



ComplexEIT

complexity from nano to large electronic systems

EARTO Annual Meeting

May 30, 2008

Jean-Frédéric Clerc and Adrienne Pervès
Coordinators of ComplexEIT project
CEA-Grenoble

SUMMARY

I – General overview of the project

II – First findings

- Worldwide trends in research organization
- Best practices
 - SWOT analysis of industrial clusters
 - Regions and cities
- Further conclusions and questions

III – An ambitious vision for the future European Innovation Community

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"If Europe wants to remain competitive, then we must ensure that we improve the relationship inside the knowledge triangle : education, research and innovation."

José Manuel Barroso



ComplexEIT

complexity from nano to large electronic systems

Call launched by European DG Education and Culture

« Pilot projects for cooperation between
European Institutes of Technology »

➤ 4 projects selected in october 2007

ComplexEIT

“from nano to large electronic systems”

- Coordinator: CEA Grenoble
- Domain: new ICT

BRIDGE

“Bridging Biomaterial Research
Excellence between industry and
academia across Europe”

- Coordinator: Uppsala University
- Domain: nanomedecine

SUCCESS

“Searching unprecedented cooperation
on climate and energy to ensure
sustainability”

- Coordinator: University of Karlsruhe
- Domain: climate / energy

GAST

“Green and Safe Road Transportation”

- Coordinator: Inno Germany, Karlsruhe
- Domain: transport



ComplexEIT

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➤ **Overall goals**

- Identification of best practices and proposal of multifaceted and multilevel governance model
- Test and evaluation of this model
- Dissemination of the results in the European innovation community

➤ Rationale

Industry is more and more driven by the concept of complexity

➤ **Complexity** increases

- in term of scale (from nanotechnology to large systems),
- in term of integration between software and hardware
- more generally in term of integration of many technologies and disciplines, including cognitive and human sciences.

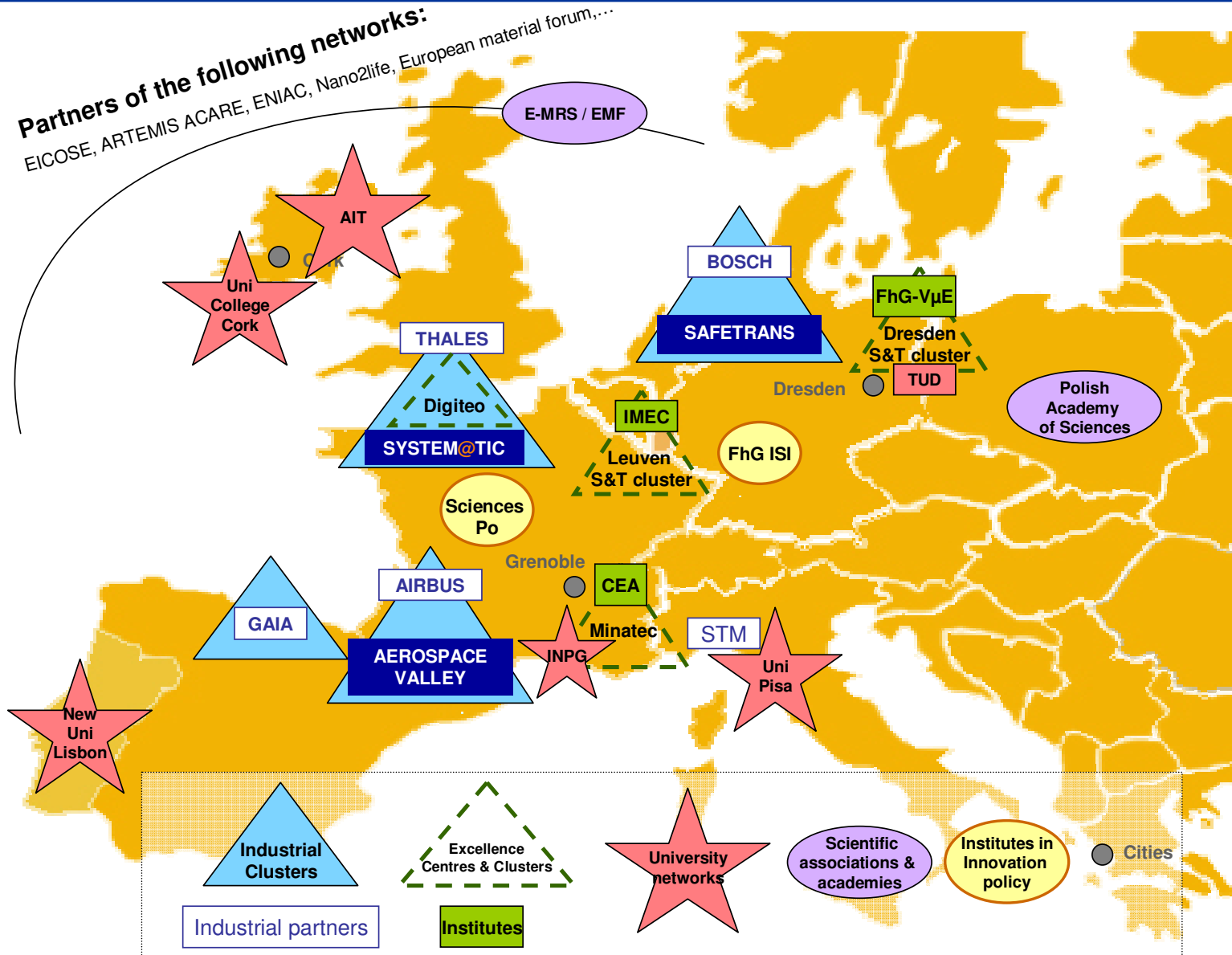
➤ **Complexity** stands today at the centre of the new challenges European citizens and nations will have to meet in future.

