

# The Swedish IFC Implementation Project

- a Product Model Server Approach

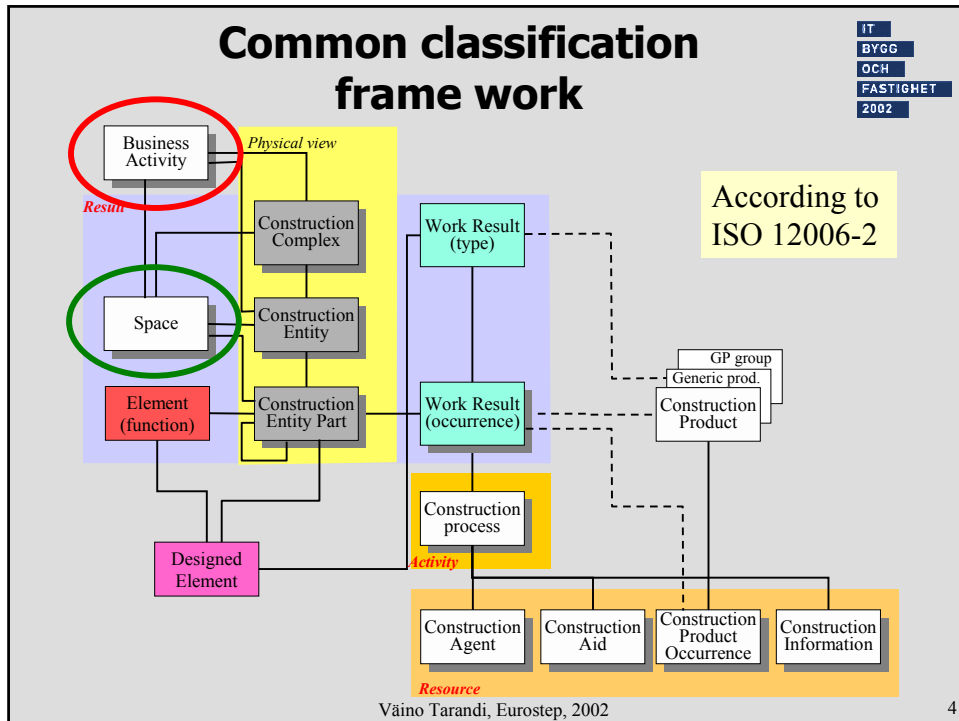
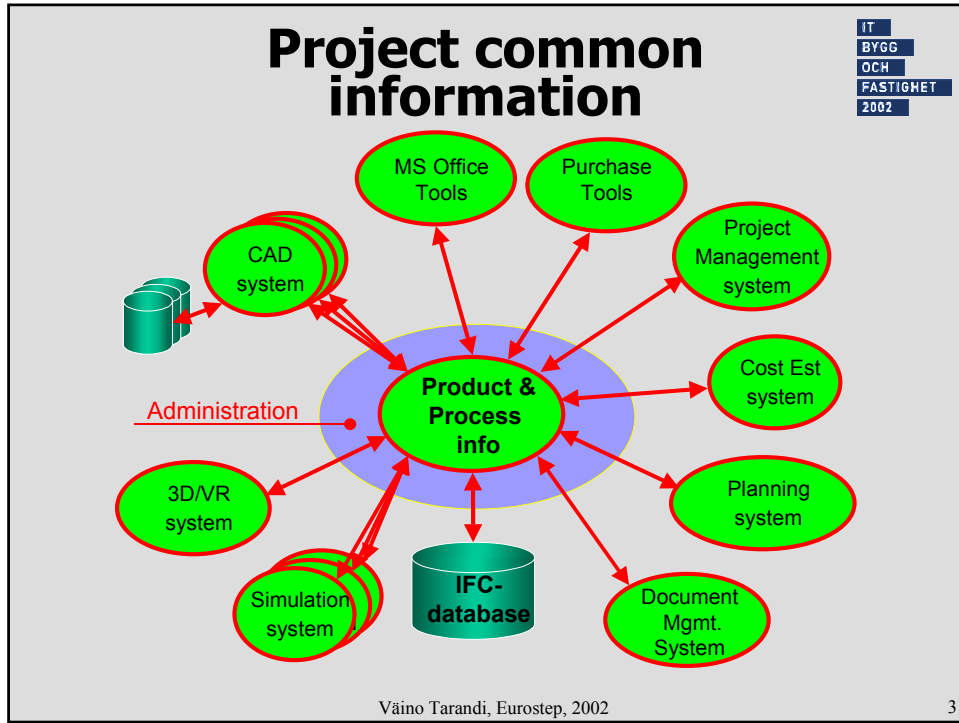
Dr. Väino Tarandi  
Eurostep  
vaino.tarandi@eurostep.com

