DATA CENTRE INDIA 2022
9th INTERNATIONAL CONFERENCE
9th November, 2022 ◆ Shangri-La, New Delhi

Astrikos ©.ai

Smart, Actionable, IoT-driven
Solutions for operational excellence

INTELLIGENT DIGITAL TRANFORMATION OF DATACENTER OPEATIONS

THE PRODUCT

BENEFITS

MANPOWER REDUCTION

COST SAVINGS BY PROCESS AUTOMATION

SUSTAINABILITY IMPACT BY REDUCING CARBON FOOTPRINT

REDUCTION OF TURNAROUND TIME

ENERGY EFFICIENT

S!AP- COGNUS

Data Centers / Cloud Infrastructure Analytics

Urban Infrastructure Analytics

Industrial Infrastructure Analytics

Utility Infrastructure Analytics

S!AP- C2RMS

Healthcare Infra Administration

Crisis, Disaster or Pandemic Management

RECOGNITION & AWARDS

AWARDS & RECOGNITIONS

PRODUCT MATURITY CERTIFICATIONS

INDIA 500 STARTUP AWARDS

The Enterprise of the year- 2019
Standard Chartered Rating

5TH NATIONAL SMART CITIES SUMMIT - 2019

5th INDIA SUSTAINABLE CITIES SUMMIT - BLR

5th INDIA SMART CITIES SUMMIT - DELHI

BRING GREEN SUMMIT - BANGALORE

WCCD
ISO 37120

ISO 37122:2019
Sustainable Cities & Communities - Indicators for Smart Cities

ISO 37120:2018
Sustainable Cities & Communities - Indicators for City Services & Quality of Life

ISO 22320:2019
Security & Resilience - Emergency Management - Guidelines for Incident Management & Response Mechanism

