

DESIGN SUPPORT. IKT OVERVIEW. STUDENT SKILLS.

IKT i Byggeprocessen

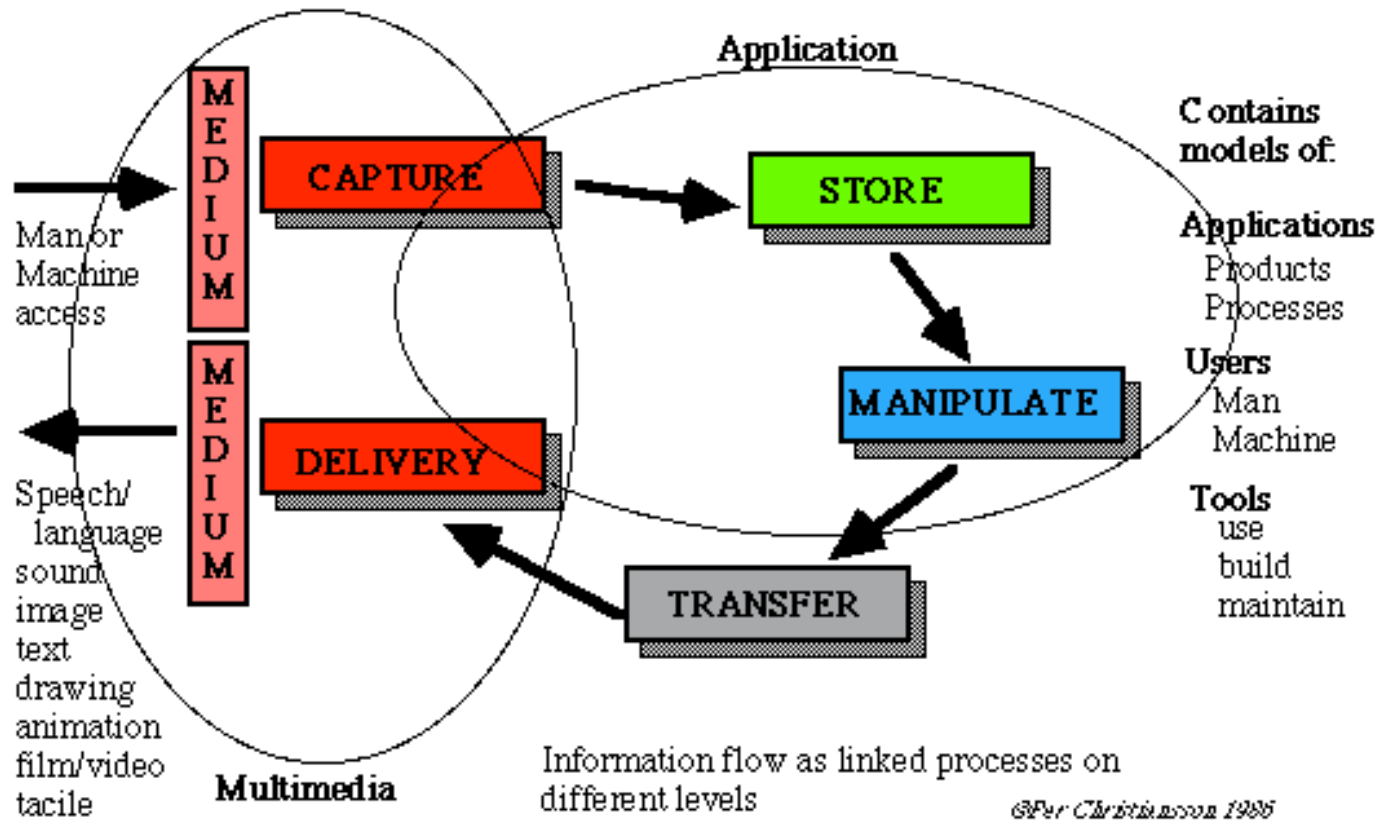
Cand. Scient. Byggeledelse. Semester 1,
4.3.2009.

Per Christiansson, Kjeld Svidt

CONTENT

- What is ICT?
- The building process
- Driving forces
- ICT support examples
- Implementing support systems
- Building informatics domains

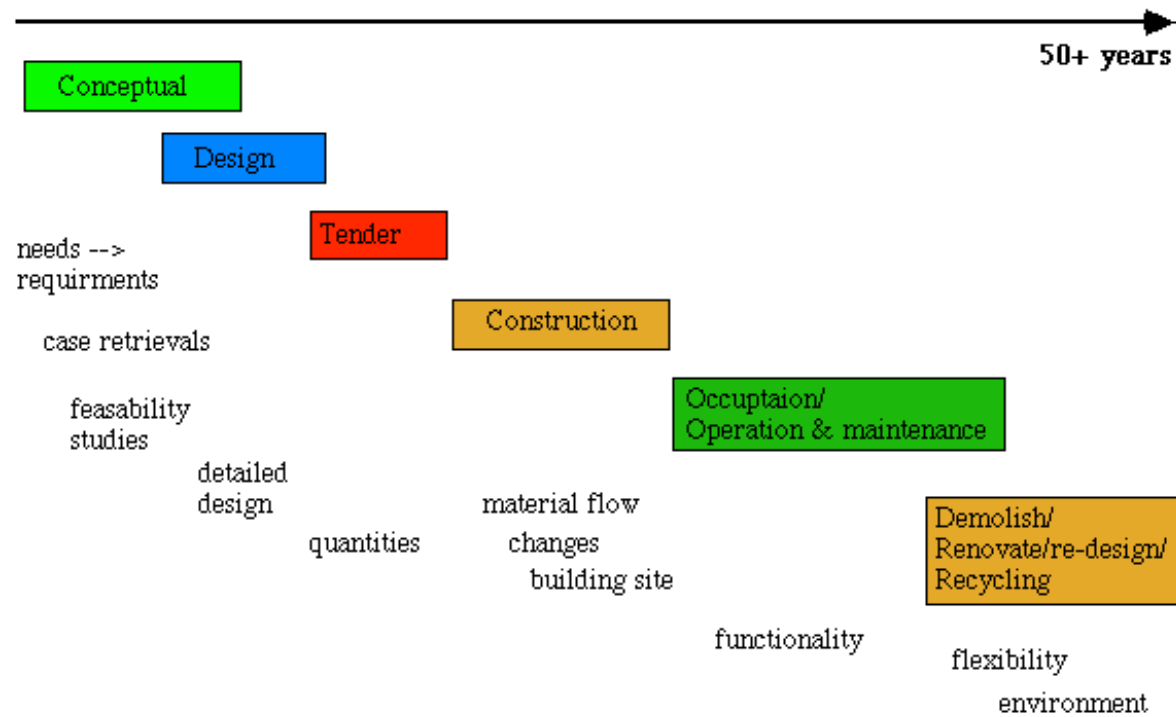
What is ICT?



