Stairway to Excellence
Cohesion Policy and the Synergies with the Research and Innovation Funds

Example of Synergies

Faculty of Automatic Control and Computers, University “Politehnica” of Bucharest

Romania

Adrian Curaj
Executive Summary

The Faculty of Automatic Control and Computers (RO Facultatea de Automatică și Calculatoare – A&C) is part of the largest technical university of Romania, University “Politehnica” of Bucharest (UPB). Following the successful completion of the ERRIC project funded under FP7 Capacities Work Programme “Research Potential” which aimed to empower the A&C’s existing excellence in research by unlocking its significant research potential and enhancing its national and regional leadership position in selected areas of Intelligent Information Technologies (IIT), A&C was awarded Structural Funds (SF) for the PRECIS “Research Infrastructure for Developing Innovative Intelligent Products, Processes and Services” project. This project had as a general objective the development of the current research infrastructure and of the research activities of A&C towards technological transfer, and the development of innovative products, processes and services mainly for the industry and health services

Type of synergies:

- Downstream
- Sequential funding

S&T field targeted by the synergies:

- ICT

The Case Study has been developed in dialogue with Adina Magda FLOREA and Prof. Traian REBEDEA

The views expressed are purely those of the author and may not in any circumstances be regarded as stating an official position of the European Commission.
1. INTRODUCTION

The case presented in the following sections is one of the examples of synergies provided by the ‘Stairway to Excellence’ project in which different sources of funding have been combined to amplify the R&I investments and their impact on the economy and wider society.

As described in the guide ‘Enabling synergies between European Structural and Investment Funds, Horizon 2020 and other research, innovation and competitiveness-related Union programmes’, synergies can be achieved through:

- **Sequential (or successive) funding** that use funds in separate projects built on each other;
- **Parallel funding** that use funds in separate projects complementing each other;
- **Simultaneous/cumulative funding** that brings together Horizon2020 and ESIF funds in the same project aimed at achieving greater impact;
- **Alternative funding** that reorients FP7/Horizon 2020 projects that were positively evaluated, shortlisted, but not funded given the limited budget, towards Structural Funds impact.

The combination of sources of funding is used to address two types of activities:

- **Upstream activities** build the appropriate capacities to perform research. They can be capacity building in physical capital (construction or improvement of research infrastructures, purchasing equipment, (including IT equipment and connections, data storage capacities), innovation infrastructures (LivingLabs, FabLabs, Design factories, etc.) and social capital (assistance for building networks, clusters and consortia).

- **Downstream activities** are focussed towards the market and the creation of economic value. They can be applied to research, development and demonstration activities, technology transfer and adoption; technology and innovation audits to identify potential demand for RDI results; proof-of-concept funding; pilot lines for first production; and pre-commercial procurement projects. There can also be activities to support the improvement of the innovation eco-system in a territory.

2. NATIONAL R&I CONTEXT

**Overall economic performance**

Romania has one of the lowest GDPs in Europe: in 2013, GDP per capita in PPP was 54% of the EU28 average (Eurostat). Further discrepancies exist between the eight regions, Bucharest registering more than double the GDP per capita compared with the second-best region and four times compared to the region with the lowest level (2010, NIS data). The level of R&D expenditure based on GDP in Romania (0.39%) is less than half that of the EU13 average (1.05%) and substantially lower than the EU15 countries (2.09%). R&D expenditure is primarily concentrated in the Government Sector and the Business Enterprise Sector. Romania has a number of researchers per population four times smaller than the EU average, with a large majority (80%) employed in the public sector. It also has one of the largest scientific diaspora, increasing further given that the PhD graduates are not absorbed by the domestic system. (RIO Country Report 2014, R Gheorghiu)

The National RDI Strategy 2014-2020 sets ambitious targets, including smart specialisations and priorities of national interest and a large spectrum of instruments and policies able to support the development of an innovation ecosystem. The 1% target reiterated by the National RDI Strategy 2014-2020 is already at risk given that the allocation for 2015 has been less than half the budget planned. The regional smart specialisation strategies in all of the 8 regions should be elaborated by

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the end of 2015, but as the regionalisation process is on hold, the spectrum of instruments these strategies can use remains limited.