QUALITY MATURITY CERTIFICATIONS

ISO 14001

ISO/IEC 21823-1:2019	ISO/IEC 20000-1:2011	ISO/IEC 27001-1:2013	ISO 9001:2015

Things to Monitor in Data Centres

Power Management

Energy Management

Cooling System Management

Environment Management

Security Management

Asset Management

Net / Server Management

**All talk about the revenue from the Data Centres…
But…
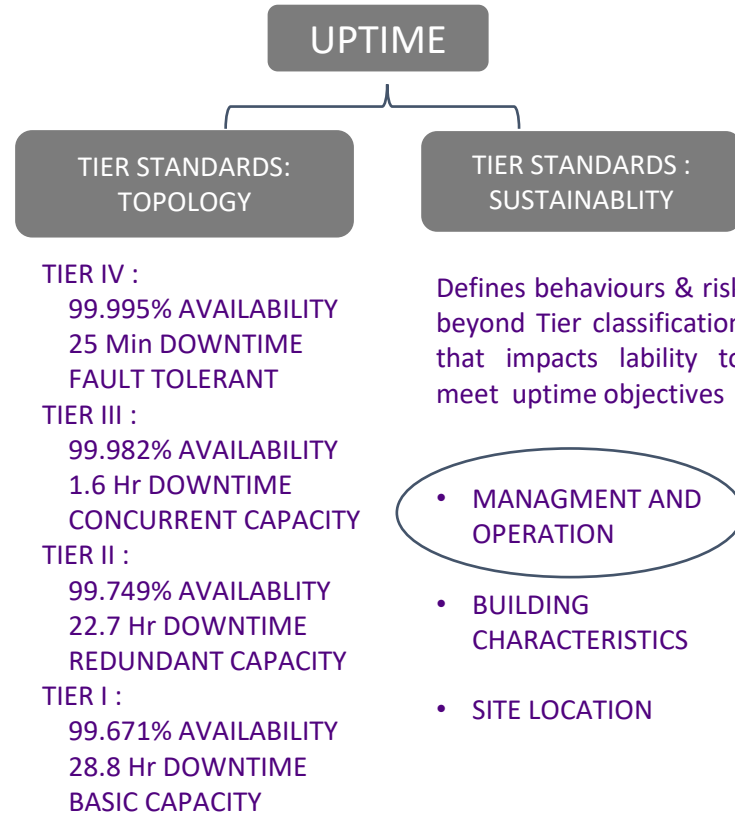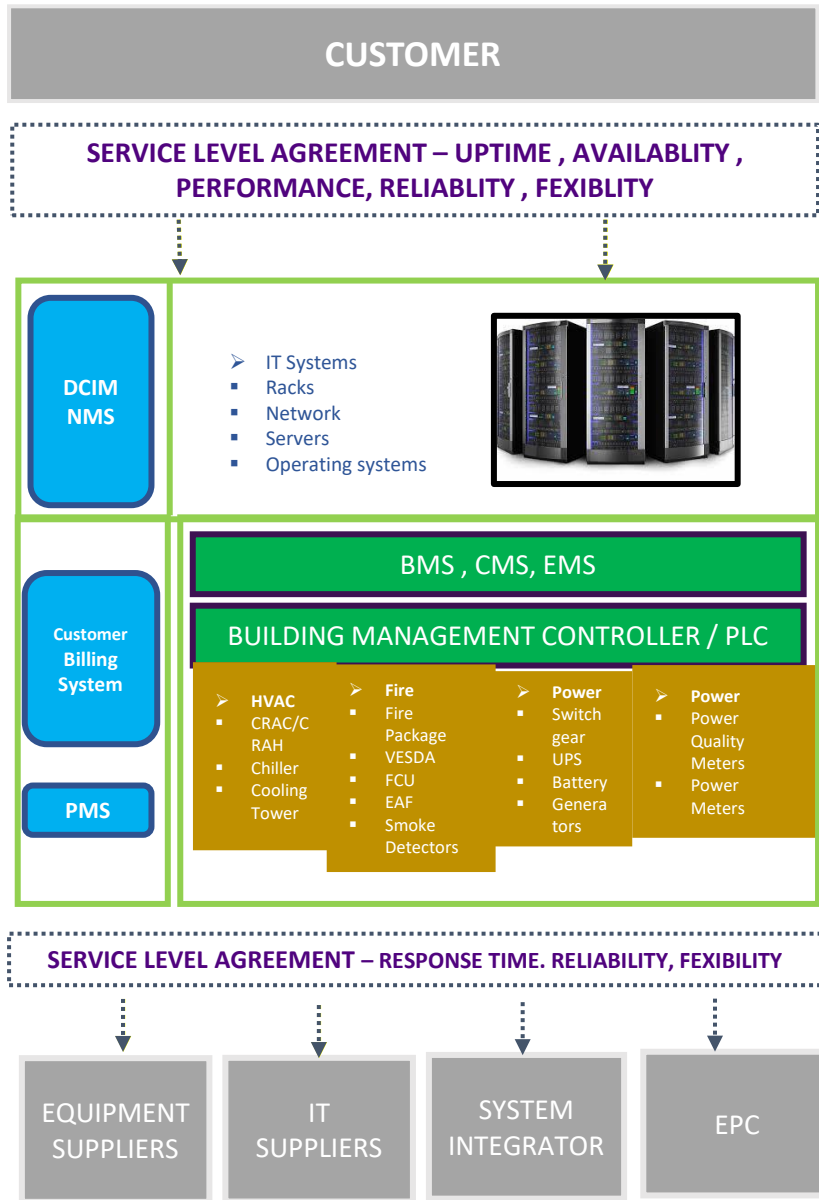Cost part of Data Centre is Often Ignored !!!**

DATA CENTER OPERATING ENVIRONMENT & CHALLENGES

CUSTOMER

SERVICE LEVEL AGREEMENT – UPTIME , AVAILABLITY , PERFORMANCE, RELIABLITY , FEXIBLITY

DCIM NMS

- IT Systems
- Racks
- Network
- Servers
- Operating systems

Customer Billing System

PMS

BMS , CMS, EMS

BUILDING MANAGEMENT CONTROLLER / PLC

- **HVAC**
  - CRAC/C RAH
  - Chiller
  - Cooling Tower

- **Fire**
  - Fire Package
  - VESDA
  - FCU
  - EAF
  - Smoke Detectors

- **Power**
  - Switch gear
  - UPS
  - Battery
  - Generators

- **Power**
  - Power Quality Meters
  - Power Meters

SERVICE LEVEL AGREEMENT – RESPONSE TIME. RELIABILITY, FEXIBILITY

EQUIPMENT SUPPLIERS

IT SUPPLIERS

SYSTEM INTEGRATOR

EPC

UPTIME

TIER STANDARDS: TOPOLOGY

TIER STANDARDS : SUSTAINABLITY

TIER IV :
99.995% AVAILABILITY
25 Min DOWNTIME
FAULT TOLERANT

TIER III :
99.982% AVAILABILITY
1.6 Hr DOWNTIME
CONCURRENT CAPACITY

TIER II :
99.749% AVAILABLITY
22.7 Hr DOWNTIME
REDUNDANT CAPACITY

TIER I :
99.671% AVAILABILITY
28.8 Hr DOWNTIME
BASIC CAPACITY

Defines behaviours & risk beyond Tier classification that impacts lability to meet uptime objectives

- MANAGMENT AND OPERATION
- BUILDING CHARACTERISTICS
- SITE LOCATION

FINDINGS OF **UPTIME INSTITUTE** ON ABNORMAL INCIDANCE REPORT (JUNE2018)

