

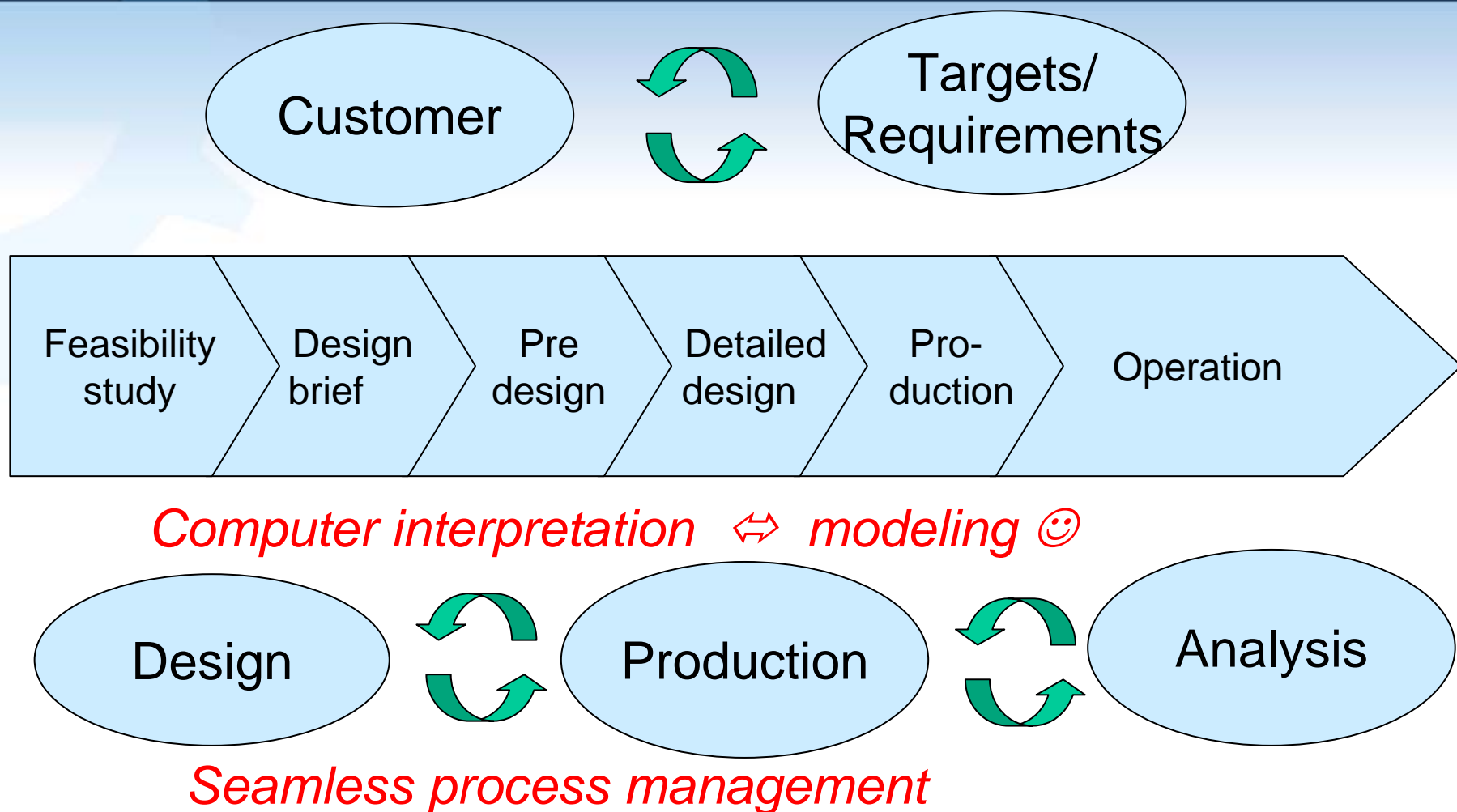
COST Action C21

Modeling and Data Exchange Standards in Construction Industry

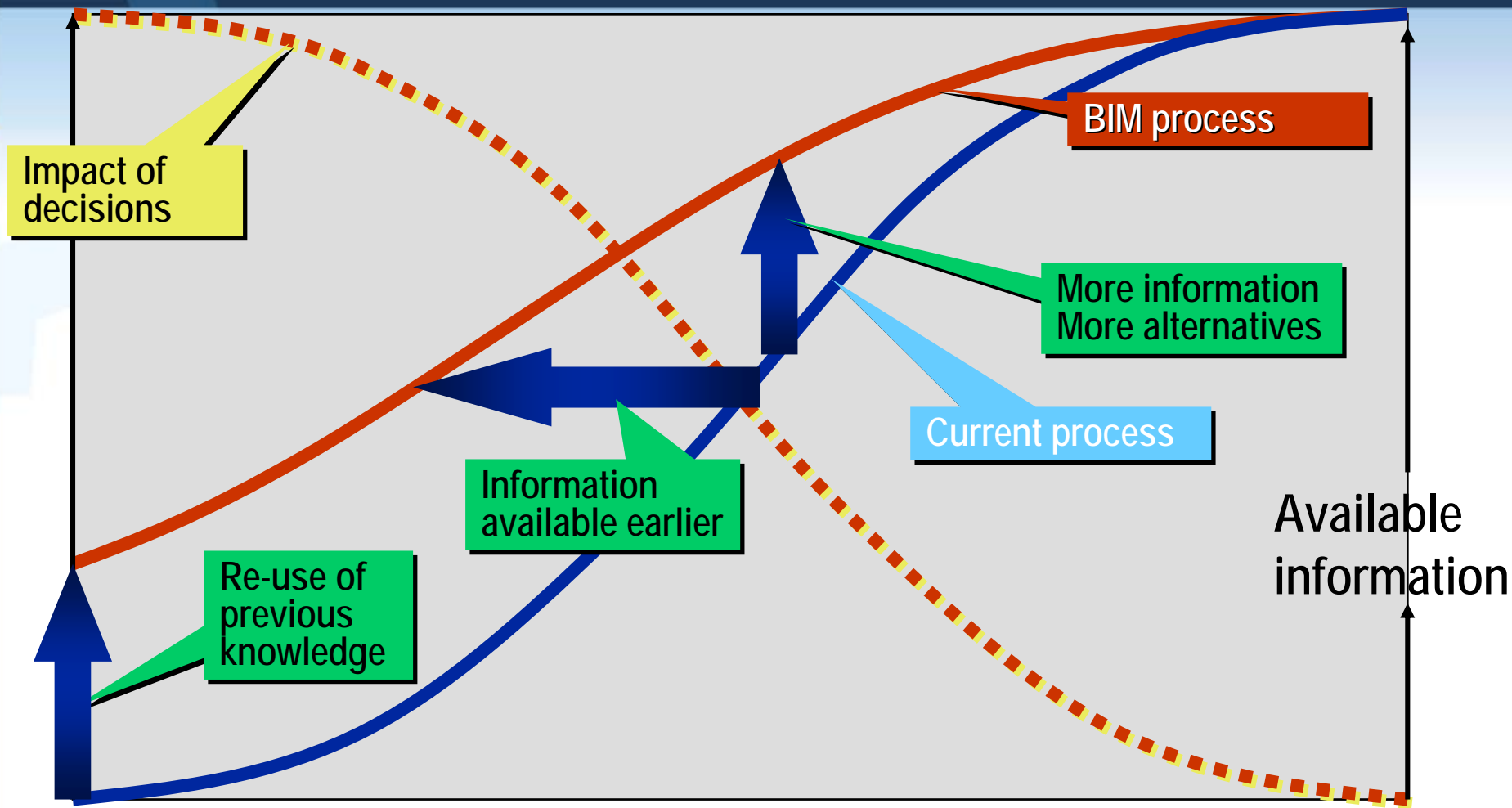
Jarmo Laitinen



The value chain of construction project



Decision Support



Product model-based design

CUSTOMER

Schematic drawings
Animations
Virtual premises



Marketing



Architectural design

Space utilisation plan
