ABB DATA CENTER FORUM 2017, 11 JULY 2017, TUESDAY

ABB Ability™ Data Center Automation

Datacenter Automation for improved operations and reduced risks

Jack van der Horst , Regional Technology Manager , Asia Pacific. ABB

Data center industrialisation is inevitable

Everyone wants Google-like functionality



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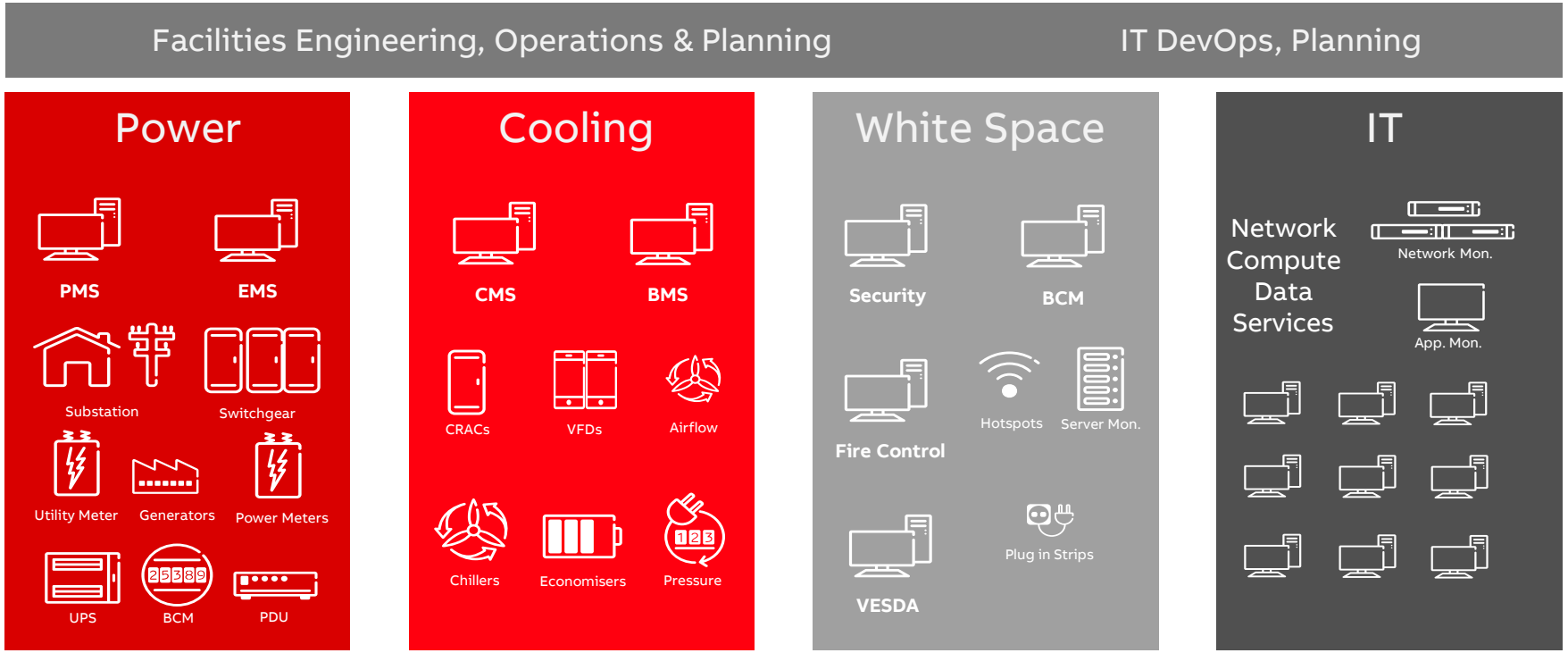
Improve Operations



Datacenter systems are needlessly complex

‘islands of automation’ increase risk, cost, inefficiency

- Silos of data and information- no real time dependency modelling
- Difficult to understand, manual integration, human error factors
- Lacking efficiency strategies to model & execute



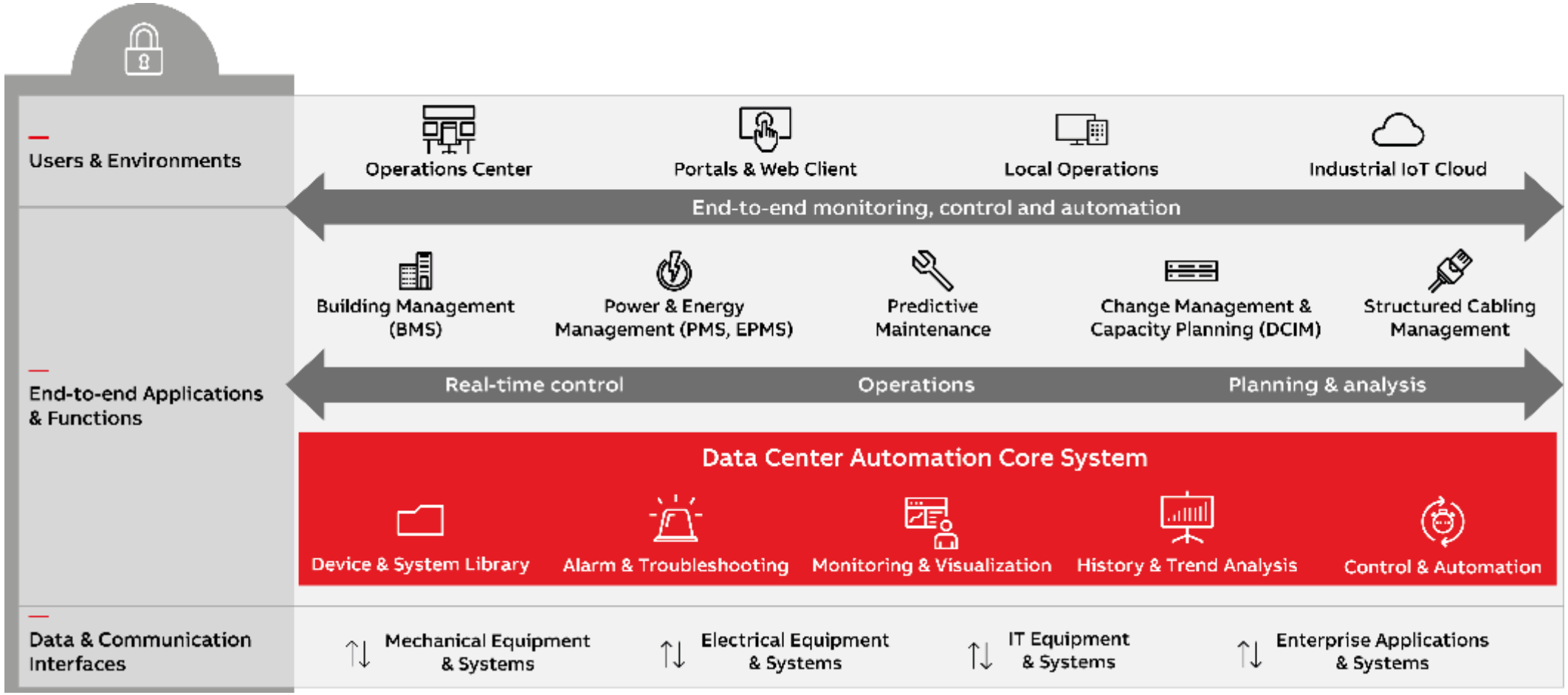
Improve Operations

We Have Done It



ABB Ability™ Data Center Automation

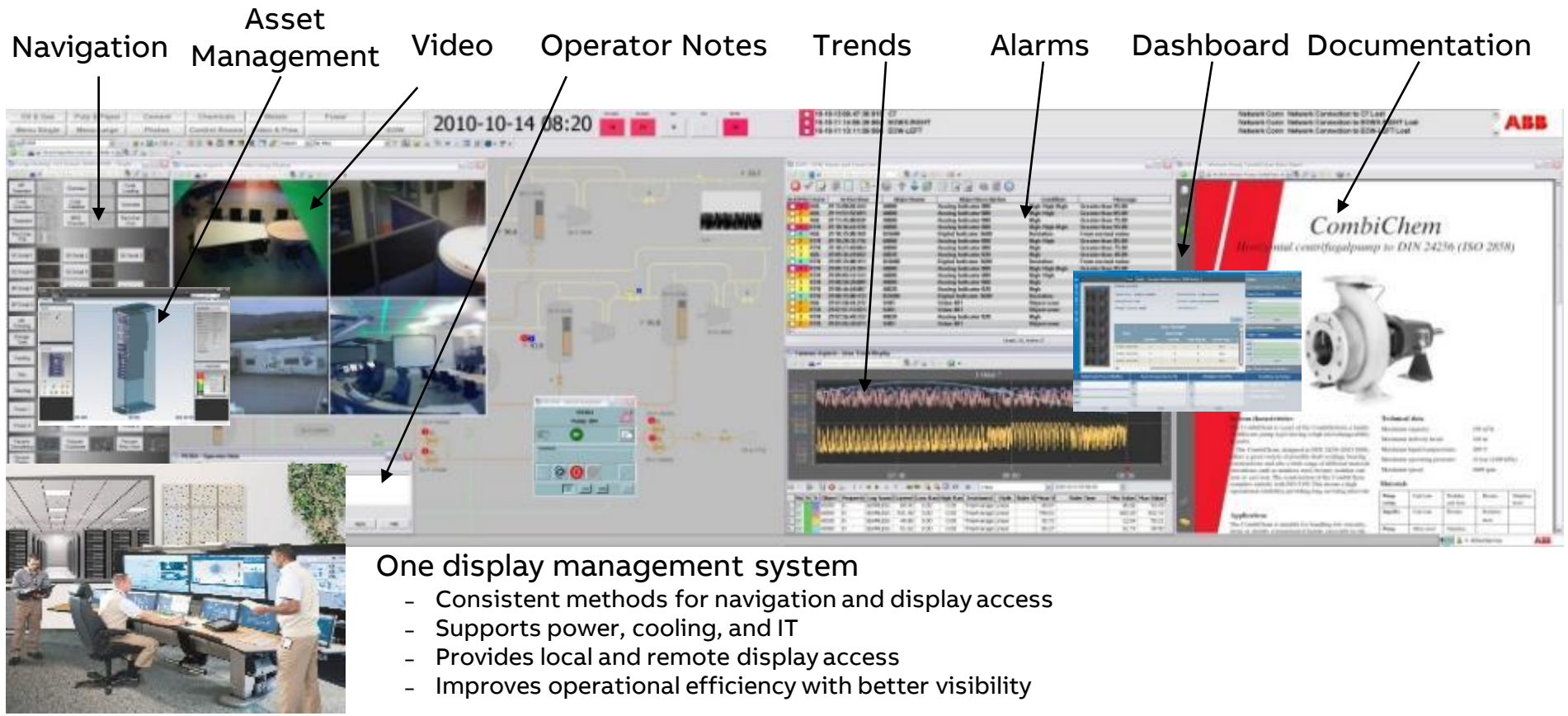
Strong foundation using ABB's position as #1 in process automation