Information and Communication Technology - ICT

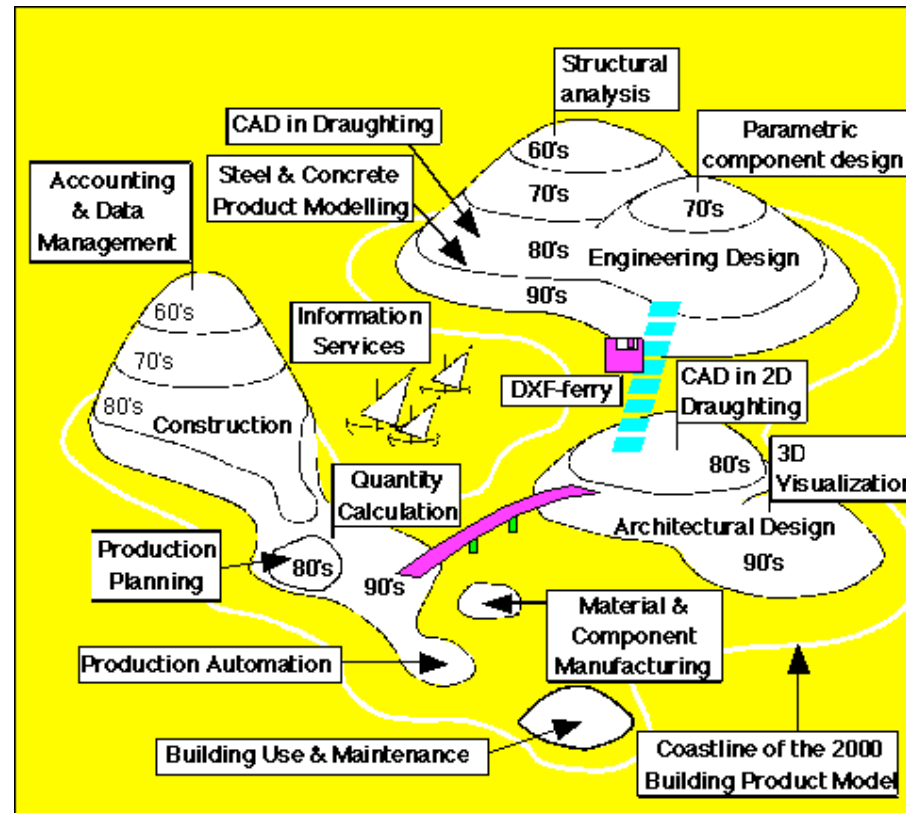
The Building Process

Traditional Life Cycle of the Building Process



The traditional *serial* process (ICT) support.

Interoperability



Models and applications for analysis, calculation and graphical presentations were earlier completely isolated islands.

Stronger connections have been established during the recent decades.

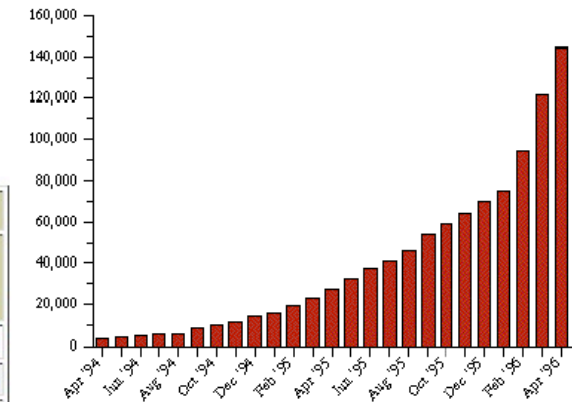
Internet usage

INTERNET USAGE STATISTICS The Internet Big Picture World Internet Users and Population Stats from <http://www.internetworldstats.com/stats.htm>

WORLD INTERNET USAGE AND POPULATION STATISTICS						
World Regions	Population (2008 Est.)	Internet Users Dec/31, 2000	Internet Usage, Latest Data	% Population (Penetration)	Usage % of World	Usage Growth 2000-2008
Africa	955,206,348	4,514,400	51,065,630	5.3 %	3.5 %	1,031.2 %
Asia	3,776,181,949	114,304,000	578,538,257	15.3 %	39.5 %	406.1 %
Europe	800,401,065	105,096,093	384,633,765	48.1 %	26.3 %	266.0 %
Middle East	197,090,443	3,284,800	41,939,200	21.3 %	2.9 %	1,176.8 %
North America	337,167,248	108,096,800	248,241,969	73.6 %	17.0 %	129.6 %
Latin America/Caribbean	576,091,673	18,068,919	139,009,209	24.1 %	9.5 %	669.3 %
Oceania / Australia	33,981,562	7,620,480	20,204,331	59.5 %	1.4 %	165.1 %
WORLD TOTAL	6,676,120,288	360,985,492	1,463,632,361	21.9 %	100.0 %	305.5 %

NOTES: (1) Internet Usage and World Population Statistics are for June 30, 2008. (2) CLICK on each world region name for detailed regional usage information. (3) Demographic (Population) numbers are based on data from the [US Census Bureau](#) . (4) Internet usage information comes from data published by Nielsen//NetRatings, by the [International Telecommunications Union](#), by local NIC, and other reliable sources. (5) For definitions, disclaimer, and navigation help, please refer to the [Site Surfing Guide](#), now in ten languages. (6) Information in this site may be cited, giving the due credit to www.internetworldstats.com. Copyright © 2001 - 2008, Miniwatts Marketing Group. All rights reserved worldwide.

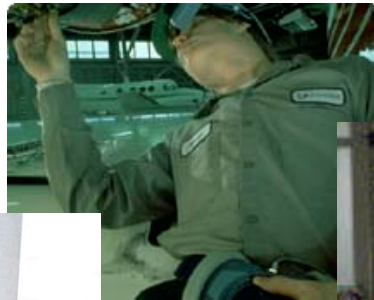
Number of HTTP Servers



Number of http-servers - the basis for the WWW

The Internet is one of the main contributors to transforming the world. Globalization, the global village, world wide services, global operating system, global knowledge management system....

