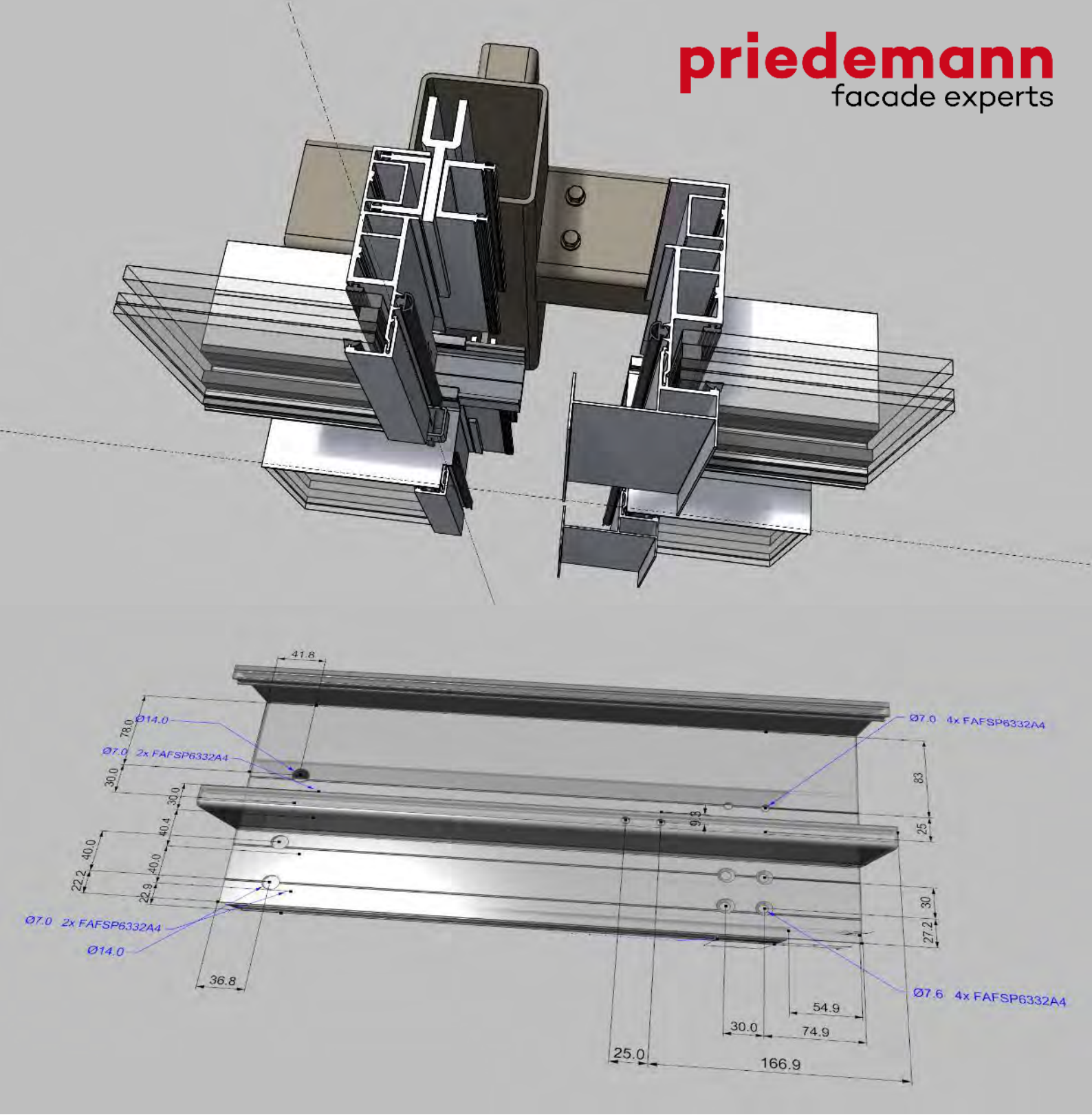



Priedemann Digital Twin

# The efficient support in 3D and BIM for Design, Construction and Production

*Clear concepts. Individual solutions. Suitable tools for every project.*

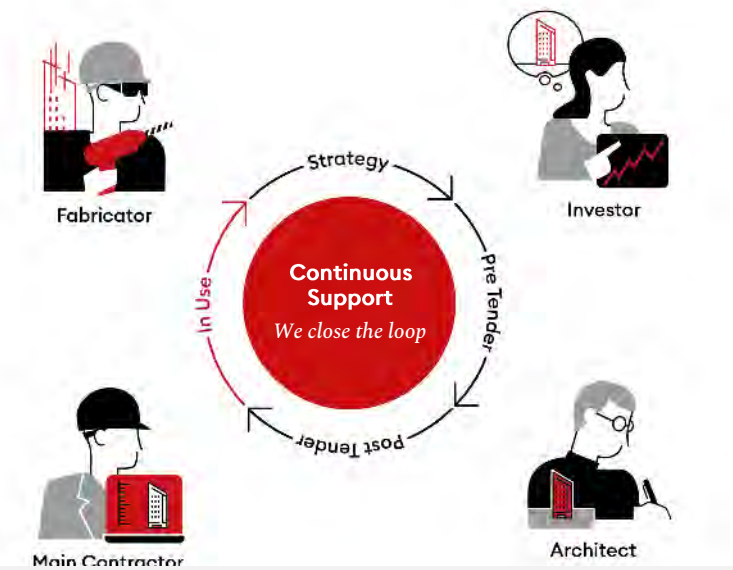
# Continuous Support

*Responsibility means taking responsibility for planning, execution and in use*

At Priedemann, we take care of facade consulting AND engineering. In this way, we close the gaps between planning and execution.

We ensure that the project knowledge we have gained is transferred to the construction phase. In this way, you can rely on the ONE person responsible for the facade.

With this, we support the architect as design author and generalist on the building site and the client and investor as idea provider, initiator and financier.




## Scope of Services

### Consultancy

**Strategy**
- Architectural Competitions
- Refurbishment Concept
- Feasibility Study
- Project-/Peer Review
- Technical Due Diligence

**Pre-Tender**
- Project Objectives & Brief
- Concept/Schematic Design
- Detailed/Developed Design
- Technical/Construction Design
- Specs/Tender Docs
- Tender Evaluation

**Post-Tender**
- Design Compliance Control
- Mock-Up Association
- Execution Compliance Control
- Approval of As-Built Docs
- Variation Claim Evaluation
- Handover

**In Use**
- Monitoring
- Defect-/Failure Investigation

### Engineering

**Strategy**
- Factory Layout
- Prequalification

**Pre-Tender**
- Bidding Stage Association
- Value Engineering

**Post-Tender**
- Construction Objectives & Brief
- System/Concept Design
- Mock-Up Development
- Provision/Shop Drawings
- Material Take Off
- Production Documentation
- Installation Documentation
- As-Built Drawings

### Specials

**Sustainability**
- Thermal Building Physics
- Building Acoustics
- Simulations
- Decentralized Energy
- Green Building Certification

**Digital**
- 3D Modelling
- BIM
- Parametric
- Digital Production
- Media Facade

**Sub-Service**
- Maintenance
- Structural Design
- Design-, Cost Optimization
- BMU Concept & Design

**Diverse**
- PI Insurance

### Facade-Lab

**Collaborate**
- Research & Development
- Showroom
- Forum
- Mock-Up & Prototype
- Model Workshop

**Asset Transformation**
- Coordination/ General Transferee
- LEAN Processing
- Purchasing/ Procurement/ Awarding
- Execution/ Realization

# We close the loop.

*With Digital Twin to sustainable buildings! We optimise the building envelope through comprehensive 3D BIM planning, avoid errors, and increase efficiency.*

**Priedemann Digital Twin** supports your project with decades of experience in the digitally supported implementation of facade projects.

We are a strong partner at every stage, from early analysis and design optimisation to models for bidding and contracting to production data development and beyond.

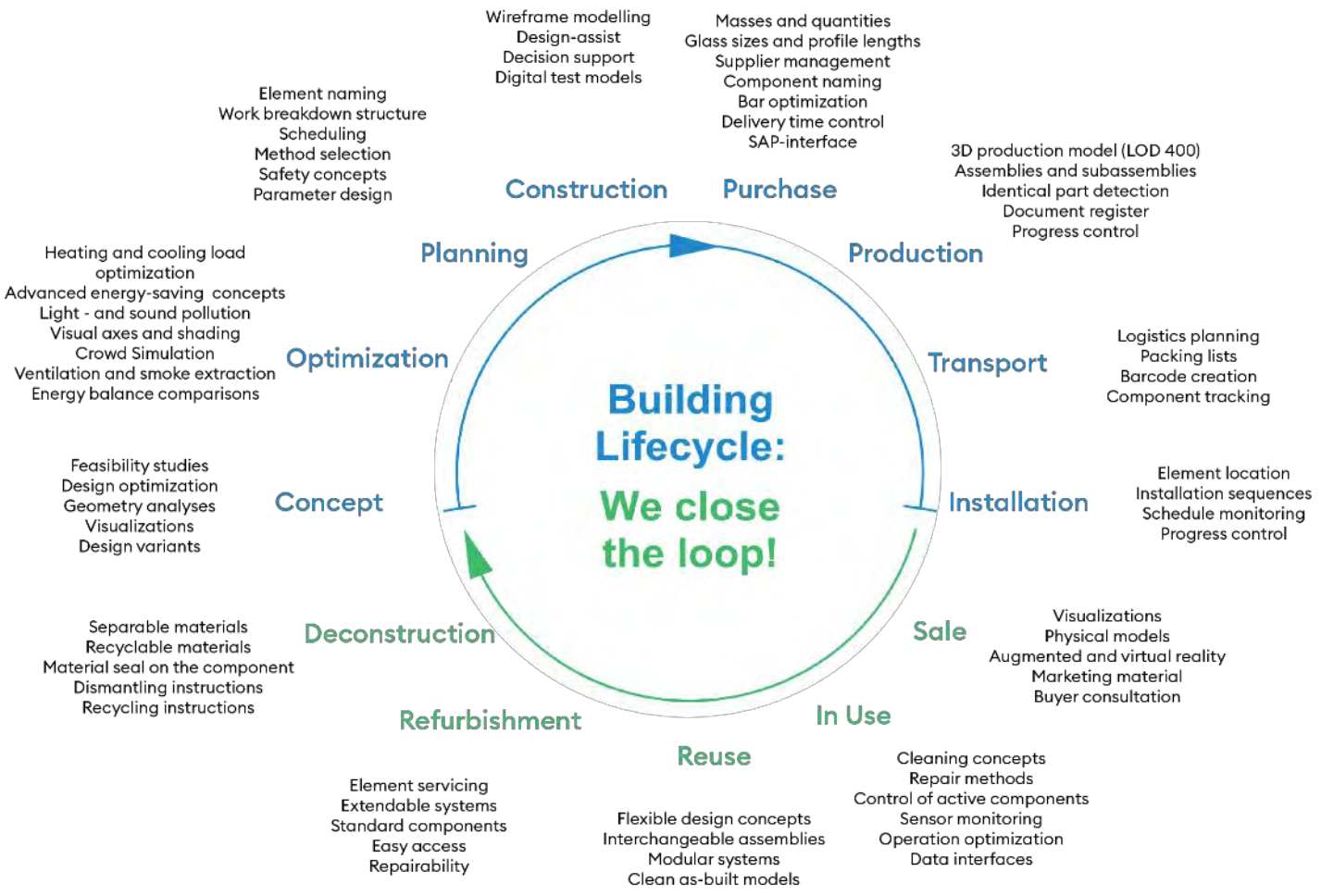
We select the most efficient digital processes for your project and, if required, develop customised methods and tools for optimal implementation of even the most complicated facades.

Through comprehensive planning of all essential aspects of each project, we optimise the entire building lifecycle, including operation, conversion or deconstruction.

Thanks to the best digital planning, you benefit from cost-effective buildings executed with foresight and high quality.

This way, you increase planning reliability, reduce your risk, save energy and time.

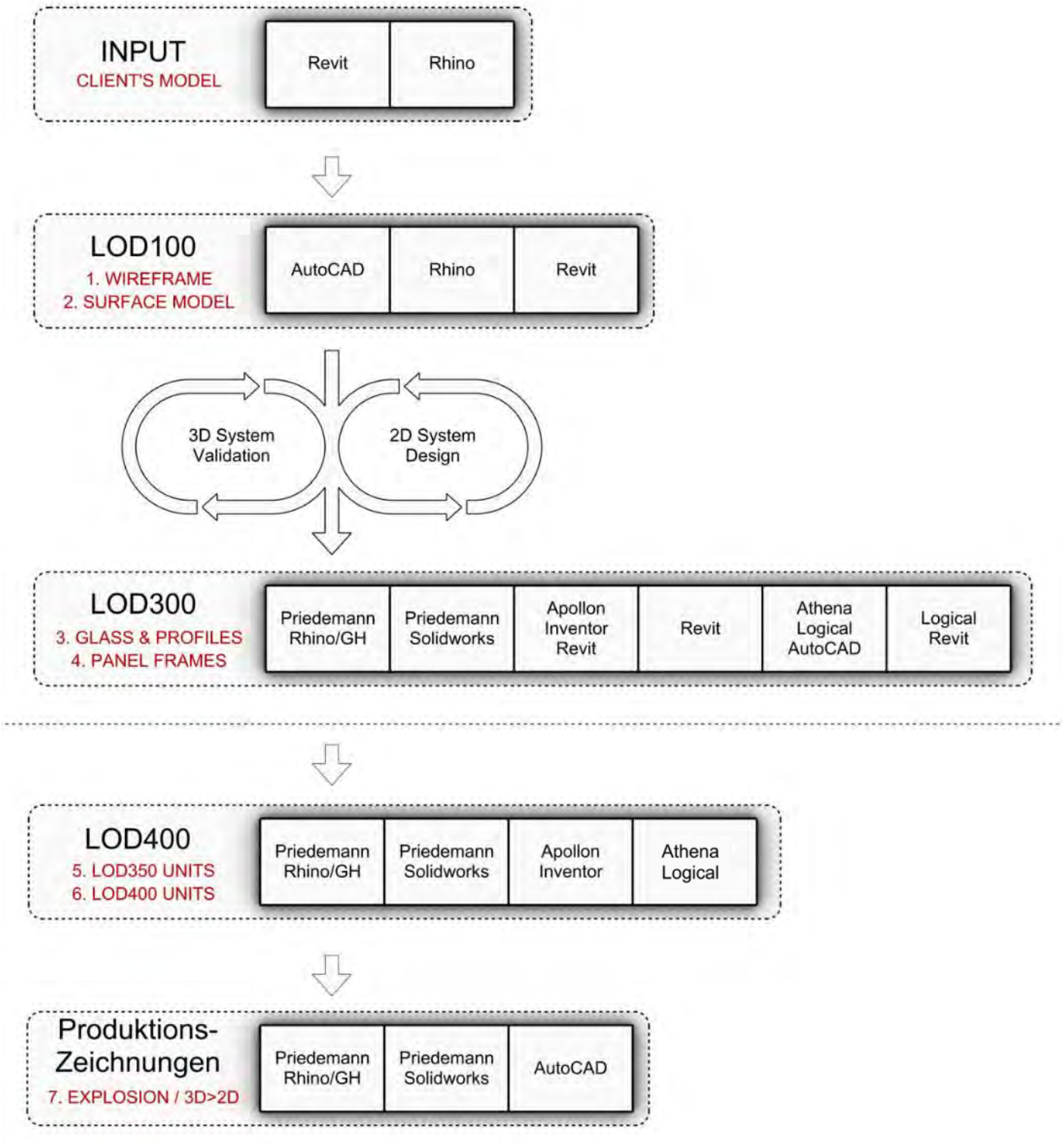
Our methods based on our experience are your profit.