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Integrated information

Command Center – Single Pane of Glass

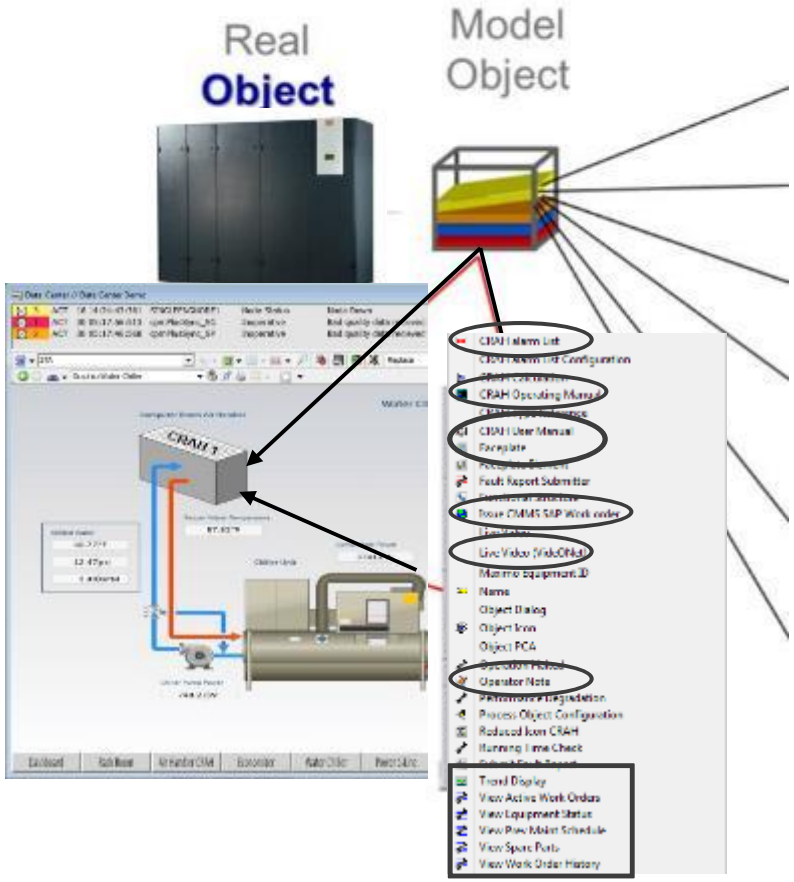


One display management system

- Consistent methods for navigation and display access
- Supports power, cooling, and IT
- Provides local and remote display access
- Improves operational efficiency with better visibility

Integrated information

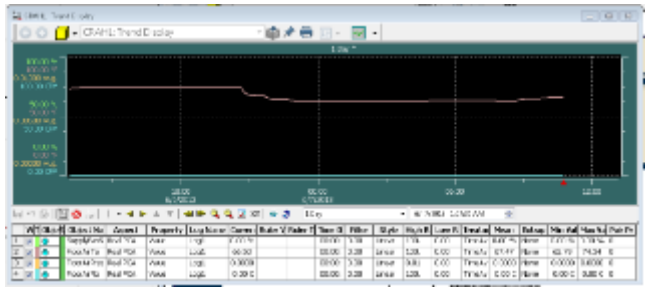
Flexible Equipment Models

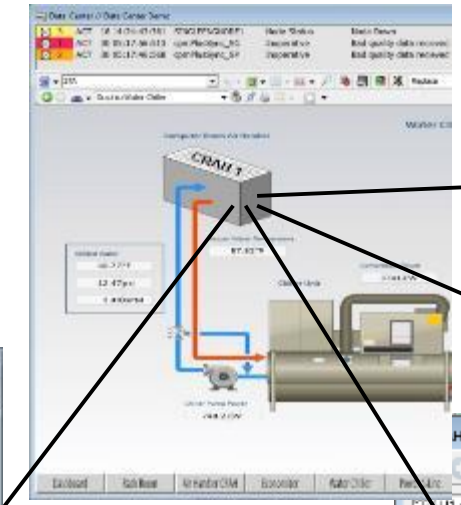


- Equipment, like CRACs, chillers, etc..., are modeled for re-use to quickly engineer the system
- This modeling is supported for equipment from any vendor that uses typical data center communication protocols
- These object types include not only the real-time data but also the display behavior, alarm grouping, and navigation links
- Provides efficient engineering and improved operator effectiveness

