



Bauen 4.0
Vom Ego – zum Lego – Prinzip
Stadt aus Holz | Zürich | Hubert Rhomberg

**Der Bauprozess ist fragmentiert, altmodisch
und mit zu vielen Akteuren besetzt.**

A large mining truck is shown in a black and white photograph, with its bucket raised and dumping material. The truck is positioned on a rocky, uneven terrain. The background shows a hazy, mountainous landscape. The truck's bucket is filled with a dark, granular material, and it is in the process of emptying it into a large, flatbed trailer or another container. The truck has large, heavy-duty tires and a complex mechanical structure. The overall scene is industrial and rugged.

Stand der Dinge

Baubranche verursacht **40%**
des Abfall und CO₂ Aufkommens
sowie Ressourcen- und Energie-
verbrauchs

Im Jahre 2050 werden mehr als 75%
der Bevölkerung in **Großstädten**
leben und wir müssen dafür über
3 Milliarden Wohnungen bauen...





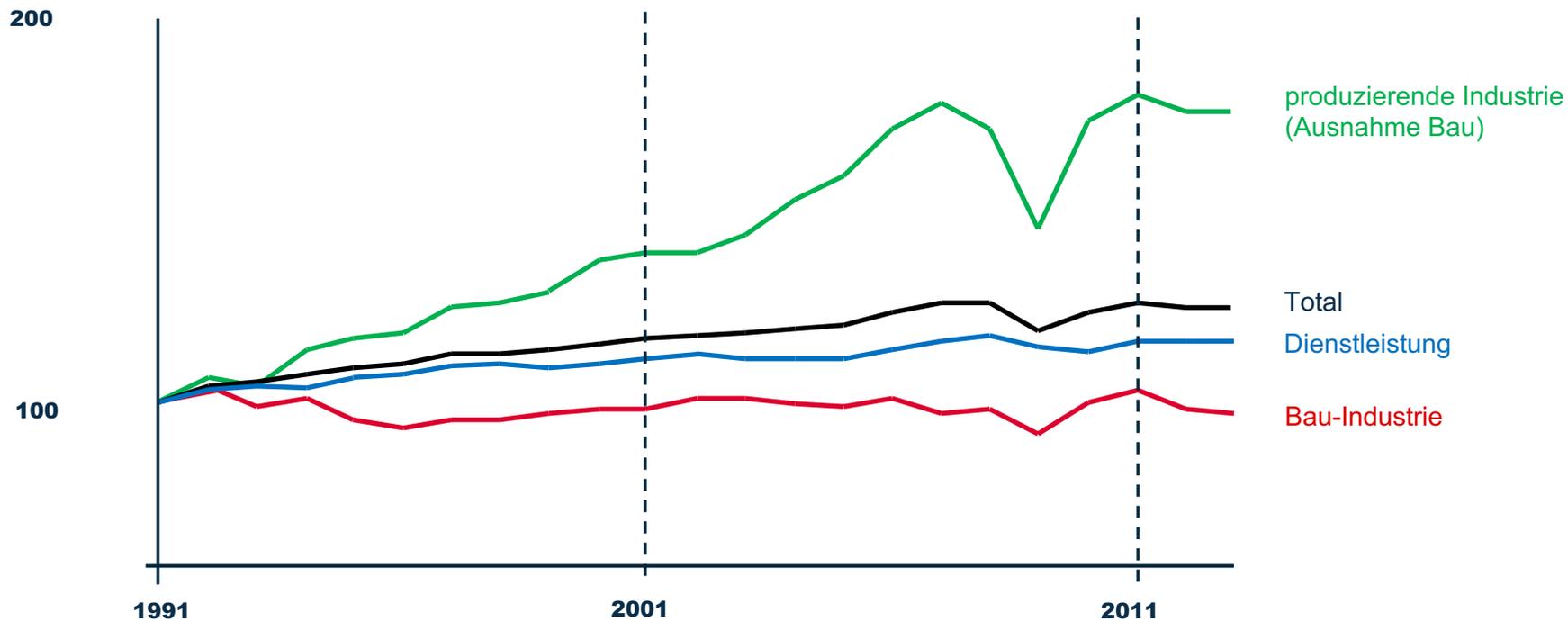
Jedes Gebäude ist ein **Prototyp**. Keine zwei sind gleich.

PRODUKTIVITÄT

Laut Studien des McKinsey Beratungsinstituts stagniert die Bauproduktivität seit Jahrzehnten.

In der Warenherstellung hat sich die Produktivität jedoch in der gleichen Zeit fast verdoppelt und eine kontinuierliche Steigung ist die Norm.

PRODUKTIVITÄT SEIT 1991





Produktionsindustrie



Bauindustrie

DIAGNOSE

- 30 Jahre lang hat man sich auf **konventionelles Projektmanagement** verlassen um zum Ergebnis zu kommen
- Fokus auf die **niedrigsten Preise** und **Risikoübertragung** geht auf die Kosten von Preis-Leistungsverhältnis, Effizienz und Beständigkeit
- Projekte werden in **Lose** aufgeteilt, was **Mehrkosten** und **Unsicherheit** verursacht und den Wissensaustausch limitiert
- Neue **Supply-Chain** für jedes Projekt
- **Geschäftsmodelle** sind nicht mehr nach Erfolg ausgerichtet
- **Veränderung** wird nicht mehr von Innovation und neuen Technologien beeinflusst und gesteuert

ANALOG vs. DIGITAL





**Innovieren oder
untergehen!**



Agieren

oder



“get uberized”

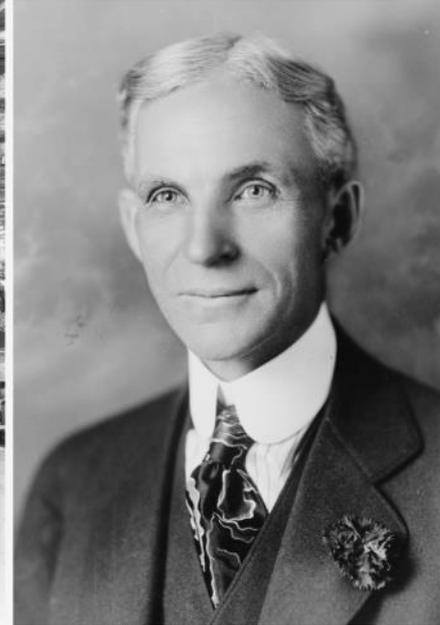
DIE MACHT VON DIGITALEN TECHNOLOGIEN



**„Fast jedes Informationssystem zerstört als erstes das Knappheitsmodell,
wenn es das Internet erreicht“**

„Überfluss macht mehr kaputt als Mangel“

DIE MACHT VON DIGITALEN TECHNOLOGIEN



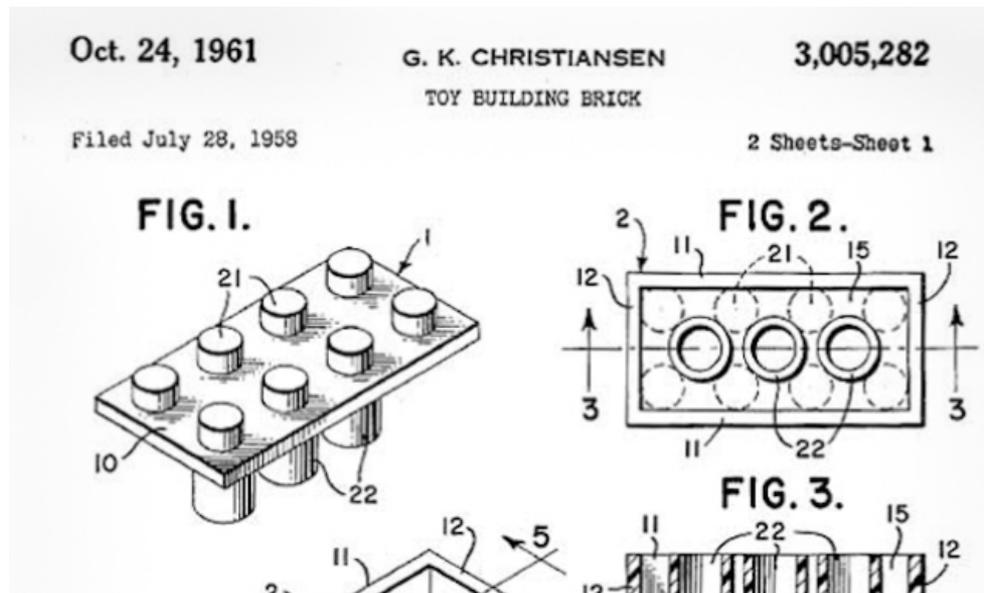
Einheitliche Produkte zu viel niedrigeren Preisen, aber mit weniger Auswahl für den Kunden - „Die Farbe ist egal, solange es schwarz ist“

TOYOTA PRODUKTIONSSYSTEM - 1975



**Ein sicherer Ablauf mit minimaler Verschwendung,
aber jeder muss die Toyota Kultur annehmen.**

LEGO PRODUKTIONS-SYSTEM - 1958



**Einheitlichkeit der Komponenten und verlässliche Passform -
 Verbindungskraft. Verschiedene Designs und Kombinationen ermöglichen
 eine enorme Vielfalt.**

DAS GEBÄUDE IST DAS PRODUKT



WIE KOMMEN WIR VON DEM...

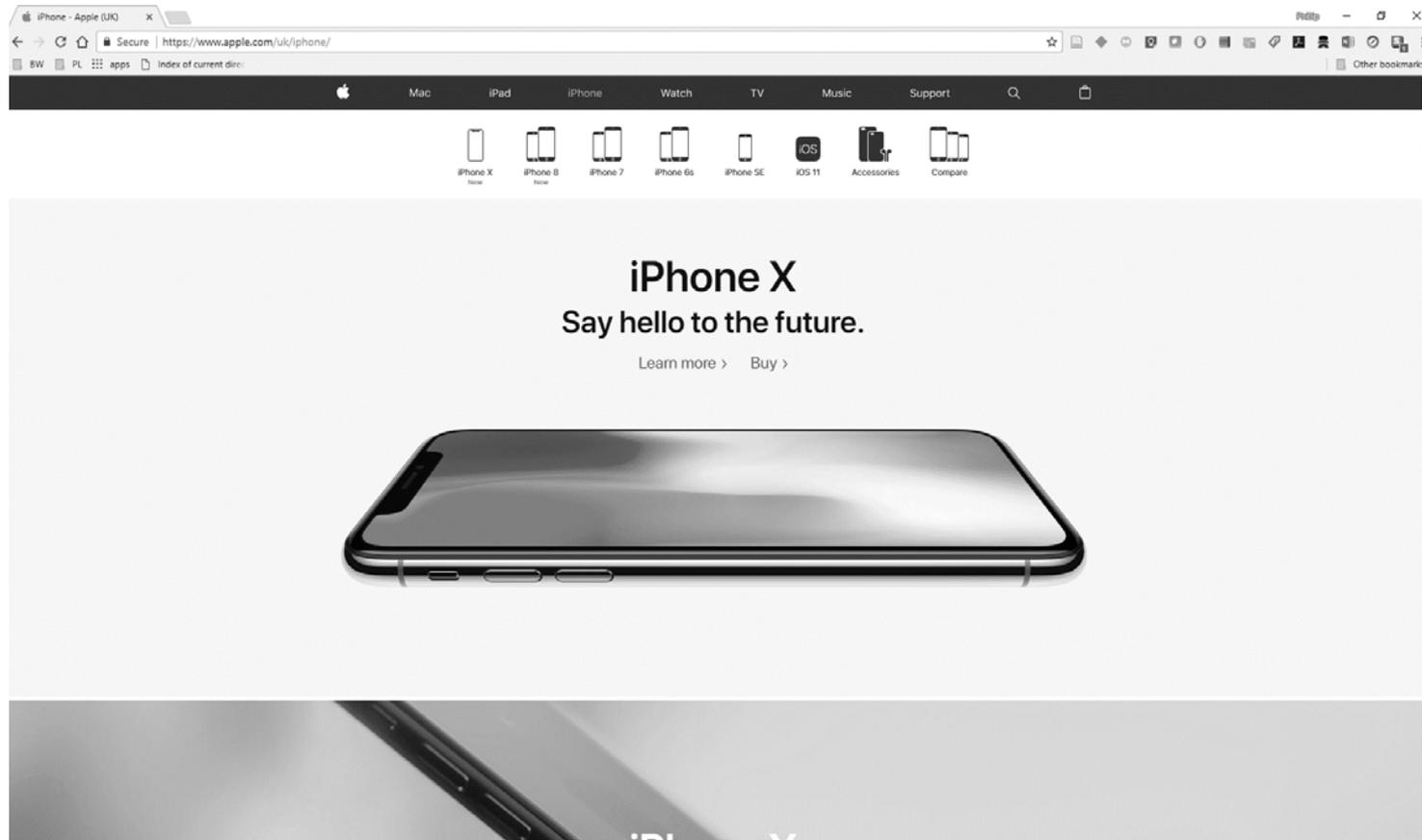
The screenshot displays the Bryden Wood 3D REPO web interface. The main view shows a 3D model of a concrete deck structure with a grid of beams and a central rectangular opening. The interface includes a navigation sidebar on the left with icons for Issues, Tree, Clip, and Compare. At the top, the browser address bar shows the URL: <https://bwt.www.3drepo.io/BWT/834a321a-9030-4098-9d6c-c17c68a1d163>. The title of the page is "Bryden Wood 3D REPO" and the subtitle is "Cree BIM LCT 2 - 01/02/2018 17:47:13".