**EU funding allocation**

The FP7 financial contribution per inhabitant ($6.4 \, €/inhabitant) is lower than the EU13 average ($17.8 \, €/inhabitant) and is far below the EU15 average ($95.2 \, €/inhabitant). The largest FP7 financial contribution to Romania is from the Cooperation Specific Programme. The Bucharest region takes the largest proportion of FP7 funding (54.4% of the total FP funding received by RO) (IPTS-JRC S2E Facts & Figures: ROMANIA).

In terms of Structural Funds, the majority are assigned to the national level (76.1%) rather than allocated to regions. For the 2007-2013 programming period, Structural Funds dedicated to Research and Innovation were managed at national level through two Operational Programmes (Regional OP and Increase of Economic Competitiveness OP). Despite the accelerated absorption in the last two years, as for 2015, Romania continues to display one of the lowest rates of SF absorption in the EU (62.2%) (European Commission, Directorate-General for Regional and Urban Policy, 2015a) and last among the group of peer countries in the Cohesion Policy. The main factors for the low absorption rate are related to the quality of governance: weak administrative capacity, poor institutional coordination and fragmentation, frequent legislative and institutional changes and insufficient policy capacity. A strategy for strengthening public administration was adopted in October 2014, together with an action plan but its implementation faces substantial delay.

### 3. Implementation

The Faculty of Automatic Control and Computers ([RO] Facultatea de Automatică și Calculatoare – A&C) is part of the largest technical university of Romania, University “Politehnica” of Bucharest (UPB). A&C itself is the most important faculty in the domains of Information Technologies and Control Systems Engineering in the country, both by number of students and by its existing research potential. For example, UPB has the largest number of participations in FP7 ICT-related projects in Romania.

In this context, in 2010, the Faculty won the ERRIC project “Empowering Romanian Research on Intelligent Information Technologies, project number 264207, FP7-REGPOT-2010-1, under the FP7 Capacities Work Programme “Research Potential”, funding scheme “Coordination and support action”, Area 4.1. “Unlocking and developing the Research Potential of research entities established in the EU´s Convergence Regions and Outermost region”, which started on 1 September 2010 and ended on 28 February 2014.

The main goal of the ERRIC project was to empower the A&C’s existing excellence in research by unlocking its significant research potential and enhancing its national and regional leadership position in selected areas of Intelligent Information Technologies (IIT): agreement technologies, semantic and collaborative technologies for the web, advanced grid technologies, large scale distributed system services, and adaptive intelligent control.

Following the successful completion of the goal and main objectives of the ERRIC project, A&C headed towards a new dimension in research and proposed a Structural Funds (SF) Project: POSCCE PRECIS –"Research Infrastructure for Developing Innovative Intelligent Products, Processes and Services", which was won following a competition in March 2013.

The Research Infrastructure for Developing Innovative Intelligent Products, Processes and Services has as general objective the development of the current research infrastructure and of the research activities of A&C towards the technological transfer, and the development of innovative products, processes and services aimed mainly for the industry and health services. In the same time, the project will start new directions of research that are smart and of high interest at both
national and international level, with a high impact on the growth of the Romanian economy’s competitiveness.

The main objectives of PRECIS are to create 28 new research laboratories focussed on smart methods and technologies in ICT and applications, oriented towards innovative and adaptive industrial processes, systems for increasing the quality of life, autonomous cognitive systems, cloud services and the future internet, smart mobile society and e-health. The 28 new laboratories will be housed in a new building which is built within the same project, with modern architecture, intelligent facilities and high-tech research equipment specific to each laboratory.

The ERRIC project together with the subsequent – PRECIS project, the first financed by FP7, and the other by SF, represent a success story in terms of the synergy created within the A&C, which constantly grows in both the number of staff and students, and excellence in research. Figure 1 maps the project chronologically, the research activities of the organisation and the type of funding. It aims to give a picture of relations between projects revealing planned or unplanned dependencies (synergies) between projects and their source of funding.

**Figure 1: Diagram of chronology of the main projects involved in synergies**

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**Added value / complementarities created by the synergies**

The FP7 ERRIC project has aimed at improving the excellence of the A&C research in intelligent information systems by supporting two-way exchanges (secondments) to/from 11 partners within the ERRIC network. They have been selected for their scientific results in specific topics related to the project, improving the visibility of the A&C research by organizing international conferences and workshops and by supporting the participation of the A&C researchers in important conferences, developing a research roadmap and improving the dissemination of the A&C research.

