AUTODESK. UNIVERSITY

Revit, Forge, ERP - Smart solution for medium sized construction companies

Presenter Name

Julius Grimm | @linkedin.com/in/juliusgrimm

Matthias Fuchs | @linkedin.com/in/fuchs-matthias

Martin Loucka | @linkedin.com/in/martin-loucka-20b585183

About the speaker

Julius Grimm

Julius is 26 years old, a BIM enthusiast and represents the third generation of the family-run, medium-sized construction company Grimm GmbH in Southern Germany. After his bachelor's degree, he was responsible for the company's first BIM project, the turnkey construction of a radiology practice. This was also part of his bachelor thesis. As managing director he is responsible for buisness development, digital transformation and strategy. His focus is on BIM implementation and the development of innovate BIM processes up to digital fabrication. In addition, Julius gives guest lectures at the Biberach University of Applied Sciences on the subject BIM and he is currently completing an MBA in business management in the construction industry at the academy of the University Biberach.

Julius.Grimm@grimm-bau.de

About the speaker

Matthias Fuchs

Matthias Fuchs studied project management/construction at the University of Applied Sciences in Biberach. During his master studies he worked as a research assistant on various digitization projects for the construction industry and investigated, among other things, the use of BIM in factory planning at the world market leader KNOLL Maschinenbau at its site in China. After his master's degree in 2019, he joined Grimm GmbH as a digitization and technology expert. His responsibilities include business development, BIM implementation, software development and the optimization and implementation of BIM workflows. Matthias is a technology enthusiast through and through. He is passionate about technology and its ability to empower people to develop new solutions, services and business models.

Matthias.Fuchs@grimm-bau.de

About the speaker

Martin Loucka

Martin Loucka is development engineer and managing director of a Swiss software company ioLabs Swiss GmbH. His focus is BIM, digital planning and manufacturing. He and his team is currently focusing on Autodesk Forge based solutions. Before that, he worked for the as a developer and as a research assistant at the University of Stuttgart.

ml@iolabs.ch

Agenda

COMPANY PROFILS

THE IDEA OF ZAPPER

ZAPPER

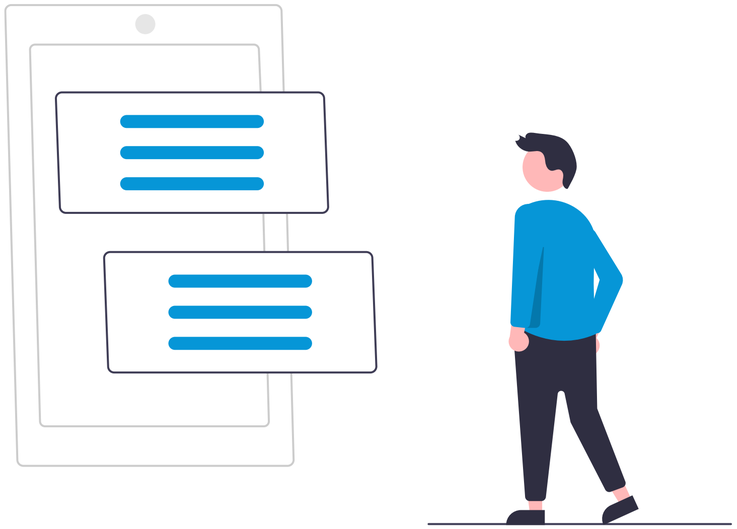
DEEP DIVE INTO ZAPPER

TECHNOLOGY BEHIND ZAPPER

SMART LINKING WITH EBKP-H

ERP INTERFACE

LIVE DEMO OF ZAPPER



GRIMM

Grimm GmbH

Who we are

We are a family-run construction company in south Germany, which plans, supervises and realizes turnkey construction projects for private and commercial customers. It does not matter whether we build new buildings or renovate existing ones, every customer is competently supported and advised by us from the first meeting to the handing over of the keys. Our team, with different skills, works with great commitment and passion on a joint project success.

HISTORY

1962
Foundation of the company.
Desire for independence.

1981
Werner Grimm joins as a plasterer. Further education to the master craftsman

1982
Paul Grimm joins as a bricklayer. Then studied civil engineering

since 1993
Turnkey construction as complete service for SFH an apartment buildings.

1994
Foundation of Grimm Bauen und Verputzen

1998
Paul u. Werner Grimm take over the management

Since 2009
Project development of residental real estat e

2018
Julius Grimm joins as the 3rd Generation. And starts with the introduction of BIM.

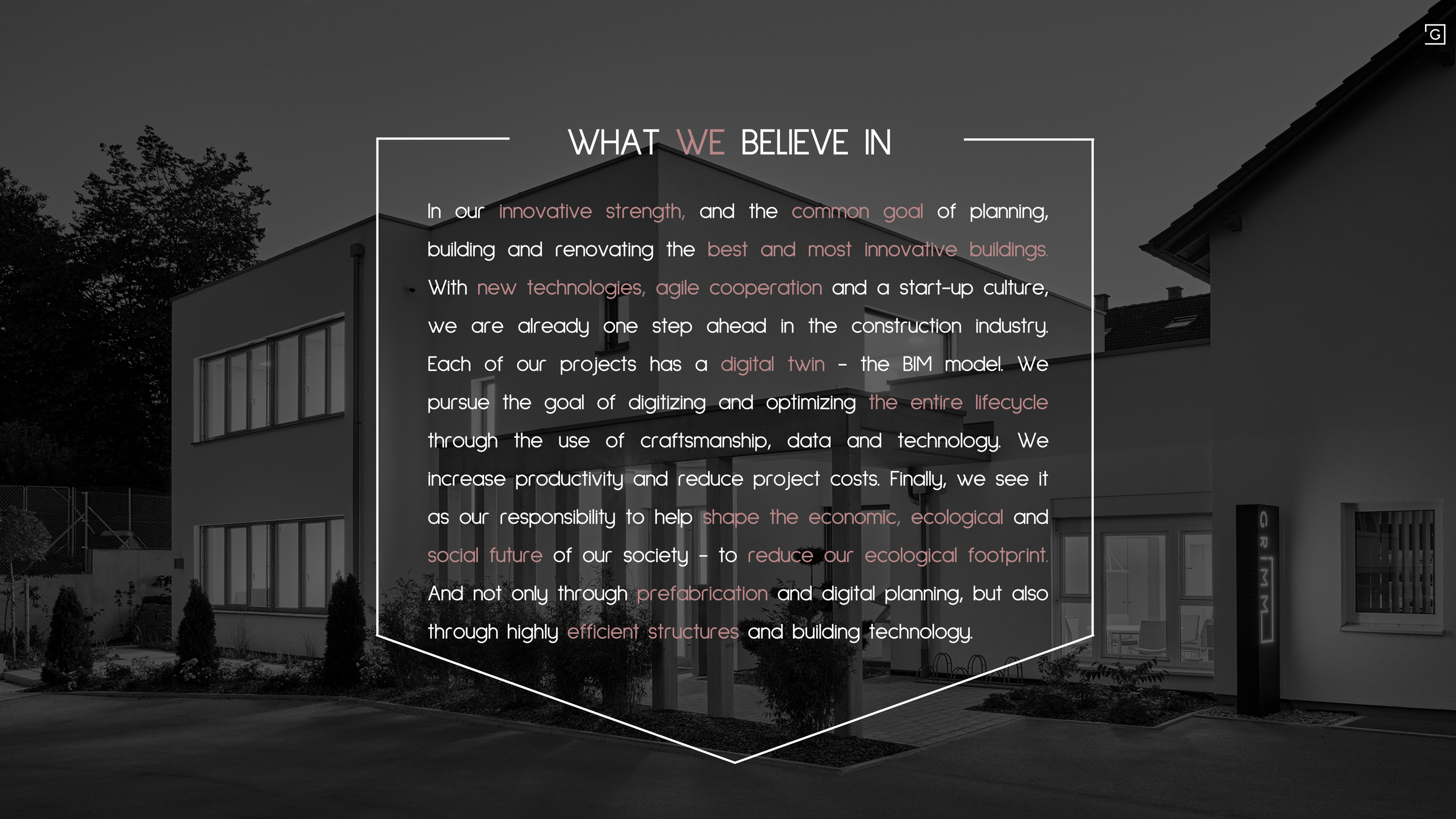
2019
Grimm Bauen und Verputzen GmbH became Grimm GmbH

2019
Implementation of a planning department

Since 2020
Construction software development based on Autodesk Forge.

Implementation of the BIM process chain across the entire value chain.

Future



WHAT WE BELIEVE IN

In our innovative strength, and the common goal of planning, building and renovating the best and most innovative buildings. With new technologies, agile cooperation and a start-up culture, we are already one step ahead in the construction industry. Each of our projects has a digital twin - the BIM model. We pursue the goal of digitizing and optimizing the entire lifecycle through the use of craftsmanship, data and technology. We increase productivity and reduce project costs. Finally, we see it as our responsibility to help shape the economic, ecological and social future of our society - to reduce our ecological footprint. And not only through prefabrication and digital planning, but also through highly efficient structures and building technology.

OUR CULTURE

Yes we can

We are a highly motivated team and want to make a difference. We think in solutions, not in problems

No Risk = No Success

Not to risk anything is the biggest risk of all. If we suffer setbacks, we stand up, learn and continue to grow.

Stay focused

We work together for the success of the project: efficiently, sustainably and conscientiously

Open minded

We live new trends and developments. That's how we fulfill individual customer wishes

Be passionate

We don't just want to be hip. Much more important to us are curiosity, creativity and the desire for change. We burn for what we do.

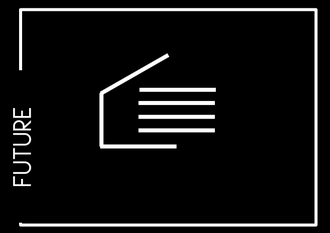
BUSINESS UNITS

Project Development

Design

Build

Renovation



Facility Management

Sumoo Softwaredevelopment

HEALTHCARE

Radiology

Biberach

INDUSTRY

BayWa

Biberach

Multi-Storey Residential Construction

Jersayweg

Biberach

Detached House

Biberach

Facts & Number

About Grimm GmbH

60	1962	11	2018
Employees	Founding	Mio.	BIM

Team ioLabs

Martin **Loucka**
M.Sc. (Uni.) ITECH,
Bc. (Uni.) Economics

Development Engineer
Digital Planning

CEO, Founder

Petr **Stefan**
Dipl. Ing., Information
Technologies

Software engineer
Full stack developer

CTO, Founder

Team ioLabs

Martin **Loucka**
M.Sc. (Uni.) ITECH,
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Development Engineer
Digital Planning

CEO, Founder

Petr **Stefan**
Dipl. Ing., Information Technologies

Software engineer
Full stack developer

CTO, Founder

Günther **Patzak**
Certified accountant

COO Finance
Accountant

Dr. Miroslav **Simko**
Dipl. Ing. Phd.,
Nuclear Physics

Software engineer
Mathematician,
physicist

Michal **Gabas**
Dipl. Ing. arch.,
Architecture

CAD Expert

Tana **Balatkova**
MSc. (Economics),
Dipl- Ing. (Media)

