

Executive Summary of the ALIPRO National Report Bulgaria

ALIPRO objective

ALIPRO1 aims at supporting the alignment of the NMS' 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 presents the findings of ALIPRO carried out in Bulgaria. It comprises an overview on mobile IST situation and a detailed description of R&D programme together with its evaluation. This document contains also the conclusions drawn from the evaluation of the R&D funding system in Bulgaria. It is meant for institutions and individuals active in the field of mobility.

The mobile sector in Bulgaria

Bulgaria develops its national Information Society and ICT policy in compliance with the ambitious goals of the Lisbon strategy on making EU the most dynamic and competitive knowledge-based economy in the world. ICT, including mobile communications, is a priority sector for the Bulgarian government. The market of mobile telephone services undergoes rapid development. Currently, there are four licensed mobile operators on the Bulgarian market that practically cover the whole territory of the country. Most of the ICT sector is private and the big international telecoms play a leading role on the national market while Bulgarian companies usually cooperate with them as subcontractors or enter market niches. Presently, the telecommunications sector in Bulgaria is liberalised.

Regulatory background

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

The Communications Regulation Commission is the National Telecommunications Regulator. Its role under conditions of full liberalisation is crucial. Its basic tasks are to ensure a common market, support effective competition, effectively manage frequency usage, effectively manage the numbering space, ensure the Universal Service Provision, support user protection and resolve disputes.

There is new Telecommunications Law passed on 23 September 2003. On 10 November 2004 the Council of Ministers adopted an updated Telecommunications Sector Policy. The document identifies the political, legal and regulatory measures which have to be taken in short-term, medium-term and long-term for ensuring effective competition on the market of electronic communications, and gives also guidelines for transposition and implementation of the new acquis. In this regards the preparation of the new Law on electronic communications started at the end of 2004.

Bulgarian research strategy

Within the context of Europe's ambition to become the most competitive and dynamic knowledge-based economy in the world, Bulgarian institutions set out the type of activities needed to increase the level of R&D investment. These fell into four main categories:

- Activities aimed at developing a common understanding amongst all R&D and innovation stakeholders about the importance of sustained and coherent efforts to attain the R&D investment targets;
- Activities aimed at improving the effectiveness of public support for research and innovation;
- Activities aimed at redirecting public resources towards research and innovation;
- Activities aimed at improving the framework conditions for research and innovation.

Bulgarian R&D policies acknowledge the need of intensifying the R&D activities and are oriented towards the achievement of downstream improvements in economic performance, competitiveness and social welfare. Efforts driven by the perceived need to improve national innovation systems and make progress towards knowledge-based societies also acknowledge this necessity. Specific strengths, weaknesses, opportunities and threats constitute the rationale for sets of R&D and innovation strategies designed to improve public research infrastructure, promote public-private partnership, attract foreign investment or stimulate the provision of venture capital.

Bulgarian system of R&D financing

In the initial phase of ALIPRO, an exploratory research was conducted to identify on-going national research programmes covering IST mobility.

Acquired information proved that in Bulgaria there is no specific national research strategy in regard to the mobile IST development, but the “Information Society” National Scientific Programme (ISNSP) launched by the state (Resolution 15/09.01.2003, Council of Ministers of Republic of Bulgaria) comprises some research objectives and activities on mobile technologies and communications. The programme is one of the five national research programmes covering the following sectors: Genomics, Information and Communication Technologies, Nanotechnology, Space Research, Social and Human Sciences. These programmes are open for participation to other associated countries and Member States, in conformity with the legislative regulations of each country. The financing of these programmes is ensured by the Ministry of Science and Technology, the interested line ministries, and where applicable by international donors. Unfortunately, the state funding is very restricted. The provided funding per call is 50 000 EUR. Public funds supporting R&D activities are allocated to all scientific disciplines by the Ministry of Education and Science. Another institution financing R&D projects in Bulgaria is the ICT Development Agency. Apart from the national resources, Bulgarian institutions benefit also from the European ones - EU Framework Programmes’ grants and the Structural fund. The “Information Society” National Scientific Programme (ISNSP) launched by the state was chosen for evaluation as in the sense of ALIPRO it is scientific research programme.

Bulgaria “Information Society” National Scientific Programme evaluation

In Bulgaria there is no specific national research strategy in regard to the mobile IST development, but the “Information Society” National Scientific Programme launched by the state (Resolution 15/09.01.2003, Council of Ministers of Republic of Bulgaria) comprises some research objectives and activities on mobile technologies and communications.

Bulgaria “Information Society” National Scientific Programme has been drawn up in accordance with the “Strategy and the National Programme for Information Society Development” in Republic of Bulgaria and respects the framework programmes priorities. The programme timeframe is 2003-2006 and the average annual budget is 50000 euro.

