



**Digital Economy: Policies Exchange and Development for SMEs
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**Mapping National Policies within the DEEDS framework: Policies for the Access to
Knowledge in Germany and Ireland**



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1. Introduction and Methodology

Since 1993-1994 EU nations have addressed the impact of ICTs and the emerging digital economy in policies aimed at helping SMEs bridge the digital divide and ultimately enhance the competitiveness of the national economy. While there are certain common themes, as identified below, the policies reflect the relevant national contexts, the relationships of the stakeholders among themselves and with the government and the varying availability of resources. Today, the primary objective is no longer only to "go digital" (a policy promoted by the EU and most EU countries in recent years within the framework of programmes such as "Go Digital" and "Internet for Everyone" within e-Europe 2002), but to improve the quality of the application of digital processes in order to raise the competitiveness of firms, develop the knowledge economy and generate *added value* in the overall European economic system--as reflected in the general objectives of e-Europe 2005.

The DEEDS project has as a principal objective the stimulation of debate and constructive exchanges on the directions of European policy to foster the adoption of digital applications and processes in SMEs. This interchange is aimed at helping European policy makers and researchers gain an understanding of where different national level policies are going in order to overcome the "digital divide" (or digital gaps) and lead to the establishment of the information society/knowledge economy. The examination of national policies according to a grid associated with particular (and sometimes overlapping) objectives will help in identifying common themes and approaches and in understanding which measures have been successful, while others have had less encouraging results in the respective countries. Within the framework of the DEEDS project, this exercise seeks to identify some of the main policies, their elements and implementation, as well as, where possible, to offer some comments on their effectiveness and the elements contributing to their success or failure.

We also provide some initial thoughts on whether their application might function in other contexts within the European Union and its future CEEC members. Finally some directions for future analysis are presented.

The eventual outcomes of the policy mapping should contribute to the following:

- Gaining an understanding of the **requirements of the beneficiaries**: toward whom or what is the policy targeted and does it truly address existing or emerging needs?
- Identifying which **instruments and mechanisms** are used to promote initiatives: funding, services or general framework (including infrastructure and legislation) to facilitate the development of particular results;
- Comprehending the effect of the **environment** on the development and uptake of e-practices: Market environment, political and regulatory framework and infrastructure comprise the national context within which the policies are formulated.
- Testing the use of the **DEEDS grid** to analyse different objectives of the digital economy: Increasing knowledge, developing new business, and improving resource quality.

Within the context of the DEEDS objectives, this particular exercise examines the central government policies of Germany and the Republic of Ireland in order to present two different national perspectives on the promotion of the digital economy and enlargement of



the knowledge society. In the future, we seek to expand the research horizontally in order to cover other EU countries (for example, the Netherlands and Italy).

The information and inputs on the Government policies and programmes were gained through a desk-based Internet search of the official websites, complemented by some valuable inputs from members of the DEEDS Policy Group.

Once the overall policy framework and various action programmes were identified, the research focused on particular initiatives and projects that would contribute to greater access to knowledge, promote the exchange of knowledge and apply knowledge in new and innovative ways with the ultimate goal of increasing competitiveness and contributing to socio-economic development. Given the vast quantity of information, especially for Germany, a selection of initiatives was made and examined in greater detail, with particular attention to the requirements of SMEs. The present phase of the DEEDS project focuses on examining policies that promote the access of SMEs to knowledge in three often overlapping areas:

1. Increasing Knowledge (incl. Networks, intelligence process, exchange of knowledge, business-academic cooperation, research stimulation)
2. Developing New Business (incl. Start-up financing, new services and competences)
3. Improving Resource Quality (incl. Human Resource Development, skills, Innovation, introduction of new technologies or processes to improve efficiency or production, training and education)

2. Policies promoting access to knowledge in Germany

2.1. The policy framework

Fostering the development of the Knowledge Society as a natural evolution of the Information Society is one of the most important objectives of the German Government. The government is currently playing an active role in promoting the development of the information society in order to generate employment and maintain competitiveness. To this end, it has formulated an extensive package of action programmes, policies and initiatives. Germany has applied a comprehensive approach aimed at various elements of the economy (in particular, SMEs, start-ups and crafts businesses) to create jobs and translate innovation into market-ready products and services: this approach also aims at reforming the regulatory framework (liberalising previously regulated markets such as telecommunications), improving education (promoting business, ITC and innovation skills, even at primary and secondary levels) and fostering links between research and industry and social partners. A further important goal of the Government is to overcome the "*digital divides*" that persist in different regions and socio-economic groups, particularly affecting the "New" German Laender, women, older individuals and less educated and lower income people.

The policy environment is currently undergoing a difficult period: with stagnating economic growth, rising national debt, high unemployment (characterised by sharp regional divergences), labour disputes, and structural rigidities and imbalances, compounded by the serious financial and organisational problems experienced by large companies, particularly in manufacturing and telecommunications (including ICTs). Certainly in this



context, the accelerated transformation of the economy toward more knowledge-intensive activities is seen as vital to maintaining Germany's role as an economic and technological leader, not only in Europe, but also in the world.

The German Government's innovation policy approach strives to create an innovation-friendly framework while providing innovation policy initiatives, promoting cooperation and coordination between business, science/academia and Government:

- **Innovation-friendly framework:** innovation and society, innovation and employment, open markets, human capital
- **Innovation policy incentives:** international innovation networks, regional innovation networks, cooperation and networking, applied research, innovative SMEs, new technology-based firms.

As the largest EU economy comprised of 16 Laender (Regions), some of which have the population and economic output equal to or greater in size than those of some smaller EU economies (for example, Ireland), Germany has been extremely active in promoting the development of the digital economy/information society at various levels of public authority. Public policies that can have a significant impact on the development of the digital economy are formulated both at the national and regional level, with the national policies often complementing regional (and in some cases, local) initiatives. Given nature of the Federal system in Germany and the economic and fiscal clout of the Laender, regional policies play a very significant role, especially in shaping the business environment and the climate for SME investment and thus deserve closer analysis (which is to be completed at a later stage in the DEEDS project). It can be argued that in no other EU country do the regions play such a strong role in the overall policy scenario.¹

A recent **Progress Report on the Federal Government's Action Programme**² presented an evaluation of the German Government's efforts to transform the national economy into an Information Society in general and to take on the leading role in ICT use in Europe. While the statistics recorded for the period between the end of 1998 and autumn 2001 show significant growth, the current economic difficulties and growing uncertainty in the business climate have led to a slowdown in development trends. The overall goal of expanding access to the internet and ICTs has been met: for example, the number of Internet users over the age of 14 more than doubled from approx. 14 million in late 1998 to over 30 million at the end of 2001; during the same period Internet access of schools expanded from only about 15% (according to an EU study published in 1998) to 100% by autumn 2001. Also the number of mobile phone users increased tremendously, numbering 56 million out of a population of around 83 million by late 2001. The ICT sector experienced a slowdown within a climate of general economic stagnation (Hardware and equipment purchases were especially hard hit). The growing significance of e-commerce, reaching a turnover of around Euro 20 billion, has made Germany, the largest e-commerce market in Europe.

