



Universitatea de Vest
din Timișoara

Building Blocks to Reach a Competitive Place in European Research Area

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Institute e-Austria

Aim

Identify and expose
the impact on the RTD activities of the support from

- National programmes
- EC Structural Funds
- EC FP6/FP7 programmes

in the case of a Romanian team

Content

- Team description
- Key steps:
 - involvement in national and EC projects (FP7/SF/PNII)
- Impact of national and EC programmes on
 - evolution of the local infrastructure
 - gaining a visible place in national/ international research

Short presentation of the team

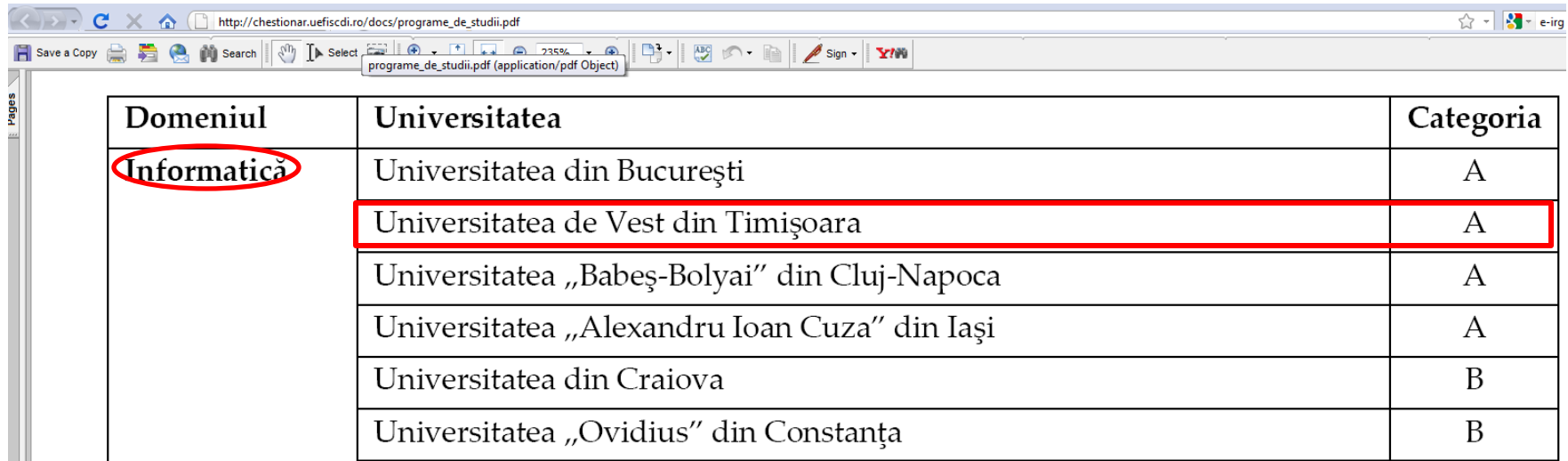
- Research team of Computer Science Department of West University of Timisoara, Romania (UVT)
 - Tradition from 1971
 - Current staff:
 - 10 senior researchers
 - 3 post-docs
 - 12 PhD students
- Private spin-off for research:
 - Institute e-Austria Timisoara (IeAT)**
 - Build in 2002 in cooperation with University Johannes Kepler from Linz-Austria and “Politehnica” University of Timisoara, Romania (UPT)
 - Current staff: UVT team + additional staff from UPT
 - 4 senior researchers
 - 4 PhD students

Research topics

- Parallel and distributed computing (UVT/IeAT)
 - Cluster/Grid/Cloud/HPC tools
 - Combined with numerical/symbolic/natural computing
 - Applications for physics, Earth observation, material sciences
- Artificial intelligence (UVT/IeAT)
 - Expert systems
 - Multi-agent systems
 - Nature inspired metaheuristics in data mining and optimization
- Software engineering (IeAT/UPT)
 - Formal methods
 - Security protocols
 - Software quality

National position of the team

- Result of the most recent (September, 2011) national classification for the universities (international evaluators)