On the right side, a "Meta Data" panel is open, displaying the following information:

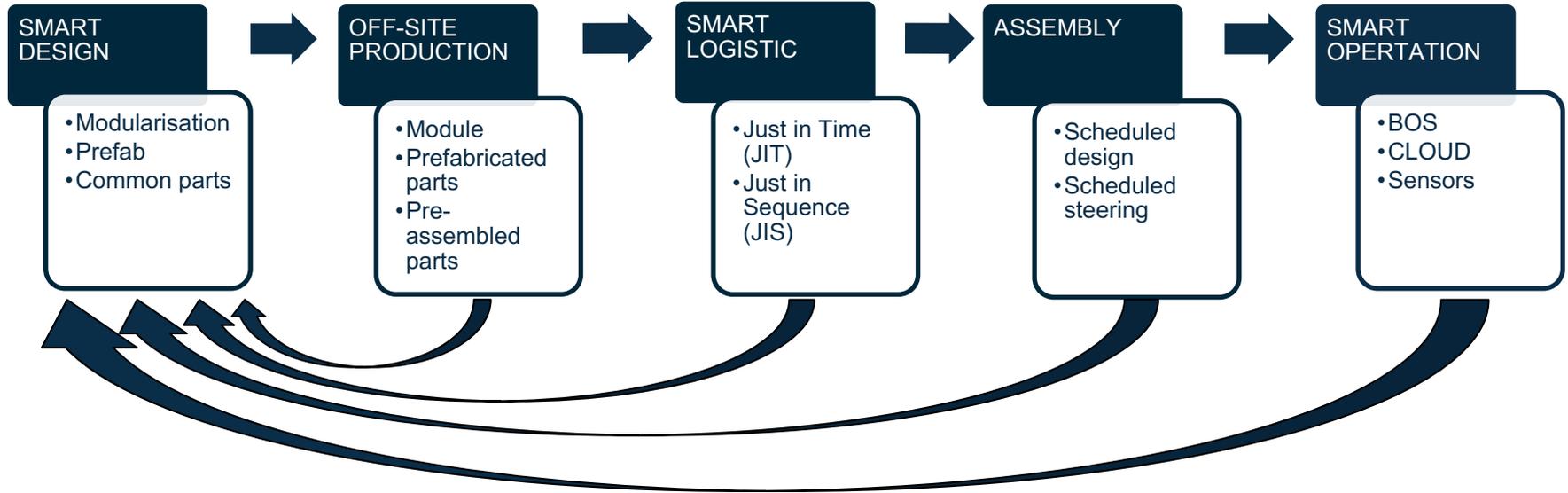
Property	Value
IFC Type	IfcSlab
IFC GUID	3qTJajs11EFQhsEQPVBGIX
Reference	LCT2.0_ConcreteDeck_ConnectionToGirder_ConcreteEdgeBeam
IsExternal	False
Area	27.364483
Height	0.1
Length	8.08
Width	2.66
Moves With Nearby Elements	False
Offset	0
Level	Level: Level 2
Host	Level: Level 2
Room Bounding	True
ComponentHeight	0.38
ConcreteDeckLength	8.08
ConcreteDeckThickness	0.1
ConcreteDeckWidth	2.69
EdgeBeamWidth	0.24
GlulamBeamHeight	0.28
GlulamBeamWidth	0.24
HalfConcreteDeckWidth	1.35
HalfEdgeBeamWidth	0.12
HalfGlulamBeamWidth	0.12
SupportWidth	0.15
Volume	2.892041
Mass Density	2400
Structural Material	Cree_Material_Concrete_Precast
Category	Floors
Family	Cree_HQ_LCT2.0_ConcreteDeck-ConnectionToGirder-ConcreteEdgeBeam_LOD300

At the bottom of the interface, there are four navigation icons: Home (Extent), Rotate (Turntable), Show All, and Isolate.

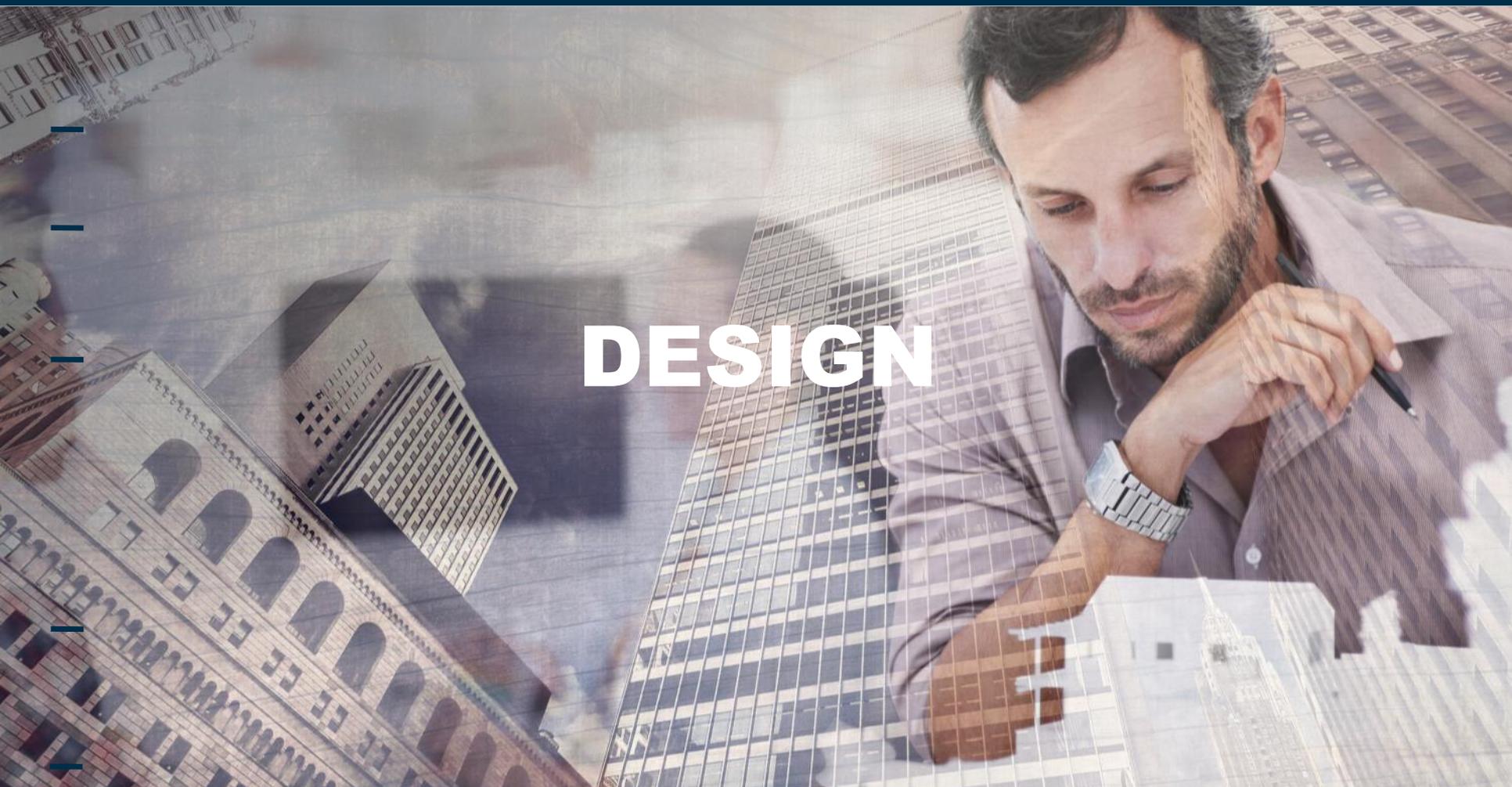
...ZU DEM?



SMART PROCESS

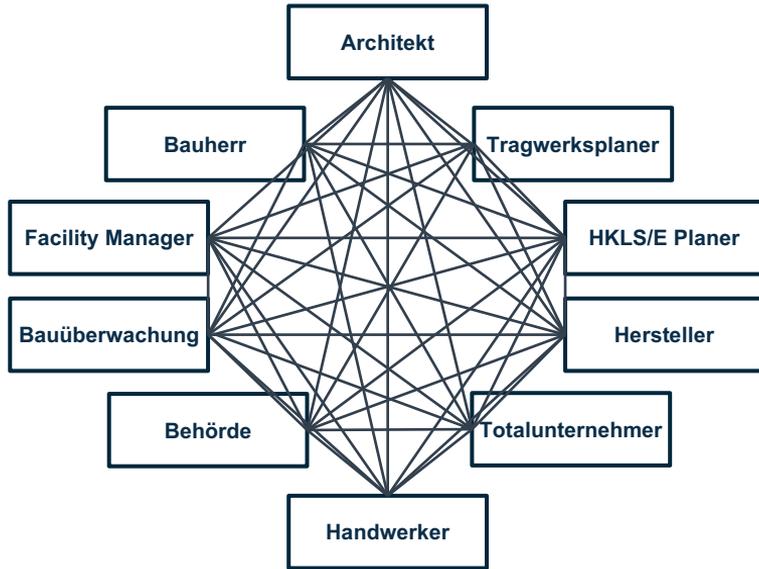


DESIGN

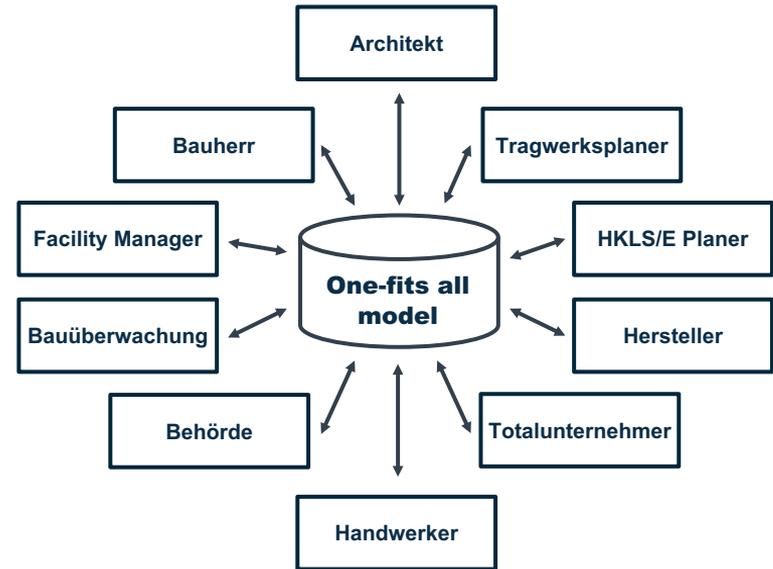


PROPRIETARY STANDARD vs. OPEN BIM

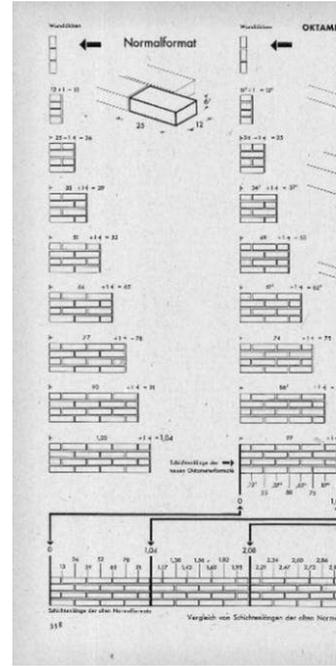
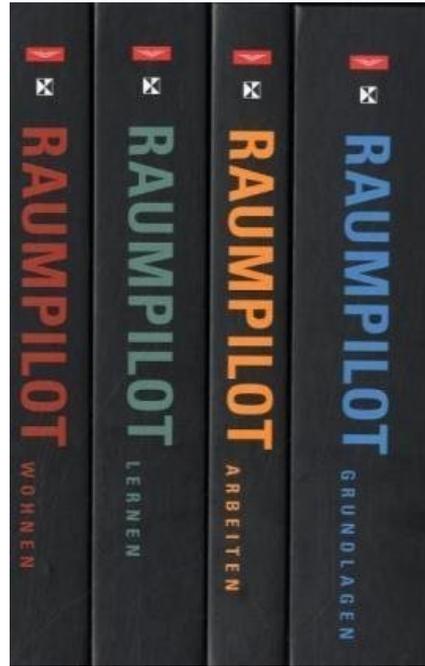
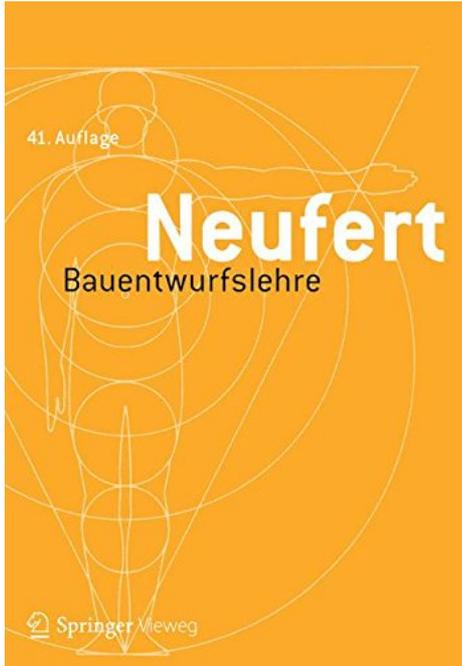
All Proprietary World



