



**Digital Economy: Policies Exchange and Development for SMEs
(IST-1999-29035)**

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**LEARNING FROM DEEDS
INPUTS TO POLICY INNOVATION IN THE DIGITAL/KNOWLEDGE ECONOMY**

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December 2003

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1. EVOLUTION OF THE DEEDS PROJECT

1.1 THE DEEDS OBJECTIVE & MISSION

DEEDS was launched with the objective of building up a community of European executive policy makers from Member States and from the European Commission, for exchanging policy issues and experiences concerning the access of small businesses to the digital economy. The DEEDS Policy Group was stemming out the network of policy-makers, which was initiated with the G7 Pilot Project n.10 A Global Market-place for SME (1995-99), co-ordinated by the European Commission jointly with Japan and USA, which had contributed to significant progresses and convergence in policies for Electronic Commerce and SMEs in the second half of the '90s.

The DEEDS Policy Group (PG) was conceived as an informal Policy Forum, participated by executive officers of national institutions such as ministries and agencies for innovation & development, whose policy activities are designed and implemented within the EU policy and regulatory framework. One major goal was to provide a stable bridge between the 'sovra-national' policy maker (the European Commission - Directorate General Information Society - KA2: New Ways of Working & Electronic Commerce), and the national policy makers, involved in the day-by-day design and management of the policies for the development of the Information Society. Within the EU such a bridge is formally institutionalised and operational at the top level (EU Council of Ministries) but it is informally organised and depends on bottom-up initiatives (if any) at the medium level. In the former case, mandate is the passport to get into the group, in the latter one can rely exclusively on commitment. DEEDS membership was based on the commitment of the national policy institutions of the PG participants, who were personally engaged in disseminating the DEEDS concept intra-muros, but also outside, in order to move from the 'club' to the 'community', by networking policy makers with similar competence and responsibilities in Europe and in other areas, particularly in the EU enlargement area.

The objective of giving the PG a stable structure and a solid methodology, in order to perform constructive policy exchange, would have been achieved through the following activities:

- a) Intra-Networking (building and consolidating the DEEDS PG)
- b) Extra-Networking (linking DEEDS to other EU and extra-EU policy networks and projects)
- c) Thematic Workshops, to access and sharing knowledge and expertise usually situated in parallel communities to the PG (academia; applied research; technology laboratories; consulting).

1.2 FIRST STAGE (2001): METHODOLOGY FOR POLICY MAPPING

In the DEEDS kick off meeting (October 2000) the need to 'take stock' of the policies for the access of the SMEs to the digital economy was raised up as a common requirement by the DEEDS PG. Over the previous five years a number of initiatives, actions, and programmes had been set and launched at national, local and European level, to cope or to catch up with the uptake of electronic commerce and of the digital economy. Any discussion about the 'best policies' to support SMEs coping with the present change could not be separated from mapping the current overcrowded and some chaotic policy landscape.

There are two ways to approach policy mapping. One is to approach the task horizontally, producing a compilation of policy actions and programmes. The outcome is likely to be a set of long lists, with unclear learning implications. Descriptions using technically neutral parameters, such as geography, budget size, stated targets may render a picture of the degree of policy activism, but are of little help to the purpose of policy assessment. The other way is to approach the task vertically, trying to get some intelligence for policy assessment 'in progress'. That requires a methodological framework be set up, taking upon the risk of selecting the analytical criteria *ex ante*. In this way the policy criteria and the analytical criteria, which do usually walk parallel paths, are going to mutually support each other and possibly overlap. The purpose is to read the state-of-the-art in order to get sufficient understanding in order to support further, effective, consistent policy actions¹. That eventually leads towards policy impact analysis.

At the time of the G7 project A Global Marketplace for SME (1995-99), which initiated the practice of policy exchange within the G7 Policy Group, the approach was horizontal, probably the only feasible one within a very wide, flexible, intercontinental policy group at the very beginning of the debate about electronic commerce. At the DEEDS time, when the focus was shifting from generic policy awareness on systemic issues to a more targeted set of policies all over the European countries, the project aimed at supporting a

¹ Patrizia Fariselli and Pier Paolo Patrucco, 2001, *Policies for SMEs in the Digital Economy. Methodology and Assessment*, in www.deeds-ist.org

constructive policy exchange by introducing a vertical approach to policy mapping and assessment. DEEDS was to provide the setting to an exercise as informal as advanced, because its technical limitations (in terms of space/time extension of the survey, of sources' homogeneity, and 'from-insider' selection of the relevant documentation) allowed to escape the technical boundaries of a wide-reach, standard and neutral assessment, and to try experimental analysis.

The exercise had been made possible thanks to the collaboration of the DEEDS Policy Group members, who have selected and provided the relevant policy documentation, and/or or the links to the accessible resources on the Web. In almost all the cases, the policy documentation sources are the national Ministries of Economics. The documentation addressing the policies for the SMEs in the digital economy covers a wide spectrum, including not only strictly SME-targeted policies, but also collateral policies, such as e-government, which have an obvious impact on the way 'SME go digital'. The overview was extended to the Central Eastern European Countries (CEECs) candidate to join the EU, in a dedicated workshop on 'Access to EU and Access to Information Society'²

Since the beginning, the Policy Group has been open to engage discussions about the most appropriate way to address policy mapping and assessment, although that would have led towards an uncharted territory in between benchmarking and policy impact analysis. The DEEDS policy exercise actually revealed the limits of the benchmarking exercises currently underway about e-commerce policies for SMEs, and the distance still to be covered from the effective implementation of policy impact analyses' objectives.

Built up to work as a forum for exchanging inputs out of the day-by-day policy making at national and European level, the DEEDS Policy Group has taken advantage of the opportunity offered by an IST project to act as a laboratory for policy thinking, linked to the current policy making, but independent from its mainstream. In other words, DEEDS wanted to operate before and beyond the implementation of the policy strategy and objectives agreed at the top level, and investigate different approaches and methodology for policy making concerning the access of SMEs to the digital economy³. That was not an intellectual choice on its own, rather it was the requirement to be fulfilled if any policy exchange had to be performed.

The prior issues to be addressed- for making policy mapping and policy assessment possible - required the disaggregation of the three 'universes' encompassed by 'policies for the access of SMEs to the digital economy', that is: Policies - SMEs - Access, because the internal differentiation of each of these notions is in contradiction with policies oriented to all-inclusive target. In § 2 an insight into the DEEDS methodology addressing these issues.

1.3 SECOND STAGE (2002): FROM POLICY EXCHANGE TO POLICY INNOVATION⁴

In its first year life DEEDS faced the limits of the policy benchmarking promoted - as a policy action - by the European Commission and the Member States, and the competition from similar Policy Groups set up to carry out the benchmarking of policies addressing the objectives of the GoDigital initiative (in particular the eBusiness Policy Group established by DG Enterprise). According to DEEDS, the limits of the current benchmarking exercises depended on a loose definitions of SME; on narrow indicators (such as on-line transactions) to measure 'access'; a bias towards e-commerce. Beside the methodological limits of a supposed quantitative benchmarking, DEEDS was stressing the qualitative limits deriving from the assumptions that lack of awareness and technical barriers (such as security, skills, legal uncertainty) were delaying the uptake of e-business models by European SMEs. Last, the search for 'best practices' through inappropriate benchmarking could be misleading in terms of policy assessment, because in the absence of homogeneous criteria and comparable contexts the value of a practice cannot be absolute and replicable.

