

Strengthening the Strategic Cooperation Between the EU and Western Balkan Region in the field of ICT Research

Document Title	Policy Paper - “Shaping EU-Western Balkan co-operation in the field of ICT Research & Development in the period 2008-2013: Priorities and Recommendations”
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Abstract	The Policy Paper presents the regional / common ICT Research & Development priorities of Albania, Bosnia-Herzegovina, the Former Yugoslav Republic of Macedonia and Serbia. The priorities were defined following a two-phase consultation process that involved more than 320 ICT stakeholders in the region. Moreover, the paper presents concrete recommendations on what the Western Balkan countries on the one hand and the EU on the other hand could further undertake in order to enhance the EU-Western Balkan R&D collaboration.
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1. Scope of the Policy Paper

1.1 The Context

The relations with Western Balkan countries are acquiring an increasing relevance for the European Union, as “*the future of the Western Balkans is within the EU*”.¹ In this context, the European Commission promotes the scientific and technological co-operation with the Western Balkan countries, aiming firstly to reinforce the research capacity of these countries, and secondly to integrate the region in the European Research Area. In this direction, the 5th and 6th Framework Programmes (for Research and Technological Development) opened up to the Western Balkan countries, while the 7th Framework Programme (FP7) creates new research & development opportunities for actors in the region in the period 2007 to 2013.

One of the Research & Development (R&D) fields identified as promising for EU-Western Balkan collaboration is Information and Communication Technologies (ICT) based on the “*EU-Balkan countries Action Plan in Science & Technology*” adopted in 2003². Along this direction, the IST Programme of the 5th and 6th Framework Programmes for Research and Technological Development opened up to the Western Balkan countries resulting in a number of projects involving partners from the region (e.g. ISIS, TRISTAN-EAST, GREAT-IST, IS2WEB, ELLECTRA-WEB, SCORE).

The IS2WEB project (predecessor of SCORE) was the first support action covering the Western Balkan Region that performed an initial mapping and training of Western Balkan ICT research organisations on Framework Programme procedures.

SCORE, being the logical continuation of this work, aims at identifying the further steps for the successful integration of the region within European research activities, by identifying future priorities for ICT R&D collaboration (in view of FP7) and concrete recommendations that the Western Balkan Countries on the one hand and the EU on the other hand should act upon in order to further enhance this collaboration.

The following Western Balkan countries³ are involved in the SCORE project and addressed by this policy paper:

- Albania
- Bosnia-Herzegovina
- Former Yugoslav Republic of Macedonia
- Serbia

¹European Commission (2003), *The Western Balkans and European Integration*, Communication from the Commission, COM (2003)

² This action plan was adopted at a Ministerial Conference in Thessaloniki on 26-27 June 2003.

³ Note that Montenegro is the only Western Balkan country not represented in the policy paper, due to the fact that in the proposal phase of the SCORE project, Montenegro was still part of the former union of Serbia and Montenegro.

1.2 The Policy Paper

The SCORE project addresses the need for well-defined Research & Development priorities that will enhance scientific co-operation between the Western Balkan region and the EU in the field of Information Communication Technologies (ICT).

The most important deliverable of the project is thus the present Policy Paper which addresses **decision-makers both within the Western Balkan countries and the European Union.**

Western Balkan decision-makers include policy makers / governmental officials related to the field of ICT / ICT research, decision-makers in the academia / universities as well as top-level management of the ICT private sector. EU decision-makers primarily targeted in this paper are policy-makers related to the field of ICT R&D.

Specifically, the **Policy Paper**:

- Proposes commonly accepted R&D priorities for EU-Western Balkan cooperation in the FP7 context that reflect the actual socio-economic needs and R&D capabilities of the Western Balkan countries. Moreover, it correlates/maps these priorities to FP7 ICT challenges.
- Identifies key problems and barriers faced by ICT research actors in the Western Balkan countries and proposes concrete recommendations for Western Balkan countries' decision-makers in order to address/minimise these.
- Makes specific recommendations for EU decision-makers which if implemented could facilitate the further integration of the Western Balkan region in the European Research Programmes.

The content of the policy paper is based on the findings of a consultation process that involved more than **320** ICT stakeholders in the participating Western Balkan countries (including ICT experts, research actors, policy makers, ICT company representatives, NGO and civil society representatives) who were involved through a combination of the following means: ICT expert panel, consultation workshops, online consultation and ICT workshops (with a dedicated session on barriers to ICT research and recommendations to Western Balkan and EU decision-makers). An overview of the consultation process is provided in **Annex I**.

