Peer eXchange & Learning

Monitoring Smart Specialisation Strategies

Emilia-Romagna

Bologna, 10 November 2015
Silvano Bertini – Regione Emilia-Romagna
Leda Bologni - ASTER
Which issues would you like to discuss and why?

- Several different indicators have been identified, an effective balance between complexity, completeness and significance is still to be checked.

- Questions for peers to discuss after the presentation:
  1. How to combine the level of specialization with a limited number of significant indicators?
  2. How to connect a specific strategy with some general results?
  3. How to take into consideration the different dynamics of indicators?
Overview of RIS3 - Governance

- The regional authority is responsible for RIS3

The governance is based on

- **Horizontal coordination** through the in-house-providing organizations ASTER (Innovation), ERVET (Territorial Development) and LEPIDA (Digital Agenda) and
  - High Technology Network for Industrial Research and Technology Transfer
  - [www.emiliaromagnastartup.it](http://www.emiliaromagnastartup.it) for new innovative entrepreneurship
  - Internationalization Lab
  - Urban Lab

- **Vertical coordination** operated by all regional offices and relevant bodies in the specialization areas
  - Fora for the development of the specialization areas
The implementation is already started, with two measures based on competitive calls, addressing the SA in

- research labs
  - 124 proposals submitted,
  - 150 M€ of investment
  - 446 companies involved
  - 466 partners
- and companies
  - 316 proposals submitted
  - 240 M€ of investment
  - 616 new jobs in R&D
4 Priorities

SPECIALIZATION AREAS

DRIVERS
PRIORITY A:

REINFORCE THE INDUSTRIAL SYSTEMS STRATEGIC FOR REGIONAL SPECIALIZATION

- High degree of specialisation
- Number of jobs
- Territorial diffusion
- Mix of technological and societal challenges

| AGRIFOOD |
| BUILDING AND CONSTRUCTION |
| MECHATRONICS AND TRANSPORT |
PRIORITY B:

REINFORCE THE INDUSTRIAL SYSTEMS WITH HIGH GROWTH AND SOCIAL INCLUSION POTENTIAL

- Qualified jobs for young population
- Social impact
- Connection with institutions managing public goods
- Changing in traditional industries

[LIFE SCIENCES AND WELLBEING]
[CREATIVE AND CULTURAL INDUSTRIES]
PRIORITY C:

DRIVERS CONCERNING SOCIO-ECONOMIC TRENDS AND CHANGING

- SUSTAINABLE DEVELOPMENT
- HEALTHY, ACTIVE AND SAFE LIFE
- INFORMATION AND COMMUNICATION SOCIETY

DEVELOPMENT GUIDELINES
PRIORITY D: INNOVATION IN SERVICES

• Innovation in the whole value chain (beyond the production)
  • E-commerce
  • Logistics
  • Post-sale services
  • .....
Priorities

S3 EMILIA-ROMAGNA

**Priority A**

- **Agrifood**
  - Integrated and sustainable agrifood value chain
  - Innovation and sustainability in agrifood products and processes
  - Nutrition and health
  - Smart and green supply chain
  - Sustainable building
  - Restoration, recovery and regeneration
  - Safety
  - Smart building and cities
  - Process and LCA
  - Ecologic solutions

- **Mechatronics and Transport**
  - Integrated, user centered solutions
  - Smart, adaptive and safe solutions

**Priority B**

- **Life Science and Wellness**
  - Personalized medicine
  - Independent living and active ageing
  - Wellness
  - Innovation in industrial processes
  - New business model and creative processes

- **Cultural and Creative Industries**
  - Smart cultural heritage
  - New customers and digital communication
# Priorities

## Priority A
Areas which are the pillars of the regional economy

<table>
<thead>
<tr>
<th>Agrifood</th>
<th>Building and construction</th>
<th>Mechatronics and transport systems</th>
<th>Life Science and wellbeing</th>
<th>Cultural and creative industries</th>
</tr>
</thead>
</table>
| • Integrated and sustainable agrifood value chain  
• Innovation and sustainability in agrifood products and processes | • Sustainable building  
• Restorative, recovery and regeneration | • Ecologic solutions | | • New business model and creative processes |

