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Implementing an Information Society in Central and Eastern Europe

The Case of Hungary

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Information Society (IS) as a concept and a reality

General definitions

When using the term information society (subsequently: IS) in a meaning, which comes close to the comprehensiveness of how the term 'society' as such is used in general sociology, we could ask ourselves: Is this seemingly broadest possible meaning suitable for our purposes, i.e. examining European Union (subsequently: EU) and national policies that aim at establishing an IS in the Central and Eastern Europe Countries (subsequently: CEEC), particularly in Hungary? The answer is yes and no.

Yes, because today's information and communication technologies (subsequently: ICTs) cover indeed nearly all aspects of life. No, because without a clear distinction between various areas where these technologies are applied and have impacts on their users, even on the non-users, the concept of IS will remain vague and little operational.

The essential argument for clarity in this paper is the policy context. We are not going to discuss different IS concepts or 'ideologies' in a philosophical manner, but will look at how different political authorities in Europe deal with issues that have been getting imminent due to the rapid innovation cycles in ICT development, combined with certain demographical and social trends on the continent.

Definitions of IS give an initial orientation of what kind of changes are happening in this new environment: As O' Donnell (2001) puts it, IS "refers to a society in which information and communication technologies (ICT), in particular the Internet, play a central role in the lives of its citizens." In an EU publication (European Commission 1999) we find a broader perspective, which is opening up the 'second pillar' of the concept: Progress in technology is just the starting point for "social change related to content, creativity, learning processes, cultural changes, institutional reorganisation and using ICT and information".

Another term, which characterises contemporary policy strategies around the globe is 'inclusive IS'. We can understand from it that there is on the opposite side of the scale an IS development path, where certain groups of the population are left out partially or completely of the fast ICT growth in modern societies. Who are those predominantly concerned by this kind of exclusion?

> *"People with few formal qualifications; the unemployed; unskilled workers in insecure employment who do not have access to computers at work, especially older people, and women, who make up a disproportionately large element of the unskilled, low-paid workforce; people living in households with low incomes; people with disabilities; those living in rural and particularly isolated areas; ethnic minorities; and people experiencing disadvantage for a range of other reasons." (O' Donnell 2001)*

Wherever political strategies and programs are designed nowadays, the specific IS-related elements of social and economic marginalisation of disadvantaged groups of the population are taken into account, a feature we will come back to further on.

There are many qualities of the IS concept that make it look promising in the sense of offering political actors an optimistic vision of future society developments. With information as the proclaimed 'raw material' of the 21st century, many agree with enthusiasm that IS "implies the goal of achieving ubiquitous and accessible information resources as a foundation for economic growth and development." (Mansell/Steinmueller 2000, p. 453) In the European context the importance of networks is obvious: Once the new technologies enable professionals to interact via ICTs across state and language borders, critical developments in both the EU and the Candi-

date States, such as the weak mobility, the ageing of the population, and skill gaps in the workforce of certain sectors or regions could lose some of their threats.

We may keep in mind that cross-border networking as a win-win game has had half-a-century tradition in Europe, a fact that has decisively influenced IS concepts as well:

> *"The vision of the European Union emphasised the role of 'trans-European' networks of all kinds as one means of extending linkages across borders and of achieving advantage from the geographic co-location of the Member States. The European information society has been, from its origins, a transnational construction." (ibid.)*

Selected impacts of IS: On the economy, on education, on public administration

Both believers and non-believers in what is labelled the 'New Economy' are currently witnessing major changes in how goods and services are produced, advertised and distributed. For political actors it is vital to see the inter-connections between the different areas, on which IS leaves its trace. As a consequence we are giving an overview of changes and challenges in the three domains of economy, education, and public administration, and the perspective is again policy-based. The Lisbon strategy of the EU as the document to take the Union into the 21st century points out that what will be necessary for reaching the often cited strategic goal of becoming "the most competitive and dynamic knowledge-based economy in the world" (European Union 2000c) is in fact a catalogue of different, but co-ordinated actions: "building knowledge infrastructures, enhancing innovation and economic reform, and modernising social welfare and education systems." (ibid.)

The Lisbon Summit resumes the underlying challenge of the developments as follows: "Every citizen must be equipped with the skills needed to live and work in this new information society." Young people are acquiring the skills necessary for success in their studies and for flexibility in their working life. Those already working and not being properly prepared for IS are trying to catch up. In both the educational sector and in public and private work organisations there are two main limitation factors to a proper adjustment of skills to the new technologies (cf. Harbour 2001, p. 149): The lack of financial means and the lack of necessary skills. In the first case we can imagine IS scenarios, where e.g. only secondary schools are equipped with modern ICT facilities and Internet access. Another possible situation is a widening gap between employees in public and private sector organisations, because only the latter can afford ambitious retraining programmes.

The second limitation factor refers to the insufficient ICT knowledge of those supposed to train others in exactly this matter. Teachers without a PC at home are not likely to bring major contributions to the skills development of their students. At this stage, instead of contemplating on other potential obstacles, such as lack of motivation, lack of time, etc. we are looking at options for policy responses, namely for education and public administration.

The European Commission admitted recently that attempts to popularise lifelong learning as a core element of IS have actually failed and the term remained "a very abstract concept for many people and for the majority of countries." (Reding 2001, p.54) The essence of lifelong learning is that it comprises all possible forms of learning over a lifetime, overcomes the traditional division between formal, i.e. school, vocational, academic, etc., and informal learning, for which there is typically no certified proof. The latter has been unilaterally depreciated by employers, but has gained more attention now as the practice of recruitment slowly shifts from formal selection criteria to the understanding that "knowledge, skills and qualifications of the individual become perishable goods." (ibid.)

Commissioner Reding names some of the new skills, which are required in IS environments:

> *"to structure and manage information, to distinguish between important and unimportant information, and to work within the multicultural environment that the Internet is making a reality for us all." (ibid., p.55)*

Education is presented as "the 'new frontier', the frontier of the next decade." (ibid., p.57). Europe will not be able to improve its economic performance and reach the goals it set itself in Lisbon, unless the continuous efforts to modernise the educational sector will pass national frontiers, just like IS developments pass them. The so-called open method of co-ordination is a promising first step.

It may be a rather surprising observation that extended ICT use in public administration is often motivated by budgetary arguments in the first place, i.e. it is supposed to reduce costs by shortening administrative procedures, this leading again to a cut in new employment and eventually even in existing staff numbers. (cf. Dutton 1999, p.175) EU policy documents would, though, stress the beneficial effects the citizen draws from the new technologies: Structural reforms in public administration will facilitate interaction, help avoid time-consuming queuing and bargaining in sticky office buildings and introduce more transparency. The European Commission states ambitiously:

> *"The public sector must lead, not trail, in the take-up of new technologies. It must both establish the legal framework for the private sector to flourish and exploit technology to bring more efficient delivery of public service." (European Commission 2001b)*

The three areas of economy, education and public administration are examples for different paces of change towards IS-compatibility: Private enterprises in the knowledge-based economy have to adapt in due time just in order to survive on the market. Their quest for IT specialists from around the world, irrespectively of what political concerns there might be with regards to joblessness and social cohesion in Europe, is an example of this exclusively market-driven pattern of IS strategy. At the opposite end of the scale we find firm resistance to structural and technological reform, namely in public administration environments where rules for governance "have evolved through decades of negotiation and bargaining among conflicting groups and interests to balance a variety of relationships" (Dutton 1999, p.175) and where buzzwords like 'technological change' and 'digital age' are for many of those involved not suitable to motivate substantial changes in their organisations.

IS policy of the European Union

From 1994–2002: Shifting perspectives and priorities

The Bangemann Report of the European Commission, published in 1994, can be interpreted as the real beginning of an IS policy at EU level. Reading this document several years later, we could see it as the result of "faith in market mechanisms as the motive power for the information society, suggesting that the widespread availability of ICTs would bring new opportunities to build a more equal and balanced society." (O'Donnell 2001) What has not changed is the belief in the great potential for job creation offered by the 'new economy'. From 1994 onwards the EU policy for promoting IS has been of a hybrid nature, in the sense that national and EU-wide developments have taken place at the same time under the implicit agreement of all actors that "the value of a common perspective on the broad outlines defining a European information society is recognised." (Mansell/Steinmueller 2000, p.454)

While the operational principles of this – "liberalisation, harmonisation, cohesion, and shared development frameworks" (ibid.) – have continued to be core EU policy, there has been heavy criticism of what is called 'technological determinism' as an important element of this policy until the late 1999. What is meant by this term? It describes the belief of the political class that

> *"both policy intervention and research and analysis should occur 'after the fact'; in other words, policy actions or research should be undertaken after the consequences of technological development have been realised." (ibid., p.454)*

Critics consider this attitude as an unjustified trust in the outcomes of liberalised market economies, which they refuse by arguing that "many technological outcomes are mediated by deliberative processes rather than by technological necessity." (ibid.) Decisions on compatibility, regulation, copyright, hardware, etc. are for them not always the result of the technological superiority of one option against the other. They point to the importance of initial public or private choices, due to the high degree of path dependency in many segments of ICT.

At the end of the day

> *"a company, technology, or market configuration may achieve substantial competitive advantage as a result of its starting position [...] rather than as a result of its inherent superiority." (ibid., p.455)*

Gradually EU policy has shifted its focus from praising the benefits of IS for everybody to considering equally the possible disadvantages for certain groups of the population. The issue of 'info-exclusion' was raised already in 1995, when the Social Affairs DG of the Commission established a High Level Expert Group. Its 1996 report draws attention to those who are left out of the developments, namely "the elderly, early and 'active' retired persons, low income families, the unemployed and women [...], illiterate people in Europe, particularly immigrants and persons with learning disabilities." (O'Donnell 2001). For these 'losers' of the rapid ICT extension in Europe pure market mechanisms obviously do not work. Public action, which has to be active and anticipatory, is needed. Further EU documents, like the Green Paper on Living and Working in the Information Society of 1996 and a following document on the social and labour market dimension of the information society, published in 1997, kept on emphasising the need for social inclusion in IS development. In its latest and most comprehensive approach, the eEurope action plan of 2000, the EU "clearly makes an inclusive information society a central policy concern." (ibid.) The following look at this action plan is going to show that other issues have come to the forefront of political considerations about IS, such as the effects on small and

medium-sized enterprises (subsequently: SMEs) and concerns about privacy and data protection.

The new regulatory framework for electronic communications networks and services, which is about to come into force, addresses fundamental issues as the conditions of access to electronic communications networks, technological convergence problems and the above mentioned protection of personal data and privacy. It is important to state that the five subordinated directives regulate only the transmission, not the content. For the latter the EU encourages its member states in the spirit of subsidiarity "to promote cultural and linguistic diversity and to ensure the defence of media pluralism" (European Union 2002a) It is thus possible for the Union to put up a "technologically neutral" communications legislation, but at the same time allow the member states to take "proportionate steps to promote certain specific services where this is justified, for example digital television" (ibid.)

The eEurope Action Plan of 2000: objectives and measuring indicators

The central EU document for this paper will be the extension of the eEurope action plan to the 13 candidate countries, i.e. the eEurope+ action plan of 2001, to be examined in chapter IV. Already now it can be stated that the differences between the two documents are not essential, keeping in mind that various modifications and additions have been necessary just because eEurope+ does not target existing member states of the EU, but candidate countries. In its outline and structure eEurope+ relies heavily on its predecessor eEurope.

The key objectives of eEurope are:

> *"Bringing every citizen, home and school, every business and administration, into the digital age and online.*
>
> *Creating a digitally literate Europe, supported by an entrepreneurial culture ready to finance and develop new ideas.*
>
> *Ensuring the whole process is socially inclusive, builds consumer trust and strengthens social cohesion." (European Union 2000a)*

The actions envisaged by eEurope are clustered around three main objectives, which are the direct result of what the Lisbon summit had requested:

> *"1. A cheaper, faster, secure Internet*
>
> *2. Investing in people and skills*
>
> *3. Stimulate the use of the Internet" (ibid.)*

For each of these points there are several sub-categories, which are structured along a pattern where first the challenges are described and then the response of the action plan is presented. (for details, cf. chapter “IS-related co-operation of the CEEC with the European Union”.)