- Failure & downtime are common & increasing , despite of many advances
- Complexity and extensive use of 3rd parties making life difficult
- Biggest reason of failure is **" Shortfall in Management , staff activities and operation procedure"**

IMPERATIVES

Improve the overall Operational Efficiency

Meet Service Level Agreements

Manage Escalation And Response Faster And Accurate

Real Time Tracking Of Asset Performance & Utilization

Initiate AI ML To Predict Anomalies, Inefficiencies & Failures

Optimize Energy Usage -PUE Curve And Cooling Efficiency

Standardization Of Procedures And Asset Across DCs

Built Resilience

SHORTFALLS : DATA CENTRE

SUPPLIER MANAGMENT	OPERATIONAL SUSTAINABILITY	CUSTOMER MANAGEMENT

SHORTFALL IN OPERATIONAL PROCEDURE

- Lack of collaboration and incidence tracking
- Vendors/suppliers SLA tracking issues

- Higher customer expectation on visibility and transparency of operation
- SLA Tracking Issues

- ❑ Vendor specific Interface across BMS, CMS, EMS, NMS, DCIM
- ❑ Each solution has its own UI to display parameters ,events and alerts
- ❑ No Ability to monitor and track interdependencies

- ❑ Very Basic situational awareness for few solutions
- ❑ No capability of drilling down for all deployed solutions
- ❑ No capability of data convergence
- ❑ No ability of scenarios management through panels and layouts

- ❑ No unification of user interfaces
- ❑ Control subsystems from Ui's suppled by respective suppliers
- ❑ No standardization of end-to-end operations
- ❑ No possibility for system driven resilience

- ❑ Basic alert and alarm report
- ❑ No ability to historize data
- ❑ Need 3rd party tool to achieve elaborated analytics
- ❑ Consolidation of data across system need 3rd party like data management system

- ❑ All internal process for Service Escalations are managed manually

- ❑ basic portal capabilities with basic interface and non real time information flow

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EQUIPMENT SUPPLIERS	OT SYSTEMS			IT SYSTEMS		DATA CENTRE CUSTOMER
	BMS	EMS	CMS	DCIM	NMS	

SERVICE LEVEL AGREEMENT

Response Time. Reliability, Flexibility

OT SYSTEMS

- Chillers
- Air Handling Units
- Variable Speed Drives
- Heat Rejection
- Fan Coil Units
- Variable Air Volumes

- CRAC And In-row Cooling Units
- UPS/DRUPS
- Switchboards & Switchgear (MV, LV)
- Power & Power Quality Meters
- Breakers
- Transformers

IT SYSTEMS

- IT Racks, IT Pods
- Crage
- In-row Cooling Units
- Access Floor Power & Environmental Sensors
- Pdu's, Rack Pdus

- Fire Suppression System
- Water Leak Detection System
- Physical Security
- Surveillance Management System

