

Executive Summary of the ALIPRO National Report Hungary

ALIPRO objective

ALIPRO¹ aims at supporting the alignment of the new member states' national and regional research programmes with the European IST research in the area of mobile technologies, applications, and services.

Purpose of the document

The national report endeavours to present the findings of ALIPRO carried out in Hungary. It comprises an overview on mobile IST situation and a detailed description of R&D programmes together with their evaluation. It contains also the conclusions drawn from the evaluation of the R&D funding system in Hungary. It is meant for institutions and individuals active in the field of mobility.

The mobile sector in Hungary

Hungary has a population of over 10 million, and has the second highest GDP per capita rate of all CEE countries (7,937 EUR in 2004). Compared to the GDP, the telecommunication sector's share was 5.6% in 2002, and this makes Hungary – together with Latvia - the most telecommunication-intensive country in Central and Eastern Europe. The market value of the telecommunications market was 3.7 billion EUR in 2002, the mobile market making up 48% of it, as opposed to the fixed-line market's 41% share.

Regulatory background

The market of wireless communication and mobile technologies in Hungary is regulated by the Act C of 2003 on telecommunication and its respective executive ordinances. Act C of 2003 on telecommunication defines the institutional background responsible for the administration and monitoring of the sector. The high authorities for telecommunication are the Minister of Informatics and Telecommunication and the government. The Minister is responsible – among other things - for policy-making, for supervising the National Communications Authority, for keeping in touch with the relevant EU authorities, etc.

¹ ALIPRO is an EU research project under Framework Programme 6. For more information on ALIPRO, please refer to <http://alipro.eurescom.de>.

The National Communications Authority is the operative body responsible for executing the telecommunication legislation and for the smooth operation of telecommunication networks. It works in tight cooperation with the Competition Council. The Competition Council ensures a liberal market and monitors the players with a significant market share. Another institution monitoring the situation in the telecommunications sector is the General Inspectorate for Consumer Protection, which is responsible for the protection of consumers' rights (both companies and individuals). In the fields of frequency planning and the clearing of interference, the authority works in cooperation with the Governmental Frequency Management Agency. The cooperation has four fields: theoretic frequency management, operative frequency management, data provision, measuring service. Some minor issues concerning the telecommunication regulation are within the competence of the National Radio and Television Commission.

The Hungarian system of R&D financing

The Hungarian national innovation system at institutional level consists of three main components such as the governmental organisations, the Hungarian Academy of Sciences and the research and technology institutions.

The governmental institutions include the Science and Technology Policy College (TTPK) - chaired by the Prime Minister and the vice-presidents being the Minister of Education and the President of the Hungarian Academy of Sciences - and its advisory body composed of eleven representatives of the national scientific community and industry (Science and Technology Advisory Committee, TTTT). TTPK is the highest government level consulting body of science and technology policy. The National Office of Research and Technology (NKTH), set up on 1 January 2004, is responsible for planning and implementing the Hungarian science and technology policy, for the competition-based research and development programmes and for promoting the international science and technology co-operation of Hungary, including EU-related research matters. The Agency for Research Fund Management and Research Exploitation (KPI) is the administrative authority, and its tasks include:

- Financing R&D and innovation projects through open calls using the sources of the Research and Technology Innovation Fund and the EU Structural Funds / national co-financing,
- Promoting public-private partnerships,
- Advisory services for S&T stakeholders at national and regional level.

This infrastructure was created as a result of the "Act XC year 2003 on the Research and Technology Innovation Fund", which was approved by the Hungarian Parliament on November 10, 2003. The act aims to provide stable and reliable financing for competitiveness oriented research, development and innovation activities. A calculable central fund is necessary to promote the R&D and the research utilization activities, the development of R&D infrastructure, and the innovative ability of entrepreneurs.

The Act created the Research and Technology Innovation Fund (hereafter: Fund). The two most important revenue sources of the Fund are the central budget and the contribution paid by the wide range of enterprises (except of micro-enterprises, with less than 10 employees) according to a defined rate described in the Act.

The Act CXXXIV/2004 on Research and Technology Innovation created the infrastructure for the development of value-added, knowledge based products and services, for the improvement of competitiveness of the Hungarian economy, and set the contribution to a sustainable development and, indirectly, to the quality of life of the Hungarian population as major objectives. The shift of the economy policy into this direction is an inevitable precondition to catch-up with the European Union. It sets the European requirement on R&D, 3% of the GDP as an objective.

Research programmes

In the initial phase of ALIPRO, a thorough exploratory research was conducted to identify on-going national and regional research programmes covering mobility. Acquired information proved that there is a Europe-wide unparalleled mobility-related research programme in Hungary, Mobil 2004. Most of the other programmes support mobility-related projects, but the total support granted is marginal.