Marketing
Public relations

Stefan **Lai**
Certified accountant
Eidg. Fachausweis, 5.4

Trustee (Treuhänder)
Accountant

Jakub **Jirous**
B.Sc., Information Technologies

Software engineer
Frontend developer

Jaroslav **Danicek**
B.Sc., Information Technologies

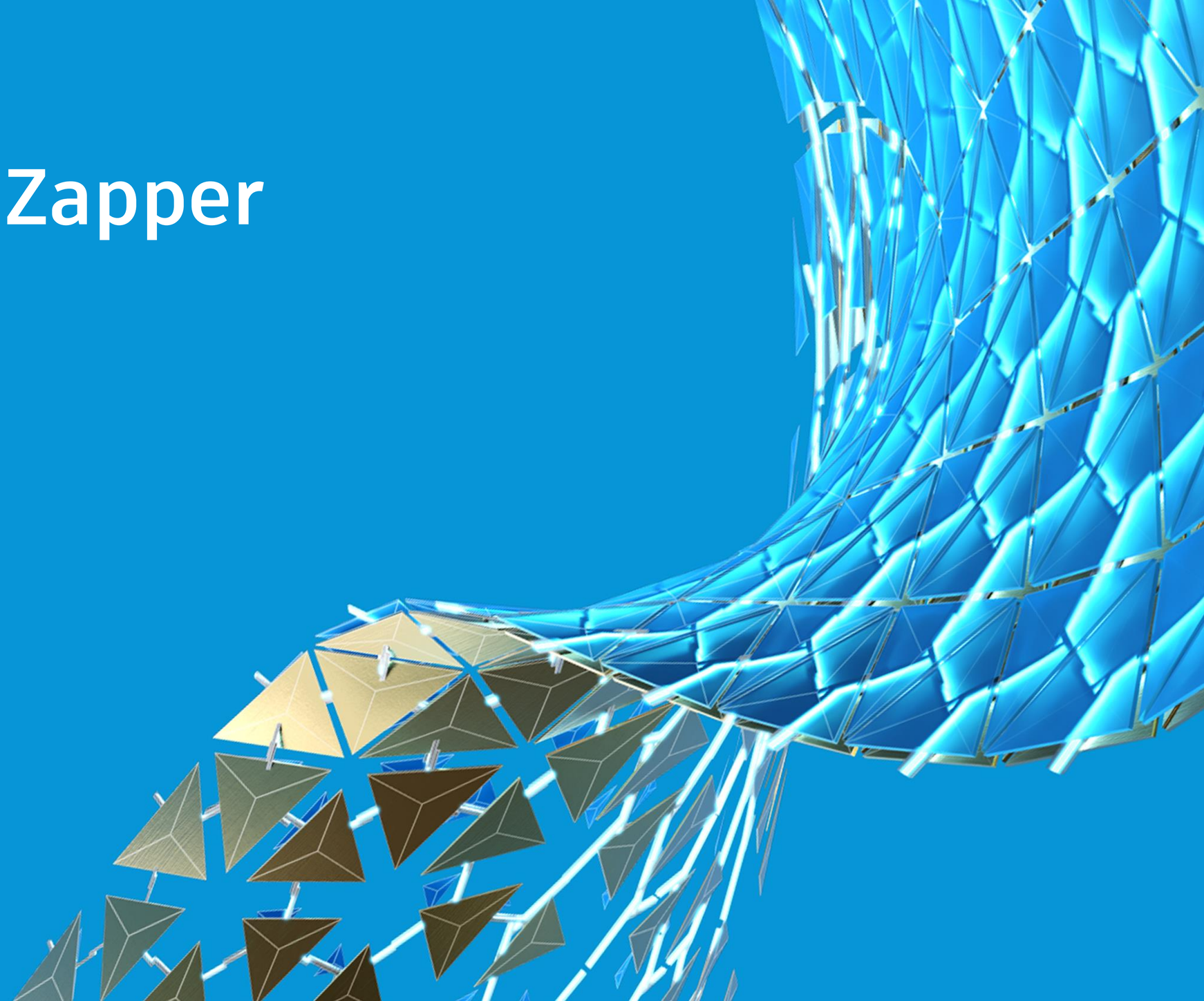
Software engineer
Backend developer

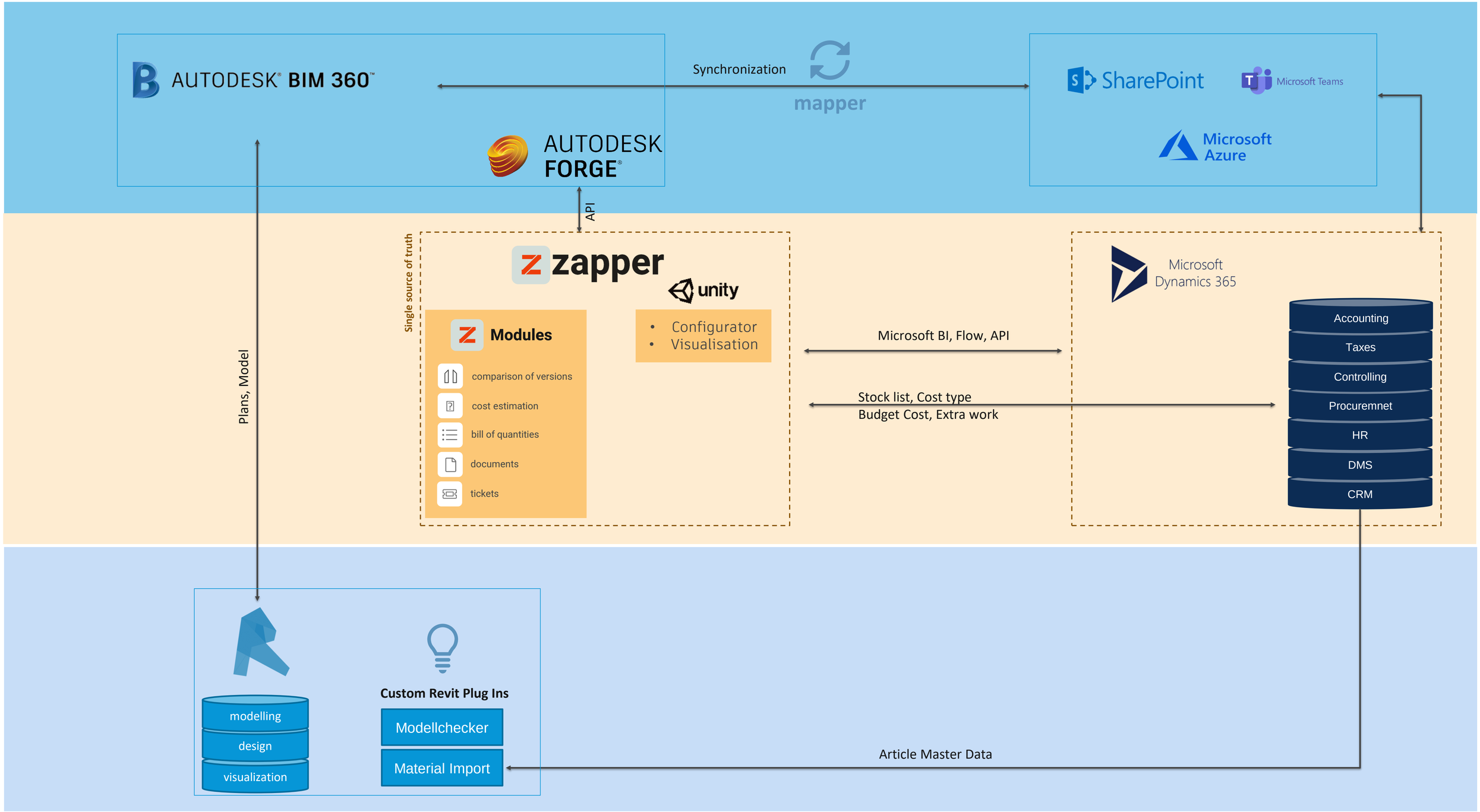
Katerina **Skublova**

Office Manager
Assistant

_ioLabs AUTODESK FORGE Certified Systems Integrator

The Idea of Zapper




AUTODESK® BIM 360™
Synchronization
mapper
SharePoint
Microsoft Teams
Microsoft Azure
AUTODESK FORGE®
API
Single source of truth
zapper
unity
Modules
comparison of versions
cost estimation
bill of quantities
documents
tickets
Configurator
Visualisation
Plans, Model
Microsoft BI, Flow, API
Stock list, Cost type
Budget Cost, Extra work
Microsoft Dynamics 365
Accounting
Taxes
Controlling
Procuremnet
HR
DMS
CRM
modelling
design
visualization
Custom Revit Plug Ins
Modellchecker
Material Import
Article Master Data

Why doing software development?

OUR REQUIREMENTS

We were looking for a modern, innovative construction software solution that supports our entire process chain and picks up the user of today.

THE MARKET

We examined existing construction software solutions on the market but have not found a suitable solution with regard to our requirements. Nevertheless we want a solution that meets our expectations.

ISOLATED APPLICATIONS

We have looked for an alternative and there was the possibility to use isolated applications. But for us, no external solution came into question.

THE SOLUTION

We finally decided to develop an eco system with own sources. We want to follow the principle of the single source of truth and wanted to control the entire digital process on ourselves.

The biggest hurdle

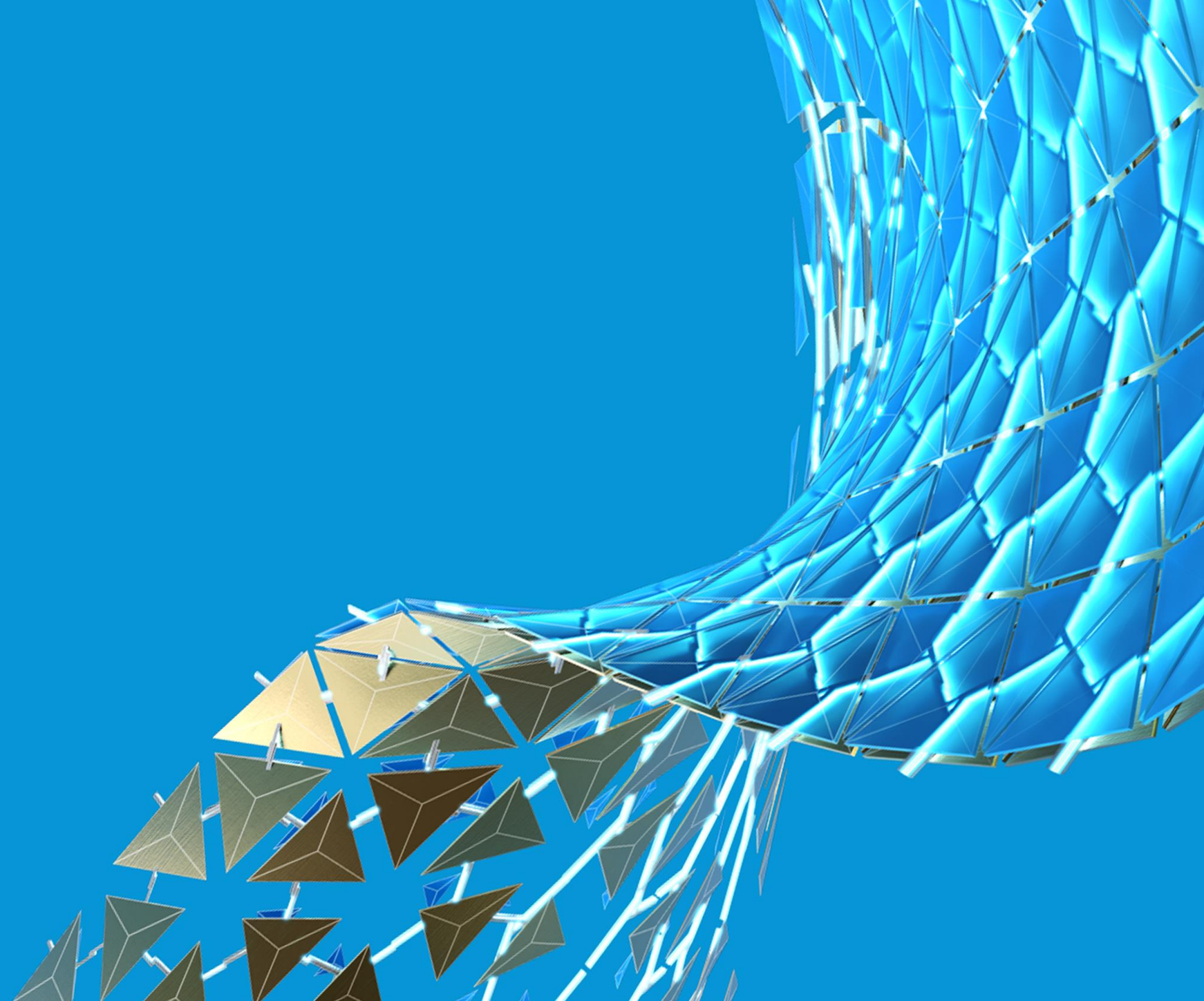
Uncertainty/risk

Large investments, undefined duration, not measurable

Setbacks – “One does not buy the cat in a bag”

Explain the process / take employees and GF with you

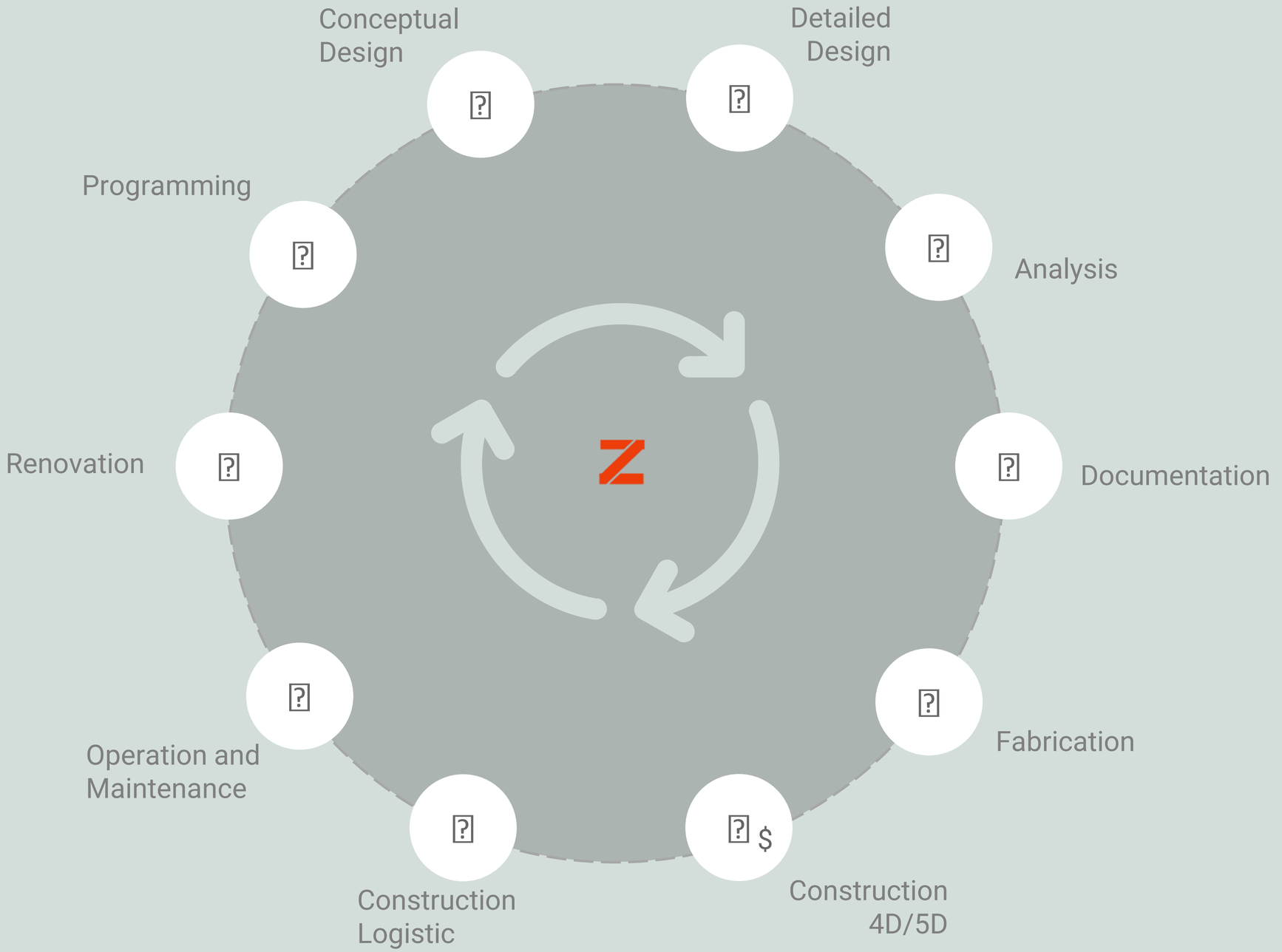
Zapper



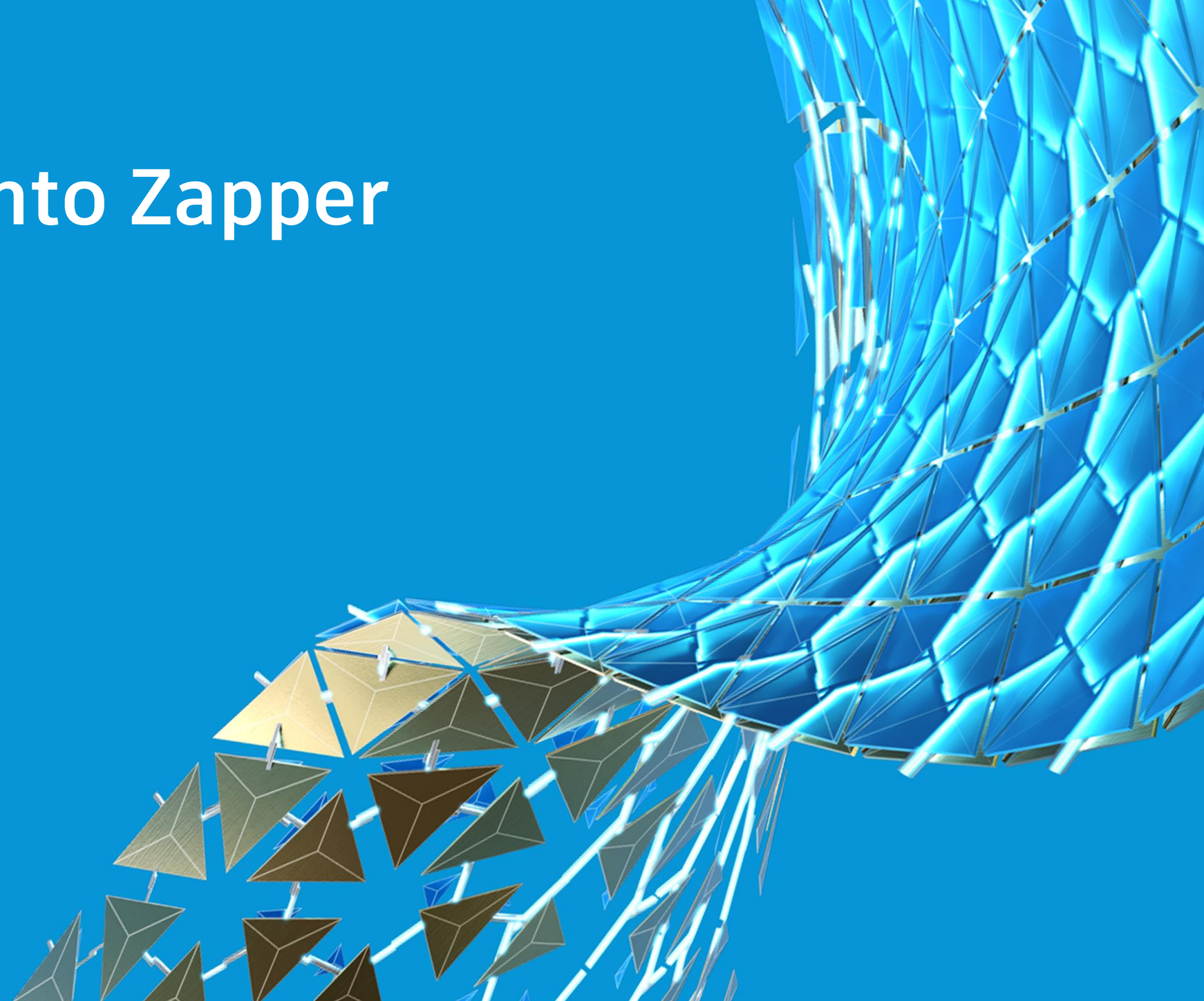
“People should not be afraid to use construction software.”

“They should love it.”