SERVICE LEVEL AGREEMENT

Uptime , Availability , Performance, Reliability , Flexibility

S!aP-Viz Visualization

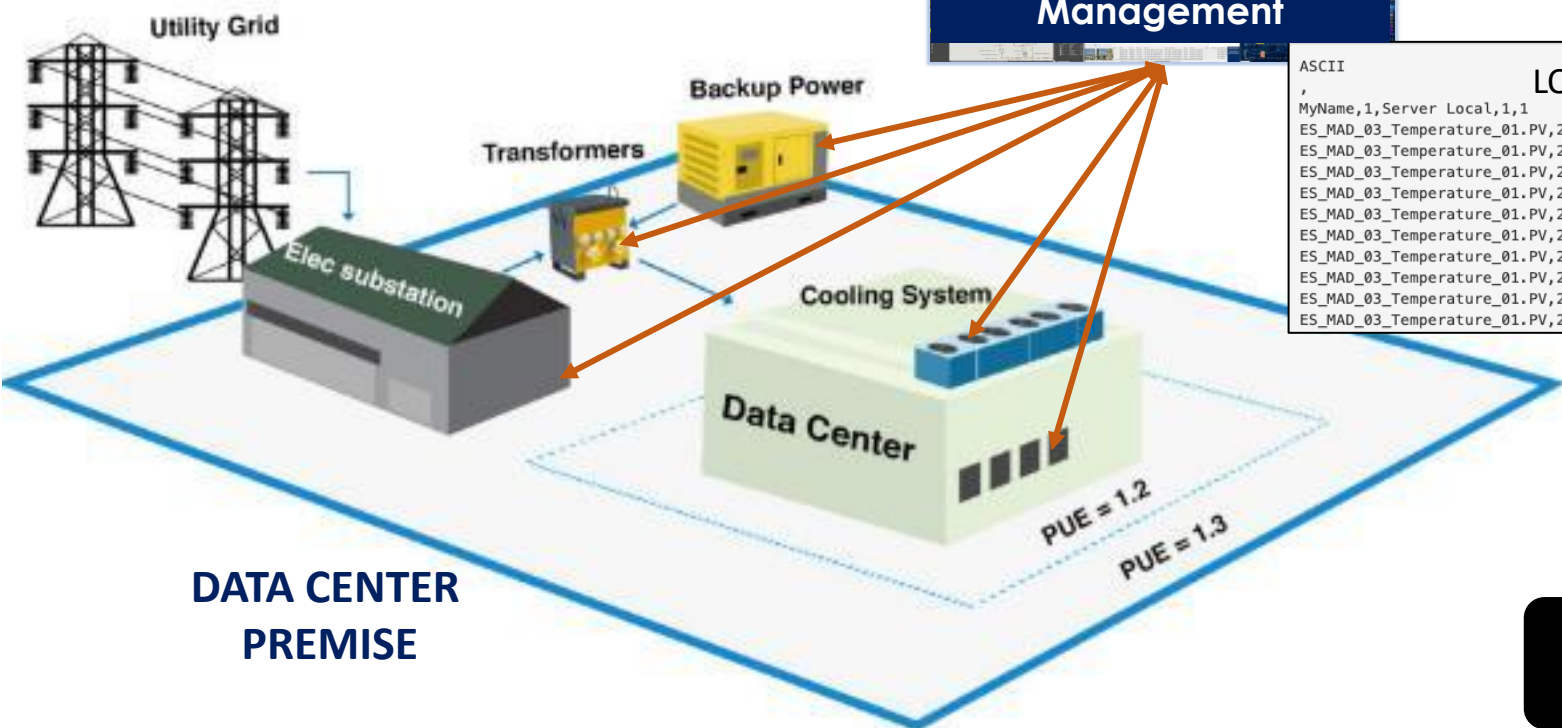Canned KPI Analytics

User Defined Analytics
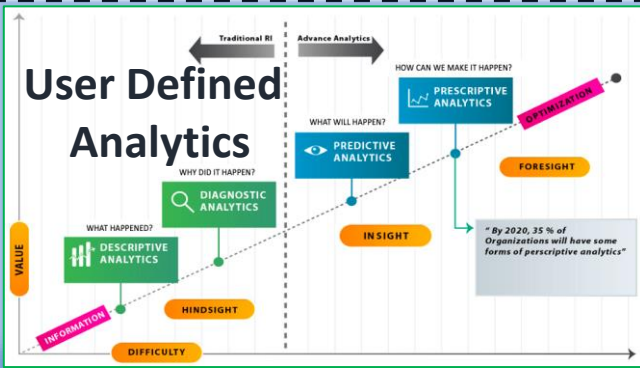
PRESCRIPTION ADVISORIES & ACTIONS