The system of science financing in Hungary is now being consolidated. The Economic Competitiveness Operational Programme, GVOP, partly financed from Structural Funds, plays an important role in R&D financing. Mobil is a government initiative that is fully financed from national funds, and so is the large-scale R&D programme, the Ányos Jedlik Programme. It must be noted that during 2004 and 2005, the financing of R&D changed significantly, and most of these programmes are not mature yet. The two general R&D programmes are successors to formerly existing programmes, whereas four others were first announced in 2004. These programmes are namely:

1. Applied Research and Development (AKF)
2. Developing the corporate research infrastructure and establishing new research jobs (INFRA)
3. Supporting corporate innovation (KKV)
4. Supporting innovation activities of start-up technology- and knowledge- intensive microenterprises and spin-offs (TST)
5. Ányos Jedlik Programme (former NKFP)
6. Establishing a mobile communication research and development / innovation centre (Mobil 2004)

Programmes:

Mobil 2004

The mobile communication centre programme (Mobil 2004) is unique as it is the only R&D programme in Hungary where only one project is awarded a grant - and that grant is big, HUF 2 billion (EUR 8 million). Also, it is unique as it sets technological requirements for the project to be funded. Compliant to Alipro objectives, Mobil 2004 also explicitly fosters the alignment of national R&D policies in the field of mobility research. If the project is carried out with an international partner involved, and the partner receives funding from its government, the rate of support is increased. The objective of Mobil 2004 is to set up a mobile communication research and development/innovation centre and a testbed network for testing technologies/applications beyond 3G. The centre is intended to make Hungary a leading country in mobile technology. It is not likely that the call will be repeated.

The general goal of the programme is to make Hungary a research and development centre in the field of mobile infocommunication technologies and applications, thus fostering the development of the Hungarian software industry, the reinforced presence of Hungarian IT companies in the global market, the creation of innovative jobs, and the attraction of foreign high-tech companies to Hungary.

The direct objectives of the programme are:

1. based on the university knowledge base and the existing industry background, establishing a technology innovation centre unique in the world that deals with the research and development of future and emerging wireless communication technologies (3G/4G).
2. creating of a high-speed mobile/wireless communication testbed to develop and try novel mobile applications and support the research of new technologies beyond 3G.
3. promoting of the introduction of 3G/4G mobile technologies and network services, promoting application development and their testing in an independent environment,
4. fostering and providing means for tight R&D cooperation between universities, industry players and SMEs
5. promoting and supporting development and practical application of the newest mobile communication technologies and applications

Unlike other programmes, this programme clearly states the minimum of diverse topics the applicants have to cover:

- 1) Creation of an experimental mobile network infrastructure and testbed system
- 2) Research and development of mobile communication technologies and systems
- 3) Development and testing services

Thus, the innovation centre has to cover a wide range of mobility-related issues.

The Mobil 2004 programme only finances a single project with EUR 8 million. The result of the evaluation was announced, and Alipro received feedback from the project selected for implementation.

The Mobil 2004 programme is able to cover the entire range of mobility-related research, however, it has very specific priorities set. Beneficiaries can come from both the academic and the corporate sector, and there is no restriction set on beneficiaries. The goals and the rationale of the programme are entirely valid and in tune with the industry's requirements. All information was made available in English, and although foreign entities could not apply directly, all the companies in the winning project are subsidiaries of multinational companies. Management quality is the weakest point of Hungarian R&D financing, the authority does not transfer any know-how on project management. The programme is not revised in a systematic way. The Mobil project may have an enormous impact on the development of mobility, but not diversifying risk and funding only a single project threatens the impact.

The Mobil programme is quite in line with the European Research Area concepts. It is meant to restructure the European research fabric, by positioning Hungary as an R&D centre for mobility, and allowing access to its R&D resources from abroad. It also addresses the economy's need for some technological excellence, and clearly prioritises mobility as a field of research.

Ányos Jedlik Programme

The Ányos Jedlik Programme, a successor to the national research and development programme NKFP, is the nationally funded large-scale R&D programme, with a budget comparable to the sum of EU-funded programmes. The scope of individual projects has grown significantly, thus Ányos Jedlik Programme can be thought of as the Hungarian version of integrated projects in the EU funding scheme.

