|--|---|

Implementation of the vision: tentative pathways

In an attempt to go beyond describing possible features of a vision, the participants of the workshop advanced a number of practical action pathways to make the vision come true (cf. Exhibit 35).

Exhibit 35 – Action pathways – Innovation Policy Workshop

| Action types | <i>Innovation Policy Workshop suggested pathways</i> |
|---|--|
| Inspiration through best practices | <ul style="list-style-type: none"> - Quantitative evidence base for SMEs and policy makers - Exchange of best practices followed by implementation of use of design to improve quality of life - Benefits to cost ratio: clear (expected) benefits, minimising costs - Compelling illustrations: design true achievements - Original inspirational design - Make design leaders and design champions visible |
| Research and innovation | <ul style="list-style-type: none"> - Develop user-centred research and innovation - Divert some of the technology research to design research - Pushing future design topics: eco and sustainability - Create an overarching structure from design for production to design for creative services - Develop synergies between the diverse areas of design (all are needed – almost) - Web-enabled networks of design suppliers and consumers, open innovation. |
| Skills, education and research | <ul style="list-style-type: none"> - Design as a means of addressing future threats and opportunities - Transformation is based on advanced knowledge and skills - Equal support to research / academia AND business to integrate “design thinking” - Design research excellence - Support skills build up - Design leadership - Teach design process / method / relevance to future decision makers (university students) |
| Awareness | <ul style="list-style-type: none"> - Programmes for mature decision makers (public, private) - Enhance design awareness in new generations - Awareness & training packages, especially for SMEs: strategic integration of design in business practices - Programme to raise awareness of design’s potential contribution to business strategy |
| Hubs, centres of excellence | <ul style="list-style-type: none"> - Get, develop, keep talents in place - 1/3 of the future global design hubs is located in Europe - Clear ecosystems for European design excellence centres |
| Other concrete actions | <ul style="list-style-type: none"> - Export business and cultural standards - A European design prize - Concrete assistance to SMEs in engaging excellence design process |
| Support to | <ul style="list-style-type: none"> - Pushing the member states to have an aim or a policy |

| | |
|----------------------|---|
| member states | <ul style="list-style-type: none"> - Committed business & national governments - Europe level facilitates national bodies to have a design policy - Vision / reference for the implementation of national policies - Allocated funds at national levels |
|----------------------|---|

5.4 Design related market and system failures

Due to the specific nature of design activities, two complementary economic approaches can be put forth as a rationale for public support for design: *market failures* and *system failures*.

Design related market failures

Theoretical bases for state aid for innovation are often found with reference to the notion of market failures (cf. the "Community Framework for State Aid for Research and Development and Innovation (R&D&I)", (2006/C 323/01)). The question is whether design, as a set of innovative economic activities can be subject to specific public support initiatives. It could be so in case the market for "design activities" does not perform efficiently, i.e. there are market failures hampering R&D&I. And since R&D&I is an overarching Community objective (cf. EU Treaty, articles 163 to 173), R&D&I related market failures must be tackled.

In relation to R&D&I, four main market failures have been identified, hence paving the way for specific support measures. In the Commission's wording, R&D&I related market failures are:

- Positive externalities/knowledge spill-overs: knowledge creates benefits which the main producer does not appropriate adequately, whereas there are positive spill-overs to the wider public. This results in a situation where the producer is insufficiently rewarded for his efforts and would therefore stop investing. Spill-overs would consequently disappear, which leads to a social sub-optimal situation.
- Public good/knowledge spill-overs: part of the knowledge, such as fundamental research, cannot be privately appropriated. It is a public good, a number of people being able to use it at the same time. The private producers of such knowledge should benefit from a protection system, adequately rewarding their efforts.
- Imperfect or asymmetric information: access to relevant information is crucial in relation to R&D&I activities since these are much subject to uncertainty. Not all companies are able to access the very best information before running the risk to invest in R&D&I. Without state intervention, society at large would then suffer from not benefiting from useful innovations.
- Coordination and network failures. Today, no R&D&I takes place in isolation, one private undertaking. Identifying, finding and connecting with the right partner (other companies, public research laboratories, and private individual experts) is therefore essential. Not all actors possess the same ability to connect and coordinate in order to carry their R&D&I activities.

We suggest four instances where innovative design related market failures could be found, through a parallel with "Community Framework for State Aid for Research and Development and Innovation (R&D&I)" 2006/C 323/01, Art. 1.5, p.8. The main line of reasoning consists in considering innovative design activities:

1. as specific services innovations;
2. in relation to the loan of highly qualified personnel;
3. as taking place in design clusters.

