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COST CLARITY CREATES PROFIT

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The way from a parametric estimate to a CAD-driven calculation

ICEAA International Symposium

Bristol, October 17-20

Joachim Schöffer

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It is not the **strongest** of the species that survive,

nor the most ***intelligent***,

but the one most ***responsive to change!***

Charles Darwin

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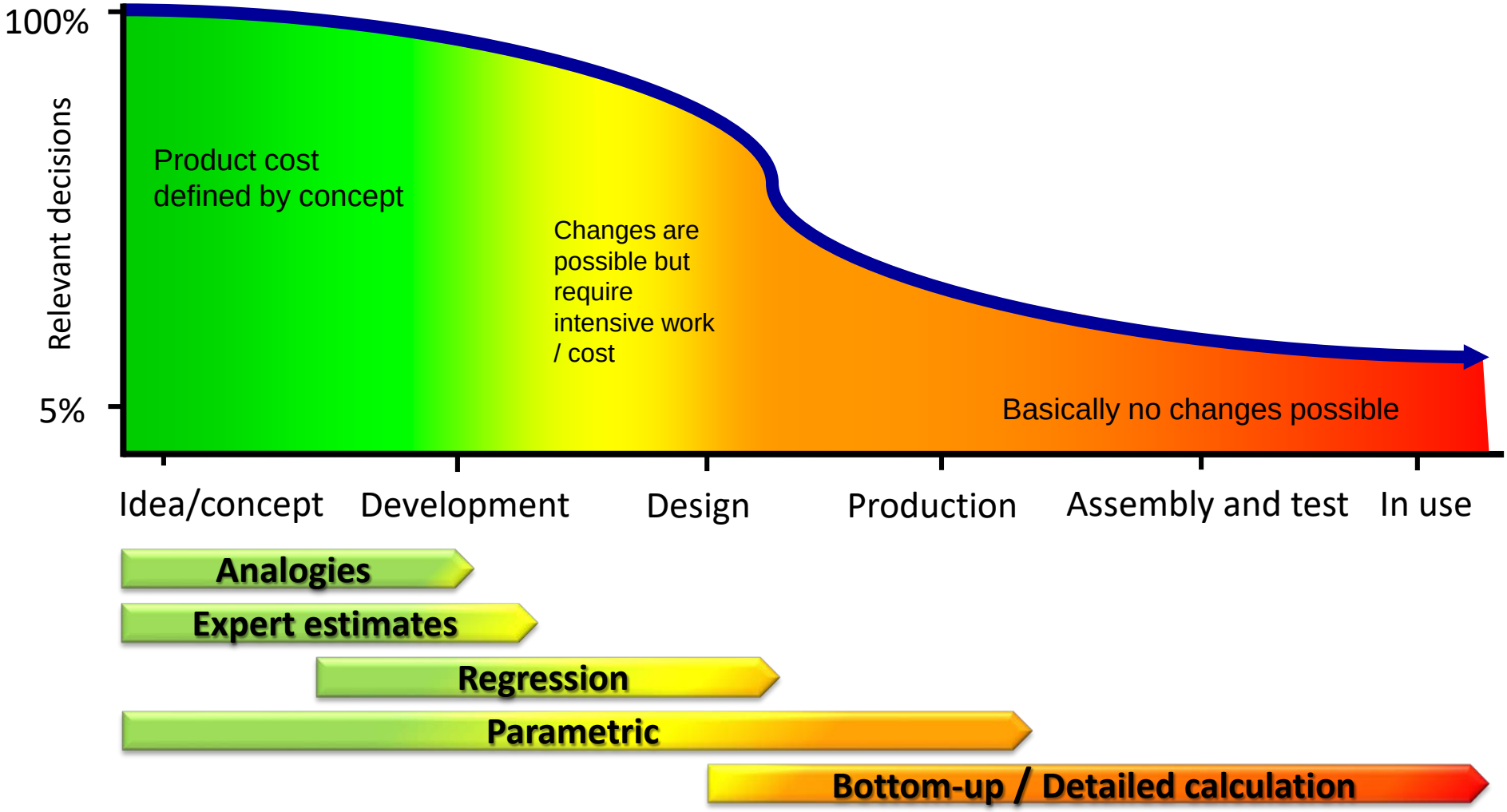
Initial situation



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Main requirements

Purchasing departmant:

1. Identify potentials quickly

2. Negotiate on the basis of detailed workplans

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Main requirements

Development department:

1. Value technical alternatives in early phases

2. Calculate detailed cost scenarios based on detailed designs

Main requirements

Sales/Marketing department:

1. Budgeting and setting targets

2. Negotiate detailed cost breakdowns

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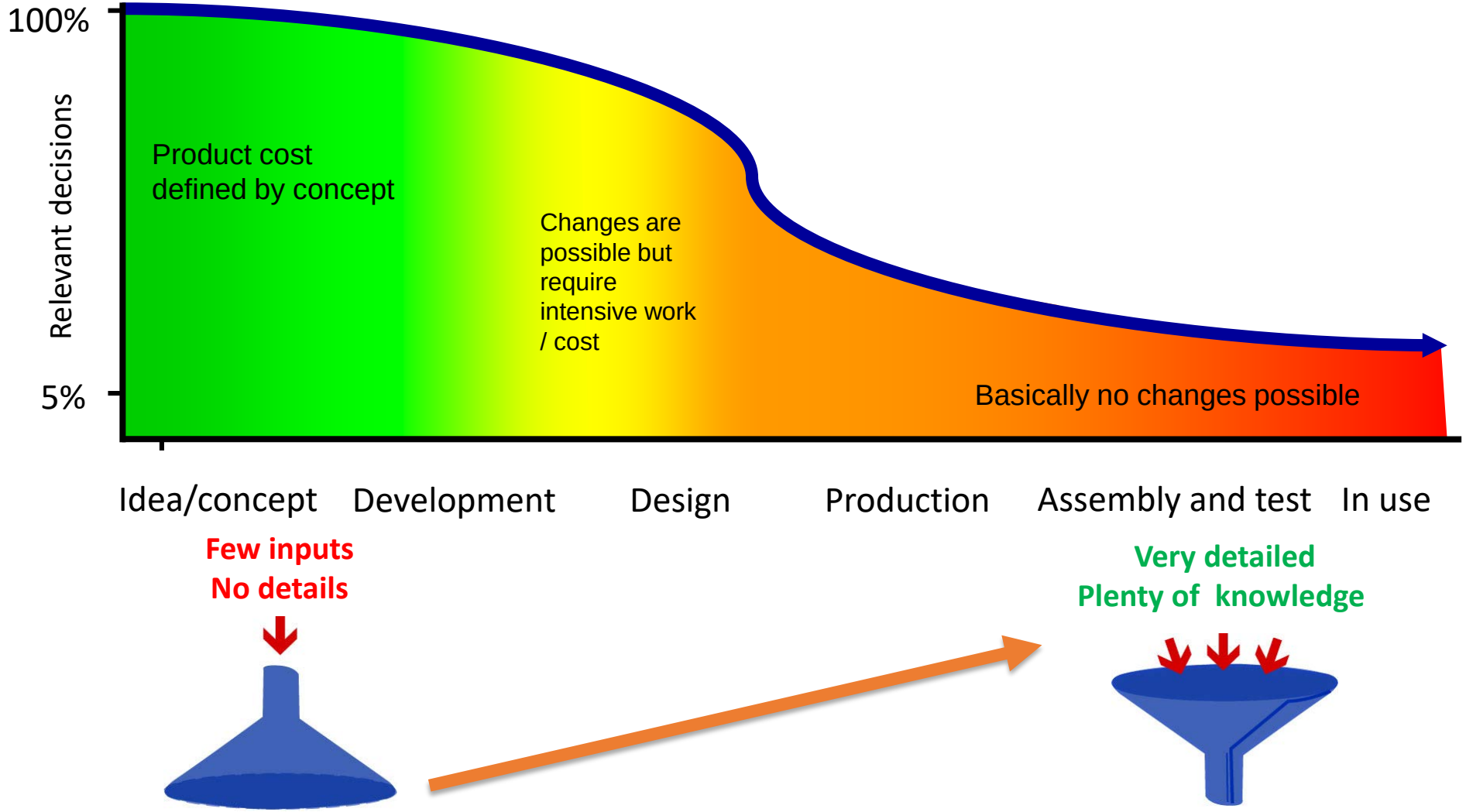
Dielmma of product life cycle



