Berner Fachhochschule
Haute école spécialisée bernoise
Bern University of Applied Sciences

Fit for BIM
digital integration in the building process

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Head of Department Wood

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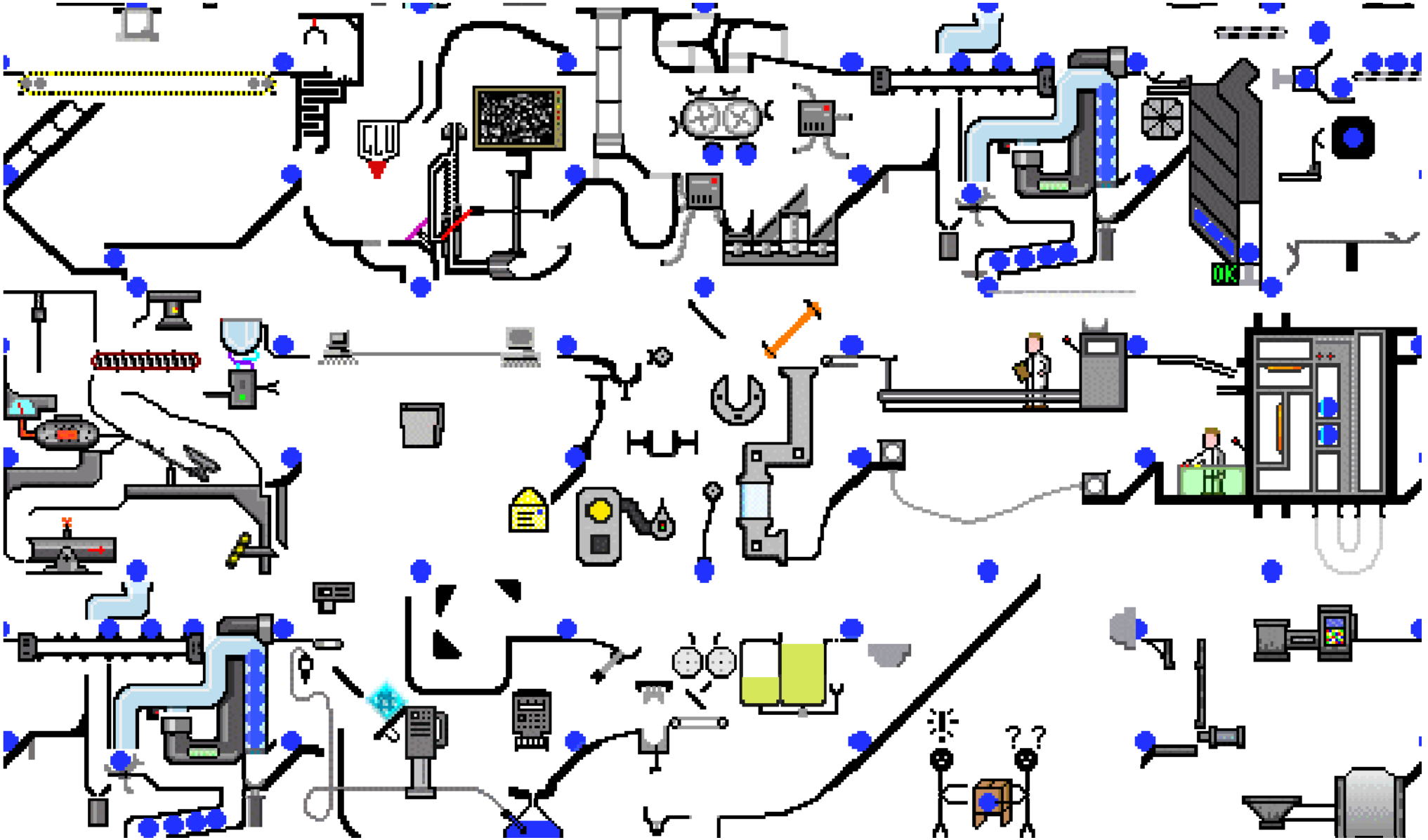
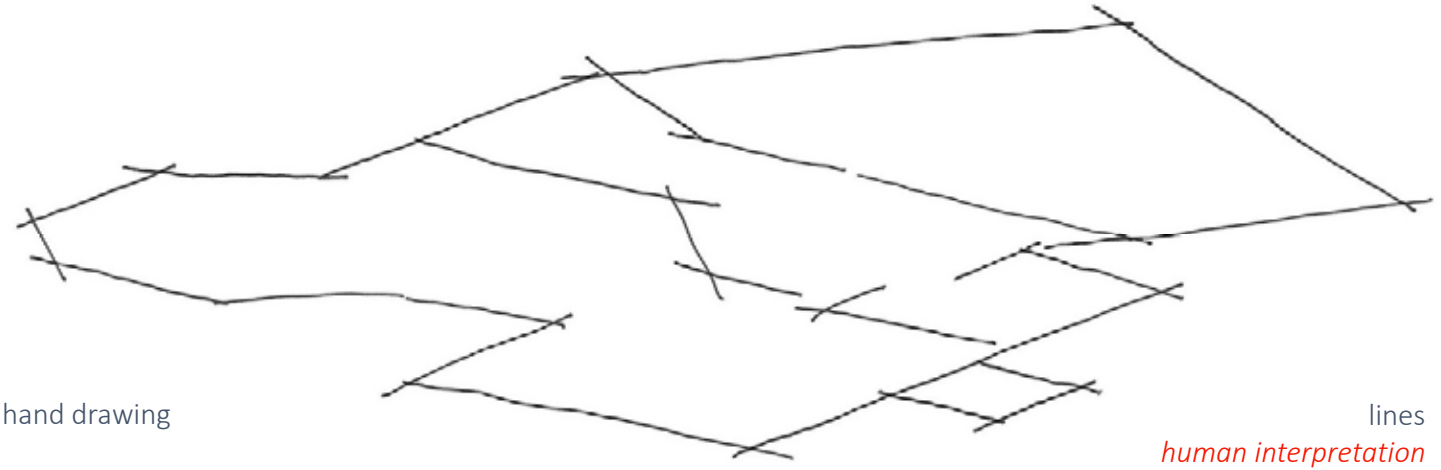
ABB


BIM


GLU
OK
HUH
??

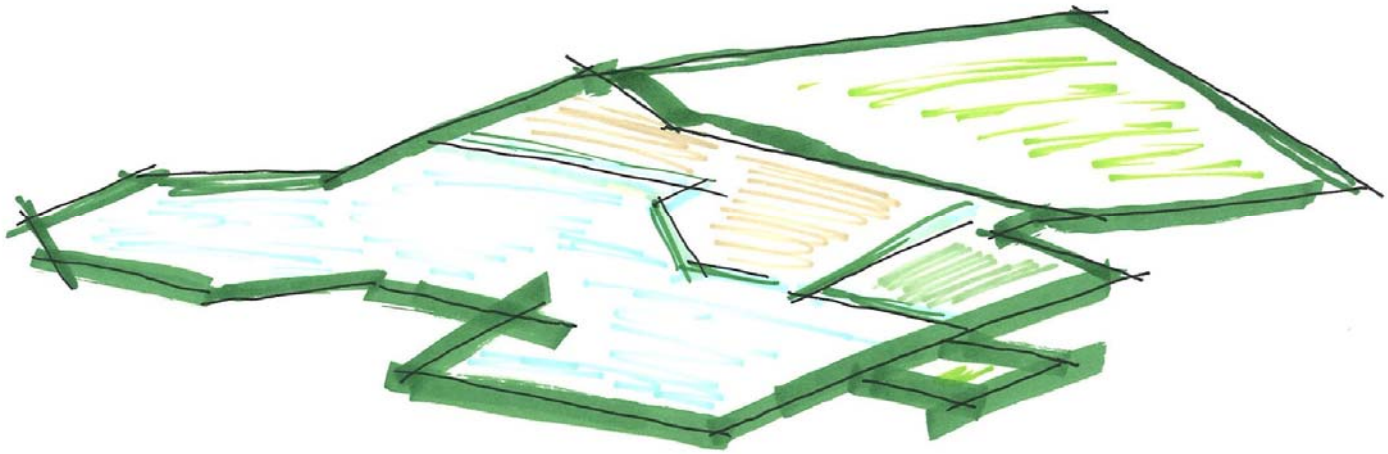
From 2D to 3D



Line – hand drawing

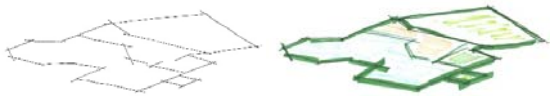
lines

human interpretation



The line

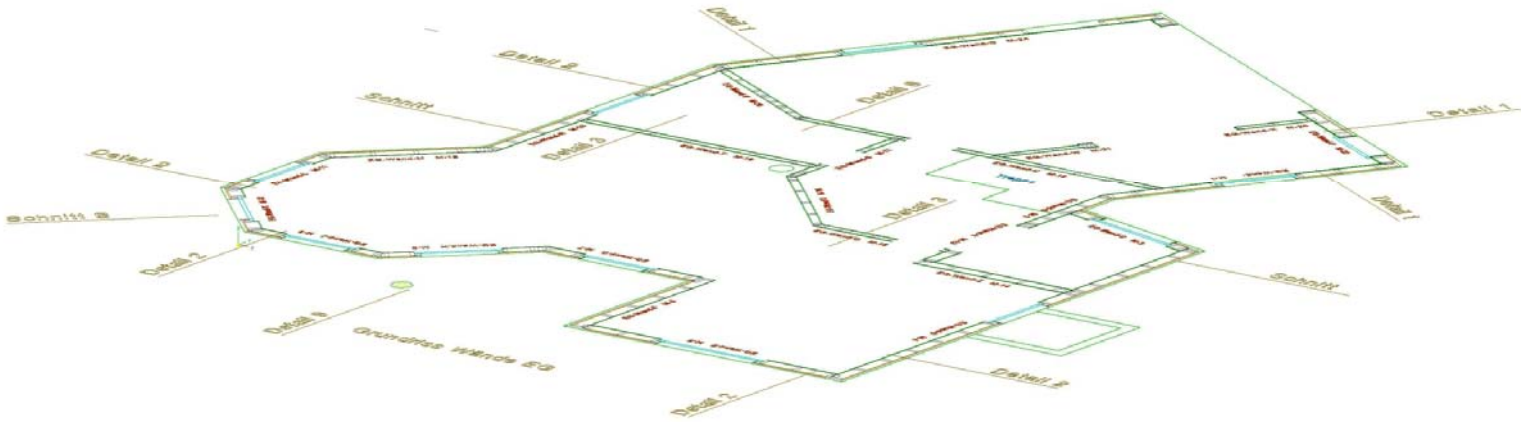
From human drawn line to digital line



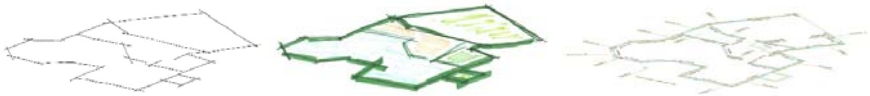
line – digital lines

digital lines

human interpretation

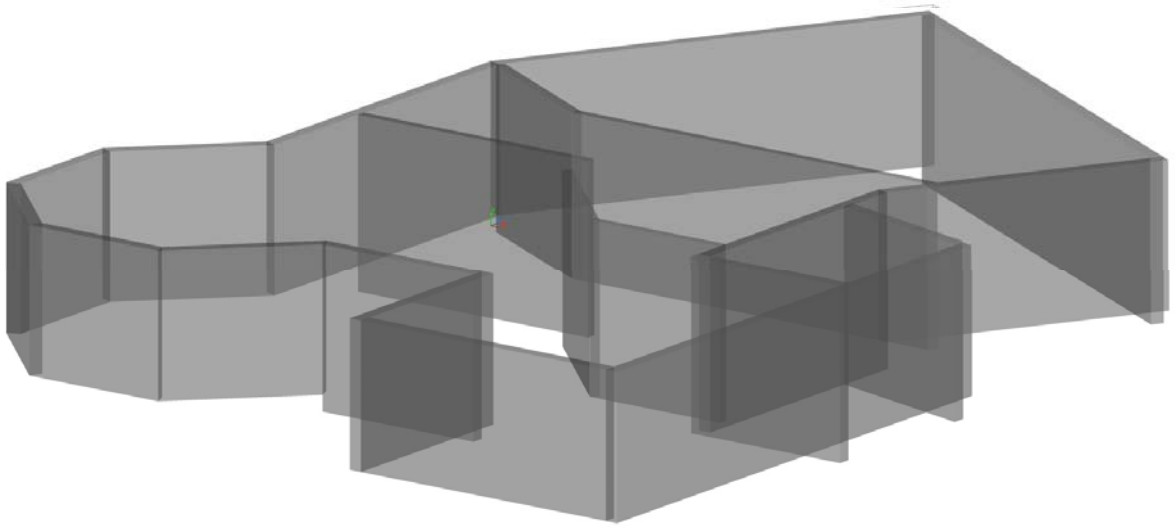


From lines to surfaces to volumes



Volumes & surfaces

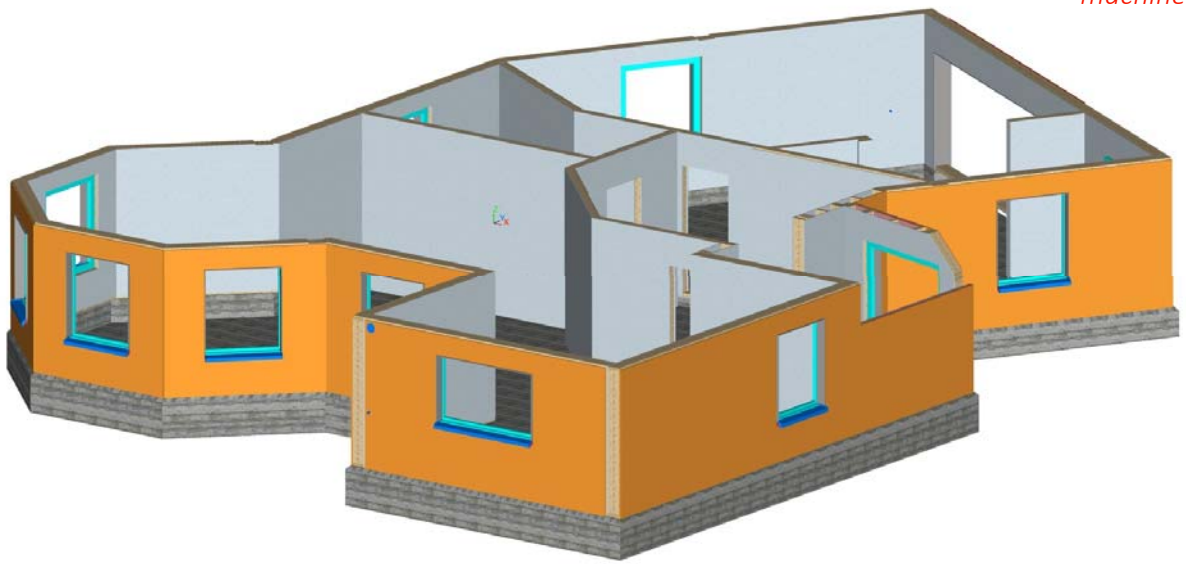
volumes & surfaces
building
shape & form

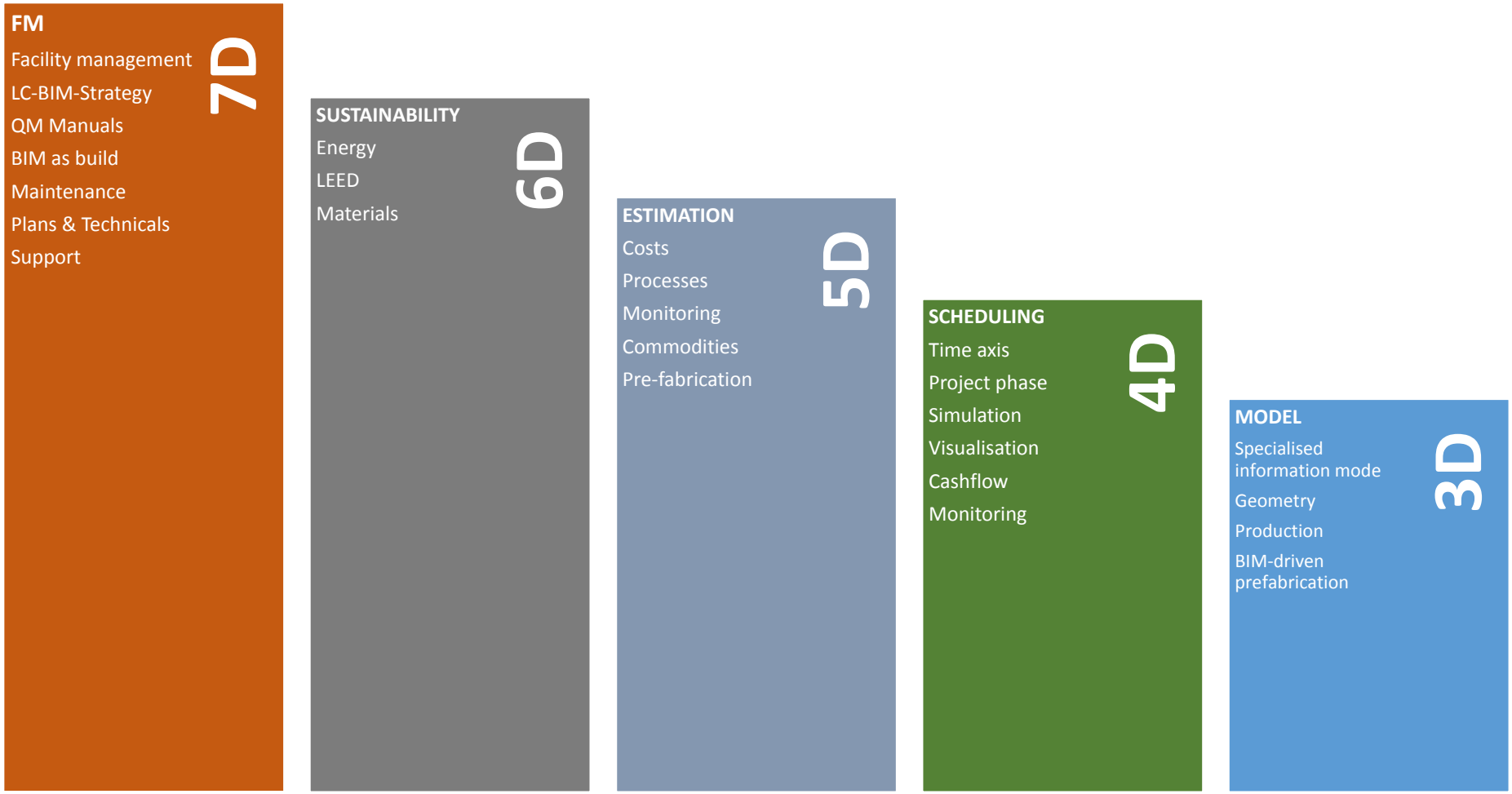


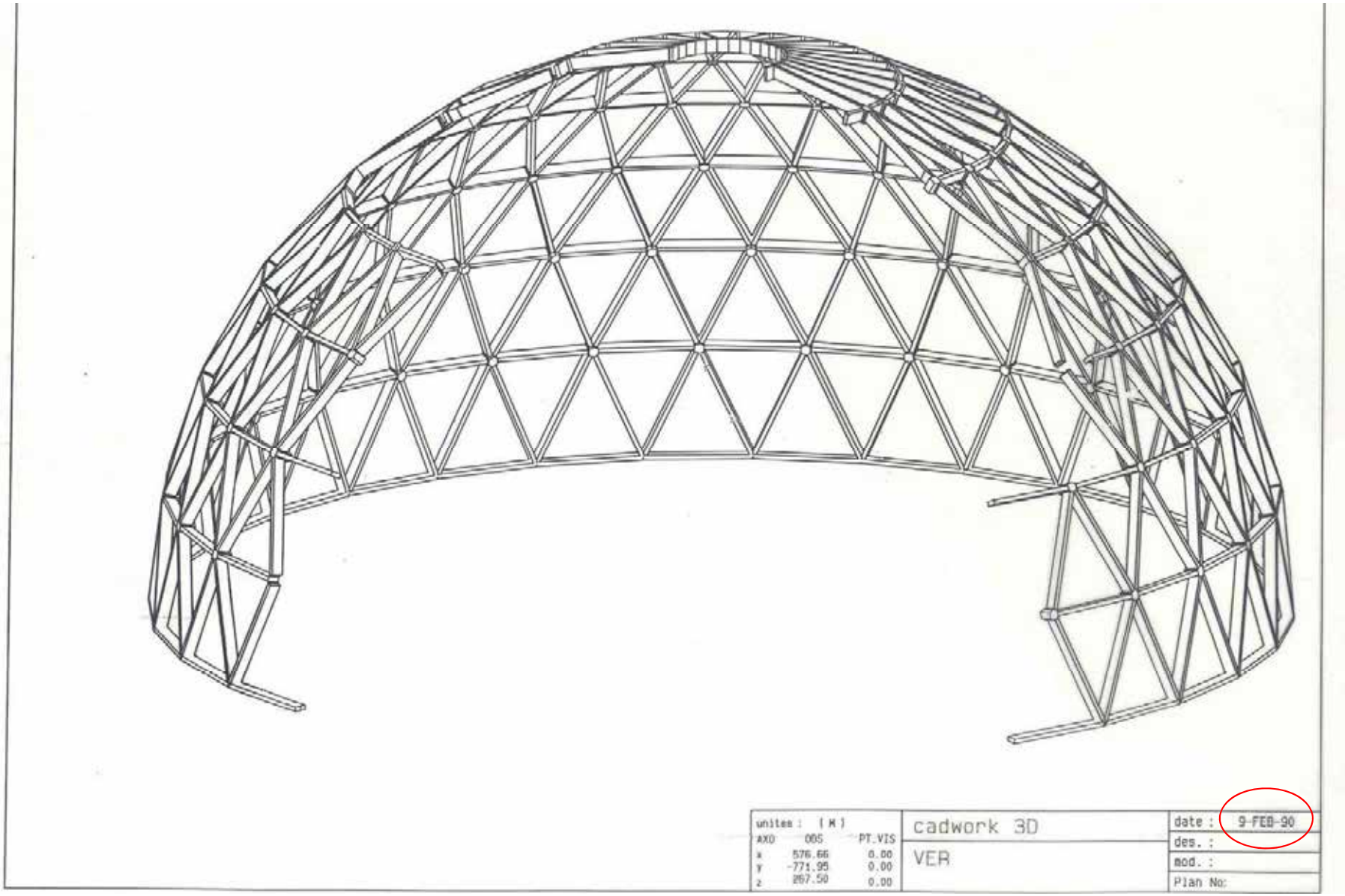
Digitai Information model

Digital objects & components

digital objects & components
properties, relations
machine interpretations




FM
Facility management
LC-BIM-Strategy
QM Manuals
BIM as build
Maintenance
Plans & Technicals
Support
7D
SUSTAINABILITY
Energy
LEED
Materials
6D
ESTIMATION
Costs
Processes
Monitoring
Commodities
Pre-fabrication
5D
SCHEDULING
Time axis
Project phase
Simulation
Visualisation
Cashflow
Monitoring
4D
MODEL
Specialised information mode
Geometry
Production
BIM-driven prefabrication
3D


unites : (M)
AXO 005 PT.VIS
x 576.66 0.00
y -771.95 0.00
z 257.50 0.00
cadwork 3D
VER
date : 9-FEB-90
des. :
mod. :
Plan No:

What is BIM ?

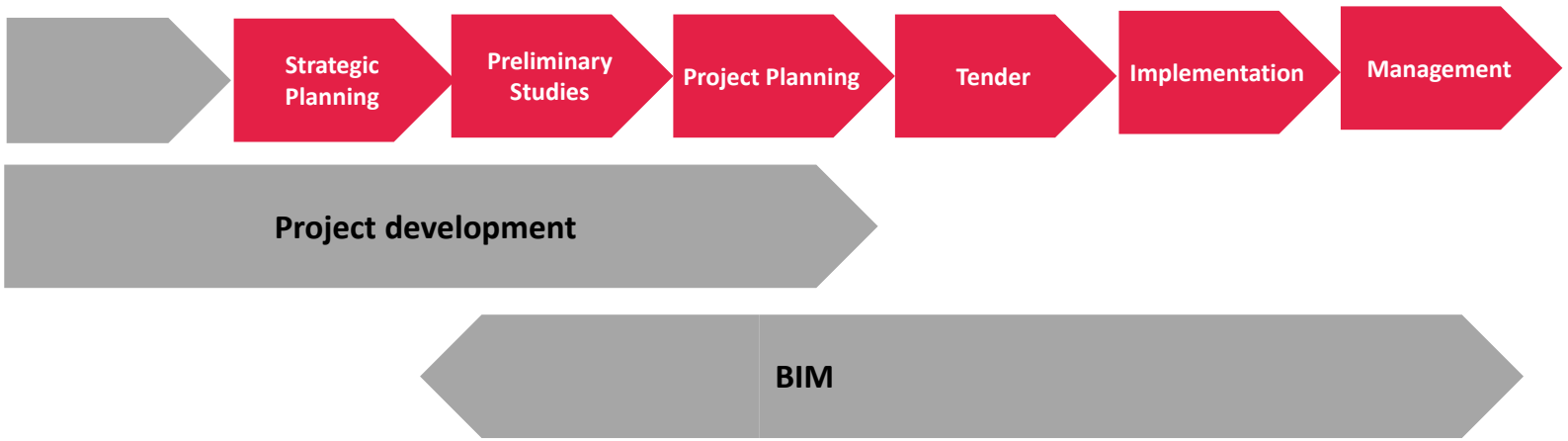
Building Information Modeling

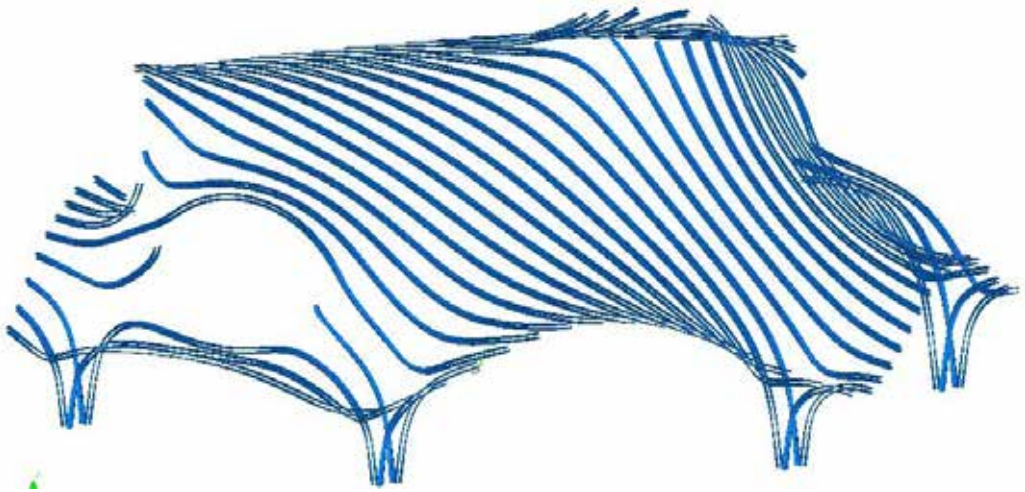
Connecting all relevant meta data with a geometric element.

SIA 112 - Modell Bauplanung

Leistungsmodell SIA 112	Schulung der CRB-Standards		
	BASIS	**PRAXIS**	**EXTRAS**
1 Strategische Planung **2 Vorstudien** **3 Projektierung**	vermittelt Grundwissen		
4 Ausschreibung 41 Ausschreibung, Angebotsvergleich, Vergabeantrag • Grundlagen: Bauprojekt • Detailpläne • Ziel: Ausschreibung • Angebotsvergleich • Vergabeantrag	vermittelt grundsätzliches Vorgehen	vermittelt Sinn, Zweck,Vorgehen und Methodik für einfache Bauprojekte	vermittelt Sinn, Zweck, Vorgehen und Methodik für komplexe Bauprojekte
5 Realisierung 51 Ausführungsprojekt • Grundlagen: Ausschreibungsunterlagen • Bereinigte Angebote • Ziel: Ausführungsreife erreicht	vermittelt grundsätzliches Vorgehen	vermittelt koordinierende Denkweise	vermittelt Übung: Beispiele erarbeiten
52 Ausführung • Grundlagen: Definitive Ausführungs- und Detailpläne, Werk- und Kaufverträge • Ziel: Bauwerk gemäss Pflichtenheft und Vertrag erstellt			vermittelt Umsetzung und Koordination
53 Inbetriebnahme, Abschluss • Grundlagen: Bauwerk gemäss Pflichtenheft und Vertrag erstellt • Ziel: Bauwerk übernommen und in Betrieb genommen • Schlussabrechnung abgenommen • Mängel behoben			vermittelt Vorgehen, Ablauf und Rechtsgrundlagen
6 Bewirtschaftung 61 Betrieb • Grundlagen : Bauwerksakten mit vollständiger Dokumentation für die Bauwerksbewirtschaftung • Ziel: Betrieb sichergestellt und optimiert 62 Erhaltung • Grundlagen: Bauwerksakten mit vollständiger Dokumentation für die Bauwerksbewirtschaftung • Ziel: Gebrauchstauglichkeit und Wert des Bauwerks für definierten Zeitraum aufrechterhalten			vermittelt Vorgehen, Übung, Umsetzung und Erarbeitung der Unterlagen

When BIM ?


Strategic Planning
Preliminary Studies
Project Planning
Tender
Implementation
Management
Project development
BIM



Virtualization of the building industry

We will simulate the whole of the building process virtually (cradle to cradle)

Target

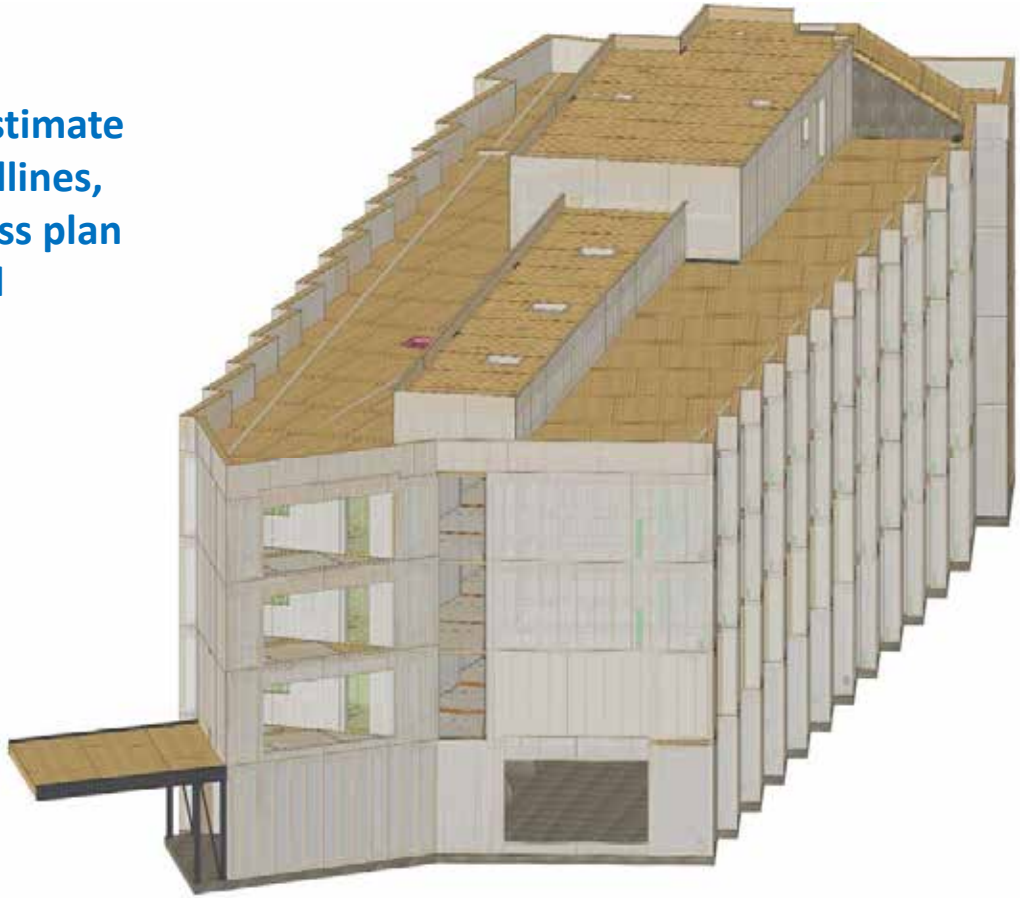
Error rate in the building industry: 20%

If we did not make any mistakes, our buildings would cost 20% less.