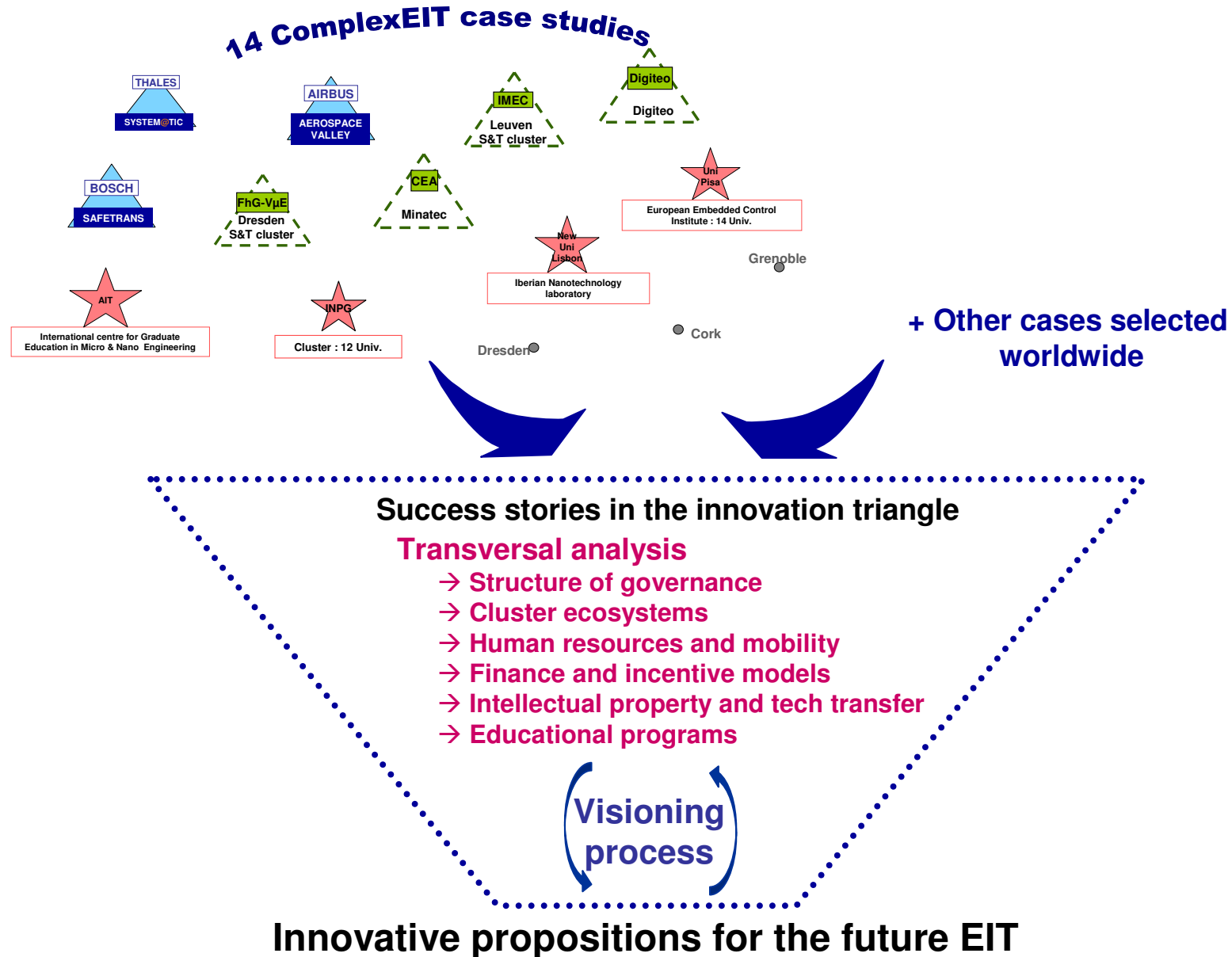
Information and communication, as well as health, economy, security, transport, environment, energy, defence, can no longer be considered as stand-alone themes to be treated separately. The challenges and their solutions are systemic.

