

Concurrent Design & Engineering

A Space System Engineering approach ?

Who am I?

- MSc Aerospace Engineering
- Space System Engineer
- 10 years at ESA Concurrent Design Facility
- 2006: ESA incubator → J-CDS B.V.
- 2011: J-CDS B.V. → RHEA Group



Space System Engineering
Projects, solutions and services
Ground and space systems

Concurrent Design & Engineering
Process and tools implementation
Projects, solutions and services

Critical Infrastructure Protection
Cyber defence operations
Security risk management
System Security Design and Engineering

Cloud
Cloud Deployment
Technology, Products, and Services



Concurrent Design & Engineering a System Engineering approach

Concurrent Design & Engineering is an approach that allows you to:

- include all life-cycle perspectives in a complex multidisciplinary activity from the start,
- structure otherwise chaotic and untraceable multidisciplinary information and decision making during early design phases,
- reduce number and cost of changes in later phases,
- enhance productivity,
- save time and money and
- reduce overall risk

What do you need?

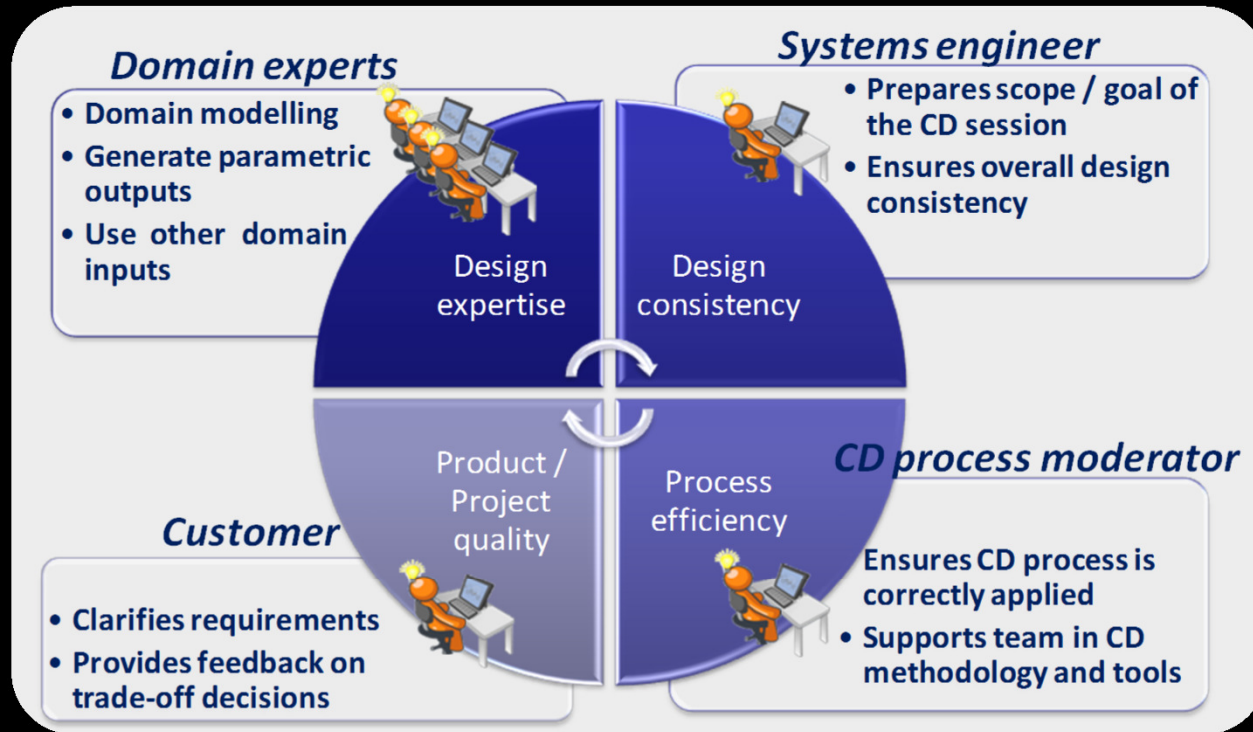
- Multidisciplinary challenge
- Motivated team
- Location
- Toolset
- The CD&E approach/process

→ focus on what you should do, not on what you can do!

