

# Requirements Capturing by the System Architect

by *Gerrit Muller* University of South-Eastern Norway-NISE

e-mail: `gaudisite@gmail.com`

`www.gaudisite.nl`

## Abstract

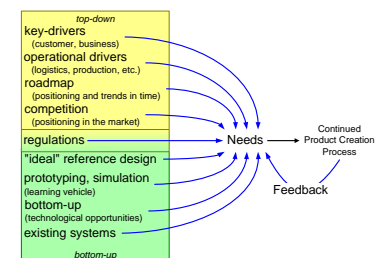
The basis of a good system architecture is the availability and understanding of the requirements. This presentation shows how a system architect can capture the requirements and how to use these requirements in the context of the product creation process.

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

## Distribution

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# Definition of “Requirement”

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

Requirements describing the characteristics of the final resulting system (product): ***System (Product) Specification***

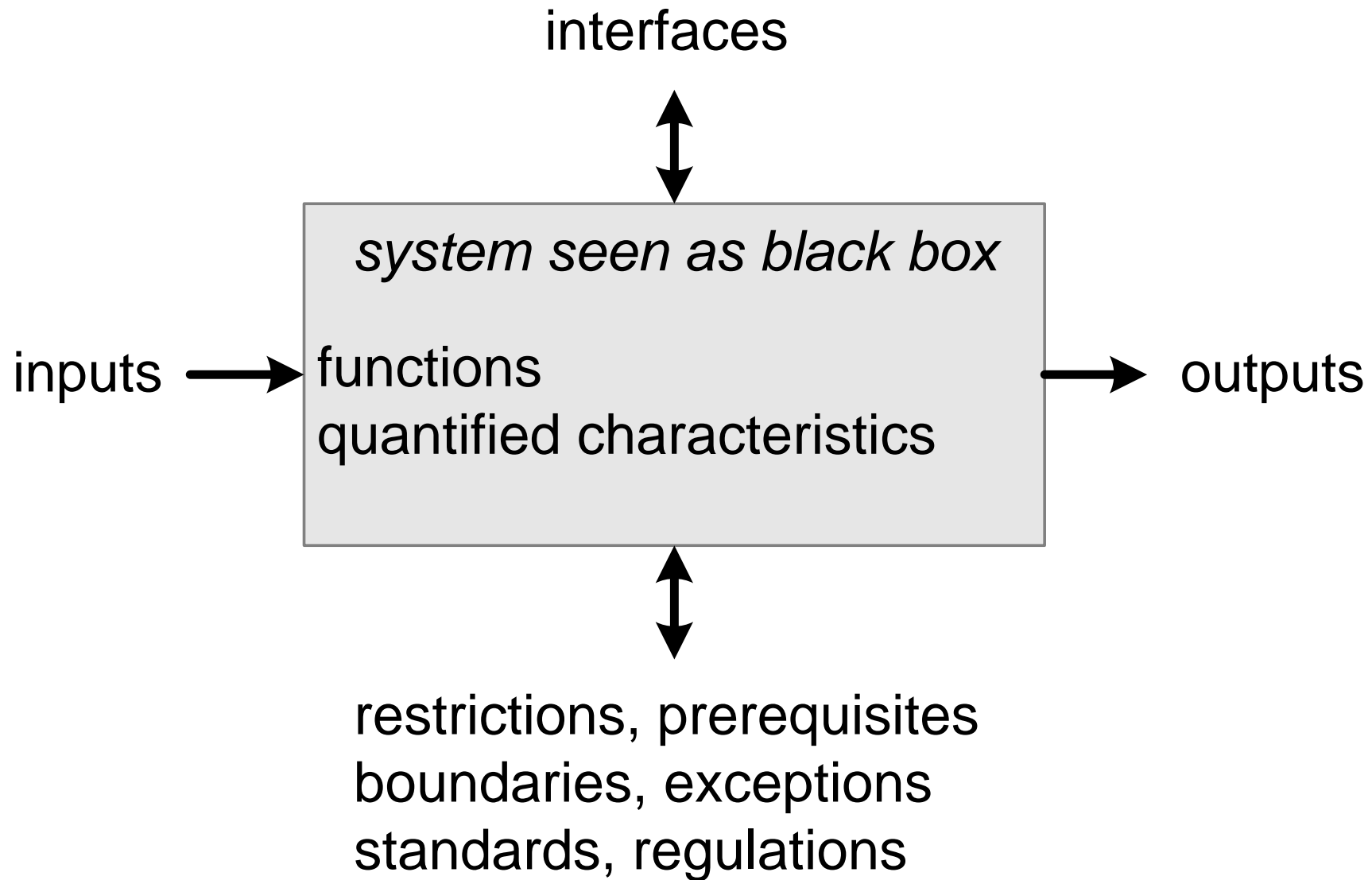
The ***requirements management process*** recursively applies this definition for every level of decomposition.