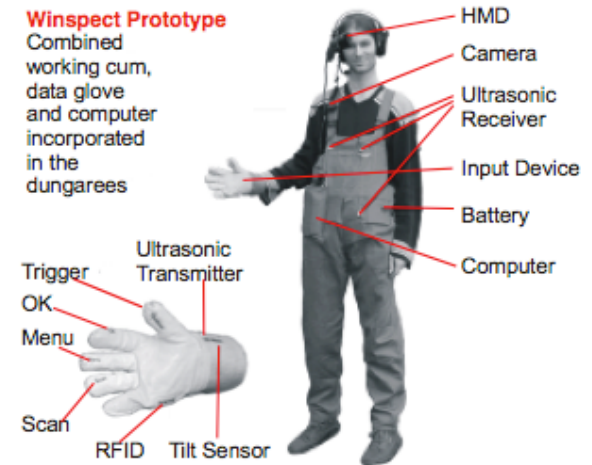
ICT at the Construction Site



VuMan
1991,
CMU



Digital Hardhat, UIUC, 1996



[wearLab] Bremen



RFID tags 2008
Ramboll, MTH, AAU

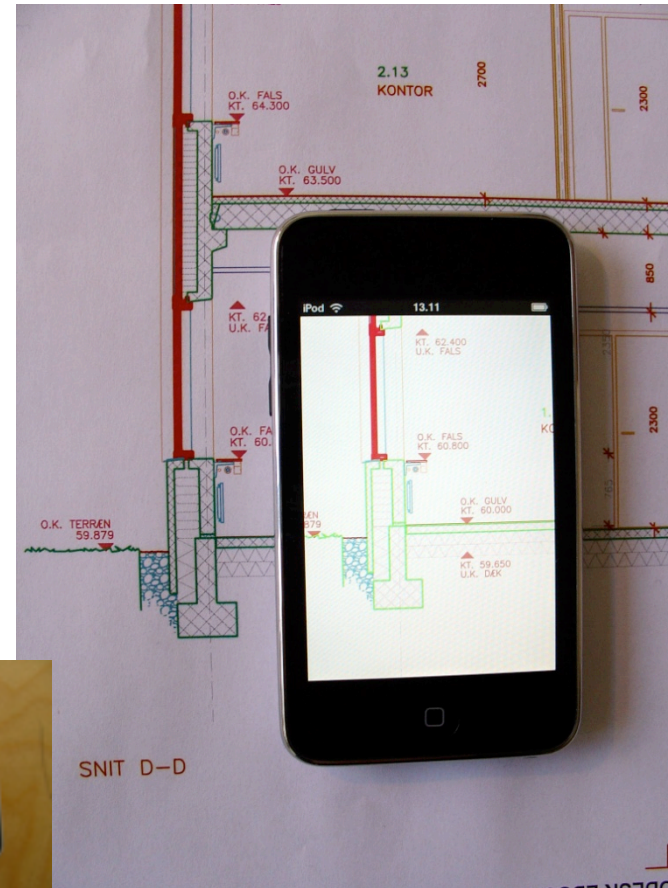
Ontologies
Peer-to-Peer
Wireless
RFID
GPS
Virtual Spaces
Augmented Reality
Grid Services

We are in an intense period of development where we can do creative design of future user environments. High quality models of building products and processes can be used in augmented reality environments to make collaboration and 4D simulations more effective, supported by underlying models and efficient data transfer.

ICT at the Construction Site



Ericsson T68i Mobile phone equipped with barcode reader scanning a laminated barcode sheet.



Drawings wireless from computer to iPod

Collaboration



4 parts video conference, 2008



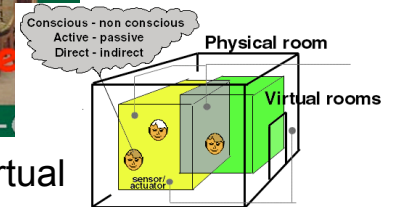
Desktop collaboration



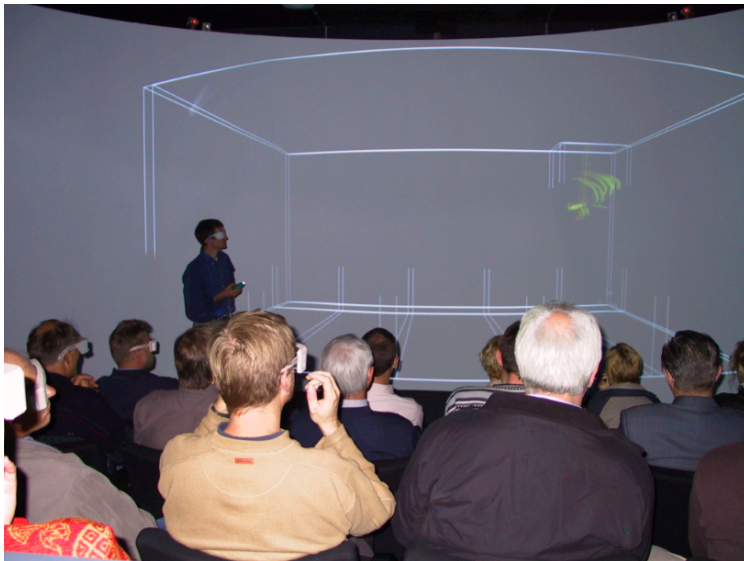
Remote lecture and application sharing between Aalborg and Lund Universities 1999



Flexible workspaces in physical and virtual rooms



Virtual Reality

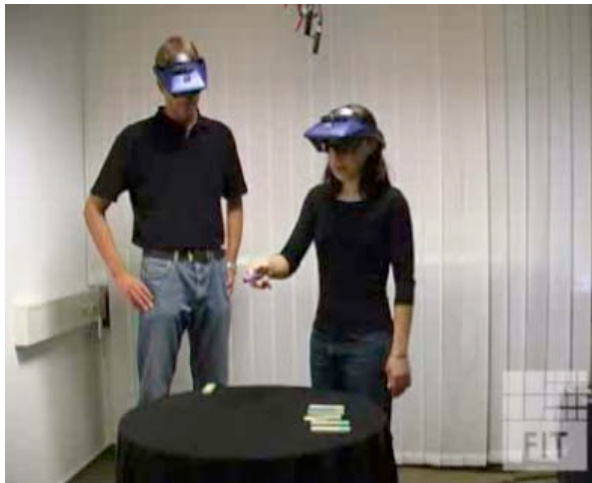


Panorama



CAVE

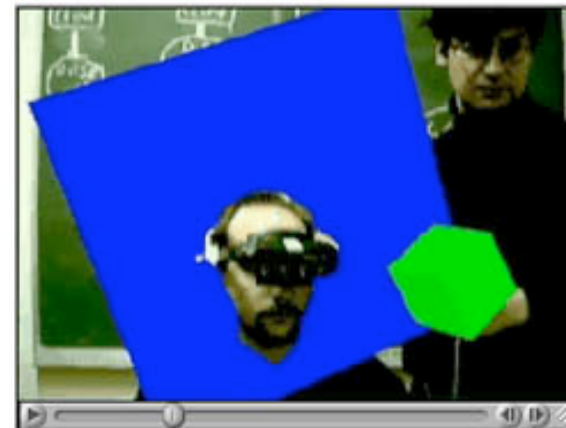
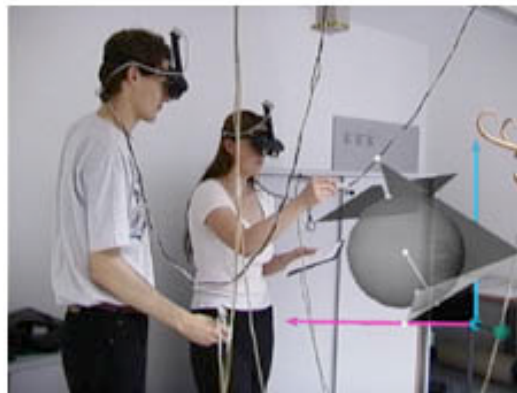
Augmented Reality