Multidiscipline



CD&E roles, responsibilities and rigor



When do you do it?

Originally:

- Feasibility
- Conceptual design

Why?

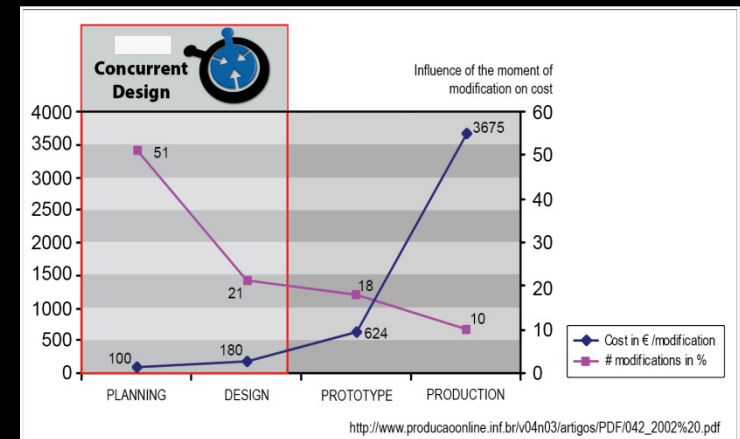
- ✓ Low cost
- ✓ Low risk
- ✓ Rough level of detail
- ✓ Low need for 'offline' work
- ✓ High upside

Trend:

- Detailed design
- Development

Why?

- ✓ Project management
- ✓ Reviews
- ✓ Awareness

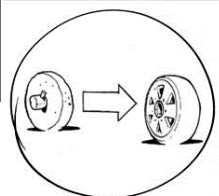
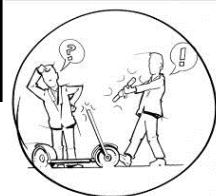
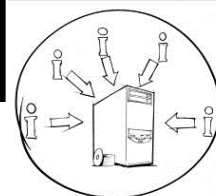
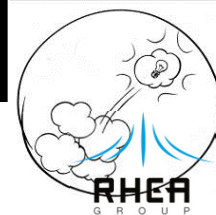
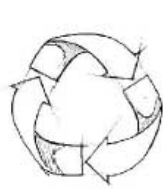
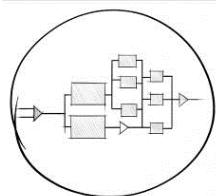


Benefits

Created by Engineers, for Engineers.....and Management loves it!

- Reduction of design/engineering time → product cost and lead time → Time To Market
 - *Increase in profitability*
 - *Improvement in competitiveness*
- Standardization of design results and methods
- Build-up of corporate knowledge in model (maximise re-use)
- Increase design control and audit trail
- Reduction in number of engineering changes during next phases
- Evaluate more product options
- Increase in involvement among employees
- Increase in employee efficiency
- Improvement in product quality
- Higher customer satisfaction

→ More profit, less risk



Case

Implementation of the Concurrent Design & Engineering process at shipbuilder.

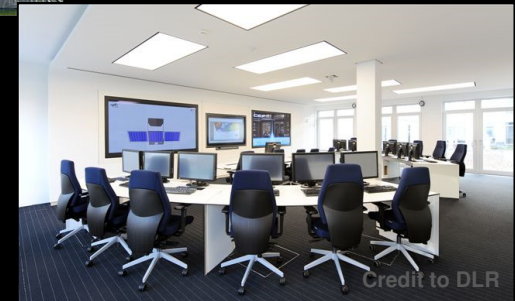
- Pilot + roll-out
- RHEA Group, SBRConsult and ESA

Use of CD&E during:

- Sales
 - Involvement of customer
 - more sales
- Design Development (DD)
 - Better integration
 - Better quality output to next phases
- Detailed Design (DO)
 - Earlier start of long lead items (e.g. casco)
- Engineering
 - More ships per shipyard

Next steps:

- Reduction of DD, DO duration
- Integration of tools



Things to Remember

Be part of the system

- Collaborate
- Anticipate
- Be open
- Do (not only talk)
- Make explicit
- Share
- Learn
- Start at the start

"Do the Right Things"

"Do the Things Right"

"Know-How" and "Make it Known"

Things to Remember

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