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

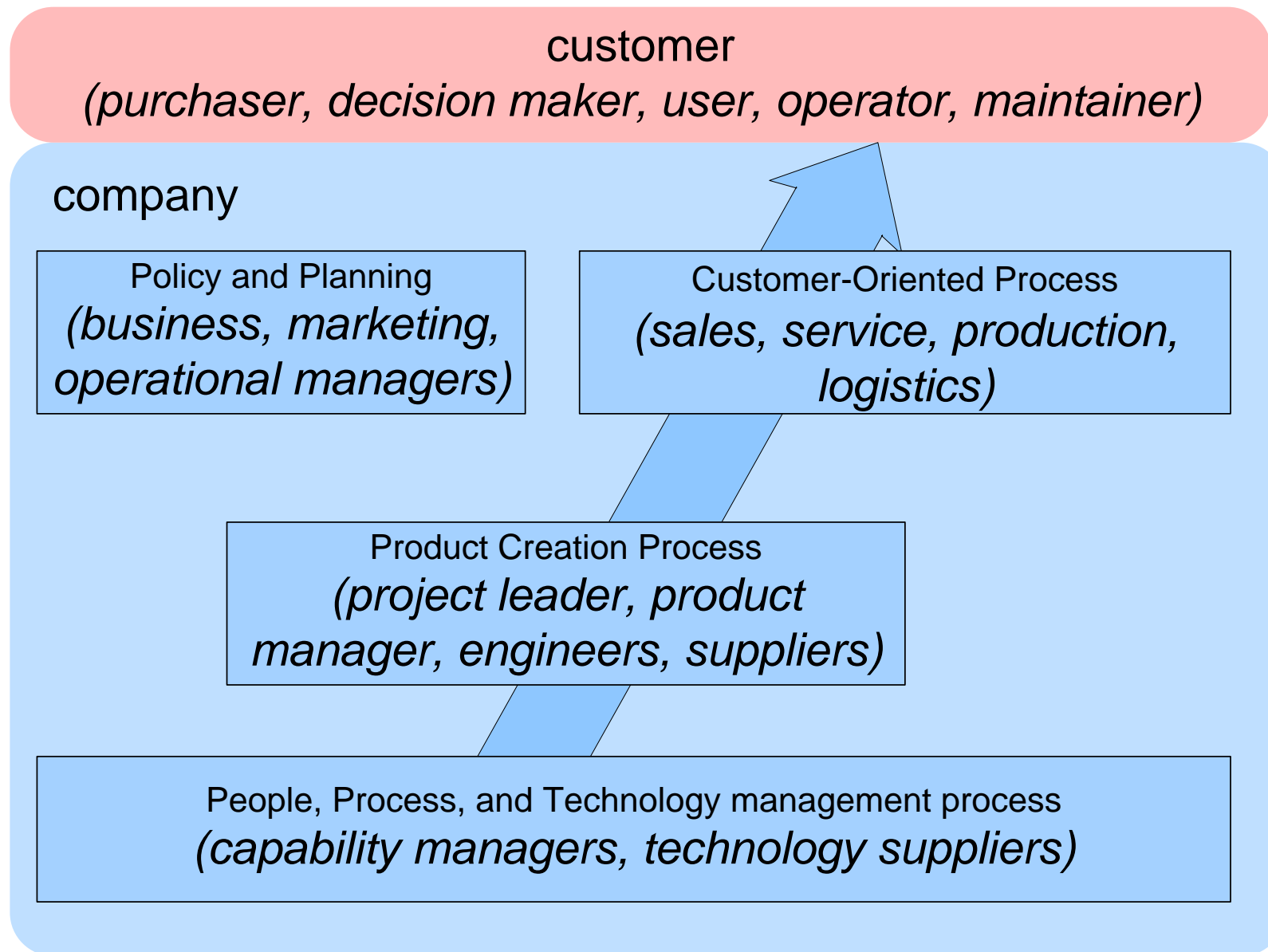


# System as a Black Box

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# 