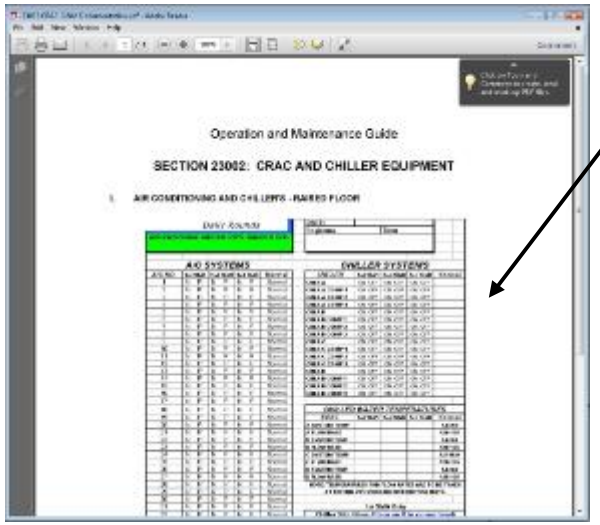
Integrated Information

Trends

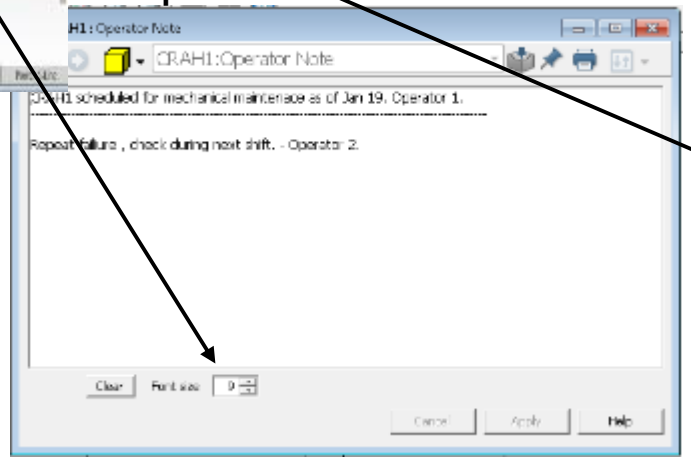




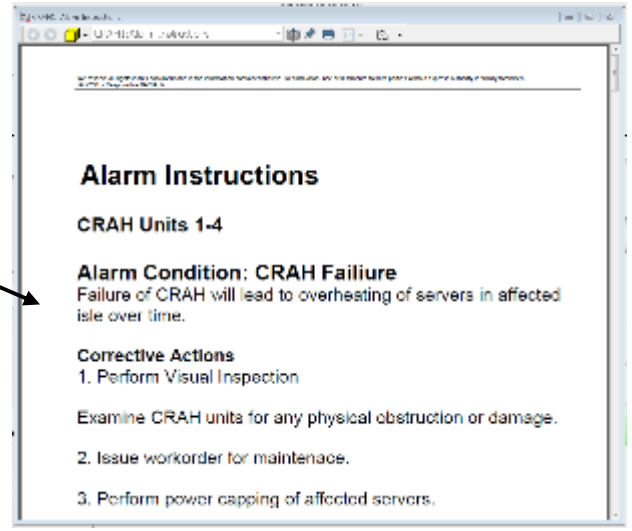
Documentation



Operator Note

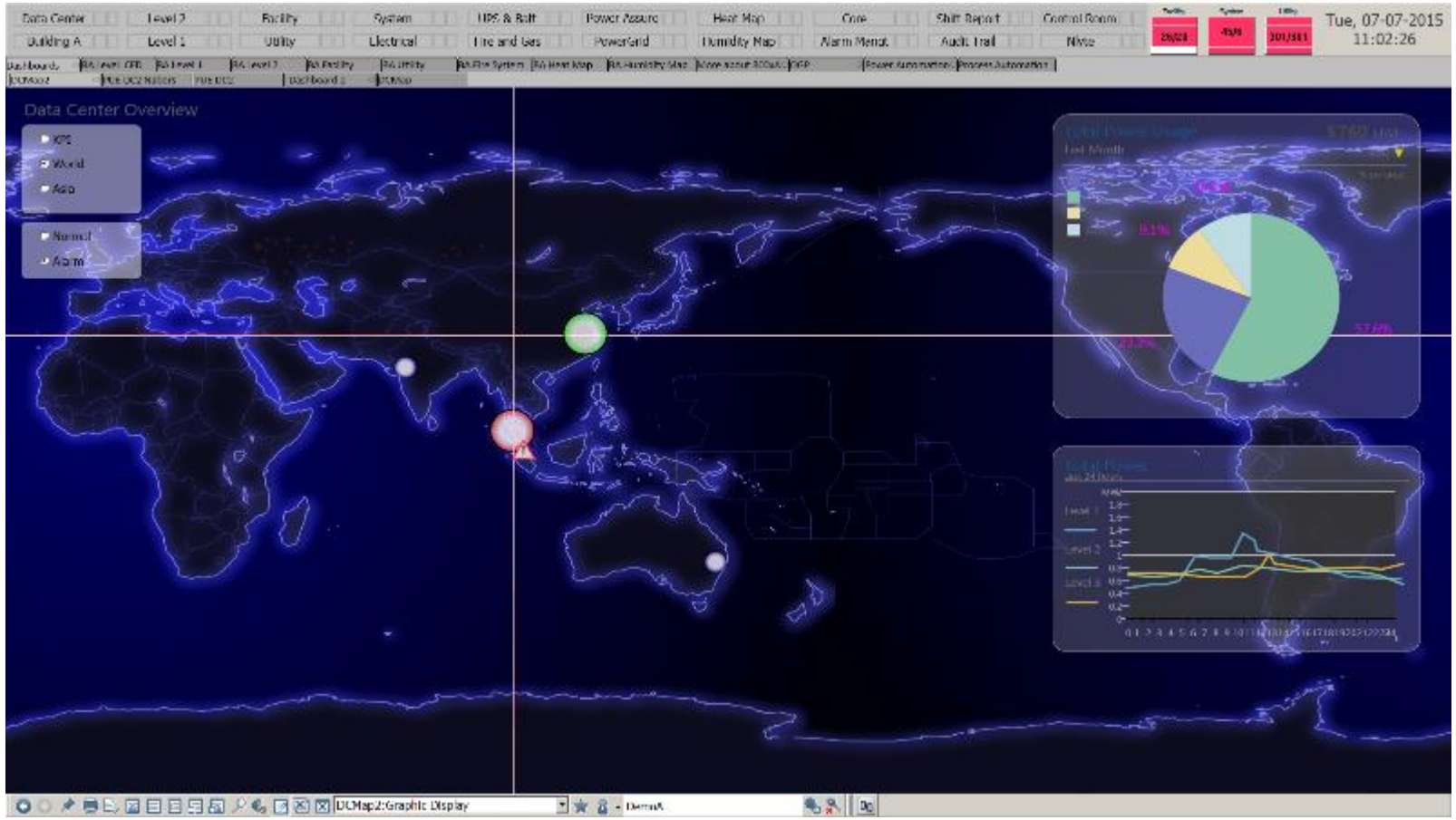


Alarm Instructions



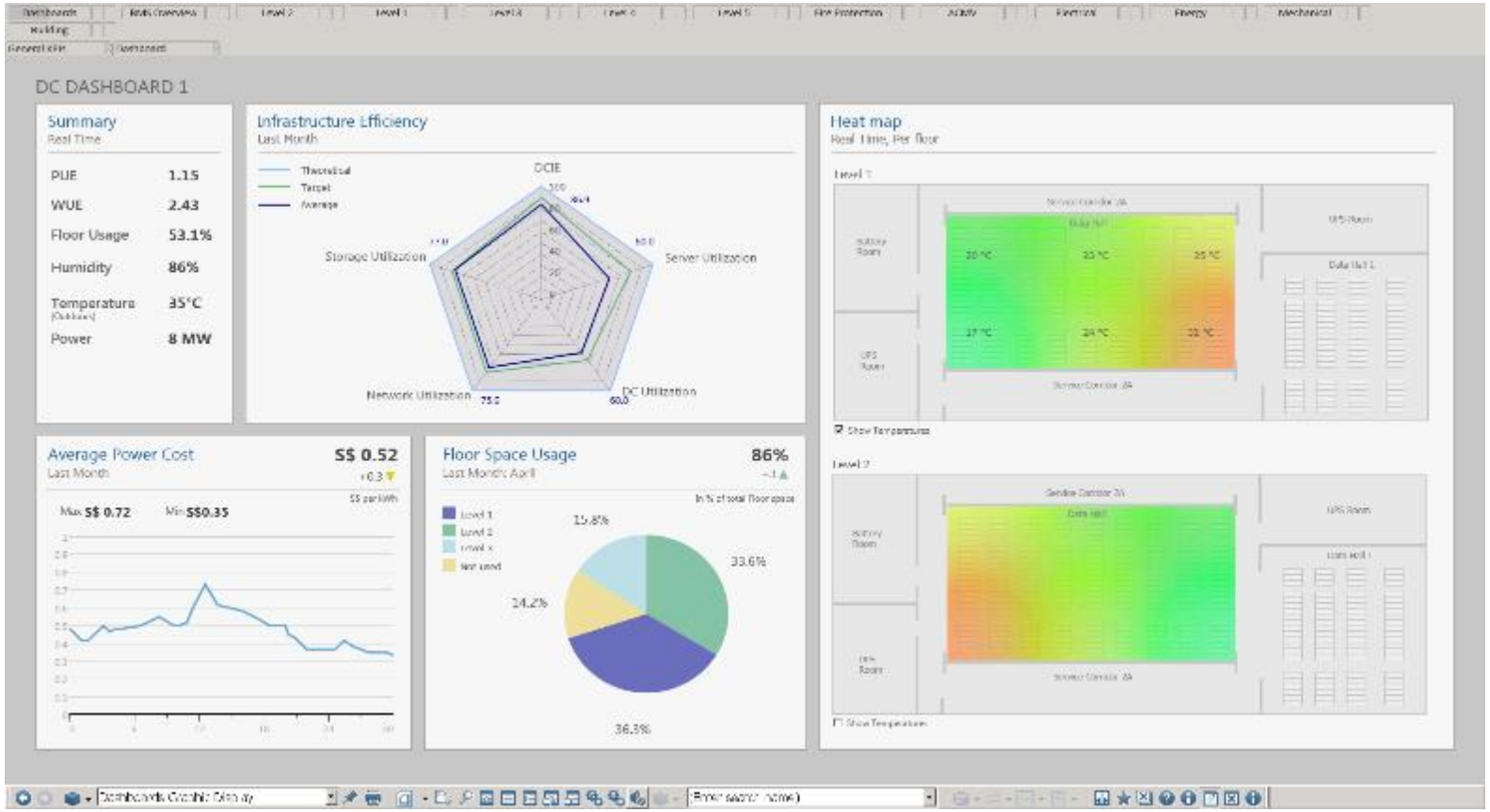
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Multi Site Capabilities