Raise work order for Asset Maintenance Management

Raise workflow for Business Process Management

Create a policy for device/equipment Control

API: ACTIONS LINKED BACK

DC Unified Operations Management

LOGS/EVENTS SAVED IN HISTORIAN

```
ASCII
,
MyName,1,Server Local,1,1
ES_MAD_03_Temperature_01.PV,2,2016/10/13,01:00:00.000,2016/10/13,02:00:00.000,0,10,192
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HISTORIAN LOGS EXPORTED

DATA CENTER PREMISE

SOLUTION ARCHITECTURE

DIGTIAL TRANSFORMTION OUTCOMES : DATA CENTRE

SUPPLIER MANAGMENT	OPERATIONAL SUSTAINABILITY	CUSTOMER MANAGEMENT

SLA PERFORMANCE

- Ability implement ITSM/OTSM process like incident management, change management, Asset Life Cycle management, SLA management etc
- Ability to collaborate critical & contextualized information across stake holders with mobile apps
- Ability to track SLAs with vendor and customers

ENTERPRISE VISIBILITY & STANDRADISATION

- Unified User Interface across BMS, CMS, EMS, NMS, DCIM
- Ability to track all parameters from single pan of glass
- Ability to manage all events and alerts
- Ability to monitor and track interdependencies
- Ability to consolidated data across systems

- Multiple options of navigation
- Ability to drill down from GIS Layers to building layers to floor layers to equipment level
- Ability to contextualize data
- Ability to converge data in contextualize panels, layouts & scenarios

- Ability to unify operations from central location
- Ability to control subsystems from UOC's Unified operation UI
- Ability to implement standardization for sustainability
- Ability to implement resilience

PREDICTABILITY

- Ability to define and implement real time KPI
- Ability to develop elaborative dashboards and drill down to equipment level to