This means that not the whole vast set of design activities can be eligible to state support. Specific design activities fall into the following four categories of aided innovation activities; certain design activities can be considered as "process and organisation innovation in services", as "advisory services and innovation support", as relating to "the loan of highly qualified personnel" or as corresponding to "innovation clusters". Hereafter are relevant excerpts from the "Community framework for state aid for R&D&I".

1. Innovation services, innovation in services

► **Aid for process and organisational innovation in services** targets the market failures linked to imperfect information and positive externalities. It is meant to tackle the problem that innovation in services may not fit in the R&D categories. Innovation in services activities often results from interactions with customers and confrontation with the market, rather than from the exploitation and use of existing scientific, technological or business knowledge. Furthermore, innovation in services activities tends to be based on new processes and organisation rather than technological development. To that extent, process and organisational innovation in services is not properly covered by R&D project aid and requires an additional and specific aid measure to address the market failures that hamper it.

► **Aid for advisory services and innovation support services**, provided by innovation intermediaries, targets market failures linked with insufficient information dissemination, externalities and lack of coordination. State aid is an appropriate solution to change the incentives for SMEs to buy such services and to increase the supply and demand of the services provided by innovation intermediaries.

2. **Aid for the loan of highly qualified personnel** addresses the market failure linked with imperfect information in the labour market in the Community. Highly qualified personnel in the Community are more likely to be hired by large undertakings, because they tend to perceive large undertakings as offering better working conditions, and more secure and more attractive careers. By contrast, SMEs could benefit from important knowledge transfer and from increased innovation capabilities, if they were able to recruit highly qualified personnel to conduct R&D&I activities. Creating bridges between large undertakings or universities and SMEs may also contribute to addressing coordination market failures, and supporting clustering.

3. **Aid for innovation clusters** aims at tackling market failures linked with coordination problems hampering the development of clusters, or limiting the interaction and knowledge flows within clusters. State aid could contribute in two ways to this problem: first by supporting the investment in open and shared infrastructures for innovation clusters, and secondly by supporting cluster animation, so that collaboration, networking and learning is enhanced.

As regards this latter justification for state aid, it should be noted that the EC ESPRIT programme (1997) has implemented a Design Clusters action - Technologies for Components and Subsystems (TCS) "Fostering Excellency in Design Skills and Broadening their Use". More recently, Danish researchers³² have attributed part of the Danish competitiveness to its design cluster, which consists of five sub-clusters: interior design, furniture design, product design, fashion design and graphic design. There are certainly more of these in Europe.

Design related system failures

According to "evolutionary" economic theories, the economic rationale for public support for design must be found in system failures which affect design activities.

As shown earlier in the examples, design driven innovative companies heavily rely on external sources of knowledge to develop innovation opportunities: roles of demand and customers, roles universities and public R&D laboratories, etc. A territory's design performance is therefore dependent upon the overall quality of the ecosystem, which is more or less favourable to interactions. Imperfect market and non market interactions in relation with design activities lead to mismatches between firms and other constituents of the ecosystems, hence system failures. According to this approach, the EU innovation by design policy should aim at facilitating relations, providing efficient interfaces and framework conditions for firms to adopt design driven innovation strategies.

5.5 A way forward: an "Innovation by design" initiative

A broad initiative at European level could complement national and local policies with coordinated actions to face the challenges of globalisation.

An "**Innovation by design Initiative**" could encompass a set of actions in the short and medium term:

³² Macoun A., Kramarz, B., Nowersztern E., Kofod J., Lundgren, M., 2007, The Danish Design Cluster, Final paper for Microeconomics of Competitiveness, May.

Actions for immediate implementation

- 1.** The "Innovation by design" indicators and monitoring of market developments and market share gains through "innovation by design" products and services.
- 2.** The "Innovation by design" practitioner service platform
- 3.** The "Innovation by design" network to further coordinate national policies
- 4.** The "Innovation by design" European label
- 5.** The "Innovation by design" Advisory group to support the implementation of the Assisted Ambient Living program (Member states DG INFSO art 169 program)

Medium term actions

- 1.** Towards a stronger IPR Policy to further protect and strengthen design driven innovations (Copyrights, Brands, ...)
- 2.** Towards an "Innovation by design" joint programme of active Member states (art 169)

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