By criticising the overconfidence in the advertising effect of storytelling, to contrast the disappointing figures about the uptake of e-commerce by the SMEs in Europe, DEEDS started posing new questions, in order to move away from the policy stalemate. The project itself was learning and evolving, and for 2002 it was proposed to reset the focus, by resetting the link between the digital economy – as the economy of the

² Patrizia Fariselli, 2001, *CEECs - Access to the EU and Access to the Information Society: a Two-track or a Convergent Process?*; Pekka Lindroos, 2001, *Potential for the Digital Economy in the Baltic States*; Csilla Lampert, 2001, *The Link between Policy for the Accession to EU and to IS in Hungary, Poland, Czech Republik, and Slovakia*; in 1st Annual Report, www.deeds-ist.org

³ Chiara Ghilardi and Luigi Scarola, 2001, *ICT and SMEs in Germany, Greece, and United Kingdom. Background Report*, in 1st Annual Report, www.deeds-ist.org

⁴ Patrizia Fariselli, 2001, *Policies for SMEs in the Digital Economy: from Policy Assessment to Policy Innovation*, in 1st Annual Report, www.deeds-ist.org

access – and the knowledge economy, to progress on the way “Europe goes to Lisbon”. The digital economy is more than electronic commerce, but is less than the knowledge economy. While the wide Internet penetration is to be maintained as a policy priority, the policies for the access to the digital economy should get a more integrated vision, based on the following interrelated priorities:

- access to and creation of knowledge, for increasing information and knowledge mobility
- upgrading the European enterprise system from business to enterprise, and from low to knowledge-intensive services
- achievement of the Single European Market, as the minimum institutional scale to e-business in the global marketplace
- developing digital technologies and applications supporting all the above objectives, giving priority to the demand side in the knowledge economy

In the 2nd DEEDS meeting, the PG agreed to:

- differentiate from other policy benchmarking initiatives currently underway and take a more ‘adventurous’ approach to policy making, developing a far-reaching vision of the policy issues related to the access of small businesses to the digital economy
- transform the PG – oriented to policy exchange – into a ‘think tank’ –oriented to policy innovation
- use the DEEDS methodology for policy mapping and assessment in dedicated exercises⁵, addressing specific emerging policy issues
- DEEDS had to stay as the collection point of information for policy mapping, but also become the collection point of expertise on specific policy issues

1.4 THIRD STAGE (2003): RE-FOCUSING POLICIES FOR SMEs: FROM THE DIGITAL TO THE KNOWLEDGE ECONOMY

The three layers framework for analysing policies for access (see § 2.2) has been used in various policy exercises carried out by the DEEDS team. In the second and third year of DEEDS the third layer (access to information and knowledge) has been particularly focused, because it represented the frontier to an innovative contribute of DEEDS to policy making within an IST context.

While access to infrastructure ('expand connectivity') and access to networks (doing e-business) have been extensively addressed by policies and by policy analyses, including DEEDS, the access to information and knowledge is a relatively new viewpoint, likely to become a policy driver in the years to come. DEEDS has much invested in that direction in 2002 and 2003, by organising PG meetings and Thematic Workshops on various implications of the subject, taking advantage of the expertise of researchers working on the demand side of SMEs accessing the digital economy, on the re-configuration of the enterprise, on the online information market, on public information and the role of e-Government, on the status of technological research improving the digital experience.

In parallel, the policy discourse came along by looking at eEurope 2005 through the lens of DEEDS, pointing to the need of indicators of dynamics of e-business vs. indicators of status, and to the need to move towards policy impact analysis, particularly as far as the role of 'supporting networks' are concerned. The two tracks are inter-twinned. Without intelligence of the dynamics of real phenomena (actual demand and usage of ICTs by the different categories of small businesses) no effective support can derive from policy makers and 'support networks' engaged with policies for the access to the digital/knowledge economy. The bottom-up approach makes sense as much as researchers and policy makers work together on a project basis, in well-defined socio-economic and policy contexts, equipped with monitoring and policy assessment tools which only can support the analysis and evaluation of results.

The interplay between researchers and policy makers has proven its effectiveness, that can be measured also by the intensity of the DEEDS PG participation. At the end of the project the core PG members gave to the DEEDS opportunity of a 'Forum for discussing issues and policies for tomorrow, and for experiencing policy impact analysis' a top evaluation ranking, and all manifested the will to go on with a similar project within the 6th Framework Programme.

Most of the inputs concerning the access of SMEs to the digital economy, knowledge management, e-business and business processes re-organisation, and e-Government have been conveyed to DEEDS from

⁵ Olana Bojic, 2001, *Mapping SME s Policies in the Digital Economy: Germany, Greece, United Kingdom*, in 1st Annual Report, www.deeds-ist.org

other communities of researchers and analysts. DEEDS has developed the questions, raised the demand, found the expertise, organised the fora, processed the inputs into new policy questions, assessed the policy state-of-the art through dedicated exercises, spread the messages.

2. DEEDS METHODOLOGY AND POLICY EXERCISE

2.1 SME AND NETWORKS TAXONOMIES

The DEEDS framework for the analysis and exchange of policies for the access of SMEs to the digital & knowledge economy is articulated on the components described in the following Table 2.1

Tab. 2.1 The DEEDS Analytical Framework

TOPIC	QUESTIONS	DEEDS APPROACH
POLICY	WHAT'S NEEDED TO POLICY EFFECTIVENESS?	INTELLIGENCE OF DRIVING FORCES POLICY DESIGN ACROSS MULTILAYER OBJECTIVES INTEGRATED VISION OF IMPACTS
SMEs	WHAT'S SMEs WORLD MADE OF? WHAT'S THE RELEVANT SMEs SPACE?	TYPOLGY OF SME NETWORKS THE EUROPEAN ENTERPRISE SYSTEM SINGLE MARKET
ACCESS	ACCESS TO WHAT?	DIGITAL INFRASTRUCTURE NETWORKS INFORMATION & KNOWLEDGE
ACTIONS	WHICH ARE THE POLICY COMPONENTS IMPACTING ON ACCESS AND VALUE CREATION?	HUMAN RESOURCES ICT & TLC INFRASTRUCTURE RESEARCH ENTERPRISES & NETWORKS REGULATION & PUBLIC ADMINISTRATION FINANCE & TAXATION
DIGITAL ECONOMY	WHICH ARE THE SMEs ' REQUIREMENTS TO BE ADDRESSED IN THE DIGITAL ECONOMY?	USER PERSPECTIVE VALUE TAILORED DIGITAL ENVIRONMENTS QUALITY OF THE DIGITAL EXPERIENCE RESEARCH FOR AFFORDABLE ICT APPLICATIONS OPEN STANDARDS & OPEN SOURCE
KNOWLEDGE ECONOMY	WHAT DOES IT MEAN TO DEVELOP THE KNOWLEDGE ECONOMY?	IMPROVE THE QUALITY OF RESOURCES DEVELOP NEW BUSINESS INCREASE THE KNOWLEDGE CREATION & ACCUMULATION

In order to engage in more focused analyses of policies promoting access of small business to the digital / knowledge economy, DEEDS reoriented its cardinal concepts by first establishing their general attributes and characteristics.

