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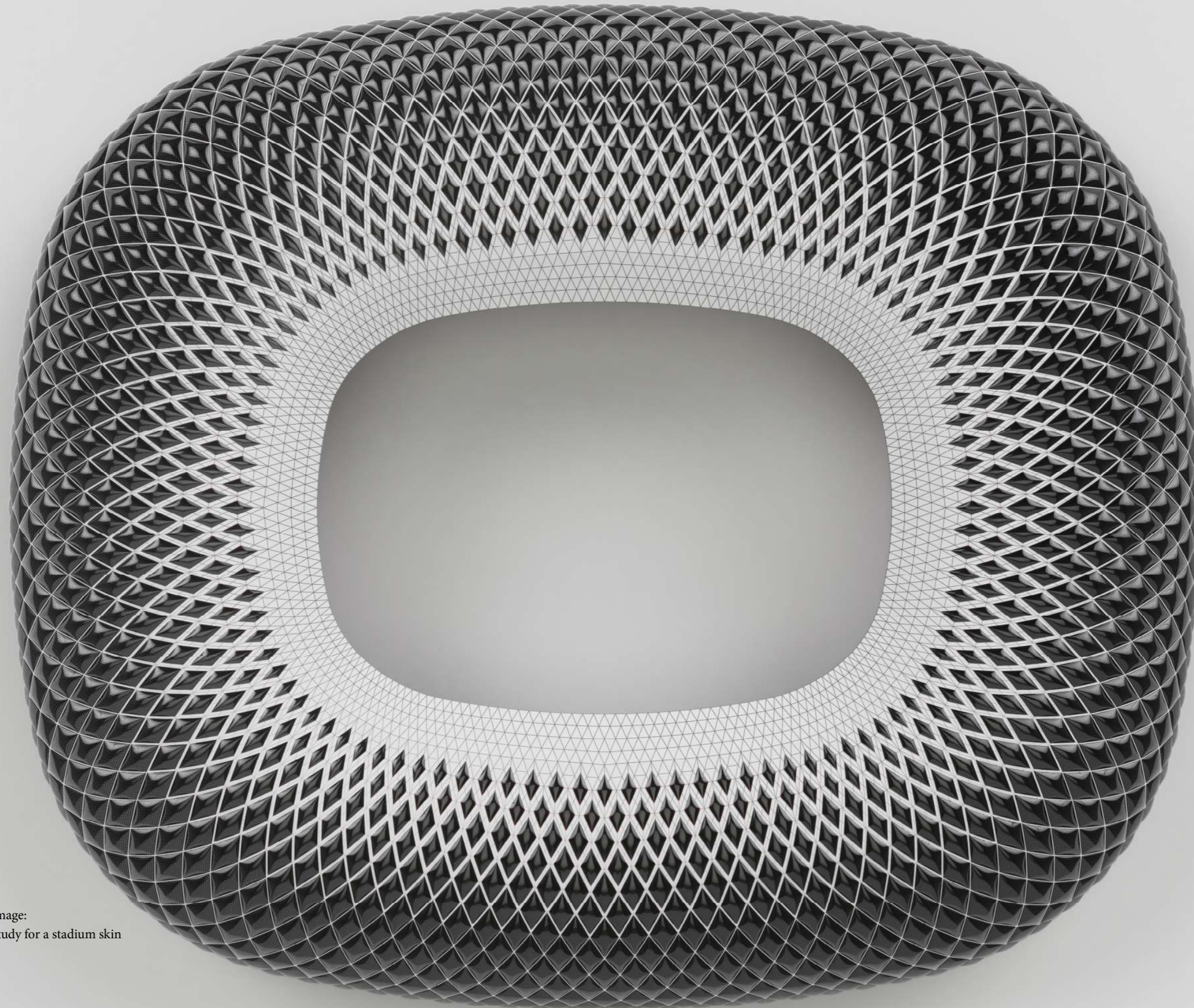+46 (0) 707 880 968

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Image:
Study for a stadium skin

About

Omnirie is an independent consulting office in the field of complex architectural design and construction, based in Helsingborg, Sweden.

Geometrically complex architectural projects can present many challenges when it comes to the planning and manufacturing of the sometimes thousands of unique building parts.

Whether you are participating in a competition or developing detailed plans for realisation, Omnirie provides expert know how to master geometric complexity.

