



TOWER 10

WATER PUMP STATION

HVAC

OFFICE

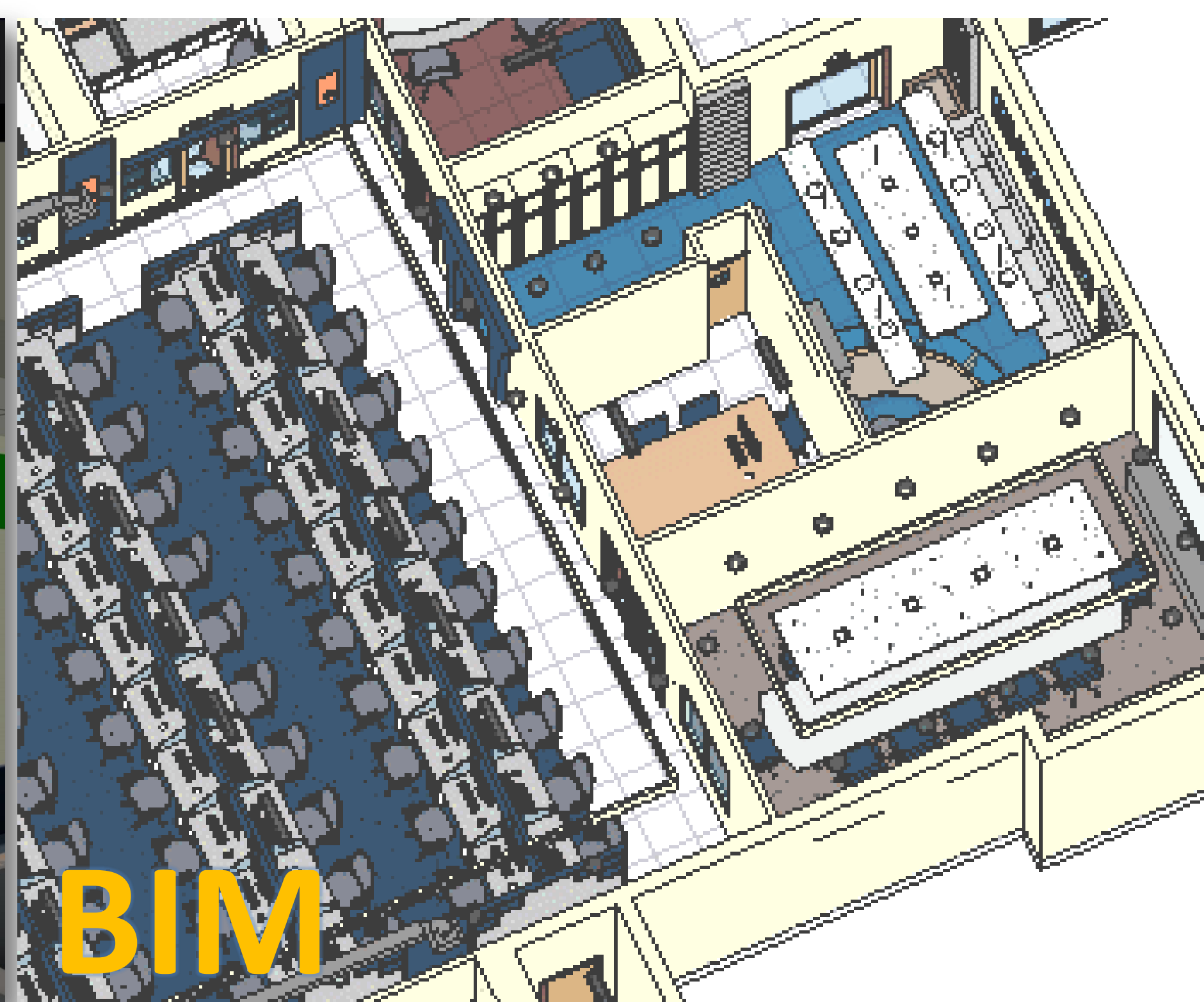
MD CABIN

BIM VIEW > BIG CONERENCE

- SWITCH 8
- SWITCH 7
- SWITCH 6
- SWITCH 5
- SWITCH 4
- SWITCH 3
- SWITCH 2
- SWITCH 1



IoT BIM



Using IoT & BIM for Enterprise Infrastructure Management

BuildTrack[®]