Tab. 2.2 DEEDS re-focusing process

CONCEPT	ATTRIBUTE	CHARACTERISTICS
SMEs	COMPLEXITY	TYPOLGIES OF SMALL BUSINESSES TYPOLGIES OF NETWORKS
ACCESS	MULTIDIMENSIONAL	DIGITAL INFRASTRUCTURE INFORMATION NETWORKS
VALUE CREATION	SYSTEMIC	KNOWLEDGE CREATION & ACCUMULATION
POLICY	EFFECTIVE	INTELLIGENCE IMPACT ASSESSMENT

In order to establish the unit of analysis, additional criteria besides the size criteria are needed in identifying the different typologies of firms that are covered under the broad umbrella of 'SMEs'.

Tab. 2.3 SMEs Taxonomy

	FIRM	TYPOLGY
CRITERIA	ORGANISATION	ENTERPRISE/NON-ENTERPRISE; INFORMAL/FORMAL; VERTICAL/FLAT; INDIVIDUAL/NETWORK; ...
	INDUSTRY	MANUFACTURING/SERVICE; MATURE/NEW; ...
	SKILL	STANDARD/SPECIALISED; ABUNDANT/LACK; LOW/HIGH COST
	KNOWLEDGE	HIGH/LOW INTENSIVE; CODIFIED/TACIT;
	CAPITAL	DEBIT/CREDIT; INVESTMENT; SHARES
	INNOVATION	HIGH/LOW; INCREMENTAL/RADICAL; CREATIVE/IMITATIVE;
	CONTROL	AUTONOMOUS/SATELLITE; GROUP/HOLDING;
	MARKET	LOCAL; REGIONAL; NATIONAL; INTERNATIONAL; GLOBAL

The processes of knowledge creation, transfer, re-generation - be they vertical or horizontal processes and whatever the share of codified and tacit knowledge at stake - take place within a typical network dimension. Networks have different and dynamic configurations. Also, different typologies of SME networks can be identified, according to different criteria/contexts, such as Product - Co-ordination - Interaction - Configuration - Dynamics.

Tab. 2.4 SMEs Network Taxonomy

	NETWORKS				
CRITERIA	PRODUCT	COORDINATION	INTERACTION	CONFIGURATION	DYNAMICS
NETWORKS	SUBCONTRACTING	HIERARCHICAL	PRE-DEFINED ORDERS	PYRAMID	STABLE
	MODULAR ASSEMBLY	PEER-TO-PEER	COLLABORATION (FUNCTIONS)	EXTENDED ENTERPRISE	TEMPORARY
	TECHNOLOGY-BASED NETWORKS	MIXED	PARTECIPATION (COMPETENCE)	VIRTUAL ENTERPRISE	UNSTABLE
	COMPLEX PRODUCTS NETWORKS	FUZZY	MARKET (PRICE)	GROUPING	

Digital technologies exert a relevant impact on the processes of knowledge creation and re-creation either because - through digitisation - they allow for the divisibility, transportability and integration of knowledge (making transparent the knowledge content of any transaction) , and because - through their connectivity power - they influence the setting and re-setting of the networks where the knowledge flows and transactions are implemented.

2.2 THREE LAYERS OF ACCESS

The implications of the digitisation give the market a dominant role in the digital economy, either because of the creation of the market for knowledge, and because the market increasingly interferes with the dynamics affecting the inclusion/exclusion in/from the networks. In the digital economy opposite network dynamics are taking place: on one hand, networks become more open, loose-coupled, and unstable. That can lead networks either to collapse, or to become more compact - by increasing selection to access, that is raising up barriers to the knowledge transfer and creation. On the other hand, the power of connectivity allows for new networks be created, leading to increasing pluralism, and new knowledge creation and accumulation.

The problem of the access of the small businesses to the digital economy, therefore, should be seen from three angles:

- ACCESS TO THE DIGITAL INFRASTRUCTURE
- ACCESS TO NETWORKS
- ACCESS TO KNOWLEDGE CREATION

Although the role of the market in the digital economy is increasing and positive, in that it enhances economic dynamism, competition, and pluralism, the transition to the digital economy claims for strong policy support, to avoid the gaps in terms of access turn into irreversible loss of knowledge and socio-economic fragmentation and divides. Policy for the access of small businesses to the digital economy have to be

oriented to overcome the three kinds of gaps, be open to innovation in the networks' configuration models, with the purpose of contributing to the generation of additional value/knowledge.

The DEEDS grid for policy mapping is developed basing upon a matrix crossing the three layers of access with six policy areas providing most of the policy inputs impacting on the access of small businesses to the digital economy.

Tab. 2.5 DEEDS grid for policy mapping. Access / Policy areas

POLICY	HUMAN RESOURCES	TLC & ICT	R&D	ENTERPRISE NETWORKS &	REGULATION & PUBLIC ADMINISTRATION	TAX & FINANCE
ACCESS						
DIGITAL INFRASTRUCTURE						
networks						
INFORMATION & KNOWLEDGE						

Policy for the access of small businesses to the digital economy have to be oriented to achieve all three kinds of access, with the purpose of contributing to the generation of additional value/knowledge. In the following Table 2.6 is represented the approach that supports the DEEDS policy mapping and assessment. Policies are grouped according to 3 layers of objectives, associated with the three layers of access.