Although ERRIC has contributed to improving the research facilities and equipment (e.g. organizing a new Ambient Intelligence laboratory, improving the A&C computing power), only with the implementation of the structural funds (SF) PRECIS project, A&C could not develop its research infrastructure in order to reach its full research potential. It is important to notice that the research domains tackled in ERRIC and PRECIS are in an ongoing synergy: the 28 new laboratories of PRECIS focus on research topics which matured from intelligent information technologies research topics developed for ERRIC, and head towards smart ICT

**Mechanisms facilitating the synergies**

For the period 2007 – 2013 there were no such mechanisms provided in the SOPs.
In A&C, synergies between the two projects were made possible through the strong institutional research and development strategy. The calls that could provide support in achieving the research and infrastructure goals have been followed closely. The outputs of the ERRIC project and how they would feed into the action plans of the PRECIS project have been planned in advance, so synergies could be ensured.

**Main problems encountered in implementing the synergies**

For several years A&C has struggled to win a project to construct a new research building. However, the previous calls on structural funds have not been directed towards improving the research infrastructure in the research domains tackled by A&C. Moreover, it was sometimes difficult to find the best synergic match between a REGPOT project and a project funded through structural funds (one is at the EU level and the other ones are at the national level, with different topics of interest and outcomes).

**Suggestions to improve the synergies**

- These types of synergies can be improved if both national authorities and the EC are willing to make an effort to coordinate their activities. For example, national authorities should undertake a survey to determine the key research areas in Romania before proposing topics for SF calls for research infrastructures. This way, they would target some of the entities that already have been active in FP projects and would encourage them to improve such synergies between FP and SF funding.
- Moreover, successful organizations that have previously implemented these types of synergies should be invited to info days and other dissemination events in order to inform other R&D actors in Romania about the use of these synergies.
- For organisations pursuing synergies: Develop a strong and precise research and development strategy of the organisation and follow the calls that can facilitate the achievement of the strategy’s objectives.
- For policy makers: for instance, this can be fast track submission, evaluation of proposals submitted under SF calls that aim to complement FP projects (alignment of call deadlines, the eligibility, evaluation criteria, etc.).

**Main motivations in implementing the synergies**

As Romanian R&D expenditure is below 0.5% of the GDP, Romanian R&D actors have to find alternative funding from as many FP and SF projects as possible in order to improve their research potential. It has been aimed for several years at developing a project for a new A&C research centre and the POSCCE call (from which the PRECIS project has been funded) provided the perfect opportunity to improve the current research infrastructure that would help A&C become an important partner in the EU research network.

On the other hand, the REGPOT calls have offered the possibility to improve the A&C research community through two-way secondments, participation at important international conferences, increased the number of publications and the organization of relevant scientific and networking events.

**Facilitating mechanisms for the take-up of the scientific results**

In the UPB there is a Knowledge Transfer Office but its activity is not very well known by the researchers or the companies mainly due to its insufficient PR capacity/activity. The office is core-funded by the institution plus projects at the national, regional and European level, as a part of the R&I strategy of the university.

Besides specific FP-funded support actions and some funds used for dissemination of research activities that are available in larger SF projects, there is no easy instrument for accessing funds specifically for organizing events in order to advertise the research results.
The IPR regulations in Romania are hindering collaboration in R&D between public and private organizations. In the case of the A&C Networking Events organized within ERRIC, this has been one of the most important issues raised by the participating companies. These issues could be partially addressed by working in joint research projects and identifying the most important issues in the current IPR regulations and then submit these issues to the Romanian authorities.

**Impact on the regional / national economy**

In the entire EU, ICT has an average contribution to the GDP of about 5%, while in Romania this contribution has risen steadily during the last couple of years nearing the EU average in 2014 (Romanian Digital Agenda for 2020). Moreover, in 2014, ICT had the third highest contribution to the Romanian GDP. These important results could not have been achieved without a strong academic education and the R&D community in the ICT domain in Romania. In this context, A&C has played a very important role, especially as Bucharest is the most important ICT hub in Romania.

ERRIC has helped organize several Brokerage events between A&C and the ICT companies from Bucharest. These events have been the starting point for the launch of joint initiatives such as joint research projects, collaborations of academics and professionals from companies, PhD grants, etc. All these elements will improve the level of Romanian public and private R&D capabilities which are essential for increasing the competitiveness of both Romanian ICT researchers and professionals.

