

Conferinta de lansare a consultarii naționale asupra priorităților CDI 2014-2020

13.06.2013

Obiectivele intalnirii de astazi

- Prezentarea proiectului “Elaborarea Strategiei CDI 2014-2020”
- Prezentarea pasilor privind consultarea nationala asupra prioritatilor CDI
- Validarea domeniilor candidate (care structureaza dezbaterea)
- Colectarea de recomandari pentru paneluri si consultari online

- CO - Unitatea Executiva pentru Finantarea Invatamantului Superior, a Cercetarii, Dezvoltarii si Inovarii (UEFISCDI)
- Institutul National de C&D pentru Fizica si Inginerie Nucleara Horia Hulubei (IFIN-HH)
- Patronatul Roman din Cercetare si Proiectare (PRCP)
- Institutul National de Cercetare – Dezvoltare pentru Inginerie Electrica (ICPE-CA)
- Academia Romana (AR)
- Agentia Spatiala Romana (ROSA)
- Universitatea Babes-Bolyai din Cluj-Napoca (UBB)
- Universitatea Politehnica din Bucuresti (UPB)
- Scoala Nationala de Studii Politice si Administrative (SNSPA)
- FM Management Consultancy SRL (FMMC)
- S.C. GEA Strategy & Consulting S.A. (GEA)
- Institutul de Fizica Atomica (IFA)

+ 137 institutii partenere

Obiectivele proiectului

Un pachet strategic integrat, care va cuprinde

- Strategia CDI 2014-2020
- Planul National CDI 2014-2020
- Programul Operational Sectorial aferent Cercetare-Dezvoltare-Inovare

Componentele cheie

- Viziunea 2020 (ianuarie – mai 2013)
- Prioritatile (final septembrie 2013)
- Modelul investitional
- Modelul de guvernanta

Abordare

FORESIGHT

- **Participatoriu**
 - Experti si actori cheie identificati pe baza relevantei si interesului
- **Sistematic**
 - Colectarea structurata de informatii, ateliere de lucru, consultari online, conferinte
- **Sistemnic**
 - Nu doar CDI, ci si societatea in ansamblul sau
- **Orientata viitor**
 - Include si factorii schimbarii (sociali, tehnologici, economici, de mediu, de valori)
- **Orientata actiune**
 - De la principiu pana la nivel operational

Viziunea

- Panel 30 persoane
- 4 întâlniri interne
- Întâlnirea cu actorii cheie
(70 participanți)



VIZIUNEA

Viziunea CDI 2020

În 2020, Romania este competitivă prin inovare la nivel regional și global într-o serie de domenii ce pun în valoare capacitatea națională și generează, astfel, dezvoltare economică și bunăstare pentru cetățeni.

La baza competitivității se află un ecosistem de inovare în care cercetarea-dezvoltarea susține avansul pe lanțurile globale de valoare adăugată.

În acest mediu, excelența și spiritul antreprenorial mobilizează o masă critică de actori.

Viziunea

Putem ajunge aici construind și menținând un larg parteneriat pentru inovare:

- *Asigurarea resurselor*
- *Asumarea, la nivel național, a unui set de priorități strategice*
- *Predictibilitatea*
- *Credibilizarea parteneriatului public-privat*
- *Masa critică de cercetători*

Pilonul 1. Firmele devin actori cheie ai inovării

- Suport pentru asumarea riscului unui comportament inovator
- Accesul la rezultatele cercetării publice
- Regimul de proprietate intelectuală
- Interfețele (centre de transfer, facilitatori etc.)

Pilonul 2. Sectorul CDI constituie un spațiu de oportunități pentru cei capabili

- Piața românească a cercetării este deschisă internațional
- Cercetarea exploratorie
- Educația susține în toate etapele comportamentul creativ, antreprenorial
- Formarea cercetătorilor

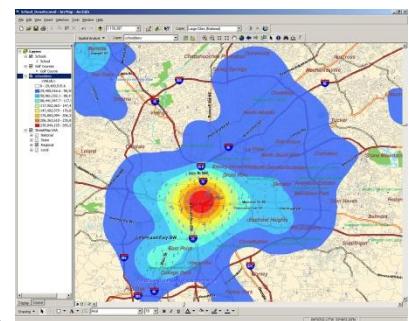
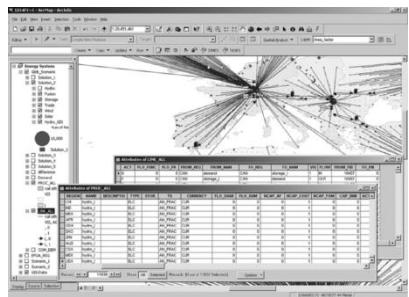
Pilonul 3. Străpungeri în domeniile strategice

- Programe pe termen lung
- *Leadership* organizațional
- Parteneriatul dintre organizațiile de cercetare, mediul de afaceri, administrația locală

Procesul de identificare a priorităților

Procedura de identificare a priorităților

Hartile cunoasterii



+
**Elemente
strategice**

+
**Tendinte
globale**

Consultare
cu actorii
cheie

**Lista de
domenii
pentru
consultari**

Panel 1 – Studiu prospectiv

Panel 2 – Studiu prospectiv

Panel 3 – Studiu prospectiv

Panel 4 – Studiu prospectiv

Panel 5 – Studiu prospectiv

Panel ... – Studiu prospectiv

Panel N – Studiu prospectiv

**DELPHI
2.0
Online, RT**

**Lista
finală de
priorități**

Identificarea prioritatilor

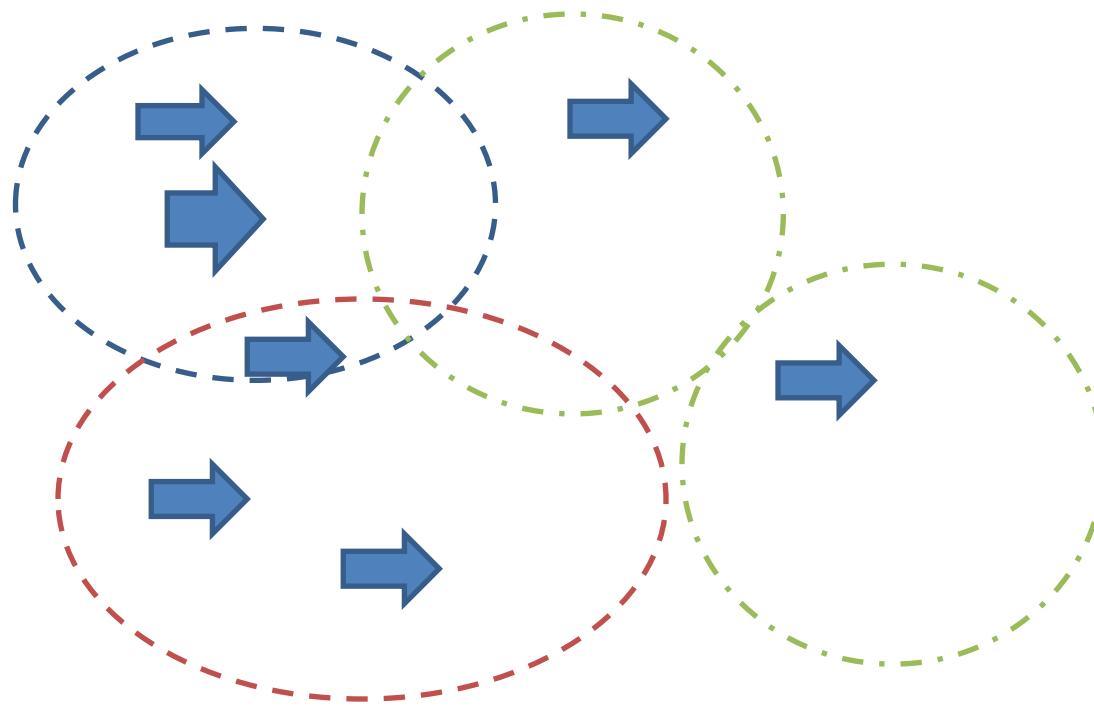
Un proces bazat pe argumente.

In care se construiesc descrieri ale unor
oportunitati relevante pentru 2020.

Si se cauta acordul comunitatilor relevante.

