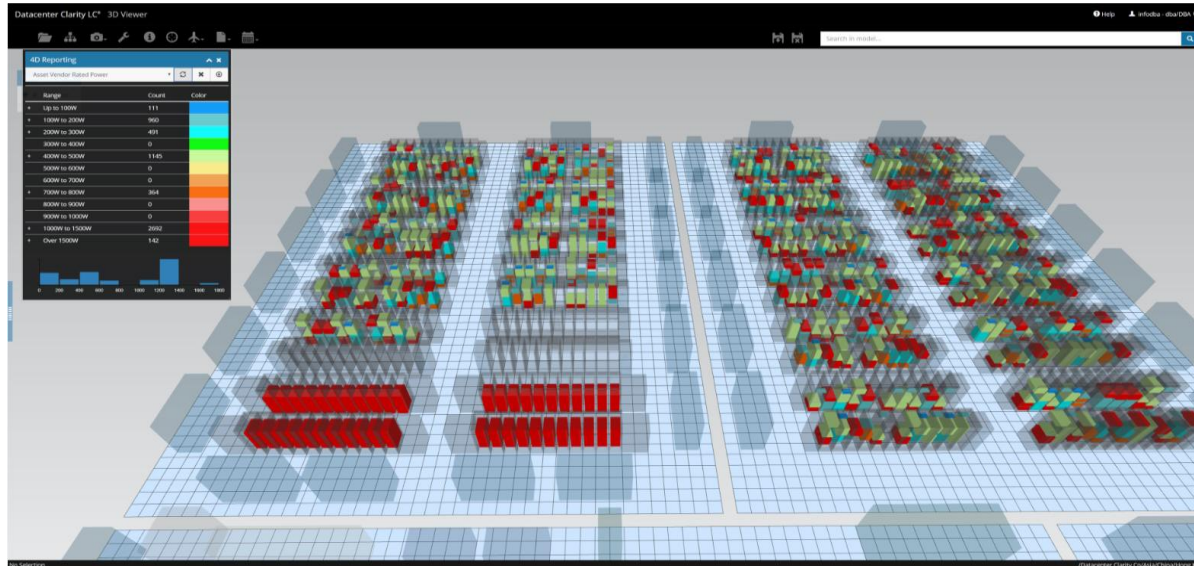# How eBay is implementing a "cockpit" view of its data centers

Jeff Tepfer – eBay

Patrick Lepage – MAYA HTT Ltd
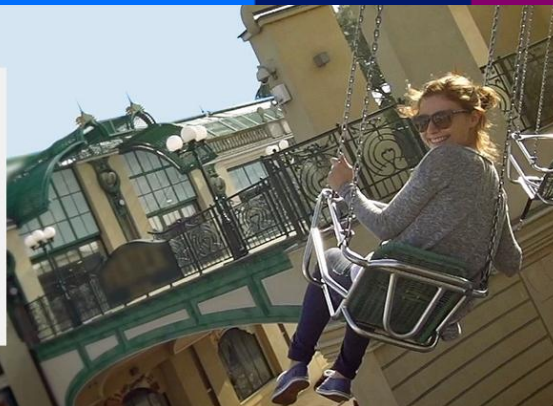
Conference Theme & Keywords

About ebay™

We're Creating a Better Form of Commerce

We connect millions of buyers and sellers around the world, empowering people and creating economic opportunity for all.

US

A watch is purchased every	5 sec
A camping & hiking item is purchased every	6 sec
A smartphone is purchased every	5 sec
A TV, video or home audio item is purchased every	3 sec
A tool is purchased every	4 sec
A sports trading card is purchased every	2 sec

The number of active eBay buyers worldwide is

170M

The number of live listings on the eBay Marketplace is about

1.1B

In the U.S., a smartphone is purchased on eBay every

5 seconds

eBay Q4'17 Fast Facts

Key Business Challenge : Capacity Forecasting

Direct insight into data center capacities; quick access to the real-time demands, equipment allocations, space reservations, & budget forecasts.

Enabling critical business decisions to be made for managing existing capacities or building out new.

Solution:

Create a "cockpit" view of the data center
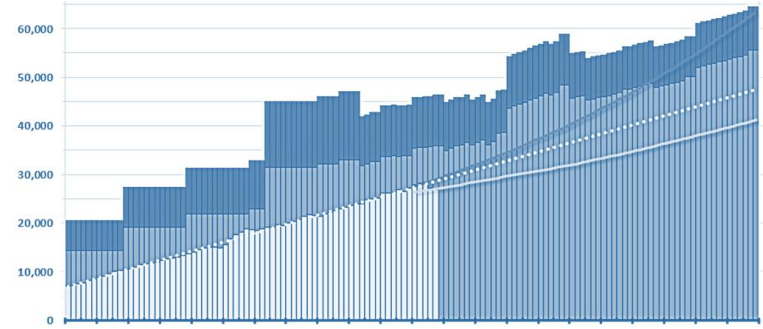
Starting Point

