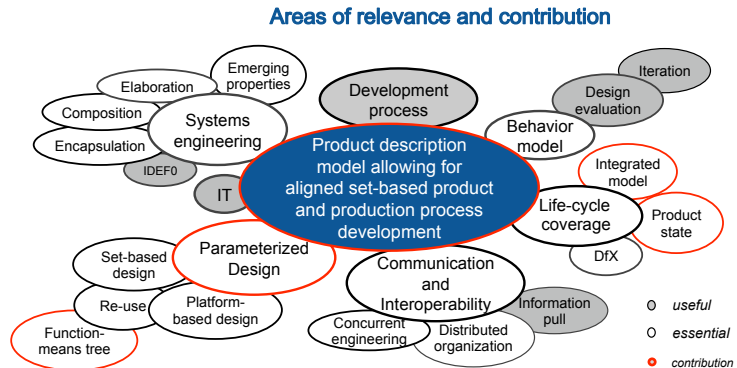


# Integrated platform-based development of products and production systems

## Background

Modern product and production development strategies based on product families, platforms and modules allow for set-based design, enhanced re-use of solutions and faster development. These are potential means to adapt to the main driving force for platform-based development and manufacturing, which is a possibility to combine customization with economy of scale. To be able to fully take advantages of such philosophies new ways to describe product and production system structures are needed. The Wingquist Laboratory has developed a new modeling strategy, the *Configurable Component Concept*. The proposed strategy is based on a more abstract and knowledge-based platform definition consisting of configurable components, representing arbitrary systems, which will support the designers design decisions during the designs complete lifecycle.



## Research Questions

How can an integrated product and production system platform description, which will support both product and production process design as well as enable simultaneous configuration of product variants and their required instantiated manufacturing resources, be realized?

**Initial focus:** How shall over-all “mating requirements” and interface design solution be formulated and described?

How shall interactions in general, and specifically between involved interface design solutions and other design solutions be described?

Can the generic “configurable component concept” be adopted to handle production system platforms – and if so – how?

## Research Approach

### Success criteria

Develop an understanding of which aspects of aligned product and production process development that is to be improved by this research

### Success criteria

Investigation of which product information that is handled by product development and product process development and the exchange in-between these.

- interview designers in both organizations
- analyze OEM and sub-supplier information exchange
- study current tools ability to handle information content
- refer to personal expediences

### Prescriptive study

Use UML class model to describe current state of the art of the configurable component concept.

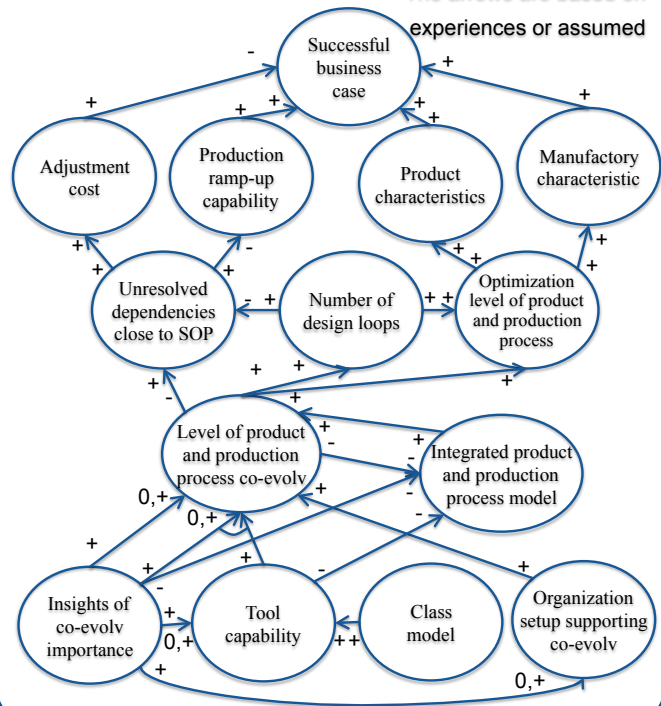
Create extensions and, if necessary, modify the UML class model  
Create UML object models to exemplify possible usages (instantiations) of the class model.

### Descriptive study II

Verification of the proposed models and methods.

## Initial Reference Model

The arrows are based on experiences or assumed



## Expected Contribution

**Scientific:** The expected contribution to the scientific community, from the coming research, is a refined and extended framework within platform-based design.

**Industrial:** To be able to use the findings made, within the industry, the scientific results have to be complemented with examples, instructions as well as presented and taught to, for example, management and design engineers. This will also be done to support my employer Saab Automobile as being an Industrial PhD student.



Stellan Gedell  
Division of Product Development  
Dept. of Product and Production Development  
Chalmers University of Technology  
412 96 Göteborg, Sweden  
Phone: +46 736 27 85 25  
E-Mail: stellan.gedell@chalmers.se