How to convey the S3 analysis: building the evidence base for the S3
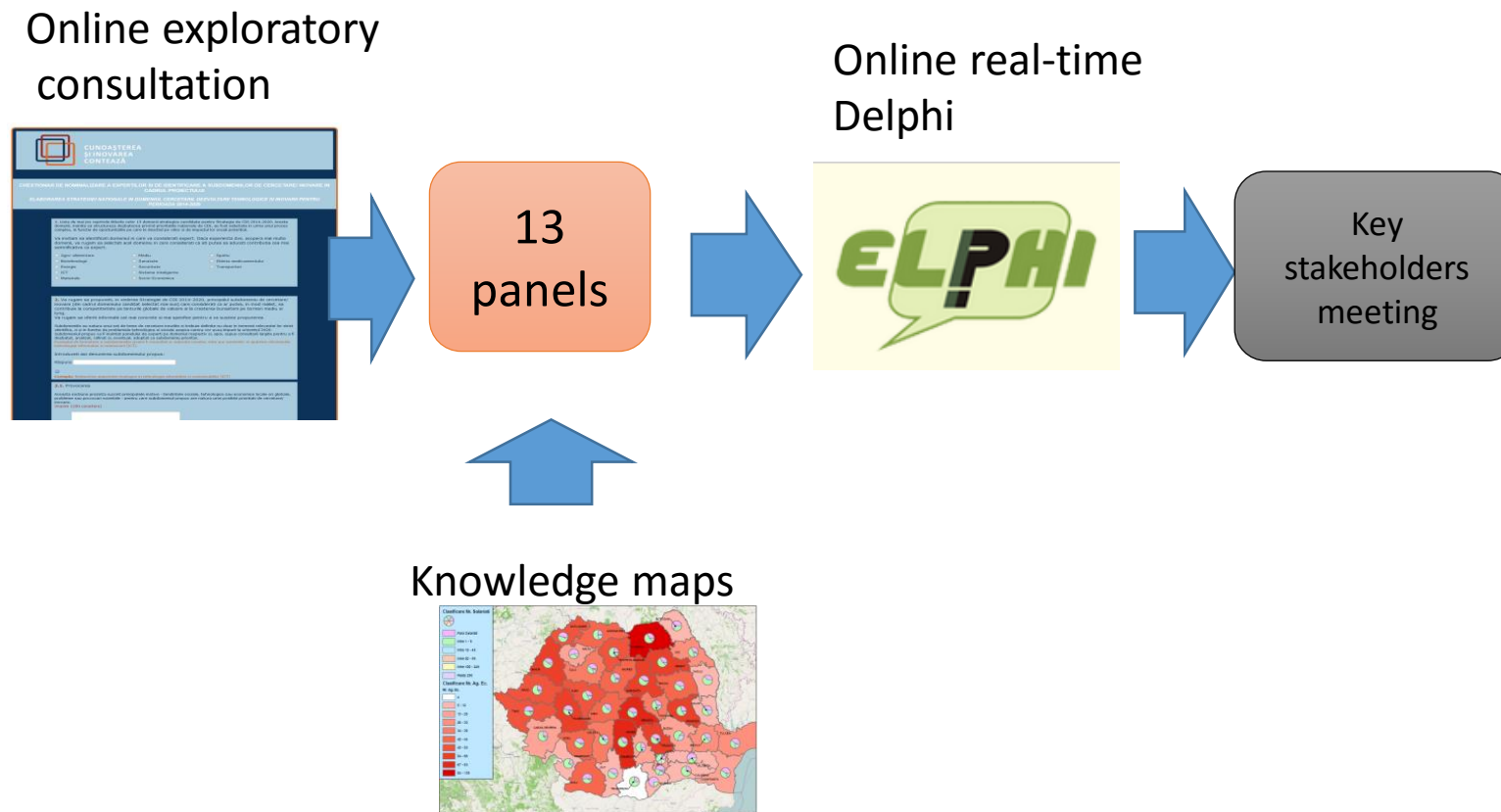
Radu Gheorghiu

Chisinau, 18 February 2016

The presentation

Focused on evidence base building in

- the entrepreneurial discovery process already implemented in 2013 in Romania

- the design of a continuous process of entrepreneurial discovery

The entrepreneurial discovering process - 2013

29 fields have been identified by integrating different inputs

Aeronatutics
Agro
Food
Water
Arts & humanities
Auto/ transport
Automatisation
Biotech
Constructions
Education
Electronics
Energy
Pharma
Nuclear phys.
Geophysics
ICT
Mathematics
Materials (new)
Veterinarian
Environment
Nanotech
Naval

