

# Requirements Capturing by the System Architect

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## Abstract

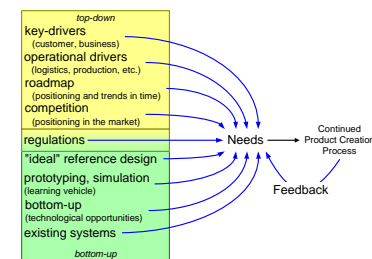
The basis of a good system architecture is the availability and understanding of the requirements. This presentation shows how a system architect can capture the requirements and how to use these requirements in the context of the product creation process.

The notion of "business key drivers" is introduced and a method is described to link these key drivers to the product specification.

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# Definition of “Requirement”

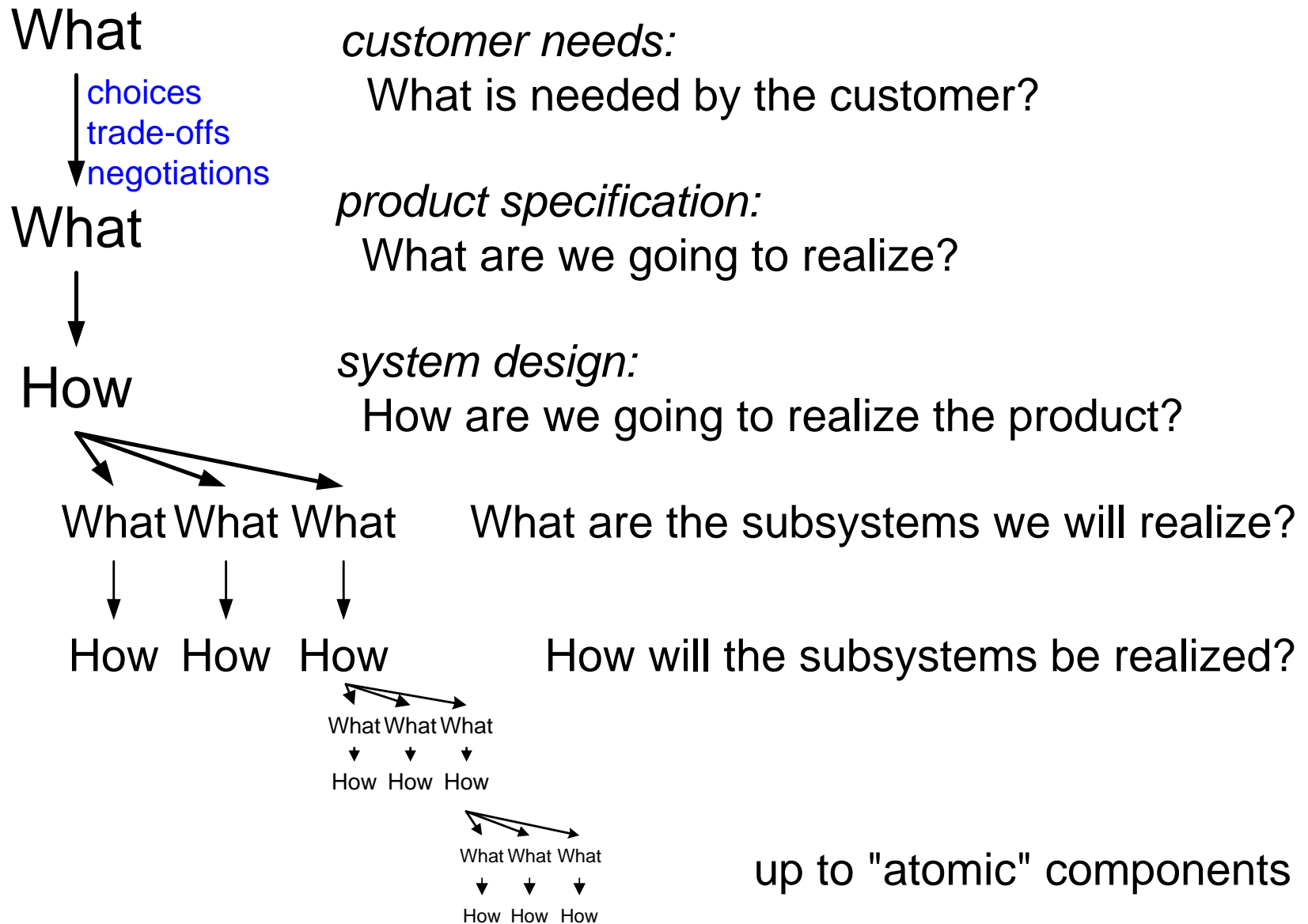
Requirements describing the needs of the customer:  
*Customer Needs*

