

# INFRASTRUCTURE MODELING & MANAGEMENT (IMM) BUILDING INFORMATION MODELING (BIM) FOR AIRPORT PROJECTS

3D Airport Master Plan

Digital Terrain Modeling (DTM)

3D Utility Modeling & Mapping

Building Information Modeling (BIM)

Airport Baggage Handling Systems

Engineering Analysis

Project Planning & Simulation (4D BIM)

Construction Management & Simulation

Infrastructure Management Systems

Disaster Management Systems

Emergency Response Systems



**SUTECH SOLUTIONS**  
*Designing the future*

The world is going through a rapid phase in Infrastructure growth and Airports have become the backbone of Transit System in any country. This has to be well Planned, Designed, Constructed, Managed and Maintained in a systematic and futuristic way which is the biggest challenge today.

The major challenges an Airport project faces are mostly in the areas of Planning, Runway & Taxiway Designing, Utility network, Storm Water Drainage System, Integrating Buildings with all services, Baggage Handling System, Project Planning (Construction and cost), Sustainability, Project Execution, Maintenance and Management.

Sutech a Computer Aided Engineering Company presents its unique and innovative technology to revolutionize the entire process of Construction and Engineering for Infrastructure projects - Infrastructure Modeling and Management. **IMM** is an answer for a well Planned, Innovatively Designed, Perfectly Constructed, Efficiently Managed and Effectively Maintained Infrastructure project. This technology integrates all data associated with Planning, Designing, Construction, Managing & Maintaining into a single comprehensive 3D file, which includes all underground, ground and above ground data. This is further incorporated to project planning & simulation software for better project management. Finally integrated to Infrastructure Management System & Intelligent Information System to help manage the project better and make accurate decisions. This can be used for Disaster Management Systems & Emergency Response System.

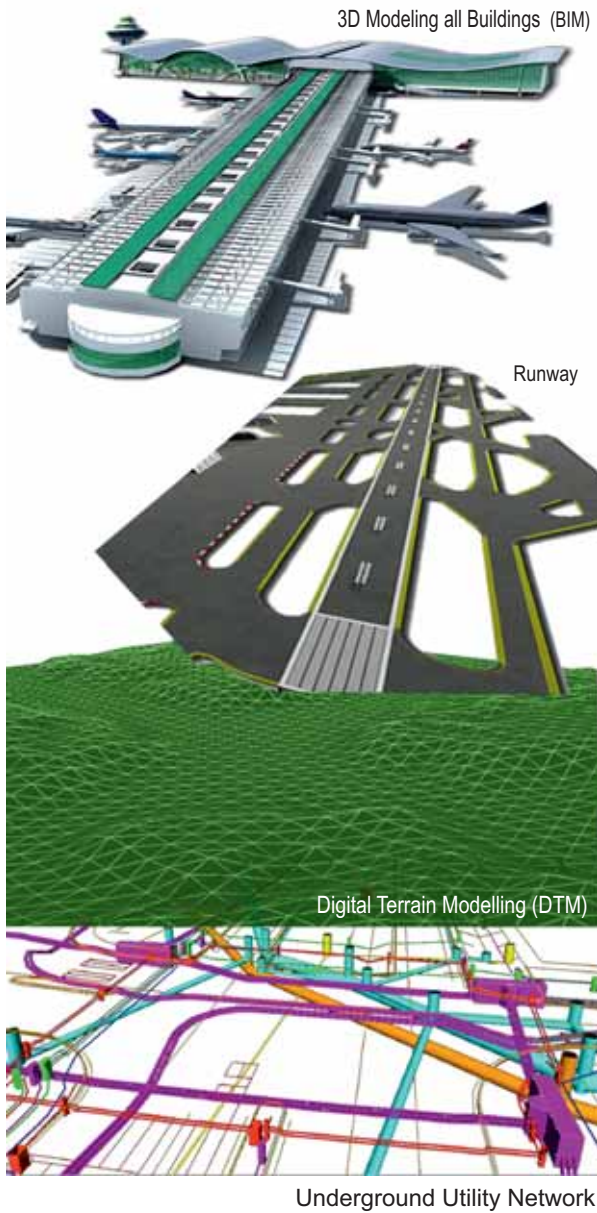
**Planning:** Sutech provides its services in Master Planning in 3D with land details on exact DTM (Digital Terrain Modeling) on GPS coordinates integrated with Geographical Information system (GIS). The land is perfectly recreated using DTM which enables exact 3D mapping of all elements like 3D Buildings, Utilities & Runways with storm water flow analysis.