SMART
AUTOMATION

Maxval Technology, Navi Mumbai

Details of Client Site

Maxval Technologies a provider of solutions and services to the commercial real estate and construction industry globally. The company has a strength of more than 300 employees with various workstations , cabins and conference rooms distributed across multiple office locations across India. Implementation of BuildTrack enterprise system has helped its distributed facility infrastructure for energy efficiency, safety and security

This case study addresses one location in Navi Mumbai consisting of:

- Cabins
- Conference Room
- Work stations
- Server Room
- Meter Room
- Lobby Area

Details of BuildTrack System

2 types of Systems were used:

- Wired BuildTrack IoT System (using RS485 wired connectivity)
- Wireless BuildTrack IoT System (using RF wireless connectivity)

The systems were constituted by the following:

- Nodes for controlling lighting : for Cabin, Conference Room, Work Stations
- IR Nodes for controlling ACs: Server Room , Conference Room
- PIR Sensors for Cabins and Conference Rooms
- CT Sensor for Server Room to detect power failures
- Sensor for Temperature, Humidity Sensor & Lux for Server Room
- IP Cameras on auto-launch on Sensor Triggering
- Smart Energy Meters for Office
- IP Gateways : multiple, both wired and wireless

Features of BuildTrack System

■ CONTROL:

- ON/OFF (Lights & ACs) of each workstation using centralized control via Smart App
- ON/OFF (Lights & ACs) for cabins and conference rooms based on occupancy (sensors)
- Scheduling of air conditioner for Server Room (alternating multiple AC used)

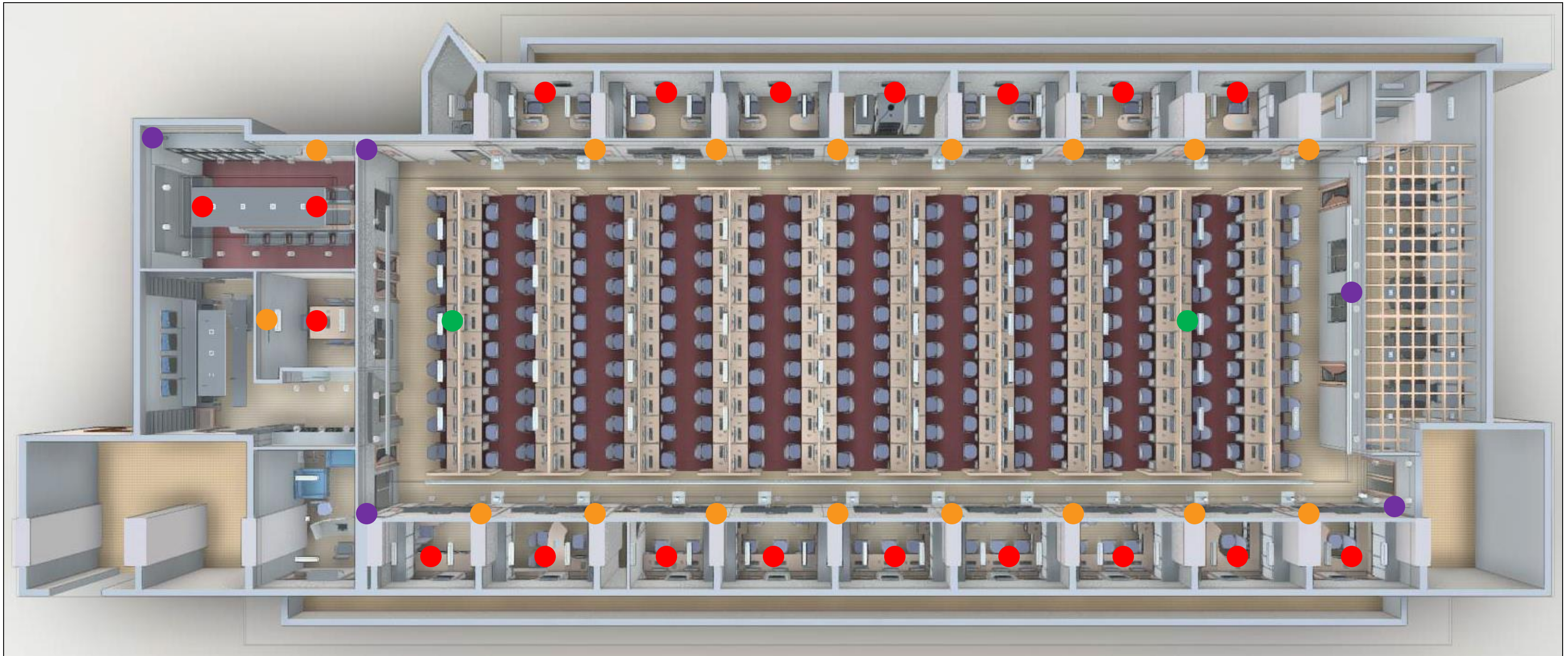
■ MONITORING:

- Inlet and outlet air temperature monitoring of air conditioners in work stations
- Server Room temperature and power failure monitoring
- Current consumption monitoring of individual air conditioners in Server Room
- Smoke sensors for safety monitoring in Server room, cabins, pantry

■ REPORTING:

- Hours of operation of Air Conditioner and Lighting retrieved from Point Nodes
- Power consumption (KWh) retrieved from Smart Meters

Placement of System: Sensors, Nodes, Gateways & Cameras



Legend: ● Sensors ● Nodes ● Gateways ● Cameras

BuildTrack App

SERVER ROOM CONFERENCE ROOM **MAIN OFFICE**

LIST VIEW > SERVER ROOM

POWER STATUS

POWER

AIR CONDITIONER

AC BLUESTAR 22°C 0.00 AMP

AC MITSUBISHI 22°C 0.00 AMP

SERVER ROOM CONFERENCE ROOM **MAIN OFFICE**

LIST VIEW > MAIN OFFICE

LIGHTS

CABIN 1

WORKSTATION 1

WORKSTATION 2

AIR CONDITIONER

FAN PANTRY AREA 22°C 2.87 AMP

RECEPTION AC HITACHI 22°C 0.00 AMP

AC SMALL CONFERENCE 22°C 0.00 AMP

S-AIR 25°C 72% R-AIR 25°C 78%

SERVER ROOM CONFERENCE ROOM **MAIN OFFICE**