With the development of PRECIS, it is hoped to further improve the level of cooperation between A&C and companies, but also to bring in new researchers from abroad and young researchers that are interested in a career in R&D. One of the main objectives of both these projects is to provide the necessary research infrastructure, research networks and cooperation with companies (both from Romania and abroad) to make A&C interesting as a career path for smart young graduates, but also for more experienced researchers from abroad. Therefore it is hoped that A&C shall be able not only to reduce the brain-drain of Romanian ICT professionals and researchers, but also to achieve a “brain-gain” for the first time in the last 25 years in Romania.

Figure 2 aims to position projects according to the activities they cover; from upstream (infrastructures, equipment, research activities) to downstream related activities (innovation, knowledge transfer, access to market).
Figure 2: Diagram of the complementarities of the funds in the knowledge triangle / flow
4. RELATED PROJECTS

Name of the SF PROJECT: PRECIS: “Research Infrastructure for Developing Innovative Intelligent Products, Processes and Services” (RO) “Infrastructura de Cercetare pentru Dezvoltarea Produselor, Proceselor si Serviciilor Inovative Inteligente”

- **SF funding scheme:** POSCCE (co-funded through the European Regional Development Fund)
- **Budget:** RON 49,219,137 (approximately EUR 11,186,000) (RON 40 million lei eligible costs and RON 9,219,137 costs for VAT which is ineligible)
- **Time frame of the SF funded project:** 12 March 2014 – 12 November 2015
- **Project coordinator:** Professor Adina Magda FLOREA
- **The two main objectives of the PRECIS project:**
  - To extend the current research infrastructure and research activities of the A&C, part of UPB, in order to facilitate the technological transfer and the design and the development of innovative “smart” products, processes and services.
  - To engage in new research activities that are in line with the EU and global research needs and trends and which will be considered a priority for A&C in the forthcoming years. These technologies have been selected to have a high impact in improving the competitiveness of the Romanian economy.

Name of the FP PROJECT: ERRIC: “Empowering Romanian Research on Intelligent Information Technologies”

- **FP funding scheme:** REGPOT – Research Potential, CSA-SA – Support actions
- **Budget:** € EUR 2,994,404.40
- **Time frame:** 01 September 2010 – 28 February 2014
- **The main objectives of ERRIC:** Related to improving the potential of the A&C researchers (hiring new experienced researchers – e.g. brain gain, improving the skills of existing A&C researchers with two-way secondments to the ERRIC partners), gaining scientific reputation by organizing workshops and conferences by the A&C research teams and enhancing the infrastructure and visibility of A&C by upgrading the research equipment (e.g. HPC infrastructure), developing new laboratories (e.g. Ambient Intelligence lab), and developing new promotional and dissemination materials (e.g. new website, alumni portal, semantic portal for researchers, etc.).
5. ANNEX: ADDITIONAL INFORMATION

SF Funded Project
Weblink: http://precis.acs.pub.ro/
Beneficiary (name of the organisation): Faculty of Automatic Control and Computers, University “Politehnica” of Bucharest, Romania
Type of organisation: HEI, Public organization
Budget: Total Investment: RON 49,219,137 (approximately EUR 10,938,000) (RON 40 million eligible costs and RON 9,219,137.00 costs for VAT which is ineligible)
   EU contribution: RON 34,104,000 (approximately EUR 7,579,000) (85.26% of eligible costs)
   Other contributors: RON 5,896,000 (approximately EUR 1,310,000) (14.74% of eligible costs)
Timeframe of project: 12 March 2014 – 12 November 2015

Main project objectives
The two main objectives of the PRECIS project are:
- To extend the current research infrastructure and research activities of the A&C, part of UPB, in order to facilitate the technological transfer and the design and development of innovative “smart” products, processes and services.
- To engage in new research activities that are in line with the EU and global research needs and tendencies and which will be considered a priority for A&C in the forthcoming years. These technologies have been selected to have a high impact in improving the competitiveness of the Romanian economy.

