



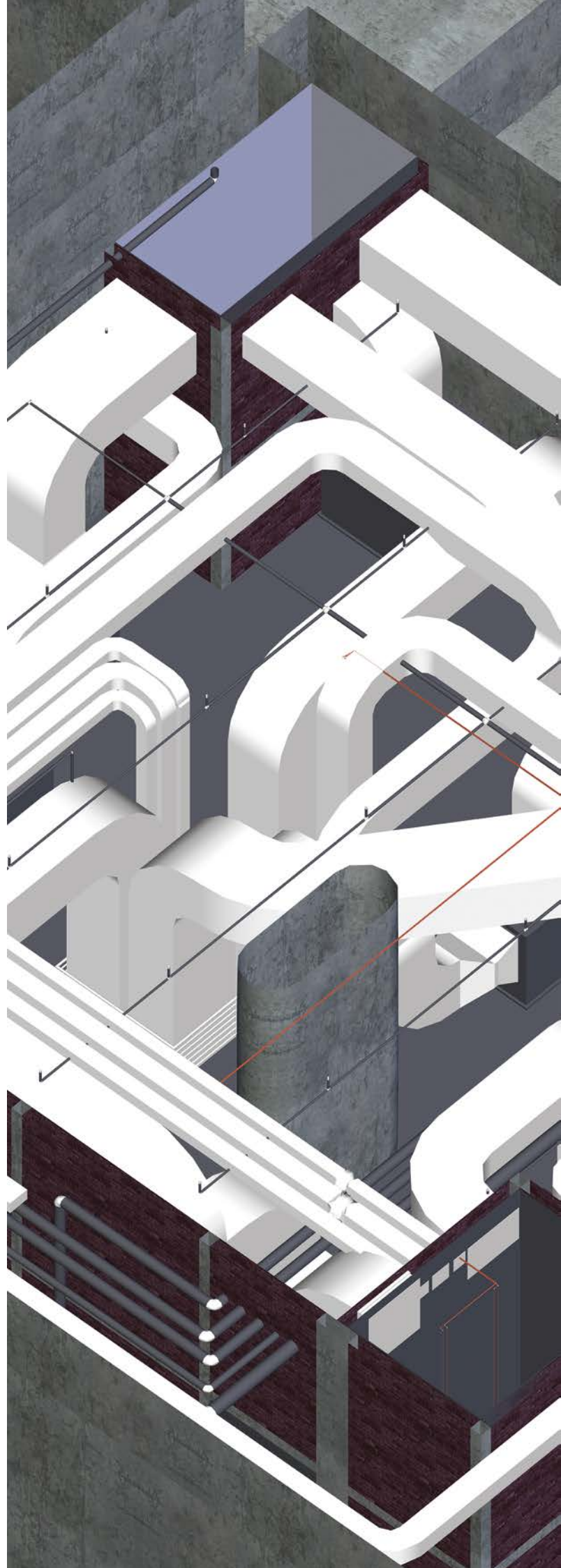
**PROTA**

**BIM**

Innovation To Design

[www.protaengineering.com](http://www.protaengineering.com)

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# About Prota

Prota was founded in 1985 and has grown to become one of Turkey's leading engineering consultancy firms with a track record of delivering innovative project design and specialist services around the world.

Prota draws from an experienced team of partners and experts from a range of backgrounds including engineers, architects, planners, project managers and BIM specialists.

At Prota's heart is a desire to exceed the expectations of our clients by harnessing talented people using the latest technology and design approaches whilst ensuring it meets social and environmental responsibilities.

## **Prota specializes in:**

Architectural and engineering design of high-rise buildings, public facilities including sports complexes, business centers, healthcare and educational facilities, Large scale transportation structures including railway stations and airports, light and heavy industrial buildings as well as execution of feasibility studies, infrastructure projects, and urban and regional planning.

Prota also has extensive expertise in earthquake engineering and has pioneered innovative methodologies for upgrading buildings and infrastructure to meet the demands of new safety standards.

Prota also provides services in project and construction management, design and construction supervision, systems engineering, quality control and contract management.

Prota is proud to have been involved with prestigious projects including;

- **Warsaw Metro Line II**
- **Dubai Route 2020 Metro Rail**
- **Istanbul New Airport**
- **Kosovo Pristina International Airport**
- **St. Petersburg Pulkovo Airport**
- **Cairo International Airport**
- **Turkmenistan Glass Factory**
- **Netherlands Flour and Flour Products Factory**
- **Istanbul University Capa and Cerrahpasa Campuses**
- **Erzurum Healthcare Campus**
- **Papua New Guinea USA New Embassy Compound**





# Why BIM?

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Building Information Modeling (BIM) is transforming how projects are delivered. By using 3D models, the flow of physically information and intelligent data from conceptual design down to construction and facilities management, is helping architects, engineers, contractors and owners realize their projects more efficiently, more economically, and with increased profitability than ever before.

At its heart, BIM is a digital representation of both the physical and functional characteristics of buildings and infrastructure.