The main central Government bodies involved in promoting policies to further the development of the digital economy/knowledge society are the Federal Ministry of Economics and Labour (*Bundesministerium für Wirtschaft und Arbeit*, BMWA) and the

¹ In Spain Catalonia, Galicia and the Basque Region and in the UK Scotland and Wales have high degrees of autonomy in determining their own policies, in particular with regard to investment and business climate, however the overall policy frameworks and systems of government are quite different from Germany's Federation.

² German Federal Ministry of Economics and Technology, Federal Ministry of Education and Research, *Information Society Germany: "Innovation and Jobs in the Information Society of the 21st Century." Progress Report on the Federal Government's Action Programme.* February 2002.



Federal Ministry of Education and Research. (*Bundesministerium für Bildung und Forschung, BMBF*).

The Ministry of Economy and Labour (BMWA) (formerly the Ministry of Economy and Technology) is the prime mover in developing and funding initiatives to promote the digital economy at the national level. The BMWA has as one of its main objectives "*the promotion of new technologies and innovation to maintain the economy's competitiveness.*" Another key objective is to "*prepare the way for the Information Society.*"

The importance of the above objectives is also reflected in the Ministry's web presence, which represents an extremely valuable complement to its policies "in the field," particularly due to the ease of access for anyone who is interested. The BMWA has an extensive and comprehensive website with multiple pages providing information on topics related to the information society/digital economy, a vast collection of downloadable studies and publications, press releases and links to related sites. The site is a useful resource for German SMEs not only in providing information of interest, but also in allowing free access to studies, best practices examples, definition of concepts and issues related to the digital economy, and experiences of firms that have had problems: "learning from errors" (*Lernen aus Fehlern*). It also includes an element of e-learning with its an online "*ebusiness academy.*" Thus the *BMWA provides not only information, but also the value added of codified knowledge and experience of other SMEs*--in effect, the website provides an extremely valuable function for those SMEs so disposed to access and utilise the large collection of documents, studies, and other material available online. This is particularly helpful for firms that would normally not seek to engage in any formal contact with either the German government or an SME support agency. Furthermore, this information and these services are provided free of charge and their use does not require any sort of commitment on the part of the government or the firms. Within the website firms are led to the regional network of Competence Centres, which represents possibly one of the Federal Government's most effective measures in providing services to SMEs that seek both access to and better integration in the digital economy.

German Government provides Value added: Access to Codified Knowledge (SWOT analysis)

The BMWA website provides studies, case studies (best practices and "bad" practices), useful links, and services (for example the *Online Academy for E-Business*, a (joint initiative between BMWA and the business magazine *Impulse*, which provides an opportunity for elearning to SMEs or any other interested individual), in addition to extensive information on public programmes and initiatives, projects, funding, etc.

Strengths

- Realising the e-government initiative BundOnline2005: putting government information and services online;
- Providing information and knowledge to help firms (especially SMEs) understand the dynamics and utility of adopting e-practices (complemented by on-line publication of e-f@cts which address various issues linked to ebusiness, including knowledge management) presented in an attractive and easy to read format.
- Easy and "free" access without commitment or necessity for bureaucratic involvement
- Reinforces (or rather mirrors) larger government goals to stimulate the transformation of Germany's tremendous innovation and technology potential into competitiveness and growth.

Weaknesses

- Incomplete dissemination to intended target group: SMEs may be unaware of or not interested in the site or don't access this information because they would not think of looking to the BMWA for this type of information or services.
- Information or knowledge overload: firms may be overwhelmed by the vast quantity of information, especially small firms that don't have "knowledge management" departments or individuals that follow these issues.
- Firms don't know what to do with the codified knowledge (but this is more a weakness of the firms)



- Difficulty in downloading or printing the larger documents

Opportunities

- Dissemination of information on direct initiatives to support firms access to the knowledge economy: projects, financing, networks, including the Competence Centres for e-Commerce.
- Firms have access to valuable studies and experiences that could help them find a good way to integrate themselves into the digital economy/knowledge society or to avoid costly mistakes.

Threats

- That the codified knowledge does not reach the firms or individuals it would most benefit: those excluded by not having access to Internet or not understanding that the Government provides such knowledge and services.
- Budget constraints may limit the updating of the site or the quality of the content (since the Federal Government commissions many of the studies that are published, i.e. KPMG study on Knowledge Management).

The Ministry of Education and Research (BMBF) also plays an important role, particularly in promoting education (training, adoption of e-culture, competitiveness, innovation orientation, new media in education) and research efforts (new technologies, ICTs, applied research, support to innovative SMEs). The BMBF co-sponsors the most important Government policies aimed at development of the information society/knowledge economy, as discussed below. It also sponsors the new *"Innovative Regional Growth Poles Programme"* for the New Laender to establish initiatives that are regionally and thematically oriented in order to lead to technical/technological innovations. The Ministry supports education, research and development of the start phases of such initiatives. In the context of DEEDS, the BMBF is particularly active in supporting the development of partnerships between business, research and finance to stimulate innovation with critical market potential and bring new products and services to market. The Ministry plays a major role in cooperating in the Inno-Regio initiative of the EU.

In recent years there has been increasingly close cooperation and coordination between the BMWA and BMBF to better develop synergies and prevent overlap of policy initiatives. The two most important current action programmes, *"Innovation and Jobs in the Information Society of the 21st Century" 1999-2005* and *"Wissens schafft Maerkte" "Knowledge creates Markets"* initiated in March 2001, are jointly promoted by the ministries.

