

# Co-operative platform and rule based product development

Chalmers University of Technology

Wingquist laboratory

## Introduction

Leading firms today aim to develop products based on virtual product life cycle models that enable a "total" digital representation of the future product and its associated life cycle processes. This means that the model(s) must be able to manage requirement documents, function structures, CAD models, NC programs, analysis models, assembly instructions and other data. It is however well known that current CAD/CAM/CAE/PDM systems have severe limitations of realizing such visions, particularly for supporting early phases of the product development process. Moreover, many of these firms also follow a mass customization strategy, and do not develop single products but rather a set of "derivative" products based on a product platform where each derivative product is offered in a large number of variants. The complexity of the matter is further increased by the fact that the development work is not a concern for one single firm alone, but a collaborative activity between a system product owner and many sub-suppliers. The sub-suppliers, who tend to take a greater responsibility for both the development and the manufacturing of their "sub-systems", have in turn sub-suppliers of their own to cooperate with. This new situation puts new demands on existing product development work procedures and supporting IT infrastructures, as most current methods and tools available are limited to support the design, development, and manufacturing of single products within one single company.

## Research questions

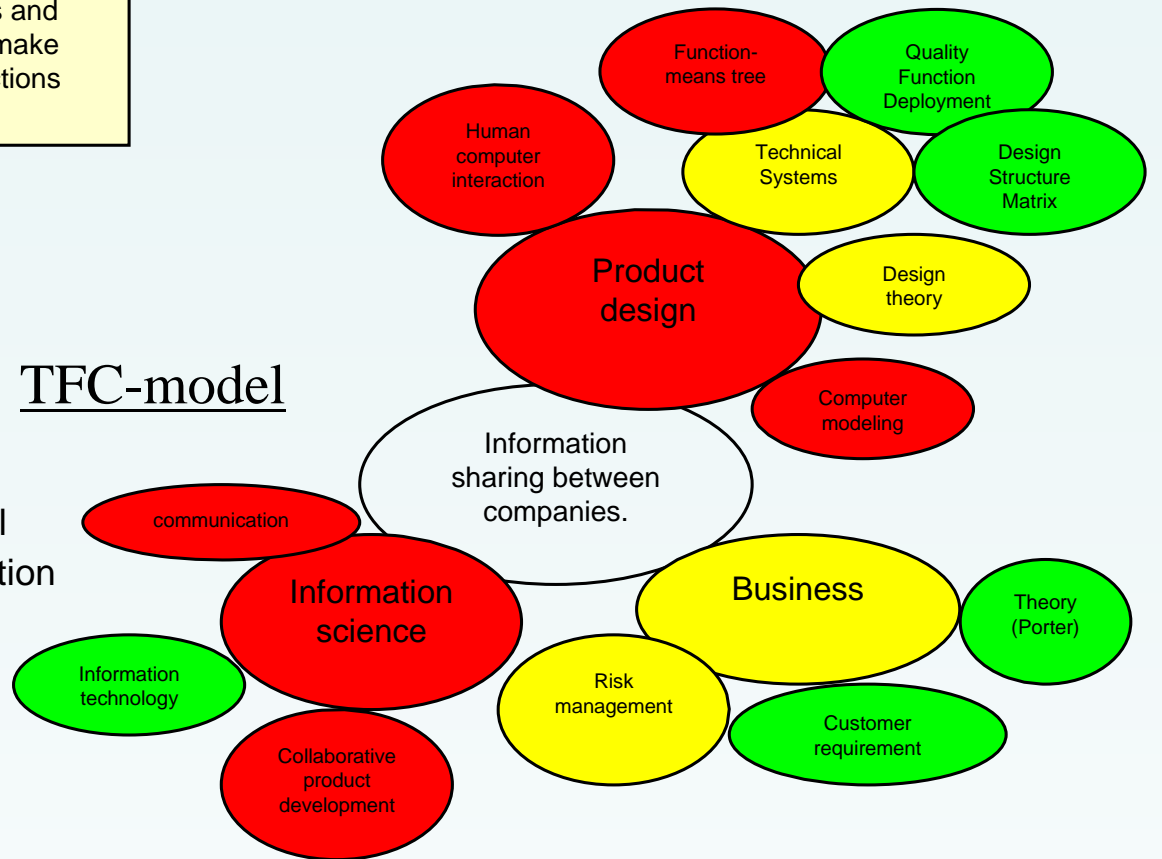
- 1) How is PLM used in today's automotive industry?
- 2) What new functions are needed to make modern PLM tools more adapted to collaborative environments?
- 3) What connections are there today between different tools and how can we make these connections stronger?

## Objective

The goal with my research is to develop a platform model that supports collaboration between the buyer and the supplier. This model should enable for companies to generate variant specific products with consideration to geometric description as well as requirement fulfilment.

