

# Design Integration Software -- Interactive Design Optimization Perspective

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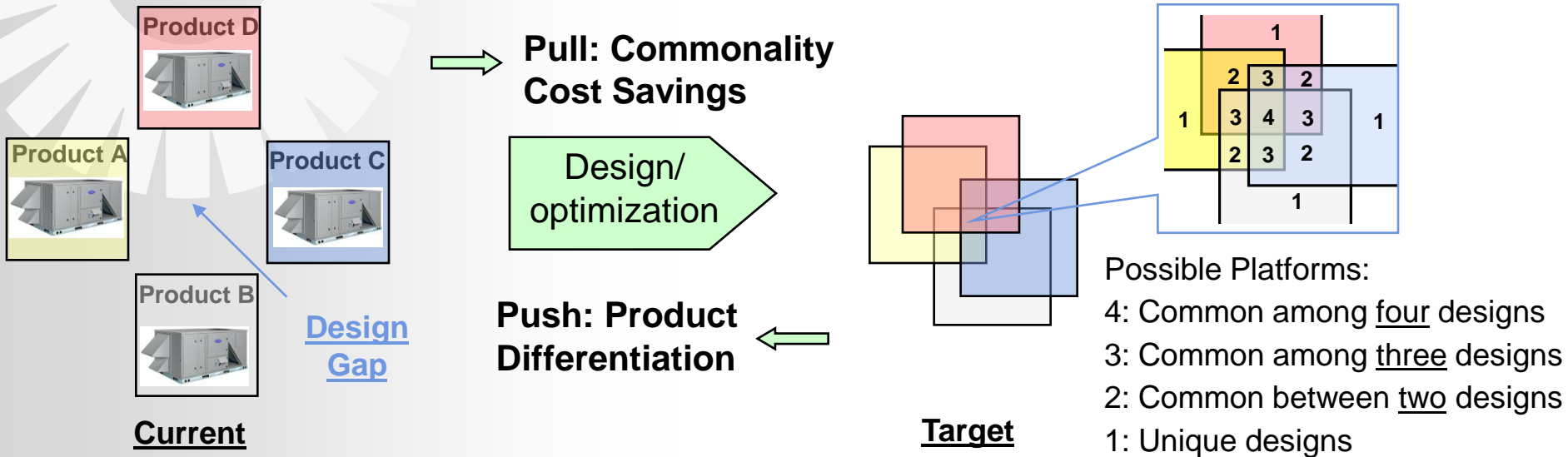
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# Model-based Product Family Optimization

**Objective:** Enable cost savings with product family optimization that balances tradeoff between commonality and product differentiation.



## Benefits:

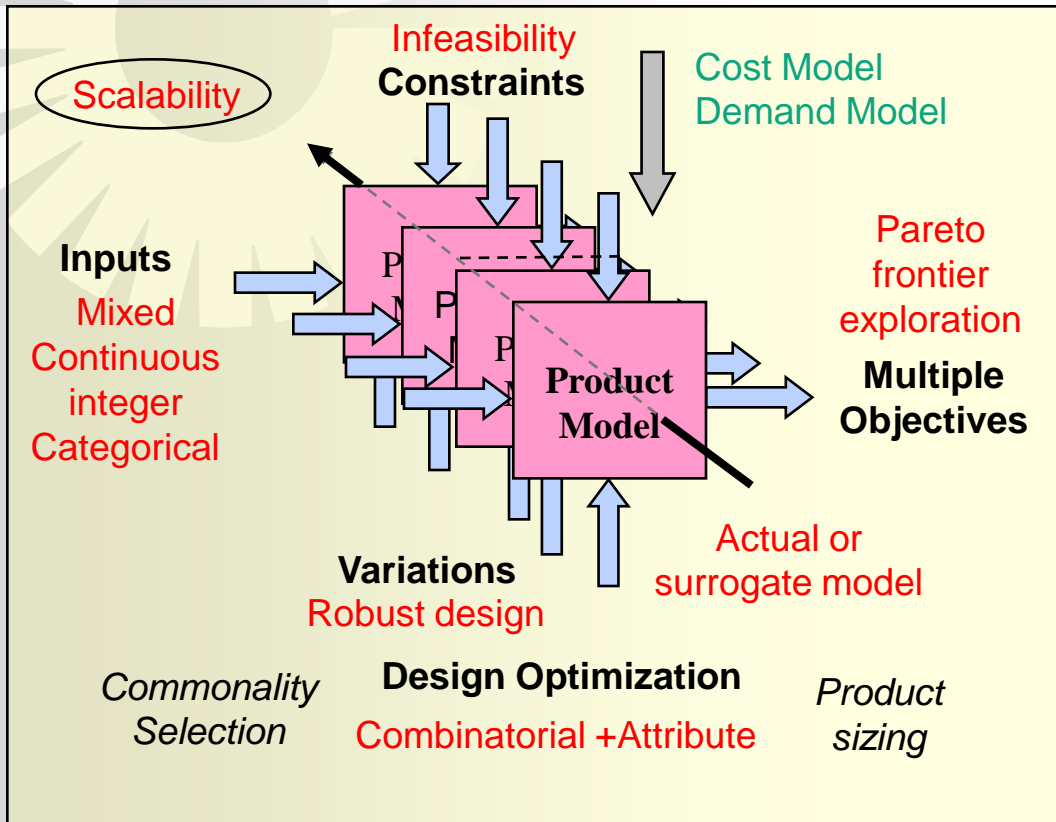
Cost savings: economy of scale  
Engineering efficiency improvement  
Product design cycle time reduction  
...