Our services, which range from 3D parametric design over BIM and visualization to digital fabrication, provide support for investors, architects, construction companies and manufacturers in planning and delivering demanding architectural projects, on every step of the way.

We employ state of the art technology, supplemented by our own project specific software solutions, to make the production of complex building parts feasible.

Our mission is to establish a fluent link between your idea and its realisation.

3D CAD
DESIGN
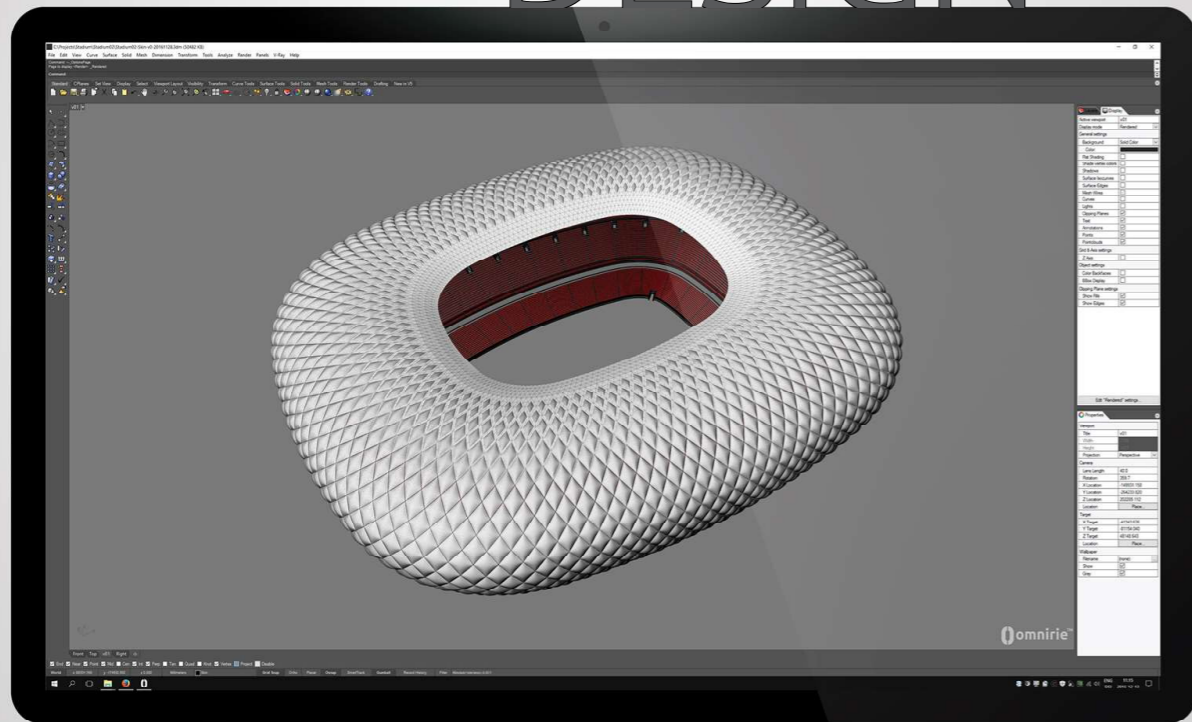
3D CAD (Computer Aided Design) Modelling lies at the heart of our competence. We employ 3D modelling techniques for all stages of a project's design development. Our projects are created, modified, analysed, evaluated and optimized completely in virtual 3D space. Having a complete 3D space based workflow brings numerous advantages. 3D CAD helps us to be more productive, to improve quality of design, to foresee potential problems and prevent them from

occurring. In 3D we can create highly accurate and comprehensive CAD Models which are a reliable basis for the evaluation of the visual and technical quality of our designs. Besides providing the framework for the creation of reliable 3D Models, 3D CAD Design significantly improves our communication capabilities; it allows a fast exchange of 3D Data in all common file types including .dwg, .dxf, .stl, .3dm etc.

Our 3D CAD services overlap in many instances, but for clarity they have been structured in the following categories: Analysis, Parametric Design, Geometry Optimization, Class A Surfacing, Value Engineering and Estimation of Quantities. The categories are described in more detail below.