Sketches
Working drawings

**PRODUCT
SUBASSEMBLY
PRODUCER**



Structural and
product component
libraries

Structural engineering



Use
Maintenance
Servicing

Service log
Building management
Alteration data



Prefabricated
panel
engineering

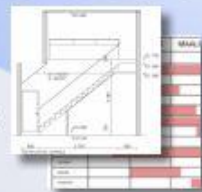


Reinforcement
Panels
Production

Construction

Building automation

Details
4-D time schedules
Simulations



Bills of quantity



Cost estimates
Procurement



HPAC design
Thermal loads

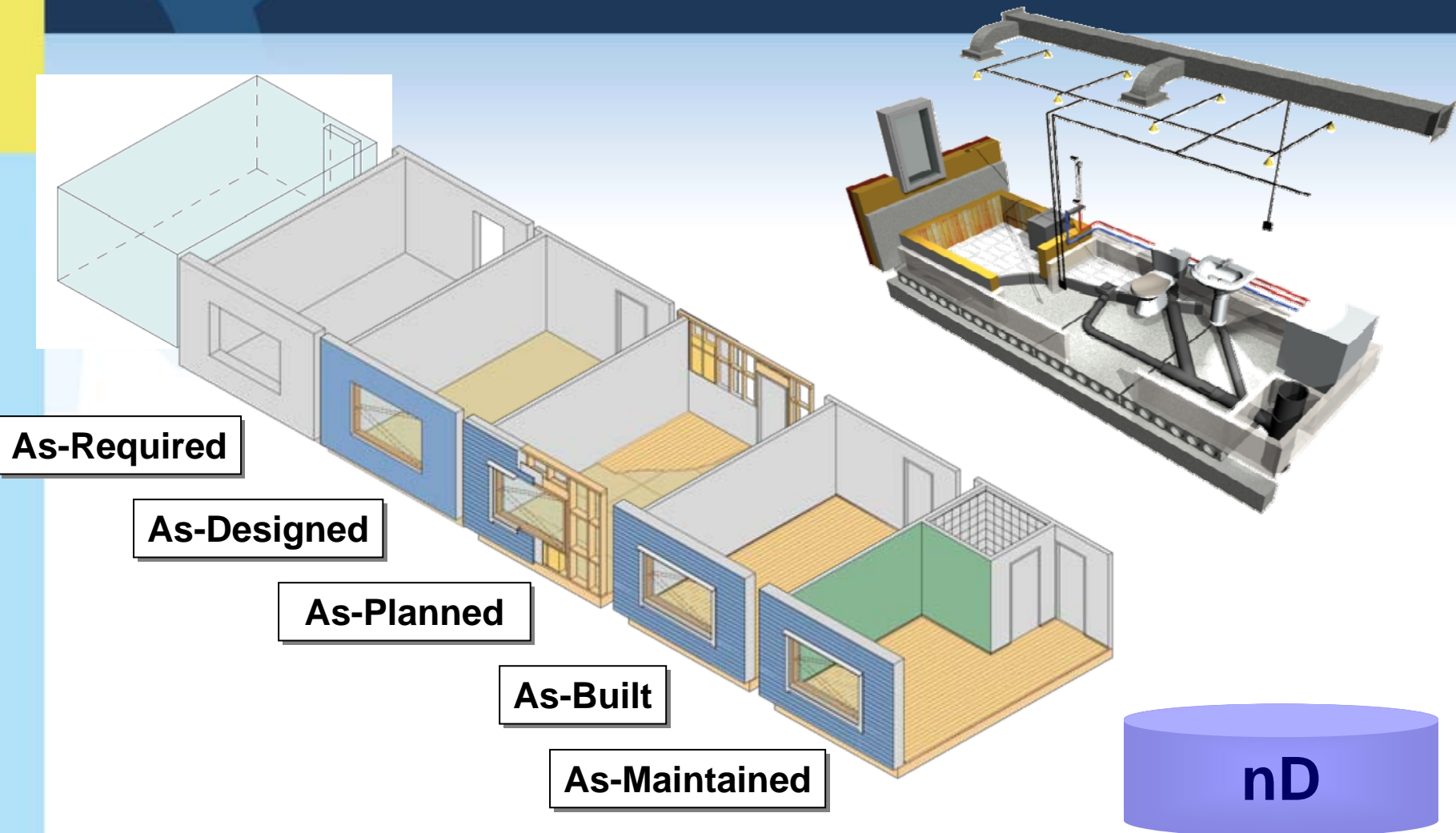
Electrical design
Lightning

JOB SITE

Pictures: M.A.D. Ltd

**SPECIAL
DESIGN**

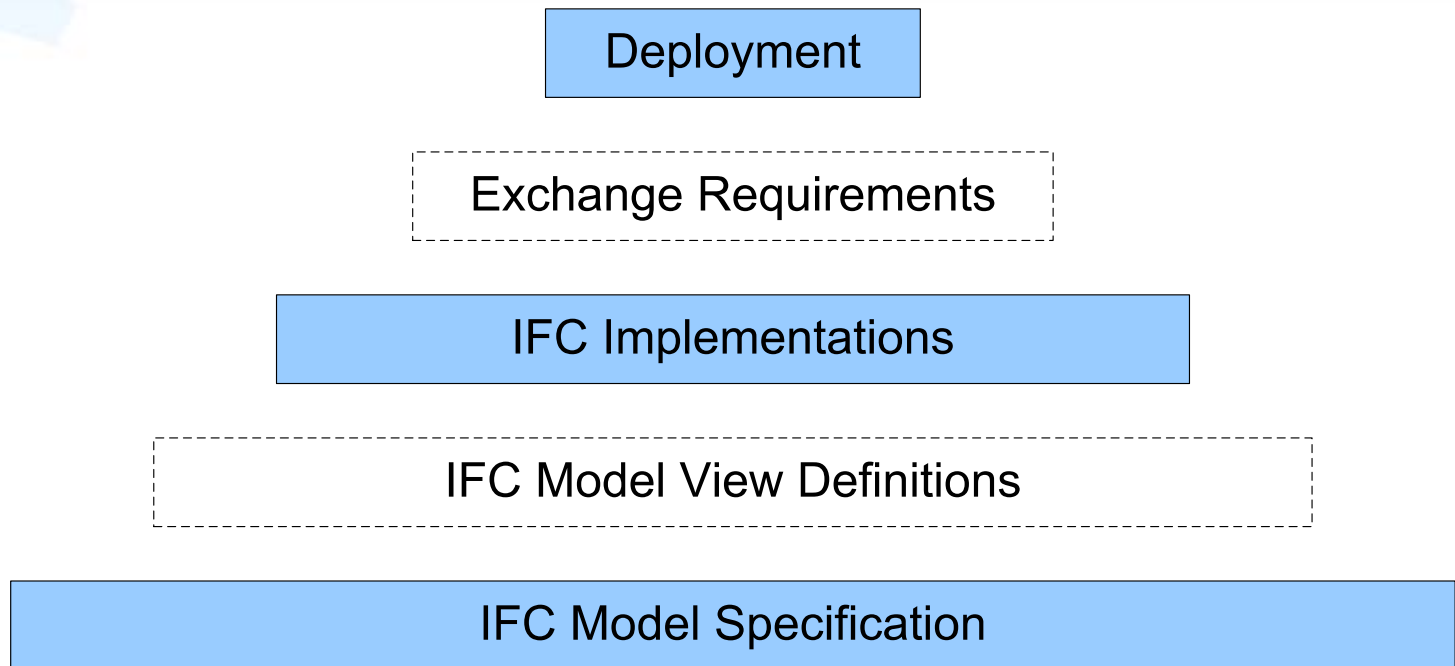
3D and nD modelling

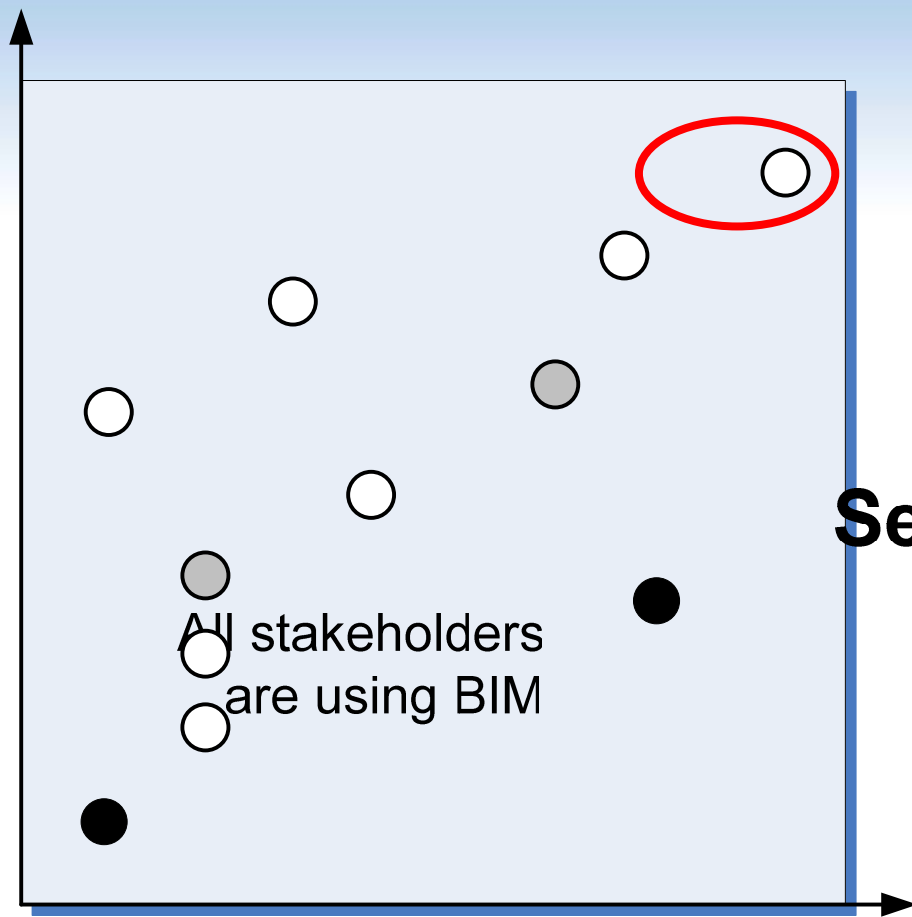


”Common Information Language” - IFC