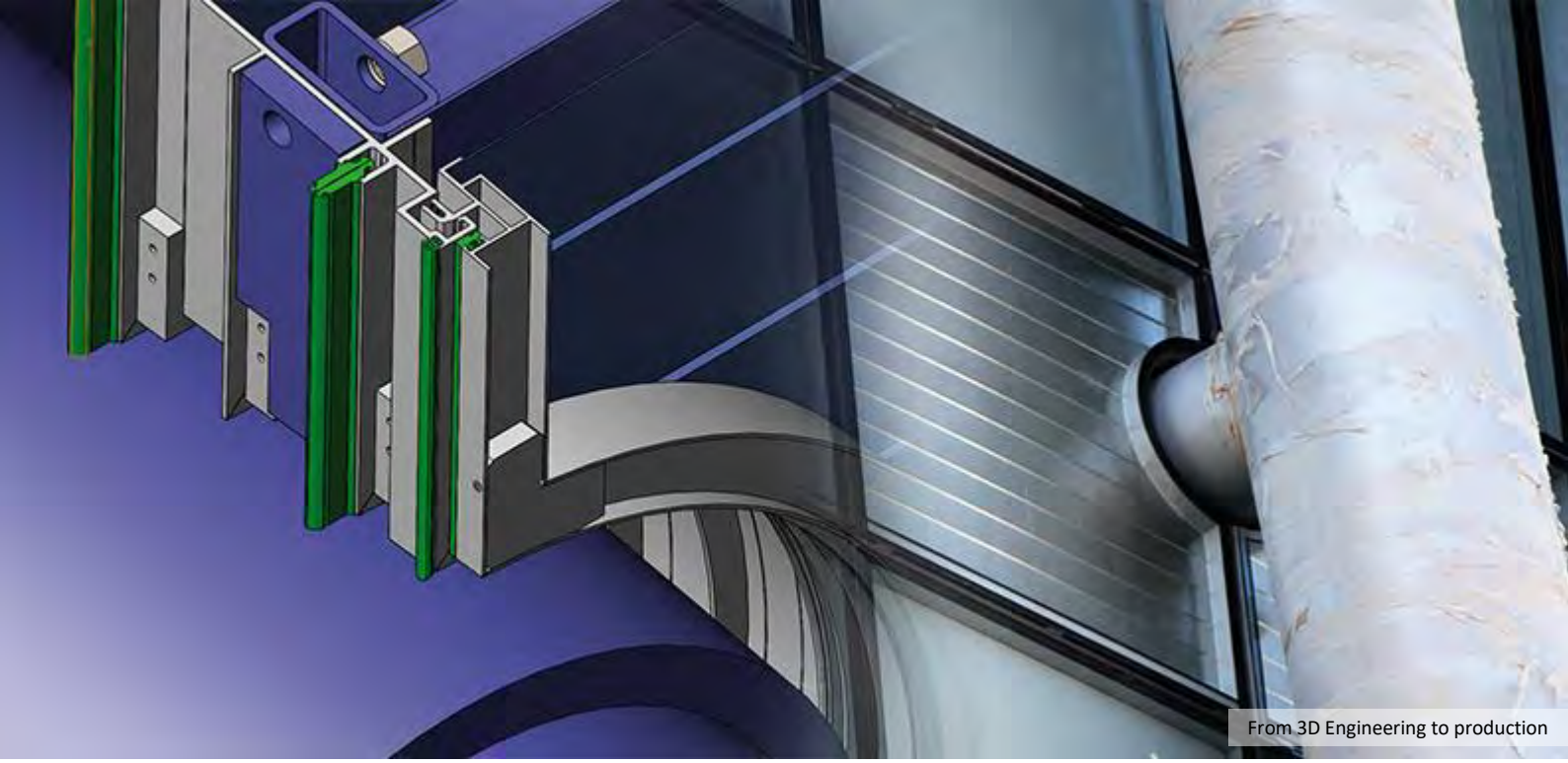


# More than Standard 3D

*For planning and execution: for every phase, the right tool*

**Priedemann Digital Twin** has many years of experience with various software systems and can accurately select the most efficient methods and tools for each project. So whether it's fast analyses, efficient tests and simulations or highly accurate production geometries for complex designs - we know our stuff.





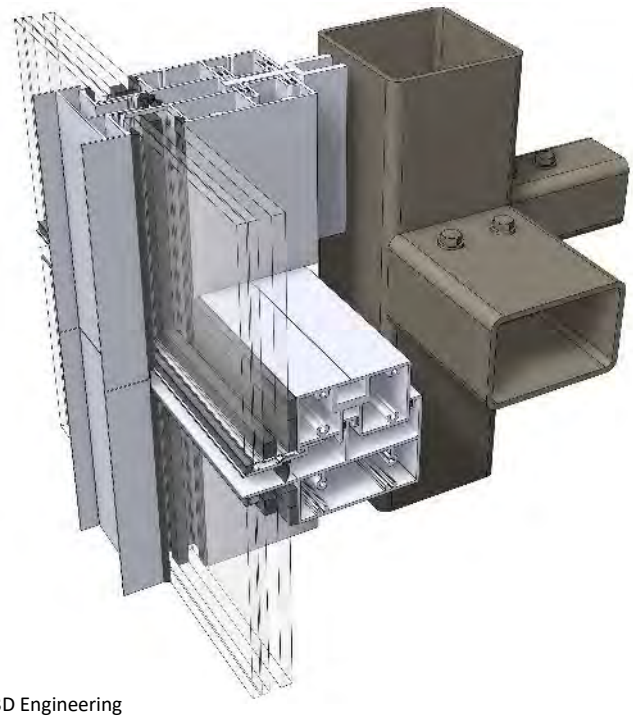
From 3D Engineering to production

# 3D Modelling increases the quality

*Through virtual assembly many errors can be found early and are easily corrected, resulting in better facades.*

We **create**, **analyse** and **optimise** digital 3D models as a basis for the, actual facade production.

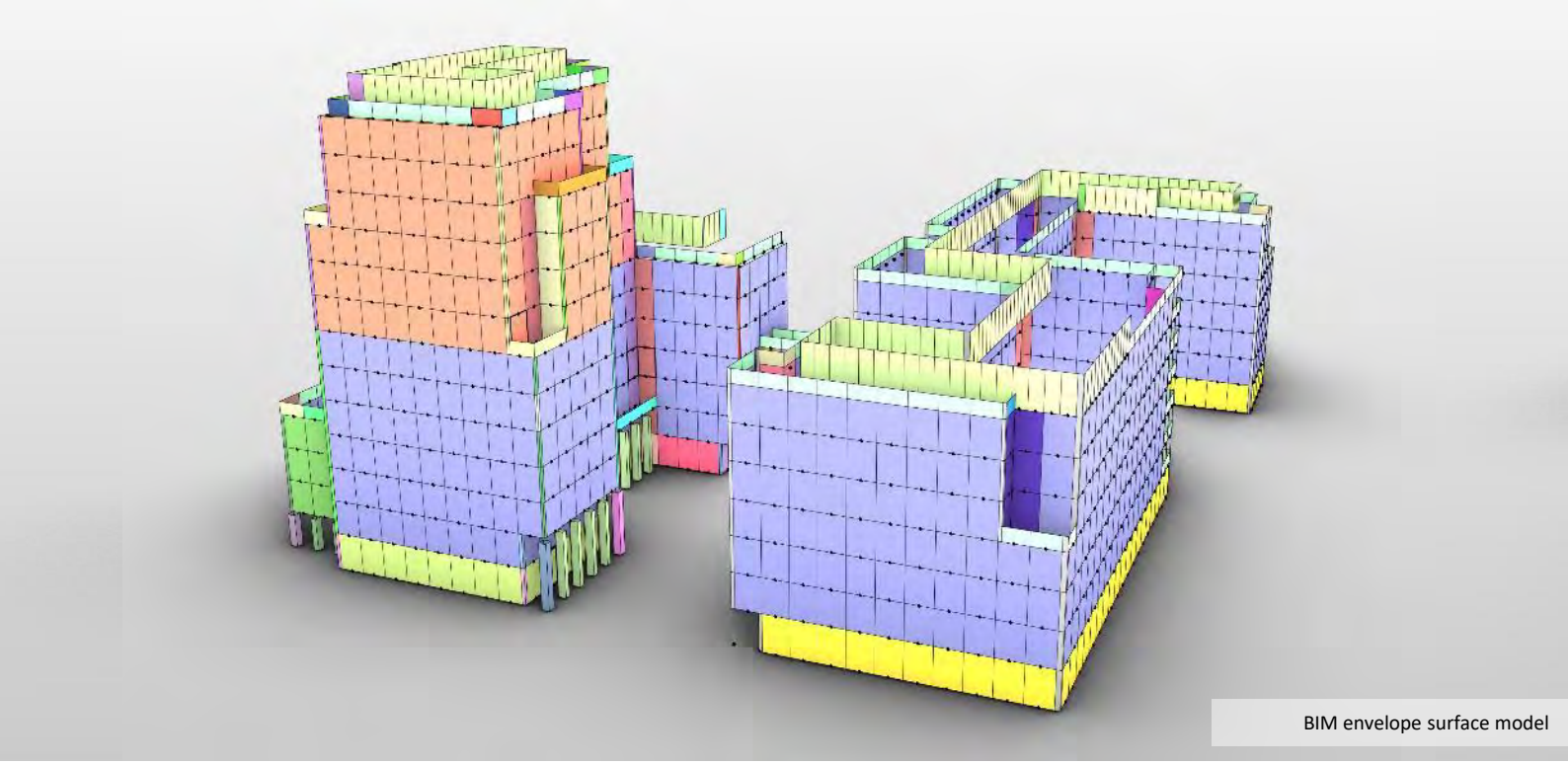
We analyse facade representations created as node or surface models and generate realistic 3-dimensional facade details from them.



3D Engineering

We optimise 3D models, which show an uneconomical differentiation of single elements, to bring the production costs in line with the architectural intent.

- Architectural 3D models are often generated as surface or nodal models. We analyse this data and transform it into realistic volume models, based on which facade components can later be manufactured.
- We provide advice on details that pose particular challenges in implementation or would not be buildable, e.g. if tested systems or approved products are not applicable, or connections would become too small to support the loads.
- To be able to react flexibly to the various system environments, we are equipped with the standard programs such as Rhino, Grasshopper, Revit, AutoCAD, Athena or SolidWorks and are familiar with many other programs.



BIM envelope surface model

# BIM: Building Information Modelling

*Standardized or individual - with databases, strong parameter management and clean interfaces, the vision of BIM becomes a reality.*

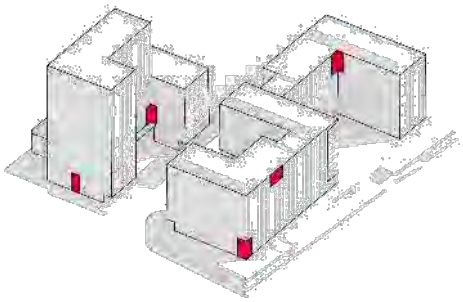
The digital, three-dimensional simulation of the complete building with all the trades involved, including the design, construction and building process, and building operation - that is the idea of BIM. More and more building owners and investors rely on comprehensive planning with the help of BIM models. Priedemann has been involved here from the very beginning.

Parallel to the development of the façade system, we offer additional work on the central BIM model for the façade area to achieve a phase-specific accurate representation of the respective development status in the central 3D model.

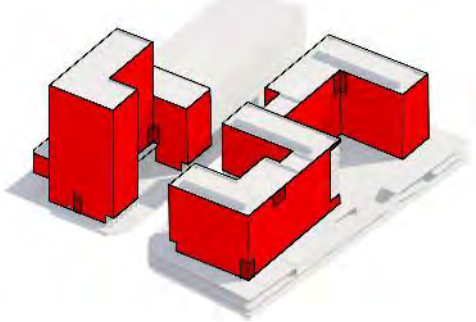
Before engaging in a BIM environment, we coordinate the formats and communication standards for data exchange with the parties involved. Then, during a kick-off meeting, these standards are defined, tested and confirmed. This way we ensure that all information can be transferred to and from the central model. Open communication and early defined goals are crucial for the success of the project.

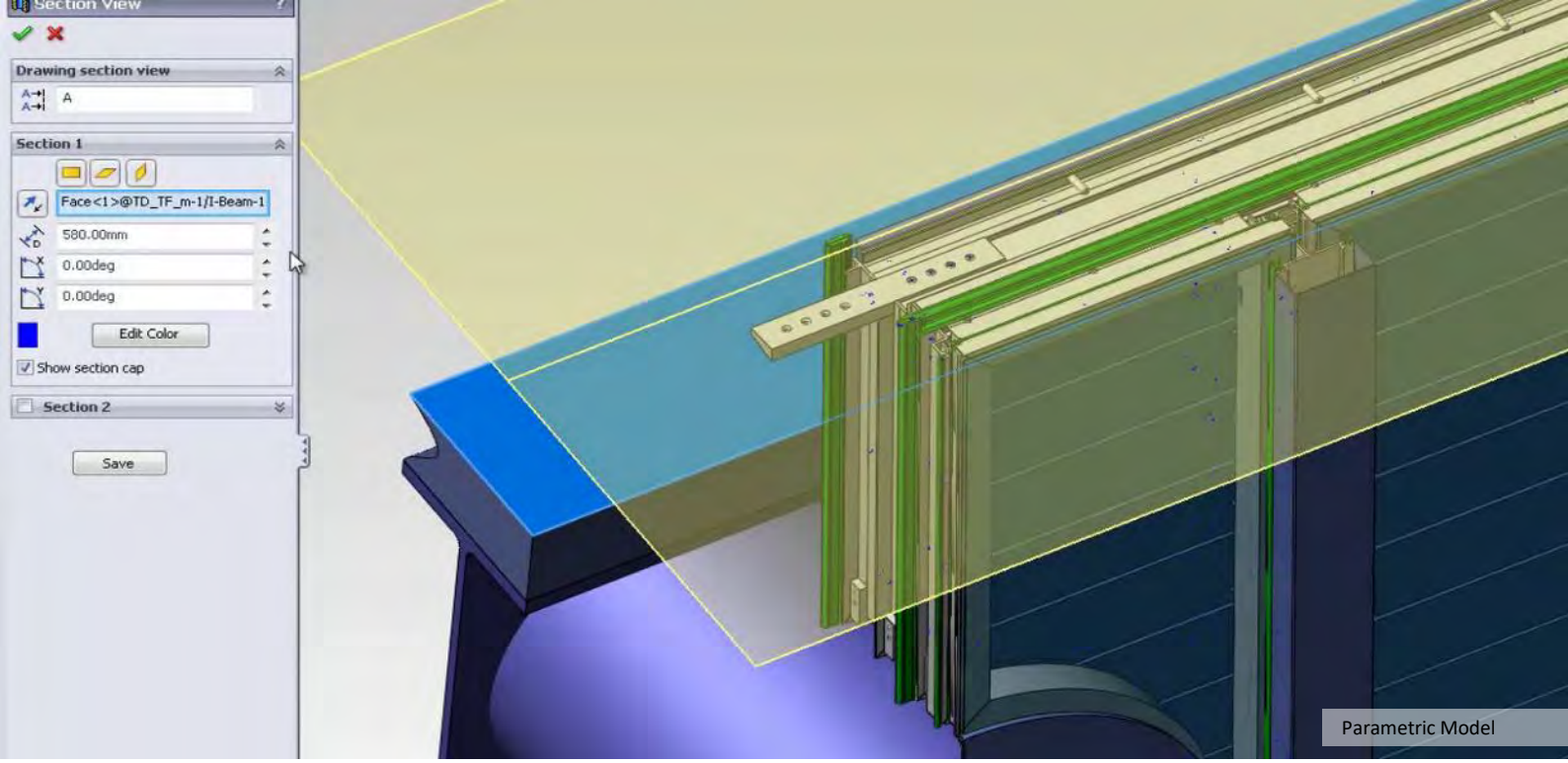
For Revit-based, centrally merged projects, two processing stages are offered.