As a result of the consultation process, ICT Strategic Research Agendas (SRAs) were developed for the four countries in the region (documented in a separate deliverable "D6-ICT Strategic Research Agendas"). The SRAs outline the **ICT research & development priorities** for which each country has the appropriate human resources and research infrastructures in order to pursue research and development in the short to medium term. Moreover, they present potential-based ICT R&D priorities which are considered attractive for the country and have future, long-term potential.

Based on the countries' SRAs the Policy Paper brings together the common elements and concerns for the four countries involved.

2. REGIONAL ICT R&D PRIORITIES PROPOSED FOR COLLABORATION IN FP7

2.1 Regional ICT R&D priorities

In this section the ICT Research & Development priorities of the represented Western Balkan Countries for the period 2008-2013 are summarised. The priorities have been identified following a broad consultation process with ICT stakeholders, which resulted in country-specific ICT Strategic Research Agendas. The priorities per country were grouped in two categories as follows:

- **ICT research priorities on the basis of the country's readiness:** these are priorities that meet actual socio-economic needs and for which the country has the appropriate human resources and research infrastructures in order to pursue research and development in the short to medium term (2008-2013).
- **ICT research priorities on the basis of future potential:** these are priorities that are considered attractive for the country and have future potential in the long-term. However, the level of readiness and capacity to pursue research and development is currently low.

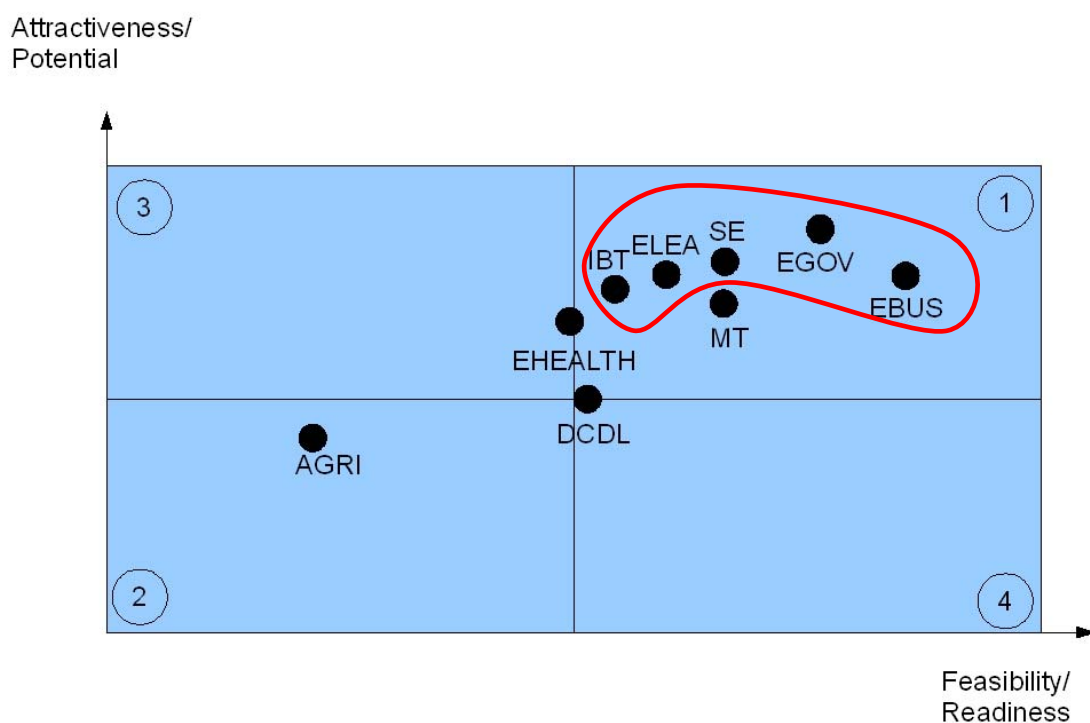
ICT R&D	ALBANIA		BOSNIA-HERZEGOVINA		FYROM		SERBIA	
	Readiness	Potential	Readiness	Potential	Readiness	Potential	Readiness	Potential
ICTs for Government & eGovernment	✓		✓		✓		✓	
ICTs for Enterprises & eBusiness	✓		✓		✓		✓	
Internet & Broadband Technologies	✓			✓	✓		✓	
Software Engineering		✓		✓	✓		✓	
ICTs for Learning & eLearning		✓	✓		✓			✓
ICTs for Health & eHealth		✓	✓			✓		✓
Mobile Technologies					✓		✓	
ICTs for Agriculture						✓		✓
Digital Content & Digital Libraries		✓				✓		
Distributed Systems		✓						
Embedded & Pervasive Systems								✓
Network Technologies		✓						
Knowledge Technologies						✓		