LIST VIEW > BIG CONFERENCE

LIGHTS

SPOT LIGHT 1

TUBELIGHT 1

AIR CONDITIONER

AC MITSUBISHI 22°C

AC BLUESTAR 22°C

CONFERENCE ROOM **MAIN OFFICE** METER ROOM

LIST VIEW > METER ROOM

SMART METER INFO

VOLTAGE V1

VOLTAGE V2

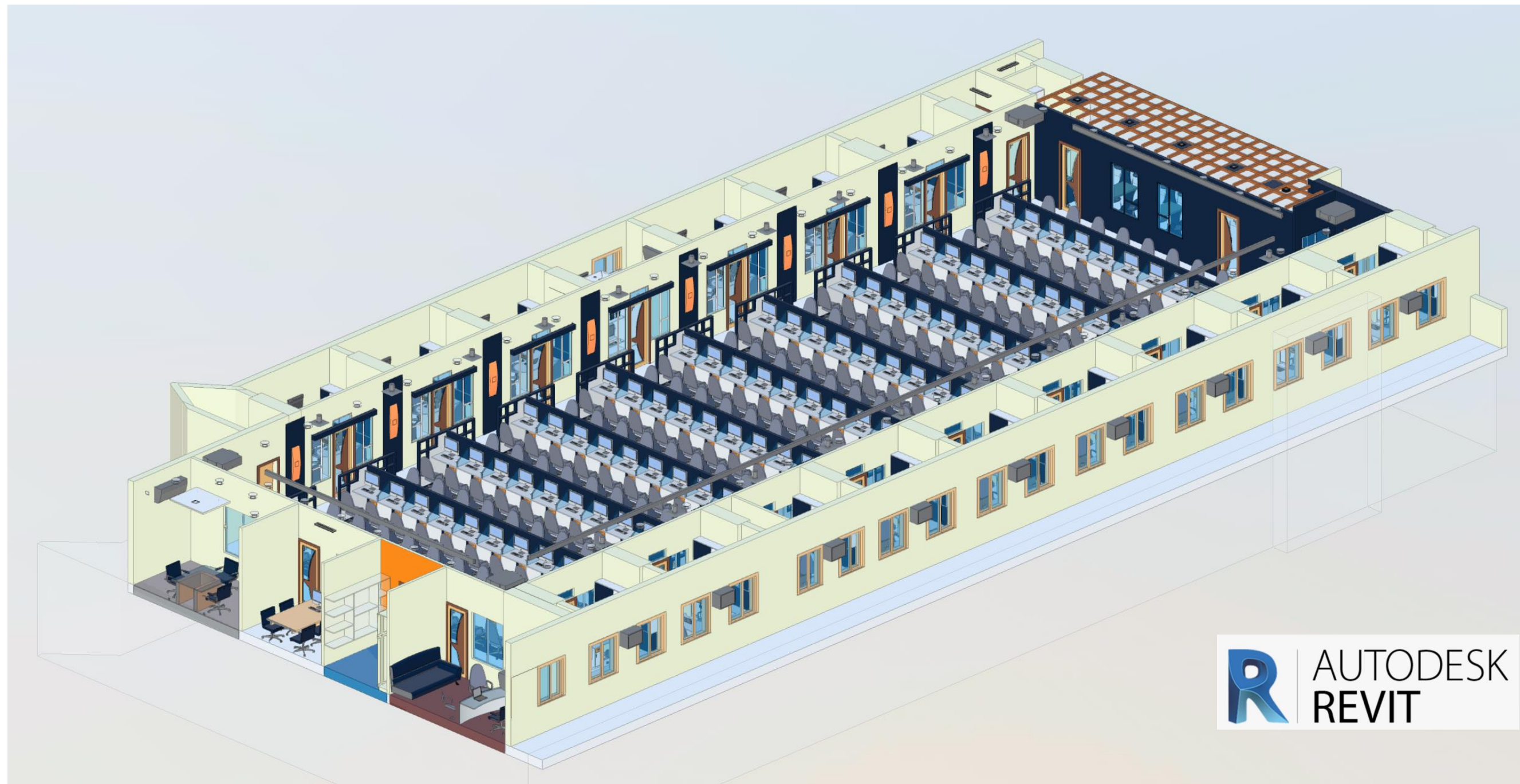
VOLTAGE V3

TOTAL KWH 73359.1

FREQUENCY 50.1

Use of the BIM model

The BIM model of the office was created during construction for supporting the interior construction coordination and to assess seating arrangements and lighting levels. The same model was adapted to enable control and monitoring of IoT enabled assets



BIM Integration into BuildTrack App

BIM model of the office was integrated using Autodesk's Forge technology to provide a visual interface to office users to operate all office lighting, ACs and Cameras

The screenshot displays the BuildTrack app's 'BIM Linkage' interface for a 'Big Conference' property. The progress bar indicates the current step is '3 Link Control with BIM Objects'. The interface is divided into three main sections:

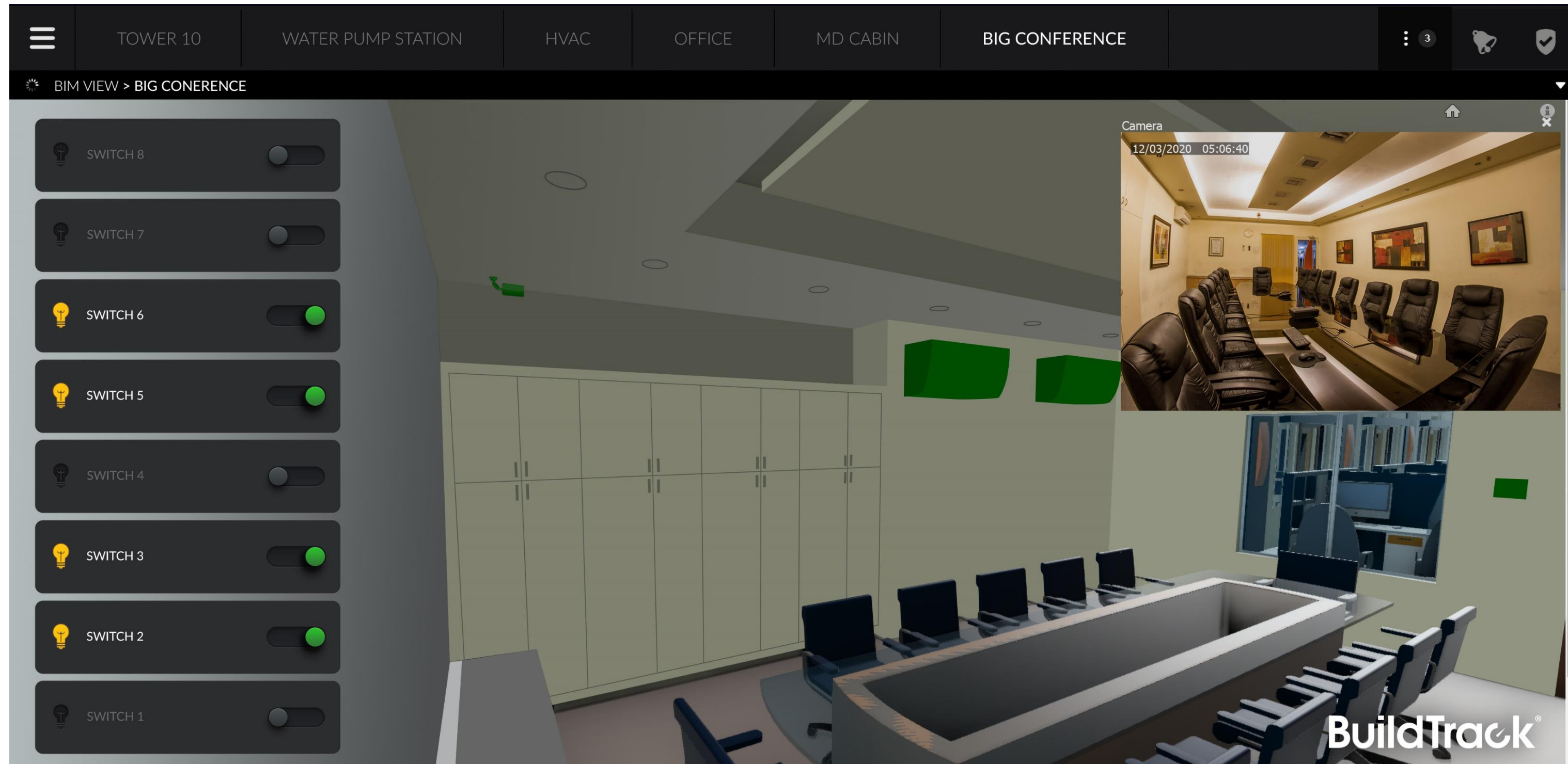
- Left Panel:** A list of BIM objects for selection. The object 'BRC_6F_C1_SWB1' is selected.
- Center Panel:** A 3D BIM model view of a conference room with a long table and chairs.
- Right Panel:** A 'Select a BuildTrack Pin' list with checkboxes for 'AC BLUESTAR', 'AC MITSUBISHI', and seven 'Switch' items (Switch 1 through Switch 7).

At the bottom of the interface, there are three buttons: 'LINK' (green), 'CANCEL' (grey), and 'CONFIRM' (blue). The BuildTrack logo is visible in the bottom left corner.

Overlaid on the right side of the interface is a detailed control panel for an 'AIR CONDITIONER'. The panel shows 'BLUESTAR 21°C' with an 'OFF' toggle and '5 AMP' power status. Below this, there are two air flow indicators: 'S-AIR 0°C 0%' and 'R-AIR 0°C 0%'.

BIM Integration into BuildTrack App

BIM objects are used to launch their respective control or monitoring features. For example, Lighting Switch objects would launch virtual switches, and clicking ACs would launch AC controls. Clicking Cameras would stream live video



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T H A N K Y O U



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