While the Federal government promotes numerous programmes and projects, in most cases the actual funding amount is not so high and very often only co-funding is provided (Modelvorhaben...), with other private or public entities providing the rest of the funding for the initiatives. For example, one of the most significant efforts in supporting SMEs in joining the digital economy, the nation-wide Competence Centre network, has only received 10 million Euro since 1998 and the Internet prizes (both the German Internet Prize and the Internet Prize for German Handicrafts) each provide only 50,000 Euro per year, part of which is funded by Deutsche Telekom and the associated business magazines. In comparison, some of the German Laender (for example Bavaria) have spent billions of Euro on initiatives such as BAYNET, Bayern-online, etc., facilitated by funds earned by privatising public land assets.



2.2. Specific Programmes and Actions

Through various Action programmes, projects and initiatives the German Government is directly and indirectly seeking to complete the transformation of the German into an information society, as well as to take the next steps toward a digital economy/knowledge society. The policies seek to create the prerequisites or the basis to more strongly develop networks linking the innovative potentials of science and industry and convert know-how into competitive products and services faster than the international competition in the world market. A high priority is placed on the development of economic and innovation potential of the New Laender, which tend to lag behind in most economic indicators.

The high level of attention of the Government to the development of Germany's information economy is reflected in six semi-annual monitoring reports ("*Monitoring Information Economics*") to be conducted through 2003 and published on the Internet.³ These reports present a qualitative prognosis of trends, publishing basic indicators of the information economy as well as indicators of its infrastructural preconditions and applications, complemented by data and opinions from experts. The February 2002 report confirmed that the recent "new economy crisis" was mainly due to an internal crisis of investors, while "a reluctant attitude of the demand side to new products and services in the sector of information economics and the tendencies of a macro-economic downturn played only a minor role as causes of the crisis" (IIF, 2002, p. 2). This would indicate that there remains significant potential for the sector, despite current difficulties. Another factor mentioned in the report is the bottleneck in the acquisition of skills needed in furthering technological progress: the German government has been addressing the skills gap, particularly in the area of ICTs, with increased funding for higher education and vocational training in these areas and programmes such as "*Green Card*", which opened the door to IT professionals from non-EU countries. Particular demands from SMEs were identified: especially for e-government,

Within the German Federal policies aimed at promoting SME access to the digital economy/knowledge society are the following key elements:

- *Private- public partnership* (numerous initiatives undertaken in cooperation with private companies or trade associations, for example D21; emphasis on co-funding of projects): This is a particular strength of the German policy environment;
- *Focus on actual experience and Best practices* (publishing of actual cases, experiences of small firms that have achieved good results--but also learning through mistakes.);
- *Prizes and competitions* (i.e. German Internet Prize and Internet Prize for German Handicrafts, project funding competitions);
- *Industry - Research/Academia partnership* (to bring knowledge to market, for example Wissen schafft Maerkte);
- *Access to information and codified knowledge* (in particular through the BMWA website)

³ Institute for Information Economics, Monitoring Information Economics (4th Factual Report 2002, 2nd Trend Report 2002, Management Summary, NFO Infratest, February 2002.



Public Private partnership

Public private partnership is an important institutionalised element of German policy aimed at developing the information society/digital economy and is explicitly spelled out in the government's Innovation policy and the Action Programme "*Wissen schafft Maerkte.*" While presenting an attractive mode of funding for the Government, especially given current budget problems, it also presents an important element of stakeholder (or at least private enterprise) involvement in the outcome of particular projects. The private element of participation may include the large mixed holding telecom (Deutsche Telekom), chambers of commerce or sectoral associations, business associations, and the print media (specific business-oriented magazines such as *Impulse* or *Focus*) as well as SMEs (which are often the beneficiaries). Examples of public private partnership related to the digital economy are the German Internet Prize and the Internet Prize for German Handicrafts as well as the Internet Initiative D21. *Internetinitiative D21 of German Business* which represents the biggest Public-Private Partnership in Germany. Six working groups made up of representatives from business and policy working together to find ways to transform Germany from an industrial to an information society.

The Government has engaged in three strategic policy programmes that are aimed at bringing Germany and Europe to a leading position in the Information Society. These include the overall policy action framework "**Innovation and Jobs in the Information Society of the 21st Century**" 1999-2005; participation in **Europe 2002--now eEurope 2005**, which involves realising the objectives in the European initiative within Germany; and the **10-point programme "Internet for All"** of September 2000, which has played a major role in broadening access to the net, in particular for schools and women and other individuals affected by the digital divide. Within the context of the DEEDS analysis, the two most important current action programmes are "*Innovation and Jobs in the Information Society of the 21st Century*" and the more recent "*Wissen schafft Maerkte*" "*Knowledge creates Markets*", jointly promoted by the BMWA and BMBF.

2.2.1 The policy framework: "*Innovation and Jobs in the Information Society of the 21st Century*" (1999-2005)

The Main action programme of the Federal Government to promote the development of the digital economy is "Innovation und Arbeitsplaetze in der Informationsgesellschaft des 21. Jahrhunderts" (Action programme "Innovation and Jobs in the Information Society of the 21st Century") which began in September 1999 and defined specific targets through 2005, focusing on seven principal areas:

- Expand access to new media
- Promote use of multimedia in education
- Strengthen confidence and security through improved legal framework: E-Commerce Initiative D-21, also the Law on Electronic Commerce and the Digital Signature Act, laws on data protection, and on consumer rights and copyrights.
- Creation of innovative employment: this covers the initiatives "Competence Centres of Electronic Commerce" , "Startup Competition Multimedia" and "German Internet Prize"
- Reach leading position in technology and infrastructure (3MG--UMTS, wireless, digital radio,)
- Stimulate modernisation of the state: BundOnline2005, [Media@Komm](#) [Multimedia-StaedtewettbewerbMEDIA@Komm](#) (E-government initiative).
- European and International Cooperation. E-Europe, G-8 initiative to bridge digital gaps



All of the above initiatives can have a direct or indirect impact on SMEs, yet the fourth area is specifically aimed at these firms and has already had concrete effects. The objective "Creation of innovative employment" covers the Competence Centres of Electronic Commerce, Startup Competition Multimedia, and the German Internet Prize and the Internet Prize for German Handicrafts.⁴ An important goal of the above Action Programme is the optimal integration of the SMEs in the digitalisation and online placement of almost all business processes leading to integration of SMEs in the information society and digital economy.