## **BIM is Transforming the Design Process.**

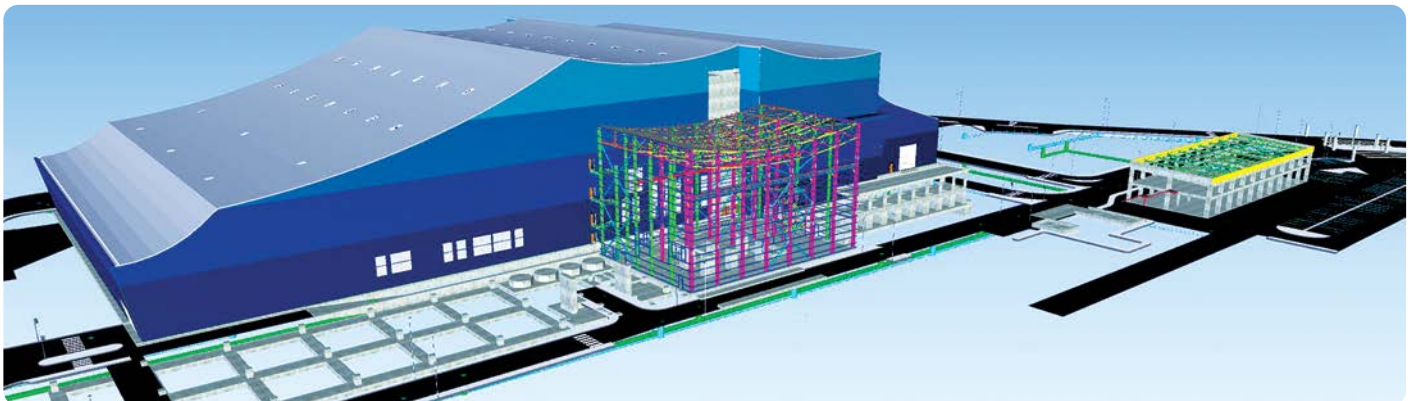
BIM helps facilitate designing, visualizing, simulating and analyzing. It solves clash detection, construction planning, quantity take-off and cost estimation. It provides improved coordination with architects, engineers and other project participants resulting in fewer errors, less waste, time savings and project cost savings. All driven from the one model.

BIM is also a wise investment. According to McGraw Hill, **63%** of BIM users say they see positive ROI on their investment in BIM and **93%** strongly believe that they will gain even more value from BIM technology in the future.

BIM is everywhere. From buildings to bridges to airports to power plants BIM is being utilized on some of the most ambitious projects around the world.

Many governments mandate BIM and many progressive measures are aiding adoption. The US and UK has actively developed and publish BIM standards. Other countries including Singapore, Norway and Finland now make BIM model submissions mandatory for building compliance.

At Prota we have fully incorporated BIM into how we operate to help our clients and our teams deliver world class projects faster, and smarter.



Prota is the first Turkish consultancy company to design an entire metro project using 5D BIM technology. We've also been recognized by our peers and have been nominated to the finals of Autodesk's Global AEC Excellence Awards for three years in a row.



## BIM in Prota

One of Prota's core strengths is to encourage innovation to deliver projects faster and more efficiently than thought possible.

The **Kabatas – Mahmutbey** metro rail project in **Istanbul** is an example of this in action. Prota's BIM team including architects, engineers and CAD experts used Autodesk's Revit, Navisworks and Dynamo to deliver US\$ 5 million of project services including railway and tunnel design, architectural, structural, geotechnical and excavation support system design, electrical and mechanical as well as fire safety engineering and control system design.

### The Prota BIM Team

PROTA BIM TEAM draws from an experienced team of engineers, architects, planners, project managers and BIM specialists.

Prota BIM Teams' keys to success steams from everyone working together in a collaborative environment where exploring and harnessing technology is not just encouraged, it's how we deliver value.

What follows outlines the service and capabilities you can take advantage of when working with us, the **ProtaBIM** advantage.

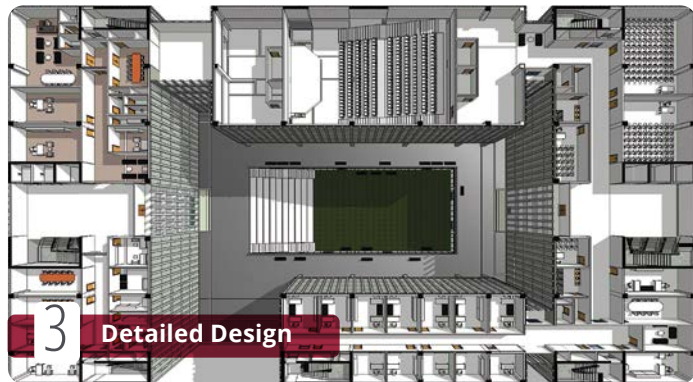
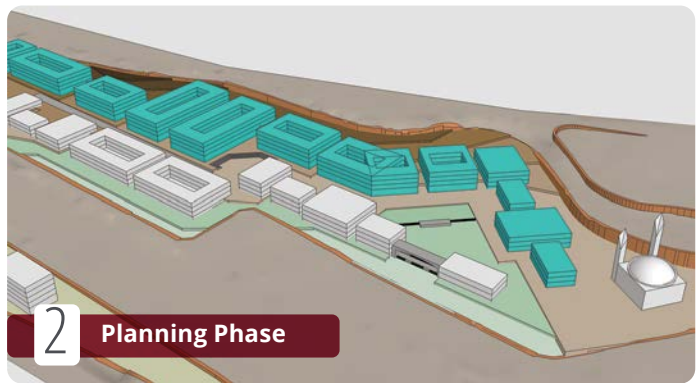


# Our Services – Planning and 3D Model Authoring

Prota's design teams adopts BIM right from the planning stage of a project. 3D models help clients see what's going to be delivered and make informed design decisions earlier. At each stage of the project, project stakeholders including engineers, architects, owners and contractors can share and interact with the model, collaborate and explore the best approaches to deliver the