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

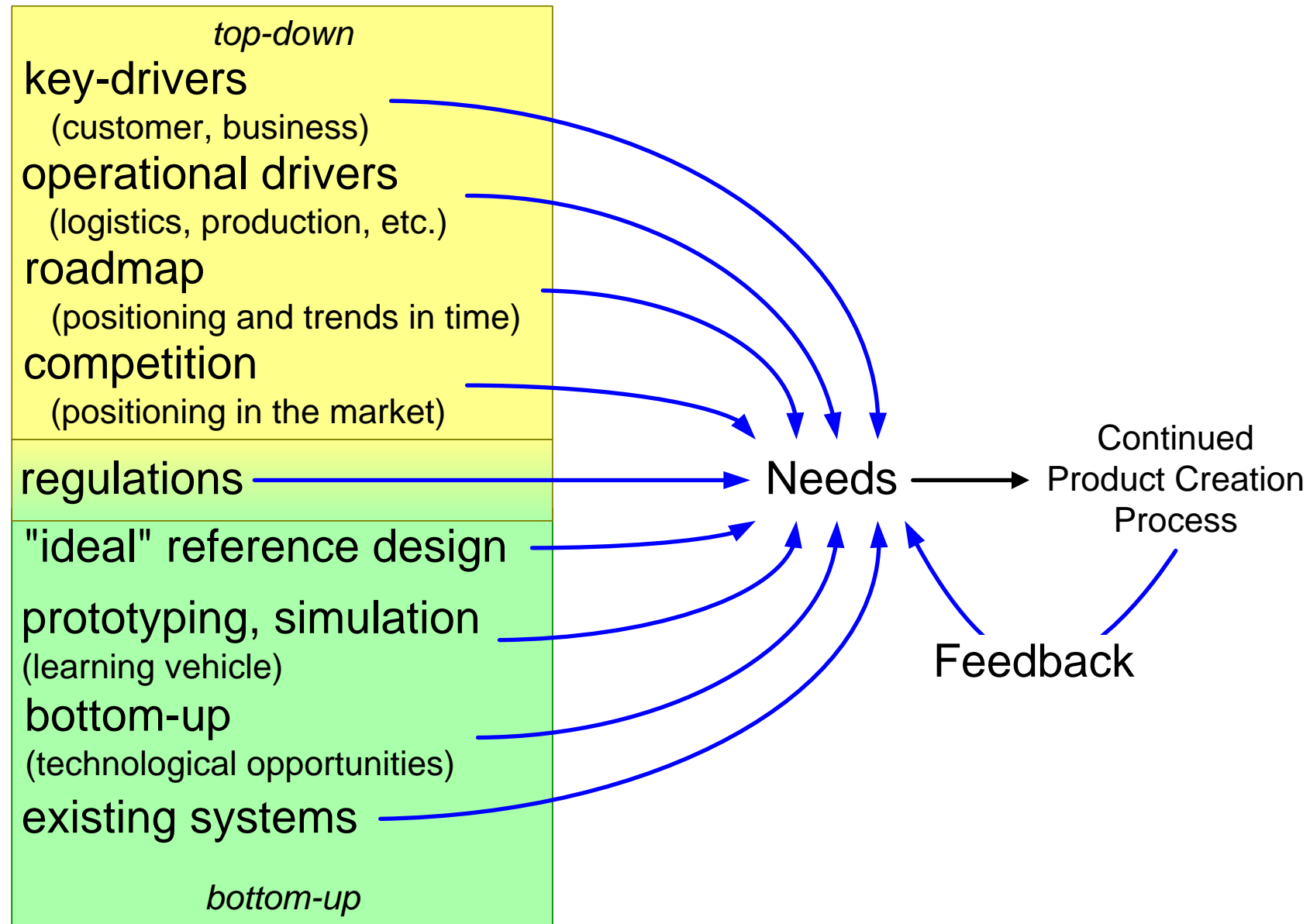
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Accessible