- Ability to drive predication and prescription along with optimization of PUE, Cooling efficiency

GROWTH

- Customer specific Wizard based UI theme selection
- Customizable customer specific Dashboard, Real alerts, Alarms,
- Ability to share Incidence's information acknowledgment & approvals
- 3D visualization of Data Hall and Assets
- Help Desk

UNIFIED OPERATION CENTRE
DATA CENTRE TEMPLATE

UNIFIED DASHBOARD	WORKFLOW	DASHBOARDS	KPI	EVENTS/ALERTS	MACHINE CONTROL	HISTORION

IT/OT INTEGRATION LAYER

BIG DATA PLATFORM SiAP

PORTAL SiAP

EQUIPMENT SUPPLIERS

OT SYSTEMS			IT SYSTEMS	
BMS	EMS	CMS	DCIM	NMS

DATA CENTRE CUSTOMER

SERVICE LEVEL AGREEMENT
Response Time. Reliability, Flexibility

- Chillers
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- Physical security
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SERVICE LEVEL AGREEMENT
Uptime, Availability, Performance, Reliability, Flexibility

OPERATIONAL SUSTAINABLITY- UNIFIED OPERATIONAL DASHBOARDS

UNIFIED OPERATION CENTRE DEMO – OPERATIONAL DASHBOARD
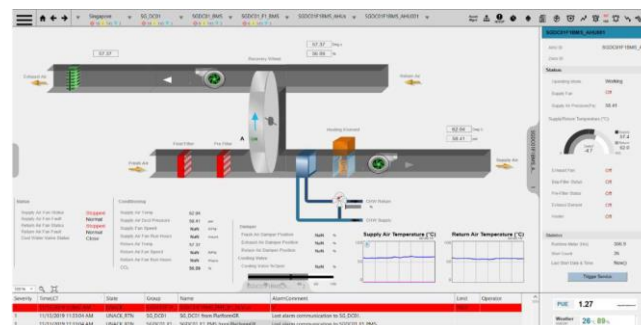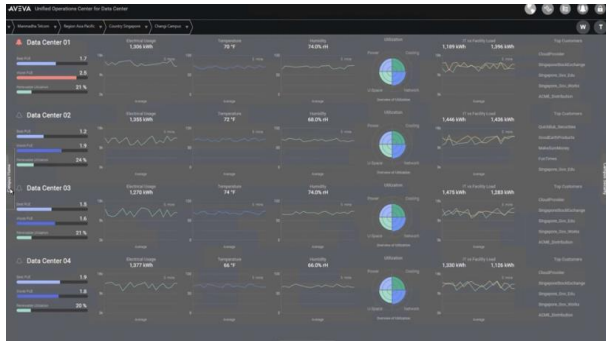
Unified Operations Management - Monitoring & Control Capabilities

This capability is used to achieve real time integration with heterogenous BMS, SCADA, DICIM, CCTV etc through Industrial protocols such as Modbus , BACnet , OPC
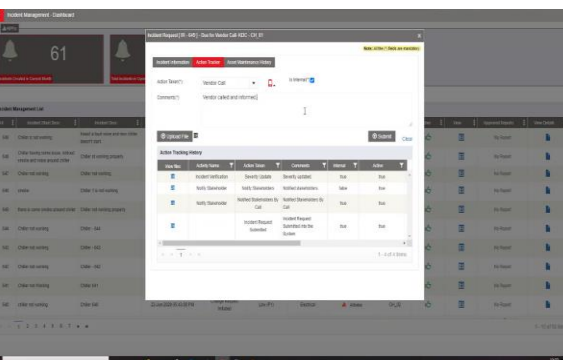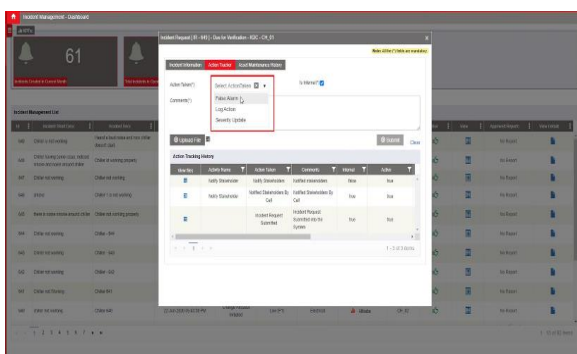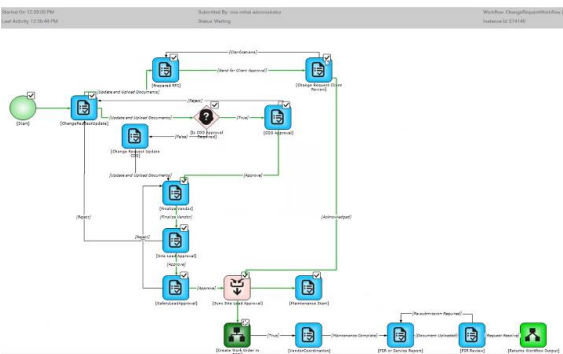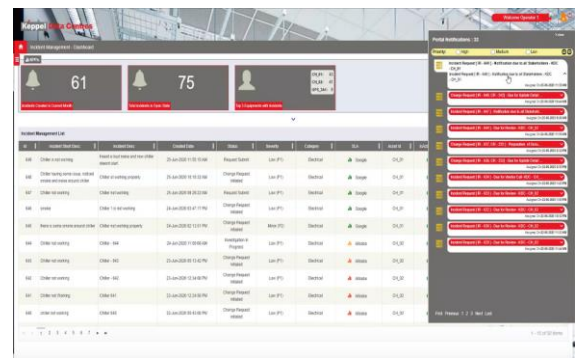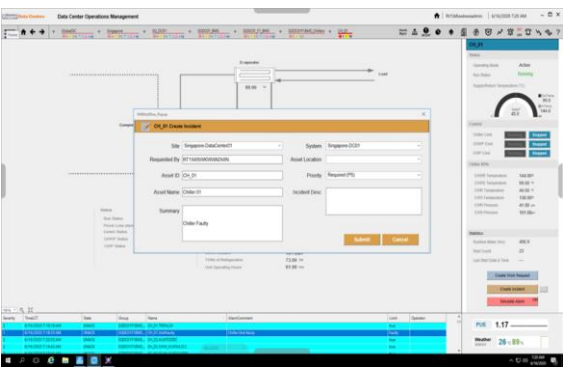
- Monitoring : Real time visibility of critical alarm, incidences & KPI

- Drill down capabilities for better situational awareness

- Control : Ability to control the BMS , SCADA and other equipment's

- Equipment templates : All M & E equipment's