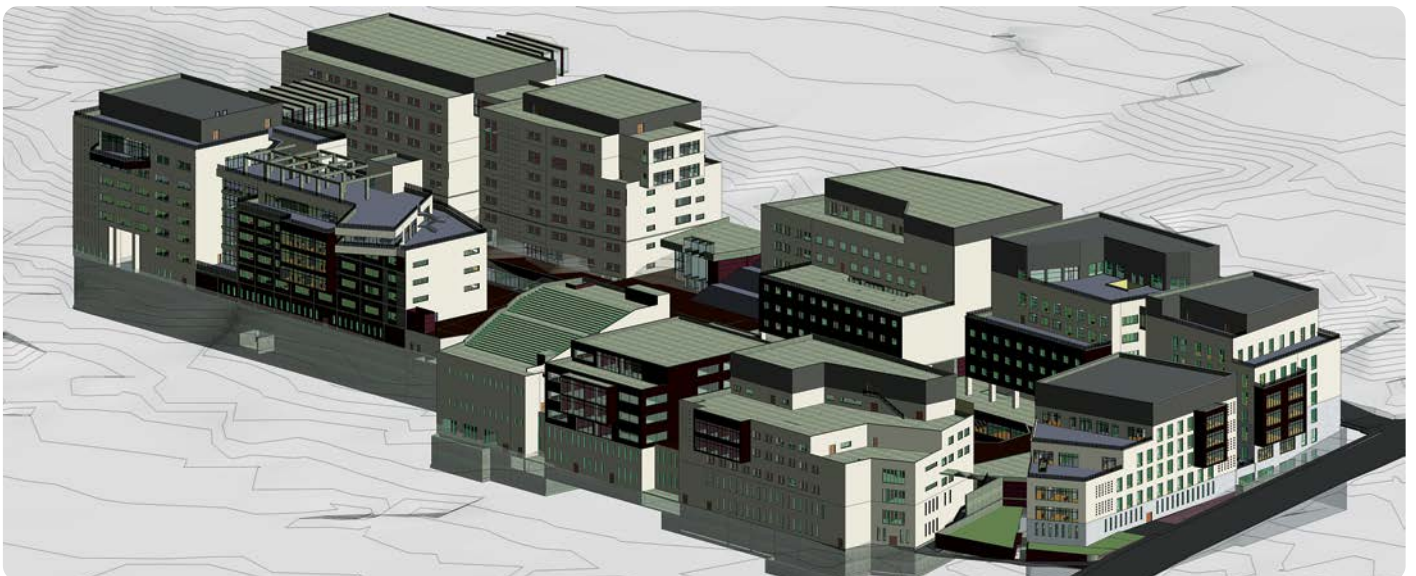
best solutions. This interactive approach to planning saves clients significant time and delivers better results.

To achieve this, Prota works with a range of BIM authoring tools including Autodesk Revit, Navisworks, Dynamo, TeklaStructures and **ProtaStructure**.





**Prota creates 3D BIM models  
at every stage of a project.**



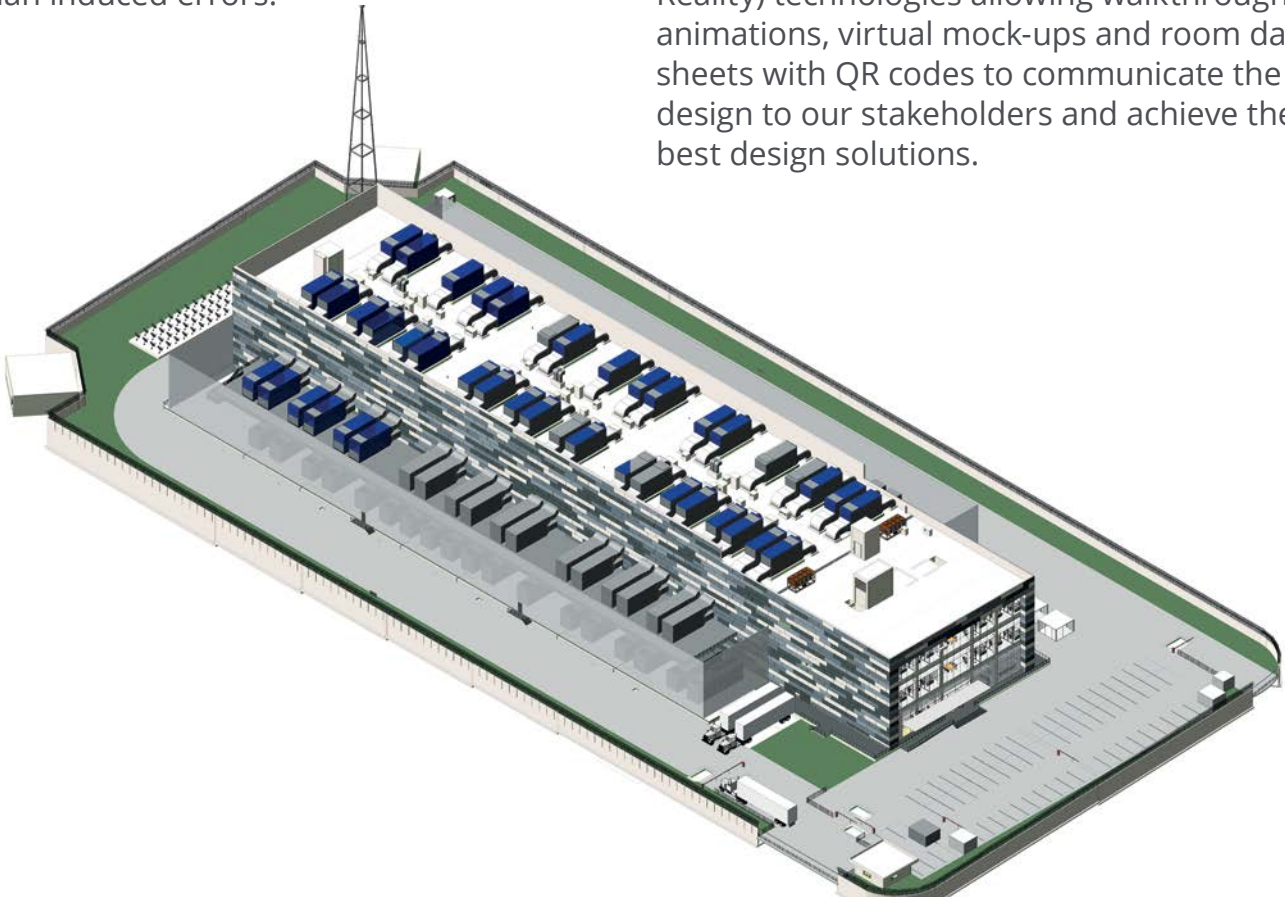


## Project Visualization / VR

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One of the most important benefits of BIM is that the design is carried out using 3D objects; both the designer and other stakeholders can see, understand and implement the design with almost no human induced errors.