Analysis
The analysis of various features of existing 3D Models informs all of our design decisions. By analysing models we can recognize the advantages of one solution to a problem over another and find unexplored potential for optimization in the design. Through a methodical analysis, we can ensure the highest grade of quality and reliability in our 3D Models.

Parametric Design
A parametric workflow allows us to make rapid adjustments to a model, even at later stages in the planning process. A parametric model is built upon parameters and relationships between parameters, which inform the design on an object. The parametric model can be integrated with services such as plan automatization, enabling us to quickly propagate changes in the general design of a building all the way to the technical drawings and machine code. Our parametric models are BIM compatible and can be shared among planning partners for communication, controlling and further development.

Geometry Optimization
Geometry optimization is the process of improving a design with the goal to reduce construction cost, while maintaining the same visual appeal and design intent of the structure. Through optimization we strive to make the fabrication and assembly of all building parts simpler. By minimizing the amount of unique parts such as facade panels, we reduce the overall cost end effort of construction.

Class A Surfacing
The form and aesthetics of all visual surfaces of a building or building part is given special consideration at Omnirie. Using modelling techniques from the automotive industry, we create perfectly smooth surfaces with Class A surface transitions wherever necessary. Class A surfacing guarantees the highest possible quality in the visible surfaces of a building, with perfectly smooth reflections, free from any inconsistencies due to an uneven surface.

Value engineering
Evaluating different proposals and solutions at an early stage of the project can save time and money in the long run. Omnirie achieves that goal efficiently through agile development of multiple solutions for a problem with different input parameters and conditions. We can then evaluate the solutions in regard to chosen criteria and help our clients to choose the best of the available alternatives. This service is especially useful in the tender stage where the most improvements to a design can be made.

Estimation of Quantities
Using parametric 3D models, we can easily estimate the quantities of the various materials that are used in your design, creating a reliable basis for your tendering process. Whenever it is possible, our 3D models are parametric, so that all changes to the design propagate automatically to the estimation of quantities.

PARAMETRIC TOWER
VERSION 01

PARAMETRIC TOWER
VERSION 02

PARAMETRIC TOWER
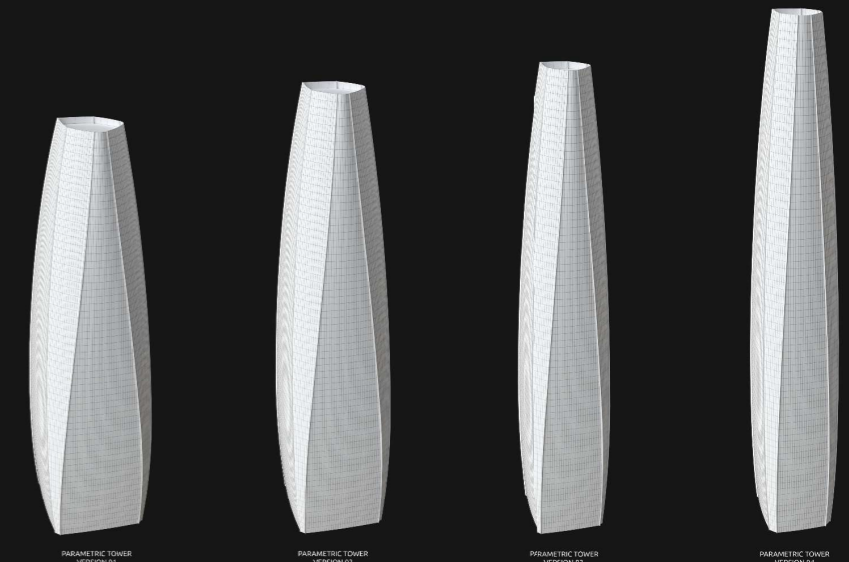VERSION 03

PARAMETRIC TOWER
VERSION 04

Image:
Design iterations of a parametric model

FABRICATION

Contemporary architecture has in many cases long moved on from modular construction and replaced it with systems of many similar, but unique elements. Thorough planning of the production and assembly of a building has become equally important as developing the perfect design. Through services such as plan automation and CNC file preparation we work with our customers to find the perfect fabrication strategy for every project. We strive to optimize the manufacturing process by creating a reliable link between design and execution, with the goal to reduce fabrication time and minimize waste.