Table 1 – Integrated list of ICT R&D Priorities for all countries (2008-2013)

The first 5 R&D priorities are considered as the common priorities for the region **proposed for future collaboration between the EU and Western Balkan countries**. The criterion for the selection of a priority as regional (in the context of being suitable for EU-WB collaboration) is the evidenced readiness to pursue R&D in the given priority by at least two countries and additionally considered as potentially attractive by one country.

Table 1 reveals that **the application-driven research** priorities (specifically, eGovernment, eBusiness and eLearning) are the fields for which in all countries, there is both high interest and readiness to pursue research & development. It is indeed one of the main recommendations that derives from this consultation, that Calls targeting these priorities can offer more opportunities for participation for the organisations of the Region.

Moreover, the following SPAN chart illustrates priorities identified by at least 2 countries in a diagrammatic form, based on the positioning of priorities in the country-specific SPAN charts (documented in D6, ICT Strategic Research Agendas). The five regional priorities recommended for EU-Western Balkan cooperation are indeed the most attractive and feasible, as illustrated in Figure 1.



Legend:

- EGOV- ICTs for Government & eGovernment
- EBUS- ICTs for Enterprises & eBusiness
- IBT- Internet & Broadband Technologies
- SE- Software Engineering
- ELEA- ICTs for Learning & eLearning
- EHEALTH- ICTs for Health & eHealth
- MT- Mobile Technologies
- AGRI- ICTs for Agriculture
- DCDL- Digital Content & Digital Libraries

Figure 1 - SPAN chart on the readiness and attractiveness of ICT R&D priorities (identified by at least 2 countries)

2.2 Mapping of regional priorities to FP7 ICT Challenges

Since one of the objectives of the policy paper is to suggest areas and objectives for cooperation in the FP7 context the following table maps relevant FP7 ICT Challenges (based on the 2007-2008 ICT Work-Programme) to the identified Western Balkan ICT research priorities (cf. Table 1).

FP7 ICT Challenge (2007-2008)	Western Balkan ICT research priority (2008-2013)	Proposed ICT research objectives (per priority)	Proposed relevant ICT research areas (per objective)
Challenge 1: Pervasive and Trusted Network and Service Infrastructures	Internet & Broadband Technologies	Providing broadband for all.	<ul style="list-style-type: none"> • Service-enabling technologies and platforms based on interoperability of telecom and internet infrastructures. • Development and introduction of broadband technologies and services based on wireless communications for all.
		Development and design of multimedia network and service infrastructure.	<ul style="list-style-type: none"> • Systems and applications for interoperability of multimedia networks. • Development of application and tools for interactive broadcasting.
		Development and implementation of secure solutions for broadband transfer through existing infrastructures.	<ul style="list-style-type: none"> • Secure and resilient architecture and technologies to ensure end-to-end secure transmission of data and services across heterogeneous infrastructure.
	Software Engineering	Software tools and service oriented architectures for distributed information systems.	<ul style="list-style-type: none"> • Models and mechanisms for security and data privacy integration into system environment. • Model driven architectures. • Development of multi-agent software systems architecture • Tools for support of interoperability and collaboration on heterogeneous systems
		Methods and tools for software development improvement.	<ul style="list-style-type: none"> • Applied research in system design, software development, integration and end-user driven development. • Methods and tools software quality control and assurance