The argument is made that the EU has all the potentials for successful performance in the IS-age, but lacks yet the necessary dynamics and innovation. This statement being perfectly in line with the Lisbon strategy, the action plan aims at encouraging all actors to draw maximum profit from ICT development and demands in particular a more "entrepreneurial, service-oriented culture" (ibid.) and an active role of the public sector. While the original timeframe for achieving the quantitative objectives of the plan ends in 2002, a longer-term IS policy perspective of the EU, which has to include the strategy for the accession countries will be needed.

There are no extra EU funds for actions on the basis of eEurope. Financial means are to be taken from existing Union programmes, e.g. SOCRATES in the field of education and training, and the Framework programmes for research and development. Additionally there are national fund-

ing agencies and the EU encourages the private economy to co-sponsor IS development "through innovative and effective public-private partnerships." (ibid.)

Assessing and benchmarking the impact of eEurope: first results

The measuring indicators for the eEurope Action Plan have been in force since November 2000, when the Council approved the list, which is described as being of an evolutive nature and open to possible revision, modification or completion following the further evolution of the Action Plan (cf. European Union 2000b). The data to be used for assessing the national results should be recent and comparable around all EU member states.

Here are some selected indicators to which we will return later for the case of Hungary:

1. **"Cheaper, faster Internet"**

- Percentage of population who regularly use the Internet
- Percentage of households with Internet access at home
- Internet access costs

2. **"European youth into the digital age"**

- Number of computers per 100 pupils in primary/secondary/ tertiary levels
- Number of computers connected to the Internet per 100 pupils in primary/secondary/tertiary levels
- Percentage of teachers using the Internet for non-computing teaching on a regular basis

3. **"Working in the knowledge-based economy"**

- Percentage of workforce with (at least) basic IT training
- Number of places and graduates in ICT related third level education
- Percentage of workforce using telework

4. **"Participation for all in the knowledge-based economy"**

- Number of Public Internet Points (PIAPs) per 1000 inhabitants

The first benchmarking results (cf. European Commission 2001b) were presented to the Stockholm summit in March of 2001, providing an assessment of "the impact of eEurope on society" (ibid.). The importance of the benchmarking exercise is highlighted in a recent statement by IS Commissioner Liikanen:

> *"Europe will not achieve its aim of becoming a world leader in the Information Society without constantly assessing how far we have come, and how far we have to go." (European Commission 2002b)*

The first areas to be addressed are the national public services in the EU. The Commission shows its dissatisfaction with "the contribution, which the plan has made to modernising the civil service in the Member States," (European Commission 2001b) and calls for more structural reforms in order to get services on-line, which are of real added value for the citizen. The fact that the Commission is repeatedly insisting on the model function of public administrations in enhancing a user-friendly IS development, may generate more popularity for the action plan as a whole, because the need to modernise public services presumably convinces many more Europeans than do the 'dry' statistics resulting from the eEurope indicator list.

The results for Internet penetration at home demonstrate that the year 2000 has brought a major breakthrough: Between March and October 2000 the EU-wide rate increased from an average of 18% to 28%. The latest figure available is as of December 2001 (cf. European Commission 2002b) when the penetration rate was at 38%, which clearly shows a slowdown in the speed of growth. While the member states on the lower end of the scale have experienced the biggest

growth rates, the access costs in these countries remain considerably higher than in the leading edge, i.e. the Netherlands, Sweden, Denmark and Finland. Internet access in schools is provided for an average 22 pupils per access point, but the peak values are 74 pupils in Portugal and only five pupils in Denmark and Luxembourg. (cf. European Commission 2001b) Telework is yet marginal in the Union with an average of 5.6% of EU workers using it in one way or the other. The impressive Danish lead in telework is for the Commission "a reflection of a supportive legal environment and favourable tax measures and a positive social framework." (ibid.) The availability of Public Internet Access Points (PIAPs) is very low.

A striking feature is the very uneven growth of Internet access at home on the one side, and the use of prominent web-based services such as shopping on-line and interacting with public authorities via e-government portals on the other side. The report does not comment on popular explanations of the kind that "Europeans insist upon a tangible and personal interaction with the 'shopping' experience" (Mansell/Steinmueller 2000, p.461), but claims with respect to the slow progress on e-government that "what is needed for an effective transition is leadership from politicians." (European Commission 2001b) Growth rates in both e-commerce and e-government continue to be slower than the ambitious goals of eEurope would require them to. In the latest benchmarking report for the Barcelona summit in March 2002 the Commission shows particular concern over a widening "North/South split in the use of the internet for buying online" (European Commission 2002b) and is virtually giving up on the target of getting 100% of basic e-government services on-line by the end of this year.

Nevertheless the Commission is convinced that

> *"there are signs that eEurope has helped to establish an environment supportive to such flexibility. It is already possible to identify an **accelerating, activating** and **priority setting** impact of eEurope." (European Commission 2001b)*

IS in Central and Eastern European Countries (CEEC)

Selected region-wide issues

An excellent assessment of the challenges that the CEEC are facing during their economic and societal transformation since 1989 and in view of their forthcoming EU accession, is provided by the panel report for the "Enlargement Futures Project" of the Institute for Prospective Technological Studies (IPTS) in Seville. Following its mission statement this institute of the European Commission examines

> *"science and technology developments and their growing impact and interaction with the socio-economic context by executing cross-sectoral projects that look at long-term challenges and opportunities for Europe." (IPTS 2001a)*

The IPTS report identified three cornerstones for developing a competitive IS in the region: "networks (infrastructure), applications (info-structure) and skills (capabilities)." (IPTS 2001b), a structure that is basically in line with the eEurope action plan. The two big topics addressed throughout the report are: Firstly, the danger of an enlarging 'digital divide', and secondly, the chances of a new, innovative and ideally 'leapfrogging' ICT industry in these countries, able to find niches, or as the report says, "pockets" (ibid.), where one or the other country acquires world-wide competitiveness.

What heritage did the CEEC bring into the post-socialist transformation? There is a larger extent of 'information illiteracy' and infrastructural backwardness in the region than in the EU member states. This observation does not surprise insofar as the Comecon countries had pursued an economic strategy based on heavy industry like iron and steel even at a time where in other parts of the world the 'chip revolution' and the success story of ICT development had taken off already. This had severe consequences on the ecological balance, employment structures, skills development, etc., and in effect cut the region off from the first decade of the 'e-revolution'.

There are important differences among the CEEC in how closed they were to 'Western' influences: neighbouring Hungary and Romania present striking examples for this: on the one hand a country, which took a rather dramatic turn towards intensified trade relations with the non-socialist world in the 1980s, and on the other hand a state run by a dictator, who cut imports to nearly zero and made the population suffer for the goal of a debt-free Romania.

Two Hungarian authors, the country's former Minister of Education Magyar and the sociologist Karvalics, identify as the major problems characterising IS development in the early transition period (cf. ITTK 1998a): structures and attitudes that developed during socialism; education and culture as the first losers of transformation; the state as an actor whose budgetary means are simply not allowing it to compete with private investors that implement ICT applications in their genuine business interests.

The early 1990s in the region saw a lot of copied IS models from abroad, without paying much attention to what specific use one could make of them and how the assets of one or the other model could effectively be exploited in a transformation country. In the rather chaotic economic and legal environment, which marked the early 1990s in some of the CEEC, and yet without the prospect of EU accession IS strategies were certainly not a priority issue in the region. Poverty rates climbed up, people had to cope with formerly unknown joblessness, and nearly everywhere the political scene was busy explaining the need for a new national conscience.

At the same time, the widening of the income gap and the insufficient welfare system laid the ground for what has become by now a huge challenge for IS policy in the region: The 'digital divide', reaching from lacking 'digital literacy' to the purely material lack of a PC and/or an Internet access. The Washington based Center for Democracy & Technology (CDT), led by the concern "that the 'digital divide' is growing as the pace of change accelerates" (CDT 2000), dedicated a whole report to the question of who in the CEEC has Internet access and who not. It asks both the accession countries and the EU not to neglect the provision of universal telecommunications services in what the CDT sees as a unilateral focus on privatisation and competition in the ICT sector, detrimental to social cohesion and the goal of an inclusive IS development. In the absence of a strong political will to bring affordable Internet access to the current non-users, "there is a danger that individuals will reject the new information culture and its instruments." (ibid.) The report calls on the EU and international organisations like the International Monetary Fund (IMF) and the European Bank for Reconstruction and Development (EBRD) to base their funding in the region on the criterion that the ICT access respects universal service principles, in other words investors and programme managers should always envisage to reach a maximum number of new users and minimise access prices.

Catching up or leapfrogging?

The 'first wave' CEEC including Hungary enjoy obvious advantages from an IS strategy that focuses on catching up with 'Western' patterns (cf. ITTK 1998a): the 'acquis communautaire' will require them to implement the EU regulation in force; the intensive co-operation with EU countries in both private and public sectors is favoured and facilitated by convergent paths of IS development, e.g. when establishing ICT-based network and data bank facilities; a rather large part of EU funding already available before accession targets catching up strategies on ICT equipment.

The leapfrogging argument is also based on the assumption that earlier phases of IS development could be left out in favour of an implementation strategy, which enables the region "to gain a competitive advantage by jumping a whole evolutionary cycle." (Harbour 2001, p.151)

A major argument in this is the prospect of a mature knowledge-based economy, as presented in the Lisbon strategy: where economic performance depends primarily on human resources, which are continuously trained and have up-to-date technologies at their disposal. Leapfrogging effects can be expected also for the change of mentalities and attitudes: In a working and living environment that is constantly transforming, an IS culture might evolve in the medium-term. The new technologies, which are presumed to be more sophisticated and user-friendly than what has been on the market until the late 1990s, could help the CEEC "to leapfrog the overall economic, social and technological arrears of their societies." (IPTS 2001b)

The practical limits to this vision are identified not in technical aspects, but rather in financial and legal constraints, which mainly have to do with the CEEC's different stage of preparation for EU accession. To take Hungary as an example, we can see the beneficial effects of massive foreign direct investment in capital-intensive industries with the background of a stable legal environment. Hungary is one of the countries to draw "advantage of the 'e-revolution' in their plans for developing both economies and civil societies." (Harbour 2001, p.151) In sharp contrast to this are Romania and Bulgaria, countries quite far from offering the assets of location, regulation and skills necessary for enhancing IS development, and are currently neither showing good performance in catching up or leapfrogging.

IS-related co-operation of the CEEC with the European Union

From 1995–2002: Conferences, forums, and finally an action plan

Starting in 1995, the EU extended its IS policy to the region of Central and Eastern Europe. The then responsible Commissioner Bangemann invited ministers and industrial leaders from the region to Brussels for a one day conference on IS development**.** Even countries that had not signed accession agreements yet were represented at the meeting. The principal objective was for the EU to send out the clear signal to the CEEC that they were expected to participate actively in the shaping of information and communication structures (cf. European Commission 2001a). The conference formally started a new co-operational framework, the EU-CEEC Information Society Forum.

A consecutive conference in Prague 1996 put together an action plan that identified areas for IS pilot projects. This early stage of EU policy on IS did not see the European Commission giving an input comparable to that of eEurope in 2000. Apart from the incentive to work on some of the pilot projects, the individual countries remained completely free to pursue their own strategies of IS policy. "The projects were designed to be 'trailblazers' by demonstrating the capability of ICT in the public and private sectors." (ibid.)