Plan Automation

Complex architectural structures, with their many unique building parts, can often represent a challenge to the design schedule. Omnirie accelerates the planning process by programming a link between the 3D Models and the 2D documentation. For each project, we develop a custom software solution which creates the necessary 2D plans automatically based on underlying 3D models. Our software is directly linked to the 3D models, so it is possible to propagate changes in the 3D models to all 2D drawings many times faster than it would be with traditional methods. By automating the process of creating drawings we save our clients countless hours of manual work and help them finish the planning of their projects ahead of schedule.

CNC File Preparation

An important part of our work is to ensure that all planning partners have access to the same data at all times. We work with manufacturers to find the best way for the preparation of files for CNC machining. Based on our parametric model we can create production quality CAD drawings and digital files for each individual building part in an automated and streamlined way, according to the manufacturer's specification and in the necessary file format.

BIM

Building Information Modelling

Building Information Modelling - BIM is a 3D model based process that improves collaboration and gives architects, engineers and construction professionals more control over projects of all sizes and at all times during the building's lifecycle. We help our customers develop highly detailed and data driven BIM models for all parts of their projects. Our speciality lies in providing BIM services for projects with highly intricate and complex geometry, with large amounts of building data. Besides the 3D geometry, our BIM models carry all relevant data of the construction project, down to the smallest building parts. It helps us and our partners to automate processes, eliminate errors, reduce cycle time and minimize costly changes. Our BIM models are universal and compatible with most common BIM applications.
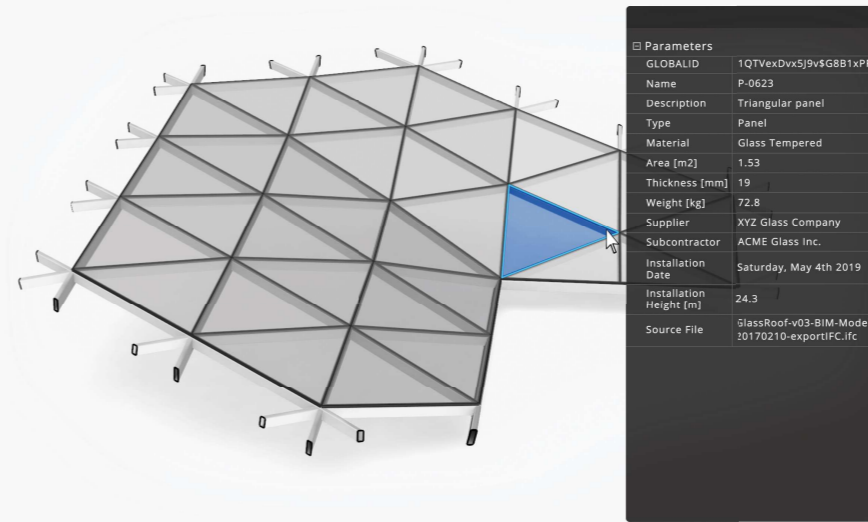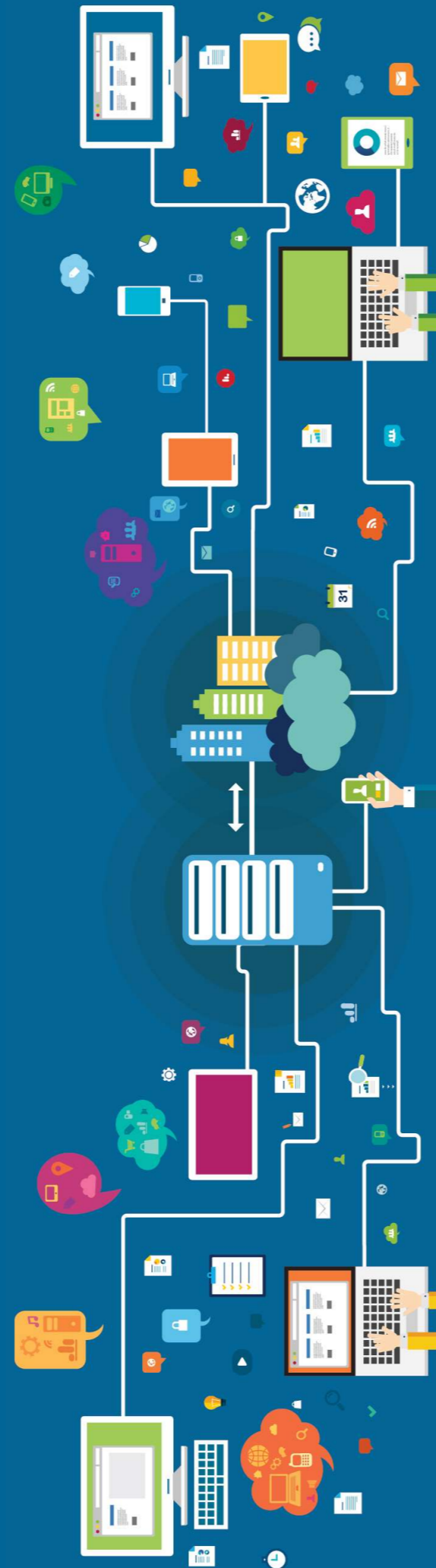
More than 3D Models