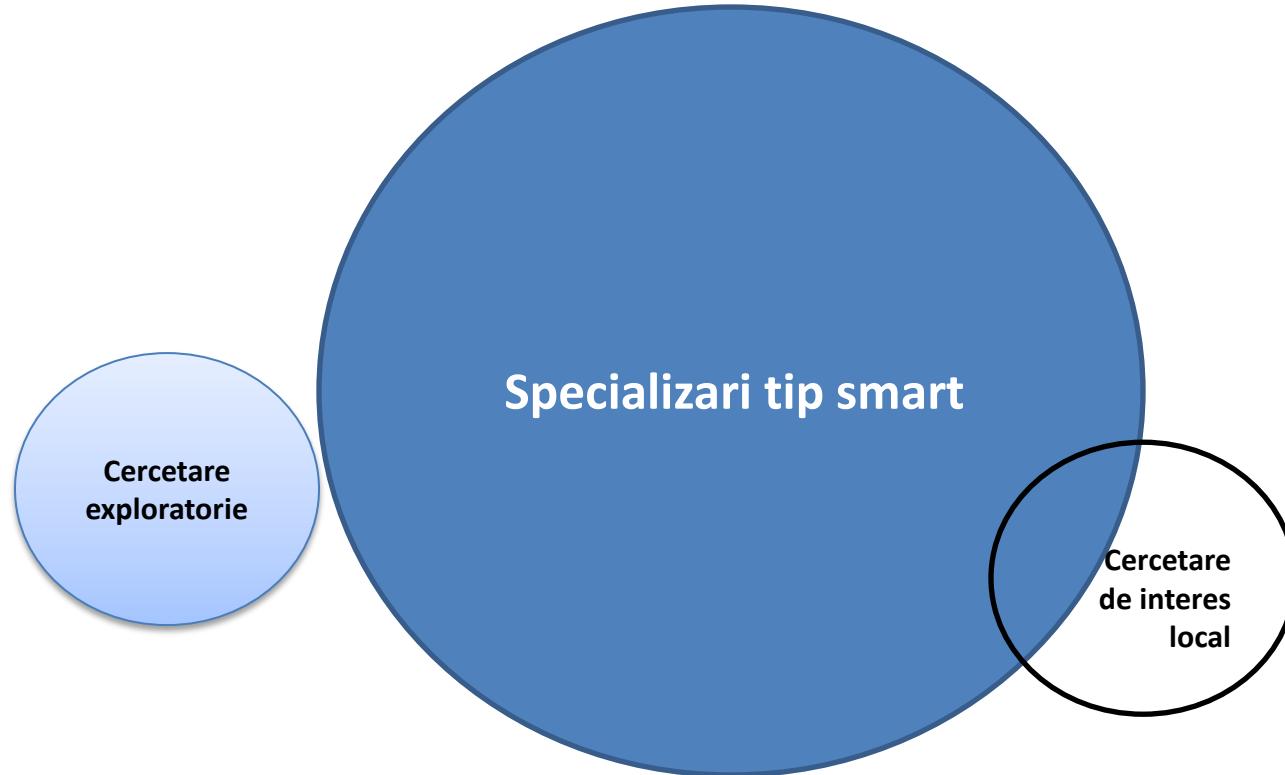
Nu este un proces de taiere de domenii!

Domeniile stabilite astazi structureaza dialogul



In interiorul acestor domenii panelurile vor propune “**Oportunitati**”

Cat de specializati?



Fisa unui domeniu de tip smart

- Provocarea
- Nevoia de cercetare/inovare
- Conditii preexistente de cercetare/inovare
- Perspective si potential

Sursa: Danish Agency for Science, Technology and Innovation

Prima analiza

Studiul JASPERS/ ARUP

Sector	Sector Specialisation	Research	Research Specialisation	Regional Focus
Food and Agriculture	Agro-Food, Biotechnology, Functional food, wine, bio beekeeping, zootehnics, fisheries	Food and Agriculture	Agronomy, crop science, food science and agricultural and biological science, agricultural biotech, Soil research, nano-materials for protein separation	NE, SE, S, BI, SV, V, CE
ICT	Telecommunications and Software / Computer Programming Mechatronics, security, e-health, ICT for transport, New Media	ICT	Networks of the future, internet of services, software and visualisation, networked media and 3d internet, flexible organic and large area electronics, embedded system design, personal health systems, ICT for energy efficiency and accessible and assistive ICT, Computer science and artificial intelligence,	NE, SE, BI, V, NV
Motor Vehicle Manufacturing and Other Transport	Materials, Components and Fabrication Ship Building, Aviation, ship design, railway, agricultural equipment	Engineering and Technology Key enabling technologies	Electrical and electronic engineering, nanotechnology, materials (specifically electronic, optical and magnetic materials, materials chemistry, materials science and metals and alloys) and mechanical engineering, motor vehicle transport and other transport	SE, S, V
Electronics	Computer, Electronics and Optical Products, Medical precision Instruments, Mechatronics. Electronics for automotive, robotics chip design, technological support services, telecomm applications		Monitoring systems, charging of electrical vehicles, Joining technologies, mechatronics systems, tribology, micro-nano fabrication Nano composites for textile applications, , anthropometric research for the clothing industry Magnetic nano-fluids Electronics for aviation	NV
Machinery and Equipment	Intelligent Agriculture, Automation Mechatronics		High power lasers/ x-rays	NE, C, NV
Textiles	Technical Textiles, smart textiles, personalised clothing, shoes, leather, fur			NE,
Energy	Renewable Energy, Wind Power, Solar Power, Green construction. Biomass, Ecological Services, geothermal, nuclear energy, oil industry	Energy and Environment, Renewable energy	Pollution, management and monitoring, environmental engineering, ecology and environmental science, network technologies, renewable energy and biofuels, thermo-chemical solar pipe, TiO2 Nano composites for decontamination, high power lasers, solar cells, trigeneration, cogeneration, micro windmills for cities, heat pumps, waste to energy, energy autonomous irrigation systems, energetic building efficiency, molecular structures for photovoltaic panels, intelligent monitoring systems and sensors for energy production, energy production and management (especially in urban areas)	S, BI, V, NV
Pharma-Health-Tourism	Wellness tourism, geriatrics, Plant and other natural treatments, dermo cosmetics		systems for aged and disabled, antibiotics, cosmetics	NE, SE, SV
Green Housing Construction-wood	Metallic structures, personalised furniture, design		Building materials, conversion of wood waste	C, NV

Domeniile de publicare ISI în care România are avantaj comparativ (2007-2011)

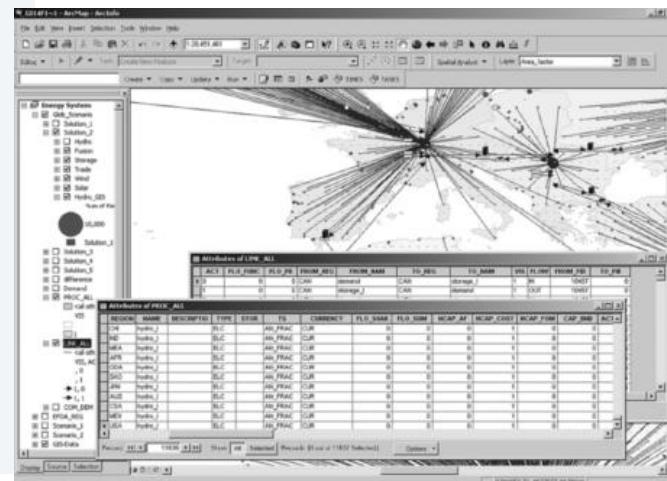
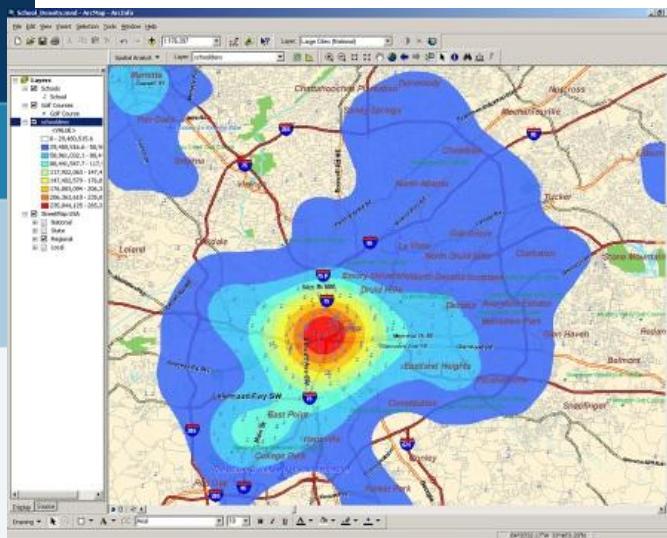
Uscătă