Requirements describing the characteristics of the final resulting product: *Product Specification*

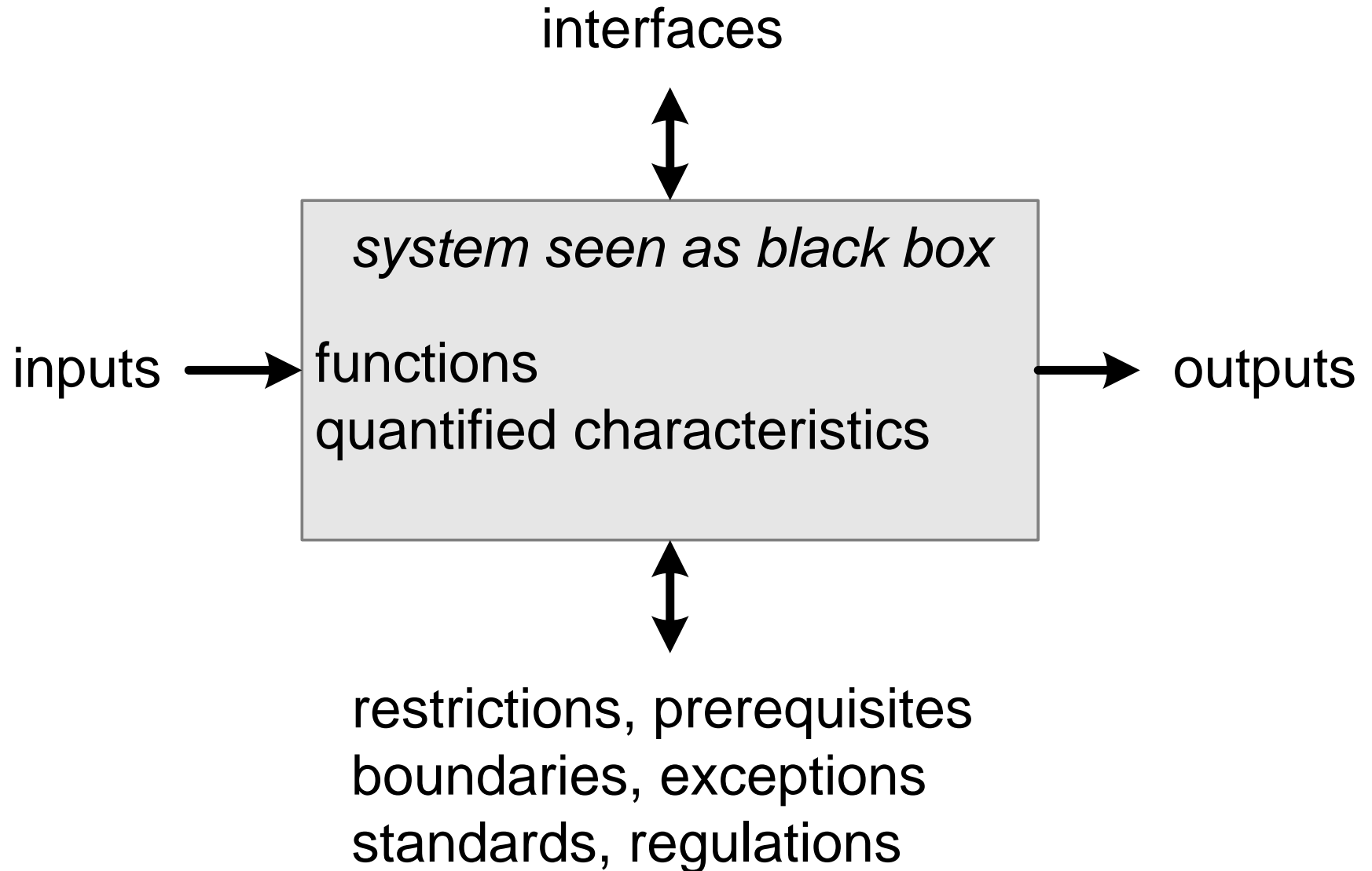
The requirements management process recursively applies definition 2 for every level of decomposition.