Design alternatives can be easily explained to customers using the latest visualization technology. Prota offers its clients a more understandable design with headsets that are compatible with VR (Virtual Reality) technologies allowing walkthrough animations, virtual mock-ups and room data sheets with QR codes to communicate the design to our stakeholders and achieve the best design solutions.

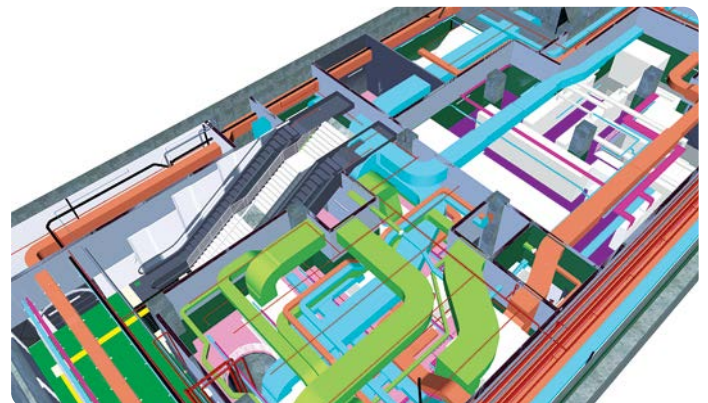
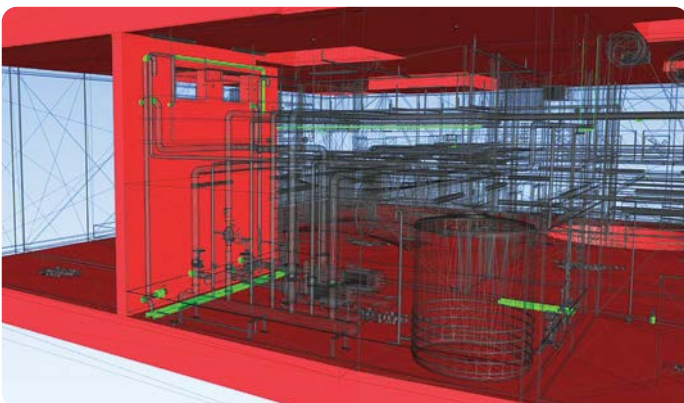
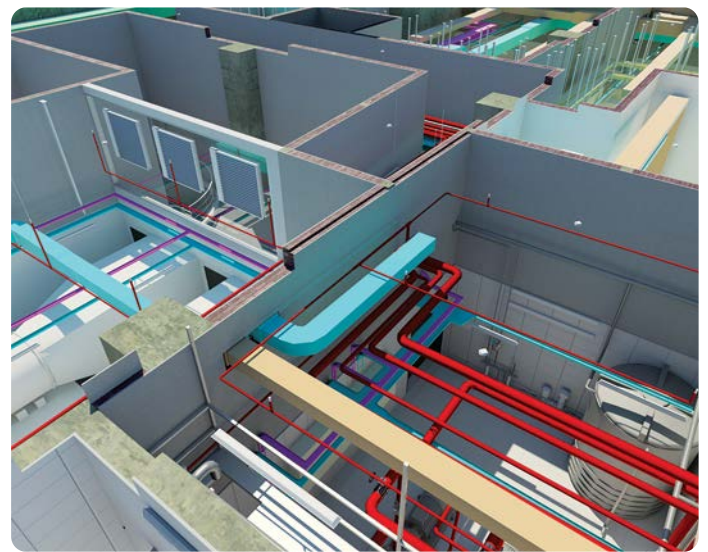
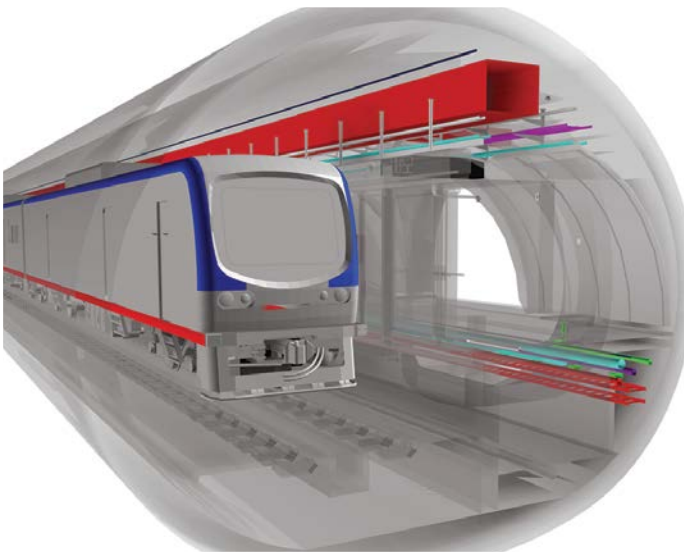




# Model Coordination and Clash Detection

Models created by every project stakeholder are used by the Prota BIM Team to facilitate project coordination. Internal and interdisciplinary clashes are then detected and eliminated at an early stage of the project where it is much easier, cheaper and less time consuming to rectify. This greatly reduces problems expensive design changes during construction can cause.