- **Primary Capacity Management Tool**
  - Spreadsheets w/ PI DataLink

- **OSIsoft Environment**
  - (5) Independent PI Systems
  - 3 Million existing PI Points
  - 1000+ Templates; 70k+ Elements
  - 83K Performance Equations w/ no analytics
  - Mixed standards; No common data structure
  - 100+ monitored devices add/removed each month
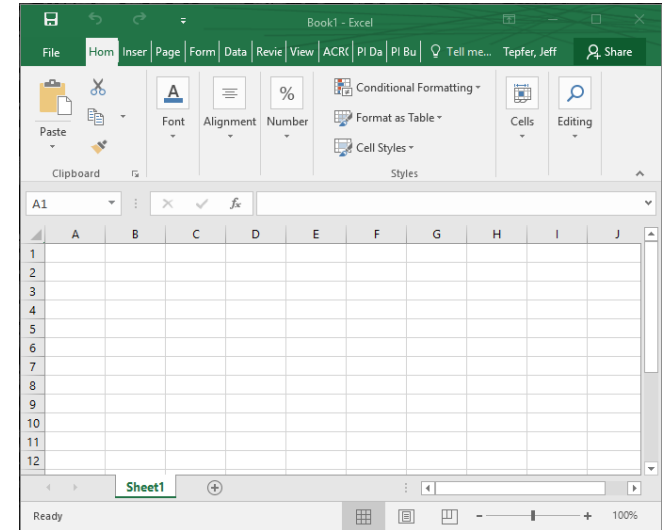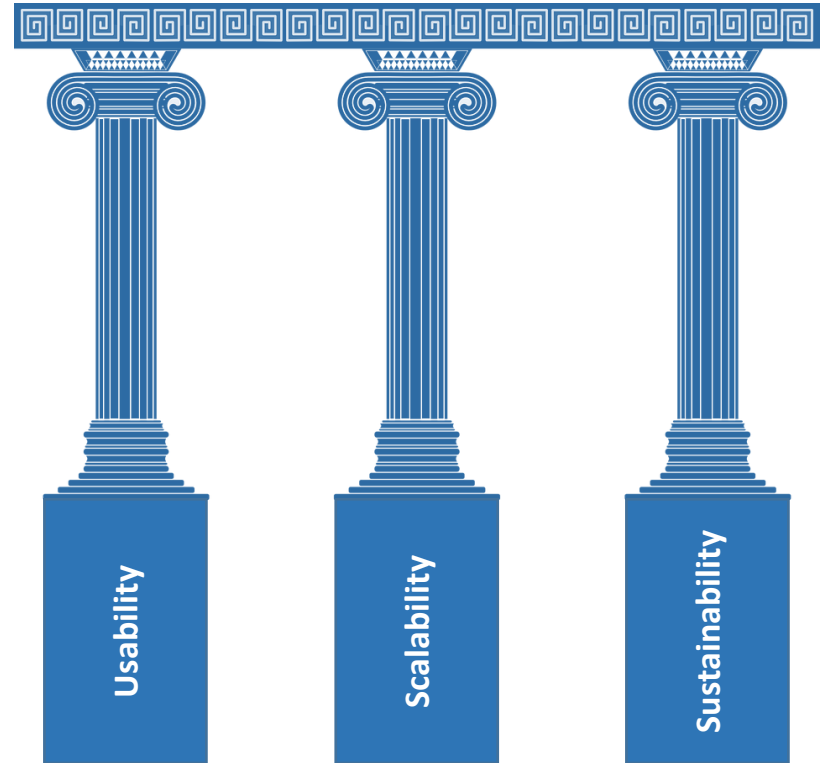
Design Criteria

1. **Usability**
   - Trustable Information
   - Accessible to Everyone
   - Intuitive Environment

2. **Scalability**
   - Structured...Everything
   - Extensible & Adaptable model
   - Variation Accommodating

3. **Sustainability**
   - Minimal Input/Maximum Output
   - Data Patterns & Data Protection
   - Deployment Automation

OSIsoft.
PI World SAN FRANCISCO 2018

Pathway Forward
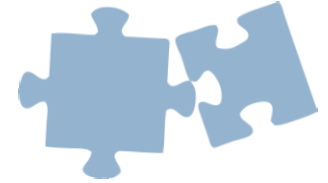
1. **Need a Data Center Infrastructure Management (DCIM) tool**
   - Transition away from spreadsheets
   - Create standards practices for capacity management
   - Establish a tool of which could be used across infrastructure domains
   - Enable management of the full equipment life-cycle

2. **Existing investment in OSIsoft must leveraged**
   - Data rich but information poor, restructure required to create value
   - DCIM needed to continually & easily integrate with data
   - At current scale and need to automate integration processes