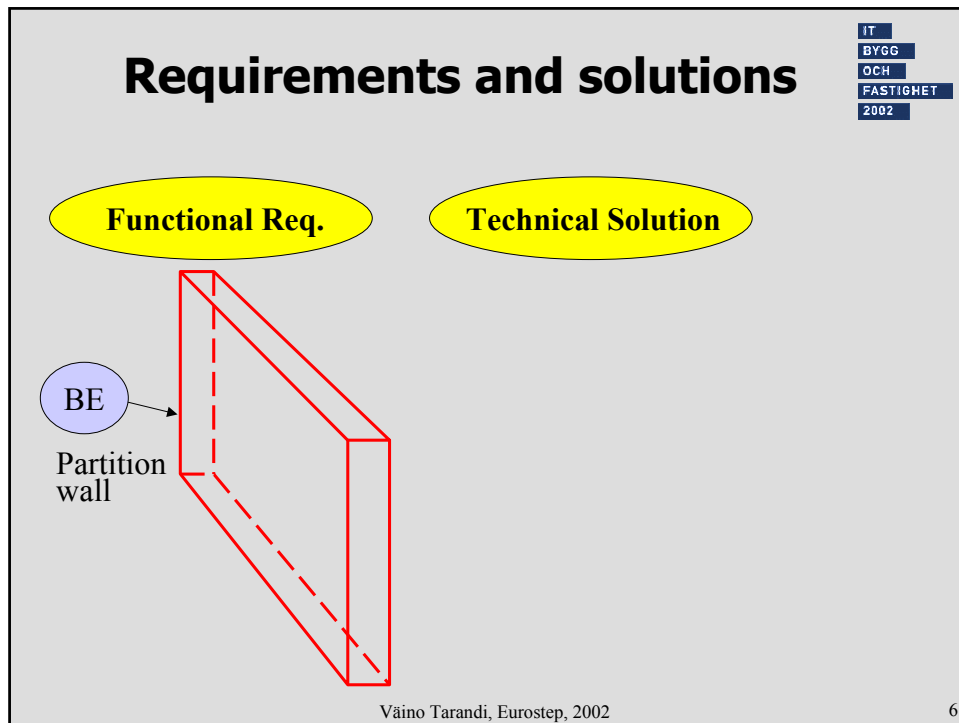
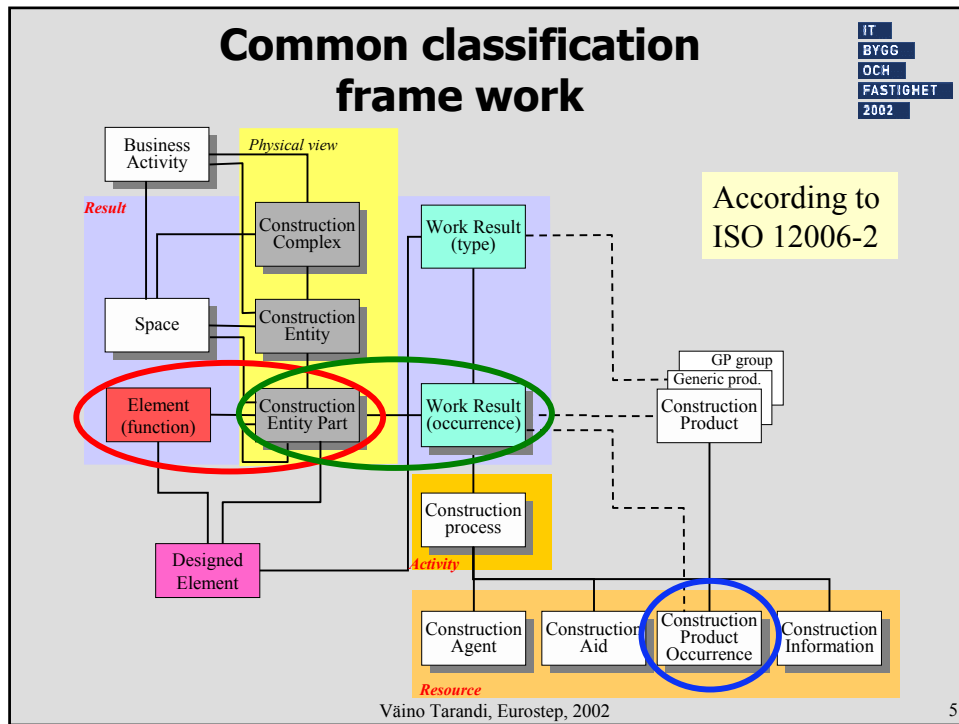
## The Idea

### A Product Model Server

**T**o store and communicate all common information about the building and its parts using a standardised data format, accessible to all participants in all phases.

→ **A Virtual Building!**

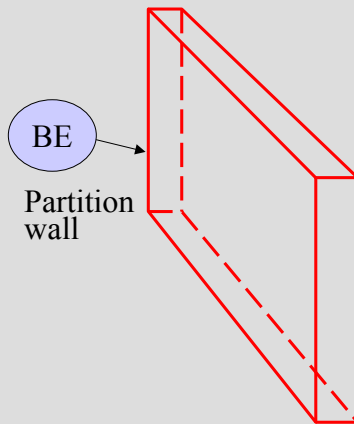




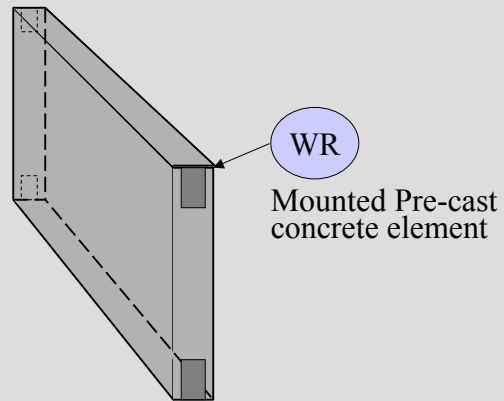
# Requirements and solutions

IT  
BYGG  
OCH  
FASTIGHET  
2002

## Functional Req.



## Technical Solution



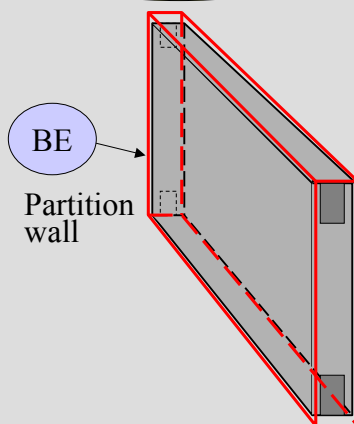
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7

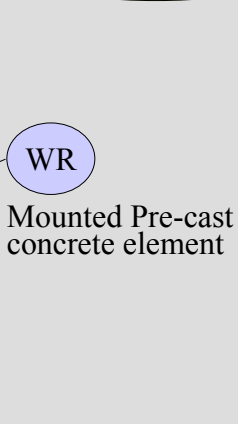
# Requirements and solutions

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## Functional Req.



## Technical Solution



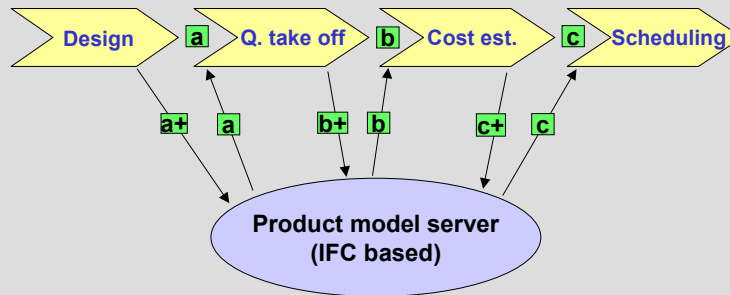
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8