[Video](#)



[Video](#)



Mixed reality different degree of mix between real world and virtual world

Project webs

PROJECT - VIC - Arkitema Wiki
 http://arkitema.onconfluence.com/display/vic/PROJECT

Dashboard > VIC > PROJECT

VIC PROJECT
 VIRTUAL INNOVATION IN CONSTRUCTION

Welcome Per Christiansson | History | Preferences | Administration | Log Out

View Edit Attachments (1) Info

Added by Torben Klitgaard, last edited by Per Christiansson on Jun 16, 2008 (view change)
 Labels: (None) EDIT

VIC
 VIRTUAL INNOVATION IN CONSTRUCTION

This is the home page for the VIC project internal space. You find the public VIC-Space at [VIC-SPACE PUBLIC](#).
 (You can also use [VIC TRAINING-SPACE](#) for training and testing).

Overview of the VIC project internal space

- [help](#)
- [a PROJECT BASIS](#)
 - [AGREEMENTS](#)
 - [bilag2_samarbejdsaftale_vic](#)
 - [bilag3_samarbejdsaftale_vic](#)
 - [bilag4_samarbejdsaftale_vic \(tilsagn\)](#)
 - [APPLICATION](#)
 - [Ansøgning](#)
 - [tilsagn_2007_08_17](#)
 - [tilsagn_svar](#)
 - [CONTACT INFO](#)
 - [SCHEDULE](#)
 - [TEMPLATES](#)
- [b ECONOMY](#)
 - [TIME CONSUMPTION](#)
- [c ACTIVITIES](#)
 - [01 INTRODUCTORY METHODS DESCRIPTION](#)
 - [Contextual Design](#)
 - [02 ESTABLISHING OF VIC-SPACE VERSION 1](#)
 - [1 VICMET](#)
 - [Questions to users](#)
 - [SWOT](#)
 - [03 USER INVOLVEMENT IN VIC-SPACE](#)

Confluence - Screenshots - Dashboard
 http://www.atlassian.com/software/confluence/screens

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Confluence
 Enterprise wiki

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SCREENSHOTS
Dashboard Personal spaces Rich text editor

Dashboard
 Your Personal Space Add Pages Add Files Recently Updated

Ben Metzger 10 minutes ago
 Erik Munk 2 minutes ago
 Michael Knippen 8 minutes ago
 Matt Guel 12 minutes ago
 Marcus Fjelland 44 minutes ago
 Ulfrik Kjørstad 14 minutes ago

Tours
 Feature tour
 Solution tour
 Plugin tour
 Screenshot tour

Customers
 Customer list
 Testimonials
 Case studies

Resources
 Webinar
 Support

byggeweb.dk

Logoff

Kjeld Svdt, Aalborg Universitet - Institut for Byggeri

Projekter | Anmod om adgang | Afmeld adgang

Tilgængelige Byggeweb-projekter:

Projektnavn
 VitusBering - IT på Byggepladsen

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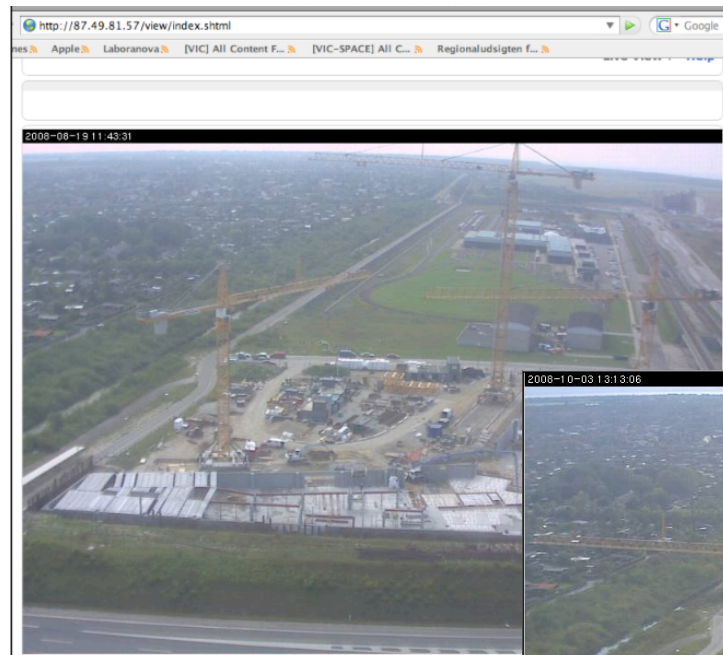
Services
 Byggeweb Projekt
 Byggeweb Arkiv
 Byggeweb Udbud
 Notifikationsoversigt