This voluntary approach, whose coordinating mechanisms were certainly weaker than what the currently used open method of coordination offers, reached its end with the third EU-CEEC IS Forum in October 1997. The enlargement negotiations were to open up soon and the EU was also heading into a new phase of liberalisation for the Telecommunications Market. This final conference agreed on actions to be undertaken by the CEEC, the European Commission, and the private sector. A more important decision, seen today as the essential step on the way to the eEurope+ action plan, was the establishment of a Joint High Level Committee on IS, comprised of EU and CEEC government representatives, which was given the task to monitor the implementation of the Forum conclusions and to come up with recommendations for a follow-up ministerial conference.

This conference took place in Warsaw in May 2000 and clearly marks the beginning of a new phase in EU-CEEC co-operation in IS policy. With the Lisbon summit and the eEurope action plan in mind, the CEEC agreed to "to launch an 'eEurope-like Action Plan' by and for the Candidate Countries as a compliment to the EU political commitments" (ibid.). This plan should enable them to contribute their part to the ambitious strategic goals of Lisbon without being full EU members and addressees of eEurope yet.

Besides the EU-CEEC co-operation initiated by the European Commission, there were several other public and private actors, who organised meetings with experts from both sides, published reports on different aspects of IS development and drew up prospective studies on how the region could best exploit the potential of the new technologies. The IPTS, in its 'Prospective Dialogues' in Berlin (1999) and Tallinn (2000), provided an all-European forum for the discussion on IS policy matters. The 'Global Internet Liberty Campaign', an international NGO, hosted an outstanding conference on "The Outlook for Freedom, Privacy and Civil Society on the Internet in Central and Eastern Europe" in 1998, out of which grew the above mentioned CDT report on the 'digital divide' in the region. Finally, the World Internet Project (subsequently: WIP), an initiative of the UCLA in California and the NTU School in Singapore issued an overview on Hungarian IS development even before the first 'official' policy assessment had been conducted. Through the Internet it has become convenient to find these and other examples of IS-related co-operation with the applicant states.

The eEurope+ Action Plan of 2001: extension of eEurope

In February 2001, the European Commission invited Cyprus, Malta and Turkey to join the CEEC in preparing a new action plan for IS development policy. The 2000 ministerial conference had already found a common formula between the candidate countries and the EU: On the one hand the eEurope action plan of 2000 stands as the dominant reference document, which is why eEurope+ can be characterised as an extension of eEurope. On the other hand, it was particularly important for the candidate countries that the new action plan would build upon a fair assessment of what had been achieved up to that date in political, institutional and economic terms.

The eEurope+ Action Plan was launched by the Prime Ministers of the candidate countries at the Gothenburg European Summit in June 2001. We are now taking a closer look at this plan and are concentrating on those features, which make eEurope+ different from eEurope – differences that are first of all due to the different stage of development of the candidate countries. For this paper we chose Hungary as an example of national IS development in the region. Nevertheless, the eEurope+ action plan is by now the only official EU document dedicated to all candidate countries and therefore is *the* reference point for examining the ideas of policy makers in Brussels and CEEC capitals about IS development.

For defining the status of eEurope+ the authors clarify that it "should not be perceived as a substitute for or interfering with accession negotiations." (Candidate Countries and European Commission 2001)

At the same time the candidate countries emphasise that they will need EU support for pursuing the actions outlined in the plan, just as they rely on assistance for implementing the 'acquis communautaire' during the accession negotiations. The Union itself demonstrates a vital interest in avoiding a situation where the applicant states would fall further behind the EU level of IS development. The motivation, or even justification for putting up a special action plan in parallel to the regular procedure of accession negotiations, reads as follows:

> *"The implementation of the acquis alone is not sufficient. The modernisation of the economy, the changes in business processes, the functioning of governments, and the changing relationships between citizens, businesses, and governments require a broader based policy approach." (ibid.)*

Addressing the issue of funding, the plan identifies national budgets and private sector investments as the primary sources. This may make us wonder: What if there are too many alternative budget priorities, especially as budget lines in the CEEC are tight anyway? What if a change of government brings a shift in priorities, possibly detrimental for certain national IS projects? Finally, to what extent can the private sector feature in a strategic action plan like eEurope+, as a partner in implementing policy objectives? Our later analysis of Hungary will try to give some insight into these questions.

To enable the comparison of data between eEurope and eEurope+ and create a reliable empirical basis for monitoring and benchmarking the performance of the candidate countries, the same indicators are in use as for the eEurope action plan. The national statistical offices and other relevant institutions are integrated in the discussion of methodological and practical issues around data collection and benchmark design. A first progress report was presented in spring 2002, an interim report at the end of 2002 and the final progress report at the end of 2003.

One additional objective became part of eEurope+: "Accelerate the putting in place the fundamental building blocks of the Information Society" It addresses the fact that in some candidate states 'fundamental' issues like having a telephone line in one's own house and not just at the neighbour's, or having access to the Internet in at least walking distance, e.g. at a public internet access point (subsequently: PIAP) cannot be taken for granted, whereas at the time when eEu-

rope was approved, the EU citizens could more or less enjoy universal access to basic telecommunications, favoured not the least by liberalised market regulations.

The technology implication of this is that traditional fixed lines should be just one option among various connection solutions, and more recent technologies such as wireless or cable access could give substance to the idea of leapfrogging earlier EU developments. Accordingly, eEurope+ includes indicators for fixed telephone services and for what is circumscribed as "some form of telecommunications that is capable of providing access to the Internet" (ibid.)

Even though the other eEurope+ objectives are copied without modifications from the eEurope action plan, important precisions are made about the specific situations and challenges in the candidate countries.

- In order to progress on the objective of a **"cheaper, faster, secure Internet"** a two-folded strategy has to be pursued: Promoting both the spread of high quality infrastructure, e.g. fast Internet connections and digital TV, and continuing to support more traditional telephone and Internet access, especially in areas that lag behind in IS development.

  The strengths of the candidate countries, especially the CEEC, in academic research and teaching have to be part of an increasing networking between universities and colleges. The fast development pace requires that the 'brightest minds' are provided with the best study conditions possible. Some applicant States are so small that enlarging their scientific bases by making use of the newest communication technologies is absolutely necessary. On the other side, we have to acknowledge that the EU member states with their indeed modest co-operation in educational matters cannot claim to be a perfect example for this cause.
- In order to progress on the objective of **"Investing in people and skills"** eEurope+ proposes an active policy management of educational reform, as outlined in the Bologna Declaration of 1999. When it comes to the innovative integration of ICTs in this change process, the candidate countries are supposed to follow the EU's eLearning initiative. The priority actions of this initiative fit the situation of the CEEC, which are lagging behind in infrastructures and equipment, but also need a strong ICT training scheme for both teachers and students at all levels. The concrete objectives, given out for the EU and not the candidate countries, include installing Internet access in all classrooms and arriving at a ratio of not more than 5–15 students per multimedia PC. This seems very ambitious for some applicant states.
- In order to progress on the objective of **"Working in the knowledge-based economy"** the action plan refers to the EU Employment Strategy that is organised around the so-called Luxembourg process. Even though the candidate countries cannot yet take part in this continuous monitoring and benchmarking framework, they pledge to enhance co-operation in the form of a social dialogue now:

  > *"Candidate Countries call on social partners and the private sector to work together with their governments to seize the employment potential of the knowledge-based economy and use information society issues as a driver for developing the social dialogue." (ibid.)*

  Training courses for the labour market should include ICT parts, but in an educational design that is able to "promote gender equality in such courses (both in work and in educational institutions), using PHARE funds where appropriate." (ibid.). After the end of socialist 'full' employment the situation for women in the CEEC became precarious and social scientists from the region have been warning since the early 1990s that those societies were actually re-establishing patriarchal schemes in employment and familial role models. It seems appropriate in a situation, where the candidate countries are not formally

participants in the EU's gender mainstreaming policy, to raise awareness for gender issues.

- In order to progress on the objective of **"Participation for all in the knowledge-based economy"** the candidate countries want to gather more information on the phenomenon of 'info-exclusion' by collecting relevant demographic and socio-economic data. A special focus will be on people with disabilities, with regard to the immense potential that ICT development holds for this group in education, employment and daily life. The eEurope+ action plan makes a kind of a mission statement, which is in line with the non-discrimination objectives of the EU's social agenda:

  > *"It is essential when developing relevant national action plans that the needs of all, whatever their age, are taken into account to ensure equal opportunities and to avoid discrimination in reform and in the modernisation of economies and societies." (ibid.)*

The candidate countries are aware of the non-binding character of the action plan for national policies, but come up with an operational scheme as well: For fighting 'info-exclusion' the national strategies should be "co-ordinated at European level through benchmarking of performance and exchange of best practice between the Candidate Countries and EU-15." (ibid.)

IS policy in Hungary

The background: a successful economic transformation with some drawbacks

The second half of the 1990s saw a very positive macroeconomic development in Hungary. However, it seems the country is not doing enough to secure its development basis in the long-term perspective:

- **The total expenditure on education** as a percentage of GDP stays behind what other candidate countries can offer: In Hungary it is around 4.5%, while Cyprus and Estonia spend a considerably higher share on their future 'human capital'. (cf. European Commission 2002d)
- **The share of research and development (R&D) expenditure** was still weak in 1998, but shortly afterwards there were some major foreign investments of multinational companies like NOKIA and AUDI for establishing parts of their R&D facilities in Hungary. Extension from just producing high-tech items in Hungary to a full infrastructure including R&D, quality suppliers and modern distribution chains will be a pre-condition for the country to continue its catching-up towards the present EU member states.

Hungary's excellent record on FDI influx has surely created enormous innovation potential, which can be realised through multiplication effects, e.g. a quality push for local suppliers, fast progress on infrastructure, and permanent training of staff. However, the actual proof for a deep-rooted change towards an entrepreneurial culture would be the success of Hungarian-owned SMEs.

In labour economic terms, Hungary has been successful in increasing its productivity and cutting joblessness to slightly above 6% of the workforce in 2001. European Commissioner Diamantopoulou, during a visit to the country in November 2001, urged the government to work harder on improving the overall employment rate of 56.4%, which stays significantly behind the EU 15 average of 64.3%. Pointing to the need for more work incentives in the tax and benefit systems and a better match between labour demand and supply, the Commissioner expects Hungary to show more "commitment to the EU's fundamental goals of competitiveness, employment and social cohesion." (European Commission 2001c) High rates of joblessness among the young and less educated, inadequate initial education and further training and the concentration of unemployment in certain regions of the country are among the structural problems the Commission has identified.

In a Joint Assessment Paper, signed on 15th November 2001, the Commission and Hungary agreed on an

> *"ongoing monitoring of the Hungarian labour market in the run-up to accession. This will ensure the country is sufficiently well prepared to implement the established European Employment Strategy once it joins the EU." (ibid.)*

Another issue in this context are the operational difficulties the EU has encountered with its Phare support in Hungary. The 2000 Phare report identified

> *"an urgent need to increase capacity, competence and experience of the entire Public Administration Sector in Hungary, with special emphasis on civil servants involved in the implementation of EU funded Programmes and the accession process." (European Commission 2001d)*

The main deficiency of the national Phare management in the past years has been the phenomenon of 'fear of being left on the shelf', which means in practice that the bulk of contracts is not completed until the very last months of a two-year contracting period. In many cases this does not leave enough time for an efficient re-tendering or re-allocation of funds.

College of Europe professor and Hungarian economist Inotai analyses this missing "absorption capacity" (Inotai 2002) as just one symptom of the insufficiencies in the institutional system. Inotai and the European Commission agree on the need for a consequent decentralisation of funds management,

> *"moving from the current ex-ante system of control for contracting and disbursement, to a system of ex-post controls more similar to that used in member states." (European Commission 2001d)*

Calling for more 'EU maturity' in Hungarian public administration, Inotai argues that the financial conditions for Hungary after becoming member of the EU will also depend on how the country has administered the pre-accession funds.