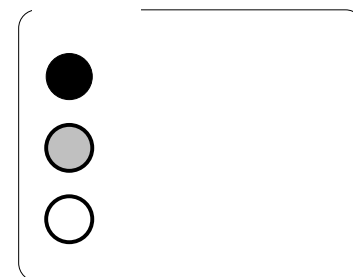


The big picture





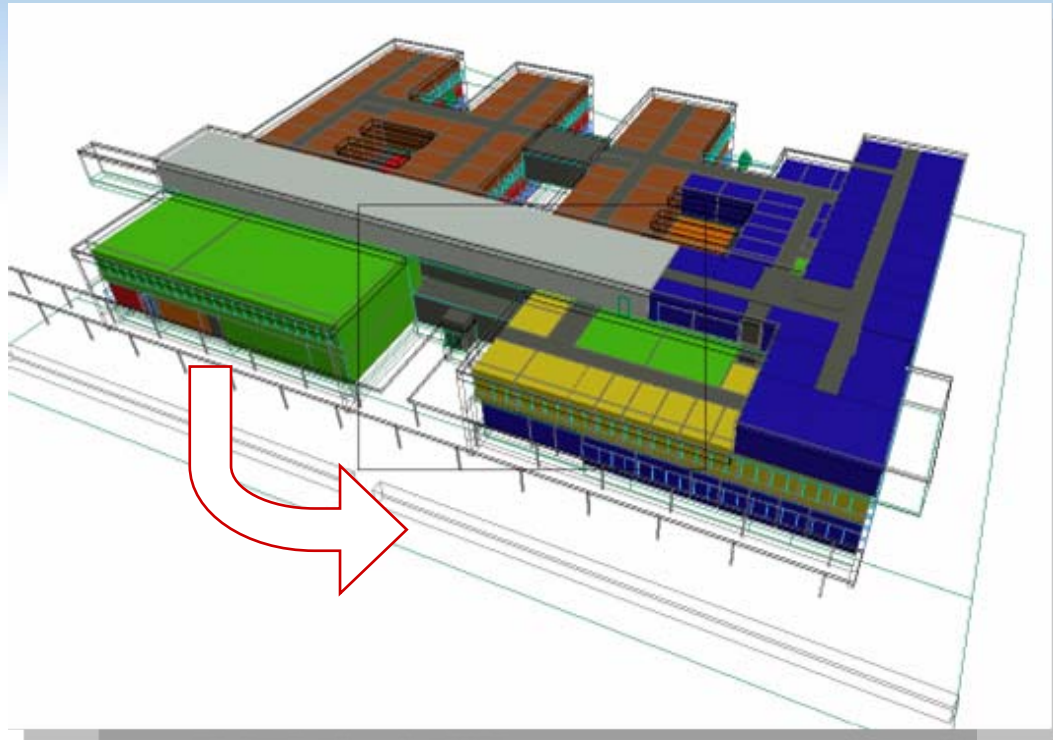
Senate Properties



Aurora II / a



Aurora II



Aurora II / b

Motivation

- By using BIM (Building Information Model) the building performance can be analyzed against set requirements and the result is more predictable
- Most important decisions are made in the early stages ↔ re-engineering

