

**Fishbowl Exchange Session, 27<sup>th</sup> September 2016 - Morning**

A broad participation of Stakeholders in the meeting was ensured via the Danish, French and German partners, said Tanja Worononicz from the University Bremen and Dr Karsten Seidel from Ikerconsulting in their opening remarks.



As an introduction to the PI “EcoMaT Bremen”, a brief explanation of the German Federal System was given, which is the framework for the ERDF intervention. Bremen has a special situation as city state, with close links to the neighboring Länder Niedersachsen and Hamburg. Compared with other cities, Bremen as Federal State also has a direct “door” to the National Ministries.

In 2011/2012 the process started to draft the ERDF programme for the 2014-2020 period. Based on the innovation and cluster policy, which existed before in Bremen. There is a long tradition to design strategic concepts and to analyse the capacities available and the economic profile. 30 economic branches and clusters have been considered of relevance for the RIS and the ERDF programme.

The former innovation programme was narrowed down to a 3-cluster strategy. The European Commission then asked to fulfill the ex-ante conditionality, which was not easy, as the framework suggested by Brussels (for example the EDP – entrepreneurial discovery process) was considered to be very academic and sort of far away from the reality in Bremen region.



Experts from the Bremen Ministry for Economic Affairs and WFB: Ms Caroline Privat, Ms Maike Frese, Mr Bastian Müller and Mr Jan Casper-Damberg.

**Question and Answer Session – Exchange and Discussion:**

RR: what percentage of R&D Money?

€ 103 mio EU money plus € 103 mio from Bremen plus private investments. Thereof 50 % are for Research. Embedded in four action axis.

Lithuania disposes of a total of 700 mio €, divided into two ministries, with 10 priorities, 3 mio inhabitants 78 % on infrastructure. Bremen has about 650.000 inhabitants.

Bremen has denominated a “Key account management” for advanced materials: The focus is on Interaction with industry: big players in aerospace : Airbus, 120 SMEs, OHB, University incl. IFAM.

Several weekly contacts and meetings on working level are conducted. Approx bi-monthly events or coordination meetings between high political level and industry.

In **Bordeaux**, there is also a double layer, but there is a shift to metropolitan regions, which are not clearly reflected by the administrative/political structure. Airbus acts on international level.

No regular meetings in **Aquitaine** held, but for special occasions yes. Mostly relations with Ministry of Defence at State Level. New , innovative developments are dealt with on local/regional level.



**Piemonte:** Policy is made at regional, some at national level, but limited on Universities and natl clusters. No action at local level. Concentration on Region. Cluster policy since 2008, opportunity of RIS and Smart Specialisation was used to expand the innovation focus.

**Hamburg:** also easy in city state to maintain close contacts.

However, many Federal decisions are taken in Berlin which impact on Hamburg, similar for Airbus HQ based in Toulouse. Research contacts are good in the region, but high dependency on out-of-the-region decisions.

**Bremen: History of the Policy Instrument EcoMaT:** 10-12 years Airbus ago talked to Bremen Senate on the need of a “Materials Centre”. It was not possible to have an exclusive centre for Airbus, but in cooperation with R&D Institutions and SMEs this would be feasible. Since 5 years the planning process was taking up pace and decisions were taken. Also the link with the ERDF programme was established at a later stage. The materials field of activity was within the ERDF policy, especially in the near-to-market R&D Axis. But also embedded in the infrastructure line, this is where the EcoMaT accompanying measure itself is located. The European Commission asked to link with SMEs, containing also a special indicator on the involvement of SMEs in this field of activity. In November 2016, the construction of the EcoMaT will start, planned to open in 2019.

**Denmark:** How was the link to other regions and the international link established > what was here the strategic element? All 5 NUTS areas in Denmark pursue a joint strategy for the focus on new materials.

Focus on defence and security sector with a drone cluster in mid-Denmark. A flagship institution like a drone centre was built allowing industry to interact among them and with admin/policy.

**NOTA:** regional structure (reflected in ERDF programme) vs global supply chains tend to give a different view and action focus of administration/policy and industry.

**EcoMaT PI set-up:** accompanied with by local R&D programme “LuRaFo” and R&D programmes close to the market. New materials are regarded in Bremen as a key enabling technology for various sectors: aerospace, automotive, medical applications, wind energy supplies for example.

Mechanism of LuRaFo: 50 % co-funding contribution to projects. Programme is composed of 80-90 % ERDF funding, with Federal and regional money for the operation of the Programme.

ERDF Bremen is co-funding lab infrastructure in the EcoMaT with approx € 2 mio. The building itself (€ 65mio) is funded by a private equity taken up by the Bremen State-owned Bremen-invest Company. Without Airbus as needs base and main tenant there would be no EcoMaT. Airbus signed a 10-year lease contract, whereas the depreciation period of a building is 30-40 years. Is there a Plan B if airbus pulls out? The building is built on Airbus ground. What would be exactly the procedure in case of de-location of airbus R&D facilities? There is the potential that EcoMaT-airbus could attract players which would “construct” an industrial focus.