**Designing:** Sutech provides its services in creating optimized and error free design, by exactly 3D modeling all structures and integrating it with all its services (Electrical & power system, Water & drainage system, Air circulation & ventilation system, Baggage Handling system, Emergency response system, Fire and security system) into a single 3D file using Building Information Modeling (BIM) and checking for all errors and clashes at design stage itself. This Saves nearly 45% on design cycle time.

**Construction:** These 3D models created by Sutech becomes very useful in error free construction, saving a whopping 20% on construction cost compared to the present way of construction. Reduces the need of interdepartmental site meetings caused due to confusions and clashes by 50%. Above all you get an exact quantification and estimation for all your construction work which is very useful in tendering process.

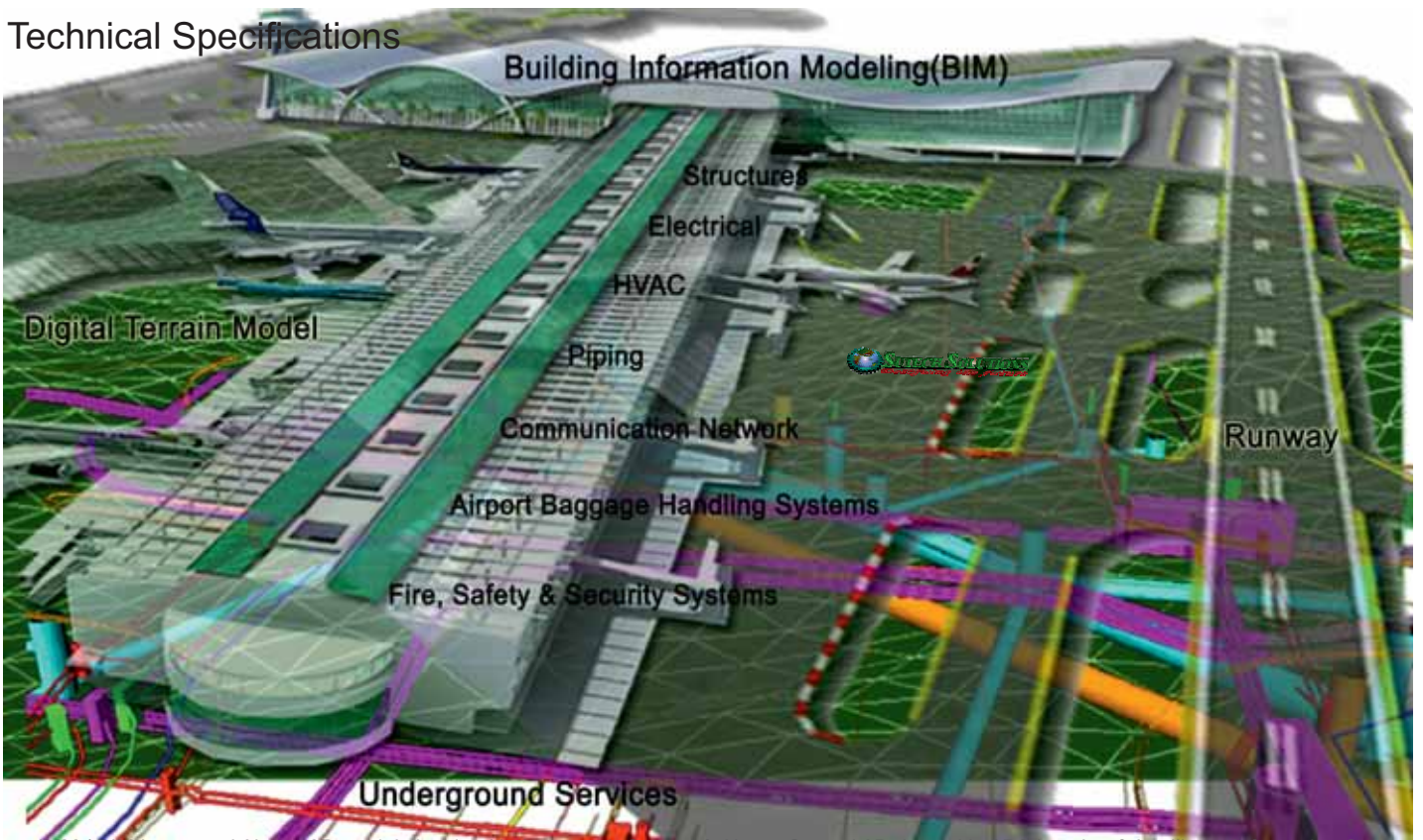
**Manage :** Sutech's 3D model is very useful in planning & managing your projects in a more efficient and effective way. This model seamlessly integrates with the project planning & management software like MS Projects or Primavera. This provides you with a 3D simulation of your project planning so that every member of the construction team would understand the Construction planning and sequencing better for a perfectly planned construction.

