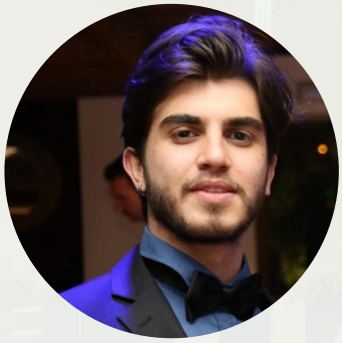
PORTFOLIO.

Onur Göztepe
Computational Design and BIM Specialist

CONTENT



ONUR GÖZTEPE

BIM & COMPUTATIONAL DESIGN SPECIALIST

CONTACT

+971 058 188 25 59

goztepeonur@gmail.com

onurgoztepe

SOFTWARE SKILLS

Rhino/Grasshopper
Revit/Dynamo
Navisworks,Bexel M.
ACC, APS
Unreal Engine, Unity
Power Platforms
Python, C#
FEA Engines

LANGUAGE SKILLS

Turkish	Native
English	B2 Upper Intermediate
Russian	A1 Elementary

PERSONAL STRENGTH

Critical Thinking
Empathy
Cognitive Flexibility
Collaboration
Emotional Intelligence

BACHELOR PROJECTS

CAD to Revit Automation by Dynamo
Seismic Design of Buildings and Isolator
Economic Analysis of Hydropower Plant
Design of Labyrinth and Piano Weirs

MASTER PROJECTS

-Gridshell Multi-Objective Design Optimisation
-UTCI Urban Comfort Analysis

WORKSHOPS

Design together with BIM Contest 2022
Digital Futures 2023 ROBO|SETTA

ABOUT

I am a design technologist working at the intersection of AI, BIM and computational design, With a background in architecture and engineering and GIS.
I explore how machine learning can advance automation, interoperability, and informed decision-making in the AEC industry.

WORK EXPERIENCES

DESIGN TECHNOLOGIST - ABU DHABI, UAE (2024 -)

-Architectural and Structural Design Technologist

- Leading development of 3D compliance checking workflows for both architectural and structural domains.
- Serving as Subject Matter Expert (SME) in regulatory rule interpretation, collaborating with government entities to integrate feedback into platform training loops and improve AI-assisted validation outcomes.
- Integrate openBIM pipelines leveraging IFC, IDS, and BCF. Developing robust data parsing tools using IfcOpenShell and geometry engines for model interrogation.

BIM COORDINATOR - SFMM, ANKARA, TURKEY (2023 - 2024)

-Luxembourg European Investment Bank Headquarters - Structural BIM Coordinaton
-Barcelona Nou Camp Stadium - Architectural BIM Support

- -Kuwait International Airport Terminal, Carpark, Apron - General BIM Coordinator
- Develop and maintain BIM workflows and applications, using tools like Dynamo and Power Automate to enhance efficiency and automation.
- Contribute to the development of processes, procedures, templates, and model content for project delivery. Support in developing, implementing, maintaining, and improving technological solutions.
- Adhere to BIM Execution Plan and maintain BIM coordination workflows on assigned projects.
- Perform model QA/QC checks on projects according to established standards.
- Collaborate with architects, engineers, and construction managers to gather requirements and design new features.
- Provided training courses for architects and engineers on BIM and the automation of repetitive tasks to enhance efficiency
- Debug and troubleshoot software issues to ensure smooth operation.

COMPUTATIONAL DESIGNER - GENX,NEW YORK,USA(2022 - 2023)

-Charlotte Main Library, Charlotte/USA
-Treehouse Hotel Sunnyvale, California/SA

- Design to fabrication automation process of building facades.
- Write grasshopper script to create parametric models
- 3D building model integration (Speckle, Rhino.Inside.Revit, BHoM)
- Scan to BIM Modelling of facade components

COMPUTATIONAL DESIGN & BIM SPECIALIST - NJ OPTIMAL, VILNUS, LITHUANIA (2021-2022)

- Providing assistance in structural and computational design
- Software usage to create 3D models and production of construction documents.
- Write and develop visual scripts to automate tasks
- Scan to BIM Modelling of Industrial Building Project
- Obtaining consistent drawing, calculation, and list outputs.

BIM MODELLER - SALIHOGULLARI INSAAT, ANKARA, TURKEY (2020-2021)

-Polsan Prestij Houses 7 tower blocks consist of 450 flats | Operating Phase 2020-2021
-Prestij Life Houses 4 tower blocks consist of 180 flats | Build Phase 2020-2021
-Life Tower Houses 3 tower blocks | Foundation Build Phase 2021

- Tracking progression of working schedule. Establishing coordination with sub-contractors and suppliers regarding equipment and material specification.
- Report on the status and progress of the construction site. Controlling work is performed in accordance with drawings.

SITE INTERN- SFMM INSAAT, ANKARA, TURKEY (2018)

- Report on the status and progress of the construction site
-

EDUCATION BACKGROUND

ARCHITECTURE AND REGENERATION OF THE BUILT ENVIRONMENT MASTER'S PROGRAM

- **Istanbul University, Istanbul, Turkey | 2025 Graduate**

Research on integration of computational design and analysis tools on architectural engineering.
Multi objective optimisation of designing gridshells

REMOTE SENSING AND GEOGRAPHIC INFORMATION SYSTEMS MASTER'S PROGRAM

- **Eskisehir Technical University, Eskisehir, Turkey | 2024 Graduate**

Research on BIM-GIS workflows: Usage of geospatial and design data together.
UTCI Comfort Map Analysis

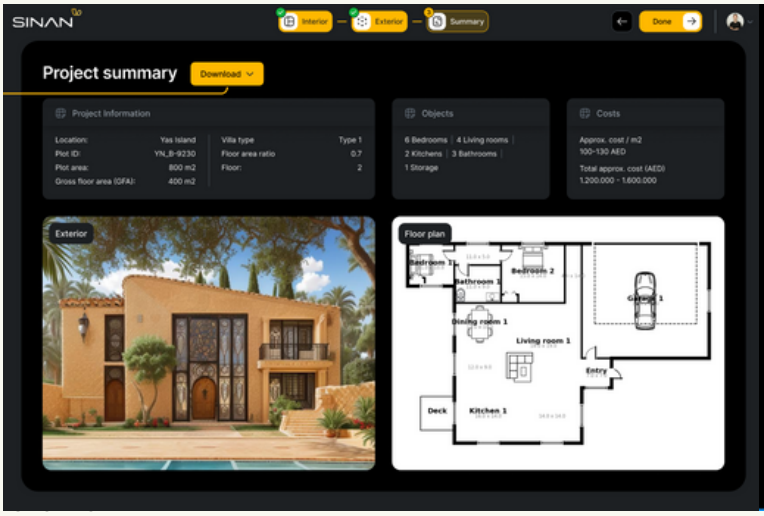
CIVIL ENGINEERING BACHELOR'S PROGRAM

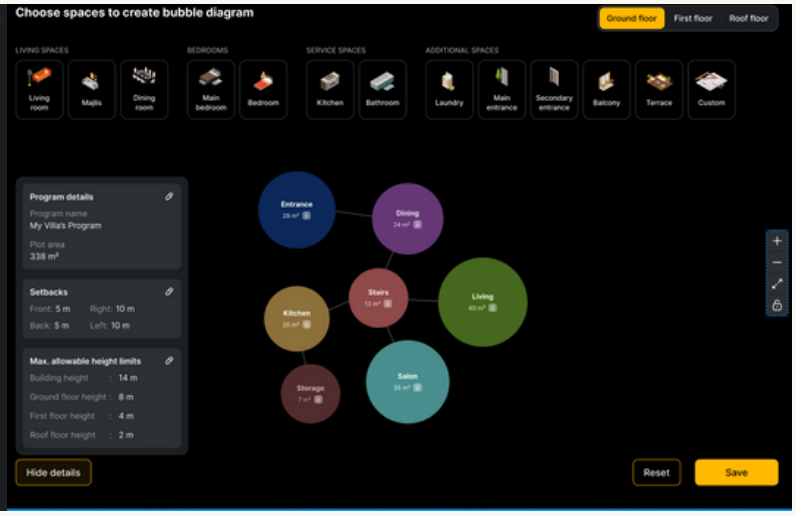
- ***Eskisehir Technical* University, Eskisehir, Turkey | 2020 Graduate**
- **Coimbra Institute of Engineering, Coimbra, Portugal | 2017-2018**

SOCIOLOGY BACHELOR'S PROGRAM

- **Anadolu University, Eskisehir, Turkey | 2023 Graduate**

Architectural Compliance Check Automation





The project focused on developing and deploying advanced computational design solutions for architectural applications. Key components included an AI-powered image generation service, room boundary detection algorithms, and cloud deployment of computational tools through Rhino Compute.

Roles and Responsibilities

- Algorithm Development: Designed and implemented robust room boundary detection algorithms to automatically identify and analyze spatial configurations in architectural plans
- Technical Integration: Bridged the gap between architectural requirements and software development by translating complex geometric operations into scalable API endpoints
- Cross-team Collaboration: Worked closely with backend and frontend teams to ensure seamless integration of computational design solutions into the larger software ecosystem

Challenges and Solutions

Challenge: Cross-disciplinary Communication Issue: Bridging knowledge gaps between software engineering teams and architectural design requirements Solution: Developed comprehensive API documentation and technical specifications that translated architectural concepts into clear engineering requirements, facilitating effective collaboration between teams
Challenge: System Integration Issue: Ensuring reliable communication between frontend applications and geometric computation services Solution: Implemented robust API endpoints using FastAPI, with thorough testing protocols using Postman to validate all geometric operations and data transformations

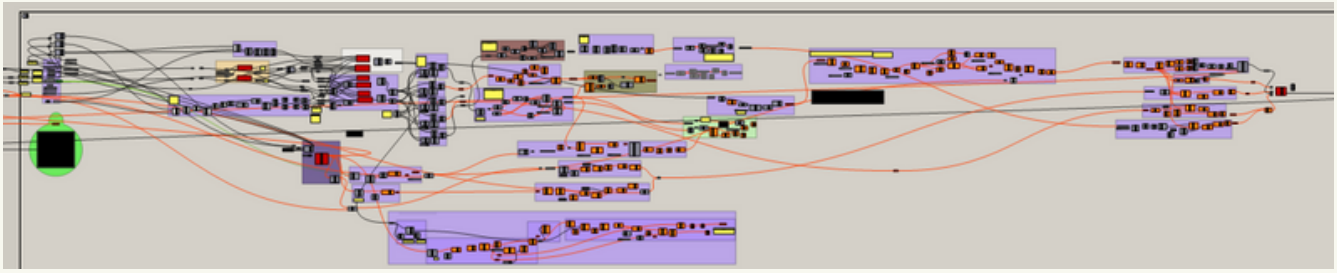
Tools and Techniques

- Computational Design:

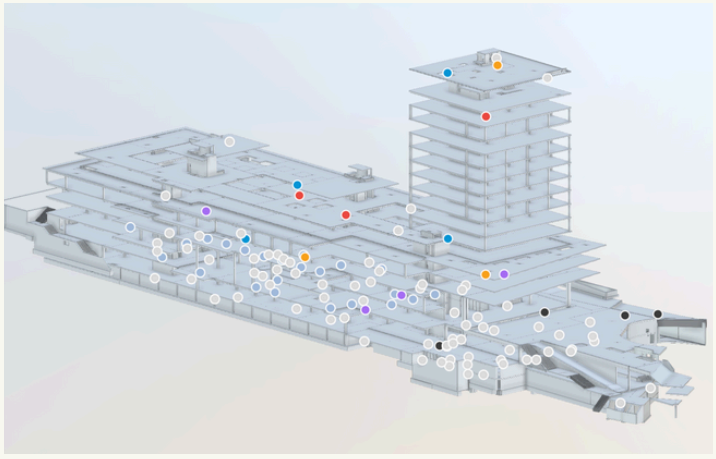
Rhino Compute: Server-side geometric computation engine
Grasshopper: Visual programming for parametric design workflows
AutoCAD API: Custom C# solutions for AutoCAD automation

- Development Stack:

Python: FastAPI for ML services and computational backends
C#: AutoCAD API integration and custom tooling
Postman: API testing and documentation



Structural BIM Coordination of Luxembourg European Investment Bank Headquarters



Overview

The project involves the construction of the new headquarters for the European Investment Bank (EIB) in Luxembourg.
This state-of-the-art facility is designed to enhance the operational efficiency and capacity of the EIB.