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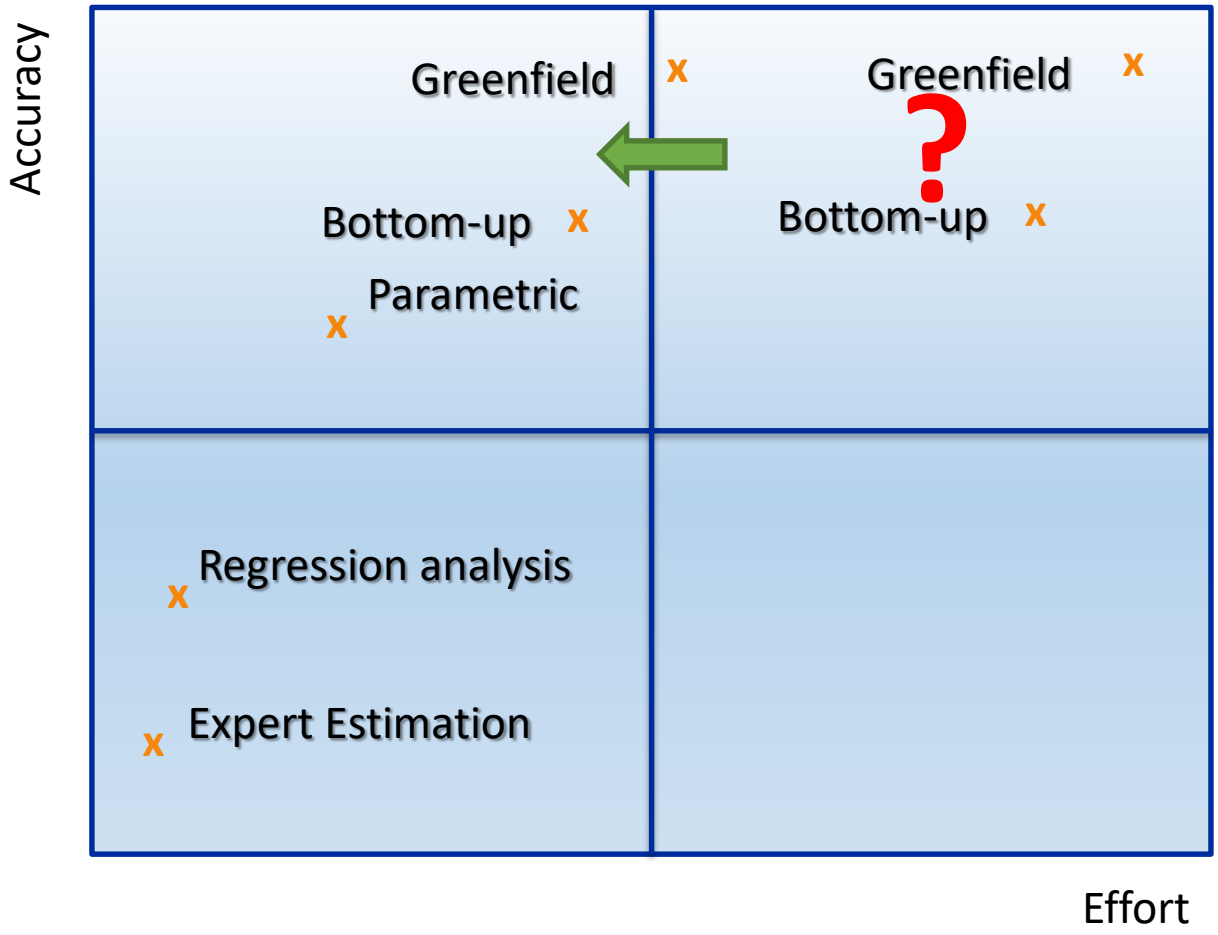
Situation -> Task



