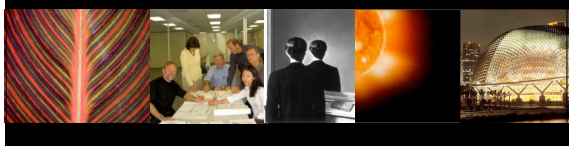
lean design
&
building industry

'The first step towards change is recognition.'
(The way of the wizard- Deepak Chopra, 1995)

ir. E.M.C.J. Quanjel: Architect, TU/e-TNO (KCBS)



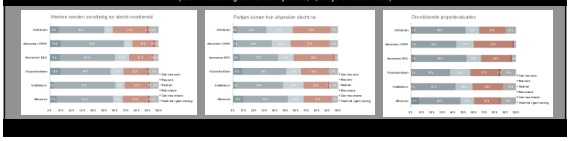
failure costs

facts:
- failure costs > 2001: 7,7 % / 2004: 10,3 % of total market exposure building industry
- total = € 48,4 mln. per year > failure costs = € 5 mln. per year

(USP Marketing Consultancy 2005)

constrains:
- insufficient preparation of work
- not working within agreed / planned circumstances
- no or ineffective evaluation projects and re-use of evaluation
- not enough focus on quality of process and project / development of knowledge and skills

(USP Marketing Consultancy 2005, Quanjel&Zeiler 2003)



waste

facts:
- 50% of all produced materials are used in buildig industry
- 50% of this amount of waste is produced by building industry
- the building industry uses 40% of the energy in the world

(Kristinsson 2002)

constrains:
- fashion
- education
- conservatism
- lack of collaboration

(Erkelens et al. 2002)

change

facts:
- more different clients with different requirements
- more new different technologies, products, materials
- more different participants with different responsibility and knowledge

(van Dinten 2006, Quanjel&Zeiler 2003)

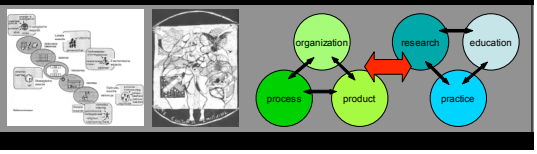
constrains:
to formulate a new methodology for both product- and building design, by using a model approach with practical tools to structure and document knowledge exchange

integral approach

integral approach
combination of product / process / organization / context domain with practice / research / education

- to support building / product design with a process methodology approach
- to formulate a new methodology for both product- and building design, by using a model approach
-to come to tools for collaborative engineering, by using scenario's / workshops / case studies

(Quanjel&Zeiler 2003)

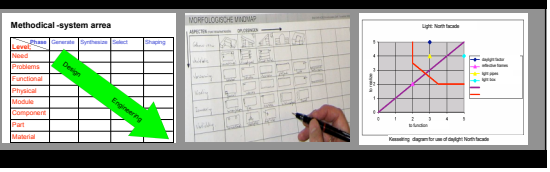


methodic design

design tools for
knowledge structuring / exchange:

morphologic matrices / kesselring method / database structure

(van den Kroonenberg 1978)



ifd

industrial:
efficient use of resources / extending life of products / pollution prevention / recycling and re-use

flexible:
scenario's of performance and priority definition / the thinking in levels

demountable / durability:
tuning to several building-components / preparation of the design-construction-process / knowledge process-performance-pre fabrication
(Habraken 1961, IFD 2000)

learning by doing

knowledge exchange between:
education / research / practice

workshops / training for students, researchers, professionals
(Schön 1983, Savanovic 2005)