The primary goal is to create a sustainable, efficient, and modern headquarters that aligns with the EIB's operational needs and environmental goals. Key deliverables include high-quality BIM models, accurate 2D drawings, and comprehensive data management for 4D and 5D project aspects.

Roles and Responsibilities

Structural BIM Coordination: MEP Openings Coordination: Managing and coordinating mechanical, electrical, and plumbing (MEP) openings within structural elements to ensure compatibility and efficiency.
QA/QC Model Cleaning: Conducting quality assurance and quality control by cleaning the BIM models and using checklists to maintain accuracy and standards.
BIM LOD Matrix Data Management: Managing the Level of Development (LOD) matrix data to ensure the model's accuracy and completeness.
4D and 5D Execution: Executing parameters for 4D scheduling and 5D cost management to streamline project planning and financial tracking.
Parameter Management: Managing various parameters within the BIM model to ensure data consistency and reliability.

Challenges and Solutions

Challenge: MEP-Structural Coordination Process
Issue: Cutting openings on structural elements for MEP systems was time-consuming.
Solution: Integrated Dynamo into every stage of the data flow to manage and control all openings efficiently. This automation streamlined the copy-monitor process and enhanced communication between teams, ensuring timely action.

Challenge: Model Cleaning and Checklist Creation:
Issue: Managing a large number of models and creating detailed checklists was challenging.
Solution: Created batch processes for model checker automation using Dynamo. This automation significantly reduced the time required for model cleaning and checklist generation.

Tools and Techniques

Navisworks, ACC, and BIM Track: Used for tracking issues and coordinating various aspects of the project.
OpenSpace: Utilized for tracking as-built elements and gathering information for 4D scheduling and 5D cost management, which was synchronized using Synchro and Bexel Manager.
PyRevit: Applied extensively for modelling and coordination tasks.
Dynamo: Used for automating data flows and various coordination tasks to enhance efficiency and accuracy.
Outcomes and Impact
Enhanced Efficiency: The use of automation tools like Dynamo and PyRevit improved the efficiency of the MEP-structural coordination process and model management.
Improved Communication: Streamlined processes and effective communication between teams contributed to the project's success.
Client Satisfaction: High-quality deliverables and adherence to client standards resulted in positive feedback from the client.

Architectural BIM Coordination of Barcelona Camp Nou Stadium

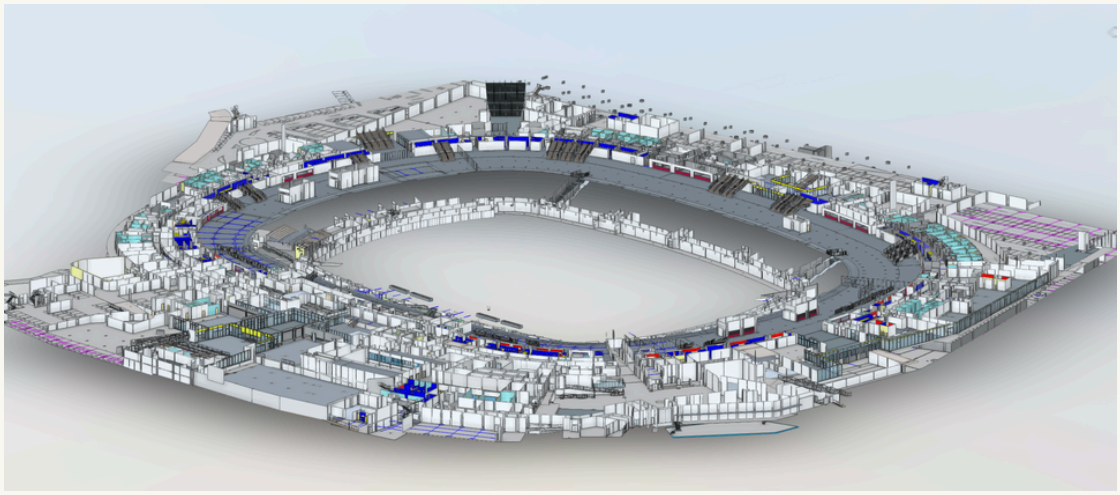
Overview

The renovation and expansion of the Barcelona Camp Nou Stadium aim to modernize the iconic sports venue, enhancing its capacity and facilities to meet contemporary standards and improve the overall fan experience. The project includes structural upgrades, seating expansion, and advanced technological integrations.

Objectives: The primary goal is to create a state-of-the-art stadium that can accommodate more spectators and provide a superior experience. Key deliverables include comprehensive BIM models, detailed 2D drawings, and efficient data management for project coordination.

Roles and Responsibilities

BIM Data Flow: Managed the flow of BIM data, ensuring accurate and timely updates across the project.
Archiving: Oversaw the archiving process to maintain organized and accessible project records.
Weekly Model Exports: Coordinated weekly exports of BIM models for team review and progress tracking.
Team Coordination: Collaborated with team members to ensure smooth communication and workflow.
Collaboration:
Interdisciplinary Collaboration: Worked closely with architects, engineers, and construction managers to gather requirements and design new features.
Troubleshooting: Debugged and troubleshot software issues to ensure smooth operation of BIM tools.
Parameter Data Management: Managed parameters for doors, washroom items, furniture, and other elements to ensure accurate data extraction.
Quantity Take-offs: Extracted quantity take-offs from models to aid in project planning and resource allocation.
QA/QC Checks: Performed model QA/QC checks according to established standards to maintain model accuracy and reliability.



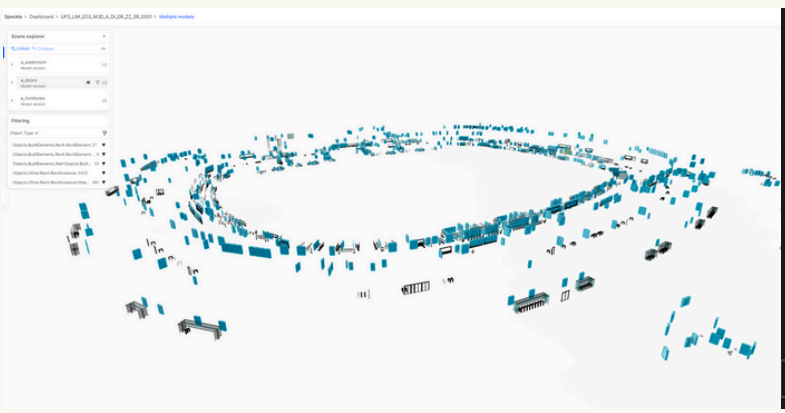
Main Challenge

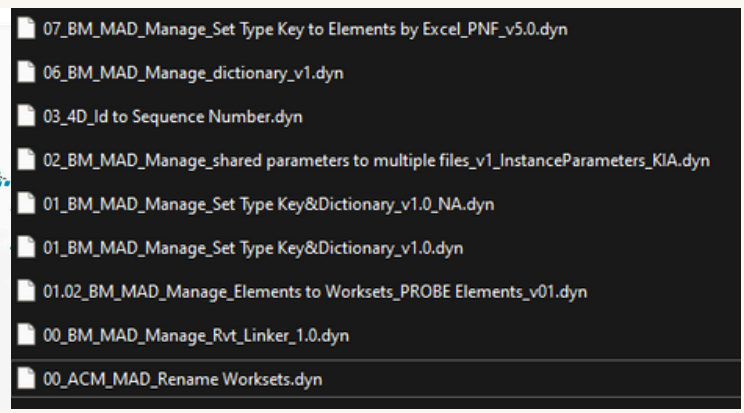
Interdisciplinary Coordination: Ensuring effective communication and coordination among diverse team members.

Solutions

Effective Communication: Established robust communication channels and regular meetings to facilitate coordination among team members.

Speckle platform is used for transfer granular data between different softwares internally and Implemented Dynamo scripts and other automation tools to streamline repetitive tasks, perform QA/QC checks, and ensure model accuracy.