Domeniul	Universitatea	Categoria
Informatică	Universitatea din București	A
	Universitatea de Vest din Timișoara	A
	Universitatea „Babeș-Bolyai” din Cluj-Napoca	A
	Universitatea „Alexandru Ioan Cuza” din Iași	A
	Universitatea din Craiova	B
	Universitatea „Ovidius” din Constanța	B

International positioning: RTD output

- SCIMAGO Institution Classification
 - based on research production
 - entries of the SIR Report 2011 for Romania:

SIR World Report 2011
<http://www.scimagoir.com>

WR	RR	CR	Organization	Sector	Country	Region	Output	IC(%)	Q1(%)	NI	Spe	Exc	
709	22	1	Politehnica University of Bucharest	HE	ROU	EE	4,139	26.1	11.1	🔴	0.5	0.9	1.5
942	38	2	Institute of Atomic Physics	GO	ROU	EE	2,988	64.2	38.1	🔴	0.8	0.9	6.8
1020	46	3	Babes-Bolyai University	HE	ROU	EE	2,697	46.1	26.8	🔴	0.9	0.8	5.5
1167	56	4	Romanian Academy	GO	ROU	EE	2,134	46.7	30.6	🔴	0.7	0.9	7.5
1281	62	5	University of Bucharest	HE	ROU	EE	1,870	48.0	31.9	🔴	0.8	0.8	7.4
1485	75	6	Alexandru Ioan Cuza University	HE	ROU	EE	1,518	41.5	26.7	🔴	0.9	0.8	4.7
1568	82	7	Gheorghe Asachi Technical University of Iasi	HE	ROU	EE	1,385	28.2	17.0	🔴	0.9	0.9	5.0
1652	87	8	Technical University of Cluj-Napoca	HE	ROU	EE	1,294	26.0	9.9	🔴	0.9	0.8	2.0
1681	89	9	Politehnica University of Timisoara	HE	ROU	EE	1,269	28.2	13.0	🔴	0.9	0.9	3.8
2301	138	10	Carol Davila University of Medicine and Pharmacy	HE	ROU	EE	802	22.9	22.3	🔴	0.6	0.9	8.0
2361	143	11	University of Craiova	HE	ROU	EE	773	23.2	10.7	🔴	0.8	0.9	2.3
2460	154	12	Iuliu Hatieganu University of Medicine and Pharmacy	HE	ROU	EE	727	18.8	15.3	🔴	0.6	0.9	4.0
2561	157	13	West University of Timisoara	HE	ROU	EE	682	28.0	28.7	🟡	1.0	0.9	5.7
2586	159	14	Transilvania University of Brasov	HE	ROU	EE	670	27.5	13.0	🔴	0.6	0.9	2.4
2729	174	15	Bucharest Academy of Economic Studies	HE	ROU	EE	591	6.8	4.2	🔴	0.4	1.0	0.2
2857	186	16	University of Medicine and Pharmacy Victor Babes	HE	ROU	EE	509	24.6	15.9	🔴	0.4	0.9	2.6
2879	188	17	Ovidius University	HE	ROU	EE	496	25.6	11.1	🔴	0.4	0.9	1.2
2959	192	18	University Dunarea de Jos of Galati	HE	ROU	EE	421	30.2	14.3	🔴	0.6	0.9	3.6
2981	193	19	University of Oradea	HE	ROU	EE	389	32.1	14.4	🔴	0.7	0.9	3.1

International positioning: RTD output

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Country statistics 2010

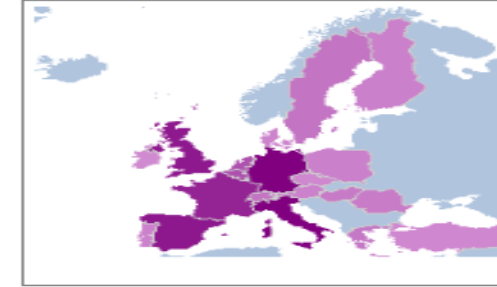
Romania (2010-01-01 - 2010-12-31)

Approx. total funding: 26.332 k€
 Total number of projects: 97
 Coordinated projects: 6
 Sole partner projects: 6