All Open World



PROTOTYPEN



Höhe	einfellige Fenster								zweifellige Fenster			
	875	1000	1125	1250	1375	1500	1625	1750	1875	2000	2125	2250
875	875	1000	1125	1250	1375	1500	1625	1750	1875	2000	2125	2250
1000	875	1000	1125	1250	1375	1500	1625	1750	1875	2000	2125	2250
1125	875	1000	1125	1250	1375	1500	1625	1750	1875	2000	2125	2250
1250	875	1000	1125	1250	1375	1500	1625	1750	1875	2000	2125	2250
1375	875	1000	1125	1250	1375	1500	1625	1750	1875	2000	2125	2250
1500	875	1000	1125	1250	1375	1500	1625	1750	1875	2000	2125	2250
1625	875	1000	1125	1250	1375	1500	1625	1750	1875	2000	2125	2250
1750	875	1000	1125	1250	1375	1500	1625	1750	1875	2000	2125	2250
1875	875	1000	1125	1250	1375	1500	1625	1750	1875	2000	2125	2250
2000	875	1000	1125	1250	1375	1500	1625	1750	1875	2000	2125	2250
2125	875	1000	1125	1250	1375	1500	1625	1750	1875	2000	2125	2250
2250	875	1000	1125	1250	1375	1500	1625	1750	1875	2000	2125	2250



SMART DESIGN



SMART DESIGN

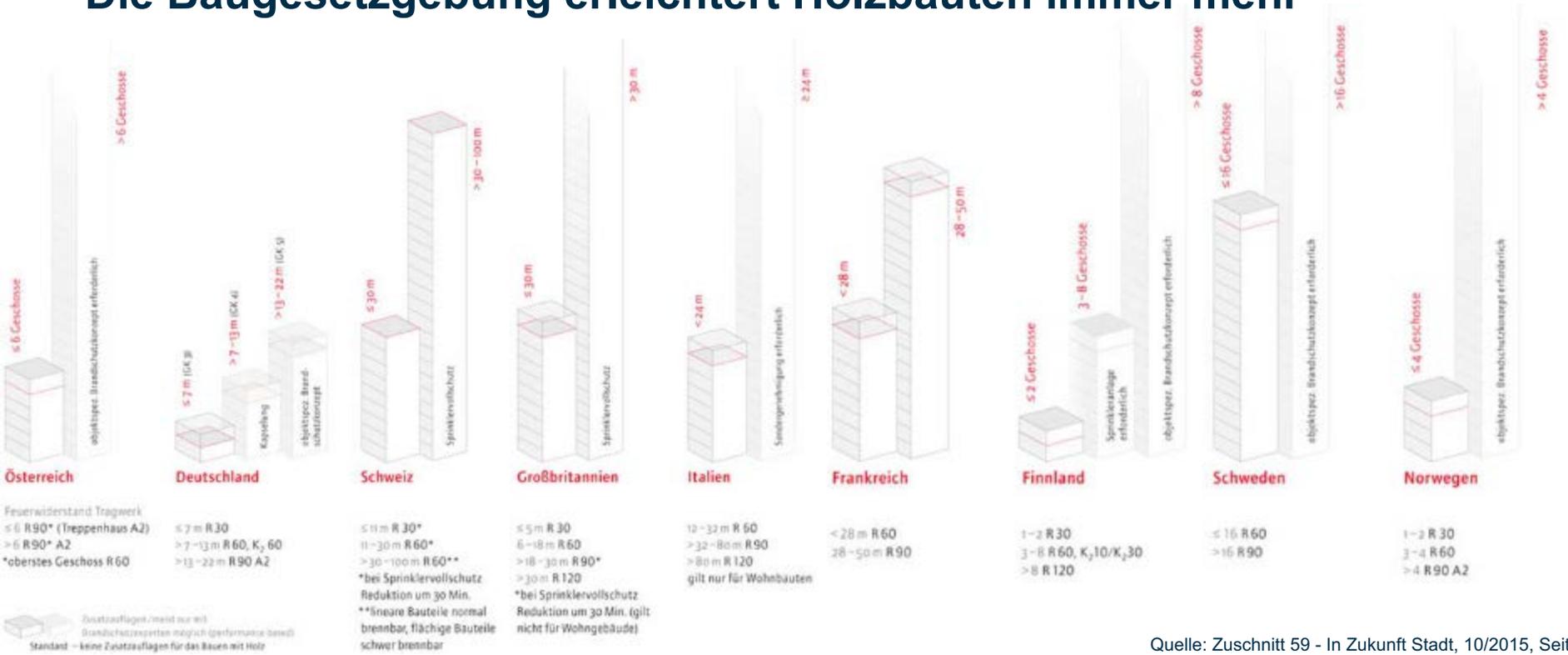
Reduktion von:

- **Prototypen** → Standardisierung
- **Komplexität** → keine Sonderlösungen
- **graue Energie** → nachwachsende Rohstoffe
- **höchster Technologie** → sequent. Anpassung
- **Schnittstellen** → Module
- **Betrieb & Instandhaltungskosten** → Qualität
- **Fehler** → BIM/Kollisionsprüfung



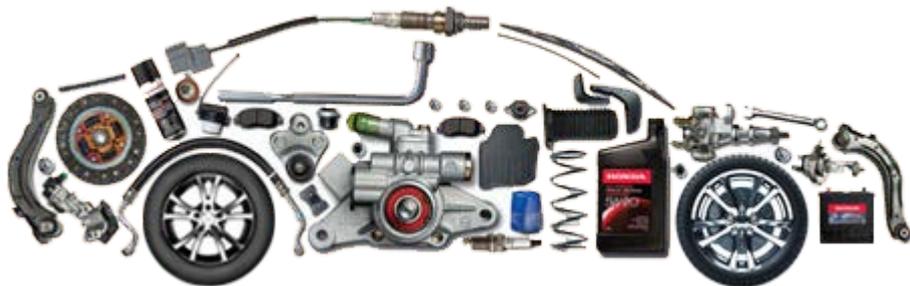
DERZEITIGE REGULARIEN

Die Baugesetzgebung erleichtert Holzbauten immer mehr



**Löse das Problem im VDC-Modell
und nicht auf der Baustelle,
lassen sie die Industrialisierung zu.**

SMART DESIGN



- gemeinsame Plattform 80%
- 2 Million Optionen



Porsche Cayenne



Bentley Mulsanne



VW Touareg



Audi A3



VW Beetle



Audi TT



Skoda Fabia



VW Golf



VW Scirocco



Seat Leone

Cree BIM Standard

Version 0.98 2016-11-13



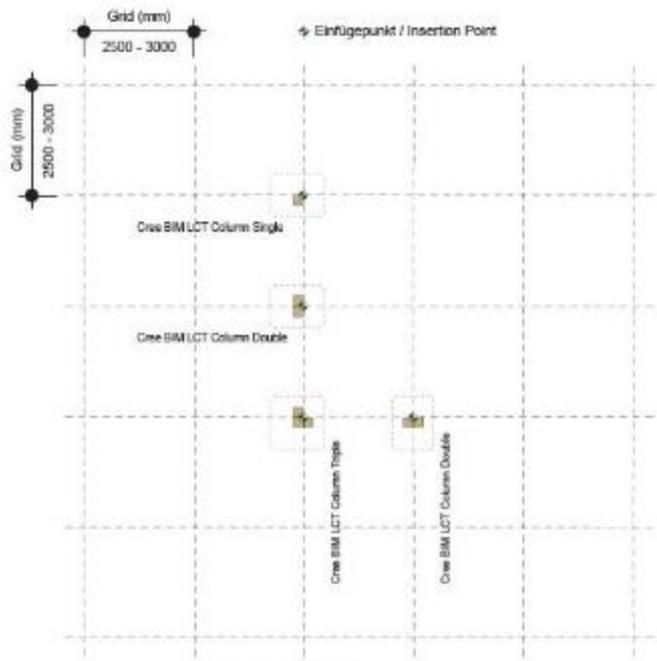
Insert Project Name here:

Cree BIM Project Plan

Project #: Insert Number 160615_AT
Author: Your Name
Date of Report:
Revision: Insert Revision Number

This template is a tool that is provided to assist in the development of a Cree project BIM execution plan if the method is chosen or contractually mandated.

Planungsleitfaden



- Kombinierbar mit / combinable with:
- Cree BIM LCT 1.0 Hybrid-Slab-Panel
 - Cree BIM LCT 1.0 Double-Beam
 - Cree BIM LCT 1.0 Transfer-Beam-Edge
 - Cree BIM LCT 2.0 Hybrid-Slab-Panel_Standard
 - Cree BIM LCT 2.0 Hybrid-Slab-Panel_Core-Connection
 - Cree BIM LCT 2.0 Double-Beam
 - Cree BIM Facade

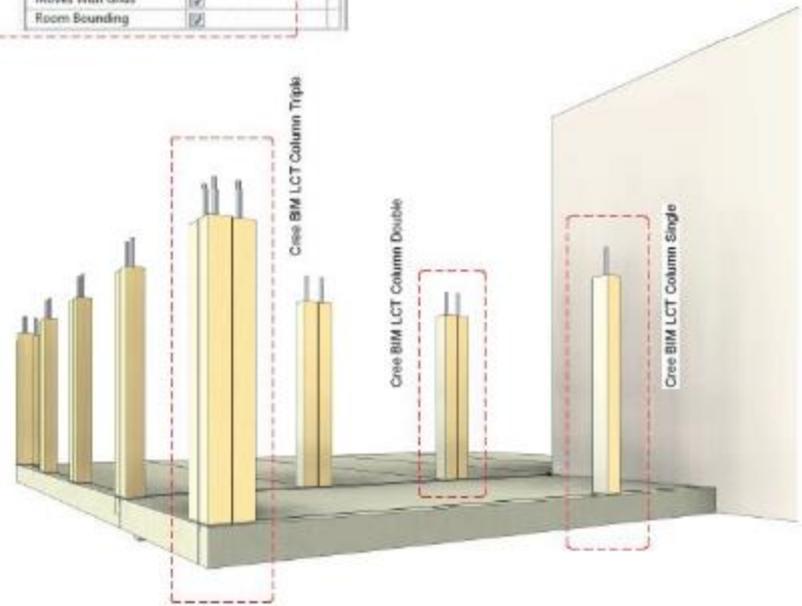
Properties

Cree_HQ_LCT_Column-Triple_LOD200 standard

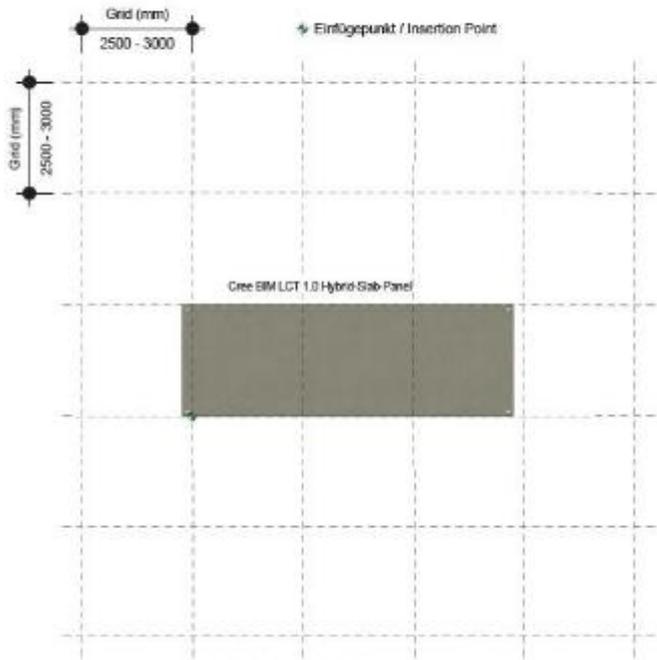
Structural Columns: (1) Edit Type

Constraints

Column Location Mark	
Level	Level 1
Host	Level: Level 1
Offset	0,0000
Column Style	Vertical
Moves With Grids	<input checked="" type="checkbox"/>
Room Bounding	<input checked="" type="checkbox"/>

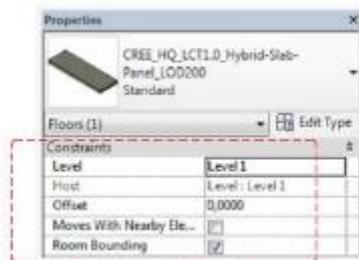


Planungsleitfaden



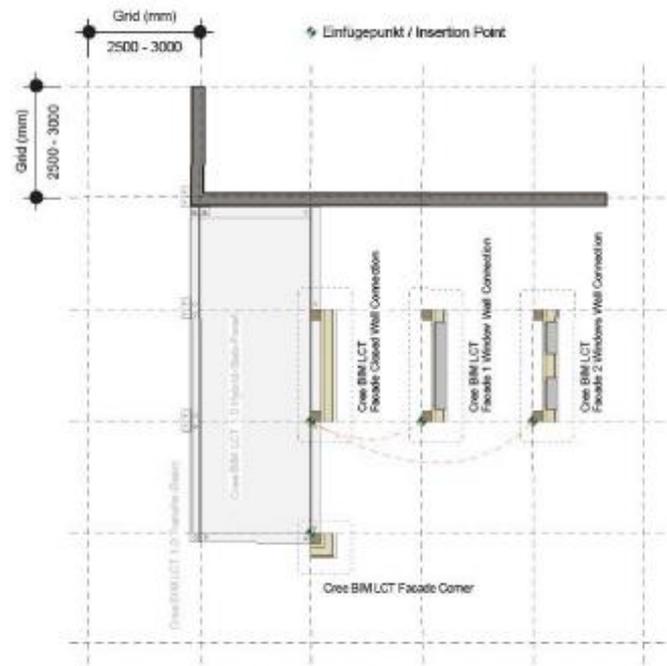
Kombinierbar mit / combinable with:

- Cree BIM LCT 1.0 Support-Angle (single, double, double-cropped)
- Cree BIM LCT 1.0 Gable-Beam
- Cree BIM LCT 1.0 Transfer-Beam
- Cree BIM LCT 1.0 Transfer-Beam Edge
- Cree BIM LCT Column (single, double, triple)
- Cree BIM LCT Facade