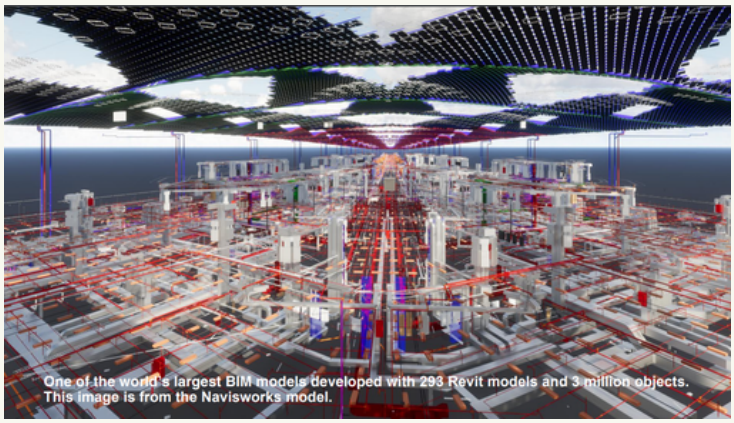


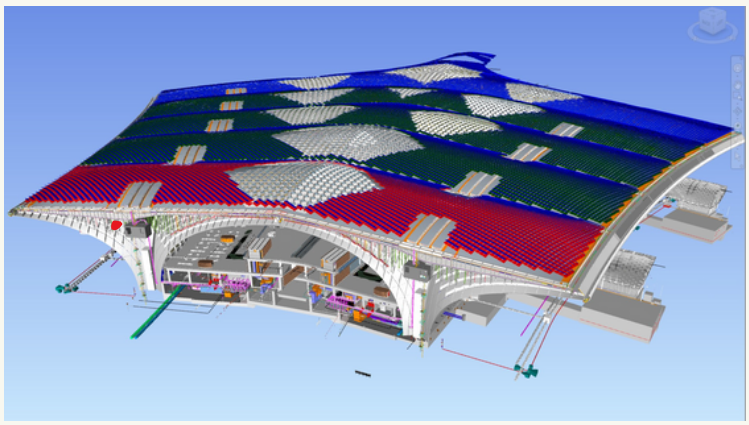


BIM Coordination of Kuwait International Airport

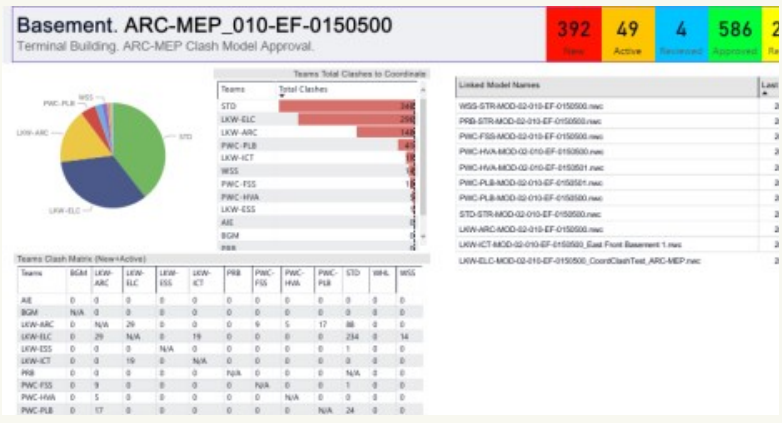
Overview: The Kuwait International Airport expansion involves constructing a new passenger terminal designed to increase capacity and improve passenger experience. The project is marked by its innovative design and advanced infrastructure to support Kuwait's growing aviation needs.
Objectives: The primary goal is to create a state-of-the-art terminal that enhances operational efficiency, passenger comfort, and sustainability. Key deliverables include high-quality BIM models, accurate clash detection, streamlined workflows, and efficient data management.

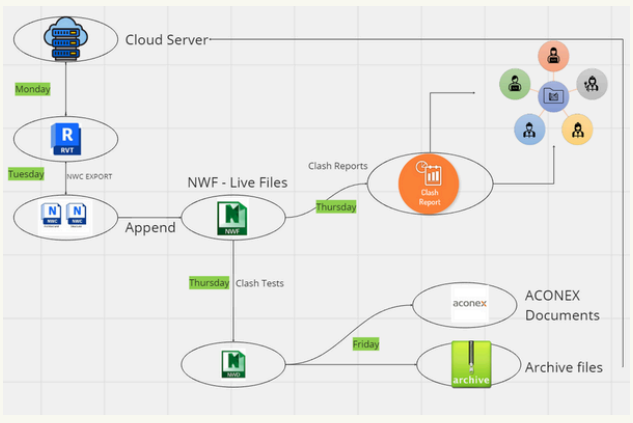
Roles and Responsibilities
BIM Workflow Development: Developed and maintained BIM workflows and applications using Dynamo and Power Automate to enhance efficiency and automation.
Process Development: Contributed to developing processes, procedures, templates, and model content for project delivery.
Technological Solutions: Supported in developing, implementing, maintaining, and improving technological solutions.
BIM Coordination: Adhered to the BIM Execution Plan and maintained BIM coordination workflows on assigned projects.
Model QA/QC: Performed model QA/QC checks on projects according to established standards.
Collaboration: Collaborated with architects, engineers, and construction managers to gather requirements and design new features.
Training: Provided training courses for architects and engineers on BIM and the automation of repetitive tasks to enhance efficiency.
Troubleshooting: Debugged and troubleshot software issues to ensure smooth operation.
Technological Updates: Stayed up-to-date on the latest BIM and AI technologies and understood their application.



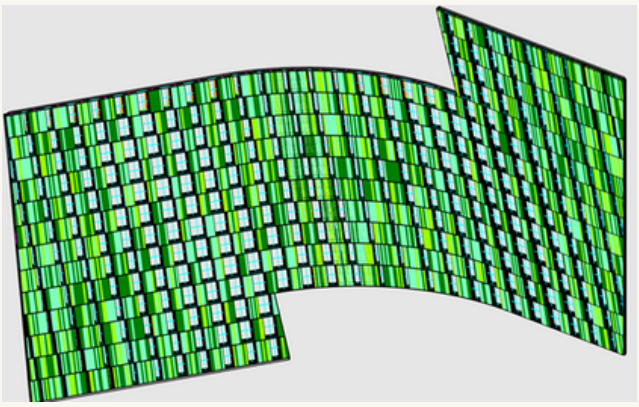


Main Challenges:
Data Volume: Managing hundreds of models and handling massive project data.
Repetitive Tasks: The BIM team faced time-consuming repetitive tasks, such as updating federated models, performing clash detection, uploading documents, and informing team members.
Tool Integration: The project began in 2017, requiring the integration of newer tools and features into Revit 2017, often necessitating custom Python scripts and custom nodes.
Multinational Workforce: Coordinating a workforce from more than 10 countries required custom solutions for cloud data and document management.
Solutions:
Automation with Power Automate: Leveraged Power Automate to automate repetitive tasks, saving approximately 40 hours of weekly manhour task.
Custom Python Scripts: Developed custom Python scripts and nodes to integrate new features and tools into Revit 2017.
Efficient Data Management: Implemented custom solutions for cloud data and document management to accommodate the multinational workforce and ensure seamless communication and coordination.

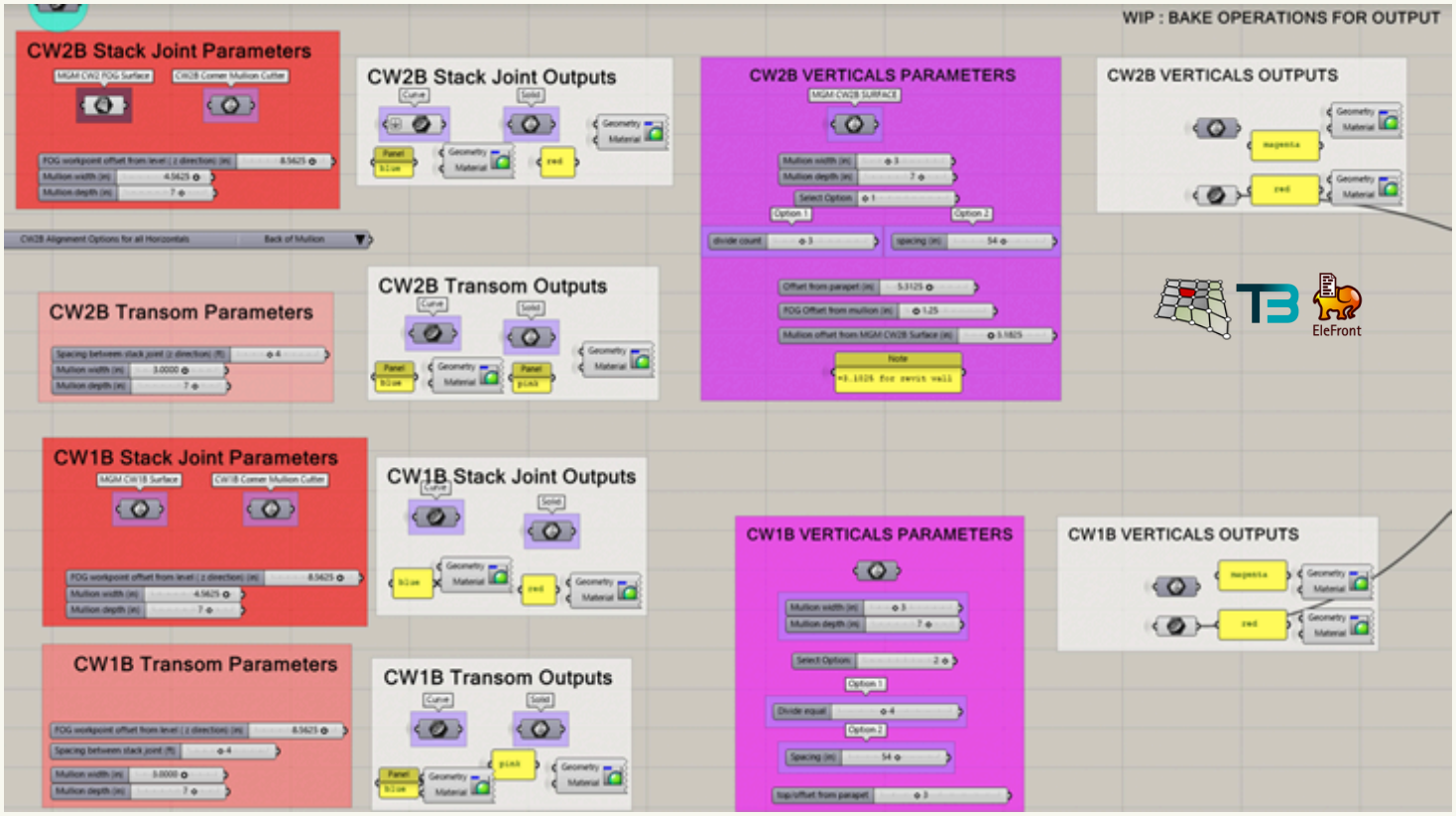




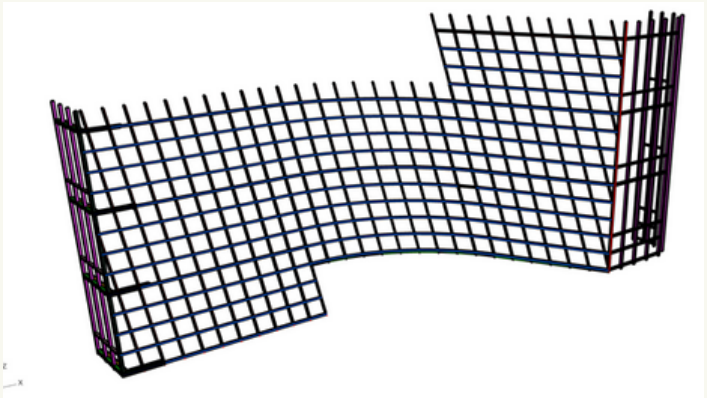
Facade Project: Design to Fabrication Modelling
Location: Charlotte/USA

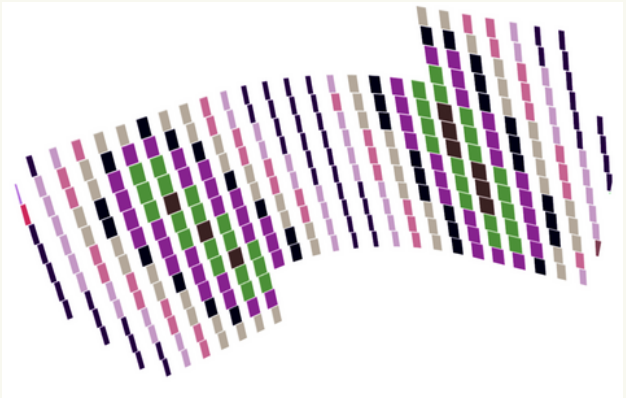


In the facade design to fabrication project, several facade elements including vertical mullions, stack joints, transoms, glass, metal panels, and anchors were meticulously addressed. The workflow began with geometry analysis carried out in Grasshopper.