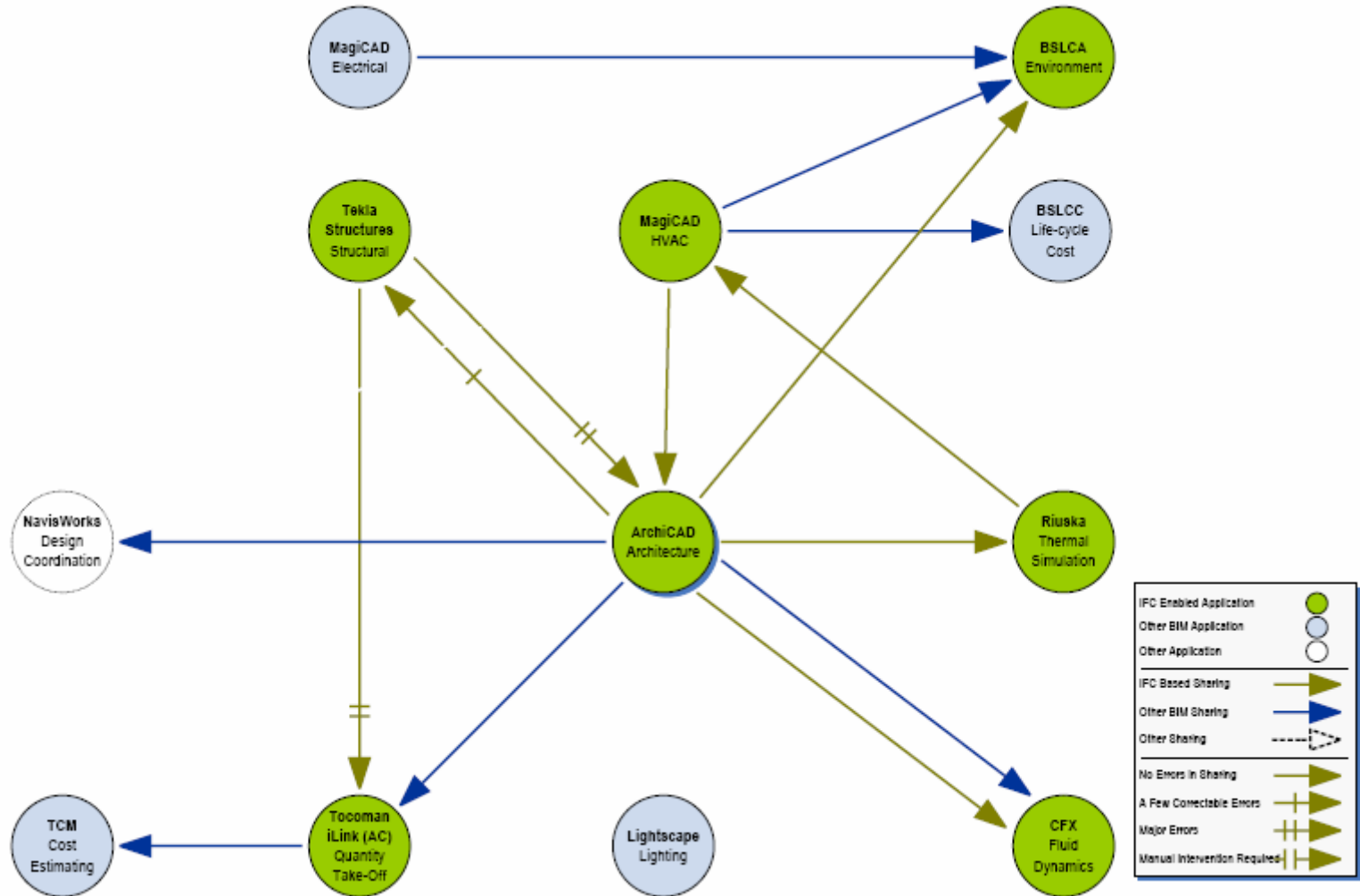
Aurora II



Senate's goals

- "Full Modeling" and team approach,
- Teamwork requires successful utilization of interoperability
- Following analysis:
 - Construction cost (investment)
 - Energy consumption
 - Lifecycle cost
 - Environmental impacts