SME share in EcoMaT is embedded as criteria in the Bremen ERDF programme.

- How is this monitored?
- How does the City State steer the EcoMaT as strategic investment?
- Is ALM / 3 D printing a strategic focus?
- A strategic research roadmap is being established for the EcoMaT by the WFB?

Do we need an international / inter-regional strategy for the PI EcoMaT?

- there is a no joint strategy between the 3 North-German Länder to cooperate in this thematic field. Currently no plans exist to draft a collective approach.
- How is the inter-sectoral cooperation for this KET being established?

**Aquitaine:** own strategy for the region, helps to negotiate with clusters (industry). A public vision is missing to

Mid-term review challenges for Bremen:

- The focus of previous programming periods was too much on branches, and less on KETs. This was changed now.
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**Site Visit to AWI Bremerhaven, 27th September 2016 – Afternoon**

Innovation & Transfer activities of AWI focus according to Dr Eberhard Sauter and Dr Christian Hamm on:

- Bionic light weight design
- Contract research
- Industry co-operation
- Think across sector barriers for transfer opportunities
- The Knowledge and TT Unit was especially set up for marketing of technology and ideas
- Marine compounds
- For further references see [www.elise.de](http://www.elise.de)
- Biomimetics, biomimicry, bionics
- Radiolaria and Diaoms are stable lightweight structures found in nature. These are being explored as patterns for bionic lightweight design.
  - o Following the selection pressure, nature generates these organisms
  - o Being weak and being heavy is deadly
  - o 700t/m<sup>2</sup> pressure resistance, very performant structures
  - o 3D reconstruction is pursued by AWI
  - o Algorithms to generate irregular, load-adapted structures
  - o Working with industry partners
    - Product development process (ELISE)
    - Large collection (world unique) on microorganisms
- ALM (3D printing) is an ideal way to explore lightweight potential
- ELISE AM is a tool, is an offer to interact with AWI



**Feedback round:**

- Perspective for AWI to get involved from a strategic point of view lies for example in HORIZON 2020 projects, cooperation possibilities > joining consortia
- Interest in KTT
- Optimization potential for the structures
- Organize a convention or fair to get together
- Build strategic partnerships, follow-up the trust generated in the project > use the participation (of stakeholders) as an indicator for success
- Weight reduction achieved in industrial research up to 50 %, normally 10-20 %
- AWI works via the ELISE AM company mechanism
- ALM is the focus

### **Site Visit to IFAM Bremen, 28th September 2016**

IFAM representatives, Mr Gerhard Pauly and Prof Erich Rikeit expressed that the main IFAM activity is to transfer research results into market products and services. Hence, modeling and simulation play a big role in getting closer to the market. Locations are in Bremen and in Stade for the “carbon line”

- Example: European automotive production uses 200.000 tons of adhesives annually
  - o PASA: Pre-applicable Structural Adhesives
- Industrial and international coop in H2020 and notably with Japan

IFAM is preparing for the second work programme of H2020 in 2017, also active in a wide number of European, national and regional programmes.

### **Lunch discussion and exchange of experience of partner PI's at IFAM**

Exchange about concrete cooperation from Aquitaine with IFAM. Examples in the area of mobility and transport. There is no such institute like IFAM / Fraunhofer in France.

Regional innovation strategy: Example from Japan - Roadmaps for more than 30 years ahead are drafted (most engineers will be retired when roadmap end ) - but it is available for many topics and present in the minds. > remarkable long term planning!

Danish Material Network (DMN): delivers services to stakeholders, some funding for research institutes. No connection so far to companies abroad. DMN is regarded as platform / matchmaking - not as a funding program.

IFAM: Aeronautic scene in Europe: well established networks beside the big players like Airbus. Super-cluster - matchmaking is not the task (we know each other). A big issue is to finding funding for mutual projects. This network on the hand talks with policy-makers about what is needed and what should be avoided. Efficient implementation of programs is a priority.

### **Is there a constant lobbying in the regions?**

Lithuania: Don't know if the institute is active in collaboration with European networks - but they will probably do on their own expenses - not using structural funds.

**IFAM - Ecomat:** IFAM will rent a small lab within the EcoMaT building - but main work will still be done at IFAM at the University location. The purpose of being present in the EcoMaT building will be mainly as meeting place with experts. No clear decisions so far concerning a shared machine park ... or how much staff will move ...

The Bremen meetings concluded with two tasks for the next meeting in Podkarpackie/Poland in November 2016.