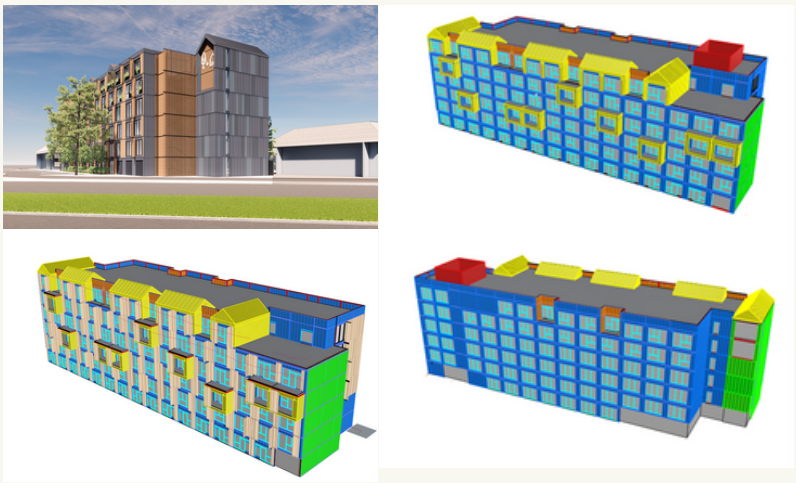
TThe Panelling Tools add-on played a crucial role in realizing the geometric aspects. Additionally, the Elefront add-on served as a vital tool for ensuring seamless interoperability between Grasshopper and Rhino. This comprehensive approach ensured a smooth transition from design conceptualization to the fabrication stage, streamlining the entire process.

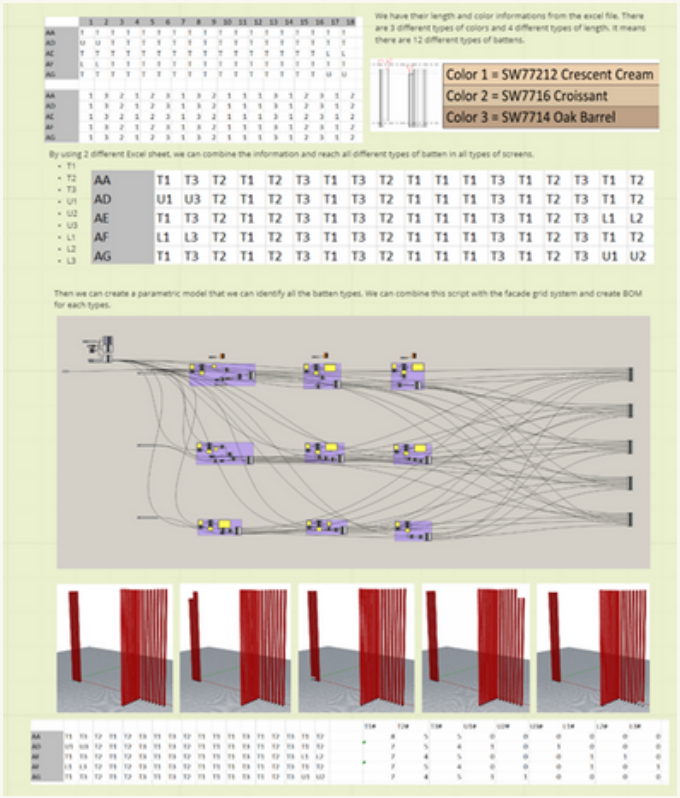




Facilitating intricate tasks such as color grouping based on glass size, as well as the grouping of mullion and transom lengths and orientations. To accomplish these tasks, C# components were strategically employed.

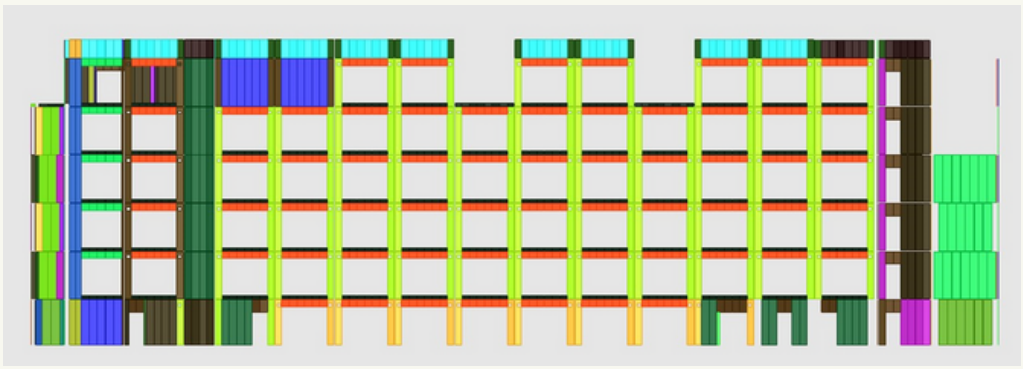
Treehouse Hotel Project - Facade Panel and Screen Modelling Automation
Location: California/USA

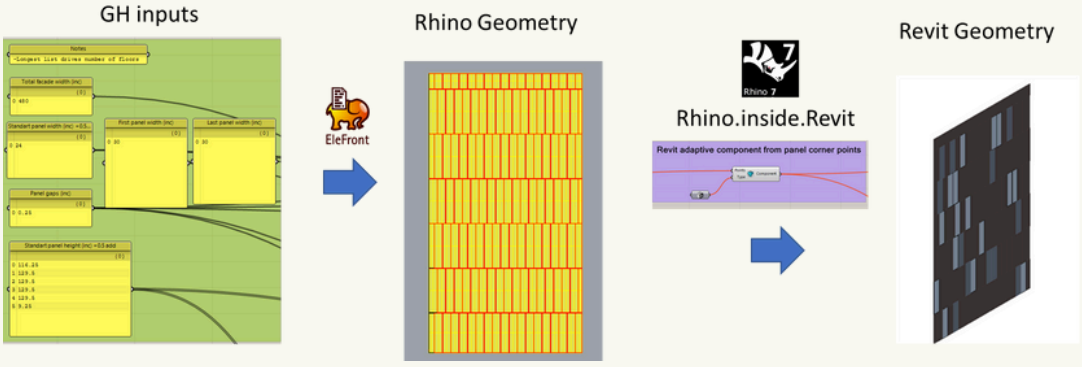




In the project focused on facade modeling automation, the challenge of handling three distinct colors and four different lengths of aluminum profile screens was efficiently addressed. To avoid manual modeling, an innovative approach was employed. Excel matrix data was harnessed as a bridge to seamlessly transfer information into Grasshopper. Subsequently, the Elefront plug-in was leveraged to assign the necessary properties, streamlining the modeling process and ensuring precision in the facade design.

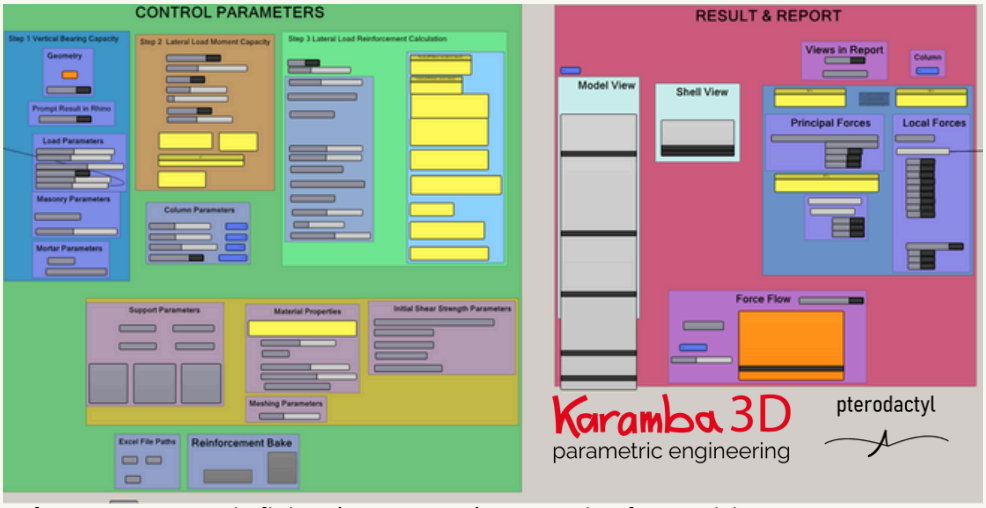
Geometry analysis was conducted through Grasshopper, enabling advanced tasks such as color grouping based on panel types. This analytical approach enhanced the understanding and visualization of the project's intricate facade design, providing valuable insights for further development.



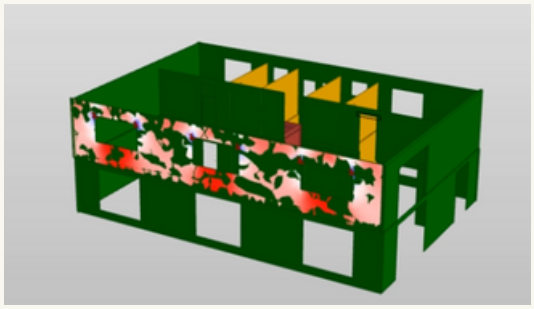


Additionally, Rhino.Inside.Revit was utilized to harness the benefits of enhanced interoperability. This facilitated the seamless transfer of the final geometry into Revit, further streamlining the design and documentation process.

Masonry Building Analysis and Design Automation

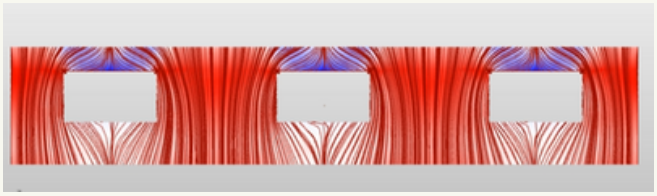


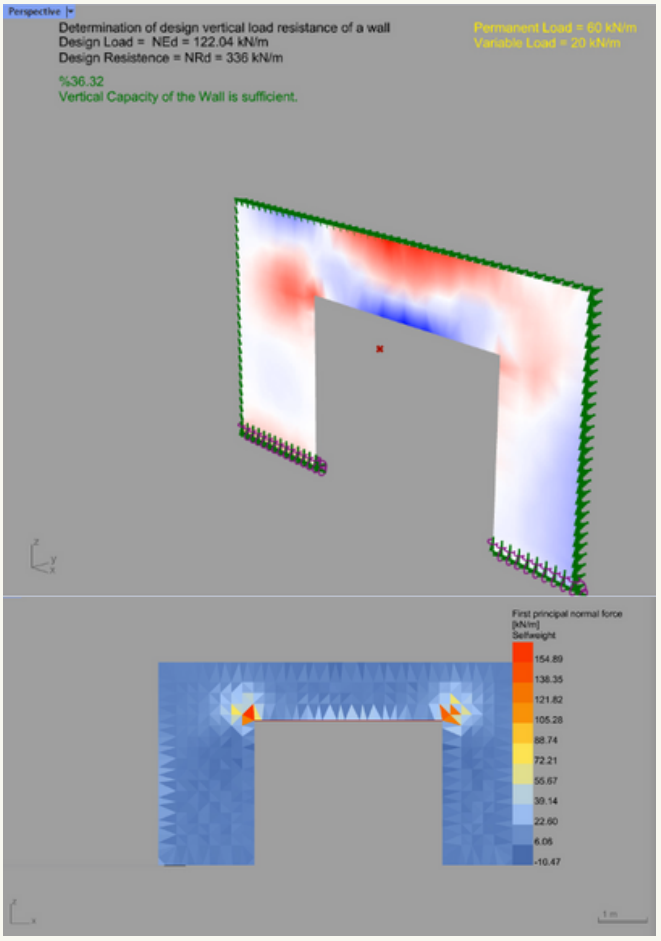
The project involves masonry wall analysis and design using Karamba3D and Grasshopper, with PDF documentation output.