## TFC-model

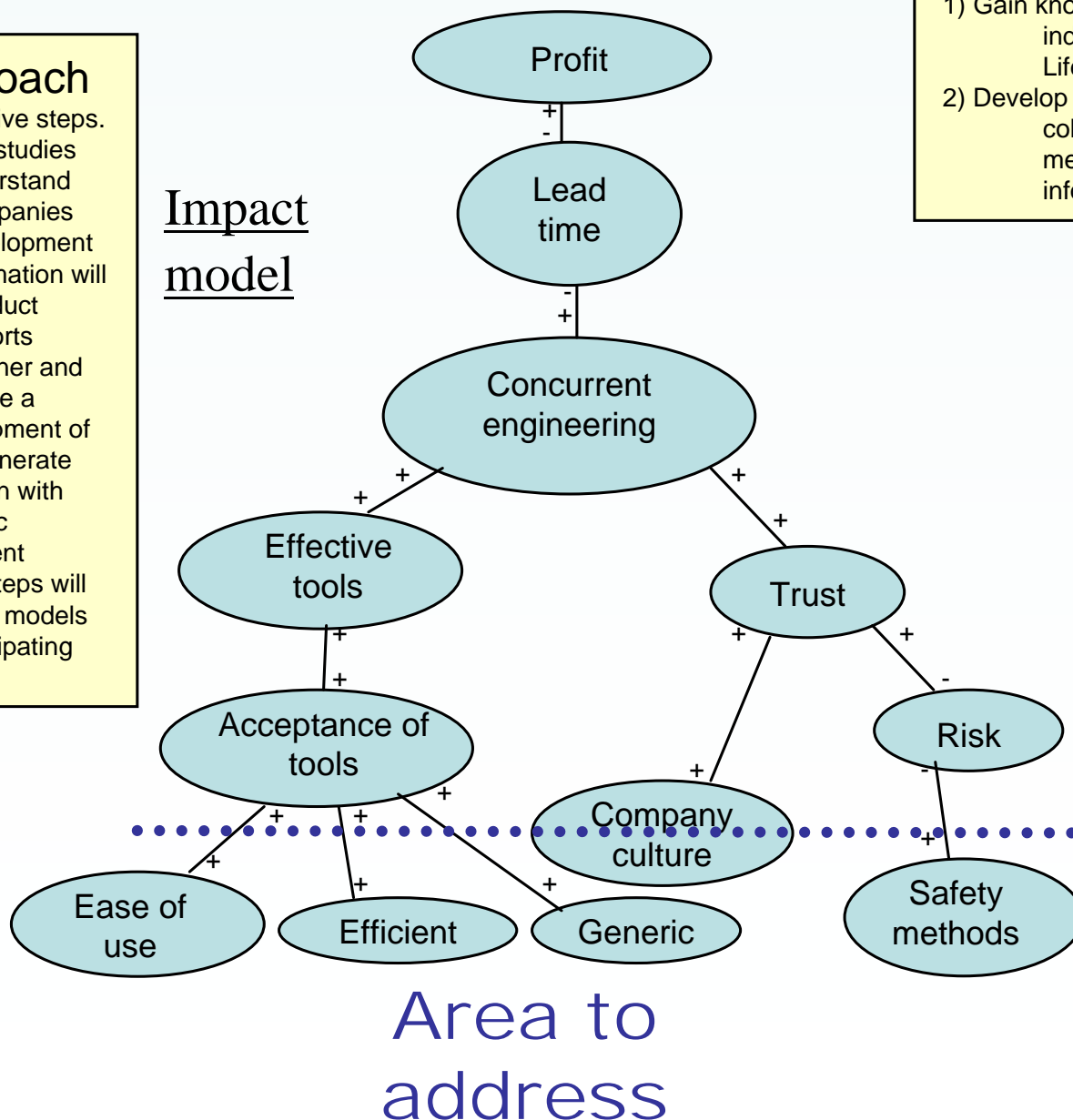
- Essential
- Contribution
- Related



## Research approach

The study is divided into five steps. During the first part case studies will be held to better understand how the participating companies work in collaborative development projects today. This information will be used to develop a product platform model that supports collaboration between owner and supplier. This model will be a foundation for the development of parametric methods to generate variant specific information with consideration to geometric description and requirement fulfillment. The two final steps will be to verify and adapt the models and methods to the participating companies organizations.

## Impact model



## Expected results

- 1) Gain knowledge in the area of how the automotive industry in Sweden deals with Product Lifecycle Management.
- 2) Develop a new platform model that supports collaborative product development with methods to generate variant specific information.



Andreas Lindquist  
Ph.D. Student  
Chalmers University of Technology