2.3 THE DEEDS GRID FOR POLICY MAPPING AND ASSESSMENT

Tab. 2.6 DEEDS grid for policy mapping. Access / Objectives

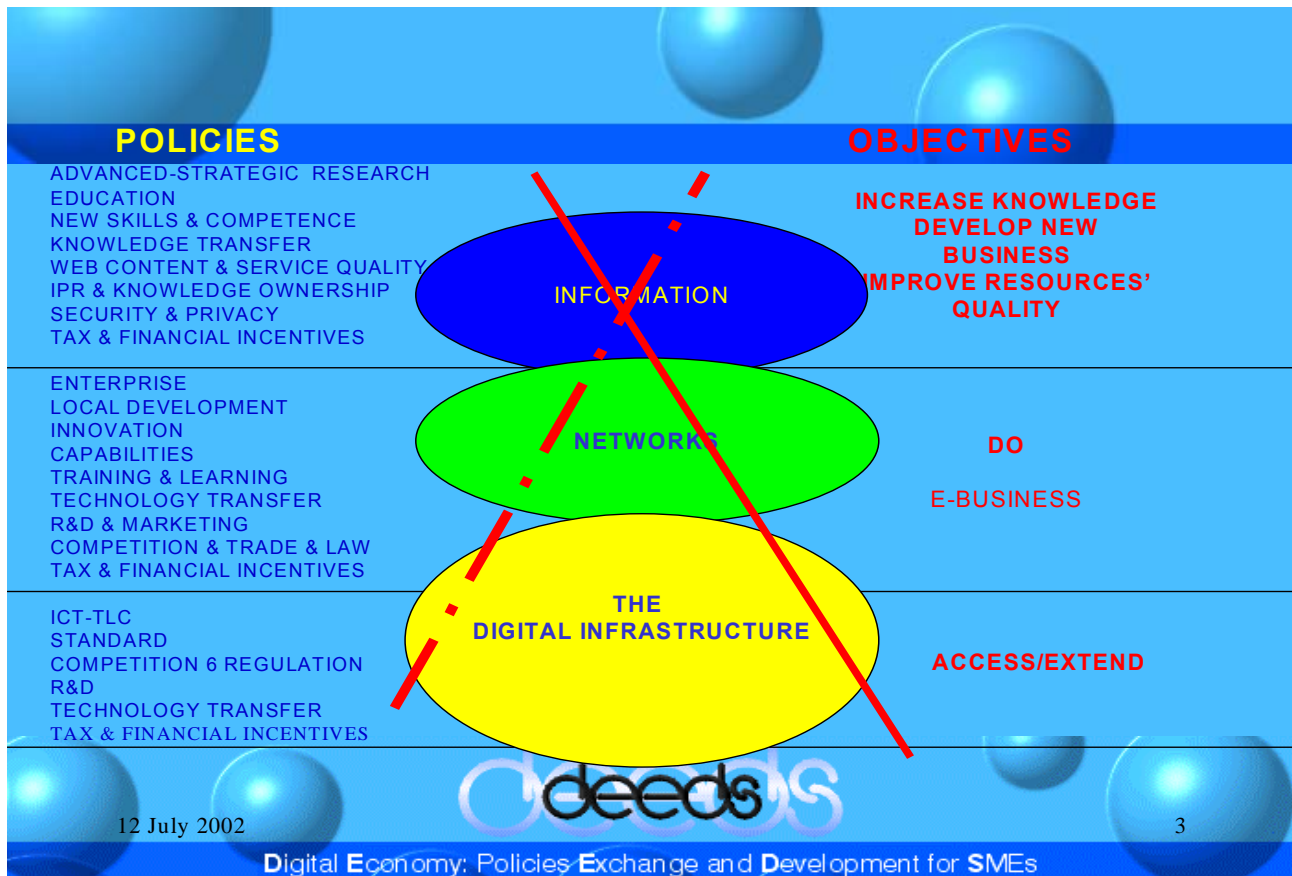
ACCESS TO DIGITAL INFRASTRUCTURE	OBJECTIVE 1
ACCESS TO NETWORKS	OBJECTIVE 2
ACCESS TO INFORMATION	OBJECTIVE 3
OBJ 1 EXTEND/ IMPROVE THE DIGITAL INFRASTRUCTURE	→ BROADBAND
OBJ 2 DO E-BUSINESS	→ NETWORK BUILDING
	→ INNOVATION (PRODUCT-PROCESS-ORGANISATION)
	→ CAPABILITIES
	→ B2B2C
OBJ 3 INCREASE KNOWLEDGE	→ ACCESS MORE INFORMATION
	→ IMPROVE RESOURCES' QUALITY
	→ DEVELOP NEW BUSINESS

In 2002, the Nomisma-NET research team has carried out various DEEDS policy mapping exercises along with the development of the DEEDS methodology. In particular, an EU-wide DEEDS mapping exercise – examining the Member States' national policies addressing (directly or indirectly) Objectives 1 and 2⁶. The same exercise has been carried out for the German Länder. A further exercise has been focused on Objective 3, surveying the relevant policies in Germany and Ireland.

⁶ Olana Bojic, *Policy Mapping through Objective 1 and Objective 2 of the DEEDS Grid*; Julia Culver Hopper, *Policy Mapping through Objective 1 and Objective 2 - th German Laender*; Olana Bojic and Julia Culver Hopper, *Mapping National Policies with the DEEDS Framework: Policies for the Access to Knowledge in Germany and Ireland*, in 1st Annual Report, www.deeds-ist.org

Combining Policies – Objectives - Access we get the following Figure 2.1

Fig. 2.1 DEEDS cross-grid for policy assessment



Issues such as Broadband (- - -) and Knowledge Management (- - -) cross transversally the three layers of access.

Comparing the approaches to policy assessment of eEurope 2005 and of the DG Enterprise Benchmarking Report with the DEEDS approach, we have the following matrix:

Fig. 2.2 DEEDS vs. eBPG & eEurope

	eBPG	eEurope 2005	DEEDS
TARGET	UNIVERSE SME	UNIVERSE SME	DIFFERENT SMEs
SUBJECT	GENERIC ACCESS	GENERIC ACCESS	THREE LAYERS ACCESS
OBJECTIVE	POLICIES		
DIGITAL INFRASTRUCTURE	Broadband		
Do EBUSINESS	FRAMEWORK AWARENESS NETWORKS INTERNET PLATFORMS	DYNAMIC ENVIRONMENT	NETWORK BUILDING INNOVATION (PPO) CAPABILITIES B2B2C
INFORMATION & KNOWLEDGE			QUALITY & VALUE

In the current policy setting, the reference to a generic SUBJECT (access) and TARGET (the universe of SMEs) generates 'general' POLICY OBJECTIVES, in a way that it is unclear what and how is the optimal matching between the three components. There is a risk is that policies do not bridge with the real world, because they are somehow exogenous to it, as there is limited understanding of its characteristics and dynamics. It becomes unclear how to proceed with policy assessment and evaluation, and it is not possible to achieve any policy impact analysis.

On the opposite, the DEEDS methodology proposes an approach which starts from the analysis of the phenomena which should be impacted by the policies, in order to define their subject, target, and objectives.

Still, the policy maker maintain the power to choose between alternatives, and although optimal results cannot be ensured, yet they can be assessed, benchmarked, evaluated and policy impact analysis can be carried out.

2.4 GOING TO LISBON

Looking at eEurope 2005 through the DEEDS lens, two issues emerge:

- There is more attention to measurement, to recover the inadequacy of the statistical surveys during eEurope 2002, but the indicators are indicators of status, mostly oriented to detect connectivity, teleworking, uptake of e-business, and - as new entry - of e-Government, focusing the innovation in the business (or public administration) processes, according to maturity curves raising up along with the degree of business/administration processes' integration.
- Interesting enough, since the policy focus and resource investment on the dissemination and uptake of e-commerce/business by the SMEs have met unsatisfactory results⁷, the reaction has been to drop that focus, and to shift the emphasis to other foci, in particular the e-Government one, as there were a kind of alternative between business online and public-administration online.
- There is a constant reference to the role of the 'supporting networks' in order to facilitate the implementation of the eEurope 2005 objectives, to improve the SMEs acquisition and access to:
 - managerial understanding & skills for e-business
 - friendly e-business solutions
 - B2B marketplace & business networks

In its 5th PG meeting, DEEDS has addressed the issues of status vs. dynamic indicators⁸, the role of e-Government for improving the access to public information and the analysis of the impact of the activities of the Support Networks. The DEEDS message is that the policy sextant should be pointed at the access and management of information to hold the course of the small businesses from the digital to the knowledge economy⁹. Small businesses use ICT, and particularly Web Technologies, mainly for communication purposes and for accessing and delivering information. The role of public supply of public information is therefore quite strategic, to address the demand of small businesses and to enhance their access to the digital and to the knowledge economy.