Brugere
 Egne brugeroplysninger
 Virksomhedens brugere
 Øvrige kontaktpersoner

Diverse
 Opdateringer
 software

Web based document management and collaboration tools

Reality access

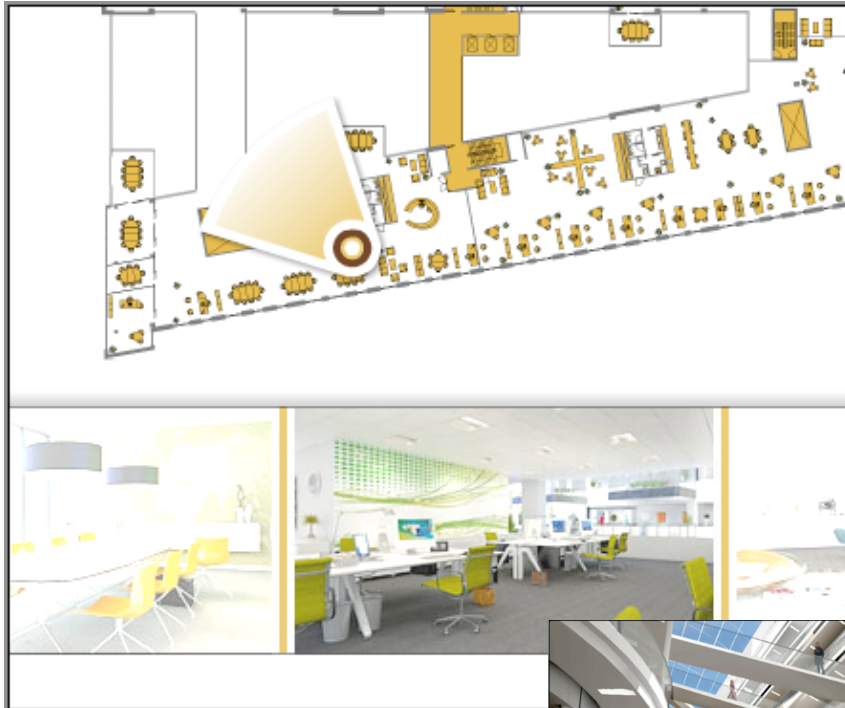


Direct - <http://87.49.81.57/view/index.shtml>



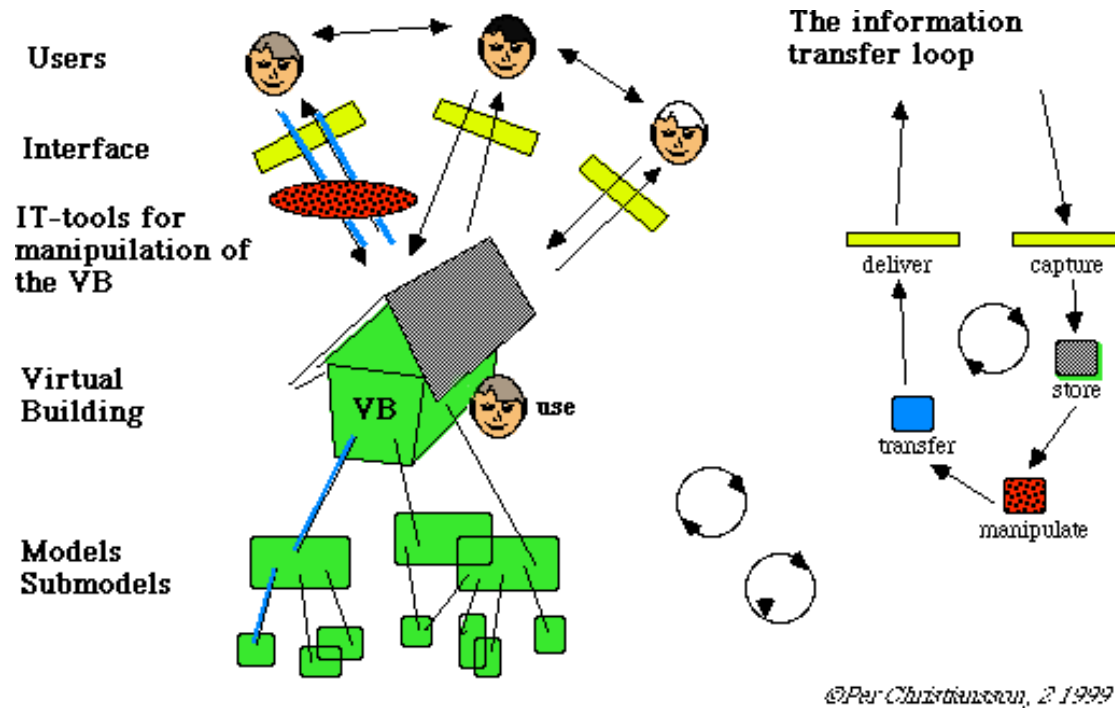
Rambøll new headquarter at Ørestad

Virtual Buildings



Arkitema and Rambøll headquarters

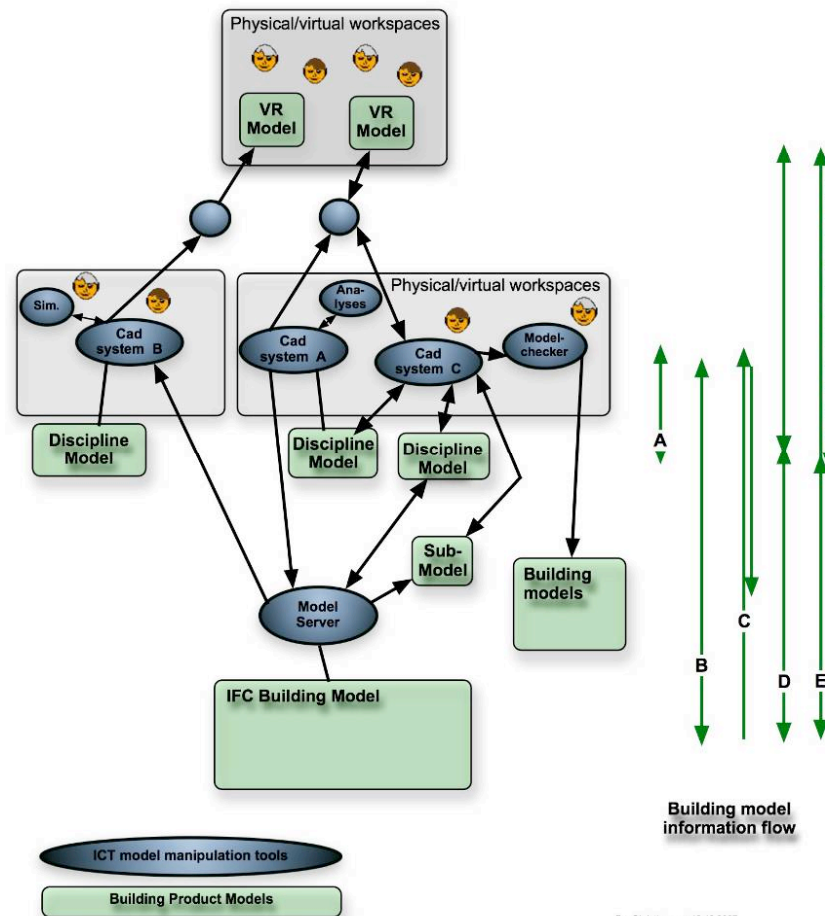
The Virtual Building and the ICT loop



Designers etc *communicate/collaborate* and *access and manipulate* building product and process *models*.

