

The main areas of activities of CORONA include the methodology, the development of tools and services, and the validation and demonstration based on different business cases, representing the MEMS foundry model as well as the fabless model.



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# Customer-Oriented Product Engineering of Micro and Nano Devices

Benefit from shorter time to market by:

- Faster product engineering
- Customer-lead multi-site product development
- Access to knowledge-base on design and processes
- Information and communication technology (ICT) structure and tools

www.corona-mnt.eu

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## Benefits

The competitiveness of European companies in micro and nano technologies (MNT) very much relies on short time-to-market. That is true in particular for collaborative, distributed design and fabrication scenarios typical for an area where SMEs are strongly involved. Reduced time-to-market can only be achieved by faster product engineering. MNT product design and fabrication process development is an experimental task making use of key experiments or past experience to iteratively improve the engineering flow until a satisfying result has been reached.

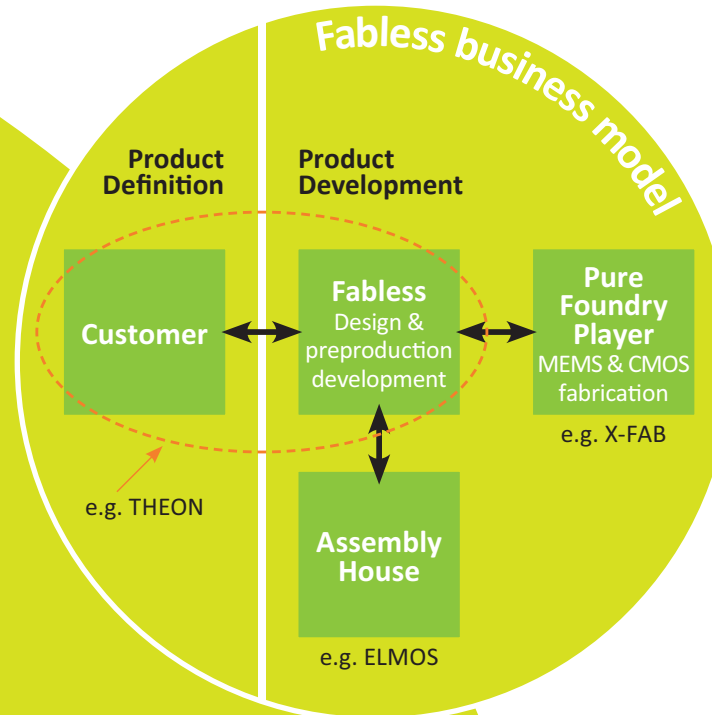
Enterprises will benefit from information and communication technology (ICT)-based product engineering for MNT by the achievements of CORONA, such as:

- A customer-driven product engineering methodology for MNT based on the co-operation of different companies, usually in different places anywhere in the world, operating concurrently.
- Business cases as performed in MNT to allow an in-depth demonstration of the capabilities and benefits of the methodology by realising representative example products. Benefits to be demonstrated include cost reduction, reduced time-to-market, new business creation and higher quality products.
- Product engineering services provided as an infrastructure to support the execution of the methodology making use of a distributed, service-oriented architecture, including a set of software tools and network infrastructure needed to support the knowledge and data management along the entire product development chain while preserving intellectual property rights.

## Methodology

A dedicated product engineering methodology will take the following aspects into account:

- **Putting the customer in charge:** There is one central entity in charge of the overall process. This is the customer, who is the authority defining the intended functionality and operating constraints of a given product.
- **Providing all required knowledge:** A comprehensive knowledge-base, that covers all required knowledge from all phases of the process, will be provided for each of the participants.
- **Permitting a smooth transition along the chain:** There will be support for a smooth transition between the process steps without the danger of misunderstandings or loss of knowledge. This will consist of thoroughly defined interfaces and tools.
- **Supporting global participation:** There will be support for an operation that is independent of time and location of the individual participants.



## Software tools and services

To execute the methodology, it is necessary to have a comprehensive set of services for the customer. CORONA will identify such services, show how they can be realised and deliver operational implementations.

Beyond existing tools from the partners a variety of other design tools, which exist on the market, will also be integrated into the environment. In the most critical areas of the design flow, especially at the boundaries between structural design, layout design and process design, however, there are still only few useful tools available. To be able to execute the whole methodology, a considerable part of the work in this project will deal with the development and implementation of new services and tools of this kind to be integrated into the overall design flow.

## Validation and demonstration

A product engineering methodology implements business processes used in industrial practice. The partners in the consortium represent the three roles of customer, development site and fabrication site. So the viability of the methodology and the effectiveness of the tools and services developed and integrated during the project will be demonstrated inside the consortium. That way, a truly distributed, networked scenario can be implemented by the consortium on its own. This ensures validation and demonstration under real-life conditions.

Typical business cases from MNT as shown in the sketch are taken as a starting point to come up with innovative business cases that reflect the customer-driven approach, which includes advancements in terms of design for manufacturing and reduced time-to-market.