FP9: LAB – FAB – APP

Key messages for process industry from the Lamy Group
Key messages from the Lamy Group
HLG task

- Name: “The High Level Group on Maximising the Impact of EU Research and Innovation Programmes”
- Evaluate H2020 impact and outcomes
- Give recommendations for FP9
- Structure, content, instruments/methods
• Responsible person: **Carlos Moedas** – EU Commissioner for Research, Science and Innovation
• Chair: **Pascal Lamy** – President Emeritus, Jacques Delors Institute
• Members:
  • **Martin Brudermüller** – Vice Chairman of the Board of Executive Directors and Chief Technology Officer, BASF
  • **Mark Ferguson** – Director General, Science Foundation Ireland and Chief Scientific Adviser to the Government of Ireland
  • **Lykke Friis** – Prorector for Education, University of Copenhagen
  • **Cristina Garmendia** – Chair, Fundación Cotec
  • **Iain Gray** – Director of Aerospace, Cranfield University
  • **Jan Gulliksen** – Professor, KTH Royal Institute of Technology
  • **Harri Kulmala** – CEO of DIMECC Ltd
  • **Nevenka Maher** – former dean, Faculty of Business & Management Sciences Novo mesto
  • **Maya Plentz Fagundes** – Managing Director, 50More Ventures
  • **Lucyna A. Woźniak** – Vice-Rector for Science and International Relations, Medical University of Łódź
  • **Milena Žic Fuchs** – Professor, University of Zagreb and Fellow, Croatian Academy of Sciences and Arts
The 11 HLG recommendations

1. Prioritise research and innovation in EU and national budgets
2. Build a true EU innovation policy that creates future markets
3. Educate for the future and invest in people who will make the change
4. Design the EU R&I programme for greater impact
5. Adopt a mission-oriented, impact-focused approach to address global challenges
6. Rationalise the EU funding landscape and achieve synergy with structural funds
7. Simplify further
8. Mobilise and involve citizens
9. Better align EU and national R&I investment
10. Make international R&I cooperation a trademark of EU research and innovation
11. Capture and better communicate impact
There are three generic routes* for science to make an impact in society in large:

1. Dissemination of research results
2. Cooperation and collaboration in doing things and carrying out research
3. Competent people move around

*International Evaluation of the State of Science and Research in Finland, 2016, Academy of Finland
Collaboration between industry and academia enhances the quality of published scientific research

Do we want to have high quality research and new jobs?

If yes, PPP is the way!

In PPP, all kinds and sizes of companies are needed.

Graph source: Prof. Mark Ferguson, President, Science Foundation Ireland: ‘Small Advanced Economies Initiative’ using the Elsevier SciVal Scopus database of published papers.
Europe is a global scientific powerhouse. The EU trails well behind many trading partners when it comes to innovation. Europe’s challenge and ambition are straightforward: Step up investment in its knowledge assets and turn the high volume and quality of its science and research results faster and deeper into innovations which generate value for economy and society. Transform knowledge into economic and societal innovation – resulting in a competitive economy that derives prosperity from higher value-added goods and services, as well as benefiting society.

The possible increase in FP budget will be invested to the use of knowledge, not to creating more new knowledge.

To maximise their [KICs] impact and as part of rationalising the EU funding landscape, they should be better deployed to deliver on the global challenges (see recommendations 5 and 6). KICs could be directly incorporated in the post-2020 EU R&I programme.

Will there be EIT after 2020?
DIMECC SIMP:
Renewal cases from process industry
(SIMP - System Integrated Metal Processes)
On-line Quality Monitoring Tool (QMT)

- A common node for all quality models and measurements in the rolling mill and the steel plant
- All models and measurements have their own defined quality limits
- Giving a **holistic view** of the quality level that is currently produced
- **On-line** quality decision process not based on single unit process data but on the full data set for the whole production lot

→ *System integration close to the definition of “systems of systems”*
Sapotech Ltd. Reveal Cast

- Development of an **cloud based analytics** service for the steel industry
- Service sold on a **monthly fee** instead of selling equipment
- Impossible for an SME to develop on their own without the support from industry
- Speed up the development of the analytics by collecting data several customers to one node – without endangering the integrity of single customers information
- Sapotech’s **learning curve is steeper** and have the opportunity to develop and multiply new even more efficient analytics services to the industry
Traditional Research

R&D Tool to Improve Blast Furnace Iron Burden Properties

- R&D toolset of Oulu University for analyzing and improving iron burden material e.g. pellets
- To optimize the raw materials (quality, mix, distribution...) that are charged into the Blast Furnace
- The results can be critical for achieving a balanced BF process – leading to cost efficiency and lower CO₂ emissions
- Conclusion: the base metal industry needs traditional research → "digitalization" or "networks of systems" cannot be all

→ We cannot live without steel, stainless steel, copper or other metals. We have to continue R&D efforts focused on improving the sustainability of the production processes.
DIMECC Innovation ecosystem: PPP
Extremely high impact and performance in EU
In EU, the digitalisation of manufacturing industry is carried out with PPP structures and innovation ecosystems.
DIMECC is the "mother" of these PPP structures!

EU has "copied" DIMECC operational model to almost all countries.
"[Numbers and figures] equal with the story according to which DIMECC has significant positive impact among its customers and in mechanical engineering industry in large."

Dr. Petri Rouvinen, CEO, ETLA-Tieto Oy

<table>
<thead>
<tr>
<th>Change from 2009 to 2014</th>
<th>DIMECC’s customers</th>
<th>Comparison group (Technology industries, TOL classification)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turnover</td>
<td>28 %</td>
<td>-10 %</td>
</tr>
<tr>
<td>Operating profit</td>
<td>1823 %</td>
<td>negative → positive</td>
</tr>
<tr>
<td>Value added</td>
<td>14 %</td>
<td>-9 %</td>
</tr>
<tr>
<td>Value added/personnel costs</td>
<td>7 %</td>
<td>-2 %</td>
</tr>
<tr>
<td>ROE-%</td>
<td>2 %</td>
<td>negative → negative</td>
</tr>
<tr>
<td>Turnover/Company</td>
<td>16 %</td>
<td>-7 %</td>
</tr>
</tbody>
</table>

(Source: Statistics Finland 2016)
Impact: DIMECC customers significantly outperform the others

Return on Equity, %

(Source: Statistics Finland 2016)
Heterogenous consortia needed to maximize the impact of the R&D investments – Finland has been leader in integrating large firms!
Ecosystem for Autonomous Ships

Finland aims to operate world’s first autonomous ship system in 2025
DIMECC in numbers

• 50M€+ program volume 2016
• 400+ customers
• 2000+ professionals
• 10+ co-creation facilitators
• 10+ program managers
• 69 shareholder organisations
• 200M€+ new program volume ready to be launched
• Since 2008: 3000+ publications, almost 1B€ company-driven projects
Where leaders and winners meet - DIMECC