Requirements describing the needs of the company itself over the life cycle: *Life Cycle Needs*

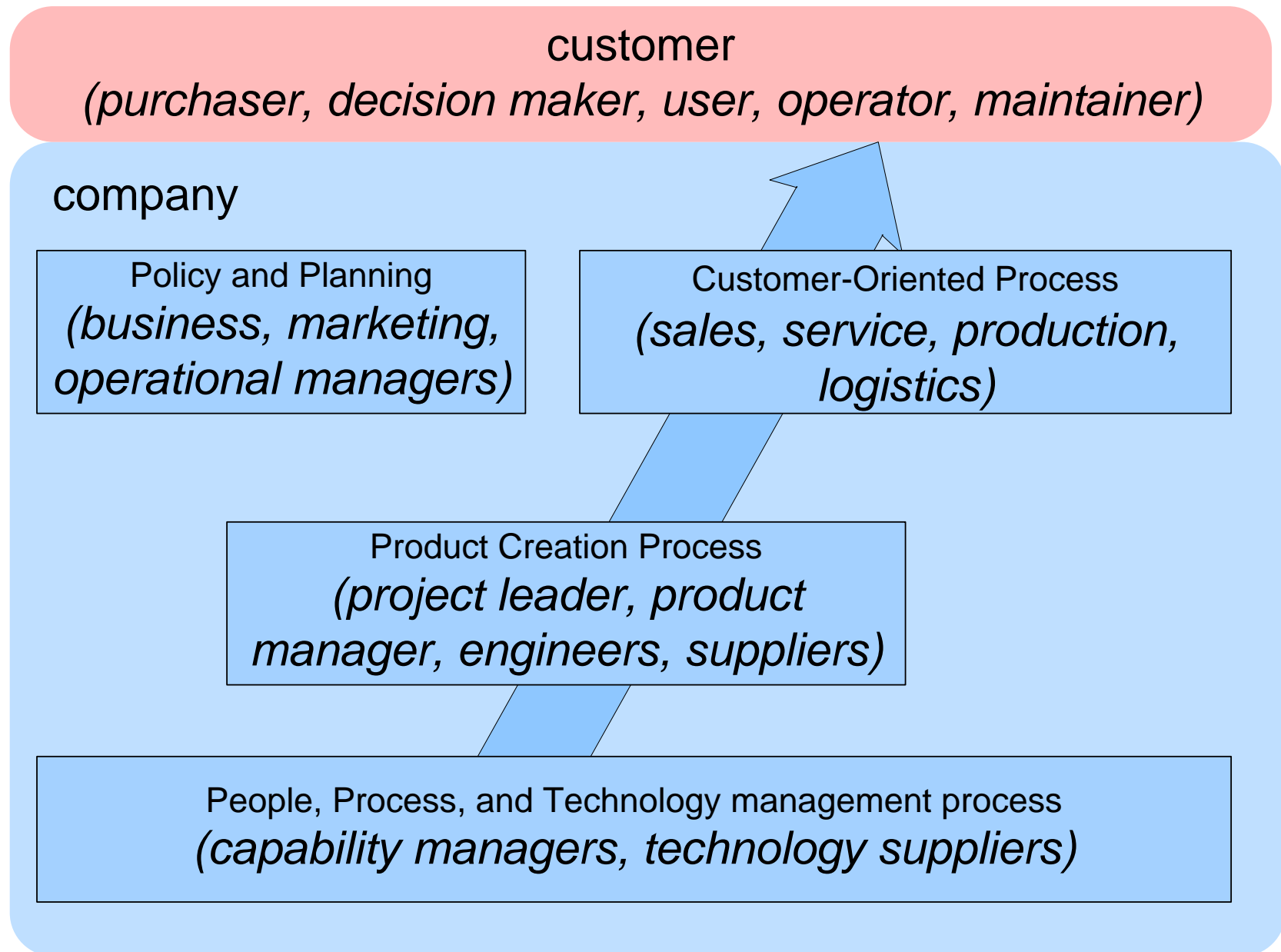
# Flow of Requirements



# System as a Black Box



# Stakeholders w.r.t. Requirements



# The “Formal” Requirements for Requirements

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Specific