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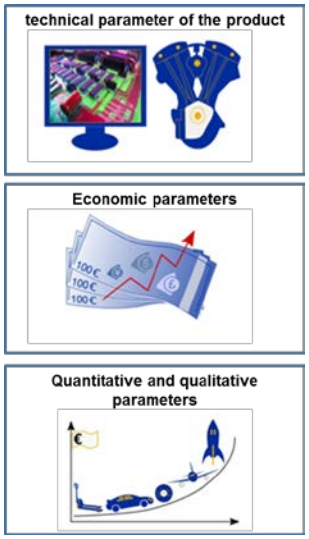
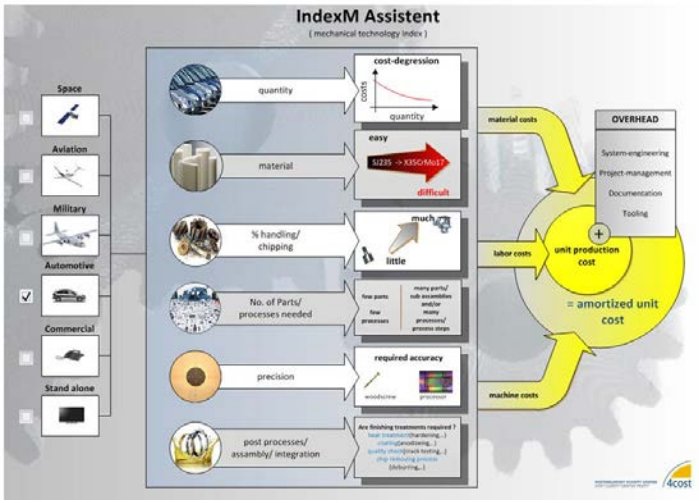
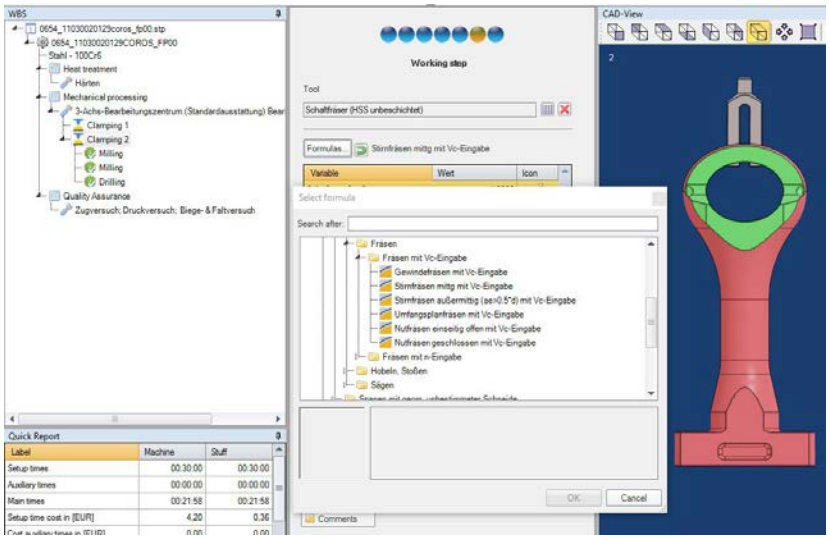
Transition (classical parametric to CAD-driven bottom-up)







Parametric

Semi-bottom-up

Detailed – CAD-driven

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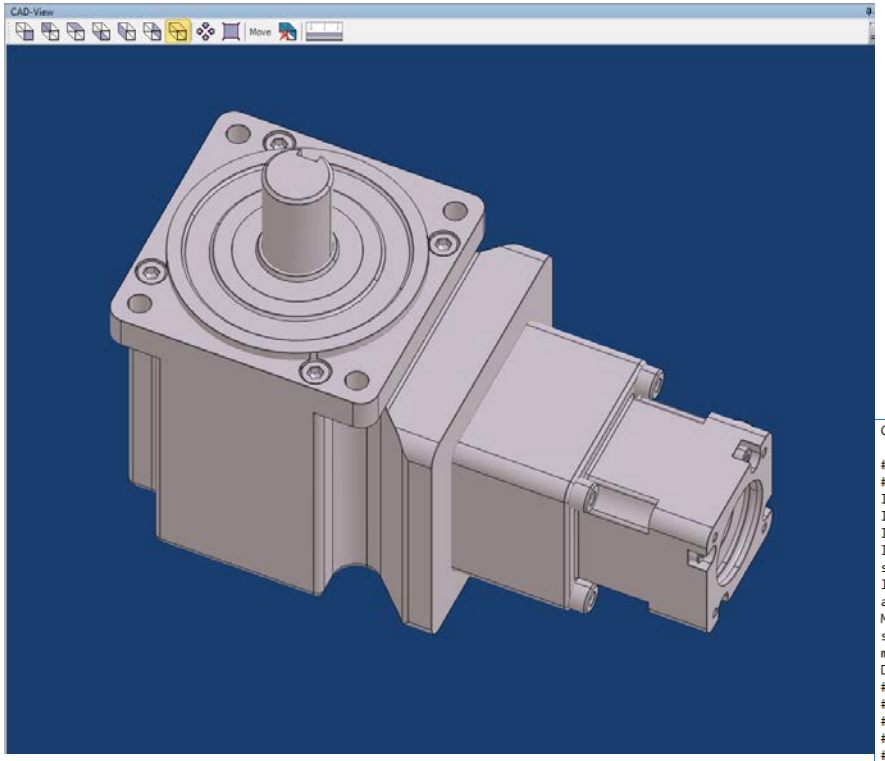
Step 1: Multidim. CER for analysing 3D-CAD-Models



CER = f(#Sub Shapes
#sig. Points
#Components
#Solids
#Shells
#Wires…)

Collected Information from Step Data

#Childs..... :	0
#Refs..... :	8
Is Assembly..... :	0
Is Compound..... :	0
Item global Precision.. :	0,000010
Item spez. Precision.. :	1,000000
spez. Precision Type.. :	(test entry)Coaxialit
length conv. fac.....:	1,0000
appr. Weigth..... :	0,363701
Material Name.....:	n/a
sepec.Weigth.....:	not specified (set to 7.8 Steel)
max Dimension (mm)..... :	97,39
Dim Type..... :	3D
#Sub Shapes.....:	2
#sig. Points.....:	4576
#Components.....:	1
#Solids.....:	2
#Shells.....:	2
#Wires.....:	513
closed.....:	513

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Author: 4Cost - Joachim Schöffer 2

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€ (2016) without escalation

Production costs HW/piece	
Purchased costs	0
Item Material Cost	91
Item Labour Cost	13
Item Machine Cost	6
UPC	**110**
Prd Overhead	15
Amuc (incl.overhead)	**125**

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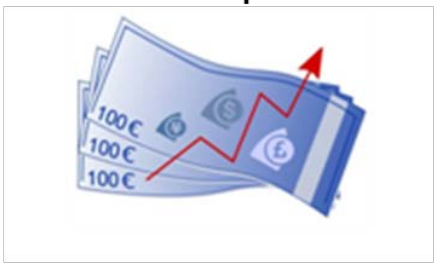
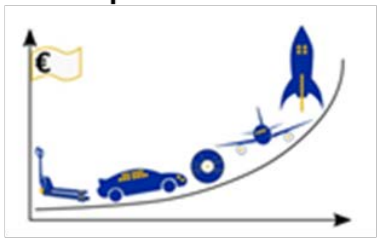
Step 2: Transition (classic parametric -> semi bottom-up)

