Value in EO Workshop
Round Table IV: Measuring impacts on innovation & entrepreneurship
Dimitrios Papadakis (EARSC)
### Focusing on innovation & entrepreneurship

<table>
<thead>
<tr>
<th>ECONOMIC</th>
<th>ENVIRONMENTAL</th>
<th>REGULATORY</th>
<th>INNOVATION &amp; ENTREPRENEURSHIP</th>
<th>SCIENCE &amp; TECHNOLOGY</th>
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</thead>
<tbody>
<tr>
<td>Farming in Denmark</td>
<td>★ ★ ★</td>
<td>★ ★ ★</td>
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<td>Flood management in Ireland</td>
<td>★ ★ ★</td>
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<td>Ice navigation off Greenland</td>
<td>★ ★ ★ ★</td>
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<td>Farming in Poland</td>
<td>★ ★ ★</td>
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<tr>
<td>Winter navigation in the Baltic</td>
<td>★ ★ ★ ★</td>
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<td>Forestry management in Sweden</td>
<td>★ ★ ★</td>
<td>★ ★ ★</td>
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<tr>
<td>Infrastructure management in the Netherlands</td>
<td>★ ★ ★ ★</td>
<td>★ ★ ★</td>
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<tr>
<td>Growing potatoes in Belgium</td>
<td>★ ★ ★</td>
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Advancing the understanding and measurement of the societal benefits of Earth Observations, Rome, July 2019

**ECONOMIC**

**ENVIRONMENTAL**

**REGULATORY**

**INNOVATION & ENTREPRENEURSHIP**

**SCIENCE & TECHNOLOGY**

**RT IV: Innovation and Entrepreneurship**
Impacts on innovation & entrepreneurship

• **Innovation (product focus)**
  • Adding new innovative products to existing portfolios
  • Making possible new creative business models
  • Improving, extending or enriching existing products in a new fashion

• **Entrepreneurship (business focus)**
  • *Ex novo* commercialisation: Seeding the creation of start-ups
  • Expansion to new markets or territories
  • Introduction of new – or improvement of existing - business models
## Measurements of innovation and entrepreneurship

**RT IV: Innovation and Entrepreneurship**

<table>
<thead>
<tr>
<th>Category</th>
<th>What it can mean</th>
<th>Specific Examples of Indicators</th>
<th>How we measured it</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovative products</td>
<td>The availability of Sentinels data allowed the creation of new products</td>
<td>New products created thanks to the availability of Sentinel data</td>
<td>Interview with stakeholders Analysis of patents was not performed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Number of patents based on use of Sentinels data</td>
<td></td>
</tr>
<tr>
<td>New business model</td>
<td>New ways of generating income/value, new interaction/transaction pattern</td>
<td>Estimated impact of EO/Sentinel data on new business model</td>
<td>Counterfactual (cost of providing an equivalent service without Sentinel data (e.g. Poland, Ireland)</td>
</tr>
<tr>
<td>Diversification of business model</td>
<td>Sales-based to subscription-based business model enabled by geo-information service (e.g. Poland)</td>
<td>Estimated loss reduction based on higher selling price of fertiliser</td>
<td>Stakeholders interview</td>
</tr>
<tr>
<td>Market expansion/internationalisation</td>
<td>Ability to serve clients globally</td>
<td>International markets reached thanks to the global coverage of Sentinel data (e.g. see Irish case, Maldives...)</td>
<td>Service provider accounts; before/after picture</td>
</tr>
<tr>
<td>Ex novo commercialisation</td>
<td>Free and open EO data allowed the creation of start-ups</td>
<td>% of start-ups that were created thanks to the availability of Sentinel data</td>
<td>Survey</td>
</tr>
</tbody>
</table>
Measurements of innovation and entrepreneurship

RT IV: Innovation and Entrepreneurship

• The core cases provide rich narratives of entrepreneurship in action.
• Examination of the concept at scale requires a different approach

Study on Copernicus Sentinel-powered Innovation and Start-ups

Preliminary report available at: http://earsc.org/Sebs/
What have we done? Study overview

Study on Copernicus Sentinel-powered Innovation and Start-ups

• **Approach:** Exploratory survey focused on Copernicus ecosystem

• **Aims:** *Characterise* the landscape of Sentinel-based entrepreneurship and innovation, **identify obstacles to commercialisation**

• **Key dimensions:** business models, entrepreneurial and technological maturity, data exploitation, incentives and challenges

- ~2500 recipients
- ~100 respondents
- 4 interviews
What have we learned?

Impact of Sentinel free and open data

• Most respondents’ business models could continue BUT less efficiently, without Sentinel data.

30 start-ups (62%) stated that:
• Sentinel data provided the basis for their competitive advantage or that
• Their business models would not be possible without Sentinel data.
2008
Landsat archive made public
Przemek pursues his D. Phil.

2013
Landsat 8
Idea for SatAgro takes shape

2015
Sentinel-2a
SatAgro launches
SatAgro from now on
Yield prediction, institutional productivity monitoring
Limitations and areas for improvement

• Definitions of “innovative” vs simply “new” products and/or business models

• Patents identification and classification is challenging and not exhaustively applicable to data products

• Attributing entrepreneurship to Sentinel data is not necessarily straightforward (esp. outside the known community)
Proposals for further research

• Extension of survey scope outside “known suspects”

• Explore ways of “systematising” data inputs through collaborative arrangements (e.g. with BICs / Copernicus start-up programme)

• Identification (from core cases) of specific value chain to test extensibility
  • E.g. agricultural services
Thank you!

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