Repeat effect in the building industry: 20%

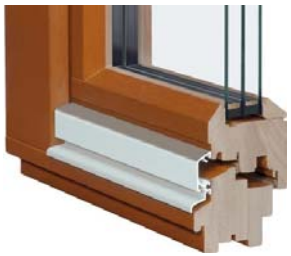
Surveys of practice reveal much more potential.

Presently, when providing construction services, we estimate construction work and deadlines, instead of creating a business plan for the building's useful and service life.



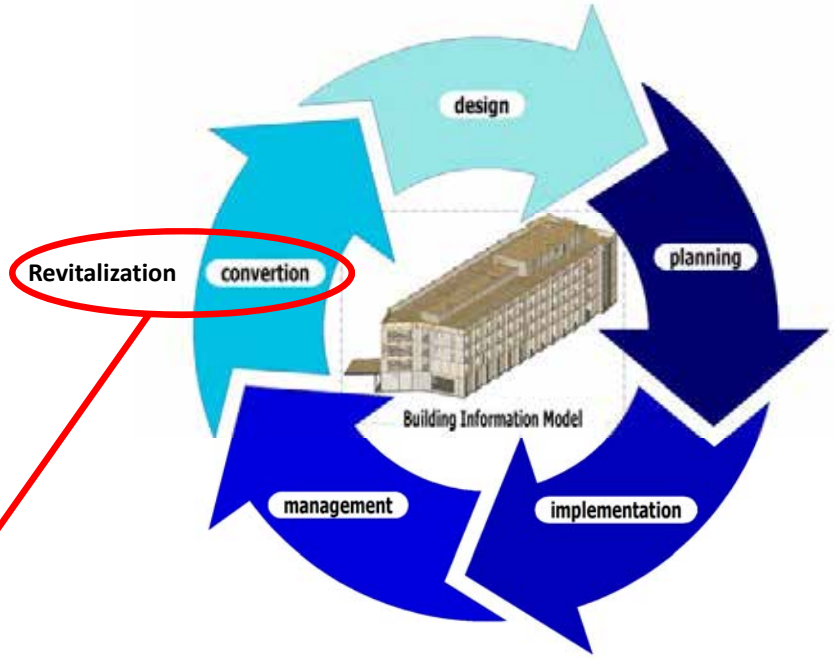
Glass door

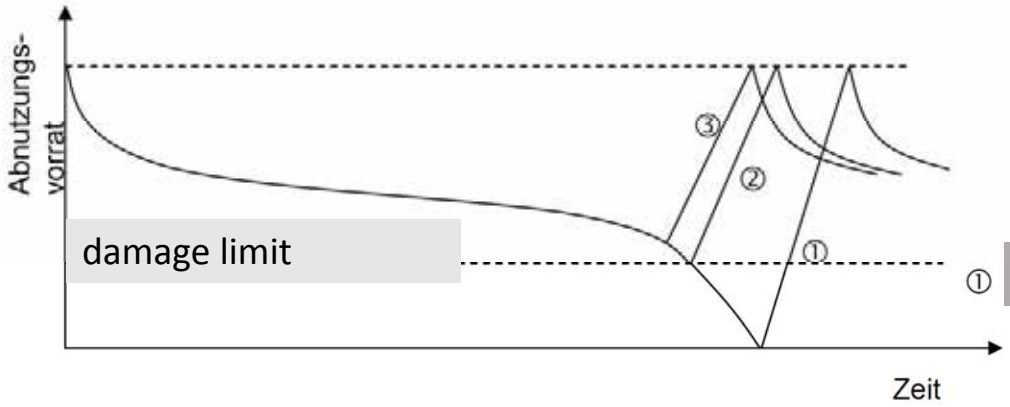
New windows



1	2	3	4
Ausgangslage / Begriffe	Vorgehen Planung bis Betrieb	Investitionszyklen	LCC Berechnung / Empfehlungen

Building Information Modeling





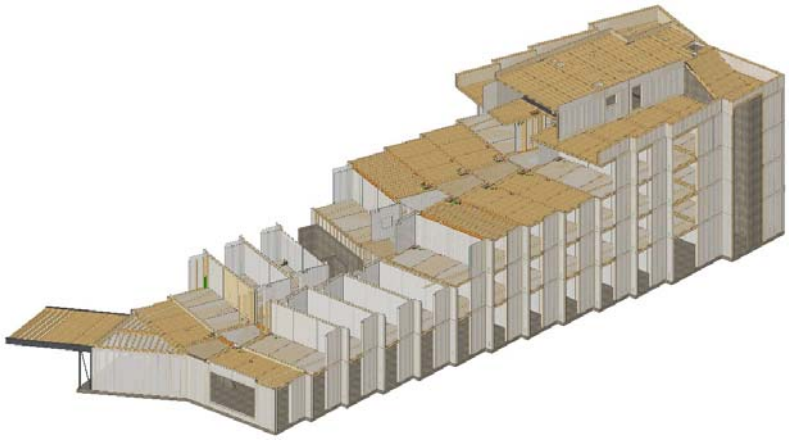
③ preventive strategy

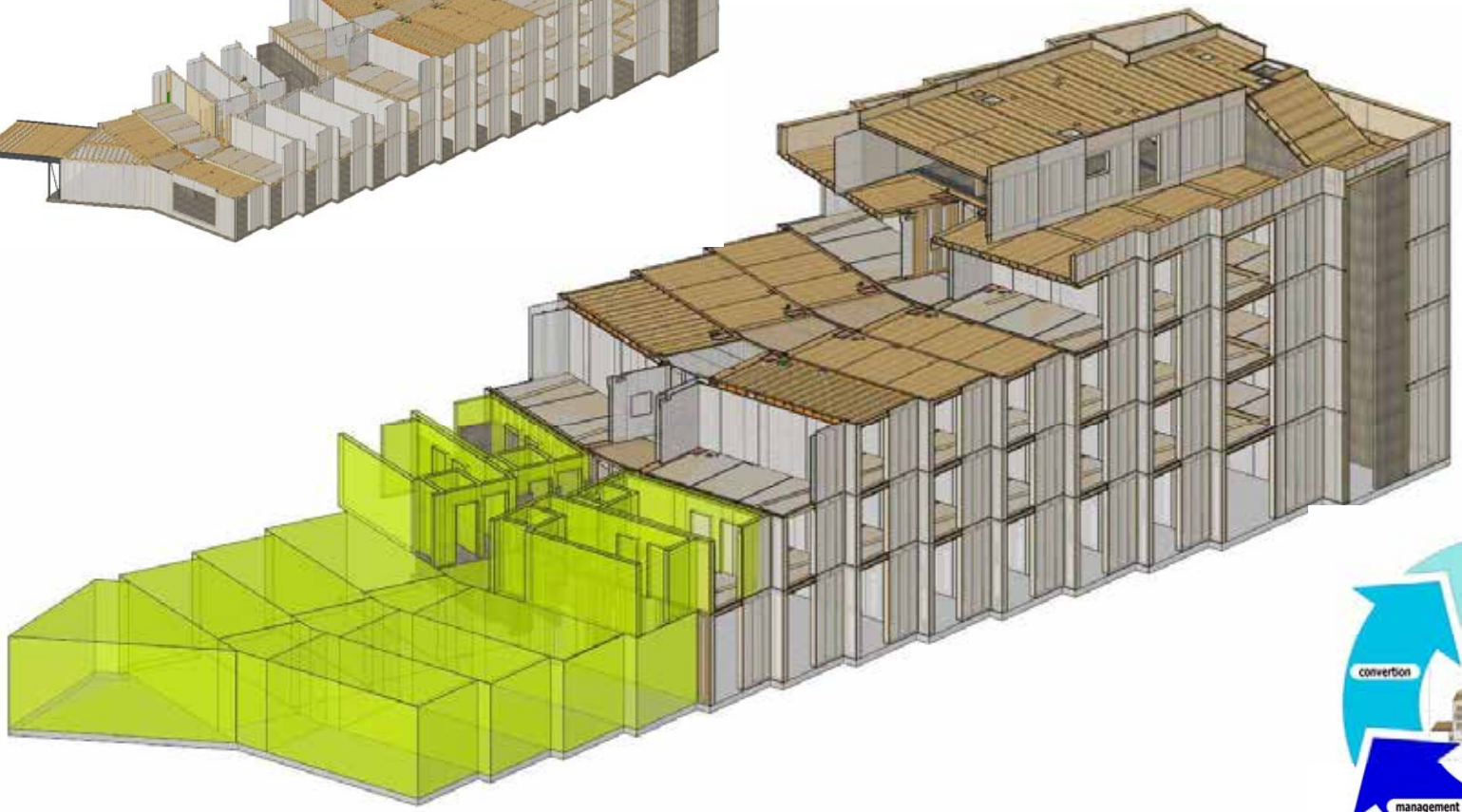
② inspection strategy

① fire service strategy

LOD – level of detail

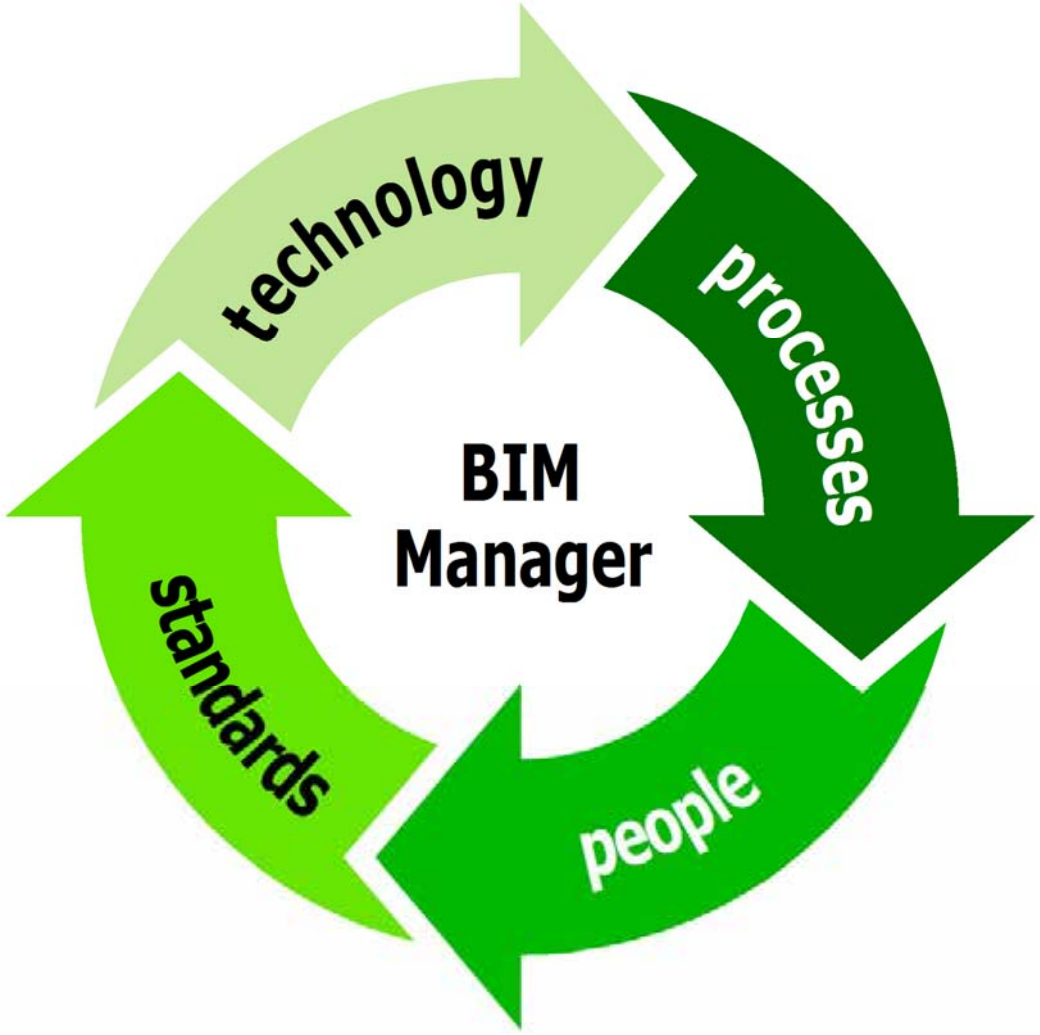
LOD
Level of Detail
Level of Development



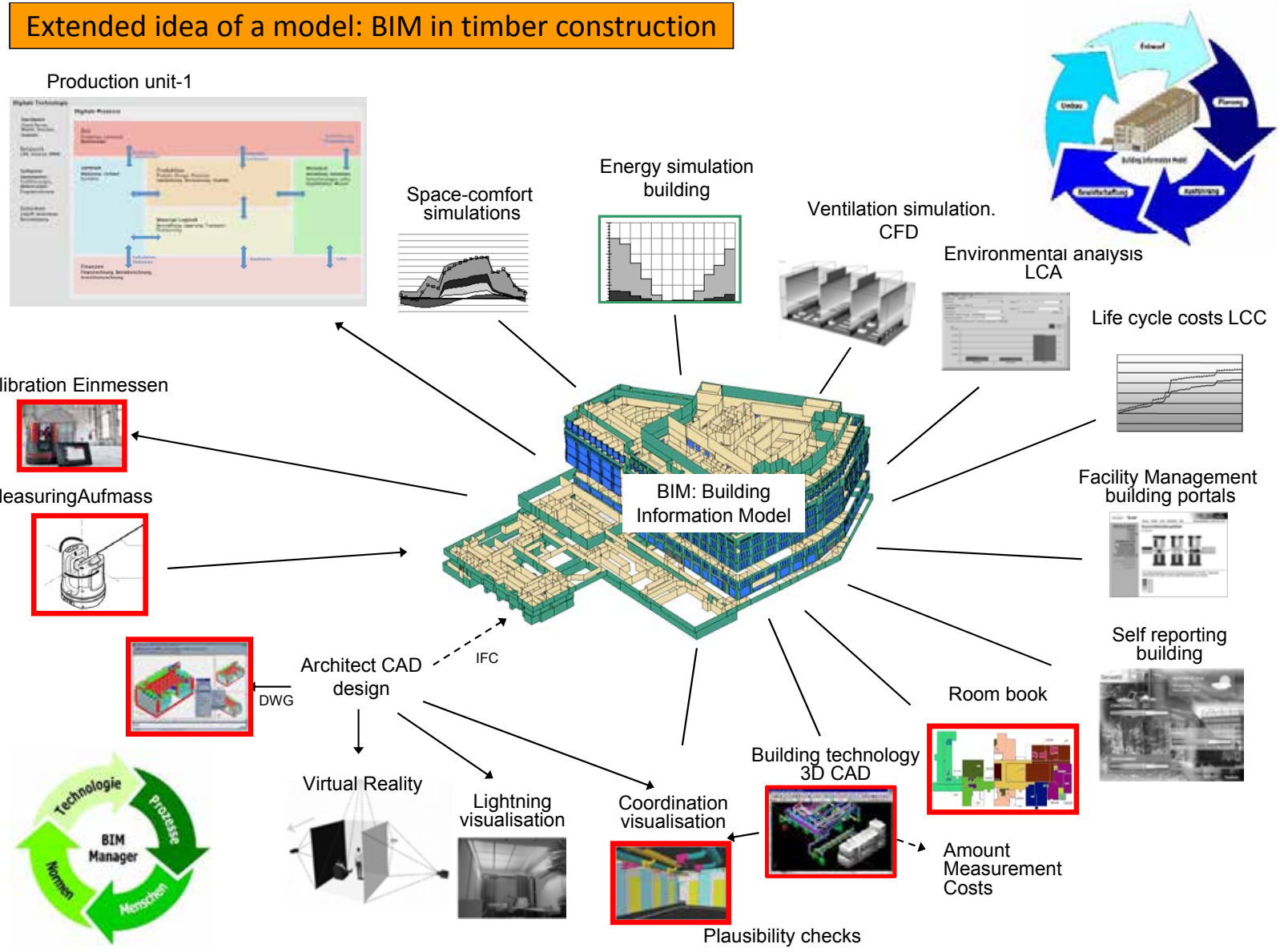


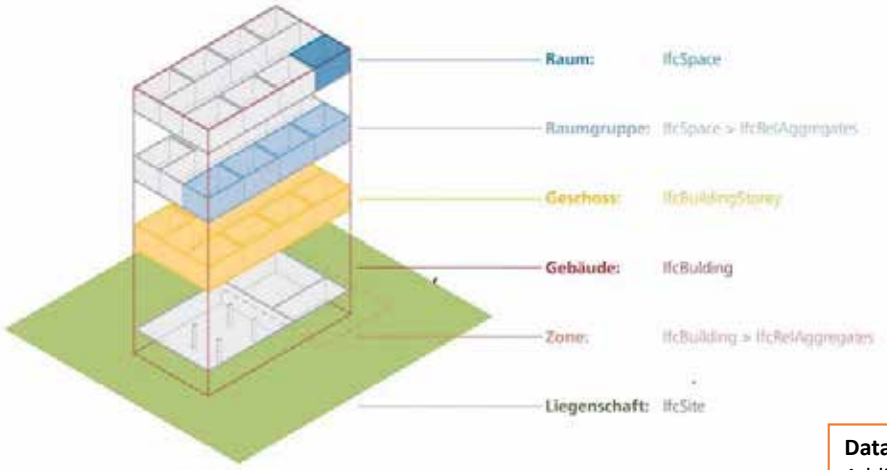
Building Information Modeling (or Management)

Connects all relevant meta data with a geometric element.



Extended idea of a model: BIM in timber construction





Data structure IFC

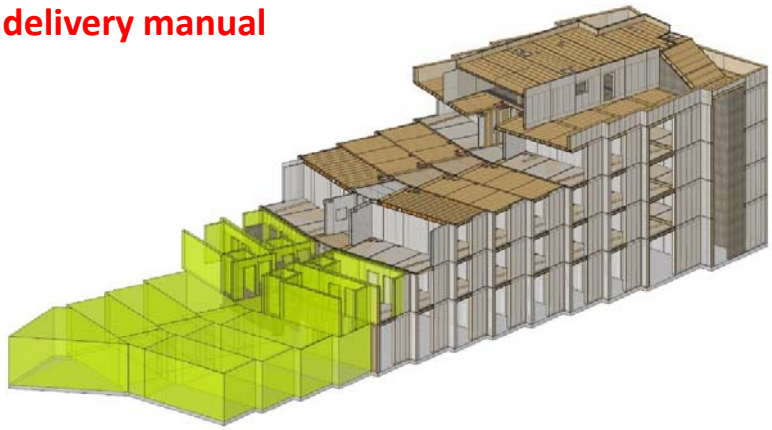
Quality assurance & coordination
The coordination of architectural, structural and building technological models will be carried out together with you in coordination workshops.
The check for data consistency is performed based on the defined types. In case of deviations between the model and the type data, the type data take precedence. Thus, particular attention should be paid to the tracking of type.

General information & use of the models
From the initial phases of the building project up to tender, graphic details and data will successively be added to enrich the informed 3D model as well as its associated database. We will use the provided models mostly to assess the requirements (target- actual comparison of the order), perform quantity surveying, coordinate the project between architecture, structural engineering and HVACS, and the economical optimisation of building and maintenance.

Data enrichment
Additional information of the components such as U value, acoustic rating, fire rating etc. are entered by specialist in the form of excel lists or directly into the database, based on type. Only after the data has been defined by the specialist should they be taken over in the type components of the architecture model.
For this purpose, it is recommended that libraries with the appropriate types be created, so that the correct values for fire protection, soundproofing and thermal transmission are recorded per type; this reduces the pressure on the draftsmen.

IDM = information delivery manual

Types
Based on the specification from the “IDM initiated/generated by models”, the concept of type is used as much as possible. This means that as little information as possible and only as much as necessary is to be stored in the model.
Determining types will be undertaken with you, according to the specific standards of project and practice. It includes:
- Rooms e.g. use/rental area/standard of development
- Type of structure for floor, ceiling, wall, depending on type of construction, e.g. raised floor
- Type of components for windows, doors, prefabricated elements



In general, supplement components with :
Fire Rating according to information from fire protection planners
Thermal transmission value according to information from building physicists
Acoustic Rating according to information from building physicists

Existing building <IFC Space>
Name of building <name> according to ***room program/space allocation***
eBKP-H <defined according to project>

Space (outside and inside) <IFC Space>
Room name <name> according to space allocation
Room number <number> according to space allocation
Room use <defined according to project > abbr. SIA416
Requirements according to indications BH/TU
G2.2 type of floor structure <defined according to project>
- underlay
- underfloor heating
- raised floor
- cavity floor
- dry screed

G4.2 type of ceiling structure <defined according to project>
- no false ceiling
- cast false ceiling
- grid ceiling
- metal grid ceiling
- acoustic ceiling

F1 type of roof structure <defined according to project>
- flat roof with gravel
- flat roof greened
- flat roof extensively greened
- flat roof intensively greened

G2.3 floor coverings <defined according to project>
- according to list of materials

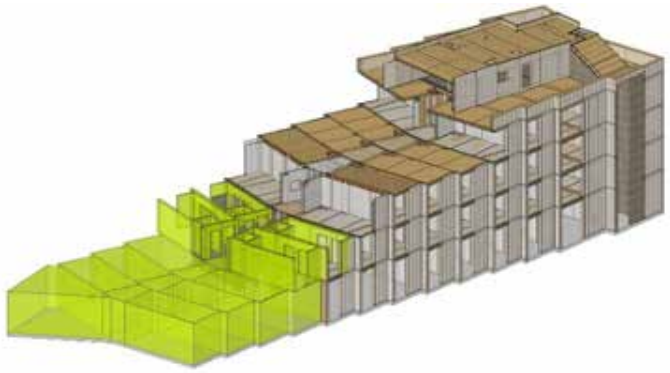
G3 wall coverings<defined according to project >
- according to list of materials

G4 ceiling coverings <defined according to project >
- according to list of materials

requirements according to indications BH/TU

stairs/ramps <IFCStairs>
eBKP-H <defined according to project>
- C4.2 /stairs and ramps)

Materials/type <defined according to project >
- reinforced concrete
- timber
- steel
- prefabricated reinforced concrete components



Property line<IFC Space>
Name of building <name> according to ***room program/space allocation***
eBKP-H <defined according to project> Q1

Windows/doors IFCWindows / IFCDoor>
eBKP-H <defined according to project>
- E3.1 (external window)
- E3.2 (external door)
- D4.6 (RWA) G1.4 (interior door)
- G1.3 (interior window)

Material/type <defined according to project>
- timber
- wood/metal mixture
- metal
- plastic
- glass
- steel
- aluminium
- sectional door
- inspection cover wall
- inspection cover ceiling
- inspection cover floor

Auxiliary volumes/others <IFC Space>
eBKP-H <defined according to project>
- B6.2 (excavation)
- B6.3 (excav. contaminated)
- B6.5 (excavation end)
- B6.6 (materials installation)

Types of auxiliary volumes <Name>
- service spaces
- equipment location
- access space
- usable exterior space (e.g. terraces, balconies, loggias)

Sanitary objects<IFCSanitaryTerminal>
eBKP-H <defined according to project> Q1
- D8.1 (fittings, appliances)

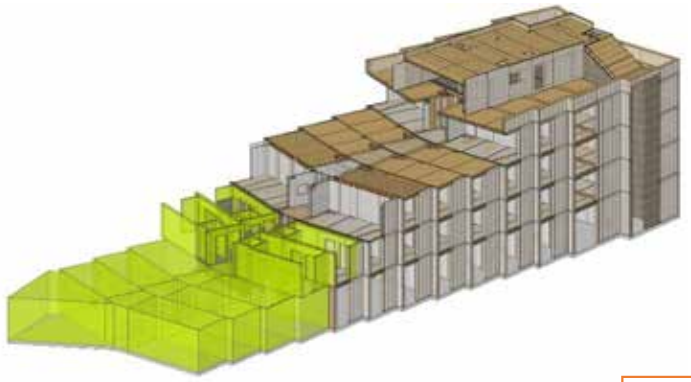
Material/type <defined according to project>
- wash stand
- wash basin
- toilette
- urinal
- shower
- bath tub
- gutter
- floor drain

railing<IFCRailing>
eBKP-H <defined according to project>
G5.4 (protections)
Material/type <defined according to project>
timber
steel
Glas

***Footing/Foundation* <IFC Footing>**
eBKP-H <defined according to project>
C1 (foundation)
C1.3 (individual, strip footing)
Material/type <defined according to project>
reinforced concrete
screw foundation

System façade <IFC Space>
eBKP-H <defined according to project>
E2.4 (façade system)
Material/type <defined according to project>
glass façade
plaster façade
rear ventilated façade

Wall<IFC Space>
eBKP-H <defined according to project>
C2.1 (external window)
C2.2 (external door)
G1.1 (fixed partition)
G1.2 (movable partition)
Material/type <defined according to project>
reinforced concrete
masonry
steel
timber
dry construction
glass partition wall
installation wall
modular wall



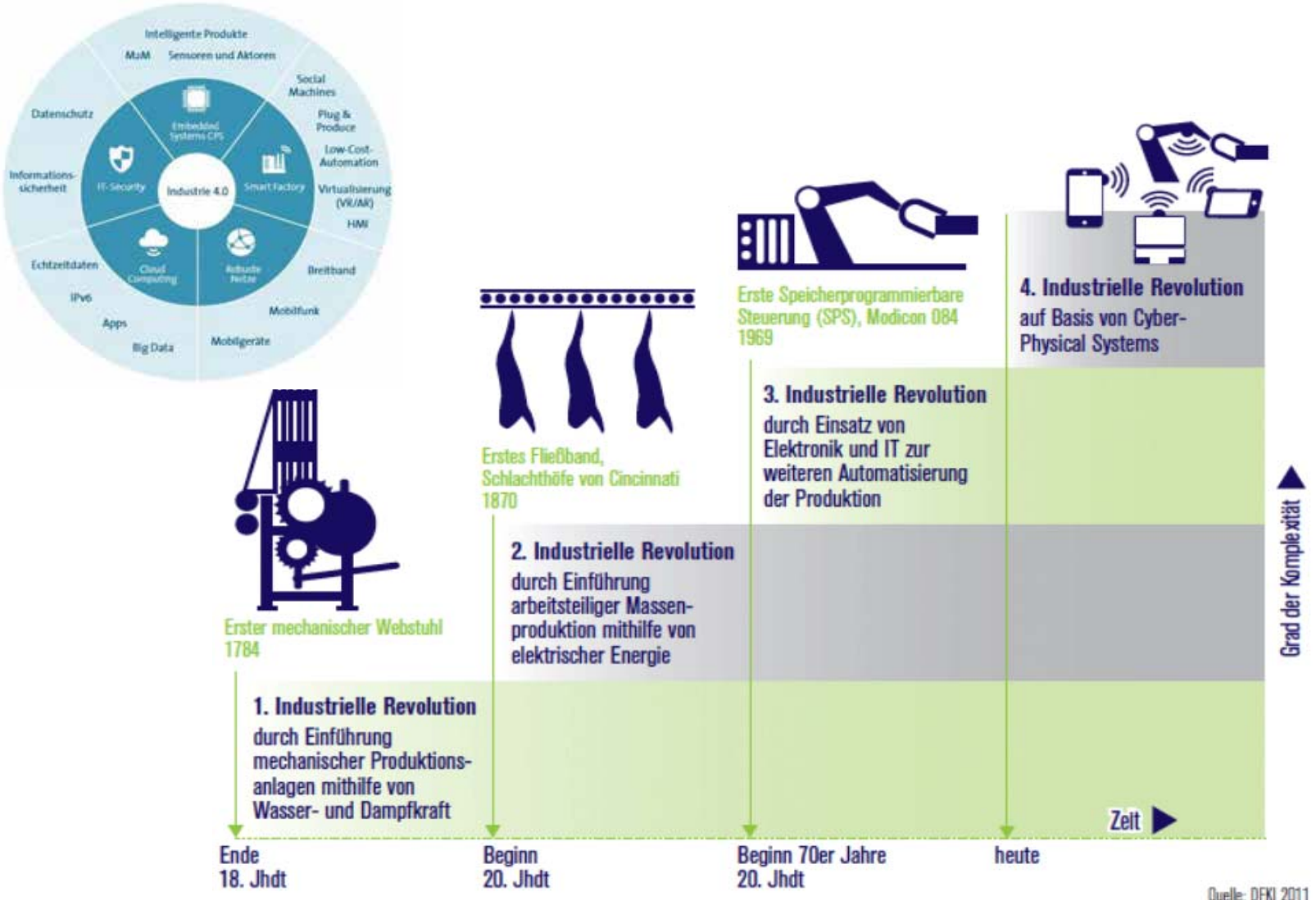
stairs/ramp<IFCStairs>
eBKP-H <defined according to project>
C4.2 /stairs and ramps)
Material/type <defined according to project>
reinforced concrete
timber
steel
prefabricated reinforced
concrete components

Ceiling balcony/roof<IFCSlab>
eBKP-H <defined according to project>
C4.1 (slabs and beams)
C4.3 (balcony)
C4.4 (roof)
Material/Typ <defined according to project>
reinforced concrete
timber
wood concrete composite
module ceiling
module floor
module roof

Sanitary objects<IFCSanitaryTerminal>
eBKP-H <defined according to project> Q1
D8.1 (fittings, appliances)
Material/type <defined according to project>
wash stand
wash basin
toilette
urinal
shower
bath tub
gutter
floor drain

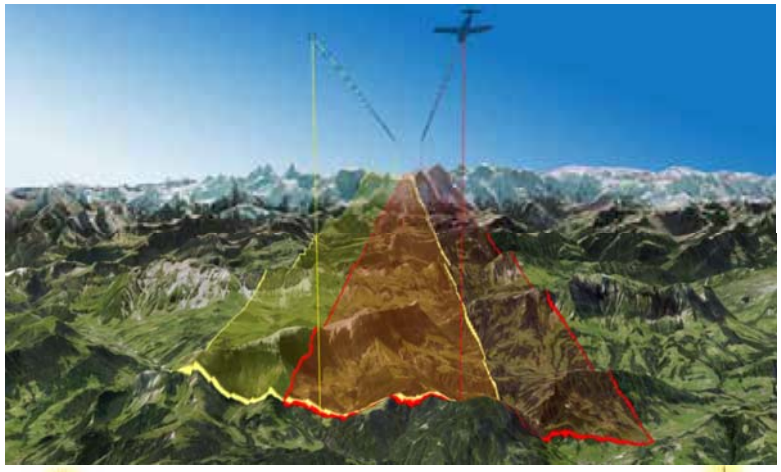
Property line <IFC Space>
Building name <Name> according to ***room program/space allocation***
eBKP-H <defined according to pr> Q1

Industry 4.0


Intelligente Produkte
MuM
Sensoren und Aktoren
Social Machines
Plug & Produce
Low-Cost-Automation
Virtualisierung (VR/AR)
HMI
Breitband
Mobilfunk
Mobilgeräte
Big Data
Apps
IPv6
Echtzeitdaten
Informations-sicherheit
Datenschutz
IT-Security
Industrie 4.0
Smart Factory
Cloud Computing
Robuste Netze
Embedded Systems CPS
Erster mechanischer Webstuhl 1784
Erstes Fließband, Schlachthöfe von Cincinnati 1870
Erste Speicherprogrammierbare Steuerung (SPS), Modicon 084 1969
1. Industrielle Revolution
durch Einführung mechanischer Produktions-anlagen mithilfe von Wasser- und Dampfkraft
2. Industrielle Revolution
durch Einführung arbeitsteiliger Massen-produktion mithilfe von elektrischer Energie
3. Industrielle Revolution
durch Einsatz von Elektronik und IT zur weiteren Automatisierung der Produktion
4. Industrielle Revolution
auf Basis von Cyber-Physical Systems
Grad der Komplexität
Zeit
Ende 18. Jhdt
Beginn 20. Jhdt
Beginn 70er Jahre 20. Jhdt
heute
Quelle: DFKI 2011