# Product Model Server

## - overview

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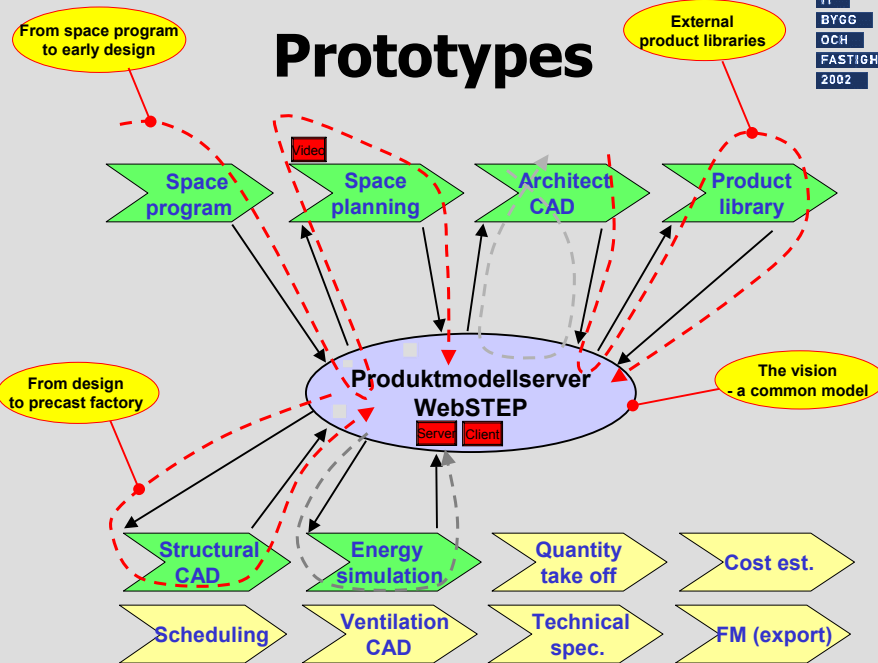


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9

# Prototypes

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10

# IFC Implementation

- the purpose of the project

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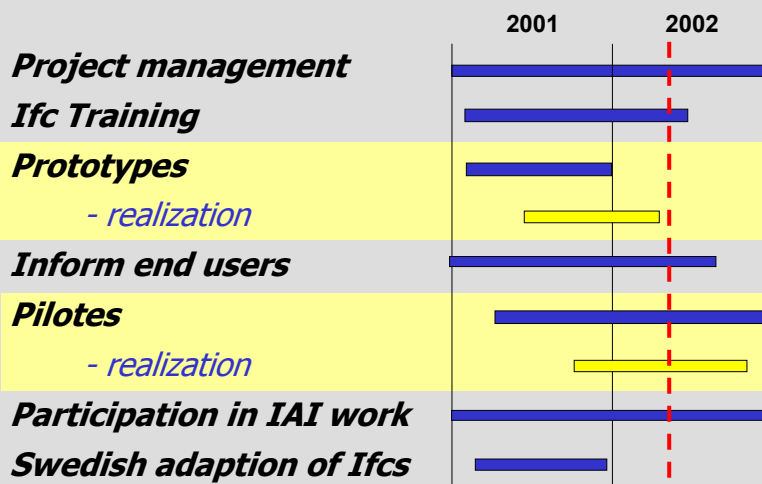
***We shall **give the actors** in the construction industry, who have a need for business improvement via better information management, **access to applications** where IFC interacts with industry common concepts (BSAB etc.)***

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11

## Activities

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12

# Prototypes

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Space program / space planning	Facility (Pythagoras)
Architect CAD / Product library	Archicad/GDL (Lasercad)
Technical specification	DescCon(Consultec)
Energy simulation	IDA/ICE(EQUA)
FM interface	(Graphic Interface)
BoQ / Cost est. / Scheduling	MAP (Skand Kalkyldata)
Structural CAD	Impact (Skanska IT Sol)
Ventilation CAD	CAD-vent (Lindab)
VR/VRML – 4D	WebSTEP (Eurostep)
Searching / visualisation in 3D	
Project administration	

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13

# Pilots

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## ***Pilot 1 – Early phases + early design***

Akademiska Hus - Owner

Space program -> Space planning -> Early CAD  
-> Technical specification -> Early energy simulation

## ***Pilot 2 – Design to construction***

Skanska – Construction company

Early CAD -> Early cost estimation -> Early scheduling  
-> Early energy simulation

## ***Pilot 3 – Construction + handing over***

NCC – Construction company

Final CAD -> Production cost estimation-> Production  
scheduling -> Purchase & Logistics -> Handing over

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14

**Apply!**

**Please!**

**Referenced ppt-s**



Utrymnesprogram

Data entry | Relations

### Registration of Space

Purpose: Education Ratio: 4 m<sup>2</sup>/person

User: Anatomy Those who will use the space, an organisation

Space: Lecture-room Name

Usage: What the space is used for (text)

No of rooms: 1 Number of rooms for space to be divided into

Location:

Grossarea: 75 (m<sup>2</sup>) Comment: Eventual subareas

Number of persons

Normal: 20 Totally within the space

Maximum: 30 Totally within the space

Other comments:

Internal climate

Thermal climate

MAX temperature: 25

MIN temperature: 20

Dimensioning data: 3 pcs 1 data projector Text

Atmospheric humidity

MAX: 80

MIN: 65

Dimensioning data: Text

Save space in database

Exit

Pythagoras®

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17

Utrymnesprogram

Data entry | Relations

### Registration of relations

Space: Dissecting-room - Anatomy

Connection "wall to wall"

- Lecture-room - Anatomy
- Teachers-room - Anatomy
- Room for group activities - Anatomy
- Dissecting-room - Anatomy
- Store-room - Histology
- Teachers-room - Histology
- Toilets -
- Cleaning stores -
- Garbage room -
- Stairwell, elevator -
- Corridor -

Close to

- Lecture-room - Anatomy
- Teachers-room - Anatomy
- Room for group activities - Anatomy
- Dissecting-room - Anatomy
- Store-room - Histology
- Teachers-room - Histology
- Toilets -
- Cleaning stores -
- Garbage room -
- Stairwell, elevator -
- Corridor -

not close to

- Lecture-room - Anatomy
- Teachers-room - Anatomy
- Room for group activities - Anatomy
- Dissecting-room - Anatomy
- Store-room - Histology
- Teachers-room - Histology
- Toilets -
- Cleaning stores -
- Garbage room -
- Stairwell, elevator -
- Corridor -