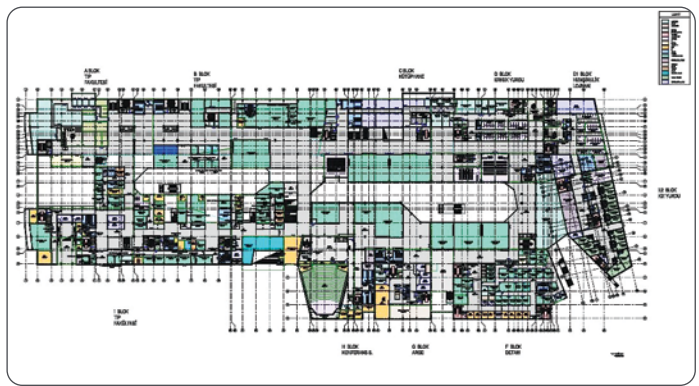
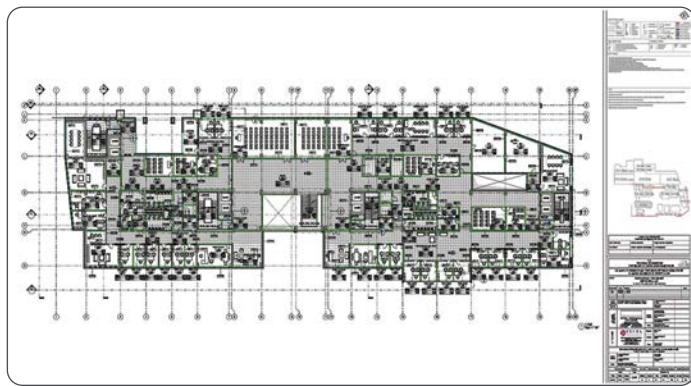
Prota recognizes that BIM is a live workflow that requires an active team approach and preparation from the beginning of a project to be successful. Proper management of data and communication among team players leads to successful BIM coordination. To get the best results, Prota organizes regular coordination meetings among stakeholders to establish a proper BIM coordination in every project.



## Sheets / Drawings

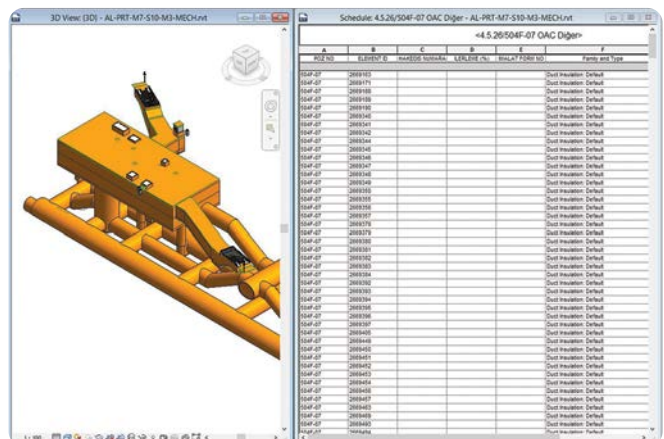
Prota's BIM models automate the production of all design documentation including detailed drawings, scheduling and design calculations. Different levels of

design documentation can be prepared in accordance with client's technical briefs and relevant technical standards.



## Material and Quantity Take-Off / Cost

Having complete physical models allows clients to obtain accurate quantities and pricing for projects. Different design schemes can be easily evaluated, and the best cost options chosen. Project changes? No problems, **Prota BIM Team's** of experienced engineers and architects can easily facilitate changes to the models and quantities can be regenerated and repriced, giving clients confidence and peace of mind when planning budgets for project delivery.





## Laser Scanning to BIM

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Prota offers laser scanning to create accurate BIM models of existing structures. Prota's team can then use this information to facilitate processes including demolition, renovation, restoration and retrofit. Laser Scans provide an efficient way of recreating

information which may not be readily available, and ,once converted to objects, provides all the benefits of an intelligent BIM model for planning and design.



## Common Data Environment (CDE)

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Prota uses Common Data Environment (CDE) software solutions for both internal interdisciplinary communication and with all external stakeholders of a project. CDA allows

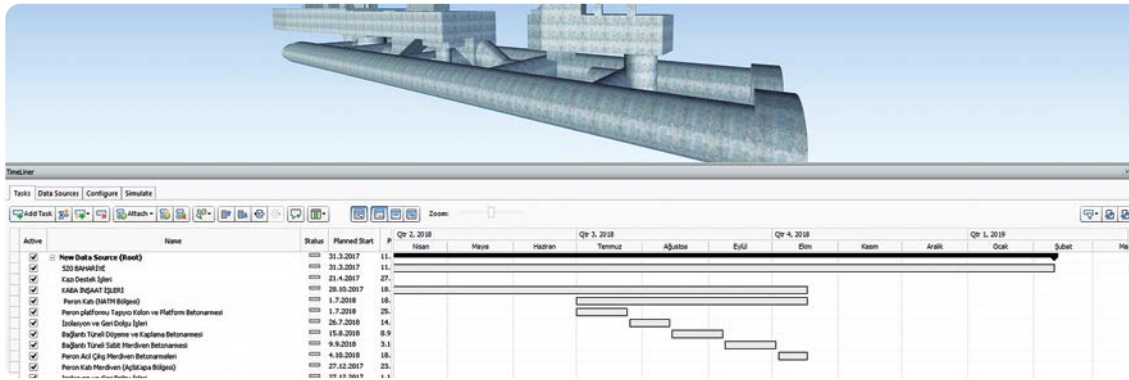
for seamless project communication between Prota's offices around the world.