IS policy before 2001: priorities, responsibilities, actions

According to a Hungarian source (ITTK 1998b), a document on IS development, the so-called National Information Infrastructure Development Program, was launched as early as in 1987. Our following summary refers however to the assessment of Hungarian IS policy, which was issued by the interministerial conference of Warsaw in May 2000. It is a concise wrap-up of what happened in the second part of the 1990s.

As a first step towards a more strategic approach to IS development a national information strategy was published in 1995. Without becoming official policy, it laid the ground for further initiatives in the area.

The term 'action plan' first appears in 1998 when the Hungarian government issued its decision 1071/1998 (V.22) on Communications policy, thought to cover a mid-term period from 1998–2005. Decision 1066/1999 (VI.11) on the further development of IT in the state administration was another key document because it assigns to the government the role of an active IS promoter.

Through a national funding scheme the government supported investments for applied research and development, a measure that resulted in 165 projects with Hungarian participation in the 4th EU Framework Programme for R&D, mainly in the fields of agriculture and fishing, biomedicine and biotechnology, environment, and a handful of funded ICT projects. Big multinational companies established plants in Hungary and some of them with time expanded their activities to R&D. Nevertheless, as professor Karvalics, director of the Hungarian Institute for IS and Trend Research (Hungarian acronym, subsequently used: ITTK) stressed in an interview, this kind of companies might come and go quickly in the IS-era:

> *"Direct physical location is becoming less and less important. It has only accidental importance, e.g. for consumption and the flexibility of people to change their job. For a global citizen it is not a big effort to 'jump' over the ocean and work three or four months in Edmonton or somewhere else, and then come back to Debrecen [a Hungarian city; M.S.]. For me, it is a very good thing that the development branches of these multinational companies are here, but be careful with overestimating the importance of this." (Interview 1)*

The newly created "Bay Zoltan foundation for applied research" follows the model of the German Fraunhofer institutes. It has been co-operating in joint research projects with international

partners, e.g. "about data mining in manufacturing, IT in health services, recycling, modelling in biotechnology and materials technology." (High Committee 2000)

Pioneer IS projects:

The Hungarian 'Schoolnet': modernising education

Robert Pinter, research fellow at the ITTK, describes the circumstances of the Schoolnet launch in autumn 1996:

> *" The Schoolnet was a partisan action. It was initiated by a member of the former government, Balint Magyar, the then minister of education. But the government did not know anything about it until it became one of the biggest projects of the ministry. It was a partisan action of one minister, who was very fond of the idea. Afterwards of course they told the outside: We have made the Schoolnet! From the outside it seemed that Hungary is doing its job very well, because it has this Schoolnet." (Interview 2)*

The proclaimed objective of Schoolnet was to connect every secondary school in Hungary to the Internet within two years (cf. ITTK 1998b), while for primary schools the respective initial deadline was 2002. Additionally, the program promised special assistance to ethnic Hungarian pupils in the neighbouring countries to help them keep in touch with cultural developments in Hungary. During the first phase of Schoolnet, investment in infrastructure enjoyed clear priority. Goals included having a room with 6–16 computers per school and standard installations like a local network and an on-line Internet connection. More than 1200 schools were equipped with a 64 Kbps digital connection and full-scale, unlimited Internet services. The central government budget covers the costs of the leased lines as a general rule. (cf. High Committee 2000)

It became obvious until 1998 that for a program like Schoolnet, which enjoys massive public funding and is a prominent driver for IS development in the country, instruments for continuous evaluation and assessment in a decentralised and impartial manner are essential.

When the basic ICT equipment was in place for the secondary schools, two development issues gained importance: content development and teacher training.

Schoolnet had funded multimedia textbooks, visual aids and ICT curricula since 1997 and teacher training had been assigned the task "to lay the foundations of 'human infrastructure'" (ITTK 1998b). In practice, though, the first two years of Schoolnet saw government funding schemes, where tenders for infrastructure clearly dominated.

The Ministry for Education then started to fund interdisciplinary multimedia materials for a single 45-minute class. Examples of these include: Multimedia Starters' Kit, Internet Starters' Kit, Music Kit, and resources on the Schoolnet homepage. The materials had to be in line with the subject areas of the Hungarian national curriculum, while the category 'fresh knowledge' provided an option for new content. This purely tender based scheme did not fulfil the expectations, so that in 1999 a permanent team of editors was installed, each of them responsible for a limited area of subjects.

Conceptual difficulties during the first years could not endanger the overwhelming success the Schoolnet had in numerical terms. The latest statistics (cf. TARKI 2002)[1] illustrate that within just half a decade the clear majority of Hungarian schools has been connected to the Internet:

[1] The first Hungarian benchmarks for the eEurope+ indicator list can be found in Annex 2 to this thesis.

Budapest schools	87%
County capital schools	91%
Schools in other towns	88%
Schools in smaller communities	65%
Overall	77%

(Source: TARKI 2002)

The public investment figures for purchasing ICT devices and services in 2000 give an idea about the focus of the program:

Schoolnet Spending for purchasing ICT devices and services in 2000

Hardware	4.3 Billion Forint[2]
Software	1.3 Billion Forint
Creating and developing Internet homepages	0.2 Billion Forint

(Source: TARKI 2002)

The prognosis for 2001 was that the value of software purchases would rise by 6%, while nearly 1/3 more was to be spent on creating and developing Internet homepages of schools. (cf. ibid.) Infrastructure still dominates in the Schoolnet program.

Beyond the technological aspects, the 2002 assessment presents insufficiencies in the actual use of IT equipment within regular education arrangements. PCs are rarely part of school lessons that do not explicitly have informatics on the learning agenda. The study identifies as reasons for this prevailing pattern:

- low IT literacy of teachers;
- not enough computers around;
- organisational problems: PC rooms are separate and accessible only for informatics lessons;
- not enough quality materials are available online.

Progress on teacher training has certainly been made, still the figures show a 'literacy divide' among the staff: 55% of primary school teachers, who are not informatics teachers, followed such a training, while for secondary school teachers this ratio is 60%.

Those who stay apart, mostly argue that a lack of time and equipment holds them from participating in IT courses.

The picture we get of the Hungarian pupils is encouraging: Among those older than 10 years, roughly 1/3 are Internet users, while a majority of 15–18 year olds goes on-line. A common problem for these youngsters is the limited access to school PCs for free-time use: Even in institutions with 'liberal' rules pupils stand in queue for one or two computers in the afternoon. While in urban environments PIAPs can substitute for this situation, children in smaller settlements often do not have an alternative access.

The 'Telecottage' movement: reinforcing rural development with PIAPs

In the eEurope+ action plan the candidate countries fixed the operational objective to

> *"set up public Internet access points in public spaces and/or establish multimedia, multi-purpose tele-centres in communities providing access to training and e-work*

[2] Exchange rate in March 2002: 1 EURO = ca. 240 Forint

facilities, where appropriate using PHARE Funds." (Candidate Countries and European Commission 2001)

In Hungary there are three different types of PIAPs: Public libraries, telecottages, and Internet cafés. (cf. TARKI 2002) The latter ones are run as commercial facilities and can usually be found in towns and cities, but hardly on the countryside. In many of the smaller settlements Telecottages are the only PIAPs and offer more than strictly ICT services, but substitute for otherwise lacking community services.

While internet cafés can offer additional services like scanning and CD writing more easily, the attraction of Telecottages lies in their vicinity to the target audience and their integration into community life, in particular if there is no other public space to meet.

The Telecottage movement plans a rapid expansion in the upcoming years. Their prognosis is ambitious:

Development prognosis for telecottages in Hungary (all sizes and organisational forms)

Year	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
No. of Telecottages	2	2	5	20	100	200	300	700	1200	2000

(Source: Pinter 2002)

The full implementation of these planning figures would mean that a large share of the 3200 small communities in Hungary will have a publicly funded PIAP. Some criticise the focus on rural areas, arguing that the average living standard in Hungary neither allows town inhabitants to frequent commercial Internet access points or to go on-line from home.

In a 1999 sociological analysis of the Telecottage movement, ITTK research fellow Molnar finds out about the specifics of this PIAP approach. Quantitative comparison with other countries presents Hungary as an outstanding performer:

The number of telecentres world-wide (figures for 1998)

USA (Community Technology Center)	260
United Kingdom	200
Hungary	110
Australia	60
Estonia	50
Germany	47
Finland	40
Austria	17
France	10
Romania	1
Belgium	1

(Source: ITTK 1999a)

But the most eye-catching difference to other PIAPs comes through the types of services that are actually made use of by the visitors:

Main services of Hungarian Telecottages and proportion of visitors using the services

Office services (Blue-printing, fax, etc.)	85%
Telecottage as community/social space	70%
Internet use	61%
Providing information	57%
Computer games	51%
Consultation	50%
E-mail	44%

(Source: ITTK 1999a)

Another, more detailed analysis of user preferences illustrates how many purposes a Hungarian Telecottage can serve:

For which activities did you already visit the Telecottage?	Sometimes (in %)	Often (in %)
Take part in courses	27	11
Use office services	39	46
Surf the Internet	36	25
E-mailing	24	20
Use data bases, do information research	34	23
Play games, e.g. on the PC	31	20
Create web pages	6	1
Do telework	4	2
Settle official matters, e.g. tax declaration	24	10
Read paper or online newspapers	39	15
Meet friends, socialise	34	36
Request advice/consultation	34	16

(Source: ITTK 1999b)

Characterising a telecottage as a provider of public ICT access is only one side of the coin. Non-electronic information (newspapers, personal advice, etc.) and services (hard paper copying, handing in forms, etc.) play an important role in these centres. This creates rather the impression of a non-commercial version of several stores in one, which moreover is a community space. One must not forget that in many of the places where Telecottages exist there is actually none of these stores around. The strong community features do not come by chance since an overwhelming majority of Telecottages has been established by 'civil society' associations, foundations or public utility companies. NGOs in Hungary have taken an important stand against the growing inequalities in a transition market economy.

More than 2/3 of the visitors meet friends and socialise in the centre. A majority of all users observes a change in the community since the Telecottage has been set up. Roughly half of them would like to see more community-related programs to be offered by the centre. These figures suggest that many Telecottages are not developing in the direction of commercialisation and do not shape their profile as an ICT provider alone. Most telecottage leaders who were interviewed by Molnar (ITTK 1999a) estimated that the new technologies will be tools and not final goals for their centres. They stick to their mission of providing a new basis for community life in the IS-era. Behind this attitude is a deep-routed belief in what Molnar calls "the paradigm shift of the information society affecting smaller communities" (ibid.).

The Telecottage movement sees itself at the beginning of a process, wherein community issues, human interaction and the new technologies are integrated in an innovative framework that promises to make smaller settlements more attractive for the locals and for needed future investors. These settlements are currently in a weak position to retain their population. The Hungarian capital Budapest, whose population is 3 Mio. in a country of 10 Mio. and which has the highest per capita share of FDI, as well as the prospering Western part of Hungary provide strong incentives for an ongoing in-country migration. The government has included rural development as a main objective in its strategic "Szechenyi" plan. Setting up Telecottages in communities of not more than 6000 inhabitants is one of the measures it supports with considerable budget means.

One of the insights from Molnar's analysis is that the Hungarian telecottage movement, in contrast to comparable organisations abroad, restricts its activity to providing public space for new technologies and human interaction in smaller communities, so that aspects of community control and solidarity are present as well. It is and wants to remain an initiative, which combines the provision of ICT facilities with a strong vision of rural development. In its quest for a sound alternative to commercialisation, the movement will depend heavily on public funding for many years to come.