>> It is therefore only by addressing complexity, both at the level of miniaturised objects and of larger systems that those challenges will be met.



Partners of the project





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- **Countries / clusters visited :**
 - USA (California, Massachusetts)
 - Asia: Japan (Tokyo, Kyoto, Sendai, Tsukuba), South Korea (Seoul, Daejeon, Pohang), Taiwan (Taipei, Hsinchu), China (Beijing), India (Delhi, Hyderabad, Pune)
 - Europe: Finland (Helsinki), UK (London, Cambridge), Germany (Dresden, Karlsruhe), Switzerland (Lausanne, Neuchâtel)
- **Fields of analysis :** institutional, juridical and cultural
- **Aim :** identifying best practices in governance of R&D structures

Led by

Marcel Morabito
Sciences Po Paris

Adrienne Pervès
CEA



Focus on the converging practices and positioning

Convergences on strategic orientations

- ❖ **Increasing importance of nanoscience and nanotechnologies**
- ❖ **Highest political level of decision-making**
- ❖ **Long term vision**
- ❖ **Strengthening links research / education / industry**
- ❖ **Attraction of the best (researchers, students)**
- ❖ **Flexible organization on projects**
- ❖ **Periodical evaluations**
- ❖ **Ethical and societal dimension**



Focus on the converging practices and positioning

Convergences on governance

- ❖ **Readable and standardized structure**
- ❖ **Clearly defined competencies for each organ of governance**
- ❖ **Clear separation between decision and advice**
- ❖ **Limited number of members in each organ of governance**
- ❖ **Members of high quality in all organs, both advising and executing**
- ❖ **Importance of external input / vision**
- ❖ **Research of consensus by the integration of operational actors in the governing process**
- ❖ **Scientific weight in the decision process**