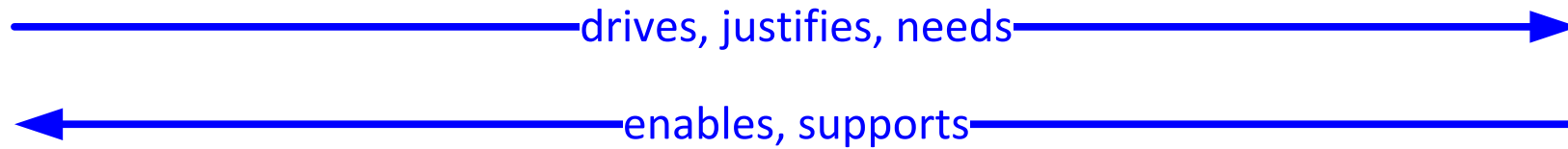
Understandable

Low threshold

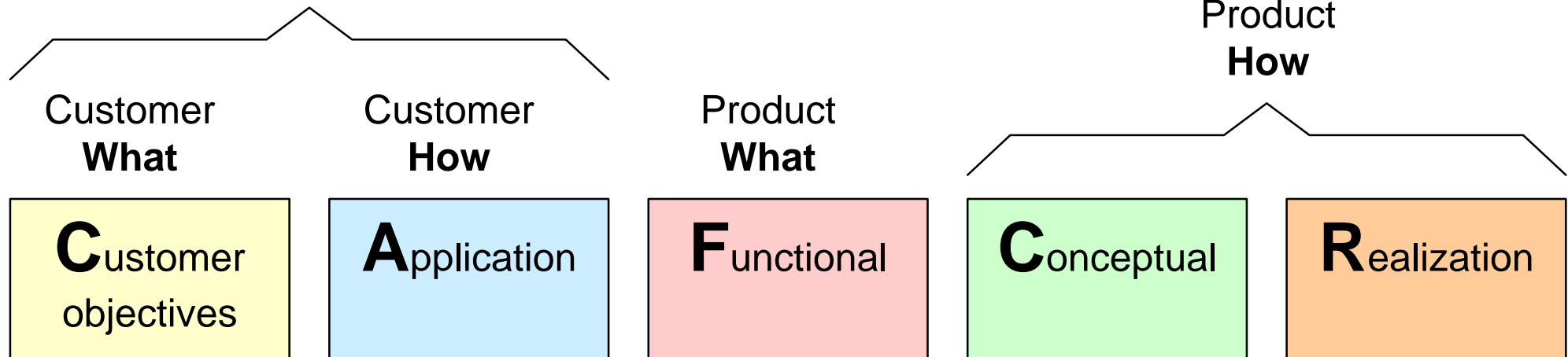
# Complementary Viewpoints to Capture Requirements