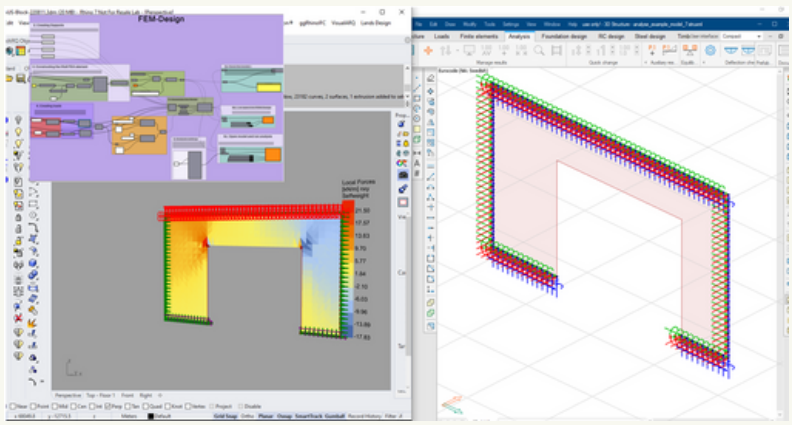
It features automatic finite element mesh generation for precision and presents results through contour lines, color palettes, or sections. An additional advantage is the ability to input the strength of any masonry unit, enhancing adaptability to various materials and configurations.

Brick material definition is available for plain wall objects, and the design calculation relies on FEA Shell Analysis. Properties dialogue offers configuration options, including the choice of slab wall connection type. The design adheres to Eurocode 6 standards, and FEA analysis determines internal forces and utilization.

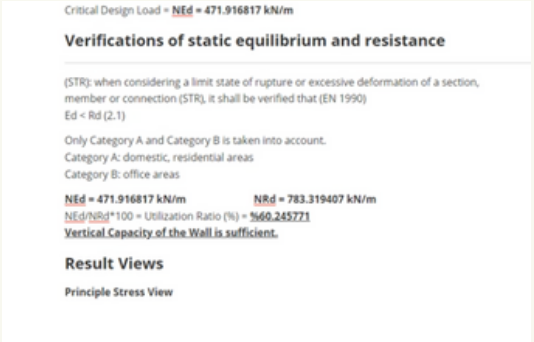




A Grasshopper script has been meticulously crafted to facilitate the seamless transfer and manipulation of geometrical and structural data. By harnessing the power of the FEM-Design API, this integration empowers the modification and refinement of structural analyses, transforming it into an invaluable and versatile tool for handling complex projects.

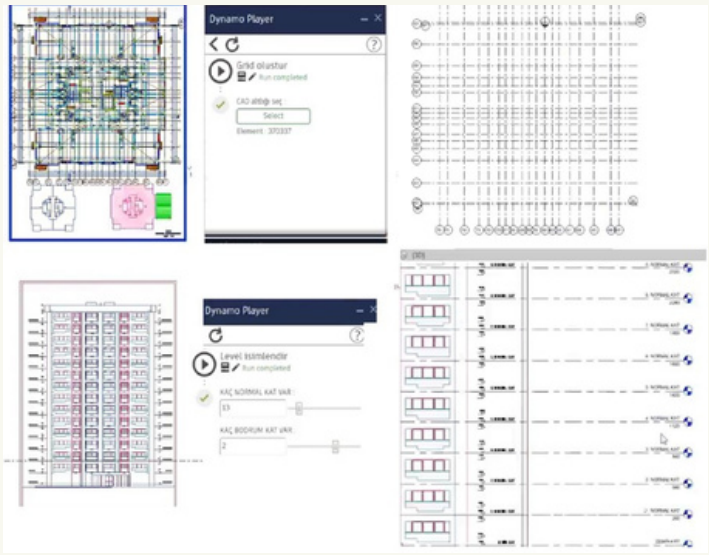


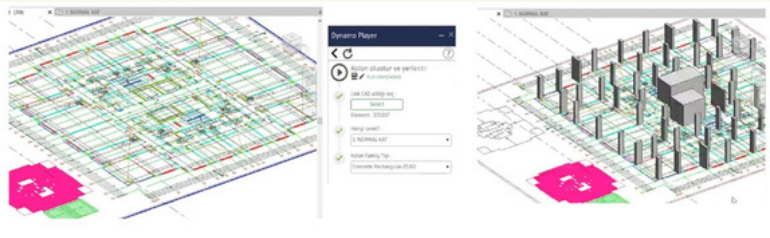
Auto-updated project reports are created within Grasshopper's Pterodactyl plug-in, convertible to PDFs. Masonry walls are modeled and analyzed for internal forces and utilization, with Display options for result management.



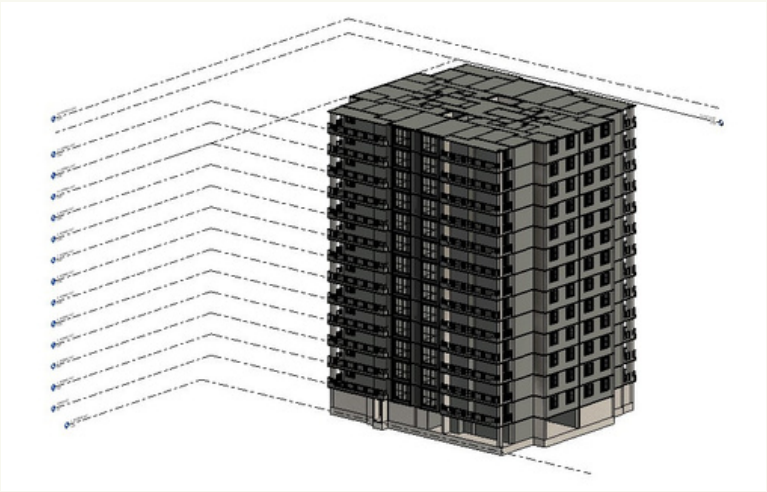
Automated 3D Modeling of Residential Buildings
Location: Ankara/Turkey

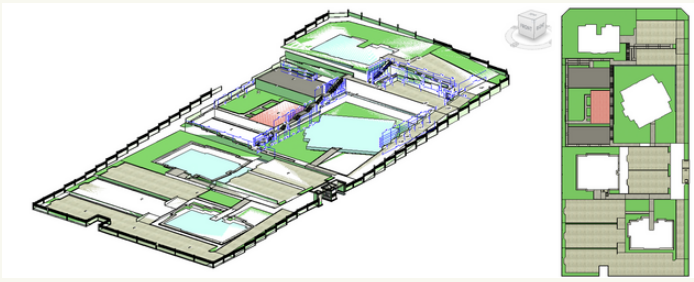
In this project, I used Dynamo scripts to generate grid and elevation from 2D CAD drawings and to create 3D structural Revit elements from the same source. The project involved modeling four residential buildings with different designs and specifications. The main objective of the project was to automate the modeling process and to reduce the time required for manual input and adjustment. The project also demonstrated the potential of Dynamo as a powerful tool for parametric design and data manipulation. The project was completed in collaboration with a team of architects and engineers, who provided feedback and guidance throughout the process. The final deliverables included the 3D Revit models, the Dynamo scripts, and a report documenting the workflow and results.



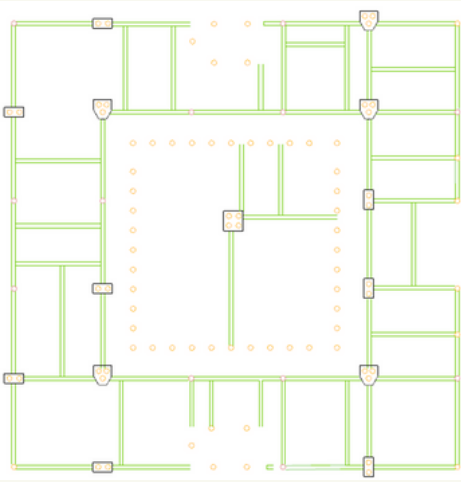


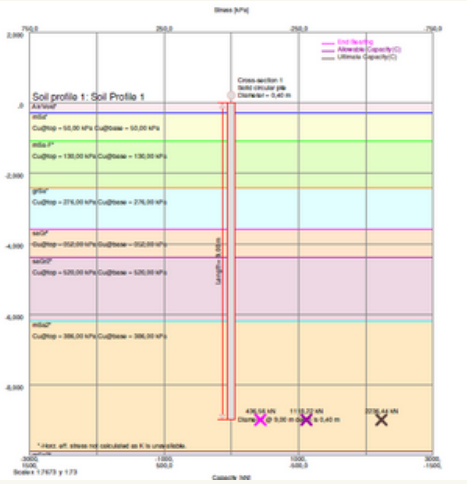
The project also involved the BIM implementation on site, where the Revit documents and model were directly used during the construction build phase. I was involved in site managament and control of the bim implementation. This enabled a better coordination and quality control among the different stakeholders and contractors involved in the project.