Partner countries:

Country	No of project partners
Germany	155
Italy	155
Spain	131
United Kingdom	130
France	121
Belgium	77
Netherlands	76
Switzerland	42
Sweden	42
Greece	38
Hungary	35

Map:



Top institutions:

1	UNIVERSITY OF BUCHAREST	score statistics	Romania	14.5
2	REGIA AUTONOMA PENTRU ACTIVITATI NUCLEARE DROBETA TR SEVERIN RA SUCURSALA CERCETARI NUCLEARE PITESTI	score statistics	Romania	14.4
3	UNIVERSITATEA POLITEHNICA DIN BUCURESTI	score statistics	Romania	13.8
4	UNIVERSITATEA TRANSILVANIA DIN BRASOV	score statistics	Romania	12.8
5	UNIVERSITATEA BABES BOLYAI	score statistics	Romania	12.1
6	DANUBE DELTA NATIONAL INSTITUTE FOR RESEARCH AND DEVELOPMENT	score statistics	Romania	9.2
7	INSTITUTE OF AGRICULTURAL ECONOMICS	score statistics	Romania	9.1
8	CENTRUL NATIONAL DE MANAGEMENT PROGRAME	score statistics	Romania	9.0
9	INSTITUTUL E AUSTRIA TIMISOARA	score statistics	Romania	9.0
10	UNIVERSITY OF MEDICINE AND PHARMACY	score statistics	Romania	9.0
11	INSTITUTUL NATIONAL DE CERCETARE DEZVOLTARE PENTRU GEOLOGIE SI GEOECOLOGIE MARINA GEOECOMAR	score statistics	Romania	8.8
12	UNIVERSITATEA TEHNICA CLUJ NAPOCA	score statistics	Romania	8.8
13	INSTITUTUL NATIONAL DE CERCETARE DEZVOLTARE IN INFORMATICA ICI BUCURESTI	score statistics	Romania	8.5
14	INSTITUTUL NATIONAL DE CERCETARE DEZVOLTARE PENTRU FIZICA MATERIALELOR	score statistics	Romania	8.7
15	INSTITUTUL NATIONAL DE CERCETARE DEZVOLTARE PENTRU FIZICA SI INGINERIE NUCLEARA "HORIA HULUBEI"	score statistics	Romania	8.7
16	ROMANIAN SPACE AGENCY	score statistics	Romania	8.6
17	UNIVERSITATEA DE VEST DIN TIMISOARA	score statistics	Romania	8.6

EC
funds/
2010

e-Infra/RO: Romanian sites in EGEE/EGI-Inspire, SEE-Grid/HP-SEE

GStat: 09:44:24 05/06/09 GMT - @wgoc01

	sites	countries	totalCPU	freeCPU	runJob	waitJob	seAvail TB	seUsed TB	maxCPU	avgCPU
Total	277	54	84205	44235	65551	36928870	204406.44	486863.98	130696	88579

No	Site Reports	GIIS Host	version	sclust	totalCPU	freeCPU	runJob	seAvail TB
174	RO-01-ICI	testbed002.grid.ici.ro	GLITE-3_1_0	CentOS 4.6	12	8	0	1.20
175	RO-02-NIPNE	tbat01.nipne.ro	GLITE-3_1_0	ScientificCERNSLC 4.6	194	188	6	28.10
176	RO-03-UPB	gw01.seegrid.grid.pub.ro	GLITE-3_1_0	ScientificCERNSLC 4.6	66	82	0	0.25
177	RO-07-NIPNE	tbit01.nipne.ro	GLITE-3_1_0	ScientificCERNSLC 4.7	424	416	8	72.21
178	RO-08-UVT	ce01.grid.info.uvt.ro	GLITE-3_1_0	ScientificSL 4.6	28	13	13	0.73
179	RO-09-UTCN	ce01.mosigrid.utcluj.ro	GLITE-3_1_0	ScientificSL 4.7	10	16	0	1.08
180	RO-11-NIPNE	lhcb-ce.nipne.ro	GLITE-3_1_0	ScientificCERNSLC 4.6	32	4	12	0.43
181	RO-13-ISS	grid01.spacescience.ro	GLITE-3_1_0	ScientificSL 4.6	22	0	0	1.83
182	RO-14-ITIM	cn-ce.itim-cj.ro	GLITE-3_1_0	ScientificCERNSLC 4.6	20	34	0	19.17
183	RO-15-NIPNE	tblb01.nipne.ro	GLITE-3_1_0	ScientificCERNSLC 4.7	2	11	15	5.24