IS policy from 2001 onwards:

The 'Szechenyi' plan as national development plan

Two introductory statements give an impression of how Hungarian IS policy, particularly in relation to the EU15, are perceived in the country. The first one is by ITTK research fellow Pinter:

> *"The EU is very important in the development. It is made up of countries, which are examples for Hungary. This is very important in the area of IS development. Without the EU maybe nobody among Hungarian politicians would know about IS." (Interview 2)*

The second statement is taken from a campaign speech of Prime Minister Viktor Orban and explains to the Hungarian public the vision the government has about development:

> *"We succeed with some difficulty [...] in putting together the Hungarian economic model, which makes us hope that Hungary will catch up with the most developed countries of the world within one or two decades. For this we made the Szechenyi plan, which does not try to merely copy the examples from the Western European manuals or to walk in the path of one single Western European country. Instead it tries to make use of everything. The result is a plan, which has in its back the philosophy of Szechenyi [a 19th century political leader in Hungary; M.S.], whose perspective of the world was neither liberal, nor conservative, nor retrograde, nor progressive, but was simply a Hungarian perspective. So we have a Hungarian economic model, relying on a Hungarian perspective of the world. A model that relies in fact on the Szechenyi plan." (Orban 2002)*

While Pinter and Orban both mention the EU15 as a provider of inspiration for the Hungarian development, the latter emphasises the originality of national policy. Pinter's following comments on how IS became a priority issue in Hungarian politics are certainly not to be taken as pure objectivism, but illustrate what the combination of outside pressure and inside lack of resources can mean in practice:

> *"One can say that the new government that took office in 1998 did not do anything about IS. But after one or two years they realised that IS development is a very important topic. They saw that in the EU one of the main policies is IS, so if Hungary wants to be a member of the EU it must do something. It was partly a must from abroad. Secondly, it was a very good policy area for showing that we are very developed! So, first it was only a marketing or a PR tool for the government. Afterwards, there mind changed and they realised that it is very important from a development point of view, in the sense that IS will come and we must get ready for it.*
>
> *[...]The Government Commission for Informatics started its work in 2000 and first wrote the Szechenyi Plan. But important parts of this plan were written in other ministries, because the 'mother' ministry is the Economic Ministry. After that they realised that they must make another plan, the National IS Plan. Today nobody really knows what is the relation between the National Plan and the Szechenyi Plan." (Interview 2)*

The Szechenyi plan as the national development plan of the Hungarian government started in January 2001 and is thought to be the answer to the challenges of the 'knowledge economy'. The need for Hungary to catch up with the EU15 goes hand in hand with the establishment of a modern IS in the country. The FIDESZ government has identified various areas where, despite the impressive economic progress in recent years, some sort of state intervention is justified,

e.g. improving infrastructure in remote regions and promoting Hungarian-owned SMEs. Throughout the plan we find a strong emphasis of the fact that Hungary has to take development into its own hands and should not give way only to foreign actors. As right wing political parties like the Hungarian Party of Justice and Life (Hungarian acronym: MIEP) gain popularity, the government has clearly shifted from its former liberalism to values-led, national-conservative guidelines for its policies.

The Szechenyi plan consists of seven programs, only one of which has a direct link at first sight to IS, i.e. the program for IS and economic development. However, five of the seven programs feature subordinate measures for IS development in selected areas (cf. Pinter 2002):

- Strengthening enterprises:
  - Helping SMEs to get connected to the 'eEconomy'
  - Helping IT start-up companies
- Developing and innovating research:
  - Setting up a network of institutions for innovative development on the regional level
  - Providing more ICT facilities
- Developing tourism:
  - Expanding electronic access to tourist information
- Building the regional economy:
  - Creating regional e-marketplaces

The chapter of the Szechenyi plan most relevant for this analysis remains nevertheless the program for IS and economic development. The following subprograms and measures, set the reference point for all projects that want to enjoy support from national development funds:

Subprogram 1. e-Government

Measure 1. Strategy and monitoring

Measure 2. Electronic government, service providing state, electronic democracy

Measure 3. Legal environment, standardisation

Subprogram 2. Improvement of IT availability and access

Measure 4. Community and institutional access

Measure 5. Individual & family / home availability and access

Measure 6. Local e-governments, intelligent settlements (regions, towns, villages)

Measure 7. Software project for the dissemination of freeware

Subprogram 3. Creating the foundations for the e-economy

Measure 8. Electronic business

Measure 9. Development of distance working

Subprogram 4. Increasing information culture and improving accessible contents

Measure 10. IT literacy, life long learning, distance learning

Measure 11. Contents development, digitisation of cultural values (libraries, public collections)

Subprogram 5. Improving quality of life and raising awareness

Measure 12. Involvement and support of civil organisations and movements

Measure 13. Involvement of unprivileged groups

Measure 14. Raising forward looking social awareness

(source: IKB 2001)

The national IS strategy and action plan

The step from the Szechenyi plan to the national IS strategy was not huge. The strategy follows the eEurope and eEurope+ objectives. Pinter claims that by the beginning of 2001 the political scene in Hungary became aware of what IS would mean for the next years' development of the country and for its forthcoming EU membership. (cf. Pinter 2002) The national IS strategy of May 2001 can be seen as an extended version of the IS chapter of the Szechenyi plan. The double effort of making IS a key element of a comprehensive national development strategy and putting it in line with EU proposals, has not resulted in the best management of resources. On the other hand, the Hungarian government was eager to present an ambitious document like the Szechenyi plan and to demonstrate its determination to lead the country in the 21st century. The European Commission took its time with eEurope, but once it was published and approved by the EU15, the candidate countries were the ones to feel time pressure and demanding expectations from Brussels.

The funding of Hungary's national IS strategy goes through the Szechenyi plan, precisely through the above listed 14 measures within the IS chapter of this plan. Therefore, for the strategy it was important to satisfy the formal preconditions of national funding. A good preparation for future EU funds lies in the principle of multiple funding sources: Government support for IS development projects depends on the ability of the applicant to raise a certain share of the budget independently.

Like eEurope the Hungarian IS strategy functions as an action plan: The objectives are made operational by identifying responsible actors and deadlines.

A regular revision of the strategy will be imperative, something that has had its impact even on the logic of numbers in the title: The first official version of May 2001 is presented as the "1.0 version". While the IS strategy includes programs designed for a period of up to five years, the action plan does only cover the years 2001 and 2002. This is why in the course of this year, and upon the first Hungarian benchmarking results (cf. points 5.1 and 5.2. of this chapter) a new action plan for 2003 onwards will be approved by the new government.

At about the same time eEurope+ is going to be reviewed, so that we can imagine a close cooperation between Budapest and Brussels. The national strategy underlines its goal that

> *"the priority projects [...] of the development of the information society will be completed before January 2003, assuring that Hungary is ready for the planned date for Hungary's accession."*

It then acknowledges:

> *"Naturally, an information society for all will not become a reality within this time frame and there will undoubtedly remain issues to be resolved beyond this date." (IKB 2001)*

Areas and results of public tenders for IS projects

The government funds for the implementation of the IS action plan are distributed by invitations of tenders, issued every 6 months and inviting applications of both non-profit and profit organisations. The overall sum of public funds available is 40 Bio. Forint. The analysis of Pinter covers the experiences for the second half of 2001 and the first half of 2002. The revision of the action plan in late 2002 will include an evaluation of the entire three rounds of invitations of tenders. The system is open to modification, if it should lack transparency, impartiality, etc.

For the second half of 2001 the government put its focus of action on the following domains (cf. Pinter 2002):

- **IS-research and strategic IS-planning**: Supporting Hungarian institutes, which publish international experiences, or which set up and update databases for public use.
- **Integration of civil society organisations** into IS development, by supporting their IS-related activities.
- **Hungarian content**
- **Raising awareness for IS**, increasing the general public's knowledge about it

The number of applicants in this first round was exceeding expectations. For research and planning alone 70 winners of public money could be selected. The financial support became 400 Mio. Forint instead of the originally estimated 200 Mio. Forint. Civil society organisations gained a total of 1.6 Bio. Forint in this first round, out of which 1.3 Bio. Forint are to be spent on the purchase of 4500 computers. The explanation for this dominance of investment in infrastructure is that most NGOs in Hungary have remained poorly equipped with ICT throughout the 1990s. Without massive public funding an alternative to the commercialised IS of multinational companies could hardly emerge. The remaining 300 Mio. Forint for civil society were allotted for establishing 165 new Telecottages in rural areas. Finally, the funding committee assigned 250 Mio. Forint for technological solutions with Hungarian content, and another 350 Mio. Forint for improving awareness and knowledge about IS.

In autumn 2001 a second invitation of tenders was published, addressing primarily teachers and civil servants as target groups, and libraries and schools as areas for IS development. The government pursues the objective of providing Internet-capable PCs for 20.000 teachers and civil servants through a 5.5 Bio. Forint funding. Their employers, i.e. schools and local administrations, should contribute 25 to 50% of the purchasing sum. An interesting feature of this initiative on 'e-access': Every new owner of a publicly subsidised PC will have to acquire the European Computer Driving Licence (ECDL) and is heavily encouraged to register for other programs of distance education as well.

Tenders are also expected for:

- Equipping public libraries with PCs: A standard of 6–10 PCs per library in order to increase the number of PIAPs, especially in communities where there are not enough Telecottage facilities
- Equipping 200 primary and secondary schools with PCs for adult education
- ICT support for SMEs that have growth rates of minimum 25% p.a.: 500 Mio. Forint for hard- and software purchases of 100 SMEs.

Assessing and benchmarking IS development in Hungary:

The national 'World Internet Project' results

The World Internet Project (subsequently: WIP) is an international project of comparative research and examines the impacts of the Internet on society, in particular the differences between users and non-users. The project started in summer 1999 as a joint initiative of the UCLA Center for Communications Policy and the NTU School of Communications Studies in Singapore.

WIP brings together project partners from a growing number of countries world-wide. Until December 2001 there were 14 national participants. Italy, Sweden, Germany, the UK, France, Finland and Hungary represented Europe.

The field survey for WIP in Hungary took place in September 2001: 5032 people above 14 years of age were interviewed face-to-face. (cf. WIP 2001, p.39)

IS development is a 'fast moving target': the following results and figures cannot be much more than a spotlight of the development in Hungary. Still, some general conclusions stem from these

findings, e.g. on the distribution of Internet access, on Internet users' profiles, and on attitudes towards new technologies.

The starting point for Hungarian IS development is not really favourable: In autumn 2001 merely 17% of the population used the Internet, to a large part not even from home. This is a poor result compared to the Internet penetration rate in EU households, which was 38% in December 2001 (cf. European Commission 2002b). But we have to keep in mind:

- Within the EU15 the national figures vary significantly: Only one in ten Greek households has an Internet access. The question for Hungary would then be, which country or region it should compare itself with. An over ambitious government, possibly in an attempt to convince foreign investors, might set the short and medium-term goals too high, while other interests could lead to a preference for comparisons with countries like Greece.
- Internet indicators for 1998 (cf. Annex 1) show extremely low rates of Internet use among the CEEC: Only Estonia and Slovenia surpassed a 10% user ratio, and Hungary only four years ago had a total of 400 000 Internet users in a population of 10 Mio. From this perspective we must speak of a tremendous pace of development in all CEEC.

After these remarks on the relative nature of IS statistics the question comes up: What indicators can be signals for development patterns in a transformation country like Hungary? For us these are:

- **the dynamics of the increase in ICT penetration rates**, i.e. the growth rates;
- **the extent of regional** disparities;
- **the gap between different groups**, e.g. by the criteria of income, education, age, living environment, household size, etc.
- **the attitudes and intentions of those not connected**, providing hints for a prognosis on future penetration patterns.

We are going to take these indicators into consideration for the following selected outcomes of the WIP study in Hungary:

In 22% of Hungarian households there is at least one PC, with or without Internet access. The growth in home PC penetration has been only 5% between spring 2000 and autumn 2001 and is considerably smaller than in the EU15, where numbers jumped up from 18% in March 2000 to the above-mentioned 38% in December 2001. If this indicator decided on Hungary's ability for catching-up, the country would clearly fail. But why is it that households are so hesitant about PC purchases? The income situation of the individual household is the decisive factor for whether it has a PC or not.