BIM to field
Field to BIM

Photogrammetry



Disto handheld distance meter

95	2.690,74	4.651,58	72,87	1.96
160	4.288,40	4.660,96	8,69	3
45	3.257,92	3.001,95	-7,86	-2
25	1.182,00	970,28	-17,91	-2
4	1.075,75	1.042,26	-3,11	-3
20	830,66	976,00	17,50	1
0	1.013,84	910,20	-10,22	-1
70	2.214,35	2.522,66	13,92	3
45	2.197,76	1.775,25	-19,22	-4
25	991,95	1.263,58	27,38	2
40	1.153,68	1.340,20	16,17	1
25	3.277,66	3.156,25	-3,70	-1
13	1.006,85	1.089,98	8,26	
40	2.921,50	3.497,60	19,72	5
16	2.378,53	2.623,20	10,29	2
100	888,10	1.279,50	44,07	3
20	1.095,42	1.341,80	22,49	2
15	1.355,36	1.272,62	-6,10	-0
30	999,90	854,55	-14,54	-1
34	2.181,61	2.425,46	11,18	2
10	1.095,93	920,65	-15,99	-1
45	2.680,29	2.863,35	6,83	1
5	1.163,97	1.181,75	1,53	
90	2.427,40	1.968,75	-18,89	-4
50	861,45	1.050,45	21,94	1
30	904,71	1.196,70	32,27	2
35	1.112,90	1.266,13	13,77	1
15	1.001,84	869,93	-13,17	-1

Scanning

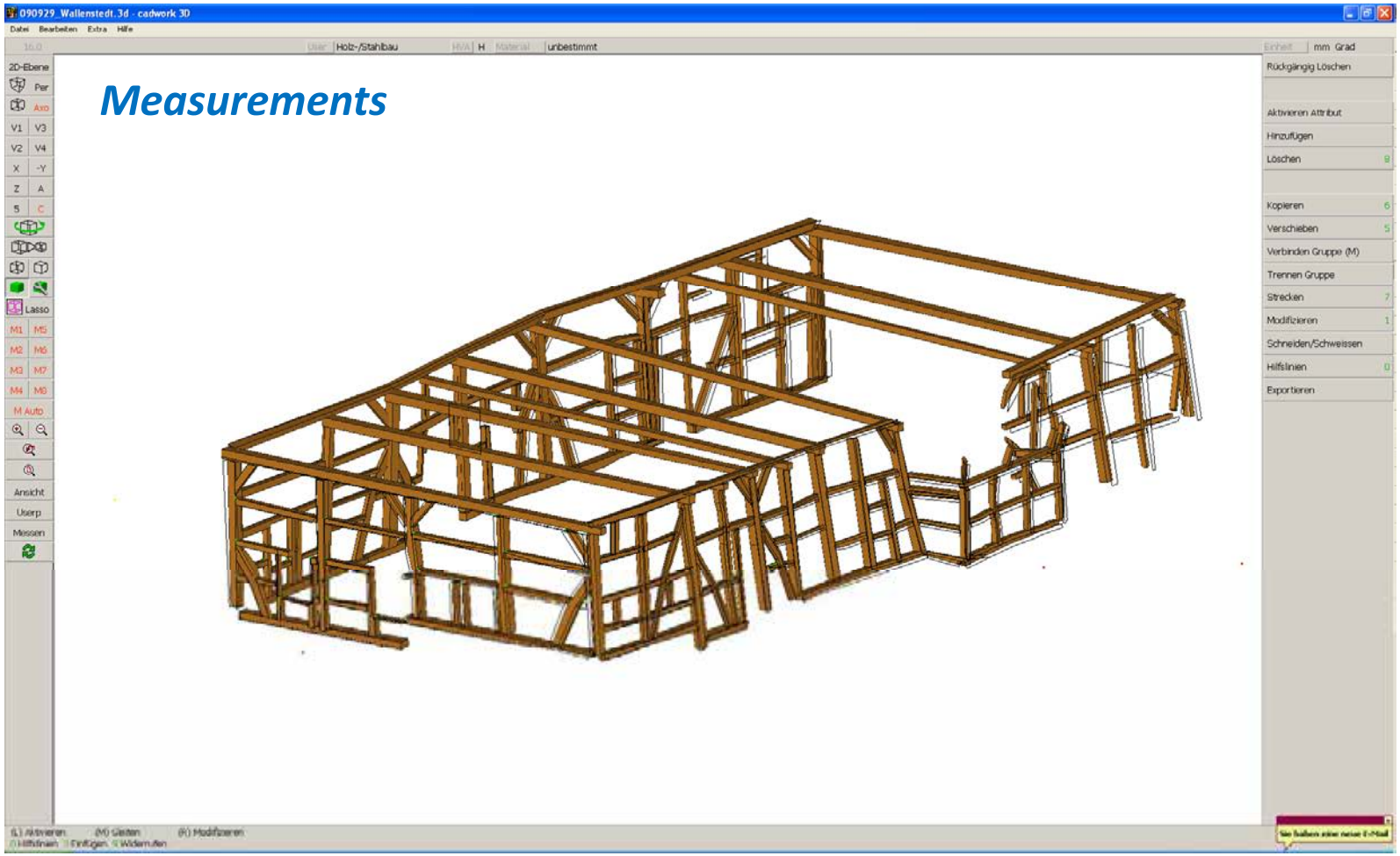
Scanning

Scanning

Surveying by vectors

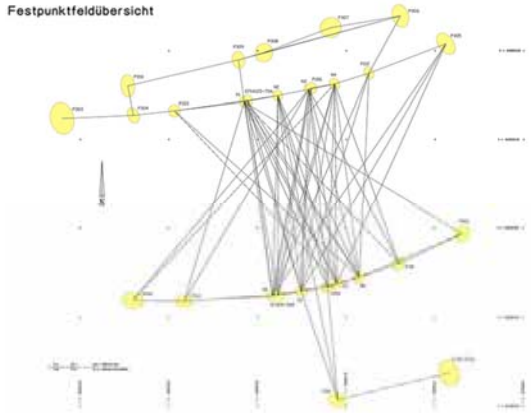
Surveying by vectors

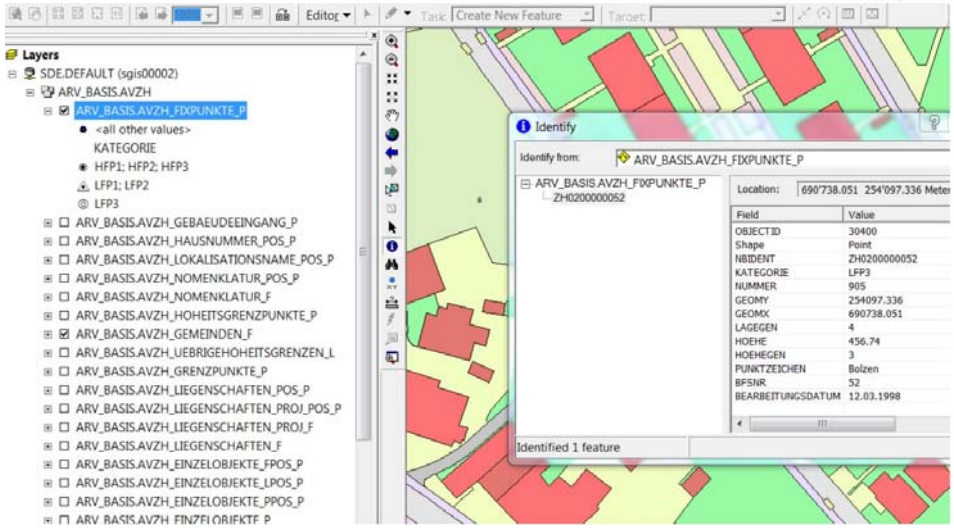
Surveying by vectors



Surveying 3D model projected

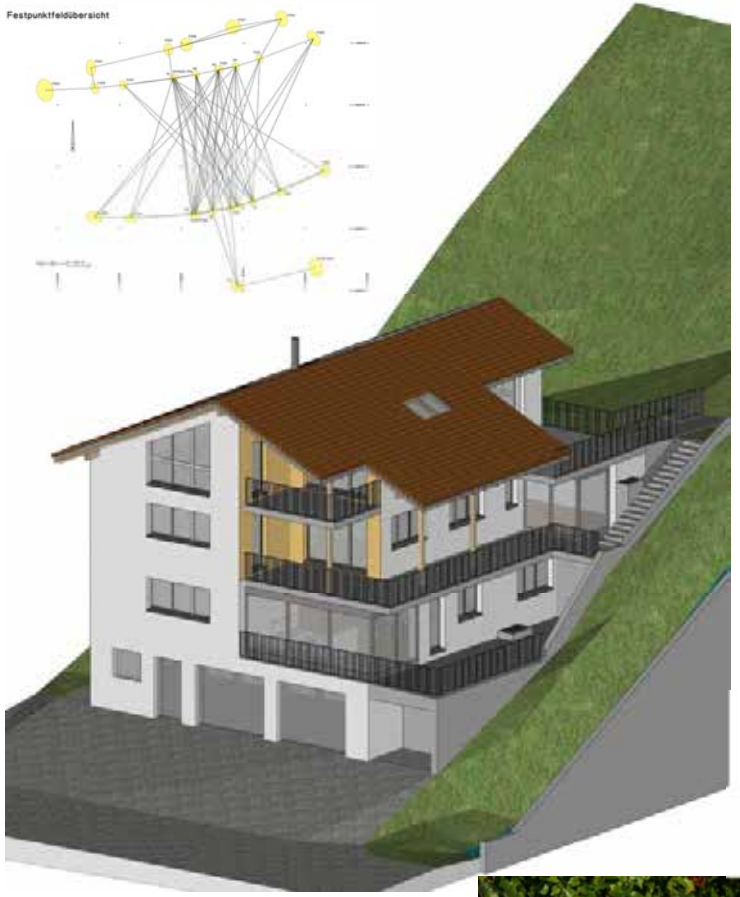
Control network

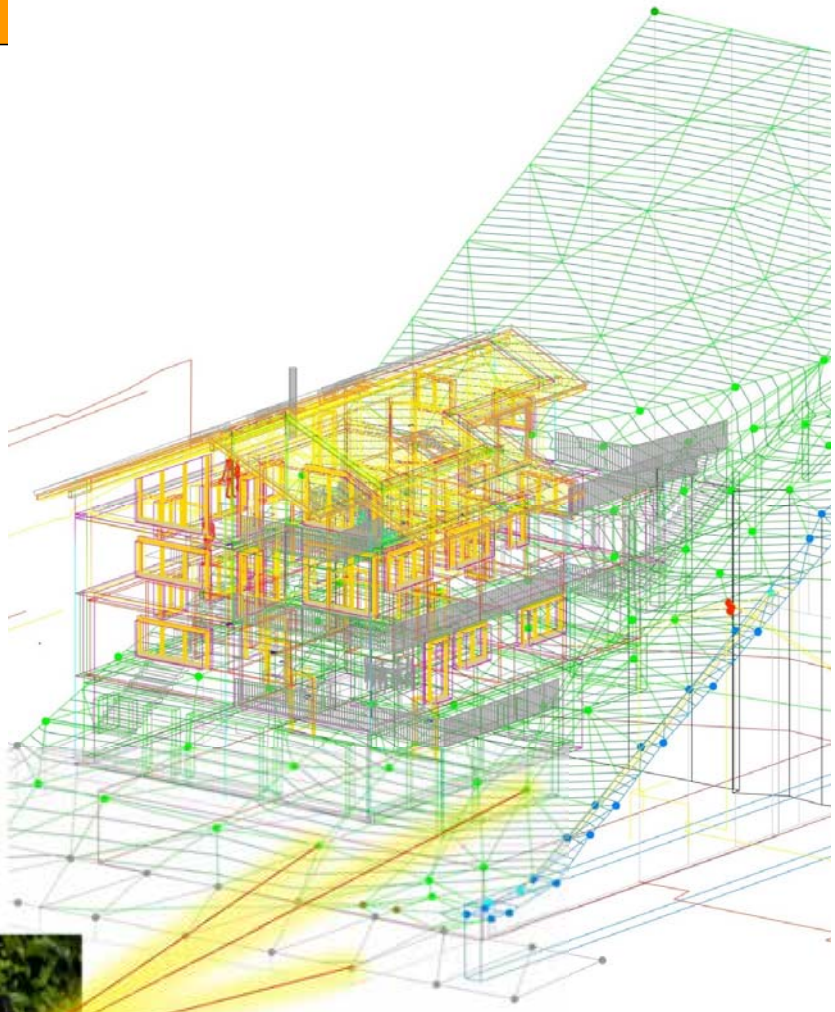




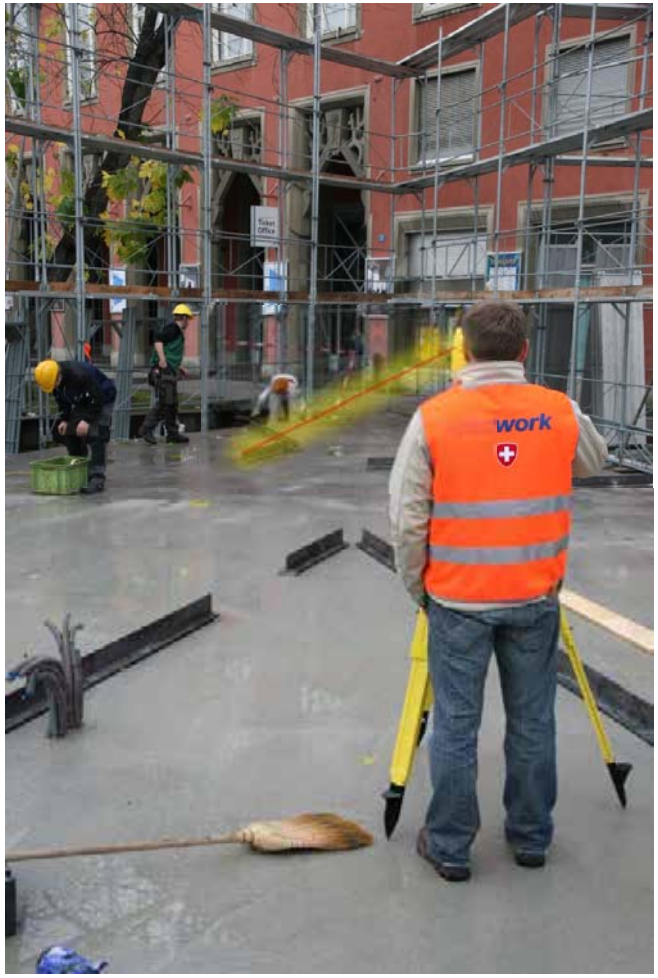
95	2.690,74	4.651,58	72,87	1.96
160	4.288,40	4.660,96	8,69	37
45	3.257,92	3.001,95	-7,86	-25
25	1.182,00	970,28	-17,91	-21
4	1.075,75	1.042,26	-3,11	-3
20	830,66	976,00	17,50	14
40	1.013,84	910,20	-10,22	-10
70	2.214,35	2.522,66	13,92	30
45	2.197,76	1.775,25	-19,22	-42
25	991,95	1.263,58	27,38	27
40	1.153,68	1.340,20	16,17	18
25	3.277,66	3.156,25	-3,70	-12
13	1.006,85	1.089,98	8,26	8
40	2.921,50	3.497,60	19,72	57
16	2.378,53	2.623,20	10,29	24
100	888,10	1.279,50	44,07	39
20	1.095,42	1.341,80	22,49	24
15	1.355,36	1.272,62	-6,10	-8
30	999,90	854,55	-14,54	-14
34	2.181,61	2.425,46	11,18	24
10	1.095,93	920,65	-15,99	-17
45	2.680,29	2.863,35	6,83	18
5	1.163,97	1.181,75	1,53	1
90	2.427,40	1.968,75	-18,89	-45
50	861,45	1.050,45	21,94	18
30	904,71	1.196,70	32,27	29
35	1.112,90	1.266,13	13,77	15
15	1.001,84	869,93	-13,17	-13