FP7 ICT Challenge (2007-2008)	Western Balkan ICT research priority (2008-2013)	Proposed ICT research objectives (per priority)	Proposed relevant ICT research areas (per objective)
	ICTs for Enterprises & eBusiness	Tools and solutions for the support of business processes management and integration.	<ul style="list-style-type: none"> • Adaptive business process management, modelling and design of business processes, workflow systems, decision support systems, CRM. • Business integration based on B2B models (including electronic and m-payment systems, digital signature). • Web services enabled business models and ICT support architectures • Advanced supply chain management solutions.
		ICTs for the networked business.	<ul style="list-style-type: none"> • New networked applications and services capable of interoperation across a wide variety of business domains and organisations of all sizes. • Distributed and collaborative intelligent-based network oriented systems for efficient and secure service creation and delivery
Challenge 4: Digital Libraries and Content	ICTs for Learning & eLearning	Personalized education process over the Internet.	<ul style="list-style-type: none"> • Adaptive learning systems development, able to configure according to learners' behaviour. • Intelligent systems for learning process personalization (student modelling & learner model development).
		Software systems for learning process management and support.	<ul style="list-style-type: none"> • Design and development of software tools for digitalization of content, digital libraries, content management and Multilanguage environments. • Integration of distributed sources of information and digital libraries into eLearning systems. • Synergies between learning and knowledge management systems for complex learning contexts and resources.

Table 2 - Mapping of Western Balkan ICT Research Priorities to ICT challenges (2007-2008)

Moreover, "ICTs for Government and eGovernment" is identified as an **additional priority** suitable for EU-Western Balkan collaboration programmes. This priority was not directly addressed by the ICT work-programme for 2007-8 but was included in many previous ICT

work-programmes and it was considered at that time in the context of future annual ICT workprogrammes. Indeed, ICT for Government was recently (re-)introduced in the WP 2009-2010 (as part of Challenge 7 “ICTs for Independent Living, Inclusion and Governance”).

Western Balkan ICT research priority (2008-2013)	Proposed ICT research objectives	Proposed relevant ICT research areas (per objective)
ICTs for Government & eGovernment	Development of electronic document and databases infrastructure for Government.	<ul style="list-style-type: none"> • Software for exchange of electronic documentation and data of citizens and companies with public institutions. • Middleware development for Government-to-Government applications (e.g. web based service providing from registers of citizens and legal entities to all e-government applications).
	Fast and secure access to information and services for citizens and the business sector.	<ul style="list-style-type: none"> • Models and mechanisms for authorization and authentication of access to administrative and other data. • Security concepts for ensuring trust and confidentiality of eGovernment applications and services.

Table 3 –Additional ICT priority proposed for EU-Western Balkan co-operation

3. HOW THE WESTERN BALKAN COUNTRIES CAN SUPPORT R&D COLLABORATION WITH THE EU: SOME RECOMMENDATIONS

Research capabilities in the Western Balkan region have been severely affected by the rapid political change, internal conflict and the transformation from state run to market economies. Specific barriers and problems faced by ICT research in the region as well as concrete actions that need to be taken by the countries have been brought forward during four country-specific consultation workshops (held between June-July 2007) and four ICT workshops (held in October 2008) in the context of the SCORE project.

During the workshops, participants mentioned various obstacles and challenges that research institutions in the Western Balkan countries face continuously in their ICT research & development activities and while trying to increase their participation in Framework Programme projects.

3.1 Common barriers and recommendations

In this section, the key problems / barriers identified are grouped at a regional level and presented together with recommended actions that decision-makers in the countries can take to effectively address these.

Institutional / Political barriers & recommendations

Barrier/Problem	Recommended action(s)
Lack of defined government policy for ICT research (at a national and regional level)	<ul style="list-style-type: none"> • Development of clear regulations and guidelines for ICT research, including national funding schemes, criteria for application etc. • Lack of initiatives encouraging intra-regional ICT R&D collaboration
Weak communication channels between policy makers and researchers	<ul style="list-style-type: none"> • Formation of central co-ordinating body for ICT research & development within each country • Establishment of permanent communication channels between policy makers and researchers e.g. consultation processes (during the definition of ICT strategies)
Insufficient encouragement policies for the collaboration between business and academic communities for ICT research	<ul style="list-style-type: none"> • Development of incentives for public-private partnerships e.g. national co-funding based on criteria
Political instability in the countries/region hinders cooperation within the region and with the EU	<ul style="list-style-type: none"> • Continued initiatives by political leadership in the region for the implementation of measures for stability in the region • Speed up of region's integration process in the EU

Barrier/Problem	Recommended action(s)
Difficulties with researchers' mobility exchange (i.e. visa, residence permits, work permits etc.)	<ul style="list-style-type: none"> • Complete liberalization of the visa process. Until this is achieved: facilitation of process by reducing the required documentation and waiting times. • Development of twinning programs in which local researchers visit EU organisations and then visit together the originating Western Balkan country.