Unambiguous

Verifiable

Quantifiable

Measurable

Complete

Traceable

# The Requirements to Enable Human Use

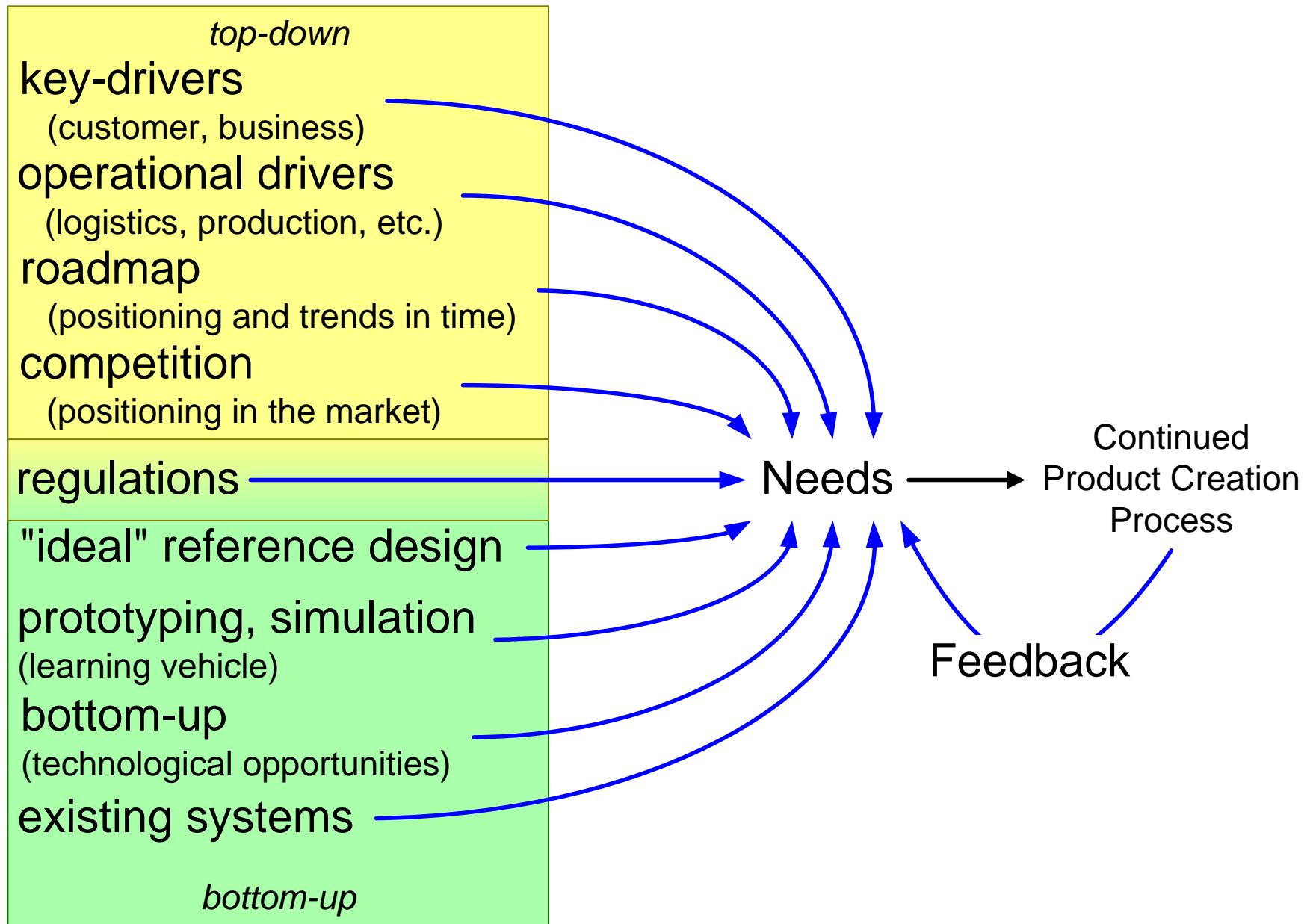
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Accessible

Understandable

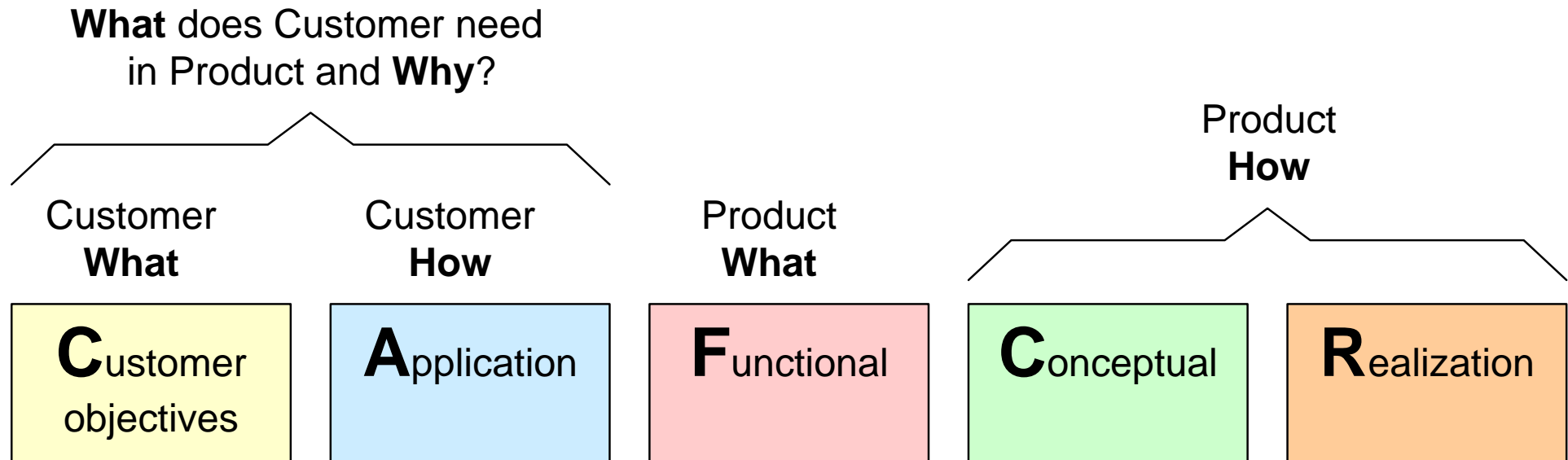
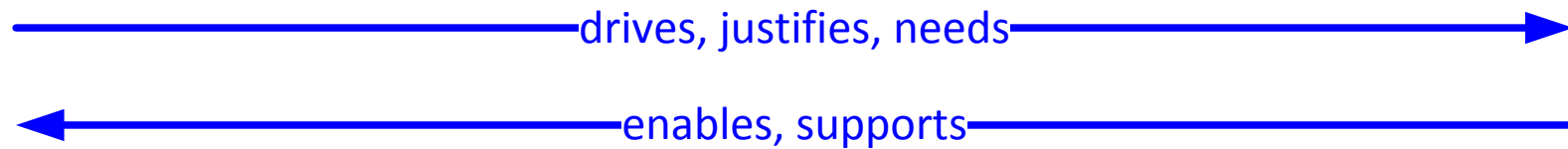
Low threshold