## 4D Phase Planning

Prota's BIM team takes advantage of 4D phase planning to integrate construction work schedules against the BIM model. This helps contractors to plan and visualize

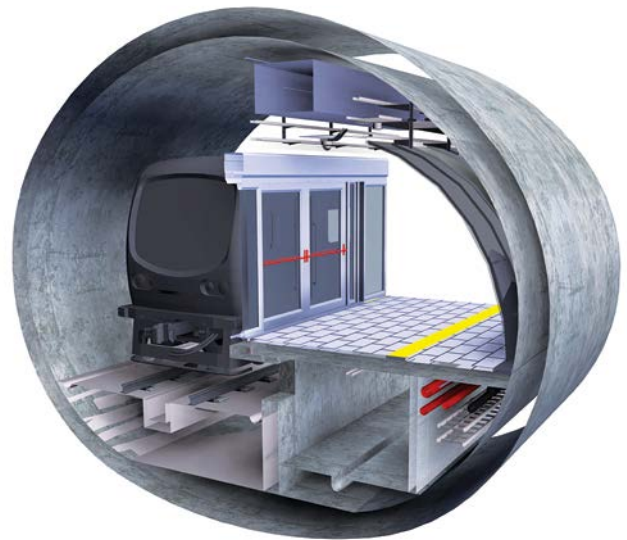
simulations of their construction works in real-time, optimizing the best construction approach to deliver projects efficiently and cost effectively.



## Parametric Design

Parametric design is the use of algorithms and variables to create mathematical and geometrical relations to generate design. Prota's BIM teams take advantage of

parametric design particularly to aid tunnel modeling, interior design, and dynamic building facades.



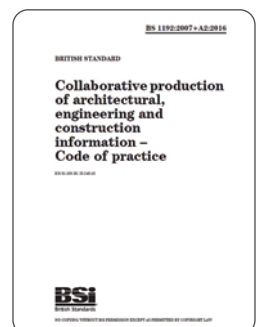
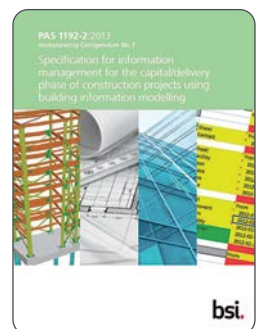
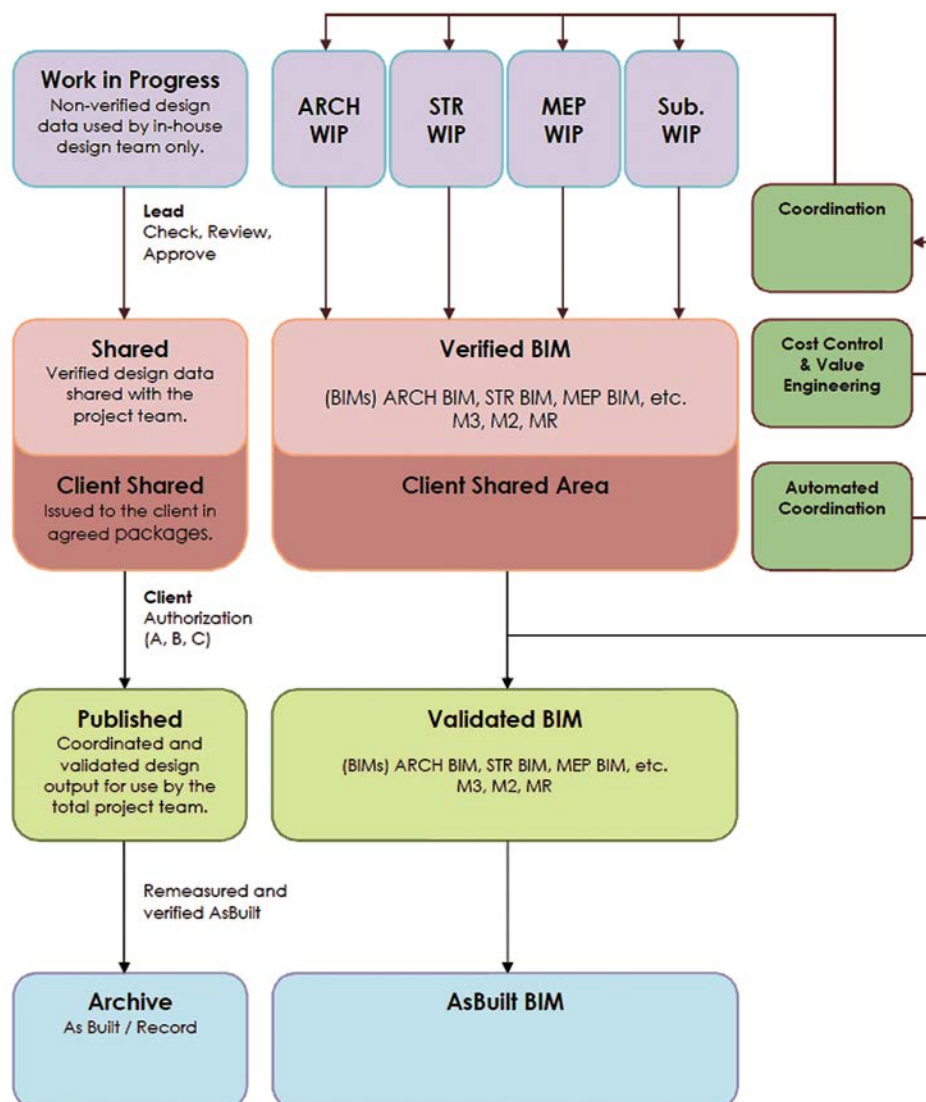


# Work Flow and Quality Control

Prota's work-flow is based on international standards **BS: 1192** and **PAS 1192-2:2013**.

Every model follows strict quality control procedures to ensure project and data integrity.

## Our work-flow:



## Innovator of the Year 2019: Prota

Prota was shortlisted to the final stage of Autodesk's AEC Excellence Awards 2019 in "Innovator of the Year" category.

After two successive nominations of Prota in the past two years, Prota achieved to become a finalist again but this time in "Innovator of the Year" category.