Models of Buildings

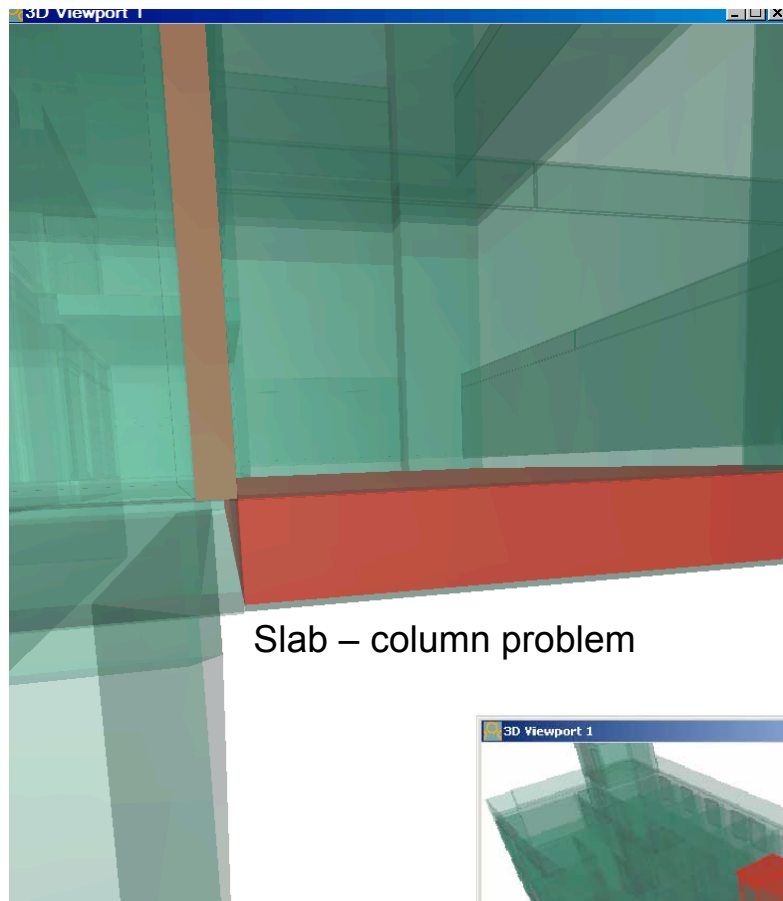
Design and Model Storage Supports



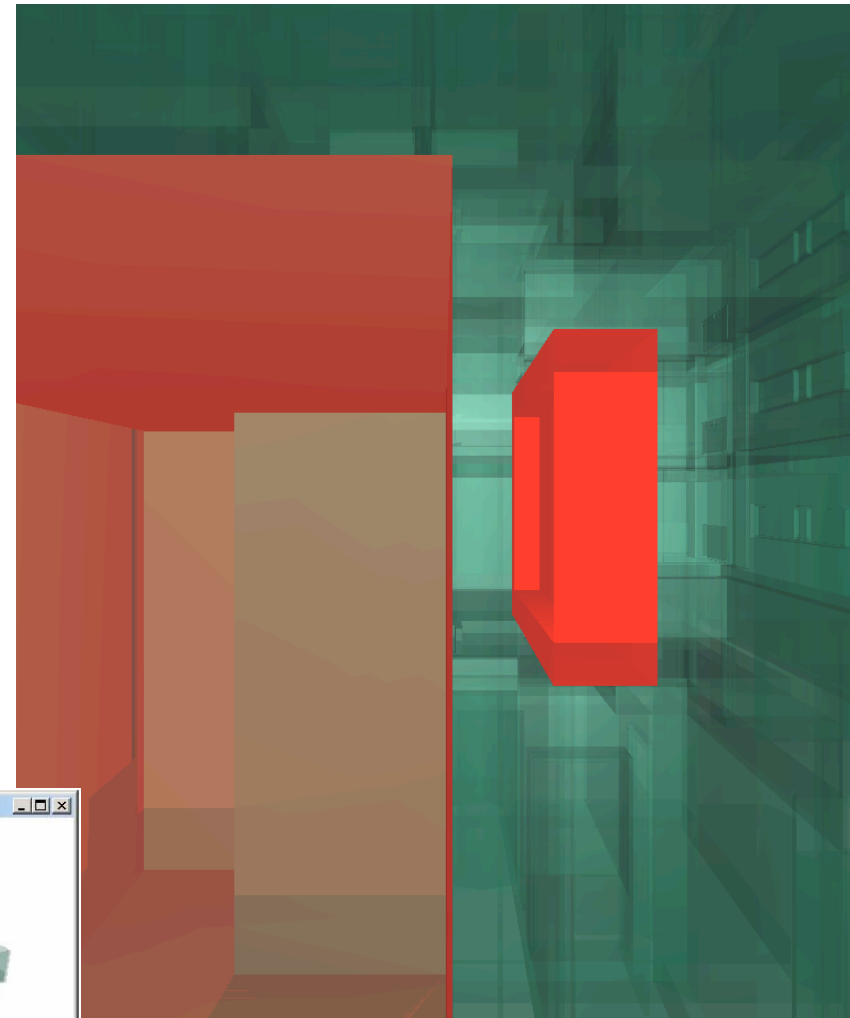
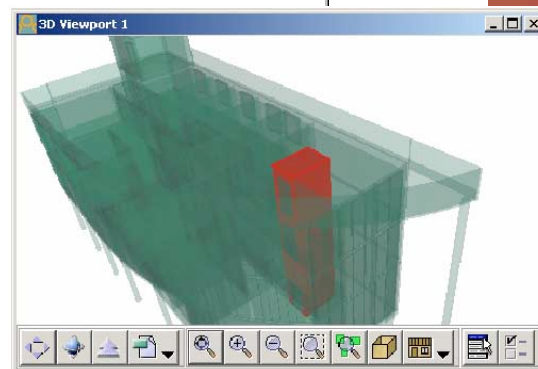
Per Christiansson 12.12.2007

Building product models can today be stored shared and distributed and used in more or less mixed reality environments.