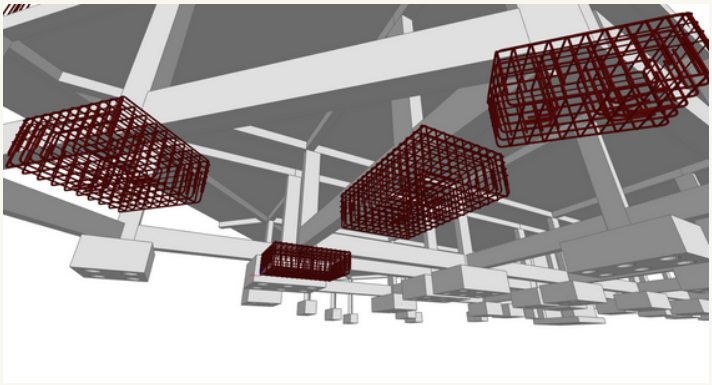
Foundation Design and Modelling
Location: Vilnius/Lithuania

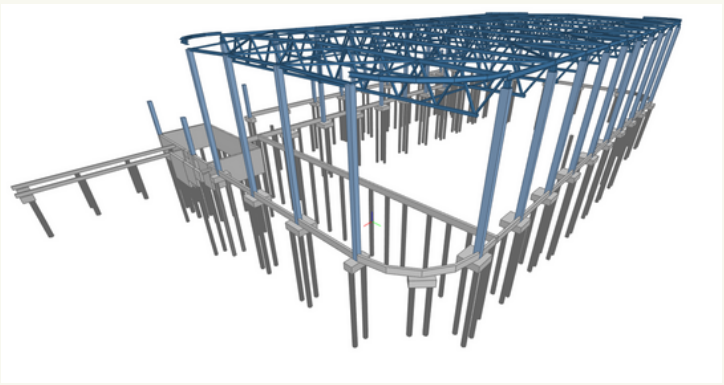




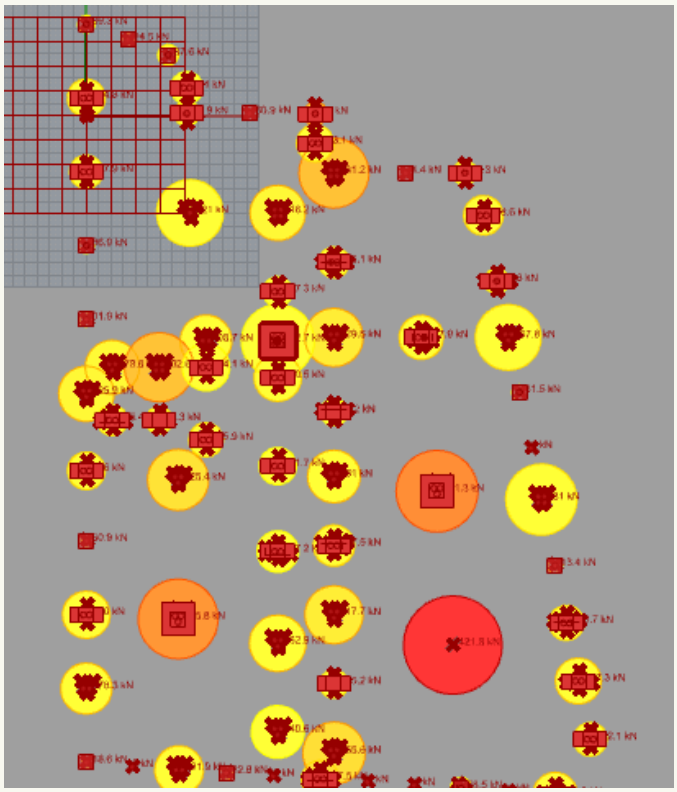
Soil examination, foundation design and capacity calculations have been conducted for numerous projects, with a particular focus on piles and pile groups. Reaction forces data has been obtained from FEM Software, facilitating the comparison of foundation capacity.

3D modeling has been executed using Rhino and Revit, followed by the export of the models in IFC format. Subsequently, comprehensive quantity take-off schedules have been derived from these models.

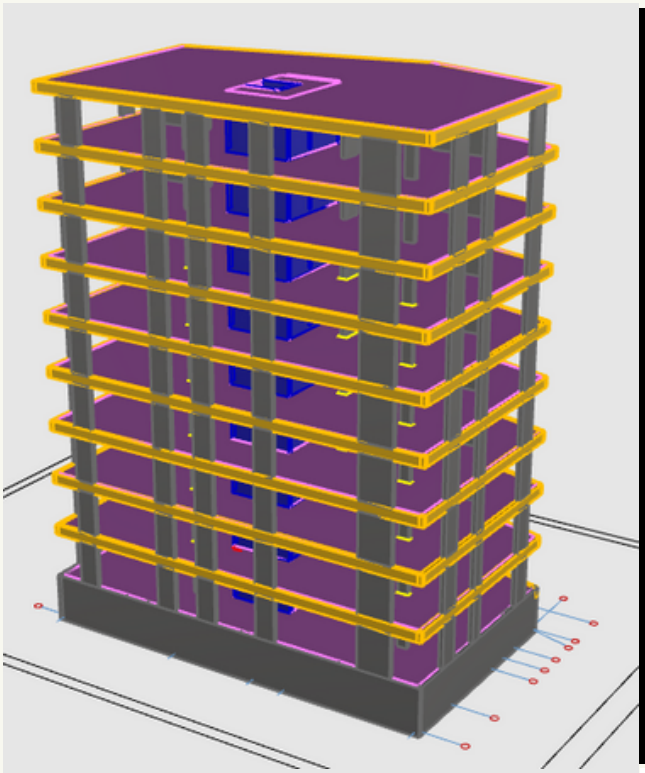


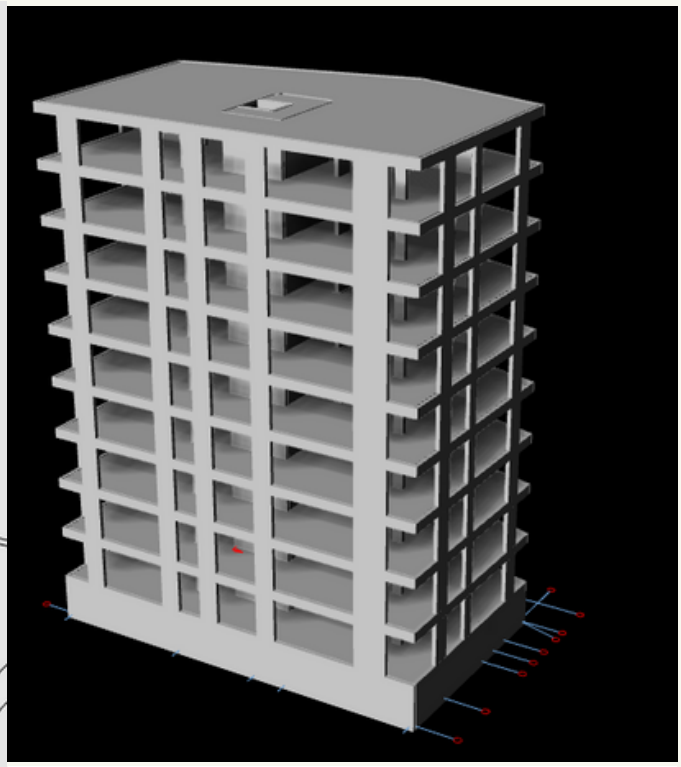


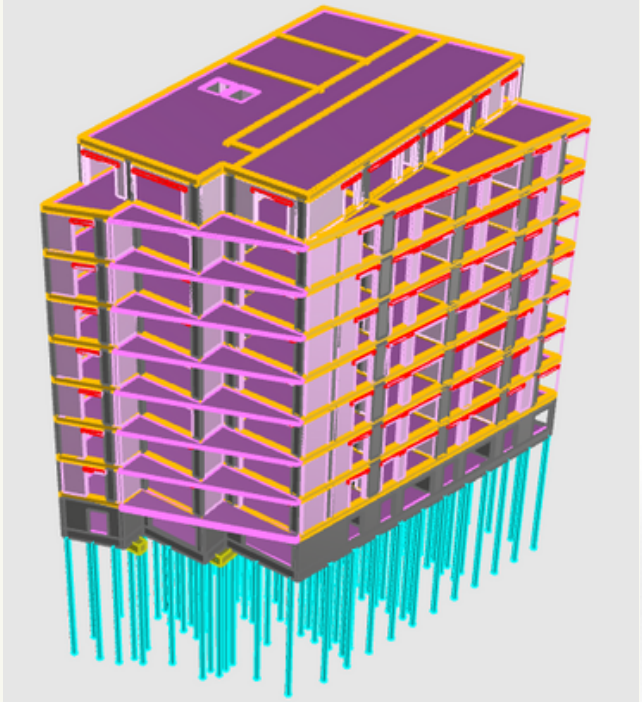
The visualization of this data has been accomplished in Rhino, employing Grasshopper for a comprehensive understanding of structural behavior.

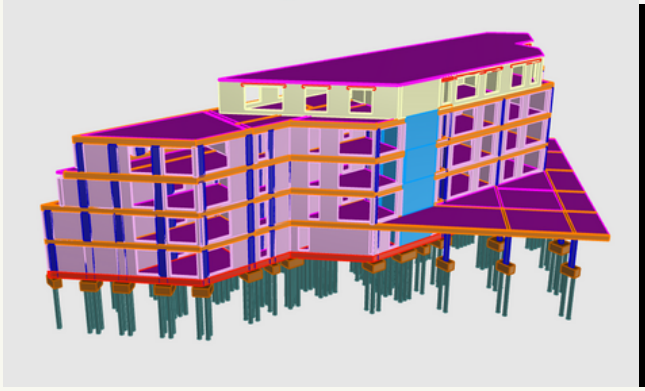


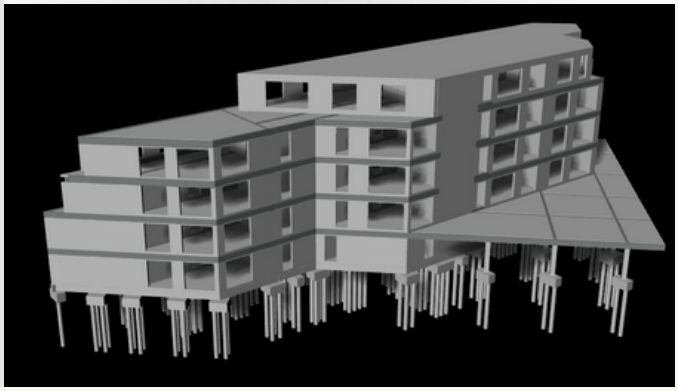
3D Modelling of RC Buildings
Location: Kaunas/Lithuania





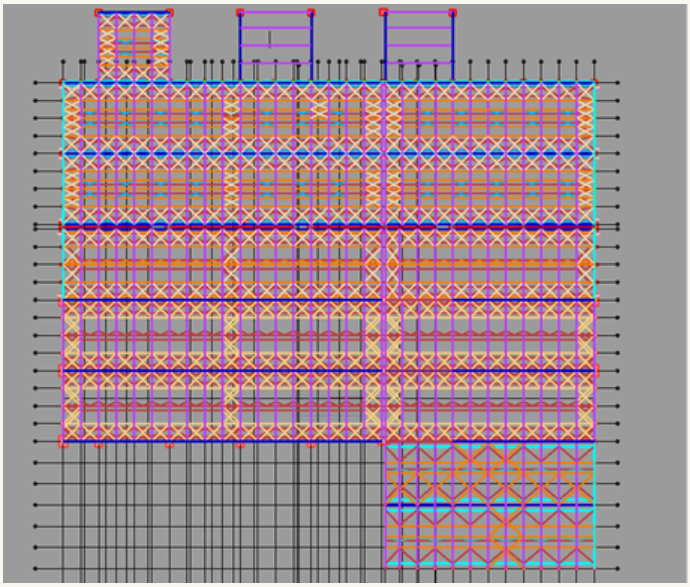


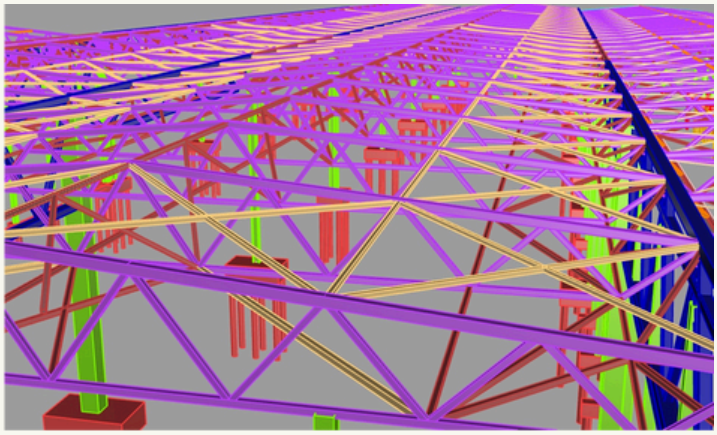




3D Modeling of Large-Scale Industrial Building
Location: Panevėžys/Lithuania

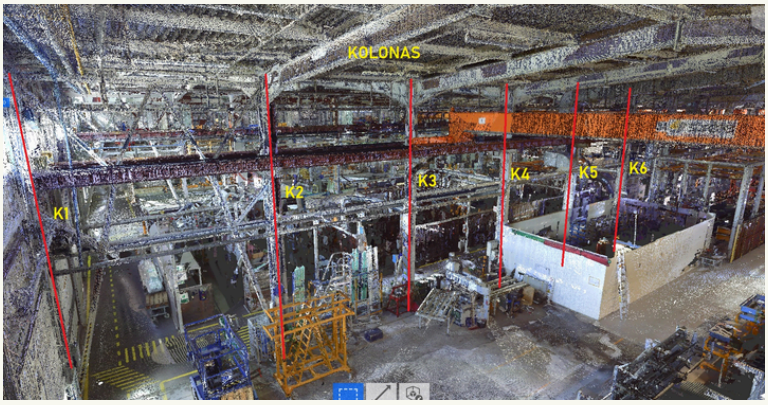
2D drawings are used as a reference to create 3D model of industrial buildings.