technical parameter of the product

Economic parameters

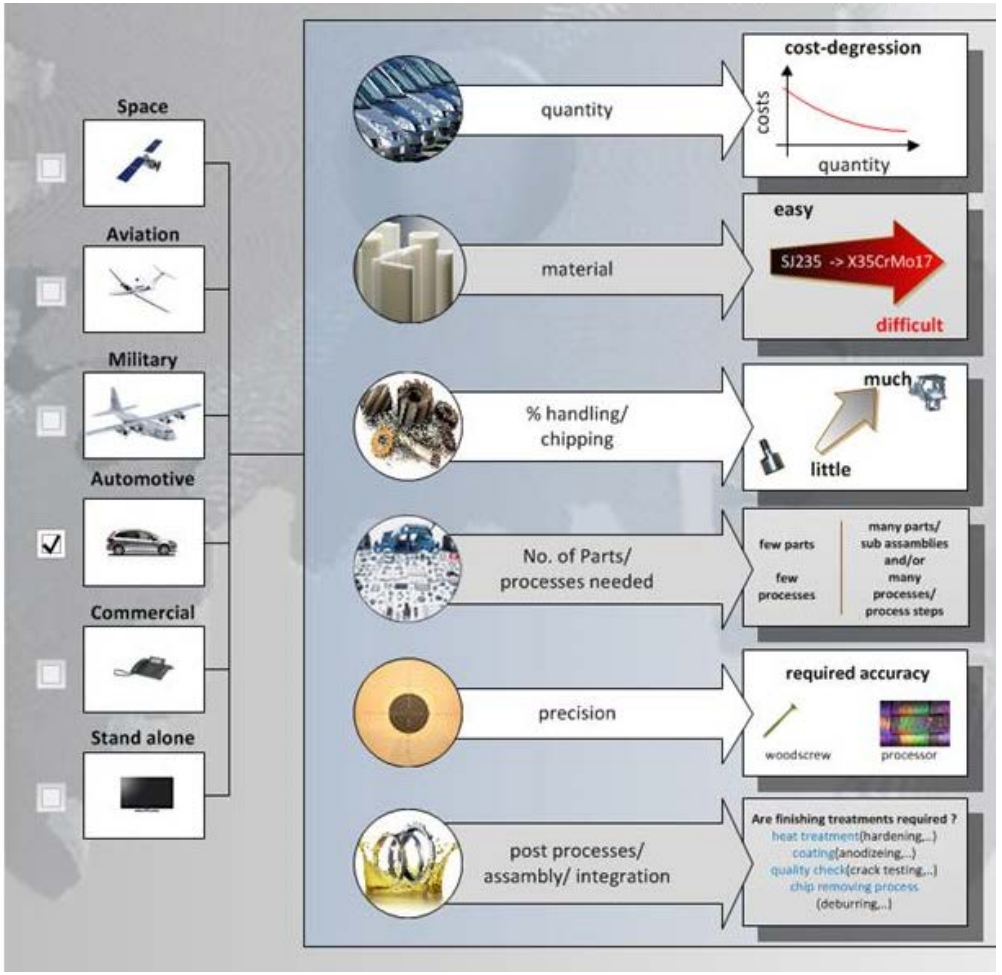


Quantitative and qualitative parameters



Detailing the parameters (Submodel):

Complexity = f (quality, scrap, precision, learning curve, stable mfg-processes, machinability, additional processes…)



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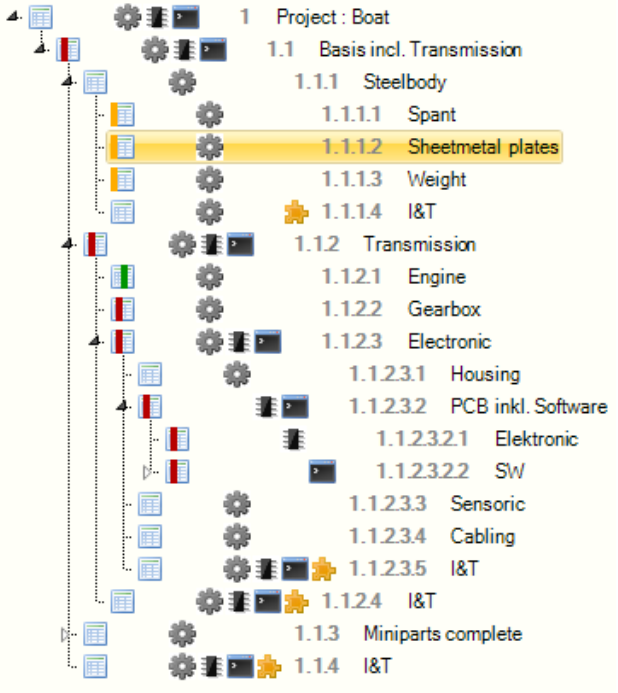
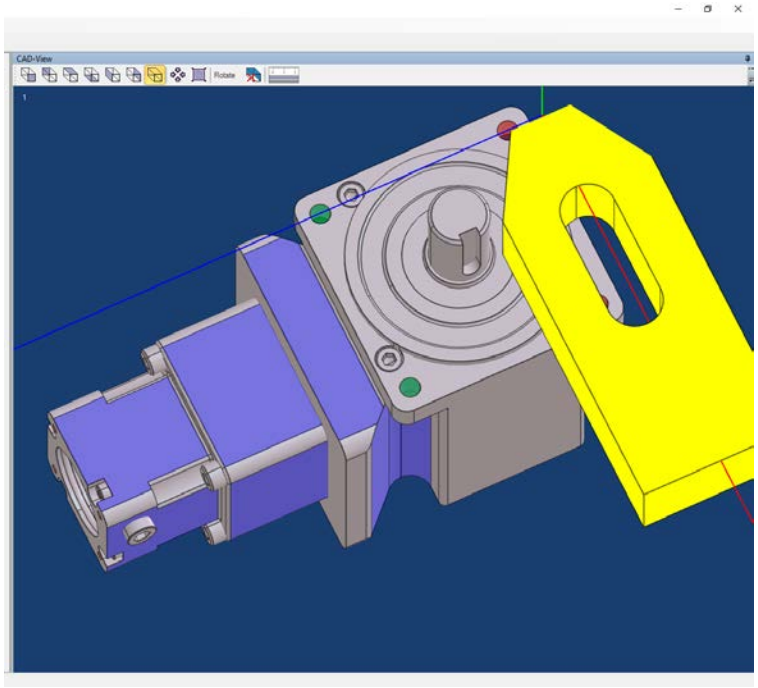
Step 3: Transition (parametric -> CAD-driven calculation