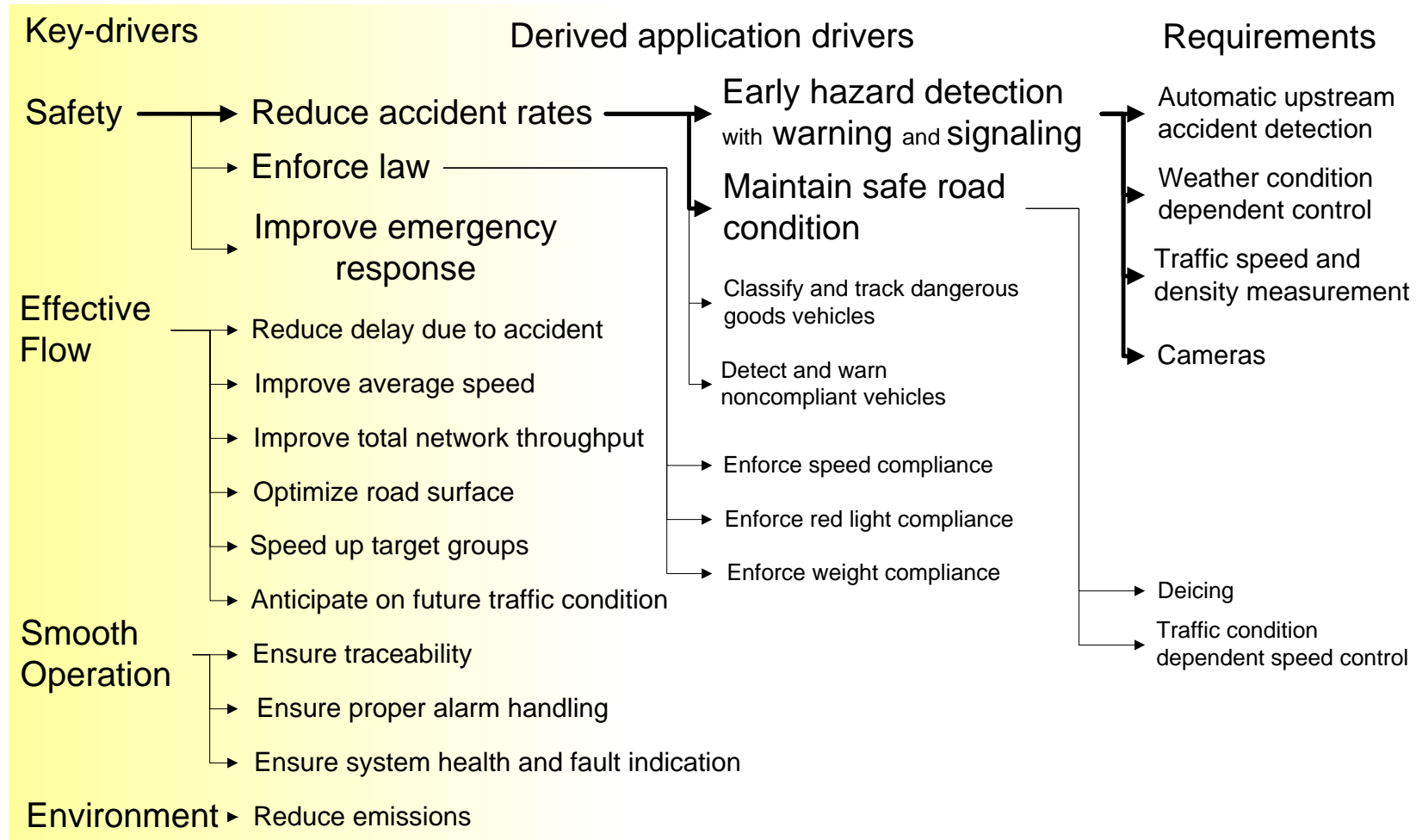
# Reference Architecture: Requirements Analysis Starts Left



