



### Business Models and Opportunities

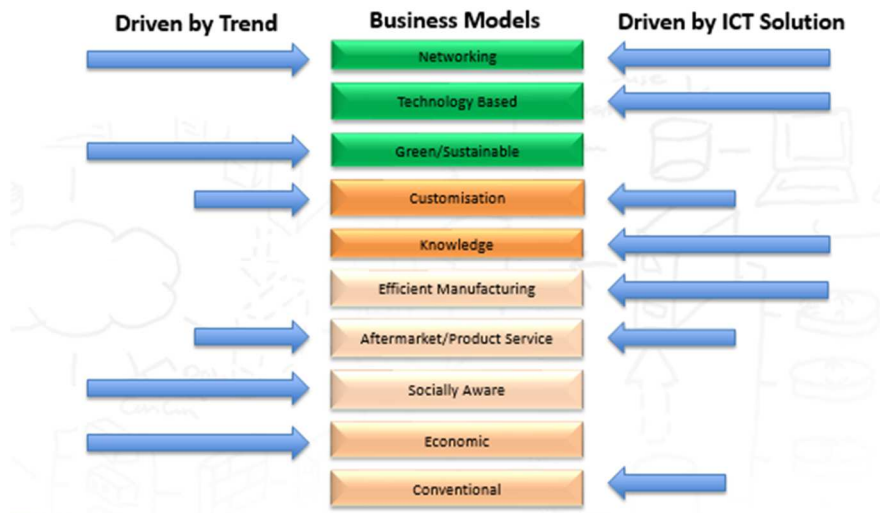
The work on business modelling in Road4FAME highlights that manufacturing companies need to evolve and adapt to meet competitive challenges and support world megatrends. The adoption of suitable architectures and services may provide a manufacturing company with substantial competitive advantage, however, successful implementation may strongly depend on the ecosystem of business services supporting them. The work considered existing business models and services employed by European manufacturing enterprises and also identified new business models and services which become possible. In total, around 90 new business opportunities were identified from interviews and via a business modelling workshop. Based upon this recommendations have been made for new business opportunities tied to future architectures and services in manufacturing. Although it is difficult to forecast 20 years ahead what the future business models will be (as they are dependent on many factors) a number of observations can be made:

- Ownership is likely to become more and more decoupled from use of products. This opens up a number of new ways for sharing products, providing value and generating revenue. Here IT has an important role to play in tracking, measuring and billing.
- The trend towards green thinking (also backed up by regulation) is driving the circular economy which requires an ecosystem that supports recycling and re-manufacture. This may also link with products being used rather than being owned by consumers.
- The ability to associate information with (and within) products allows much greater levels of tracking from cradle to grave and cradle to cradle. This information can be used in a variety of ways such as for gathering data on sustainability, providing personalised products, giving guarantees of provenance, etc.



The project identified 100 business models that were classified into 10 categories. The business models that were identified were either market driven or dependent on policy/regulations. A key

example of this is green/sustainable manufacturing which is driving the development of circular economy and collaborative consumption infrastructures both at a business level and also in partnership with consumers. Market drivers towards customised products requires new levels of connection between the customer and manufacturing and also flexibility within the manufacturing supply chain. Overall it is clear that companies in the future will need to be much more flexible and open minded in order to allow much higher levels of collaboration.



A feature of future business models will thus be increased interconnectivity. Although many reports highlight the move to servitization as evidenced by the aerospace industry there is still scope and interest in other business models. It was noted that socially aware and economic business models are currently the least interesting to the manufacturing sector. For socially driven business models it is difficult to see how an idea can be monetised. For economic business models a major barrier is the legal framework that has grown up around the manufacturing industry. Well known ways of funding manufacturing enterprises exist, but the current rigid legal framework would prohibit some of the more “exotic” new approaches to financing.

## Recommendations

**Entrepreneurship** - There is a need to develop the entrepreneurial framework and ecosystem to support increased connectivity between companies. Policy interventions may be required at a European level to support this change.

**Platform Competition** - A large proportion of the value chain is generated by non-manufacturing companies, e.g. Google, Uber and Amazon. There is a need for greater awareness regarding new potential competitors outside the core market.

**Education** - There is also a need for education. There are many well-functioning and conservative manufacturing firms which utilise outdated software. These companies fear system changes and so there is a need to build awareness for the necessity of a change. There is also a need to raise awareness of new potential competitors within the value chain, e.g. Google, Uber and Amazon.

**Legal Framework** – A legal framework is required to allow contracts to be rapidly set up between companies. The legislation governing the IT sector and the internet has been built up around this sector and this may not be appropriate for manufacturing. There is thus a need for legal support specific to manufacturing applications.

**Insurance** – A barrier to many SME's from offering services to companies is the risk introduced from liability for lost production. Here a mechanism to provide insurance would remove some of this risk.

**Technology Transfer** - There is also a need to transfer technology and best practices from advanced industries, e.g. aerospace, automotive, to less advanced sectors.

**Standardisation** - There are many challenges when offering a service based on data transfer between a client and service provider and here there is a need for standardized data formats for interoperability.

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