Cree BIM LCT 1.0 Hybrid-Slab-Panel

Planungsleitfaden



- Komponenten mit / combinable with:
- Cree BIM LCT 1.0 Hybrid-Slab-Panel
 - Cree BIM LCT 1.0 Gable-Beam
 - Cree BIM LCT 1.0 Transfer-Beam-Edge
 - Cree BIM LCT 2.0 Hybrid-Slab-Panel_Standard
 - Cree BIM LCT 2.0 Hybrid-Slab-Panel_Corner-Connection
 - Cree BIM LCT Facade

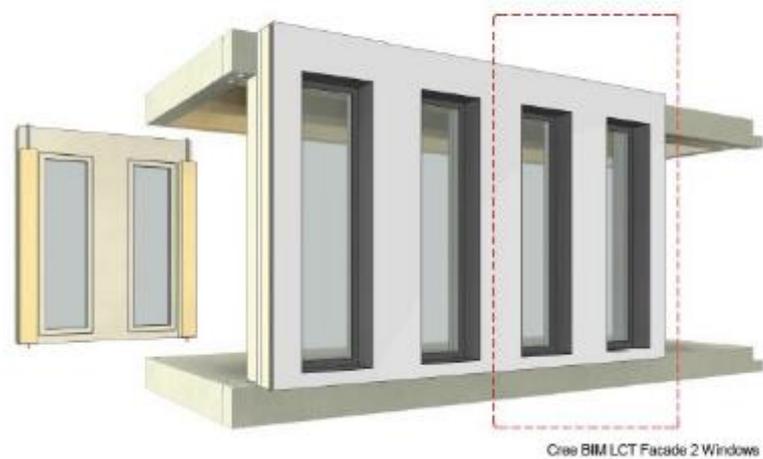
Properties

CREE_HQ_LCT_Facade_2-
Windows_LOD200
standard

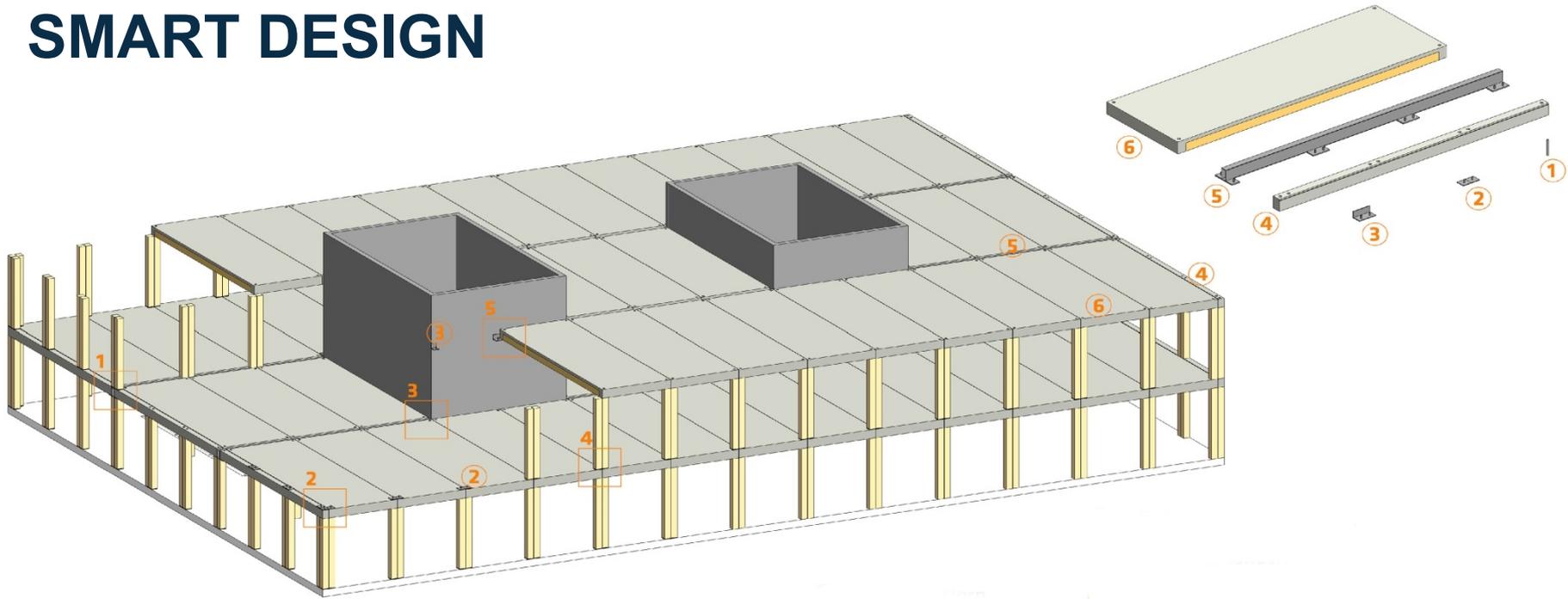
Structural Framing (Other) (1) Edit Type

Constraints

Level	Level 1
Host	Level : Level 1
Offset	0,0000
Moves With Nearby Ele...	<input type="checkbox"/>
Reference Level	



SMART DESIGN




Cree LCT 1.0 Edge Beam
Cree Building System

♥ Entfernen



Cree LCT 1.0 Edge-Beam_Span-Ch...
Cree Building System

♥ Entfernen



Cree LCT 1.0 Facade Room-high ...
Cree Building System

♥ Entfernen



Cree LCT 1.0 Facade Room-high ...
Cree Building System

♥ Entfernen



Cree LCT 1.0 Facade Room-high ...
Cree Building System

♥ Entfernen



Cree LCT 1.0 Facade Room-high ...
Cree Building System

♥ Entfernen



Cree LCT 1.0 Hybrid Slab Panel
Cree Building System

♥ Entfernen



Cree LCT 1.0 Support Angle
Cree Building System

♥ Entfernen



Cree LCT Column
Cree Building System

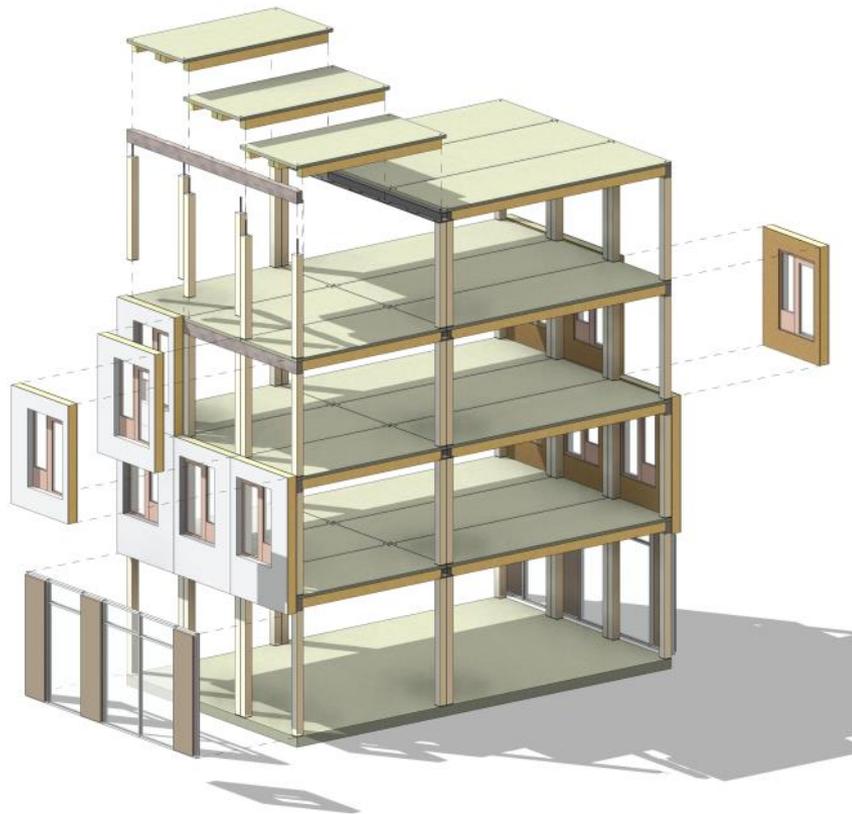
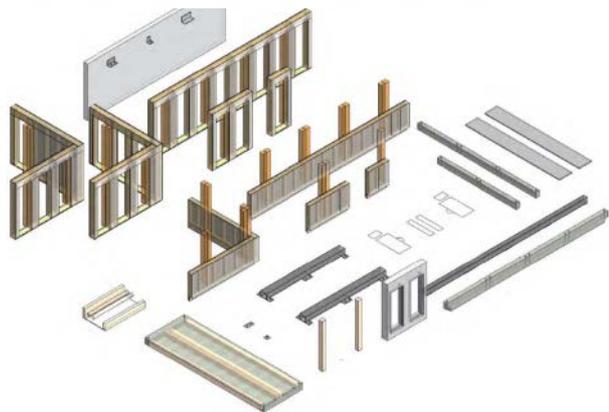
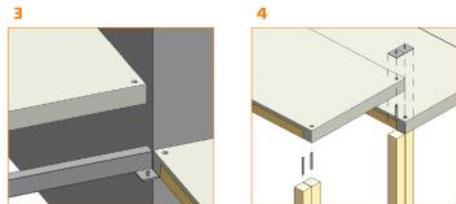
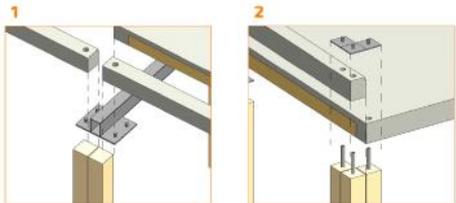
♥ Entfernen



Reference Project LCTone
Cree Building System

♥ Entfernen

DIGITAL TWIN



Hybrid Slab Configurator and CREEator

CREEator V 0.9

Projektnr. 161011 Angebotsabgabe 11.10.2016

Bauvorhaben Ausführungsbeginn

Bauherr Ausführungsende

Gewerk 15 CREE System Zuschläge:

Sachbearbeiter Harald Professer AGK 8 % WuG 5 %

Anzahl Decken 1

Länge HBV 810 cm Länge BSH 770 cm

Breite HBV 270 cm Breite BSH 24 cm

Hohe HBV 36 cm Hohe BSH 28 cm

Dicke Betonspiegel 8

Ansichten: ISO, RAND, FRONT, TOP, RB

Layer BSH: EIN, AUS

Layer STB: EIN, AUS

Details: EIN, AUS

Transparent: EIN, AUS

Volumen Holz 0,00 m³ Gewicht Holz 0,00 t ED2 Holz -0,000 t

1.012,28 € Gewicht Stahlbeton 0,00 t ED2 Stahlbeton 0,000 t

Gewicht Betonstahl 0,00 t ED2 Betonstahl 0,000 t



Hilfe <AUTHOR>

Bedarf: Regalgeschoss Sockel / Dach Lage des Gebäudes Gebäudeebene Raumplatzierung

Bürogebäude Geschosse Anzahl Arbeitsplätze Passivhaus Ausstattungskriterium

Geschossfläche (vorh) 328 m²

Bedarf: Anzahl Arbeitsplätze 13

Büro Arbeitsplätze

1 0 1 0 1 0

Life Cycle Assessment – project dashboard

Reference Model

Cree-System
Global warming potential

Reinforced Concrete
Global warming potential

CO2 Saving
264%

System	Production	Removal	Global warming potential
Cree-System	-3670,3 kg CO2e	5966,9 kg CO2e	
Reinforced Concrete	6666,7 kg CO2e	1685,3 kg CO2e	

ingrunddate: Okobau.dat 2011

Click to select, TAB for alternates, CTRL adds, SHIFT unselects.

CRE System (primary) Active Only

Life Cycle Assessment – project dashboard

The screenshot displays the Autodesk Revit interface. On the left, a 3D model of a building facade is shown with various material samples labeled, such as 'CREE_Material_Fassade_Naturstein', 'CREE_Material_Fassade_Faserzementplatte_Muster1', and 'CREE_Material_Fassade_Holz_Silber_Horizontal'. A 'Material-Browser - CREE_Material_Beton' window is open, listing materials like 'CREE_Material_Bodenbelag_Fliesen_Grau' and 'CREE_Material_Bodenbelag_Linoleum_Blau'. A 'Materialparameter' dialog box is overlaid, showing a table of parameters and values for a selected material.

Parameter	Wert
ID-Daten	
CREE Position	
Bearbeitungsbereich	Materials
Geändert von	
Eigenschaften für ökologisches Bauen	
AP_A1-A3	0,652 kg
Dichte_oe kobau.dat	2485,000000 kg/m ³
EP_A1-A3	0,081 kg
GWP_A1-A3	337,084 kg
GWP_C	6,751 kg
ODP_A1-A3	0,000 kg
oekologischerRucksack_TMR	
PENRT_A1-A3	2539,148
PENRT_C	132,916
PERT_A1-A3	159,892
PERT_C	5,313
POCP_A1-A3	0,068 kg
AP_C	0,063 kg
EP_C	0,011 kg
ODP_C	0,000 kg
POCP_C	0,007 kg
LCA-fähig	<input checked="" type="checkbox"/>

Additional elements in the image include a 'Städtebau' (Urban Planning) icon, a 'DIESEN WERKE' icon, and a blue 3D arrow icon. The bottom status bar shows 'Worksheet (not editable)' and 'Basisvorlage'.