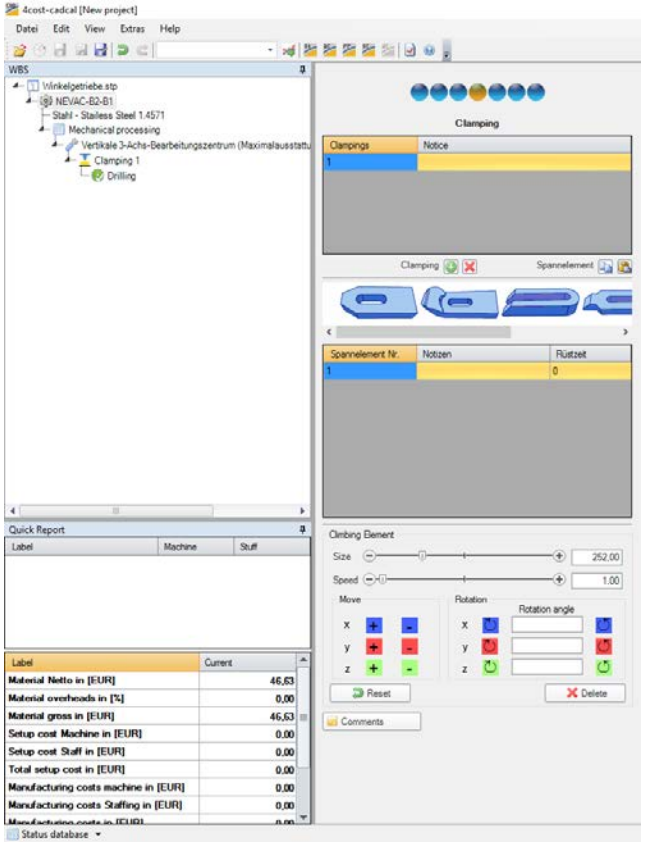
WBS
(Parametric)





CAD – Import
Feature recognition

Detailed Working plan
(Bottom-up)



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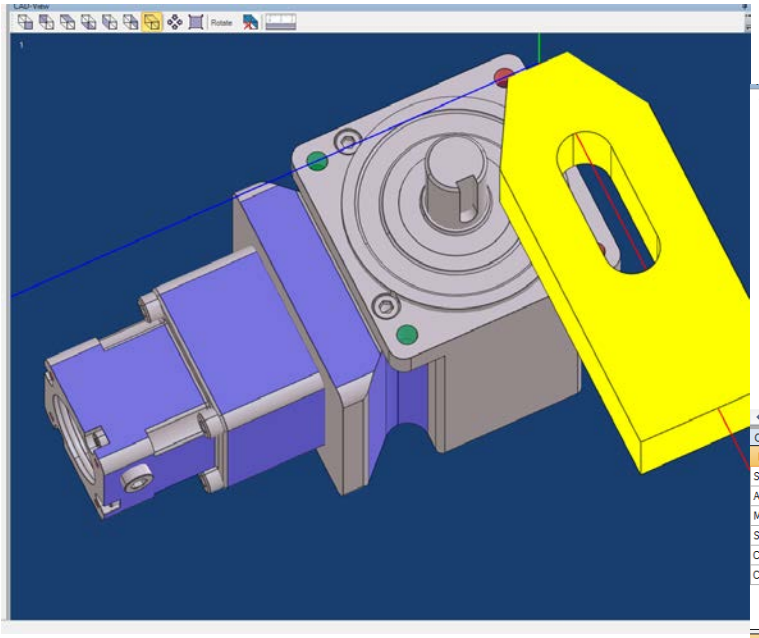
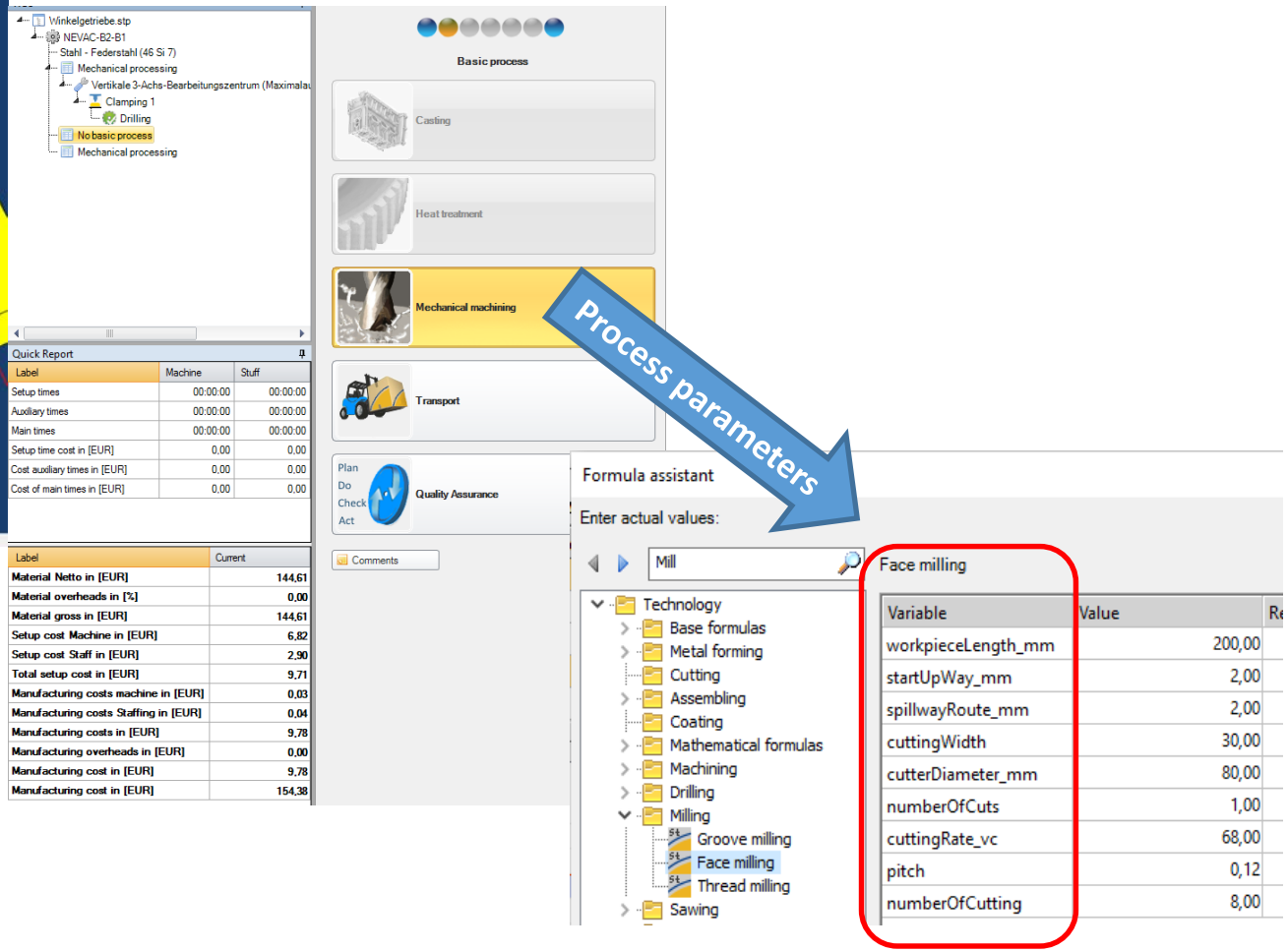
Step 4: Detailed parameters for process calculation