The research work on central Government portals¹⁰, to be further developed, is the early attempt to draft and apply a methodology for the analysis - from a user viewpoint - of the supply of public information through e-Government. In that way, DEEDS started to address typical e-Government issues in tight connection with the policies for the access of SMEs to the digital economy. As the latter are seen as steps to the access and development of the knowledge economy, the supply of / access to public information becomes a key link. Access to public information is a key issue also for policy makers, researchers, and PA officers, who needs public information - such as statistics - for increasing the knowledge of the socio-economic and technological environment they are going to analyse or to address with policy measures.

These themes have been further developed in the last PG meeting and workshop, looking at the impact of public information on enterprise, public administration and research in the knowledge economy 'going to Lisbon'.

3. LEARNING FROM DEEDS

3.1 THE INTERPLAY BETWEEN RESEARCH & POLICY

The interplay between research and policy, which was nothing more than an intuition at the very beginning of the DEEDS project, become a requirement during the project life cycle, as long as the task of performing policy exchange within the PG showed up its complexity. Specialisation between researchers and policy

⁷ COM(2003)353final, *Adapting e-business policies in a changing environment: the lessons of the GoDigital initiative and the challenge ahead*.

⁸ Hannes Selhofer, 2003, *Indicators for the New e-Business Environment: Challenges for Statistics and Research*, in 3rd Annual Report, www.deeds-ist.org

⁹ Patrizia Fariselli, 2003, *Pointing the Policy Sextant to Hold the Course from the Digital to the Knowledge Economy*, in 2nd Annual Report, www.deeds-ist.org

¹⁰ Olana Bojic and Julia Culver Hopper, 2003, *Access to Public Sector Information (PSI). A survey of 17 Central Government Portals in Europe, USA and Canada*, 5th PG meeting, in www.deeds-ist.org

makers can be constructively exploited only if a convergence process, dialogue and peer-to-peer exchange are developed.

The exchange between research and policy makers is not to be intended as a top down process, where knowledge from experts is transferred to executives in public administrations or - vice versa - researchers are told what results are expected to be delivered out of their work.

On the other hand, the flow of information and knowledge between the research and the policy environment normally occurs, either directly, when policy institutions commit research and consulting, and indirectly, when research addresses the policy dimension of the issues controlled by specialised competence. However, a major hindrance to effective interchange between the two spheres is due to the 'time lag' between the research and the policy making processes, which are constrained by different time horizons. Policy makers have normally a shorter time perspective, while researchers need a longer one.

Quite often, the empty space in between is filled by powerful consulting companies, which spread around timely messages in order to orient the policy agendas, feeding a waterfall effect from top institutions downwards. The background to such a knowledge management process is not always clear, as well as the degree of independence of the messages from the market leading forces. It may be relatively easier for a world-wide trusted consulting brand company to sell the 'ten golden rules' on specific subjects to policy makers, who buy the package on-the-shelf, rather than for an independent research centre to introduce complexity throughout theoretic research or micro-analyses into the policy making routine.

In some cases the public-private partnership is claimed as a driver to policy making, acknowledging the important inputs to policy that can be provided by the market. In this relationship sometimes the public side is seen as the beneficiary and the private side as the contributor to a knowledge sharing process, implicitly assuming that the 'real world' knowledge is superior to the policy bureaucrats' one. Indeed, any balance between the two powers is imperfect, because both the poles require the complement of a third pole: the research one. Market players and policy makers both need information and intelligence about the real world they both part of. Victims of the hype are either in the policy and in the business environment. Yet, whenever the triangulation is organised, the method of working together does influence significantly the success of the co-operation model. The DEEDS model of interaction between researchers and policy makers has proven to be successful, because of its peer-to-peer standard. When the same model is applied in project-based collaborations, involving competencies and responsibilities of different parties in a horizontal setting, the chances of achieving and maintaining the project's objectives raise up.

We have recently witnessed how misleading the 'ten golden rules' may turn to be, discovering that they were mostly based on expectations fuelled in the 'new economy' market (*the power of the hype*), rather than on intelligence of the real market forces' dynamics. The message '*don't panic, do e-commerce*' has been inspiring the policy mainstream within the EU from late '90s onwards, but actually it did not convince sufficiently the small business world. That reluctance has been interpreted by the mainstream policy thinking as a proof of backwardness, to be coped with injections of awareness campaigns, relying on the propulsive effect of the 'best practice' examples. More, collections of cases have been sold as benchmarking exercises, but apparently the bandwagon effect did not take place according to the expectations, and disappointing results have spread some shadow on the e-business side of the policies for the access to the digital economy in the EU.

3.2 DEEDS THEMATIC WORKSHOPS

Parallel to the policy and media effort focusing on the uptake of e-commerce and transfer of e-business models to the 'universe' of SMEs in Europe, DEEDS has been exploring new directions beyond the border of the current debate, entering a web of winding paths inside the digital economy jungle. Over the three year life of DEEDS many researchers and experts from the enlarged Europe and the US have contributed to DEEDS by sharing their knowledge with the PG in workshops on themes at the frontier of the debate.

The sequence of the thematic workshops mirrors the stages of the DEEDS policy thinking, evolving over time along a coherent line going from policy exchange, through policy innovation, to policy refocusing. The DEEDS methodology for policy mapping and assessment also evolved in parallel, and policy analysis exercises were produced accordingly.

The 1st Thematic Workshop's topic was **B2B and SMEs** (Brussels, 15 May 2001).

The objective was to address the :

- pluralism in the universe of the SME and networks of SMEs
- different requirements in terms of ICTs, e-business and e-marketplace models
- present and potential technologies supporting the key success factor of e-commerce and e-business in a small businesses network context: collaboration.

Whatever robust the platform and integrated the e-business models, the characteristics and the dynamics of the SME networks prevail, in such that the former has to be adapted to the latter, otherwise ICTs can lead to networks' instability, atomisation, loss of economic resources.

References:

BUSINESS ORGANISATIONS NETWORKS IN THE DIGITAL ECONOMY. THE IMPACT OF ICTs ON SMEs
Gian Luca Baldoni, Nomisma (Italy)

A STRATEGIC VIEW ON THE B2B MARKET
Ilse van Rijsbergen, in-connection (Belgium)

E-MARKETPLACES: NEW MODELS
Luigi Geppert, iperbusiness (Italy)

COLLABORATIVE COMMERCE - TRENDS AND TECHNOLOGY POTENTIALS
Volker Tschammer, GMD-Fokus (Germany)

In the DEEDS Brainstorming Meeting (29-30 April 2002), a small group of experts explored the technological, socio-economic, market, and regulatory constraints which limit the access of small businesses to the digital economy, and the policies aiming at improving it. The interplay between these components is not univocal, depending upon the components' definition and the analytical standpoint. Current policies for the access are heavily driven by a 'push to the ICT market' approach. While that is consistent with the objective of accessing and extending the ICT infrastructure – preliminary step to any further development of knowledge-based value-added activities – there is the risk of underestimating the complexity of the small business world, on the one hand, and the potential of knowledge creation and accumulation through the digital technologies, on the other.

The two days discussion converged on a message, giving the outline to the next DEEDS Thematic Workshop: **IMPROVING THE QUALITY OF THE DIGITAL EXPERIENCE** (Brussels, 12 July 2002). Two the major questions raised by the theme:

- What is needed to improve the quality of the digital environment?
- What does add value to the digital experience?