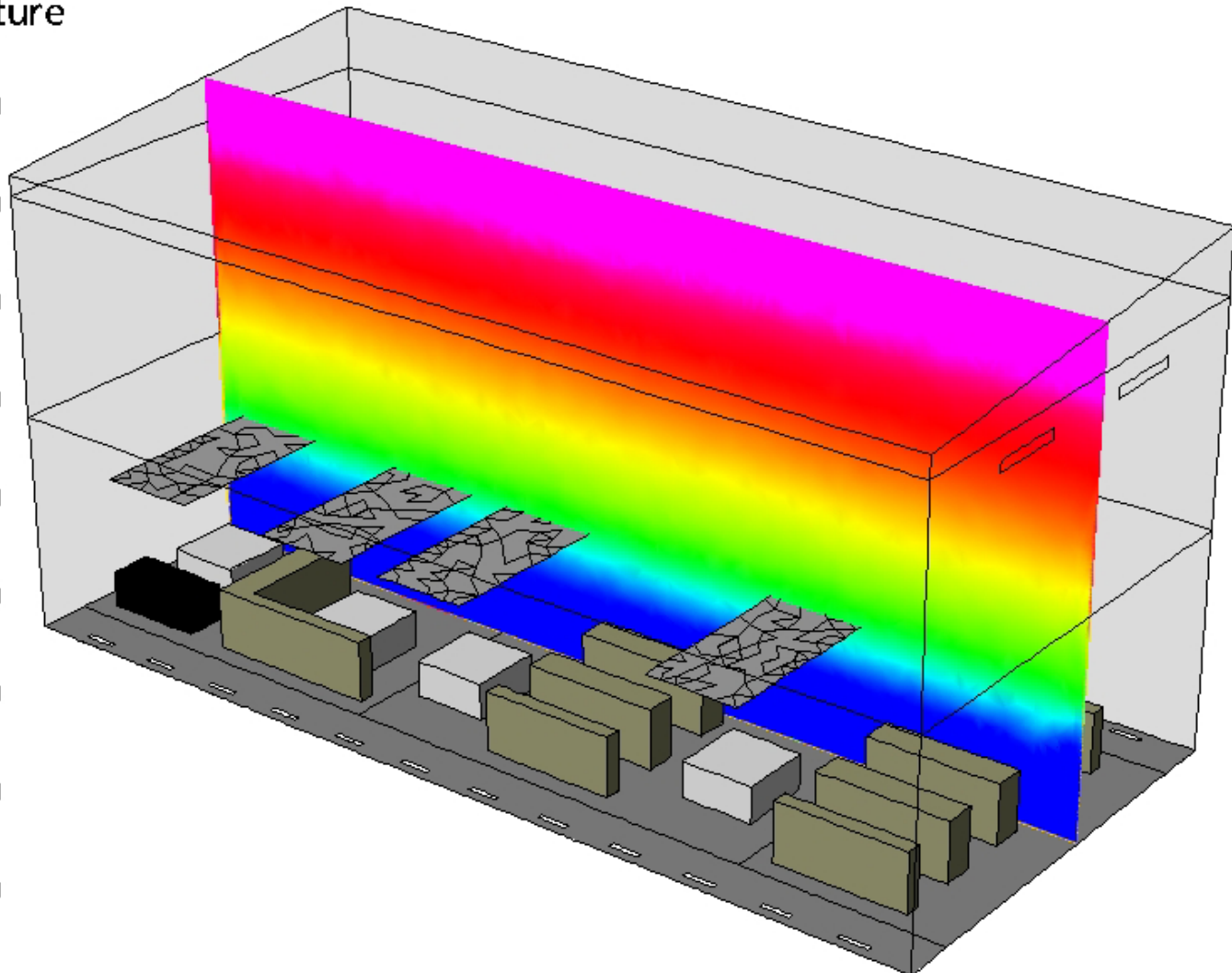
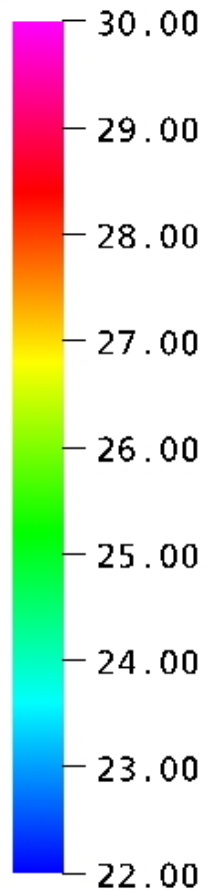