Site measuring



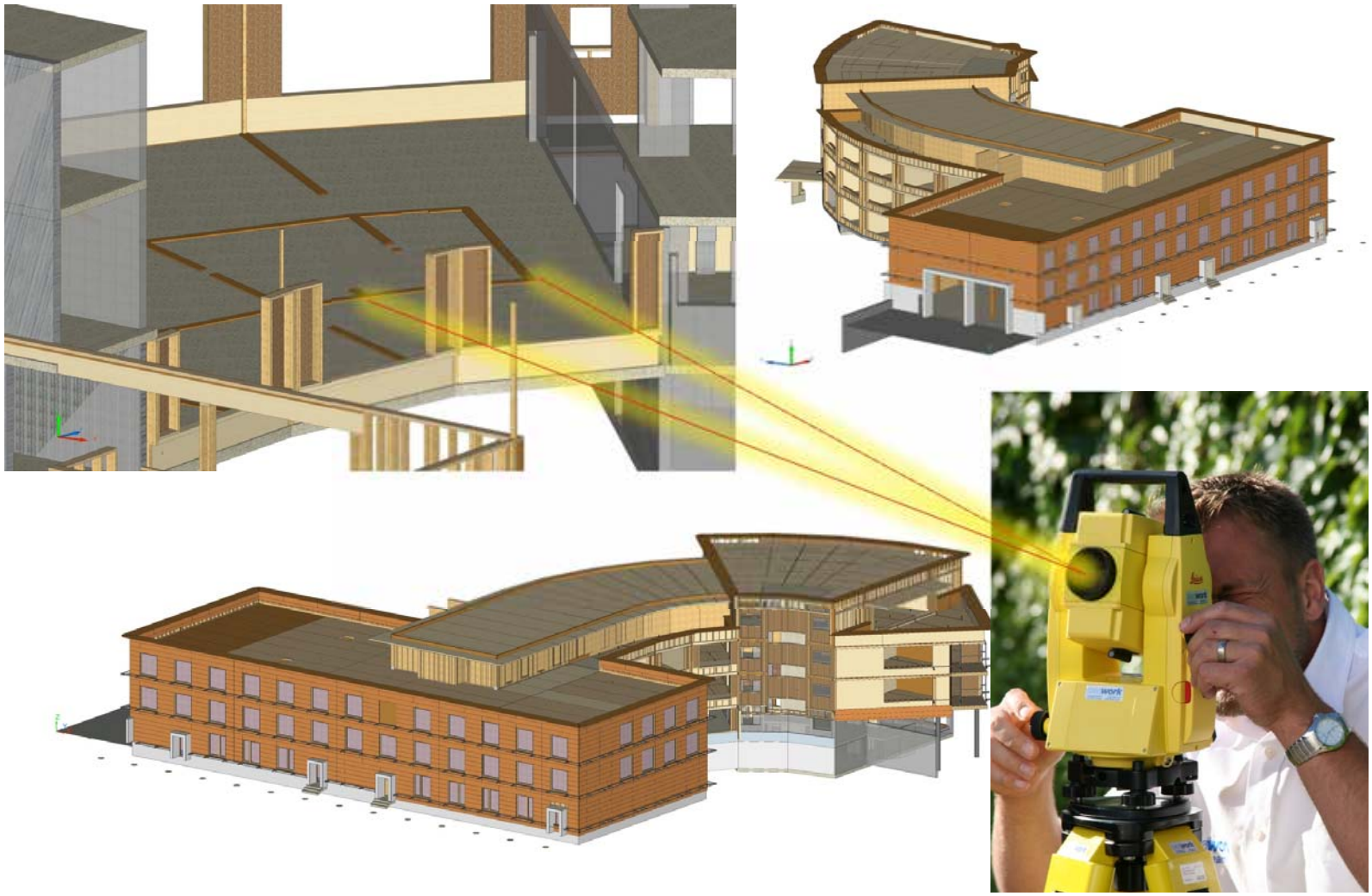


Stakeout 3D model on site



Stakeout 3D model on site

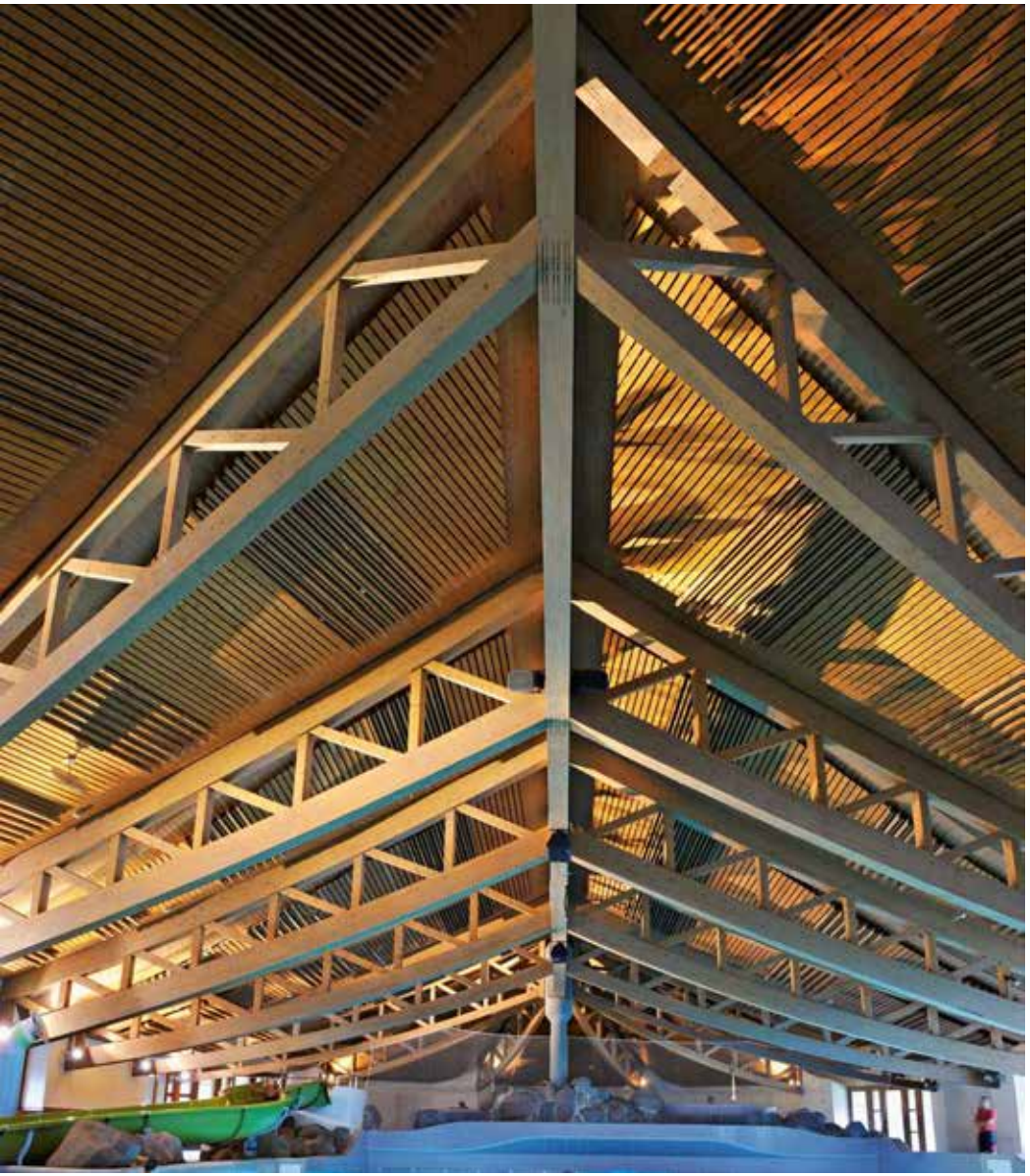
Stakeout 3D model on site



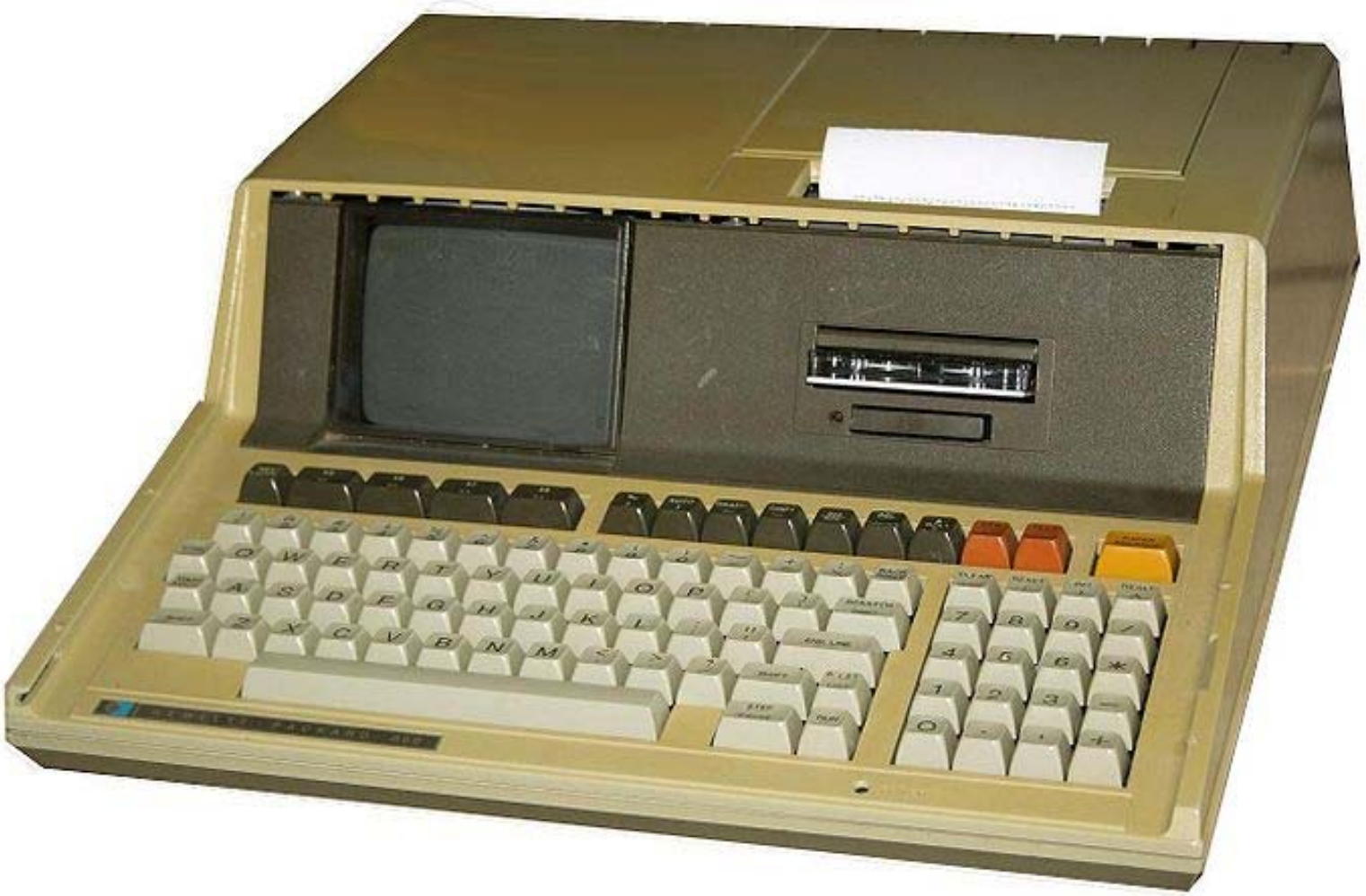
Power Digger 3D

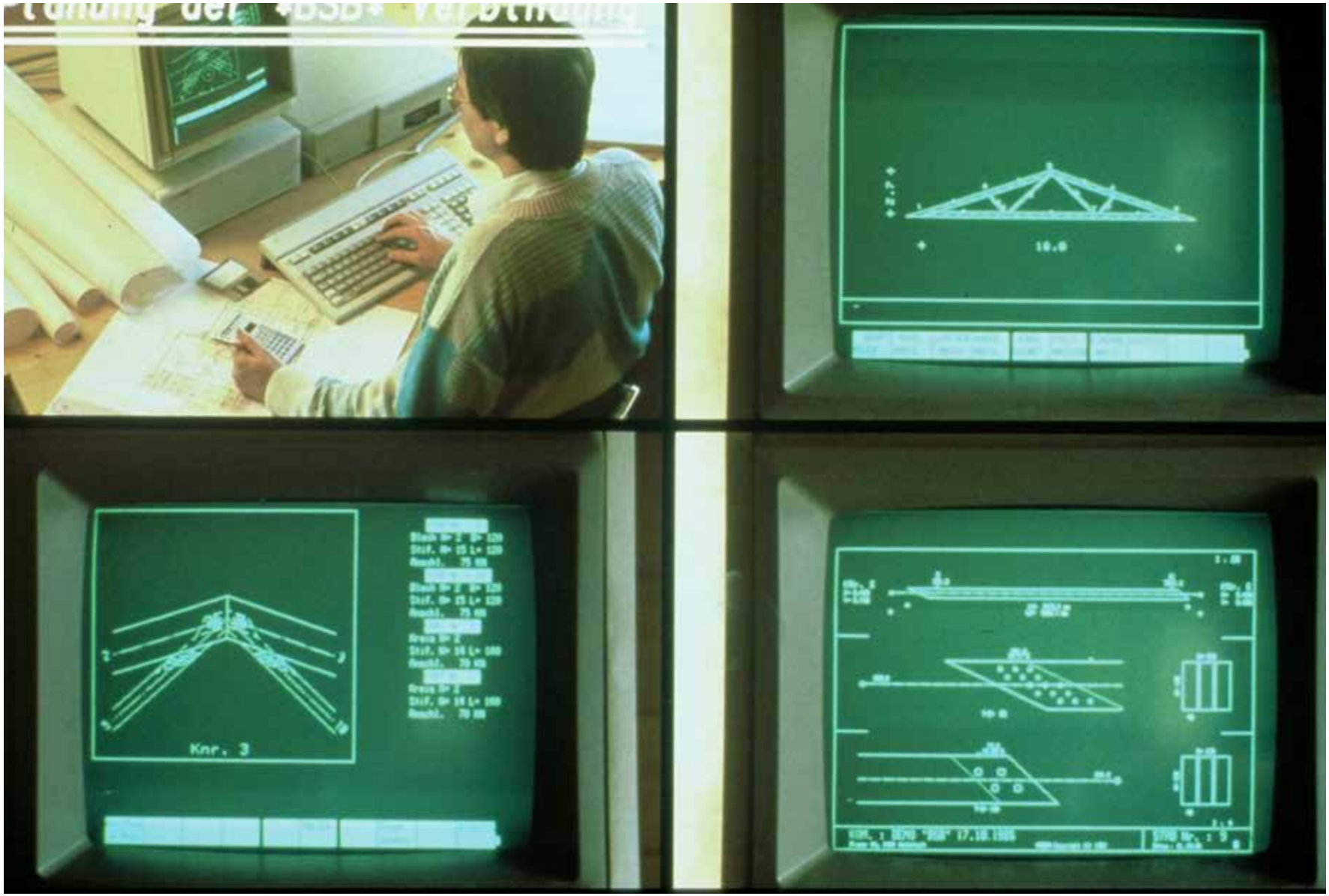
BIM in architecture

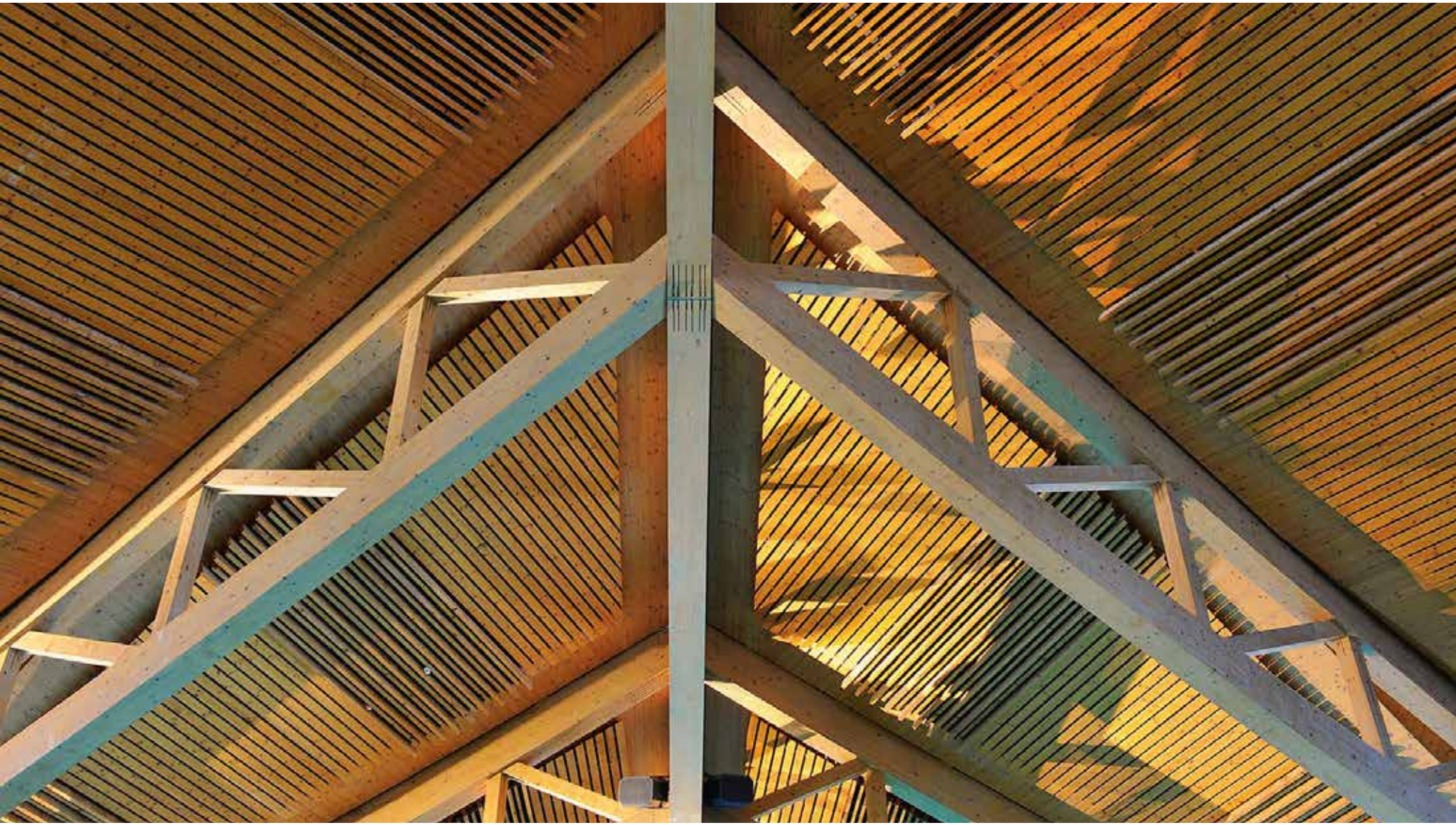
Säntispark 1986 – by RLC Architekten AG



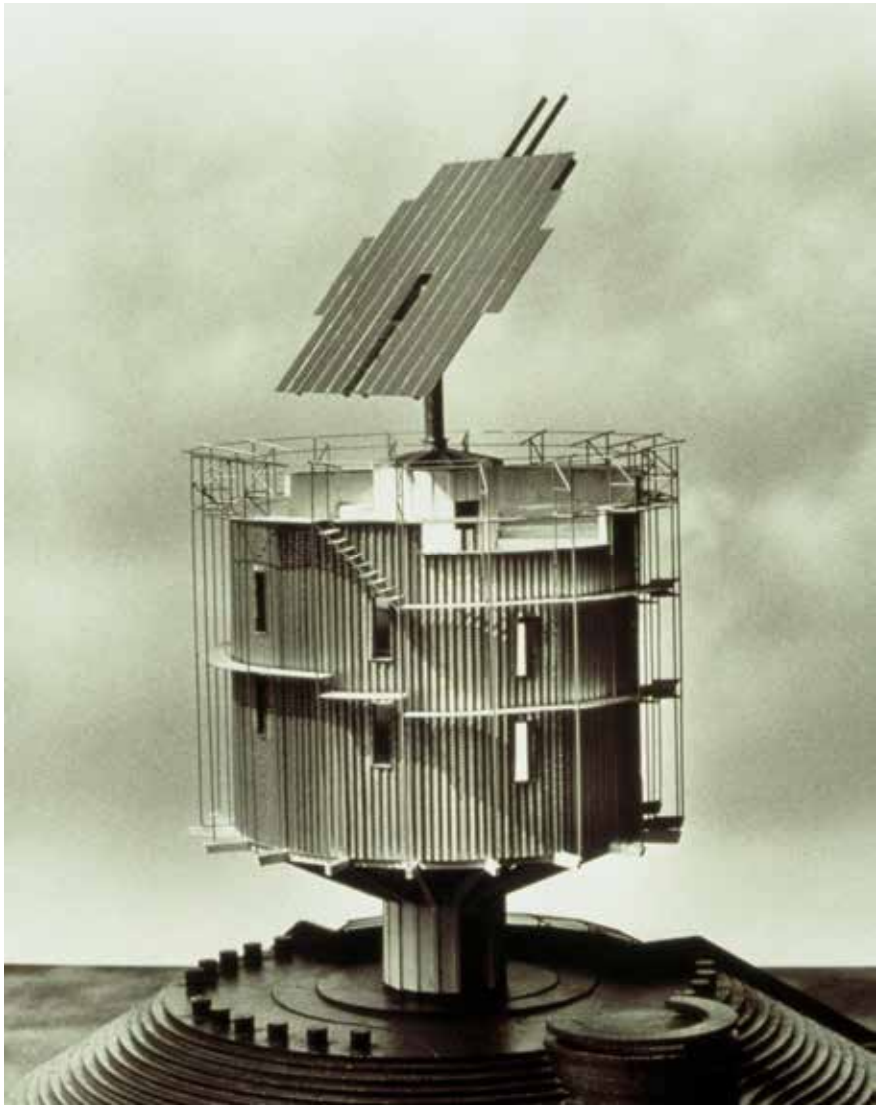
This is the HP computer used to compute the Säntispark




Knr. 3

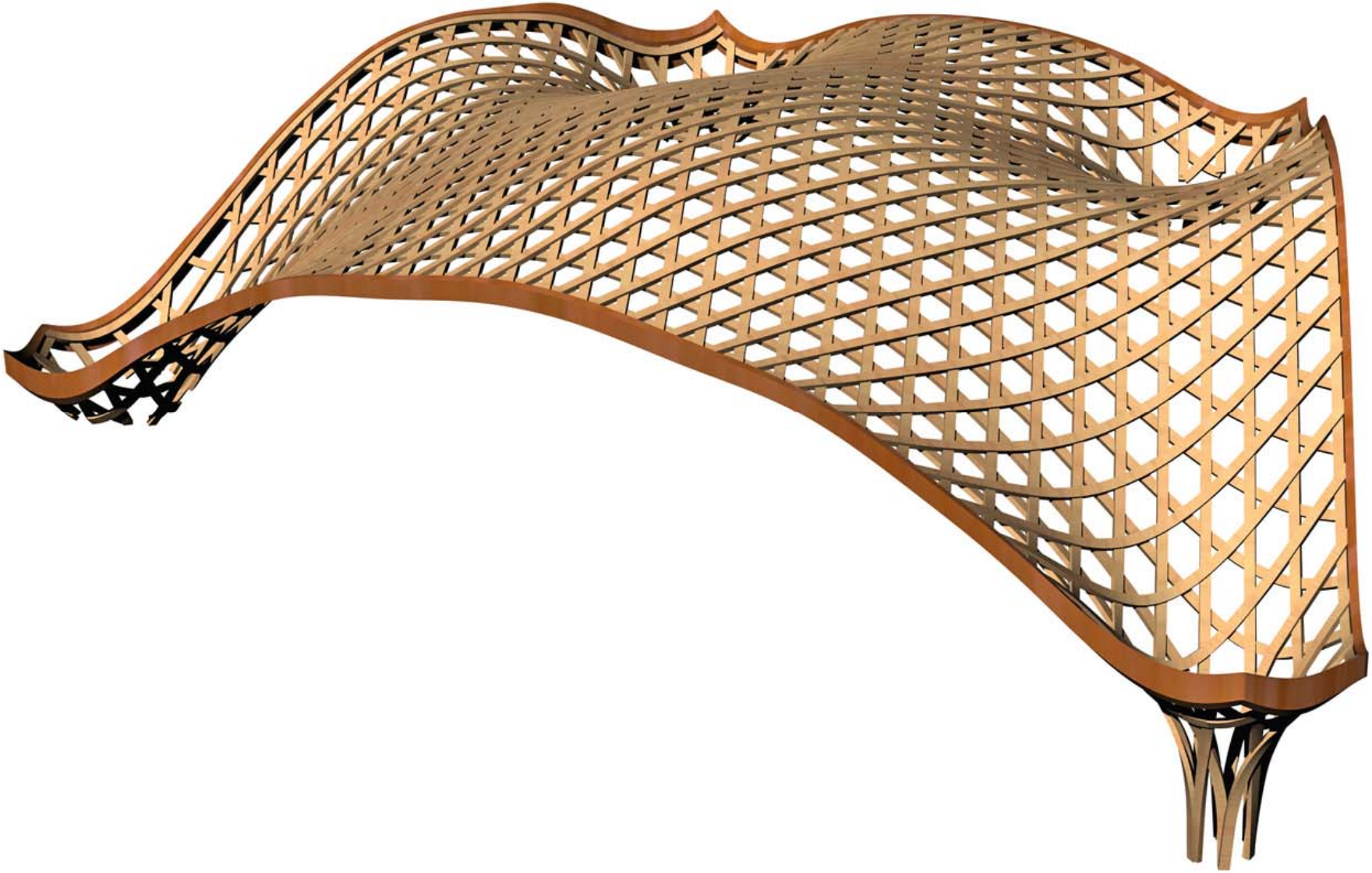


Heliotrop by Rolf Disch 1994




Centre Pompidou 2010
Shigeru Ban
作品づくりと社会貢献の両立を目指して

Shigeru Ban
作品づくりと社会貢献の両立を目指して




21403


Shigeru Ban
作品づくりと社会貢献の両立を目指して


I-Park by Helen&Hard 2012

TWOODS®
LEBENSQUALITÄT IN HOLZ

TWOODS®
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TWOODS®
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Aspen Art Museum 2014

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作品づくりと社会貢献の両立を目指して

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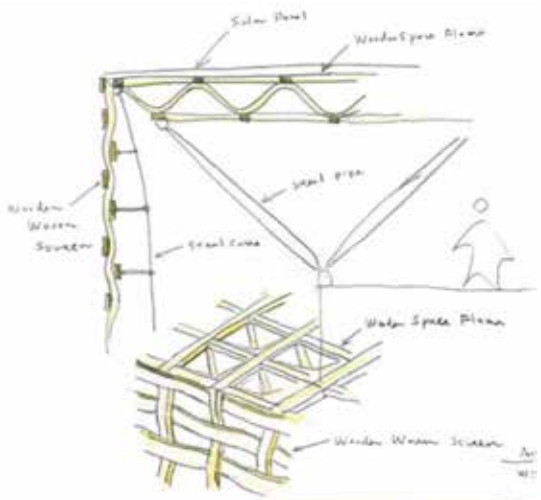
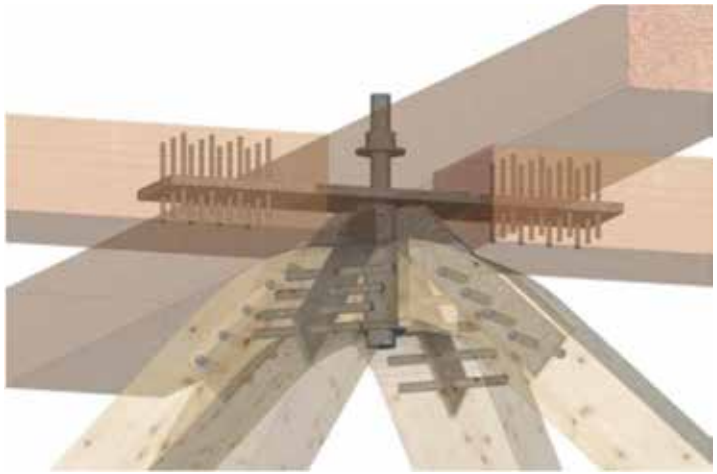
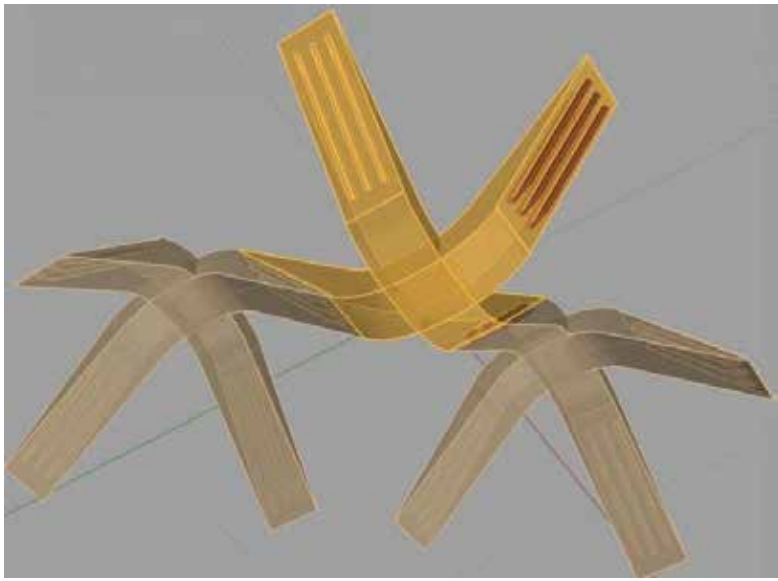
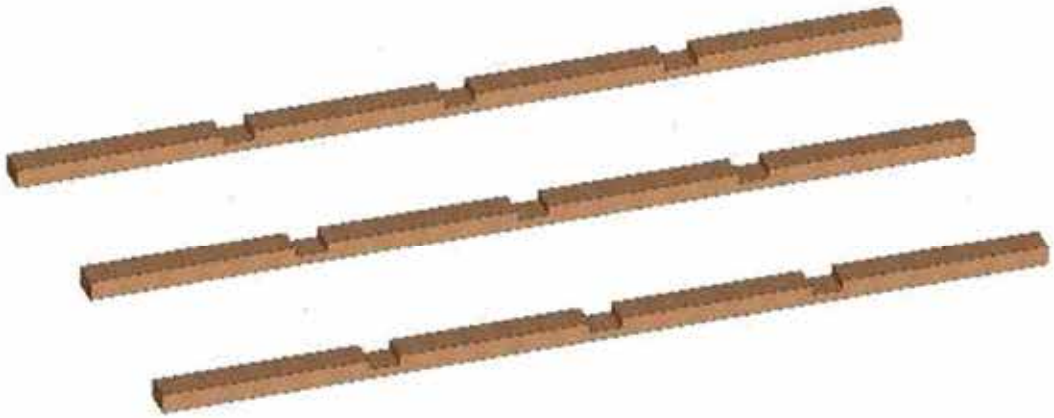
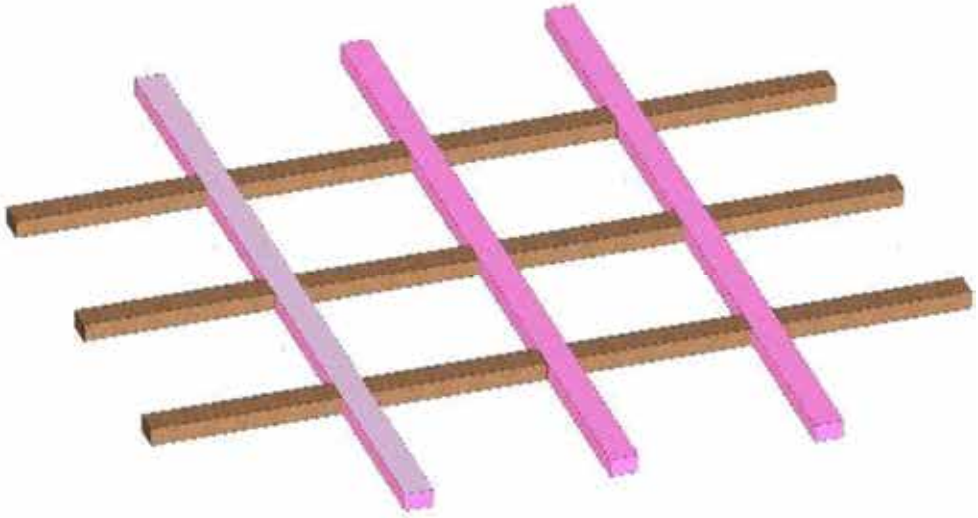


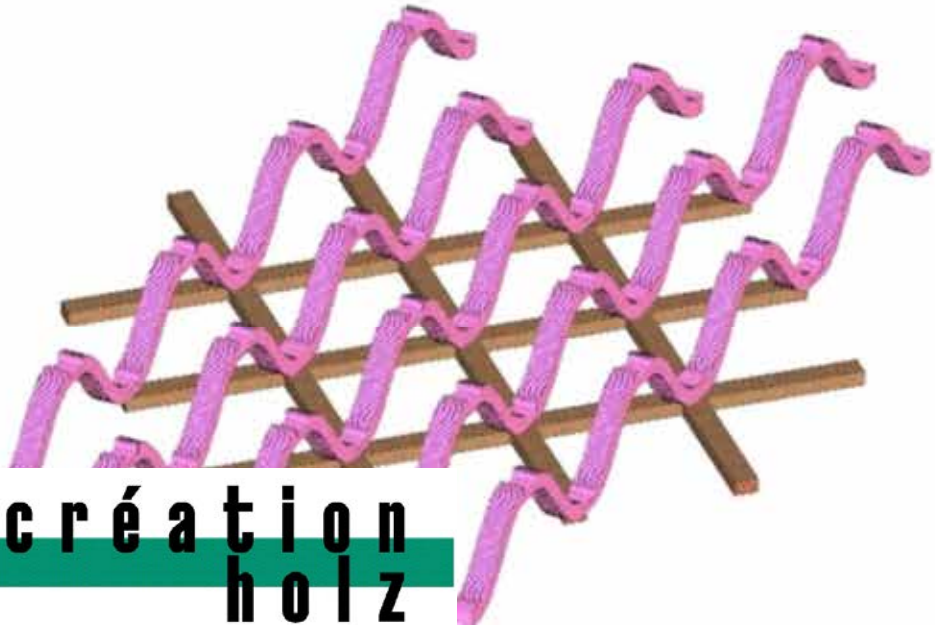


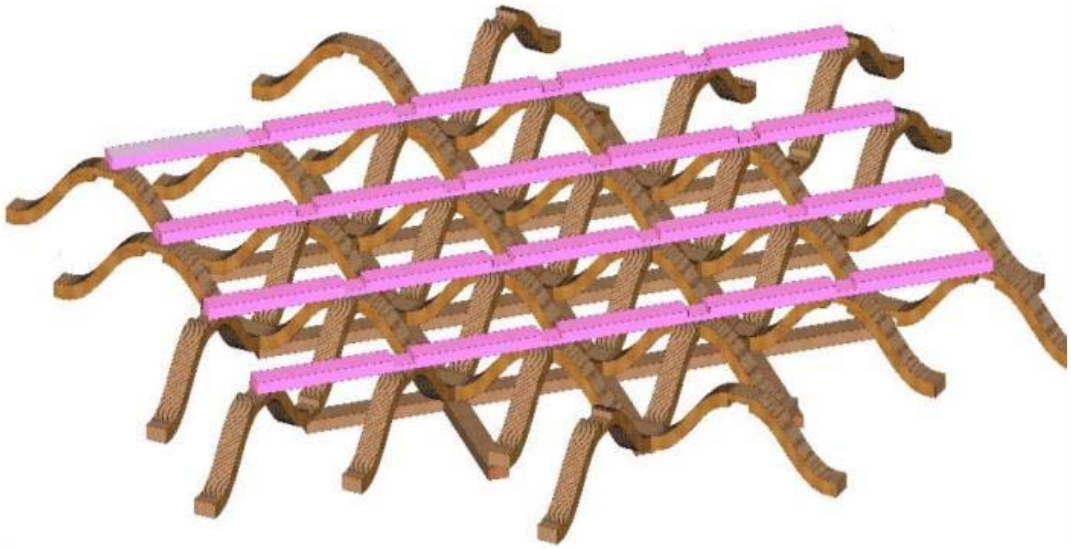


création holz









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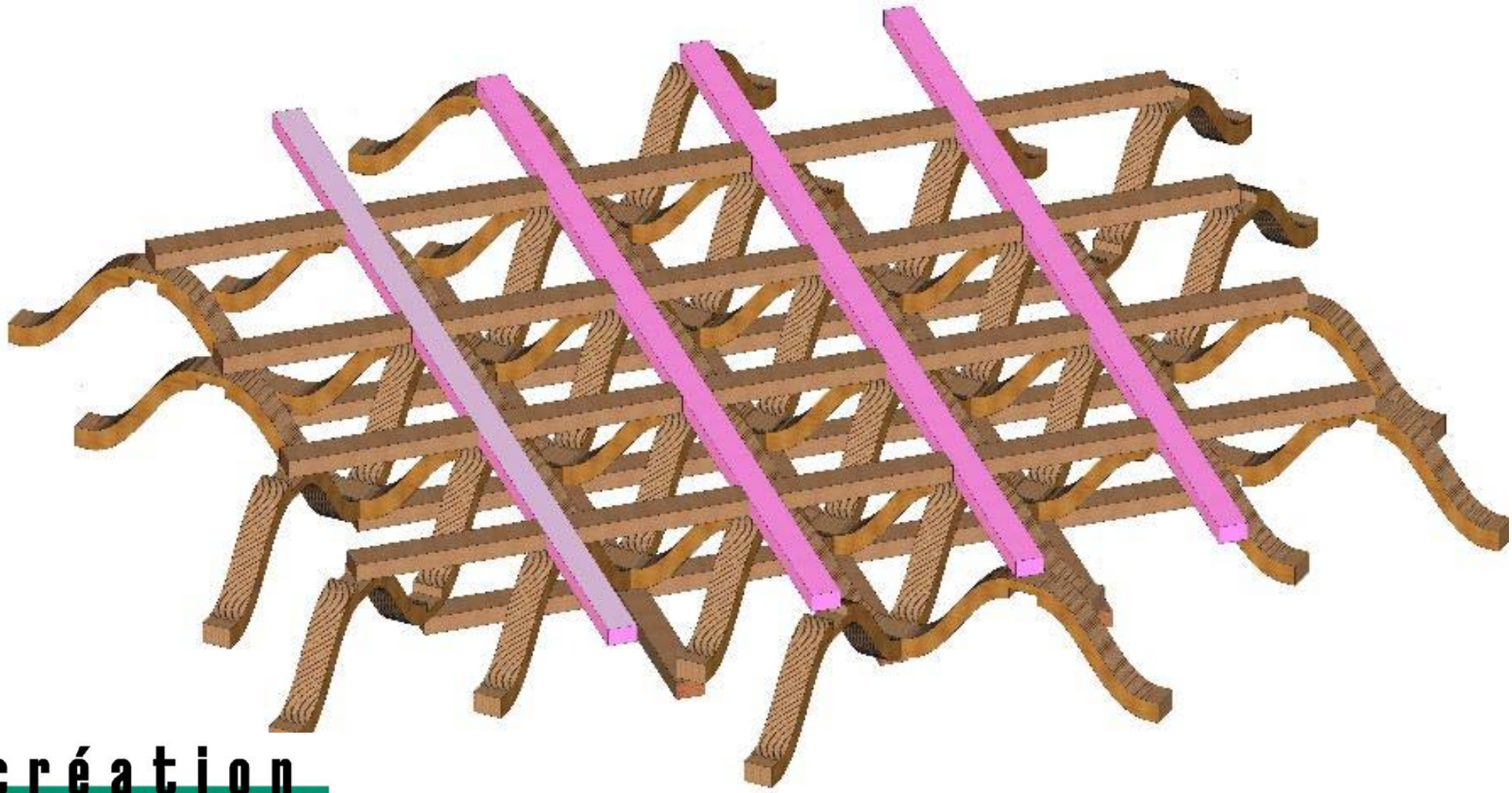

création holz


Shigeru Ban
作品づくりと社会貢献の両立を目指して

Shigeru Ban
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TAMEDIA by Shigeru Ban 2013

BLUMER-LEHMANN AG


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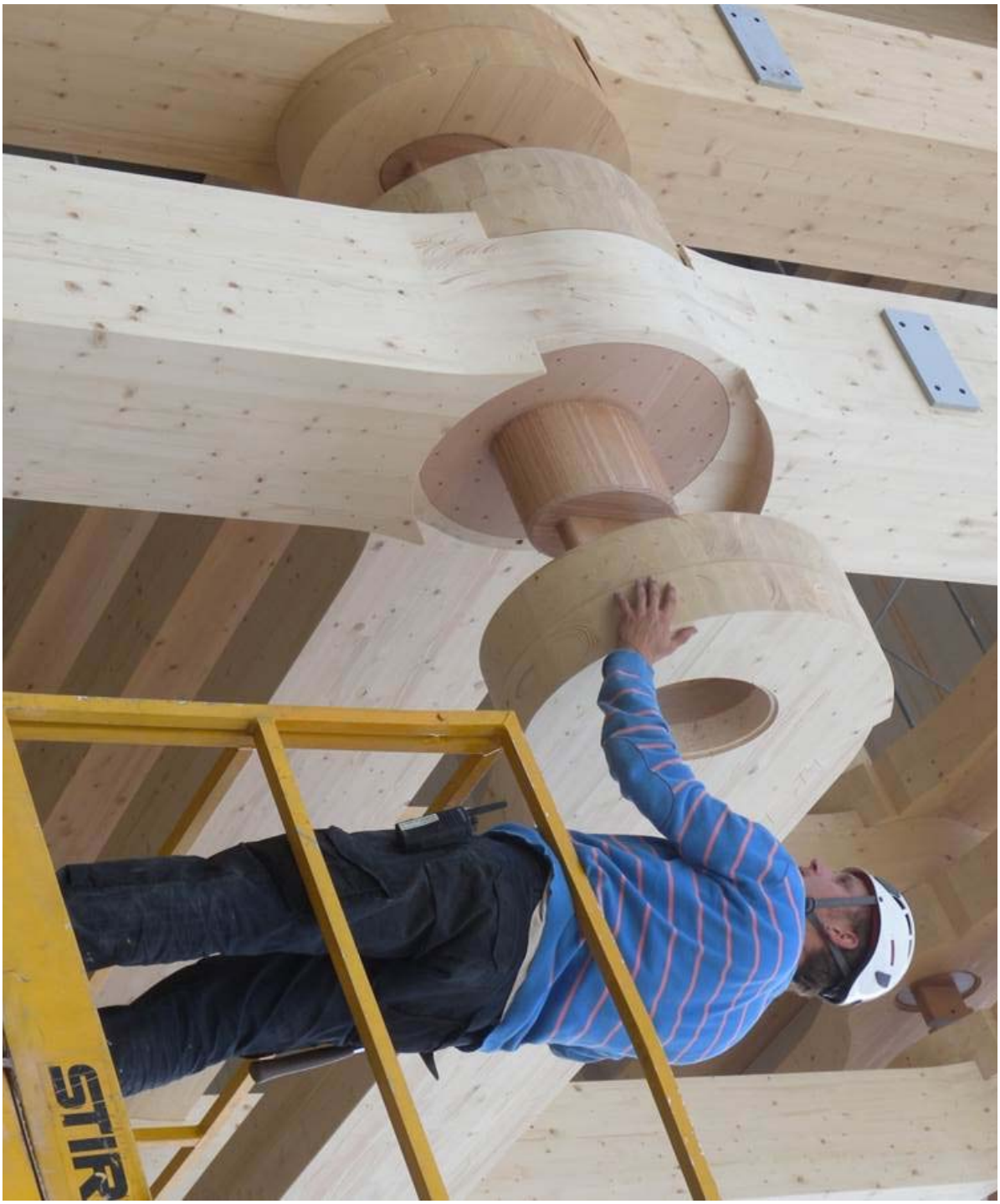

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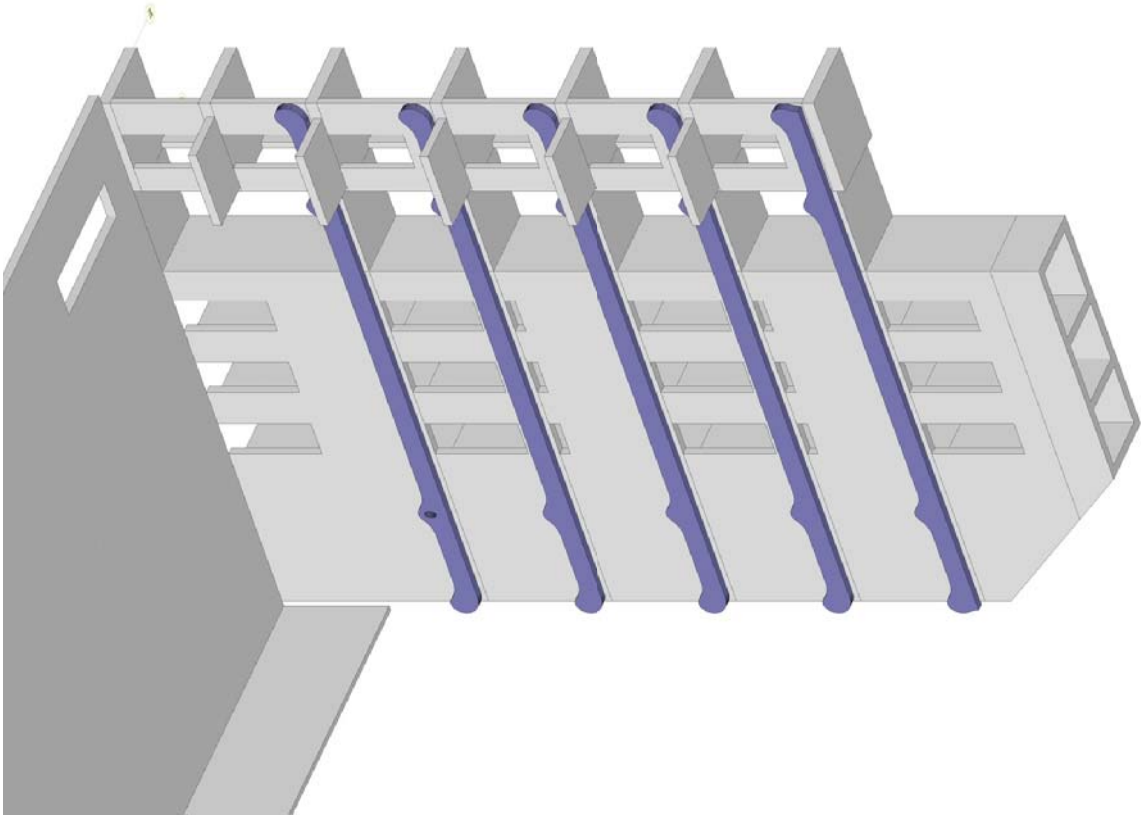

création holz

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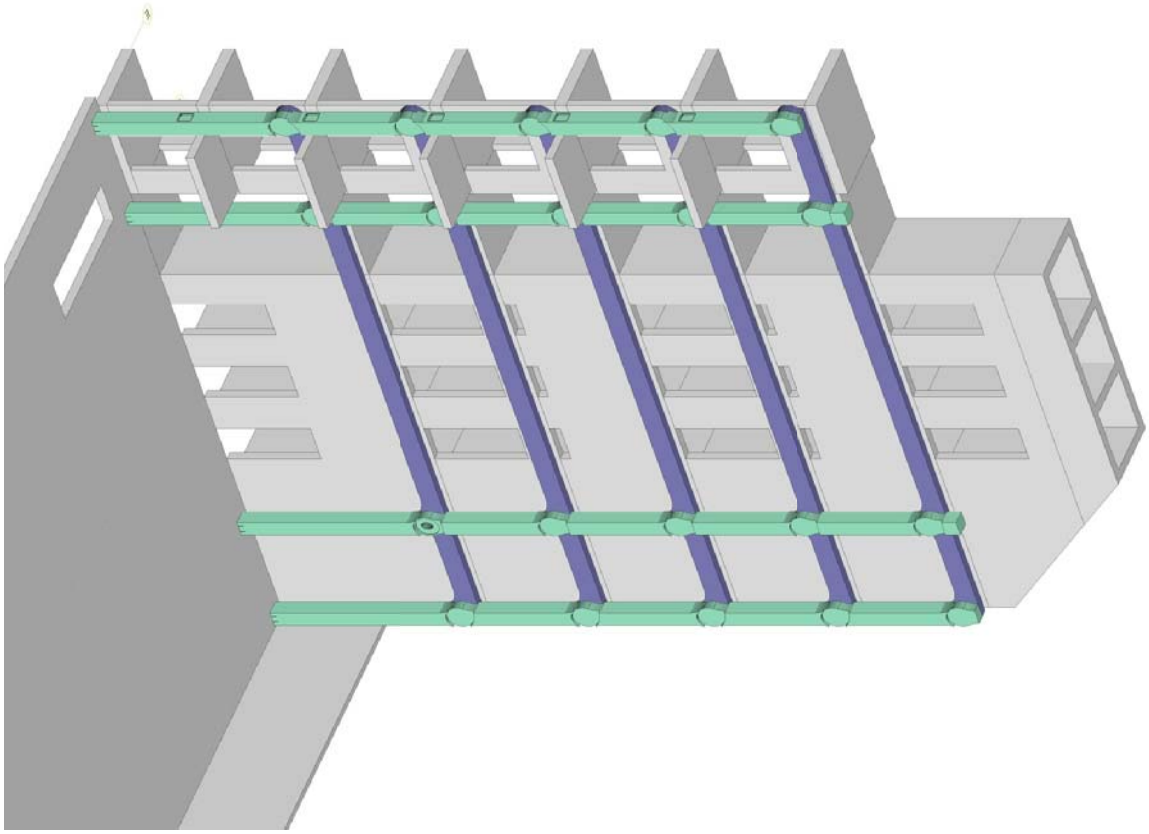

création holz

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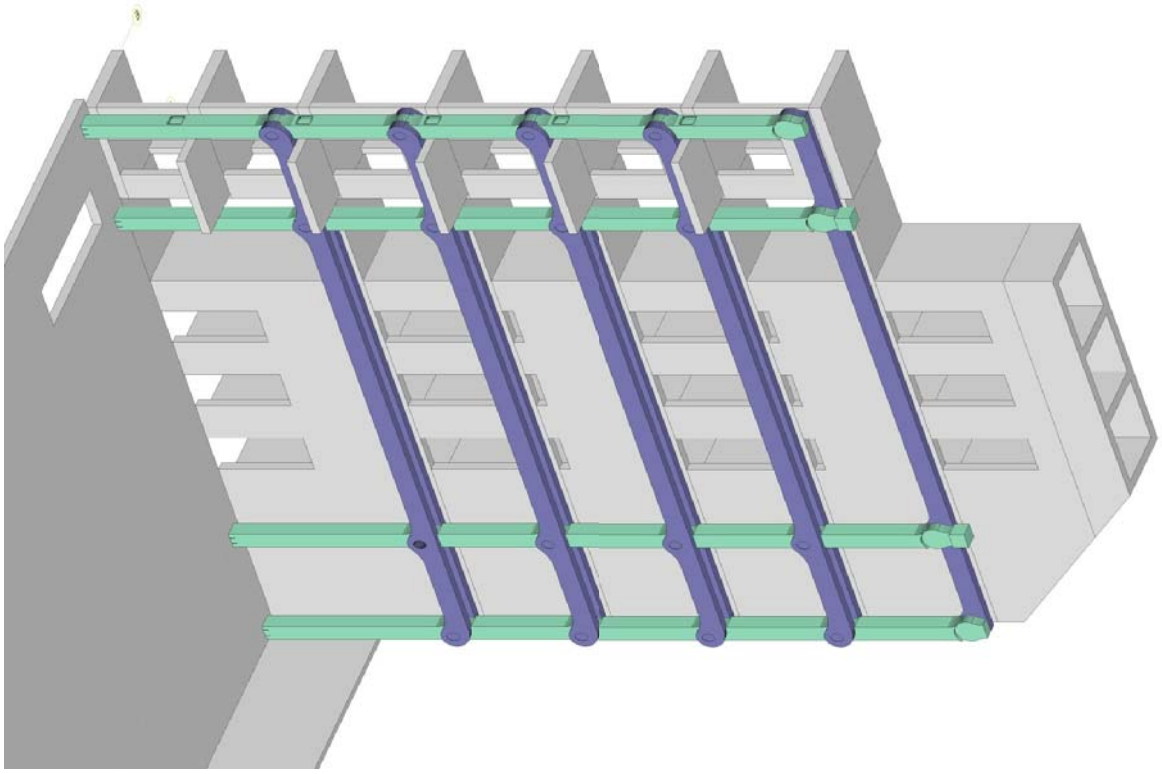