- Situational Awareness : Asset model (Graphics, Logic, Face plates, Layout, Navigation) enables dynamic displays with Situation awareness displays

- Data management : Historization, playback

- Integrated PLC logic viewer

OPERATIONAL SUSTAINABLITY & VENDOR MANAGMENT- WORKFLOW MANAGEMENT

ITSM DEMO 1

ITSM OTSM DEMO 2

Unified Operations Management - Workflow Management

Module is central pieces which collaborates information between integration and Monitoring, Asset Management and Portal modules to achieve OT/IT Service management to improve response time and operational productivity.

- Alarm & Alert escalation to vendors and track the actions of vendors on incidences till closers

- Monitor vendors and customer SLAs in term of uptime and response time

- Automate IT/OT service management to ensure reduction is human error , faster response and continues process improvement

- Extend the process beyond organizational boundaries to vendors and customers through mobile applications or by portal interface

- Accomplish complex tasks like auto calling , emails , SMSs and complex workflows based on specific needs of the client

# OPERATIONAL SUSTAINABLITY - PREDICTABLITY

SiAP DEMONTRATION

Unified Operations Management - PREDICTABLITY , SUSTAINABILITY KPIs & EFFICENCY KPIs
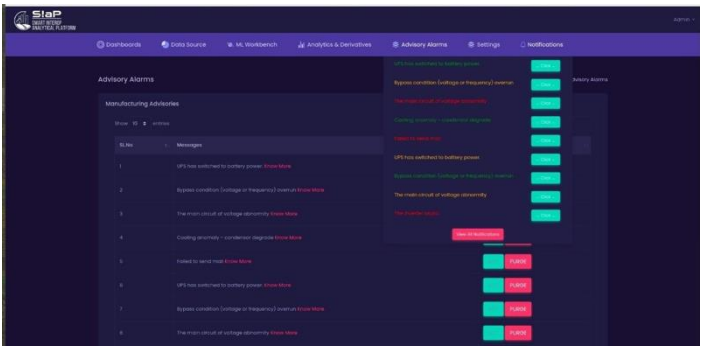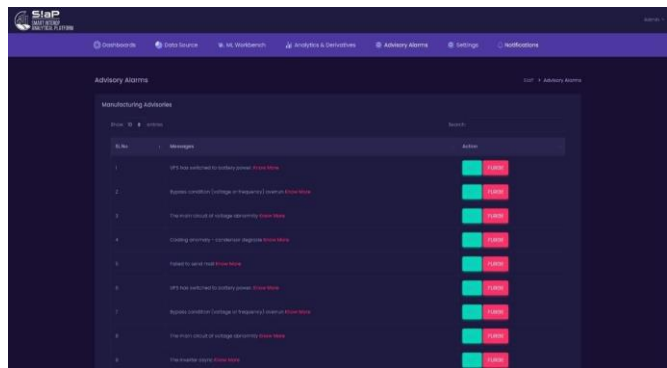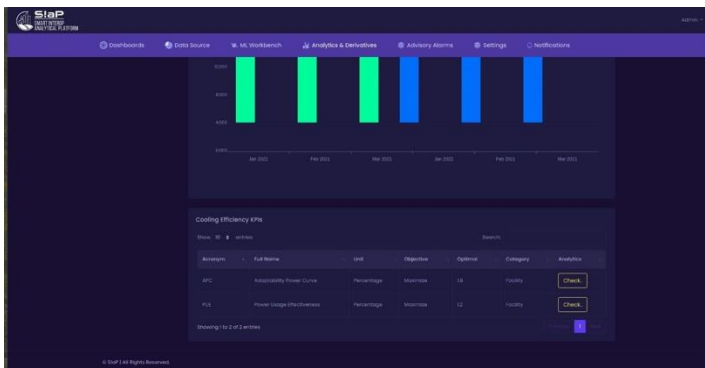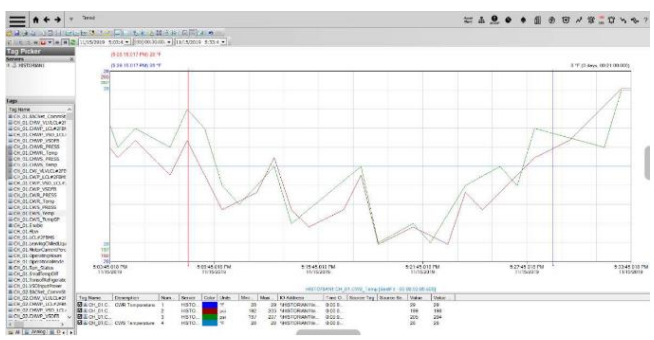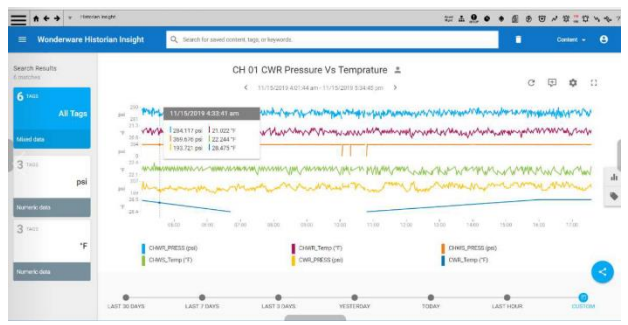
This is a big data analytics platform which gather the data from UOC through real time integration with heterogenous BMS, SCADA, DICIM, NMS , ERP , Help Desk and initiate AI and ML powered actionable intelligence interns of historical , descriptive , predicative and prescriptive analytics and advisories.