**Step 1** Constructional 2D through-development and 3D modelling of selected main elements for further processing, sufficient for experienced facade contractors.



**Step 2** Constructive 2D through-development and 3D modelling of the entire facade for maximal risk control and max. Know-how transfer!





Parametric Model

# Parametric Models

*plan all geometries methodically and produce them precisely.*

Parametric models contain any number of parameters relevant to construction and operation and the pure 3D geometry. Parameters are linked to the model in such a way that any changes of one parameter also influence the model geometry immediately.

Whether and how parametrics should be included in the modelling process depends on the individual project and requires careful analysis. Advantages and disadvantages must be assessed. At Priedemann, we have been moving between both worlds for many years:

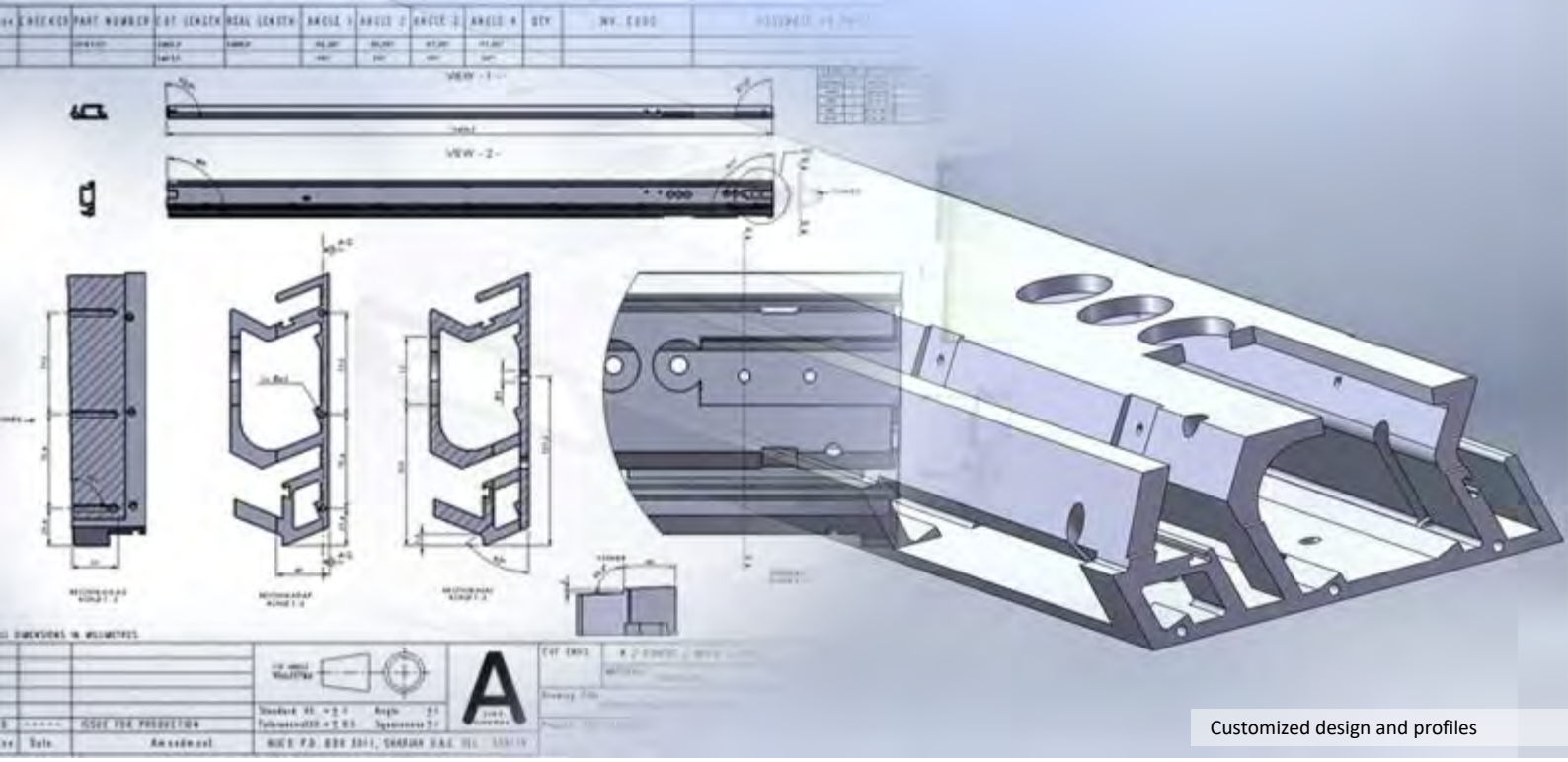
With our optimised, standardised, and highly efficient tools, we can create **simple buildings** quickly and cost-effectively in 3D.

On the other hand, **complex buildings** require different new tools. Here we have a wide range of experience and are familiar with many ways to implement even challenging projects. We master fully parametric modelling environments and the development of project-specific methods and tools necessary for many complex projects.

Especially for complex façade geometries, parametric planning is an efficient and reliable tool for continuous, highly accurate planning - from design, tendering and contracting, manufacture and assembly, conversion and deconstruction.

Parametric models can create data sets for the production of facade elements on modern CNC-controlled machines. High, error-free accuracy is thus made possible, as is the production of the most complex designs.

Our models are often the decisive tool for cost-effective optimization of the design. We transfer the identification and solution of design problems from the factory and construction site to the digital simulation. We can thus avoid many expensive surprises with relatively little additional effort.



Customized design and profiles

# Digital Production

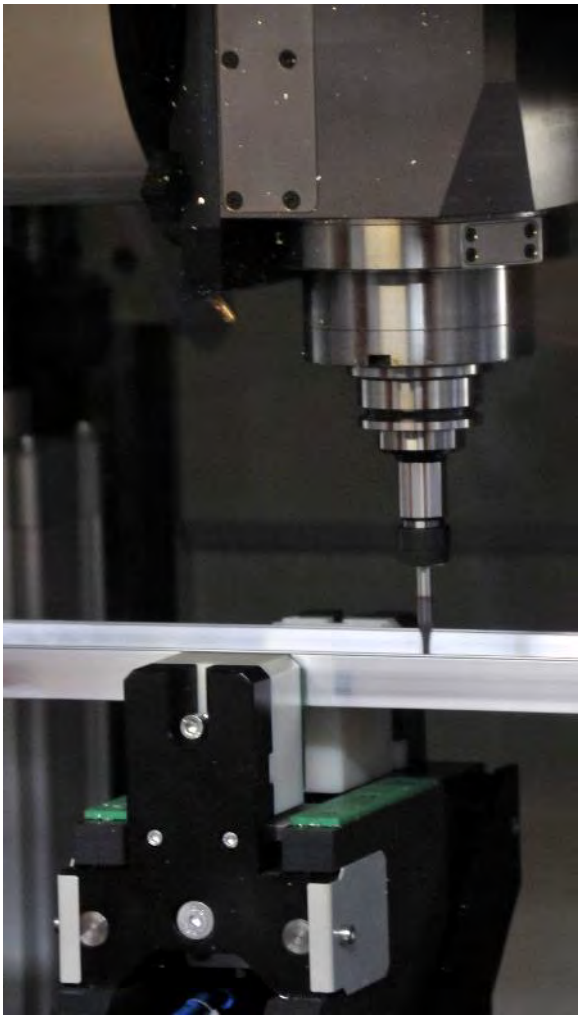
*Model products. Simulate processes.*

As fast as possible, as much as possible and everything at the lowest possible cost, but with the agreed qualities and applicable standards. That is often the target. Priedemann has long relied on the advantages of digital tools and computer-aided processes.

We keep the advancing automation of further production areas and the increasing complexity of machines and processes under control. AND we generate and deliver the data sets to control these machines and processes.

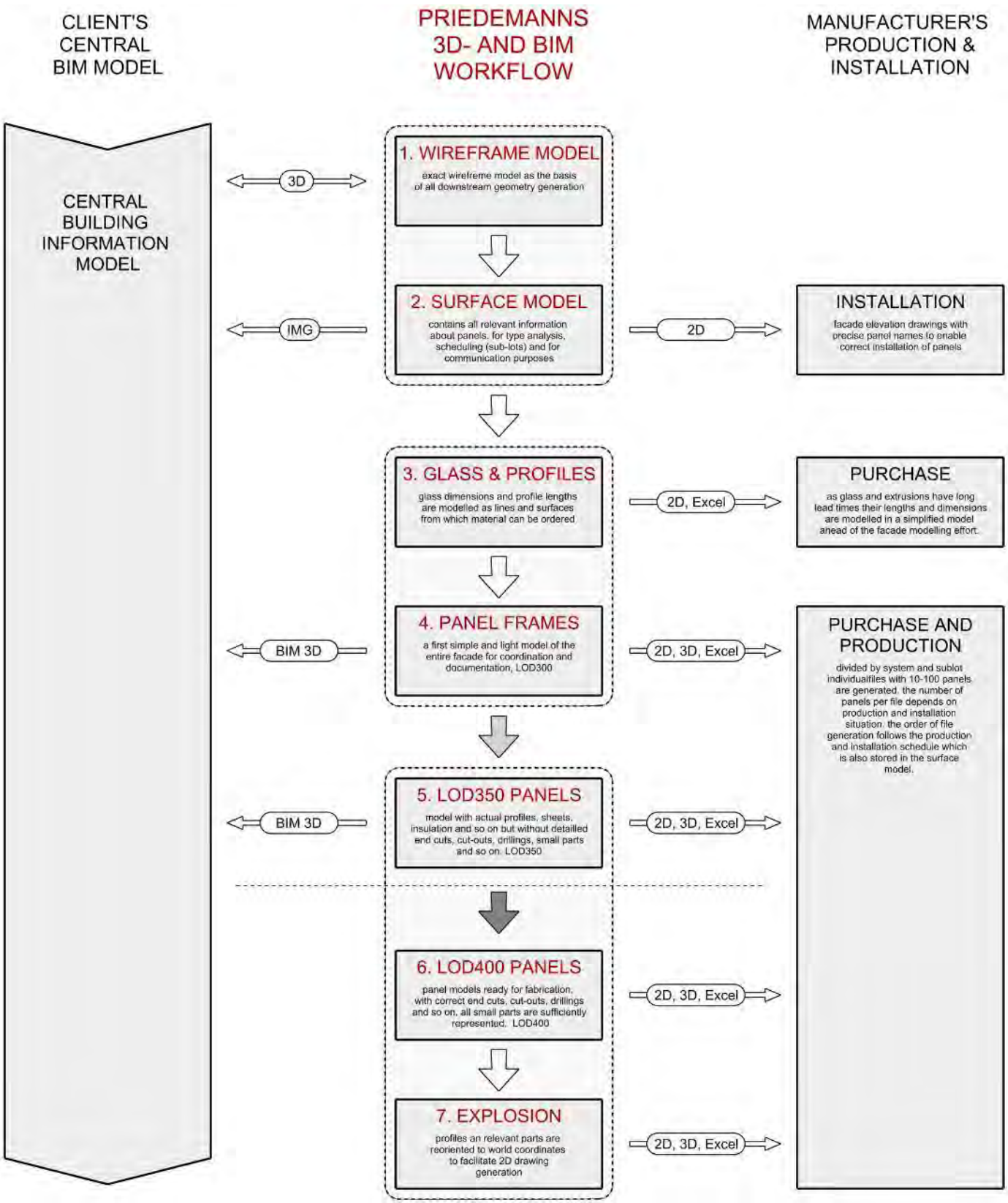
We see Digital Production happen on two levels, that of the automated machines as well as the level of the manual production process. First, we design the production and process level under the premise of maximum efficiency. For this purpose, processes are digitally simulated, and facades are modelled in 3D. We prepare the computer-based adaptation and implementation of the design to the production conditions (Design For Manufacturability DFM). For this purpose, we generate relevant CAD data, which we transfer into CNC data for subsequent production.

Production is thus simplified, and quality is increased for increasingly complex projects.



# BIM Strategy Facade

*Process for the creation of Building Information Models*



| Tender | System Design | Rationlization | Generate 3D | Material Orders | Files to Factory |
|---|---|---|---|---|---|
| *Basic information is generated from architect's drawings and 3D models for pricing, scheduling and initial design.* | *System Designers and 3D Experts work closely together on digital Mock Ups to develop and confirm the design (DMU, VMU, PMU, CMU).* | *A tidy wireframe model is generated form the architect's 3D model. System design and production decisions are constraining the wireframe.* | *Geometry Generators are developed. It generates the BIM LOD 400 3D model (marry System Design with the wireframe model)* | *Material Orders are extracted from the 3D model and sent to purchase departments or similar* | *Production Information from 3D amd additional support information is generated and sent to factories and suppliers.* |
| *Data: Excel, Rhino* | *2D & 3D: AutoCad, Rhino* | *3D: Rhino, AutoCad* | *3D: Rhino, Inventor, Catia, ProE (Information is fed back to Revit/ Navisowrks for standard BIM compliance)* | *Data: Excel, Inventor, Rhino* | *3D (and 2D): Rhino, Inventor, Catia, ProE, AutoCad* |

Overall facade design process

# BIM – strategic implementation

## *Facade Design in 3D*

**Introduction**

Priedemann provides the BIM-compliant implementation of the facade design in 3D.
On one hand, the purpose is to create BIM 3D models for coordination with general contractors, other trades and approval authorities, and on the other hand, we can create BIM 3D models of higher accuracy, which enable the production of the facade. We combine both purposes into one continuous process.