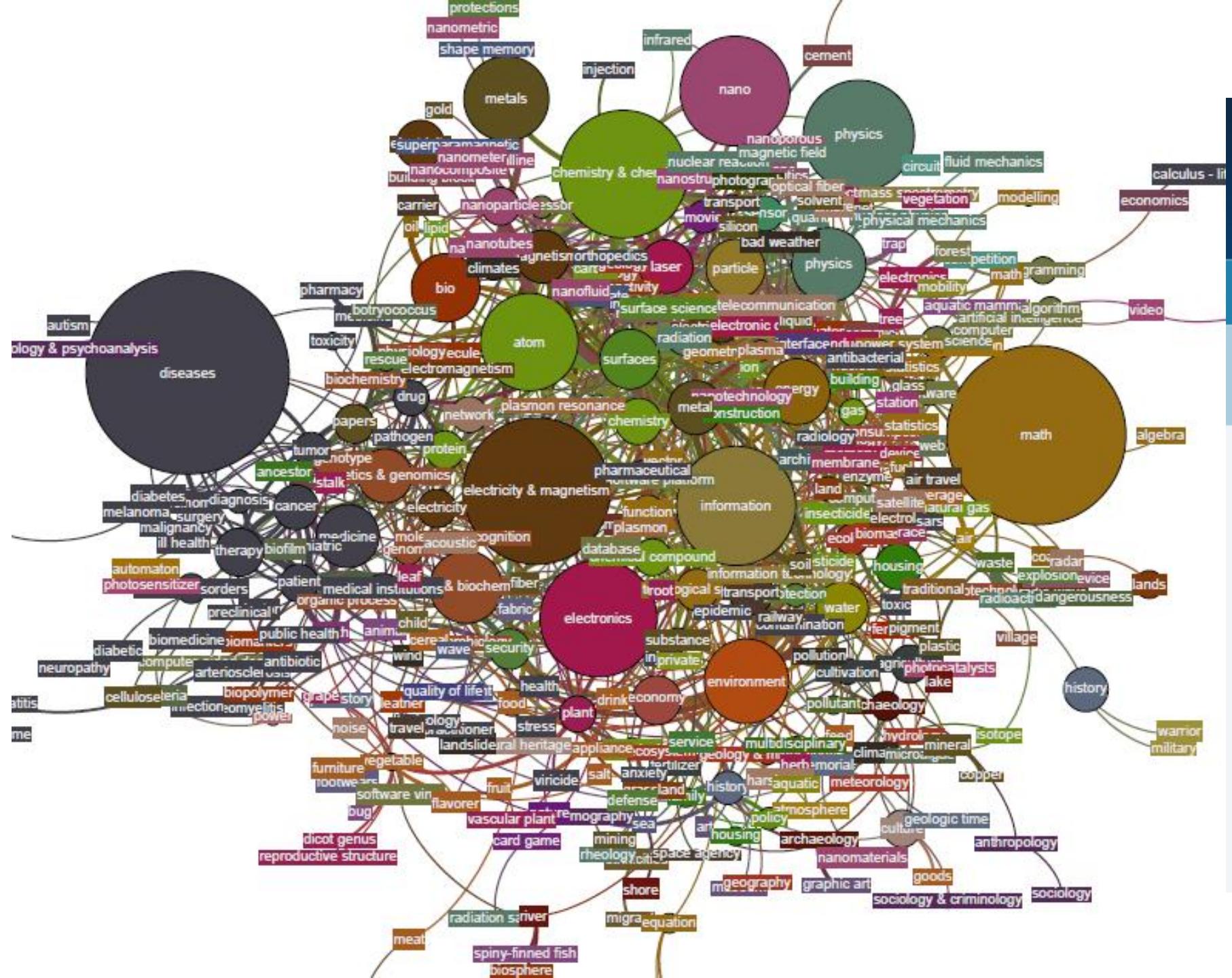


Subject Area	Impact Relative to Country/Territory	% Documents in Subject Area	% Documents in Country/Territory
AUTOMATION & CONTROL SYSTEMS	0.44	1.33	1.43
BIOTECHNOLOGY & APPLIED MICROBIOLOGY	0.47	0.48	1.88
CHEMISTRY, ANALYTICAL	1.62	0.67	2.10
CHEMISTRY, INORGANIC & NUCLEAR	1.91	0.54	1.17
CHEMISTRY, MULTIDISCIPLINARY	0.72	1.52	10.26
CHEMISTRY, PHYSICAL	1.85	0.52	3.87
DEVELOPMENTAL BIOLOGY	0.30	1.76	1.29
ECONOMICS	0.23	0.94	2.15
ENGINEERING, CHEMICAL	0.74	1.72	6.02
ENGINEERING, ELECTRICAL & ELECTRONIC	0.58	0.45	2.99
ENGINEERING, MECHANICAL	0.98	0.53	1.10
ENVIRONMENTAL SCIENCES	0.86	0.95	4.49
INSTRUMENTS & INSTRUMENTATION	1.31	0.73	1.39
MATERIALS SCIENCE, MULTIDISCIPLINARY	0.82	1.23	11.36
MATHEMATICS	0.68	1.90	6.77
MATHEMATICS, APPLIED	0.84	1.84	6.51
MATHEMATICS, INTERDISCIPLINARY APPLICATIONS	1.01	1.48	1.66
MECHANICS	1.23	0.77	1.87
NANOSCIENCE & NANOTECHNOLOGY	1.30	0.40	1.28
NUCLEAR SCIENCE & TECHNOLOGY	0.94	0.87	1.29
OPTICS	0.63	1.72	6.13
PHARMACOLOGY & PHARMACY	1.21	0.29	1.58
PHYSICS, APPLIED	0.83	1.05	7.92
PHYSICS, ATOMIC, MOLECULAR & CHEMICAL	1.62	0.46	1.18
PHYSICS, CONDENSED MATTER	1.35	0.68	3.22
PHYSICS, MATHEMATICAL	1.14	0.85	1.53
PHYSICS, MULTIDISCIPLINARY	0.91	1.42	5.61
PHYSICS, NUCLEAR	1.72	1.46	1.50
PHYSICS, PARTICLES & FIELDS	1.50	0.75	1.32
POLYMER SCIENCE	1.26	0.73	1.91
SURGERY	0.55	0.34	1.72

perioada 2014-2020

Competence	Discipline	Type of competence
Heat transfer; Fluids; Natural convection	Heat transfer; Friction lubrication & Wear; Mechanics of solids & structures	Emerging
Fixed point theorem; Fixed Point;	Nonlinear analysis; Fuzzy Sets; Power transmission.	Distinctive
Membranes; Formal languages; Models	Data mining; computer systems theory	Emerging
Nuclei; Decay; Neutrons	Nuclear Physics; Data mining	Emerging
Variable exponent; Existence; $p(x)$ -Laplacian	Nonlinear analysis	Emerging
Polymers; Polyamides; Polyurethanes	Micromolecules & Polymers	Distinctive
Analytic function; Unit desk; subordination	Nonlinear analysis	Emerging
Azobenzene; gratings; polymers	Macromolecules and polymers; Organic chemistry; Thermal analysis	Distinctive
Glass; Ions; Chemical analysis	Solar & Wind Power	Distinctive