Optics
Patrimony
Health
Security
Socio-economic
Space
Textiles

Data analytics proposed clustering
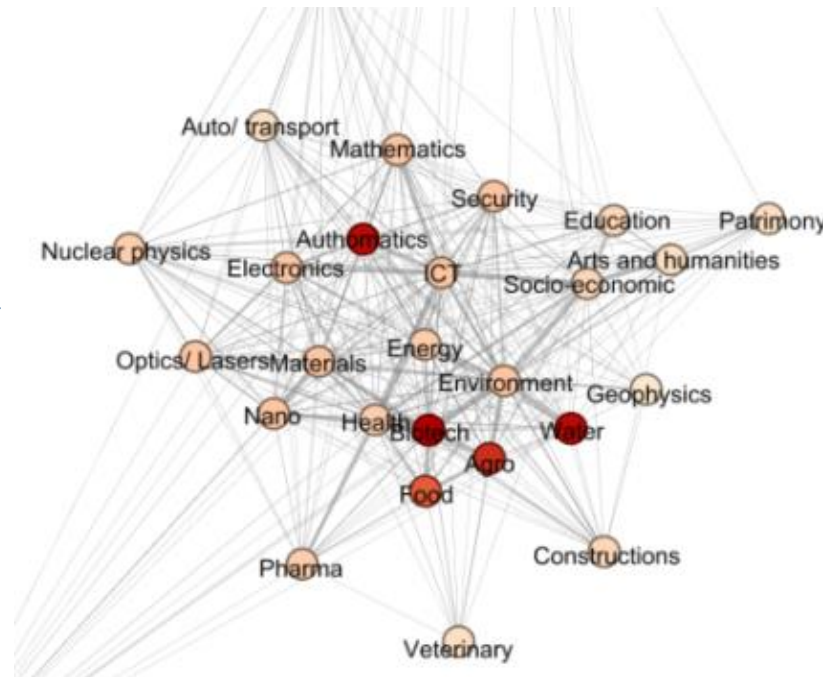
13 fields have been validated in a key stakeholders' meeting for structuring the consultations

Agro-Food
ICT
Intelligent systems
Health
Energy
Pharmaceuticals
Environment
Security
Space
Materials
Biotechnologies
Transport
Socio-economic

Exploratory online consultation (June 2013)

28000+ persons invited
1500+ responses
2000 new persons have been nominated

Domain	Value
Agrofood	88
Biotechnology	62
Energy	126
ICT	110
Materials	165
Environment	168
Health	223
Security	56
Intelligent systems	63
Socio-economic	366
Space	41
Pharma	35
Transport	50

"Knowledge maps"