# Complementary Viewpoints to Capture Requirements

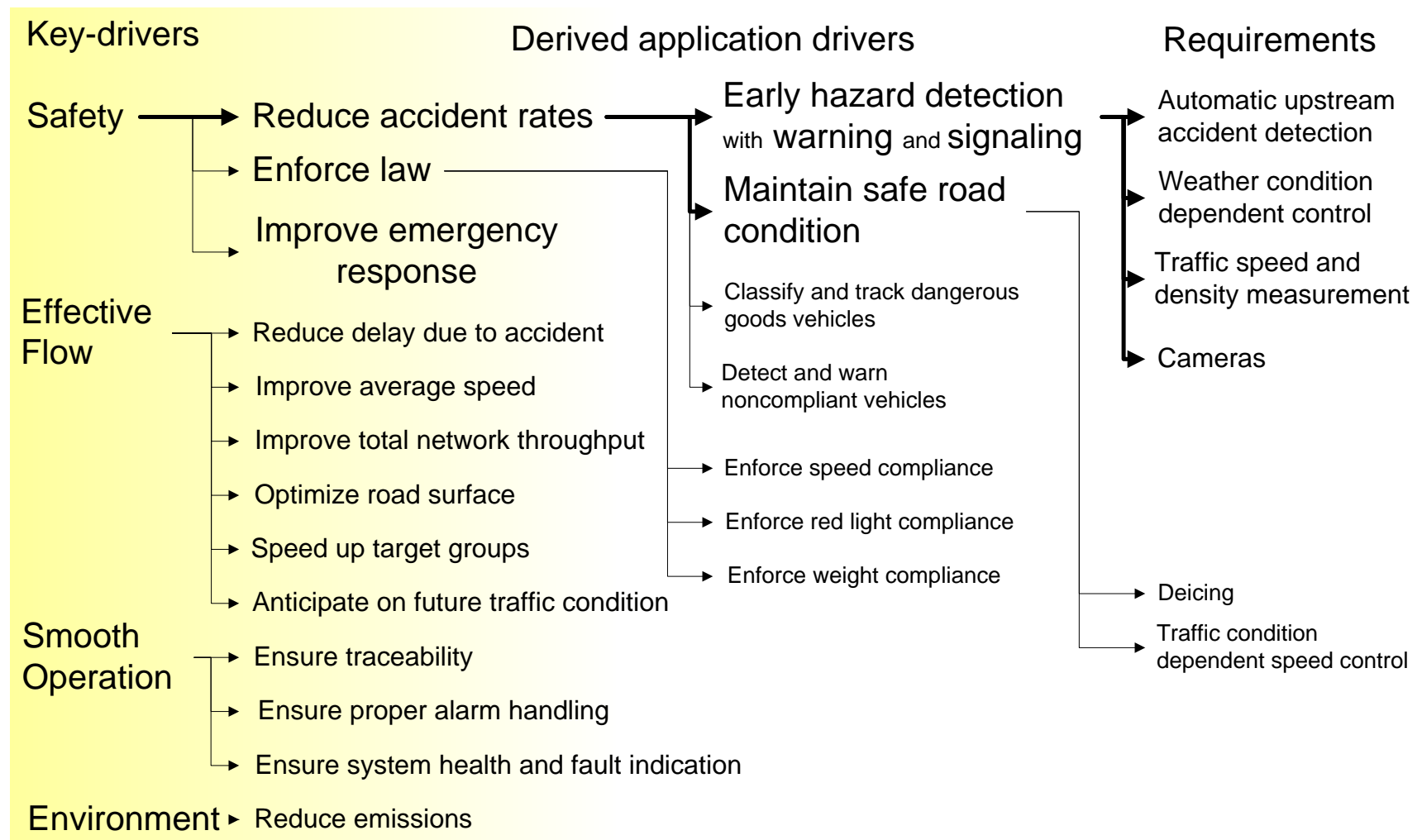




# Reference Architecture: Requirements Analysis Starts Left



# Example Motorway Management Analysis



*Note: the graph is only partially elaborated for application drivers and requirements*