The answers are complex, but to start addressing these questions, the workshop focused on two issues:

- Broadband (BB)
- Knowledge Management (KM)

Among others, the following key issues emerged from the discussion:

- Plurality of public & private BB networks raise many critical issues, such as unbundling, infrastructure sharing, interconnection; the need of public policies to cope with failures in the BB market to provide universal and integrated services; the leading role that territorial institutions are going to play
- KM as such – imprinted by the large organisations codified systems – is not perceived by SMEs as a priority, while the 'interaction with partners' is. The critical issue for SMEs is more to find K outside their borders, rather than procedural techniques to manage it.

References:

BROADBAND: STATUS-POLICIES-ISSUES IN THE EU
Giuseppe Rao, Prime Minister's Office (Italy)

KNOWLEDGE MANAGEMENT. APPROACHES AND POLICIES
David J. Skyrme, David Skyrme Associates Limited (UK)

Following the DEEDS methodology, DEEDS went progressively focusing on the third layer (access to information & knowledge), but escaping 'traditional' knowledge management models.

The question posed at the workshop **SMEs ACCESS TO KNOWLEDGE: DEMAND, MARKET SUPPLY, RESEARCH AND POLICY** (Brussels, 16 December 2002) was: what should be needed for improving the 'quality of the digital experience', that is the access to information and knowledge by various typologies of small businesses, addressing their contexts and demands, in order to increase the value creation in the overall economic system (and not only the efficiency of islands of e-businesses)?

Put differently, the question is: what is needed in order to:

- improve resources' quality
- develop new business
- enhance knowledge creation and accumulation

The answers are multidimensional, requiring inputs from research focusing the:

- SMEs' demand of access
- knowledge creation process in low / high knowledge-intensive businesses
- technologies for access, management of information and knowledge tailored to small businesses in local networks, in value or in supply chains, in inter-organisational Intranets
- reconfiguration of the firm as a system with capability, legal, organisational, and institutional dimensions
- new businesses in the market of the 'access to knowledge', such as the online information market

References:

NETWORK TECHNOLOGIES AND LOCAL NETWORKS: EVIDENCE FROM A 3 YEARS SURVEY IN NORTH-EAST ITALY
Stefano Micelli, TEDIS, International University of Venice (Italy)

ICT AND SME: ROLE, NEEDS, REQUIREMENTS, AND PURCHASING PROCESS
Luigi Geppert, ASAM Observatory SMEs, Catholic University Milan (Italy)

PIONEERING SOLUTIONS AND TOOLS FOR ACCESS & MANAGEMENT OF INFORMATION AND KNOWLEDGE FOR SMEs
Annaflavia Bianchi, TiLAB, Telecomitalia (Italy)

A SUPPLY AND VALUE CHAIN MANAGEMENT METHODOLOGY FOR THE INTERNET ENVIRONMENT
Hannu Vanharanta, Pori School of Technologies & Economics, Tampere University (Finland)

INTER-ORGANIZATIONAL INTRANETS - ACCESS & MANAGEMENT OF INFORMATION AND KNOWLEDGE
Roberta Lamb, University of Hawaii, Manoa (USA)

EUROPEAN ONLINE BUSINESS INFORMATION MARKET - 2002 TRENDS
Fred Hitchins, IRN Research Ltd, Hampton Middlesex (UK)

KNOWLEDGE CREATION PROCESS IN KNOWLEDGE AND NON-KNOWLEDGE SERVICES
Thomas Hempell, ZEW, Mannheim (Germany)

RECONFIGURING THE FIRM: THE RESOURCE-CAPABILITY-COMPETENCE APPROACH
Sandro Montresor and Alessandro Romagnoli, Dept. Of Economics, University of Bologna (Italy)

TECHNOLOGY FORESIGHT AND STRATEGIC INTELLIGENCE IN SUPPORT OF POLICY
Ken Ducatel, JRC/IPTS, Seville (Spain)

The last DEEDS Thematic Workshop on **THE IMPACT OF PUBLIC INFORMATION ON ENTERPRISE, PUBLIC ADMINISTRATION AND RESEARCH IN THE ENLARGED EUROPEAN KNOWLEDGE-BASED ECONOMY** (Bologna, 21 October 2003) closes the process from policy exchange about SMEs accessing the digital economy to policy innovation about the access of small businesses to the digital economy.

Access to / expansion of the digital economy holds an essentially instrumental nature for the achievement of the top EU economic objective: the development of the most dynamic knowledge economy by 2010 (Lisbon 2000). In the knowledge economy information plays a key role, marking the difference by citizens, institutions, and enterprises according to different degrees of: access, usage, management, production, processing, mobility, ownership.

Policies for the access & development of the digital & knowledge economy have to address access, usage, and control of information by citizens, institutions and enterprises as a priority focus, as it means to deal - directly and indirectly - with all the relevant social, economic and policy objectives of the EU. Beyond intelligence, efficiency and effectiveness, public policies require a vision, to keep the balance between top-down and bottom-up, local and European, specific and general initiatives, coherently with their (public) nature. There is often a contamination of languages between policy and market in the ICT matters, leading to mis-placed expectations and under-estimation in the specific role of policies. The disappointing evidence about the e-commerce/e-business uptake across the EU has pushed to keep distance from the market, turning to public services, but there is a risk that the market logic (cost-reduction - productivity gains) be reintroduced in setting and assessing the eGovernment objectives. Coming back to Internet technologies and to information is actually the most appropriate area to policy making in the enlarged Europe today.

References:

THE IMPACT OF PUBLIC INFORMATION ON BUSINESS AND CITIZENS. REFLEXION ABOUT THE FRENCH WEBSITES SERVICE PUBLIC AND LEGIFRANCE

Patrice Platel, Secrétariat Général du Gouvernement (France)

AVANCES OF E-GOVERNMENT IN THE US

Yelena Yesha, University of Maryland Baltimore County (USA)

THE FRUGAL, THE RADICAL, THE ADAPTIVE AND THE STRAITJACKET: CONFIGURATION OF ERP ADOPTERS IN THE EUROPEAN AND US MANUFACTURING SECTOR

Andrea Masini, London Business School (UK)

NEW STATISTICAL INDICATORS FOR POLICY IMPACT ANALYSIS IN THE KNOWLEDGE ECONOMY

Paolo Roberti, ISTAT (Italy)

SOME CONSIDERATIONS ON TECHNOLOGIES INVOLVING NATURAL LANGUAGE FOR INFORMATION ACCESS AND USAGE

Renato de Mori, Laboratoire Informatique d'Avignon (France)

NATIONAL SCIENCE FOUNDATION'S DIGITAL GOVERNMENT PROGRAM (USA)

Nabil Adam, Rutgers University (USA)

3.3 TEN LESSONS

Taking advantage of the interplay between researchers and policy makers, DEEDS has brought to surface questions and research inputs highlighting the:

1 **varying demand of ICTs by various categories of small businesses**

The European enterprise system is populated to a large extent by micro and small enterprises operating in the low knowledge-intensive service sectors or as subcontractors in the supply chains of mature manufacturing and service sectors. A significant proportion of them have an informal organisational setting and are not only unable to play a role in the global market, but are also reluctant to consider the European market as a 'domestic' market. The small business world is, however, also populated by firms that are completely different, except for size, in that they play a key role in the knowledge economy, which is increasingly based on services. The digital demand of these two broad categories of firms is obviously quite different, and the best way to match it with the ICT supply is to offer tailored solutions that address the individual businesses' real contexts and the European macro-objectives at the same time. In other words, policies for SMEs have to be conceived as instrumental to the modernisation of the enterprise system and stimulate the development of the service economy.