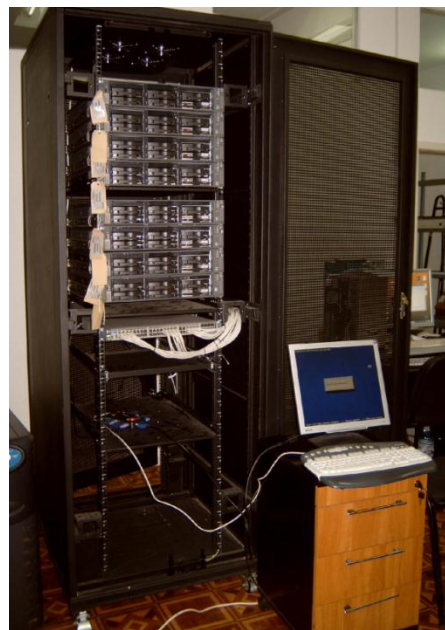
e-Infrastructure / RTD projects

2002



First Romanian cluster
connected to a Grid
infrastructure -
US ASC Portal
UVT/National INFOSOC
Program (8 CPUs, Myrinet)

2006



New cluster connected to
SymGrid - FP6 project
SCIENCE (28 cores)
leAT/EC FP6 RI Programme

2008



New cluster connected to
RoGrid, SEE-Grid-2, EGEE-2
(28 CPUs)
UVT/National CEEEX + EC FP7

e-Infrastructure / Structural Funds

2009



2011



BG supercomputer (11.7 Tflops/ 4096 cores)
UVT/ICAM project/EC Structural Funds
(Research Center for Environmental Studies)

InfraGrid Cluster (400 cores, Infiniband)
UVT/EC Structural Funds

<http://hpc.uvt.ro>

General overview of the RTD projects in last 10 years

Level	Programme	Subprogramme	Periods	RO-Associate State to EC Progs.					RO-Full member of EC Progs.									
			Years	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Forecast	Topics		
EC	FP7	Cooperation	ICT					VISP				AVANTSSAR DEAMS				Web services Secure services ICT for Energy Software services Cloud computing Secure services		
		Capacities	Res. Infra Res. e-Infra							SCIENCE							Grid for maths Grid supply Grid tools Grid supply Grid tools & appls Grid supply HPC tools & appls HPC & Cloud	
		Peoples	Reg.potential										EGI-Inspire HP-SEE				Formal verification Algs & physics	
		Structural funds (SF)	Research Infra	e-Infra Institutional supp						SysteMaThEx		PhaseTrans					Cluster/Grid/IaaS(Cloud) HPC for computational problems Grid for Earth Observation	
		ESA	PECS										InfraGrid ICAM				Formal verification	
		INTAS								Formal Verific							SEED	Cloud for e-Citizens
		CIP	ICT															HPC/Cloud/Grid/Cluster Artificial Intelligence
COST	ICT															Distributed comp & AI & Soft.Eng. Formal verification & AI Computational problems Formal verification Computational Mathematics Formal verification		
Bilateral	RO-Austria	Austrian Progrs.			IeAT start-up											HPC		
	RO-Swiss RO-Ukraine	RO-Austrian Prj. Swiss Progrs. RO-Ukraine Prj.	SCOPES										AEMTIA SciCom			Software engineering		
																Grids for Earth Observation Grid for computational problems Simulations for material sciences Simulators for bio computers Parallel comp, CFD, optimization Grids for librarians Grids for document management Grid for computational problems Natural Computing Web services & AI Sensor networks & AI EC Info Days, visibility Grid & AI		
	NATO															Grid for computational problems Artificial Intelligence Optimization Automation in Cloud computing Cluster for computational files HPC & Grid		
	Industry	IBM A/D/F companies														Simulators for bio computers Knowledge transfer Knowledge transfer & trainings Infrastructure		
National	CEEX/PNII	Cooperation																
		Capacities																
		People																
		Ideas																
		Others	InfoSoc															
Regional	IT Park Companies	IT Cluster	Acatel, Siemens															
		Multinational Local	Eta-2U, Lasting															
		Stages e-Infras	Pre-EC/Pre-CEEX Cluster															
				</														