Comfort simulation

Auditorium, temperature distribution

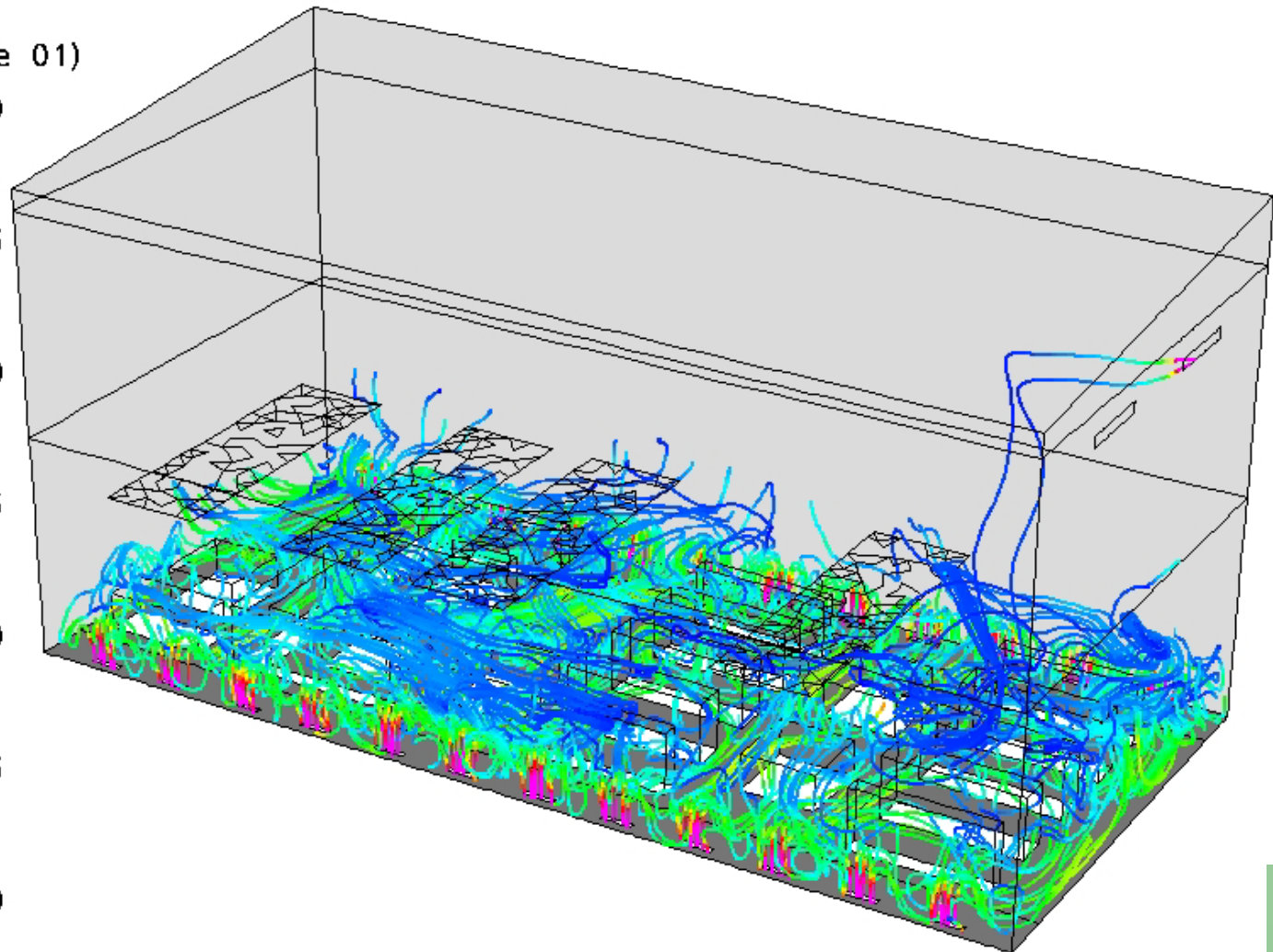
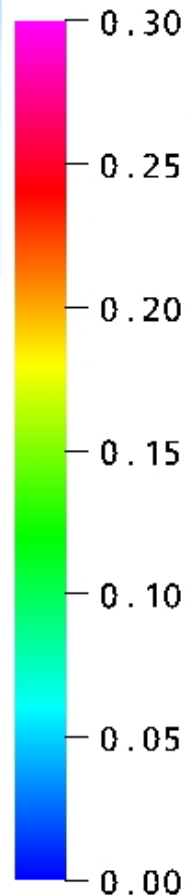
Temperature
(Plane 03)



Comfort simulation

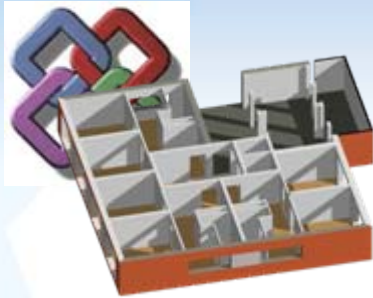
Auditorium, air movement

Velocity
(Streamline 01)

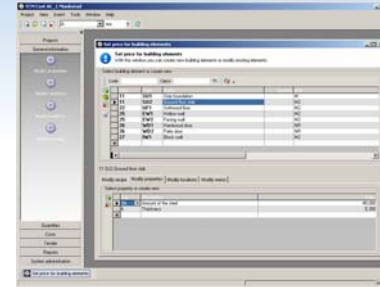


Linking design with production

Design model



Production recipes

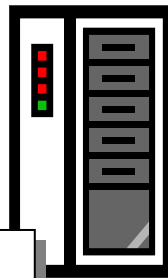
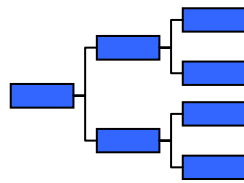


Linking process ...



Sharing information with the project team ...