The national Ányos Jedlik Programme is the funding scheme for large-scale consortial research and development. The programme is only being introduced in 2005 as a successor to NKFP (National R&D Programme). However, the scale of the programme boosted: the minimum financial support in 2004 was HUF 100 million, whereas in 2005 it will be HUF 300 million - in the meantime the programme budget was slightly decreased, so concentration will be higher. The programme is similar to the EU's integrated funding scheme: industry-driven, large-scale research and development, with large grants awarded, but stringent rules and total accountability. There are five major sub-programmes: Life Sciences, Information and Communication Technologies, Environmental Protection, Agro-food Business and Biotechnology, Materials Science and a support programme: Social Challenges of Technological Development; Studies, Analyses, Concepts, where different rules apply. Programme direct beneficiaries are consortia with up to 8 members. There is no restriction set on the types of beneficiaries, and the programme covers all fields of mobility research. Every consortium must include an enterprise and a public body too. Enterprise-led consortia are given preference. The goals and the rationale of the programme are valid, however, this R&D programme runs the risk of funding bogus research, i.e. the existence of research entities instead of funding actual research objectives. In 2005, the programme makes a step towards even bigger integrated research programmes. The project can be co-financed from other projects, foreign partners are encouraged to participate by awarding a higher amount of funding to the domestic players in projects where foreign partners are also invited. Foreign partners are not entitled to receive funding. The call is also available in English, and some parts of the proposal have to be submitted in English, too, because some evaluators are foreign. Unfortunately the management quality is poor – the project executives are not given any know-how in project management issues, and administration is not made easy.

Sometimes the authority organises a one-day seminar for successful proposers. There is no public programme revision policy. Being the most popular Hungarian R&D programme, the *Ányos Jedlik* Programme has a big impact on Hungarian R&D.

AKF

The Applied Research and Development Programme (AKF) offers funding for research, development and innovation projects falling within seven thematic priorities. The call specifically addresses mobility. This is the EU co-funded umbrella research programme where all (soundly managed) organisations can apply, and has not very specific thematic requirements. This programme definitely welcomes small and medium sized companies with small and medium sized projects, whereas its counterpart, the *Ányos Jedlik* programme is for the veterans of research. Although the programme was first announced in 2004, it has traditions reaching far back, with its predecessor IKTA (Ministry of Education) being the most popular high-tech research programme for long. Like the *Ányos Jedlik* Programme (and all general programmes), AKF also runs the risk of not funding significant R&D endeavours but the operation of R&D entities. The application procedure is going very smooth, but the programme is very weakly managed: the timespan between submitting the application and contracting can be as big as 14 months. This also risks the impact of the programme: without proper funding and calculable cash-flow, the quality of the milestones can be deteriorated. There is no programme revision policy in place, and the managing institution often settles for ad hoc solutions.

As a conclusion, the AKF programme is one of the best planned and worst implemented programmes ever in the history of Hungarian R&D financing.

INFRA

So far, all programmes targeted the achievement of specific results - the creation of a research centre in the case of Mobil 2004, major research achievements in *Ányos Jedlik* Programme, lower-scale research achievements in AKF. INFRA, also a part of the EU-co-funded GVOP programme, targets no technological results. It aims to increase long-term R&D competitiveness of Hungarian entities by providing them the infrastructure necessary to employ researchers. However, it also has an underlying research project - the basis for evaluation -, but compliance with the research plan is not checked for.

The INFRA programme (Developing the corporate research infrastructure and creating new research jobs) offers financial assistance for creating new R&D jobs. The programme does not finance human resources (wages, salaries), it enables the creation of jobs by providing a grant for procuring hardware and software – machinery, research equipment, computers, and software. Projects are awarded support, therefore in every case, there must be two projects running: the government-financed infrastructure establishment project and the long-term R&D project in which the equipment will be used by the new researchers.

INFRA is not comprehensive, as it only provides direct funding to companies, which they have to spend on tangible and intangible assets, research infrastructure, including the purchase of research achievements – thus it can provide indirect funding to other entities too. In the programme, there is no thematic range set. The programme is not open as it only awards funding to a single Hungarian company for each project, no partnership is allowed. Co-financing is possible. On the other hand, the programme is indirectly very open, because the successful proposer can order or buy any R&D achievement in the world. There are no programme management tools, no programme revision policy in place, and the authority settles for ad hoc solutions sometimes. The programme's rationale is well justified by the fact that market-driven R&D brings the economy forward. Companies often lack the resources necessary to create the infrastructure for such R&D. This programme does not have a direct impact on R&D, it is meant to create centres of excellence. It is very hard to evaluate the dedication of companies to long-term R&D goals, but if the funds were awarded to the right proposers, the impact can be serious.