Pharma companies

Pharma export and import

Institutions with Pharma R&D projects

Institutions with Pharma patents
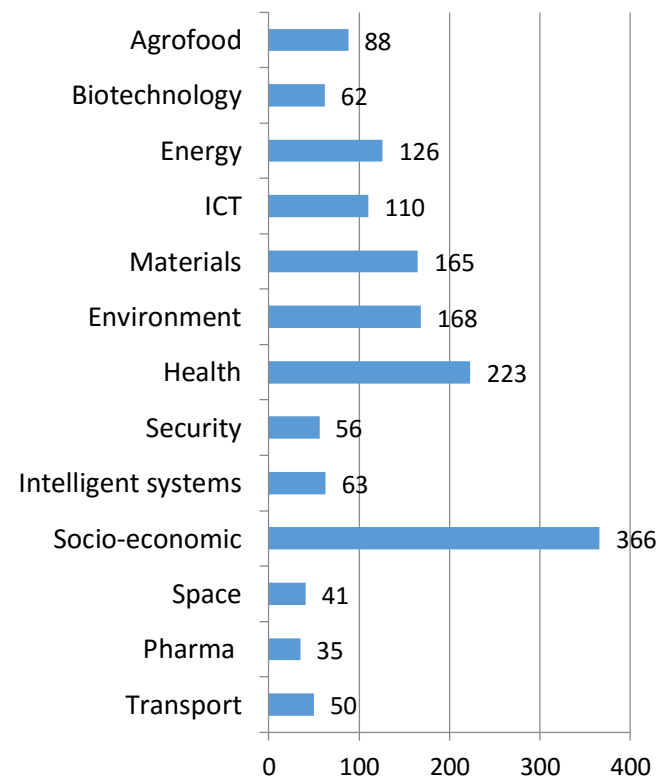
Pharma (co)publications
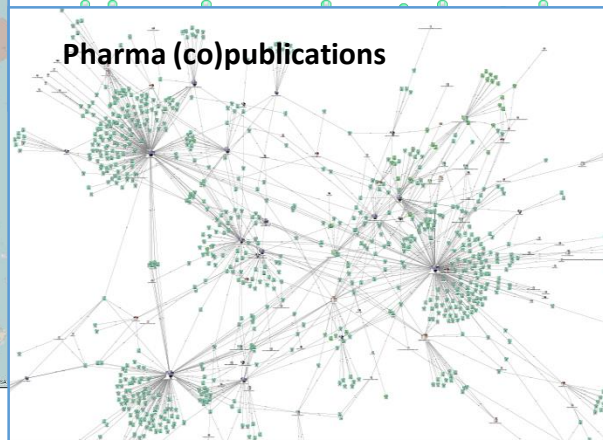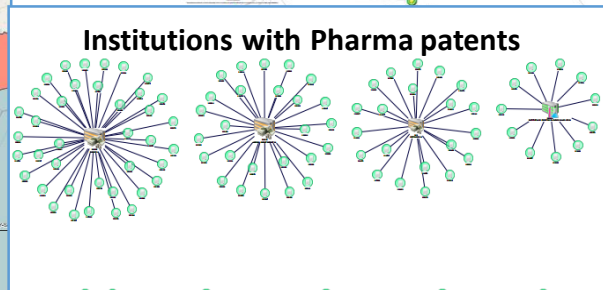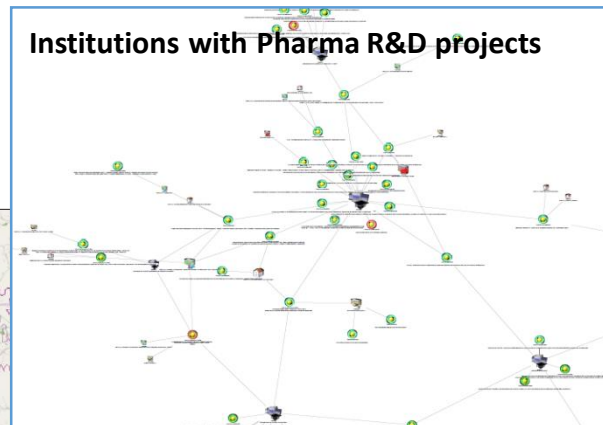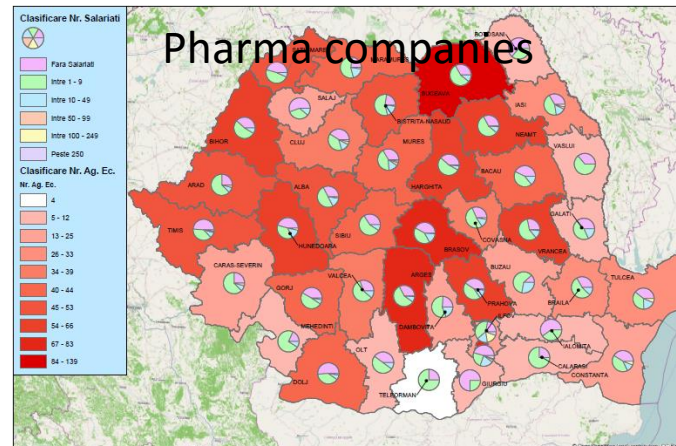
Data analytics of

- National RTDI projects (5000+)

- Projects FP7 (600+)

- RTDI Structural funds projects (500+)

- Patents (7000+)

- ISI Thomson articles (100.000+)

- Companies track record (600.000+)