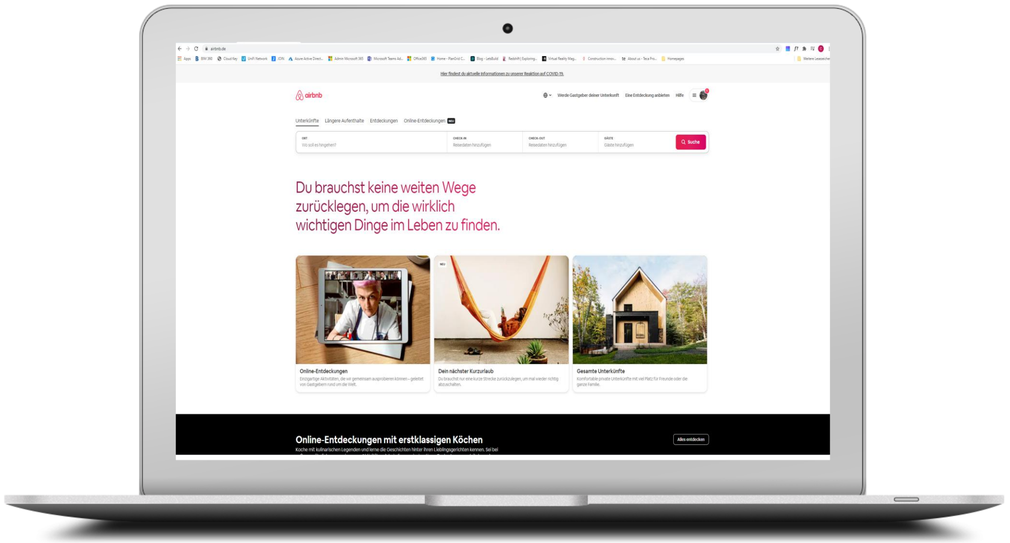
zapper

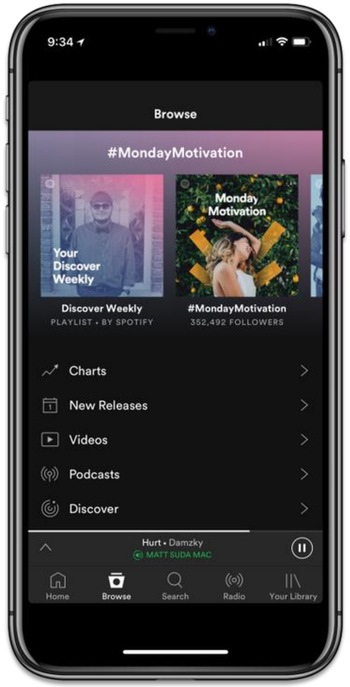

Conceptual Design
Detailed Design
Programming
Analysis
Renovation
Documentation
Operation and Maintenance
Fabrication
Construction Logistic
Construction 4D/5D
$

Deep Dive into Zapper

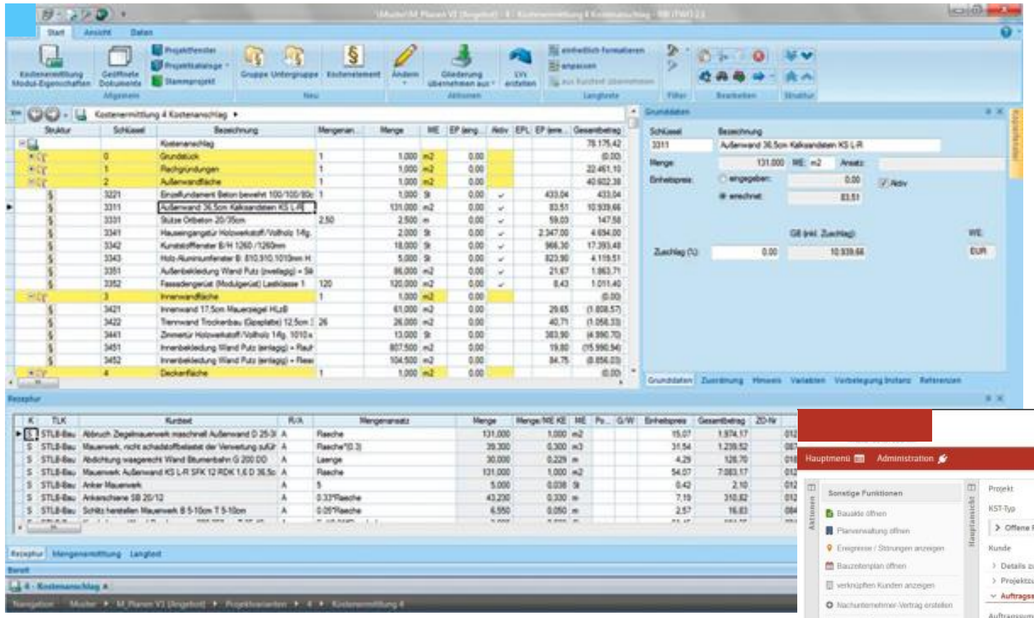


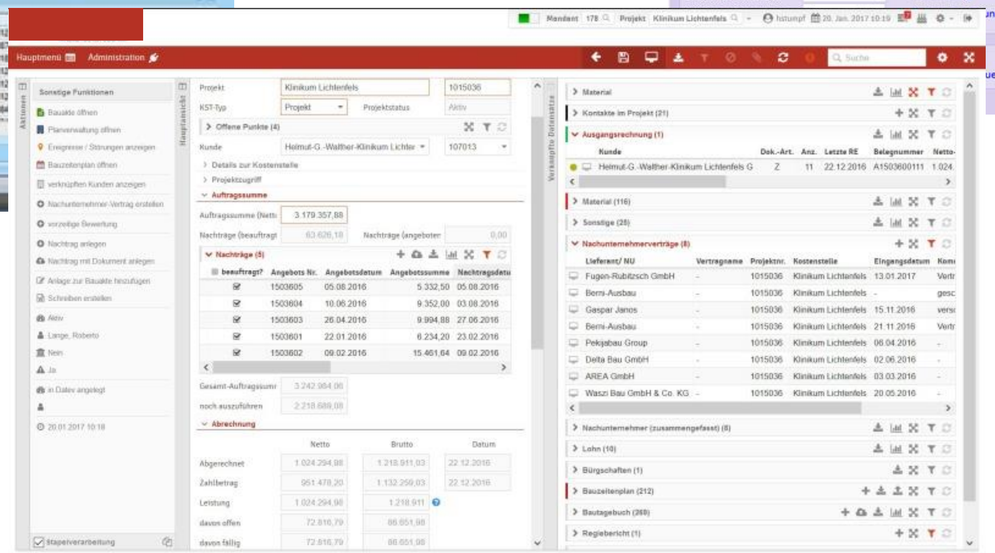
User experience is the key

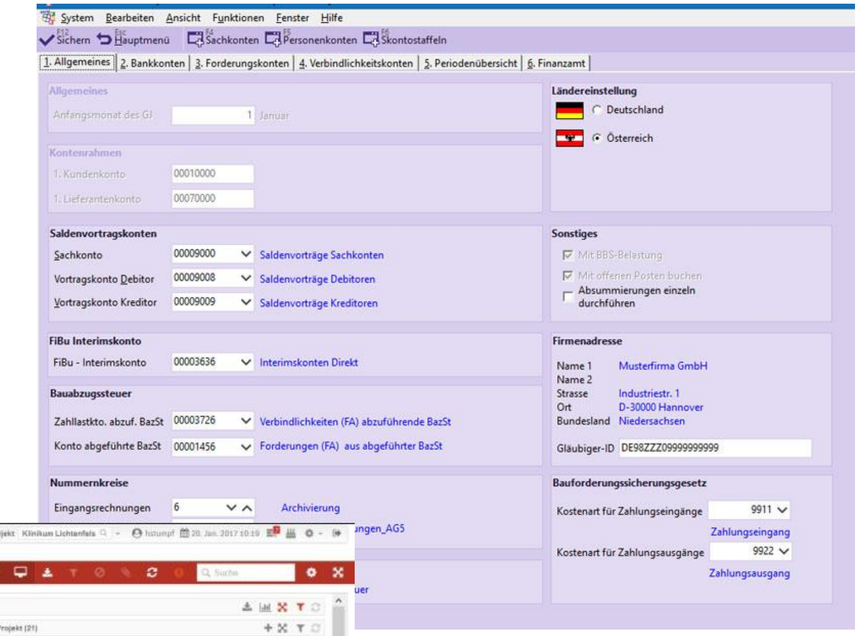




Todays contruction software







A
Grundstück

Vorbe

E
Äussere Wandbekleidung Gebäude

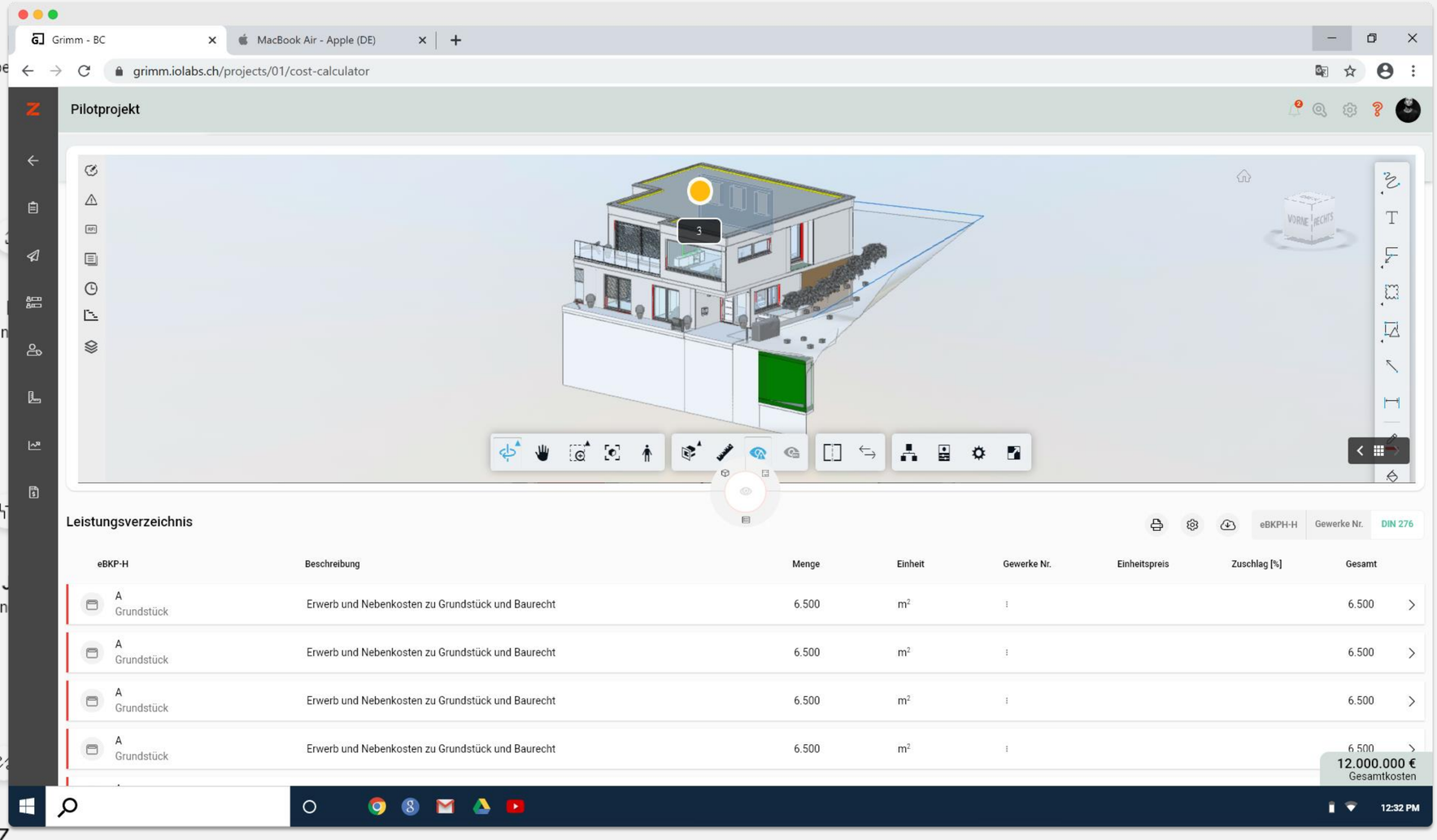
Bedachun

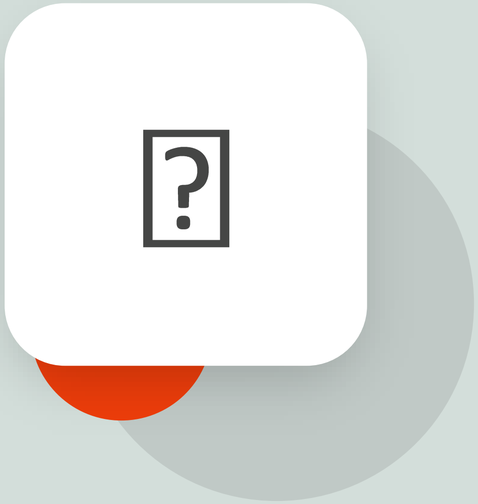
I
Umgebung Gebäude

Ausstattun

Y
Reserve, Teuerung

Z
Mehrwertsteuer



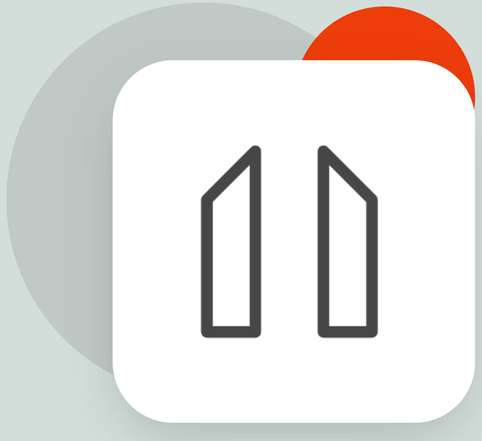


Referenced

Model-based

Cost estimation

Cost estimation based on comparison projects and model-based conceptual designs



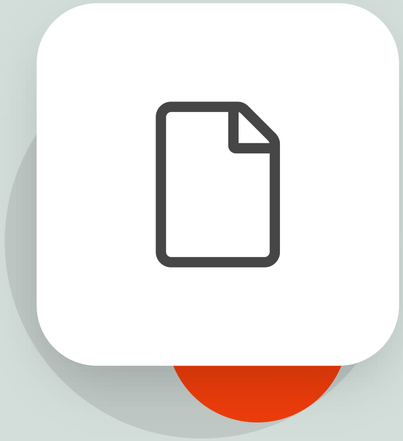
Comparison of versions

Compare design drafts and planning options

- Tendering
- Call for Tenders/ Submissions
- Assignment
- Status Quo Analysis
- Controlling
- Billing

Bill of quantities

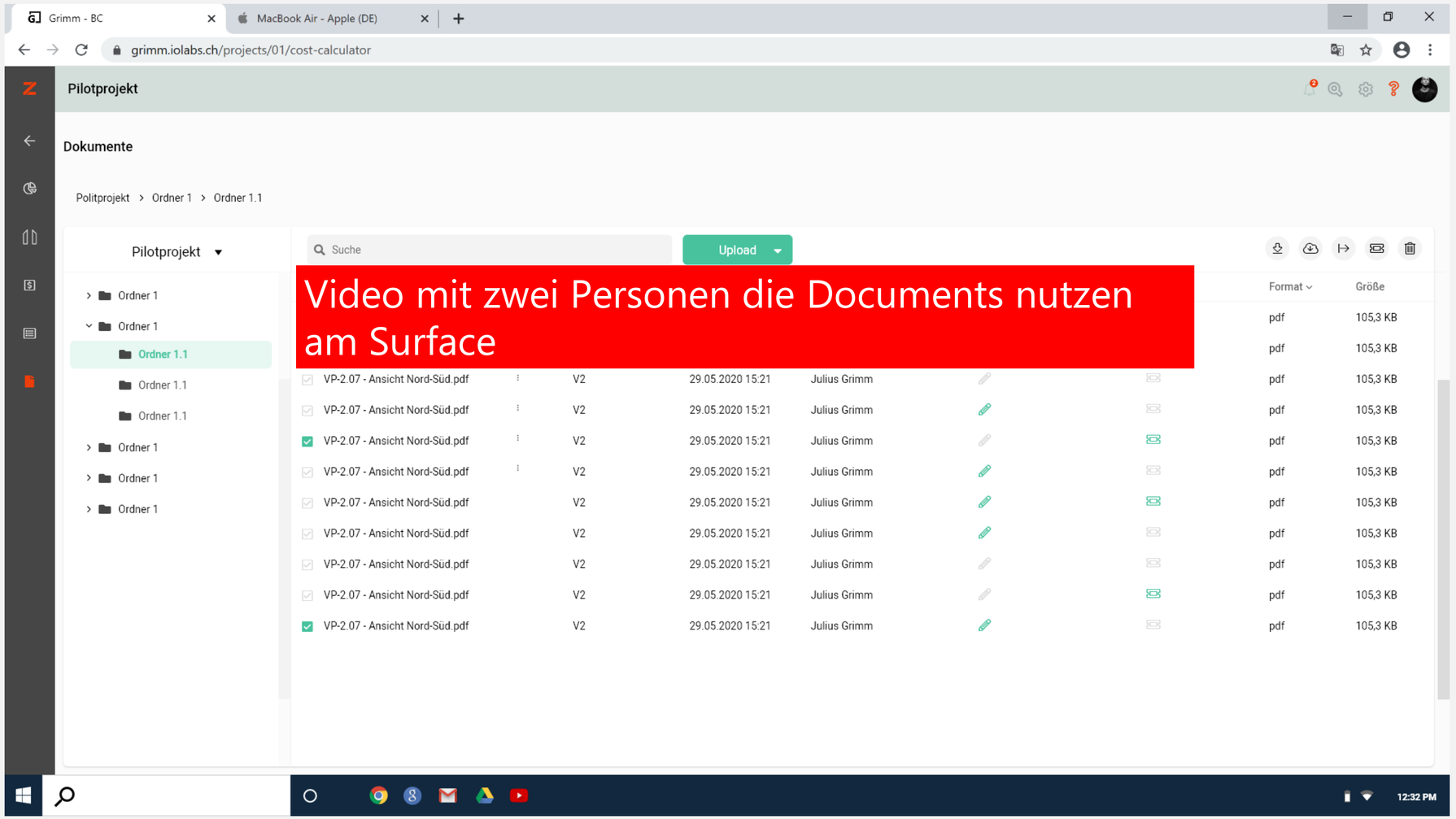
All information in one place.