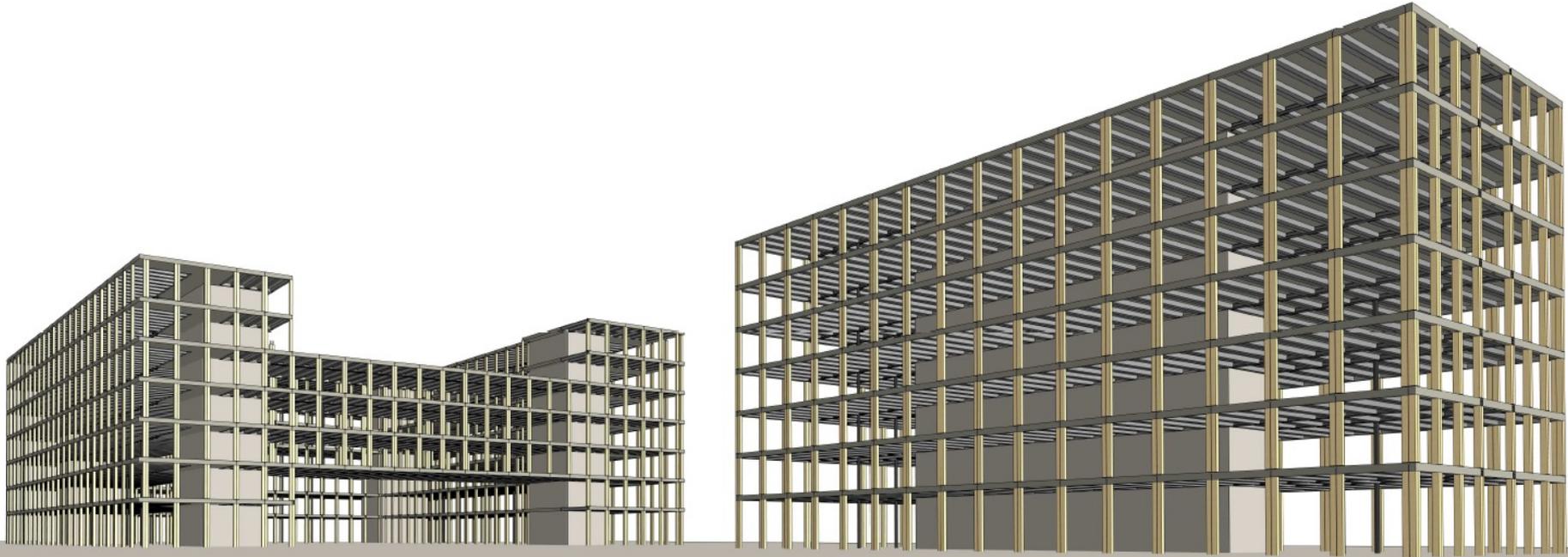
Calculation based on Revit model

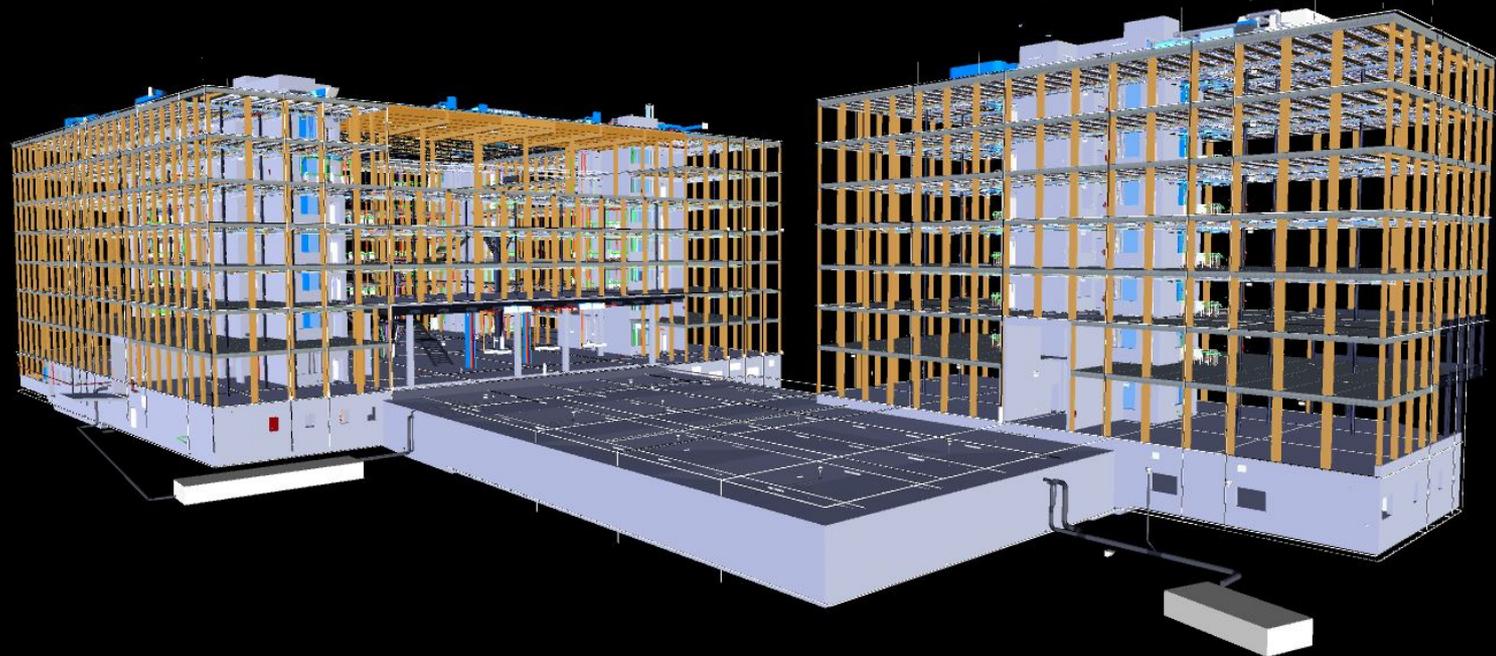
The screenshot displays the Autodesk Revit 2014 interface. The title bar shows the project name: "Autodesk Revit 2014 - 131121_AT_Wien_Aspen-Tower-Opt03_ZENTRAL_voje.rvt". The ribbon is set to "Modify | Rooms". The Project Browser on the left shows a hierarchy of views, including "01_Architektur" and "02_Grundrisse". The main view area is split into two panes: "Floor Plan: KA_Ebene 15 (Hot..." and "3D View: KA_3D-AXO_03 (Grossraumbüro) - 131121_AT...". A "CPI Export for RIB iTWO 2013" dialog box is open, showing options for "Space" and "Interse". A "Constraints" panel is visible on the right, displaying the following data:

Constraints	
Level	Ebene 15
Upper Limit	Ebene 15
Limit Offset	2,4384
Base Offset	0,0000
Dimensions	
Area	76,097 m ²
Perimeter	35,0400
Unbounded Height	2,4384
Volume	185,555 m ³
Program Area	
Computation Height	0,0000
Identity Data	
Workset	KONV_Rohbau
Number	45
Name	Room
Kategorie	(none)
Raum Schlüssel	(none)
Comments	
Occupancy	
Department	

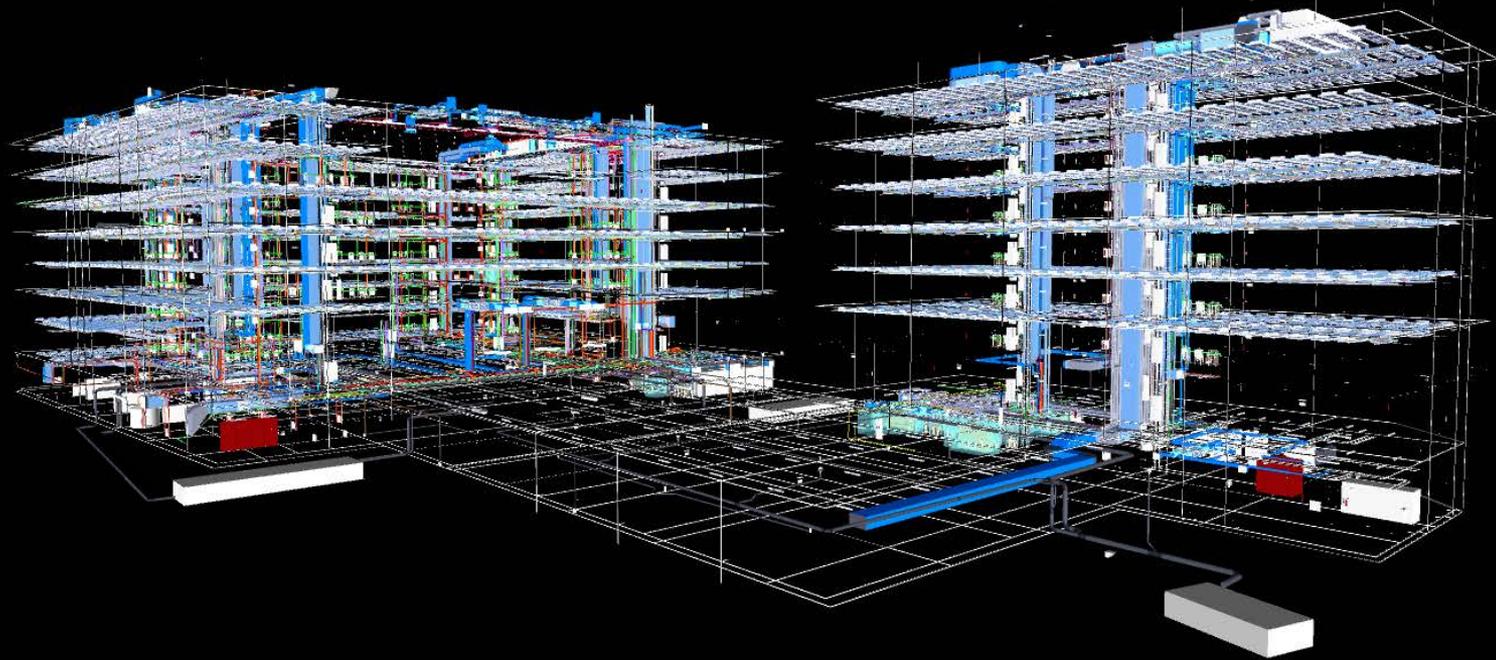
- ↳ Mass
 - ↳ Körper.32
 - ↳ Walls
 - ↳ Doors
 - ↳ Floors
 - ↳ Stairs
 - ↳ Runs
 - ↳ Supports
 - ↳ Aufzug.dwg (2)
 - ↳ Structural Columns
 - ↳ Cree_A_02.003_LCT1.0_Column_LOD
 - ↳ 240x240
 - ↳ 240x544,5
 - ↳ 240x240_Span-Change-Beam
 - ↳ Windows
 - ↳ Ceilings
 - ↳ Landings
 - ↳ Top Rails
 - ↳ Topography
 - ↳ Pads
 - ↳ Lines
 - ↳ <Room Separation>