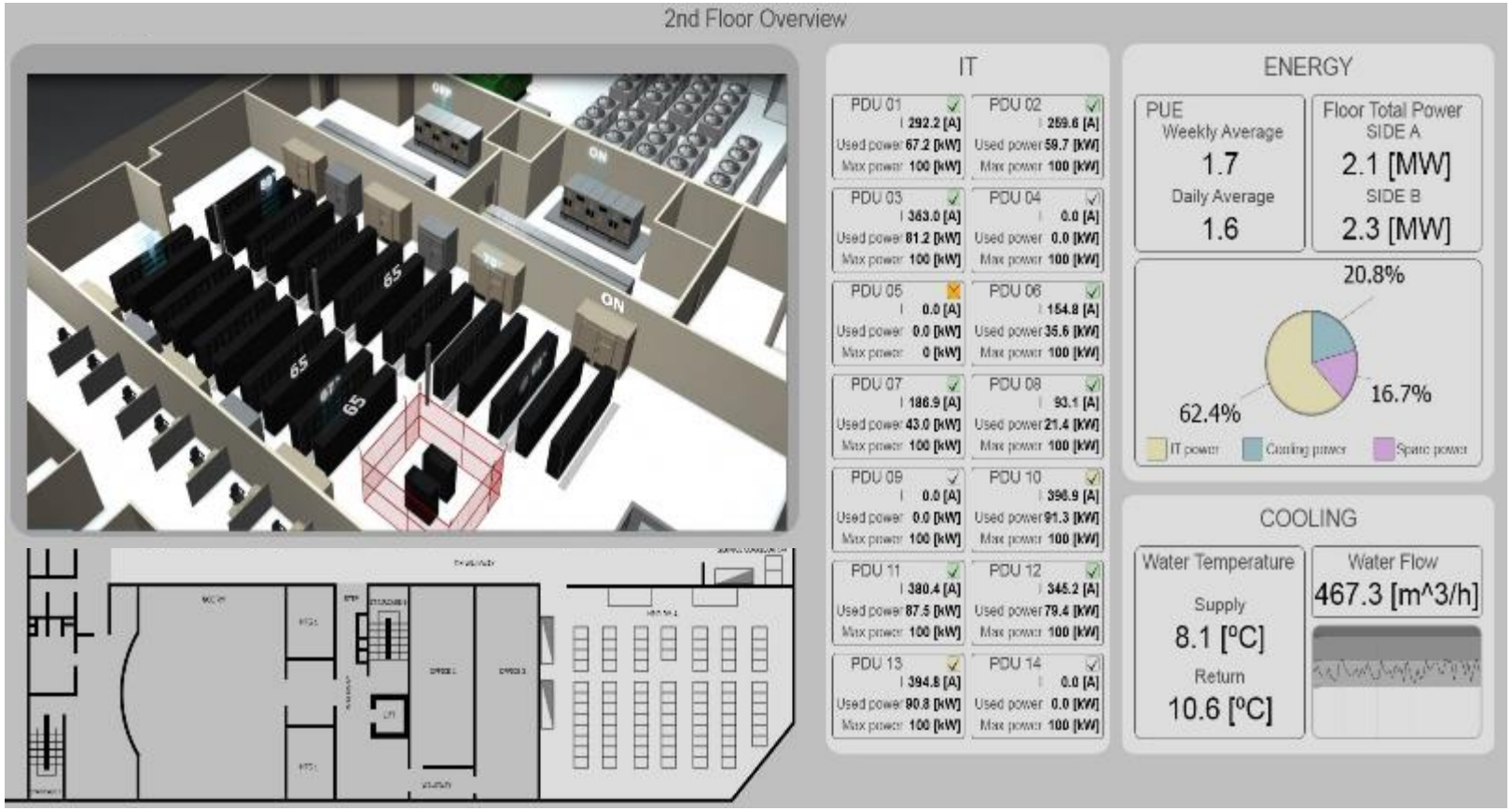


Holistic Operational View

Full Data Center KPI’s – Targets and Actual

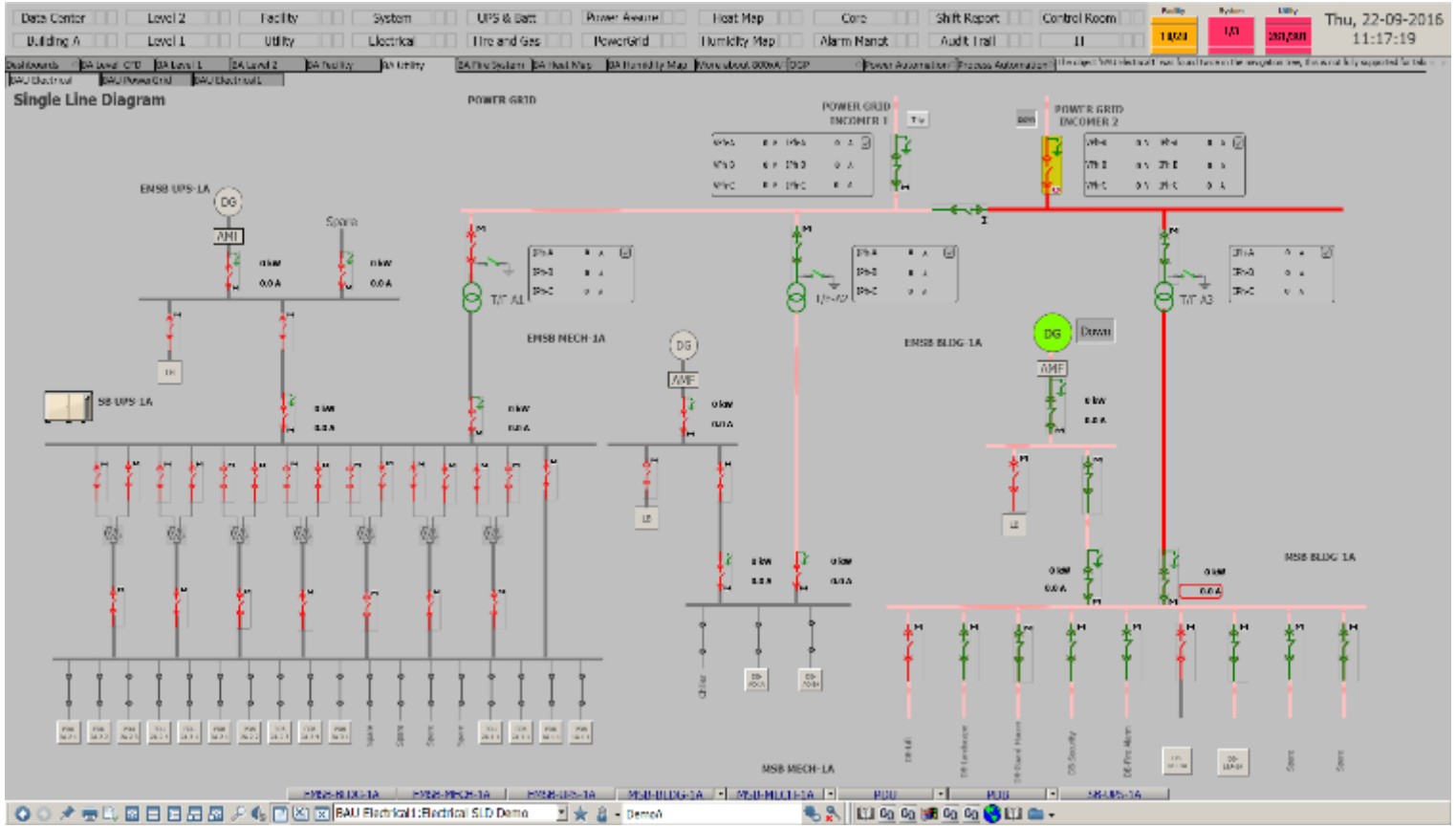


High Performance Graphics



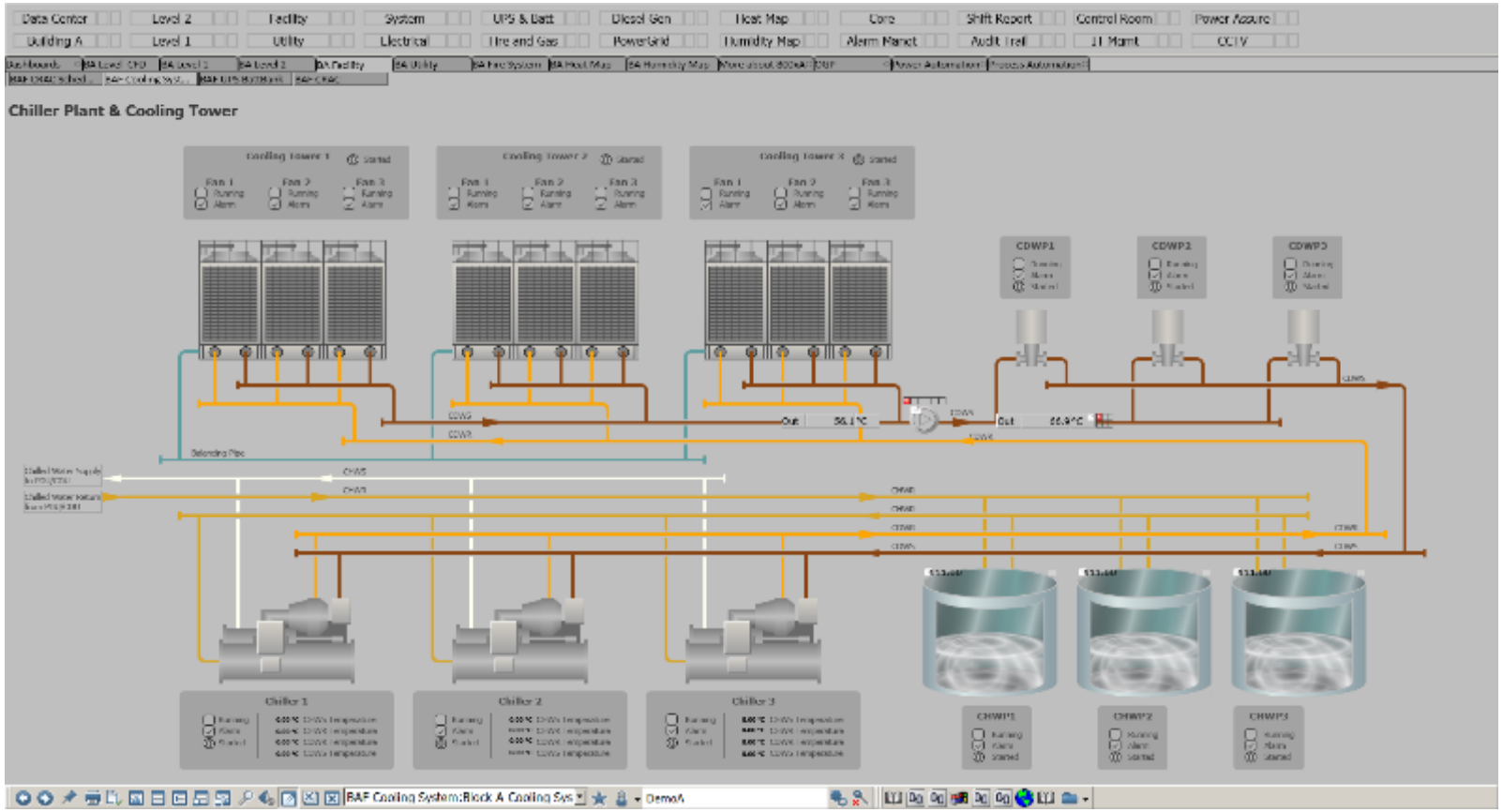
High Performance Graphics

Power Train Monitoring - Example



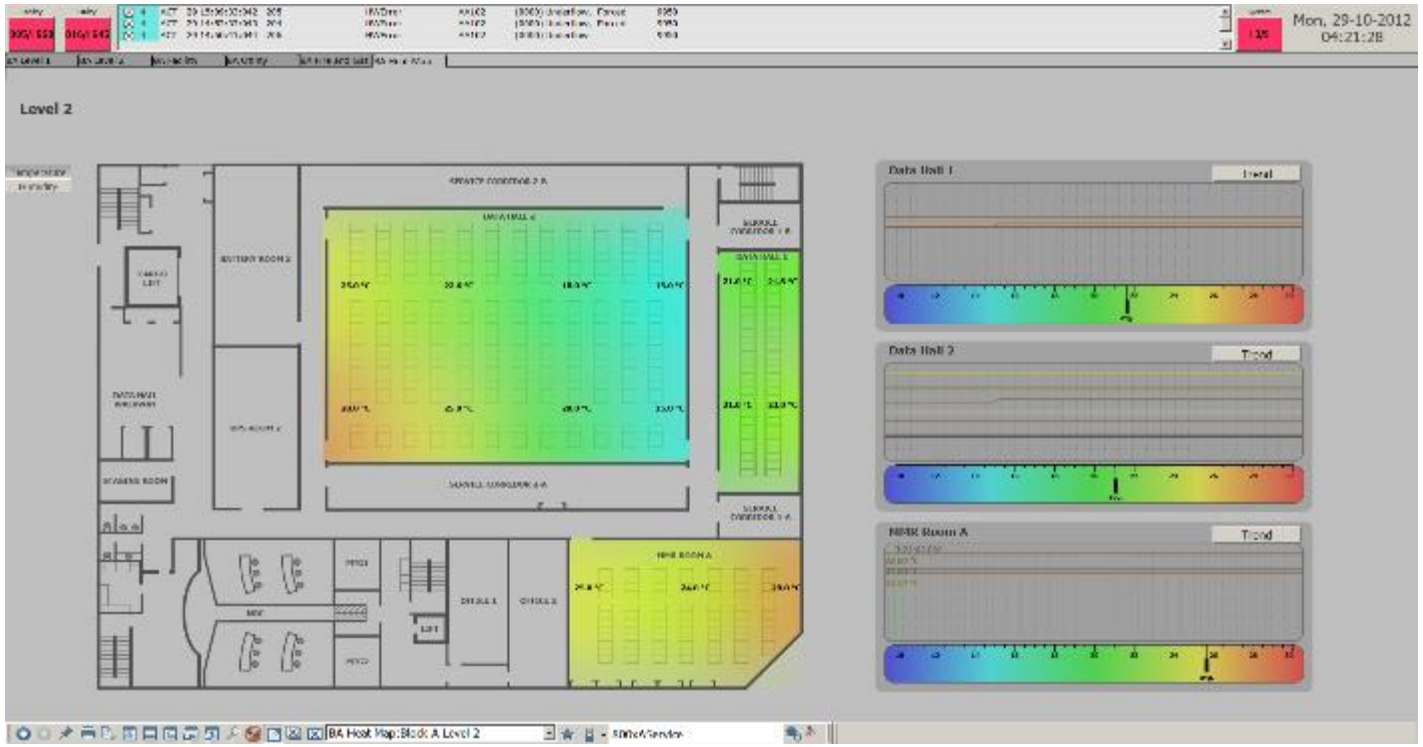
High Performance Graphics

Cooling System Overview - Example



High Performance Graphics

Real Time Hot Spot Identification with Contour Maps



Graphic visualization of humidity and temperature sensor data in real time.

Improve Operations

Floor Planning and 3D-Footprint







- True-to-scale plan
- Multilayer – underfloor, floor, ceiling
- Calculation of threshold values
- Detailed 3D component view

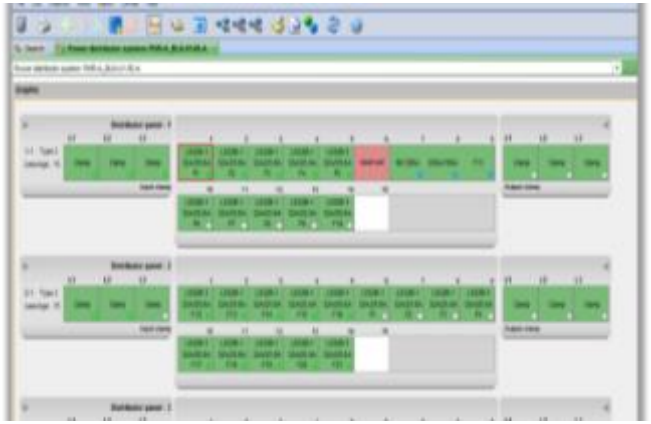
- Analysis of space usage
- Navigate through the as-is and to-be data center
- Capacity Analysis for power, climate/ cooling, weight, space and ports

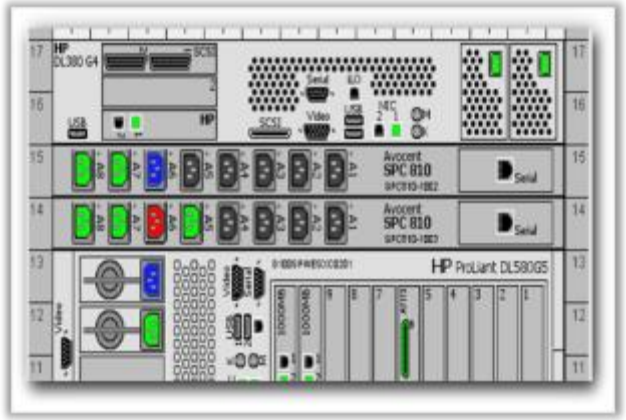
Improve Operations

Cabinet view and Power Management

- Photo-realistic view
- CI library > 55,000 components
- Graphical database content
- Intelligent components with plausibility checks
- Distributor panels and fuses, placement in graphical view