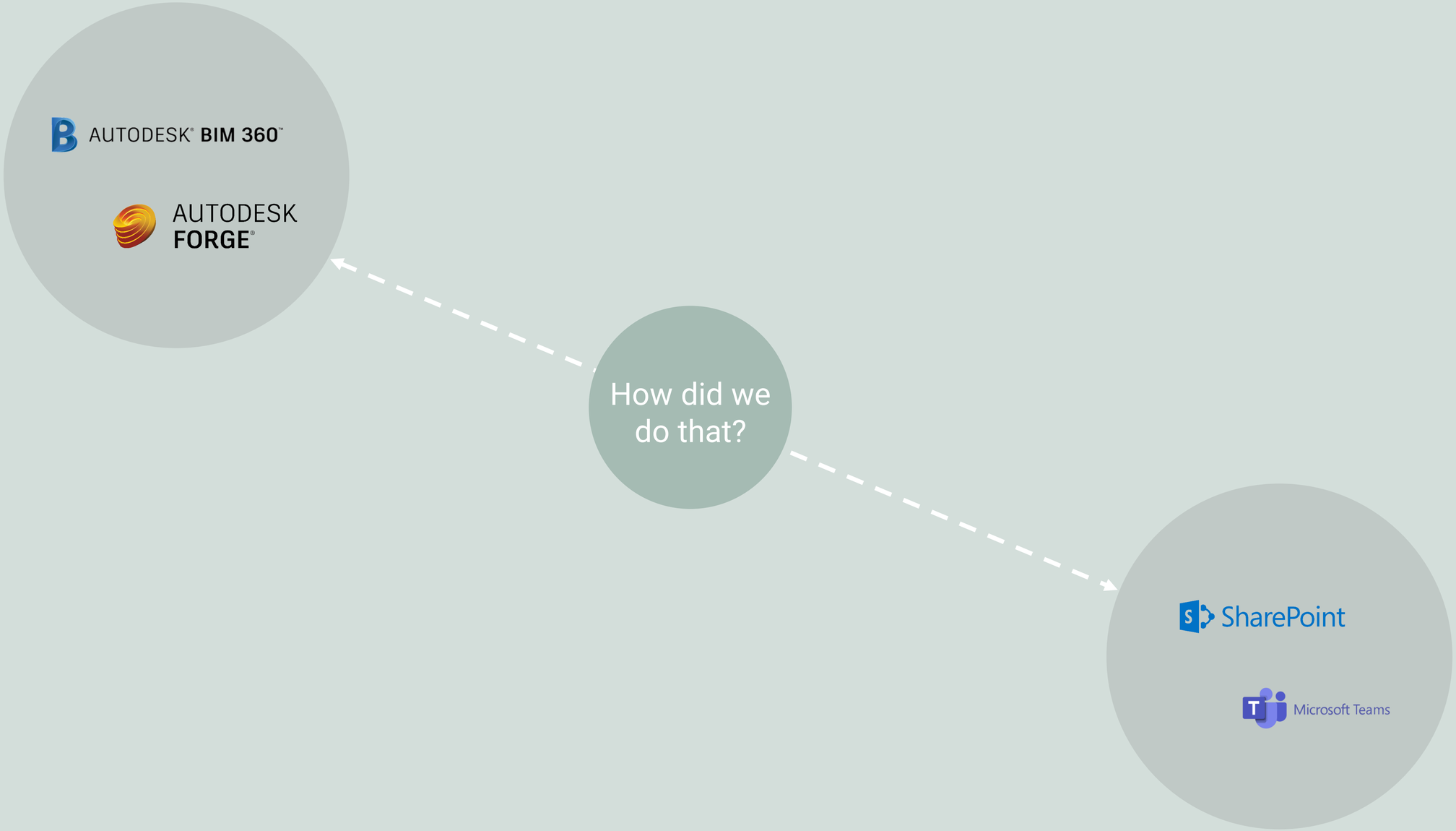


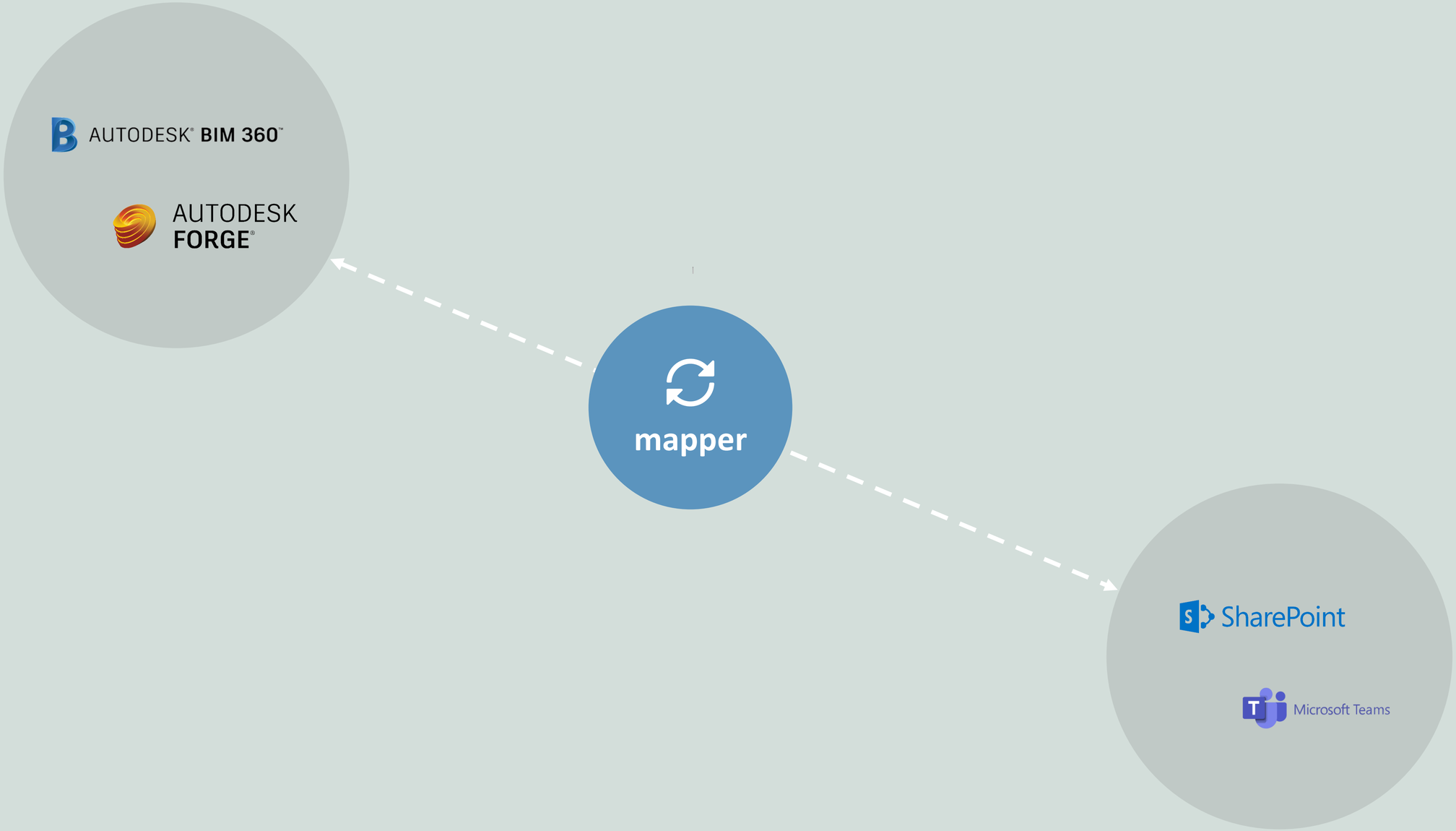
Documents

Linked and current documents

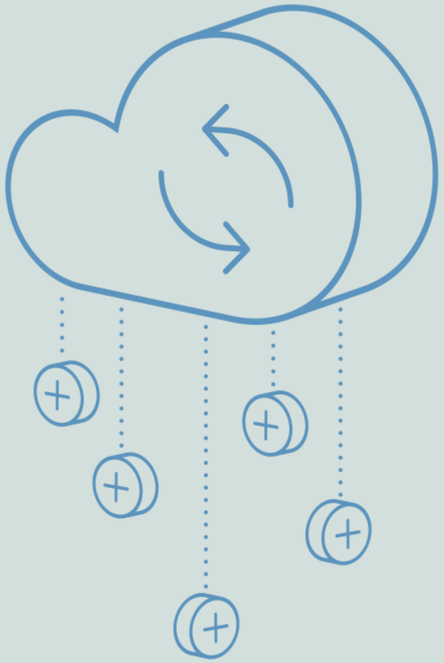
Documents


Grimm - BC
MacBook Air - Apple (DE)
grimm.iolabs.ch/projects/01/cost-calculator
Pilotprojekt
Dokumente
Politprojekt > Ordner 1 > Ordner 1.1
Pilotprojekt
Suche
Upload
Video mit zwei Personen die Documents nutzen am Surface
Ordner 1
Ordner 1
Ordner 1.1
Ordner 1.1
Ordner 1.1
Ordner 1
Ordner 1
Ordner 1
Format
Größe
VP-2.07 - Ansicht Nord-Süd.pdf
V2
29.05.2020 15:21
Julius Grimm
pdf
105,3 KB
12:32 PM


AUTODESK® BIM 360™
AUTODESK FORGE®
How did we do that?
SharePoint
Microsoft Teams


AUTODESK® BIM 360™
AUTODESK FORGE®
mapper
SharePoint
Microsoft Teams

mapper

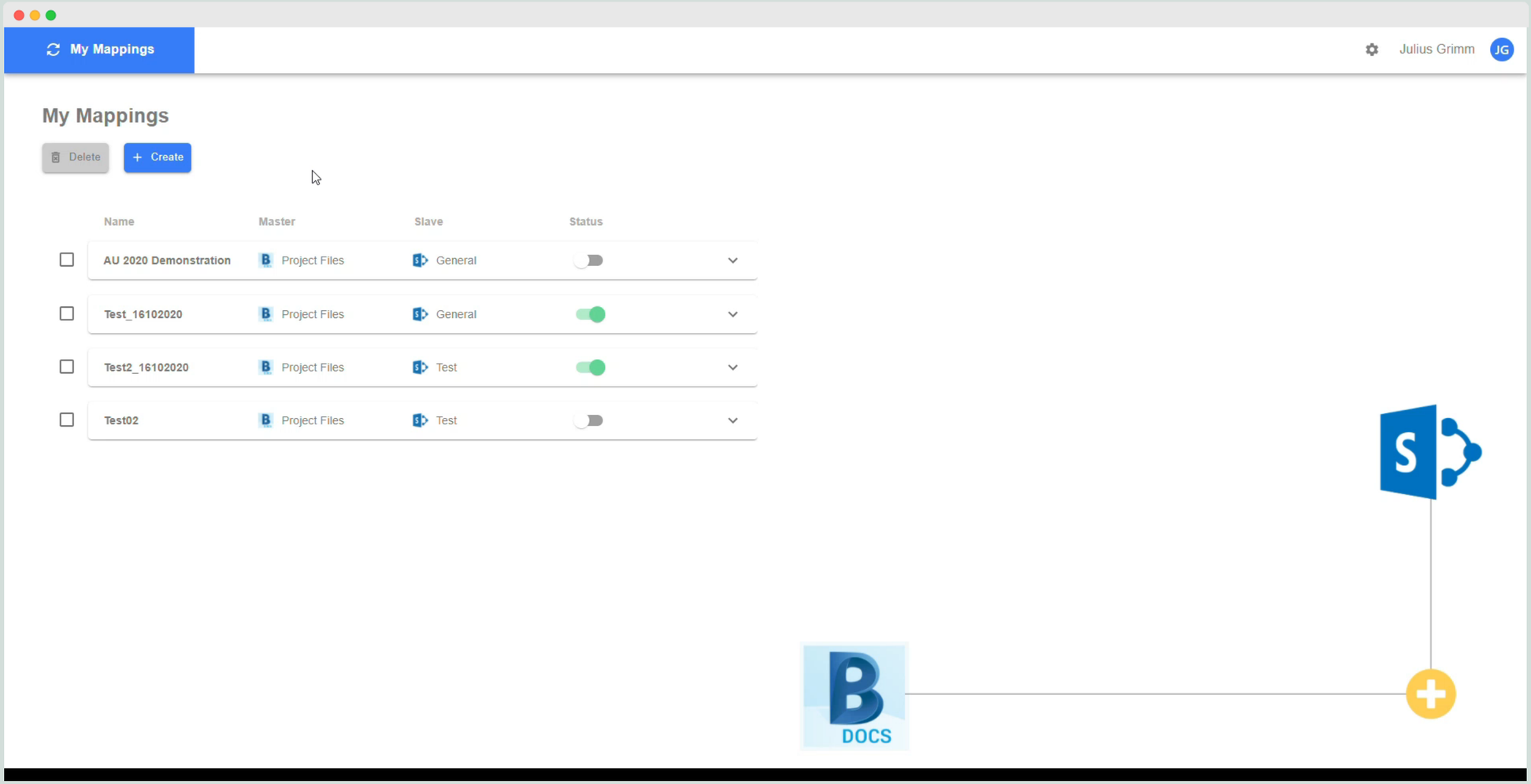


Two apps. Different projects.

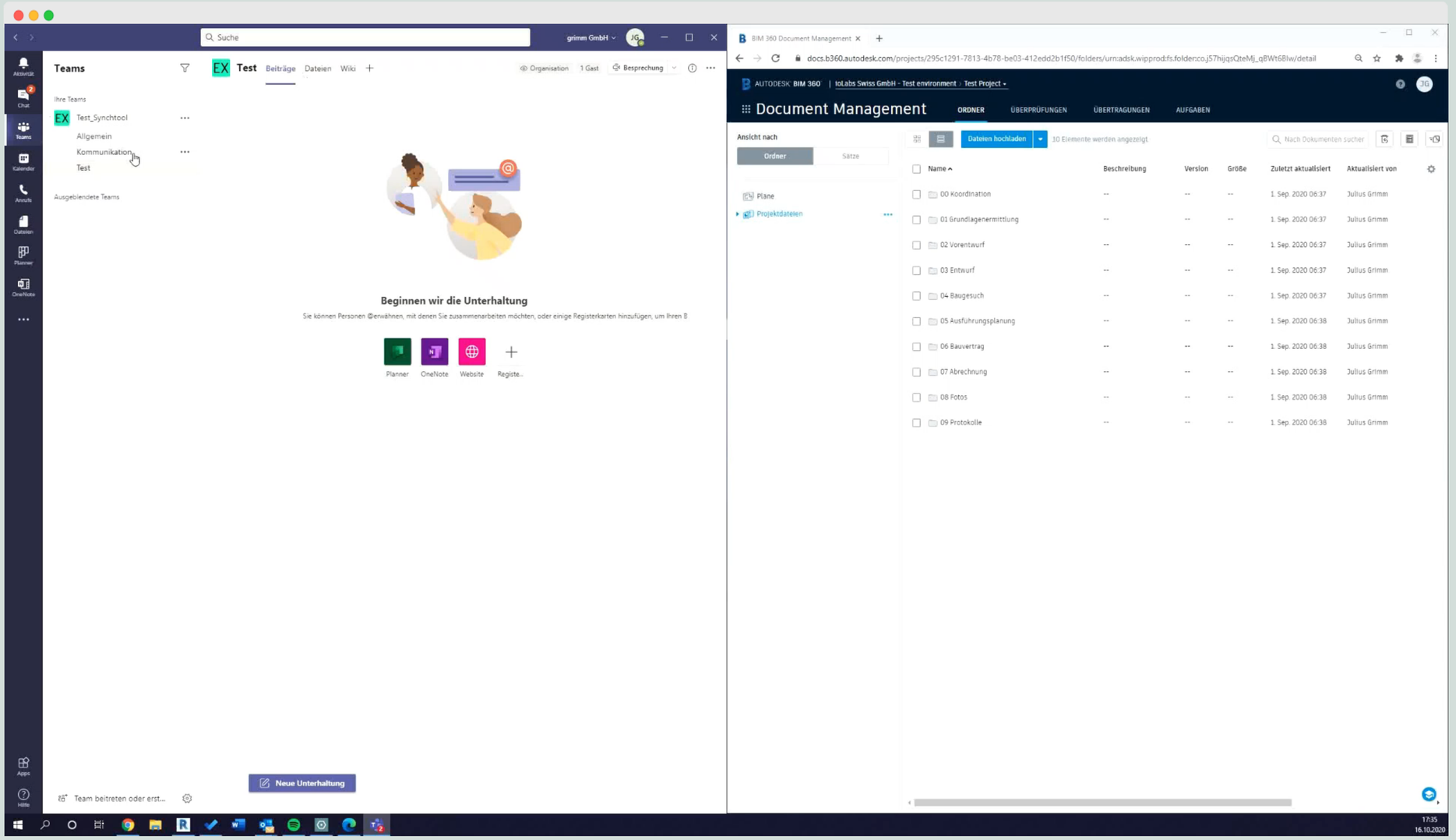
One updated database.