General overview of the RTD projects in last 10 years

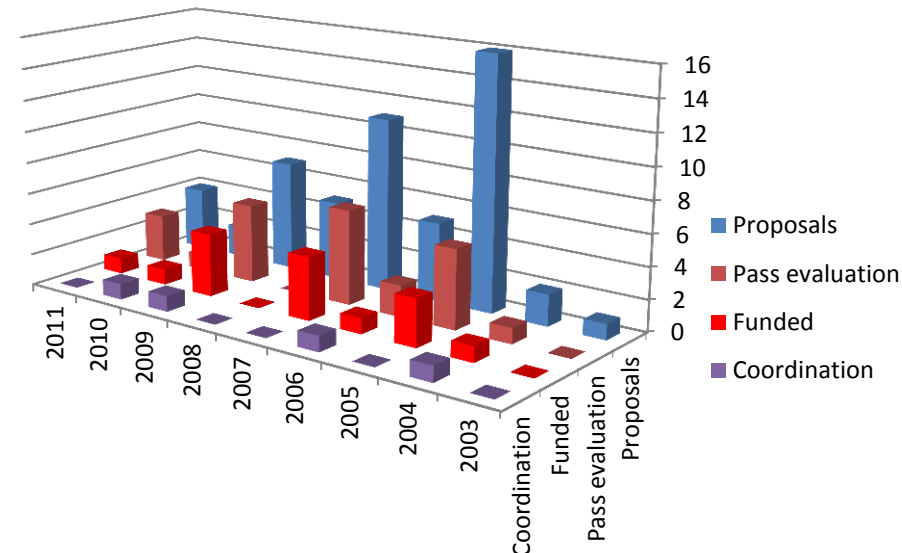
Level	Programme	Subprogramme	Periods	RO-Associate State to EC Progs.					RO-Full member of EC Progs.							
			Years	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Forecast	Topics
EC	FP7	Cooperation	ICT						VISP							Web services Secure services ICT for Energy Software services Cloud computing Secure services
										AVANTSSAR					Secure services Software services Cloud computing Secure services	
											DEHMS				Secure services Software services Cloud computing Secure services	
												SPRERS			Secure services Software services Cloud computing Secure services	
													mOSAIC		Secure services Software services Cloud computing Secure services	
													SPaCloS		Secure services Software services Cloud computing Secure services	
		Capacities	Res. Infra Res. e-Infra								SCIence					Grid for maths Grid supply Grid tools Grid supply Grid tools & appls Grid supply HPC tools & appls HPC & Cloud
											EGEE-2					Grid for maths Grid supply Grid tools Grid supply Grid tools & appls Grid supply HPC tools & appls HPC & Cloud
											SEE-Grid-II					Grid for maths Grid supply Grid tools Grid supply Grid tools & appls Grid supply HPC tools & appls HPC & Cloud
											EGEE-3					Grid for maths Grid supply Grid tools Grid supply Grid tools & appls Grid supply HPC tools & appls HPC & Cloud
									SEE-Grid-Sci					Grid for maths Grid supply Grid tools Grid supply Grid tools & appls Grid supply HPC tools & appls HPC & Cloud		
												EGI-Inspire		Grid for maths Grid supply Grid tools Grid supply Grid tools & appls Grid supply HPC tools & appls HPC & Cloud		
												HP-SEE		Grid for maths Grid supply Grid tools Grid supply Grid tools & appls Grid supply HPC tools & appls HPC & Cloud		
													HOST		Formal verification Algs & physics Cluster/Grid/IaaS(Cloud) HPC for computational problems Grid for Earth Observation	
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Key changes due to national programmes