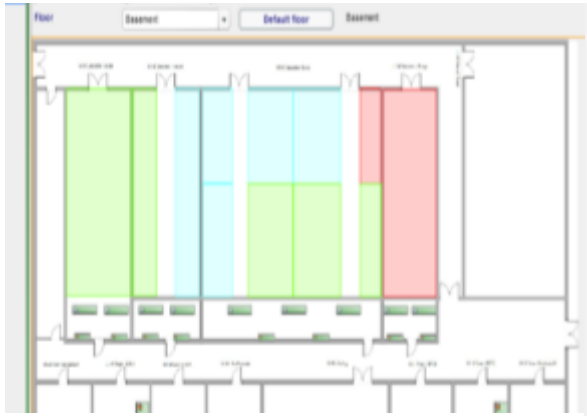


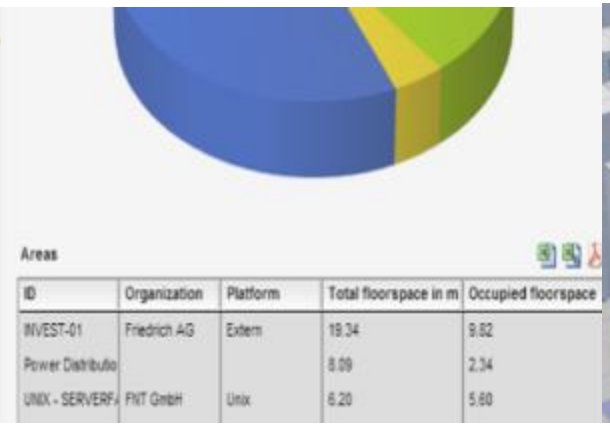


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Improve Operations

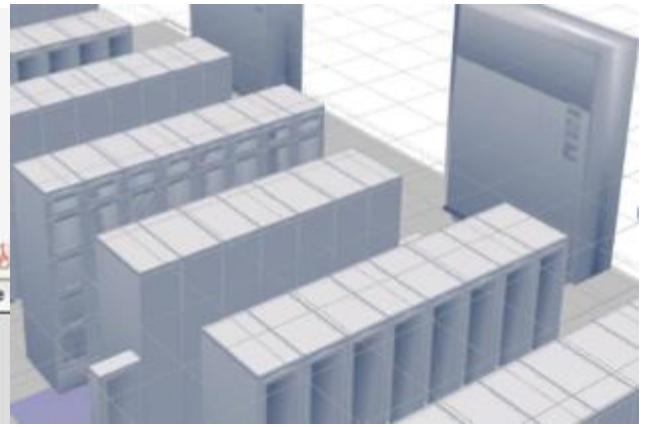
Facility Space Management



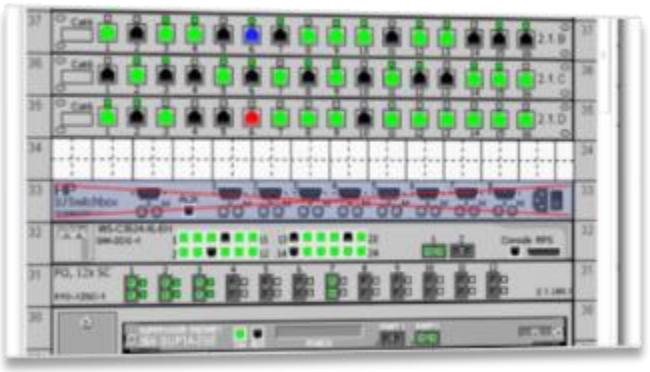


Areas

ID	Organization	Platform	Total floorspace in m	Occupied floorspace
INVEST-01	Friedrich AG	Extern	19.34	9.82
Power Distributio			8.09	2.34
UNIX - SERVERF	FNT GmbH	Unix	6.20	5.60



- Rack, Cage, Suite
- Reporting on used / free / reserved
- Cost Center, Link to Customer / Tenant
- Space Usage Diagrams per Rack / Cage / Suite and Overall
- Reports per Customer / Tenant



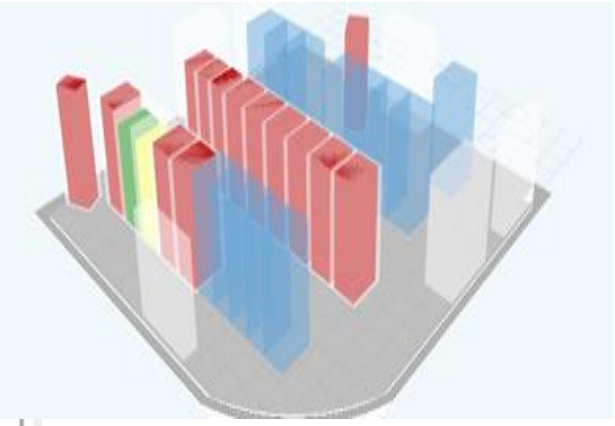
Improve Operations

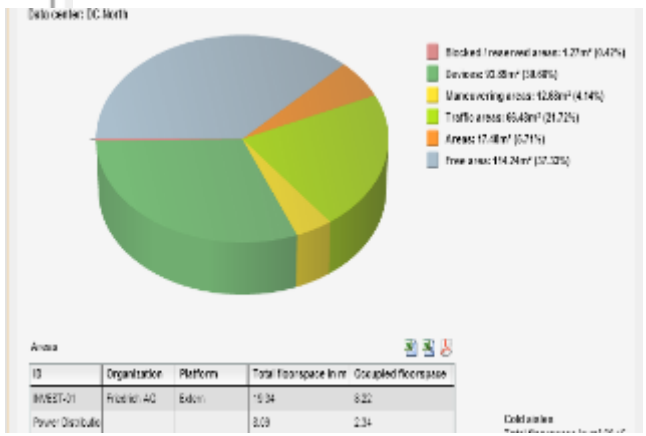
Facility Space Management

Features

- Cage and Suite Management including Reservation Scheme, Customer/Tenant and Cost Assignments
- Real Estate and Asset Management
- Manage and Monitor all components of power chain







Integrated operations

High information density and ergonomic workplaces

- Interactive, close large overview ”owned” by the NOC operators
- Easy to use individual ergonomics
- Built-in communication tools simplifies collaboration
- Saves up to 30% floor space compared to traditional solutions





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IOW – The Intelligent Operator Workplace

Ergonomic Positions



IOW – The Intelligent Operator Workplace

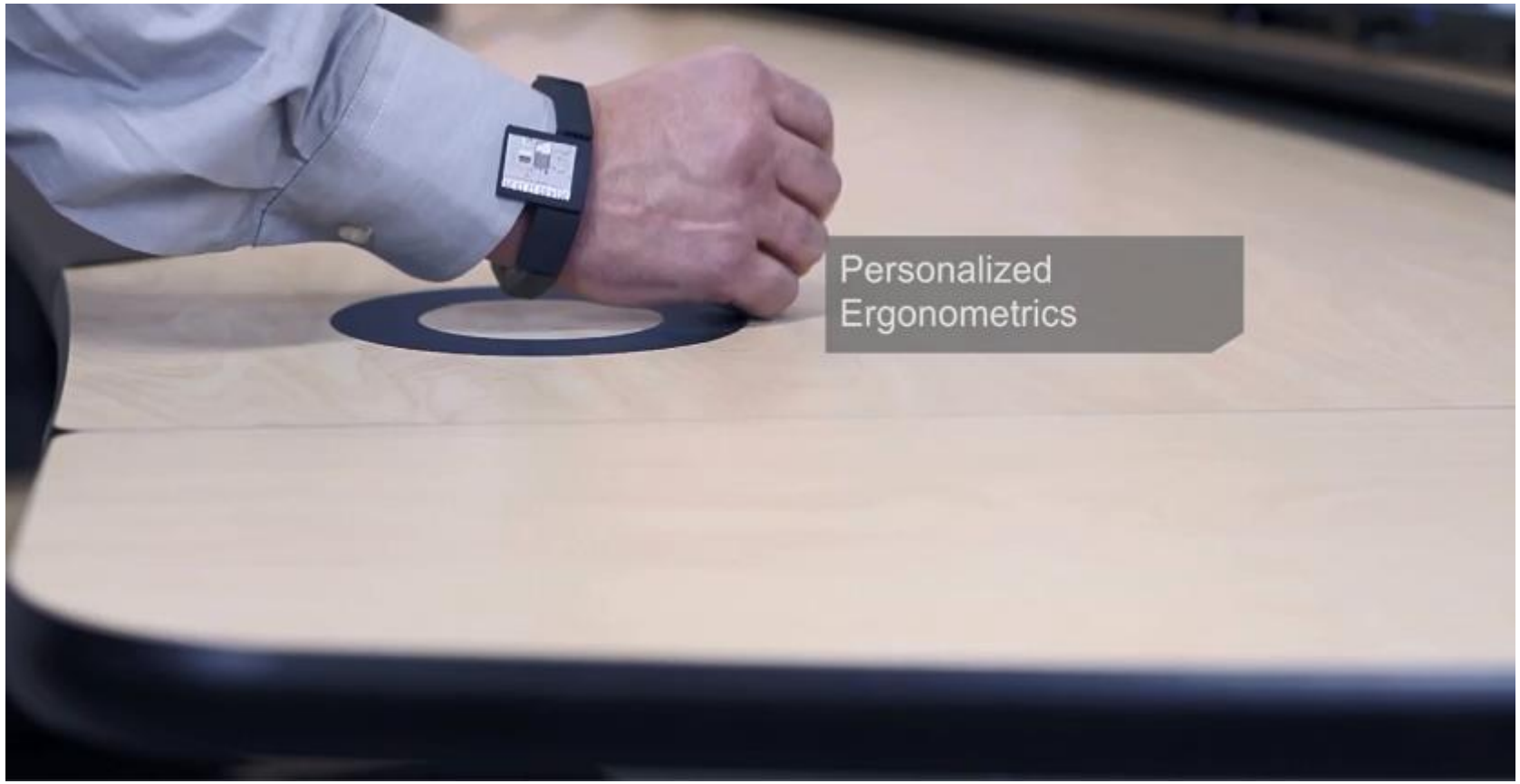
Integrated Directional Sound and Lighting



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IOW – The Intelligent Operator Workplace

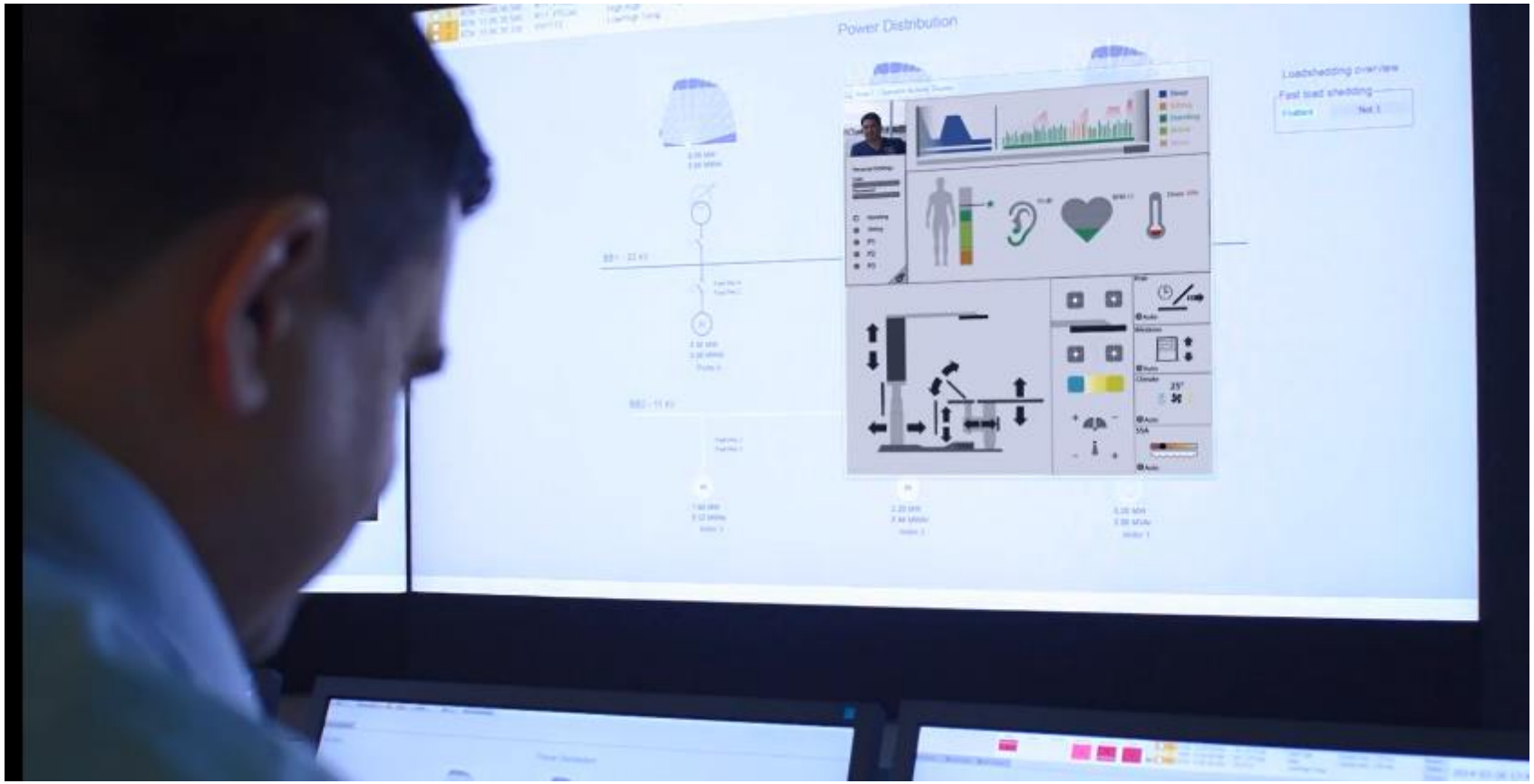
RFID for Personalized Ergonomics



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IOW – The Intelligent Operator Workplace