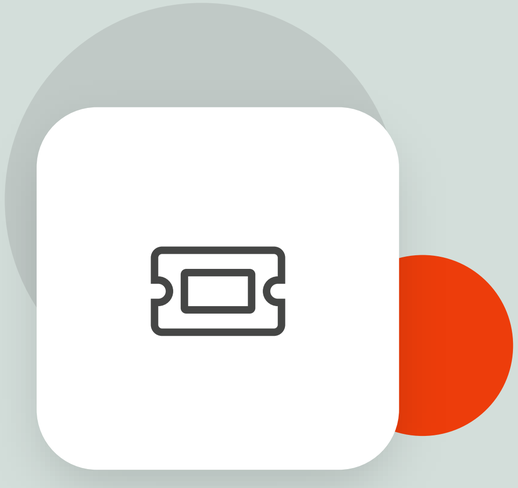
mapper synchronizes data between Sharepoint and BIM360 in real time. So everyone is up to date. Always. Automatically.

mapper


My Mappings
Julius Grimm
JG
My Mappings
Delete
Create
Name
Master
Slave
Status
AU 2020 Demonstration
Project Files
General
Test_16102020
Project Files
General
Test2_16102020
Project Files
Test
Test02
Project Files
Test
DOCS

mapper


Teams
Test
Beiträge
Dateien
Wiki
Test_Synchtool
Allgemein
Kommunikation
Test
Beginnen wir die Unterhaltung
Planner
OneNote
Website
Neue Unterhaltung
Document Management
ORDNER
ÜBERPRÜFUNGEN
ÜBERTRAGUNGEN
AUFGABEN
Dateien hochladen
00 Koordination
01 Grundlagenermittlung
02 Vorentwurf
03 Entwurf
04 Baugesuch
05 Ausführungsplanung
06 Bauvertrag
07 Abrechnung
08 Fotos
09 Protokolle



Tickets

Support plattform for all stakeholders

Comparison Of Versions

Cost Estimation

- Referenced
- Model-Related

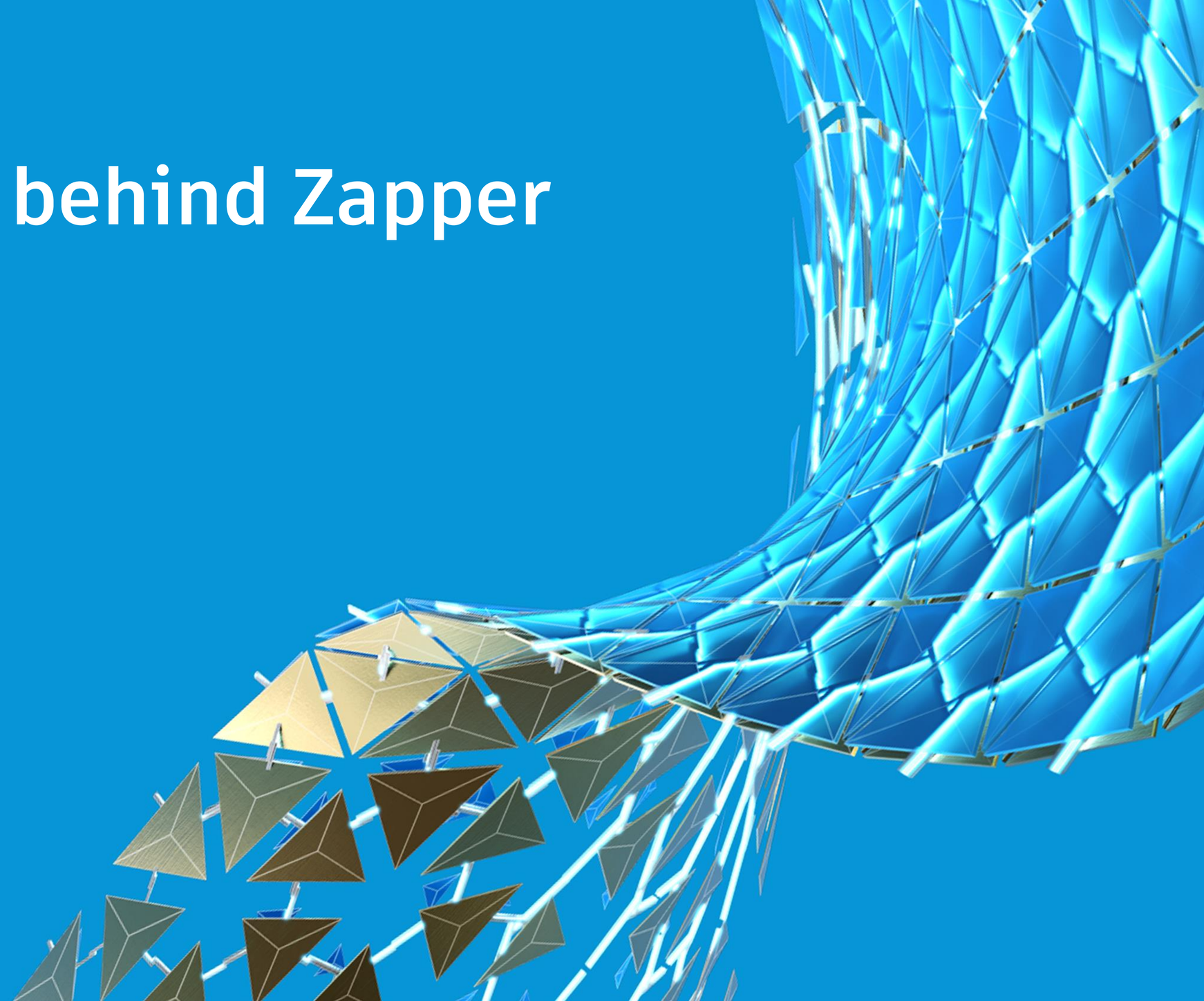
Bill Of Quantities

- Tendering
- Call for Tenders/ Submissions
- Assignment
- Leistung/Aufmaß
- Controlling
- Billing

Documents

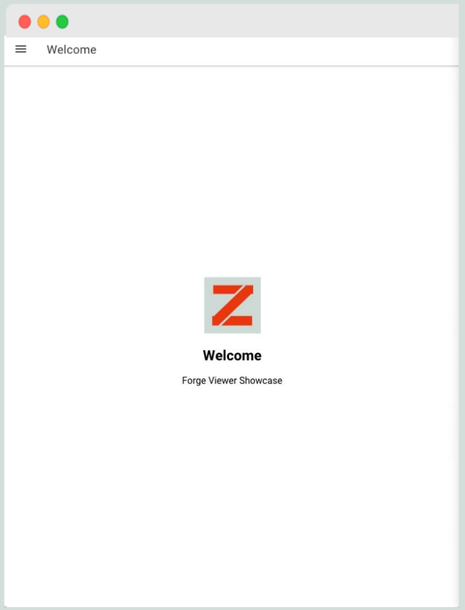
Tickets

Technology behind Zapper



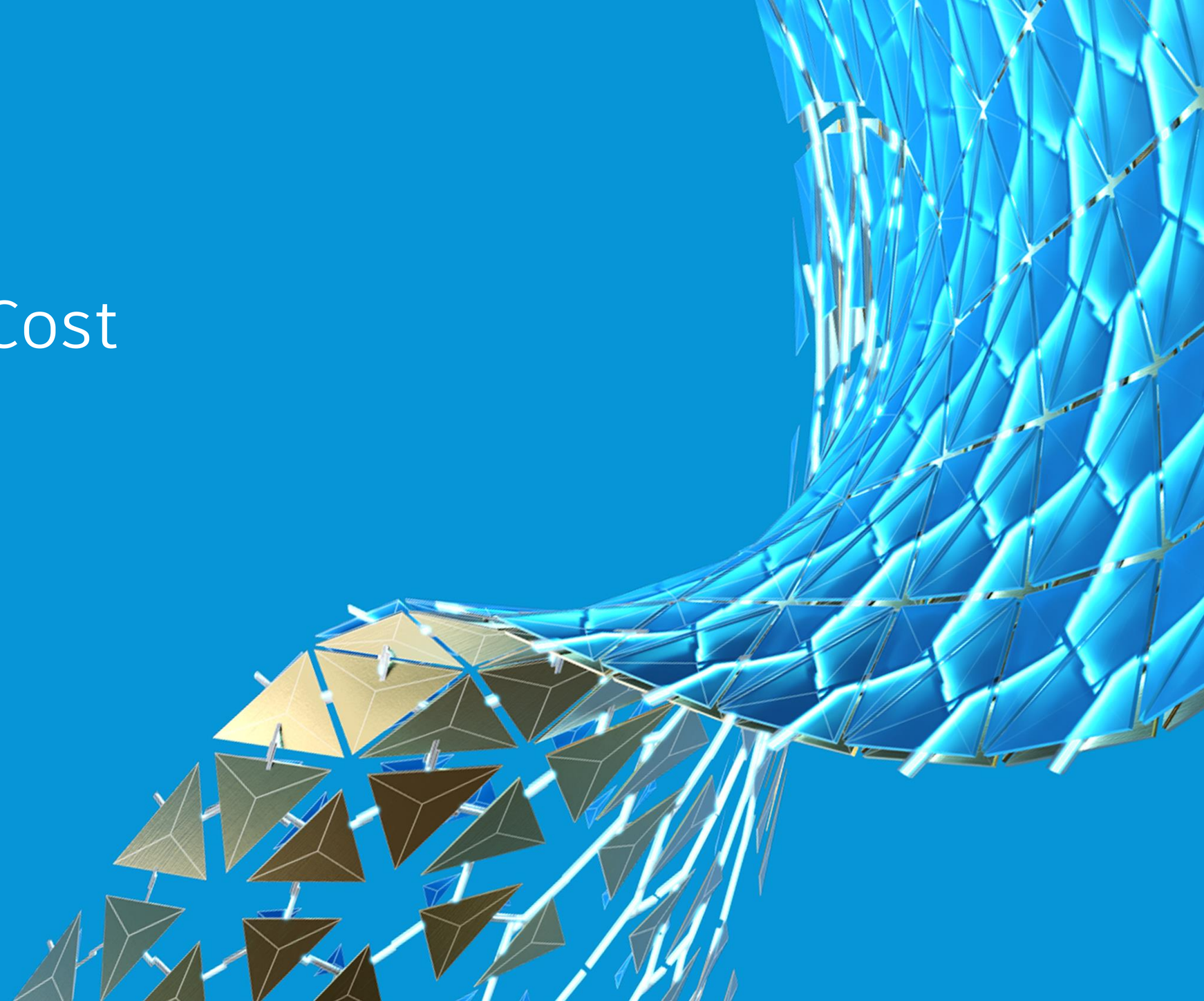
Technology behind zapper

Database	MSSQL
UI	nativ iOS, nativ Windows, Web-based, React, Redux, TypeScript
API	.NET core, Entity Framework, GraphQL
CAD	Autodesk Forge + BIM 360 Docs
ERP	Microsoft Dynamics 365



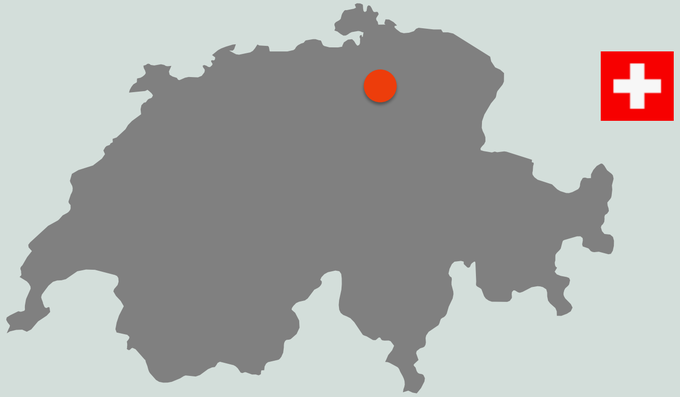
eBKP-h

Construction Cost Classification



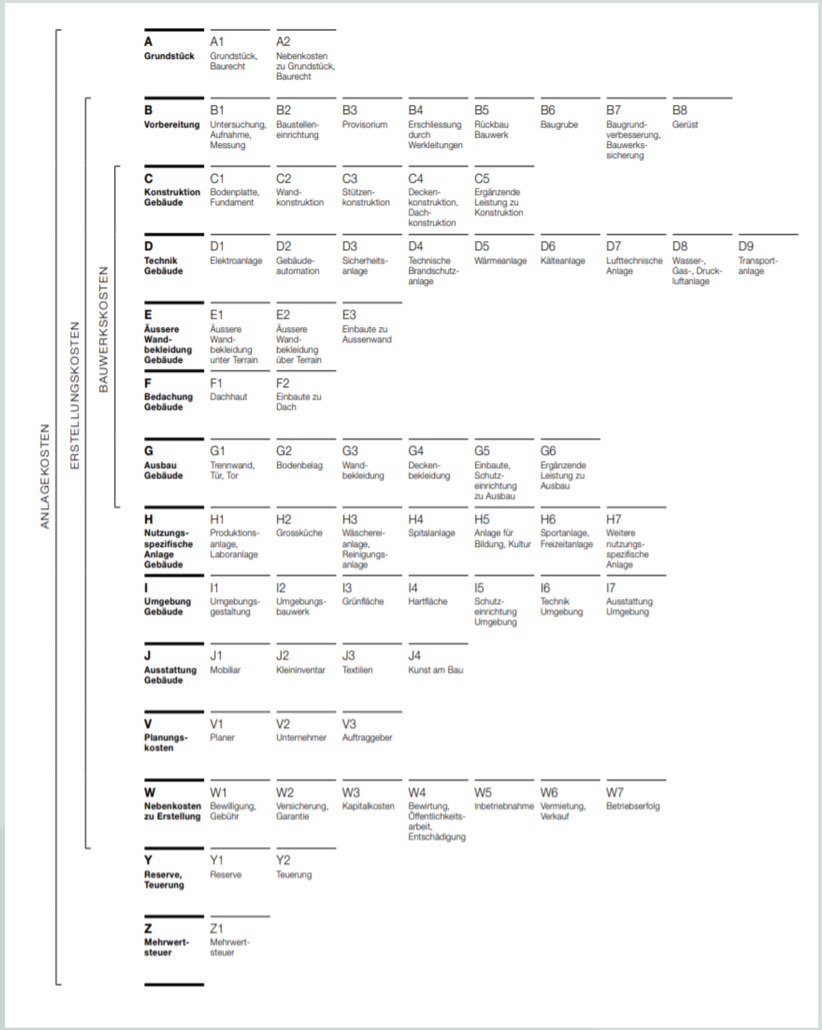
CRB + eBKP-H Gate

CRB – Standards für Bauwesen
Steinstrasse 21
Postfach, 8036 Zürich
T +41 44 456 45 45
M info@crb.ch