## Priority B
Areas with high growth potential

## Priority C
Innovative paths towards social and economic change

### Sustainable Development

- Healthy and active life
  - • Nutrition and health
  - • Safety
  - • Integrated, user centered solutions
  - • Personalized medicine
  - • Independent living and active ageing
  - • Wellness

- Information Society
  - • Smart and green supply chain
  - • Smart building and cities
  - • Process and LCA
  - • Smart, adaptive and safe solutions
  - • Innovation in industrial processes
  - • Smart cultural heritage
  - • New customers and digital communication

## Priority D
Strengthening the role of innovation in services to enhance the ability of companies to manage value chains
Monitoring system (1)

- **Current status of RIS3 monitoring**

  The steps of the Action Plan on Monitoring:
  
  ✓ Organization of a working group
  ✓ Definition of indicators, sources of data, baseline and **target**
  ✓ Implementation of an online information system (31.12.2015)
  ✓ Approval of an updated version of S3 (31.03.2016)
Monitoring system (2)

- Monitoring strategic objectives/vision

**Measures implementation**
- OUTPUT INDICATORS

**Changing of the regional economy with reference to Specialization Areas**
- CHANGE INDICATORS
  - SPECIALIZATION INDICATORS
  - TRANSITION INDICATORS

**Effectiveness of the Strategy**
- RESULT INDICATORS

**Evolution of the regional economy**
- FRAMEWORK INDICATORS
## OUTPUT INDICATORS

1. **Measures identification**
   - Regional ESIF (ERDF, ESF, EAFRD)
   - National (Research, competitiveness)
   - European (H2020)

2. **Measures classification**
   - Specialization area (mandatory, one choice)
   - Theme (recommended, one choice)
   - Innovation driver (optional, multiple choices)
   - KET (optional, multiple choices)

3. **Indicators selection**
   - 12 OI selected

### OUTPUT INDICATORS

<table>
<thead>
<tr>
<th>O01</th>
<th>• N. Projects approved</th>
</tr>
</thead>
<tbody>
<tr>
<td>O02</td>
<td>• N. Companies financed</td>
</tr>
<tr>
<td>O03</td>
<td>• N. Companies involved</td>
</tr>
<tr>
<td>O04</td>
<td>• N. Research laboratories financed</td>
</tr>
<tr>
<td>O05</td>
<td>• N. Research laboratories involved</td>
</tr>
<tr>
<td>O06</td>
<td>• N. New companies</td>
</tr>
<tr>
<td>O07</td>
<td>• N. Patents</td>
</tr>
<tr>
<td>O08</td>
<td>• Total investment</td>
</tr>
<tr>
<td>O09</td>
<td>• Total contribution</td>
</tr>
<tr>
<td>O10</td>
<td>• N. Researchers employed</td>
</tr>
<tr>
<td>O11</td>
<td>• N. New jobs in R&amp;D</td>
</tr>
<tr>
<td>O12</td>
<td>• N. New jobs in R&amp;D for researchers</td>
</tr>
</tbody>
</table>

[https://infogr.am/pictorial-2500620](https://infogr.am/pictorial-2500620)
CHANGE INDICATORS

1. Is the regional economy moving towards the specialization areas?
   - Agrifood
   - Building and constructions
   - Mechatronics and transport system
   - Life science and wellbeing
   - Cultural and creative industries