2.2.2. Action Programme: Knowledge creates Markets (March 2001-ongoing)

The Action programme "*Knowledge creates markets*" (Wissen schafft Maerkte) is promoted by the Ministry of Economics and Labour BMWA and the Ministry for Education and Research BMFB to further technology transfer as a link between science and business. The initiative is aimed at helping new scientific research results to reach the market much quicker and in larger quantities. It especially emphasises the cooperation of SMEs with research institutes and higher education. This action plan promotes a number of different projects and initiatives, including *WissensMedia* (below), while also coinciding with the objectives of eEurope 2005. Within the framework of the Action Programme there are four different policy "offensives" focusing on:

- transformation of research into market-ready products (facilitating patents, certification, uniform information platform for research and technologies);
- start-ups (easier access to risk capital, support in initial phase through business plan, public-private partnership);
- partnership for technology transfer (stimulus, reform of legal framework, academia-business partnership, cooperation, "*Innovative Regional Growth Poles*"); and
- innovation competence (support of pilot projects to build training competence, continuing education).

2.3. Specific policy initiatives:

Given the vast quantity of information available, we have selected those initiatives that are particularly relevant within the DEEDS framework: the Competence Centres for Electronic Commerce, BundOnline2005 and WissensMedia are all examples of central government initiatives that have had or can have significant effect on the access of SMEs to the digital economy and their capacity to gain access to and transform knowledge into added value.

⁴ Prizes particularly aimed at SMEs are the German Internet Prize and Internet Prize for German Handicrafts awards given to SMEs by the German government, Deutsche Telekom and the German business magazine Impulse. The "Deutsche Handwerksblatt" (magazine for crafts industries) is the media partner of the prize. The BMWi (now BMWA) gives out prizes in order to stimulate the introduction of new ICTs in SMEs and crafts businesses. Recognition of innovative solutions and Best Internet Prize for German Handicrafts: Practices in future-oriented Internet applications:

- Business processes - sales, customer relations, procurement and exchange of available capacities
- Gaining of knowledge and information: use of databases to e-learning
- Management of cooperation between enterprises --from virtual enterprises to common offering to joint fulfilment of orders.

Each year, through 2004, 50,000 Euro are awarded (1st prize 25K, 2nd prize 15K, 3rd prize 10K).



2.3.1. Competence Centres for Electronic Commerce

From the perspective of SMEs, among the most relevant of the German Government's policy measures has been the *Competence Centres for Electronic Commerce*. This programme has also been cited in the June 2002 Final Benchmarking Report as a successful case in promoting involvement of SMEs in the e-economy.⁵ The network of centres is funded only in part by the Federal Government⁶--the rest of the funding is provided to varying extents by the *Laender*, the municipalities, or counties (*Kreise*) and trade or industry associations (*Handwerkskammern* and Chambers of Commerce), thus representing a private/public joint initiative.

Within the framework of the Federal Government's initiative "Electronic Commerce", beginning in 1998 the German Ministry of Economy and Technology (BMWi, now BMWA) set up a nation-wide network of regional information, advice and training facilities as competence centres to promote the uptake of e-commerce by SMEs. The 24 regional centres provide assistance and advice to SMEs and crafts businesses on incorporating ICTs and e-practices into their business as well as market research, seminars, training and events. Many services are provided free of charge, whereas more advanced services can be provided for moderate fees. Specific topics of concentration are legal issues, security of e-commerce and personal data, technology, logistics, market places, management and website design. All of the centres provide some basic services and information, but many focus on specialised issues, depending on the region. Among the centres there are also three that are branch-oriented, covering commerce, tourism and professionals.

Since summer 2001 three more competence centres (external network partners) were added to the network, but receive no Federal funding. Cooperation linkages with other competence centres promoting e-business outside of the network (especially for branch organisations) have led to the development of positive synergies with joint activities comprised of workshops, publications and new projects aimed at developing e-business instruments for SMEs. After 2005 the centres will no longer receive funding from the Federal Government and must look to their other public and private funders as well as their clients to pay for their operations and services. Central government funding averages out to only about 50,000 Euros per centre per year — not a large investment, when the direct positive impact on the regional SMEs as well as the leveraging effect is considered.

Value added: locally adapted services and knowledge for SMEs, while providing access to the global competence of a national network (<http://www.bmwi-netzwerk-ec.de>)

The Competence Centres operate in the local or regional context and thus are best suited to address the requirements of SMEs in their particular geographic areas. For example, the Competence Centres in the New Laender are better equipped to deal with the needs and concerns of firms in a post-transition business environment than those in Bavaria or Baden Wuerttemberg. While each of the centres provides certain basic services, each is also different in the more specific and targeted services as well as know-how and knowledge it can offer (depending on the contributing entities, the Land and the city in which the centre is located) and individual centres have built up experience in certain sectors or branches. At the same time,

⁵ The June 2002 Benchmarking Report⁵ sites the Competence Centres as a successful programme. The 2002 Benchmarking Report summarises the following as elements of good practice in the initiative: services tailored to the needs of the SMEs and crafts businesses (important themes e-marketplaces, e-logistics, IT security); taking advantage of the existing networks to provide an extended service; exploiting important synergies; and the development of business networks around the centres at a regional level.

⁶ Between 1998 and 2001 the Federal Government provided around 10million Euro of funding. For 2001 the budget was 3.1-3.2 million Euros, for 2002 it was 3.9 million Euros.



the accumulated knowledge of various centres can be made available to the network as a whole. The Competence Centres also provide a valuable link to regional initiatives (for instance, B-on-line⁷ in Lower Saxony-- also cited in the Benchmarking Report as a Best Practice example). Another factor contributing to the success of the centres is the fact that the people who work with or are associated with the centres know and tend to trust each other and have built up a wealth of knowledge of the local and regional business environment. Thus, the centres have become important actors in the local business fabric. Germany, which does not have a strong culture of centralisation, has found the decentralised approach to SME support much more effective.

Examples of some projects undertaken by the Competence Centres:

- eBusiness with Poland: provides electronically based knowledge and business advice on doing eBusiness in Poland (2001), involves various partners in cooperation with the KEGO Competence Center of the Oderland (Frankfurt an der Oder).
- E-Management (8/2001-7/2003), cooperation between EC-SH (Schleswig-Holstein) and MD-ECZ (Magdeburg), focuses on introduction of management processes required in e-commerce undertaken by SMEs. Research in order to present state of the art of the knowledge base on this topic. Workshop to present results and exchange ideas between competence centres in an Old and New Land.