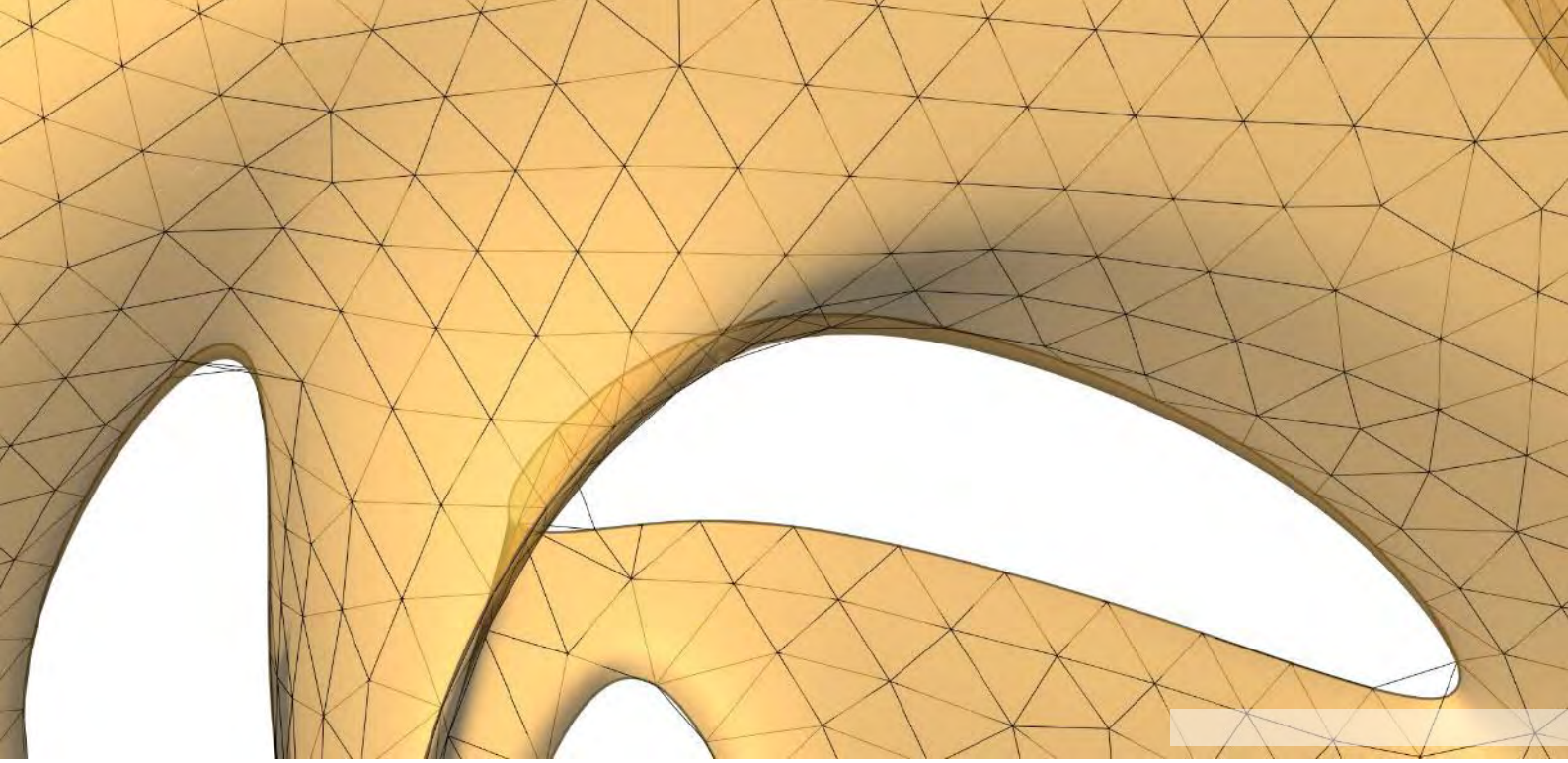
The following pages provide an overview of our process to create BIM models for both scenarios.


**Basics**

The generation of production information for geometrically variable facades places high technical demands on the team and the software. Therefore, we reserve the right to determine the software platform to be used.

We offer to submit the generated information in compatible file formats to the Central Building Information Model. The required scope of this data can only be indicated in BIM guidelines and should be coordinated and determined with the responsible project managers.

The individual stations of our 3D process chain are described as follows. The structure of the process chain is based on the processes of facade production, i.e. we prepare glass and profile order information at an early stage due to long lead times for these materials, fully detailed production models then later. In addition, in consultation with those responsible for production and installation, we divide the order into subsections, controlled by system limits and manufacturing capacities.



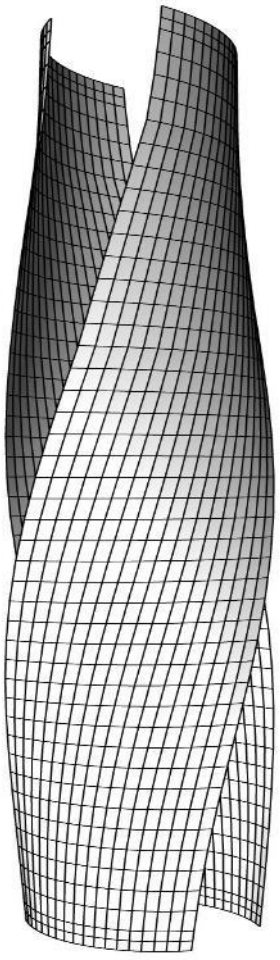
# Stations of our 3D process sequence

**1. wireframe and 2. surface model**

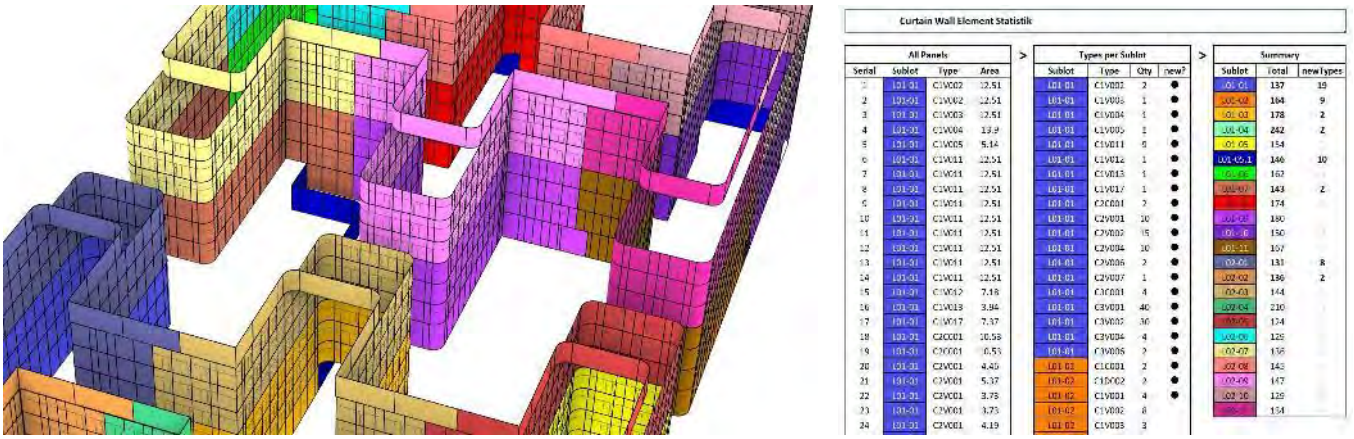
The starting point of our process is receiving a 3D model of the facade, usually made by the architect.

These models vary significantly in quality and depth of development from project to project, but what they all have in common is that they represent the architectural intent. We also obtain the facade system designs from internal or external design teams.

Based on the architect's model, we first develop a highly accurate wireframe model, which from this point on precisely defines all element joints and other essential division lines. As things stand today, the architect's model does not tend to offer the necessary lines with the required accuracy. Still, if this accuracy is available, considerable effort can be saved here in some cases.



Surface model of a twisted tower

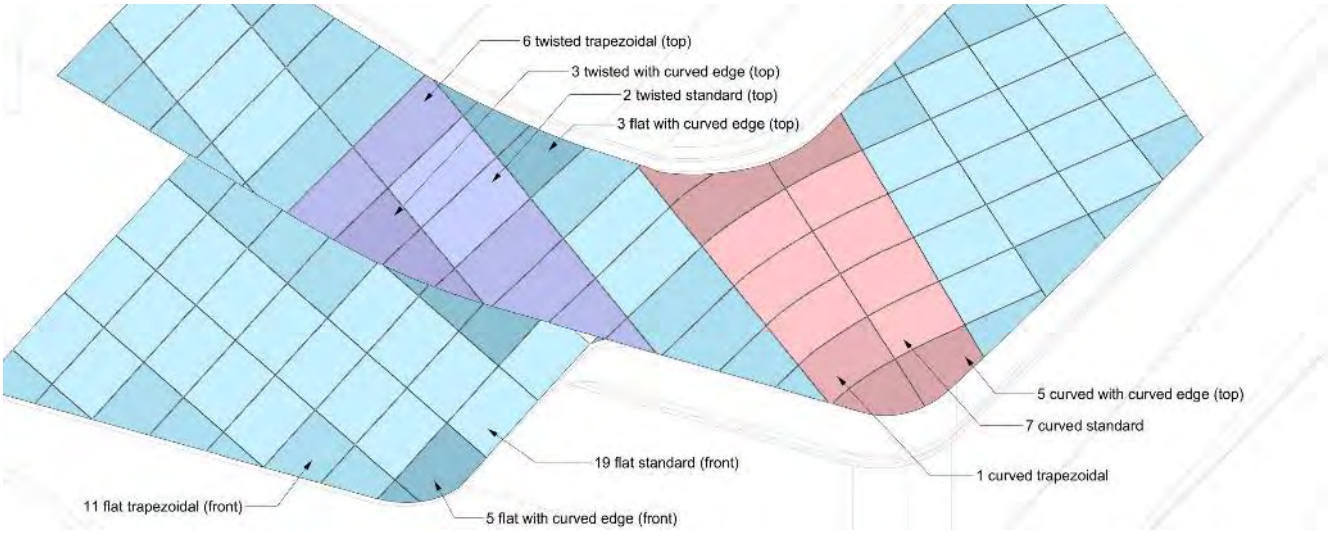



LOD100 surface model with associated configuration data

We create a surface model of the facade based on the wireframe model, which subsequently serves to control all following subprocesses.

Each surface represents an element or assembly and is loaded with all the information that applies to the element (name, type, position, subsection affiliation, specific design features, ...).

Images of the surface model are essential tools for construction scheduling and are regularly coloured by hand or digitally to communicate specific progress and phases. The surface model also contains all the information required to control further 3D model generation.




LOD100 Surface model

### 3. Glass- and Profile model

To be able to order materials with long delivery times, such as glass or extrusion profiles, at an early stage, the next step for most projects is to produce a model that allows the necessary information to be extracted.

As a rule, glasses panels are two-dimensional elements whose edges are located at specific, precisely defined distances from the element joints.

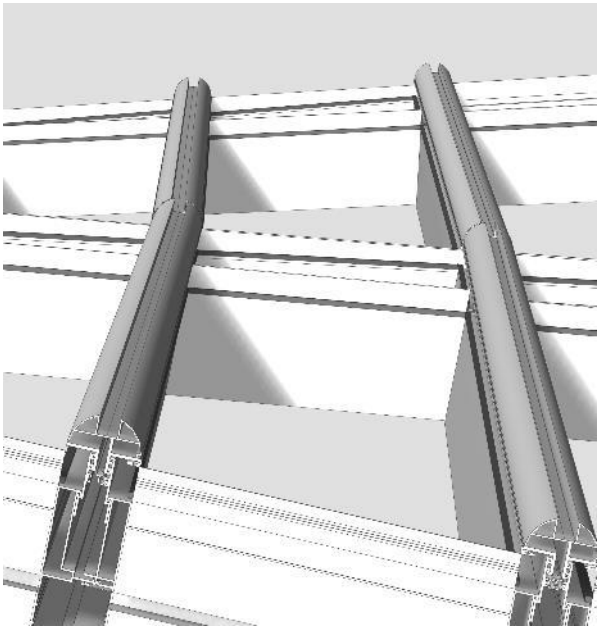
These offsets are used to generate the actual glass areas for each element, which are then automatically transferred to 2D drawings and/or Excel tables for glass orders. Profiles are represented here as correctly named line objects to save time. Depending on the project, profile lines can be generated automatically with generators based on the surface model and element type information. Once all profile lines are available, order lists are automatically derived in Excel.

## 4. Panel Frame model – LOD300

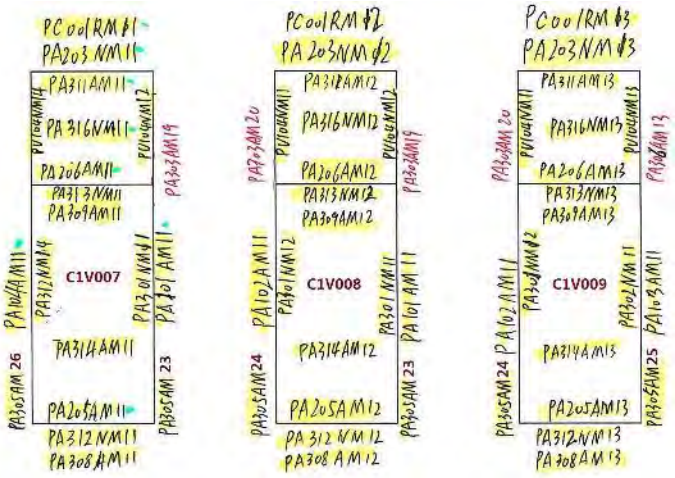
The first actual step towards the production data model is the panel frame model.

At this point, the generators for the actual element modelling are developed and tested for the first time. The result is a still highly simplified model of all panels, in which boxes still represent profiles and almost all small parts are missing. The panel frame model can be produced as a continuation of the glass and profile model within the same file.

This LOD300 model of the entire facade thus forms the basis for the subsequent extension of the facade geometry to LOD400 and consequently to production. At the same time, it is also a valuable communication tool for the identification of problems as well as for the relatively efficient documentation of the facade in the central BIM model.



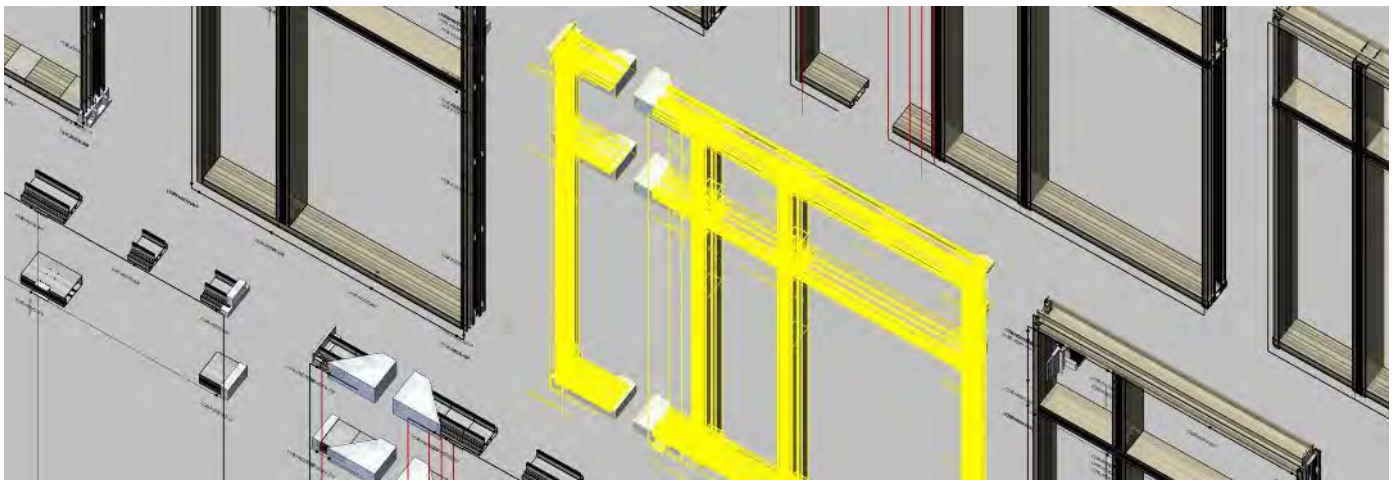
several element frames of a twisted facade




"Paper configuration" as a tool for determining the frame structure.