A BIM model is much more than a three-dimensional representation of a building. The 3D geometry carries useful data that helps design, construct and maintain the building. We utilize the BIM process to its full potential: our BIM models contain all necessary data, specific to the project and each individual building part.
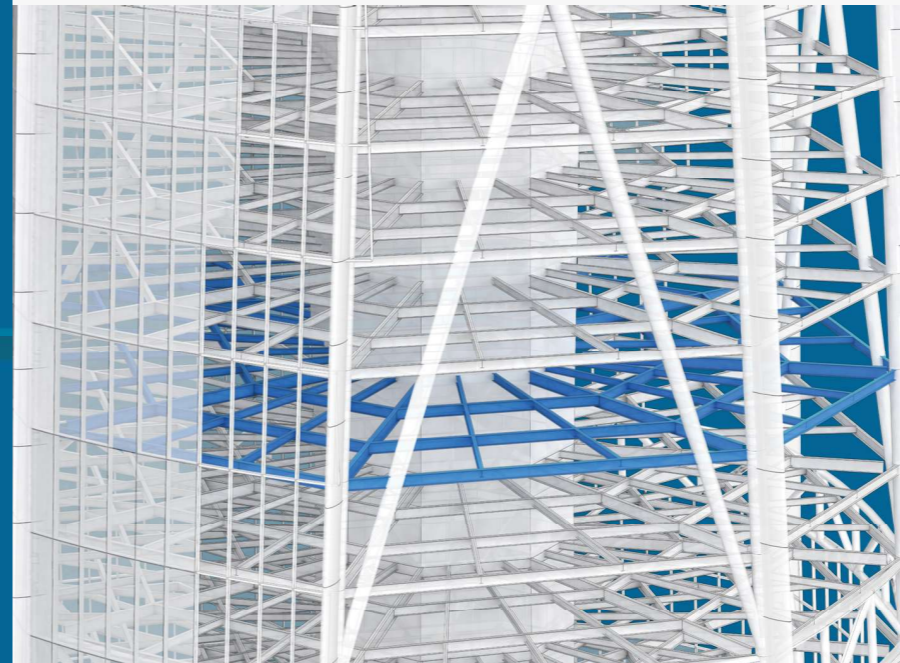
Managing Complexity

With parametric models and our custom computational tools it is possible to combine highly complex 3D geometry and its associated building data to create BIM models that our clients and planning partners can use for communication, examination, documentation and further processing.