When defining five discrete layers of income distribution among the population, the lower four of them do not show significant differences in home PC penetration: 14–18% of them have a PC at home. The 20% richest households of the country make the difference, because their penetration rate is 28%, i.e. twice as high. These figures provide an important explanation for the success of PIAPs in Hungary, and the modest growth rates in home PC penetration illustrate that access outside home will remain a very common pattern in the medium term.

Taking educational attainment as the independent variable, the figures are the following:

Educational attainment	**Rate of home PC penetration**
Tertiary education degree	58%
Secondary education degree	39%
Vocational education degree	19%
Primary education degree	14%

(Source: WIP 2001, p.17)

Age is another important factor: In households with a PC the average age of the household members is 37 years, while in those without PC it is 47 years.

For age cohorts the highest PC-rate is among the 14–17 year olds (52%) and not surprisingly among the generation of their parents who are between 40–49 (39%). In fact, Hungarian teenagers are the ones best hooked up to new technologies.

17% of Hungarians use the Internet on a regular basis, a majority of them either from facilities in their educational institution or from their workplace. Here again the 14–17 year olds are at the top:

Age cohort	Using the Internet at least from time to time
14–17	69%
18–29	31%
30–39	17%
40–49	14%
50–59	9%
60 and older	1%

(Source: WIP 2001, p.21)

There is a strong correlation between these figures and the answers to the question: "Do you have the intention to hook up to the Internet within the next 12 months?" Roughly half of those between 14 and 17 years old answer positively, which expresses the widely spread enthusiasm for the Internet among young people in Hungary. If all these youngsters had the financial means of financing their access plans, the growth rates would be fairly satisfying. This is though not realistic, and at the same time adult Hungarians do not show much interest in becoming Internet users. There is strong evidence for a 'digital divide' between generations, both in factual use of the new technologies and in the mental readiness to use them in the near future.

Another worrying fact is that the 40–49 year olds, whom we identified earlier as being mainly the parents of PC-active teenagers, fall back in personal Internet use: Only 14% of them are regular users. A PC at home does in many cases not mean that other members of the family apart from the IT-literate kids make use of it. What might be the underlying reasons? Parents do not have the necessary skills, they might give their children priority, and the connection costs could be too high for everyone to go on-line.

After 1989, regional disparities in Hungary regained importance, because the socialist policy of central planning and the allocation of industrial facilities in provincial sites came to an end. The following two macroeconomic indicators for the seven regions of the country illustrate the uneven development during a decade of economic transformation and significant foreign investment:

Region in Hungary	GDP/head (PPS), EU15=100%; average 1997–98–99	Unemployment rate in 2000
Southern Plain (South-Eastern Hungary)	37.0%	5.1%
Northern Plain (Eastern Hungary)	32.5%	9.8%
Northern Hungary	32.6%	9.9%
South Western Hungary	37.6%	8.0%
Central Western Hungary (near Budapest)	46.5%	5.1%
Western Hungary	53.5%	4.4%
Central Hungary (including Budapest)	72.4%	5.4%

(Source: European Commission 2002c)

Unemployment is a bigger problem in regions with an economic performance lower than the national average. More important for IS development is that the population in these areas does not have the necessary financial means even for initial investments in new technologies. The GDP/head figures for the largest part of Hungary are still so far away from the EU15 average that we should not wonder about the lag in PC penetration rates and other IS indicators. This is

where policy intervention comes in and tries to compensate for weak household investments in ICT technologies.

The WIP study does not differentiate between regions, but between community size. In the capital Budapest significantly more households have Internet access than in other towns and smaller settlements. In Hungary households of four and more persons are leading in Internet access: in Budapest around 25% of them use it from home, whereas smaller households are not equally well connected. The phenomenon of one-person households especially in cities is not yet widespread in Hungary. Therefore it is mainly young families, students and pensioners who live alone and often cannot afford either a PC, the Internet access, or both of them.

Without a look at the big groups of non-users the analysis would remain incomplete. Compared with the eEurope indicator list, the WIP approach seems more adequate for social sciences and keeps a sound balance between technological and social aspects.

The following table provides a first clarification about the Hungarian non-users:

Reason for not using the Internet	**Percentage among the non-users**
I do not have a PC.	43.7%
I am not interested in it.	37.0%
It is too expensive.	21.5%
I do not know how to use it.	15.5%
I do not trust the technology.	3.4%

(Source: WIP 2001, p.26)

The most frequent obstacle to Internet use is the lack of a PC. Another significant group of non-users is simply not interested in the Internet, they seem to have other things to worry about. In a transition economy this attitude of not perceiving access to the Internet as a personal priority can be traced back to issues like job insecurity, changing skill demands, rising costs for expenses of daily life, etc. 22% say that the Internet is too expensive for them, while 16% actually declare themselves unable to go on-line because of missing basic knowledge.

Among the non-users only 12% say that they are likely to become a user within 12 months time. This should contribute to a continuation of the slow growth figures for IS development in Hungary. Public awareness measures could be one answer, but as we have seen before the most prominent reason for not accessing the Internet is the lack of a PC. And this again explains why PIAPs play such an important role in the country and are currently a priority area for public IS investment within the Szechenyi plan.

A final section of the WIP study looks into the opinions of Hungarians about the change brought about by the Internet: Both users and non-users agree that not being connected to the Internet can mean a serious disadvantage. At first sight this attitude could be seen as contradictory to the unwillingness of non-users to go on-line in the nearer future. But again, the lack of home PCs as the traditional material prerequisite for Internet access matters much more than whatsoever mental obstacle.

The question: "Can the new technologies make the world a better place?" gets most positive responses among the 18–29 year olds (79%) Hungarians in general agree more with this question than US citizens. The optimism of the Hungarian non-users is particularly striking: 64% of them say that the new technologies can have positive impacts on the world's future, while in the US only 49% think so.

Why is there so much optimism about the potential of new technologies in a country, where a majority of people does not even have the possibility of using just a small part of these technologies? Maybe it is indeed the fact that most of the respondents have no personal experience with the Internet and still need to get 'realistic' about it. In this case we could speak of a certain naivety of the CEEC population about what IS can do. Given the fact that the European Com-

mission shows in eEurope and other documents a strong belief in the beneficial impacts of IS on society and economy, the public opinion in Hungary is well prepared for joining the Union.

Results according to the eEurope+ measuring indicators

The publication of the report "Situation of IS in Hungary 2001" (TARKI 2002) in February 2002 marks the beginning of yearly national analyses based on the 23 eEurope indicators, which had been approved by the EU Council of Ministers in December 2000.

We will focus on the parts of the TARKI report dealing with IS infrastructure in enterprises, with higher education and with the modernisation of public administration including eGovernment.

The eEurope indicator list puts home access to the Internet as the standard, while in Hungary and other CEEC the access from school or workplace is still dominating. The result would be a significant underestimation of user numbers in these countries, moreover as for many people in the region the out-of-home access is the only one they can refer to.

Hungary wants to expand on high-speed Internet connections as a precondition for having more and higher quality web-content. The numbers for broadband connections are still modest, as the following table illustrates:

Companies in Hungary: Which type of Internet connection do they have?	**Percentage among companies with Internet access**
ISDN	55%
Analogue modem	37%
Rented line	10%
Cable TV	5%
ADSL	2%
Other	3%

(Source: TARKI 2002)

A majority of Hungarian SMEs does not have the capital means necessary for constantly upgrading their ICT equipment. It is a question of business priorities whether to invest in the newest technologies or not.

On the other hand, the connectivity rates of the Hungarian economy are encouraging because at least a traditional modem or ISDN Internet access is guaranteed in most companies across sectors, with the exception of agriculture and tourism:

Economic sector of the company	**Internet penetration rate for this sector**
Agriculture	45%
Mining	96%
Energy	79%
Construction	68%
Tourism	46%
Health and social care	64%

(Source: TARKI 2002)

The chapter "Developing Tourism" in the Szechenyi plan (cf. Pinter 2002) aims to increase the number of tourist companies that use the Internet as a promotional tool. Tourism, especially to Budapest, the Balaton and the thermal spas, has been for years a major contributor to GDP growth in Hungary. Creating the possibility for foreign visitors to get tourist information and to do the booking conveniently via the Internet, is therefore a core objective of sectoral IS development.

Besides the Schoolnet for primary and secondary education Hungary is making a big effort to modernise its universities and colleges. The country has a strong record on scientific achieve-

ment, which results e.g. in several Hungarians having received a Nobel Prize in disciplines like mathematics, physics or biology in the 20th century. The academic landscape, which was split into many small teaching and research institutions, has undergone a thorough reform for some years, with the primary goal of more efficiency in management and administration.

The TARKI report informs that all university and college students in Hungary have to participate in some IT courses whatever their main field of study may be. In precise figures graduates have had on average 109 obligatory lessons of basic PC applications. For those who are interested in further broadening their knowledge 75% of universities and 87% of colleges offer additional IT courses, which in certain cases can even replace a regular subject.

The use of ICT in non-informatics teaching is nevertheless not widely spread. The experiences in tertiary education are comparable to those of the Schoolnet project: the Internet usually serves as a medium for communication, but is not integrated in the actual education. In academics the most frequented Internet services are e-mailing, reading newspapers, observing invitations for tenders, searching for teaching materials and the Intranet.

Distance education, mostly as an opportunity for professionals to acquire a first or second degree, has strong roots in Hungary and most universities and colleges have built up a special branch for it. In 2000 ca. 50 000 people took part in a distance course. Many of these programs need to be modernised, because they do not include the new technologies in a conceptual way. The most common form is still the so-called 'correspondence education', where the teaching body distributes hardcopy materials, which the students have to prepare at home. The real-life interaction with the teachers is limited to "consultation hours" on the weekend. Communication by e-mail has gained importance recently, but it tackles organisational questions more than it ensures a continuous exchange of questions and answers between students and teachers. eLearning has become a big trend in Hungary, with private companies far ahead of public education. The ECDL certificates are already very popular in the country. If state universities and colleges want to catch up on contemporary eLearning, they will face huge challenges in the years to come.

The Ministry of Education has provided significant funds for innovative projects in the sector (1 Bio. Forint in 2000, 500–600 Mio. Forint in 2001) and has established the "Apertus" public foundation for administering the tenders. The focus of public support for distance education shifted in 2001 from hardware infrastructure to the development of PC-based teaching materials. This is in line with the new eContent programme of the European Commission, which wants to stimulate the use of the Internet in the context of eLearning.

Public administration is another interesting area to be examined. In quantitative terms a lot has changed already: The city of Budapest has reached an average of 1.56 employees per PC in its institutions. The share of mobile phones in local administration is high: The average institution in the country has eight fixed phone lines, five mobile phones and two fax machines. 69% of local administrations have Internet access and another 23% plan to get connected within 12 months. On the other hand, a tool like the Intranet, which is likely to make public services more efficient in speed and quality does exist much more in municipal bodies than in smaller settlements. The national average for Intranet in local administrations is 20%.

In order to know more about the changes in mentality and to possibly identify a new kind of public services, the decisive criteria should be extent and quality of the on-line presence. Here the numbers are not yet sufficient: Less than 1/4 of local administrations are accessible via an Internet site, and again the numbers go up and down with the size of the agglomeration. More relevant in terms of eGovernment is the fact that most of these sites provide only general, brochure-like information: 30% are updated every three months only, while 20% undergo a weekly revision. These figures show that local administrations in Hungary still have a way to go until they will provide at least some of the 20 basic public services of eEurope.

The EU has defined four different stages of service provision:

- posting of information online
- one-way interaction
- two-way interaction
- full online transactions including delivery and payment (cf. European Union 2001).

The Hungarian local administration should be capable of reaching the first three stages until the end of 2003, in order to be properly prepared for the accession to the EU.