The programme direct beneficiaries are Research institutes of Bulgarian Academy of Science, industry SMEs, NGO and universities.

The “Information Society” National Scientific Program aims at speeding up the development of information society through creating the necessary preconditions for improving the quality of life of all citizens as well as for making state and local administration more efficient through:

- supporting those spheres of scientific research which exert considerable influence on the development of the country's society and economy; ensuring the establishment of a competitive, knowledge-based society and economy;
- improving the quality of scientific research in the field of information society; supporting the work of research networks, especially in the context of European integration; improving the qualification of scientists participating in research networks;
- speeding up the development of information society technologies and supporting market-oriented activities which aim at implementing new products and services developed on the basis of contemporary information and communication technologies;
- supporting the adaptation of educational and vocational training systems to the requirements of the information society as well as to the opportunities it offers.

The programme is partly aligned with the ERA specific objectives as described in the Commission Communication “Towards a European research area (COM (2000) 6, Brussels, 18 January 2000):

- Provides financial support predominantly for R&D projects.
- Does not support creation of centers/networks of excellence at national level and networking with existing centers/networks in Europe.
- Favours consortia with European foreign partners, however, they could not be funded under the programme.

- Favours consortia with the participation of research institutes, Universities, NGO's or SME's. The last 2 however could not be entirely funded by the state budget and should ensure co-funding.
- Partly contributes to the creation of large scale infrastructure. Usually the eligible costs can cover ordinary or unique research equipment and/or maintenance of existing infrastructure. On the other hand there are other specific programmes directed toward upgrading the research infrastructure of the Universities and research organizations. Even the programme itself could not cover costs for large-scale research infrastructure, trans-national and trans-regional access is very much stimulated and costs incurred for travel, fees of access, etc. are eligible under the project budget.
- Supports creation of data-bases and access to data-bases. On the other hand, the National Science Fund maintains a comprehensive up-to date data base for all submitted projects. The public part of information is accessible in English (project summaries, contact details). Also, recently a Register of the scientific activities in the Republic of Bulgaria has been created and opened. It consists of the following six interconnected parts: scientific organisations and scientists; national R&D projects; research objectives; project results; public competitions; Bulgarian projects in international programmes.
- Is not fully coordinated with other national programmes, but all national programmes should be approved by the Council of Ministers. Before that they are circulated for approval to all Ministries for consolidation.
- Is related with scientific and technological intergovernmental frameworks. The project proposal might be submitted by a research team which is a part of larger established consortium, especially in the case of COST and ESF, where national funding is obligatory condition. Bulgaria is participating in over 100 running COST actions and all units are funded under one or another national competition. Also, the bilateral cooperation can be funded at national level.
- Does not support risk capital investment in high tech sectors and does not promote innovative companies starts-ups.

- Is in compliance with the National Development plan and the European priorities in the IST area.
- Encourages foreign exchange of researchers and supports young researchers. It has put as a goal to stimulate young research generation to embark career in science by providing opportunities to do their PH.D or POST DOC research outside Bulgaria, aiming at creating a pool of young competent scientific community.
- Contributes to the transfer of knowledge between academic and business world, since companies are allowed to join the project consortia and project results are often utilised by the industry. However, business is not eligible for funding under this programme.
- Does not subsidise information, training and familiarisation projects for researcher or/and administrative managers of research organisations, but may sponsor participation in training courses both organized on national and international level. Participation in such events should be well justified.
- Due to legislative restrictions does not promote establishment of academic facilities with international/European profile.
- Bearing in mind that Bulgaria is in one of the leading countries not having problems with gender issues; the same is valid for the research programme. 35 to 40% of the successful proposals are coordinated by women researchers.
- Sponsors activities such as dissemination of scientific results; awareness-raising meetings, discussion events, etc.
- Promotes the integration between research institutes, universities and SME's and strengthens the regional dimension by giving priority to projects consortia involving participants from regional or local business companies. Until now there were not special activities directed towards strengthening regions. However, a Strategy for regional Development has been recently adopted, where promotion of science and innovation in the less favoured regions is put as one of the main goals.

Assuming from the above analysis, the Bulgarian "Information Society" National Scientific Programme has to be further improved in order to achieve full alignment with the ERA concepts and specific objectives.

Also, the summary of the “Information society” national research programme evaluation could take a form of a simplified SWOT analysis which could help us to come up with basic conclusions considering typical Strengths/ Weaknesses/Opportunities/Threats. The results of such SWOT analysis are briefly presented below:

Strengths:

- Clearly designed and understandable programme goals in compliance with the national priorities and the FP6 priorities in IST area;
- Very good communications policy;
- Openness for participation of different stakeholders, including foreign ones;
- Easy and transparent application procedures;
- Substantial impact on the development of national research capacity.
- Support of projects targeting the needs of industry.