Enriched with the information from the surface model, the panel frame model is transferred to the central BIM model as a LOD300 BIM model.

This model is often the last model of the façade that can be used in an **undivided manner.** Subsequent models with a higher level of detail require subdivisions due to their immense file size in order to remain editable. They can usually no longer be mapped in the central BIM model.



highly optimized modeling of simple elements

## 5. LOD350 Panels

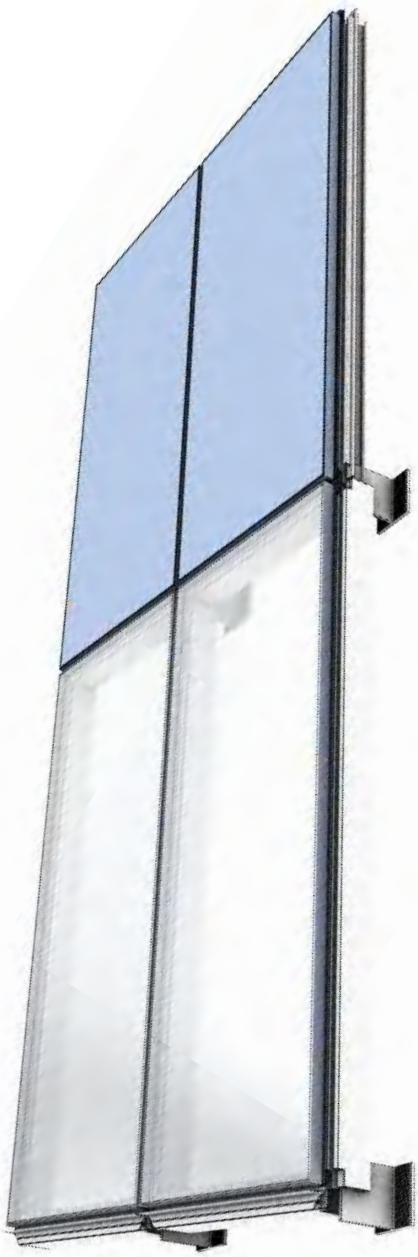
The next step to the production data model is the often optional intermediate stage in LOD350. The purpose can be a preliminary check of the facade geometry or the need to provide the central BIM model with slightly more accurate data than the LOD300 model.

**In LOD350, we have the main sections complete as an "extrusion box". End sections, however, are still simplified** (no complex cuts), pockets and holes are missing, same as connector positions and small parts.

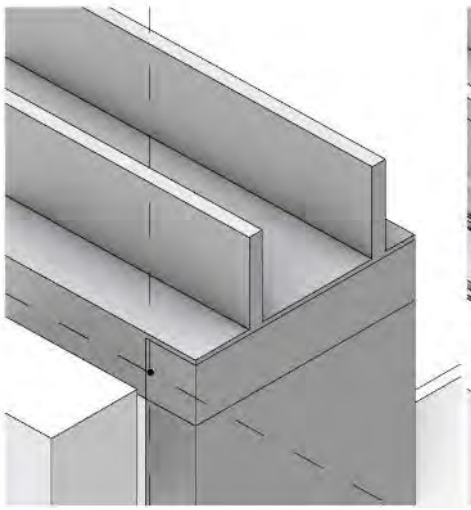
In projects with sharp-angled profile sections, the actual profile length can only be determined for these profiles in this step, resulting in consequences for profile purchasing. However, experienced production sites can produce from these simplified models for less complex facades depending on the system design.

Suppose the production data is not part of the contract, and it is only a matter of generating a BIM model for coordination, communication and documentation. In that case, the LOD350 model represents the upper limit and the last step of reasonable effort.

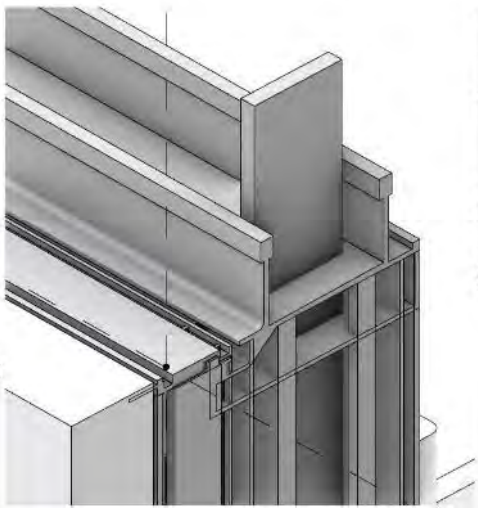
In this case, the necessary designation depth of the individual parts of the model must be carefully weighed and coordinated with the general contractor



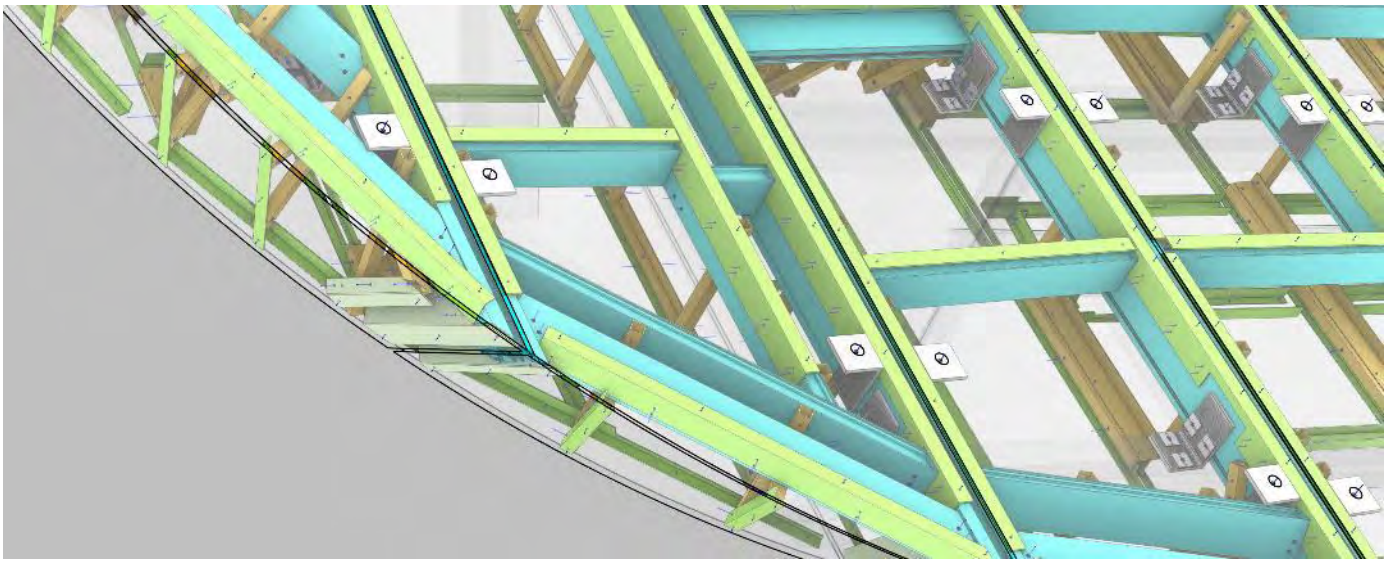
**LOD300**



**LOD350**



**LOD400**



Production data model in LOD400

## 6. LOD400 Panels

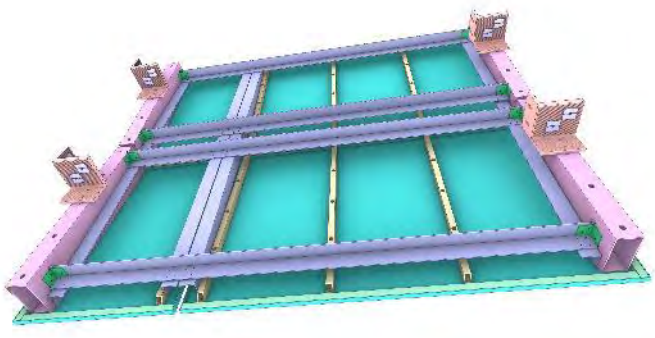
For the production of modern facades with elements of variable geometry, models with a level of detail of LOD400 or higher are usually required. Here, all profile sections, cut-outs, drill holes and the like are realistically available in order to provide the machine programmers with exact specifications for the actually required component geometry.

In addition, the position and often the shape of all small parts are indicated by lines or spatial objects. All objects are named according to agreed conventions and enriched with further relevant information as required.

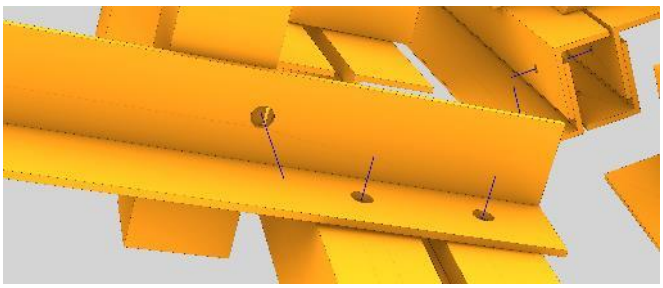
This information is automatically extracted into Excel part lists before the data is transferred to the factory.

The exact level of detail of these models is to be determined with the factory management. For example, the actual modelling of fasteners such as bolts, screws, nuts and washers is often omitted to overload the models; instead, line objects are placed in the exact position of the elements, which refer to their object name to the respective fasteners used.

During the information export to Excel, these references are then automatically replaced with the correct descriptions of the elements so that they can be ordered in proper quantities. Similarly, complex bent sheets can be displayed with or without thickness and curvature radius, which must be adjusted to the capabilities of the respective production.



Production data model in LOD400



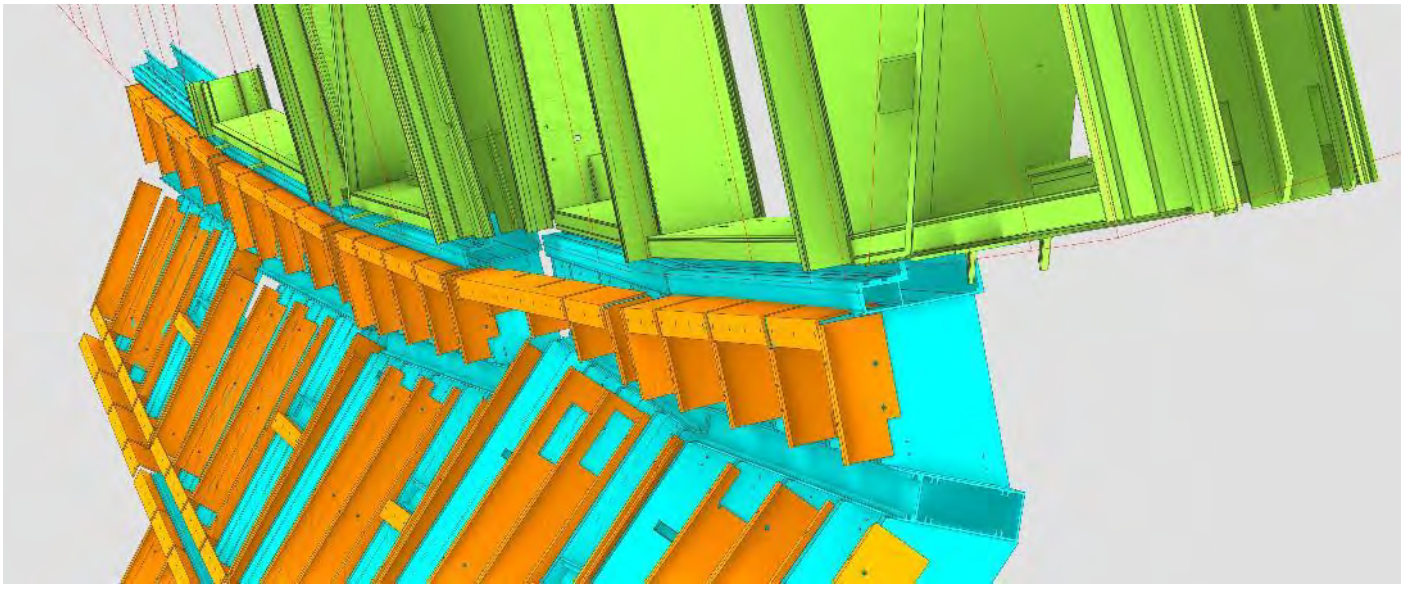
LOD400: Screws as lines, holes in correct size

Fastener connections generate a wide variety of holes, which we can create automatically depending on the connector name (positioning holes for self-tapping screws, through-holes, pilot holes, countersunk holes, threaded holes).

It should be noted that the effort required to create LOD400 production data is much higher than that needed to develop LOD300 models.

**7. Explosion**

As needed, all 3D elements, such as extrusions, sheet metal, etc., can be automatically sorted and transformed back to the world XY plane to allow for the sometimes still necessary creation of meshed 2D drawings. In addition, we can often automatically add dimension information such as end cut angles and holes, although details would need to be clarified on the project and system design.



Complex production data model

**Performance Mock-Up**

It is of significant advantage to take the process described here and apply it to the performance mock-up before the actual façade is built, thus testing and optimizing not only the physical production processes but also our relatively invisible digital process sequence.

In projects where the same team processed the PMU and with the same digital tools and methods as the actual facade, later on, it has been shown that the error rate in the production start-up phase was significantly reduced. This is because many problems were already found and eliminated during PMU processing, just as is the case in physical production.

**Bar Optimization**

The lengths of the extrusion profiles to be purchased can be combined to reduce waste in production as much as possible. However, this step also involves a certain amount of work on our part, so the advantages and disadvantages must be weighed up.

**Self-similar parts**

If a facade design produces many almost identical parts, we can group them together with some effort on our part. However, since this optimization can lead to considerable savings on the part of the production, advantages and disadvantages must be weighed up.