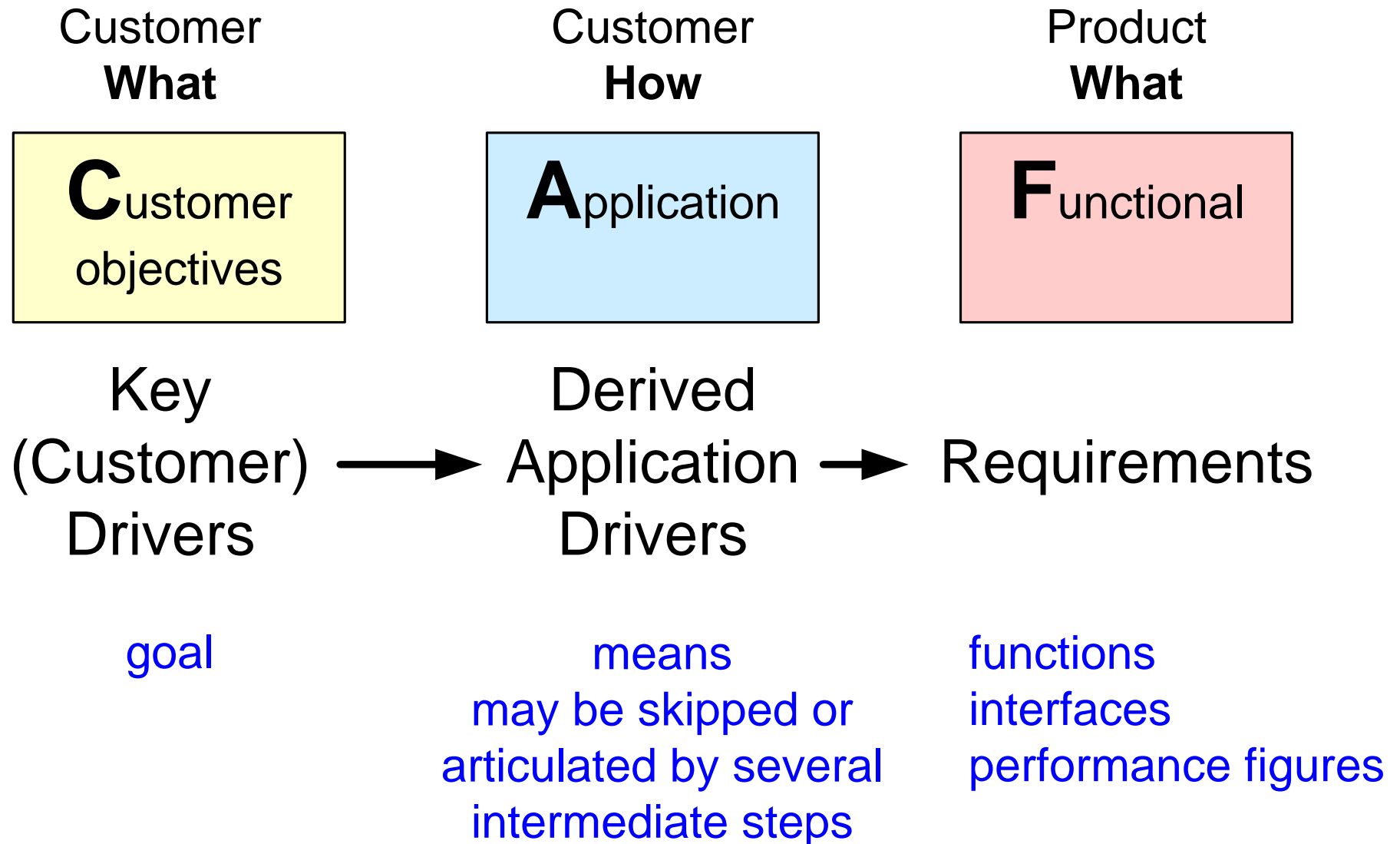
# Method to create Key Driver Graph

- |  |  |
|--|--|
| • Define the scope specific.   | in terms of stakeholder or market segments   |
| • Acquire and analyze facts  | extract facts from the product specification<br>and ask why questions about the specification of existing products.  |
| • Build a graph of relations between drivers and requirements<br>by