Weaknesses:

- financial capacity; Very low
- scope with regard to mobility issues; Too general
- for foreign participants and partners from private companies; Lack of funding
- participation of SMEs; Insufficient
- of participants in the correctness of selection process; Insufficient trust
- management quality (lack of electronic submission tools and electronic programme management tools; and of relevant approach for dissemination of results). Insufficient

Opportunities:

- Raising the international prestige of Bulgarian research constituency and better integration into ERA;
- Successful preparation for participation in FP7;
- Strengthening the cooperation and technology transfer between the academia and high-tech industry;
- Fostering the innovation process;
- More high quality products and services for the

Threats:

- Lack of funding for large scale mobility related projects;
- Insufficient utilization of the research capacity of high-tech SMEs.
- Lower than expected impact of the programme.

Other mobility related R&D support activities in Bulgaria

The ICT Development Agency to the Ministry of Transport and Communications was responsible for the implementation of various investment and RTD programmes and projects in the ICT area. In 2004 the ICT Development Agency absorbed funds amounting to 6 392 815 EUR for the development of the information and communication infrastructure. This figure exceeds 50 times the funds absorbed in 2003. Currently, in 2005 the ICT Development Agency invests more than 15 300 000 euro for further ICT infrastructure developments. The funds have been mainly used in the provision of computer equipment for the Bulgarian schools and universities, the establishment of tele-centers and "hot spots", and for the procurement of wireless Internet across the country.

Conclusions and recommendations

There are two best practices noticed for Bulgarian 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, communications quality and goals validity.

Among all attributes of the programmes the quality of communications within this programme turned out to be excellent. Following the regulations of the Rules for the activities of the National Scientific Fund all competitions are announced on the official Internet site of the Scientific Fund and in at least one daily newspaper. The announcements contain the scientific directions; the specific conditions for each competition, the terms and the place where the documents for participation have to be submitted. Furthermore, experts dealing with the programme coordination reach the research institutions by post mail and/or e-mail announcing the opening of new national competition (call for proposals). In addition dedicated information days are organised where the research constituency receives comprehensive information about the forthcoming call content, participation rules, etc. The staff of the Secretariat to the Board of

the National Scientific Fund assists willingly both to prospective applicants and to all other enquiries.

The goals of the programme reflect both the necessities of researches and industry. They correspond to the priorities of the National Development plan and the Strategy for Information Society Development, as well as to the objectives of the Sixth framework programme.

On the basis of the information gathered it is apparent that certain aspects of the Bulgarian research policy require substantial improvement. These aspects are as follows:

- concentration and increase of funding for R&D;
- establishment of open coordination model for scientific research and innovation;
- establishment of open coordination process for human resource development activities;
- application of modern and harmonised instruments for scientific research and innovation;
- modernisation of the research infrastructure;
- creation of centres and networks of excellence and competency zones;
- establishment of technology clusters;
- overwhelming the regional disparities in R&D and innovation.
- seeking synergy effect among different initiatives.

For this purpose the existing National Scientific Programmes (among them ISNSP) should be updated. In addition, horizontal programs should be launched to complement the thematic priorities. All these programmes shall be open at regional and/or European level on the principle of reciprocity. Last, but not least, special attention should be given to the creation of joint program initiatives with other countries based on common priorities.

The Draft National Scientific Strategy prepared by the Ministry of Education and Science takes into consideration all these aspects and formulates measures for improvement of the national research policy in the light of Lisbon strategy and ERA concepts. Hopefully it will be adopted very soon by the Council of Ministers and successfully implemented.

In this report we make recommendations on some specific aspects that we consider very critical.

Improvement of R&D financing system

Financing is one of the most critical issues. As Bulgaria is in a currency board the public funding for R&D which is about 0,5 % of GDP can not be sharply increased. 3% of GDP for research by 2010 is an ambitious goal that can be achieved through incremental increase of public funding and attracting more private funding. The public and private funding schemes should be restructured. Financing should be concentrated to a more narrow scope of research thematic and horizontal priorities and wisely allocated according to three principles:

- a balance between current and new activities;
- a balance between research for the advancement of knowledge and its industrial application; and
- a balance between support for human and material research capabilities.

Financial mechanisms promoting the participation in EC's framework programmes and other EU initiatives should be established.

Improvement of national scientific programmes and better coordination with other programmes at European level

The existing National Scientific Programmes and particularly the Bulgaria "Information Society" National Scientific Programme have to be improved with regard to their effectiveness and efficiency, as well as to their alignment with ERA concepts and specific objectives. Basing on the analysis of the latter one we propose:

- Substantial increase of programme budgets based on increased public funding combined with private funds;
- Involvement of private stakeholders in program preparation and management processes;
- Aligning the programme rules, procedures and evaluation criteria with those used in framework programmes and ensuring full transparency and fair treatment of participants.