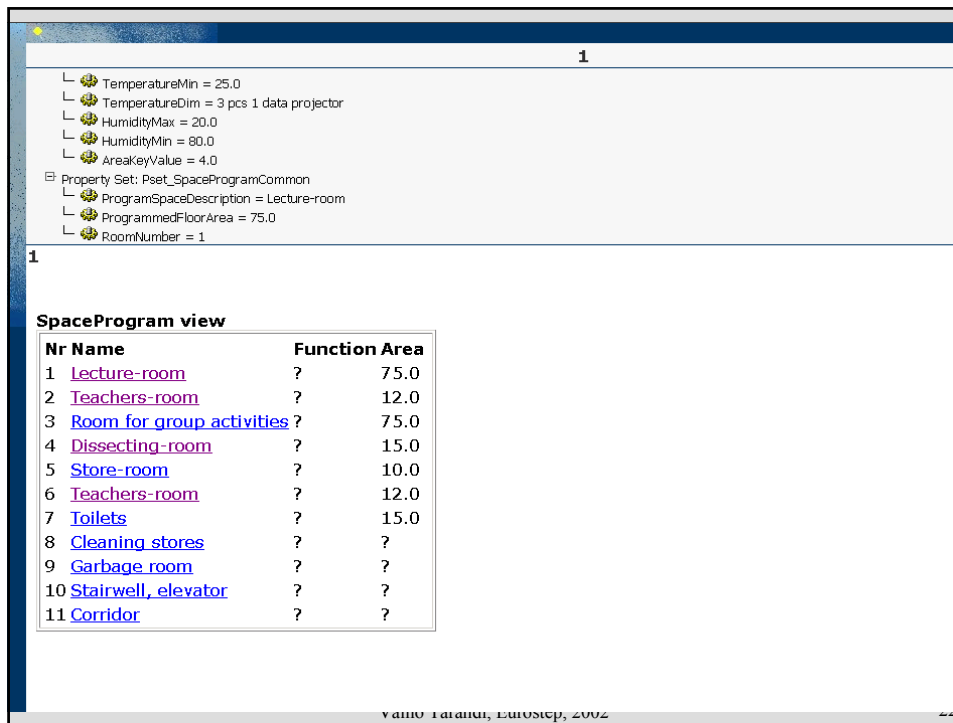
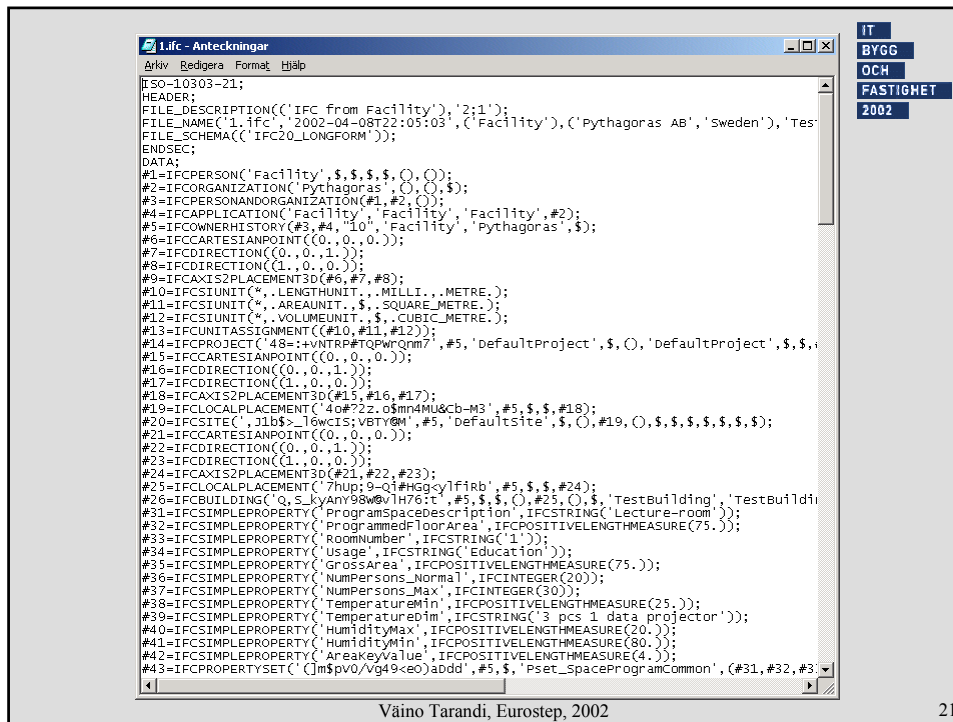
Save relations in database

Pythagoras®

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18





Microsoft Excel - report.xls

Vista | Edreg | Zooma | Skriv ut... | Format... | Marg. | Sidbrytningsgranskning | Stäng | Hjälp

### Evaluation of space program (report from Facility)

Id	Purpose	Space	Area			Person/m2		No of rooms		Diff	Organisation	Area comment
			Program	Placed	Share (%)	Ratio/limit	Current	Program	Current			
1	Education	Lecture-room	75	72,87	97	4	3,64	1	1	0	Anatomy	---
2	Administration	Teachers-room	3	0	0	0	0	1	0	1	Anatomy	12
3	Education	Room for group activities	75	63,1	84	5	3,16	5	1	0	Anatomy	---
4	Education	Dissecting-room	15	12,04	80	0	4,01	1	1	0	Anatomy	---
5	Education	Store-room	10	5,88	59	0	0	1	1	0	Histology	---
6	Education	Teachers-room	12	7,23	60	0	2,41	1	1	0	Histology	---
7	General areas	Toilets	15	0	0	0	0	0	0	0	---	---
8	General areas	Cleaning stores	0	0	0	0	0	0	0	0	---	---
9	General areas	Garbage room	0	0	0	0	0	0	0	0	---	---
10	Communication	Stairwell elevator	0	0	0	0	0	0	0	0	---	---
11	Communication	Corridor	0	0	0	0	0	0	0	0	---	---