Operator Stress and Effectiveness Indicator



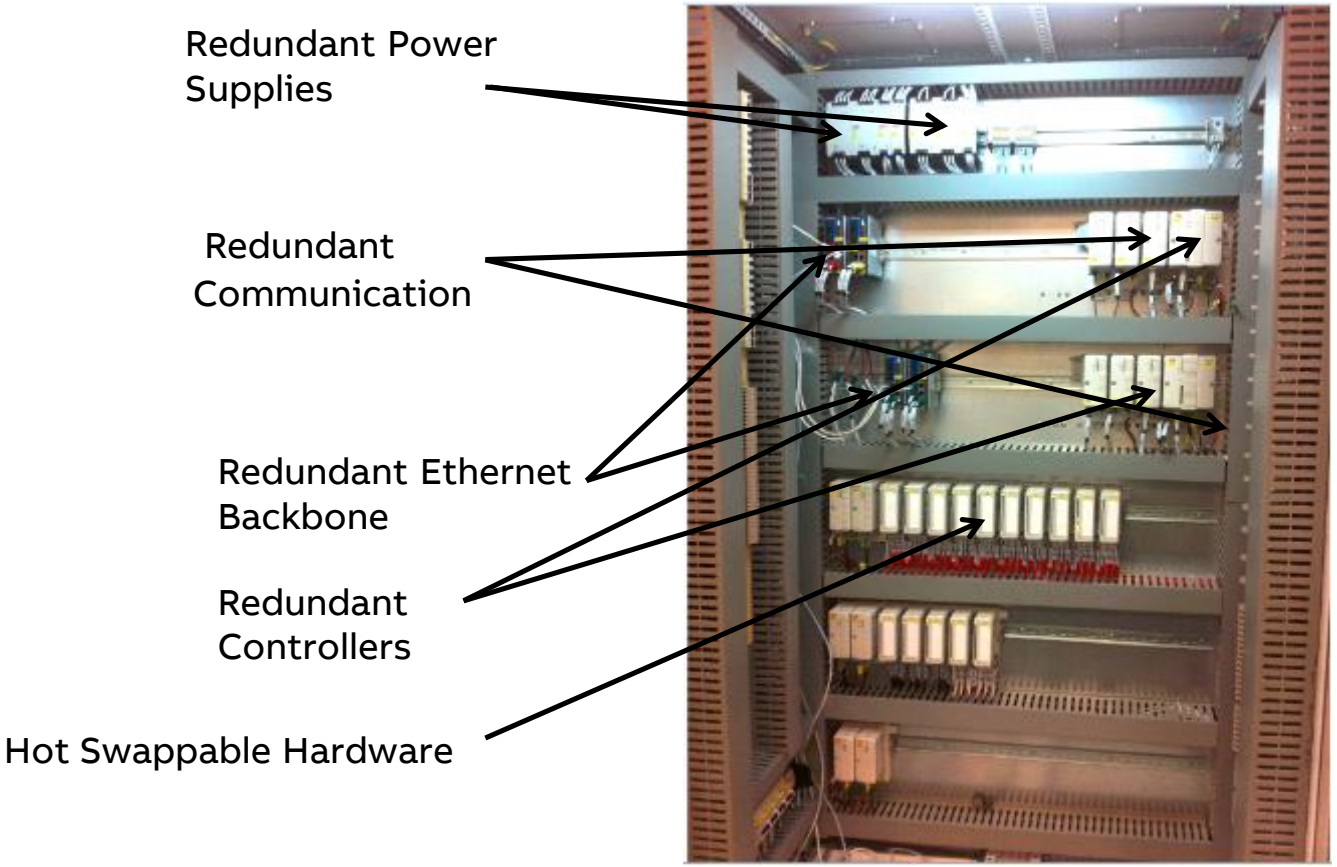
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Reduce risk



Reduce Risk

Fault tolerant and concurrently maintainable



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Reduce Risk

Hardware - Industrial Strength Features



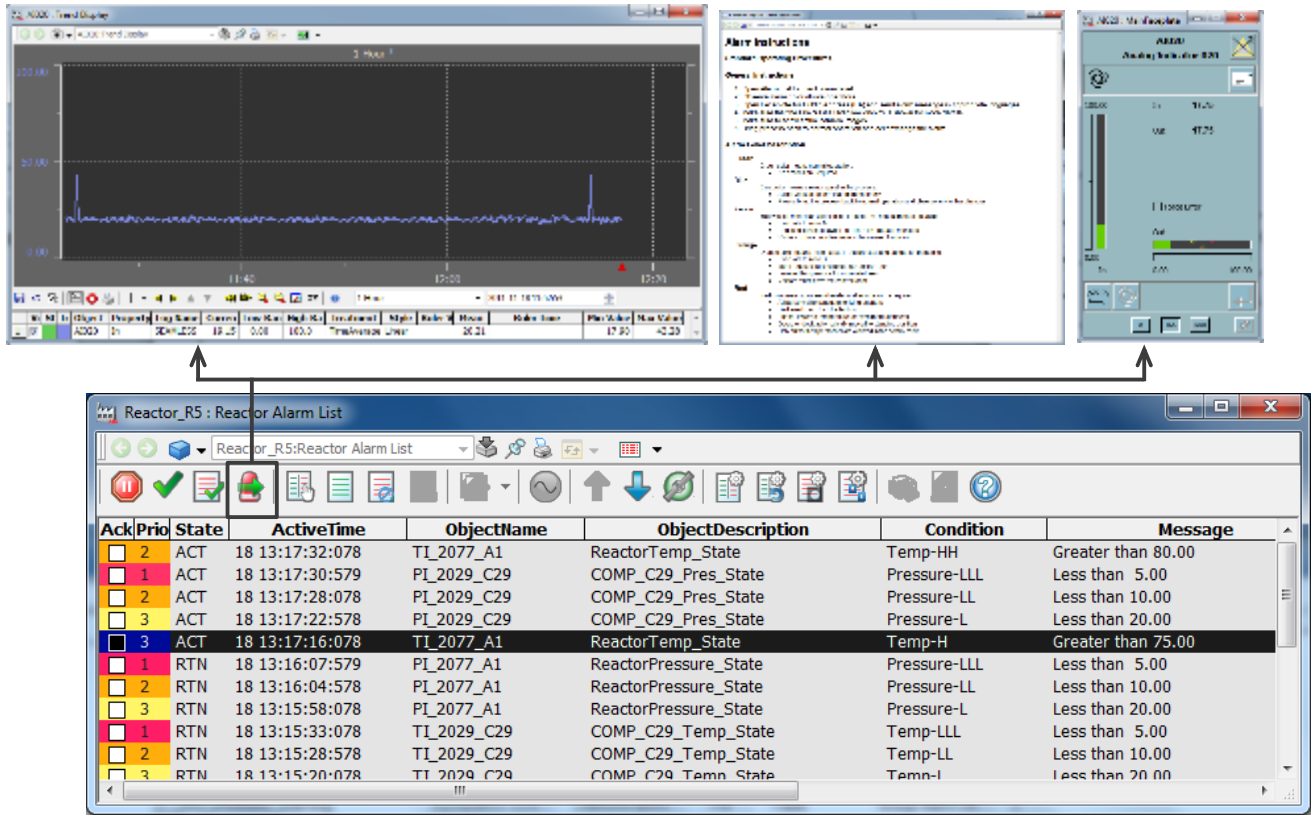
Completely Redundant Controller.
Adding hardware and software live without interrupting program execution.
Switch-over time guaranteed below 10 ms.

Smart marshaling leads to lower risk during installation and shorter commissioning time.
Individually fused channels of critical signals reduce impact of any error.



Reduce Risk

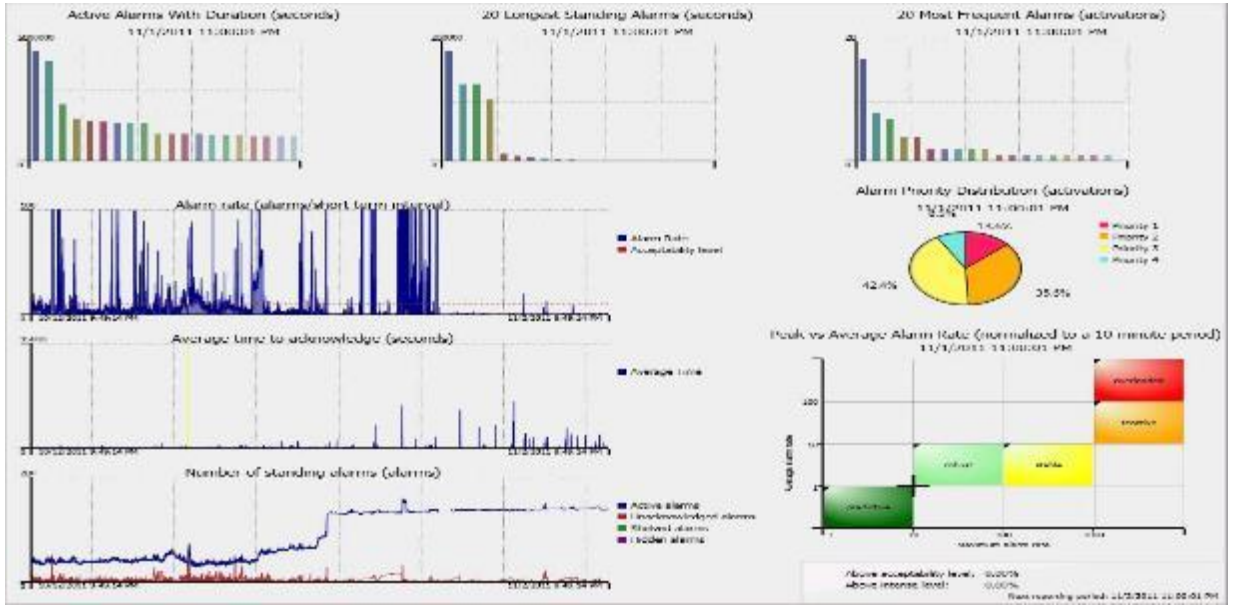
Intelligent Alarm Response



Reduce Risk

Integrated Alarm Management KPI’s

- Enables a starting point for alarm rationalization
- Analysis of ”worst cases”
- Allows for continuous analysis and optimization
- View alarms from cooling, power, and IT in a single list sorted chronologically, by priority, or by equipment and filtered by location, functionality, or network connectivity

