

# **Computer Aided Cost Engineering**

26 September 2019 Huub Ehlhardt | Vanderlande, Soest

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# **Computer Aided Cost Engineering**

### Content

- > Digitalisation new tools
  - Shift to digital
  - Overview of some CACE tools
- > How is it used and evolving
  - Cost over the Product Life Cycle
  - Evolution in CACE software
  - Conclusion & Discussion

#### shift to digital



# Adaption of modern tools has increased our productivity, but also changed way of working



#### Related applications

- Email
- Publishing tools
- Presentation tools
- Etc.

#### Change in WoW is 'irreversible'

What will happen with **Cost Engineering?** 

- Computer Aided Manufacturing
- Rapid Prototyping
- AM
- Visualization tools
- FEM analytical tools
- Etc.

# **Digitalization of tools increases productivity** *What's happening with cost estimation tools?*



Mechanical type writer

Cost estimation tools are still developing



Slide ruler, pen and paper.



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WordStar. since

First market lea

24% of the wor

*Electronic calculators, since early 1970s* 

Current situation
Various solutions available from many vendors with mixed backgrounds, but...
No dominant design (in functionality, features, approach etc.).

In general

 No harmonisation, fragmented tool landscape

tool

Spread sheets, since late 1970s



WordPerfect, since 1979. R4.2 overtook WordStar as most poptar. R5.1 (1989) was most popular

#### WoW is 'irreversible'



Cost estimation software, since around 2000s



Evolution expected

- Dominant design appears (in features, approach etc.)
- Growth of functionality and level of automation
  Integration into CAD or PLM suits
- Differentiation of features linked to license models
  Common use through value chain (from data exchange towards cost reference models)

What tools will future cost engineers use?

# Many cost estimation tools available, using different approaches

#### **Automated** – CAD model based / black box



Note, the list of tools shown is known to be not exhaustive.

# Teamcenter Product Cost Management

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Siemens

**ABC** / bottom up / open book







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other

What's The Price

WTP BUYNAMICS

#### overview of some CACE tools

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#### Synopsis

- Fast based on 3D CAD input
- Automatically identify cost drivers in design
- Evaluate design / manufacturing alternatives
- Automatically monitor changing product cost (overnight)
- Black box (less strong in nego support)
- Venture, not yet linked to CAD or ERP vendor

### Cost estimation approach: Automated Costing



# **Teamcenter Product Cost Management**



Cost estimation approach: Activity Based Costing

#### Synopsis

- Requires manual input / detailed
- Very large supporting data set (labor rates, machine rates)
- Evaluate Supply Chain alternatives
- Should cost / open book; strong in nego support
- Part of Siemens PLM suit, expect more CAD based functionality in future



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#### Cost estimation approach: Activity Based Costing

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#### Synopsis

- Requires manual input / detailed
- Very large supporting data set (labor rates, machine rates)
- Evaluate Supply Chain alternatives
- Should cost / open book; strong in nego support
- Linked to SAP

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cost over the product life cycle



# Cost over the life cycle; from concept to phase out



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# **Different types of use will influence functional evolution**



- Types of functionality
- Part cost
- Cost driver analysis
- Evaluation design alternatives
- Mould cost

- Part cost
- **Negotiation support** (should cost, open book)
- Evaluate supply chain scenario's

# IT landscape integration will influence evolution



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# Various trends in CACE software

# Types of use

- Two different approaches emerge;
   CAD based (automated) ↔ ABC / bottom up / open book
- Integration in suit of business applications (around CAD, PLM, ERP)
- Professional software houses ↔ consulting firms

## General

- Digitalization progressing applications getting more advanced
- Enterprise Data Warehouse > linking of various databases & systems; allows to derive more information from data
- Master Data > needs to be managed, roles to be defined, interaction with Purchasing function

## Is Computer Aided Cost Estimating mature yet?

The use of CACE will .... change way of working in cost engineering!

... bring faster insight in should-cost, evaluation of alternatives >> more cost transparency

- ... a need to maintain master data available in CACE software (material cost, OH levels etc.)
- ... evolve over time. Current software is showing no standardization yet in approach. CAD/PLM vendors might integrate CACE in portfolio's.
- ... ultimately change relations in supply chains (towards a handshake model?)

Standardizing via tools will help to drive a consistent approach, efficient output and reliable costs analysis.

conclusion



# Where does is stop?



# evolution never ends

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