## Lots and Sub-Lots

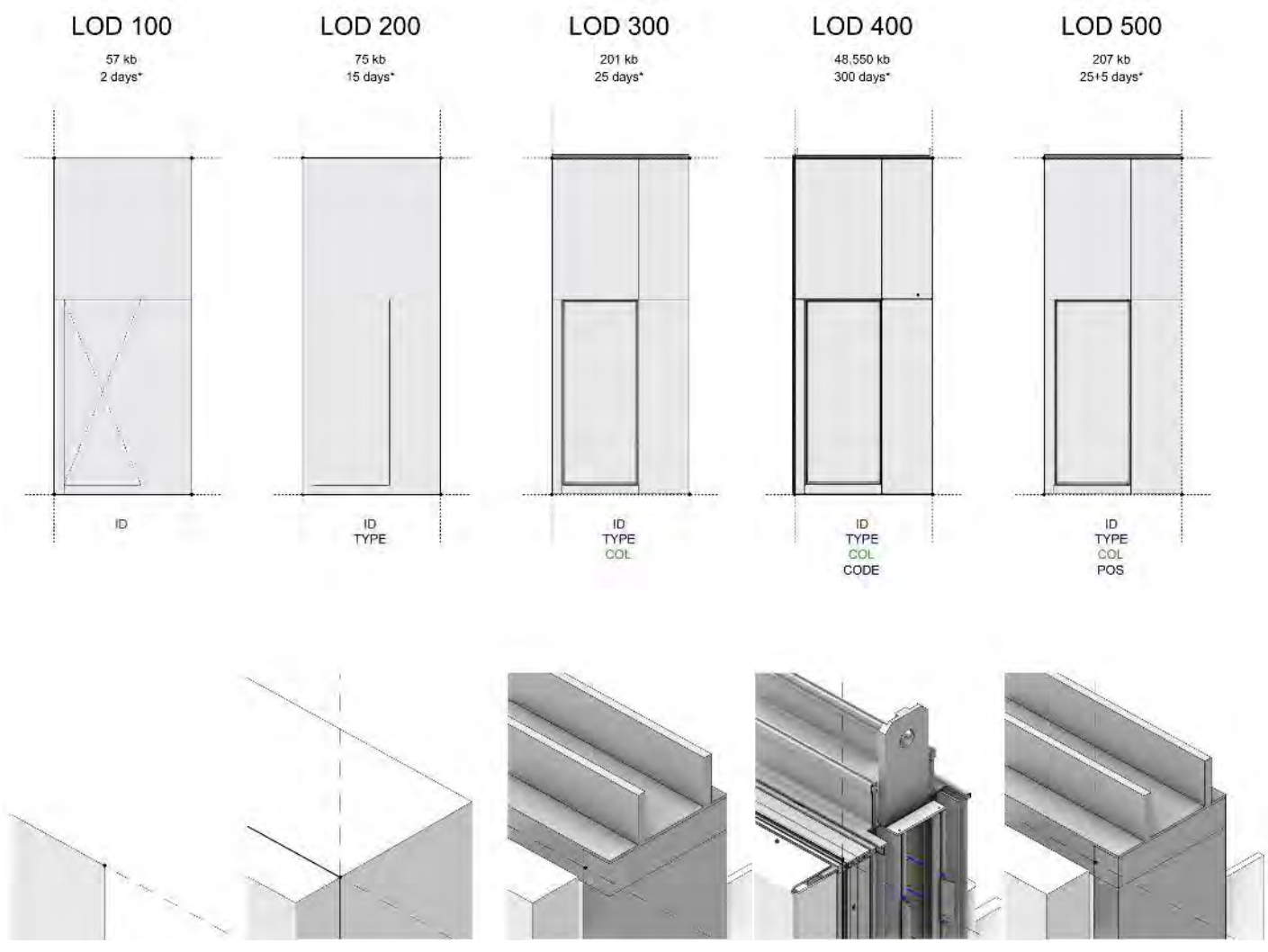
It has proven valuable to group the LOD400 models into groups of up to a maximum of 250 panels or assemblies. However, the exact size and processing sequence of the sub-sections (sub-lots) must be agreed upon between Purchasing, Production, Installation, 3D Team and Project Management. Each of these teams will have its ideas on optimum group sizes.

The agreed construction sections are stored in the surface model. The panel areas are colour coded accordingly, and construction section designations are explained with text elements.

## Naming conventions

We have a system for naming all parts that we use successfully over several projects. The system is customizable. Alternatively, we can follow the manufacturer's specifications, in which case we would add an automatic translation step between the designation systems.

The basis for Priedemann's offer is always the use of our successful system; the effort to adopt the customer's system must be quantified.



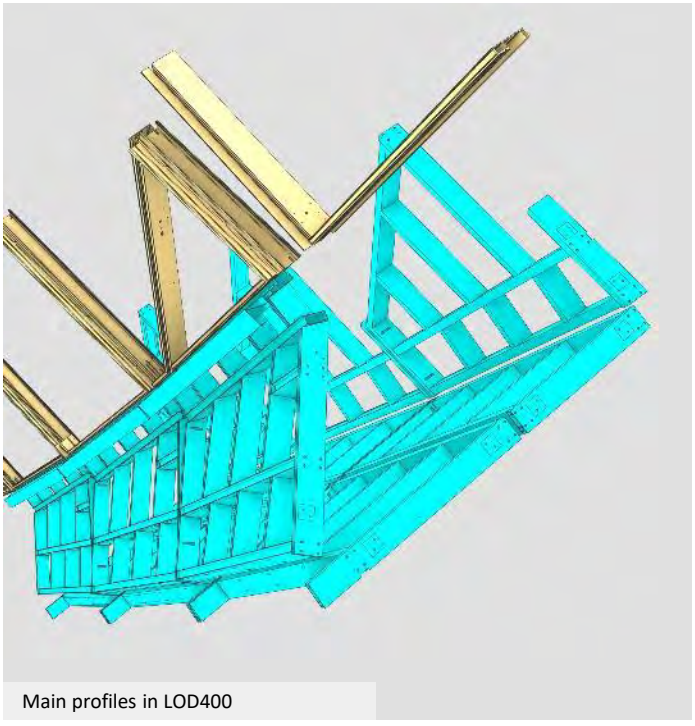

LOD levels, indicative effort and type of filed parameters

| WBS | Design | PMF | | Production | Site | Project Plan Target Dates | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Lot | 1st Sub-misison | Orders | 3D Fab Docs | Assembly Start | Installation Start | DD Approval | Glass + Bars Order | Fab Docs (3D) | Assembly start | Installation start |
| | | 11 May 15 | 11 May 15 | | | | | | | |
| M01-01 | 30 Mar 15 | 24 May 15 | 11 Jun 15 | 30 May 15 | 15 Jun 15 | 7 Mar 15 | 6 Apr 15 | 8 May 15 | 30 May 15 | 15 Jun 15 |
| L02-02-01 | --- | 26 May 15 | 6 Jul 15 | 11 Aug 15 | 10 Aug 15 | 29 Jun 15 | 9 Jul 15 | 3 Jul 15 | 11 Aug 15 | 10 Aug 15 |
| L02-01-01 | 25 May 15 | 14 Jul 15 | 24 Jul 15 | 11 Aug 15 | 20 Aug 15 | 29 Jun 15 | 9 Jul 15 | 6 Jul 15 | 11 Aug 15 | 20 Aug 15 |
| L02-01-02 | 25 May 15 | 14 Jul 15 | 6 Aug 15 | 11 Aug 15 | 27 Aug 15 | 29 Jun 15 | 9 Jul 15 | 6 Jul 15 | 11 Aug 15 | 27 Aug 15 |
| L02-21 | 25 May 15 | 14 Jul 15 | 21 Aug 15 | 11 Aug 15 | 27 Aug 15 | 29 Jun 15 | 9 Jul 15 | 6 Jul 15 | 11 Aug 15 | 27 Aug 15 |

Project status and progress tracking, schedule control

## Status Monitoring for Design and Modeling

We have developed comprehensive and simple cloud-based tools for completed projects for timely progress tracking weekly and daily.
Highly complex sub-problems require intensive micromanagement, and here daily tracking of design or modelling progress is sometimes helpful. In general, our weekly status report has proven helpful over many projects.



Main profiles in LOD400

## LOD400 Models in the factory

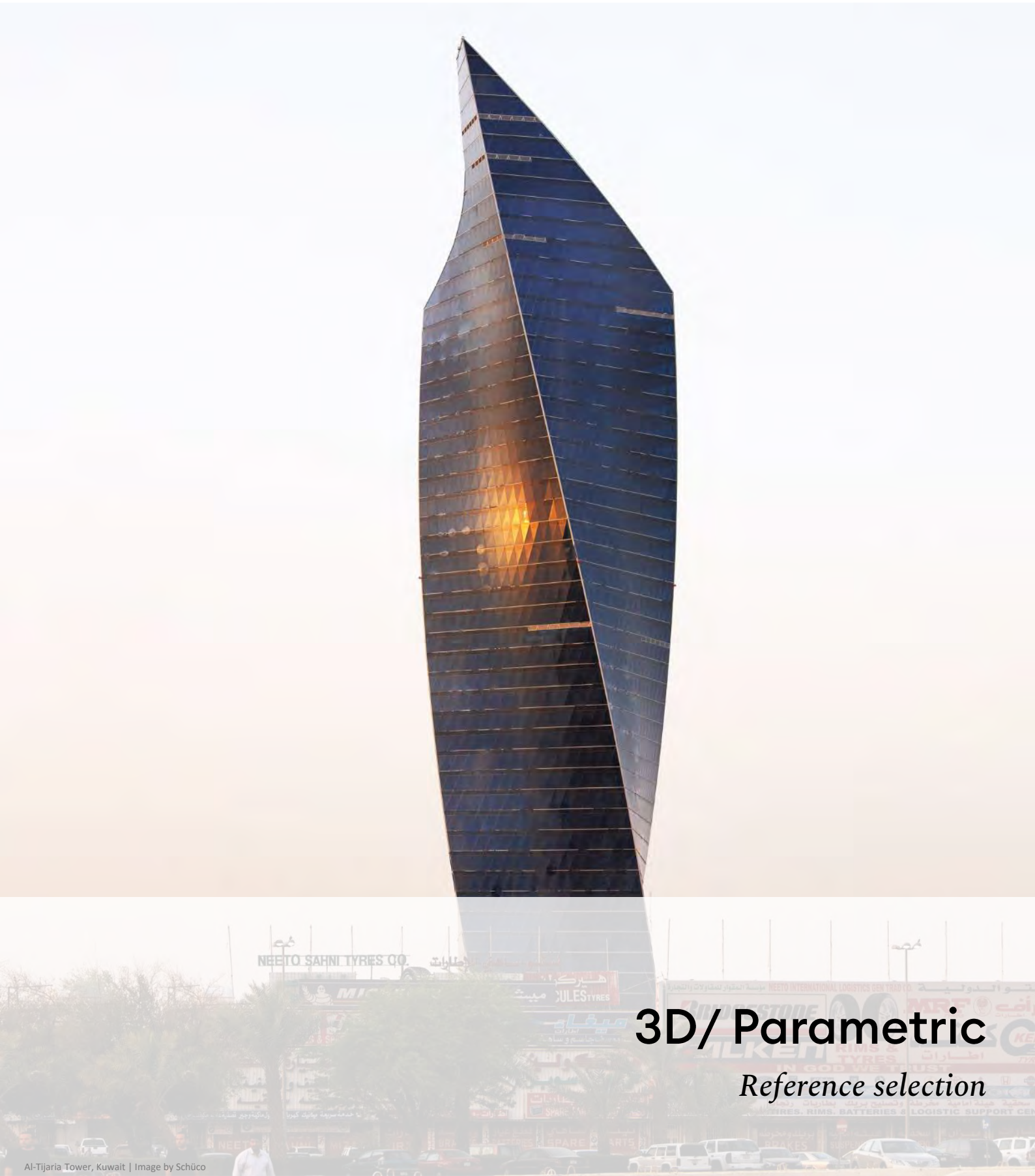
Depending on the actual capabilities of the production sites involved, our information preparation work varies significantly in some cases. For example, some fabricators still require detailed factory drawings in 2D, which we can basically create with the corresponding effort. Therefore, exactly which files and documents are required by manufacturing and which part of them can be made from our information in factory production preparation has to be carefully clarified in detail for each project.

## Document Control

Working on projects with complex and highly complex geometries teaches that omitting unnecessary steps and simplifying necessary steps to the maximum are fundamentally crucial for project success. We keep document management as simple as possible. Revision numbers are included in all submissions' subject and file names, and all relevant files are stored in a clean and orderly manner in the file system. This saves us from keeping track of revisions via separate Excel files or more complex systems.


SATURN
PHILIPS

priedemann
facade experts




# 3D/ Parametric

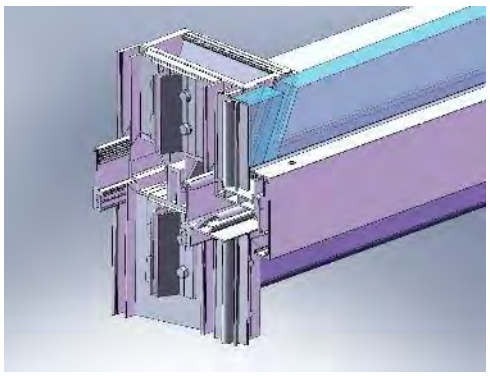
*Reference selection*

Al-Tijaria Tower, Kuwait | Image by Schüco

# Asia
# Kuwait

# Al-Tijaria Tower
# Kuwait City

Progress of construction work



3D construction detail

Finalized Al-Tijaria Tower

Site installation check

Mock-Up test

**Client**
Alico Aluminium and Light Industries Co. Ltd.

**Owner ▪ Developer**
The Commercial Real Estate Co.

**Architect**
- Al Jazera Consultants
- NORR Group Consultants

**Project Data**
- approx. 219 m building height
- approx. 29,000 m² facade surface

**Building Function**
Office

**Technical Features**
- Twisted facade
- Unitized curtain wall
- Structural glazing

**Engineering Services**
- Value Engineering
- Construction Objectives and Brief
- System/Concept Design
- Structural Design
- Mock-Up Development
- Provision/Shop Drawings
- Material Take Off
- Production Documentation
- Installation Documentation

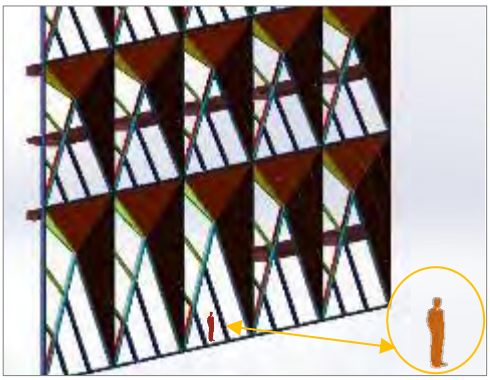
**Special Services**
- 3D Modelling
- Parametric Design

**Status**
Completed 07/2009

# Asia
# Russia

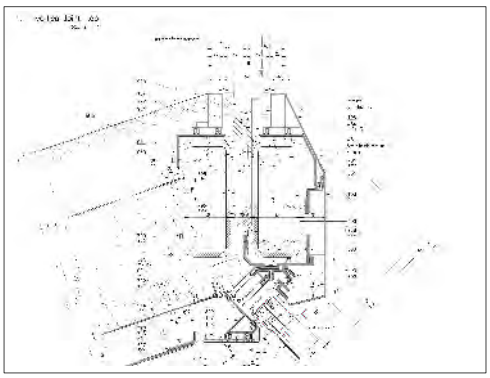
# RMK New Headquarters
# Yekaterinburg

RMK New Headquarters during construction progress



Façade 3D Model, different element sizes

Mock-Up on site, January 2017



Shop drawing, horizontal section of unitized curtain wall

Digital production of a junction detail

**Client**
- Pre-Tender: Foster + Partners
- Post-Tender: Diamond Building

**Owner**
Russian Copper Company

**Architect**
Foster + Partners

**Project Data**
- approx. 90 m building height
- approx. 12,500 m² facade surface

**Building Function**
Office

**Technical Features**
- Diamond shaped facade
- Oversized elements, max. element size 12 m height, 6 m width
- Semi-unitized curtain wall
- Coloured stainless steel cladding

**Consultancy Services**
- Detailed/Developed Design
- Technical/Construction Design
- Specification/Tender Documentation
- Tender Evaluation

