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Cooperation through Clusters and Strategic Research Centers

An open innovation approach implemented between Flemish universities, research centers, and industry

Contact

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Main actors

- Flanders Make Strategic Research Center (as organizational entity bringing together the various research entities in the field of manufacturing and product engineering)
- KU Leuven as one of the leading academic partners in Flanders Make (together with the other Flemish universities)
- Siemens Industry Software research group (as one of the leading industrial partners in the Flanders Make programs (together with multiple other key industries in Flanders))
- KU Leuven and SISW administrative and legal support
- Project researchers in the various involved entities

To support the transformation of the manufacturing industry in Flanders required to fully embrace the opportunities and challenges offered by Digitization and the Industry 4.0 agenda, the Strategic Research Center "Flanders Make" was established in 2014, supported by the Flemish government. This physical Center brings together Academia, Research Centers and Industry to implement a jointly defined strategic roadmap for research, innovation and industrial uptake in the field of product design and product manufacturing. Flanders Make consists of a unique combination of an "Intra-Muros" capacity for applied and transformational research and a "Virtual Department" consisting of a number of leading Flemish academic laboratories, which together with industry partners execute projects of different types (including Strategic Basic and Industrial Cooperative).

The roadmap definition and the project implementation are supervised and validated by both an Industrial and a Scientific Advisory Board while IP principles are discussed and agreed in an IP board.

KU Leuven was one of the co-founding partners of Flanders Make and leads key roadmaps while Siemens Industry Software (SISW) has been a driving industry member from the first hour and involved in several of the identified strategic innovation lines. These two partners together create both a platform and bring own expertise.

Process Main Stages

STAGE 1 – STRATEGY
Definition/update of the global vision and strategy of the Research Centre. Validation by the International Scientific and Industrial Advisory Board.

STAGE 2 – DEFINITION OF MAIN TECHNOLOGY ROADMAPS
Definition/update – by all stakeholders – of the main technology roadmaps. Intensive consultations with all stakeholders take place and proposals are iterated and consolidated in joint workshops.

STAGE 3 – SELECTION OF RESEARCH TOPICS
Staged process to propose, develop and select concrete research topics for implementation in projects (with subsequent reviews by stakeholders, management board, funding agency). Dedicated consultations and workshops take place per roadmap and per gate in the Stage Gate process.

STAGE 4 – PROJECT EXECUTION
Execution of the selected research projects.

STAGE 5 – PROJECT FINALIZATION
Finalization of the research projects with specific attention on valorization perspectives and required follow-up actions.

STAGE 6 – PROJECT DISSEMINATION
Dissemination of the – open part of the – research results to the broader (industrial) community.

STAGE 7 – IMPROVEMENT
Evaluation of the processes as well as roadmaps in view of future improvement and adaption.

Touchpoints & Bottlenecks

TOUCHPOINT 1 – PHYSICAL AND VIRTUAL CONSULTATIONS
Physical individual consultations with the involved stakeholders. Mainly physical; of course from time to time some virtual consultations take place (online surveys)

TOUCHPOINT 2 – WORKSHOPS
Research roadmap workshops. Project proposal workshops (per Gate in the Stage Gate process) to come to a common project definition endorsed by the involved academic, research and industry partners.

Success Factors / Barriers

SUCCESS FACTORS
The key success factors are the identification of common technology innovation needs for a whole industrial sector (Flemish Manufacturing Industry with all stakeholders) and the pooling of available innovation and research capacity among a variety of academic, RTO and industrial research laboratories to address these needs through a structured research roadmap. The complexity and multi-disciplinary nature of the problems posed by the manufacturing industry make it impossible for a single research team to address the required innovation challenges. Cooperation between complementary competences as well as along the value chain from basic research to industrial deployment allows to develop, implement and validate breakthrough solutions previously impossible.

BARRIERS
A first barrier challenging industry-academia cooperation is related to the different time horizon pursued by the various actors. This makes that the industrial support to generic long term basic research is often not easy to obtain as the outcome seems still too far away for solving the daily concerns while the need to extend research trajectories to address short term industrial deployment needs is not always put as a priority in the academic research. By being together in the intensive roadmapping and programme discussions and understanding each other's agenda's and concerns, this gap however gets narrowed down.

A second barrier concerns IP. Basic research targets general scientific progress and aims at widespread dissemination, industrial research on the other hand aims at proprietary solutions while research centers aim to build up expertise for future exploitation. Jointly agreed template agreements adapted to the specific nature of the various types of co-operation have therefore been established and an IP board governs the related issues.

Conclusion

Overall, the experiences of cooperating in the context of Strategic Research Centres or Advanced Research Clusters are very positive for KU Leuven and Siemens Industry Software. Pooling competencies across various complementary fields and sharing research needs between different companies, possibly also along the value chain, allow to unleash innovation power and realize innovations not possible stand-alone or by pure bilateral cooperation.

DO
- Respect each other's DNA and KPI's, including the IP concerns of the various stakeholders
- Be sufficiently open in sharing roadmaps and research needs as the leveraging power largely outweighs the potentially competitive concerns

DON'T
- Lose view on addressing the long term research needs by focusing too much on short term industrial deployments, the research partners should not become/be expected to become a service organization helping out in daily problems but have to enable the long term break-throughs
- For the research partners: don't lose the view on the need to eventually realize socio-economic added value through the innovations

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