## A Prota Project in AEC Excellence Awards 2018!

One more time in 2018, Istanbul Metropolitan Municipality's Atakoy – Ikitelli metro line project in Istanbul, designed by Prota BIM Team, has advanced to the final stage

of Autodesk's AEC Excellence Awards in Infrastructure category. Only 9 projects were nominated to the finals among 256 submissions from 32 different countries.



**Owner:** Istanbul Metropolitan Municipality  
**Designer:** Prota

**Contractor:** AGA Construction  
**Project Info:** 13.5 km line, 11 stations





# A Prota Project in AEC Excellence Awards 2017!

Kabatas - Mahmutbey metro line, Istanbul was the first BIM-mandated project tendered by the Istanbul Metropolitan Municipality. Prota was nominated to the final stage of

Autodesk's Global AEC Excellence Awards 2017, being shortlisted from project among 32 countries and 145 participants in the Infrastructure category.

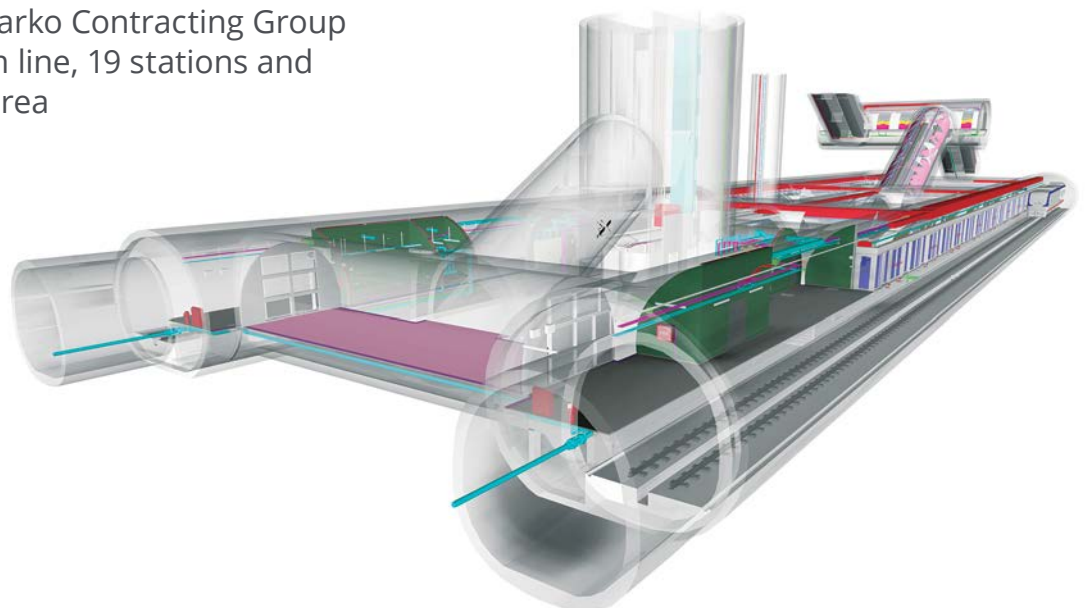


**Owner:** Istanbul Metropolitan Municipality

**Designer:** Prota

**Contractor:** Alsim Alarko Contracting Group

**Project Info:** 22.5 km line, 19 stations and depot area



# “BIM and Beyond”

## International Symposium of Prota

### Draws the AEC Professionals in Istanbul

Prota was delighted to host over 500 design and construction professionals from around the world to Istanbul October 2018. This international symposium built on Prota's history of gathering leading experts from around the world to showcase the latest technologies and innovative approaches driving project delivery across the construction landscape.

**“BIM and Beyond: A Digital Transformation in the Construction Sector”** brought together leading academic researchers and professional experts from Canada, US and Europe Japan together to share their knowledge and experience in BIM technology. During the two exciting days, 4 main sessions were presented covering themes of Create-Implement-Capture-Proceed. Technological advancements, best industry practices and case studies on a range of BIM related topics were shared and discussed.







# Why Prota?

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Prota is a global provider of professional consultancy services in architectural and engineering design, project management, construction supervision, BIM consultancy, earthquake engineering.

It also develops the global leading software platform for Structural Building Design, **ProtaStructure**.

Prota was the pioneer of BIM technology in Turkey being the first design company to deliver an entire metro project using BIM technology. Prota's mission is to foresee future needs and to develop effective and reliable solutions for its clients.

**"Innovation to Design"** is at the forefront of Prota's BIM team ethos. Our expert BIM engineers and architects adopt the latest BIM technologies and innovative approaches to produce aesthetically pleasing, economical design solutions for our clients around the world.