Model checker

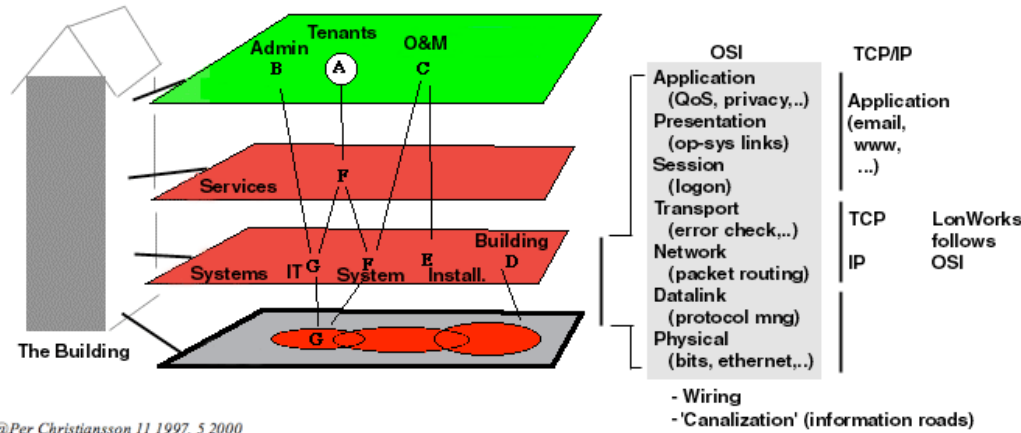


Slab – column problem



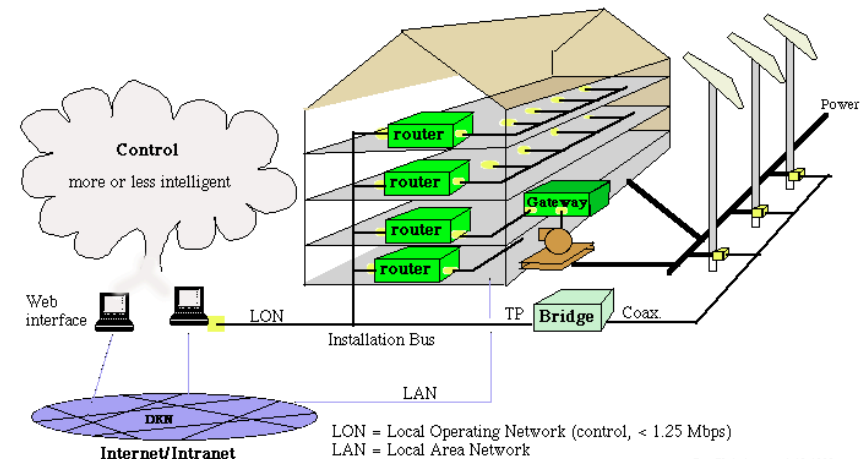
Wall – Window problem

Intelligent buildings

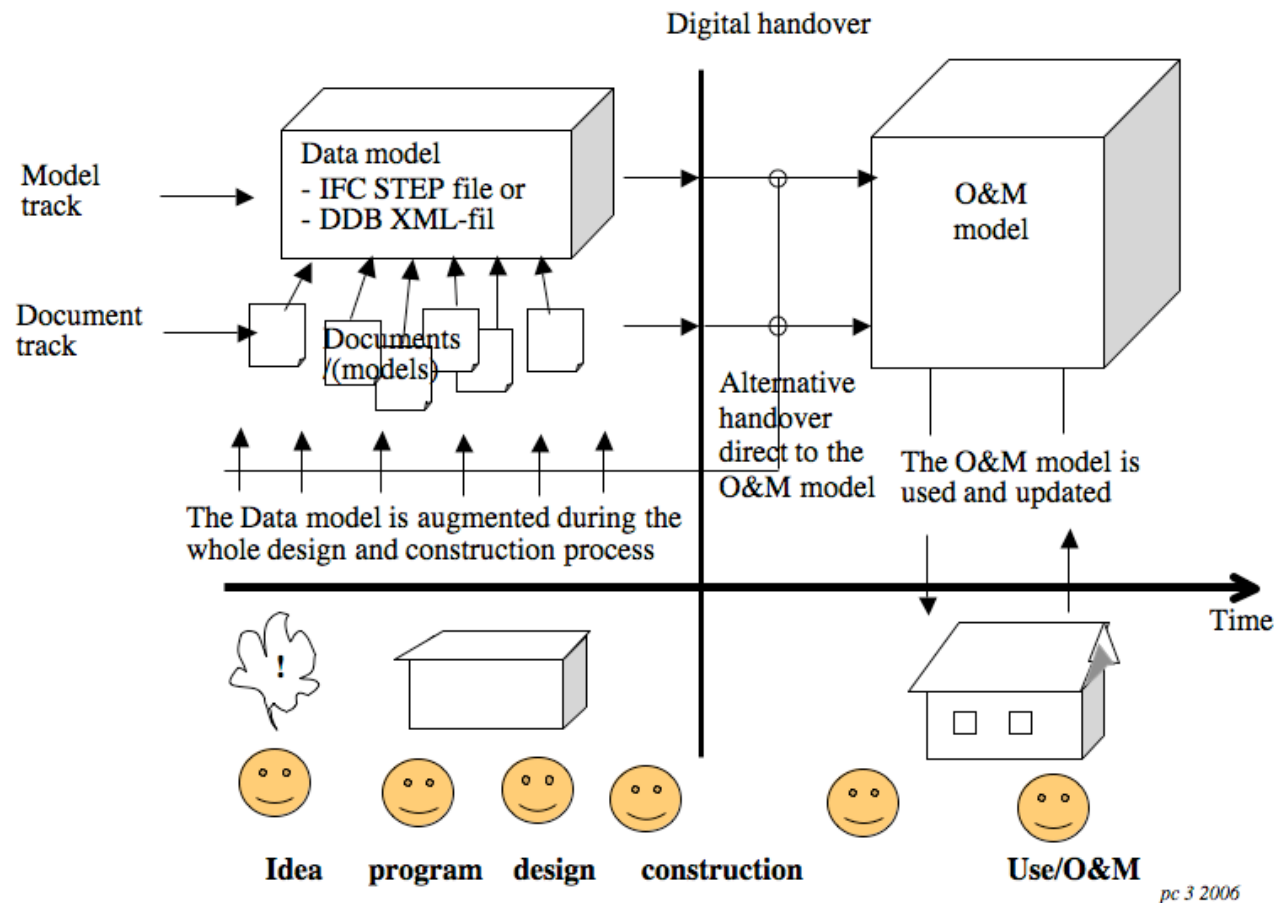


@Per Christiansson 11 1997, 5 2000

Intelligent buildings are buildings that through their physical design and IT installations are *responsive*, *flexible* and *adaptive* to changing *needs* from its users and the organisations that inhabit the building during it's life time. The building will supply services for its *inhabitants*, its *administration* and *operation & maintenance*. The intelligent building will accomplish transparent 'intelligent' behaviour, have state memory, support human and installation systems communication, and be equipped with sensors and actuators.