An interim evaluation of the policy action Competence Centres was published in May 2001 by Prognos AG of Basel. Prognos came to the conclusion that the measure coincided with the Government's objectives and that the spectrum of services provided also coincided with the needs of the SMEs in the past. A demand for basic information and advice to new entrants to the area of e-business is also foreseen for the next few years (2003-2004). In the future, however, Prognos suggests that the competence centres should strengthen their services with regard to specific themes or branch needs and involve more intensive participation of trade chambers as well as improve marketing activities and cooperation between themselves.

2.3.2 WissensMedia - Wissensmanagement in mittelstaendischen Unternehmen und oeffentlicher Verwaltung (Knowledge Management in SMEs and Public Administration. (BMWA, 2002-2006)

WissensMedia is a new initiative launched in October 2002 with projects to be initiated in June 2003 and to continue for up to three years. Projects are selected via a competition for the best ideas on stimulating knowledge management. The initiative will fund up to five of the best project ideas, for a total of 10 M Euro. The competition is open to SMEs and research institutes and research users. The funding covers the "development and testing of knowledge management" in SMEs and in the public domain. The funding will provide support to enterprises, research institutes or implementers based in Germany, with a particular emphasis on developing cooperation between industry, research generators and research users, with a minimum of three partners. The initiative provides 50% of the needed funding. It is also foreseen that there would be an accompanying measure to analyse and evaluate the implementation of the project and support the rapid dissemination of the results.

⁷ An important feature of this initiative is that it is supported not only by the regional Government, but also all of the chambers of commerce and trade of Niedersachsen as well as the Technology Agency of Niedersachsen (NATI), representing essentially a private-public partnership. The initiative comprises a network of seven local centres that were established and funded locally. Started May 2000 was to continue for 2 years, but its success has caused it to be extended through August 2002, with a continuation planned through 2003. Another important feature is the level of funding--Euro 2.15 million from the Land.



2.3.3. E-Government initiative: BundOnline2005

Germany, despite a relatively late start compared to other countries such as Sweden, has achieved good results in establishing an e-government. The Federal Government has set up a sophisticated e-government, which was cited in a recent benchmarking report as a best practice example, particularly in the area of best practice sharing between federal and Land governments.⁸ In fact, increasing emphasis is being placed on e-government as constituting a critical foundation for the development of the knowledge society.

BundOnline2005 www.bundonline2005.de

Germany's concerted action to set up an e-government went into effect in September 2000, launched personally by the German Chancellor. As a result of this initiative, more than 100 Federal agencies have gone online in a broad reform process affecting various activities, focused on user and transaction-oriented service delivery. By 2005 around 380 services are to be provided via Internet by the public administration--everything that is suited to go online will be put on the Internet. Total funding through 2005 is estimated to be 1.65 Billion Euros, thus representing one of the most substantial investments on the part of the German Government and the largest e-government programme in Europe. The e-government initiative seen as a comprehensive modernisation project for Germany's public institutions.

BundOnline2005 comprises a series of model projects and initiatives covering repayment of student loans (Bafög-online), online job search and placement service (Arbeitsamt Online), online search for patents and trademarks, online submission of income tax declarations (ELSTER) and online procurement (Öffentlicher Enk@uf Online) for federal administration. The objective is to simplify, streamline and improve co-ordination of government services and move toward paperless working processes. E-government will save money in providing routine information and services to citizens online, speeding up standard processes, and increasing efficiency via automation in many cases. For small businesses, greater bureaucratic efficiency and improved access to administrative processes can be very important.

BundOnline2005 affects the following spheres of the digital economy:

- Citizens (A2C: Administration to Citizen)
- Business (A2B: Administration to Business)
- Public administration of the Federal Government, Laender and Municipalities (A2A: Administration to Administration)

With support of the BundOnline2005, the Federal Office for Information Technology developed an *e-Government Handbook* which will be disseminated to all managers in the public administration, but is also available to the public on Internet and is constantly updated. This provides useful information about new developments in administrative processes.

Complementing the goals of BundOnline2005, [MEDIA@Komm](http://www.media@komm.de) (initiated in March 2001) is the largest initiative of the Government to promote the introduction of multimedia services

⁸ P. 147 Booz Allen Hamilton., November 2002.



at the Federal, Land and municipal levels. The project is based on comprehensive development of "virtual city halls" and "virtual marketplaces" which is expected to bring about fundamental changes in the way people go about their business. Through new ICTs administrative and bureaucratic processes are to be simplified, productivity can be optimised and the system will open up wholly new sales and procurement channels. The focus is putting *online legally binding interactions and transactions onto the Internet*, comprising the introduction of the use of digital signatures (first Government to do so) and development of technical and legal framework to permit the implementation of these processes. The initiative promotes both e-business and e-government in a comprehensive framework: the objective is to establish a comprehensive system solution that will integrate the virtual city hall with the virtual marketplace.

The project is being implemented in three pilot regions: Bremen, Nuernberg and Esslingen, which were selected in a nationwide competition. [Media@Komm](#) also seeks to stimulate widespread imitation as well as synergy effects and standardisation.

While the innovations in e-government introduced under the above initiatives have tremendous potential, it remains to be seen how effective they are in terms of actual user numbers, access, money saved, reliability, security, and user ease and satisfaction. Since many of the features have only been in operation for a very short time, it remains to be seen how they evolve over time. Among the limiting factors may be not only the access of SMEs to the Internet, but the confidence of the users in the system and the validity of the transactions with public bodies.