Restructuring OSIsoft Environment

- Rigid templates & categories; standards driven through inherencies
- Single click for operational config changes (alerting, scan on/off, debug)
- Data health protection through analytic evaluations
- Equipment variance managed through lookups
- Buildout automation via AF SDK & data pipes

AUTOMATION EXAMPLE 1

No Action Needed

Template Automation	0
ARD	0
IRC	0
RPDU	0
Element Names	String Array
Element Qty	2
Template - Current	I&CT(RPDU)RAR_s_PX
Template - Required	I&CT(RPDU)RAR_s_PX

AUTOMATION EXAMPLE 2

Buildout Required

Child Element Needed

(2) Needed using this template

| Template Automation	1
ARD	0
IRC	0
RPDU	1
Element Names	String Array
Element Qty	2
Template - Current	No Data
Template - Required	I&CT(RPDU)RAR_s_PX

Datacenter Clarity LC® for DCIM

- **Partnered with MAYA HTT & Siemens**
  - Best of Breed DCIM software; nimble development team
  - Built around Product Life-Cycle (PLM) Management system
  - Back-end data store is OSIsoft PI Data Archive / PI Asset Framework
 - UI capable of visualizing & navigate capacities across time

Building "Cockpit" Views

- Datacenter Clarity LC® powered by the PI System to enhance business visibility into the current real-time power, cooling, and environmental data from within the data center
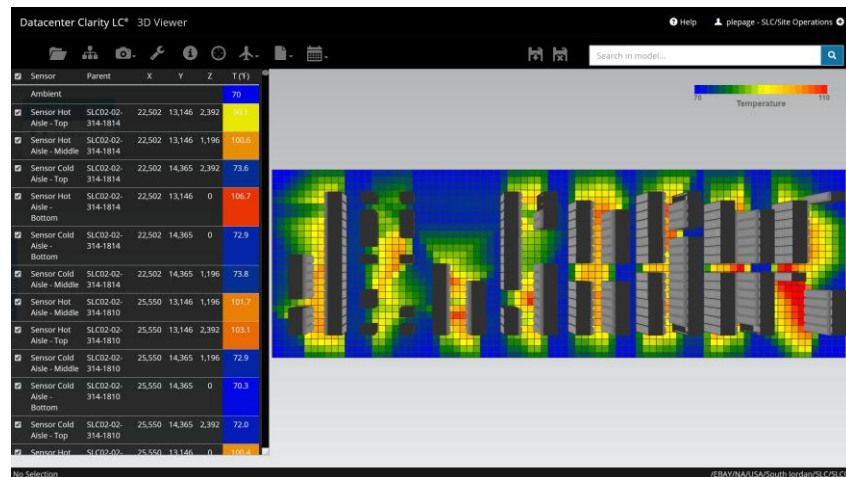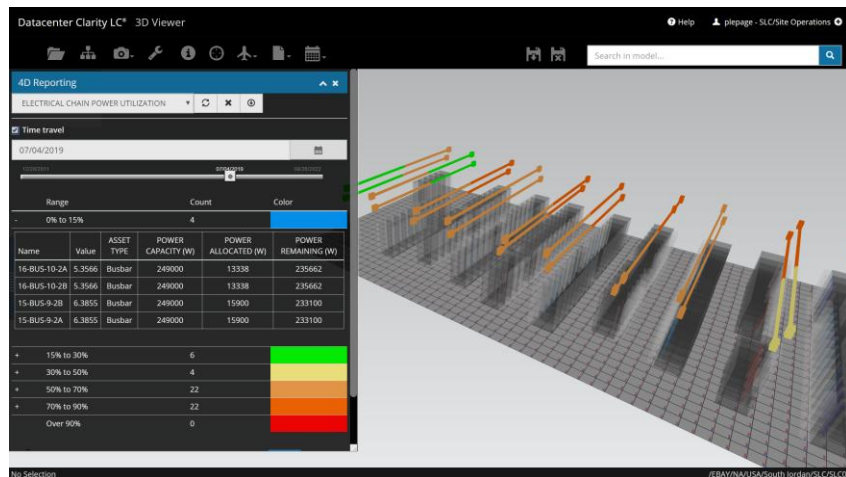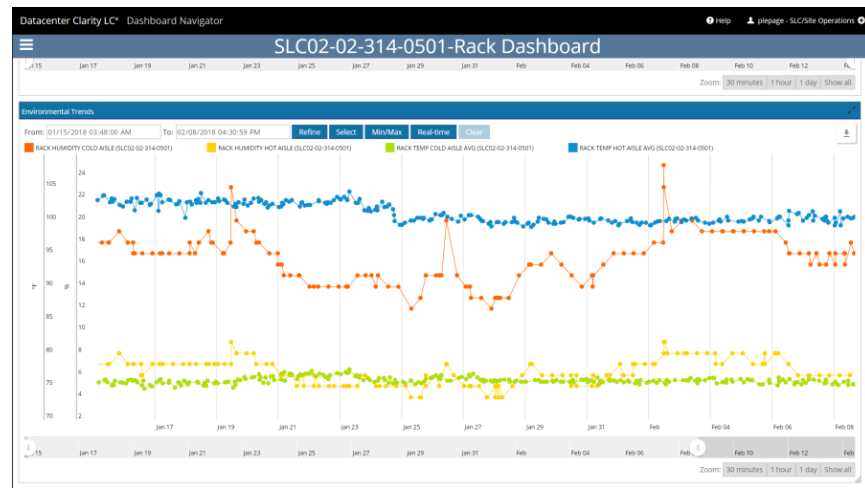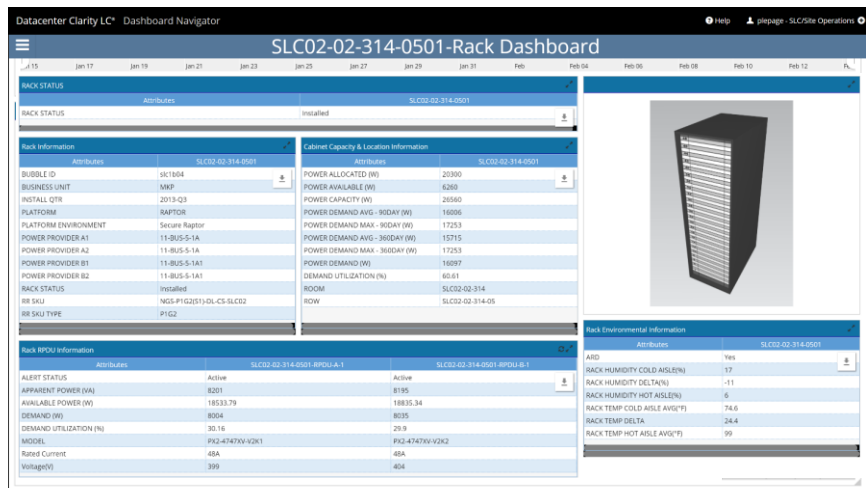
Footprint & Time Traveling for Forecasting