2 **gaps between supply and demand of online technology and information to/of small businesses**

Companies are driven to gain access to digital infrastructure in their search for and the exchange of information that can be used and manipulated to various purposes, related - directly or indirectly - to the business organisation and management, ultimately improving the economic performance of the firm. Through the internet, companies can get information; but the quality of access and of the information digitally accessed over the Internet can make a significant difference in the full-fledged exploitation of the opportunities associated with connectivity. We have seen that sometimes solutions are unnecessarily complex and fragile in a non-expert environment -- that is, in most of the small and very small

businesses -- and often access to information is complicated and unreliable because of time-consuming and tortuous navigation paths, duplication of limited content over multiple sources, uncertainty about currentness, completeness and reliability of information.

An inadequate supply of technological solutions/products, either for accessing and for providing structured information, drives the demand for information towards intermediaries, whose service costs sometimes reflect the lack of or a chaotic supply of free information across inadequate digital tools more than the higher quality and added value of the service.

3 relationship between knowledge investment, organisational strategy, information systems

The degree of efficacy of the same integrated information system varies according to the operational environment (stable, simple / complex, turbulent) of the firm, and depends either on the strategy of adoption and on the knowledge investment implemented by the firm. Therefore, information systems - as ERP systems - require a clear vision of knowledge capability and management implications, which go far beyond the acquisition of e-skills for the management of the information system itself.

4 risks of a pervasive cost-reduction & efficiency-driven approach to information society

In most of the e-business literature the priority motivation to adopt digital technologies is to increase the efficiency of the company or network by reducing the transaction costs. But a number of risks are implied, particularly for SMEs, which eventually lead to an increase of those costs.

- Technological applications embedded in market products, including standards, are given a high degree of control over the intra and inter-firm business processes' re-organisation strategy to increase efficiency. However, lack of information, capability and skills for managing new information systems to improve efficiency may drive to increased delegation and outsourcing, worsening rather than improving control and co-ordination problems. On the other hand, additional inefficiency can derive from lack of integration between legacy system and new applications; discontinuity between business processes; over-investment in fast dying applications and systems.
- The microeconomic efficiency gain in a specific firm or supply chain or marketplace, derived from e-market selection (excluding from original networks those suppliers unable to adopt/apply new digital applications) may be offset by the macroeconomic loss of resources due to the instability of original networks, and by increasing costs of coordination within an archipelago of e-islands.

5 knowledge creation and social interactivity

Digital technologies and applications impact on business organisations and relationships which basically have a networked nature -- whatever the configuration (vertical, horizontal, virtual) of the network -- and whether the firm is observed from within or outside a set of relations. The need to preserve and further develop the social dimension of the interactions carried out over the Internet channels within business networks is a key factor. The question to be addressed is: why to go digital? In the DEEDS perspective, the critical elements to be considered are:

- knowledge mobility within business networks
- organisational innovation according different integration models

The knowledge creation and accumulation processes - the core of the knowledge economy - have a fundamental relational nature, which can be significantly enhanced through the use of digital information and communication technologies. Evidence from in field researches show that the usage of ICTs by workers and enterprises - including the low-knowledge intensity ones - is widely extended, particularly as far as Web technologies are concerned. There is an emerging consensus about the preference and demand (by individuals and enterprises) of digital applications which enhance communication and the access to information related to the business, the partners, the market.

6 complex relationship between knowledge ownership, management, and information technologies

User-friendly-technologies could reduce the distance between information systems specialists and content owners and managers, which limits rather than facilitating - the extensive and deep exploitation of the access to digital infrastructure and information. Control of content by the users is key to the successful implementation and use of intranets, and the blurring of the competence boundaries between business and IS professionals contributes to that success. Access to and delivery of information contribute to the knowledge creation and accumulation process, as access and use of information for knowledge have an impact on the creation of value. Information is not yet knowledge. However, before a company enters and practices knowledge management techniques in order "to convert knowledge into commercial products and services", it is required:

- Awareness of the information and knowledge in one's possession;
- Control of the codification procedures and tools;
- Compatibility, through adoption of common interface standards.

While there is no reason to suppose that small businesses are not aware -- neither of their knowledge or of the digital opportunities -- policy is to favour the access to and the research of technology solutions and applications which address SMEs' demand for control over and management of the information in their possession and for access to the information relevant to their specific requirements and contexts. In other words, technology has to *adapt to* demand, not only drive it, in order to transform technology into innovation.

7 key role of e-Government policy for addressing access to public information & knowledge

Public Information plays an important role in developing a dynamic knowledge-based economy, and a competitive research system in an enlarged-integrated Europe, because it impacts on the:

- usage of Web applications that have been extensively diffused through the massive connectivity policy successfully implemented over the last 5 years
- access of enterprises (any size - any knowledge intensity), and of public services (local, national, European) to resources which can be employed for creating new value (knowledge)
- valorisation of public information-mines, whose non-digital status favours some private control by élites in public institutions, while it could add a significant amount of information resources to the public and private research environment in the EU
- consolidation of a common European-wide information background to be used by citizens, researchers and enterprises of old and new Member States, to strengthen mobility, harmonisation, and integration bottom-up dynamics across the enlarged EU

8 limits of statistical indicators and paradigms to understand the knowledge economy dynamics

The prevailing attention to the productivity gains expected (but still non univocally demonstrated) from ICTs applied to business operations and management tends to shrink the scope to the assessment of the impact of ICTs on the economy and on society, just because the demand side is not sufficiently investigated. Indicators looking at the maturity curve which lifts up along with the ratio of e-business models/efficiency, rank the ICTs usage according to the degree of ICT-led integration in the business processes' organisation. The usage of digital technologies for communication and for accessing information online are placed in the low side of the maturity curve, assuming that they little contribute to the increase of productivity. Yet, these 'basic' applications are extensively and advantageously used by workers, firms, business networks, communities of practice, representing effective tools in the acquisition of information and in knowledge sharing and creation processes. Moreover, static indicators tends to give a limited picture of the past, without capturing the dynamics which escape the classification of traditional models.

9 systemic view and micro-data-based policy impact analysis

ICT-induced systemic change brought about by the New Economy challenges the macro focus of the old policy paradigms and indicators, reinforcing the need to use micro founded indicators to support evidence-based policy making, and Policy Impact Analysis (PIA). The DEEDS approach to policy mapping, assessment and impact analysis claims for an expansion of the third layer of access (access to information & knowledge), as it requires that more of the existing public information is made available and accessible through the Internet channel. The role of public information is key in the digital/knowledge economy to support intelligence and decision making by the enterprises, whatever the size, and by policy makers.