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GLOBAL SYNTHESIS

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> . Strategic R&T partnerships based on synergy and convergence of knowledge triangle actors. . A core business activity and vision focused on a multidisciplinary R&T . Cross-industrial synergy, information, survey,... . Visibility at different geographical levels thanks to a critical-mass (size, numbers of members, facilities, ...) 	<ul style="list-style-type: none"> . Project life in terms of fundings, management, communication, intellectual property, availability of partners,... . Lack of durable permanent human resources to develop the clusters actions and international involvement
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> . Re-enforcement and development of a critical-mass with an increased coherence between the actors . Explore new R&D activities/innovation breakthroughs . Capture more and new R&D fundings . Implement world-class shared technology platforms and scientific campus . Deeper involvement of SMEs 	<ul style="list-style-type: none"> . Threats inherent to the clusters (project funding, lack of permanent staff, less and less participation of large companies, thematic sharing ...) . Threats linked to public authorities : sustainability of the funding sources, frequent changes of the public sponsorship rules (no long-term visibility), multiplication of public actions and clusters, ...



Added-value of an EIT for the cities / regions

- Competitiveness → innovation
- Employment → skilled and mobile Human Capital
- Capacity to forecast the new challenges for their local economy
- Cultural melting pot – diversity
- Access to non-national centers of decision of major companies



Added value of the cities / regions for an EIT

- ✓ Capacity to locally gather actors in the triangle
- ✓ Capacity to focus / orient the local economy into strategic economic fields
- ✓ Reactivity of the cities / regions compared to other public authorities -
Strategic Decision-Making Ability
- ✓ Capacity to play simultaneously on fiscal and incentive strategies
- ✓ Capacity to invest in infrastructures
- ✓ Capacity of communication and promotion at national and international level
- ✓ Capacity to facilitate mobility and transport
- ✓ Capacity to guarantee and increase the quality of life

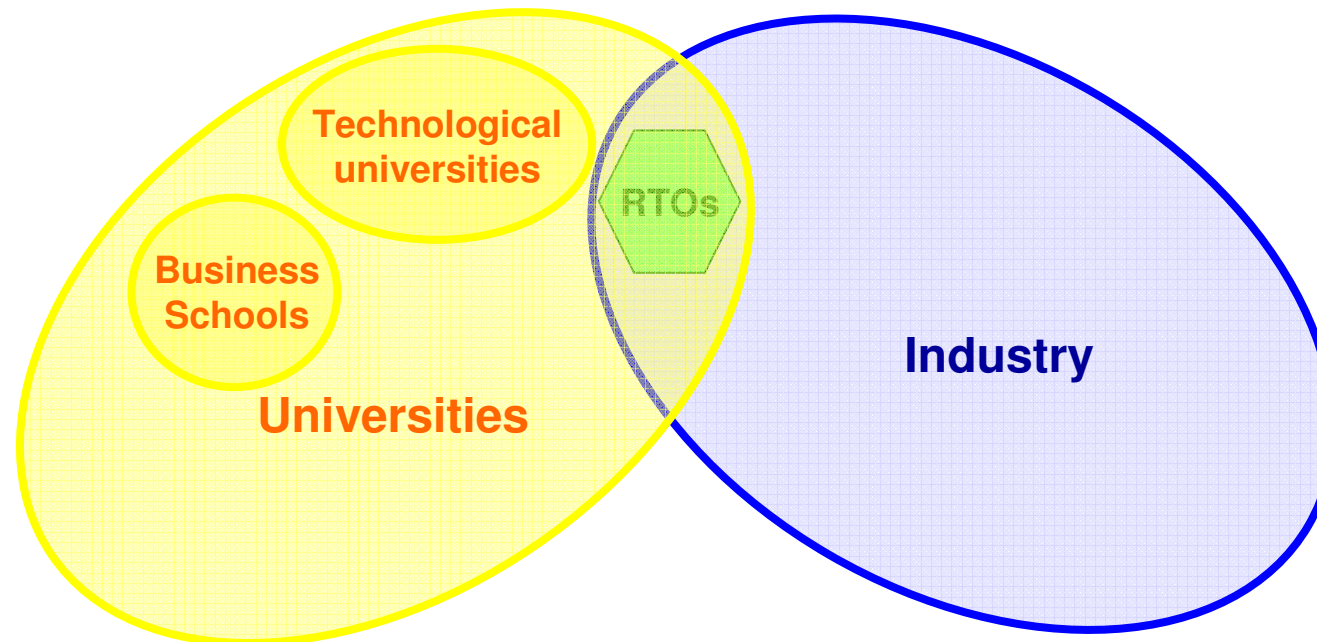
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International research and education model centered on pluridisciplinary universities
 - streamlining of university curriculums in the EU (Bologna process)
 - large number of european initiatives to encourage the mobility of students
 - weak number of students benefiting from those initiatives
- 
Consolidated industrial clusters worldwide
- 
Marginal interaction between universities and the industrial world
- 
A European « exception » : the RTOs
 - capacity to transfer technology to industries
 - active involvement in european platforms and motor of strong alliances (HTA, innovation triangle)
 - at the heart ambitious consolidation between universities and RTOs (KIT, Minatec, Digiteo, GIANT..)