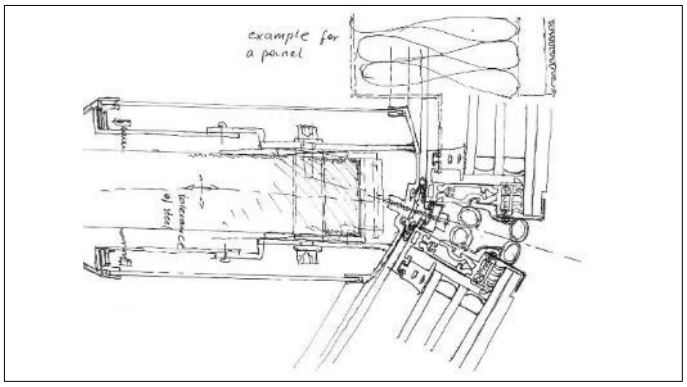
**Engineering Services**
- System/Concept Design
- Structural Design
- Mock-Up Development
- Provision/Shop Drawings
- Material Take Off
- Production Documentation
- Installation Documentation

**Special Services**
- 3D Modelling
- Maintenance, Cleaning, Facade Access, BMU

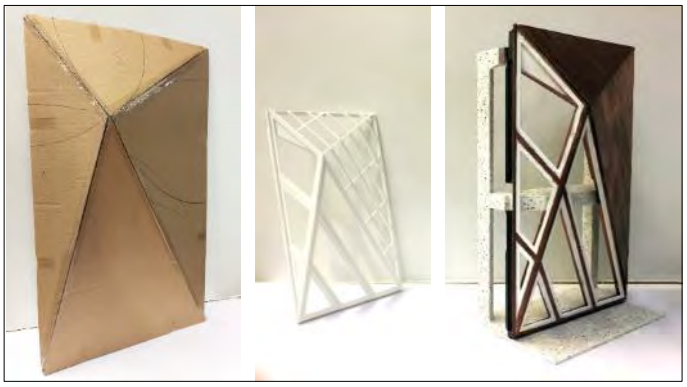
**Status**
Completion 2020

# Continuous Support
## Size beyond limits

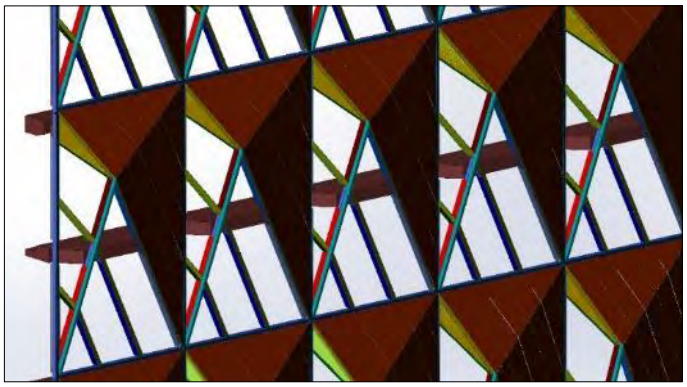
# RMK New Headquarters
## Yekaterinburg, Russia



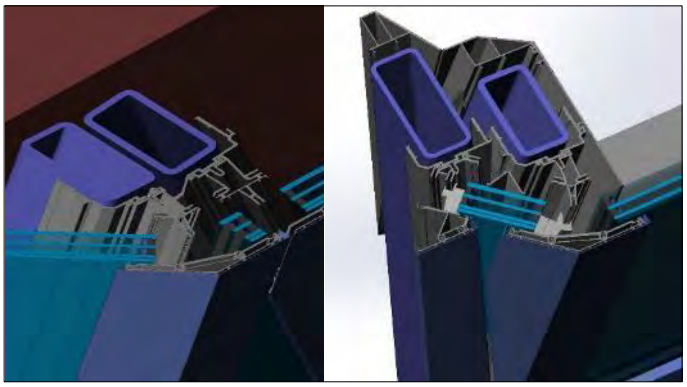

Facade Design responsibilityy from the first idea sketches...



followed by simple cardboard and 3D-printed models...



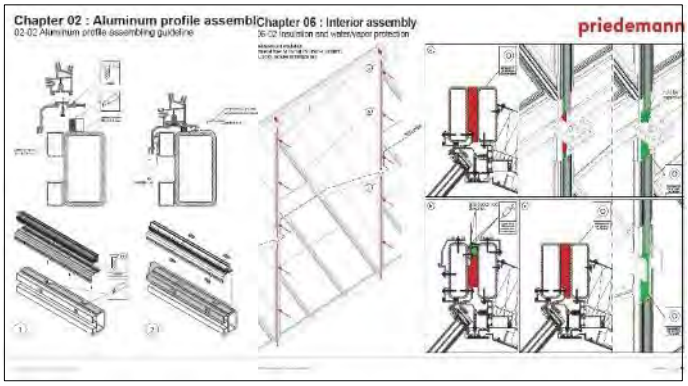
to entire 3D building envelope modelling....



and parametric 3D volume models....

for producing and proving the performance mock-up...

to implement the 1:1 visual mock-up on site in Yekaterinburg...

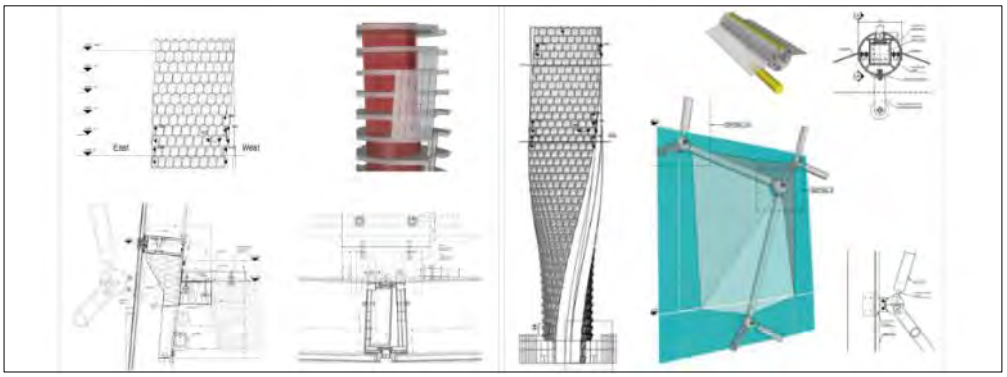



and finally we provide all the shop drawings and production documents to ensure the design by Priedemann Know-how for Russian capacities during assembling in the local factory and installation on site.

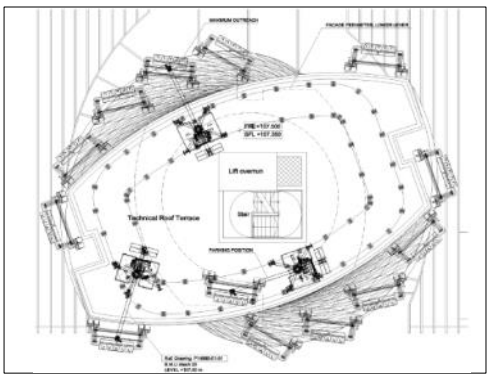
# Asia
# Qatar

# NPP Control Tower
# Doha

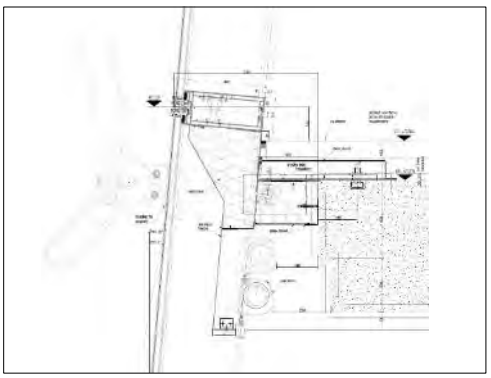

NPP Control Tower at twilight, rendering and the progress during construction



Facade design development, typical details of the main facade wall type 04 and the facade spider system wall type 07



Facade access and maintenance strategy, proposal - track mounted roof BMU with dedicated cradle, detailed overview



Typical in detail in process, vertical cross section main facade

**Client**
Arab Engineering Bureau

**Owner ▪ Developer**
Port Authority, State of Qatar

**Architect**
PLP Architecture

**Project Data**
- approx. 110 m building height
- approx. 26,000 m² facade

**Building Function**
Mixed-Use, Office,
Port Navigation

**Technical Features**
- Twisted facade
- Unitized curtain walls, cold-bent glass
- Stick system, structural glazing, glass fins
- Sunshade elements

**Consultancy Services**
- Project Objectives and Brief
- Concept/Schematic Design
- Detailed/Developed Design
- Technical/Construction Des.
- Specification/Tender Doc.
- Feasibility Study

**Engineering Services**
- Construction Object. & Brief
- System/Concept Design
- Structural Design
- Mock-Up Development
- Provision/Shop Drawings
- Material Take Off
- Production Documentation
- Installation Documentation
- As-Built Drawings

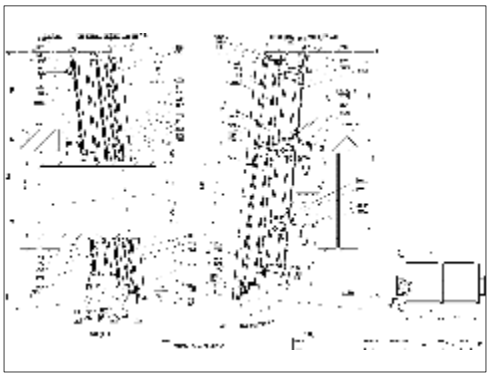
**Special Services**
- Parametric
- Maintenance, Cleaning, Facade Access, BMU

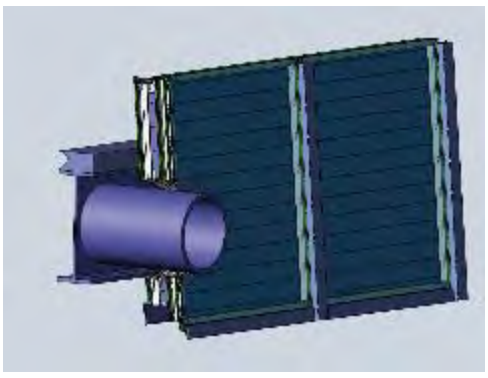
**Status**
Completed 03/2024

# Asia
# Kuwait

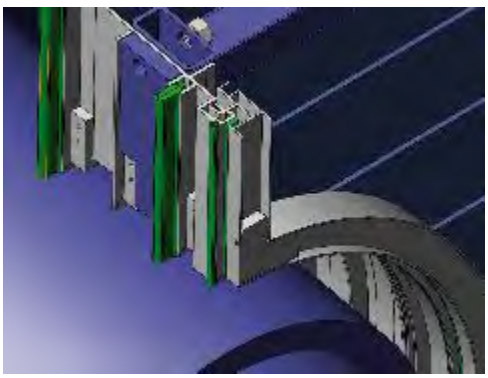
# Central Bank of Kuwait
# New Headquarters, Kuwait City

The New Headquarters – Central Bank of Kuwait at dawn


Unitized curtain wall, Excerpt of production paper


3D model of UCW


Detail of facade elevation


3D detail of facade element module

**Client**
SCHÜCO International KG

**Owner ▪ Developer**
Central Bank of Kuwait

**Architect**
HOK International Ltd.

**Project Data**
- approx. 240 m building height
- approx. 34,000 m² facade surface

**Building Function**
Office

**Technical Features**
- Unitized curtain wall, blast resistant

**Engineering Services**
- Construction Objectives and Brief
- Provision/Shop Drawings
- Material Take Off
- Production Documentation

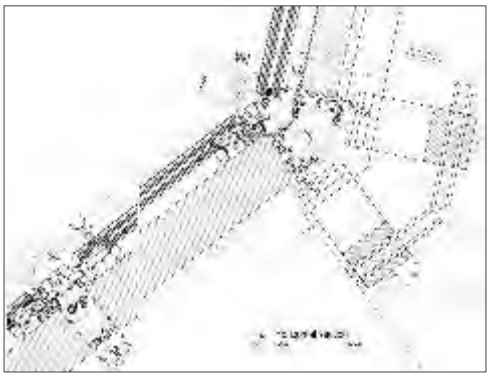
**Special Services**
Parametric Design

**Status**
Completed in 2014

# Asia
# United Arab Emirates

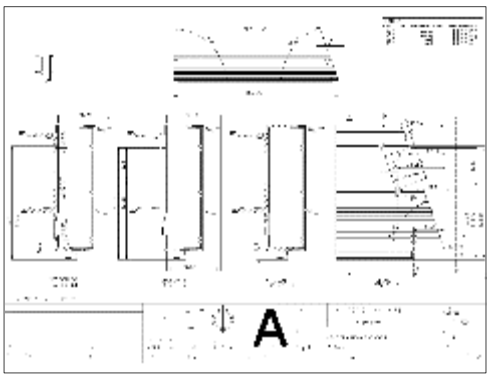
# Landmark Tower
# Abu Dhabi

Landmark Tower – unitized curtain wall with integrated sunshade system



Unitized curtain wall - horizontal section

Facade elevation of the balconies




Production paper of a head transom

Elevation with canopy

**Client**
Alico Aluminium and Light Industries Co. Ltd

**Owner ▪ Developer**
Department of Presidential Affairs (DOPA)

**Architect**
Pelli Clarke Pelli Architects

**Project Data**
- approx. 329 m building height
- approx. 45,000 m² facade surface

**Building Function**
Mixed-Use, Office, Residential

**Technical Features**
- Unitized curtain wall
- External sunshade
- Stick system facade
- Sliding doors
- Balustrades

**Engineering Services**
- Value Engineering
- Construction Objectives and Brief
- System/Concept Design
- Structural Design
- Mock-Up Development
- Provision/Shop Drawings
- Material Take Off
- Production Documentation
- Installation Documentation
- As-Built Drawings

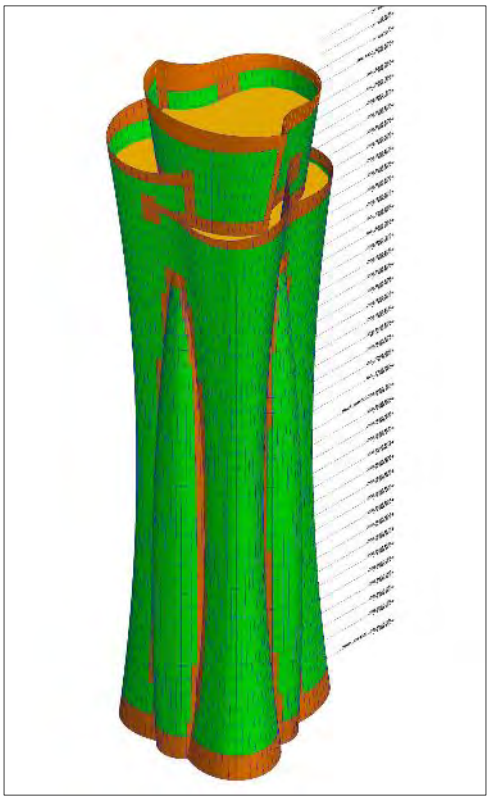
**Special Services**
- 3D Modelling
- Parametric

