OSIsoft® UC 2010

Real Time Information — Currency of the New Decade

How to Monitor
Large & Live Data Centers

PI makes data centers Green!

Introduction

On an average day, someone on eBay
- **sells a vehicle every minute**
- **sells auto parts every second**
- **sells diamond jewelry every 2 minutes.**

"The foundation of our revenue is our data centers…"

Dean Nelson, eBay
Dir, Global DC Strategy

Motivation: Improve operations

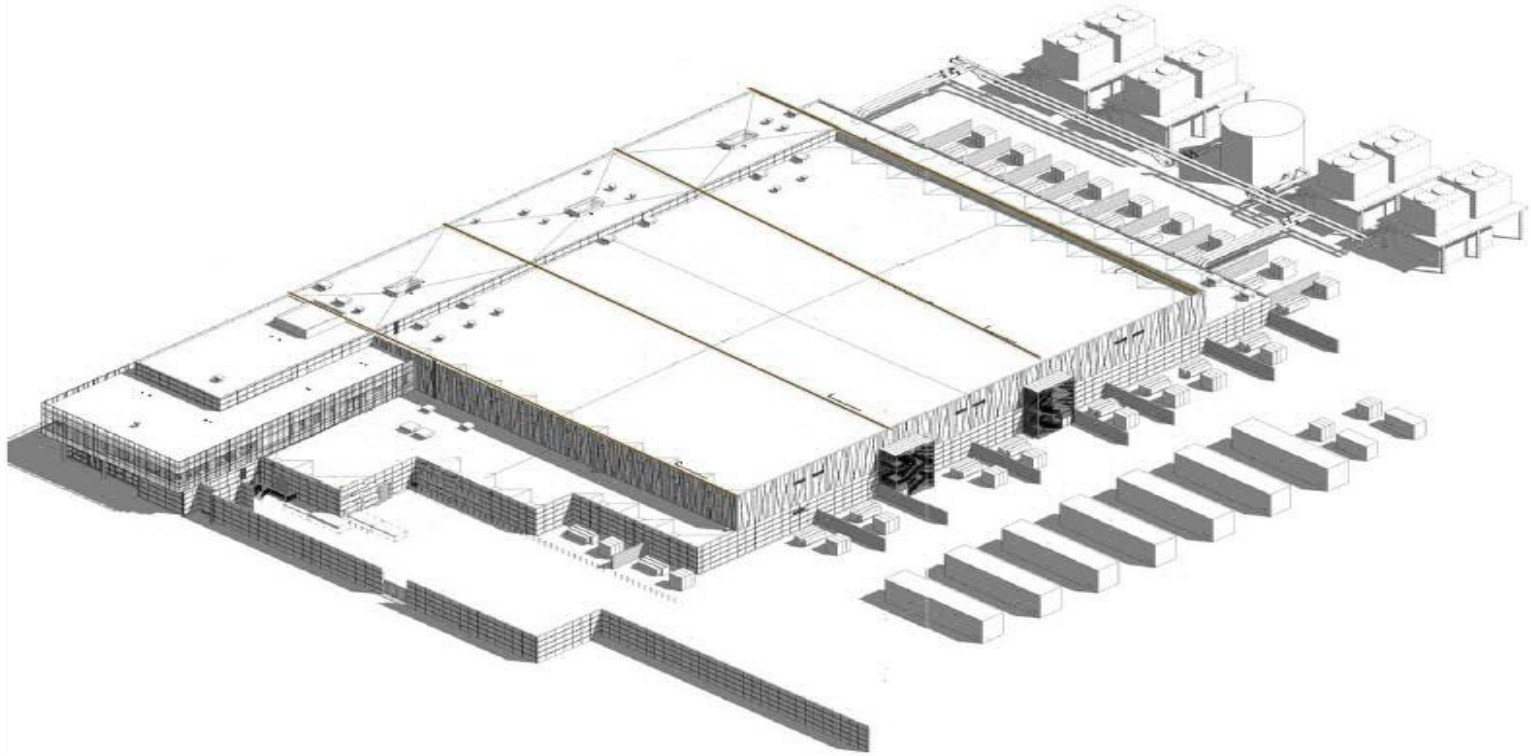
- Treat Facilities and IT as a holistic system
- Integrate real time data into corporate decision making
- Present real time data collection as a single system with an enterprise-wide interface
- Compare real time result to original building design requirements of capacity, availability and scalability