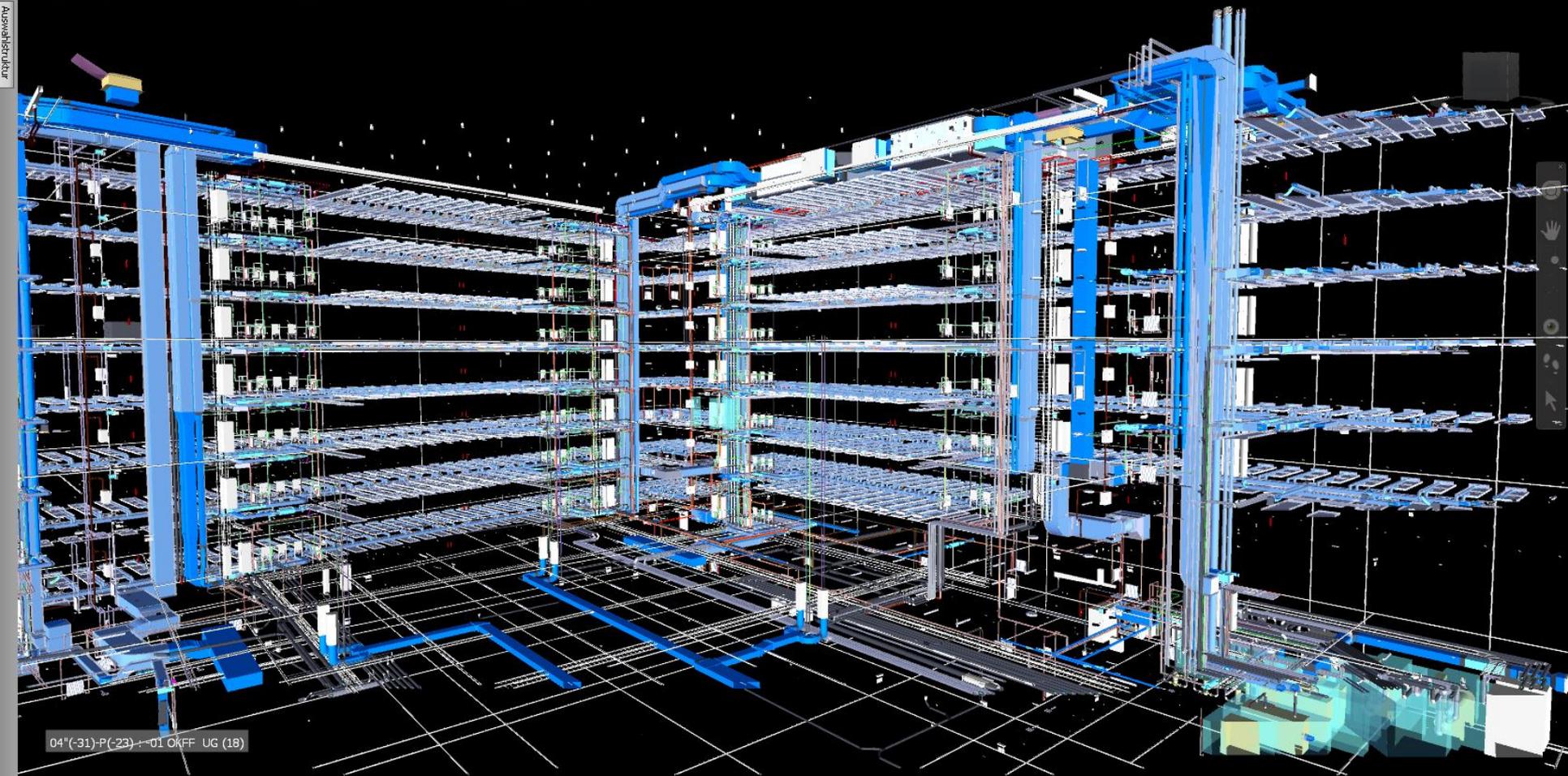




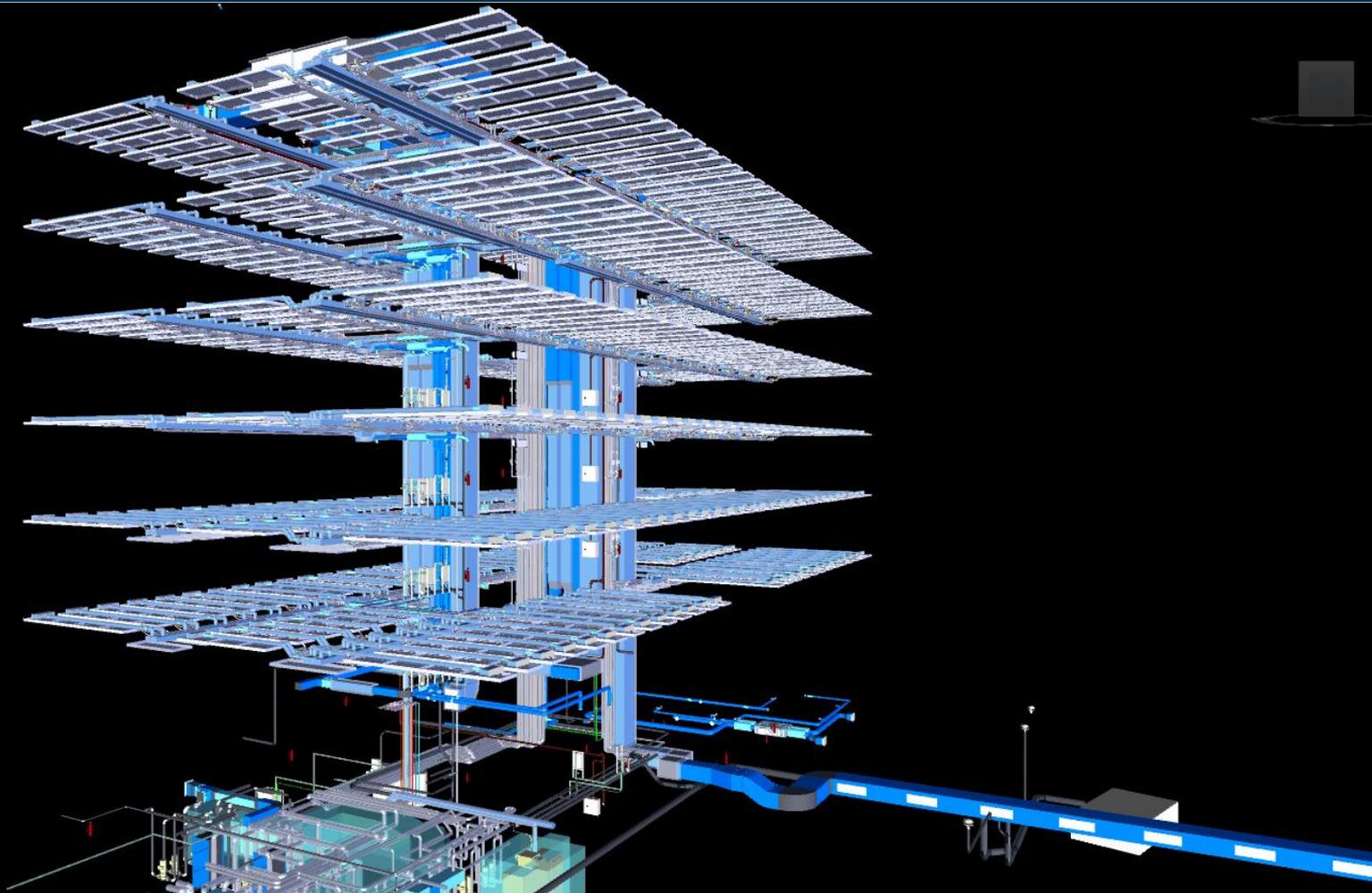
04*(-63)-X (18) : -01 OKFF UG (16)

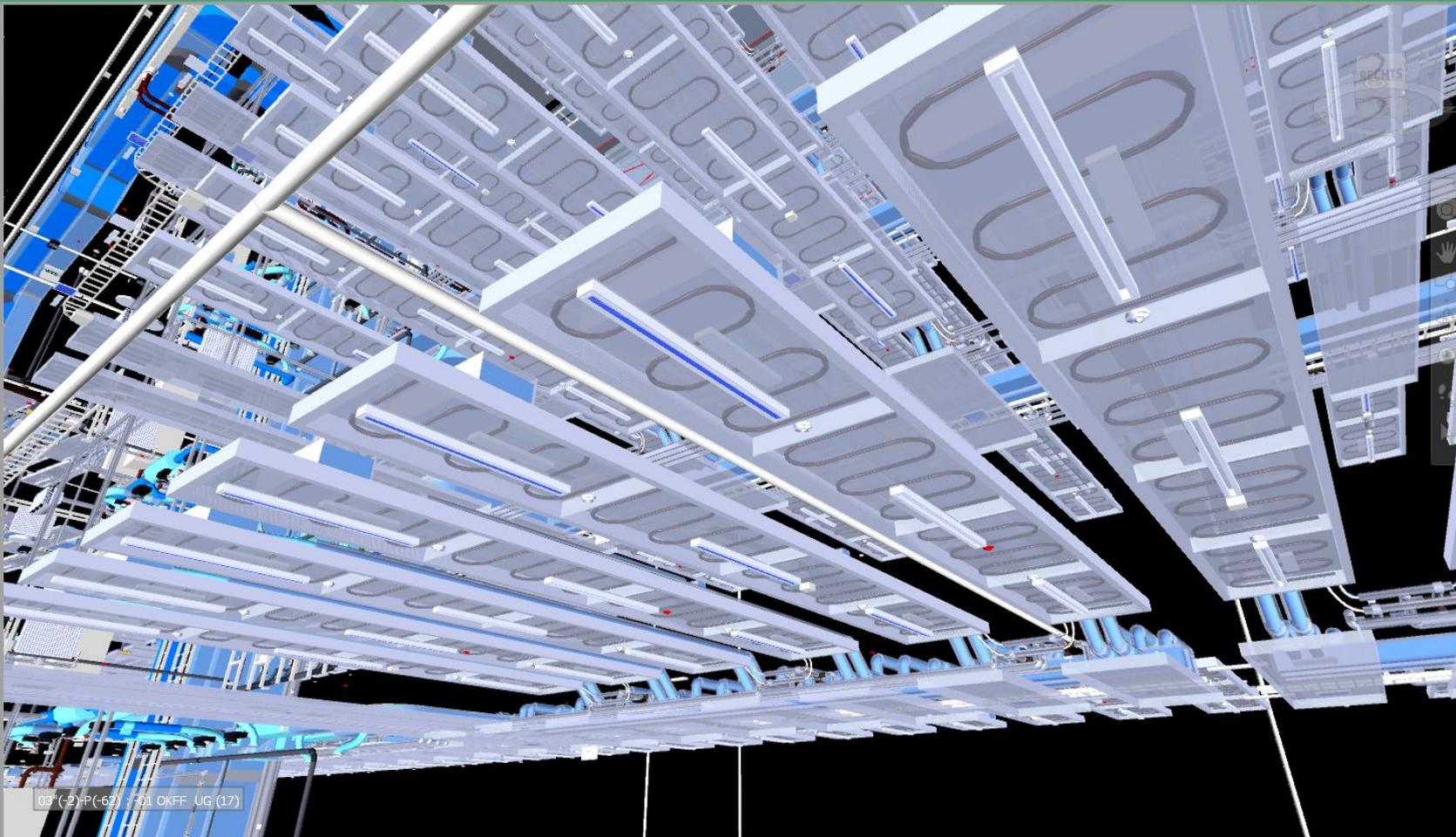


04*(-63)-X(18) : -01 OkFF UG (16)



04*(-31)-P(-23) - 01 OKFF UG (18)

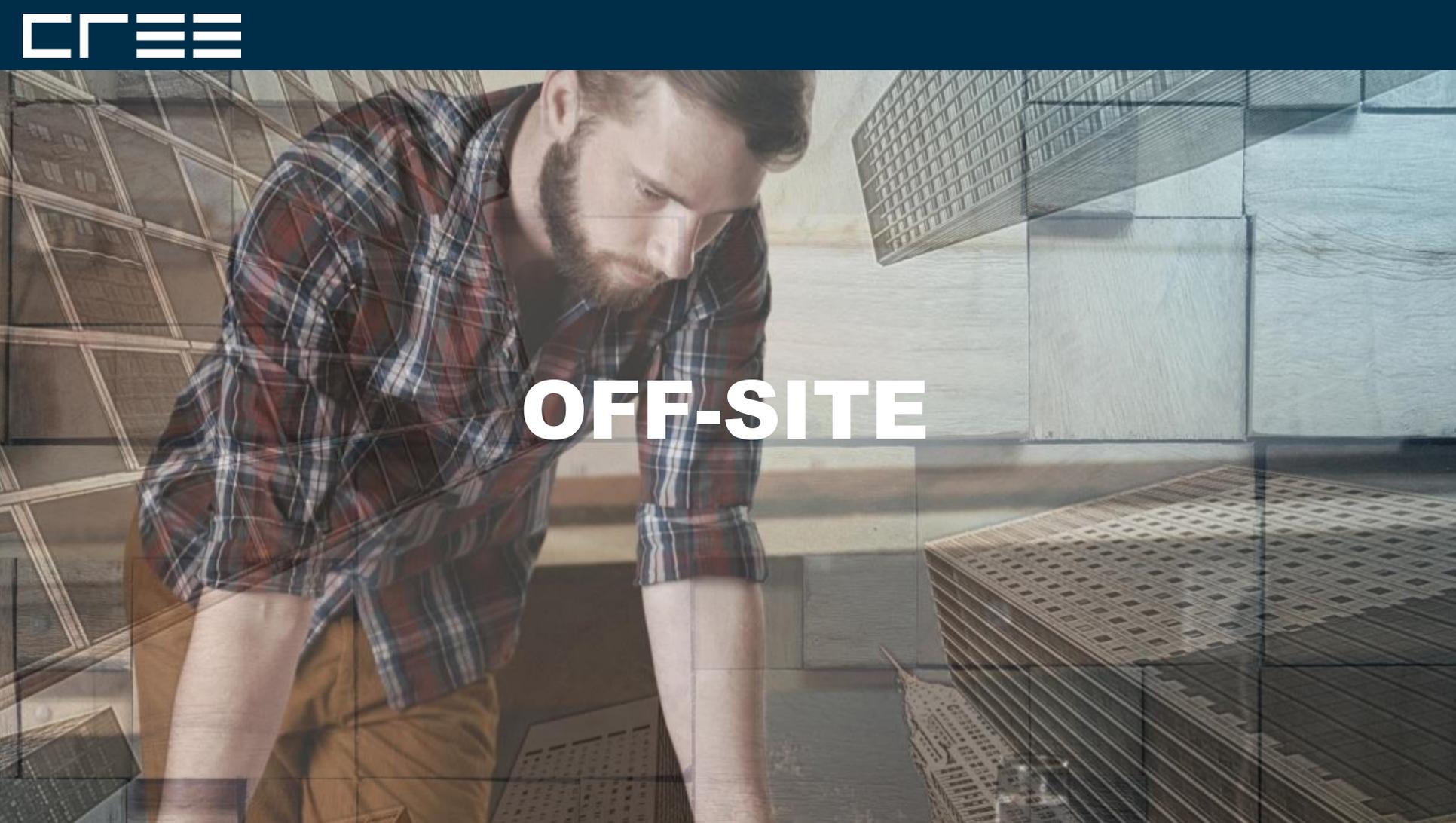




05*(-2)*P(-62) - 01 OKFF UG (17)

Gespeicherte Ansichtspunkte

- (3D - bkopplin)
- Decke module
- Coordination - Archite
- 3D user - TR.1.1
- 3D user - melze
- Haupteingang Transfe
- Vierendeel Ecktraeger
- (3D - jholk}
- (3D - pszobski}
- (3D - bwest}
- Coordination - Archite
- Atriumdach
- 3D-Melze TR.2.1
- MK2 - 6.OG V1
- MK2 - 6.OG V2
- MK2 - 6.OG V3
- MK2 - 6.OG V4
- MK2 - 5.OG Terrasse
- MK2 - EG Atriumingar
- MK2 - EG Atrium
- MK2 - EG MK2 Ansicht
- 3D - Kopplin
- Bäume
- 3D Isometrie Terrasse
- CREE Explosion 3D vie
- Coordination - Archite
- 3D-Melze TR.2.4
- Coordination - Archite
- Coordination - Archite
- 3D-Melze TR.2.3
- Coordination - Archite
- 3D-Melze TR.2.2
- 3D View 1
- (3D - jholk} (SXB-MK2
- 3D-Melze Workview
- (3D - melze}
- 3D Sketch
- 3D Sketch 2
- 3D Sketch 3
- 3D Sketch 4
- brian
- 3D Isometrie Atrium B.
- (3D - bkopplin) (SXB-↑
- 3D View 2
- (3D - bwest} (SXB-MK
- (3D - pszobski} (SXB-↑
- Ansicht
- Ansicht (1)

A man with a beard, wearing a red and blue plaid shirt and brown pants, is leaning over a workbench in a factory. He is looking down at a perforated metal sheet. In the background, there are stacks of similar perforated metal sheets and a large industrial structure. The scene is lit with warm, industrial lighting.