means of brainstorming and discussions | where requirements<br>may have multiple drivers  |
| • Obtain feedback  | discuss with customers, observe their reactions  |
| • Iterate many times   | increased understanding often triggers the move of issues<br>from driver to requirement or vice versa and rephrasing |

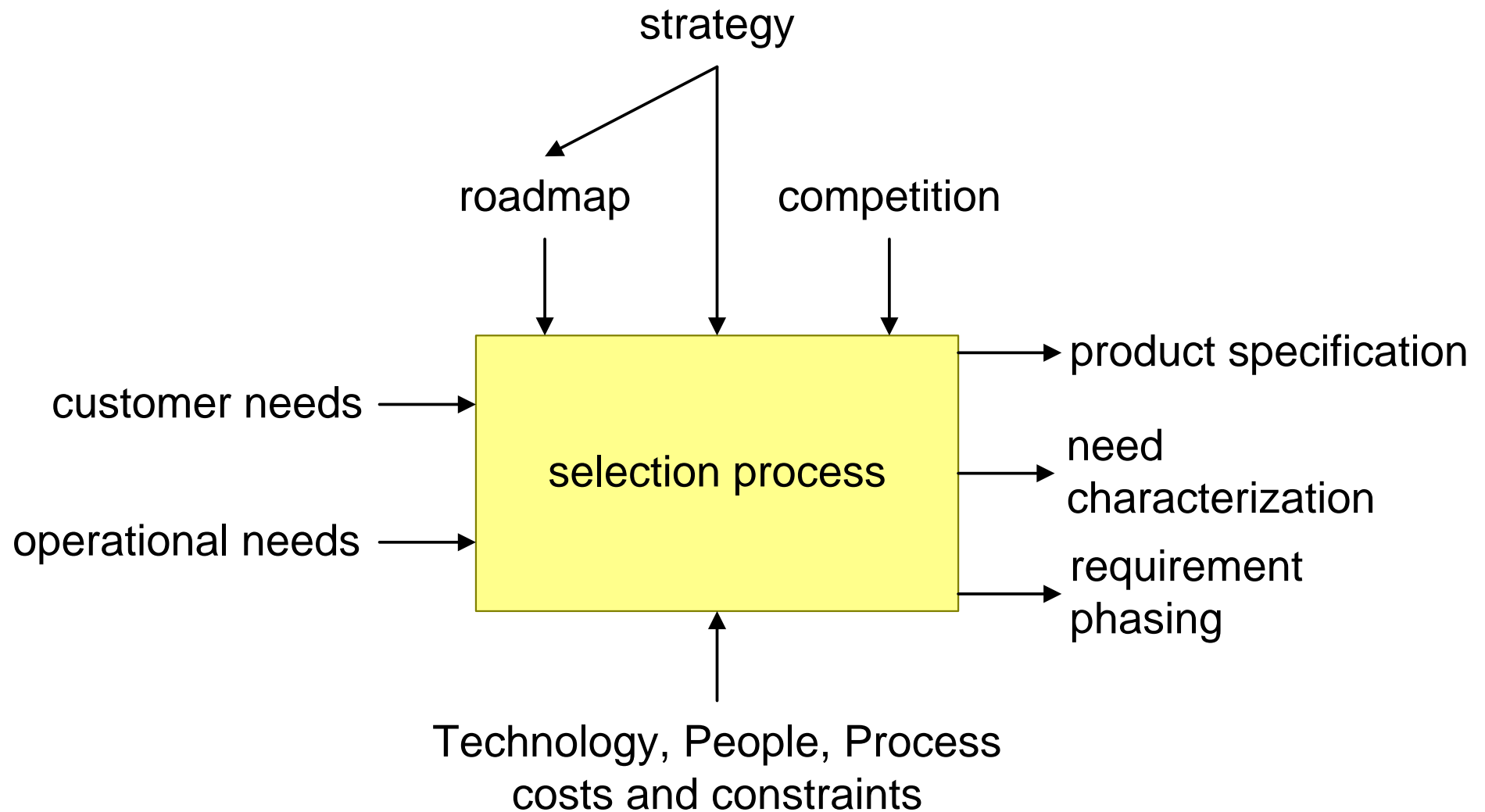
# Recommendation for the Definition of Key Drivers