Financial barriers & recommendations

Barrier/Problem	Recommended action(s)
Low level of national funds for ICT research (significantly lower than EU average)	<ul style="list-style-type: none"> • Increase of the % of national budget dedicated to research in ICT • Development of a fund for supporting advanced R&D in the ICT field • Initiatives in collaboration with neighbouring countries for funding regional collaboration in ICT research • Better exploitation of existing funds (if applicable)
Absence of defined financial support policy (at a national level) for participating in FP projects	<ul style="list-style-type: none"> • Improvement of national financial rules so as to facilitate the participation in EU FP projects
Lack of investments from the business sector in R&D	<ul style="list-style-type: none"> • Determination of tax incentives for companies investing in R&D • R&D activities by private companies should be valued as a competitive advantage during the tendering process (for national projects). • Scholarships from business sector for PHD research
Lack of financial incentives for collaboration between universities and businesses	<ul style="list-style-type: none"> • Development of financial incentives for the facilitation of RTD collaboration in public-private partnerships • Follow-up existing collaborations and publication of success stories

Education related barriers & recommendations

Barrier/Problem	Recommended action(s)
Lack of high-level willingness by academic leadership to engage in FP projects	<ul style="list-style-type: none"> • Determination of incentives for the participation of academia in FP ICT research projects
Low motivation for students who could be involved in FP projects.	<ul style="list-style-type: none"> • provision of incentives to students in order to obtain qualification in R&D within the country and abroad e.g. study trips in EU countries • Financial support for full-time PHD students involved in ICT

Barrier/Problem	Recommended action(s)
	research
Lack of specialized ICT professors	<ul style="list-style-type: none"> • Incentives for advanced specialization of ICT professors in European universities
Education system not in line with needs of ICT industry	<ul style="list-style-type: none"> • ICT businesses to be consulted (for their current and future needs) in the development of academic curricula

Human resource barriers & recommendations

Barrier/Problem	Recommended action(s)
Skilled ICT researchers leaving the country (brain drain).	<ul style="list-style-type: none"> • Incentives for researchers to remain in their country (financial as well as immaterial) • Development of Centers of Excellence focusing on ICT research • Creation of ICT Business Incubators
Weak local and regional ICT research networks	<ul style="list-style-type: none"> • Development of networks able to attract and encourage young researchers not just in pure science but also in ICT research development and innovation • Improving access for researchers to research environments of a significant size at a national, regional and EU level (i.e. through research networks).
Lack of professionals able to provide assistance on FP proposal writing and project management	<ul style="list-style-type: none"> • Raising awareness on the importance of the research manager within SMEs and other organisations • Training on proposal development and project management (including financial management) in the FP project context.

ICT business related barriers & recommendations

Barrier/Problem	Recommended action(s)
Limited ICT research in the business community / private sector.	<ul style="list-style-type: none"> • Fiscal and administrative incentives to ICT companies for pursuing research activities • Development of action plan to raise the awareness among the companies about the benefits of research within their companies. There should be focus on the results (impact) of such projects.
Insufficient collaboration between the ICT industry and universities.	<ul style="list-style-type: none"> • Development of industry-university co-operation mentality through specific national programmes and appropriate legal framework.

Infrastructure barriers & recommendations

Barrier/Problem	Recommended action(s)
Insufficient ICT research infrastructure.	<ul style="list-style-type: none"> • Further national & international investments in ICT infrastructure • Incentives (such as co-investments, subsidies) to be offered to infrastructure providers for ICT investments in rural areas • Investments in the set-up of cutting-edge R&D laboratories, business incubators, innovation centres, centres of excellence etc.

Cultural & other barriers

Barrier/Problem	Recommended action(s)
Lack of familiarity with FP and other funding programs.	<ul style="list-style-type: none"> • Organisation of dedicated training courses on the FP and other funding programs (in collaboration with National Contact Points and the EC).
ICT R&D projects, after being completed, disappear without producing a real impact.	<ul style="list-style-type: none"> • Actions should be taken by government policy-makers to ensure the sustainability and impact of ICT R&D projects e.g. appropriate monitoring mechanisms, exploitation of research outputs.
Low appreciation of international cooperation in R&D (resulting in low levels or EU-regional and intra-regional R&D collaboration).	<ul style="list-style-type: none"> • Measures for the facilitation of contacts between research organisations in the country and others in the region and EU. • Presentation of benefits from international collaboration to ICT companies.
Low international reputation of the “scientific image” of countries.	<ul style="list-style-type: none"> • Promotion of the countries’ ICT research strengths and achievements abroad e.g. through supported participation in relevant EU or regional events. • Development of success stories. • Organisation of more regional ICT R&D conferences and other events.