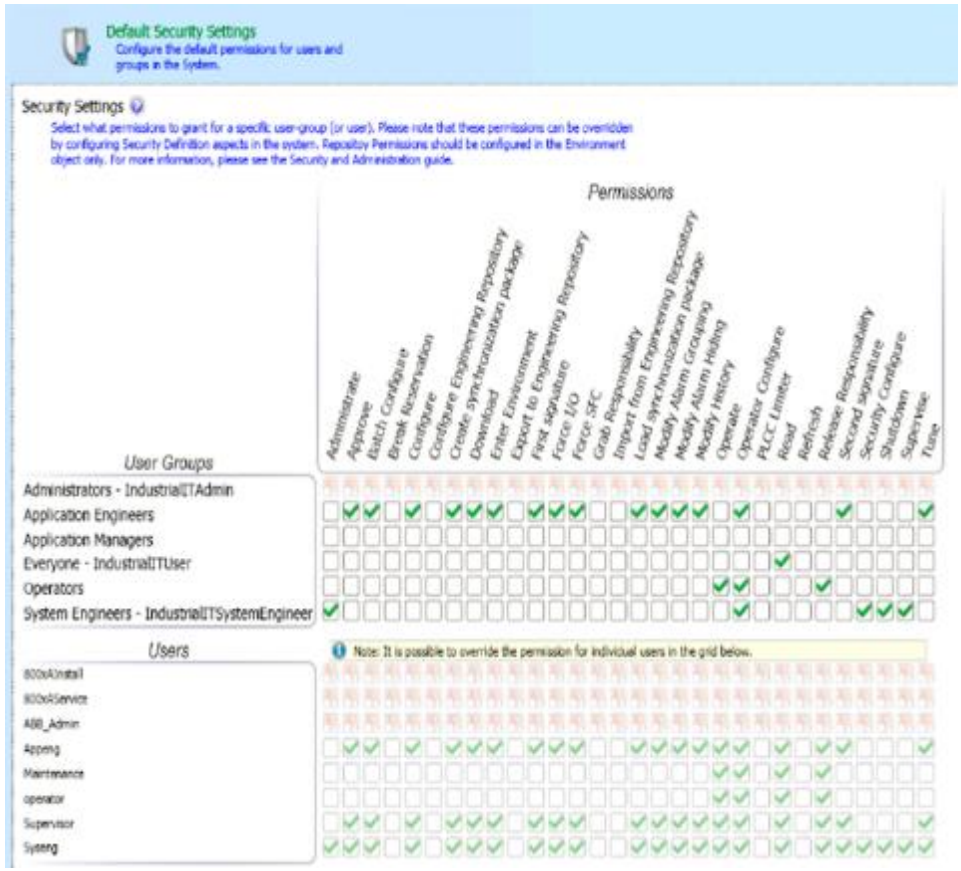


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Reduce Risk

Cyber Secure



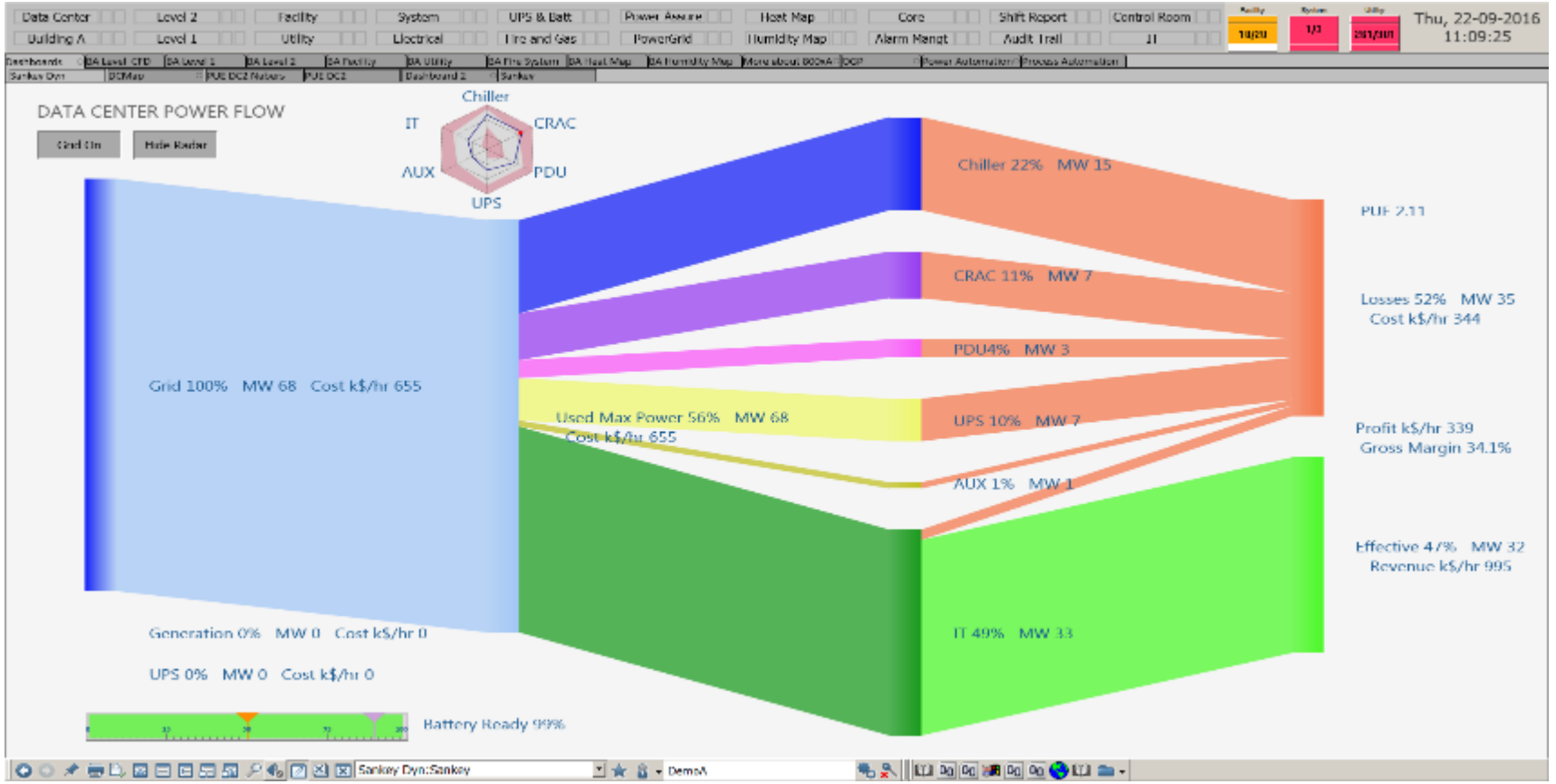


Save energy



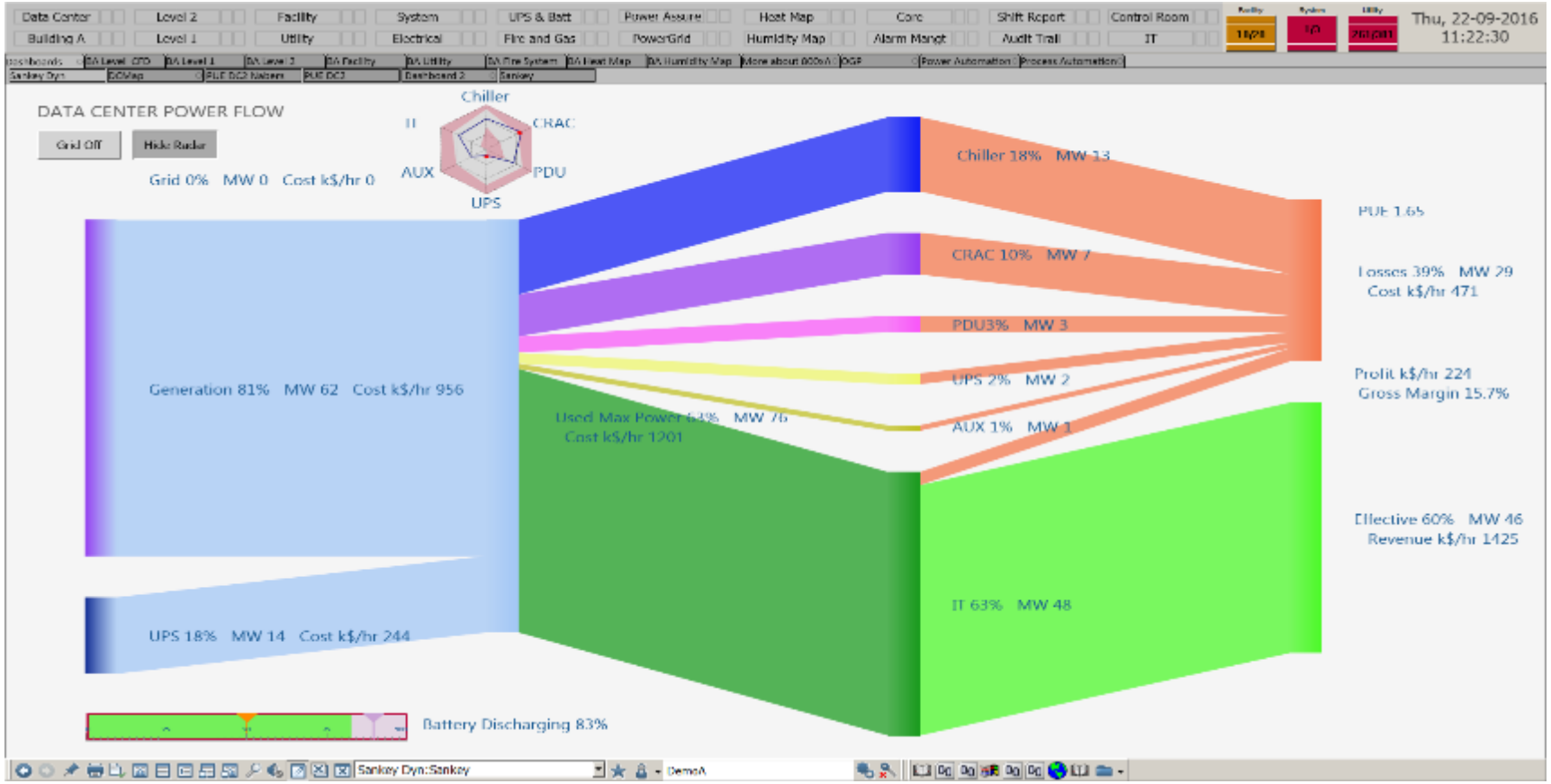
Sankey Diagram Analyzer

Energy Flow – Identify Inefficiencies



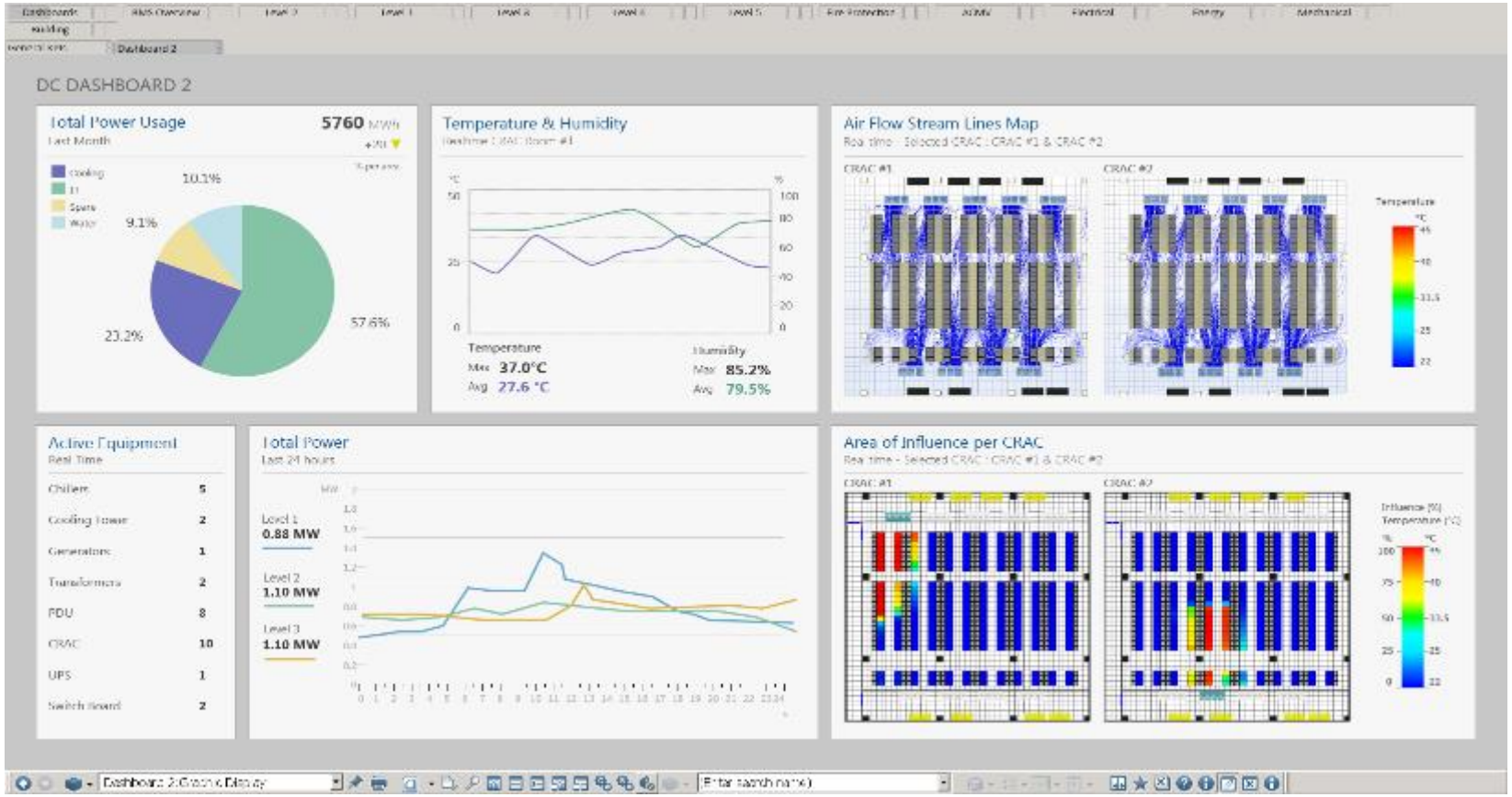
Sankey Diagram Analyzer

Energy Flow – Identify Inefficiencies

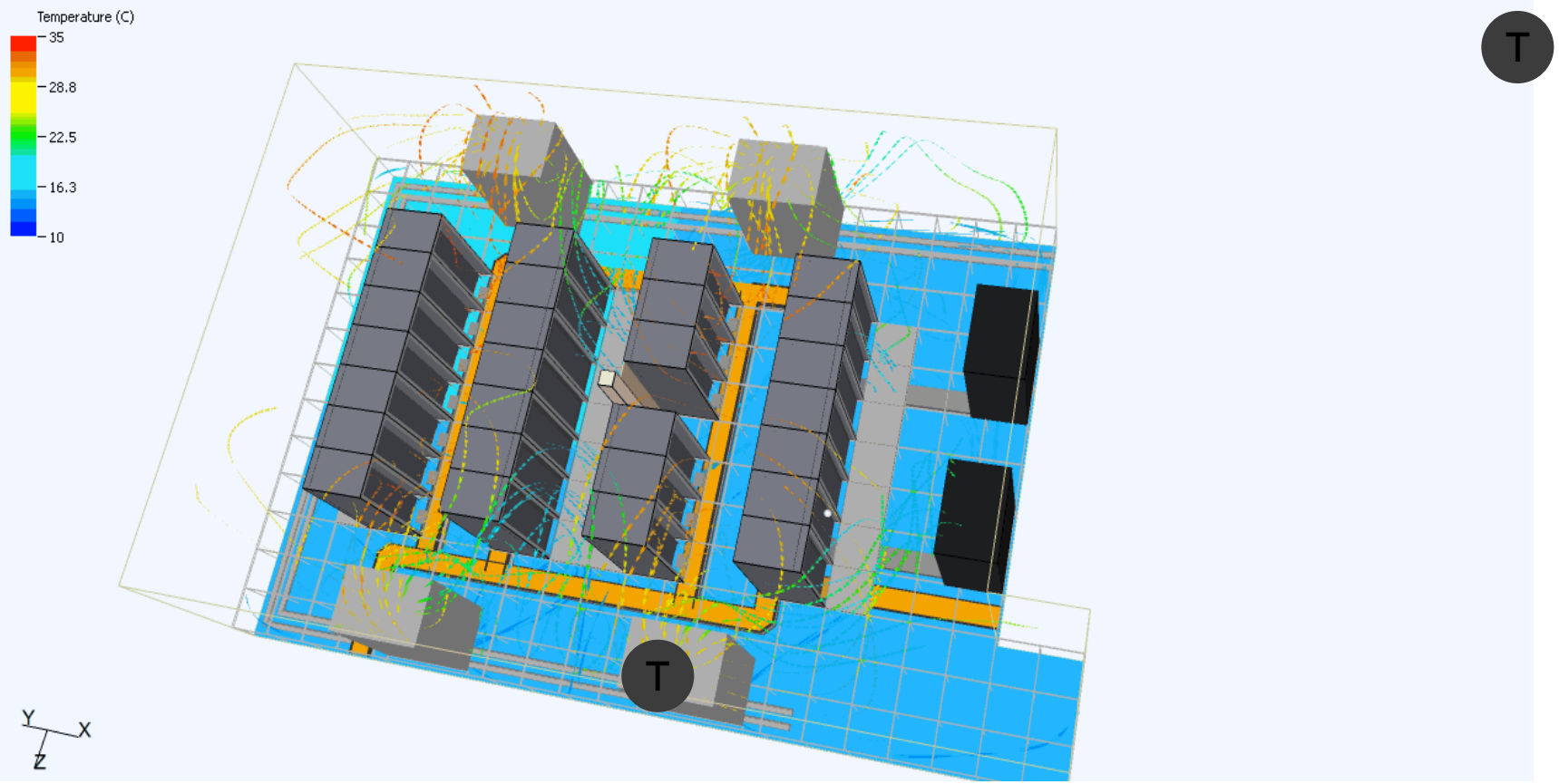


Save Energy

Real-Time Adaptation of Airflow and Temperature