# THANK YOU FOR YOUR CONFIDENCE

GENERAL DIRECTORATE OF HIGHWAYS / A TASARIM ARCHITECTURE / ACE ARCHITECTURE / ACWA/ AG ARCHITECTURE / AGAOGLU GROUP / AKCAM CONSTRUCTION / AKDENİZ İNŞAAT / AKDENİZ UNIVERSITY / AKFEN CONSTRUCTION INC. / AKPINAR ENGINEERING / ALPKON DESIGN / ALSIM ALARKO / ALSTOM / ANKARA METROPOLITAN MUNICIPALITY / ANKARA UNIVERSITY / ANTALYA METROPOLITAN MUNICIPALITY / ARCADIS / ARTI ARCHITECTURE / ARUP / ASTALDI / AYMAZ ARCHITECTURE / BAKI CONSTRUCTION INC. / BAKIRKOY MUNICIPALITY / BASARI INVESTMENTS / BASF / BASTAS CEMENT / BAYINDIR HEALTH GROUP / BECA INTERNATIONAL / BEGENDİK / BEGUM ENGINEERING / BIMTAS / BLEDA CONSTRUCTION / BOGAZICI UNIVERSITY / BOTAS / BURSA METROPOLITAN MUNICIPALITY / CANKAYA MUNICIPALITY / CELTAS / CENGİZ CONSTRUCTION / CENGİZ ENERGY INC. / CENGİZ HOLDING / CEYHAN MUNICIPALITY / CEYLAN ENGINEERING / CİMSA CEMENT / COWI / CUKUROVA UNIVERSITY / DALOKAY ARCHITECTURE / DAR AL-HANDASAH / DEVELİ CONSTRUCTION / DIA HOLDING / DIMETRONIC / GENERAL DIRECTORATE OF SOCIAL SERVICES / GENERAL DIRECTORATE OF LAND REGISTRY AND CADASTRE / DOĞUS CONSTRUCTION INC. / DOLŞAR ENGINEERING / DOST CONSTRUCTION INC. / DOYAP / DURMAZ CONSTRUCTION / EBI / EDF / EFE ASFALT / EGE GROUP / EKOL ARCHITECTURE INC. / EMBASSY OF FRANCE / EMEK CONSTRUCTION / EMT ERİMTAN / ENERJİSA / ENTEGRE HARC / ENTİM CONSTRUCTION / EPTISA / ERAS / ERME CONSTRUCTION / ESKİŞEHİR METROPOLITAN MUNICIPALITY / ESKİŞEHİR POLICE DEPARTMENT / ESSA PROJECT / ETİ ALUMİNİUM / ETİ COPPER / EURASIA METRO GROUP / FLASH TV / FREYSSINET / FUGRO-SIAL / GAMA / GAZİ UNIVERSITY / GAZİANTEP METROPOLITAN MUNICIPALITY / GEBZE TECHNICAL UNIVERSITY / GENCER CONSTRUCTION INC. / GENCLERBİRLİĞİ SPORT CLUB / GENERAL DIRECTORATE OF FOUNDATIONS / GENERAL DIRECTORATE OF INFRASTRUCTURE INVESTMENTS / GEODATA / GMD / GMW ARCHITECTS / GOKYOL ENGINEERING / GOOD YEAR / GRIMSHAW ARCHITECTS / GS E&C / GULERMAK / GUNDAY ARCHITECTURE / HACETTEPE UNIVERSITY / HATIRLI ARCHITECTURE / HILL INTERNATIONAL / İC İCTAS / İDOM / İFM CONSTRUCTION / İLF / İLLER BANK / İMPREGİLO / İSTANBUL METROPOLITAN MUNICIPALITY / İSTANBUL PROJECT COORDINATION UNIT / İSTANBUL TECHNICAL UNIVERSITY / İSTANBUL UNIVERSITY / İSTON / İZİİS / İZMİR METROPOLITAN MUNICIPALITY / JICA / KA.BA ARCHITECTURE INC. / KADIKÖY MUNICIPALITY / KALE ARCHITECTURE / KALEMCI CONSTRUCTION / KALYON ENGINEERING / KAM CONCRETE INDUSTRY INC. / KANDILLI OBSERVATORY / KARADENİZ TECHNICAL UNIVERSITY / KAYI CONSTRUCTION / KLV CONSTRUCTION / KMD ENGINEERING LTD. / KNAUF / KOCAELİ METROPOLITAN MUNICIPALITY / KOLEKSİYON FURNITURE / KOLIN / KOLTEK / KOLUMAN CONSTRUCTION AND ENGINEERING INC. / KOLUMAN MOTOR VEHICLES / KOZA-İPEK HOLDING / KUR CONSTRUCTION INC. / LIMAK CEMENT INC. / LIMAK CONSTRUCTION INC. / LIMAK GMR / LIMAK HOLDING / LIMCİM CEMENT INC. / LIMKOM CONSANGRATED FRUIT JUICE INC. / LOTUS / MADİNSAN MINING / MAKYOL / MAN / MAPA / MARMARA UNIVERSITY / MARUBENİ / MAY CONSTRUCTION / MAYA HOLDING / MECHANICAL AND CHEMICAL INDUSTRY CORPORATION / MERSİN METROPOLITAN MUNICIPALITY / MERSİN UNIVERSITY / MESA / METEKSAN / METROPLAN / MIDDLE EAST TECHNICAL UNIVERSITY / MNG HOLDING / MOTT MACDONALD / MUKOM ENGINEERING INC. / MURAT FLOUR INDUSTRY INC. / NACE MACHINERY INC. / NEJAT ÜREGEN ARCHITECTURE / NERU / NİGBAS / NORDIC ARCHITECTURE / NUH CEMENT INC. / NUR-AK CONSTRUCTION INC. / ODC CONSTRUCTION INC. / OHL / ONCUOĞLU ARCHITECTURE LTD. / OYAK-RENAULT / PARLAR FOUNDATION / PEKERLER CONSTRUCTION INC. / PILON CONSTRUCTION / PORTAKAL ÇİÇEĞİ / PREFİ / PROJEN ARCHITECTURE INC. / PROMİM / PTD ENGINEERING / PTT / RELE INVEST SA / RENAISSANCE HOLDING / ROKETSAN / SABANCI HOLDING / SAHİNBAS FİKİRLİER ARCHITECTURE LTD. / SAMSUNG / SANLIURFA CEMENT INC. / SAYHAN CONSTRUCTION INC. / SAYKA ARCHITECTURE LTD. / SCOTT WILSON / SEKA / SELDA GUMUSDOĞRAYAN ARCHITECTURE INC. / SEYHAN MUNICIPALITY / SIEMENS / SİNPAS GYO / SK ENGINEERING / SOCAR TURKEY / STAR RAFINERY / STF / STRUCTORIS ENGINEERING INC. / STUDIO CALVI / SUMMA / SURUCULER CONSTRUCTION INC. / SWS TURK / T. & ASSOCIATES / T.C. 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