- Top export companies

PN-II-PC-2008-5162

SERICAROM SA -FILIALA DE CERCETARE P

DEFINIREA PROFILULUI AROMATIC AL VINURILOR DIN SOIURI AUTOHTONE PRIN TEHNICI IZOTOPICE IRMS SI GAZ CROMATOGRAFICE, CA ELEMENT DE AUTENTIFICARE A ACESTOR PRODUS

servarii si protectiei speciei
10156350

Evaluarea diversitatii fond

RCETARE - DEZVOLTARE PENTRU CREȘTEREA OVINELOR ȘI CAPRINELOR

14784234

STAȚIUNEA DE CERCETARE-DEZVOLTARE PENTRU POMICULTURĂ VÂLCEA

18923009

UTIL NATIONAL DE CERCETARE DEZVOLTARE PENTRU CARTOF SI SFECLA DE ZAHAR-BRASOV

grat de producere a fertilizatorilor pentru sol

e si

PN-II-PC-2

PN-II-PC-2008-6079

Sistem de management ecologic de protectie si productie durabila la culturile de coacaz si zmeur in Romania SIMAECO

Sistem de management ecologic de protectie si productie dur

PN-II-PT-PCCA-2011-3.2-1336
TRANSLATING STEM CELL TECHNOLOGIES TO THE CONSERVATION OF HIGHLY ENDANGERED SPECIES

ARE AGRICOLA

The 13 panels

- ➢ **Formation**
  - ➢ Each coordinated by a triplet **Business –Institute-University**
  - ➢ Participants (20 per panel) selected based on a co-nomination process

- ➢ **Input**
  - Results of the exploratory questionnaire
  - Knowledge maps
  - A repository of statistics and studies

- ➢ **Procedure** (4 days face to-face)
  - Foresight oriented (e.g. exploring drivers of change)

- ➢ **Output**
  - 6-8 **microvisions** for subfields, each following a template of arguments
    - 2020 microvision statement
    - The opportunity (→ Looking beyond the boundaries)
    - The possible contribution the R&I for benefiting the opportunity (e.g. promising RDI lines)
    - The current RDI capacity at national level
    - Economic relevance
    - Required R&D investements for reaching critical mass

•8

The microvisions elaborated by the panels entered an online consultation for selection, using an argumentative real-time Delphi
Aug-Sept 2013

Criteriul 5. Economia relevanta pe plan national | **5th criterion: capacity of the national economy to absorb the results of the R&I program**

In ce masura considerati ca exista, la nivel national, un **potential real de absorbtie si valorificare economica a rezultatelor cercetarii** din subdomeniul propus?

Mai jos gasiti o serie de afirmatii prin care alti experti si-au sustinut raspunsul la intrebarea din partea stanga.

Va rugam sa justificati raspunsul dvs. selectand cel mult 3 afirmatii dintre cele de mai jos si/sau introducand o afirmatie noua.

Nota: Cifra din paranteza care apare dupa fiece afirmatie indica numarul de experti participanti la consultare care au selectat deja afirmatia respecti

Va rugam evaluati ▼

Quantitative estimate of the economic potential of the R&I program.

Telefonia mobilă, reţelele sociale, tranzacţiile online, activităţile de marketing şi promovare, reţelele de senzori, industria de petrol si gaze, energetica (smart grid), etc. au o dinamica pozitivă, ceea ce generează un potenţial uriaş de dezvoltare şi valorificare a beneficiilor Big Data. **(121)**

Sectorul asigurarilor publice de sanatate din Romania, odata cu implementarea dosarului electronic al pacientului (proiect in curs de implementare), poate aplica conceptele Big Data pentru optimizarea cheltuielilor, politici proactive de prevenire a maladiilor, monitorizarea de la distanta a pacientilor, etc. In linie cu activitatile similare mentionate pe plan mondial. **(86)** **Backing up the estimate with pro/con arguments.**

Monotorizarea proceselor si fenomenelor cu impact economic si social (procese de fabricatie, procese de poluare a mediului, retele hidrografice, evolutia stari ide sanatate a pacientilor, trafic de transport auto sau aerian etc.) beneficiaza de capabilitatile de filtrare, stocare si analiza oferite de Big Data. **(75)**

Serviciile si (open) datele din domeniul public (e-administrare, e-guvernare etc) **(31)**

Securitatea cibernetica reprezintă o preocupare prioritara la nivelul statului si metodele moderne bazate pe Big Data incep sa fie considerate ca soluţii viabile pentru implementare. **(24)**

doar in zona solutiilor autohtone de securizare a datelor. Banuiesc ca orice privind Big Data va fi de import. Povestile Cloud/HPC sunt la alt domeniu, nu aici. **(13)**

marile aplicatii ce trebuie implementate in viitor opereaza eficient numai in conditii de maxima securitate a bazelor foarte mari de date, costurile trebuind controlate strict. **(6)**