© Vemaps.com

Construction Cost Classification eBKP-H



Cost calculation for building construction eBKP-H Swiss Standard

Main group
C Building structure

Strategical Planning
Estimate of financial requirements

Element group
C 2 Structural wall

Pre-studies
Rough cost estimate

Element
C 2.1 External wall

Pre-project
Estimate of costs

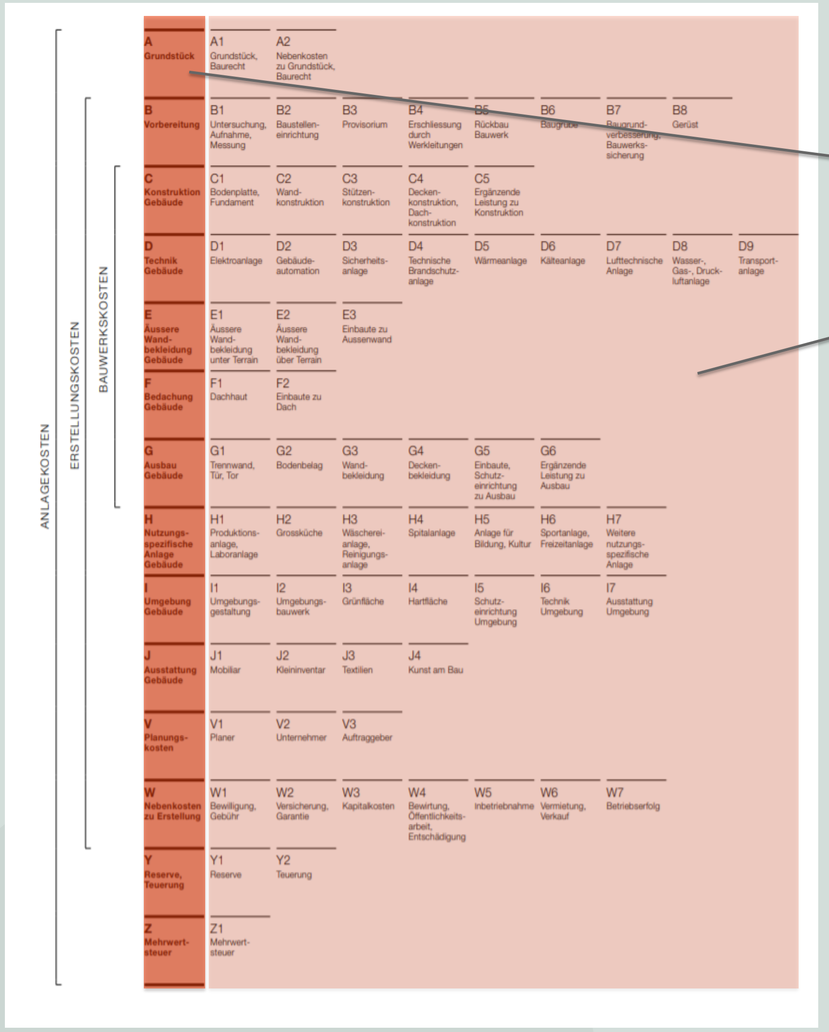
eBKP-Gate BIM CRB Standard

Subelement
C 2.1.001 Concrete wall

Component
C 2.1.001.007 Concrete wall; thickness; 0,25; m

Construction project
Quantity Take-off
Cost calculation
Model-Based tendering
Model-Based offering

Construction Cost Classification eBKP-H



Cost calculation for building construction eBKP-H Swiss Standard

Main group
C Building structure

Strategical Planning
Estimate of financial requirements

Element group
C 2 Structural wall

Pre-studies
Rough cost estimate

Element
C 2.1 External wall

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Estimate of costs

eBKP-Gate BIM CRB Standard

Subelement
C 2.1.001 Concrete wall

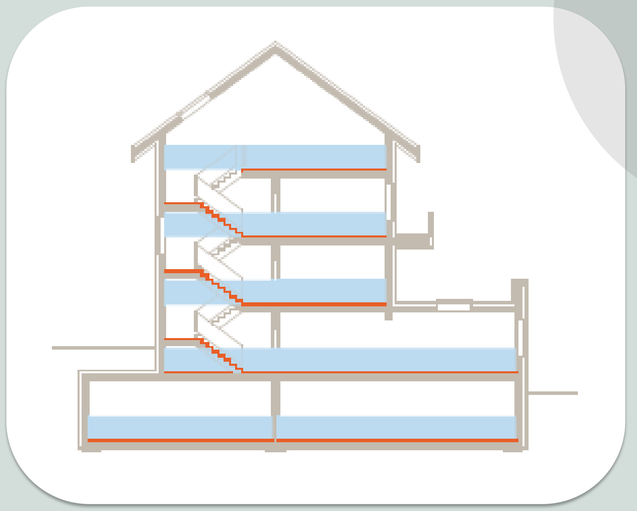
Component
C 2.1.001.007 Concrete wall; thickness; 0,25; m

Construction project
Quantity Take-off
Cost calculation
Model-Based tendering
Model-Based offering

eBKP in CAD

G 2.2
Floor finish

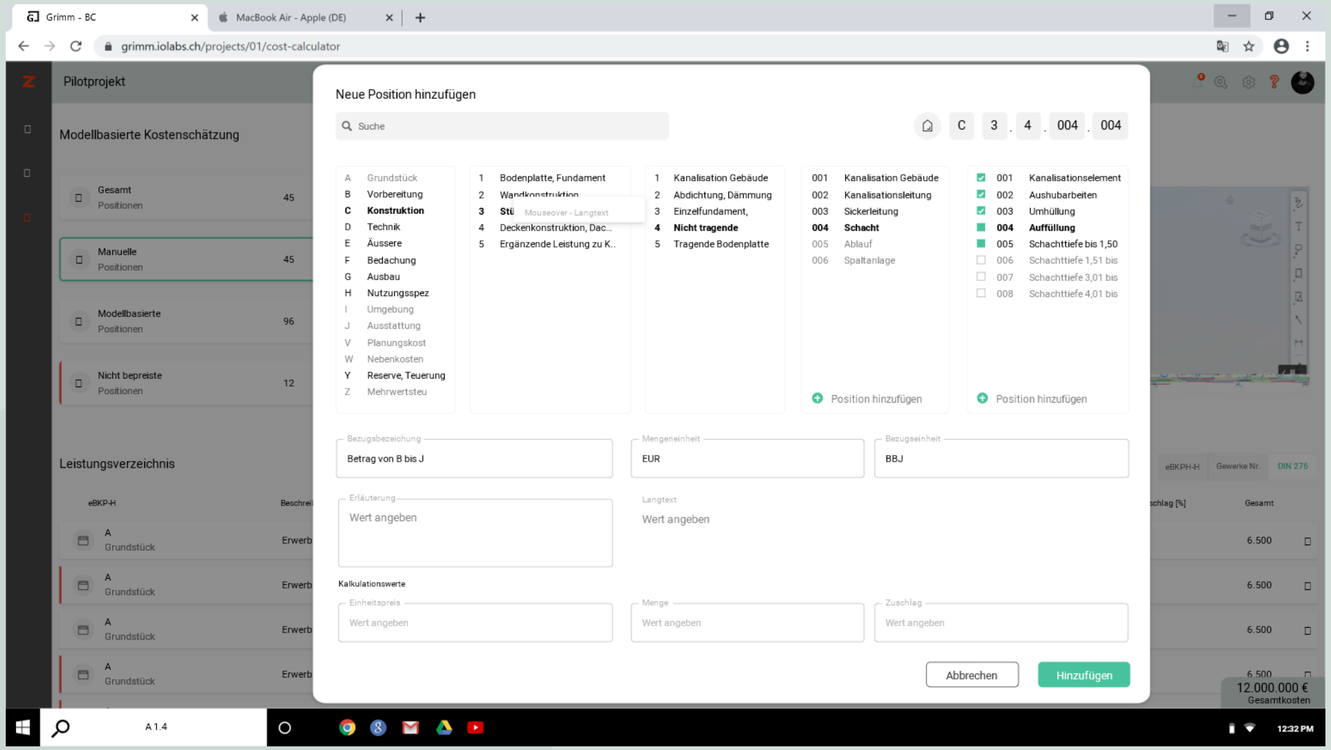
ifcEntity	ifcSpace
PredefinedType	INTERNAL
Qto_Set	Qto_SpaceBaseQuantities
Property	NetFloorArea
ifcEntity	ifc Covering
PredefinedType	FLOORING
MaterialLayer.Category	FINISH

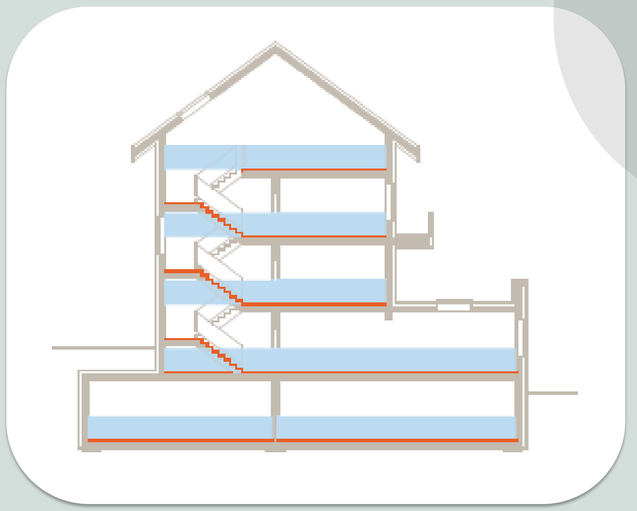


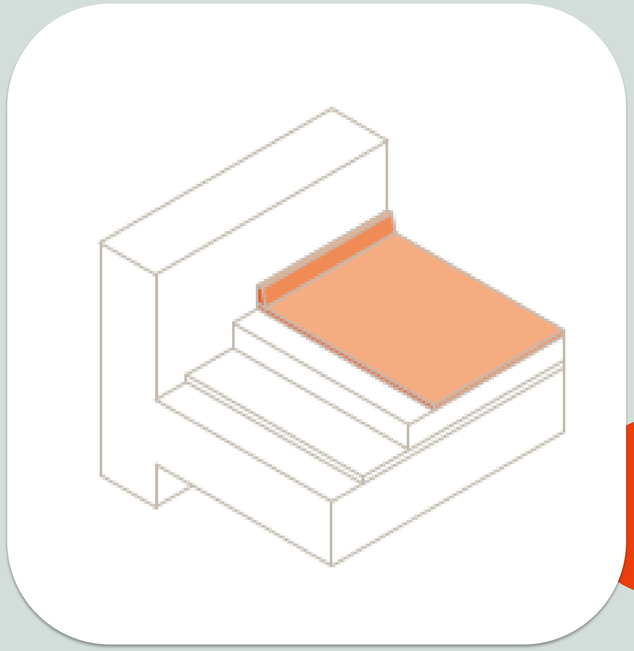
eBKP in CAD

G 2.2
Floor finish

ifcEntity	ifcSpace
PredefinedType	INTERNAL
Qto_Set	Qto_SpaceBaseQuantities
Property	NetFloorArea
ifcEntity	ifc Covering
PredefinedType	FLOORING
MaterialLayer.Category	FINISH







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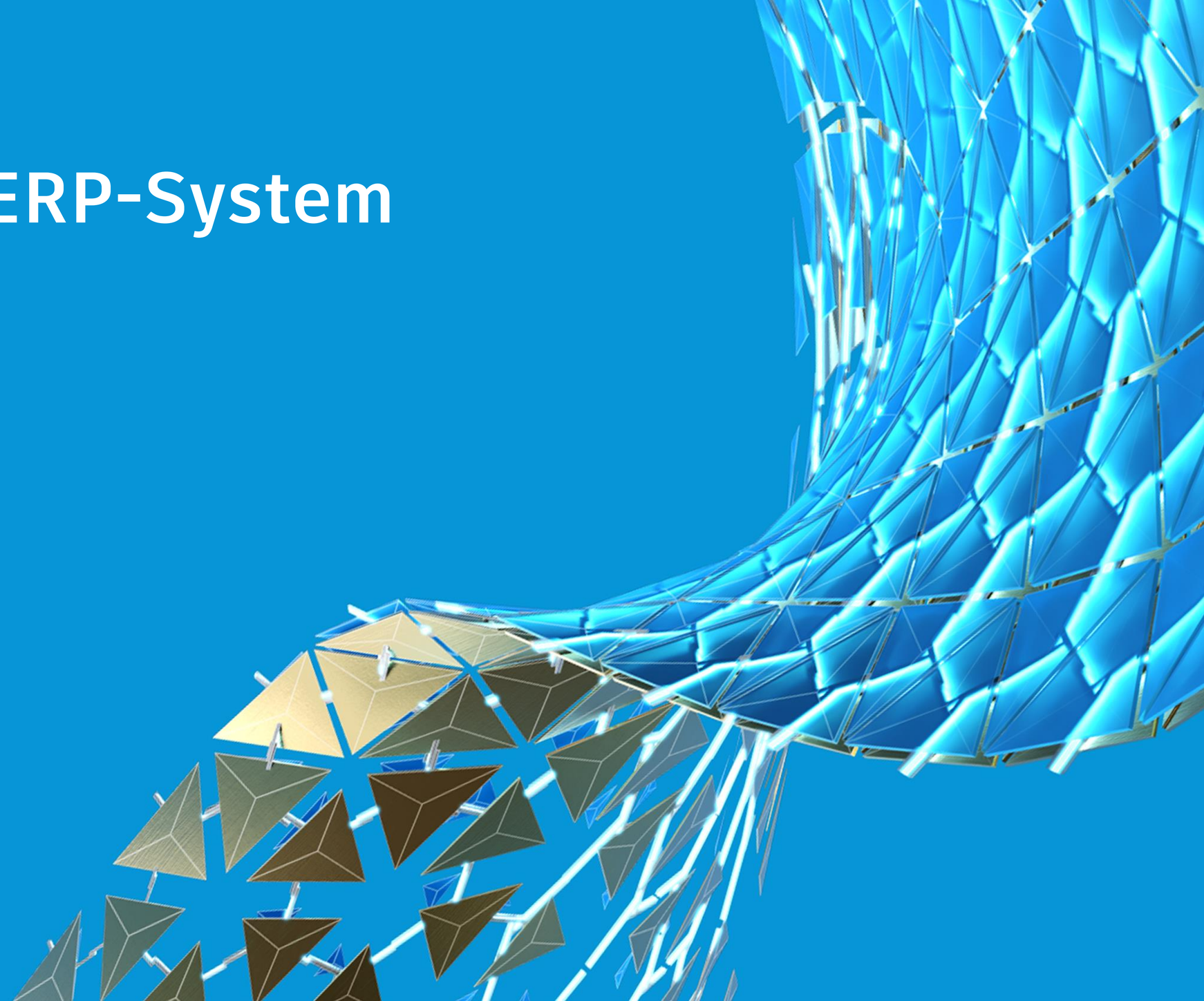
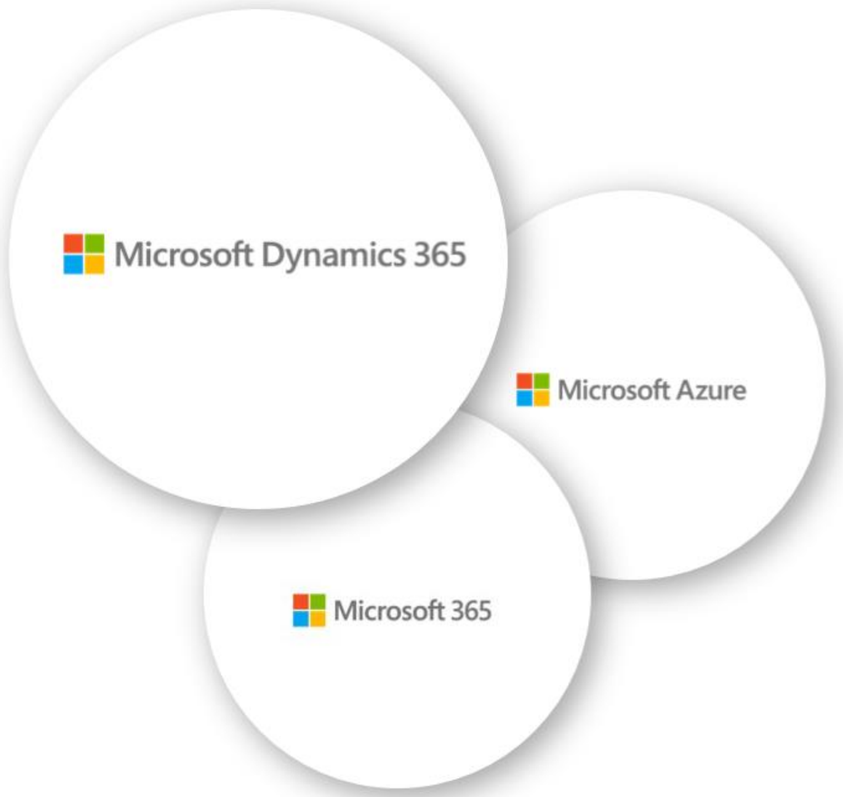
Interface to ERP-System