- Combining PI System real-time allocations /w lifecycle planning for future allocations of the data center capacities allows eBay to raise the accuracy of forecasting so sound business decisions can be made
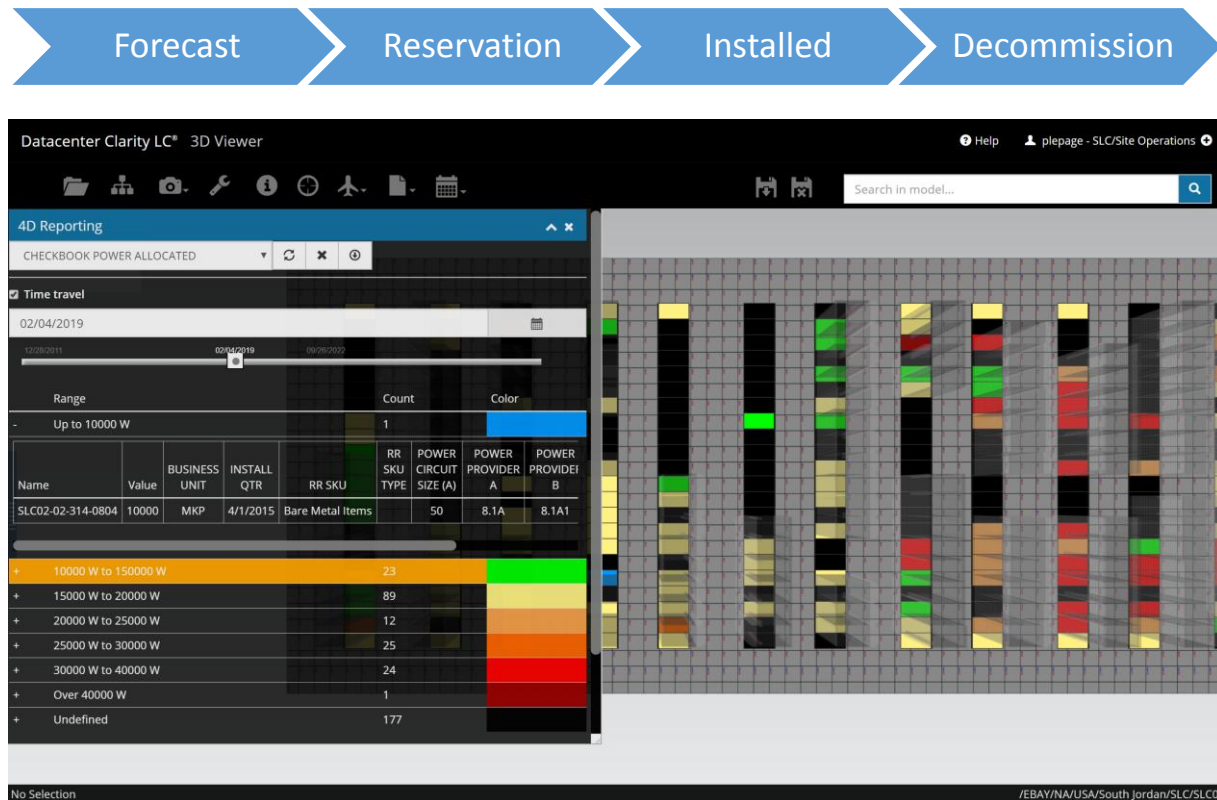
Drilldown Dashboards