Detailed process plan



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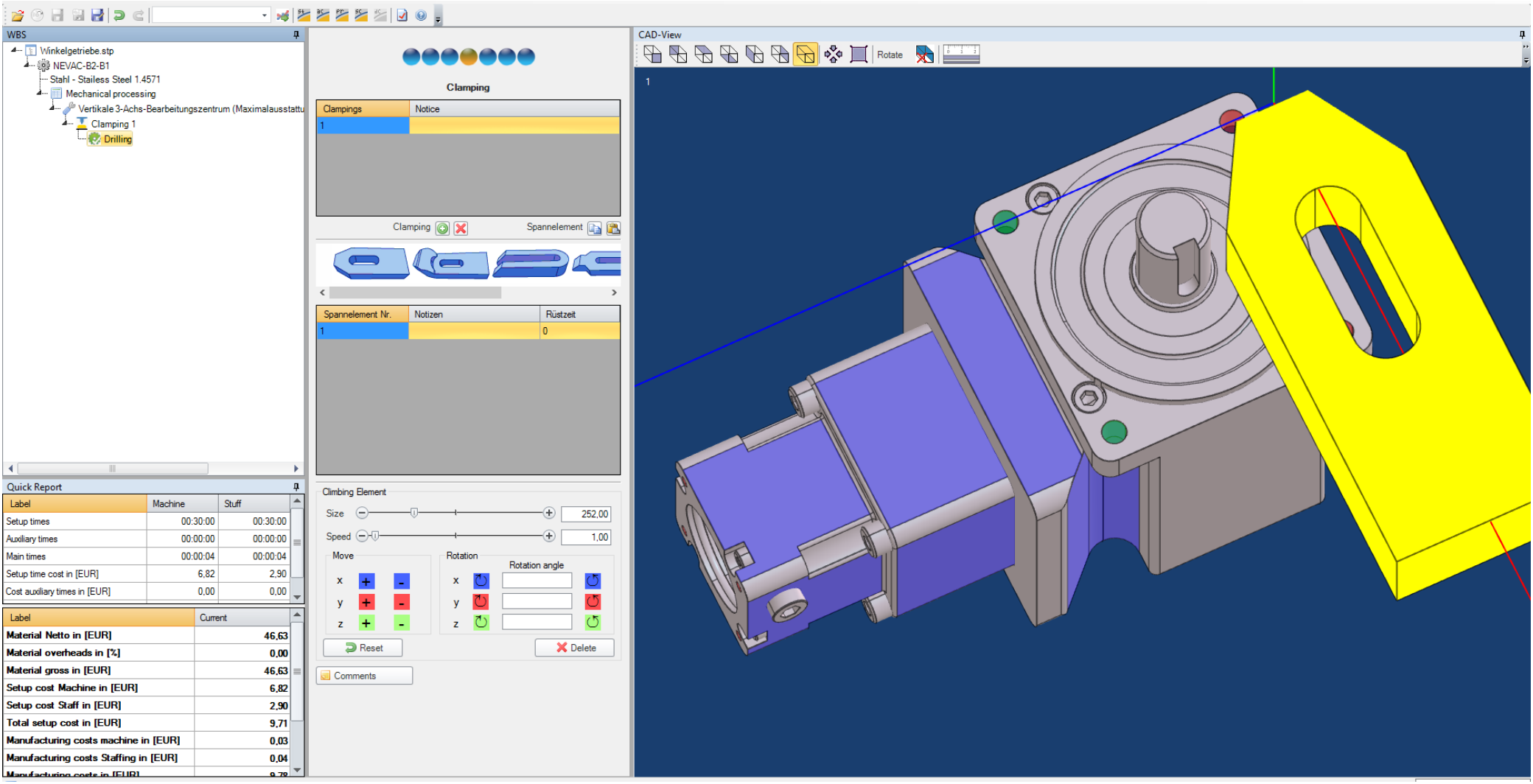
Transition



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Result

Purchasing departmant:

1. Identify potentials quickly ✓
2. Negotiate on the basis of detailed workplans ✓

Development department:

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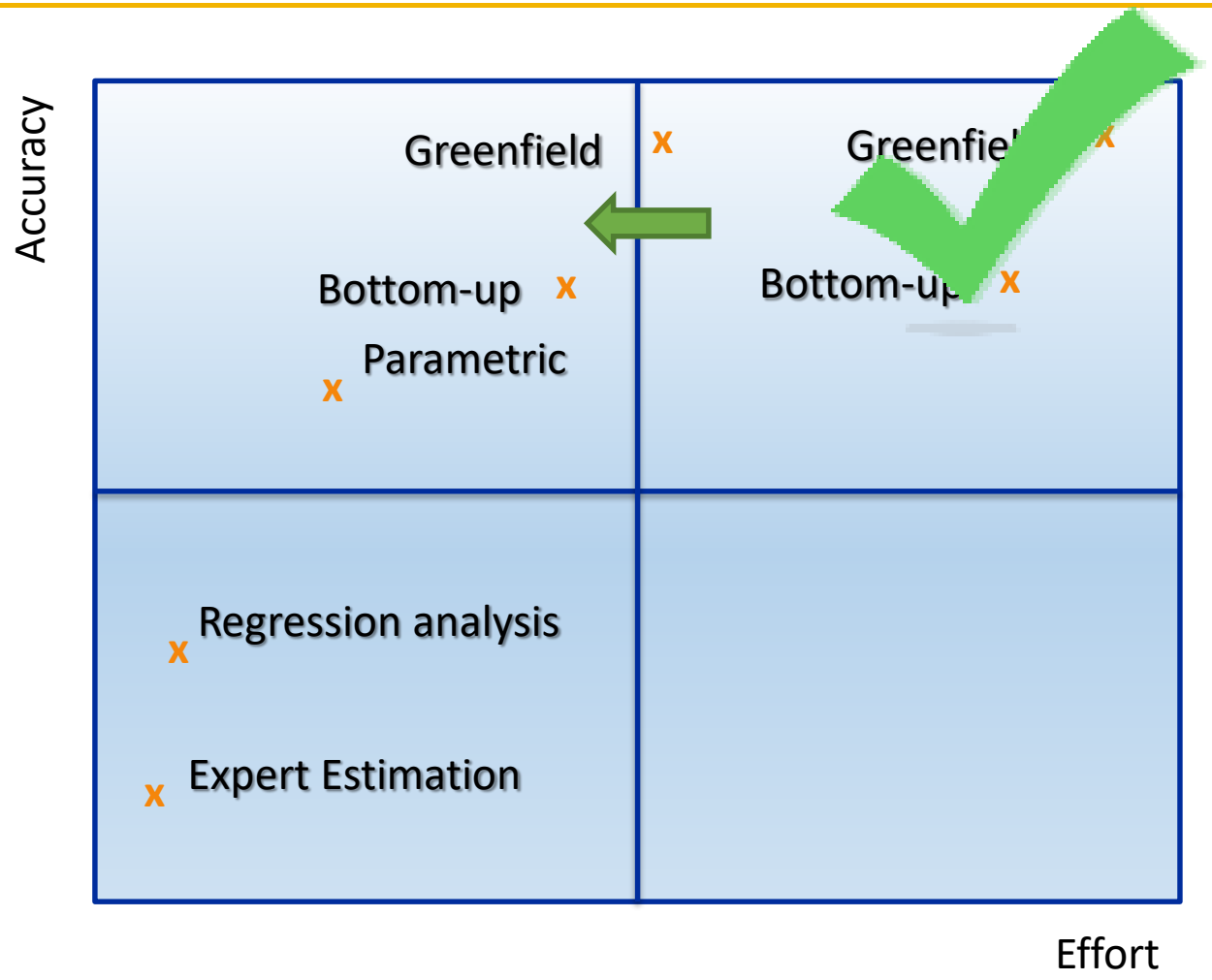
Result



