

COMPANY

Arup & IDA

PROJECT

New Terminal 2 for Mactan Cebu International Airport

LOCATION

Cebu, Philippines

TYPE

Airport

SCHEDULED TIME OF COMPLETION

2017

BIM Helps Create an Airport for Tomorrow

ARUP

BIM PARTNERS INVOLVED

GMR Megawide Cebu Airport Corporation (GMCAC)**Megawide GMR Construction JV (MGCV)****About Arup**

Arup is the creative force at the heart of many of the world's most prominent projects in the built environment and across industry. We offer a broad range of professional services that combine to make a real difference to our clients and the communities in which we work.

We are truly global. From 92 offices in 40 countries our 12,000 planners, designers, engineers and consultants deliver innovative projects across the world with creativity and passion.

Founded in 1946 with an enduring set of values, our unique trust ownership fosters a distinctive culture and an intellectual independence that encourages collaborative working. This is reflected in everything we do, allowing us to develop meaningful ideas, help shape agendas and deliver results that frequently surpass the expectations of our clients.

The people at Arup are driven to find a better way and to deliver better solutions for our clients. We shape a better world.

About IDA

Integrated Design Associates Ltd (IDA) is an award winning architectural practice established in 1999. We have completed several international projects like Hyderabad International Airport, Jinan International Airport, Parkview Green Beijing, Discovery College for ESF etc.

We aim to provide a high calibre design and planning consultancy services for our clients internationally.

Our philosophy is always that our projects irrespective of complexity, derives its architectural excellence from full multi-disciplinary integration. We aim to add value for all our clients' projects.

The Project

Arup and Integrated Design Associates (IDA) work together on the design for major enhancements to Mactan Cebu International Airport in the Philippines - including a new passenger terminal and expansion of the existing terminal.

The Challenges

The project entailed significant challenges. Building height limitations must be identified, including by determining line of sight from the control tower to taxiways. Design options must be presented to the client, in a readily understood format. There were tight spatial constraints, with potential for clashes among entities from different disciplines. Analysis of solar access was required. The team also aimed to achieve optimised structural design through parametric modelling, design automation and model conversion, and to support facilities management.

The Solution

Line of sight from the Control Tower was assessed through creating BIM/3D massing models including the roof arches and shading structure, creating a plane on the taxiway, and viewing it in the virtual airport. Visualisations were used to convey the advantages and disadvantages of different options to the client. BIM allowed the team to identify a variety of spatial constraints and clashes among entities from different disciplines. Information in the BIM model was used in performing solar studies, at early design stages and during design development. BIM models created by the design team can be used for asset management.

The Benefits

BIM delivered an array of benefits for the project. There were several instances where it provided the designers insight regarding ways the different geometries and disciplines affect each other, helping swift resolution of issues such as with required clearances, complicated interfaces including the facade mullions to the main roof geometry, and avoiding hard clash between escalators and structural beams. The solar studies supported a value engineering exercise to optimise locations of skylights.

Better with BIM

3D models are especially useful for airport projects where the circulation of people is among key drivers in space planning. In this project, they allowed discussions of options, notably regarding the passenger movements from the departures and arrivals level to the fixed link bridges. BIM allowed for quick, efficient testing of the inter-relationships between competing airport requirements, such as for apron airfield topography, terminal floor heights, and road networks. The project has one source of information employing a true BIM ethos, with drawings produced directly from Revit.



Image courtesy of IDA

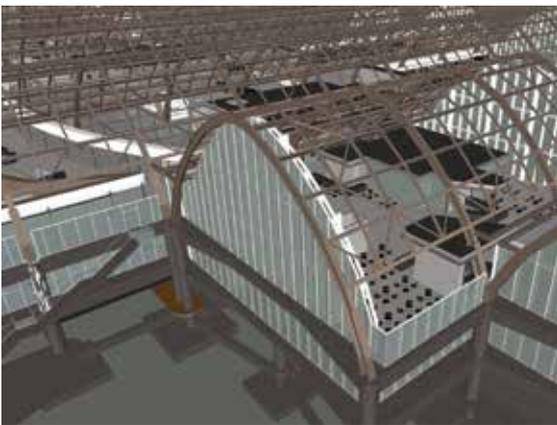


Image courtesy of Arup

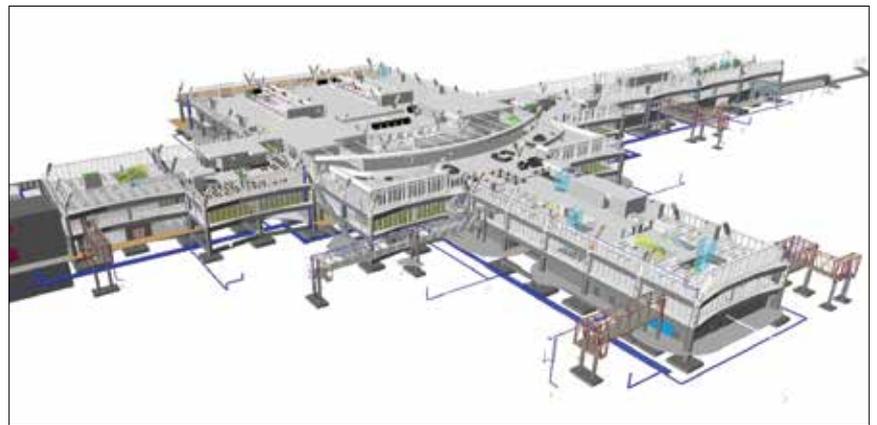


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