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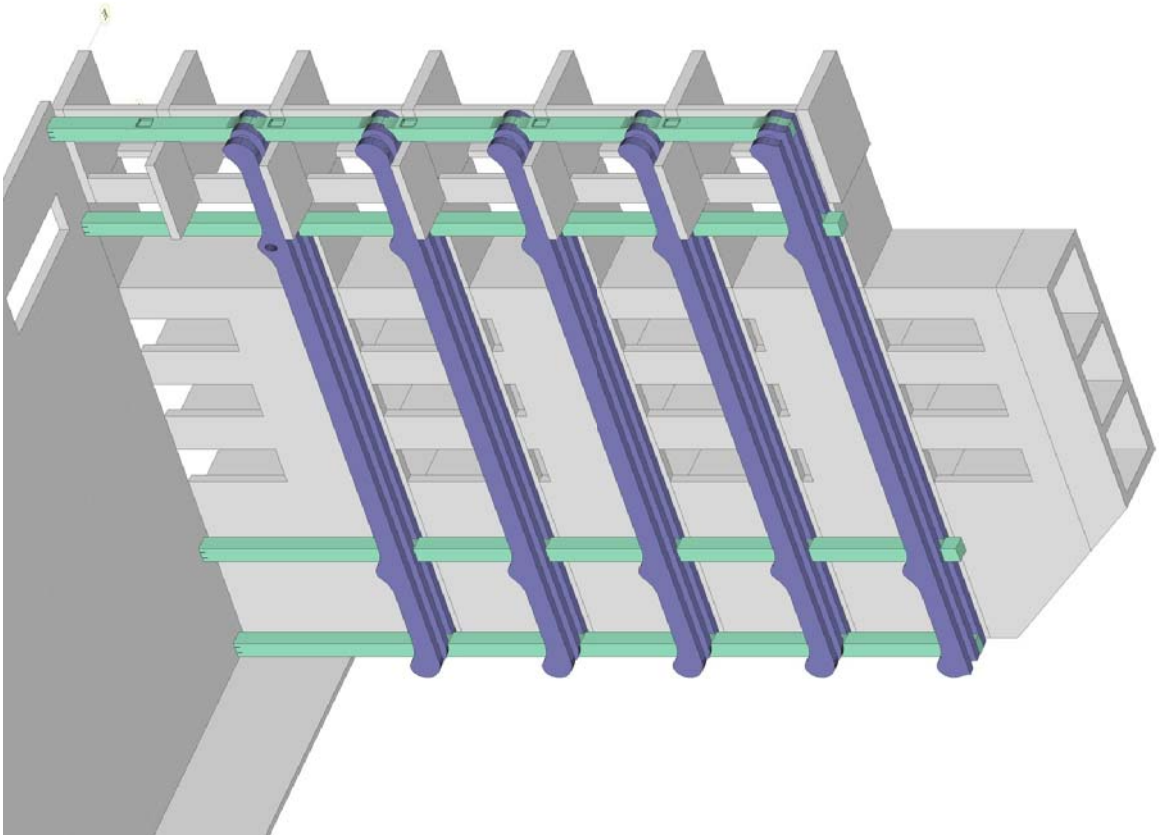

création holz

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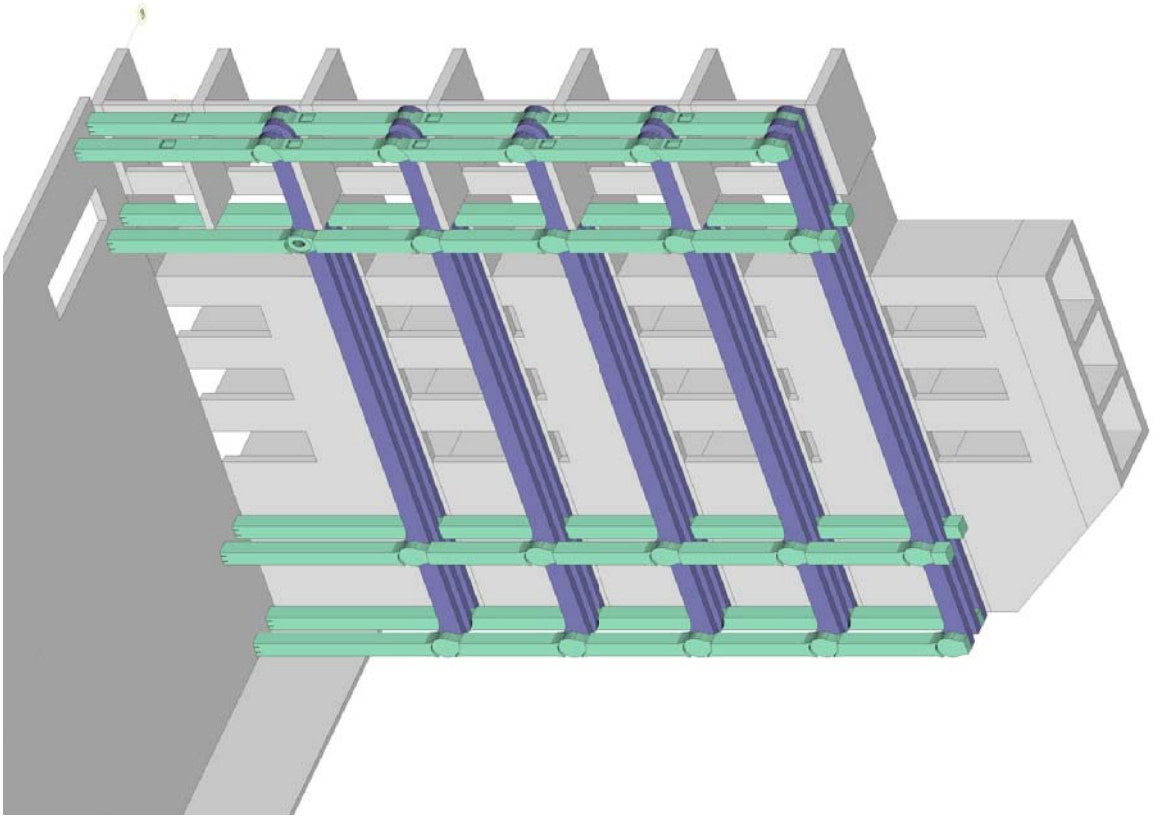

création bois

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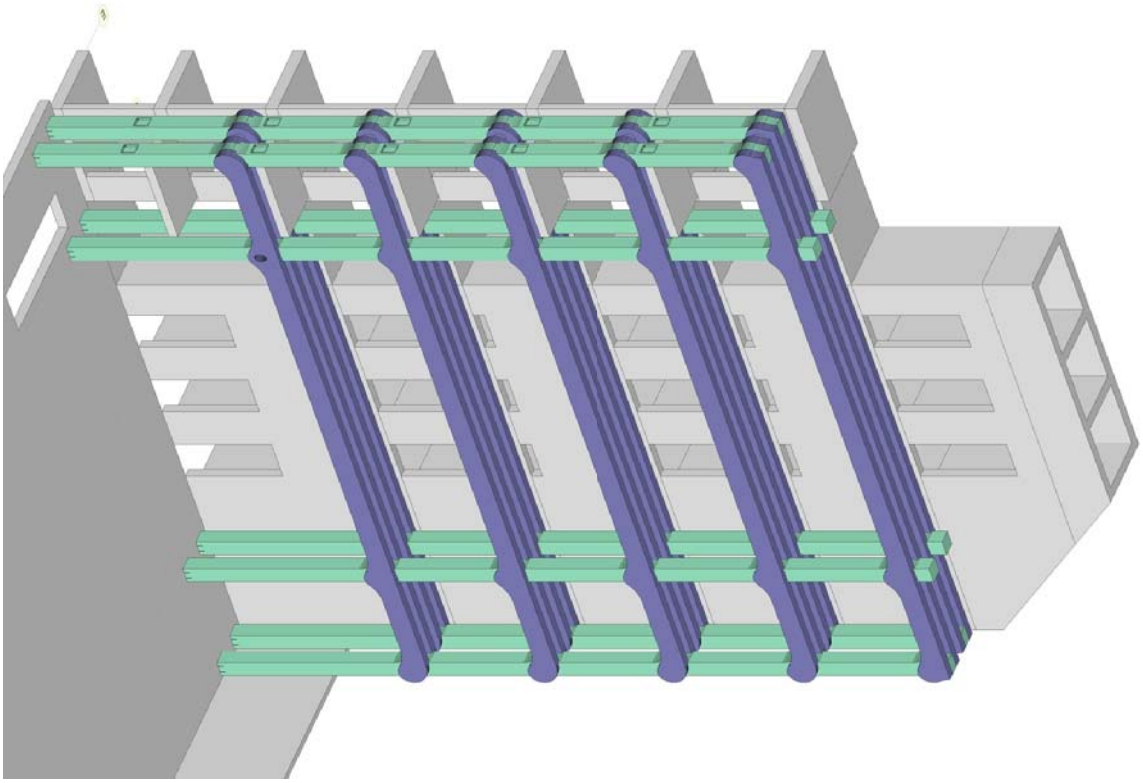

création holz

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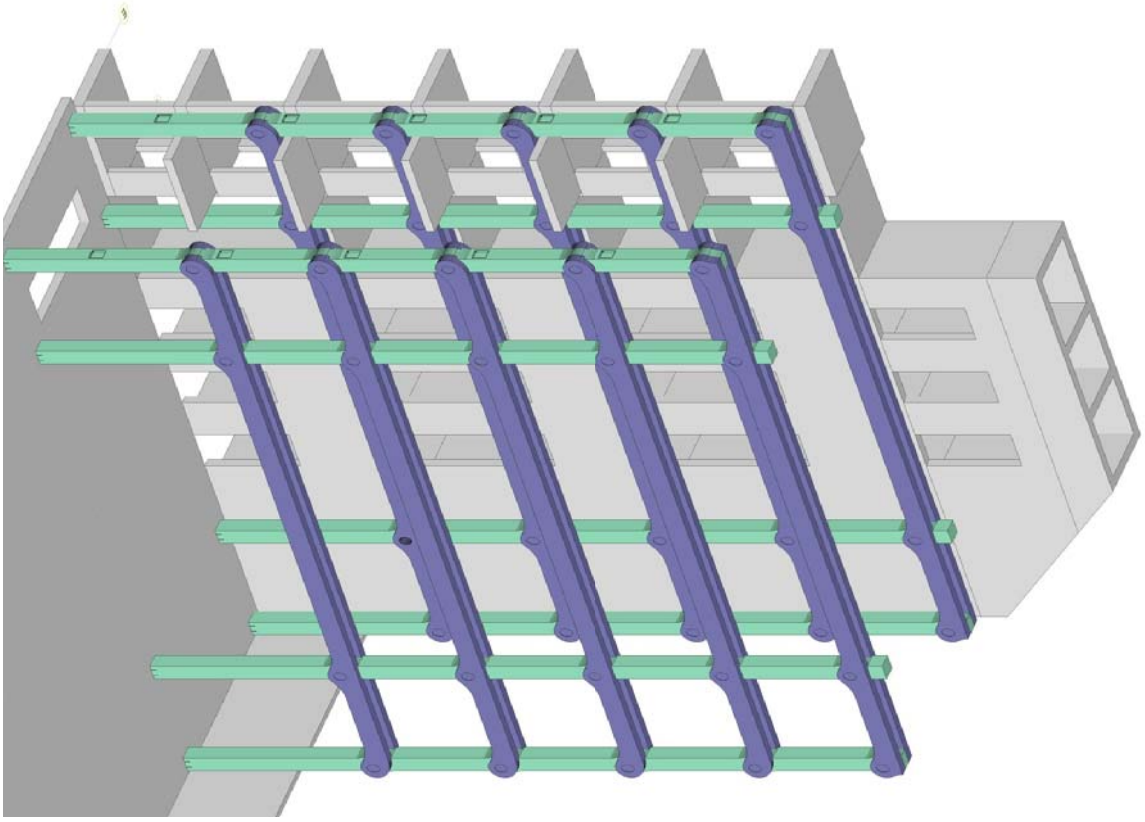

création bois

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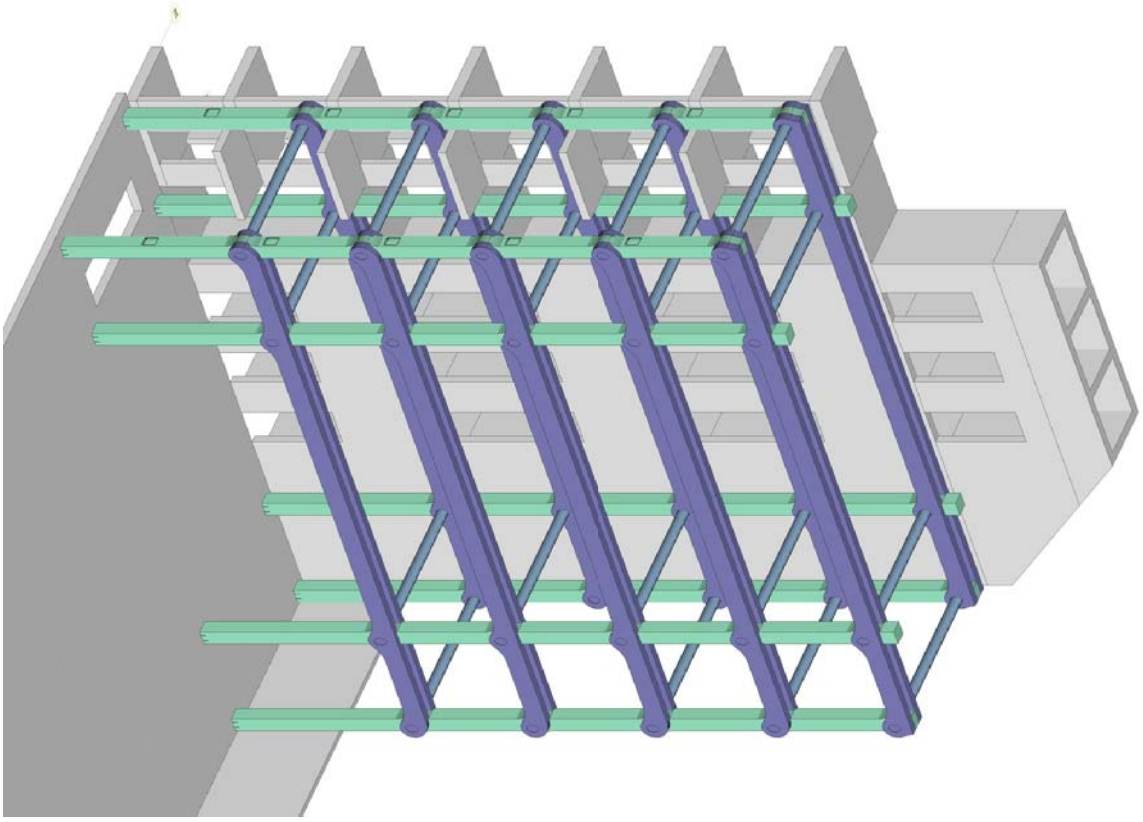

création holz

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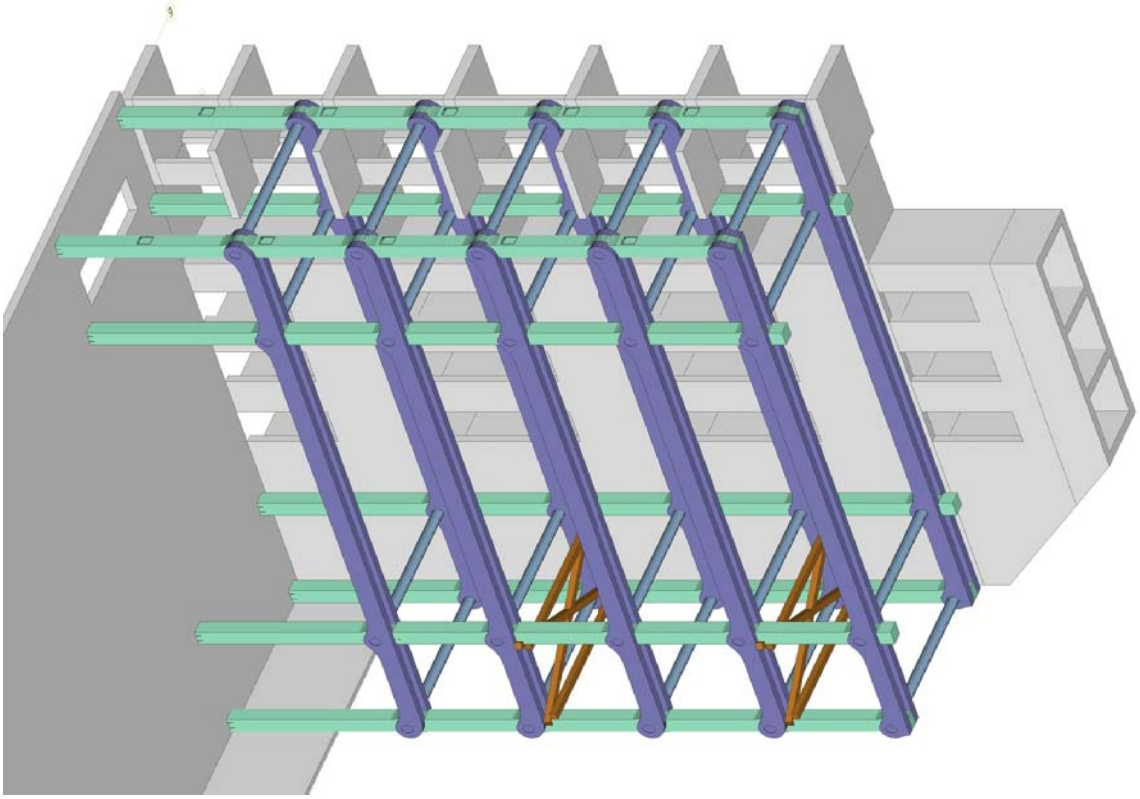

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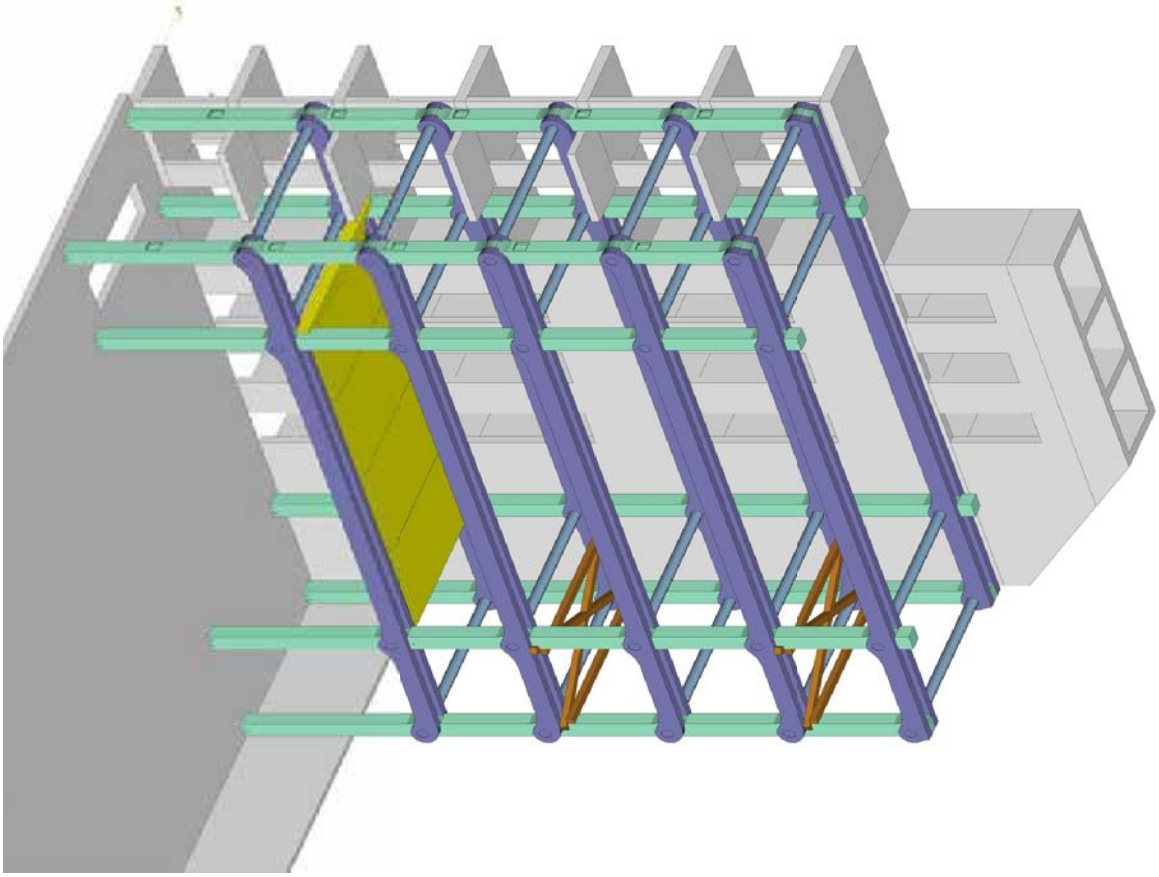

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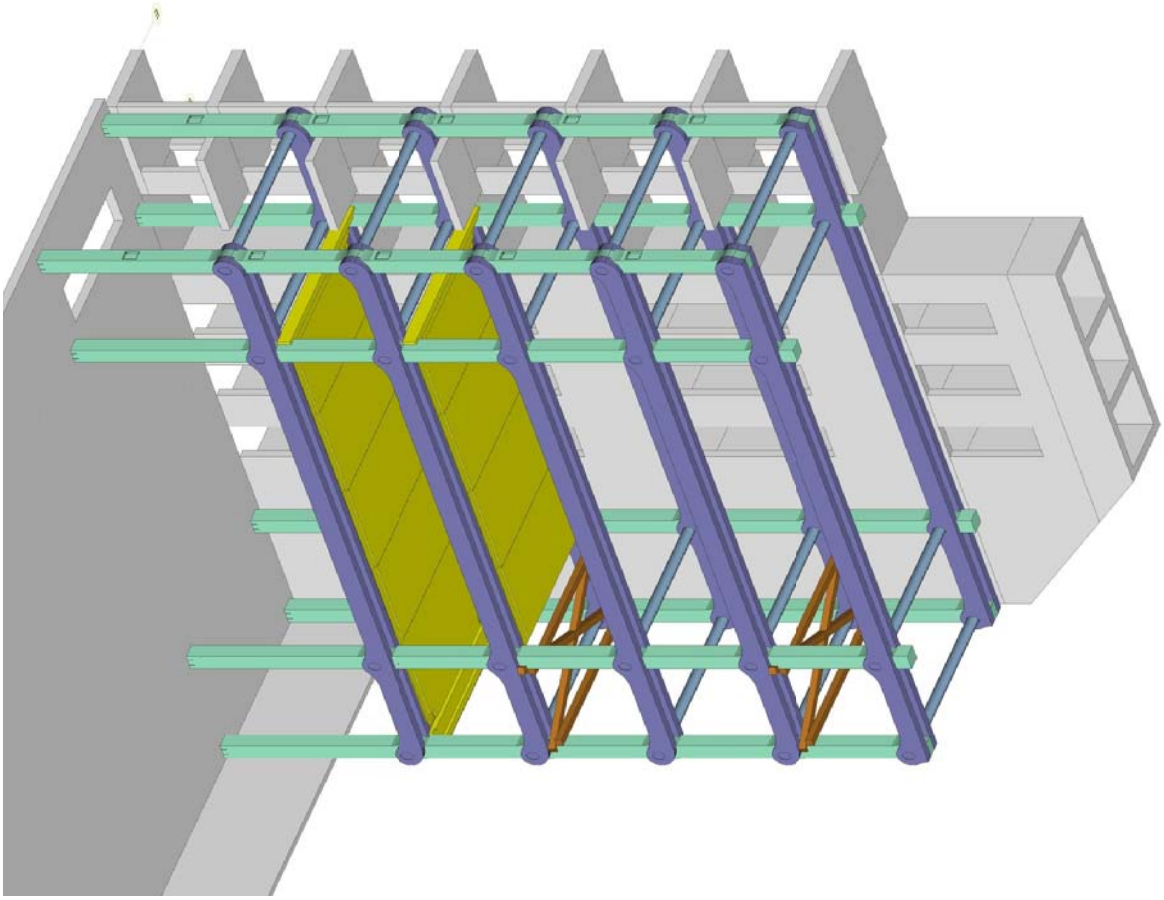
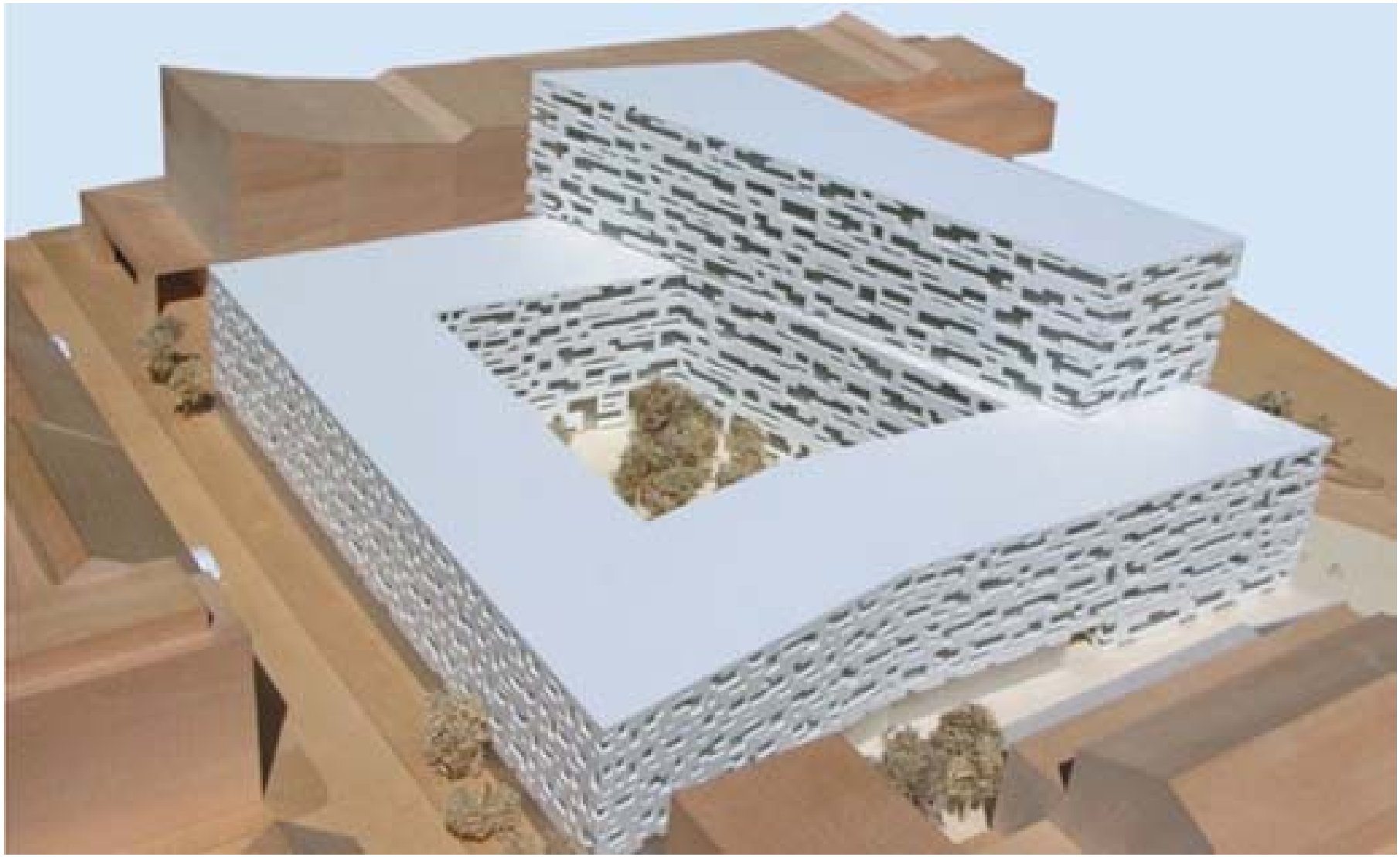