Germany: Federal Government sponsored initiatives

Policy/Objectives	Increase Knowledge	Develop Business services / New new	Improve Resource Quality
Competence Centres	<ul style="list-style-type: none"> Competence Centres 10M Euro since 1998 		<ul style="list-style-type: none">
Introduction of innovative and effective practices			<ul style="list-style-type: none"> German Internet Prize, 1999-2004 (50K Euro /yr) Internet Prize of German Handicrafts (annual, 50K euro/yr)
Innovation for and Audiovisual Multimedia		<ul style="list-style-type: none"> Startup Competition Multimedia (Gruenderwettbewerb Multimedia) 	<ul style="list-style-type: none"> New Media in Education (2000-2004, 200M Euro)
Innovation and New Technologies		<ul style="list-style-type: none"> ERP Innovation Programme, FUTURE 2000 - Promotion for technology-oriented start-ups in E. Germany EXIST- Start-ups from science 	<ul style="list-style-type: none"> ATI/Innovation Management (1992-1999, modified in 2000 - 2004; 3.7M Euro in 2000) ProlInno ZUTECH - Future technologies for SMEs Innovative Regional Growth Poles INSTI Innovation Action
e-Government		<ul style="list-style-type: none"> Media@kom (multimedia competition in cities and municipalities, 1998- 2002; 26.5M Euro) 	<ul style="list-style-type: none"> BundOnline 2005 (2000-2005)
Networks	<ul style="list-style-type: none"> Networks of Competence (1999-2002; 2 M Euro, 0.5 Euro/yr) NEMO Management of Innovation Networks for East German SMEs 	<ul style="list-style-type: none"> INST- Innovation Market (1998- ongoing) InnoRegio - innovative networks in E. Germany InnoNet 	<ul style="list-style-type: none"> LERNET WissensMedia -- Knowledge Management in SMEs and public administration (2002-2003-2005/2006) Initiative D21 (1999- INSTI Network (Innovation STimulation)
Increase Knowledge	FUTUR (Technology Foresight, ex-Delphi, 1998-2002)	<ul style="list-style-type: none"> Online-Akademie fuer Existenzgruender und Jungunternehmer (public-private partnership) TOP: Technologie orientierte Besuchs- und Informationsprogramme 	<ul style="list-style-type: none"> Wissen schafft Maerkte Action Programme (March 2001)
Do E-business	<ul style="list-style-type: none"> e-business Academy (jt. Initiative BMWA & Impulse magazine) 		<ul style="list-style-type: none"> VERNET (secure and reliable transactions in open transaction networks) Fair Pay (security in e-payments)
European Projects			e-Europe InnoRegio



3. Policies promoting access to knowledge in Ireland

3.1 The policy framework

Ireland is a small island country (less than 4 million inhabitants) without strong regional bodies located on the western-most periphery of the European Union. Ireland has benefited much from FDI in recent years, especially from the USA, leading also to a transfer of business practices from American investors to Irish affiliates. The openness of the Irish economy to investment and pro-business policies, including strong tax incentives, has contributed strongly to the development of the economy and the country's infrastructure. Ireland has also benefited from significant financial inflows from the European Union in the form of Structural Funds.

The policies to promote the development of the digital economy/knowledge society are formulated mainly at the national level. Such development has recently taken on increased importance as the country seeks to transform certain aspects of its limited resources into comparative advantages. Ireland has particularly sought to capitalise on its human resources and its special relationship with the United States. US and other foreign investors have brought inflows of capital, technology, know-how and have stimulated the development of software-oriented activities and other employment requiring higher levels of knowledge and skills. The contribution of high-tech industries in total employment in Ireland is around 7.3%, a level marginally below the EU average of 7.7%, and the growth of high- and medium high-tech industries is relatively high.

Technology transfer through FDI is important, but sustained growth depends on indigenous dynamics and enterprise culture

On 18 June 2001, Enterprise Ireland (EI) launched a **Research and Development Awareness Initiative** aimed at Irish firms. According to EI, this campaign is based on the premise that, while the recent unprecedented economic development in Ireland has been driven by the ability to attract large-scale high technology multinational investments, these in turn have helped to spawn Irish-owned high-tech industry, which has achieved significant successes, for example in the software and electronics sectors. Given the dynamics of international investment trends, over the long run, Ireland's prosperity and continued growth will depend very much on its indigenous companies. The challenge ahead is to put into place conditions which will allow for the further development of an indigenous enterprise culture. The initiative aims at improving growth in output and employment by building on the competitiveness achieved in certain branches or sectors.

Most policies associated with the digital economy/knowledge society are promulgated at the national level, with the Department of Enterprise, Trade and Employment (DETE) as the primary mover. DETE is responsible for promoting and supporting overall industrial development as well as innovation and competitiveness in the economy. The Office of Science & Technology (OST) within the Department reports to the Minister of State for Science, Technology and Commerce, whose responsibilities cover the overall science and technology budget, the Interdepartmental Committee and the science and technology development programme under the Department for Enterprise, Trade & Employment (DETE) and Department of Education & Science (DES). The level of public expenditure in



the area of science and technology and related issues is due to be radically increased under **the National Development Plan (NDP)**, which envisages a total of more than €700 million being spent over the course of 2000-2006. The role of the Department of Education & Science –specifically the Higher Education Authority – is becoming increasingly significant in promoting educational and training programmes to prepare Ireland's human resources for the information society.

Within the Department of the Taoiseach (Prime Minister) there is an *Information Society Commission* which advises the Prime Minister/Government on issues linked to the information society. The main areas of focus are: e-business, legal issues, telecommunications infrastructure, e-government, e-inclusion, learning and future public policy issues. This Commission is an independent advisory body to the Government: members are drawn from academia, NGOs, private industry, associations and government. The Commission plays an important role in identifying priorities to be addressed in the above areas in supporting Ireland's economic and social development as an Information Society. Furthermore, it participates in preparation of appropriate recommendations to Government.

The Enterprise, Science & Technology Policy Division of DETE manages the state funds provided by agencies that support enterprise development (including innovation and knowledge transfer activities) and ensure that the application of these resources reflects the objectives. To maximise utilisation of resources, the approach applied by the Irish Government tends to be very practical and concrete, recognising the importance of SMEs in the Irish economy.

National Development Plan

The main policy framework concerning innovation policy in Ireland is the National Development Plan (NDP) 2000-2006. The NDP includes three national Operational Programmes, two Regional Operational Programmes and a separate Operational Programme for the PEACE Programme which operates in the border counties and in Northern Ireland. These programmes receive Structural Funds from the European Union. The main objectives of Ireland's National Development Plan (NDP) 2000-2006 associated with the productive sector are the following:

- to develop new sources of competitive advantage for indigenous industry;
- to move industry up the value chain; and
- to build a world-class knowledge-driven economy.

Government investment in research, technological development and innovation (RTDI) is perceived to be central to the achievement of the above objectives. The key aims of the RTDI component of the NDP are to encourage companies to develop their own research activities, to develop a world-class research environment in higher education institutions and state research institutions and to ensure a pool of high-quality, technically literate graduates to service the needs of these companies and to start their own enterprises.