Real-time Delphi

➢ 44.111 persons invited

➢4091 respondents

➢ Average 161 respondents per microvision
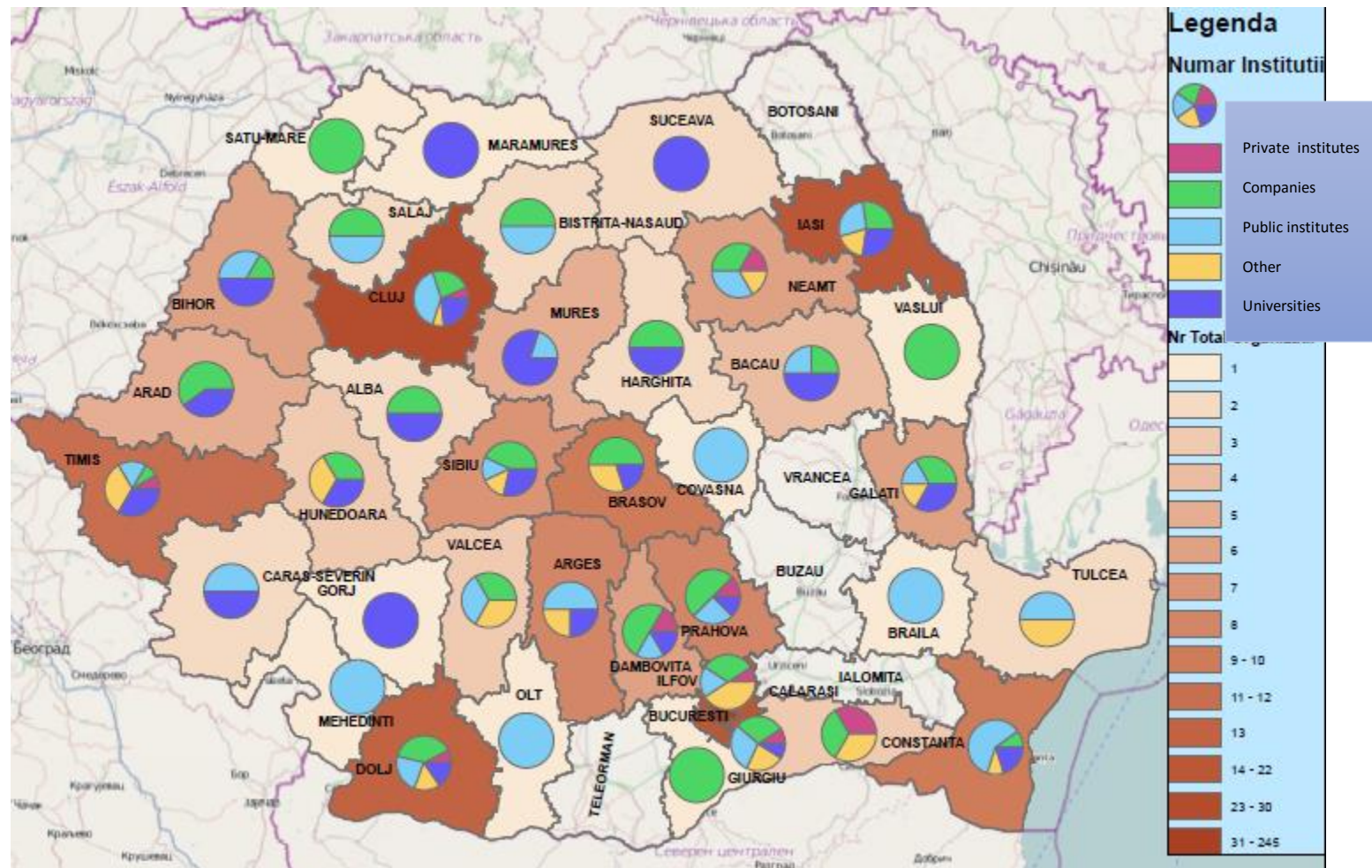
Selection mechanism

Rank	Micro-vision	Required investment for reaching critical mass
1		
2		
3		

Σ 5 billion Euro

90		

24 billion Euro

The fiches has been ranked based on three criteria (each estimated on a 1-5 equivalent scale) :
(1) the opportunity, in terms of the **future dynamics of the field** (**25%** in the composite index);
(2) the possible **contribution the RDI** (**25%** in the composite index).
(3) the estimated **economic impact** (**50%** in the composite index).