- Widget-based self-service dashboards for detail data views and dynamic trending

Pivot Table Dashboards

- Bring spreadsheet functionality for end-user experience consistency

Day in the life of forecasting at eBay
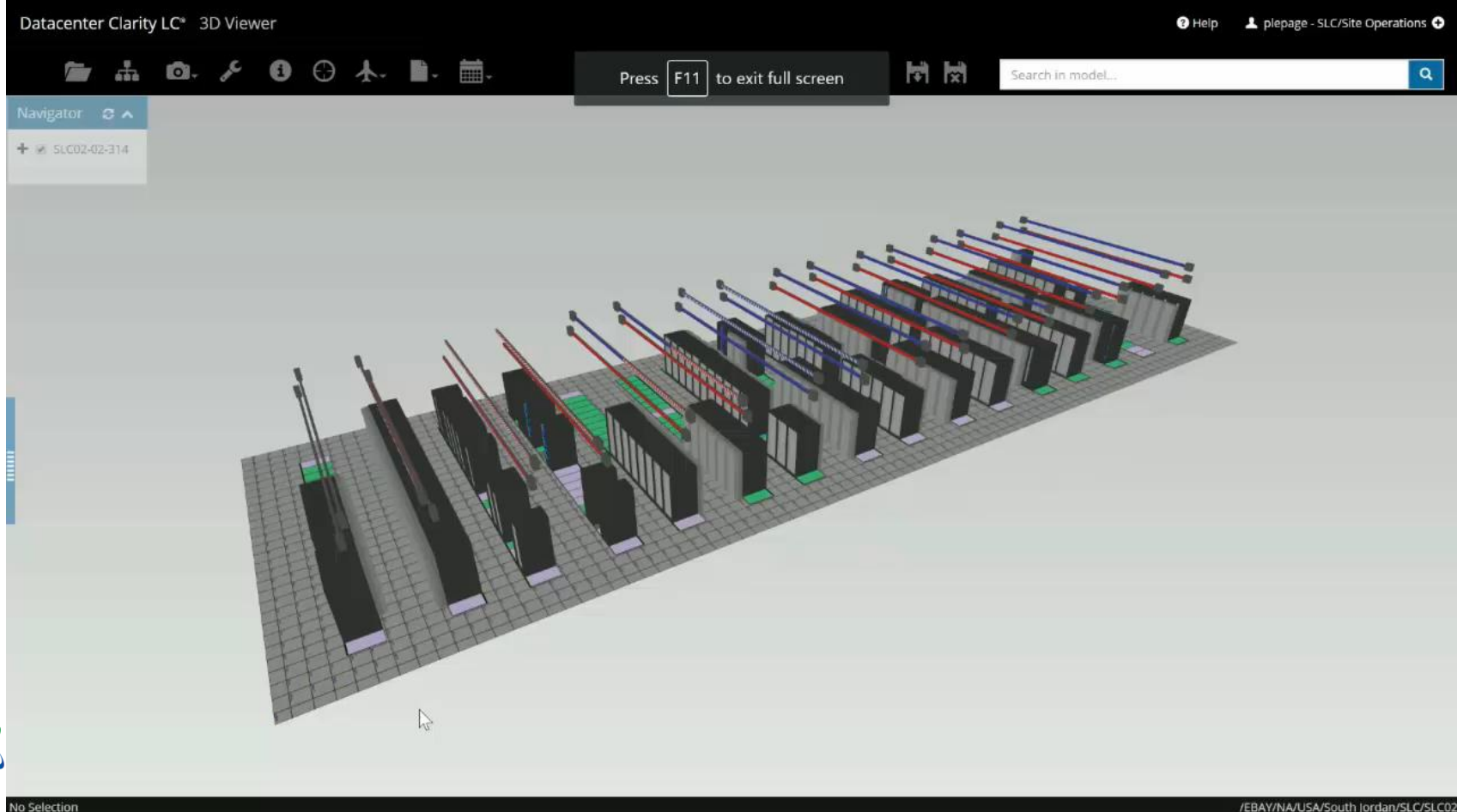
Canadian Software company