**What** does Customer need  
in Product and **Why?**



# Example Motorway Management Analysis



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

# Method to create Key Driver Graph

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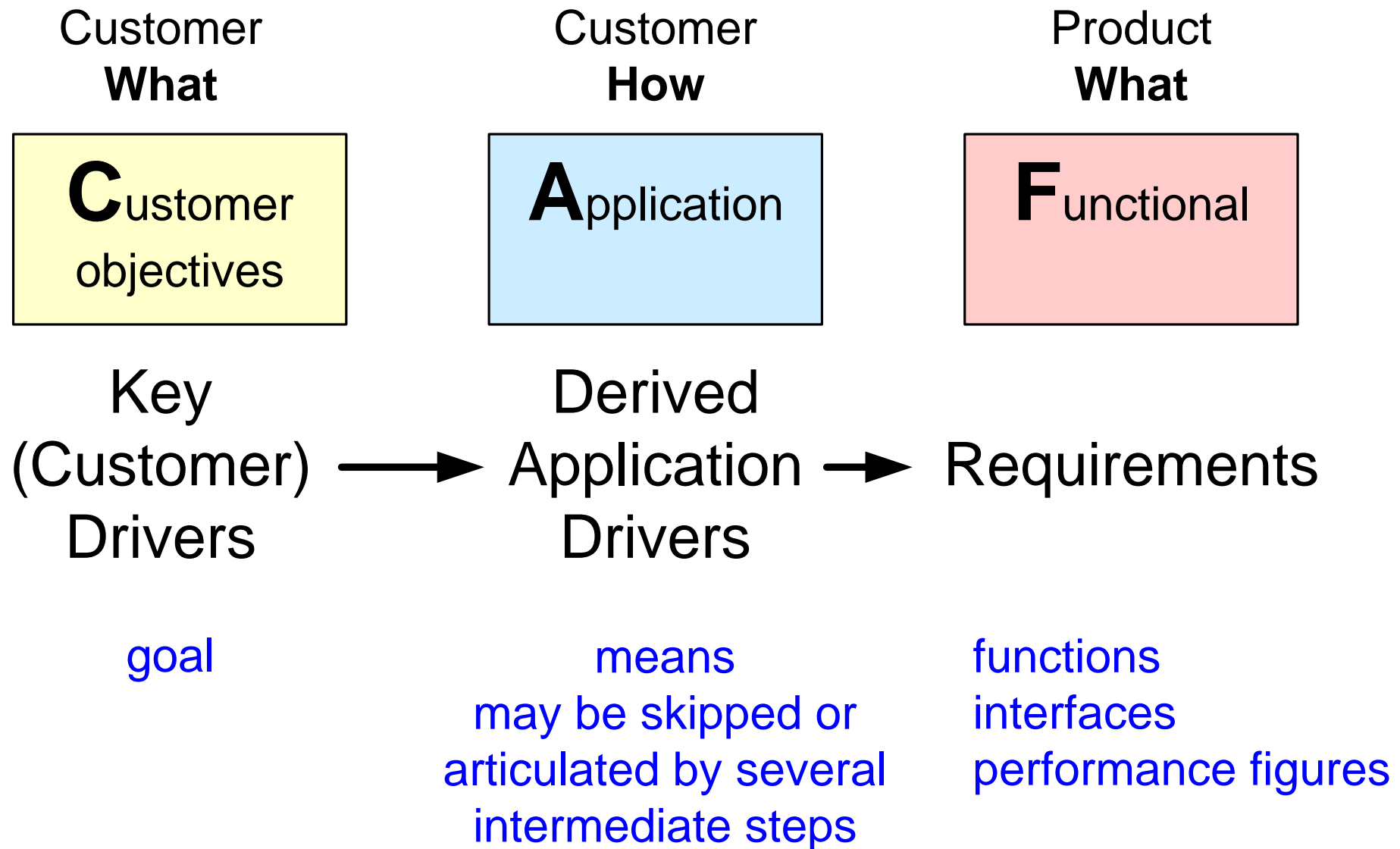
- |                                                                                                            |                                                                                                                      |
|------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| • 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