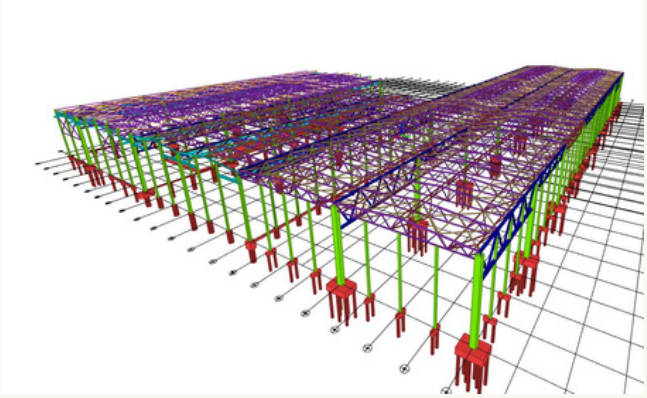




The building was 140x140m in size.
Custom cross-sections is created by using Rhinoceros with the visualARQ add-on.

The point cloud was then imported into Rhino and aligned with the model. The point cloud is used to verify the dimensions, alignments, and details of the model and to make any necessary adjustments.

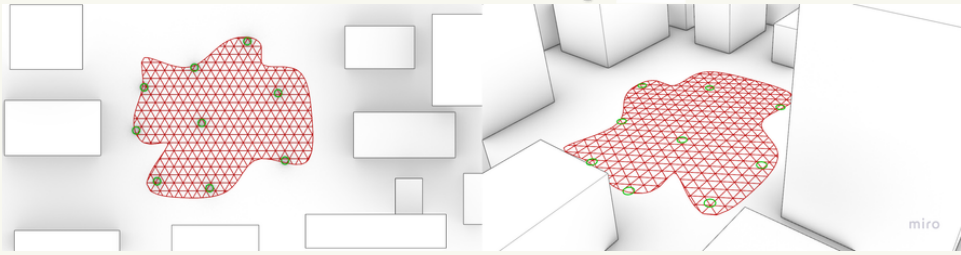


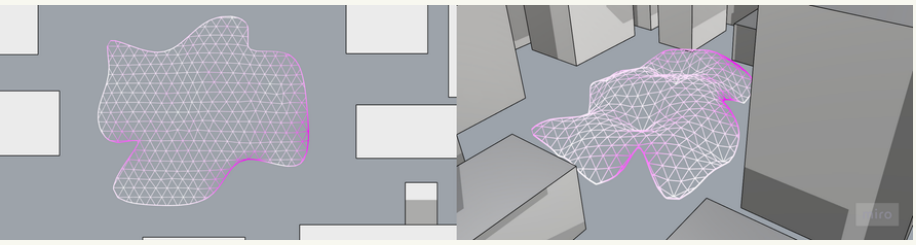


The final model is converted to structural model by using grasshopper and exported to FEM software. The project was completed in collaboration with a team of structural engineers, who provided feedback and guidance throughout the process. The final deliverables included the 3D Rhino model and the FEM results, and a report documenting the workflow and results.

Multi-Objective Optimisation of Gridshell

Project Overview: A computational design approach for optimizing a gridshell structure in an urban context, focusing on balancing environmental performance with structural efficiency for a metro station design.





Design Objectives:

1. Minimize Solar Radiation
- Target: Reduce heat gain through form optimization
- Method: Ladybug environmental analysis integration

2. Maximize Usable Area
- Efficient space utilization for metro station functions
- Optimize grid pattern density
- Balance between openness and structural requiremen

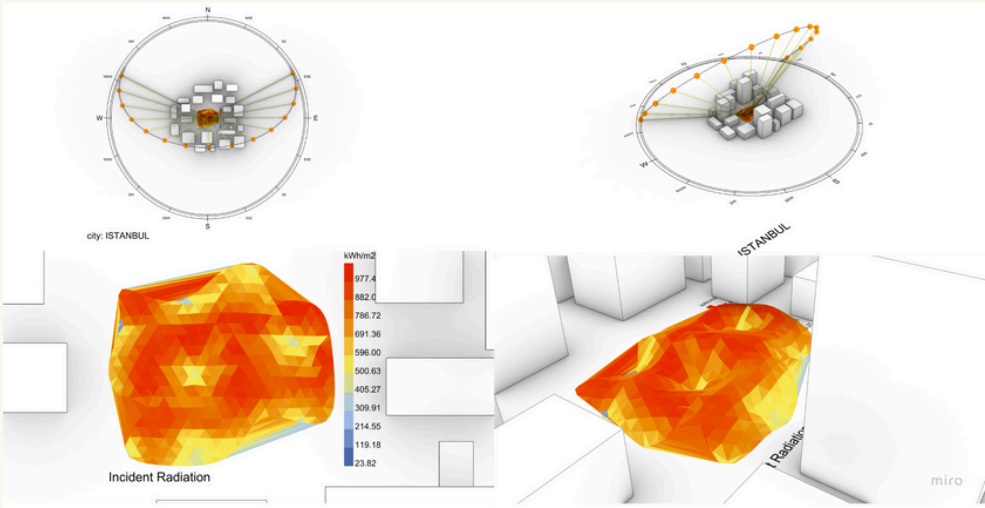
3. Structural Performance
- Minimize material usage while maintaining stability
- Optimize grid pattern and support points
- Dynamic structural analysis using Karamba3D

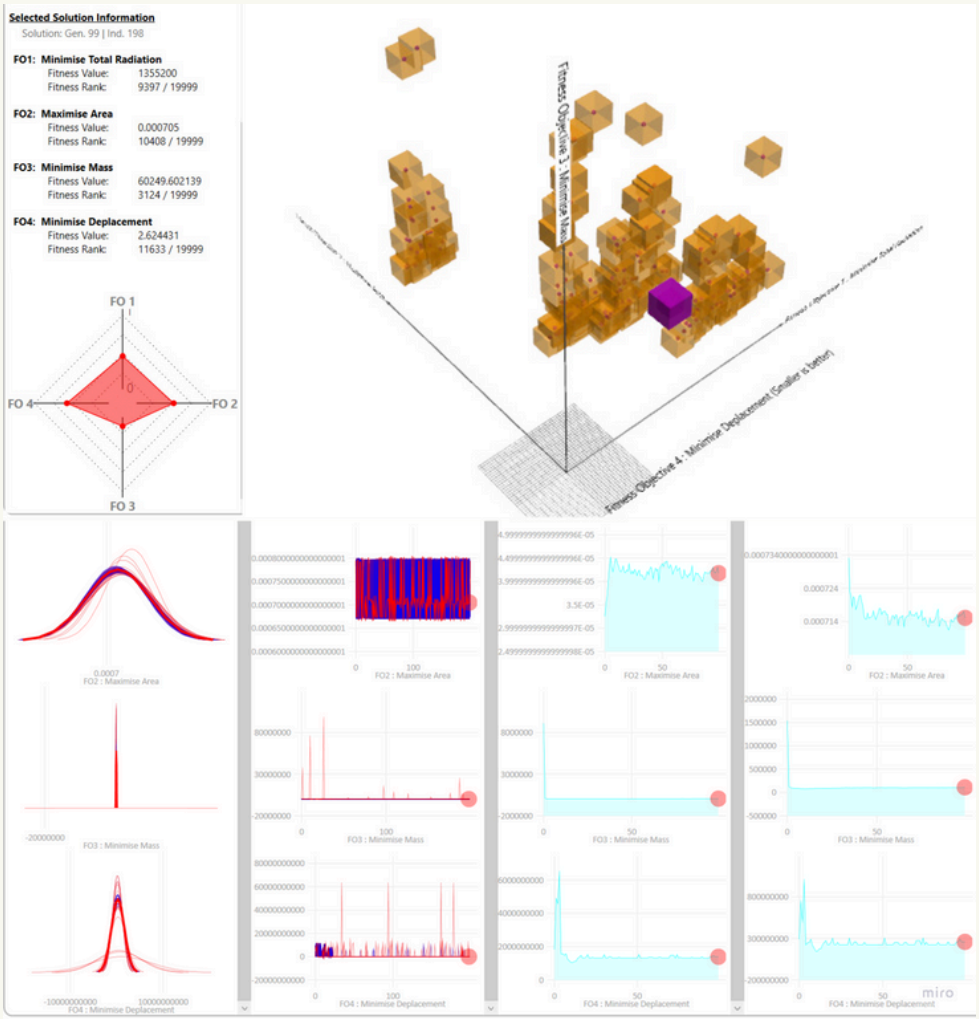
Methodology:
- Parametric Design: Grasshopper-based workflow
- Environmental Analysis: Ladybug Tools
- Structural Analysis: Karamba3D
- Multi-Objective Optimization: Wallacei X

Key Innovations:

1. Context-Responsive Form Finding
- Adaptive to surrounding building heights
- Strategic support point placement
- Responsive grid density variations

2. Performance Integration
- Real-time environmental feedback
- Structural efficiency optimization
- Trade-off analysis between competing objectives