Irhandsgranska: Sida 1 av 2

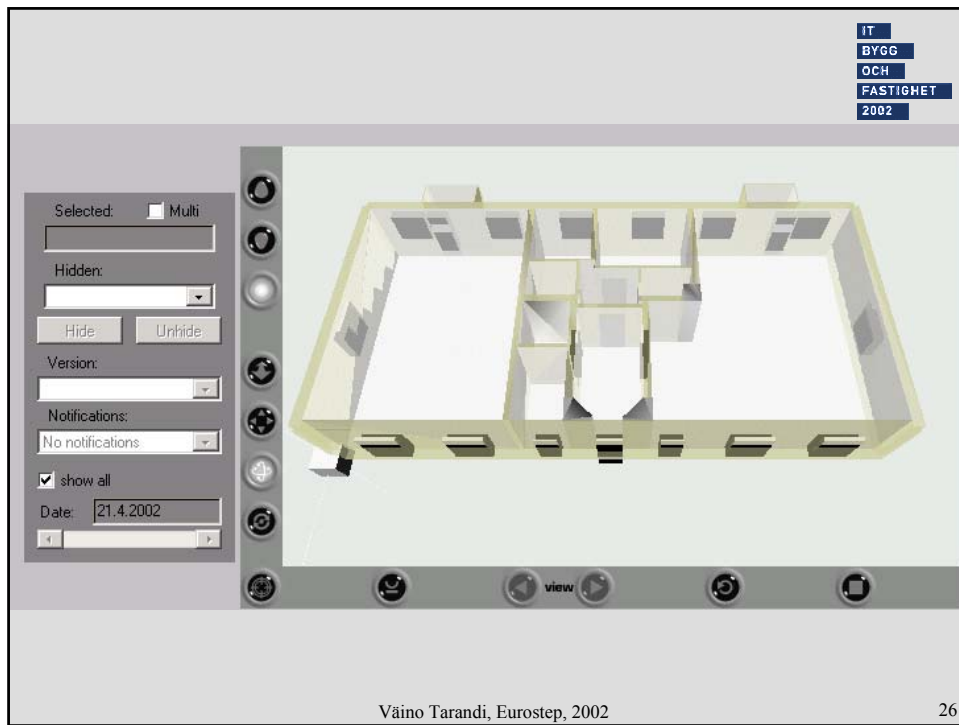
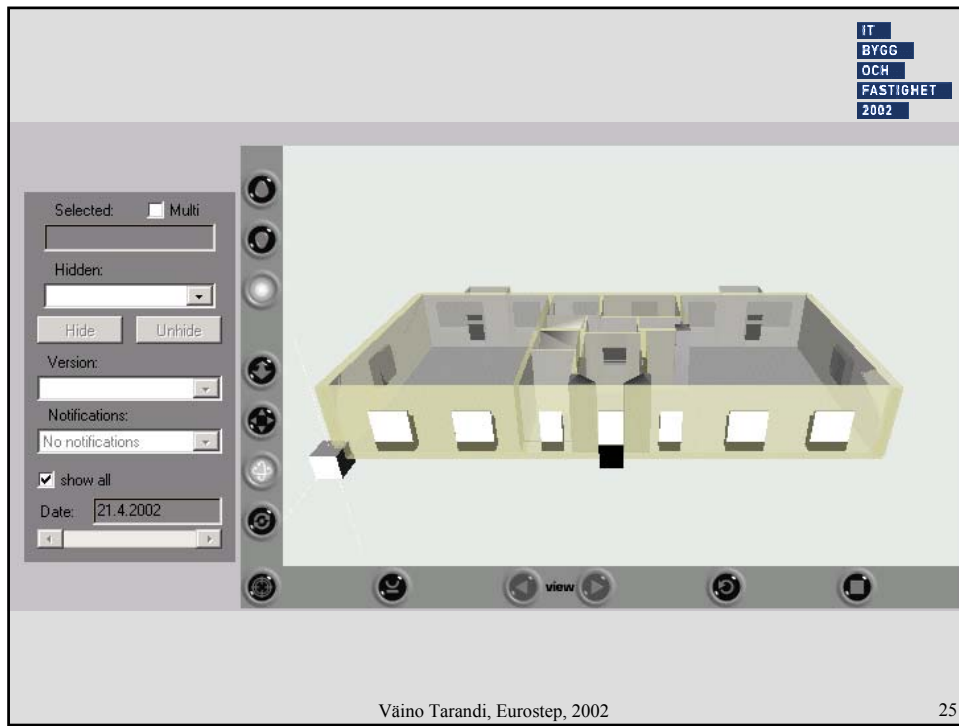
Microsoft Excel - report.xls

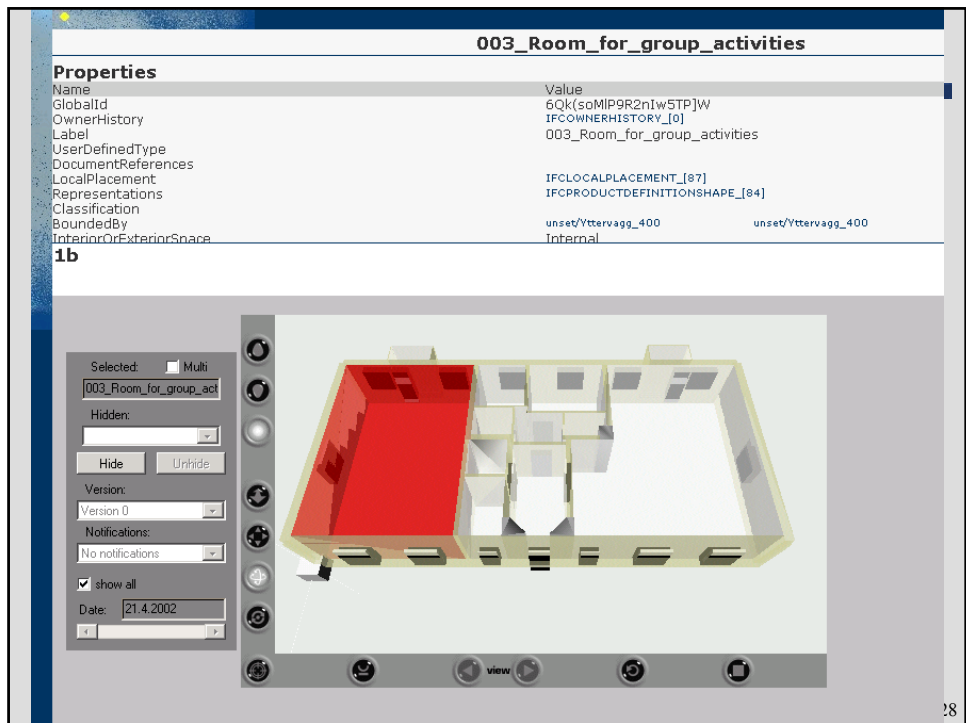
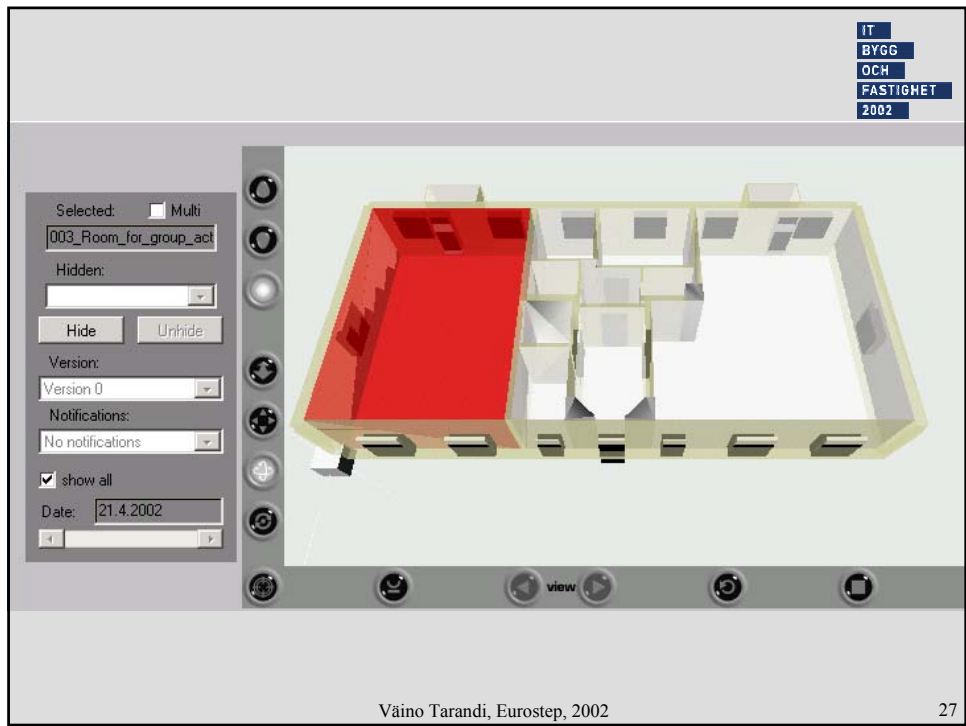
Vista | Edreg | Zooma | Skriv ut... | Format... | Marg. | Sidbrytningsgranskning | Stäng | Hjälp