Microsoft Cloud

Marketing
Sales
Commerce
Service
Operations
Finance
Talent



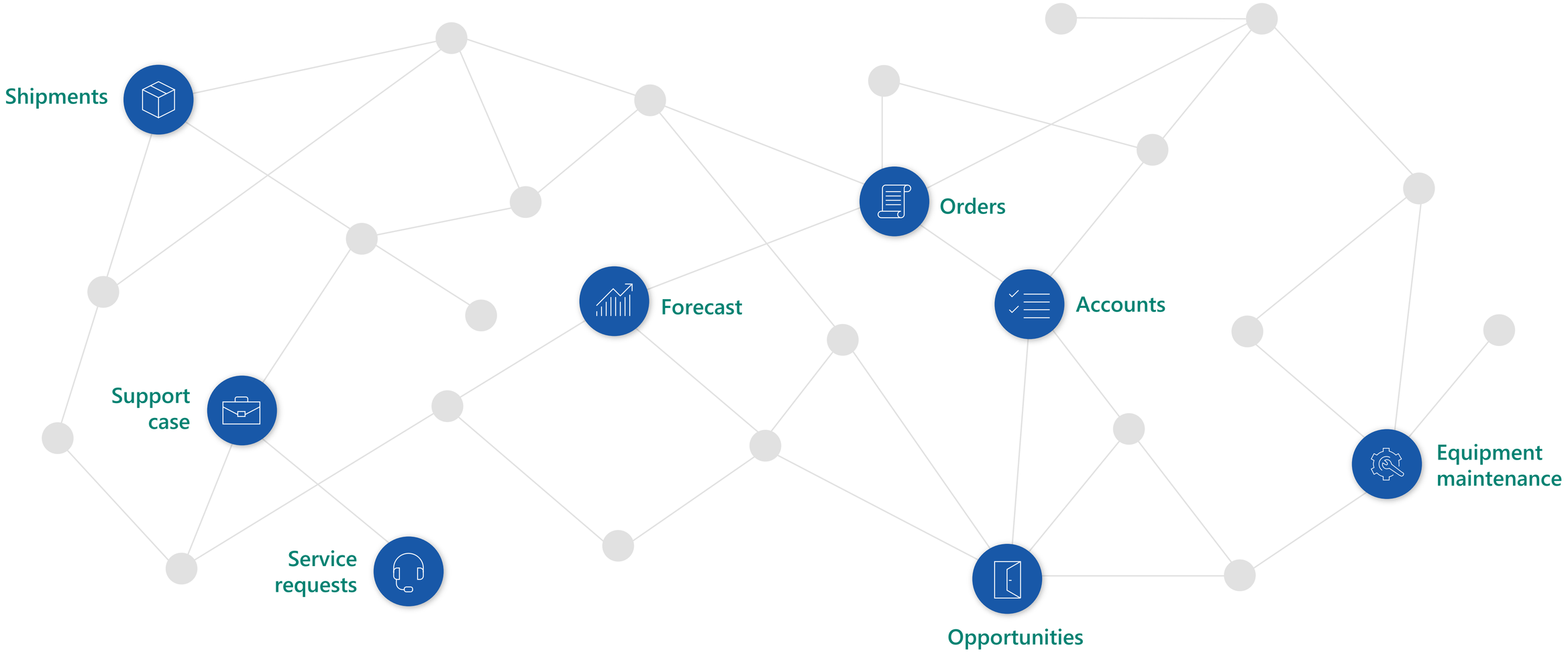
AI + Machine Learning
IoT
Analytics
Developer tools
Databases
Virtual server
Compute
Cognitive Services

Windows 10
Office 365

UNIFIED PROCESSES AND DATA

zapper

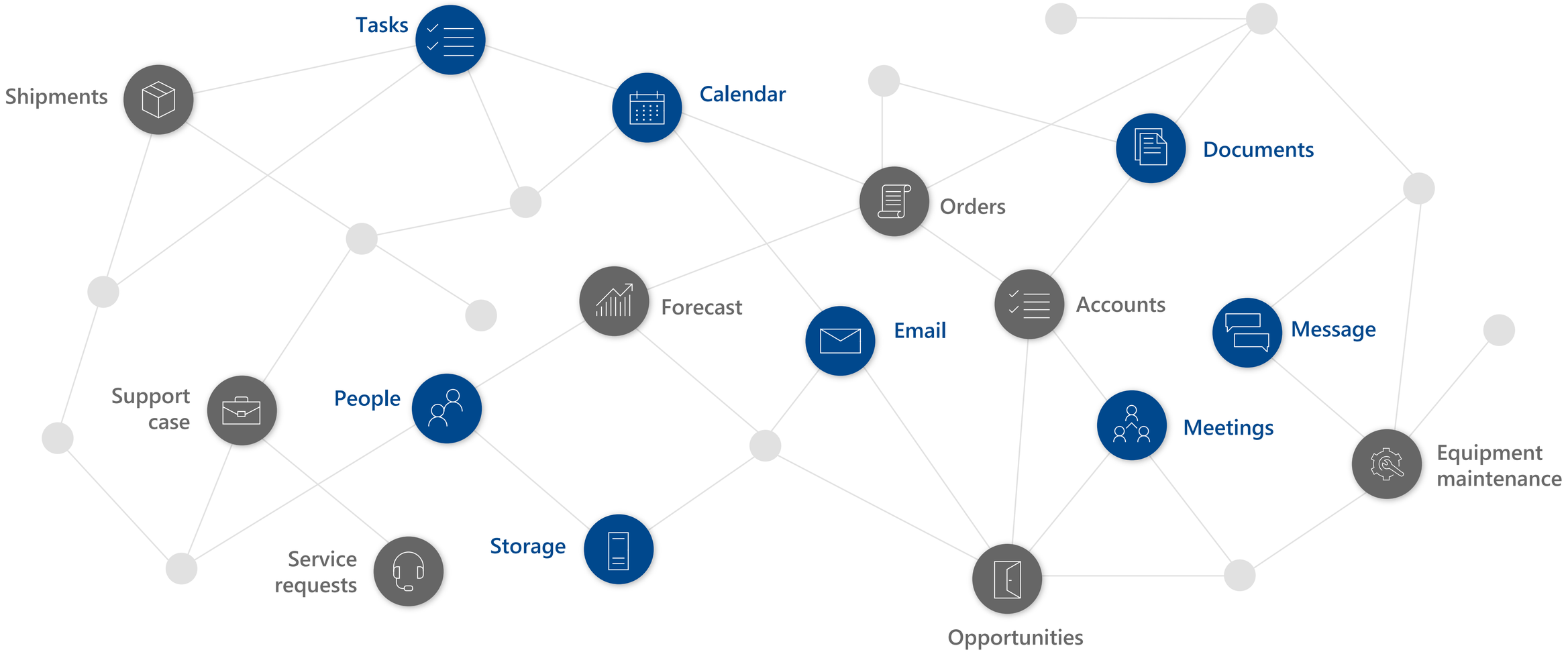
Dynamics 365



UNIFIED PROCESSES AND DATA

zapper

Dynamics 365 + Office 365

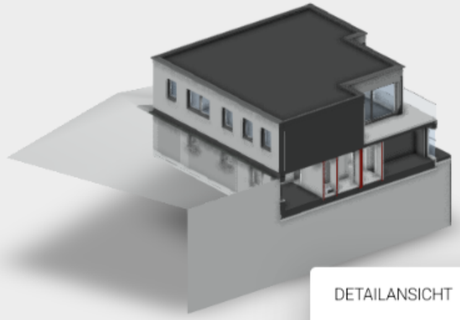


UNIFIED PROCESSES AND DATA

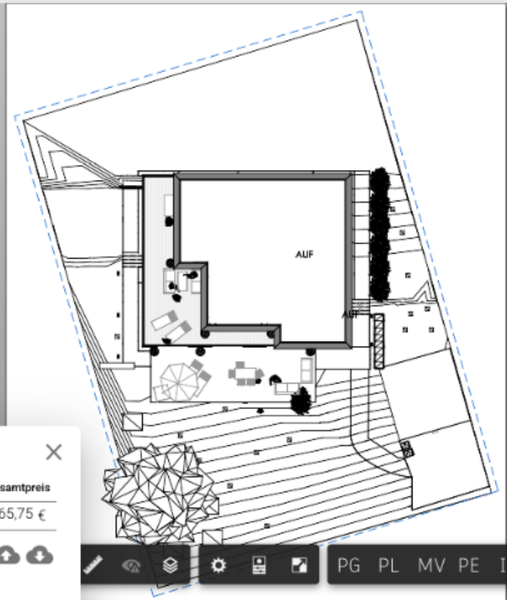
zapper

Dynamics 365 + Office 365 + Zapper

Variante mit Tisch



EP-3.00 - Lageplan



PG PL MV PE IS CP

DETAILANSICHT

eBKP-H	Name	Menge	Einheitspreis	Preis	Zuschlag	Gesamtpreis
G_C 2.1.003.100	Mauerwerk, Planziegel, d=36,5 cm	56	257,485 €	14419,16 €	13,5 %	16365,75 €

Bezugseinheit
1 m3

eBKP-H	Name	Menge	Einheit	Li.-Preis	Zuschlag	Einheitspreis
01.02.0014	Lorem	0.25	m3	77	12	89.47
01.02.0015	Lorem	0.25	St	19	30	53.34

eBKP-H	GEAB						GewerkNr	Preis	Zuschlag	Gesamtpreis
A								0 €	1 €	**1 €**
A 1								0 €	1 €	**1 €**
A 2	Nebenkosten zu Grundstück, Baurecht	Varia	0	m³	1 €			0 €	1 €	**1 €**
B	Vorbereitung	Varia	0	m³	1 €			0 €	1 €	**1 €**
C	Konstruktion Gebäude	Varia	452.82	m³	1 €			452.82 €	1 €	**453.82 €**
D	Technik Gebäude	Varia	0	m³	1 €			0 €	1 €	**1 €**
E	Äussere Wandbekleidung Gebäude	Varia	36.69	m³	1 €			36.69 €	1 €	**37.69 €**
F	Bedachung Gebäude	Varia	0	m³	1 €			0 €	1 €	**1 €**
G	Ausbau Gebäude	Varia	179.64	m³	1 €			179.64 €	1 €	**180.64 €**
H	Nutzungsspezifische Anlage Gebäude	Varia	0	m³	1 €			0 €	1 €	**1 €**
I	Umgebung Gebäude	Varia	0	m³	1 €			0 €	1 €	**1 €**
J	Ausstattung Gebäude	Varia	0	m³	1 €			0 €	1 €	**1 €**
V	Planungskosten	Varia	0	m³	1 €			0 €	1 €	**1 €**
V 1	Planer	Varia	0	m³	1 €			0 €	1 €	**1 €**
V 2	Unternehmer	Varia	0	m³	1 €			0 €	1 €	**1 €**
V 3	Auftraggeber	Varia	0	m³	1 €			0 €	1 €	**1 €**
V 3.1	Auswahlverfahren	Varia	0	m³	1 €			0 €	1 €	**1 €**
V 3.2	Eigentümer	Varia	0	m³	1 €			0 €	1 €	**1 €**
V 3.3	Betreiber	Varia	0	m³	1 €			0 €	1 €	**1 €**
V 3.4	Nutzer	Varia	0	m³	1 €			0 €	1 €	**1 €**