création holz

BLUMER-LEHMANN AG

Shigeru Ban
作品づくりと社会貢献の両立を目指して

South Park by Herzog & De Meuron 2003

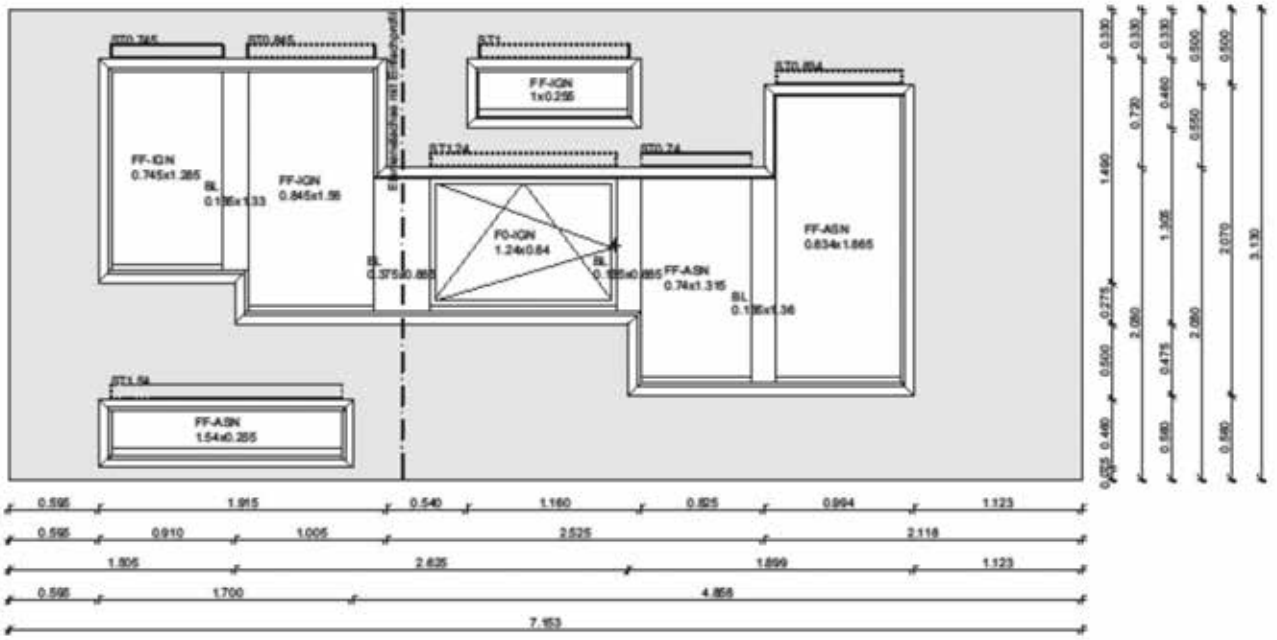


HERZOG & DEMEURON

25.11.2009 M 1:25 | 1 meter

Pos: N-1-02

O-1-13

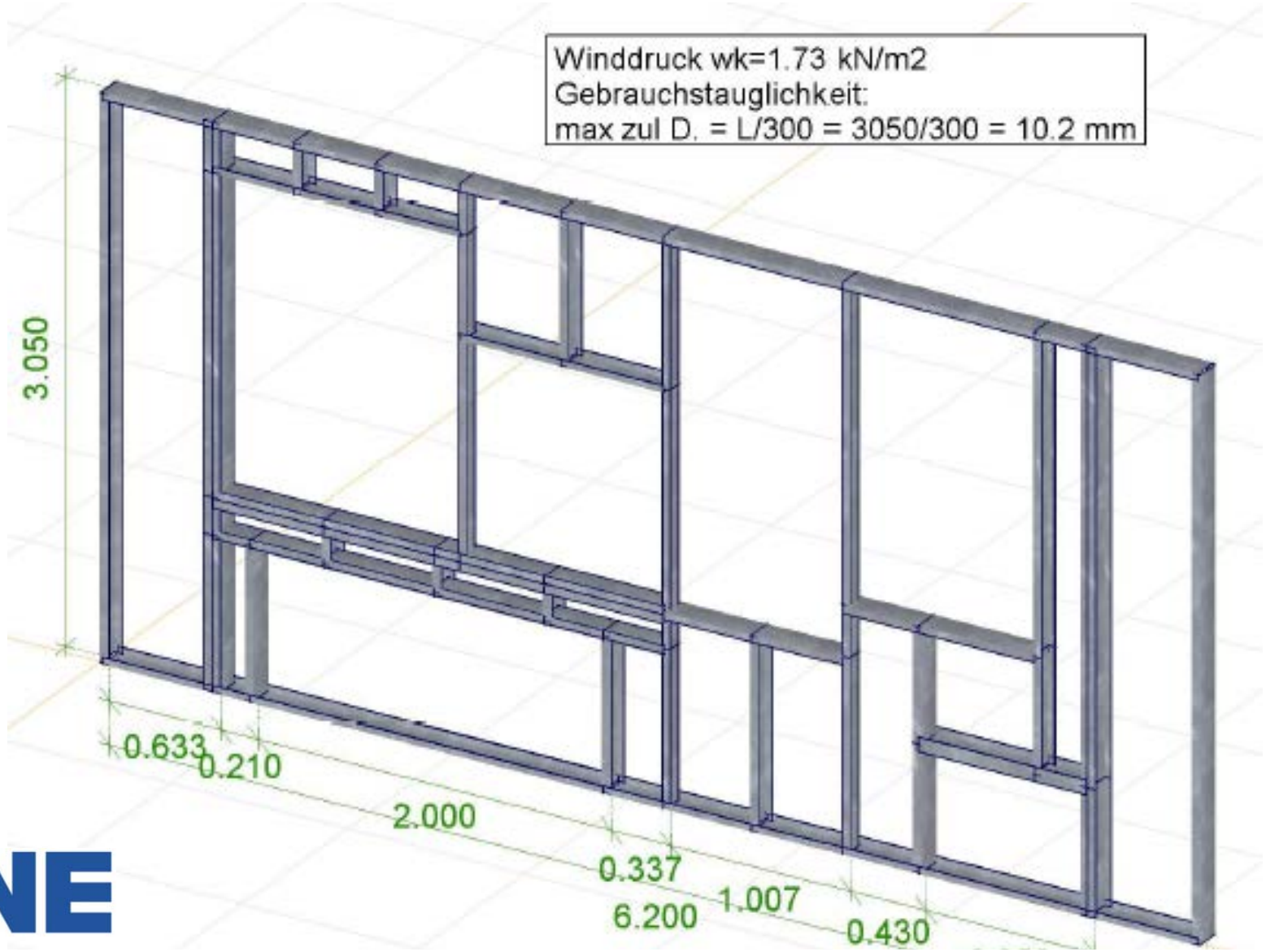


Typ: N-1-02_MD03_RR0_F01_L00_S1_LLXX_WL2618_WR4535_HB-160_HT2970_Z1

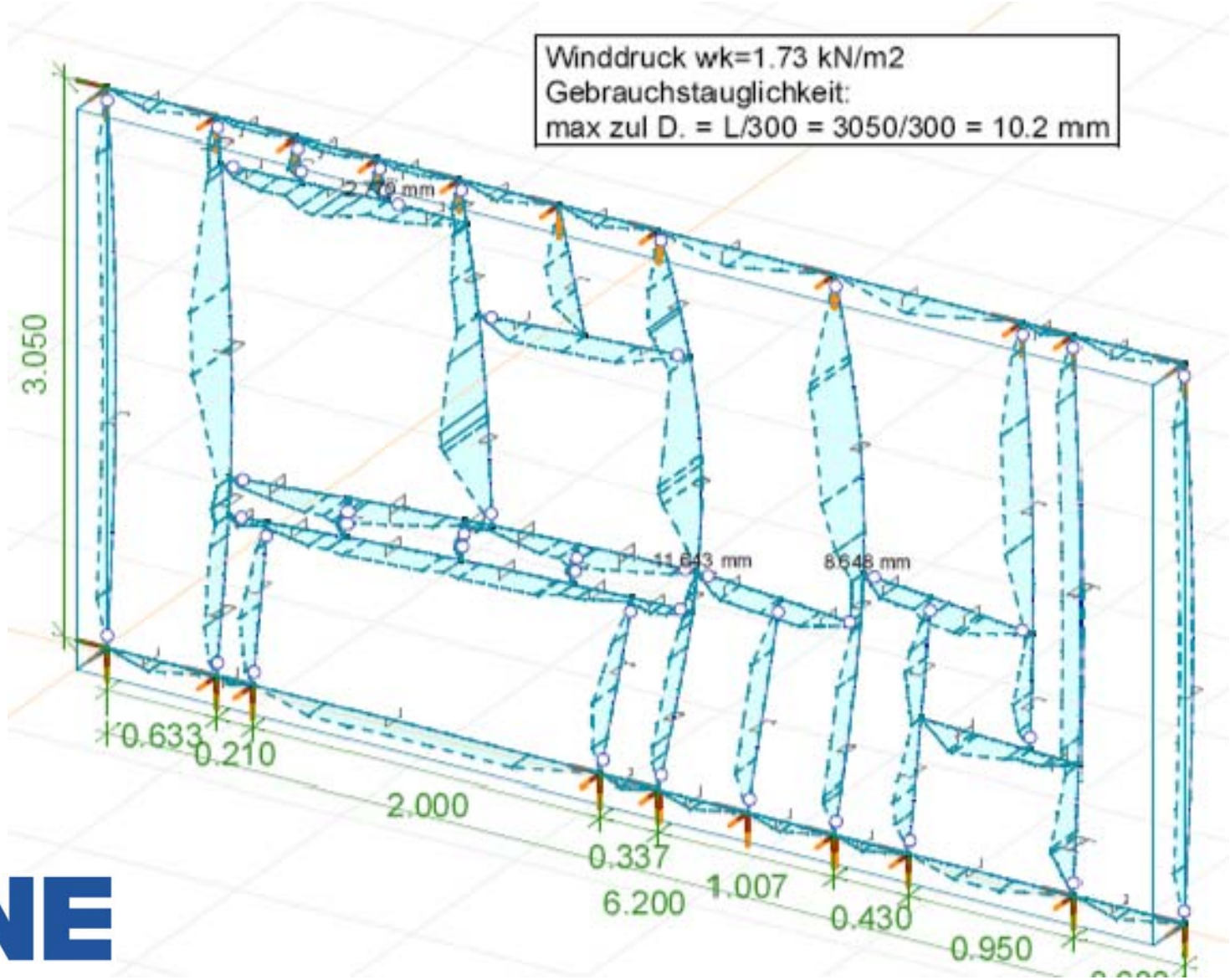
Öffenbare Fenster	1 x F0-IGN = 1.04 m²
Festverglasung	3 x FF-ASN = 2.92 m², 3 x FF-IGN = 2.54 m²
Festverglasung Ecke	-
Festverglasung Loggia Brüstung	-
Festverglasung Loggia Brüstung Ecke	-
Storen Loggia	-
Storen	7 x ST = 6.944 m

Putzfläche	12.82 m²
Seitliche Zarge	7.42 m
Fensterbank	8.29 m
Sturz	8.29 m
Loggia Handlauf	-
Loggia Blech	-
Blech	4 x BL = 0.92 m²

ERNE


Winddruck wk=1.73 kN/m2
Gebrauchstauglichkeit:
max zul D. = L/300 = 3050/300 = 10.2 mm
3.050
0.633
0.210
2.000
0.337
6.200
1.007
0.430

ERNE


Winddruck wk=1.73 kN/m2
Gebrauchstauglichkeit:
max zul D. = L/300 = 3050/300 = 10.2 mm
11.643 mm
8.648 mm
3.050
0.633
0.210
2.000
0.337
6.200
1.007
0.430
0.950

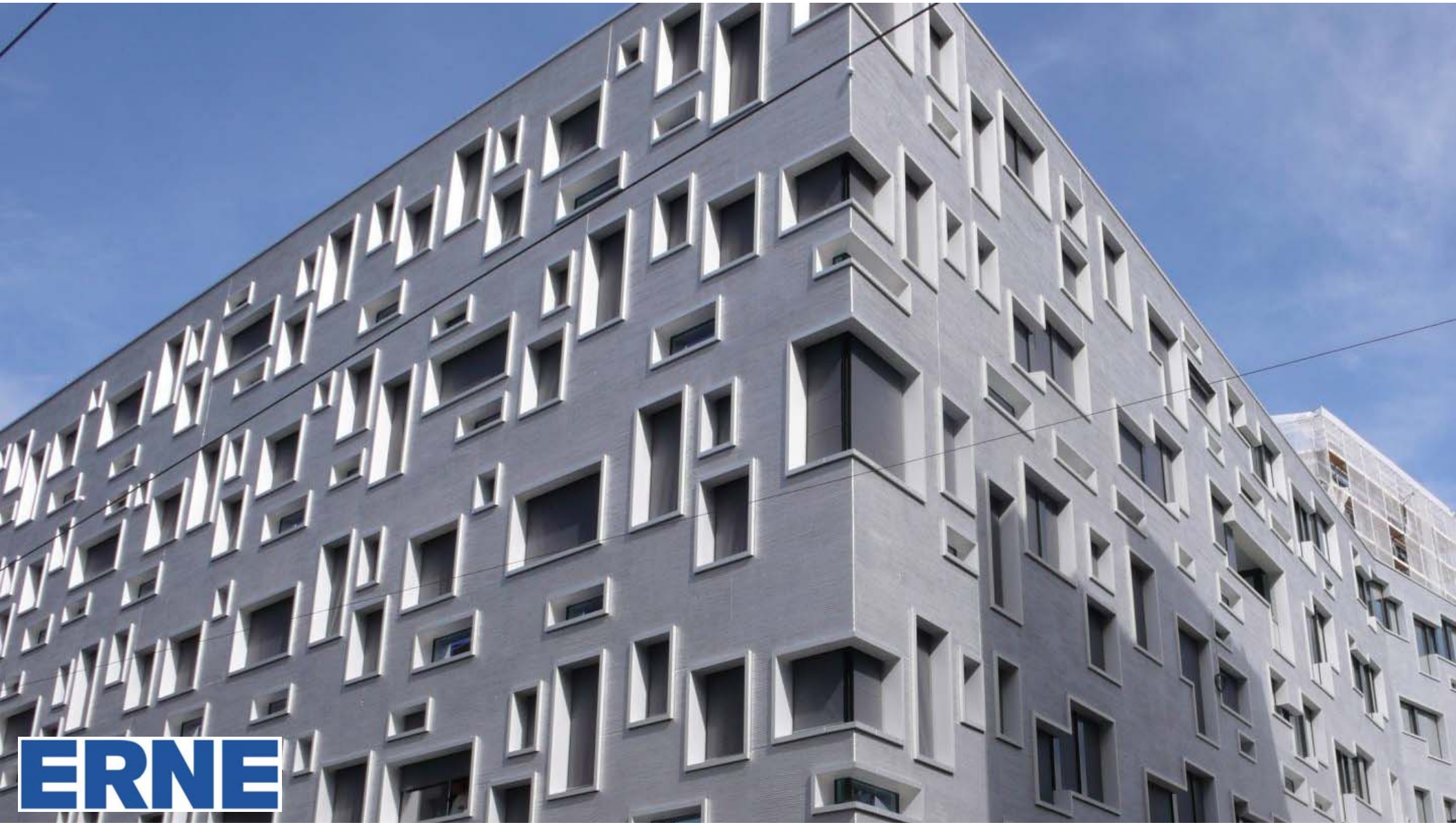
ERNE

Hauptpos	Profilart	Pos.	Länge	Anzahl
N-1-04	C147	Z/1061	3812	1
N-1-04	C147	P/1107	2902	4
N-1-04	C147	Z/1001	2902	4
N-1-04	C147	P/1022	967	2
N-1-04	C147	P/1199	960	1
N-1-04	C147	P/1281	563	5
N-1-04	C147	P/1653	492	2
N-1-04	C147	P/1119	485	1
N-1-04	U150	P/1688	5512	3
N-1-04	U150	Z/55	3812	1
N-1-04	U150	Z/1070	3812	1
N-1-04	U150	Z/3	2826	2
N-1-04	U150	P/1218	2012	1
N-1-04	U150	P/1226	1858	1
N-1-05	C147	P/1003	3024	3
N-1-05	C147	Z/1007	3024	2
N-1-05	C147	Z/1080	2458	1
N-1-05	C147	Z/1077	1921	1
N-1-05	C147	P/1829	1228	1
N-1-05	C147	P/1013	1089	2
N-1-05	C147	P/1275	1082	2
N-1-05	C147	P/1167	699	1
N-1-05	C147	P/1381	624	3
N-1-05	C147	P/1700	616	1
N-1-05	C147	P/1759	616	1
N-1-05	C147	P/1099	614	2
N-1-05	C147	P/1171	607	1
N-1-05	C147	P/1093	606	3
N-1-05	C147	P/1299	600	1
N-1-05	C147	P/1301	333	2
N-1-05	C147	P/1295	325	1
N-1-05	C147	P/1261	224	2
N-1-05	C147	P/1250	216	1
N-1-05	C147	P/1007	129	4