Smart specialisations identified in the foresight exercise include:

A1. BIOECONOMY
- Safe, accessible, nutritionally optimized food
- Sustainable development in forestry
- Zootechnics, veterinary medicine, fishing and aquaculture
- New products, practices, processes and technologies in horticulture
- Sustainable development of fields crops
- Bioenergy – biogas, biomass, biofuels
- Biotechnologies for agro-food
- Nanobiotechnology
- Environmental biotechnologies
- Industrial biotechnologies
- Bioanalysis
- Medical and pharmaceutical biotechnologies
- In vitro/ in vivo assessment for generic drugs
- Systemic, local and targeted drug delivery and technologies to optimize the biopharmaceutical and pharmacokinetic profile
- Molecular design, (bio)synthesis, semisynthesis, high-performance screening

A2. ICT
- Analysis, management and security of big data
- Future internet
- Software development technologies, instruments, and methods
- High performance computing and new computational models

A3. ENERGY AND ENVIRONMENT
- Increasing end-use energy efficiency
- Optimizing the use of conventional and non-conventional water resources
- Substitution of critical materials and functional covering
- The intelligent city

A4. ECO-TECHNOLOGIES
- New-generation vehicles and ecological and energy-efficient technologies
- Innovative technologies, equipment and technical systems for the generation of bioresources
- Depolluting and waste reuse technologies

In addition to the four smart specialisations, the foresight exercise identified three national priorities: **Health, Space and Security**, and **Heritage and cultural identity**.

Design of a continuous entrepreneurial discovery process

Governance
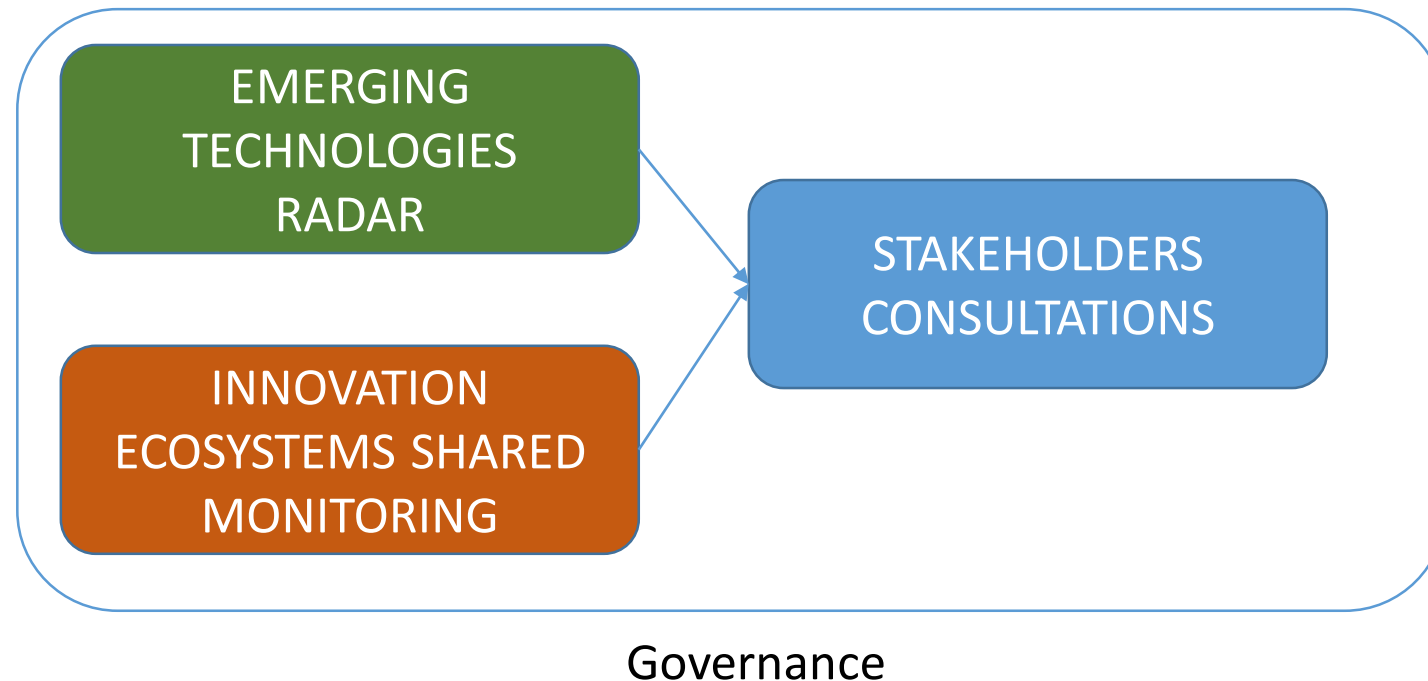
RADAR of emerging technologies