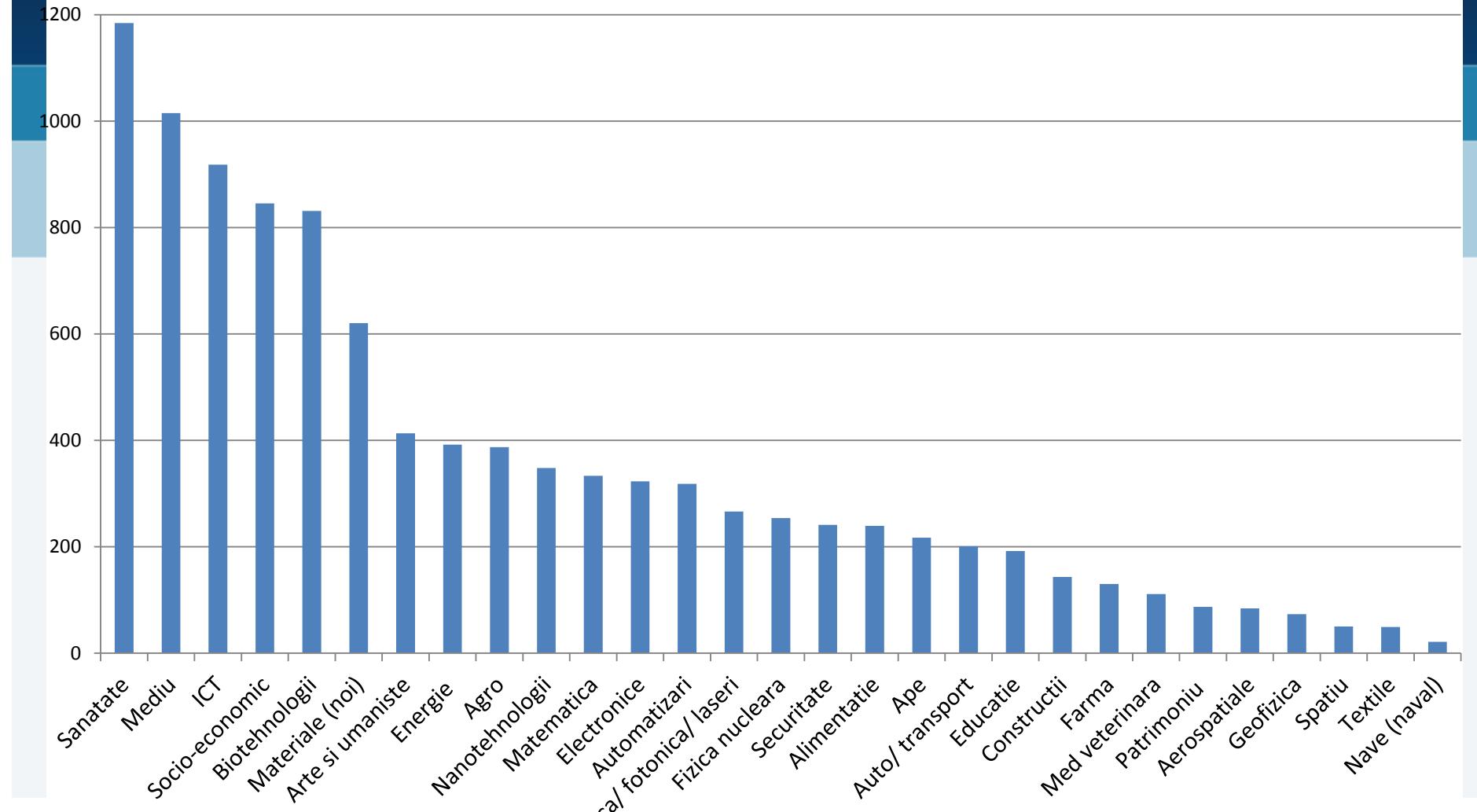
Consolidarea a 29 domenii categoriale

Aerospatiale	ICT
Agro	Matematica
Alimentatie	Materiale (noi)
ape	Med veterinara
Arte si umaniste	Mediu
Auto/ transport	Nanotehnologii
Automatizari	Nave (naval)
Biotehnologii	Optica/ fotonica/ laseri
Constructii	Patrimoniu
Educatie	Sanatate
Electronice	Securitate
Energie	Socio-economic
Farma	Spatiu
Fizica nucleara	Textile
Geofizica	

Corespondenta domenii - brevete

1	Aerospatiale	1	ENGINEERING, AEROSPACE					
2	Agro	7	AGRICULTURAL ECONOMICS & POLICY	AGRICULTURAL ENGINEERING	AGRICULTURE, DAIRY & ANIMAL SCIENCE	AGRICULTURE, MULTIDISCIPLINARY	AGRONOMY	HORTICULTURE
3	Alimentatie	3	FISHERIES	FOOD SCIENCE & TECHNOLOGY	NUTRITION & DIETETICS			
4	Ape	7	ENGINEERING, OCEAN	ENGINEERING, MARINE	FISHERIES	LIMNOLOGY	MARINE & FRESHWATER BIOLOGY	OCEANOGRAPHY
5	Arte si umaniste	47	ANTHROPOLOGY	AREA STUDIES	ART	BEHAVIORAL SCIENCES	CLASSICS	COMMUNICATION
6	Auto/ transport	2	TRANSPORTATION	TRANSPORTATION SCIENCE & TECHNOLOGY				
7	Automatizari	3	AUTOMATION & CONTROL SYSTEMS	REMOTE SENSING	ROBOTICS			
8	Biotehnologii	8	BIOCHEMICAL RESEARCH METHODS	BIOCHEMISTRY & MOLECULAR BIOLOGY	BIODIVERSITY CONSERVATION	BIOPHYSICS	BIOTECHNOLOGY & APPLIED MICROBIOLOGY	ENGINEERING, BIOMEDICAL MATERIALS SCIENCE, BIOMATERIALS
9	Constructii	3	ARCHITECTURE	CONSTRUCTION & BUILDING TECHNOLOGY	ENGINEERING, CIVIL			
10	Educatie	4	EDUCATION & EDUCATIONAL RESEARCH	EDUCATION, SCIENTIFIC DISCIPLINES	EDUCATION, SPECIAL	PSYCHOLOGY, EDUCATIONAL		
11	Electronice	2	ELECTROCHEMISTRY	ENGINEERING, ELECTRICAL & ELECTRONIC				
12	Energie	1	ENERGY & FUELS					
13	Farma	2	ALLERGY	PHARMACOLOGY & PHARMACY				
14	Fizica nucleara	11	NUCLEAR SCIENCE & TECHNOLOGY	PHYSICS, APPLIED	PHYSICS, ATOMIC, MOLECULAR & CHEMICAL	PHYSICS, CONDENSED MATTER	PHYSICS, FLUIDS & PLASMAS	PHYSICS, MATHEMATICAL PHYSICS, MULTIDISCIPLINARY
15	Geofizica	10	ENGINEERING, GEOLOGICAL	GEOCHEMISTRY & GEOPHYSICS	GEOGRAPHY	GEOGRAPHY, PHYSICAL	GEOLGY	GEOSCIENCES, MULTIDISCIPLINARY MINERALOGY
16	ICT	11	COMPUTER SCIENCE, ARTIFICIAL INTELLIGENCE	COMPUTER SCIENCE, CYBERNETICS	COMPUTER SCIENCE, HARDWARE & ARCHITECTURE	COMPUTER SCIENCE, INFORMATION SYSTEMS	COMPUTER SCIENCE, INTERDISCIPLINARY APPLICATIONS	COMPUTER SCIENCE, SOFTWARE ENGINEERING COMPUTER SCIENCE, THEORY & METHODS
17	Matematica	8	MATHEMATICAL & COMPUTATIONAL BIOLOGY	MATHEMATICS	MATHEMATICS, APPLIED	MATHEMATICS, INTERDISCIPLINARY APPLICATIONS	PHYSICS, MATHEMATICAL	PSYCHOLOGY, MATHEMATICAL SOCIAL SCIENCES, MATHEMATICAL METHODS
18	Materiale (noi) (Elsevier)	9	MATERIALS SCIENCE, BIOMATERIALS	MATERIALS SCIENCE, CERAMICS	MATERIALS SCIENCE, CHARACTERIZATION & TESTING	MATERIALS SCIENCE, COATINGS & FILMS	MATERIALS SCIENCE, COMPOSITES	MATERIALS SCIENCE, MULTIDISCIPLINARY MATERIALS SCIENCE, PAPER & WOOD
19	Med veterinara	1	VETERINARY SCIENCES					
20	Mediu	9	ECOLOGY	ENGINEERING, ENVIRONMENTAL	ENGINEERING, PETROLEUM	ENVIRONMENTAL SCIENCES	ENVIRONMENTAL STUDIES	FORESTRY METALLURGY & MINING
21	Nanotehnologii	1	NANOSCIENCE & NANOTECHNOLOGY					
22	Nave (naval)	1	ENGINEERING, MARINE					
23	Optica/ fotonica/ laseri	5	IMAGING SCIENCE & PHOTOGRAPHIC TECHNOLOGY	OPTICS	RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING	REMOTE SENSING	SPECTROSCOPY	
24	Patrimoniu	3	ARCHAEOLOGY	BIODIVERSITY CONSERVATION	PALAEONTOLOGY			
25	Sanatate	65	ALLERGY	ANATOMY & MORPHOLOGY	ANDROLOGY	ANESTHESIOLOGY	CARDIAC & CARDIOVASCULAR SYSTEMS	CELL & TISSUE ENGINEERING CELL BIOLOGY
26	Securitate	0						
27	Socio-economic	22	AGRICULTURAL ECONOMICS & POLICY	BUSINESS	BUSINESS, FINANCE	CRIMINOLOGY & PENALOGY	DEMOGRAPHY	ECONOMICS ERGONOMICS
28	Spatiu	1	ASTRONOMY & ASTROPHYSICS					
29	Textile	1	MATERIALS SCIENCE, TEXTILES					