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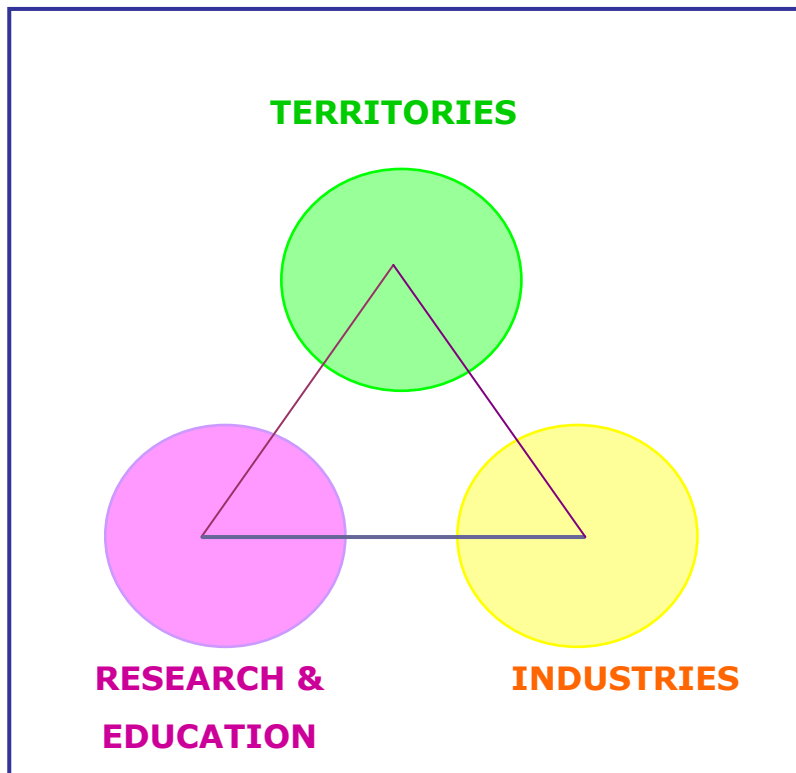
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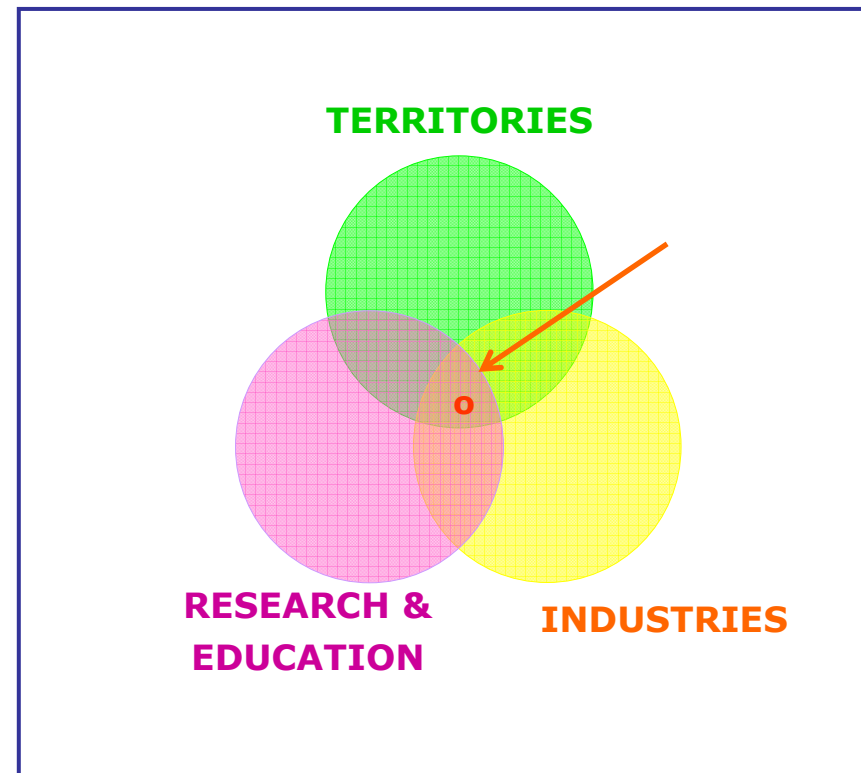
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Building a joint vision of the European Innovation Community