At the national level the progress on eGovernment is somewhat better, but full on-line interaction between public bodies and the citizen does not take place at this level as well. From the government Internet sites numerous forms can be downloaded, but after filling them out the user is obliged to send in a hardcopy version. Among other things the lack of electronic signature systems is responsible for this. An exception to this, but one that does not concern the communication with the citizen, is the Schengen database: When police or border guards control passports they use an electronic information system without time consuming file reviews or phone calls.

Public procurement via the Internet is soon to be introduced in Hungary. Interestingly Romania, with its "www.e-licitatie.ro" portal, has been first. e-Procurement is seen by many as an important element in the fight against corruption in the region.

The IS future in Hungary

The main challenges for the upcoming years

This final chapter will present the options for national IS development from a strictly Hungarian point of view. We are in the fortunate position to have both face-to-face statements by experts from the leading IS institute of the country, and fresh Hungarian documents on the 'state of the art' in late 2001.

For ITTK director Karvalics it will be essential to give people a fair chance of changing their attitudes about the new technologies. The key word in this context seems to be awareness:

> *"Awareness is extremely important, and this is why the EU is a good example for us. It is a question of perception: How the mass media, media intellectuals, teachers, parents perceive the challenge of IS. This is why I like the EU's IS policy." (Interview 1)*

Of course, 'soft' measures like information campaigns will not be sufficient. There is a number of urgent problems about the future competitiveness of the country in a European and worldwide IS context. A sensitive issue is the 'brain drain' that virtually all CEEC suffer from. The case of Hungary is particularly dramatic, because the country lost many of its best brains as early as in 1956, in the aftermath of the civil revolution, which the Soviets had oppressed violently. Since the early 1980s, when the country started to gradually liberalise its socialist system, there has been important emigration again. The arrival of foreign investors, particularly multinational companies, has contributed to a decrease of this figures, but the basic dilemma, i.e. the wage gap between Hungary and more developed countries, remains unchanged. The following is just one example of what 'brain drain' means in concrete terms:

> *"In the high-tech fields of the information-related sciences the situation is worse than in other sciences in Hungary. Just one example: We have very good links to six Hungarian colleagues learning and working at different universities in the U.S. and dealing with social aspects of IT. If we were strong enough to invite them here to become a project leader or a director of an IS institute...But there is not enough motivation, financial background, possibilities and freedom to do what they would like to do. So, it is not easy to gain the brain in this 'info' field." (ibid.)*

High hopes of bringing the 'brain drain' to an end have been associated with the growing presence of multinational companies in Hungary. The recent decision of some global players like NOKIA, ERICSSON and KNORR BREMSE to establish R&D facilities in the country has actually strengthened these hopes. In his reply to our respective question Karvalics uses arguments of the 'virtual economy' and comes to a less optimistic assessment:

> *(Interviewer): "But on the other side there are companies like NOKIA and ERICSSON, which deliberately came to Hungary because they found out there are enough highly qualified graduates of technical universities who can work for them. Obviously they find their workforce here in Hungary."*
>
> *Karvalics: "Yes, but that is why I said that it is becoming less and less a question of direct physical location. This has only accidental importance, e.g. for the consumption and people's flexibility to change their job. For a global citizen it is not a big effort to 'jump' over the ocean and work three or four months in Edmonton or somewhere else, and then come back to Hungary. For me, it is a very good thing that the development branches of these multinational companies are here, but be careful with overestimating the importance of this." (ibid.)*

In the current situation with a significant backwardness of the Hungarian performance on the eEurope indicators, other CEEC provide more realistic benchmarks. Especially after the EU's strategic decision on a 'big bang' Enlargement due to take place in 2004, there is a strong argument for comparison between the candidate countries in the region. This 'look around' instead of a 'look to the West' is part of eEurope+, as the national statistics will be available from spring 2002 onwards and will make it possible to put up a ranking for IS development, which does not necessarily have to be in line with the progress of the accession negotiations. Pinter explains this point:

> *"As the mobile phone penetration is concerned, Hungary has to see that in the region it is not the first: In Slovenia and the Czech Republic the situation is better. Still, the government says: We must be the first in IS development in the whole region, and we can do it. Here in the institute we say: Maybe they are dreaming. It is right that Hungary can claim to be the best country when it comes to economic preparation for the EU-accession. But in the IS development it is not necessarily so: Estonia is better in eGovernment, the Czech Republic is better in the Information Economy...So there could be some confusion here." (Interview 2)*

In eEurope+ the candidate countries have pledged to "use the full potential offered by the Information Society", which should include a special focus on those who are more likely than others to be disadvantaged. The TARKI report names three groups that require high attention, but can also profit most from a socially responsible expansion of the new technologies:

- **Physically disabled persons**, for whom the Internet offers a large variety of improvements in the context of work, communication and entertainment. Additionally they can find easier contacts to people in similar situations, e.g. through websites, newsgroups and targeted on-line contact fairs. The power of the Internet to get marginalised people out of a state of isolation is strongest in geographical areas where real-life interaction within the peer group is very limited, i.e. in rural settlements.
- **The Roma**, for whom the statistical evidence is so far weak in terms of IS development: Out of 56 interviewed persons who declared themselves Roma, only 5% had a PC at home (cf. TARKI 2000). As in other areas of cultural life the materials and applications for the new technologies do not reflect the Roma heritage and identity. Neither are the teachers who use the new digital educational content familiar with the differences of the Roma approach to culture and technology. If the under representation of Roma among those who design and transmit educational and cultural content does not come to an end, this minority will justly claim that IS development cannot help their cause, but is going to contribute to their assimilation to majority attitudes and ideas.
- **Inhabitants of small settlements**: the gap between urban and rural environments, measured by home PC penetration, has gone down from 3:1 to 2.1:1 between 1999 and 2001. But rural schools and administrations continue to be less connected to the Internet. Hungary has become more sensitive about the problems of its countryside in recent years. It acknowledges today that equal opportunities in national development schemes, including IS issues, are endangered by 'vicious circles' such as the combination of fewer high school graduates and lower ICT skills in rural areas. We have to repeat that as long as the average local citizen will not have a PC at home, PIAPs will remain the only access facilities for a critical mass of the rural population. In a parallel development this public access should enable innovative solutions in the professional life of these people: Tele-working, the promotion of tourist accommodations on-line and other projects that can help to increase income, motivation and qualification of the locals.

Chances of an increasingly regional focus of IS policy:

The EU Regional IS Initiative

The recently published study "World Knowledge Report 2002" has identified the following trend, which seems to be highly relevant for IS development:

> *"Policy makers are demonstrating an increasing appreciation of the importance of regions as economic entities in the global economy. One consequence is that globalisation and regionalisation are developing in tandem." (World Knowledge Report 2002)*

The report assesses the 'knowledge competitiveness' of each region. Its results show that the EU regions fall well behind the US. The Financial Times point out that the report comes at a moment where the Barcelona summit of the EU had to admit failure "in its much publicised original aim – to move the EU significantly closer to becoming the world's most competitive economy by the end of the decade." (FT 2002)

The success of US regions is presented as the outcome of

> *"high research and development spending by businesses, high spending on education and a highly developed information technology infrastructure." (ibid.)*

The World Knowledge Report calls on governments to use their wide scope for intervention in regional development, mainly by spending more money on education and by introducing R&D tax breaks.

The concept of 'intelligent regions' and 'information regions' has had its place within the IS policy of the EU since 1994. Its main goals are to strengthen public-private partnerships in and between regions, promote best-practice solutions and encourage exchange between sectoral experts. From 1994–1999 several pilot regions received EU funding in order to gain experiences from the concrete implementation of an IS development concept focussing on regional aspects. With no EU-wide strategy paper like eEurope in sight, the European Commission integrated the principle of subsidiarity in its efforts to prepare the Union for the dramatic changes of the 'information age'. The program started in 1994 under the title "Inter-Regional Information Society Initiative" (IRISI) with six participants, all of them so-called 'less favoured regions' of the EU (cf. European Commission 1999)

The Commission describes these initial projects more as a learning experience than in terms of impressive outcomes and results. The following statement illustrates the pioneer spirit in 1994 and marks a clear difference to eEurope with its quantitative indicators and deadlines:

> *"The process of awareness-raising, assessing the region's strengths and weaknesses, evaluating its baseline situation and then generating a widespread public debate is vital in identifying and exploiting the potential of the Information Society, in stimulating real demand, and in seeking to guard against the risks." (ibid.)*

After this pilot stage the program, meanwhile renamed into "Regional Information Society Initiative" (RISI), expanded its scope and included 22 regions across nearly all member states. They adopted a common methodology, which progresses on the creation of a regional IS environment in seven consecutive steps:

- **Evaluating** the baseline situation in the region
- **Raising awareness** of the Information Society and its potential impacts
- **Conducting a SWOT** (Strengths, Weaknesses, Opportunities, Threats) **assessment** of the region; developing scenarios for a possible development

- **Developing new partnerships** and achieving a consensus amongst the key players in the region
- **Writing down the priorities for action** in a regional development plan
- **Re-orientating public funds**, especially the EU Structural Funds, towards the chosen priorities
- **Determining selection criteria** for projects and funding; feasibility studies; monitoring and evaluation (cf. ibid.)

The basic assumption behind this approach is that each region is different and has to adopt an IS development concept suitable for its specific circumstances. The common methodology should help the member states

> *"in preparing succinct and tailor made action plans which are directly based on their own national priorities, specificity, concerns and interests. (ibid.)*

This is much more a bottom-up process, leading from experiences in regional IS programmes to the elaboration of national action plans, than eEurope appears to be. Partnerships on a regional level include companies, individuals, associations, educational institutions, ICT providers and public bodies. They should agree on the priority set for IS development in their region. In recent publications and online forums of the CEDEFOP (2002), the EU institute for vocational training, the concept of 'learning regions' elaborates further on public-private partnerships and sees them as a promising innovation force. In the economic crisis after the events of 11th September, 2001 such well-targeted joint actions could indeed be an adequate measure against the dilemma of budget cuts, mass redundancies, youth unemployment, etc.

The Commission advises national policy makers not to overestimate the impact of action plans:

> *"Achieving consensus support for a document is relatively easy. Gaining real commitment in terms of investment for carefully chosen priorities is much harder. The action plan [...] requires that real (and difficult) choices have to be made and, of course, for every 'winner' there is also one or more 'loser'" (European Commission 1999)*

Pilot regions in Hungary

Two regions in Hungary have been chosen as testing grounds for a regional approach to IS development: The East Hungarian region of the Southern Plain, and the West Hungarian region bordering with Austria, the Slovak Republic, Slovenia and Croatia.

We are going to examine the latter, which comprises three administrational units: Győr, Szombathely and Zalaegerszeg. (cf. Pinter 2002)

The macroeconomic figures for this region are favourable: dynamic growth rates and a high employment rate. It is Hungary's "gate to the EU", so that its border crossings are the busiest of the country. But despite a positive GDP/head development the region lacks investment in R&D facilities and has seen the majority of its researchers move away to Budapest. The population of the region makes up 10% of the national total, whereas 1/5 of the Hungarian agglomerations are situated here. The rural structure of large parts of Western Hungary requires well-targeted development concepts. For Pinter the biggest obstacle to the transformation towards an 'information region' lies in the lack of inner cohesion:

> *"The relations within the region are not really developed, especially in the north-south direction. The poor transport infrastructure signs partly responsible for this." (ibid.)*

The region has put up a development strategy in the spirit of one of the guiding principles of current EU policy on IS: "Participation for all in the knowledge-based economy". Summarising the first actions in the framework of this strategy: A regional Internet portal has started, which is

supposed to present the region as an entity to different target groups. There has also been progress on Intranet penetration in public administration. Western Hungary participates as a region in the invitations for tenders within the national development plan and aims to use the expected funding on IT industry development, projects with disadvantaged groups and 'digital literacy' projects with unemployed people.