Specific goals (expected output)
The specific objectives of PRECIS are related to improving the research facilities and infrastructure of A&C, starting from the new building that will host the research centre for innovative “smart” products, processes and services. Thus the goals are:
- Creating 28 new laboratories for advanced research, together with the required high-technology research equipment;
- Acquisition of the required research equipment for the research laboratories;
- An infrastructure for the new laboratories, namely a new building with a modern architecture and with facilities of an intelligent building, that will also have special spaces for interacting with the ICT companies and for business incubators;
- Creating 35 new work positions in R&I which will represent not only a viable alternative for talented young researchers, but also a serious solution for researchers returning to Romania;
- Providing with new research equipment and facilities for over 140 researchers working in A&C
- Accelerating the technological transfer and the innovative capabilities of R&I in innovative “smart” products, processes and services;
- Improving the visibility and attractiveness of the Romanian academic research results and potential, both to Romanian companies and to other EU research actors and companies;
- Improving the participation of A&C in international research projects with high impact; increasing the power of the A&C research network.
Collaborative work within the project
All laboratories within PRECIS will have strong cooperation relationships with national and multi-national IT companies, but also with other universities and research centres, both from Romania and EU.

Type of costs covered:
- Research infrastructures: RON 33,512,163 (approximately EUR 7.6 million);
- Research equipment: RON 5,105,003 (approximately EUR 1.16 million);
- Consumables;
- Salaries: RON 902,334 (approximately EUR 205,000);
- Indirect costs RON 390,000 (approximately EUR 88,636), dissemination: RON 90,500.

Main Results
The constructor of the new PRECIS building has been selected as scheduled after a public bid and the works started before the end of 2014. At this moment (end of April 2015), the first two stories have been built and the project is on schedule to be finished before the end of 2015. At the same time, the equipment acquisition procedures were started in order for the laboratory equipment to be purchased by the end of the year.

Difficulties encountered at the stage of drafting the proposal
As there are no offices in universities specialized in offering support for writing proposals for structural funds projects, researchers have to understand all the rules of the structural funding calls and also all the financial aspects (with some help from the financial department of UPB). Handling all these aspects is not easy and straightforward for researchers. Research actors should have in mind that there are specialized companies that offer assistance in proposal writing, but with a certain cost if the project is successful – it was not the case for PRECIS, but in some situations this might be useful.

Concerns regarding the evaluation
There are no concerns regarding the evaluation in terms of the evaluation criteria, the transparency of the procedure, the appropriateness of the evaluators, nor any concerns regarding political influence in the selection of the proposals.

Difficulties during the implementation of the project
The most prominent barrier in the project implementation is the complex and bureaucratic administrative work that researchers have to carry: they have to write complex acquisition documents, monitor the project, discuss with contractors, etc. while they also have to perform qualitative research work. Similar to the discussion for the acquisition of equipment for FP projects, in structural funds (SF) projects the rules are the same, being governed by the minimum price offered for a request for equipment acquisition. In many cases, there are problems with the winners of the public bids as they may offer lower quality for a lower price. This can result in complex procedures where both parties (public institutions and bidders) are attacking in various courts the results of the bidding procedures and outcomes. On the other hand, the staff employment procedure for SF projects is straightforward and there have so far been no problems.

Facilitating mechanisms during the draft proposal/ implementation
Specific public offices/ministry offer assistance with draft proposals during courses and seminars organized in this sense.

Strengths of the proposal to become successful
The main strengths of the PRECIS proposal were the high potential of Romanian ICT R&D, its role in the Romanian economy and the economic growth, but also the previous results of A&C in FP
projects and the impact of smart/intelligent technologies and products in the ERA, including in H2020 calls. The FP7 REGPOT ERRIC project had a prominent role as it provided a boost in the A&C research in intelligent information technologies. Thus PRECIS provided additional and, most importantly, complementary funding to improve the research infrastructure and facilities of A&C, one of the top Romanian performers in the European R&I.

**Suggestions to policy makers to facilitate the participation**

Policy makers can help participants by increasing the time between the initial publication of the call and its deadline. Moreover, providing support for assessing preliminary proposals (e.g. proposal pre-check and support) leads to better projects that are more likely to be successfully implemented.

**Advise to R&I performers**

R&I performers need to be very careful for research infrastructure calls within POSCCE and other SF calls in the new European budget (2014–2020). These calls provide the most important funding source for improving research facilities, infrastructure, and equipment which will result in more competitive research at the European and global level.