Following a commitment in the National Development Plan to increasing the level of support for R&D in industry, 59 projects were approved (with a total grant value of €11.73 million) under the RTI scheme, which uses a competitive process to support high quality, high-risk R&D projects. In the current National Development Plan, €2.48 billion has been allocated to research, Technological Development and Innovation (RTDI) over the seven-



year period of the Plan. Of this, €1.5 billion is being provided specifically for industrial research-related activities and will be used to allow companies to develop their own research activities, develop a world-class research environment in the higher education institutions and state research institutions, ensure a vibrant and dynamic pool of high quality, technically literate graduates to service the needs of many companies. The campaign is aimed at demonstrating the support that is available to firms to help them to develop innovative products, services and processes and encourage them to access and exploit R&D and technology from international sources.

Enterprise Ireland

Enterprise Ireland is one of the most active promoters of the adoption of e-practices by SMEs and has conducted a series of case studies that can provide "best practice" examples for companies that are trying to decide which approach to take. Enterprise Ireland is the implementing agency for indigenous industrial and technological development. It falls under the policy remit of Forfás and services a wide variety of programmes that have direct and indirect impacts on innovation. These include the *Programmes in Advanced Technologies (PATs)*, grants for in-firm R&D (RTI for Industry) as well as basic, strategic and applied research grants for college researchers, mainly to encourage greater interaction between higher education and industry. It also maintains a network of international and Irish regional offices.

In 2000, Enterprise Ireland, within its major area of focus on technology and innovation, supported 75 companies that had initiated innovation projects with a total investment value of €88.8 million, covering a wide range of technology areas. This included the strategic exploitation of R&D and innovation within companies (alongside support for near market applied R&D for companies undertaken in the Higher Education sector).

In another effort to stimulate the transfer of knowledge and start new businesses, Enterprise Ireland funds the *Graduate Enterprise Programme* which provides enterprise development training and financial support to graduates who have been employed in industry and who are prepared to start their own business. During the twelve month programme, participants are assigned individual mentors to help with market research and prototype development. A key feature of the Graduate Enterprise Programme is that participants who give up their jobs to join the programme receive 50% of their salary from Enterprise Ireland.

3.2 *Policy actions and initiatives*

The NDP 2000-2006 places strong emphasis on developing linkages between industry and higher education as well as the promotion of innovation and R&D capability in enterprises. A number of NDP measures are intended to assist the transfer of knowledge from the third-level sector, for example the *Third-level Incubation Centres* and the *Regional Business Incubation Space* initiatives (*Trendchart: Country Report Ireland*) has published a report on the rising demands and expectations for universities in the emerging knowledge society, highlighting the importance of factors such as university reform and development as key enabling factors in the transformation of a traditional society and economy into modern, information and knowledge-based economy.



The two main initiatives within the research, technological development and innovation (RTDI) component of the NDP are the *Research Technology and Innovation Competitive Grants Initiative* and the *Research and Development Capability Initiative*. The former provides financial assistance for in-company product and process development, while the latter provides financial support for enhancing R&D and for technology start-ups with a heavy dependence on R&D. Enterprise support under the R&D Capability Initiative is only available as part of an overall company business plan.

Other initiatives within the RTDI include provision of training in innovation management and advice on the development and commercialisation of patentable technology and the development of industry-higher education linkages. The *Innovation Management* initiative is intended to assist companies which have increased R&D spending to develop management ability to control the process and better absorb the resulting benefits. The initiative aims to provide training and consultancy to enterprises in order to enhance skills and to ensure that the best practice tools and techniques are embedded in company operations.

Within the Department of Enterprise, Trade and Employment (DETE), the Office for Science and Technology funds the *STI Awareness Programme*, which aims to increase awareness, understanding and support for science, technology and innovation in business, education, policy-makers and the public. It should be noted, however, that, as its name implies, the STI Awareness Programme has been designed to create awareness of S&T among stakeholders rather than provoke debate on innovation.

Stimulating Knowledge Exchange and Transformation in Ireland

FUSION

Previously known as the All-Island Knowledge Transfer Initiative, FUSION brings together three types of partners in an effort to stimulate knowledge exchange and the development of positive synergies:

- enterprises – SMEs with a technology-based development need;
- knowledge centres – third-level institutions such as a college, university or technology centre;
- knowledge carriers – recent graduates (within last 5 years) from a college or university.

Each participating company has a specific technology-based development need and is subsequently matched with a knowledge centre with specialised expertise in that field. A graduate is then employed by the company for up to 18 months to work specifically on that development project. During this period, the graduate has full back-up support from and access to the knowledge centre. In essence, the graduate acts as a conduit or knowledge carrier to facilitate the transfer of knowledge from the college to the company. A dynamic tripartite arrangement is formed between the company, college and graduate which focuses solely on meeting the high-spec technological development need. This project involves 40 companies, 40 colleges and 40 graduates. The companies will be 'recruited' into the initiative on a rolling basis over a four- to six-month period.

Embark

The Embark initiative launched by the newly formed Irish Research Council for Science,



Engineering and Technology (IRCSET) represents a change in funding programmes aimed at knowledge creation. The Embark programme does not target research projects with an industrial or economic focus; instead, it aims to support researchers in exploring ideas and bringing visions to reality.

Regional Policies

The NDP 2000-2006 divides Ireland into two regions for Structural Funds purposes: the Border, Midland and Western (BMW) Region, which has retained Objective 1 status for Structural Funds for the entire period of the NDP, and the Southern and Eastern (S&E). The formulation of Regional Operational Programmes involves representatives from the Central Government, the social partners and community groups. The Regional Assemblies have representatives on the monitoring committees of the three National or Inter-Regional Operational Programmes. In theory, these new regional structures will give the regions a greater input into the development and implementation of research and innovation programmes. However, both Regional Assemblies are of very recent origin and it may take some time before the impact of their role as a co-ordination mechanism – particularly in terms of innovation policies – is known.

The Regional Assemblies are directly responsible for the *Regional Business Incubation Space* initiative, which is managed on their behalf by Enterprise Ireland. The Regional Business Innovation Space initiative seeks to strengthen the regional innovation infrastructure by facilitating the provision of incubation and commercial R&D space for the development and establishment of businesses with high added-value potential, with particular emphasis on the role played by the Institutes of Technology. The initiative aims to support centres which facilitate the development of high added-value start-up companies arising from or associated with the research and development of the host Institute of Technology.