eBay Selects South Jordan For Data Center

...and seeks the U.S. Green Building Council's

Leader in Energy and Environmental Design (LEED) certification,

..Dean Nelson, the senior director of global data center strategy



Agenda

- *eBay requirements*

Monitoring system Architecture

Building the Monitoring system

- Screens and Points

How do people use it?

What did we gain?

Where to from here?

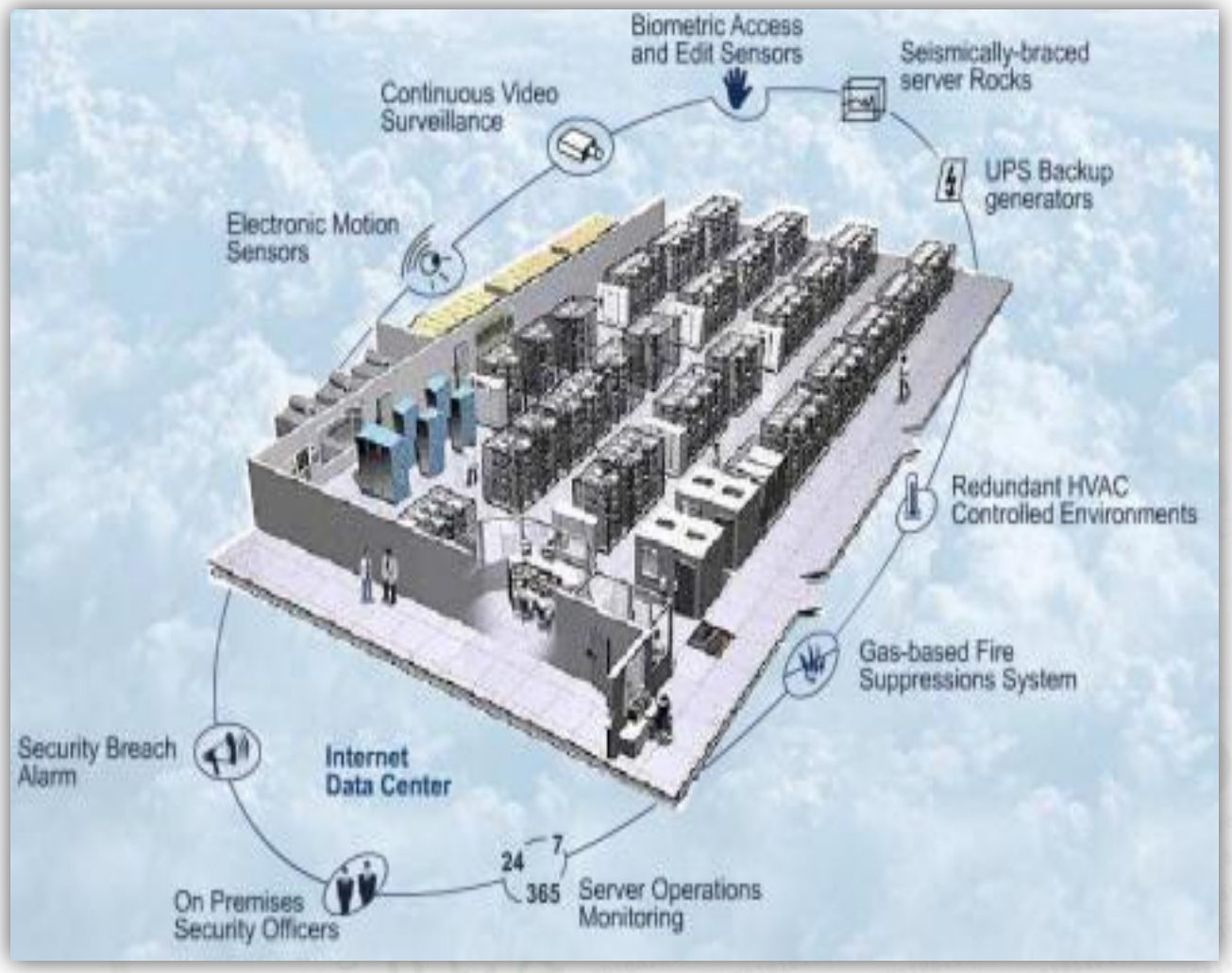
Customer Requirements & Project Size

60,000 sq ft of raised floor - 7.2 Mw of N+2 IT load - 4X expandable