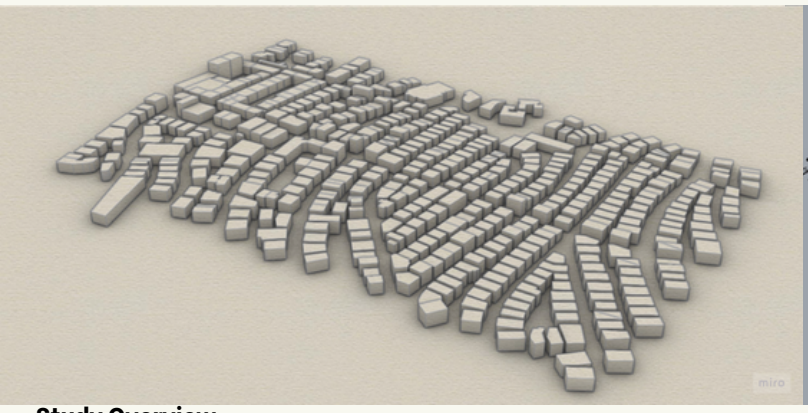


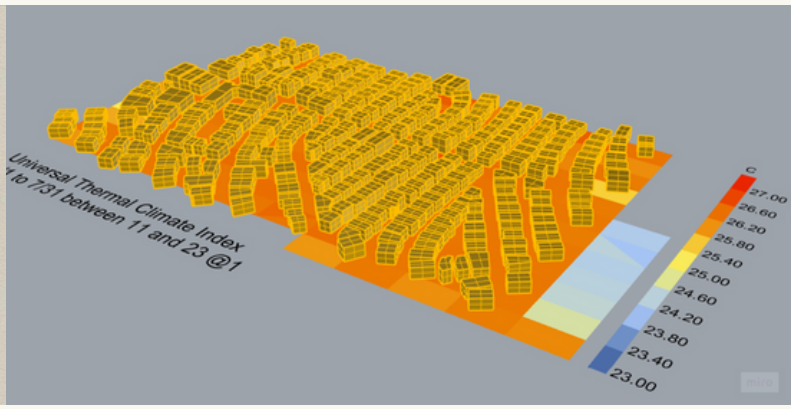


Results:
- Solar Radiation: Achieved 40% reduction from baseline
- Structural Performance: Optimized material usage with stable displacement values
- Form Generation: Successfully created diverse design solutions with similar performance metrics

The project demonstrates how computational design methods can create high-performing architectural solutions that balance multiple competing objectives while responding to complex urban contexts.

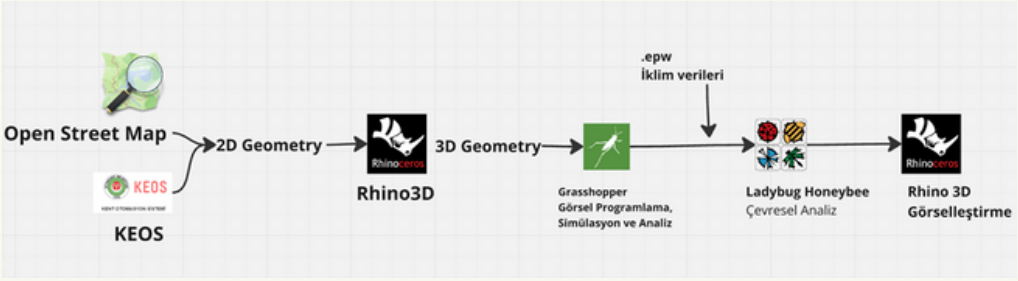
UTCI Urban Thermal Comfort Analysis





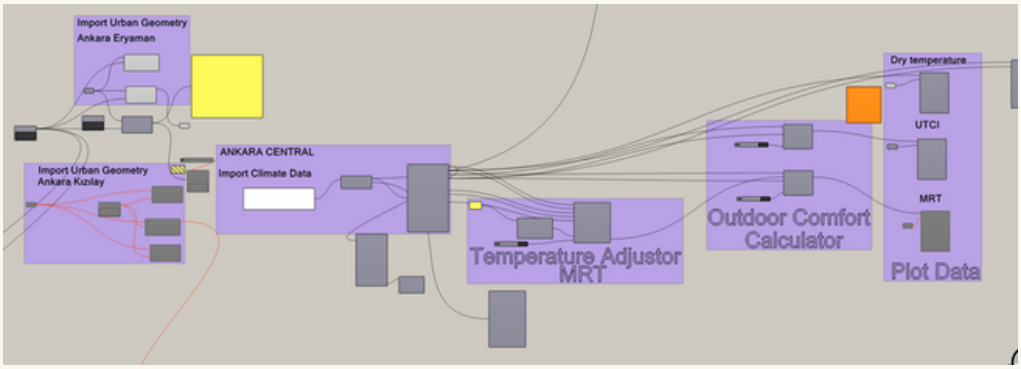
Study Overview

This research investigates the Urban Heat Island (UHI) phenomenon in Ankara, focusing on how different urban designs, particularly comparing the green areas of Eryaman and the dense urban core of Kızılay, affect thermal comfort levels. The project aimed to develop effective UHI mitigation strategies using Geographic Information Systems (GIS) and simulation tools like Rhino and Ladybug to enhance urban livability.



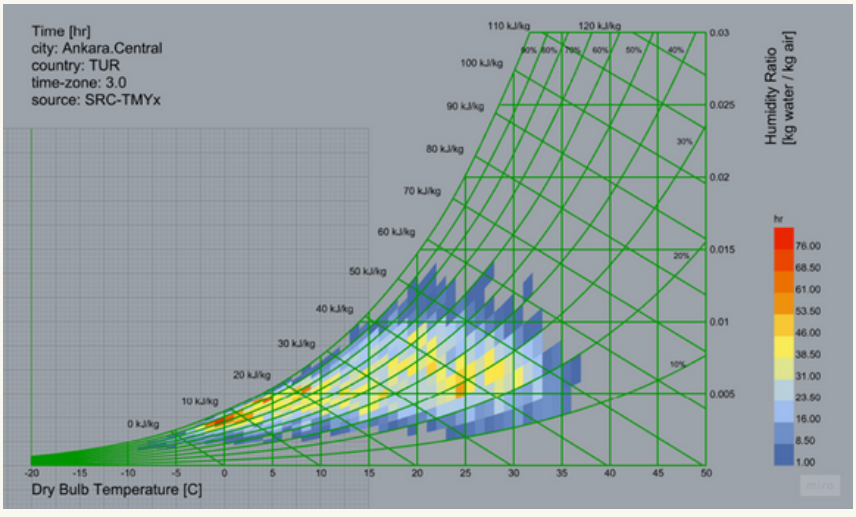
Workflow

Data Collection and Analysis: Utilized GIS to collect urban layout data and performed detailed simulations to compare thermal comfort indices across different city areas.
Simulation and Modeling: Integrated Rhino and Ladybug Tools for dynamic environmental modeling, assessing the impact of green infrastructure on UHI effects.
Strategy Development: Formulated recommendations for urban planning and green infrastructure deployment to mitigate UHI impacts effectively.



Challenges

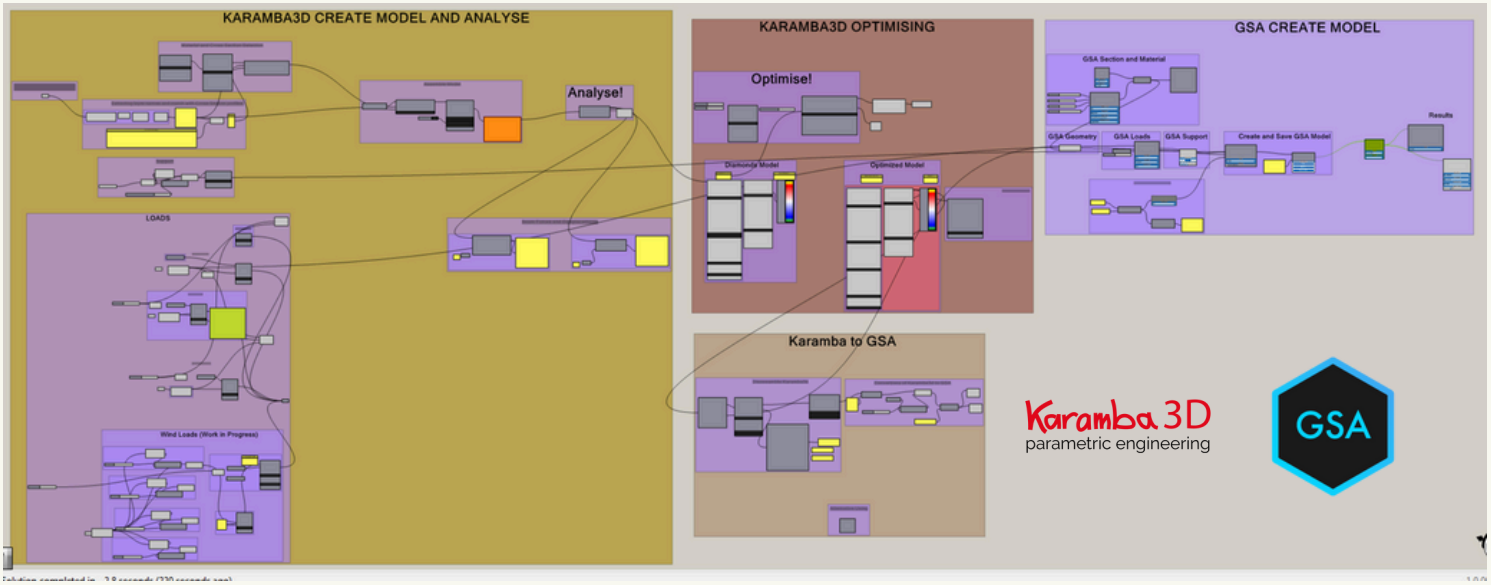
Complex Data Integration: Managed and synthesized large datasets from diverse sources, requiring sophisticated data handling and modeling techniques.
Adaptation to Dynamic Conditions: Continuously adapted models to reflect real-time environmental changes and urban dynamics, ensuring accuracy and relevancy of findings.



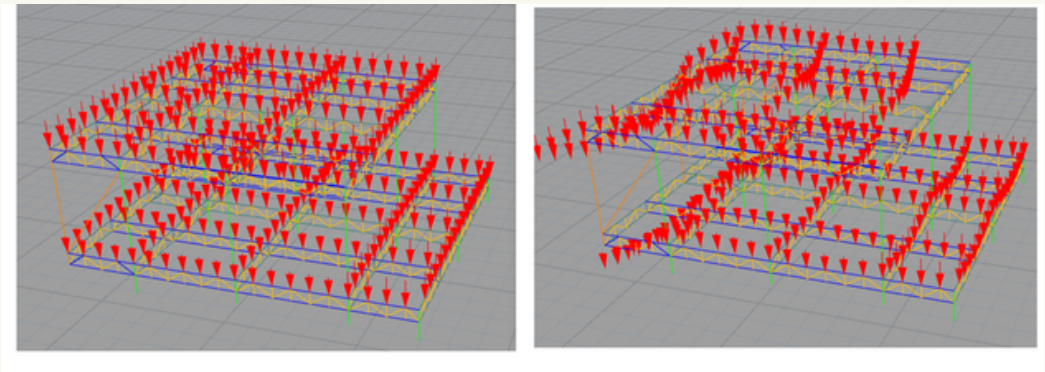
Lessons Learned

Developed and implemented advanced modeling techniques to dynamically simulate UHI impacts and potential mitigation strategies.
Impactful Insights: Provided actionable insights into how urban design influences thermal comfort, informing future urban planning initiatives.

Cross-Section Optimisation of Steel Building



The project involved the optimization of cross-sections for a steel building, a task accomplished through the combined use of Karamba3D and Grasshopper.



Following this optimization, geometrical and structural data were seamlessly transferred and manipulated, making use of Oasys GSA to rigorously verify the results.