Five macro forces that impact business models in the production chain

INSPIRE identified five macro trends in the process and manufacturing industries that drive (potential) disruption and significant transformation of business models. These trends are often interacting and reinforcing each other in reshaping the process and manufacturing sector and its business models. Based on literature search, validated with case studies and field interviews INSPIRE categorizes business processes with similarities according to an updated classification into four major business model archetypes.

Europe is widely anchored in the global market. By making use of modern technology the place of production has become more flexible than ever before. The EU industry is confronted with (1) delocalisation and competition from (often low cost) non-EU country producers and (2) the environmental and climate changes with in consequence the related cost and availability of raw materials and energy. In view of these challenges, Business Models are used to analyse and compare industries on performance, management systems or innovation.

New and emerging technologies as well as business strategies may change these business models, and may be used to increase the performance and competition of the industry, as well as meet the two challenges mentioned above. Mapping the evolution of important technological and non-technological trends allows developing tools and strategies and can help guide companies that might be ready to adopt the latest set of advances.

A selection of innovative and promising trends that have a potential economic impact and also have positive environmental effects in view of the challenges have been made; **Digitalisation, (fast) Customisation, (resources) Optimisation, Servitisation and Modularisation.** In order to get insights in the practical transformation mechanisms of business cases emerging for delivering a value proposition, this preliminary evaluation links the theoretical concept of business model innovation performed by a desktop study with a practical approach based on 25 interviews with a selection of high level stakeholders.

Based on the literature search validated with case studies and field interviews INSPIRE categorises business processes with similarities according an updated classification according four major archetypes: **Decentralised or modular production, Customized mass production, Servitisation and Reuse / Sustainability.**

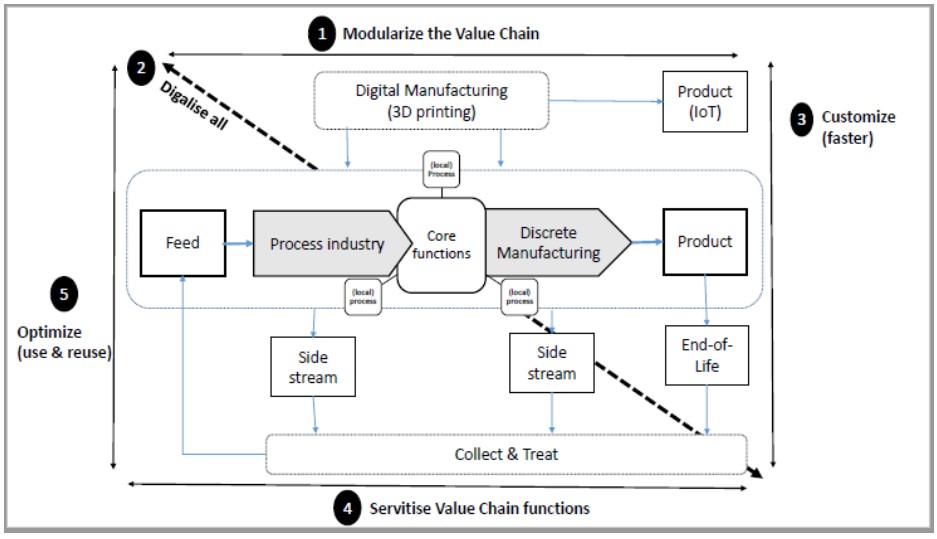

Figure: trends versus business models

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Decentralised or modular production

A 'decentralised or modular production system' allows quick response and scale flexibly where production units operate in a complementary part of the value chain. Capacity and location flexibility can be seen in different studied cases. Thanks to new communication opportunities made possible by digitalisation it becomes much easier than before to detach individual parts of the value chain. Digitalisation can be seen in all cases as an enabler for new communication between entities of a production process in which engineering goes together with product and process development as well as the supply chain development.

Customized mass production

MC is a strategic mechanism used in different businesses with the aim to for align the business with its customers' needs. MC combines the manufacturing of individualized goods at mass-production costs. MC enriches therefore the existing business.

At the moment INSPIRE consortium sees a major impact on the value chain collaborations on the demand side in the business model, especially for the discrete manufacturing industry.
However, they wishes to take account of the potential stronger development of customisation on the upstream parts of the value chain

Servitisation

Servitisation impacts the entire value chain while the product becomes part of the offering. This is an incentive for the provider to add related services to its product offering and lock the customer into a long-term relationship. Improved knowledge, through better insight of product use, specify that integrated solutions are a lasting source for differentiation, as they are less easy to copy.

Reuse / Sustainability

Reuse and industrial symbiosis can be key factors in the realization of a low carbon economy and the development of a circular economy. Actions to directly and indirectly support and promote industrial symbiosis are the application of economic and regulatory instruments, the development of cooperation platforms, the establishment of eco-industrial parks and identification and invitation of potential investors. In parallel plant engineers and operators will need to develop the capabilities of digital technology for process optimization, control, smart data applications and plant maintenance.

Future steps

The next steps are to assess in detail which technologies are enablers for each of the four archetypes and to investigate the impact of these technologies on flexibility, business value and sustainability. The study of the scalability of the model, i.e. to what extent can the model achieve substantial uptake and impact for the European Industry, is central.

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