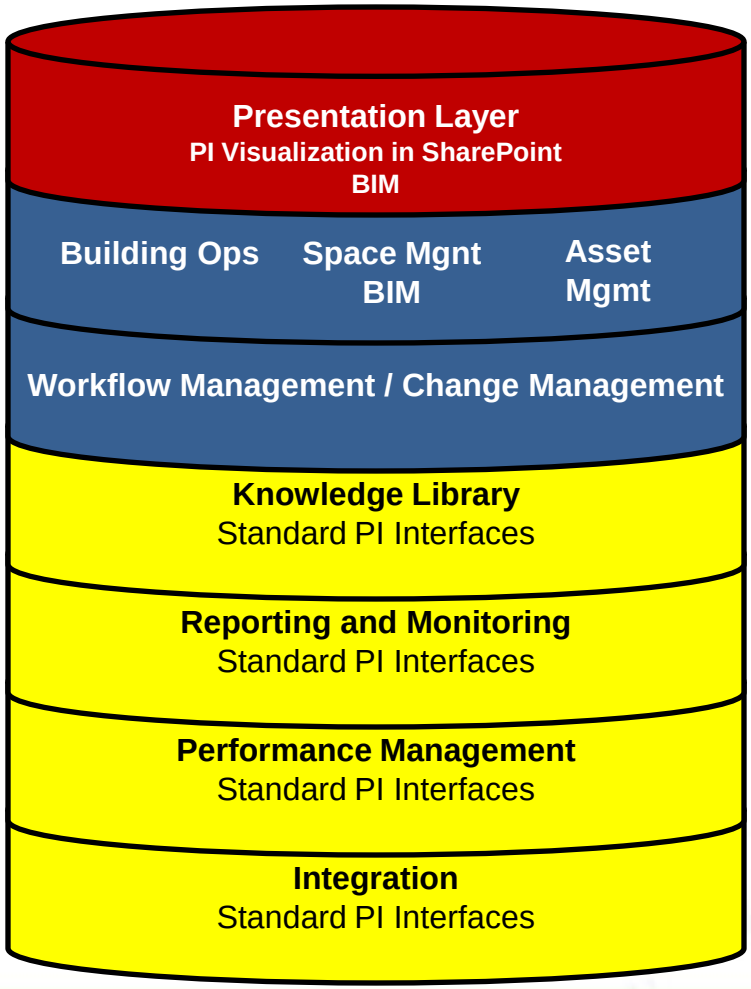
Monitoring Requirement

Treat Mechanical, Power, IT and Security as one complete system

- *Nearly 1000 devices*
- *Over 110,000 points*



Enterprise Integration Requirement



Capacity & Load Planning Systems

Data Center Simulation Toolkits
Power, Cooling, Space, Network

Nationwide alarming & trouble ticket systems

- 1000 points per 10 minutes
- remote from Salt Lake City by 1000 miles

Agenda

eBay requirements

➢ *Monitoring Architecture*

Building the Monitoring system

The result:

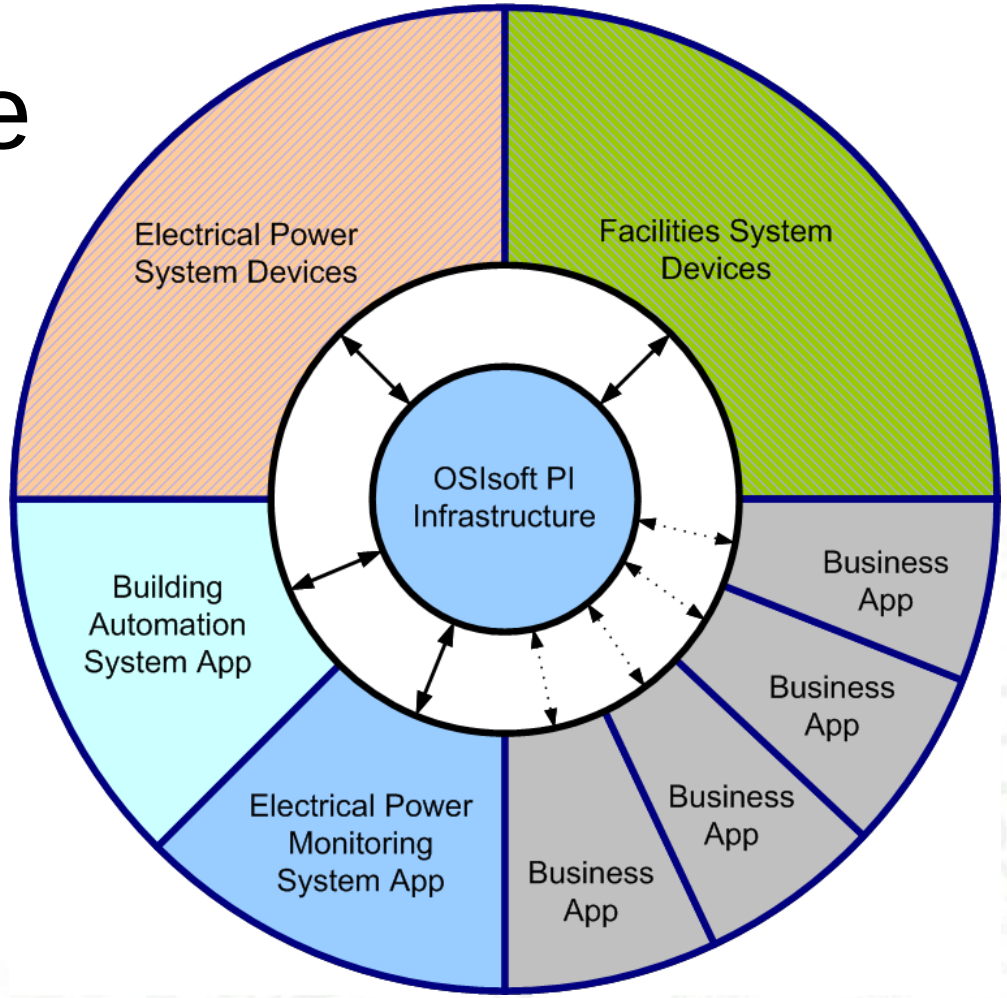
How do people use it?

Where to from here?