- Provides innovative ML workbench for user defined analytics
- Provides KPI analytics farmworker for sustainability assessment
- Predictive analytics which can be fed to workflow engine or UOC for operationalizing the advisories
- Energy and resource conservation framework
- Provides optimization analytics PUE , DCiE, DCE , APC and CADE up to 139 KPIs

OPERATIONAL SUSTAINABLITY – CUSTOMER MANAGEMENT
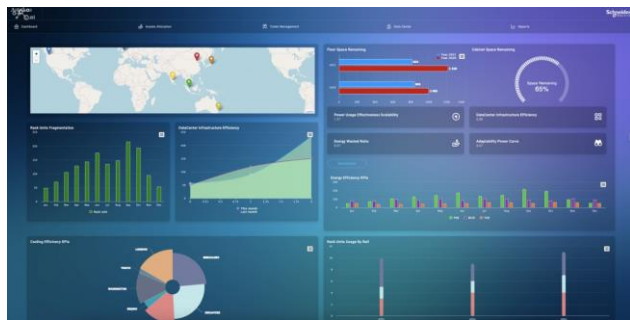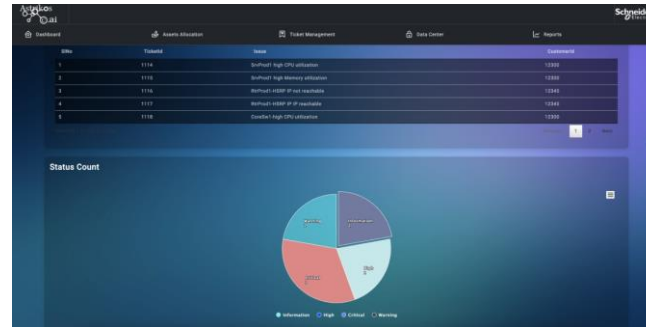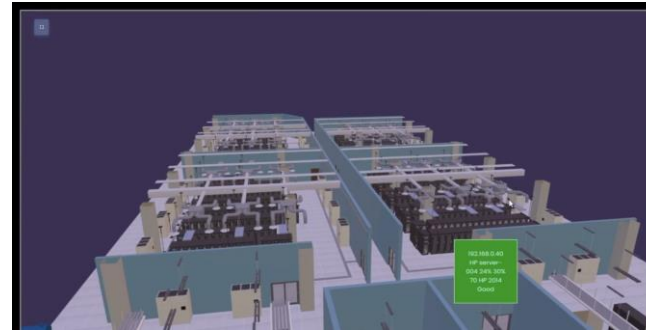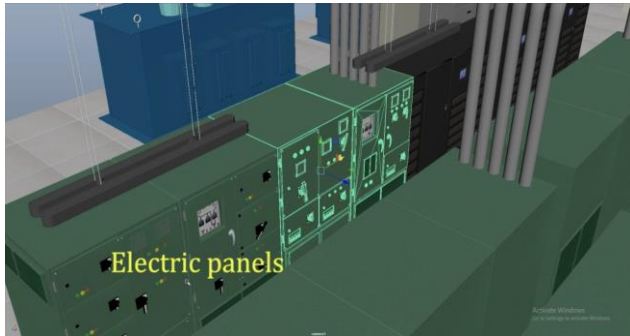
3D PORTAL DEMO

Unified Operations Management - Digital Twin and 3D PORTAL (Internal and Customer Transparency)

This capability is provided visibility and transparency of operation to tenets in real time

- Provides digital twin rendering of the respective data hall to tenets
- Provides flexibility to customize UI specific talents preferred design
- Provides real time visibility to KPI, Alarms, Alerts , Parameters respective assets owned by tenets
- Provides help desk services request management
- Provides tenant on-boarding capabilities
- Provides participation in escalation process and incidence tracking and reporting

GLOBAL ROLEOUT STRATGEY - UNIFIED OPERATION DATA CENTRE

UOC CORPORATE DASHBOARD

- Supervising & monitoring for all local sites through dashboard for critical alerts , alarms , operational KPI's , cost performance ratio , asset performance, Incidence reports , work in progress etc

- Analyze the operations, asset and cost performance ratio between and across geographies

Singapore   **SYDNY**   **HONG KONG**   **LONDON**   **PARIS**   **FRANKFURT**
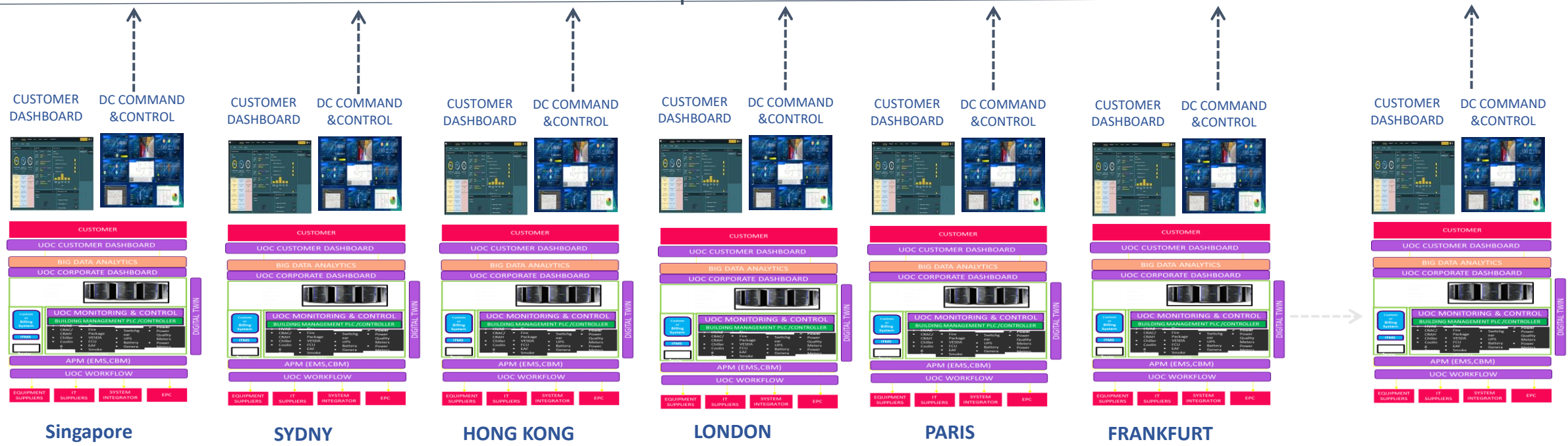
Thank you

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