10 gaps in the current RTD programmes

The focus on supply and demand of public information as a key asset of the digital/knowledge economy, claims for investment in RTD targeted to the access, usage, and control of digital information. There is a need to go back to the origins of the Internet technologies, whose further potential development as a 'neutral' opportunity has been somehow absorbed by a myriad of applications (or methodologies) addressing individual business or social models/cases, or diverted towards technologies (ex. Aml) which put at the centre the individual consumer of goods and services, rather the producer -manager - user of information. The improvement of the quality of the digital content made available over the Internet depends on:

- Technology (for data mining, search engines, interfaces, natural languages, etc).
- Content building, organisation and supply

Beside the gaps in the technological priorities, a major gap is the lack of integration between RTD and socio-economic-policy research programmes. DEEDS demonstrates the bad effects of such a divergence, which often leads to misconceptions, misplaced expectations, and reduces significantly the impact of policy making on the real world.

3.4 DEEDS METHODOLOGY IN SUPPORT OF POLICY MAKING

STEPS	ACCESS 1 Infrastructure	ACCESS 2 Networks	ACCESS 3 Information	↓ POLICY	↓ RESEARCH PRIORITY
Define Target(s) SME Typology Target Area Technology	Identify the relevant ACCESS to be addressed			Map current policies addressing the target(s) and available policy tools (bottom-up mapping)	Socio-economic analysis Technology and Market Trends Policy Mapping
Identify Systemic Dynamics occurring among micro-and macro targets Local National EU Global	Analyse demand & supply interactive dynamics, gaps, key factors, technology developments and market Analyse feedback across the three layers of ACCESS			Map policy objectives from macro to micro (top-down mapping) Global EU National Local	Socio-economic & System analysis Technology and Market Trends Policy Mapping
Define Priorities & Strategy Translate priorities into specific objectives Define implementation strategy & tools Identify resources, partnerships and method of work & coordination Formalise background, target(s), objectives, interaction with macro-objectives, resources, responsibilities, in order to fix indicators to measure the impact of the policy action				Policy implementation, monitoring, assessment, evaluation Interplay between researchers & policy makers to get intelligence of the driving forces	Policy Impact Analysis: Methodology & Cases Interplay between researchers & policy makers to get intelligence of the policy results
Policy Impact Analysis	Identify results & take lessons to orient next policy design and implementation strategies			Policy analysis, exchange, benchmarking	Identify new research priorities, in the technological, socio-economic & policy domains

3.5 DEEDS POLICY PRIORITIES

SME	DEMAND	ACCESS 1 Infrastructure	ACCESS 2 Networks	ACCESS 3 Information	↓ e-GOVERNMENT POLICY	↓ IST PRIORITY
Informal Business Organisations <i>Local Markets</i>	<ul style="list-style-type: none"> • Connectivity • User-friendly Access • Interactive Communication • Business, Market, Regulation, Research Information • Easy Navigation • Control & Communicate of Intimate Knowledge • Content & Data Management • 	<ul style="list-style-type: none"> • Capillary • Upgraded • Interoperable • Secure 	Network e-services (one-to-many) <ul style="list-style-type: none"> • Digital Literacy • Business Mngmnt • Market & Research Trends • Regulation & Incentives • Community & Network Building 	Training <ul style="list-style-type: none"> • Online Communication • Data Mngmt • Web Content Mngmnt • Organisational Models 	<ul style="list-style-type: none"> • Portals • e- Services for the EU Single Market • PA simplification 	<ul style="list-style-type: none"> • Web Interfaces • Search Engines & Data Mining • Data & Content Mngmnt • Open Source
Assemblers in Manufacturing <i>Industrial districts Clusters of Decentralised Production</i> <i>National, International, Global Market</i>	<ul style="list-style-type: none"> • Fast Connectivity • Networks Stability • Strengthen partnerships • Market & Technology Trends • New Skills • Knowledge Management Capability • Control of e-Business Processes Integration 	Broadband (BB)	<ul style="list-style-type: none"> • Intra-net • Extra-net • Communities of Practice • e-Supply Chains • e-Marketplaces • Cross-border Networks 	<ul style="list-style-type: none"> • Market & Research Info • Information Systems Mngmnt • e-Business Models Expertise • Knowledge Mngmnt & Sharing Practices 	Public Sector Information <ul style="list-style-type: none"> • Dedicated Portals on Markets & Networks & Technology • Statistics for SMEs • Developing information from e-services Cross-borders Mobility of European Knowledge Resources	<ul style="list-style-type: none"> • Interoperable Standards • Open Source • Data Mining & Repositories • Knowledge Management Capability & Tools

SME	DEMAND	ACCESS 1 Infrastructure	ACCESS 2 Networks	ACCESS 3 Information	↓ e-GOVERNMENT POLICY	↓ IST PRIORITY
End-market Producers <i>Local, National, International Markets</i> <i>Niche Markets</i>	<ul style="list-style-type: none"> • Fast Connectivity • Know your network - Know other networks • Market & Technology Trends • Quality online information • E-Marketing • Control of e-Business Processes Integration • Knowledge Management Capability 	BB	<ul style="list-style-type: none"> • Intra-net • Extra-net • Interactivity with Business Networks • Network e-services (one-to-many) • Network & Community Building 	Training <ul style="list-style-type: none"> • Online Communication • Data Mngmt • Web Content Mngmt • Organisational Models • E-Business Models 	Public Sector Information <ul style="list-style-type: none"> • Dedicated Portals on Markets & Networks & Technology • Statistics for SMEs • Building Information from e-services e-Procurement	<ul style="list-style-type: none"> • Web Interfaces • Search Engines & Data Mining • Data & Content Mngmnt • Technology Convergence
Information-based Services <i>Networked Enterprise</i> <i>Local, National, International & Global Markets</i>	<ul style="list-style-type: none"> • Fast Connectivity • Quality online information • Governance of Information Ownership, Transfer, Manipulation, Commercialisation Models • Flexible Information Systems & Technologies 	<ul style="list-style-type: none"> • BB • Cyber-Infrastructure 	<ul style="list-style-type: none"> • Information Systems Mngmnt • Open Networks vs. Information Fortress 	<ul style="list-style-type: none"> • Info & Knowledge Integration 	<ul style="list-style-type: none"> • Supply of Public Sector Information Integrating Private Intermediaries • Cyber-Infrastructure 	<ul style="list-style-type: none"> • Web technologies • Technology Convergence • Data & Content Mining &Mngmt • Privacy & Security • Cyber-Infrastructure
Knowledge-intensive Firms <i>Extended-Virtual Enterprise</i> <i>Project-based Networks</i> <i>Local, National, International, Global Markets</i>	<ul style="list-style-type: none"> • Fast Connectivity • Project Management • Digitally Supported Decision Making • Knowledge Management & Sharing 	<ul style="list-style-type: none"> • BB • Cyber-Infrastructure 	<ul style="list-style-type: none"> • Intra-net • Extra-net • Communities of Practice 	<ul style="list-style-type: none"> • Specialised Information • EU & Single Market Information and Opportunities 	<ul style="list-style-type: none"> • Public Sector Information in Support of Big Projects and Leading-edge Industrial and Research Sectors • Cyber-Infrastructure 	<ul style="list-style-type: none"> • Technology convergence • Collaborative Technologies • Information & Data Mngmnt • Cyber-Infrastructure