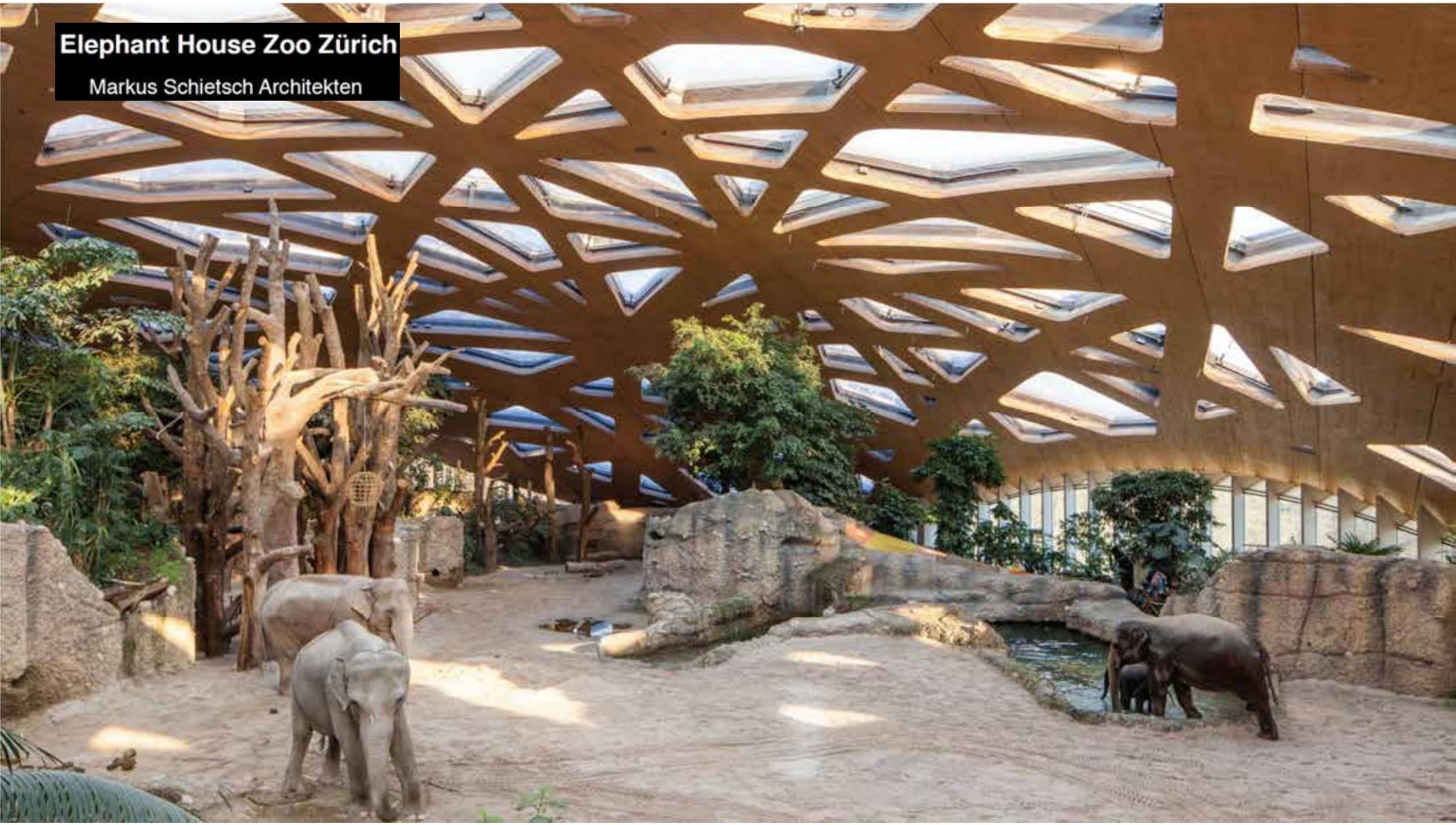
ERNE

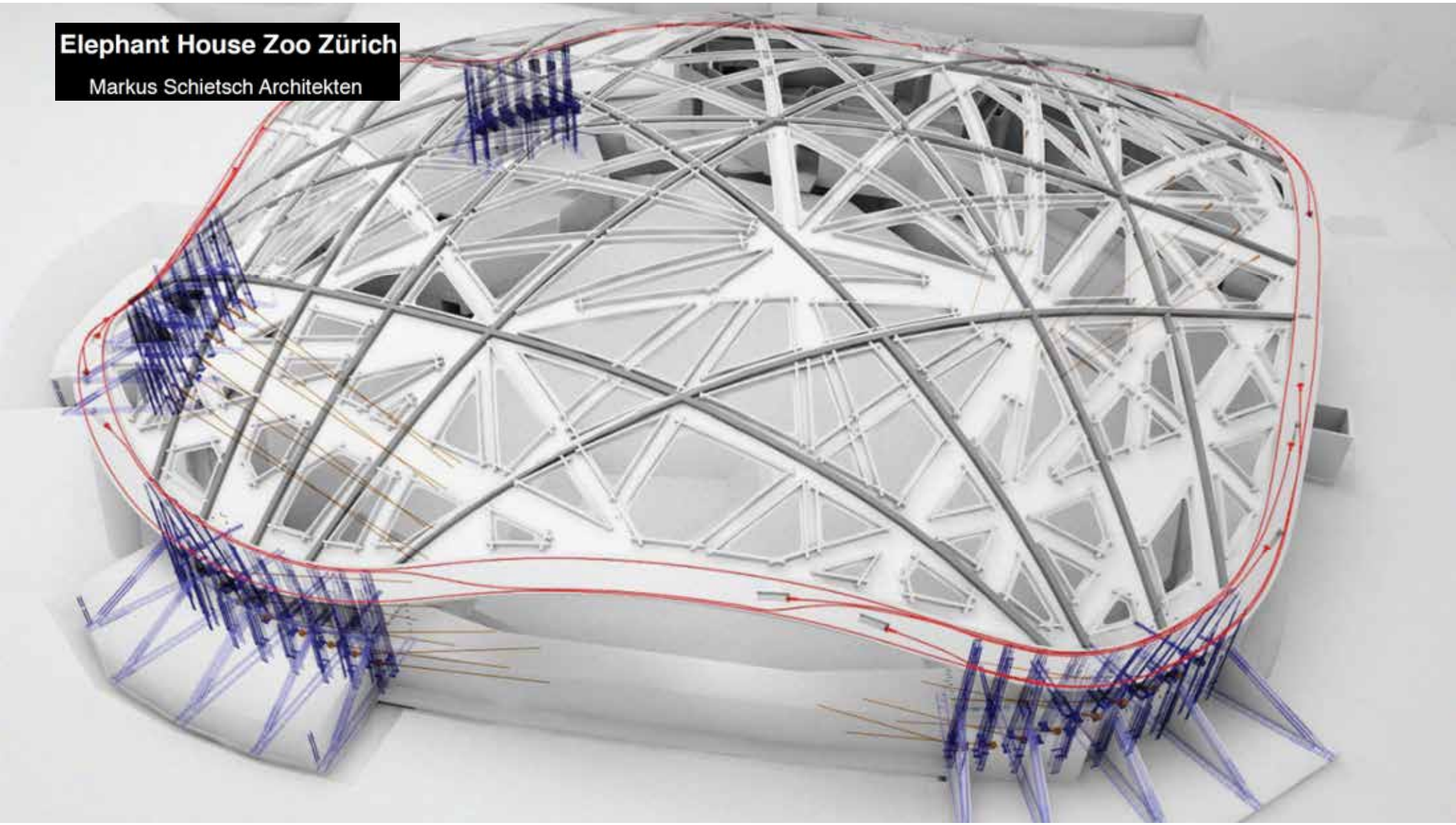

ERNE


KAPULICA AG


ERNE

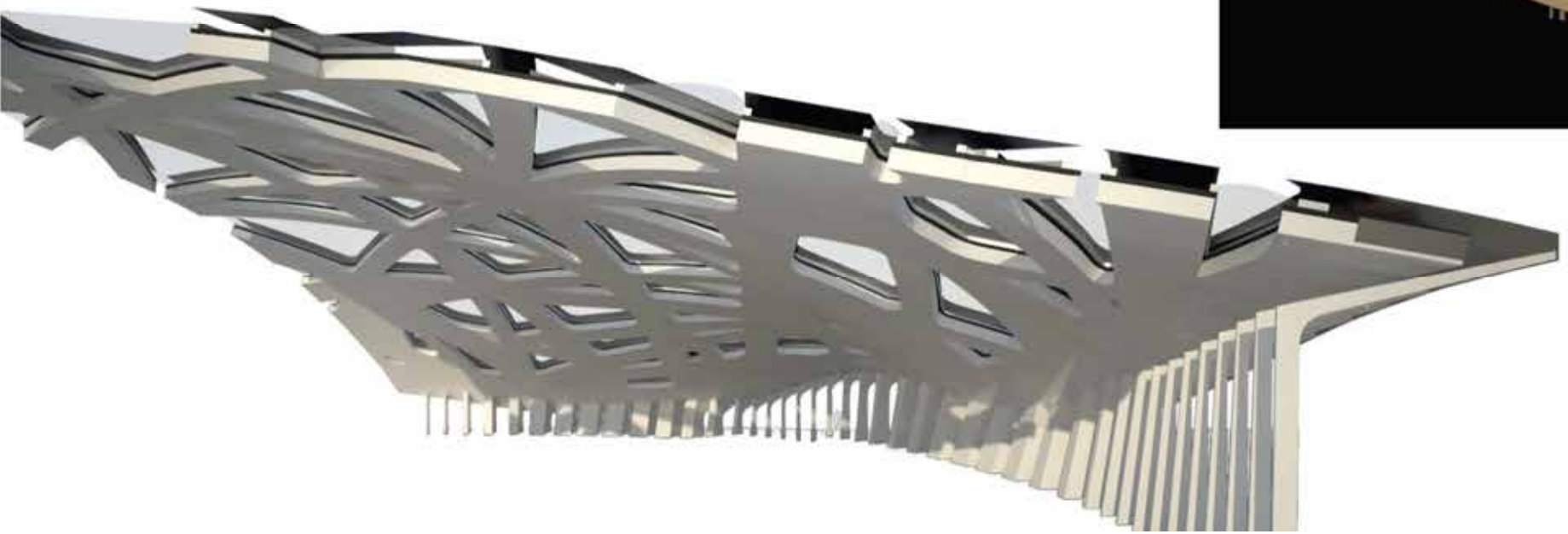

Elephant House Zoo Zürich
Markus Schietsch Architekten


Elephant House Zoo Zürich
Markus Schietsch Architekten


Elephant House Zoo Zürich
Markus Schietsch Architekten

Elephant House Zoo Zürich

Markus Schietsch Architekten

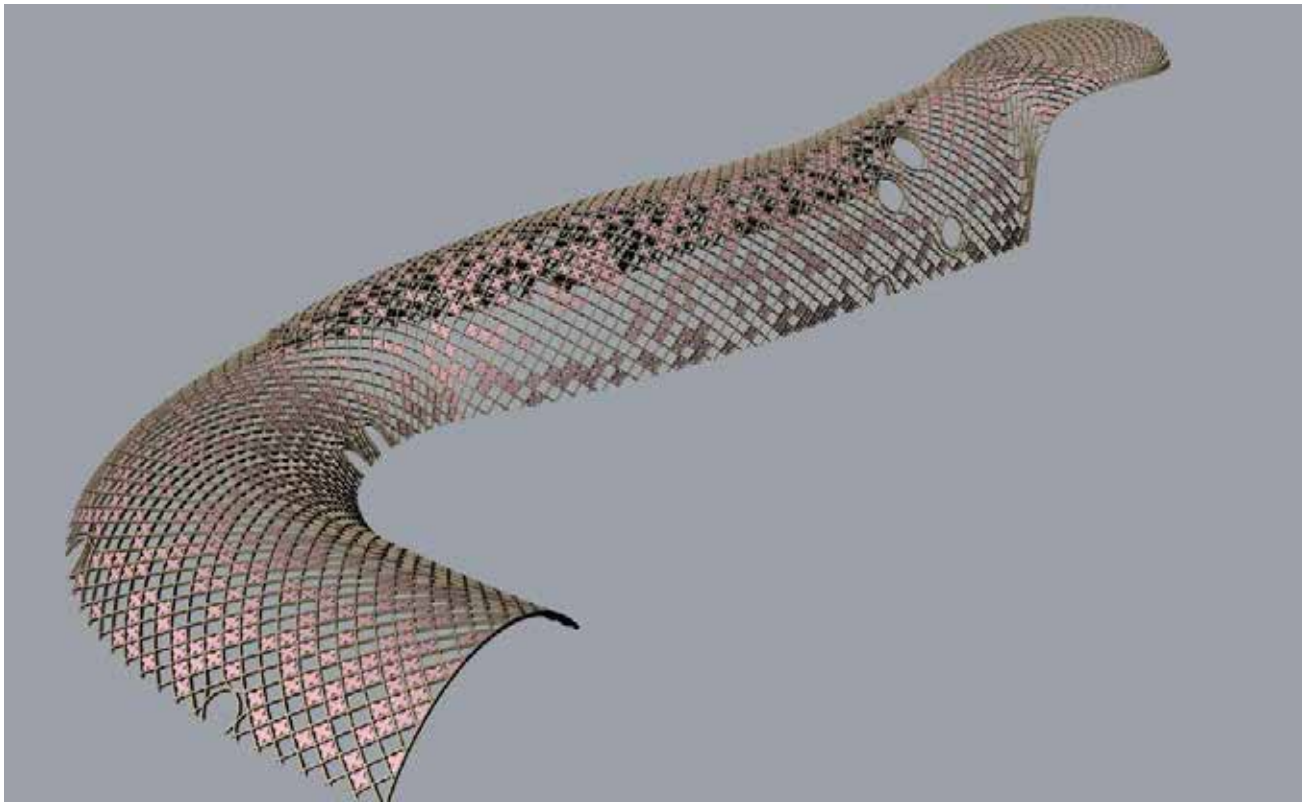



Elephant House Zoo Zürich
Markus Schietsch Architekten

Elephant House Zoo Zürich

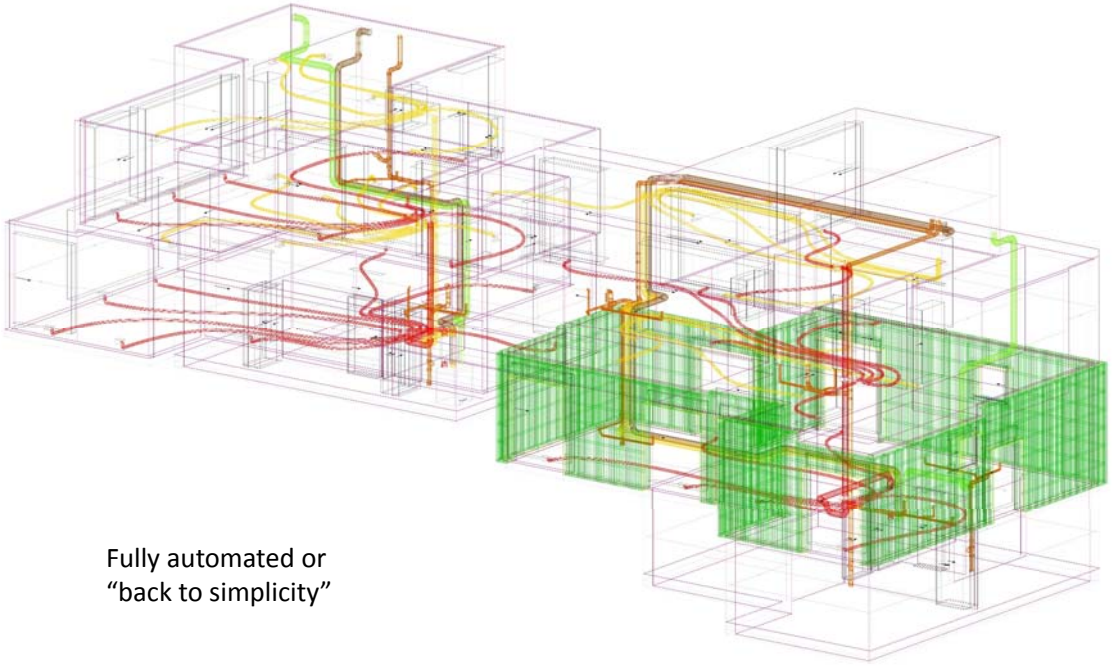
Markus Schietsch Architekten

OMEGA and SWATCH by Shigeru Ban 2016

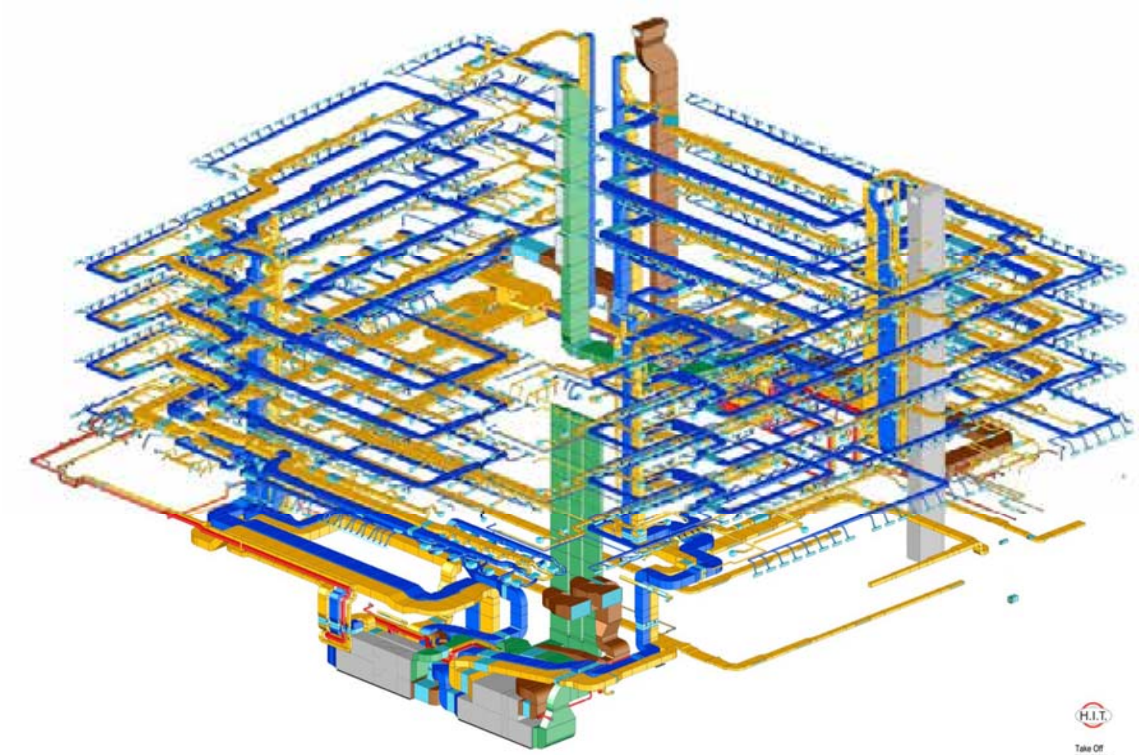


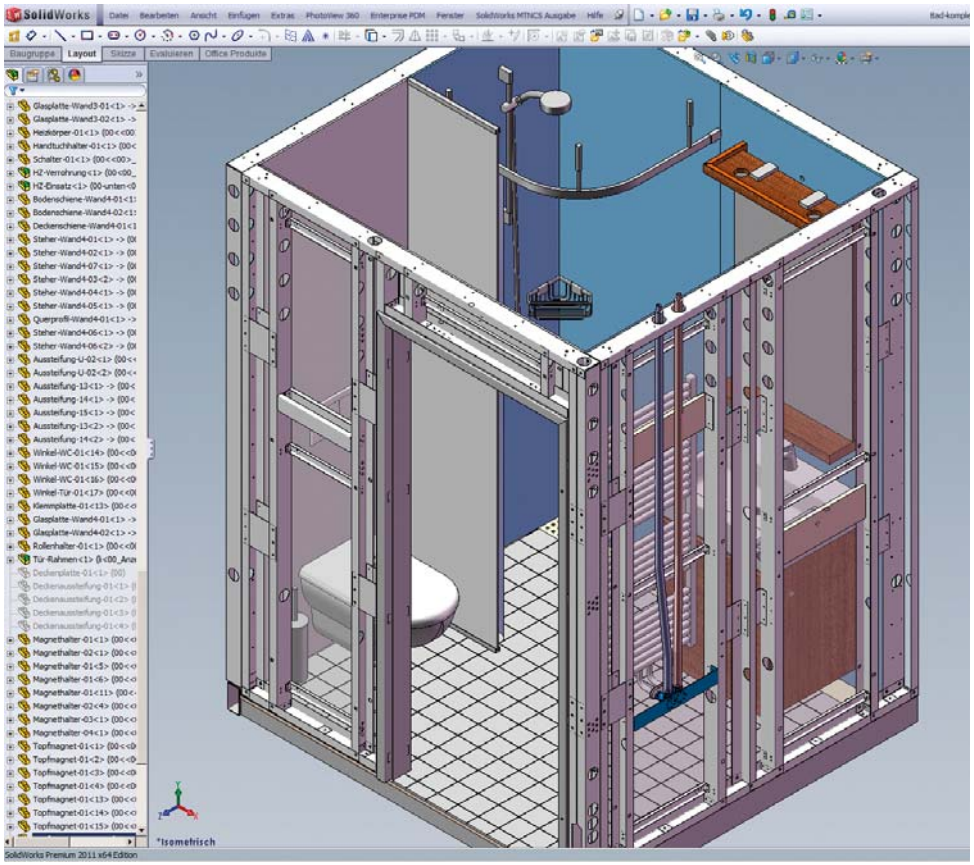

BIM and HVACS

BIM for HVACS (heating, ventilation, air conditioning, sanitary installations)



Fully automated or
“back to simplicity”


H.I.T.
Take Off


SolidWorks
Datei Bearbeiten Ansicht Einfügen Extras PhotoView 360 Enterprise PDM Fenster SolidWorks MTACS Ausgabe Hilfe
Baugruppe Layout Skizze Evaluieren Office Produkte
*Isometrisch
SolidWorks Premium 2011 x64 Edition

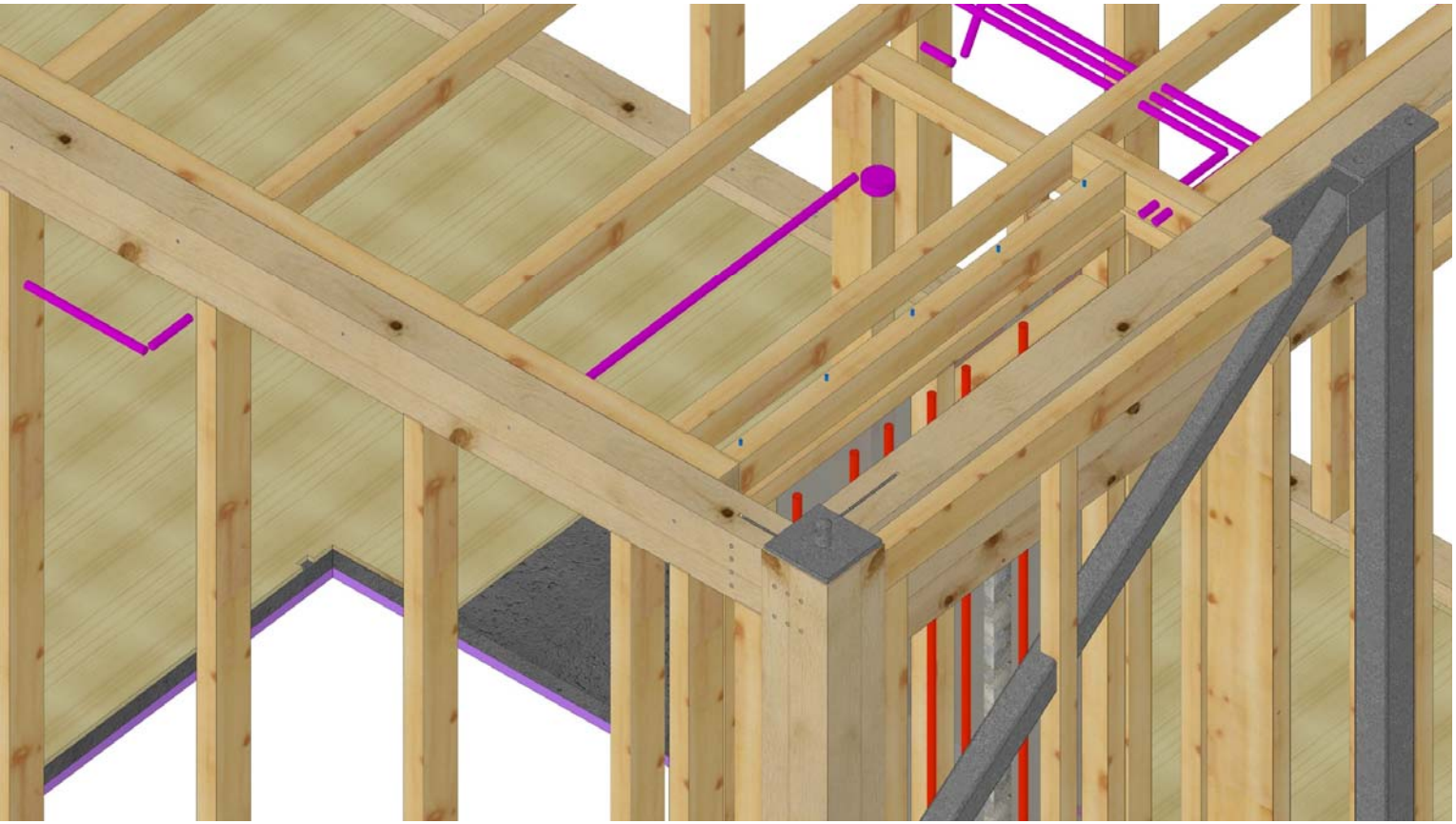
Geberit BIM-Daten

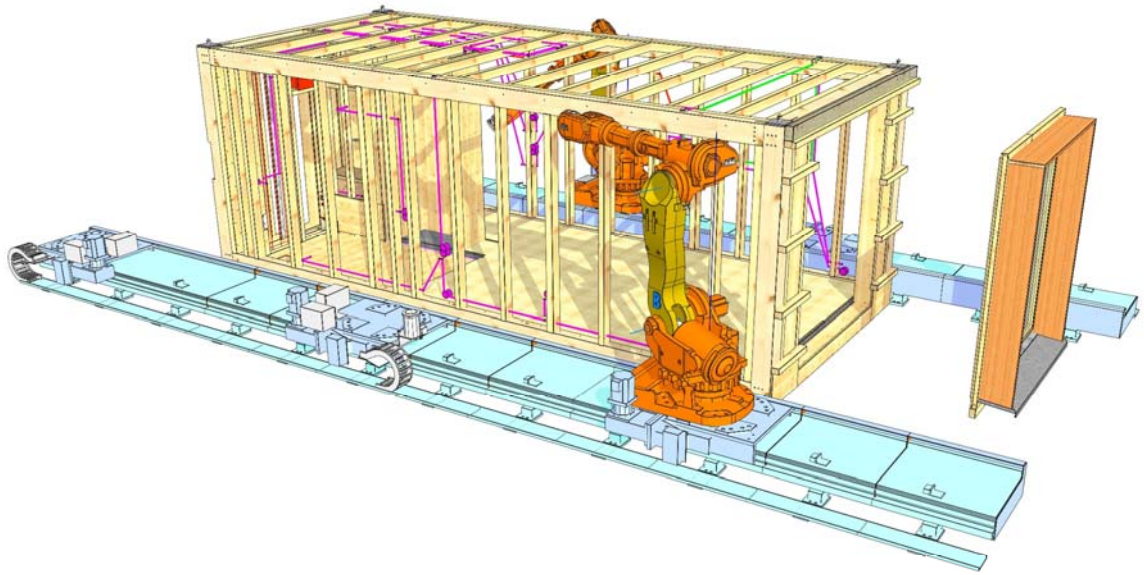
Für Autodesk Revit

Geberit Revit-Package

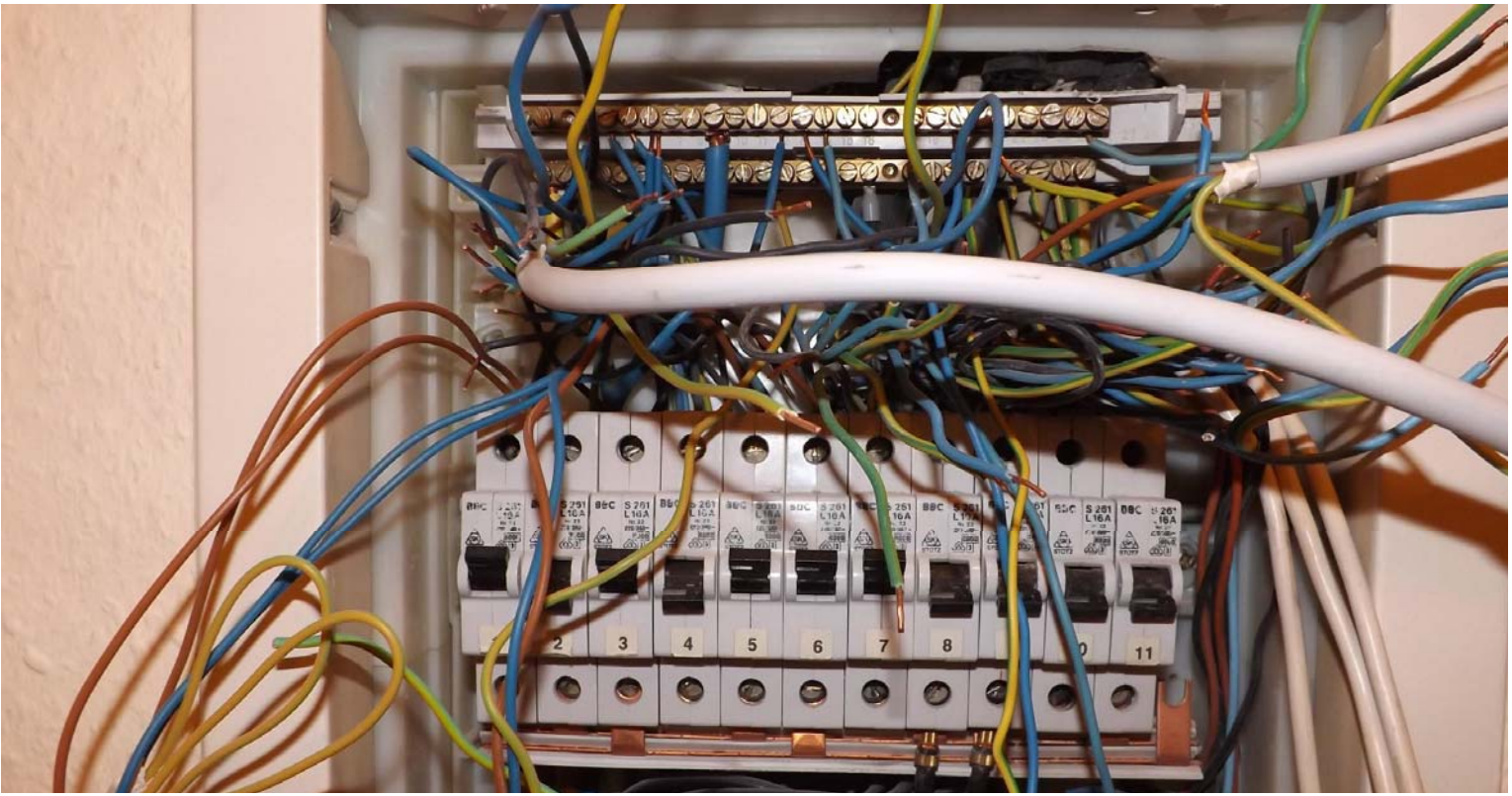
- Revit-Daten für komplette Produktfamilien im Format RVT für AutoDesk Revit
- Daten verfügbar für die AutoDesk Revit 2014, 2015 und 2016
- Datenpakete enthalten länderspezifische Sortimente

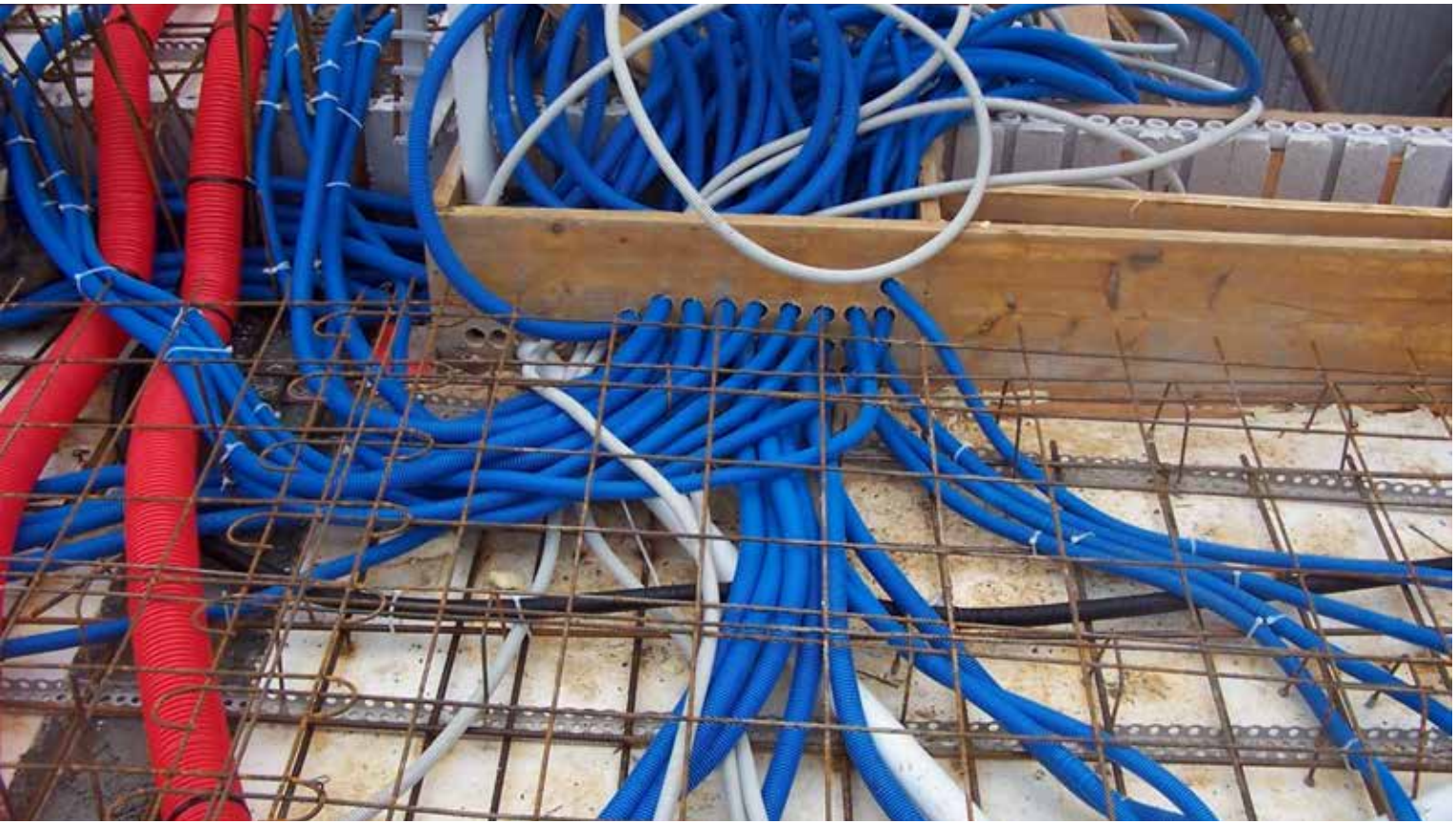
Die Revit-Daten von Geberit werden regelmässig aktualisiert und verbessert. Für die Information über Aktualisierungen benötigen wir Ihre Kontaktangaben.

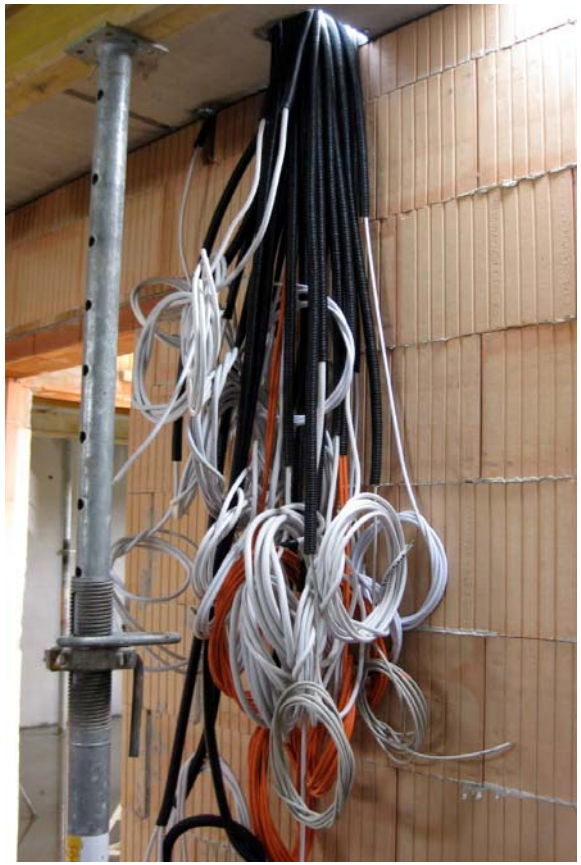




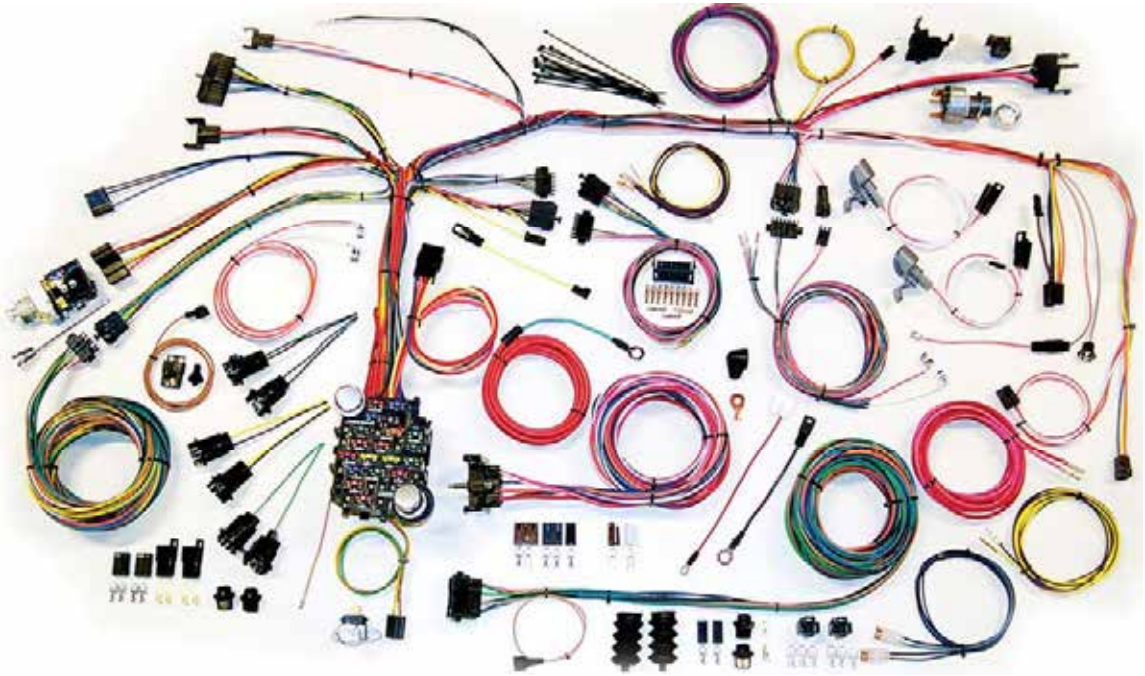
Electrical installation

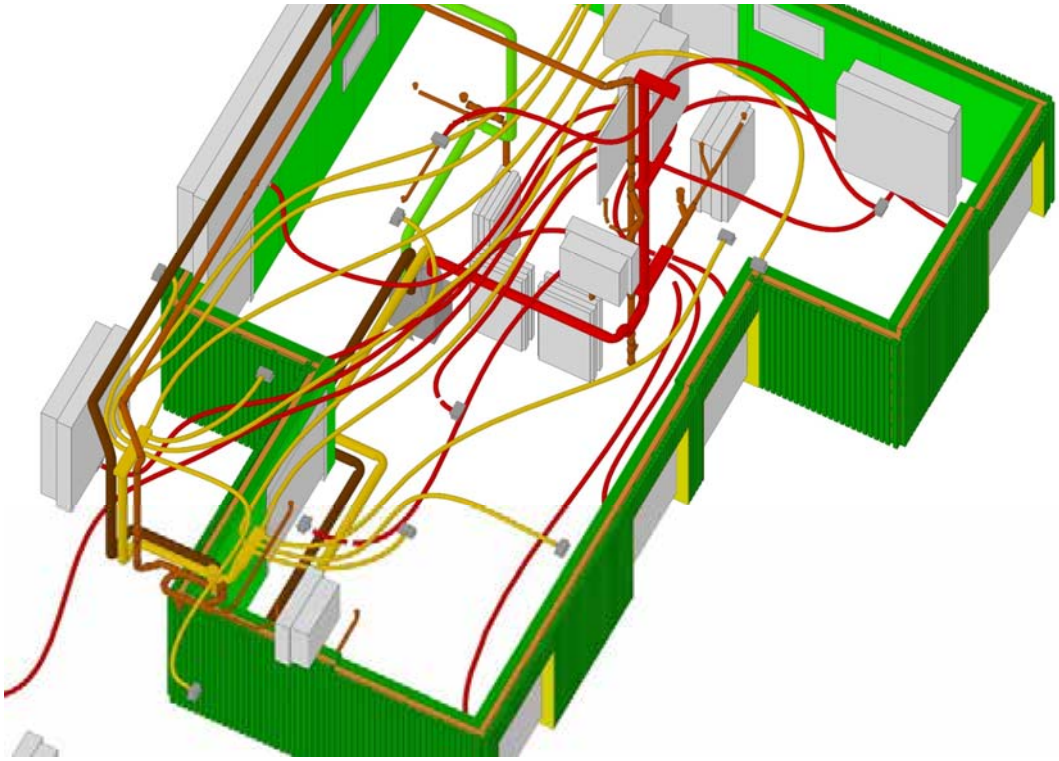




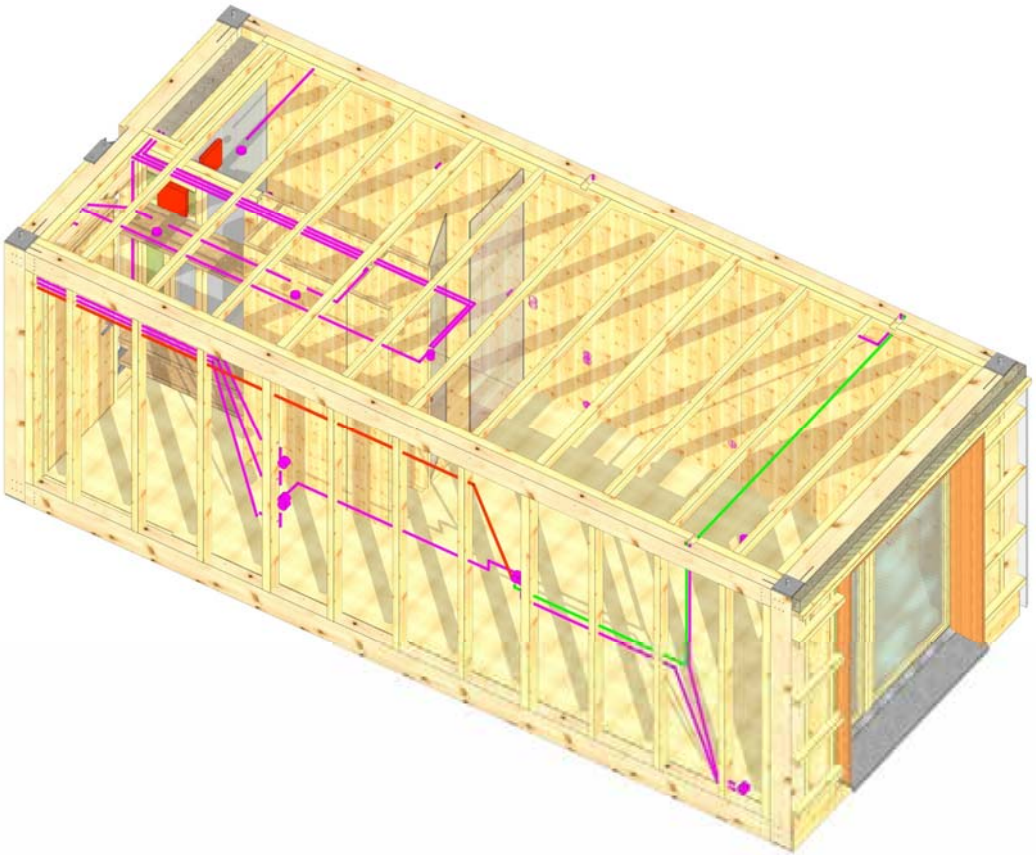


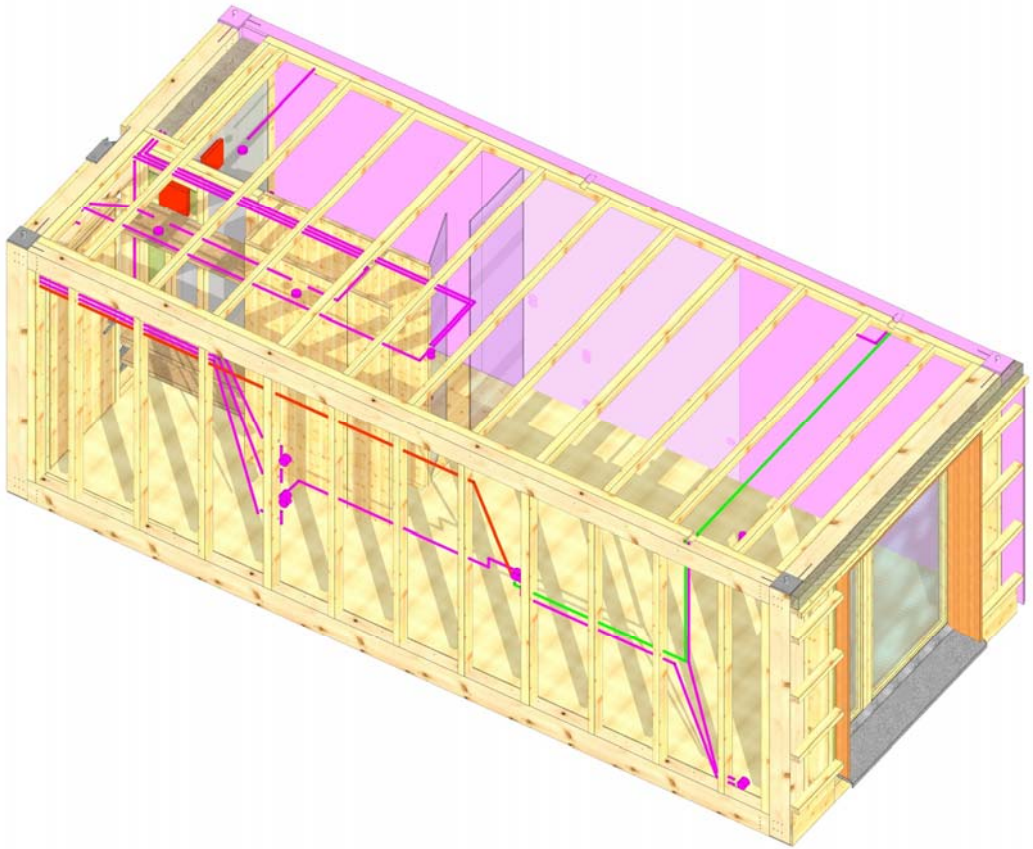
Outcome of the electrical planning in BIM = pre-assembled harness

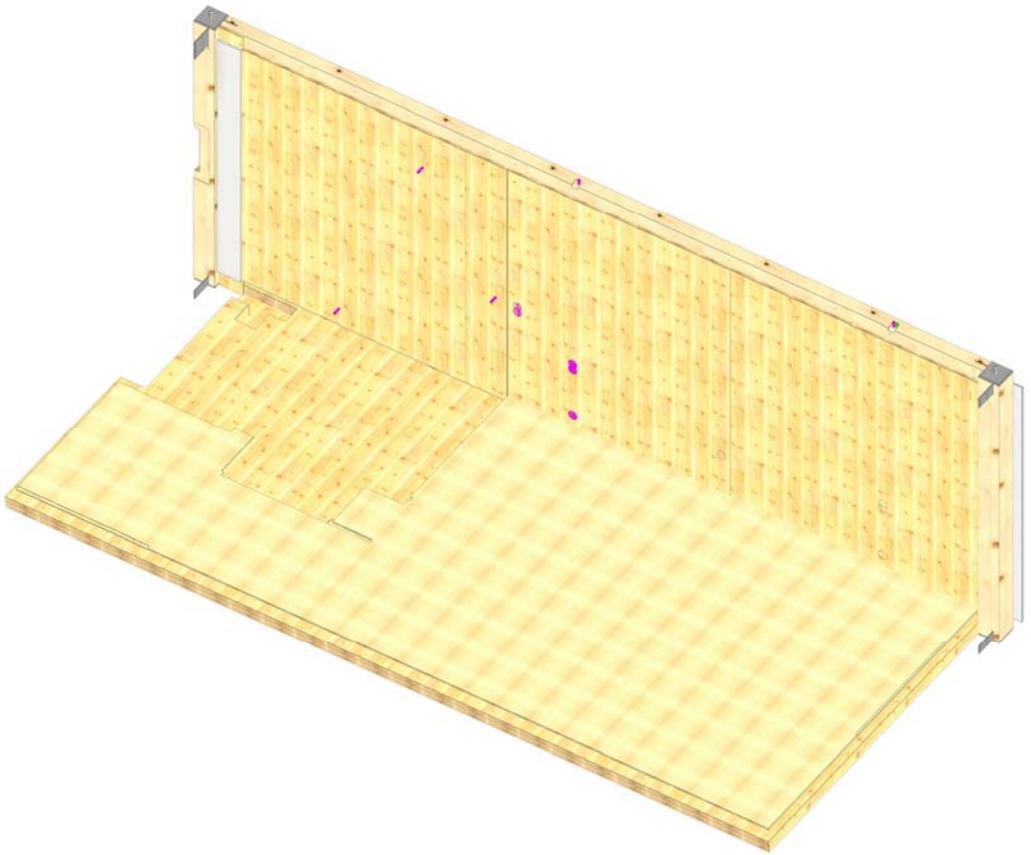


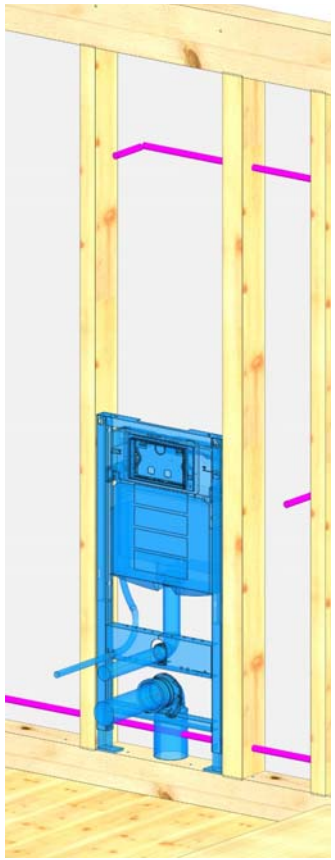


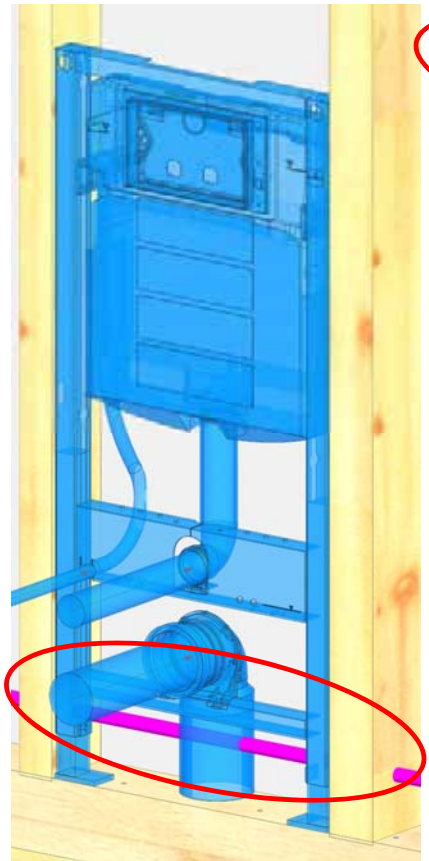
BIM compatible -- but manageable?