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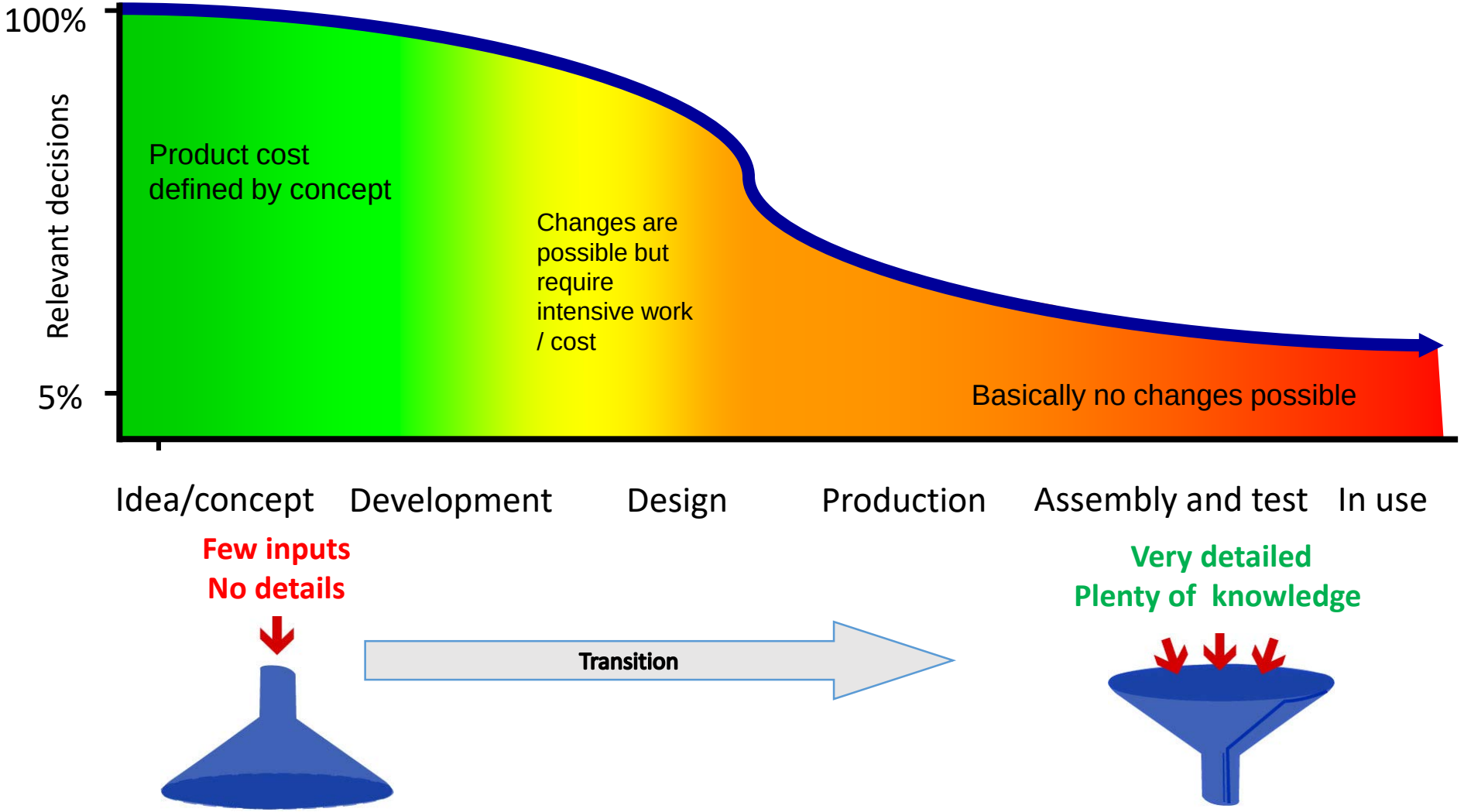
Result



Outlook

Next steps:

1. **Additional basic processes (forging, sheetmetal, electronics …)**
2. **Automate the working plan generation**
3. **Learning algorithm to suggest „best-in-class“ calculation**

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Thank you for your attention