The pace of IS development in the region will largely depend on obtaining those national funds. Pinter does not explain the role of local public-private partnerships as a possible alternative to the focus on central funding sources. It can be assumed that the lack of capital is a frequent reason for the modest degree of decentralised activities. Once again there are obvious limits to a simple comparison of Hungarian IS development with the example of the EU15.

Lessons learnt – ways ahead

eEurope and eEurope+ have been successful in raising awareness in Hungary: IS policy is perceived more and more as a strategic instrument for the country's overall development. The conservative government between 1998 and 2002 has put the issue into its national development plan and has provided significant funds for IS-related programmes and projects.

The Telecottage movement presents an originally Hungarian approach to the low PC and Internet penetration rates in private households: in the large rural areas of Hungary PIAPs will remain in the medium term the most appropriate solution for ensuring universal access to the new technologies. The Telecottage concept is innovative because it combines ICTs and community space. Telecottages can become part of a wider policy approach for the revitalisation of rural Hungary.

The new focus of the Schoolnet is on ICT training for teachers and on high-quality Hungarian digital content for education. These priorities will ensure that the new technologies are better integrated in new, innovative curricula.

Support for the 'IS-inclusion' of disadvantaged groups can only be efficient, if the general situation of these groups improves. Transposing the EU legislation against discrimination at the workplace will help the Roma minority to get better chances on the labour market. ICT qualifications can be only one factor, their impact depends on the environment of law, economy and the attitudes of key players.

With economic growth rates of the CEEC slowing down, Hungary is not likely to catch up even in the medium term on the average EU15 performance in IS development. Benchmarking and best-practice reports will be much more relevant, if done for candidate countries with comparable macroeconomic figures. At the same time, Hungary must continue to embrace the principles of EU policy and take into account new legislation like the Telecommunications Regulatory Framework. The revision of eEurope+ in late 2002 should reflect a two-folded strategy: Candidate countries pursue an IS policy that is strictly directed towards their forthcoming EU accession, but can decide to choose development priorities that fit their situation best.

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Interview 2: with Robert Pinter, Research fellow at the ITTK (3rd January, 2002)

Annex 1: Internet indicators for the Candidate Countries, 1998

TABLE 4 Internet indicators

	number of access providers	total number of hosts		hosts per 10000 inhab.		Internet users per 10000 inhab.		Internet users (in 1000)
		1996 (1)	1998 (1)	1998 (2)	1999 (3)	1996 (2)	1998 (1)	1998 (2)
Bulgaria	170	3017	11212	12.30	36	70.85	179.94	150.0
Cyprus	n.d.	n.d.	n.d.	73.92	n.d.	n.d.	403.88	30.0
Czech Republic	13	3775	11820	84.11	114	193.89	389.03	400.0
Estonia	9	5612	22478	166.64	196	n.d.	1034.69	150.0
Hungary	n.d.	30486	89830	94.12	111	97.92	392.46	400.0
Latvia	22	5423	13687	58.30	76	161.29	325.41	80.0
Lithuania	29	1697	9614	26.46	42	26.97	188.99	70.0
Malta	n.d.	n.d.	n.d.	47.86	n.d.	n.d.	234.38	9.0
Poland	250	49600	125317	33.72	43	124.23	408.34	1581.0
Romania	150	5261	22357	10.46	13	22.12	222.48	500.0
Slovak Republic	n.d.	7197	21938	41.03	66	186.08	929.89	500.0
Slovenia	33	25126	22722	115.06	n.d.	502.26	1003.51	200.0
Turkey	n.d.	n.d.	n.d.	7.32	n.d.	n.d.	67.43	450.0
Finland	n.d.	n.d.	459568 (2)	890.64	n.d.	n.d.	2540.70	1311.0
Greece	n.d.	n.d.	49904 (2)	47.08	n.d.	n.d.	330.19	350.0

Source: (1) Ripe NCC Hostcounts, 1996, 1998 (2) ITU Internet indicators 1998, ITU World Telecommunication Development Report (1998)
(3) CEENET 2000 (http://www.ceenet.org/database/country.htm)

Annex 2: Internet indicators for Hungary, 2002

		Breakdowns		Data	Source	Type of figures
	Cheaper, faster Internet					
1.	**Percentage of population who regularly use the Internet**			9%	NetSurvey	
	Place of Access					
		Home		4%	NetSurvey	assessment
		Work		3%	NetSurvey	assessment
		School		4%	NetSurvey	assessment
		PIAP		1%	NetSurvey	assessment
		Cyber Cafe		1%	NetSurvey	assessment
		Other		2%	NetSurvey	assessment
	Frequency of use					
		Daily		4%	NetSurvey	assessment
		Weekly		9%	NetSurvey	assessment
		Monthly		12%	NetSurvey	assessment
	Social breakdowns of weekly users					
		Gender				
			Male	60%	TÁRKI	assessment
			Female	40%	TÁRKI	assessment
		Age-groups				
			15-17	21%	NetSurvey	assessment
			18-29	42%	NetSurvey	assessment
			30-39	15%	NetSurvey	assessment
			40-49	15%	NetSurvey	assessment
			50+	7%	NetSurvey	assessment
		Occupation				
			Active	51%	NetSurvey	assessment
			Inactive	49%	NetSurvey	assessment
			Students	41%	NetSurvey	assessment
	Type of Use					
		WWW		73%	NetSurvey	assessment
		Shopping		3%	NetSurvey	assessment
		Information search		64%	NetSurvey	
		Work		32%	NetSurvey	assessment
		E-mail		65%	NetSurvey	assessment
		Download		37%	NetSurvey	assessment
2.	**Percentage of households with internet access at home**			6%	TÁRKI	
	High speed access at home					
	Percentage of Households with Int-access	ADSL		3%	NetSurvey	estimation
		ISDN		20%	NetSurvey	estimation
		Cable		7%	NetSurvey	estimation
		Satellite		0%	NetSurvey	estimation

(Annex 2: contd.)

		Breakdowns	Data	Source	Type of figures
3.	**internet access costs**				
	Costs of different frequency of use				
		1-10 hours/month	**1200**	Axelero	
		11-20 hours/month	**2500**	Axelero	
		unmetered	**6000**	Axelero	estimation
	Cost of high speed access				
		Cable	**10000**	Axelero	estimation
		ADSL	**14500**	Axelero	estimation
	Identify cheapest access by MS in addition to overall basket				no data
	Faster internet for researchers and students				
4.	**Speed of interconnections and services available between and within national research and education networks (NRENs) within EU and world-wide**				
	Minimum speed requirement for the NREN (if such a requirement exists).		**60% over a 1Mbps**	GKI	fact
	Extent to which primary and/or secondary schools are being connected to the NREN		**2-3%**		estimation
	Secure networks and smartcards				
5.	**Number of secure servers per million inhabitants**		**1**		
	Number of CERTs (Computer Emergency Response Teams)				
		Private	**3**		estimation
		Public	**0**		estimation
	Pct of computers equipped with a sec.device (smart card reader, security software etc.)		**0,01%**		estimation
6.	**Percentage of internet-using public that have experienced security problems**		**5-10%**		estimation
	European youth into the digital age				
7.	**Number of computers per 100 pupils in primary/secondary/ tertiary levels**		**8,1**	GKI	assessment
	Primary school		**5,6**	GKI	assessment
	Secondary school		**11,6**	GKI	assessment
	Universities		**7,9**	GKI	assessment
	Hours of computer use per pupil per week		**7**	TÁRKI	assessment
8.	**Number of computers connected to the internet per 100 pupils**		**5,8**		estimation
	Primary school		**4,1**		estimation
	Secondary school		**9,3**		estimation
	Universities		**7,2**	GKI	assessment
	Hours of internet use per pupil per week		**4,5**	TÁRKI	assessment
9.	**Number of computers with high speed connections to the internet per 100 pupils**		**1,9**		estimation
	Primary school		**0,8**		estimation
	Secondary school		**2,1**		estimation
	Universities		**6,8**		estimation
10.	**Percentage of teachers using the internet for non-computing teaching**		**47**		estimation
	Primary school		**35**	IKT-TÁRKI	assessment
	Secondary school		**74**	IKT-TÁRKI	assessment
	Universities		**90**	IKT-TÁRKI	assessment

(Annex 2: contd.)

		Breakdowns	Data	Source	Type of figures
	Working in the knowledge-based economy				
11.	**Percentage of workforce with (at least) basic IT training**				
	Gender				no data
		Male			no data
		Female			no data
	Age-groups				no data
		15-17			no data
		18-29			no data
		30-39			no data
		40-49			no data
		50-59			no data
		60+			no data
	Income				no data
	Occupation				no data
		Active			no data
		Inactive			no data
12.	**Number of places and graduates in ICT related third level education**				no data
	Gender				no data
		Male			no data
		Female			no data
	Type of Universities				no data
		ICT related			no data
		non-ICT related			no data
13.	**Percentage of workforce using telework**		**0,10%**		estimation
	Gender				no data
		Male			no data
		Female			no data
	Economic sectors				no data
		Retail			no data
		Industry			no data
		Service			no data
		non-profit			no data
	Percentage of the workforce covered by telework framework agreements				no data
	Participation for all in the knowledge-based economy				
14.	**Number of Public internet Points (PIAP) per 1000 inhabitants**		**0,32**		estimation
	Number of public access points (excluding private initiatives) per 1000 inhabitants		**0,075**		estimation
	Number of free public access points per 1000 inhabitants				estimation
	Percentage of libraries offering internet access to the public.				no data
15.	**Percentage of central government websites that conform to the WAI at level A**		**85%**		estimation
	% of central government sites with higher level AA		**10%**		estimation
	% of central government sites with higher level AAA rating		**0%**		estimation

(Annex 2: contd.)

		Breakdowns	Data	Source	Type of figures
	Accelerating e-commerce				
16.	**Percentage of companies that buy and sell over the Internet**		**0,01**		
	Size of Enterprises				no data
		Small (5-50 emp.)			
		Medium (50-250)			
		Over 250			no data
	Sector of Enterprises				
		Retail			no data
		Industry			no data
		Service			no data
		non-profit			no data
	% of turnover from e-commerce		**0,003**	GKI	
	Type of Business				no data
		B2B	**85%**		estimation
		B2C	**15%**		estimation
		B2A	**0%**		estimation
	Government on-line				
17.	**Percentage of basic public services available on-line**		**40%**		
18.	**Public use of government on-line services - for infos/ for submission of forms**		**5%**		estimation
19.	**Percentage of public procurement which can be carried out on-line**		**0%**		estimation
	Health on-line				
20.	**Percentage of health professionals with Internet access**		**55 - - clinical**		
	Percentage of PCPs using the Internet to communicate with pharmacies		**10**		estimation
	Percentage of PCPs using the Internet to communicate with secondary care (administration)		**100**		estimation
	Percentage of PCPs using the Internet to communicate with secondary care (clinical)		**60**		estimation
	Percentage of PCPs using the Internet to communicate with patients		**0**		estimation
21.	**Use of different categories of web content by health professionals**				no data
	European digital content for global networks				
22.	**Percentage of Hungarian web sites in the national top 20 visited**		**100%**		calculation
	Type of site				
		ISP or search engine	**10%**		
		services (e-commerce, databanks)	**15%**		
		info-media	**35%**		calculation
		games and entertainment	**20%**		
		educational	**0%**		calculation
		freeweb	**15%**		calculation
	Number of personal websites		**10000**		
	Amount of government information which is digitised and available on line				
		Pages	**40000**	GKI	estimation
		Megabytes	**12 Gbyte**		estimation
	Employment in the on-line content sector		**6000**		estimation
	Number of Internet hosts per 1000 inhabitants				same as oecd report
	Intelligent Transport Systems				
23.	**Percentage of the motorway network (vs. total length of network) equipped with congestion information and management systems**		**55%**	Kopint	assessment

(Source: TARKI 2002)

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