Empower.ie

Empower.ie is a portal site allowing Irish businesses to simply, cost-effectively and efficiently create an on-line presence for their business, essentially providing a service to assist the *initial entry* of small and micro-enterprises to the digital economy. The initiative is sponsored by Ireland's 35 City and County Enterprise Boards and facilitates access to infrastructure. Empower.ie offers enterprises a free e-mail address, a facility to create their own website without any specific technical or programming knowledge, technology to set up an on-line shop and begin to trade securely online, as well as tools to upload text and graphics free of charge.

Transnational innovation policies

Staff shortages together with a lack of resources have constrained Irish policy-makers from making extensive use of transnational learning in innovation policy development and evaluation. *The Third Report of the Expert Group on Future Skills Needs, (Trendchart: Country Report Ireland)* published in July 2001 states that, in view of the projected gap between the demand for the skills of researchers with a PhD and the probable supply from within Ireland over the next few years, the Expert Group believes it will become increasingly necessary to attract suitably qualified people from abroad. It therefore



commissioned a benchmarking study of mechanisms and strategies which other countries are using to attract researchers from abroad.

Though Ireland does not have any formal transfer arrangements with the Candidate Countries, Irish policy-makers believe that the lessons arising from Ireland's effective use of EU funds to develop its S&T infrastructure and innovation capabilities could be of particular value to the Candidate Countries.



Ireland: national polices and measures

Policy/Objectives	Increase Knowledge	Develop Business / New services	Improve Resource Quality
Competence Centres			
Introduction of innovative and effective practices		<ul style="list-style-type: none"> FORBAIRT (now Enterprise Ireland) technology transfer & partnership programme 	<ul style="list-style-type: none"> Business Incubation Centre programme Science & Technology Personnel Placement
Innovation for Audiovisual and Multimedia			
Innovation and New Technologies	<ul style="list-style-type: none"> Advanced Technologies Research Programme 2001 	<ul style="list-style-type: none"> Research Technology&Innovation (RTI) Support for Industry Scheme 	<ul style="list-style-type: none"> STI (Science, Technology&Innovation) Awareness Programme
Networks		<ul style="list-style-type: none"> The FORBAIRT (now Enterprise Ireland) Technology Transfer & Business Partnership Programme 	<ul style="list-style-type: none"> Training Standards – Excellence through People
Increase Knowledge	<ul style="list-style-type: none"> Stimulating Innovation Management and Strategies at Enterprise level 		<ul style="list-style-type: none"> Forfás/Expert Group on Future Skills Needs Technology & R&D Management
Do E-business	<ul style="list-style-type: none"> Empower is an e-business initiative for small businesses 	<ul style="list-style-type: none"> The PRISM II initiative: e-commerce capacity building with SMEs 	

4. Conclusions and Next Steps:

The above exercise provides an overview of the national policies in Germany and Ireland to promote an increase in access to knowledge for SMEs in the digital economy and a starting point for future research that will seek to gain a better understanding of the socio-economic impact of these policies.



In Germany the Federal Government, in particular the newly reorganised Ministry of Economics and Labour (BMWA), has developed a comprehensive and informative website which not only provides information, but also actual studies, the findings of studies, best practice examples and cumulated knowledge derived from the experience of actual firms. A particularly interesting example is "*aus Fehlern lernen*" (learning from errors). This web presence was realised under the Government's ambitious BundOnline2005.

In terms of providing direct services to SMEs, the partially Federally funded *e-commerce Competence Centres* have been particularly effective in addressing the needs of SMEs within the local context, while at the same time allowing access to a nation-wide network and competencies for more specialised requirements.

In Germany, key elements of federal policy are:

- Emphasis on Co-funding: Federal funding only covers part of costs: regional and municipal funding and trade chambers and associations as well as private firms cover the rest.
- Provides a vast range of information and services for SMEs: Government helps firms help themselves rather than providing handouts
- Use of prizes and competitions as stimulation mechanism
- Current crisis increases priority for stimulating SME development and start-ups in the knowledge economy
- Access to Internet more or less achieved, now must go beyond this to generate more value added
- Federal policies are complemented by different regional policies (some better funded than national programmes)

In Ireland it is mainly Enterprise Ireland that stimulates private sector development.

- Case Studies produced by Enterprise Ireland
- Enterprise Ireland provided some small grants to companies to set up a web presence and further develop the capabilities of their website, including e-commerce, payment and internal stock management, etc.

An increasing number of countries tries to learn from other countries in order to improve the design and evaluation of their own national policies and programmes. Benchmarking national performances against foreign 'success stories' has been recognised as one possible way to mobilise stakeholders and the forces of change. Yet, benchmarking studies and related scoring prompt considerable public debate about whether successful policies could be 'imported' from elsewhere. Benchmarking requires that policies having the same objectives are compared, but in most cases the national set of objectives and policy tools reflect socio-economic characteristics and governments' programmes that cannot be standardised.

The DEEDS approach is to map the policies according to objectives that are considered relevant for the achievement of a developed digital - knowledge economy, but are 'neutral' to the various national models. The exercise we have carried out here was intended to allocate in a tentative map policies that directly or indirectly address the objective of improving the quality of the access to the digital environment of the small businesses, in order to increase the '*k*' component in parallel with the '*e*' component.



In that way, we may find that in some countries the objective of enhancing the knowledge dimension of the economy is pursued throughout policy programmes which explicitly link that objective to the policies for the access to the digital economy (as in the German case). In other cases, the objective is pursued by a further integration and adaptation of policies that emanate from various institutional sources, oriented to 'innovation', as in the Irish case. A typical benchmarking exercise between the two countries would be difficult, not only because of quantitative variables (Ireland has the territorial and population size of a German Land), but also because the relevant policies are framed within very different contexts. Anyway, both countries show a coherent policy path in the transition to the knowledge economy, stimulating policy analysis and debate, providing interesting cases for learning.

In the future, in addition to expanding the analysis horizontally to other EU countries, the research will also focus on understanding the socio-economic impact of the policies for the access and development of the digital and of the knowledge economy, including an effort to understand the implications of the enlargement of the EU.



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