**Maintain :** This whole 3D model can be Synchronized into an Intelligent Infrastructure Management System so that you could efficiently maintain the entire project throughout its lifecycle. The Intelligent Information System would provide you with all information required of each member like its supplier, name & make, maintenance chart, details etc. at just a click of a button.



Ultimately IMM is a future ready 3D platform to Visualize, Analyze, Simulate, Execute, Manage and Maintain your project more efficiently & effectively.

## Technical Specifications



IMM / BIM Integrated Airport 3D model showing Underground, Ground & Above Ground 3D data with GPS location & Intelligent Information System

### Master Planning

Sutech provides total services in Master planning from-

- Initial planning data: which includes super imposing satellite images of the proposed site on 3D terrain model, with surrounding Buildings & vegetation in 3D for feasibility study.
- Final Master plan in 3D by modeling the land as per master plan, by taking into consideration land profiling, runway profiles and storm water flow patterns etc.
- Volumetric calculation (cut & fill) for ground work of Airport Building, Runway, Drainage and services.
- Storm water flow analysis / Drainage flow analysis.
- Creating working envelope along the flight route to check all possible obstacles, clashes and shifts at design stage.
- Replanning to have minimum obstacles, clashes or shifts

### Under Ground Modeling

Sutech Provides Services in-

- 3D Mapping and Terrain Modeling (DTM) of the entire Under ground data.
- Integrating all details like Soil Sample, Locations and the Geological conditions.
- 3D Mapping the whole Utility network (Piping, Electrical, Lighting, Signaling, Drainage, Fire etc.) in the airfield both above & below ground.
- Clash Check between different Underground services.
- Geocoding all services on exact GPS coordinates for easy construction & in locating services under the Airfield to aid future maintenance.
- Integrating intelligent information system & Management information system of all service elements for one click information and approvals.

### Building Information Modeling(BIM)

Sutech provides services in creation of 3D BIM (Building Information Modeling) of the Airport and its Auxiliary Buildings, which provides you a comprehensive 3D error free design with:

- 3D Model of Airport Buildings and ATC
- 3D Model of RCC Structures
- 3D Model of Steel Structures
- 3D Model of HVAC Network
- 3D Model of Piping Network
- 3D Model of Electrical Network
- 3D Model of Communication Network
- 3D Model of Fire, Safety & Security systems
- Clash checks between different services