OFF-SITE

DIE DENKWEISE IST DIE TREIBENDE KRAFT



**„Wenn ich die Leute gefragt hätte
was sie wollen, hätten sie
gesagt schnellere Pferde.“
(Henry Ford)**



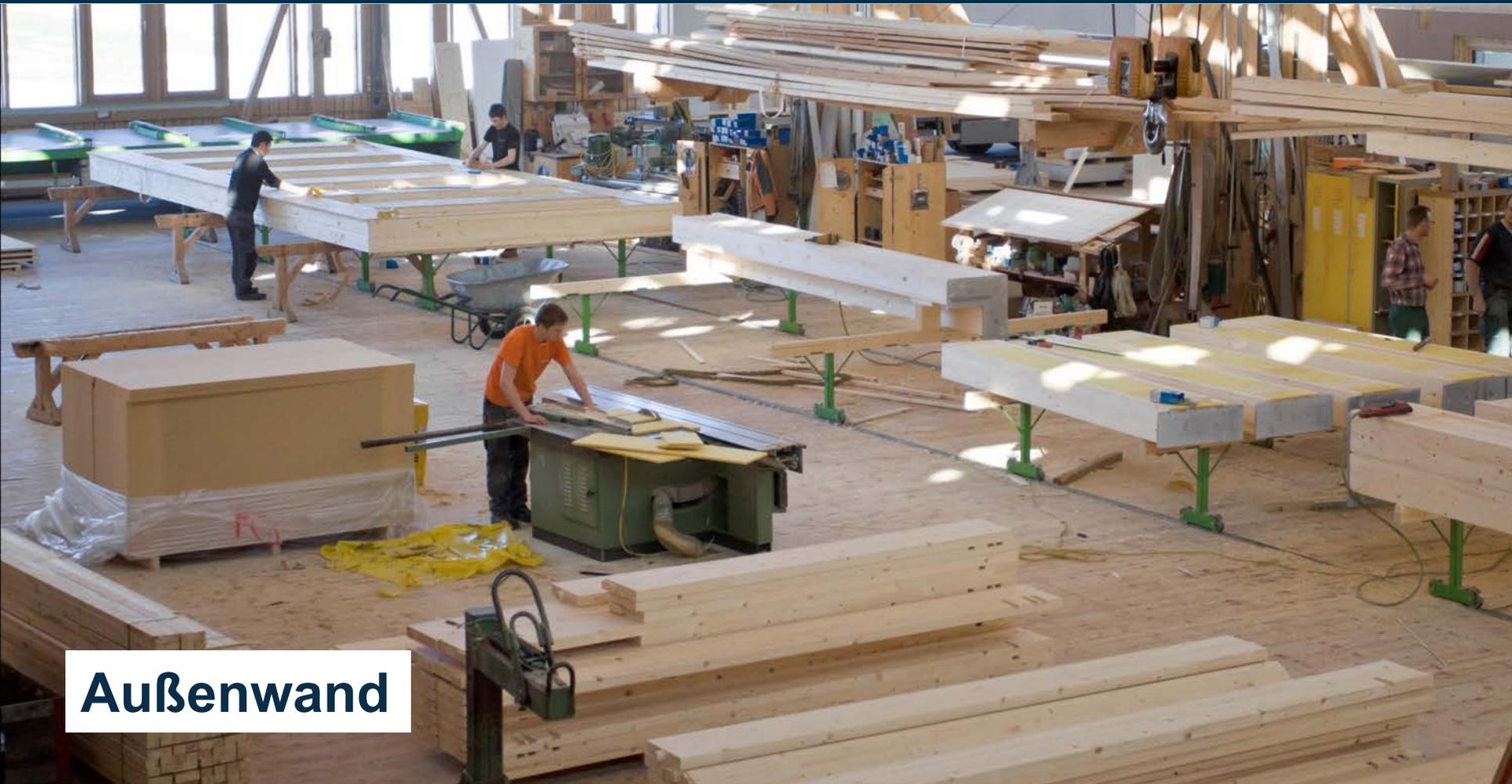
**„Wenn wir mit der momentanen
Situation zufrieden sind, kann kein
Fortschritt generiert werden“
(Taiichi Ohno)**



Stützen



Stützen



Außenwand



Außenwand



Außenwand



Außenwand



Aussenwand



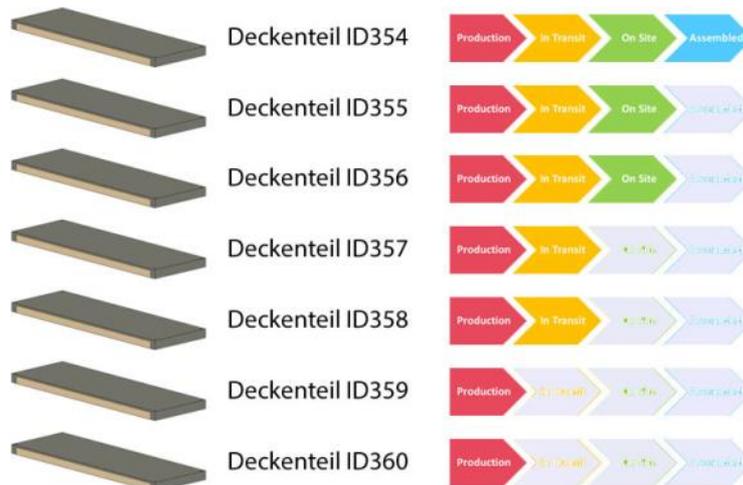
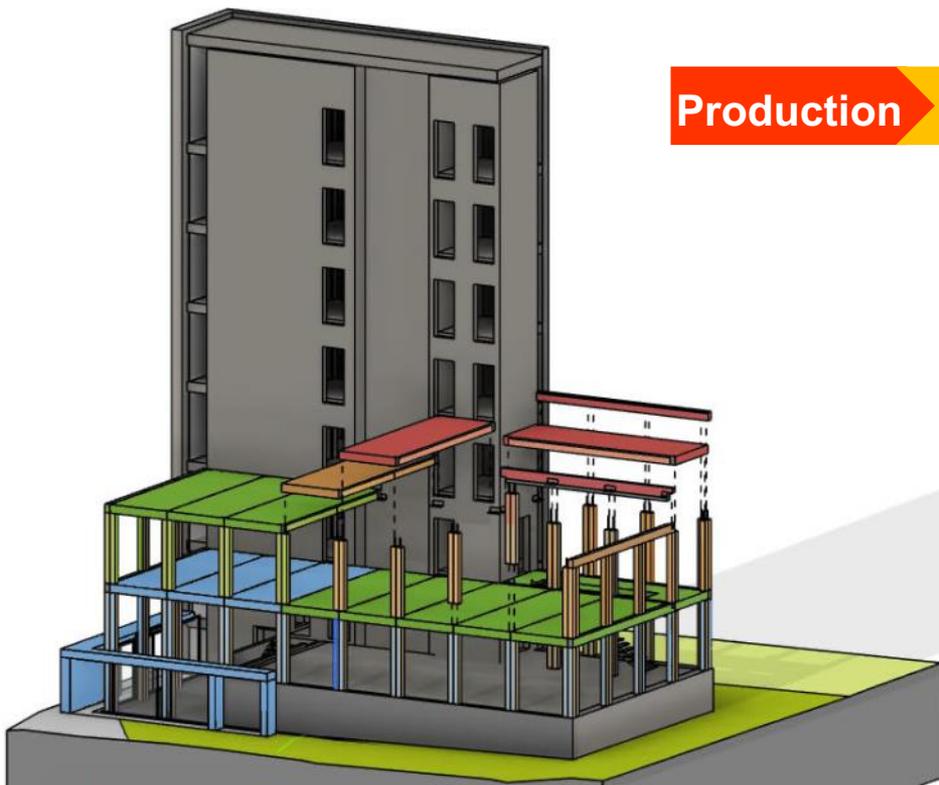
Hybrid Decke



LOGISTIK

**Um Risiko, Kosten und CO₂ zu reduzieren,
ist ein früher Einbezug der „Supply Chain“
der Schlüssel.**

SMART LOGISTIC







Ändern | Geschossdecken Verschieben mit umliegenden Elementen

Eigenschaften

Cree_A_02.003_LCT1.0_Hybrid-Slab-Panel_LOD200
Standard

Geschossdecken (1)

Abhängigkeiten

Ebene	WIP_Level 02
Basisbauteil	Ebene : WIP_Level 02
Versatz	0.0
Verschieben mit umliegenden Elementen...	<input type="checkbox"/>
Raubbegrenzung	<input checked="" type="checkbox"/>

ID-Daten

Bild

Kommentare

Kennzeichen

CREE Position

Phasen

Phase erstellt New Construction

[Hilfe zu Eigenschaften](#)

Projektbrowser - Reference Project LCTone-4.rvt

- Ansicht: WIP_East
- Ansicht: WIP_North
- Ansicht: WIP_South
- Ansicht: WIP_West
- 10_3D
 - 3D-Ansicht: WIP_Explosion_View**
 - 3D-Ansicht: WIP_Isometric_Standard
 - 3D-Ansicht: WIP_Isometric_Standard_Section Box
- for sheets
- worksets
 - Deckenplan: WIP_FOK 05
 - Grundriss: WIP_FOK 05

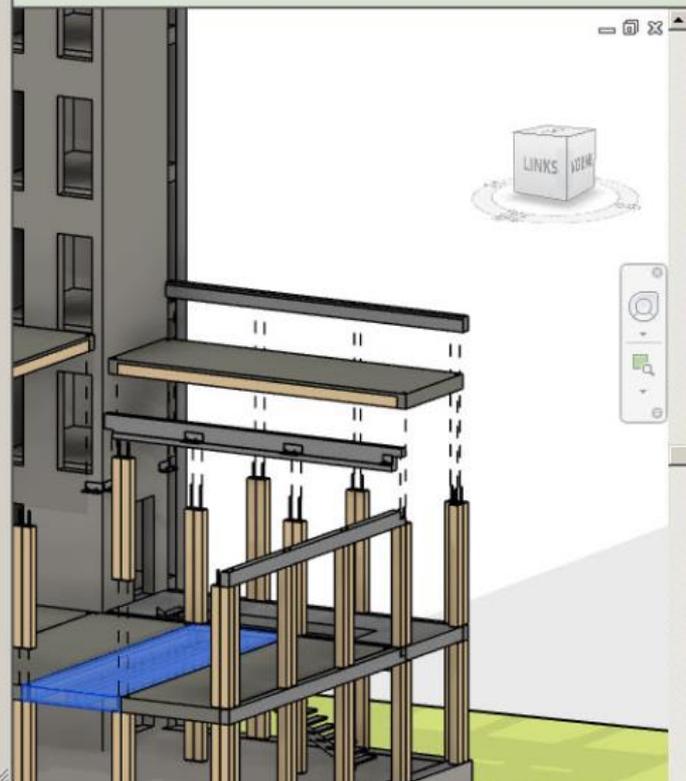
Typeneigenschaften

Familie: Cree_A_02.003_LCT1.0_Hybrid-Slab-Panel_LOD200

Typ: Standard

Typenparameter

Parameter	Wert		
Konstruktion			
Funktion			
Finished floor heights (FFH)			
Possible floor coverings			
System weight			
Pedestal spacing			
Load class			
Panel thickness			
Logistikstatus			
Location	Date	Local Time	Activity
Herne-Boernig, Germany	12/07/2016	6:35 A.M.	Arrival Scan
Glostrup, Denmark	12/06/2016	9:15 P.M.	Departure Scan
	12/06/2016	7:55 P.M.	Export Scan
	12/06/2016	7:54 P.M.	Export Scan
	12/06/2016	7:54 P.M.	Origin Scan
Denmark	12/06/2016	5:17 A.M.	Order Processed: Ready for UPS
Concrete beam thickness		600.0	
GluelamBeamHeight	280.0		
GluelamBeamWidth	240.0		
EdgeBeamWidth	240.0		
SlabPanelWidth	2690.0		
SlabPanelHeight	360.0		
GluelamBeamLength	7620.0		
HalfGluelamBeamWidth	120.0		
ID-Daten			
CREE ID	Cree_A_02.003_LCT1.0_Hybrid-Sla		



MONTAGE





Plug and Play



Plug and Play

A wide-angle photograph of a building's interior during construction. The ceiling is composed of numerous parallel wooden beams. The walls are partially finished with vertical wooden studs and sections of oriented strand board (OSB). A series of windows runs along the back wall, with some sections still under construction. A long, thin metal rod or pipe is leaning against the wall on the right side. The floor is a smooth, light-colored concrete.

Fit for business



A dark grey sidebar containing a white clock face with hands pointing to approximately 1:50. Below the clock, the text "DAY 1" is displayed in a large, bold, white font. The sidebar is decorated with various UI elements, including small white 'X' marks, diagonal hatched patterns, and small text blocks, all in white.

PROJEKTE



The image is a composite of two photographs of a modern building. The left side shows a vertical facade with a grid of rectangular windows, some of which are illuminated from within. The right side shows a low-angle view of the building's facade, which features a complex, geometric pattern of white panels and dark window openings. The sky is overcast and grey.