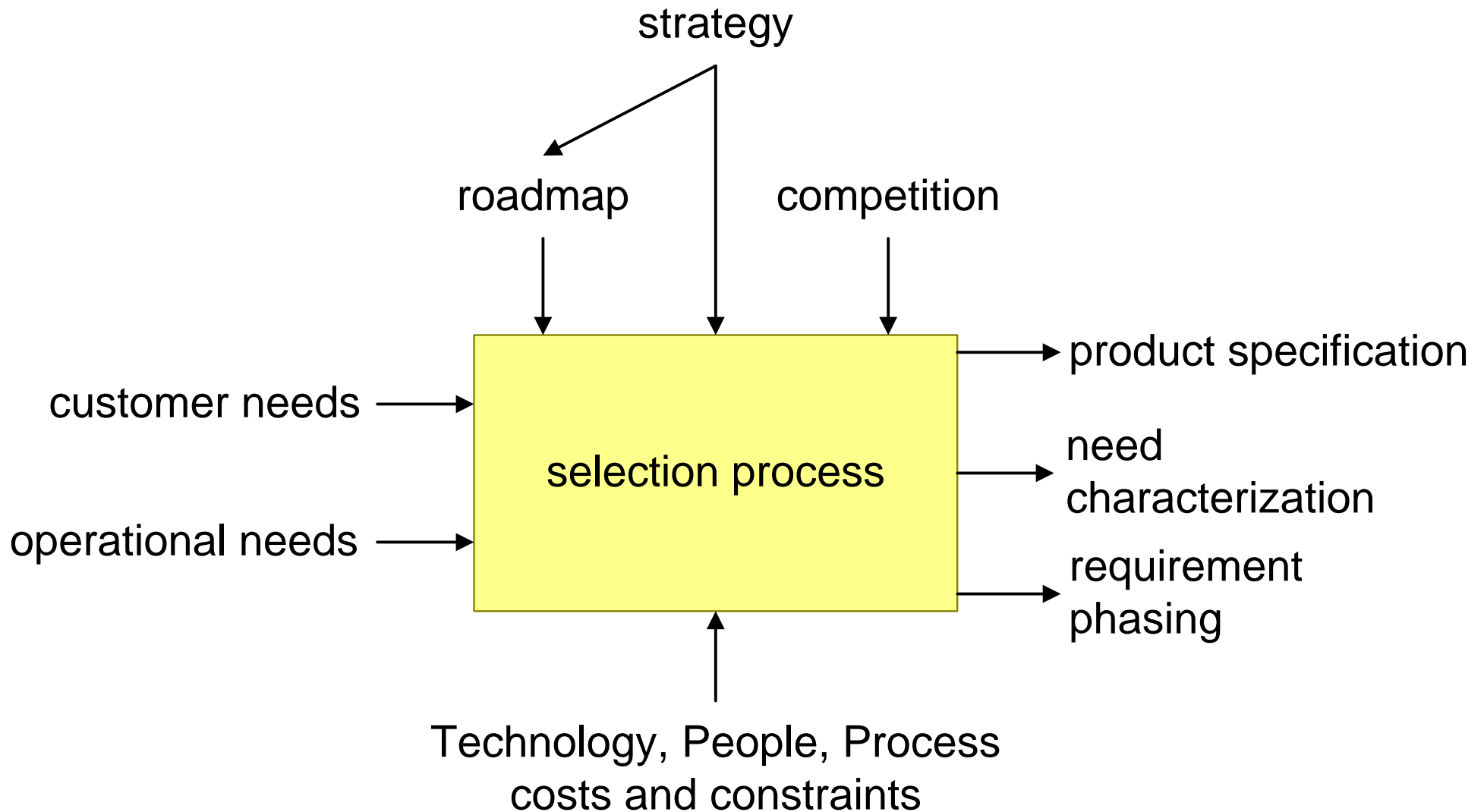
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- Limit the number of key-drivers minimal 3, maximal 6
- Don't leave out the obvious key-drivers for instance the well-known main function of the product
- Use short names, recognized by the customer.
- Use market-/customer- specific names, no generic 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