2. How the regional economy is moving along the selected innovative drivers?
   - Sustainable development
   - Healthy and active life
   - Information society
   - Innovation services
<table>
<thead>
<tr>
<th>ID</th>
<th>Expected change</th>
<th>Specialization indicator</th>
<th>Unit</th>
<th>Reference year</th>
<th>Baseline</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>C01s</td>
<td>Growth of regional innovative potential</td>
<td>Patents per AS</td>
<td>N.</td>
<td>2013</td>
<td>tbd</td>
<td>EPO</td>
</tr>
<tr>
<td>C02s</td>
<td></td>
<td>Patents in the selected OT per AS</td>
<td>%</td>
<td>2013</td>
<td>tbd</td>
<td>EPO</td>
</tr>
<tr>
<td>C03s</td>
<td>Growth of R&amp;I in public research system</td>
<td>Research grants in regional universities per AS</td>
<td>N.</td>
<td>2013</td>
<td>tbd</td>
<td>MIUR-CINECA</td>
</tr>
<tr>
<td>C04s</td>
<td></td>
<td>Research grants in regional universities in the selected OT, per AS</td>
<td>%</td>
<td>2013</td>
<td>tbd</td>
<td>MIUR-CINECA</td>
</tr>
<tr>
<td>C05s</td>
<td>Reinforcement of research-business relations</td>
<td>Number/value of research-business contracts per AS/OT</td>
<td>N./k€</td>
<td>2016</td>
<td>tbd</td>
<td>Research dashboard - ASTER</td>
</tr>
<tr>
<td>C06s</td>
<td></td>
<td>Percentage on total of Number/value of research-business contracts per AS/OT</td>
<td>%</td>
<td>2016</td>
<td>tbd</td>
<td>Research dashboard - ASTER</td>
</tr>
<tr>
<td>C07s</td>
<td>Innovative regional entrepreneurship</td>
<td>Innovative startup per AS</td>
<td>N.</td>
<td>2013</td>
<td>143</td>
<td>Registro imprese</td>
</tr>
<tr>
<td>C08s</td>
<td></td>
<td>Percentage on total of innovative startup in the selected OT per AS</td>
<td>%</td>
<td>2013</td>
<td>tbd</td>
<td>Registro imprese</td>
</tr>
<tr>
<td>C09s</td>
<td></td>
<td>Number of innovative SMEs per AS</td>
<td>N.</td>
<td>2015</td>
<td>Na (*)</td>
<td>Registro imprese</td>
</tr>
<tr>
<td>C10s</td>
<td></td>
<td>Percentage on total of innovative startup in the selected OT, per AS</td>
<td>%</td>
<td>2015</td>
<td>Na (*)</td>
<td>Registro imprese</td>
</tr>
</tbody>
</table>

(*) National law 33/2015
<table>
<thead>
<tr>
<th>Sustainable development</th>
<th>Agrifood</th>
<th>Building and construction</th>
<th>Mechatronics and transport</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Energy from biomass</td>
<td>Certification LEED® - Leadership in Energy and Environmental Design</td>
<td>Intensity of climatealterant emission in manufacturing</td>
</tr>
<tr>
<td></td>
<td>Certifications EMAS/ ISO 14001</td>
<td>Number of energetic certification (ACE)</td>
<td>Producers of machines with sustainable quality label</td>
</tr>
<tr>
<td></td>
<td>Energetic intensity in agrifood companies</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Percentage of organic production</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Organic producers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Healthy and active life</td>
<td>Companies active in dietary food</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of dietary foods</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information society</td>
<td>Buildings connected via ultra-wideband</td>
<td></td>
<td>Robots produced and installed yearly</td>
</tr>
</tbody>
</table>

(draft synoptic)
## CHANGE INDICATORS - TRANSITION

### MECHATRONICS AND TRANSPORT

<table>
<thead>
<tr>
<th>ID</th>
<th>Driver</th>
<th>Expected change</th>
<th>Transition indicator</th>
<th>Unit</th>
<th>Reference year</th>
<th>Baseline</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>C23t</td>
<td>SUSTAINABLE</td>
<td>Growth of sustainable productions</td>
<td>Intensity of climatealterant emission in manufacturing</td>
<td>Tons CO2/year per M€</td>
<td>2010, 2012</td>
<td>373,12</td>
<td>ARPA E-R, ISTAT</td>
</tr>
<tr>
<td>C24t</td>
<td>DEVELOPMENT</td>
<td></td>
<td>Producers of machines with sustainable quality label</td>
<td>n.</td>
<td>2013</td>
<td>8</td>
<td>UCIMU</td>
</tr>
<tr>
<td>C25t</td>
<td>INFORMATION</td>
<td>Growth of ICT based manufacturing systems</td>
<td>Robots produced and installed yearly</td>
<td>n.</td>
<td>2013</td>
<td>tbd</td>
<td>UCIMU</td>
</tr>
</tbody>
</table>