KKV

The KKV programme (Supporting corporate innovation) is the short-term innovation fostering programme in Hungary, as opposed to INFRA, the long-term innovation programme. It offers three types of grants for obtaining new technologies to launch new/modified products and services on the market: de minimis for ordering research services (100% grant support for a limited sum), R&D for own R&D activities (including procurement of machinery, hardware and software), and investment for obtaining/buying rights to use inventions. There's an overlapping R&D funding area between KKV and AKF, yet KKV is more market-oriented, whereas AKF is more research-oriented. Both

programmes provide similar support for own development. There is no topical scope: all R&D activities may be financed. The programme has short-term goals: short-term revitalisation of the Hungarian technology market, increasing competitiveness, short-term improving of the living standards. It fosters the innovation activities of successful SME's by providing assistance in introducing new or advanced products, procedures, services through means of adapting and utilising existing R&D achievements and supporting own development. The aim of the programme is to help SMEs in obtaining and achieving high-tech development achievements with a relatively short return.

The programme's thematic range is not restricted, but beneficiaries can only be companies. In the programme, you can place an order for the provision of R&D services, thus indirectly, the beneficiary of the programme can be any entity.

The goals of KKV – short-term marketable research – are very justified. The administrative burdens are rather excessive due to the categorisation of all works into three different funding categories. Reporting, however, does not take more time than the average in Hungary, and the accounting rules are not very stringent either. Unfortunately, half of the proposers find the funding available low, which may either be due to bad project management or high expectations. The programme is not open as it only awards funding to a single Hungarian company for each project, no partnership is allowed. On the other hand, the programme is indirectly very open, because the successful proposer can order or buy any R&D achievement in the world. The financial capacity of KKV is limited. It is targeted to a specific niche.

The management quality is poor. There are no programme management tools, no programme revision policy in place, and the authority settles for ad hoc solutions sometimes.

TST

The TST programme targets new technology-intensive start-ups and spin-off companies, and provides 100% support to them - however, due to the nature of this de minimis support, it is very likely that they only get a single chance to be awarded some grant in TST. TST is a very well-targeted programme that helps whenever assistance is needed the most.

The technology start-up programme (TST) is an innovation programme focusing on new microenterprises. It involves innovative newcomers or former university researchers deciding to go to the market in the government support programmes. Not just the enterprises, the projects are also micro, and receive 100% funding. However, as this is de minimis funding, which may not exceed 100,000 euro in three years time, and the programme first announced in 2004 does not support companies established before 2000, it is most likely that one company can only be awarded TST funding once – thus it's the first 'kick'.

The thematic range of the programme is not restricted, but direct beneficiaries can only be companies that were established up to 5 years ago and natural persons possessing a declaration of a university or research institute on their intent to delegate some technology to a company to be established by the natural person. The TST programme addresses real issues: assistance in promoting new, high risk high potential technology-intensive companies. The funding is rather low, but the rate of support can be up to 100%, which such new companies with limited resources very much welcome. It promotes a shift to market-oriented research among university researchers. The administrative complexity of TST is not very high, because of the limited funding and the full reimbursement of costs. The application process is very efficient. Both the annual programme budget and the maximum single grant are quite low. This is specific assistance to the question marks of the research community, thus the programme is not expected to have a major financial capacity. The impact of the programme on R&D is indirect – it promotes market-oriented research and assists in the creation of new high risk high potential research entities.

Conclusions and recommendations

There are several best practices noticed among Hungarian R&D programmes and initiatives worth considering for adaptation at a wider scale, within other national R&D programmes in NMS and ACC. These are namely the centralisation of all governmental research funding activities into a single infrastructure, the targeting of research in line with the economic policies, the communications procedures, the transparency and the application process. Mobility development is a key priority in Hungary.

It is a general statement that the planning of the programmes is quite efficient, but the implementation is rather weak. Due to the lengthy decision and contracting processes, proposers ask for more than enough, to compensate for the uncertainty caused by the authority. Also, it is very likely that between the project start (which can start right after the submission) and the announcement of results most of the proposers do not conduct any serious project-related activity, as in case of failure in proposing, they would not be reimbursed for the costs. The idle time can take up a major share of the project duration, sometimes as much as 30%!

The efficiency of the whole system could be enhanced by the managing authority's transferring of project management know-how. There is no way to ensure that all members of a consortium are in accord concerning the project's goals. Such internal communication difficulties can render a project inefficient. The authority should also promote actively the marketable research and development attitude.

As regards the programme evaluation, there are no specific evaluation and review policies in place. Without such policies, it is impossible to align the programmes with the ERA objectives. All in all, it is very probable that the inefficiency in the funding scheme renders Hungarian R&D inefficient, too.