- Largest simulation co in Canada
- Founded in 1982
- HQ in Montreal, 6 NA Offices
- OSIsoft OEM & SI partner
- Siemens PLM Partner since 1986
- R&D in engineering and sciences
- 29 solution portfolio
- WW and local partners

170+ employees

- 100 Developers
- 35 PhD
- 44 Masters
- 26 Languages

WW Projects

- 1,000,000 cars
- 10,000 aircraft engines
- 1,000+ engineering projects
- 100+ data center sites
- 50+ satellites in orbit
- 1 amazing hockey stick

Offerings

- Software Development
- Machine learning / AI
- IoT & Digital Enterprise
- Engineering Services
- Optimization & Simulation

Datacenter Infrastructure Management (DCIM)

Datacenter Clarity LC®
by MAYA

Operational access

AI Ready

Integration of 3th party systems using open API

Interaction with different Stakeholders

Key Performance Indicators

Alarm management with web client access

Existing data which will be used to feed DCIM

OSIsoft

User Access
- Web Client
- 3D Client
- Mobile Client
- IT
- Electrical

Stakeholders and Operations Teams
- Mechanical
- Fire and Safety
- Security
- Business
- Corporate Social Responsibility
- Tenant and Customer

Metrics
- PUE ™
- CUE ™
- WUE ™
- DCiE ™
- RCI ™
- RTI ™
- Uptime
- Cost

Open API

Predict and Optimize
Analyze and Report
Capacity Planning
Monitor and View Assets in 3D
Organize, Discover, and Manage Assets

Manual Data

Real Time Collector
- Smart Network
- Devices
- EPMS
- SCADA
- BMS
- CMDB

External Data
- Third-Party Systems
- 2D/3D CAD
- Excel/Text Files
- Relational Database