20.000+ technology news evaluated monthly using human evaluators and Natural Language Processing

Innovation ecosystems monitoring

a)   "Knowledge maps"
-   integration and visualization of data on companies, exports, patents, R&D projects etc

b) Qualitative data
- interviews made by the regional observatories

c) Social networks
- BrainRomania – entrepreneurs, researchers
- ERRIS – research infrastructures

ERRIS
ENGAGE IN THE ROMANIAN
RESEARCH INFRASTRUCTURES
SYSTEM

Find services, infrastructures, and equipment

👤 Register   🔒 Login   Selec

CERNESIM - INTEGRATED CENTER OF ENVIRONMENTAL SCIENCE STUDIES IN THE NORTH EAST REGION (http://cernesim.uaic.ro)

ALEXANDRU IOAN CUZA UNIVERSITY OF IASI

CERNESIM brings together researchers from five different faculties (Biology, Chemistry, Physics, Geography and Economical Studies) of the Al.I.Cuza University of Iasi („Alexandru Ioan Cuza").
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Domains of activity
- Analytical Facilities
- Atmospheric Measurement Facilities
- Materials Synthesis or Testing Facilities
- Economic studies

Infrastructure direct public Link: http://www.erris.gov.ro/cernesim.uaic.ro

1498 VISITS   **0** REVIEW(S)   ★★★★★ 1   f Share 1   in Share 1

SCIENTIFIC & TECHNICAL TEAM:

Coordinator:
Prof. univ. dr. Romeo-Iulian OLARIU

‹ ●●●● ›

CONTACT:

Tel. +40(232)201354
Fax. +40(232)201313

Carol I, 11
Zip code: 700506
Iasi - Iasi, ROMANIA

SERVICES:

- **Chemical analysis of the organic and inorganic pollutants from natural matrixes**
- **Investigation of chemical degradation of polutants under simulated environmental conditions**
- **Test new instruments with applicability to the industry (new sensors of monitoring gas pollutants)**
- **Development of ecological technologies for the destruction of gas pollutants**
- **The investigation of biodiversity in terrestrial and aquatic ecosystems**
- **Creation of cartographic products (maps, drawing boards)**
- **Evaluation and forecasting of the impact on the geosystem**
- **Evaluation and forecasting of the environmental effects of urbanization**
- **Assessment of the role played by the energy sector in the sustainable development process**
- **Economic analysis and evaluation of the effects of pollution**
- **Evaluation of the impact of environmental degradation on individuals and households**
- **Analyses regarding the introduction of non-pollutant technologies in economic activities**
- **Study of the internalization by businesses of their environmental effects**
- **NMR Analysis of Solid and Liquid Samples**
- **The investigation of the influence of some physical and chemical factors on growth and development in plant species cultivated in experimental conditions**
- **Exploration of resources for bioremediation and bio-control**
- **X-ray structure determination of single crystals**

EQUIPMENTS:

- **Environmental chamber (ESC-Q-UAIC)**
- **500MHz NMR Spectrometer**
- **Single crystal X-ray diffractometer**
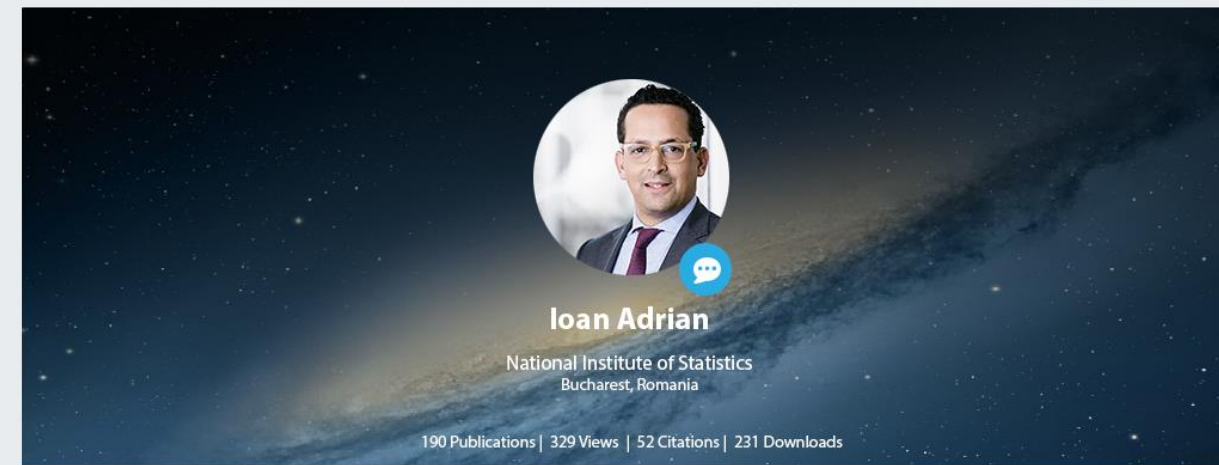
Ioan Adrian
National Institute of Statistics
Bucharest, Romania

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Topics of interest
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Skills & expertise
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Vision Critical   📍 Market Research
VISIONCRITICAL
Founded: 2014
Sold: 2015
Visit Website

Co-entrepreneurs
Antonli Pavlov   Jeni Roxy   Daniel Marcu   Daniel Gheorghe Stefanescu

Innovative contributions
Lorem ipsum dolor sit amet, consectetur adipiscing elit. Fusce auctor ut tellus eget tempus. Curabitur lacinia turpis a enim pretium, bibendum vestibulum mi tristique. Praesent a imperdiet nisi, et lacinia erat. Donec id augue a neque venenatis vehicula auctor a neque. Aliquam erat volutpat. Cras euismod felis at lorem pulvinar posuere. Cras pretium erat id porttitor interdum. Pellentesque a dolor ipsum. Sed pharetra pretium lorem vel hendrerit. Donec lobortis nulla hendrerit, tincidunt justo ac, tincidunt orci. Morbi mollis at velit sit amet pulvinar. Maecenas iaculis ullamcorper ornare.

Samsung   📍 Electronics
SAMSUNG
Launch: 2014
Visit Website

Co-entrepreneurs
Antonli Pavlov   Jeni Roxy   Daniel Marcu   Daniel Gheorghe Stefanescu

Innovative contributions
Lorem ipsum dolor sit amet, consectetur adipiscing elit. Fusce auctor ut tellus eget tempus. Curabitur lacinia turpis a enim pretium, bibendum vestibulum mi tristique. Praesent a imperdiet nisi, et lacinia erat. Donec id augue a neque venenatis vehicula auctor a neque. Aliquam erat volutpat. Cras euismod felis at lorem pulvinar posuere. Cras pretium erat id porttitor interdum. Pellentesque a dolor ipsum. Sed pharetra pretium lorem vel hendrerit. Donec lobortis nulla hendrerit, tincidunt justo ac, tincidunt orci. Morbi mollis at velit sit amet pulvinar. Maecenas iaculis ullamcorper ornare.

Stakeholders consultations

- Entrepreneurial Discovery Workshop
    - Format with 30 stakeholders implemented in 2015
    - Procedure includes a combination of world café and cards of emerging trends
- The new design the candidate fields are validate in two rounds of workshops

Governance

- Coordination body (tbd)

- Network of Regional Observatories (regional entities)

- Central capacities

  - Radar of emerging technologies

  - Data analytics

  - Social networks management

  - Methodologies (data collection, consultations)

Conclusions

- A "specialization" has an associated **ecosystem of actors** aiming for success in the global value chains

- A new sense of "evidence"
  - From indicators to analytical data (zoom in, see relations)

  - From monitoring to open information (the actors see themselves in the game)

  - From shared information to shared meaning (social networks, dialogue)

  - From data to shared assumptions about the future (horizon scanning, vision building)

Thank you!