- **2002:** National InfoSoc (Information Society Programme):
 - Acquired the first cluster with the fastest connection at that moment
 - Allowed a boost of the research in parallel computing with orientation towards applications
 - Opened a new direction of research, in Grid computing
- **2005:** National CEEEX (Excellence in Research Programme)
 - Stimulated the cooperation between RTD institutions, and with industry (our case - [scale 1:5](#))
 - Stimulated the participation to FP6 Projects ([scale 2:16](#))
 - Stimulated the of research activities and the team has been enlarged with young researchers ([scale 1:2](#))
- **2011:** National PNII with changes in quality level
 - One of the 3 projects in CS funded in the Call 2011 (PCE) was proposed by the UVT team
 - Support for a new direction oriented toward using AI techniques for Cloud computing

FP6/FP7 success rate & coordination

Year	No. prop.	Passed eval.	Funded	Coordination	Succ. rate
2003	1	0	0	0	0%
2004	2	1	1	1	50%
2005	16	5	3	0	19%
2006	5	2	1	1	20%
2007	11	6	4	0	36%
2008	5	0	0	0	0%
2009	7	5	4	1	57%
2010	2	1	1	1	50%
2011	4	3	1	0	25%
Total	53	23	15	4	28%



*Samples of contract values
for the project with max value per year:*

2004: 80 000 Euros

2006: 200 000 Euros

2010: 400 000 Euros

2011: 2 400 000 Euros

Key changes due to FP6/FP7

- **2004:** First successful participation at FP6
- **2007:** Participation to 3 RI and 3 RTD projects
 - no. of 6 projects currently maintained (3-IeAT, 3-UVT)
- **2010:** Management experience in 4 projects
 - Project coordination:
 - Former: 2 (IeAT/People), Current: 1 (UVT/FP7-ICT)
 - Contracted: 1 (UVT/FP7-RegPot)
 - But only one participant/project
 - Sci. coordination experience in an FP7-ICT STREP (Cloud comp.)
- **Preparing the future:**
 - RTD new direction: GPU-based computing starting from 2012

Key changes due to Structural Funds

- **2009:** InfraGrid cluster
 - changed the “Cinderella” status in parallel/distributed computing in an European compatible one
 - 7th biggest cluster in Romania
 - aimed to serve the regional requirements for computational power
 - allowed to open the new RTD direction in Cloud computing
- **2011:** BG/P supercomputer
 - created the opportunity to become the first supercomputer center of Romania
 - increased the potential for future collaboration with national and international teams

Equation of SUCCESS in ERA

Peoples +

Support from:

- FP6/FP7 People (Re-integrations)
- National CEEEX programme (PostDocs)

Ideas +

Support from:

- National InfoSoc/CEEEX/PNII programmes
(Acquire expertise for FPx)

Cooperation +

Support from:

- FP6/FP7 ICT (RTD), ESA, Bilateral proj. (Increase knowledge)
- National CEEEX programme & Regional funds
(Knowledge transfer)

Capacities

Support from:

- EC FP6/FP7 RI (e-Infrastructure Collaborations, RI JRAs)
- EC Structural Funds (large installations)
- National CEEEX programme (Visibility and coop. support)

Success in ERA

(Our) Prerequisites

Peoples +

Ideas +

Cooperation +

Capacities

Success in ERA

- Core group of senior researchers with international visibility
- Availability of young researchers with high potential
- Interest and knowledge in the latest cutting-edge topics
- Capacity to adapt and to serve the society needs
- Openness for collaborations
- Contacts with the scientific community and industry
- Institutional support
- Awareness of the opportunities

(Our) Benefits

Peoples +

- Raise a competitive group of researchers
- Import new knowledge
- Increase the professional and management skills

Ideas +

- Work to solve challenging problems
- Improve existing knowledge
- Innovate and experiment

Cooperation +

- Exploit and increase the knowledge
- Knowledge transfer towards society
- Build communities

Capacities

- Create the proper conditions for the team development
- Increase the positioning and visibility
- Stimulates the development of new RTD directions