### Airport Baggage Handling Systems

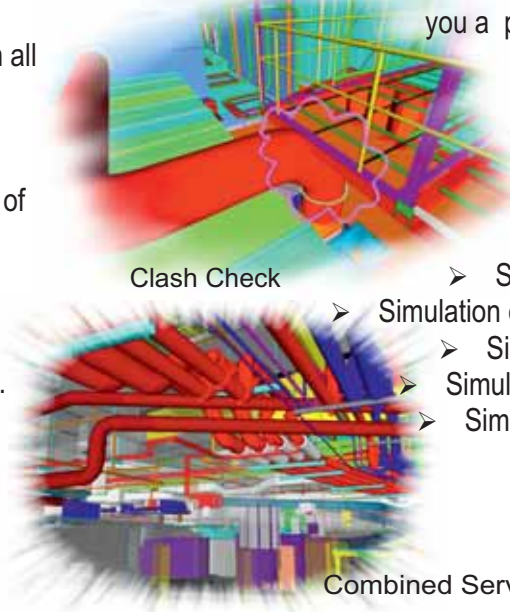
Sutech provides services in creating 3D model of airport baggage handling systems. This includes creating and integrating systems for security screening, storage, sorting and transportation of departure baggage from check-in to departure gate on exact scale & creates an error free 3D design.

- 3D Modeling of Security Screening Systems
- 3D Modeling of Conveyor Systems
- 3D Modeling of Destination-Coded vehicle (DCV)
- 3D Modeling of Sorting station
- 3D Modeling of Baggage Claim system
- 3D Modeling of tracks/ carriers on exact scale and location.
- 3D Modeling of all services associated with ABHS
- Clash check between different systems & services
- Digital Simulation showing working of ABHS
- Check for collision between moving parts when this whole system is working.

## Construction Planning & Simulation

Sutech provides total solutions on construction planning & simulation for Airport projects like-

- 4D Project Planning Simulation
- Ready for construction, error free 3D model with all Combined Services.
- Simulation of systematic sequence of laying of services to avoid confusions at site.
- Simulation of systematic sequence of assembly of Airport Baggage Handling System.
- Simulation of systematic sequence of laying of underground Utility & Services Network.
- Safety planning and execution.
- Systematic Construction, Planning & Simulation.
- Systematic Equipment movement Planning & Simulation.
- Optimized routing of services.
- Bill / Quantification of materials.



## Engineering Analysis

Sutech provides services on Engineering Analysis and Simulation of various elements and systems to assure you a perfectly engineered system.

- Structural Analysis
- Seismic Analysis
- Wind Load Analysis
- Crash Analysis
- Checks for Fatigue
- Checks for Collision
- Simulation of flight movement
- Simulation of Baggage handling system
- Simulation of signaling system
- Simulation of people flow analysis
- Simulation of What-if conditions.

**Project Planning & Simulation(4D BIM)** : Sutech provides services in Project Planning Simulations (4D BIM) as the 3D model created would be very useful in planning & managing your projects in a more efficient and effective way. This model seamlessly integrates with the project planning & management software like MS Projects or Primavera, to provide you with a 3D simulation of your project, so that every member of the construction team would understand the Construction planning and sequencing better.

**Infrastructure Management System** : Sutech synchronizes this whole 3D model into an Intelligent Airport Management System so that you could efficiently maintain the entire Airport throughout its lifecycle. The Intelligent Information System would provide you with all information required of each member like its supplier, name & make, maintenance schedule, details, GPS location etc. at just a click of a button.

## Disaster Management Systems & Emergency Response System

Sutech provides its services in creating a comprehensive 3D interactive model of the entire layout on exact GPS coordinate system, which can be loaded to a handheld device (e.g.: i-pad, Tablets, Laptops) and navigated through in case of emergencies like a disaster or an attack. This would help the emergency response team to navigate and locate the problem area much quicker using the virtual 3D model on a hand held device.

## Advantages of implementing Infrastructure Modeling & Management

- Single model approach to Planning, Designing, Constructing, Managing and Maintaining of entire project.
- Provides error free 3D model of entire project at design stage itself, hence saving 20% on construction cost, 45 % on design cycle time, nearly 50 % of interaction & interdepartmental meetings and 25% on Material cost.
- Facilitates 3D Navigation, Zooming and Rotation of the entire project to see every small details & get intelligent information.
- Facilitates Systematic Construction Planning, Scheduling and Simulation.
- Facilitates Engineering Analysis & Simulation, Facilities Management, Project Planning and more.
- Integrated Infrastructure Management Systems for easy & better Management through 3D model.
- Very useful for Post construction maintenance by 3D Navigation to know the exact locations in case of any failure on GPS.
- Integrated to Emergency and Disaster Management system.

*Always @ your Service*



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