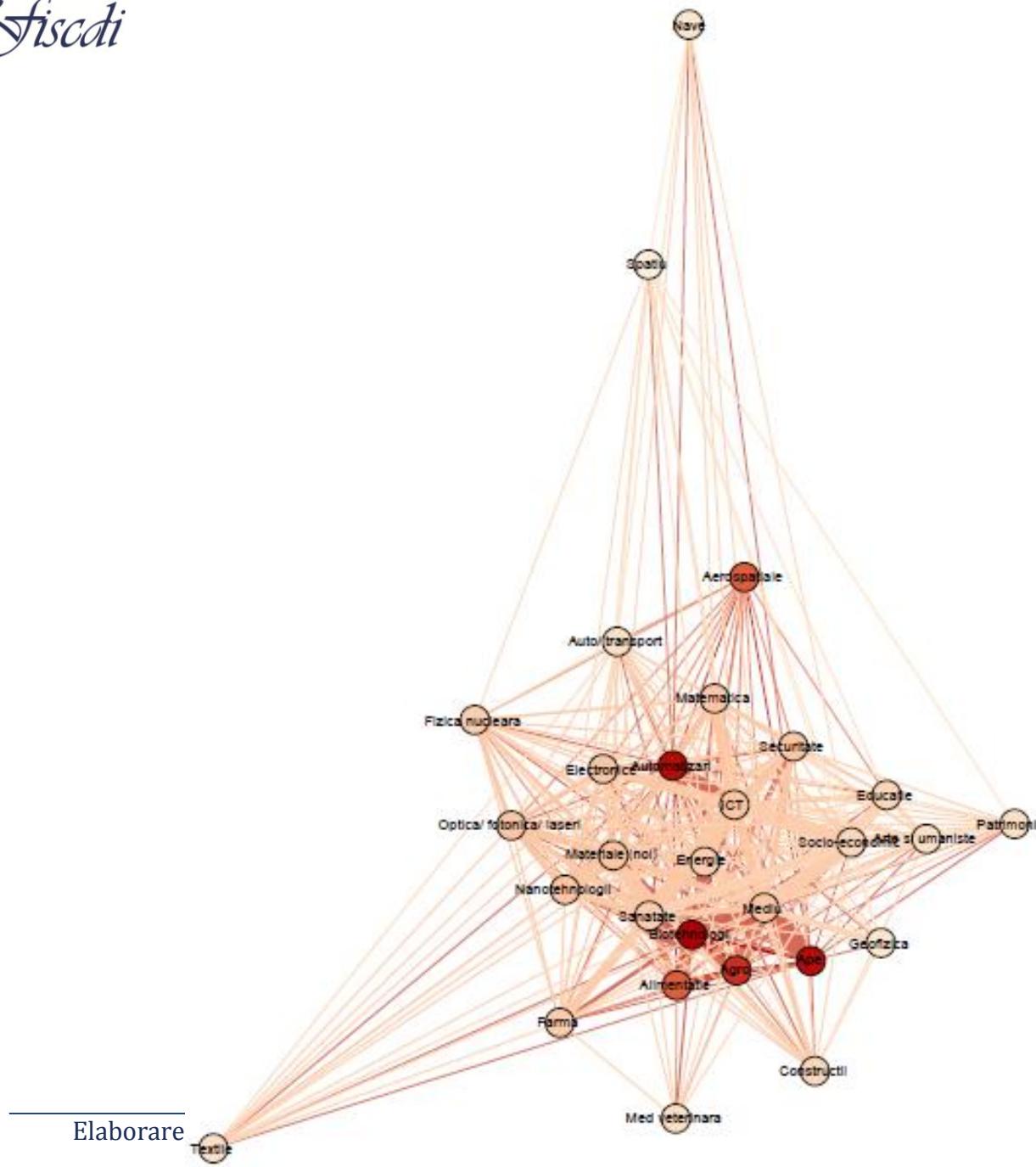
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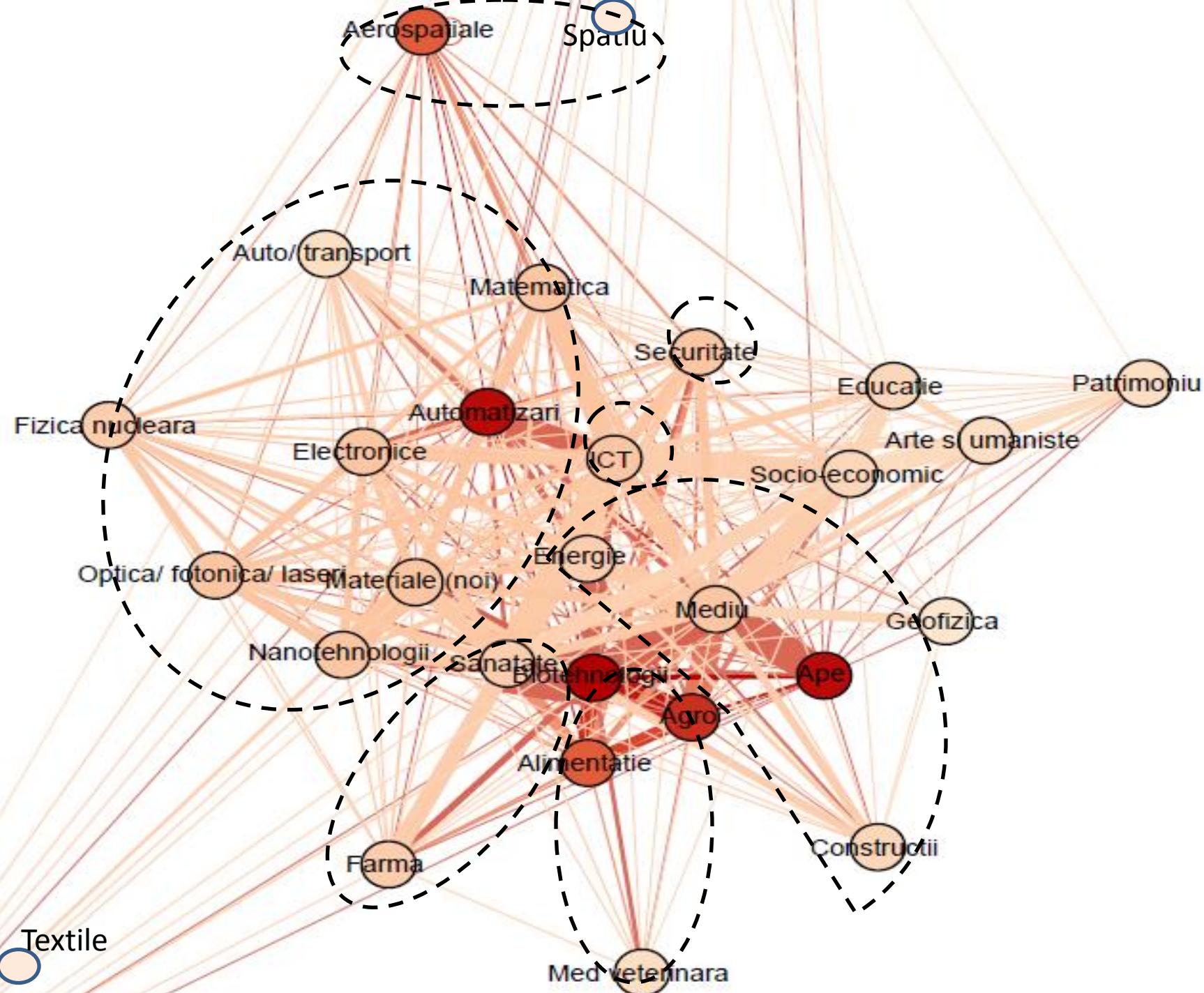