***ACTION ITEM I: discuss Joint Programming on R&D***

Starting with a contribution from Philippe Troyas, Airbus, partners spoke about their regional funding opportunities as part of the regional Policy Instrument (PI). At the next meeting partners wish to share information about local funding options in materials, aeronautics, etc. Ralf Engel and Uffe Hoeg Andersen volunteered to coordinate this activity. There shall be a specific agenda item in Rzeszów. Each partner region shall prepare a brief presentation to explain their regional/national funding instruments. Based on this actions for the partnership shall be considered.

These could be for example:

- a *Partnership of Materials Regions* within the P2L2 project
- Establish joint or complementary projects
- allocate “small money” to stakeholders to set up joint projects
- explore to synchronize regional programmes like the Bremen-LuRaFo with similar programs in other regions?
- How to set up such a cooperation network?
- Starting with a MOU?

***ACTION ITEM II: discuss Exchange of Staff between P2L2 regions***

During the discussion the need of training, learning from each other, like for example facilitated by the EU Marie Curie Programme was mentioned. Some contributions suggested the idea of an exchange program in- or between the regions? Example: IFAM Fraunhofer rented during a former project some office space at the Bremen Airbus site: IFAM members went to lunch together with Airbus staff: Both sides appreciated learning from each other .... IFAM learnt what Airbus needed and how they are working. This activity was backed by middle-management plus political backing with funding (Bremen funds) plus collaboration on working level. Partners stressed that exchange of staff is key to build sustainable networks - will be there some support with funding? The forthcoming meeting in Rzeszów shall this topic.

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**Visit to the Carbon Fibre Composite Centre in Stade/Niedersachsen.**

The CFK Valley Centre received large financial support in its starting phase from regional and EU programmes. Unique in Europe, the entire idea and production chain is reflected in the set-up of CFK Valley: from academic studies at the college in Hanse Campus Stade, including the technology center CFK Valley Stade Technology and the service center CFK Valley Stade service suppliers at the site engage in research, development and prototype production, building components on site for the main client and end users aircraft manufacturer Airbus.

The **CFK Valley Association** represented by Dr Gunnar Merz and Mr Carsten Stichweh provides opportunities for:

- Partner Search and promotion;
- Networking opportunities like regular events;

- Coordination with CFK Hanse College.

The **DLR facility** in Stade was established in 2009 as one of the two research sites operated by the Center for Lightweight Production Technology (ZLP) and has been an independent site of the German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt; DLR) since 2011.



Using one-of-a-kind, multifunctional, large-scale facilities, the ZLP develops strategies for manufacturing large, high-quality CFRP components in a cost-effective manner, expressed Mr Christian Bülow. To achieve this, every step in the process is studied, integrated and, using the appropriate technical infrastructure, reproduced on an industrial scale.

To conduct these research activities, the DLR site in Stade is equipped with the following innovative facilities:

- a fully-automated RTM process chain
- BALU research autoclave (420 degrees Celsius, length: 20 m, diameter: 5.8 m)
- a CNC-based multi lay-up facility for automated fibre placement (AFP) and automated tape laying (ATL)
- rotor blade mould for wind energy systems (length: 45 metres).

**The Automation and Production Technology department of Fraunhofer IFAM** based at Research Center CFRP North in Stade demonstrated by Dr Dirk Niermann showed an impressive range of projects. The group develops and automates assembly processes for large fiber reinforced plastic (FRP) structures to meet the specific needs of individual customers.

Key activities are:

- Adhesive bonding, bonding processes
- Shimming, shimming processes
- Sealing, sealing processes
- Machining.



With large structures, unavoidable deviations from the specified geometry mean that there is a need for adaptive guidance for automated processes. Software-assisted calibration of actuators – for example high precision industrial robots – in combination with various sensors and optical geometry measurement provide the necessary precision.

The visit to the **CTC Composite Technology Centre** showed yet another part of the advanced materials value chain: the field of the design and manufacturing of large and complex CFRP components, by as experts for specification, production ramp-up, and series production support. Mr Georg Lonsdorfer said: “CTC coordinates, manufactures, and documents components based on the highest standards.”

**Hamburg’s Center of Applied Aeronautical Research (ZAL)** puts the focus on the integration and industrialization of aviation technologies. ZAL networks industry and science, establishing an application-oriented think-tank culture, and making the very latest research and development infrastructure available to its partners.



ZAL TechCenter opened at the beginning of 2016 offering interested players to integrate their activities with partners on a spatial level, becoming part of an international aviation research network. With a working area of more than 26,000 square meters, the ZAL TechCenter provides space for around 600 workplaces in offices, laboratories, and hangars. Equipped with a sophisticated research and test infrastructure for selected aspects of aviation, the site empowers the industrialization of new technologies.

Anna Maaßen from Hamburg networking hub presented the **European Aerospace Cluster Partnership (EACP)** provides a permanent platform for mutual exchange, policy learning, and cooperation to achieve high-level performance among European aerospace clusters. It focuses on the exchange of experiences both concerning cluster policy and the search for effective solutions to the various challenges faced by the European aerospace cluster partners.