Alarm and Notifications

The OSIsoft PI System is the Real-Time Monitoring Foundation of Datacenter Clarity LC
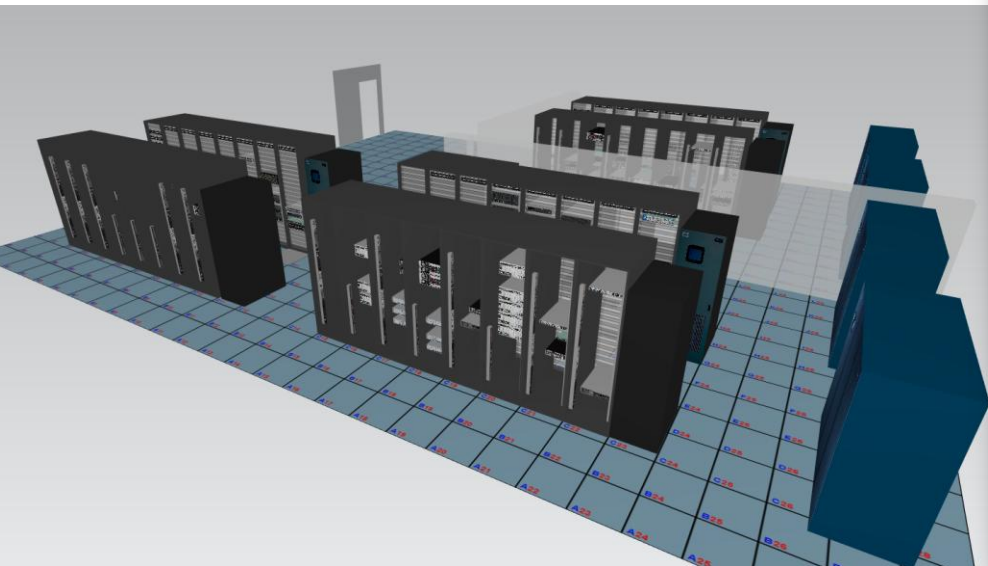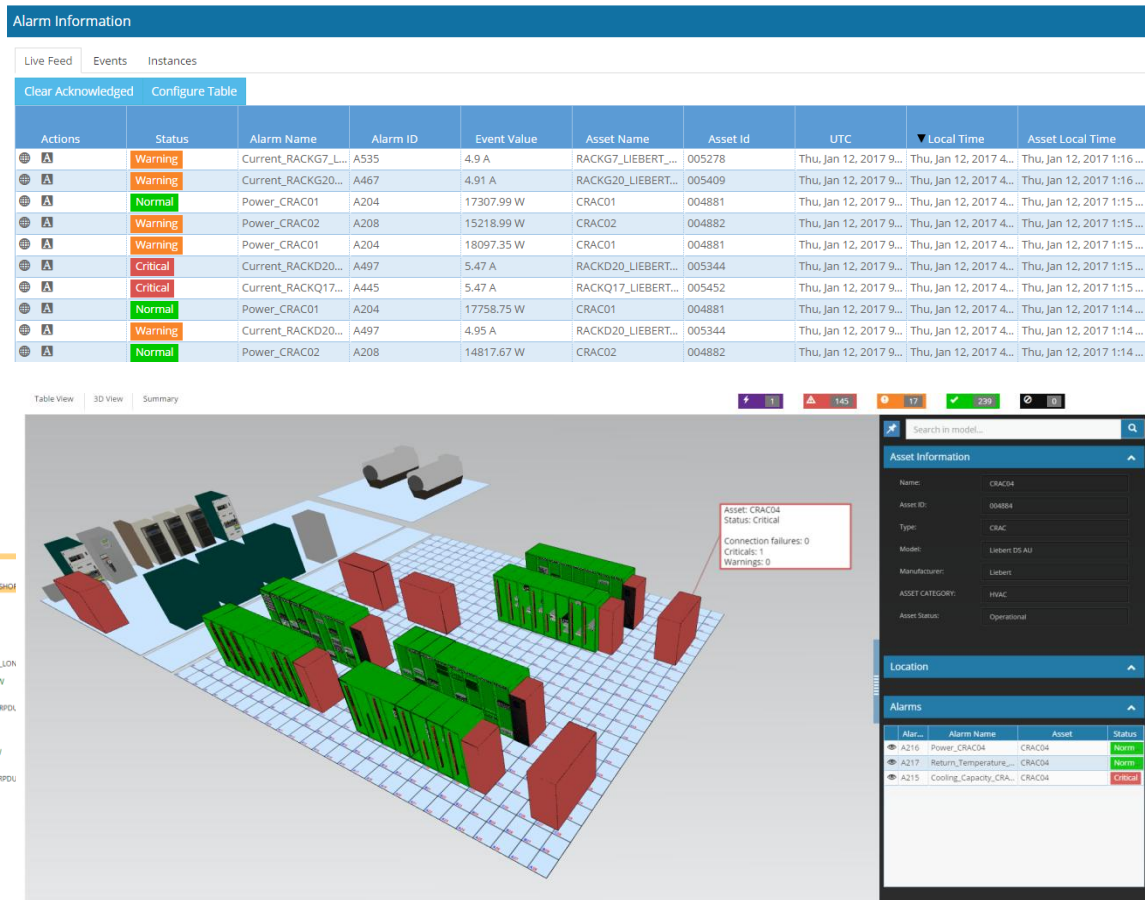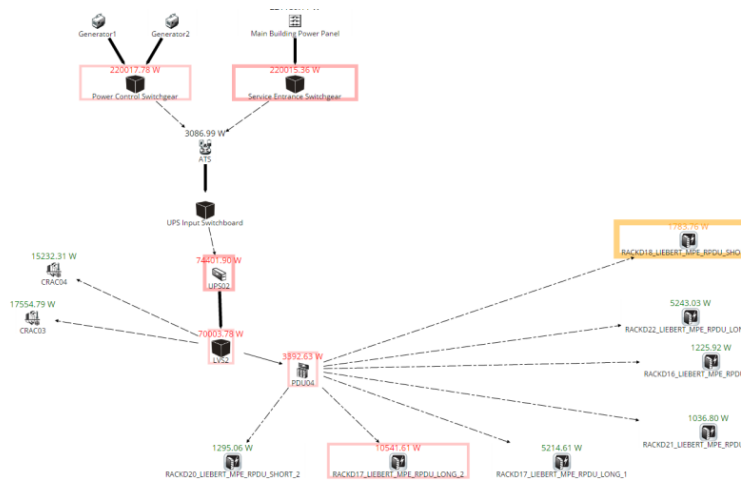
Automated asset assembly structure synchronization with PI Asset Framework
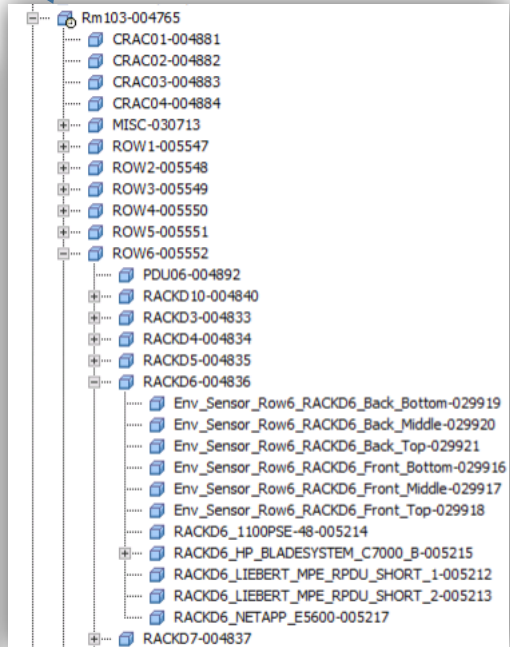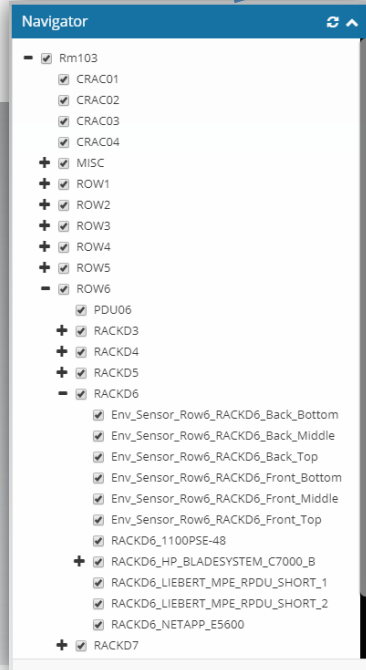
Real-Time Monitoring & Alarming with up/downstream & 3D contextual information