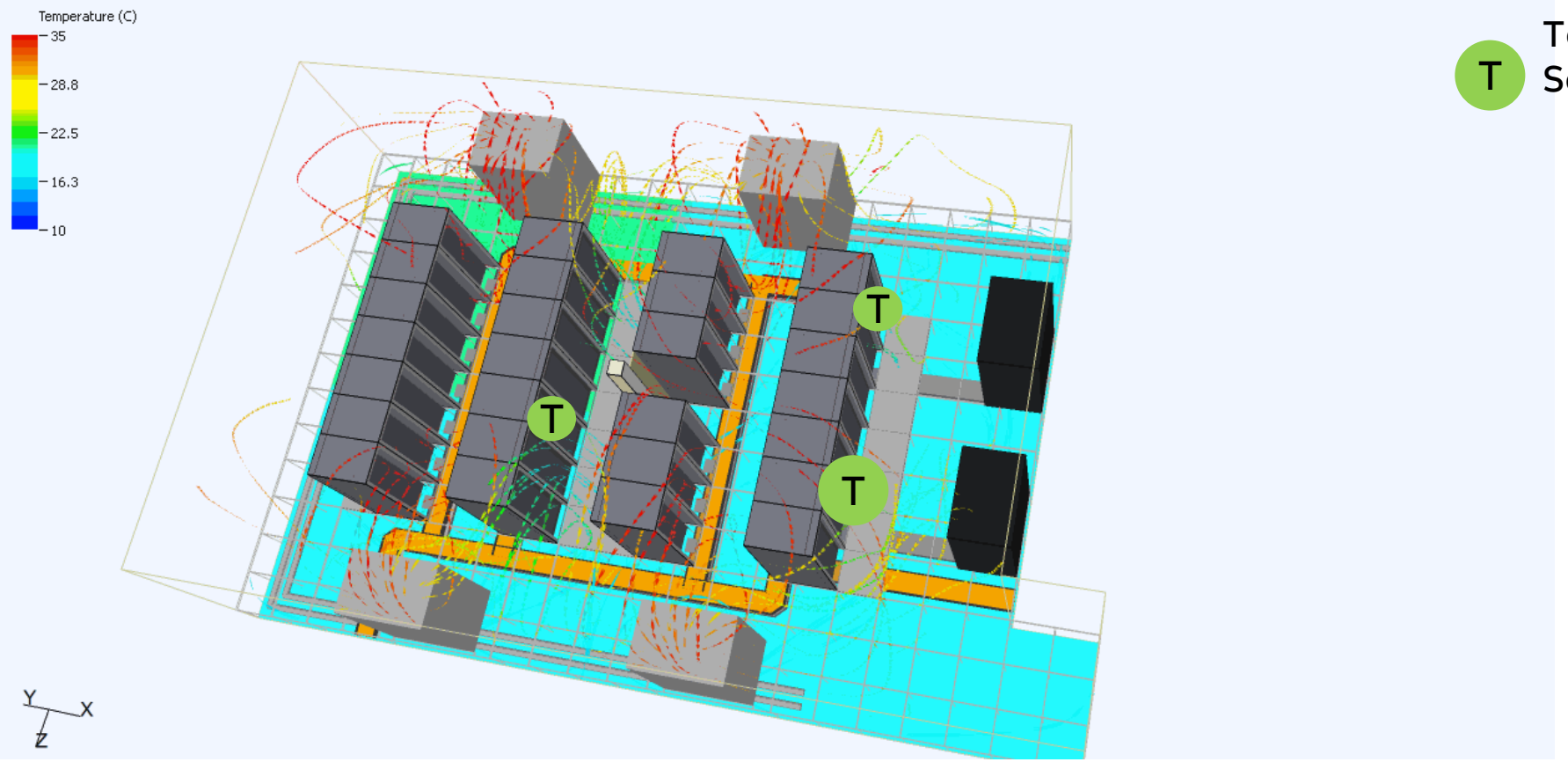
Traditional Control Based on Return Air Wastes Energy



T Temperature Sensor

Advanced Control Based on Sensors for Inlet Air Saves

Energy and Meets SLA’s



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The industrialized data center

Summary

One integrated system



Fully Redundant & Cyber Secure



Energy Saving Controls



Reduce overall operational costs

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