### Evaluation of relations/connections between spaces (report from Facility)

Space	Floor	Location	RoomId	Area	Connection "wall to wall"			Close to			not close to		
					Program	No OK	Diff	Program	No OK	Diff	Program	No OK	Diff
001	Lecture-room	1	unset	72,87	0	0	0	0	0	0	0	0	0
003	Room for group ac	1	unset	63,1	1	0	1	0	0	0	0	0	0
004	Dissecting-room	1	unset	12,04	1	1	0	1	1	0	0	0	0
005	Store-room	1	unset	5,88	0	0	0	1	1	0	0	0	0
006	Teachers-room	1	unset	7,23	1	0	1	0	0	0	0	0	0

Irhandsgranska: Sida 1 av 2





**Yttervagg\_400**

Properties	Value
Name	SM:_uL<z[77gWX>-<)7X
GlobalId	IFCOWNERHISTORY_0]
OwnerHistory	Yttervagg_400
Label	
UserDefinedType	
DocumentReferences	
LocalPlacement	IFCLOCALPLACEMENT_5]
Representations	IFCPRODUCTDEFINITIONSHAPE_2]
Classification	
HasMaterial	
LayerInformation	IFCMATERIALLAYERSETUSAGE_0]

**1b**

Selected:  Multi

Yttervagg\_400

Hidden: 003\_Room\_for\_group

Version: Version 0

Notifications: No notifications

show all

Date: 21.4.2002

29

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**IMPACT**

[www.impact.skanska.se](http://www.impact.skanska.se)

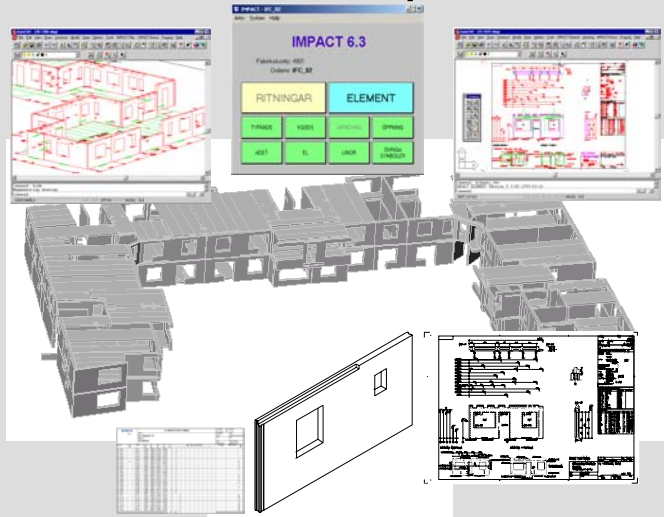
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30



# From model to production

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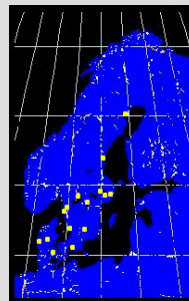
31



# Users

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- Skanska Prefab
- Abetong Precon
- Granholm Byggkonsult
- Scandiaconsult
- Flygfältsbyrå
- Byggt teknik i Skåne
- Structor
- SamCon



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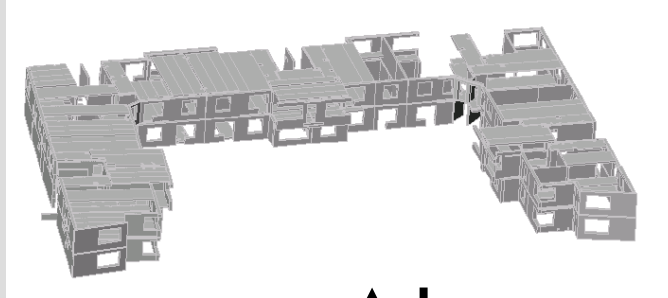
32