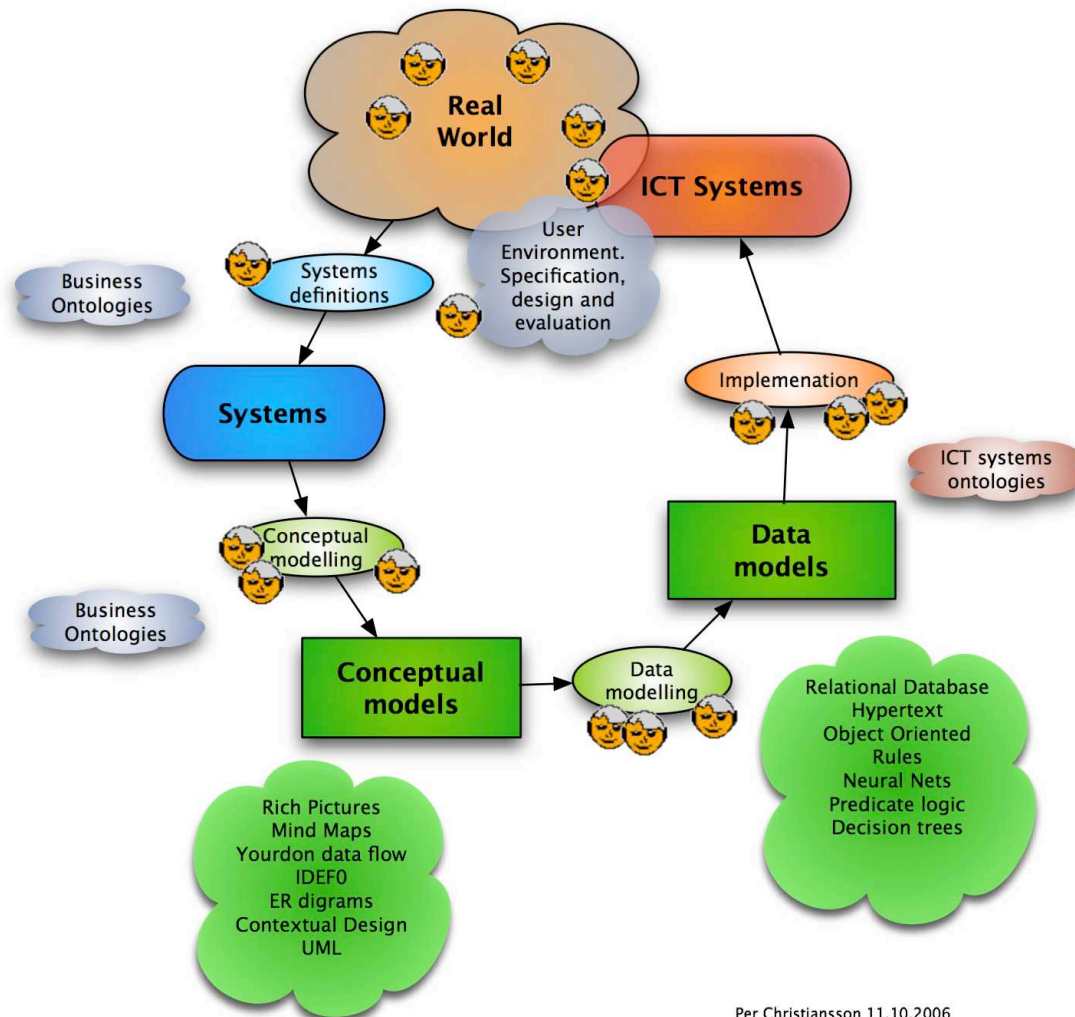


Hand over of Building Models



The newly released, January 2007, Danish digital construction requirements lets public clients put requirements on the content of the digital models of the building handed over to the client after finalised construction. (DDB, 2006)

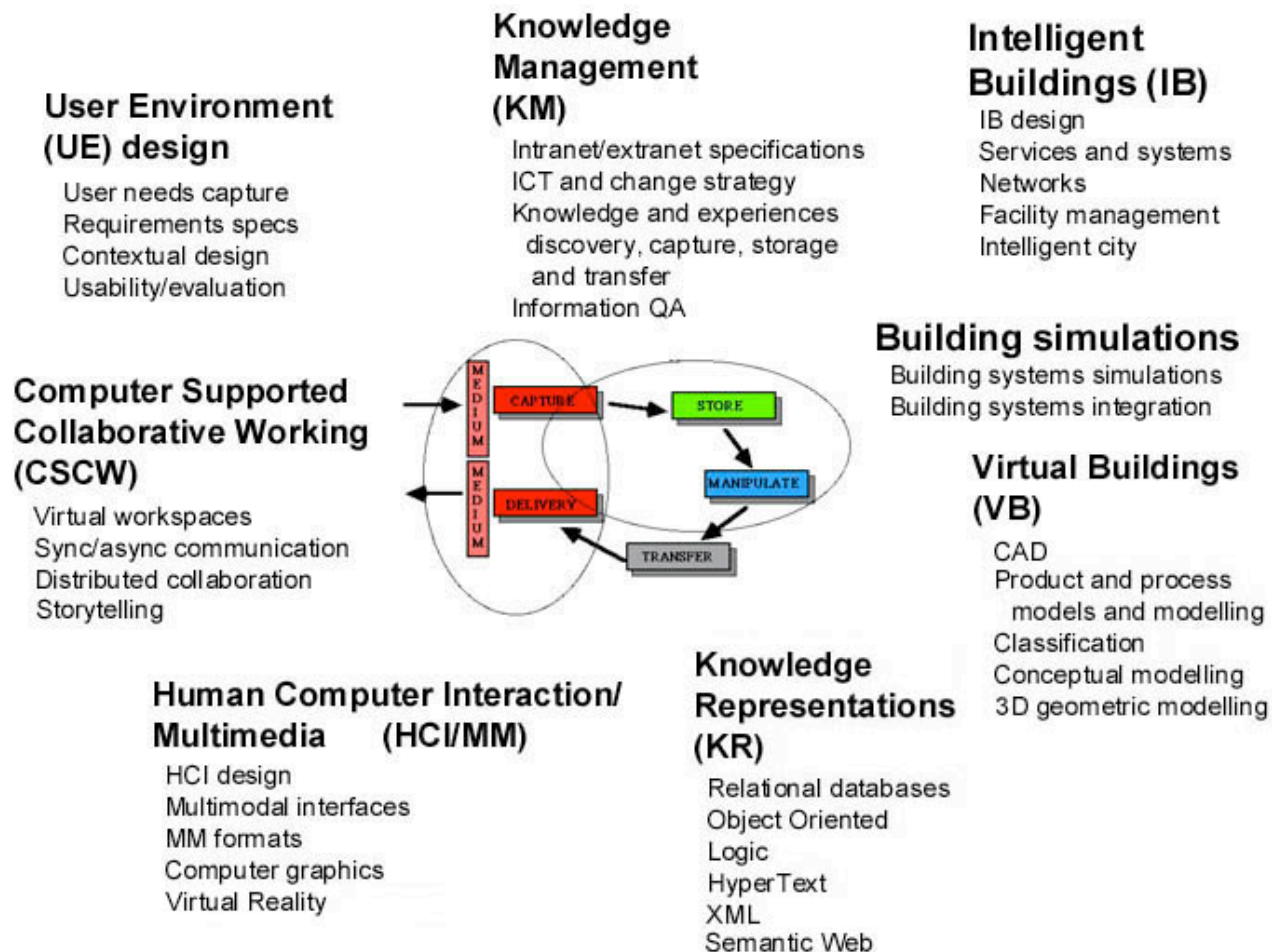
Implementing ICT support systems



In the *real world* we identify activities, things, processes, context, and persons.

The real world can be described as (interrelated) *systems* (no de-facto structure is available today) to accomplish different *functions* e.g. a comfort system to provide personal living and working quality, personal transport system, load carrying building system, escape system, and communication systems (collaboration, knowledge transfer, mediation, virtual meeting).

Building Informatics



Building informatics related areas.

END

<http://it.civil.aau.dk>