- Power and energy monitoring
- Storage of historical data
- Alarms and dashboards
- Impact Analysis

The future with ML | Applied AI

Gain business advantages
- ✓ Optimize your operations (increase efficiency, reduce errors, etc)
- ✓ Create new revenue streams

Organize your data and reveal hidden value
- ✓ Automated data clustering/classification
- ✓ Data anomaly detection/removal
- ✓ Multi-variate outlier detection
- ✓ Multi-variate clustering/classification
- ✓ Real-time pattern recognition

Augment your people's output
- ✓ Trained AI able to detect anomalies in real-time
- ✓ Trained AI to predict future results based on multiple input variables
- ✓ Trained AI to detect faulty sensors or drifting sensors

Move from Data to Wisdom with Datacenter Clarity LC
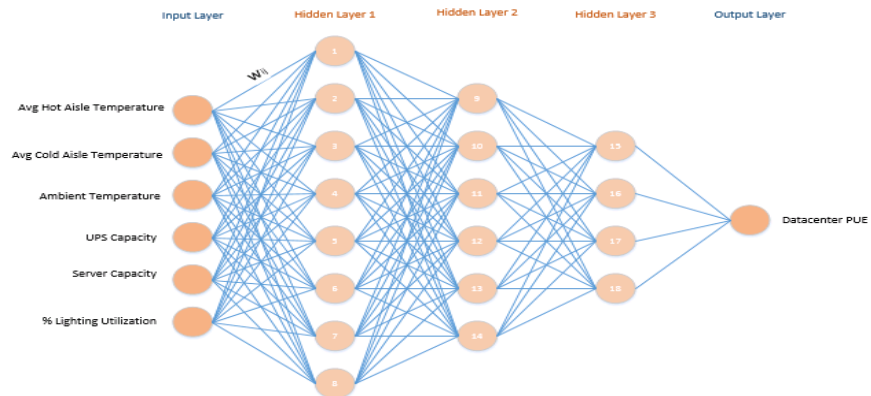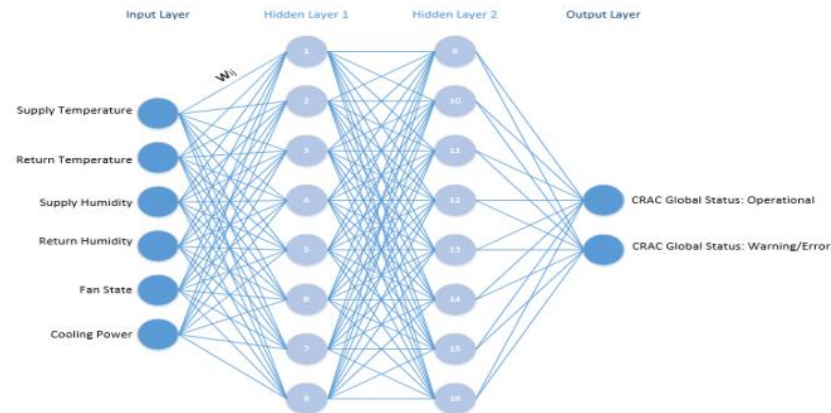
Questions

Please wait for the **microphone** before asking your questions

State your **name & company**

Please remember to…

Complete the Online Survey for this session

How eBay is implementing a "Cockpit" view of its Data Centers

- **Jeff Tepfer**
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  - eBay Inc.

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  - Senior Application Engineer
  - Datacenter Clarity LC & PI Integrator team
  - MAYA HTT Ltd.

Merci

谢谢

Спасибо

Danke

Gracias

Thank You

감사합니다

ありがとう

Grazie

Obrigado

May the Datacenter Clarity LC force be with you…