http://www.4cost.co.uk/en

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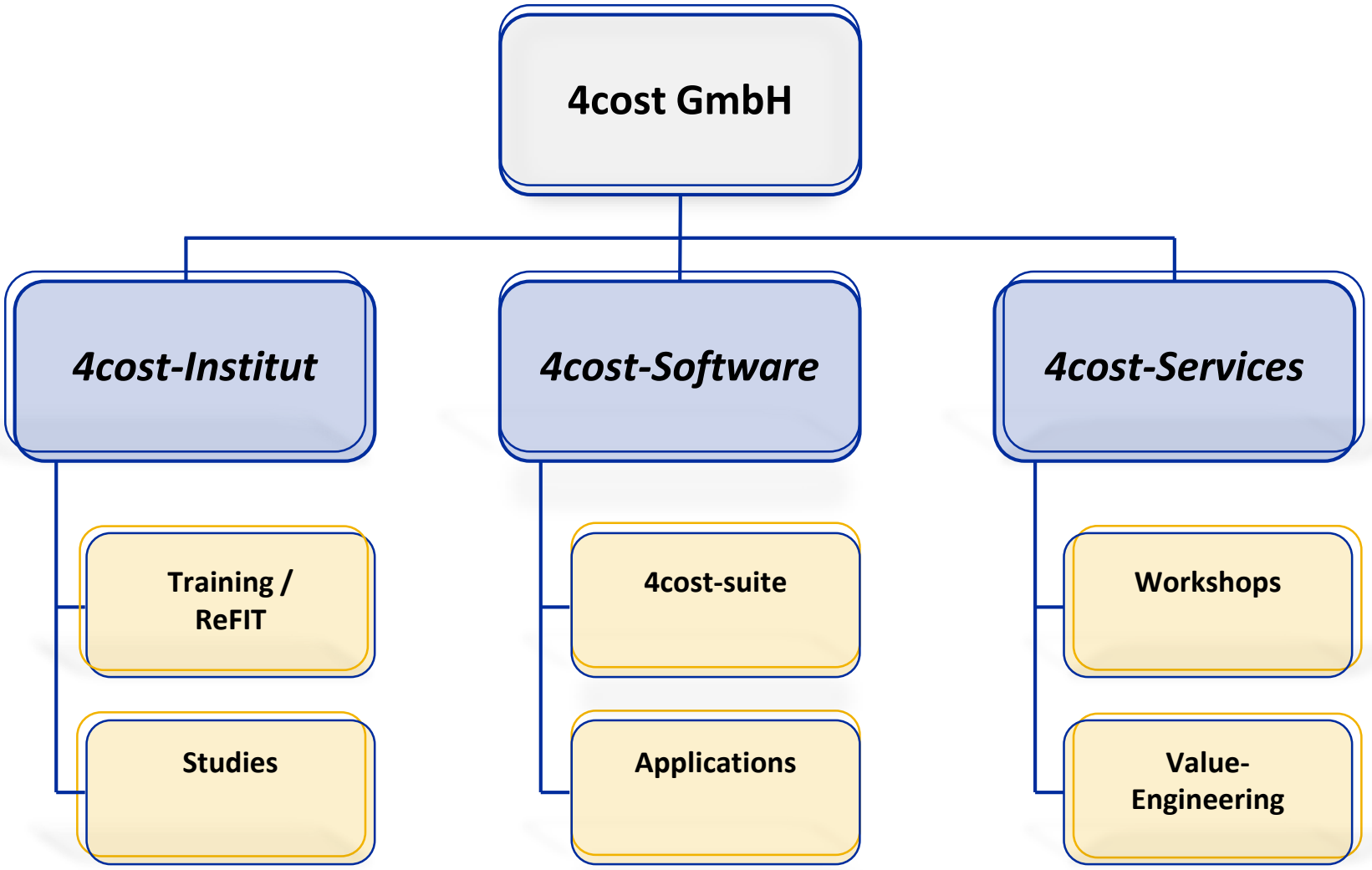
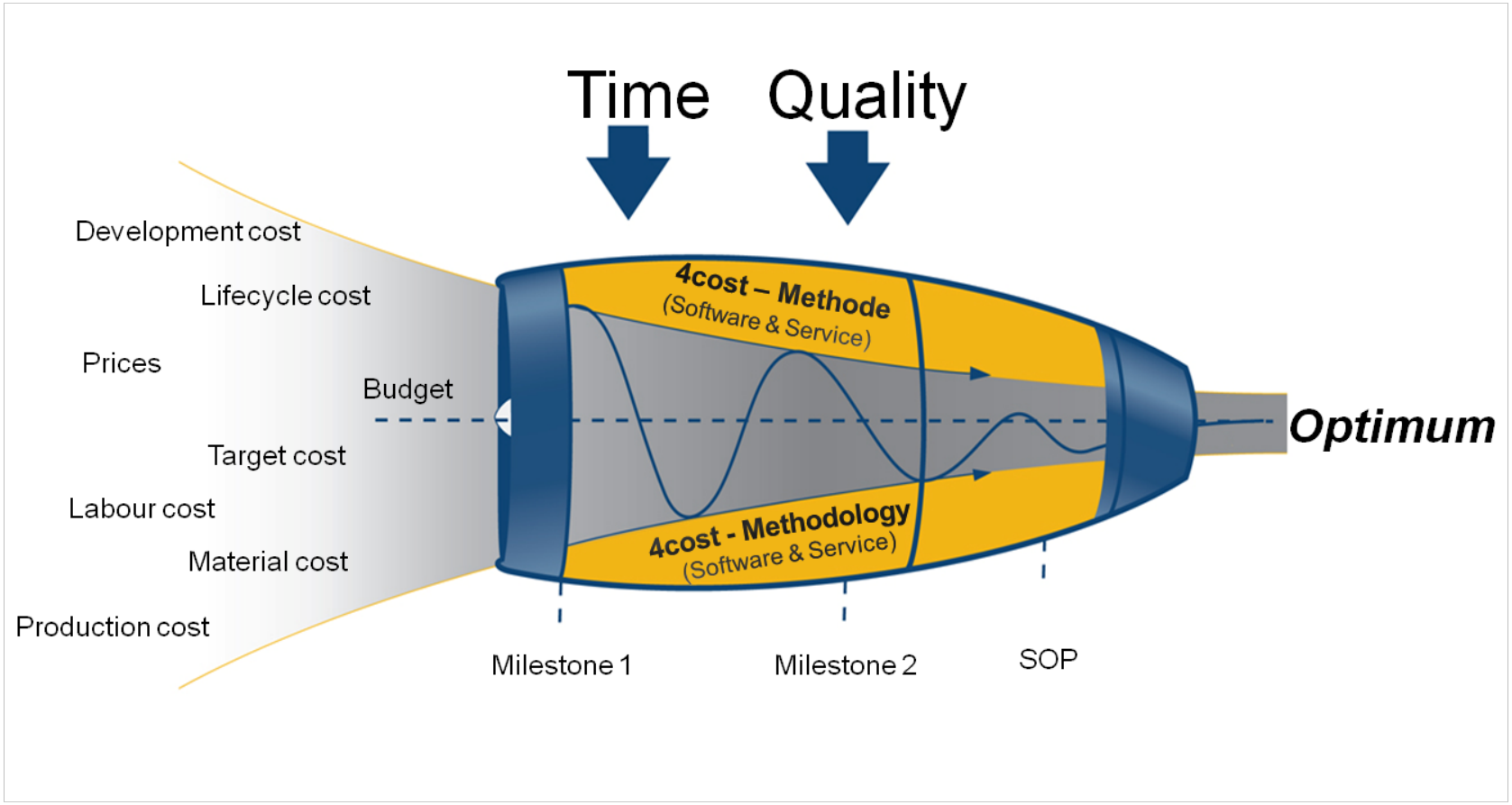
Backup



Using 4cost models optimizes timeline and product quality



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Die integrierte Methode