**FP7 Funded Project**

**FP project title:** Empowering Romanian Research on Intelligent Information Technologies (ERRIC)

**Web link:** [http://www.erric.eu/](http://www.erric.eu/)


**Beneficiary:** Faculty of Automatic Control and Computers, University “Politehnica” of Bucharest, Romania

**Type of organisation:** HEI

**Budget:** EUR 2,994,404.40

**FP funding instrument**

- Funding scheme: CSA-SA - Support actions
- Subprogram: REGPOT - Research Potential
- Call for proposal: FP7-REGPOT-2010-1

**Time frame:** 01 September 2010 – 28 February 2014

**Main project objectives**

The main ERRIC objectives were related to improving the potential of the A&C researchers (hiring new experienced researchers – e.g. brain gain, improving the skills of existing A&C researchers with two-way secondments to the ERRIC partners), gaining scientific reputation by organizing workshops and conferences by the A&C research teams and enhancing the infrastructure and visibility of A&C by upgrading the research equipment (e.g. HPC infrastructure), developing new laboratories (e.g. Ambient Intelligence lab), and developing new promotional and dissemination materials (e.g. new website, alumni portal, semantic portal for researchers, etc.).

The ERRIC concept was to further leverage, support and develop the existing high quality human and material resources of A&C coupled with the goal of achieving international recognition for the Faculty as a world-class research excellence pole in a complex domain, Intelligent Information Technologies, which requires the synergetic gathering of several research areas converging to support the development and deployment of such systems.

The main goal of the ERRIC project is to empower A&C existing excellence in research by unlocking its significant research potential and enhancing its national and regional
leadership position in selected areas of Intelligent Information Technologies (IIT): agreement technologies, semantic and collaborative technologies for the web, advanced Grid technologies and large scale distributed system services, and adaptive intelligent control.

**Specific goals (expected output)**

**Strengthen Core Research Excellence**

- Strengthen the research and technological innovation capacities of A&C in above mentioned areas of Intelligent Information Technologies by:
  - increasing the quality and number of published papers and participation of A&C permanent staff in high quality scientific events: more than 60 scientific papers on IIT, accepted for publication in journals and conference proceedings, will be developed as a result of project's activities;
  - hiring of six experienced researchers to perform research in specific topics relevant to IIT, and an experienced research manager;
  - expanding the current research infrastructure: (a) develop a new Laboratory of Ambient Intelligence: the AmI Laboratory will be operational in 24 months with all necessary technical equipment installed and running flawlessly; (b) upgrade the HPC resources of A&C by almost doubling the capacity of the NCIT to reach an estimated performance in benchmarking of two TFlops.
- Reinforce the A&C research potential by supporting and mobilising A&C human resources through 132 trans-national two-way secondments of A&C research staff by the staff of the 11 EU partnering organizations, towards exchanging know-how and experience, and building long-term cooperation relationships.
- Establish an ambitious research agenda and the A&C RTDI Roadmap to significantly develop its research potential in the strategic selected research areas and bring A&C research activity to the highest European level.
- Improve A&C's ability to respond to ICT related socio-economic needs in Romania and Europe by orienting the research topics towards these needs, in interaction with the project Advisory Board.
- Networking, Community Building and Strategic Partnerships
  - Make A&C an international gateway to access IIT research results through ERRIC Knowledge E-Environment (KEE) and ERRIC portal; web traffic will be used to measure the impact of these developed resources.
  - Establish adequate strategic partnerships and wide-ranging collaborations between A&C and high excellence research units across the EU through the European Network of Excellence and Partnership in IIT, including common organisation of scientific events, cooperation agreements between organisations, common R&D project proposals, throughout the duration of the project and beyond.
  - Build the capacity of A&C for a better collaboration with high tech companies in order to put good use of the high potential research results, including the organisation of the A&C Brokering events; more than 30 companies from Romania and abroad will be contacted and invited to join the Network.
- Promotion, Visibility and Dissemination
  - Organize 18 high quality scientific events and 4 dissemination events, in cooperation with the partnering organizations, focused on knowledge sharing and network building, to raise international awareness of A&C research capacity.
  - Promote A&C scientific research excellence and increase its visibility by the publication of A&C research book and the elaboration of the A&C dissemination, promotion and awareness plan and package (DPA package).
  - Disseminate scientific information and results of A&C research by publishing a book with selected research contributions of A&C staff, which were enabled by ERRIC activities, by an internationally recognized publishing house.
Collaborative work within the project

As ERRIC was a REGPOT project, the collaborative work was restricted to two-way secondments for researchers working at A&C, or 11 partnering organizations (see http://www.erric.eu for the list of research organizations that were partners in ERRIC). This allowed for the strengthening of the research collaborations with important research organizations in Intelligent Information Systems within the EU, which resulted in over 30 research papers published by joint groups from A&C and one of the partnering organizations, writing joint project proposals or even joint PhD studies for Romanian students.