Matricea “afinitatilor”

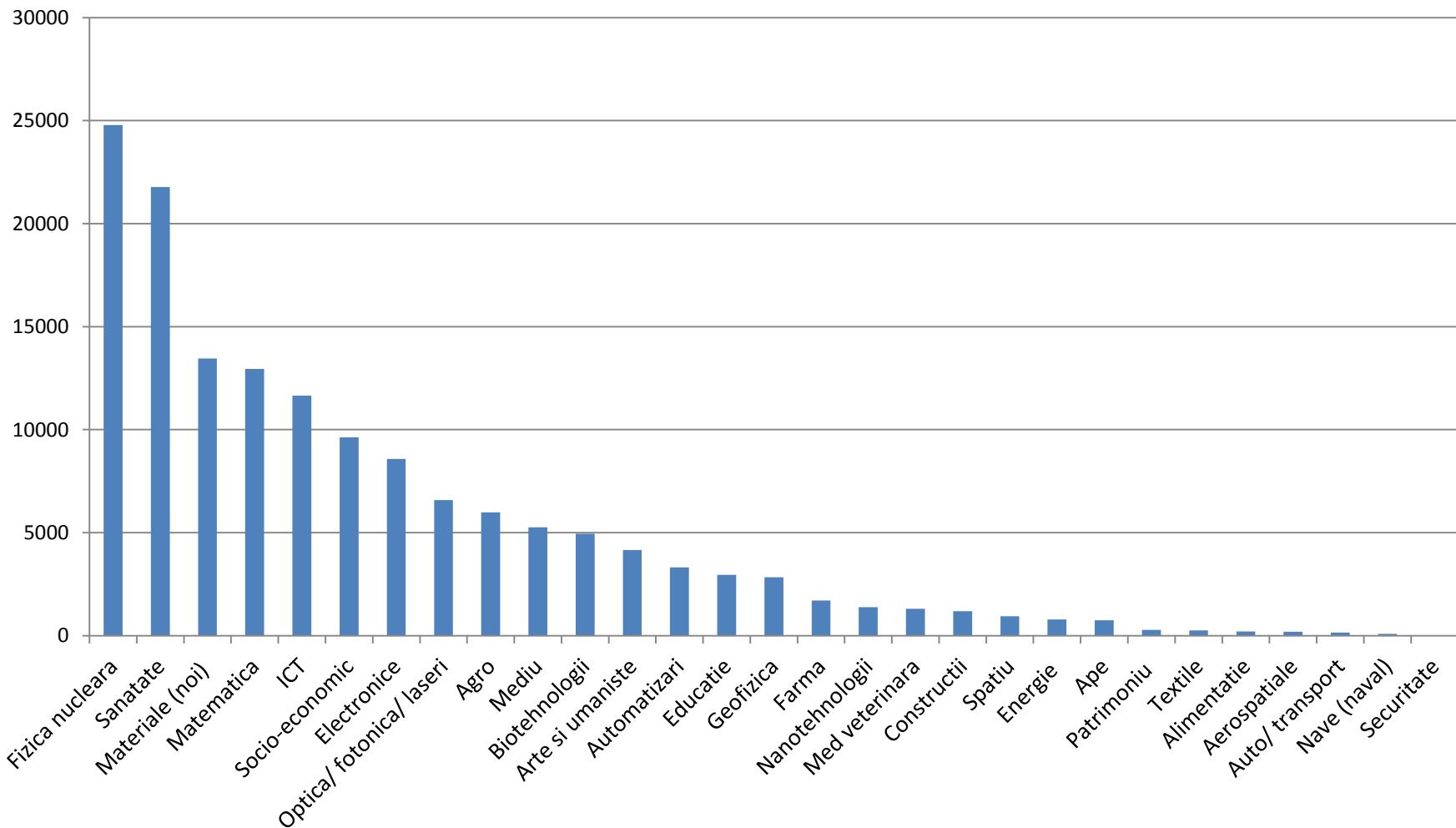
	Aerospatiale	Agro	Alimentatie	ape	Arte si umaniste	Auto/ transport	Automatizari	Biotehnologii	Constructii	Educatie	Electronice	Energie	Farma	Fizica nucleara	Geofizica	ICT	Matematica	Materiale (noi)	Med veterinară	Mediu	Nanotehnologii	Nave (naval)	Optica/ fotonica/ laseri	Patrimoniu	Sanatate	Securitate	Socio-economic	Spatiu	Textile
Aerospatiale																													
Agro																													
Alimentatie			52																										
ape	2	14	7																										
Arte si umaniste			1		5																								
Auto/ transport	8	6																											
Automatizari	4	18	9	10		28																							
Biotehnologii	4	108	84	23	1	9	2																						
Constructii	0	2		6	1	5	13	4																					
Educatie	1	1		0	33	1	2	1	0																				
Electronice	7	3	2	2	1	14	45	10	3	0																			
Energie	2	11		14	0	16	24	61	15	0	27																		
Farma		4	13	1	1	1	1	26	0	0	1	0																	
Fizica nucleara	1		1	3	1	2	7	2	1	3	9	10	2																
Geofizica			0	5	0	1	1	0	6	0	0	0	0	1															
ICT	16	11	8	14	20	25	87	28	5	36	70	42	6	14	8														
Matematica	2	4	2	7	4	1	18	6	6	2	15	7	2	22	5	83													
Materiale (noi)	5	3	1	8	4	24	18	58	31	1	28	33	11	16	0	21	14												
Med veterinară	0	9	9	0	0	0	0	16	0	0	0	0	1	0	0	2	0	1											
Mediu	7	99	23	135	30	25	21	143	30	6	16	84	2	21	45	69	18	45	6										
Nanotehnologii	2	3	2	10	0	3	9	43	4	0	28	18	9	20	0	24	12	108	0	23									
Nave (naval)				1	0	2	2	0	0	0	0	0	0	0	0	3	1	2	0	3	0								
Optica/ fotonica/ laseri	3	1	1	1	1	3	7	13	2	0	36	16	4	32	1	26	8	48	0	10	40	0							
Patrimoniu			4	1	1	39		3		3	1	0	2	1		6	0	4	0	16	0	0	1						
Sanatate		9	49	12	3	6	16	249	1	13	36	5	69	17	0	122	15	58	9	40	53	0	35	0					
Securitate	12	12	29	4	1	8	16	13	1	3	17	16	1	8	2	48	4	11	1	36	1	0	11	2	19				
Socio-economic	0	18	5	8	74	2	3	12	5	72	5	6	0	3	6	108	23	2	2	105	1	1	2	12	65	13			
Spatiu	0	0	0	0	0	1	5	6	0	0	1	5	1	0	11	1	4	2	0	0	2	2	0	0	4	0	0	5	
Textile	0	0	0	1	0	1	5	6	0	0	1	0	1	0	0	1	1	11	0	8	2	0	2	0	6	1	1	0	
Independente	27	86	31	11	229	64	38	46	9	43	58	96	15	102	10	238	135	211	62	203	66	8	53	11	474	39	373	15	9