## Technology Requirements:

Scalable: number of products  
Easy to learn and use  
Interactive and interesting  
Knowledge creator

# Challenges to Product Family Optimization

## Design Space Exploration

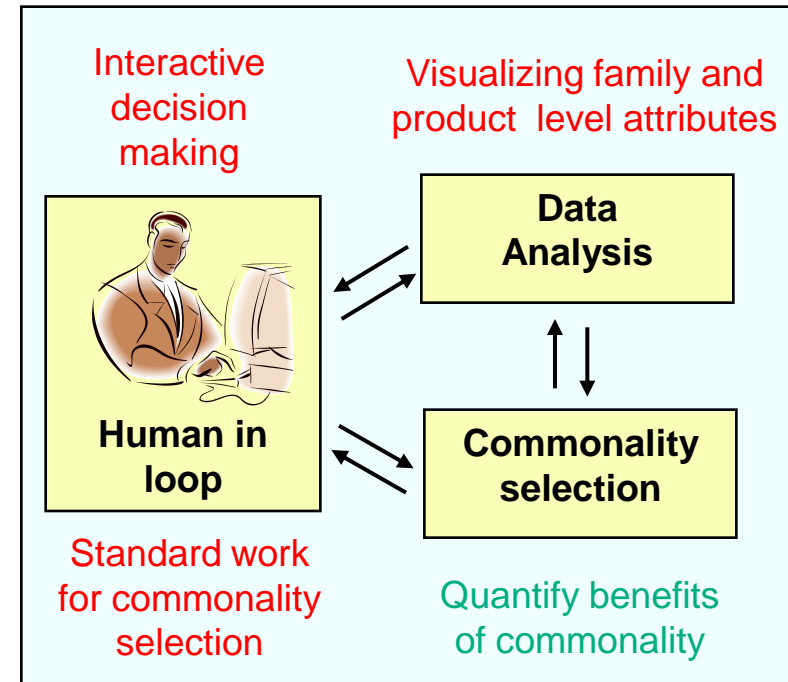


*Features of product family problem in black*

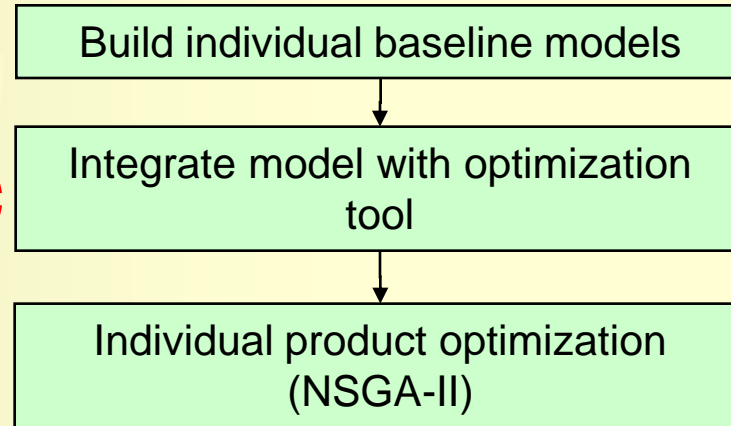
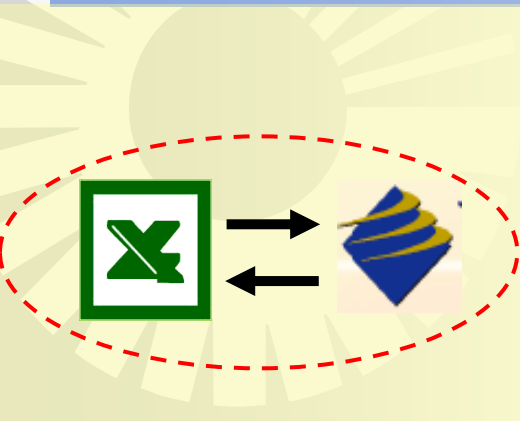
*Technical challenges shown in red*