LifeCycle Tower
LCTONE



IZM

Illwerke Zentrum Montafon





HOHENEMS

Wohnanlage



FELDKIRCH

Wohnanlage



LCT Next

Büroerweiterung





BERLIN I

Bürogebäude





BERLIN II

Büro-/Wohngebäude





EUNOIA

Junior College



WOLFURT

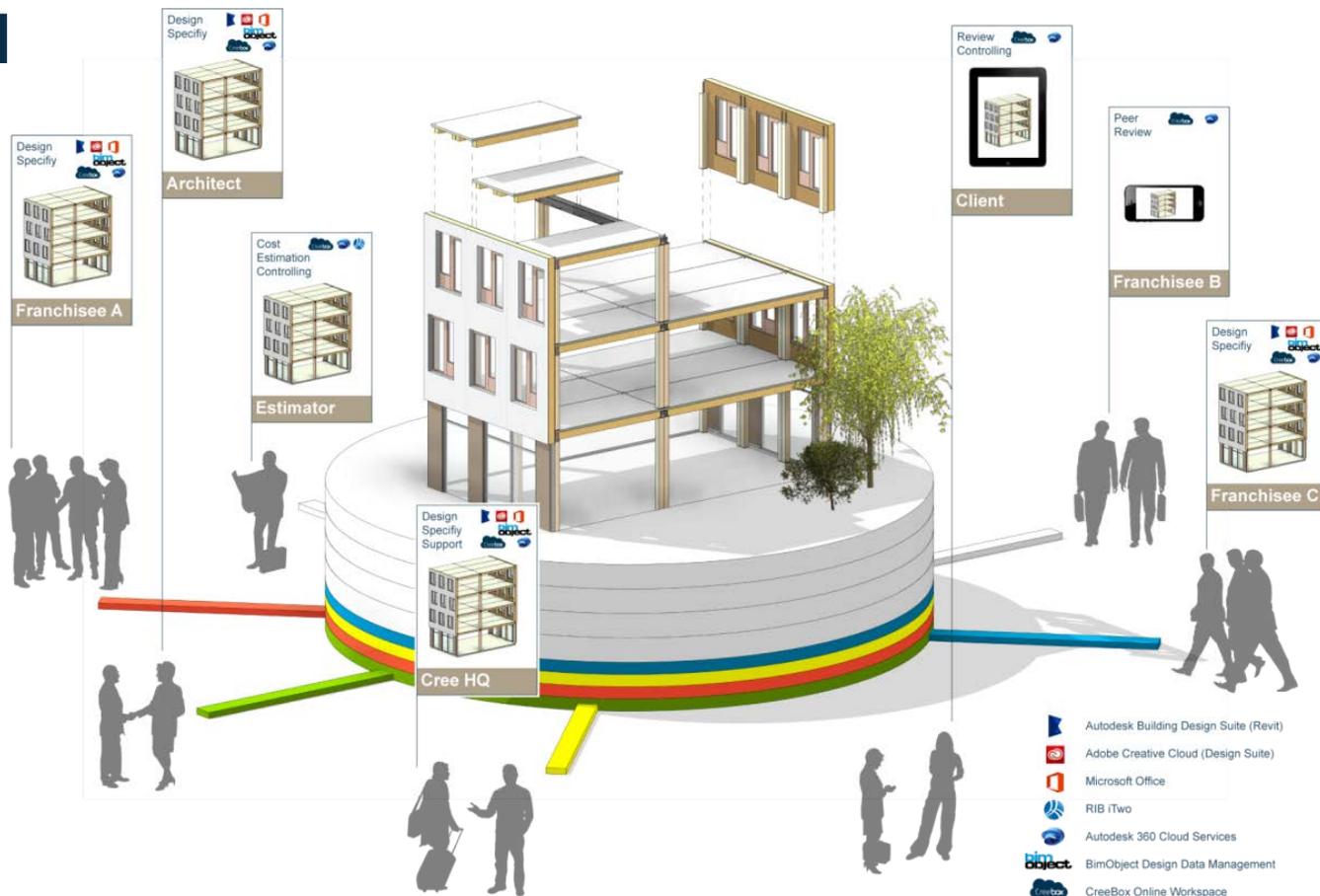
Wohnanlage



A hand is shown holding a globe of the Earth. Overlaid on the globe is a network of white lines connecting various white circular nodes, representing a global platform or network. The word "Plattform" is written in a bold, white, sans-serif font across the center of the globe.

Plattform

PLATTFORM



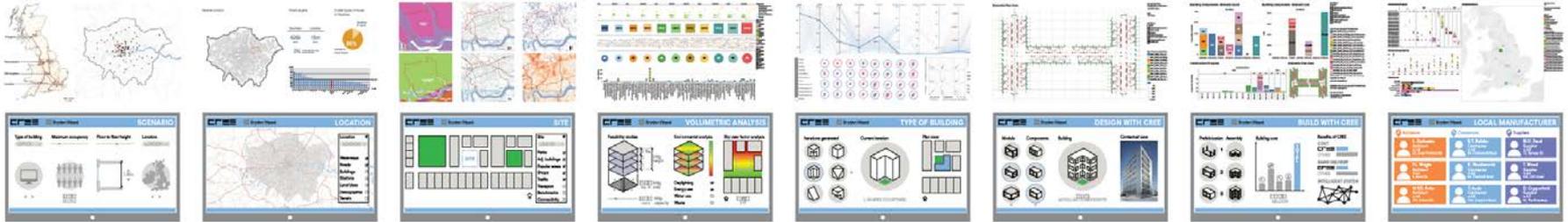


**Digitalisierung and Big Data
Erfassen, sammeln & auswerten**

Building Operation System



GEPLANT FÜR DIE PRODUKTION ANGETRIEBEN DURCH DIE DIGITALE ZULIEFERUNG



1 SCENARIO

The first step is an automated translation of the scenario and requirements into diagrams and useful data which can point towards appropriate sites for a specific development.

The initial requirements:

- The location
- The maximum occupancy
- Floor to floor spatial heights and therefore building height
- A city as the location for the development

2 LOCATION

Big Data

Access every available piece of information from a wide variety of different open data sources to explore the geographic profile of the city location of the project.

Aggregating big data into categories helps understand the various analytical aspects and exploring a range of urban aspects from means to means scale.

3 SITE

GeoSpatial Analysis

Connectivity and Accessibility:

- Public Transport, RTM
- Access routes (primarily to parking areas and analysis of safety, child safety)
- Urban Design and Public Open Spaces
- Global priority positions, settlement analysis, social media
- Operation Scores in the neighborhood
- Urban Form
- Morphology from satellite sensor
- Benchmarking
- Identify similar buildings nearby

4 VOLUMETRIC ANALYSIS

Volumetric analysis comes into play when a specific site can be tested against the scenario with all its requirements.

Initial feasibility studies are undertaken and generated in order to translate the requirements of the scenario into spatial conditions.

Based on these feasibility studies, site specific volumetric analysis and environmental analysis is carried out to find the maximum the volume's access in terms of initial massing.

5 BUILDING TYPE

Based on the massing, a library of building typology is generated. The process here represents an automated iteration through a list of building typologies.

The output of this stage is a number of site specific 3D diagrammatic building options.

6 DESIGN WITH CREE

Once the spatial layout is resolved, the build can be resolved very rapidly using the library components from CREE. The idea is to iterate through CREE library of components to create the modules and building based on the parameters and requirements set up in the previous stages.

In this stage, a business case can be made and costs can be used to iterate through the use of virtual and augmented reality, showcasing an entire experience of the end product, costs and risks.

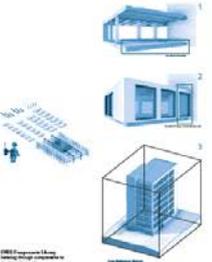
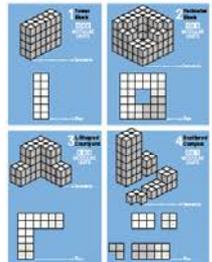
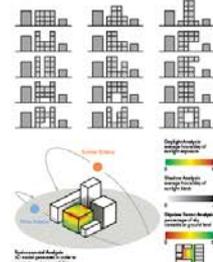
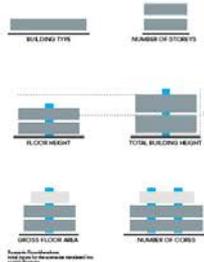
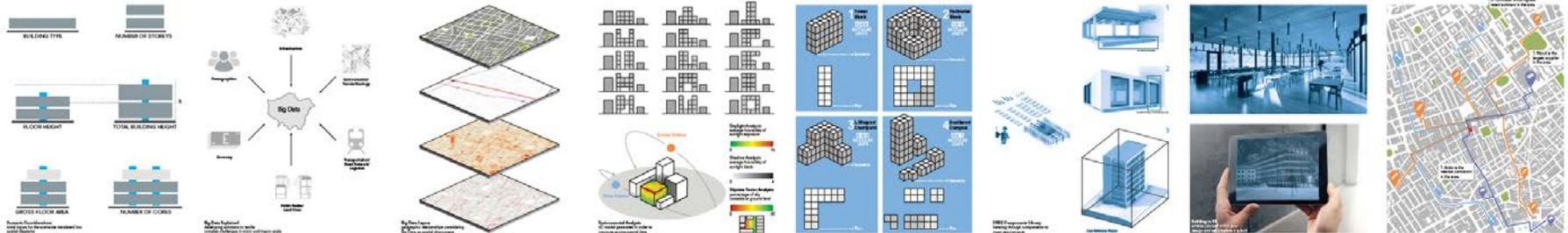
7 BUILD WITH CREE

The design achieved in the previous stage is analysed for cost versus with CREE components to meet. A schedule of components can be generated. The entire construction process can be simulated and cost can be estimated as well as a virtual tour.

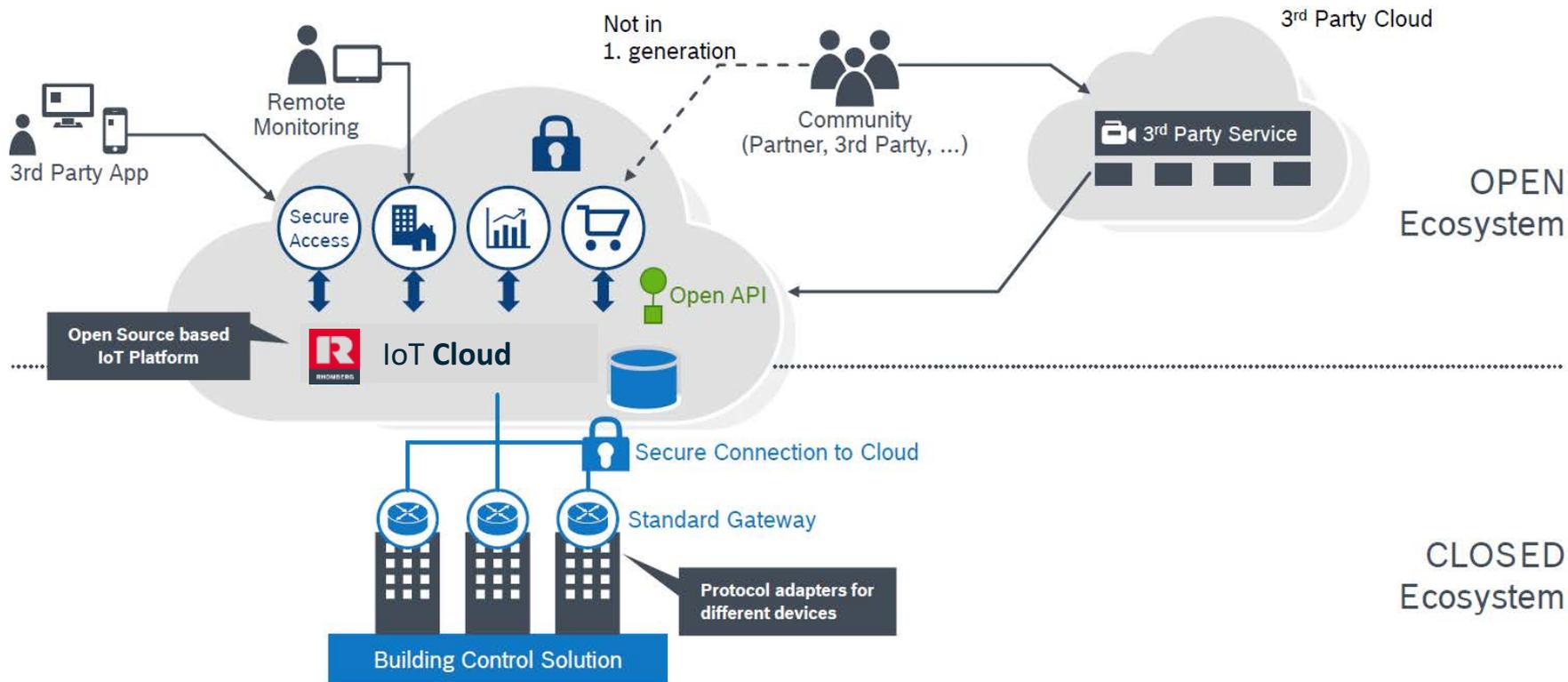
8 LOCAL MANUFACTURER

In a final stage, the platform enables you to find your local manufacturer through an interactive map.

- Specific design or quantity based requests
- Authorized authentic, complete and well equipped
- Ability to view the construction process of the platform
- Availability of the components by CREE or other suppliers
- Site and cost analysis of the options
- Augmented reality building buildings designed by CREE technology



BUILDING OPERATION SYSTEM



**„Elektrisches Licht wurde nicht durch die
Verbesserung der Kerze erfunden“**

(Oren Harari)

A blue-tinted wireframe cityscape with several buildings of varying heights and a grid-like street pattern. The scene is rendered in a perspective view, creating a sense of depth and architectural structure.

BE PART OF THE CHANGE



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