- |  |   |
|--|---|
| • Limit the number of key-drivers  | minimal 3, maximal 6  |
| • Don't leave out the obvious key-drivers  | for instance the well-known main function of the product  |
| • Use short names, recognized by the customer.                                     |   |
| • Use market-/customer- specific names, no generic names                           | for instance replace "ease of use" by "minimal number of actions for experienced users", or "efficiency" by "integral cost per patient" |
| • Do not worry about the exact boundary between Customer Objective and Application | create clear goal means relations   |

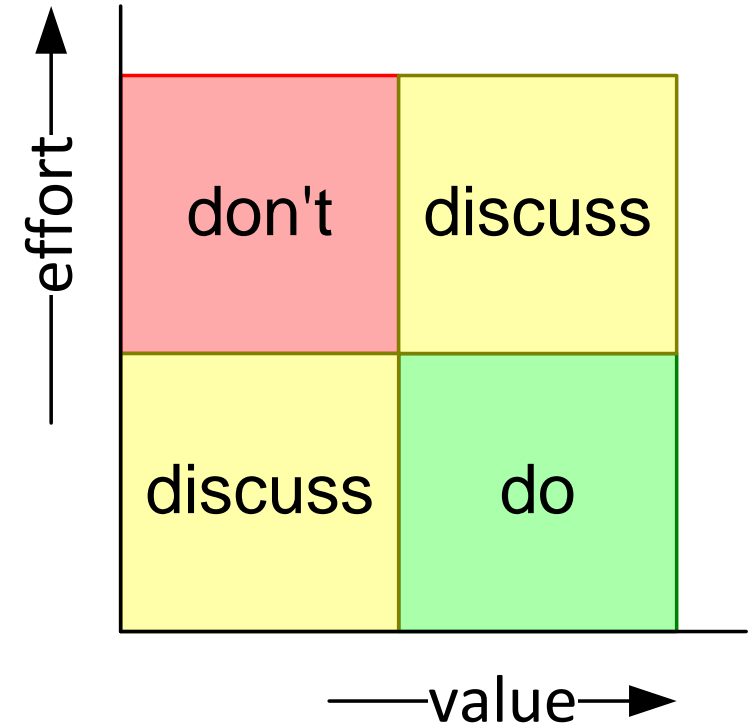
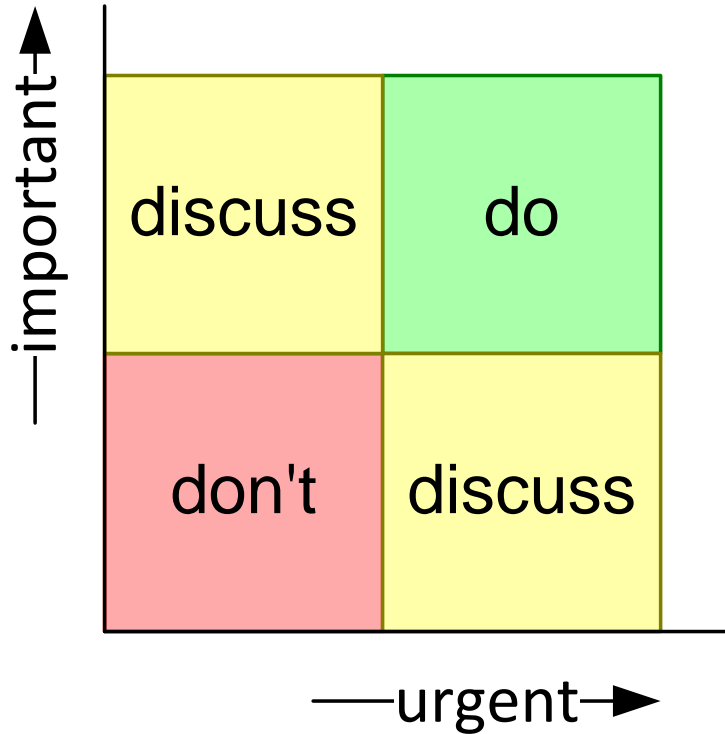
# Transformation of Key Drivers into Requirements



# Requirement Selection Process



# Simple Qualification Method



# Examples of Quantifiable Aspects

- Value for the customer
- (dis)satisfaction level for the customer
- Selling value (How much is the customer willing to pay?)
- Level of differentiation w.r.t. the competition
- Impact on the market share
- Impact on the profit margin

Use relative scale, e.g. 1..5 1=low value, 5 -high value

Ask several knowledgeable people to score

Discussion provides insight (don't fall in spreadsheet trap)