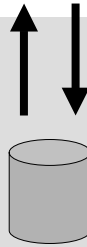
# IMPACT - IFC

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## WALLS

- GEOMETRY
- OPENINGS



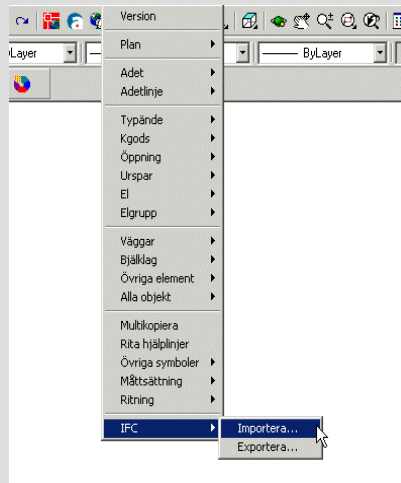
FASADE  
ELEMENTS  
INNER WALLS

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33



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34



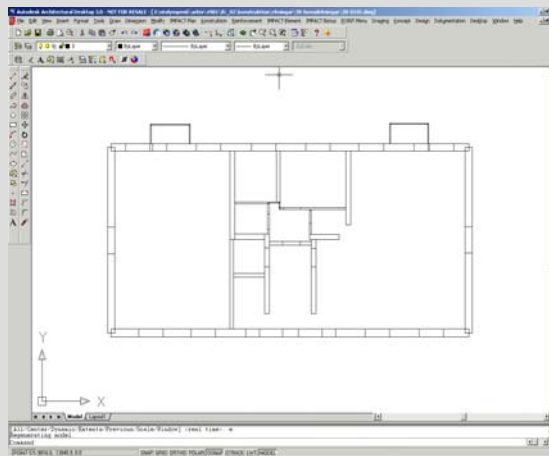
**Import IfcOpeningElements:**

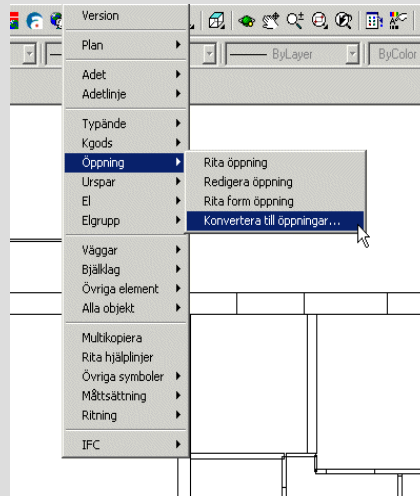
Project:

Site:

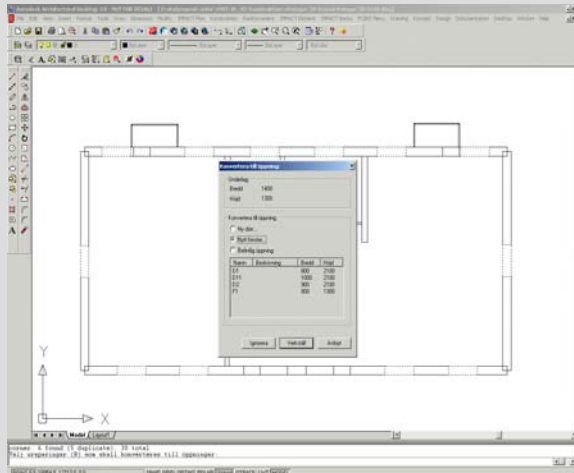
Building:

BuildingStorey:

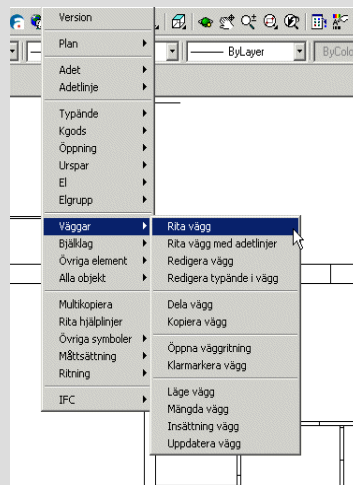
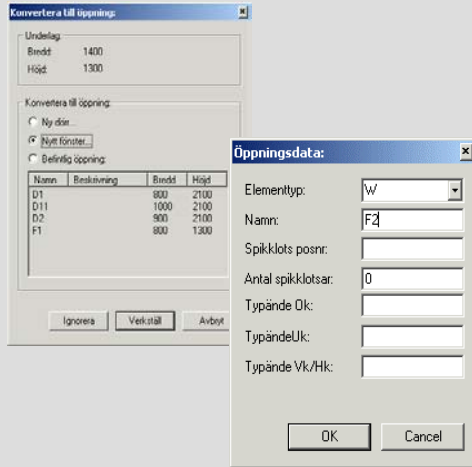




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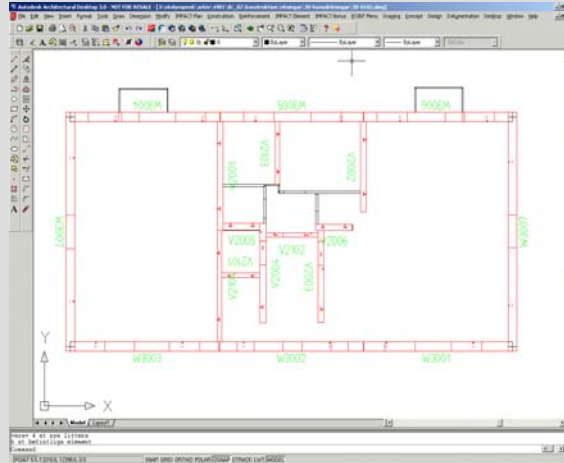


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2002

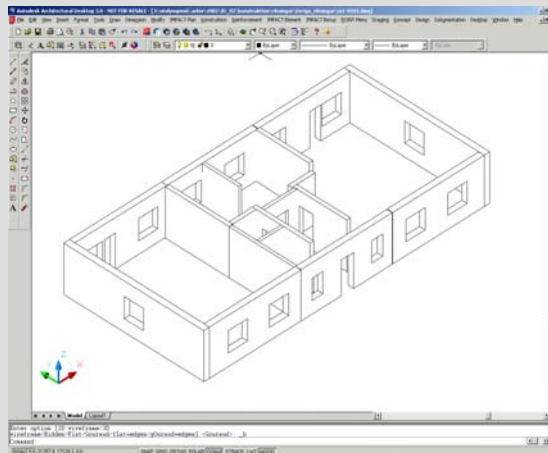


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41



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42



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The screenshot displays a software interface with a 2D architectural plan on the left. On the right, there are two tables. The top table is titled "RITNINGSFÖRTECKNING" and the bottom table is titled "ELEMENTFÖRTECKNING". Both tables have columns for "SKANSKA", "BYGG", "OCH", "FASTIGHET", and "2002".

RITNINGSFÖRTECKNING	
NO	BESKRIVNING
00-0001	...
00-0101	...
00-0201	...
00-0301	...
00-0401	...
00-0501	...
00-0601	...
00-0701	...
00-0801	...
00-0901	...
00-1001	...

ELEMENTFÖRTECKNING	
NO	BESKRIVNING
00-0001	...
00-0101	...
00-0201	...
00-0301	...
00-0401	...
00-0501	...
00-0601	...
00-0701	...
00-0801	...
00-0901	...
00-1001	...

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43



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The screenshot shows a software interface with a menu on the left and a 2D architectural plan on the right. The menu includes options like "Version", "Plan", "Adetlinje", "Typände", "Kgoods", "Öppning", "Urspår", "El", "Elgrupp", "Väggar", "Bjällag", "Övriga element", "Alla objekt", "Multikopiera", "Rita hjälplinjer", "Övriga symboler", "Måttställning", "Ritning", and "IFC". The "IFC" option is highlighted, and a sub-menu is visible with "Importerera..." and "Exporterera..." options. The 2D plan shows a rectangular structure with dimensions and labels like "E00", "E01", and "VZ103".