3.2 Country-specific barriers and recommendations

Certain barriers are specific to the circumstances of each country. In this section, some important country-specific barriers and suggested recommendations are presented.

In **Albania** the following barrier was identified “Different financial rules among research organisations (in particular public ones) and those stipulated by FP projects”. A recommendation for the country’s policy-makers is to facilitate the financial rules for organisations (in particular the public ones) and align them as much as possible with European standards. Also, to increase the financial autonomy of public organisations by

replacing the control towards these institutions with monitoring instruments and promotion approaches for researchers.

Bosnia-Herzegovina has in particular infrastructure problems following the dissolution of the R&D structures after the war. Also, the specific inflexible state structures create further barriers to co-ordinated ICT R&D policies and activities at a national level.

Moreover in **Bosnia-Herzegovina** and in **Serbia**, one interesting barrier identified is that government funding for R&D projects is intended to limited number of organisations and institutions registered as Science & Research Organisations (SROs). Recommendation is to review this process and to set new financial rules in order to facilitate participation in EU projects. Similarly, in **Albania** only organisations whose status mentions that they perform research and development can benefit from Government funds.

4. HOW THE EU CAN ENHANCE R&D COLLABORATION WITH THE WESTERN BALKAN COUNTRIES: SOME RECOMMENDATIONS

From the open discussions during the consultation workshops and ICT workshops held in the context of the SCORE project a number of recommendations for EU decision-makers were also put forward in view of facilitating future EU-Western Balkan scientific collaboration.

Indeed many of these recommendations were already the conclusion from previous workshops and consultations in the Western Balkan Region, mainly during the IS2WEB Project, which proves their importance and consistency.

The main recommendations are summarised below:

Recommendation	Justification
Targeted regional calls should be retained for key/common Western Balkan ICT research priorities.	In previous FP6 calls, targeted objectives for the region enabled Western Balkan organisations to participate more successfully. ICT experts in all countries mentioned that the same approach should be retained in future FP calls ⁴ .
Targeted calls should focus on application-oriented priorities.	The results of the consultations reveal the need for research in specific ICT application areas and in particular in eGovernment, eBusiness and eLearning.
Apart from targeted calls on regional priorities, there should be support actions for other (EU) priorities that are underdeveloped in the region (in order to transfer & build know-how in the region).	Overall, the EU should encourage the participation of more Western Balkan partners in horizontal non-targeted objectives so that they can obtain know-how on state-of-art research carried out at a pan-European level.
Inclusion of R&D priorities in the next work-programmes that reflect the <u>actual needs</u> and R&D capacities of the Western Balkan countries.	R&D priorities and objectives well-reflecting the needs and capacities of the region can help in better mobilizing the participation of actors from the Western Balkan Countries.
Support actions on FP7 procedures and proposal development are still considered important for the region, in order to assist research actors in the region to fully exploit FP7 opportunities.	Although a number of support actions have been completed in the region, there is still a need for support to organizations with regards to understanding the FP programme and procedures.
Future RTD projects should strongly encourage cooperation between academia and business in applied research.	Although this is a fundamental principle of FP, it could be further encouraged by determining for example a minimum number

⁴ Some quotations by experts are revealing: “They are the only reason why an EU partner would look for a Western Balkan partner”; “Region is not competitive enough to participate in open calls; we need special treatment”; “EU Funding for ICTs should be targeted – have clear objectives and impact for the countries in the region”.

Recommendation	Justification
	of organizations representing academia and the private business sector.
Need for stricter evaluation and review procedures with regards to the sustainability and impact of ICT R&D projects (<u>both</u> at the proposal and project implementation phases).	ICT projects upon completion usually end in a vacuum. They have limited follow-up activity and results are seldom actually used either in further research or real-life application.

5. SUSTAINABILITY AND FUTURE OUTLOOK

One of the key problems identified during the SCORE consultations was that FP projects are **treated as one-off projects** with limited actual potential and follow-up activities. Indeed, there have been many R&D initiatives from the EU aiming at starting the digital economy in the region, however, so far, when the various Framework Programme projects end, “nothing happens”.