perioada 2014-2020

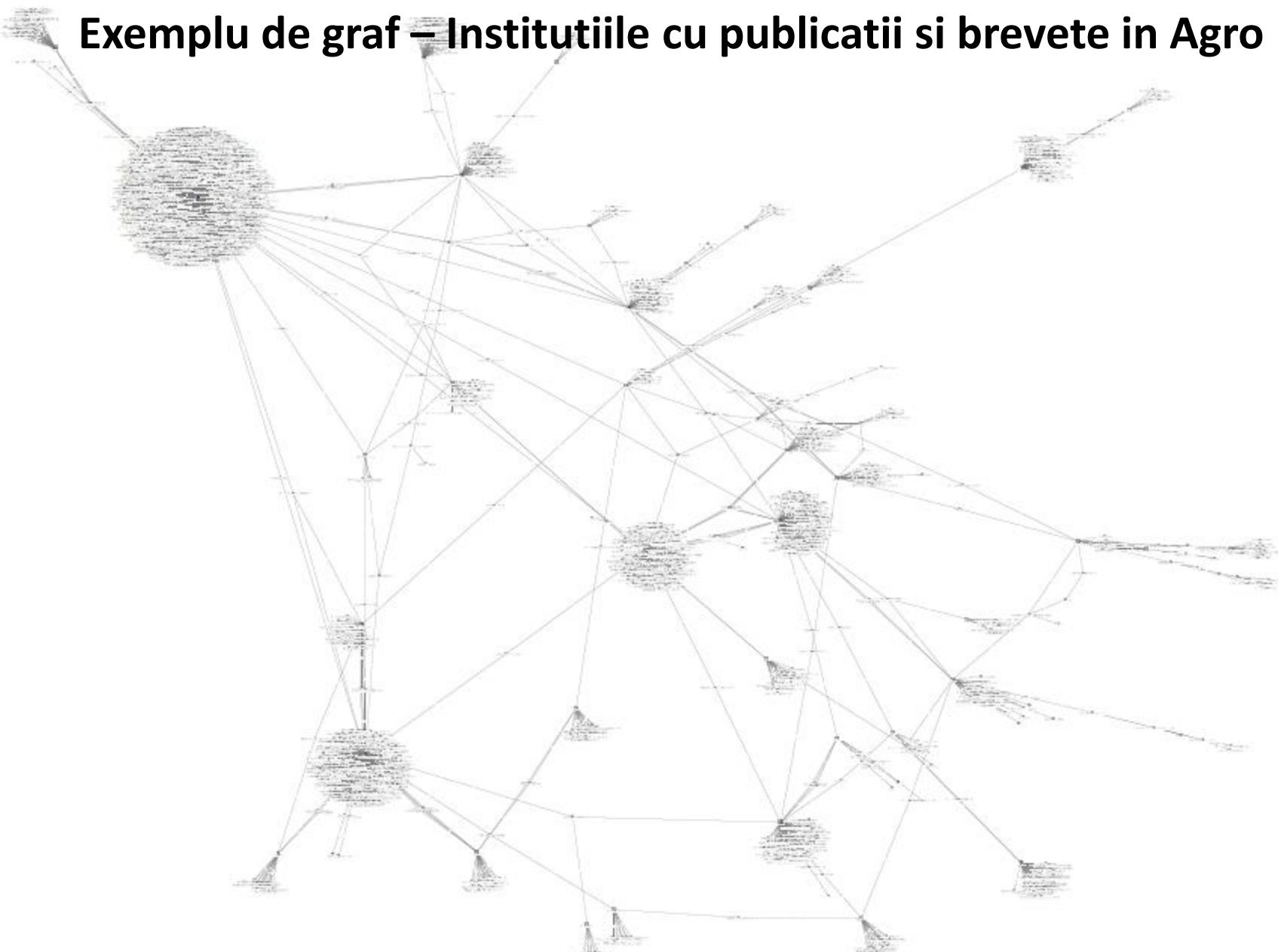


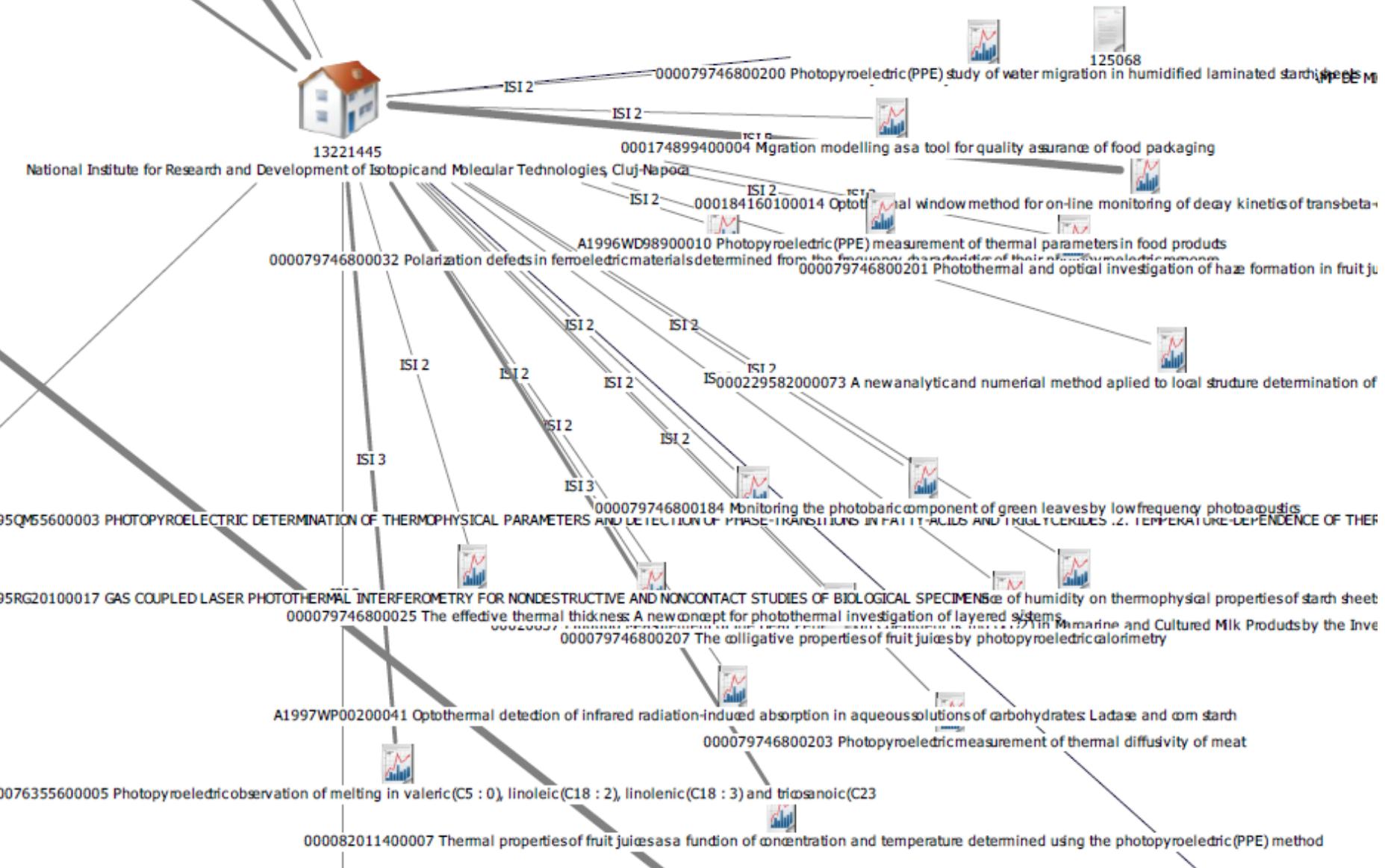


Numar articole ISI pe domenii

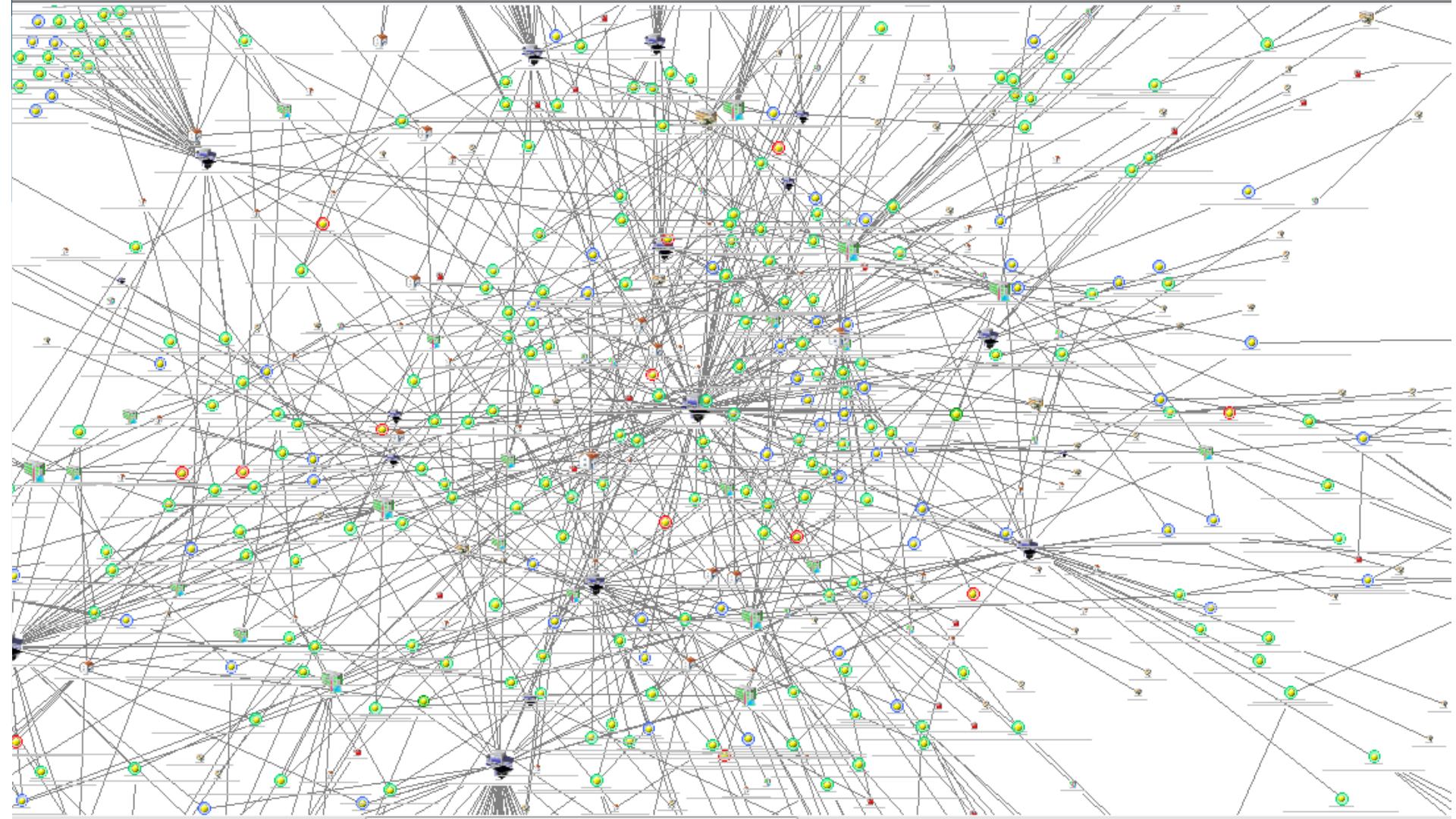


Exemplu de graf – Institutiile cu publicatii si brevete in Agro

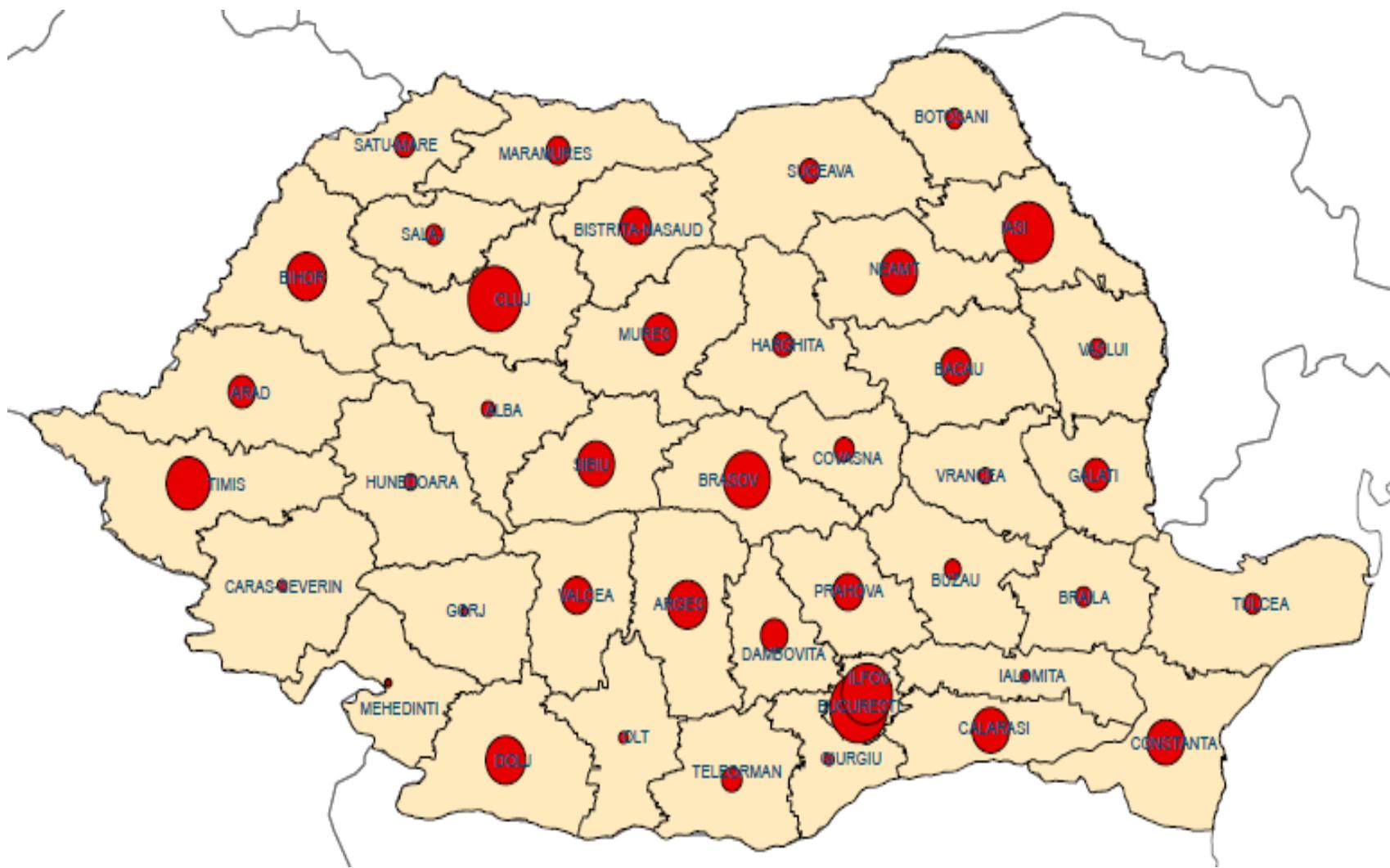




Exemplu de graf: proiecte domeniile Agro + Alimentatie



Exemplu de harta: organizatiile cu proiecte in domeniul Agro



Aerospatiale
Agro
Alimentatie
Ape
Arte si umaniste
Auto/ transport
Automatizari
Biotehnologii
Constructii
Educatie
Electronice
Energie
Farma
Fizica nucleara
Geofizica
ICT
Matematica
Materiale (noi)
Med veterinara
Mediu
Nanotehnologii
Nave (naval)
Optica/ fotonica/ laseri
Patrimoniu
Sanatate
Securitate
Socio-economic
Spatiu
Textile



Agro-alimentare
ICT
Sisteme inteligente
Sanatate
Stiinta medicamentului
Energie
Mediu
Securitate
Spatiu
Materiale
Biotehnologii
Transporturi



Bioeconomie
ICT
Sisteme inteligente, materiale, mașini și echipamente
Energie și mediu
Sănătate
Spațiu și securitate

Optiuni

- “Socio-economic” distribuit?
 - Dezvoltare rurala -> în Agro-food, Bioeconomie
 - Societate informatională → în ICT
 - Crestere economică intelligentă într-o societate inovativă, bazată pe cunoaștere;
 - Capacități institutionale și guvernanta pentru creștere economică și dezvoltare politică;
 - Migratie și demografie: imbatranirea populației, fluxuri de migratie și integrare, work-life balance.

Optiuni pentru etapele urmatoare

- “Biotehnologiile” se distribuie in Agro, Sanatate, Energie si Mediu?
- Bioeconomie (agro + food + biotehnologii)?
- Spatiu si Securitate impreuna?