Success in ERA

Funds influence on the RTD activities

Peoples +

With funds: over 100%

Without national/EC SF/EC funds*: bellow 10%

Ideas +

With funds: over 40%

Without national/EC SF/EC funds*: bellow 5%

Cooperation +

With funds: over 100%

Without national/EC SF/EC funds*: bellow 5%

Capacities

With funds: over 1000%

Without national/EC SF/EC funds*: bellow 5%

Success in ERA

*Only using Institution/Bilateral/Regional/EDU-Ministry Funds based on the trends in 1994-2003

Helping the NMS community

FP7-ICT SPRERS

Strengthening the **P**articipation of **R**omania at **E**uropean **R**&**D** in **S**oftware **S**ervices (<http://sprers.eu>)

Aim:

- improve the participation to European collaborative research activities of research teams involved in software services from new member states

Main actions:

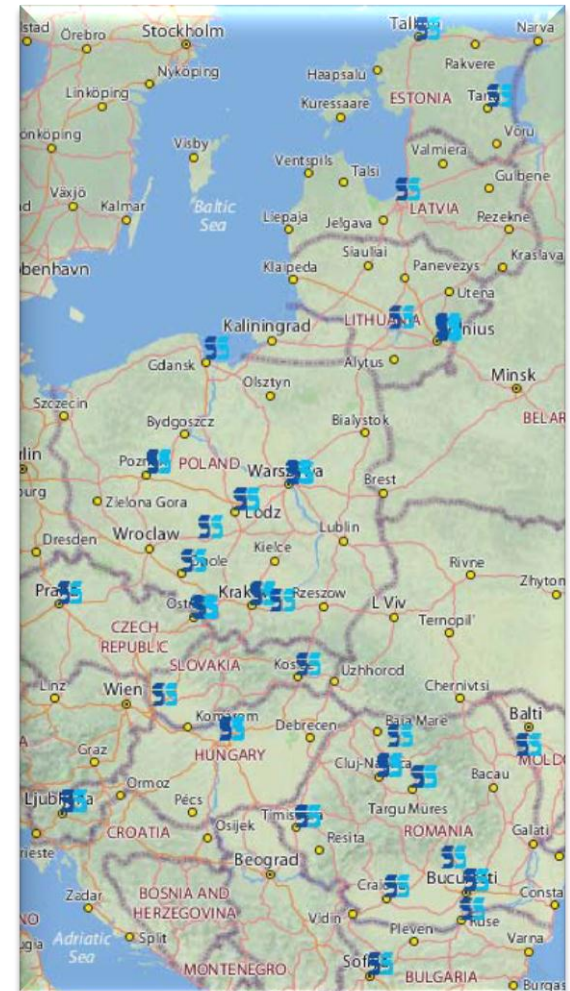
- identifying the strengths of these teams
- facilitate their collaboration through:
 - thematic workshops
 - expert meetings
 - training events
 - an awarding program
 - white papers.



Helping the NMS community

FP7-ICT SPRERS

- Map of competences:
 - Collection of profiles, obtained by self-assessment, of more than 130 research teams from NMS grouped by expertise in various topics related to software services
 - Useful to facilitate the networking and the development of scientific contacts
 - Information accessible through:
 - an online search engine (<http://sprers.eu/competences>)
 - white paper containing the catalogue of teams profiles (<http://sprers.eu/storage/D1.4.2.pdf>)



Helping the NMS community

FP7-ICT SPRERS

- Next events:
 - Info Day on the Call 8 of FP7-ICT Programme
10 November, Timisoara, Romania
<http://sprers.eu/events/infoday-on-call-8-of-fp7-ict-programme>
 - 2nd Training on Software Services – Cloud Computing,
11-14 November, Timisoara, Romania
<http://sprers.eu/events/2nd-training-on-software-services>
- Training aim:
 - dissemination towards the teams from NMS of the achievements of the on-going European collaborative projects in software services
 - opportunity for networking between the partici



Conclusions

- There are both national and international elements which have a critical impact in reaching competitiveness
- It does not exist a “success recipe” but there is no success without a synergetic exploitation of European and national opportunities