In particular, EU projects in the Western Balkan region, after completion, “**disappear**” and do not have real impact. The results and services/tools of R&D projects are not implemented by organizations and national governmental actors, despite having obtained the knowledge.

To address this problem, recommendations are made to both the Western Balkan Countries and the EU:

- **The Countries to try to systematically benefit and exploit the projects’ achievements, not only in the technical aspect (know-how, research expertise etc.) but also in the aspect of developing contacts, both scientific and commercial.**
- **The EU to stress the element of sustainability as a very important criterion when evaluating proposals and during the review process of contracted projects.**

Finally it is **not** the intention of SCORE to become one more project whose results are “stored in the shelf”. In order to achieve its stated objectives further actions are required on the part of decision-makers in the Western Balkan countries (as initiators) as well as in the EU to build the next steps for EU-Western Balkan scientific cooperation.

The implementation of the recommendations goes certainly **beyond the power or the influence of SCORE partners.**

Under this consideration the SCORE project co-organised with the WBC-INCO.Net project the Regional Conference on 11-12th December 2008, in Belgrade and presented its results to representatives of Ministries and researchers from the Western Balkans and broader region.

In this way SCORE “delivers its results” to WBC-INCO.Net, which started in 2008, with the expectations that WBC-INCO.Net Consortium being a political forum could have the means to further deepen and implement the SCORE recommendations.

ANNEX I - OVERVIEW OF THE CONSULTATION PROCESS

A common consultation process was implemented across the four involved countries in the SCORE project.

The consultation process involved three phases that can be summarised as follows:

- **1st phase – “Expert consultation”**: A panel of approx. 15 expert stakeholders (identified based on a set of criteria) was formed per country and consulted by means of a consultation document which includes also a set of questions. After the contributions were collected, a Consultation Workshop was held in order to consolidate the findings (workshops were held between June and July 2007). The initial contributions and outcomes of the workshop formed the basis for a first version of the ICT Strategic Research Agendas (one per country), that were available at the end of October 2007.
- **2nd phase – “Open consultation”**: the initial version of the ICT Strategic Research Agenda was consulted openly with the broader stakeholder communities (direct and indirect stakeholders) via targeted mailing lists and publication at the SCORE project’s website (the open consultations commenced on the 7th November and ended on the 14th December). Comments were collected and analysed in order to develop the final ICT Strategic Research Agendas (one per country). The final ICT SRAs constitute the basis for the development of the Policy Paper.
- **3rd phase – “ICT workshops”**: the overall findings in the SRAs and the Policy Paper were reviewed and enhanced during four ICT workshops organised in October 2008. The workshops engaged a total of 139 participants across the region (approx. 35 per country). In the workshops, ICT experts and governmental representatives participated to discuss the key challenges and respective recommendations for enhancing scientific cooperation between the respective country and the EU.

During the expert consultation phase, a total of **68 ICT experts** were consulted via a consultation document and participation in a consultation workshop as follows:

- 17 experts in Albania
- 13 experts in Bosnia-Herzegovina
- 18 experts in FYR of Macedonia
- 20 experts in Serbia

The consultation workshops were held as follows:

- Albania: 14+15 June 2007
- Serbia: 21+22 June 2007
- Bosnia: 28+29 June 2007
- FYR of Macedonia: 5+ 6 July 2007

The following table presents some key statistics from the open consultation phase per country. A total of **181 direct and indirect ICT stakeholders** in the region provided their opinion on the initial Strategic Research Agendas.

	Target base (# of direct & indirect stakeholders to which email invitations were sent)	Comment Forms Received (via email & online) from Target Base (A)	Response rate (as % of target base)	Comment Forms Received (via email & online) from non-targeted audience (B)	Total Comment Forms Received (A&B)	Responses from target group as % of total responses
Albania	190	30	16 %	21	51	59%
Bosnia-Herzegovina	164	16	10 %	10	26	61%
FYR of Macedonia	225	35	16 %	7	42	83%
Serbia	159	53	33 %	9	62	85%
TOTAL	738	134	18 %	47	181	74%

Table 4 – Statistics on open consultations

The profile of respondents' organisation is as follows:

- higher education/university – 39 %
- commercial organization – 30 %
- governmental body - 9 %
- non-governmental organization – 6 %
- other – 17 %

The majority (**66%**) of respondents participated on a personal basis, while **34%** responded on behalf of their organisation. This is an indication that most organisations may not have a well defined strategy in their research planning, or that this strategy, if existing, is not properly communicated.