(draft example)
### RESULT INDICATORS

<table>
<thead>
<tr>
<th>ID</th>
<th>Result indicator</th>
<th>Unit</th>
<th>Year</th>
<th>Baseline</th>
<th>Target 2023</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>R01</td>
<td>Companies collaborating with research organizations</td>
<td>%</td>
<td>na</td>
<td>na</td>
<td>na*</td>
<td>National Statistics, ISTAT, R&amp;D survey</td>
</tr>
<tr>
<td>R02</td>
<td>Researchers working in enterprises in the total number of employees</td>
<td>%</td>
<td>2011</td>
<td>0,35</td>
<td>0,76</td>
<td>National Statistics, ISTAT, R&amp;D survey</td>
</tr>
<tr>
<td>R03</td>
<td>Companies running R&amp;D activities with external subjects</td>
<td>%</td>
<td>2012</td>
<td>29,35</td>
<td>35,0</td>
<td>National Statistics, ISTAT, R&amp;D survey</td>
</tr>
<tr>
<td>R04</td>
<td>R&amp;D public share on GDP</td>
<td>%</td>
<td>2011</td>
<td>0,49</td>
<td>0,55</td>
<td>National Statistics, ISTAT, R&amp;D survey</td>
</tr>
<tr>
<td>R05</td>
<td>R&amp;D share on GDP</td>
<td>%</td>
<td>2011</td>
<td>1,43</td>
<td>1,96</td>
<td>National Statistics, ISTAT, R&amp;D survey</td>
</tr>
<tr>
<td>R06</td>
<td>Innovation rate</td>
<td>%</td>
<td>2010</td>
<td>37,73</td>
<td>41,4</td>
<td>National Statistics</td>
</tr>
<tr>
<td>R07</td>
<td>Index of cultural demand of state assets</td>
<td>Visitors</td>
<td>2013</td>
<td>26,18</td>
<td>29,5</td>
<td>National Statistics, National ministry for culture</td>
</tr>
<tr>
<td>R08</td>
<td>Index of cultural demand of state and non state assets</td>
<td>Visitors</td>
<td>2011</td>
<td>19,39</td>
<td>11,75</td>
<td>National Statistics, National ministry for culture</td>
</tr>
</tbody>
</table>

(draft, from operative programmes)
FRAMEWORK R&D INDICATORS

- R&D expenditure in % on GDP by sector
- R&D employees by sector
- % of researchers in the total of employees by sector
- % of graduates in the total of employees by sector
- Graduates in technical and scientific disciplines
- Population (30-34 years) with a university degree
- Patents registered with the European Patent Office (EPO)
- Export by sector
- N. of employees in high and medium / high technology manufacturing
- N. of employees in the field of knowledge-intensive services
- Companies with at least 10 employees that have introduced innovations in product and process
- Companies that have carried out R & D in collaboration with external parties
- Specialization in the production of knowledge-intensive sectors (total, male, female)
- Regional average expenditure for innovation per employee in the total population of enterprises
- N. of Start Up or innovative companies
- Birth rate of enterprises in the high knowledge intensity
- Three-year survival rate of companies in the high knowledge intensity
- Technology Balance
- Attractiveness Index of Universities
- Companies that use broadband connectivity
- Companies with more than 10 workers in the industry and services that have a web site

(draft)
FRAMEWORK STRUCTURAL INDICATORS (per SA)

- new companies
- n. of jobs
- Competitiveness
- Export
- added value
- internationalization
- ....
- .....
Monitoring system – indicators visualisation

1. Online information system available for innovation stakeholders and citizens
2. Data visualisation technology
3. Open data when applicable
Monitoring system – indicators visualisation
Monitoring system

- **Role of the monitoring system**
  To be a decision support method for strategy evaluation, results analysis and policy adaptation and refinement

- **Responsibilities**
  ASTER is responsible for RIS3 monitoring

- **Stakeholders**
  In the RIS3 implementation some permanent Forums will be organized. They will be involved in the monitoring process and evolution, and will be required to analyse the indicators, discuss them and/or suggest adjustments
Monitoring system

- **Using the monitoring evidence**
  - Verify the steps of implementation of the policy tools
  - Verify the in-process degree of achievement of indicators
  - Supply information to impact evaluation

- **RIS3 revision**
  - A RIS3 revision is planned for 2017-2018
Summary & next steps
for more info ....

monitoraggios3@aster.it

leda.bologni@aster.it
Question 1: How to combine the level of specialization with a limited number of significant indicators?
**Question 2:** How to connect a specific strategy with some general results?
Question 3: How to take into consideration the different dynamics of indicators?