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Current

Data

One Click

Experience

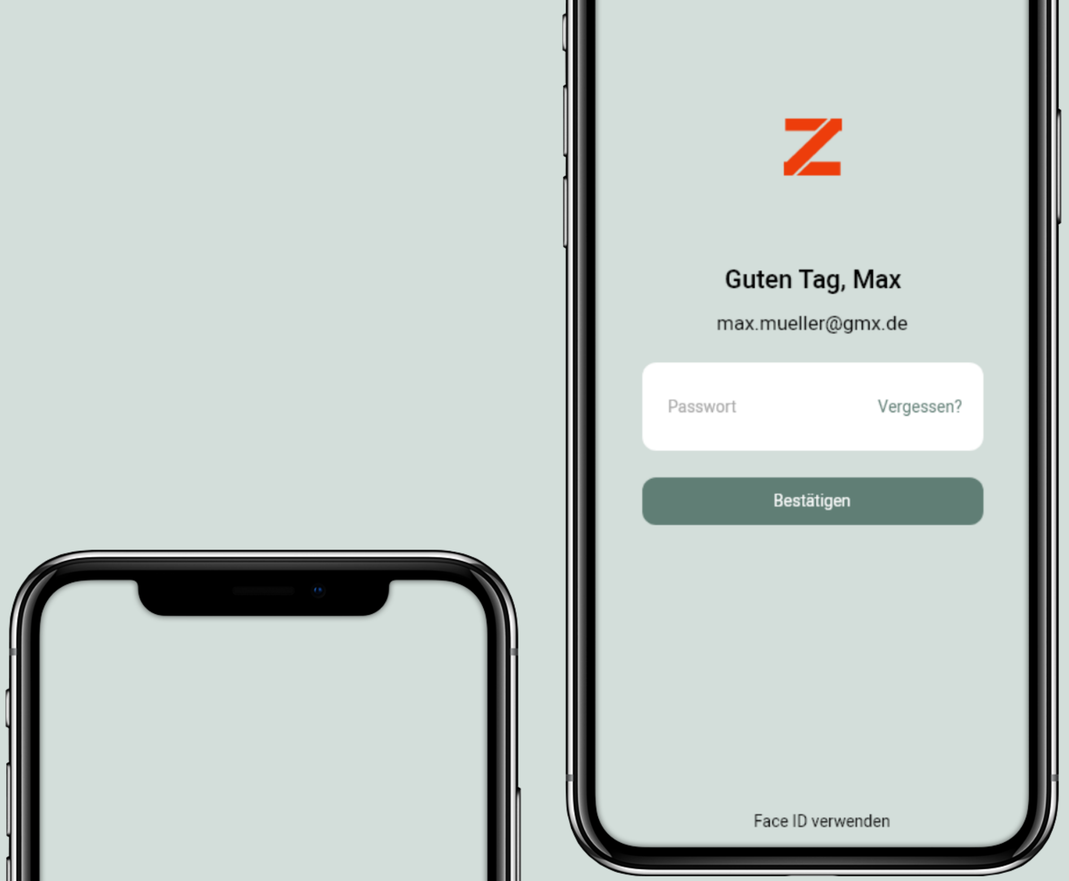
Intuitive

Interface

zapper

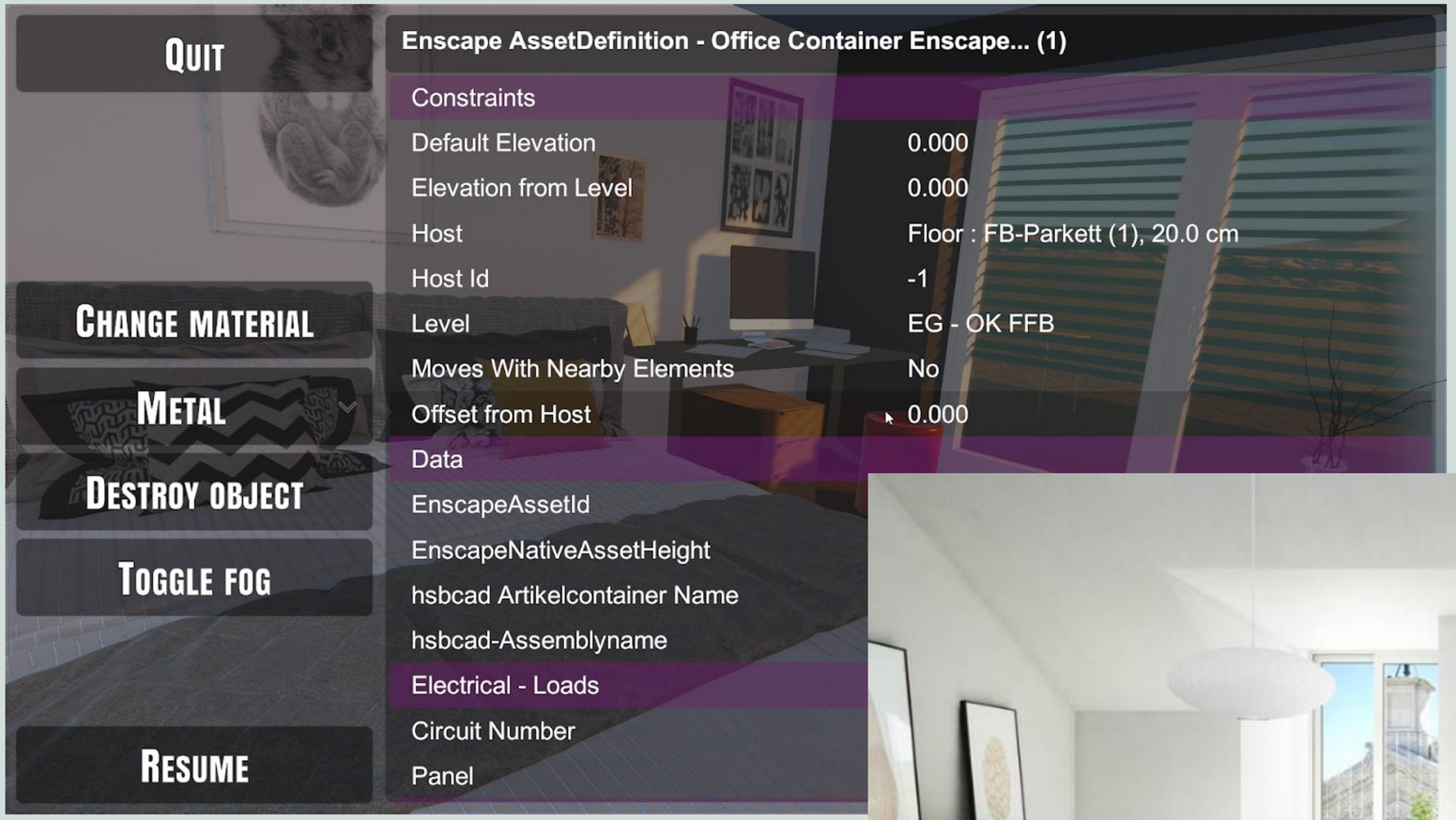
Download on the App Store

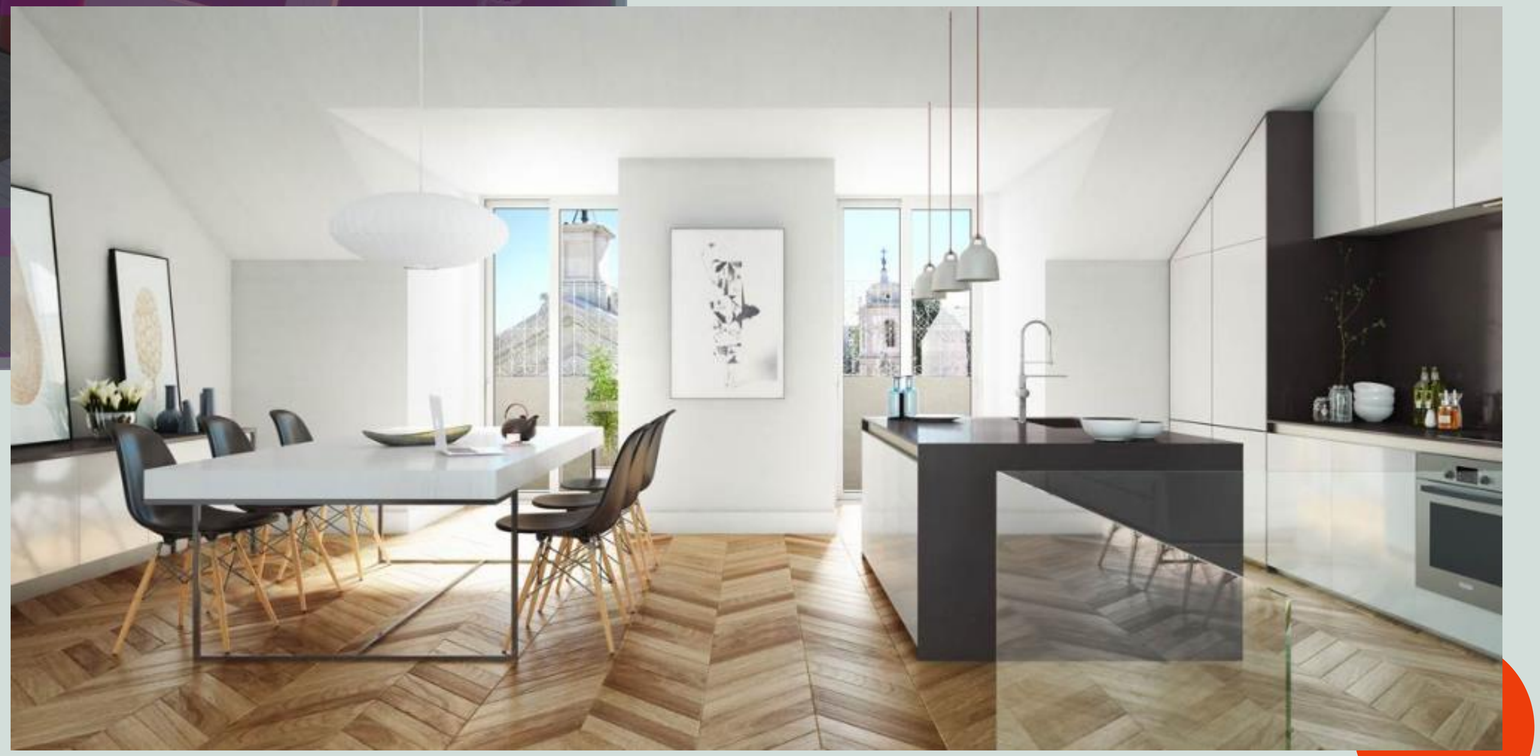
GET IT ON Google Play



Unity - Revit

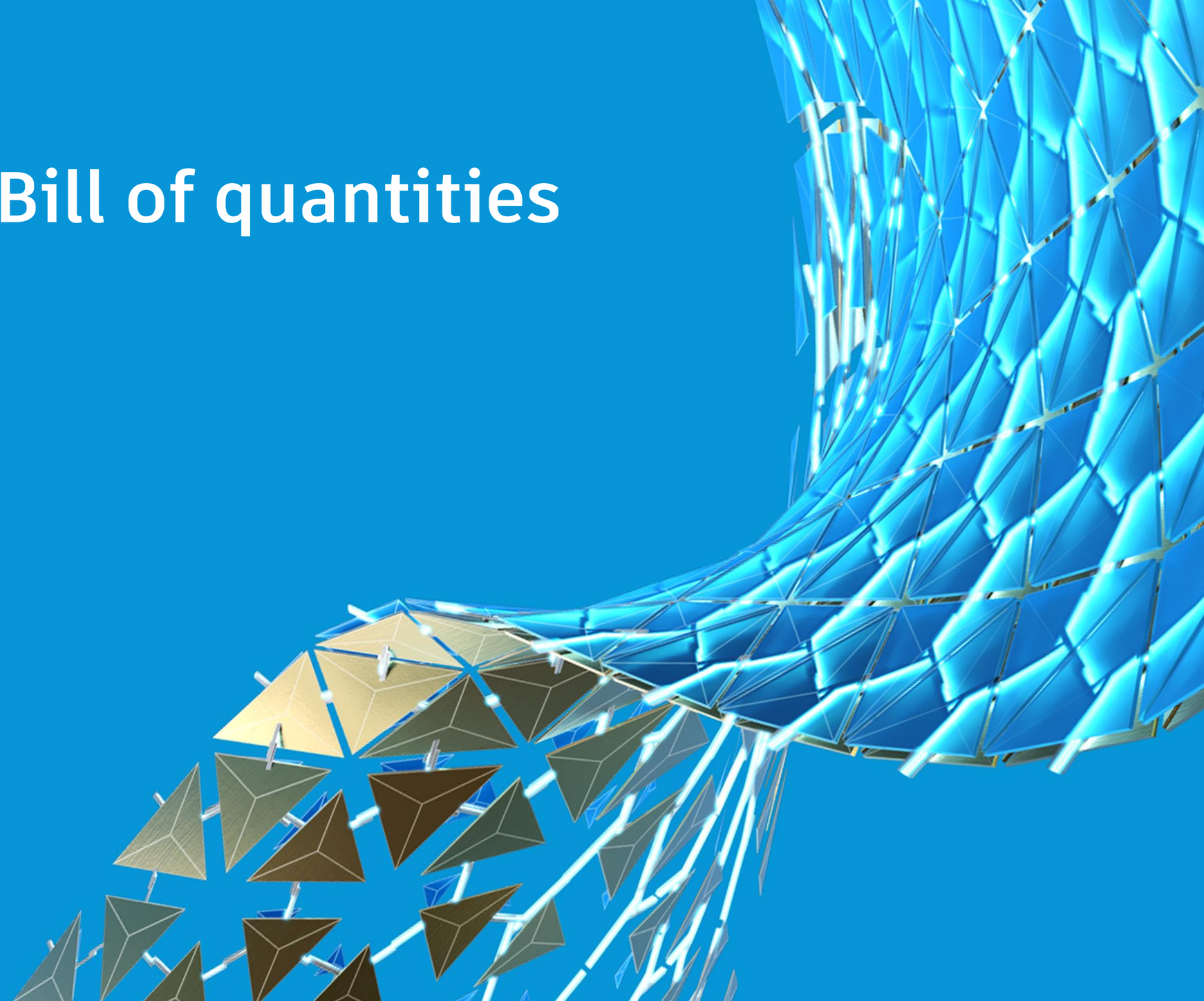
Zapper merges visual quality of Unity game enigine with high CAD performance of Revit



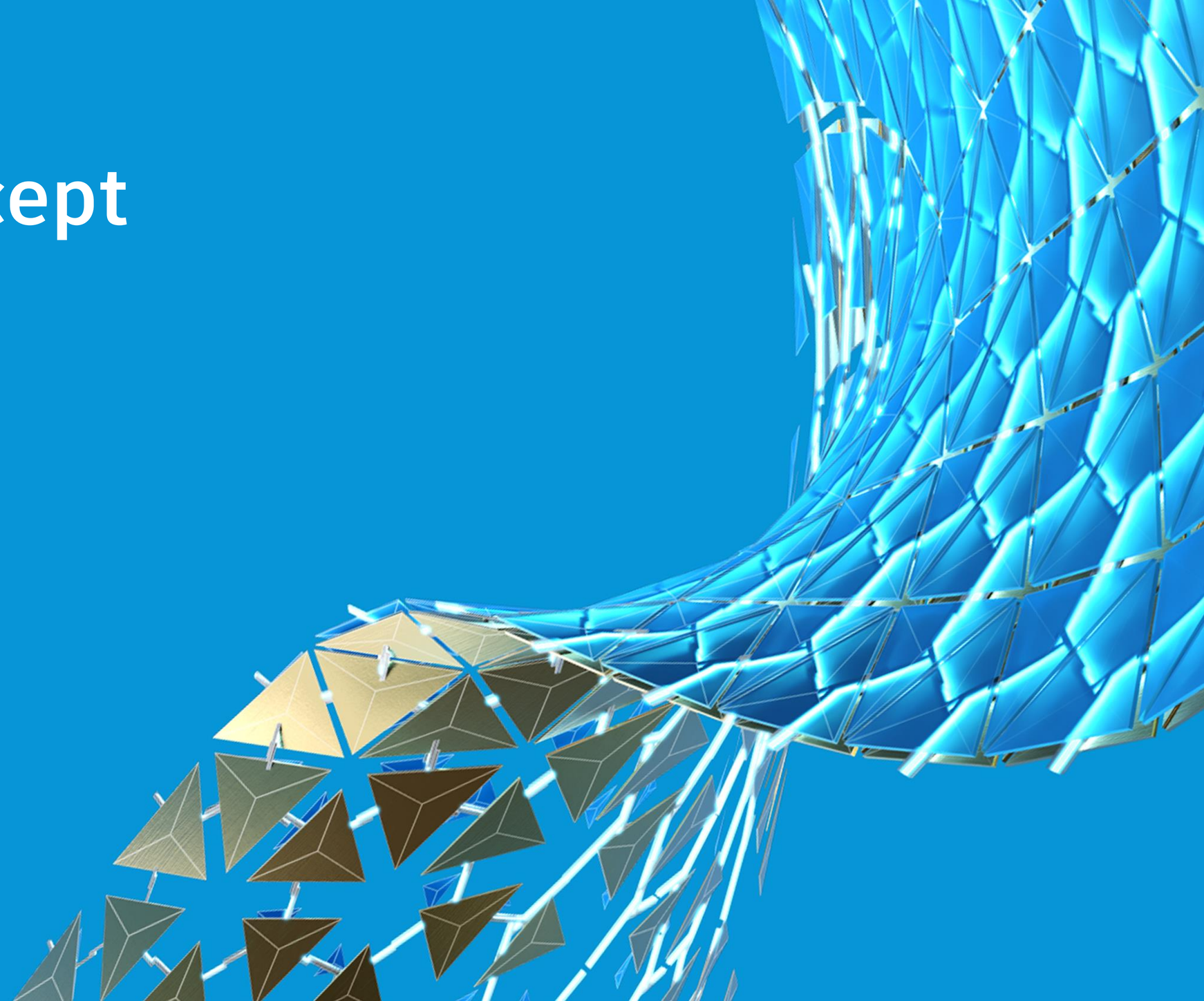


Customer Experience

Live Demo – Bill of quantities

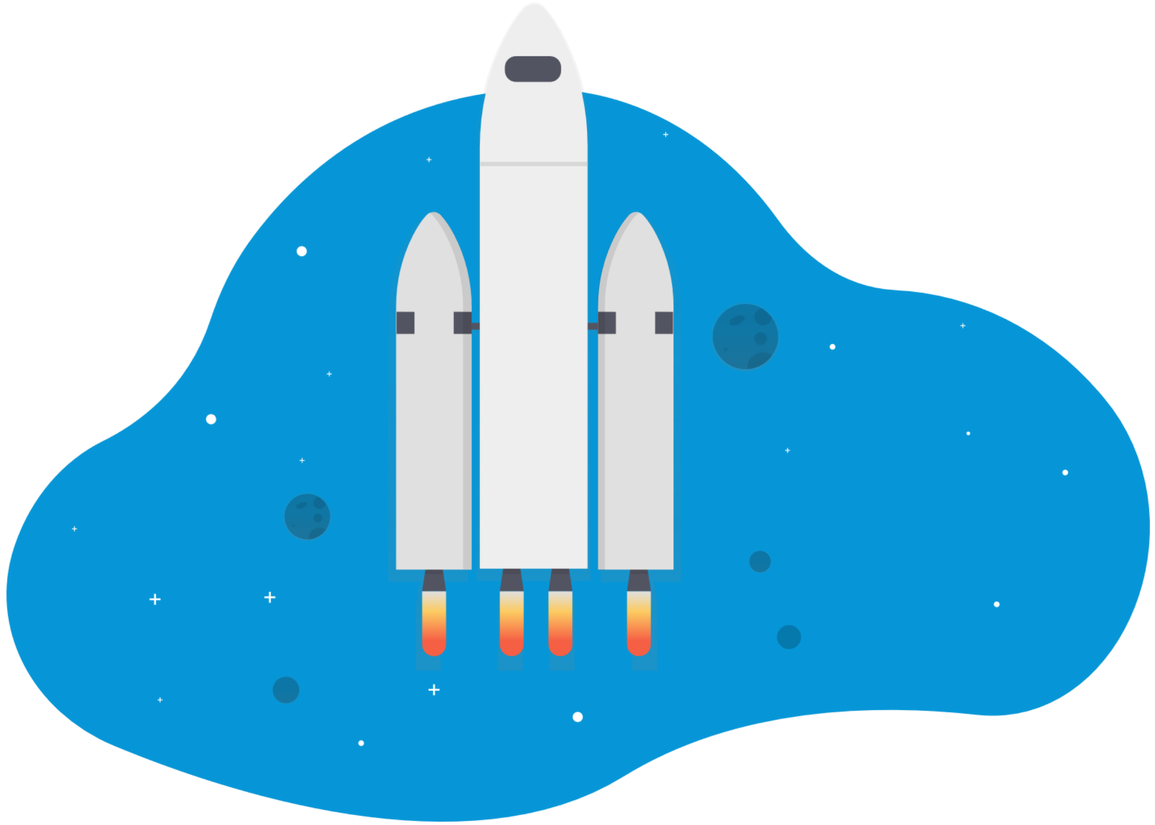


Future Concept



Future Concept

- Algorithmic property search
- Tools for Facility Management with Zapper App
- Prefabrication BIM to CAM
- Construction management
- Configurator (Unity -> Revit)
- IoT service
- Algorithmic property search
- Model Checker
- sUmoo
- ....



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