Type of costs covered

- Research infrastructures and facilities – approx. EUR 400,000;
- Salaries – approx. EUR 720,000, including the salaries for newly hired experienced researchers;
- Secondments and conference participations – approx. EUR 600,000;
- Organization of international conferences and workshops – approx. EUR 65,000;
- Consumables – approx. EUR 20,000 (including some components for swarm bots);
- Others - Dissemination materials: approx. EUR 26,000 (including new website, A&C research book, publishing costs, etc.).

Main Results

ERRIC was responsible for setting up the Ambient Intelligence (AmI) laboratory in the Faculty of Automatic Control and Computer Science, consisting of:

- Nine Microsoft Kinect sensors (3D depth sensing equipment that is usually shipped in combination with XBox) used for RGB imaging at a resolution of 1280 x 1024 and a depth imaging at 640 x 480 resolution;
- One Samsung SNP-3120V camera, with PTZ (Pan-Tilt-Zoom) and 360 degree field of view;
- 20 Arduino Mega boards with sharp infrared proximity sensor (sensing range: 20-150 cm), Electret Microphone, Humidity and temperature sensor, and Ambient light sensor.

For the computing equipment, we are using 12 servers grouped accordingly:

- Seven servers for data crunching (ranging from quad-core Xeon with 16GB RAM to Core2Duo with 4GB RAM);
- Five servers for data acquisition (data retrieval from the sensors);
- aZyxel GS 1100-24 Gigabit switch for connecting all these servers.

The High-Performance Computing (HPC) laboratory has been upgraded as follows:

- 14 servers with 2x x86 six-core processors;
- Eight servers with 2x RISC/EPIC octo-core processors;
- 6.4 TB storage;
- 296 additional computing cores.

Moreover, the industrial robots laboratory has been improved/updated/upgraded with the acquisition of a High-speed robot-vision system for Active Holon Entity aggregation and intelligent product inspection – CARTERV (see more here http://www.erric.eu/industrial-robots-lab).

Five experienced researchers were hired by A&C, however one of them left before the project was over.

More than 80 two-way secondments between A&C and the 11 partnering organizations took place during the lifespan of ERRIC. Out of these, there were 14 long-term secondments made by researchers from A&C to the partners and four long-term secondments the other way around.

13 international workshops and five international conferences (three located in Romania, two at the partnering organizations) were organized with the support of ERRIC.

14 publications in ISI journals with ERRIC acknowledgment and over 50 papers published in conferences; those proceedings are indexed by ISI Web of Knowledge.
The work for one patent “Distributed processing platform with applications in fractal analysis” (RO00123593G06F950) was partially founded by ERRIC.

**Difficulties encountered at the stage of proposal drafting**

Writing a successful EU (FP7, Horizon 2020) project proposal is a difficult task for any research organization, especially as A&C does not have any department specialized in supporting project proposal writing. The most difficult aspects are related to clearly and correctly identifying project costs, timeline and impact. Moreover, ERRIC was the first FP7 project coordinated by A&C (and by UPB on the whole), therefore there were several administrative burdens to understand and tackle.

As UPB does not have any specialized personnel for proposal writing, financial checks, proofreading, etc., and since there was no SF funding scheme for such support, most of the project proposal work is done by the researchers in addition to their own usual tasks (ongoing research, teaching, conferences, meetings, etc.).

REGPOT was a great programme as it allowed top research organizations from the new member states to improve their research visibility and outcomes without competing directly with the research organizations from EU15 that have a big advantage in terms of experience and funding. As in any community, these new research organizations must be helped to integrate within/into the wider EU research community in order to reach their full potential.

**Concerns regarding the evaluation**

This was the first successful FP project proposal coordinated by A&C (and by UPB on the whole) therefore it is clear that there is not the experience of other organizations from the EU.

A&C is a top organization in the Romanian R&D community, with important connections abroad and several successful participations in previous FP projects as a partner. However, it does not receive adequate funding for achieving its peak performance level due to chronic insufficient funding of Romanian R&D. Therefore, we are at a disadvantage when competing with other EU research organizations.