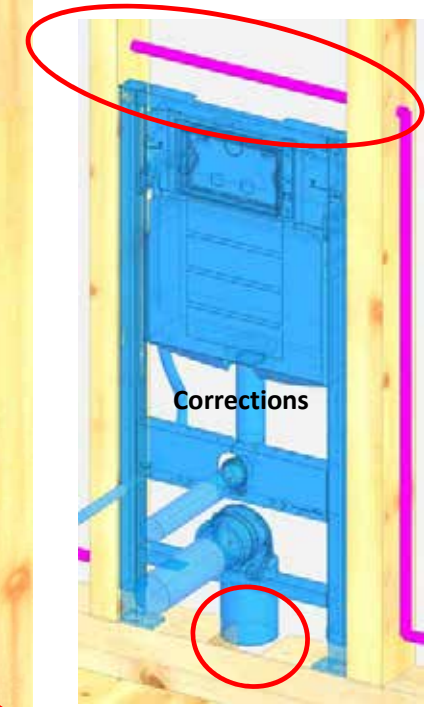




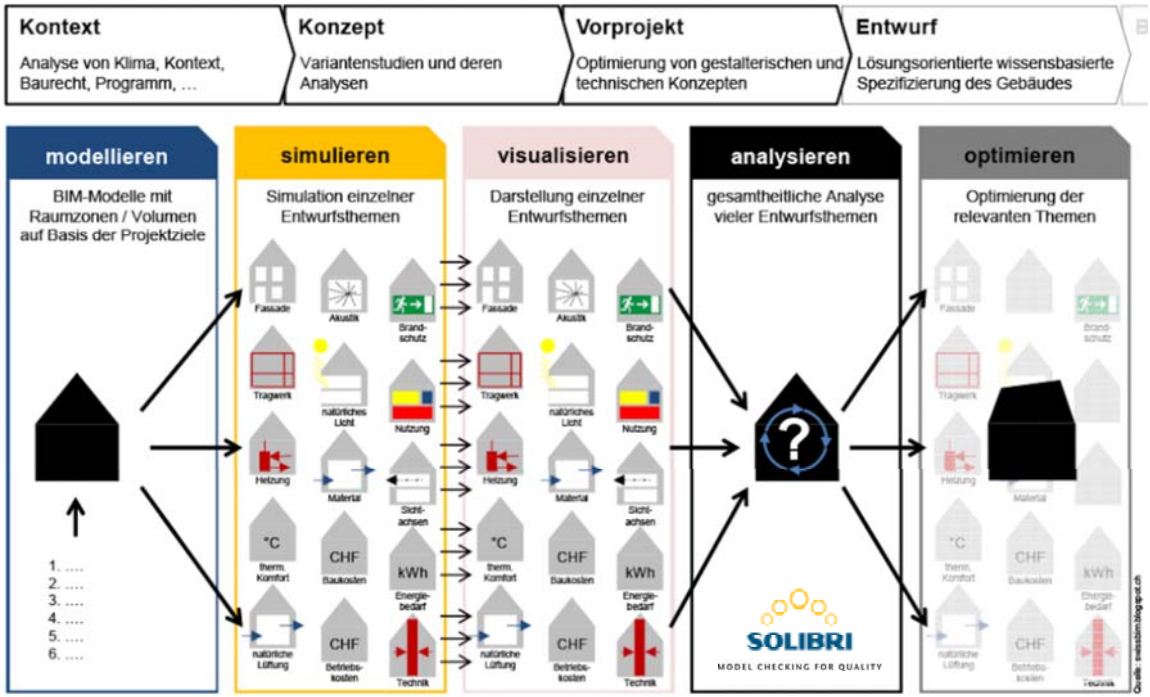




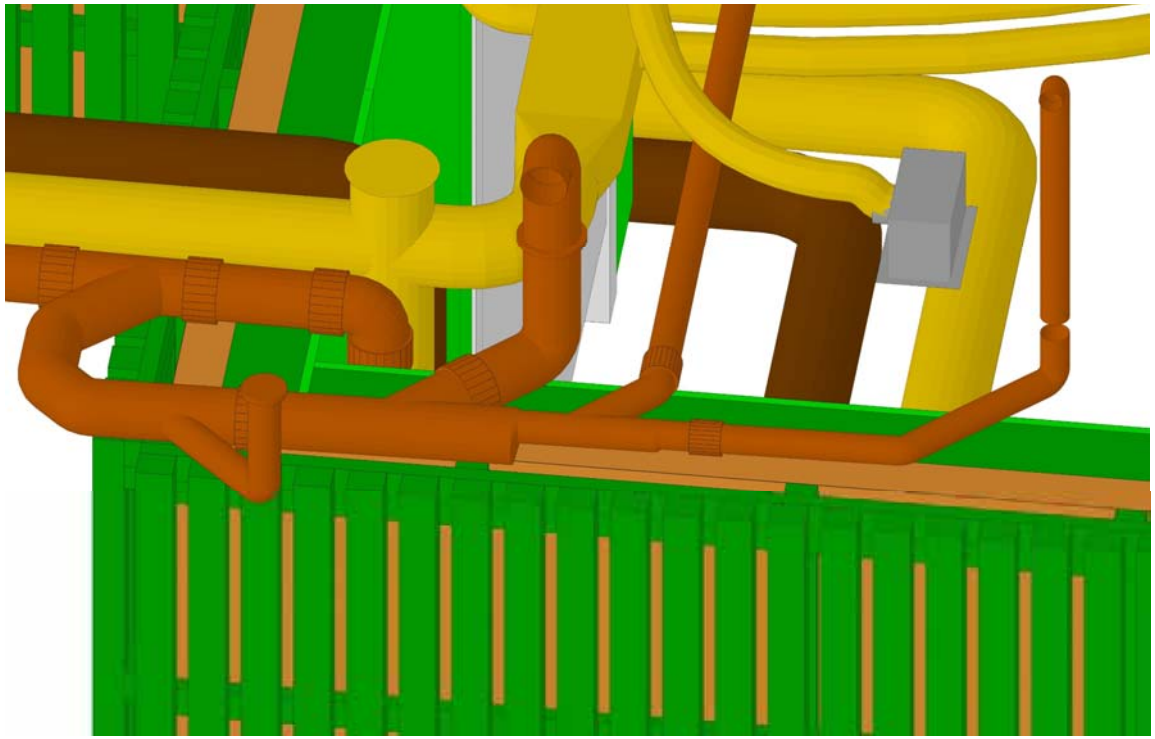




Collision identified



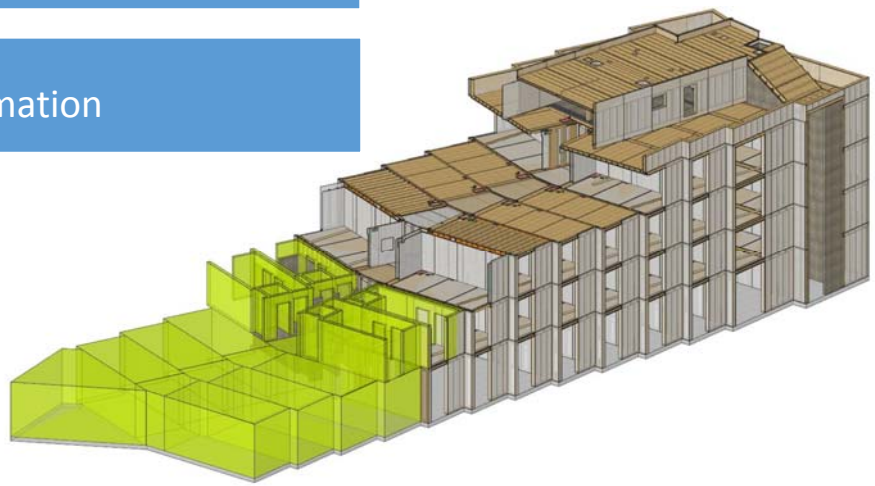
After SOLIBRI has discovered collisions, measures need to be taken. It is possible to define hierarchies: «Static elements before building services before electrical pipes before insulation»

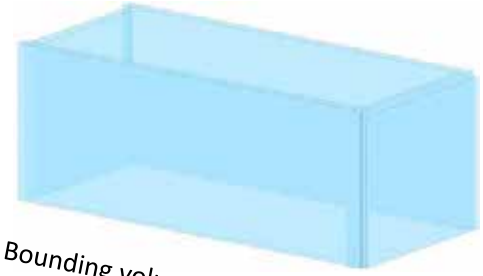


In timber construction, there is no “casting”, which means: everything has an impact on workability. An upward inclined pipe in timber construction is a complex 5 axis process.

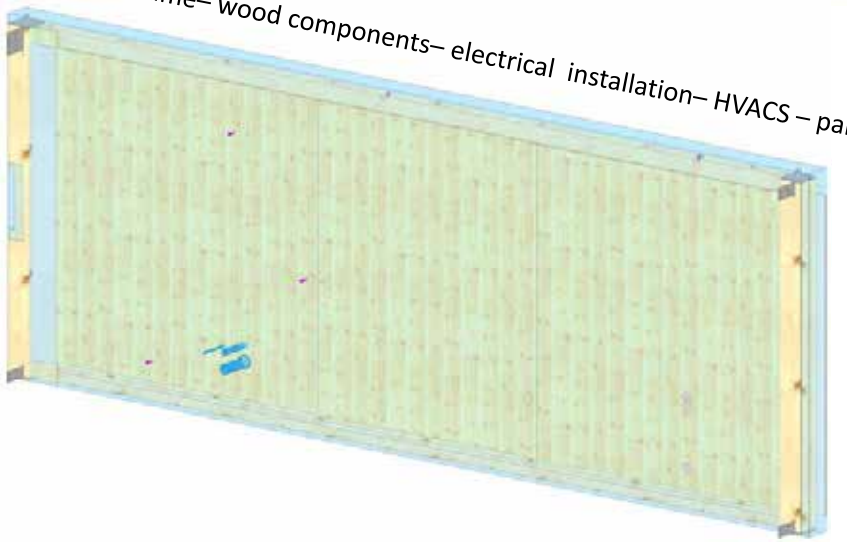
Level of Detail

- **LOD** Level of Development
- **LOG** Level of Geometry
- **LOI** Level of Information





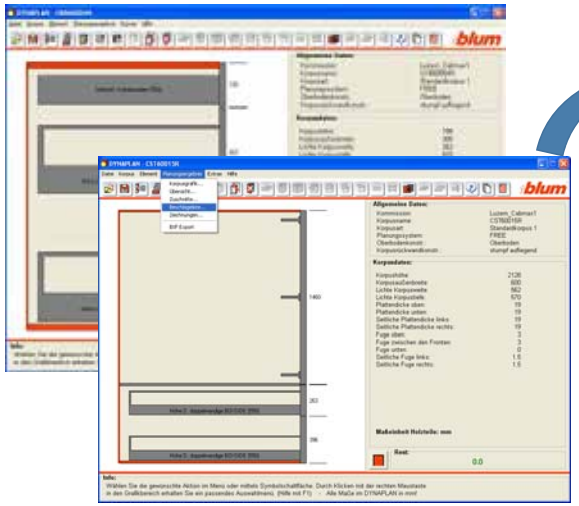
Bounding volume– wood components– electrical installation– HVACS – panelling interior/exterior




BIM in joinery

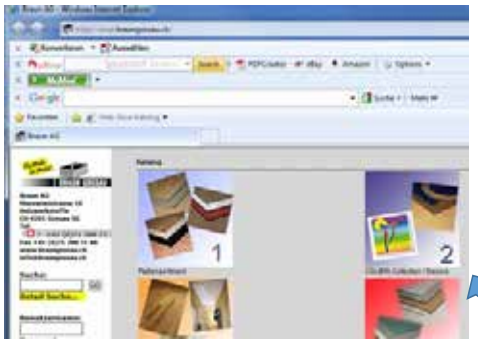
Combination of design drawing and photo reality

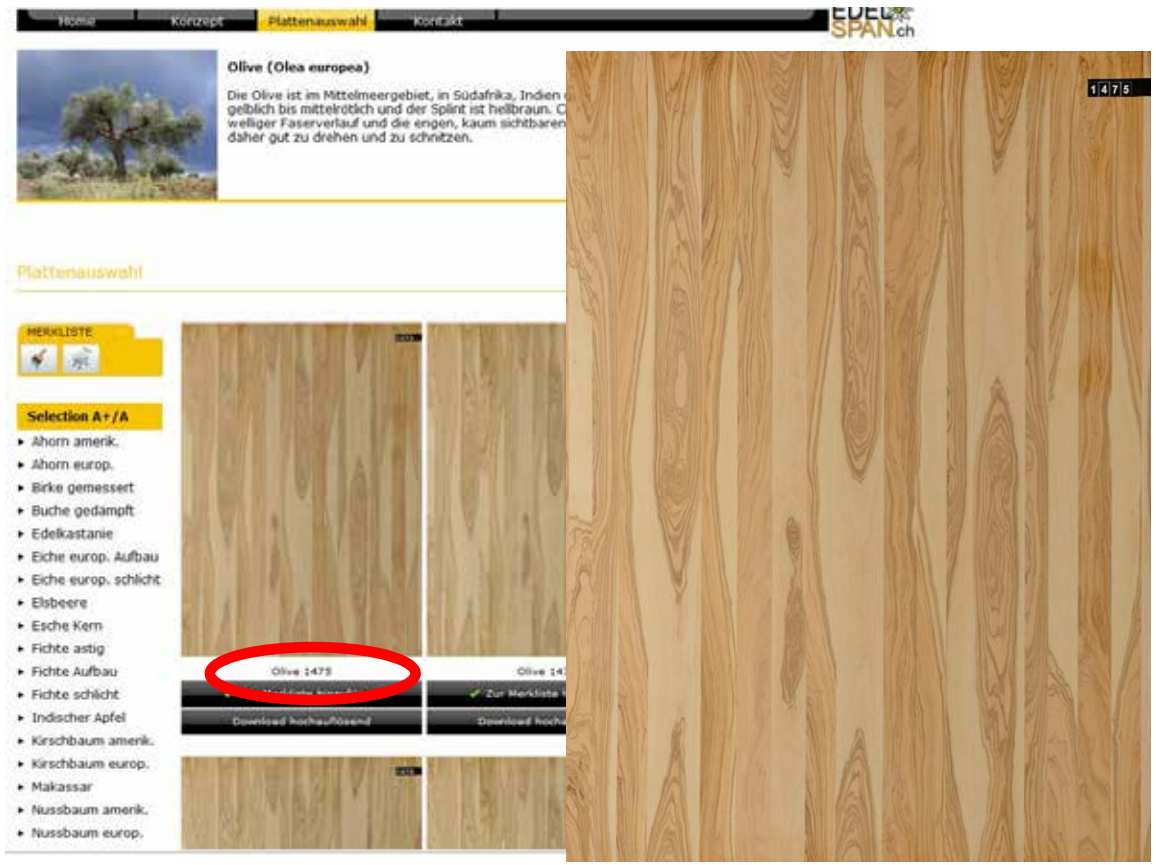
Digital networking



BXF

COM norm

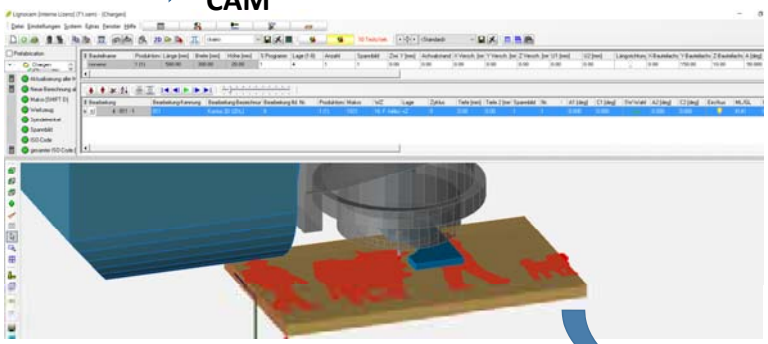



Home
Konzept
Plattenauswahl
Kontakt
EDELSPAN.ch
Olive (Olea europea)
Die Olive ist im Mittelmeergebiet, in Südafrika, Indien
gelblich bis mittelrötlich und der Splint ist hellbraun.
welliger Faserverlauf und die engen, kaum sichtbaren
daher gut zu drehen und zu schnitzen.
Plattenauswahl
MERKLISTE
Selection A+/A
Ahorn amerik.
Ahorn europ.
Birke gemessert
Buche gedämpft
Edelkastanie
Eiche europ. Aufbau
Eiche europ. schlicht
Elsbeere
Esche Kern
Fichte astig
Fichte Aufbau
Fichte schlicht
Indischer Apfel
Kirschbaum amerik.
Kirschbaum europ.
Makassar
Nussbaum amerik.
Nussbaum europ.
Olive 1473
1475


1475

CAD

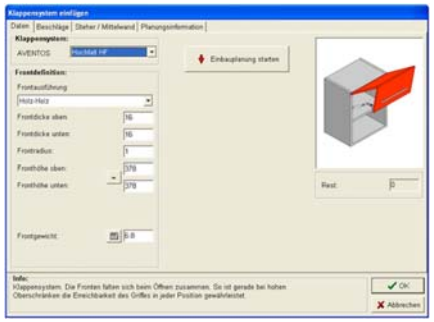
CAM




blum

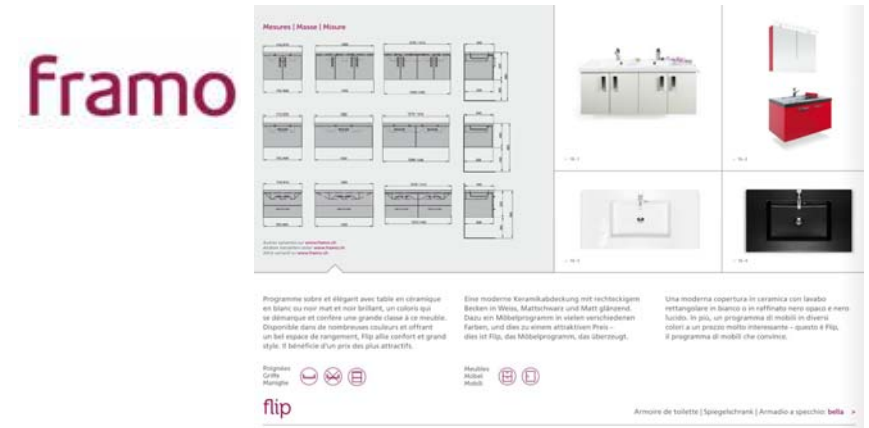
Der Schreiner
Ihr Macher
schreiner.ch

Description of database
Parameterisation (ERP)



CAD 3D
or
database

3D specialised information model
CAD (BIM)



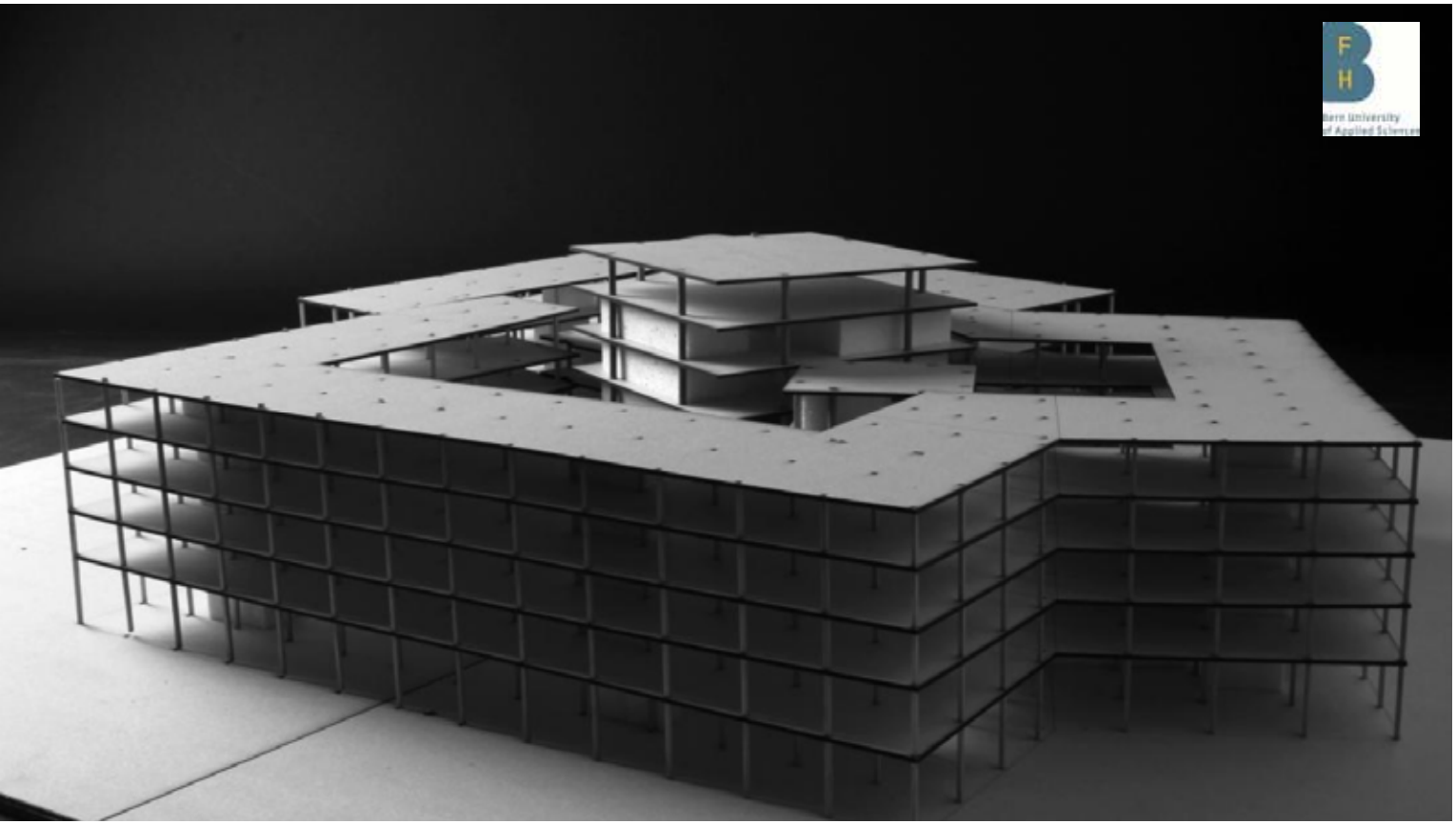
design/sketch
parameterized
CAD 3D model

construction
visualization
3D print
costs

ERP connection
production
industry 4.0

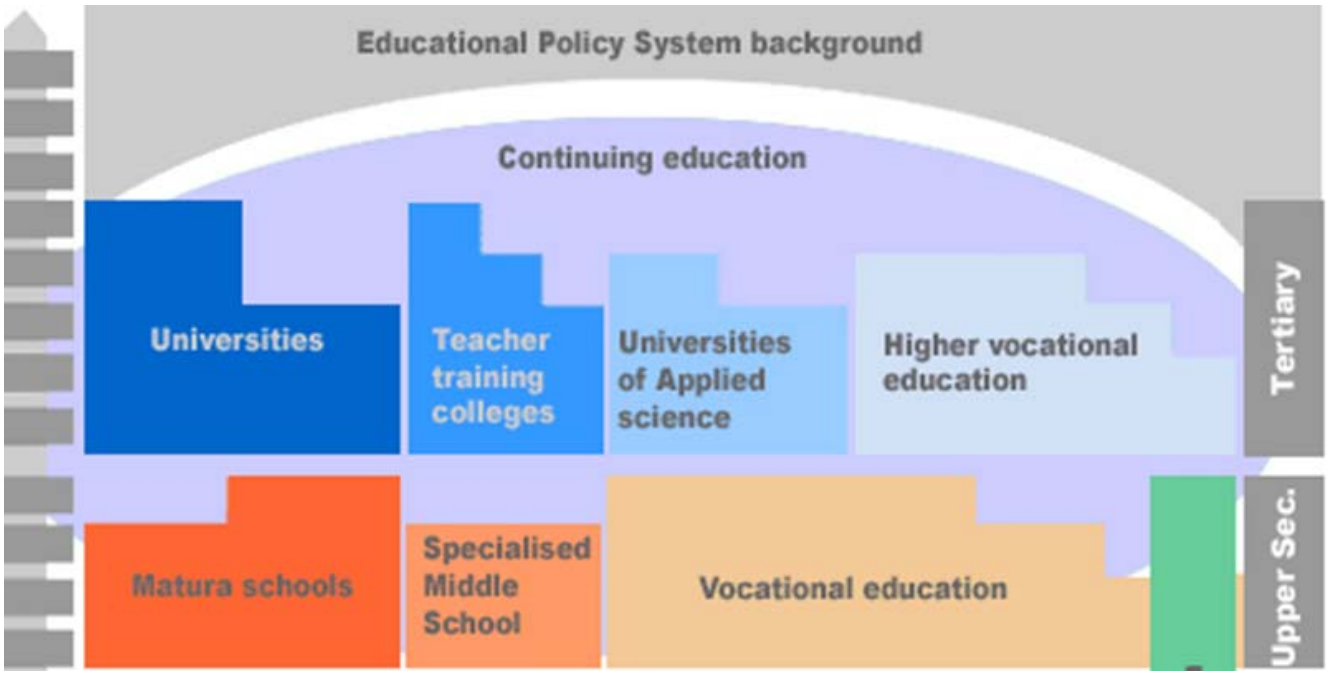

Science City
Bern University of Applied Sciences


F
H
Bern University
of Applied Sciences




F
H
Bern University
of Applied Sciences

The Swiss educational system



Bachelor degree courses

- Bachelor of Arts in Architecture
- Bachelor of Science in Wood Engineering
- Bachelor of Science in Civil Engineering

Bern University of Applied Sciences

Masters degree courses

- Master of Arts in Architecture
  (in cooperation with the University of Applied Sciences Western Switzerland)
- Master of Science in Engineering
  (in cooperation with seven Swiss Universities of Applied Sciences)
- Master of Science in Wood Technology
  (in cooperation with the University of Applied Sciences Rosenheim, Germany)

Focal points

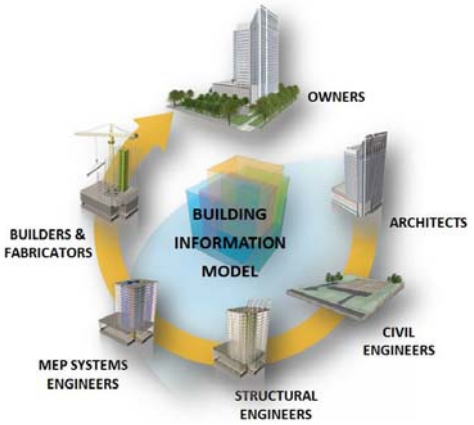
Specialisation Complex Timber Structures – CTS

Bern University of Applied Sciences

1. Multi-storey Timber and Hybrid Structures

2. Complex Timber structures

3. Building Information Modeling (BIM)



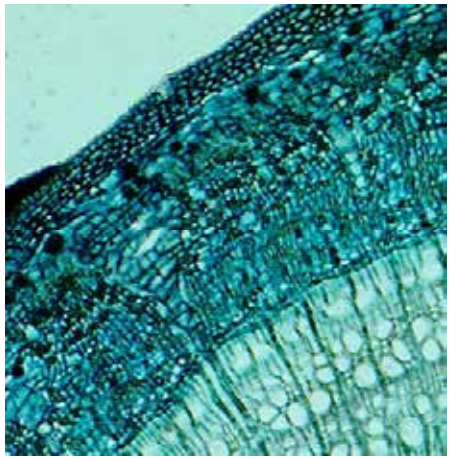
Left: *design of a 30 storey building by the kanadian Architect Michael Green*
Middle: *Shigeru Ban the new SWATCH Headquarter in Biel*
Right*: Source www.cooperindustries.com*

Research and Development

3 Institutes of Bern University of applied sciences

Bern University of Applied Sciences

Institute 1: Materials and Wood Technology



Institute 2: Timber Construction, Structures and Architecture

Institute 3: Urban Development and Infrastructure

teaching Researchers – researching Teachers


Thank you very much for joining us.