Parametric Models and Freeform Shapes

Our parametric models and freeform surfaces can be converted into a BIM file format and accessed with various BIM applications and viewers.
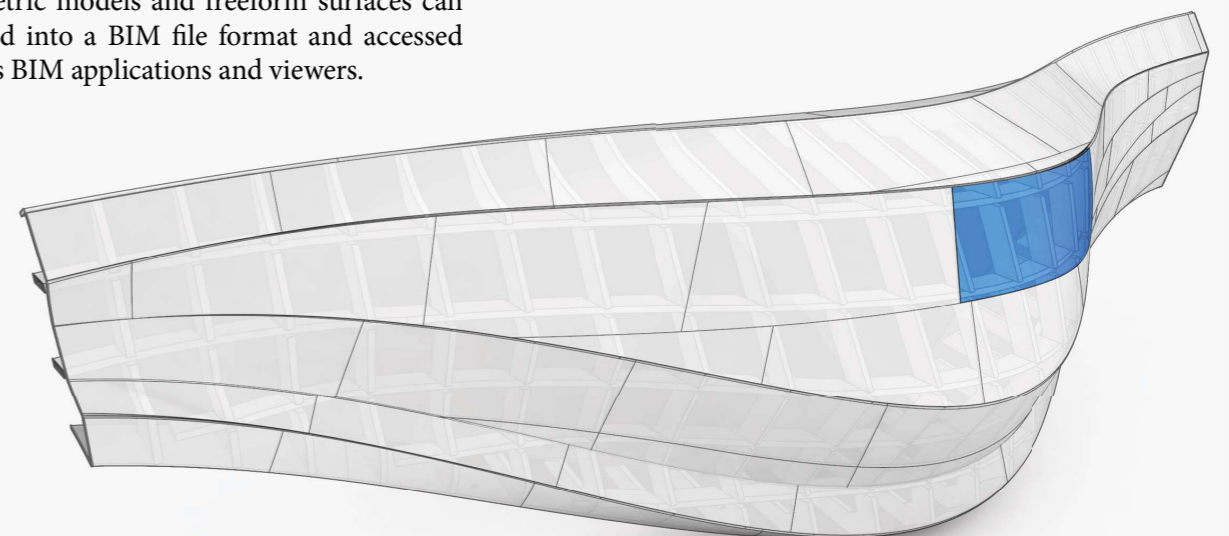
VISUALIZATION
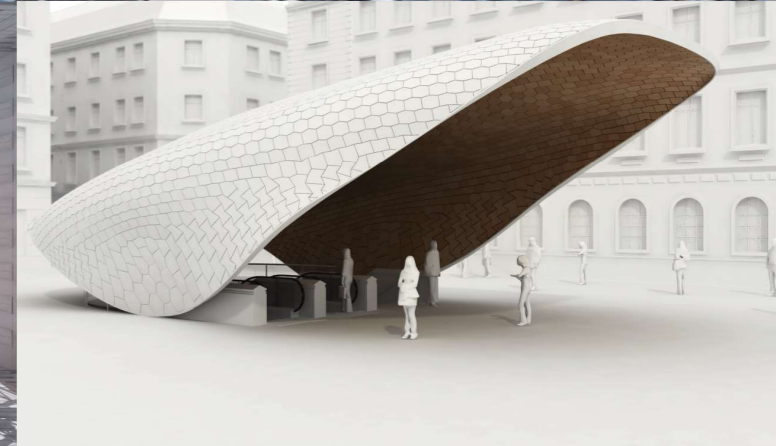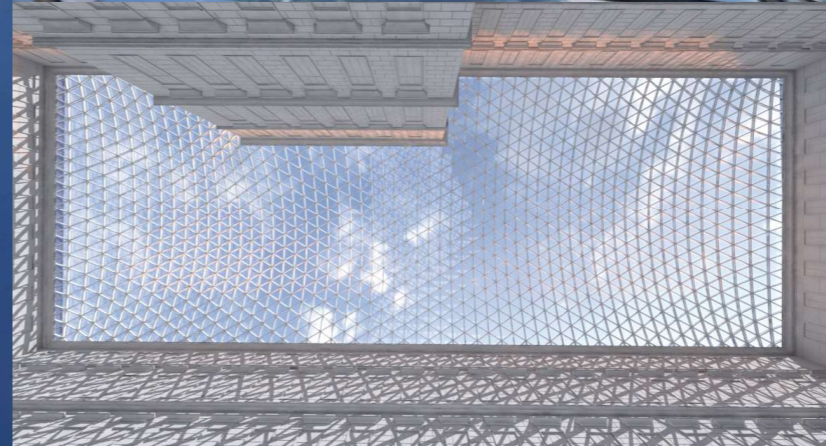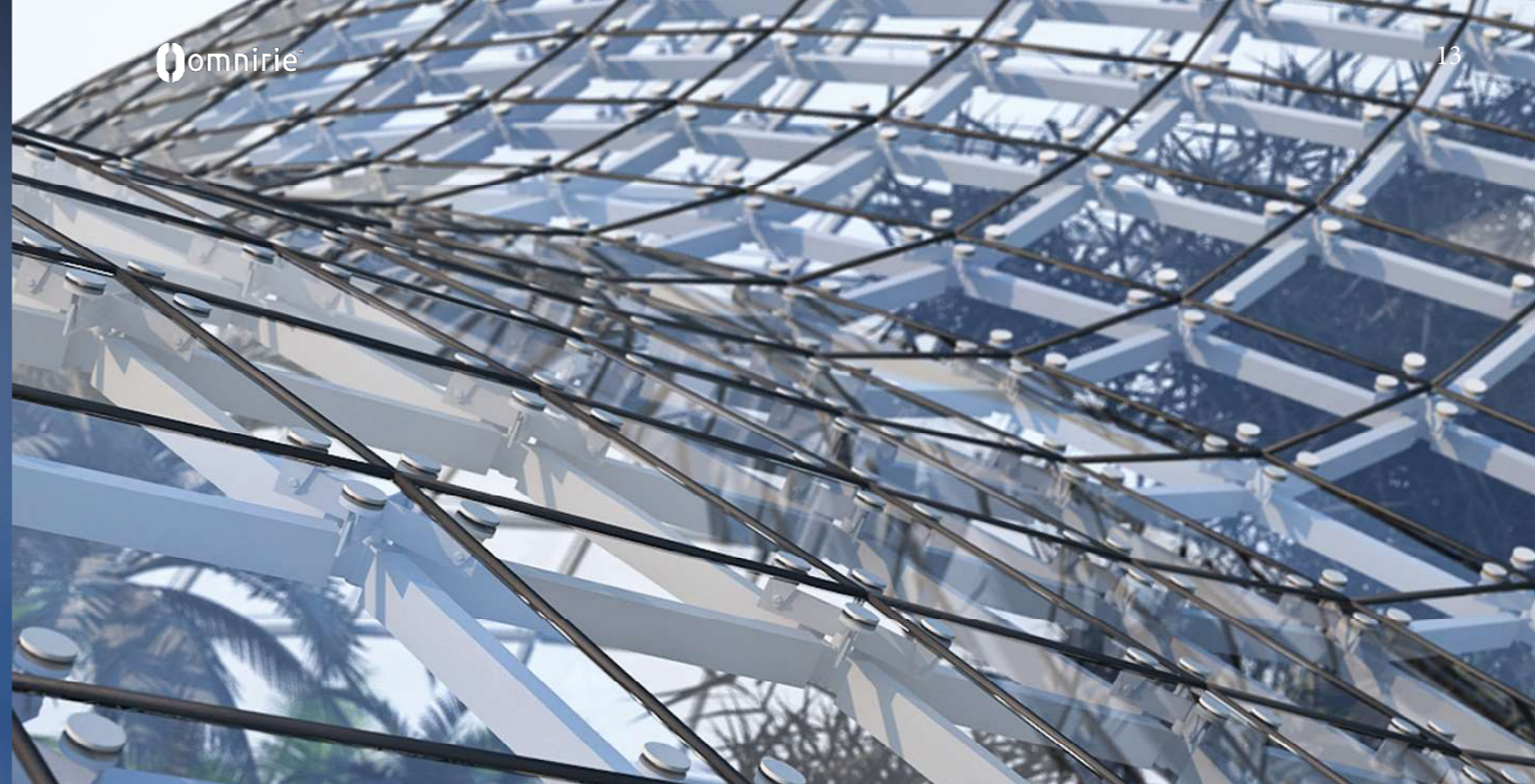
People have been using pictures to express themselves since the dawn of humankind. From the cave paintings of Sulawesi to Michelangelo's ceiling of the Sistine Chapel and beyond. The methods might have changed over time, but the idea stays the same. We believe that nothing communicates a complex concept or idea better than a good image. That is why we provide photorealistic and conceptual visualizations of the highest quality as part of our services.

We go to great lengths to ensure that the inputs for our visualizations are well prepared and accurate, making the final image a correct representation of your ideas.

Conceptual

Clean images and pure geometry, conceptual visualizations are a fast and efficient way to communicate an idea or to document progress. They are simple and to the point. Conceptual visualizations are great for explaining a concept and they are created in a fraction of the time that realistic visualizations take.

Photorealistic

Photorealistic visualizations provide the best possible preview of a buildings appearance and how it will be perceived when it is built, before the construction has even begun. Precise 3D models, realistic lighting and realistic materials ensure that our images are a faithful representation of reality.

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