Production model



Third party applications

cost estimating

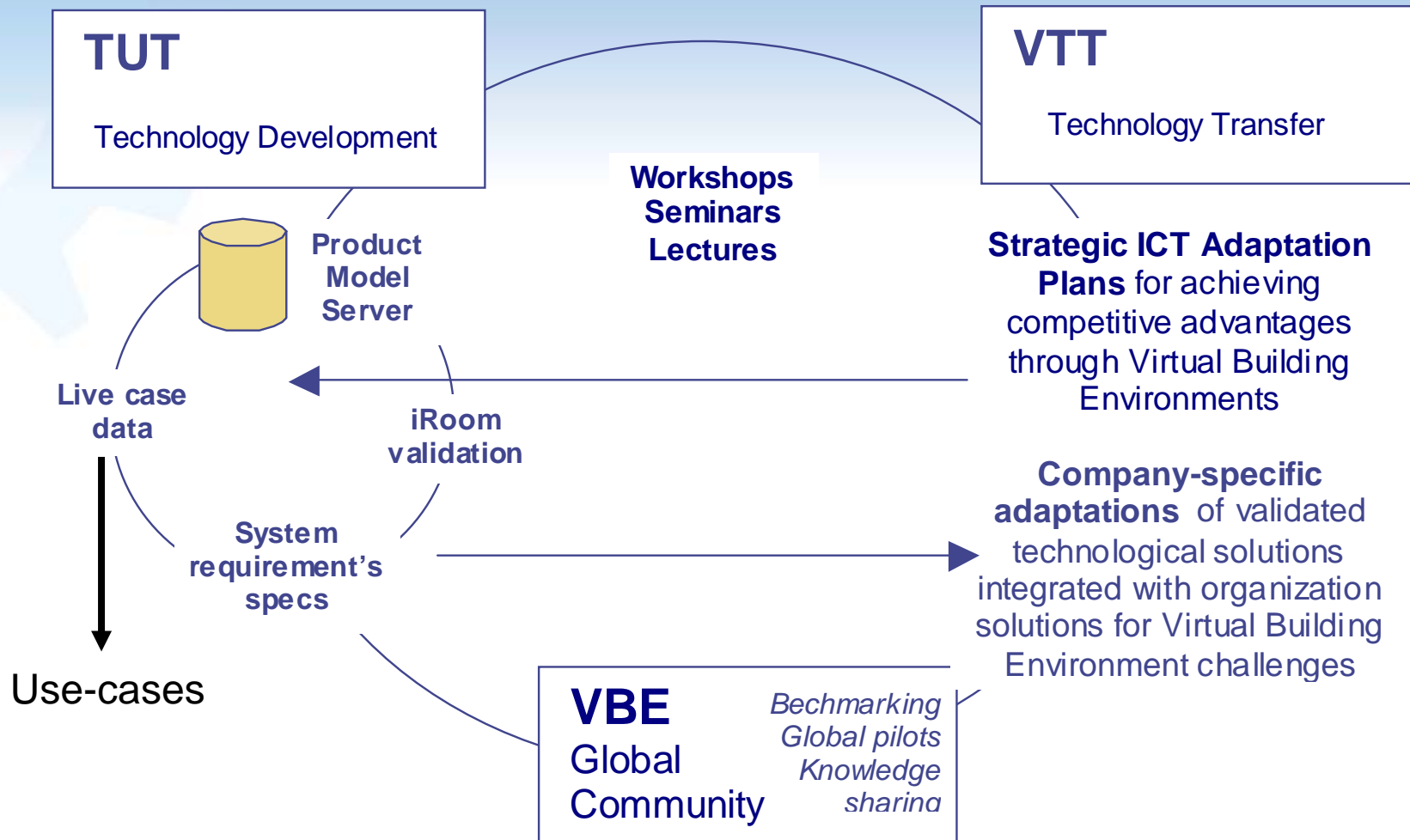
scheduling

procurement

MS Office tools



VBE, Virtual Building Environment

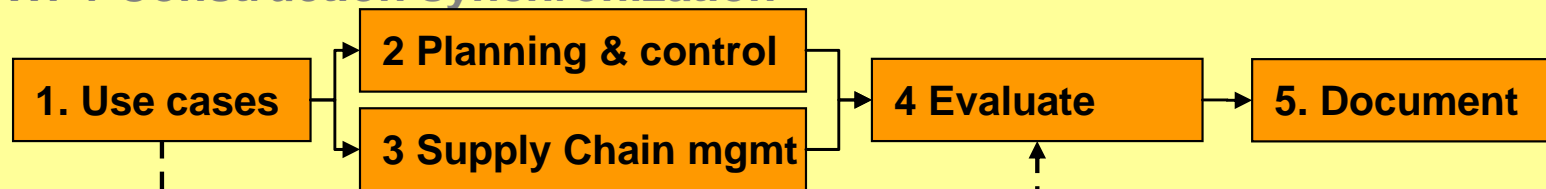


ERABuild

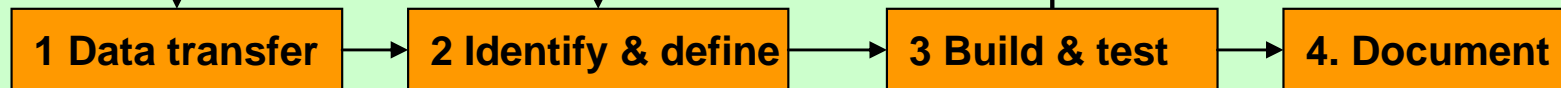
Industrial Processes Supported by an Open VBE

Proposed ERABuild project

WP1 Construction synchronization



WP3 Virtual Building Environment



WP2 Building services



EU research project Cost C21 - Integration of GIS data into the VBE in WP3