*Practical challenges shown in green*

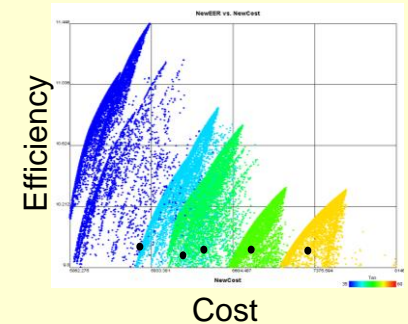
## Decision Making



# Commonality Decision Making Process

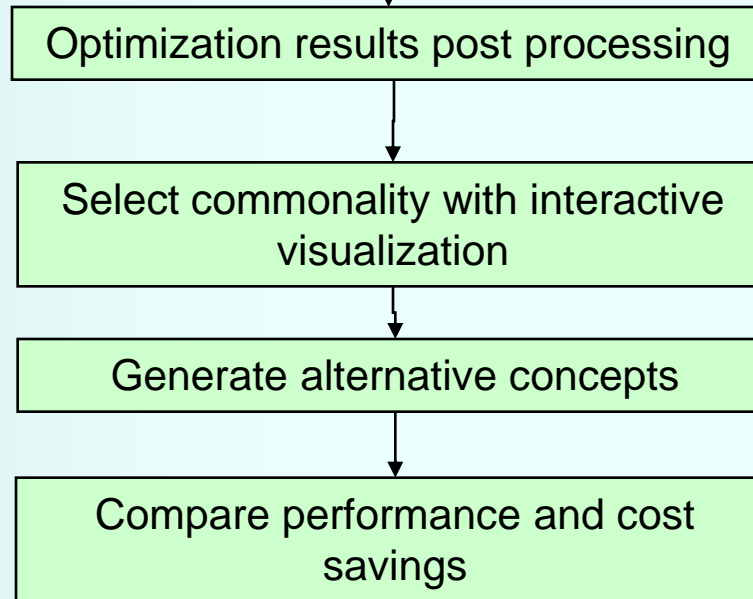
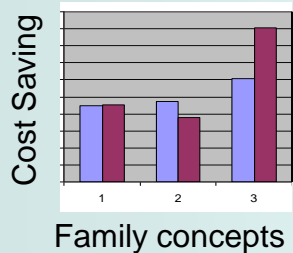


## Design Space Exploration

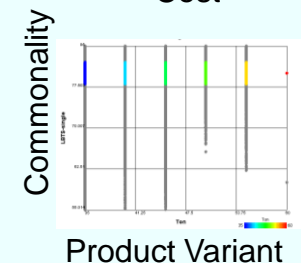
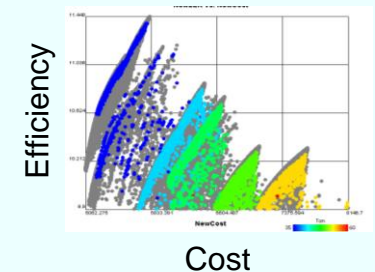
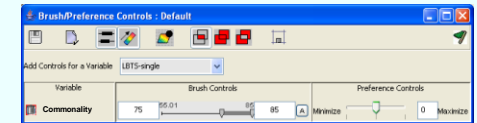


## Decision Making

### Post-processing



### Interactive visualization



# What Do We Need in Future

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- **Design as a process -- Exploration + Decision Making**
- **Minimize/eliminate post processing**
- **Interactive visualization**
- **Decision making**
- **Designer access to exploration process**
- **Knowledge generation**
- **Brain Mapping -- capture**