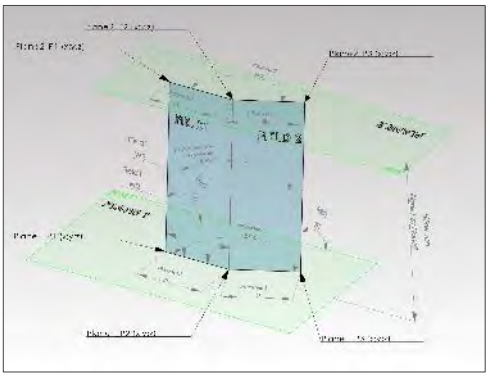
**Status**
Completed 03/2013

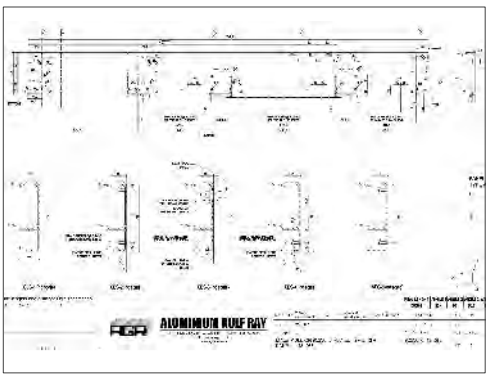
# Asia
# Qatar

# Qatar International Islamic Bank
# Headquarters, Doha

Qatar International Islamic Bank beside the World Trade Center on a Friday night in Doha, March 2014


3D-Model, isometric elevation north-east


3D model analysis, presentation of panel element



Excerpt of work drawings, panel type 1

**Client**
AGR Aluminium Gulf Ray

**Owner ▪ Developer**
Qatar International Islamic Bank

**Architect**
Dara Engineering Consultants

**Project Data**
- approx. 190 m building height
- approx. 22,000 m² facade surface

**Building Function**
Office

**Technical Features**
- Multiple curved facade
- Unitized curtain wall

**Engineering Services**
- Construction Objectives and Brief
- Provision/Shop Drawings
- Material Take Off
- Production Documentation
- Installation Documentation

**Special Services**
- 3D Modelling
- Parametric

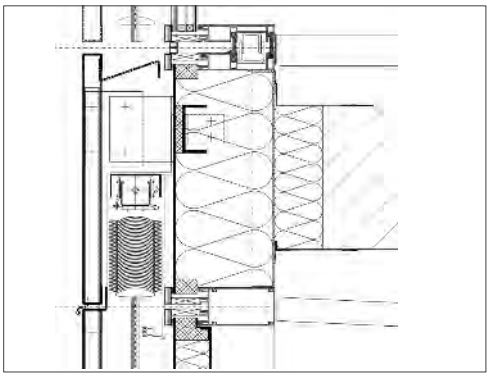
**Status**
Completed in 2014

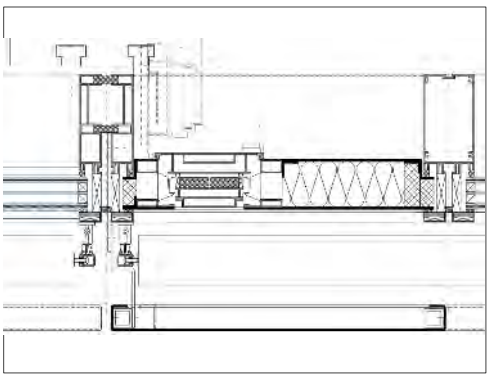
# Europa
# Deutschland

# Börsenplatz Eschborn
# Frankfurt am Main

Knochenmarktransplantationszentrum am UKM im Baufortschritt


3D Konzept, Fassadenelement


Leitdetail, 2D-Konzept, Vertikalschnitt Paneelbereich


Leitdetail, 2D-Konzept, Horizontalschnitt Paneelbereich

**Auftraggeber**
Gertler Estates GmbH & Co

**Bauherr ▪ Projektentwickler**
Gertler Estates GmbH & Co

**Architekt**
holger meyer architektur

**Projektdaten**
- ca. 23 m und 38 m Gebäudehöhen
- ca. 57.000 m² BGF

**Gebäudefunktion**
Office

**Technische Daten**
- Pfosten-Riegel-Fassade
- Elementfassade
- Vorgehängte hinterlüftete Fassade
- Sonnenschutz, außenliegende Lamellen
- LEED/DGNB Zertifizierung wird angestrebt

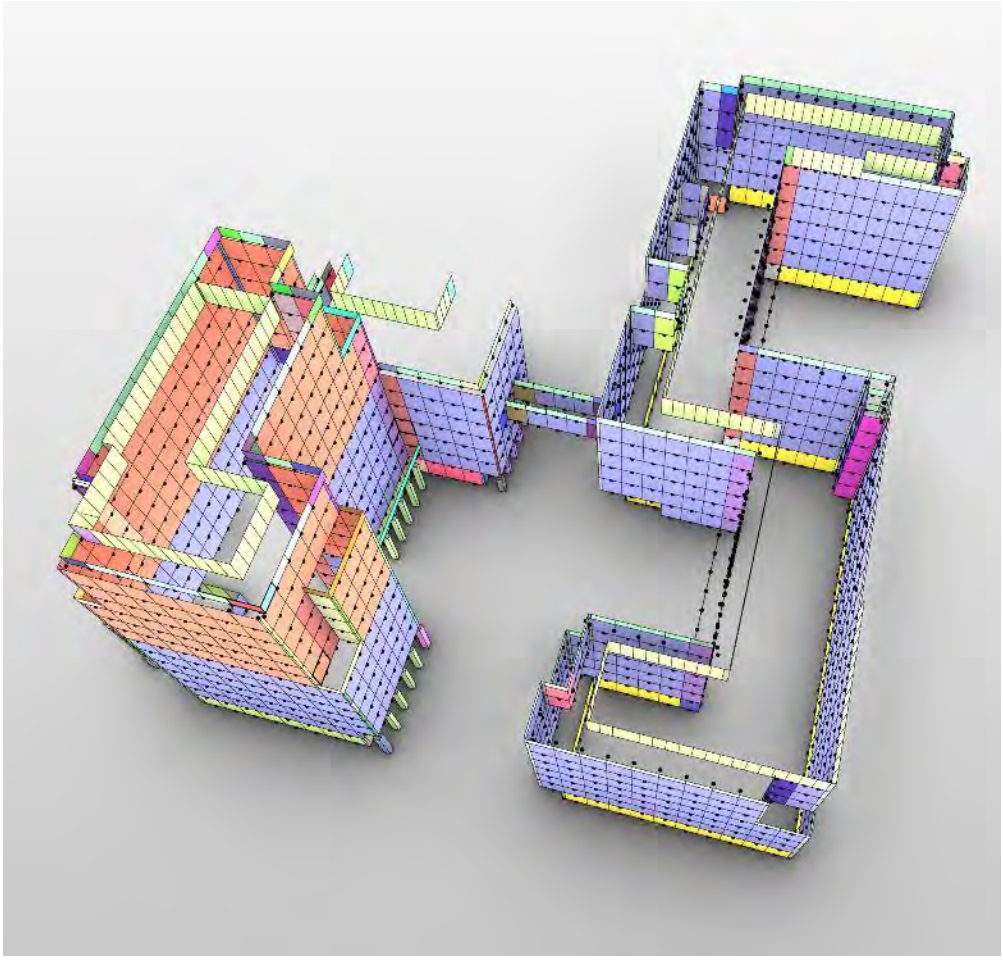
**Consultancy Services**
- Grundlagenermittlung und Zielstellung
- Entwurf
- Genehmigungsplanung

**Special Services**
- BIM, Stufe 1
- 3D Modelling
- Parametrik
- Reinigungskonzept

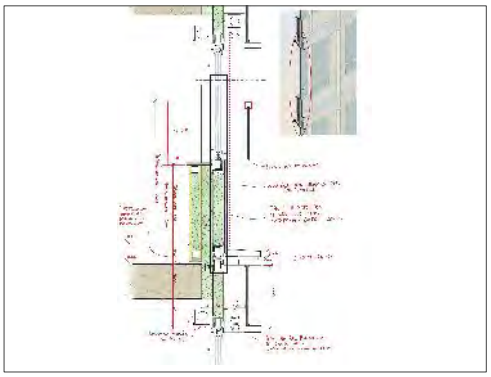
**Status**
In Planung

# Europa
# Deutschland

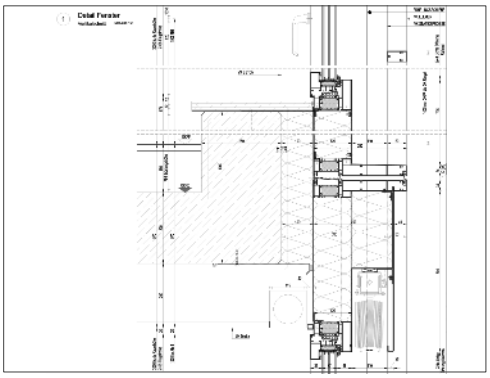
# Europa-Center Eschborn 1+2
# Frankfurt am Main



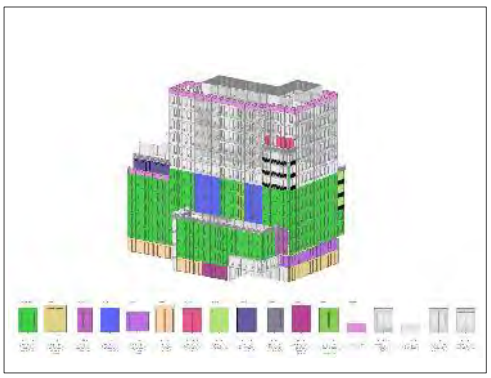
3D-Analyse zur Ermittlung der Elementvariationen des Gesamtareals mit Bauteil 1 und 2



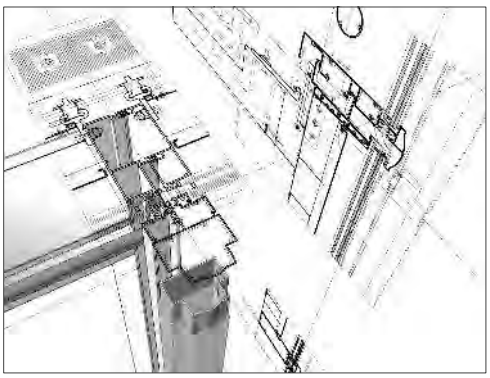
Fassadenskizze Standardelement, Vertikalschnitt



Vertikalschnitt, Standard-Fensterelement



3D-Fassadentypenübersicht, selektierter Bereich



3D Modelling

**Auftraggeber**
Europa-Center AG

**Bauherr ▪ Projektentwickler**
Europa-Center AG

**Architekt**
Europa-Center AG

**Projektdaten**
- ca. 51 m Gebäudehöhe
- ca. 30.000 m² Fassadenfläche
- ca. 25.000 m² BGF

**Gebäudefunktion**
Office

**Technische Daten**
- Elementfassade, teilweise als Kaltfassade
- Entwurf W90 Brüstung
- DGNB Vorzertifikat in Gold wird angestrebt

**Consultancy Services**
- Grundlagenermittlung und Zielstellung
- Entwurf
- Leitdetailplanung

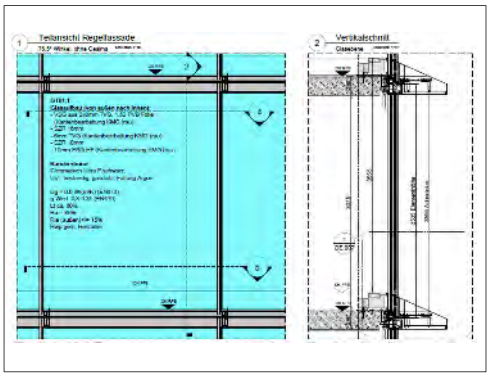
**Special Services**
- BIM, Stufe 1
- 3D Modelling
- Parametrik
- Fassadenstatik, Entwurf
- Bauphysik, Vordimensionierung $U_{CW}$-Werte
- Kostenschätzung

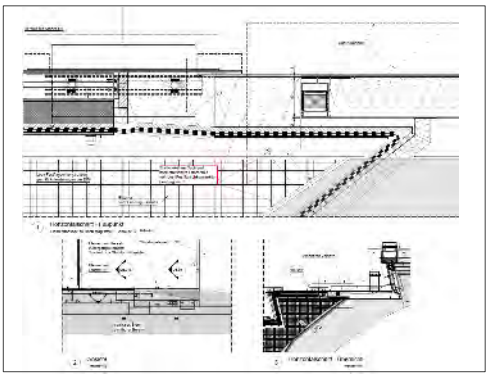
**Status**
In Planung – on hold

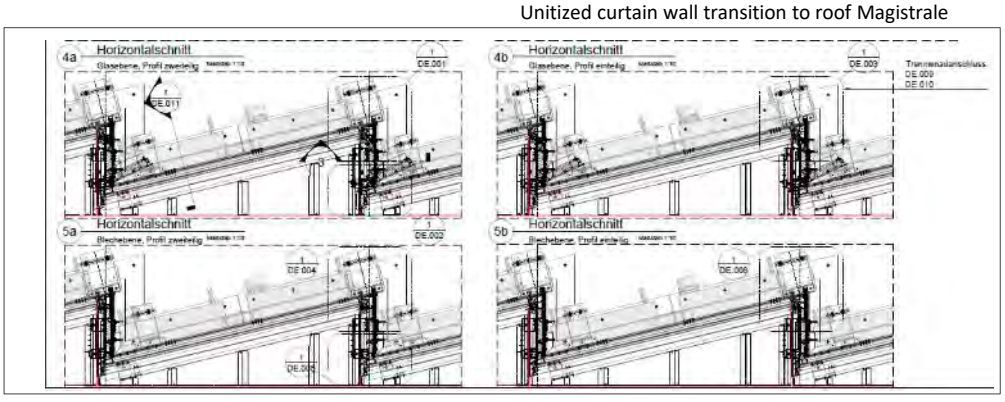
# Europe
# Germany

# Schwarz-Projekt-Campus
# Bad Friedrichshall

Overview of the campus, architectural rendering


Facade view and section


Horizontal section - base point 1st floor/building A
Unitized curtain wall transition to roof Magistrale



Horizontal section of a regular detail element

**Client**
- IGM GmbH & Co. KG
- Ebener GmbH

**Owner ▪ Developer**
Schwarz Immobilien-Service GmbH & Co. KG

**Architect**
JSWD Architekten GmbH

**Project Data**
- 5 buildings
- ca. 20 m – 26 m building height

**Building Function**
IT-Campus (Office, Fitness, Kindergarden)

**Technical Data**
- Unitized Curtain Wall (UCW), jagged, partly F90, customized window profiles
- Fixed glazing
- Ventilation sashes
- Modular partition wall connections

**Engineering Services**
- Construction Objectives and Brief
- Bidding Stage Association
- System/ Concept Design
- Mock-Up Association
- Provision/Shop Drawings
- Production Documentation
- Installation Documentation

**Status**
In Progress

# Priedemann Facade Experts

*Thinking global – Acting local*

## Germany
## Office Berlin

Priedemann Fassadenberatung GmbH
Priedemann Facade-Lab GmbH
Asset Transformation GmbH
Am Wall 17
14979 Grossbeeren/ Berlin, Germany
Fon +49 33701 32 79-00
Fax +49 33701 32 79-10
berlin@priedemann.net
facade-lab@priedemann.net

## United Arab Emirates
## Office Dubai

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Dubai CommerCity, Business Cluster
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