- Introducing electronic tools for submission of proposals and programme management.
- Introducing mechanisms for wide dissemination of programme results;
- Introducing better mechanisms for programme monitoring and evaluation.
- Wider openness for SMEs and foreign partners; some legal regulations shall be changed to allow funding of private companies and foreign partners;
- Active participation in the ERA-NET activities for the networking with other national programmes.
- Support for creation of new centers/networks of excellence at national level and networking with existing centers/networks in Europe.

Development of the research infrastructure of national and European interest

The further development and modernisation of the research infrastructure should be a subject of a separate horizontal programme closely linked with the National Development plan and EU priorities and combining national funding and funding from the structural funds which will become accessible after Bulgaria's accession to the EU.

Emphasis should be given to:

- Modernisation of the research laboratories of the institutes of the Bulgarian Academy of Sciences and main universities, establishment of new centres and networks of excellence and strengthening the cooperation with similar foreign entities at European level;
- Further development of the National Research and Educational Network, increasing the connectivity with the Pan-European Research and Educational Network and the number and quality of the provided services through active participation in GEANT projects for the interconnection of electronic research networks and GRID architecture;
- Establishment of high-tech incubators and high-tech parks to promote innovative companies starts-ups and ensuring risk capital investment; promoting cooperation with similar entities at European level;

- Establishment of academic facilities with international/European profile.

Making Europe and Bulgaria more attractive to the best researchers and stimulating basic research

The European Union's objective is to promote the development of European scientific careers, at the same time helping to make sure that researchers stay in Europe and attracting the best researchers to Europe by placing emphasis on:

- attracting young people to science and the initial training of researchers through support for the structuring of training, in particular trans-disciplinary training;
- the role and place of women in science and research;
- the transfer of knowledge, for the benefit in particular of the technologically least advanced regions and SMEs;
- the international dimension of training and mobility through increased exchanges with other parts of the world;
- life-long learning and career development.

The Commission also suggest the creation of a mechanism for open competition in basic research. Open competition between individual research teams and support for them at national level would boost the dynamism, creativity and excellence of research whilst increasing its visibility.

Bulgaria should establish a horizontal national programme providing:

- Higher support for activities related to attracting young people to science and the initial training (particularly structuring of training and trans-disciplinary training) of researchers;
- Support for activities related to transfer of knowledge, for the benefit in particular of the technologically least advanced regions and SMEs;
- Strengthening the mobility dimension through providing national support for international exchange of researchers;
- Introduction of mechanism for supporting basic research through open competition between teams at national level. Projects would be proposed by researchers on

their own initiative, without thematic constraints, on subjects of their choice. Projects would then be selected on the basis of their scientific excellence.

Launching national technological platforms and joining the EC technological platforms

At the initiative of the Commission and industry, “technology platforms” are being set up, which bring together companies, research institutions, the financial world and regulatory authorities at European level to define a common research agenda which should mobilise a critical mass of - national and European – public and private resources.

This approach has been, or will be adopted in areas such as mobile communications, embedded systems and nanoelectronics, energy, transport. This entails in particular identifying the legal and regulatory conditions needed in order to implement the common research agenda.

The participation in such initiatives will strengthen the possibilities of Bulgarian institutions to join the EC funded programmes by means of “integrated projects”. In a limited number of cases, a “pan-European” approach appears appropriate, involving the implementation of large-scale “joint technology initiatives”.

In Bulgaria the mobility related R&D strategy has to be done in the context of the European Technology Platform (ETP) concept and particularly through launching a National Technological Platform following the EC eMobility technological platform.

ETP helps the industrial and research community to better structure and coordinate R&D in order to reach common objectives of industrial and societal relevance.

In the mobile and wireless context of the 7th Framework Program (FP7), a Mobile and Wireless Communications Technology Platform (eMobility) has been established in the autumn of 2004.

ALIPRO is considered as a candidate for liaison with eMobility. This liaison would focus on the involvement of the new Member States and Associated Candidate Countries: Bulgaria, Romania and Turkey stakeholders, and on their potential national R&D programmes, in the area of mobile and wireless communications.

Related to ALIPRO project execution, the vision for Bulgarian eMobility Technology Platform development has been discussed with the main stakeholders. Most of them agreed on, and commit to support such initiative.

A joint mobility related strategic research agenda will be established taking in consideration the specific national needs and conditions. The agenda could be seen as an important input for developing and better alignment of Bulgarian mobility related research strategy and programmes to EU priority in the context of FP7. So, Bulgaria would be prepared for the future steps for joining the eMobility Technology Platform on European level.