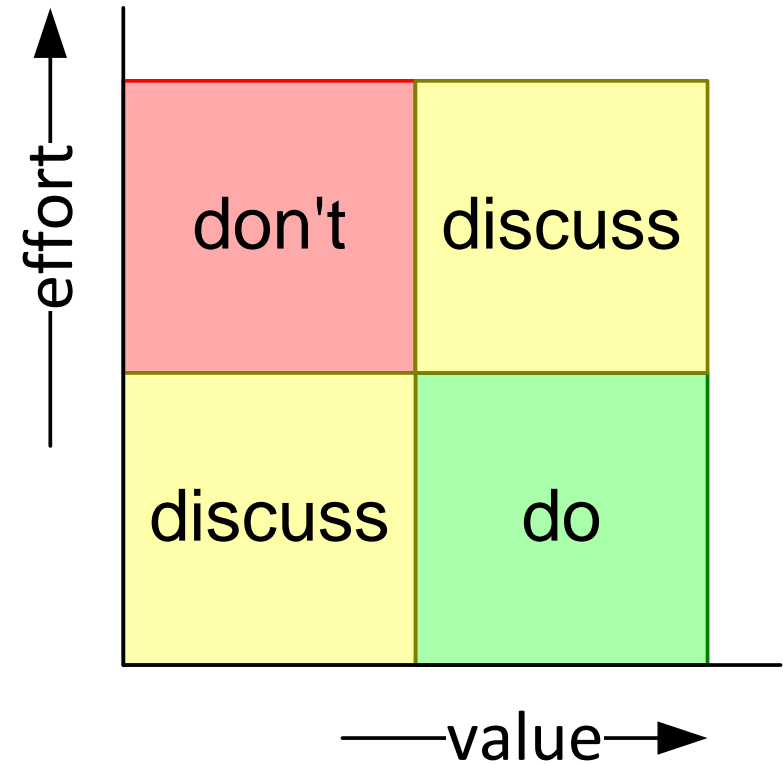
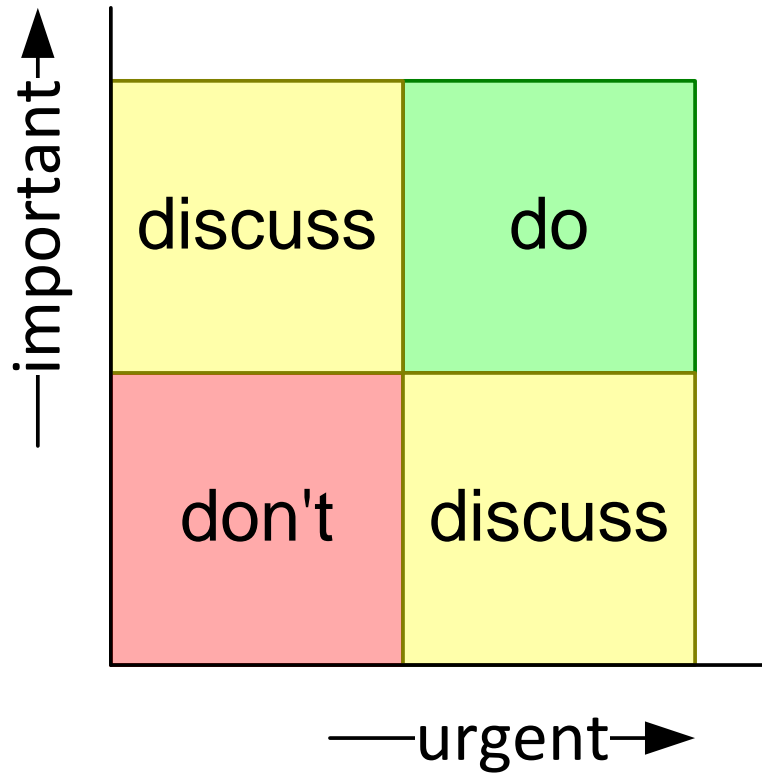
# Transformation of Key Drivers into Requirements



# Requirement Selection Process



# Simple Qualification Method



# Examples of Quantifiable Aspects

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- 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)