**Difficulties during the implementation of the work**

VAT is not eligible in the FP7 projects, therefore for all the purchased equipment, A&C needed to identify sources for funding these costs.

The administrative personnel are not trained to work for FP projects therefore some of these tasks (including financial reporting, for example) were performed by (or with the help of) A&C researchers.

Equipment acquisition is still not running smoothly in the Romanian universities mainly because researchers do not know all the governing rules for public acquisitions which can result in problems when selecting the best public (e.g. in Romania, “best” means lowest price so the public demand must be very specific).

Probably this was the most significant problem encountered in achieving the goals of ERRIC. As computer science and automatic control are domains where the competition for good specialists (including researchers) is very high, where companies and universities all over the world are trying to get the best people, it was very difficult to find and attract researchers (foreign or Romanians working abroad) to A&C. Even with the salaries provided by ERRIC, the offers were not competitive enough to convince them to come and work at A&C. One of the main reasons (or objections) of the researchers was related to the fact that this job can only be funded during the lifespan of the project and afterwards it would be very insecure, especially as Romania does not have adequate and clear R&D funding programmes.
Facilitating mechanisms during the draft proposal/ project implementation
The additional and reliable income provided for the staff working in the project is an important motivation, especially as the national R&D funding has been very low during the lifespan of the project.

Other push – pull factors that may affect the R&I performers in applying / being successful in FP calls
Some research organizations from Romania might not be very well informed about all the FP7 and Horizon calls and opportunities, especially the ones for strengthening the research potential of new member states.

As this was the first FP project coordinated by A&C, there are not many qualified research project managers mainly due to the fact that there have been few projects involving Romanian research organizations. Nevertheless, from now on there are project managers who have gained some experience and should be able to lead future projects.

The number of national events for raising awareness about the FP opportunities is still low.

All Romanian research organisations lack adequate funding for participation to international conferences and other dissemination events. Moreover, few research organisations in Romania are really part of an international research community that developed in time, by meetings at conferences, joint work, joint PhD studies, research projects, etc.

As Romanian organisations participating in FP calls have a low success rate, they become discouraged to take part in future calls. The work required to write even an unsuccessful project proposal is very high and many researchers are giving up after engaging in 2-3 proposals that are not funded by the EC.

Strengths of the proposal to become successful
There have been two important reasons for the success of the ERRIC proposal. The first one is related to the fact that A&C already had several successful participations in FP6 and FP7 projects, this being highlighted by the fact that UPB is the organization with the largest number of FP7 projects in Romania. Moreover, A&C benefitted of a previous support action in FP6 IST, called EU NCIT (http://cordis.europa.eu/result/rcn/46955_en.html) which helped the organization achieve better results in FP7 projects by enhancing its research network, improving the skills of its researchers, etc. The second reason for the success of ERRIC is the importance of ICT, in general, and intelligent information technologies (IIT), in particular, in the context of European research including the high number of H2020 calls related to these domains.

Suggestions to policy makers to facilitate the participation of national R&I performers in H2020
In order to improve the participation of Romanian R&I organisations in H2020, the policy makers should take several actions:

1. Organize national info days on H2020 calls where members from relevant R&I organisations from Romania should be invited, but also guests from some important research organisations from the EU. Moreover, Romanian organisations should support the costs of key researchers participating in info days organized for specific H2020 calls, and other dissemination events where project consortia are being created.

2. Improve the NCP and expert level support for Romanian organisations, such as having relevant people employed fulltime as NCP and experts in order for these persons to be able to offer help and feedback for project proposals (such as pre-proposal checks, etc.).
3. Offer incentives for researchers that participate in successful H2020 projects, even for those writing unsuccessful proposals. In the end, the success rate for H2020 projects is very low, therefore, a researcher is expected to write several proposals until being funded.

Advise to R&I performers willing to apply
It is important to understand very well the call objectives and to have an idea for the proposal that achieves important work beyond the state of the art. Moreover, Romanian R&I organisations must understand that a strong research network allows them to enter into strong project consortia which is one of the keys for the success of a proposal. To achieve these objectives, Romanian R&I organisations should participate at top-level conferences in their domains, meet new researchers at these scientific events and also participate in dissemination and networking events for H2020 calls. In the end, it is important for Romanian R&I organisations to make use of a mix of H2020 and structural EU funds to enhance their researchers' skills and the research facilities.