- The majority (**68%**) of respondents indicated that **90%** of the initially identified priorities in the Strategic Research Agendas fully reflect the needs and capacities of their respective country, while the remaining 32% either indicated “don't know / no answer” for certain priorities or did not agree with on average 2 out of approximately 10 priorities in the SRA per country.
- Moreover, **66%** of respondents believed that no priority needed to be added in the country-specific SRAs, while **34%** identified at least 1 priority to be added. However, given that the proposed priorities for addition were not sufficiently justified in terms of proposed research objectives and areas, the list of priorities in the country-specific SRAs has remained overall the same (while minor changes do not affect the common priorities identified at a regional level).
- For the defined research priorities in the SRAs **83%** did not wish to add or modify research objectives or research areas within these, while 14% indicated objectives or research areas for addition or modification. Some of these additional objectives were included where appropriate in the final SRAs.

Finally, during the 3rd phase of the consultation, four “**ICT workshops**” were organised in October 2008 as follows:

- Albania: 2-3 October 2008
- Bosnia-Herzegovina: 9-10 October 2008
- Serbia: 16 October 2008

- FYR of Macedonia: 21 October 2008

In total the workshop engaged 139 participants across the region. The specific breakdown per country according to participants' profile is provided below:

	Albania	Bosnia & Herzegovina	Serbia	FYR of Macedonia	Total
Total Number of Participants, out of which:	36	32	42	29	139
National authorities, policy representatives	5	7	11	6	29
SMEs	10	11	12	5	38
Research Organisations	14	7	11	4	36
NCPs/NIPs or other EU-related guests	3	1	2	3	9
Other-NGO	4	6	6	11	27

Table 5 - Summary of SCORE ICT workshop participation

ANNEX II – CLASSIFICATION OF ICT RESEARCH FIELDS

The methodology adopted for the consultation process and the identification of the research priorities was based on an extended version of the ICT research taxonomy developed by the CISTRANA project (www.cistrana.org). The reason for this decision, which was taken after an extensive debate, was that the stakeholders in the region could better understand and correlate their expertise with this taxonomy and would have the possibility to identify additional priorities on top of those already included in the FP7 ICT work-programme (2007-2008) as an input for future ICT work-programmes.

Id.	ICT Research Fields	Id.	ICT Research Fields
	<i>ICT Software & Information Processing</i>		<i>ICT Hardware Components</i>
1	Artificial intelligence	33	Digital systems, digital representation
2	Bioinformatics	34	Display systems and technologies
3	Cognitive systems	35	Embedded & pervasive systems
4	Computational modeling	36	High frequency technology
5	Database management	37	Micro/nano systems
6	Distributed systems	38	Nanoelectronics
7	Entertainment computing	39	Nanotechnologies
8	Grid technologies	40	Organic electronics
9	Identity management	41	Optical networks and systems
10	Image processing & pattern recognition	42	Peripheral technologies
11	Knowledge Technologies	43	Photonic components and subsystems
12	Middleware	44	Printed and Integrated circuits
13	Privacy	45	Quantum Informatics
14	Security technologies	46	Robotics
15	Semantic technologies	47	Smart cards and access systems
16	Sensor systems and networks		<i>Telecommunications</i>
17	Service engineering	48	Broadband technologies
18	Simulation technologies	49	Internet & broadband technologies
19	Software engineering	50	Network security
20	Speech & Language processing technologies	51	Network technology
21	Signal processing systems	52	Satellite technologies
22	Virtualisation tools	53	Mobile technologies
	<i>ICT software applications</i>		<i>Multimedia</i>
23	Electronic commerce	54	Digital content & digital libraries
24	GIS – Geographic Information Systems	55	Digital video broadcasting
25	ICTs for Agriculture	56	ICTs for Cultural Heritage
26	ICTs for Energy	57	ICTs for Learning & eLearning
27	ICTs for Enterprises & eBusiness	58	Multimedia infrastructures

Id.	ICT Research Fields
28	ICTs for Environment
29	ICTs for Government & eGovernment
30	ICTs for Health & eHealth
31	ICTs for Independent living & eInclusion
32	ICTs for Transport & eTransport

Id.	ICT Research Fields
59	Virtual reality
60	Visualisation tools
-	Other