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44



**Yttervagg\_400**

Properties	Value
Name	SM:_UL<z[7?gWX>-<)7X
GlobalId	IFCOWNERHISTORY_10]
OwnerHistory	Yttervagg_400
Label	
UserDefinedType	
DocumentReferences	
LocalPlacement	IFCLOCALPLACEMENT_5]
Representations	IFCPRODUCTDEFINITIONSHAPE_2]
Classification	
HasMaterial	
LayerInformation	IFCMATERIALLAYERSETUSAGE_0]

**1b\_IMPACT**

Selected:  Multi

Yttervagg\_400

Hidden:

Version:

Notifications:

show all

Date:

view

47

**IMPACT Wall, Nbr: W3007, Handle: 3A08**

Properties	Value
Name	A@ZY[+UP@y8Gz7->teuB
GlobalId	IFCOWNERHISTORY_11]
OwnerHistory	IMPACT Wall, Nbr: W3007, Handle: 3A08
Label	
UserDefinedType	
DocumentReferences	
LocalPlacement	IMPACT Wall, Nbr: W3007, Handle: 3A08
Representations	IFCPRODUCTDEFINITIONSHAPE_1159]
Classification	IFCClassificationList_0]
HasMaterial	
LayerInformation	IFCMATERIALLAYERSETUSAGE_7]

**1b\_IMPACT**

Selected:  Multi

IMPACT Wall, Nbr: W3007

Hidden: Yttervagg\_400

Version:

Notifications:

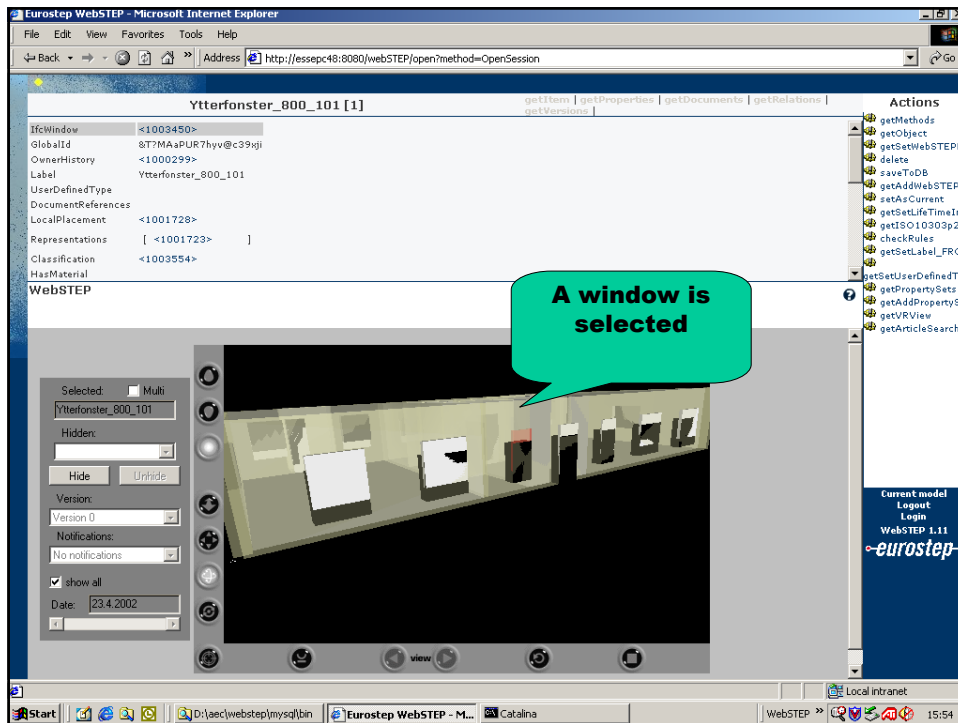
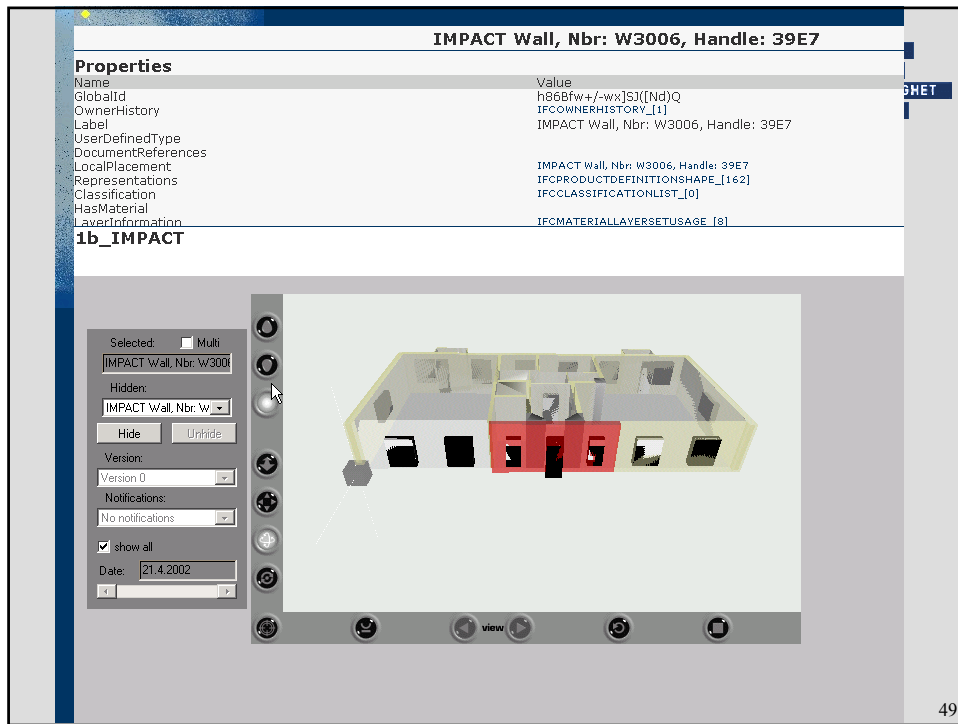
show all

Date:

view

48





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**Attributes are retrieved using search definition**

**Search definition DTD**

```

SearchDefinition [1..∞] -- Class [1..∞] -- Parameter [1..∞] -- Attribute [0..∞]
Definitions of the parameters to search for
The class in IFC to which the attributes belong
The name of the parameter
The path to the attribute value
A required value on the attribute
Attribute
The path to the attribute value

```

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2002

# GDL application