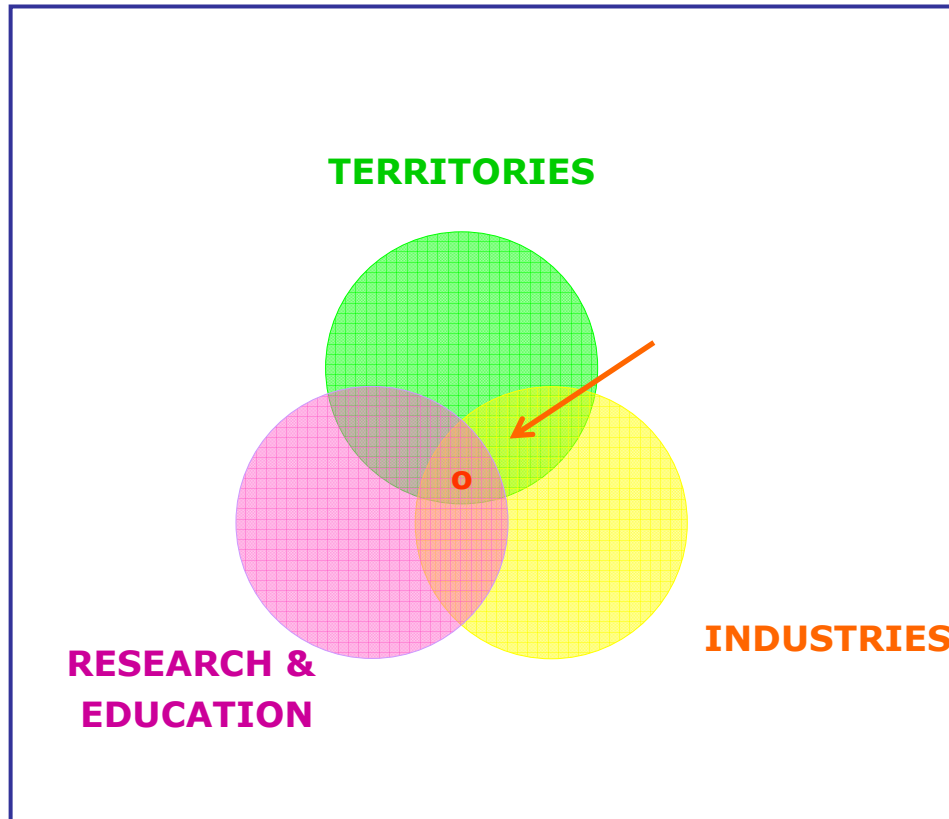


→ A sum of existing projects ?



→ Construction of a new identity ?

Building a joint vision of the European Innovation Community



WHAT DOES THIS MODEL MEANS?

- . Contamination
- . Hybridization
- . Overlapping
- . Networking
- . Communities
- . Multilevel
- . Sharing

→ **BUILDING A NEW IDENTITY**



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