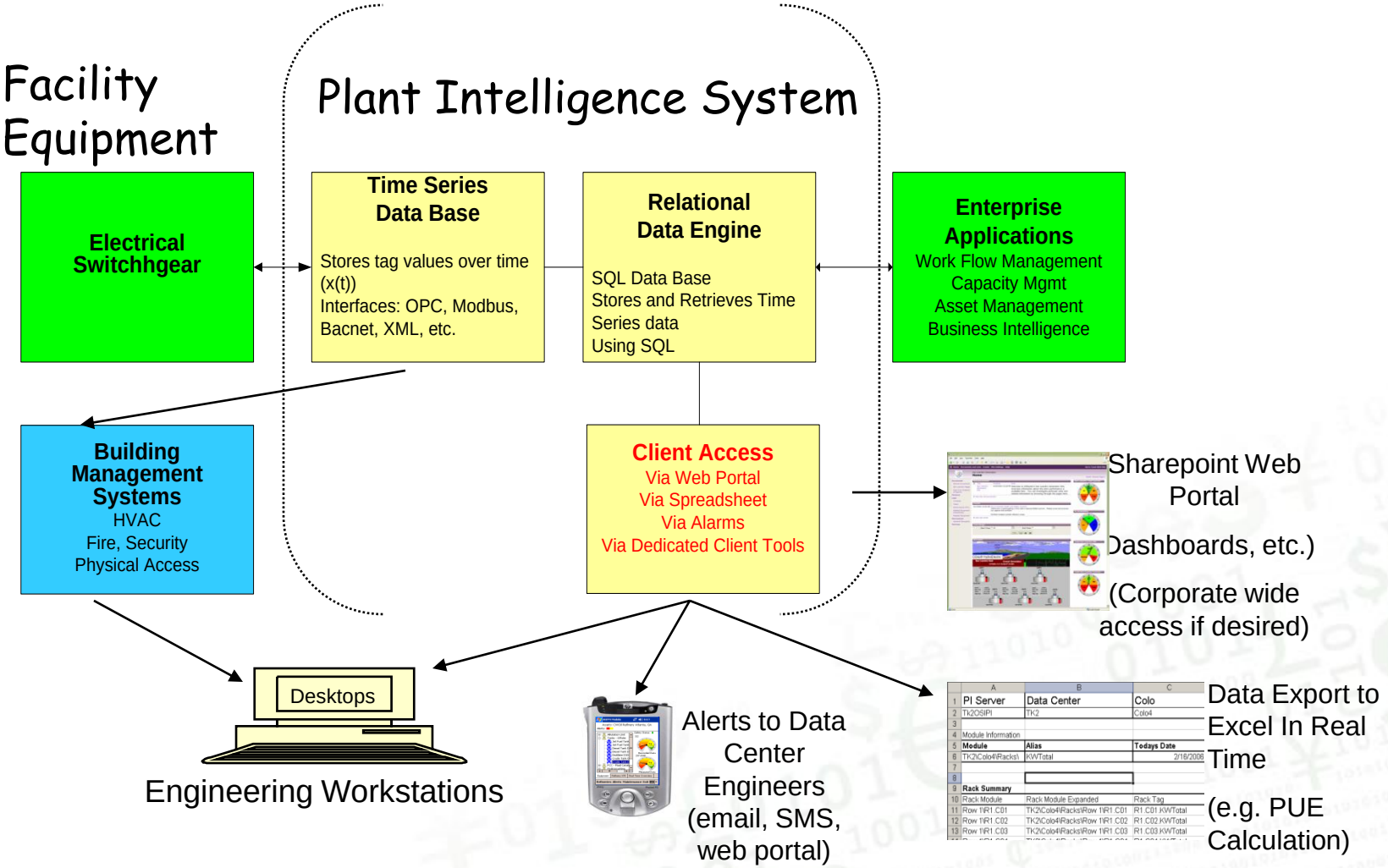
Why PI ?

- Leader in Asset and facility management software integration into BIM
- Only Infrastructure chosen by IT providers Microsoft, IBM, HP, Cisco
- Only infrastructure capable of handling real-time data over 1M points on single server
- Only open architecture platform from Data Connectors through applications – with development platform .net
- Fastest Infrastructure available 250,000 events per second

PI is an infrastructure



PI in relation to Enterprise



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eBay requirements

Monitoring Architecture

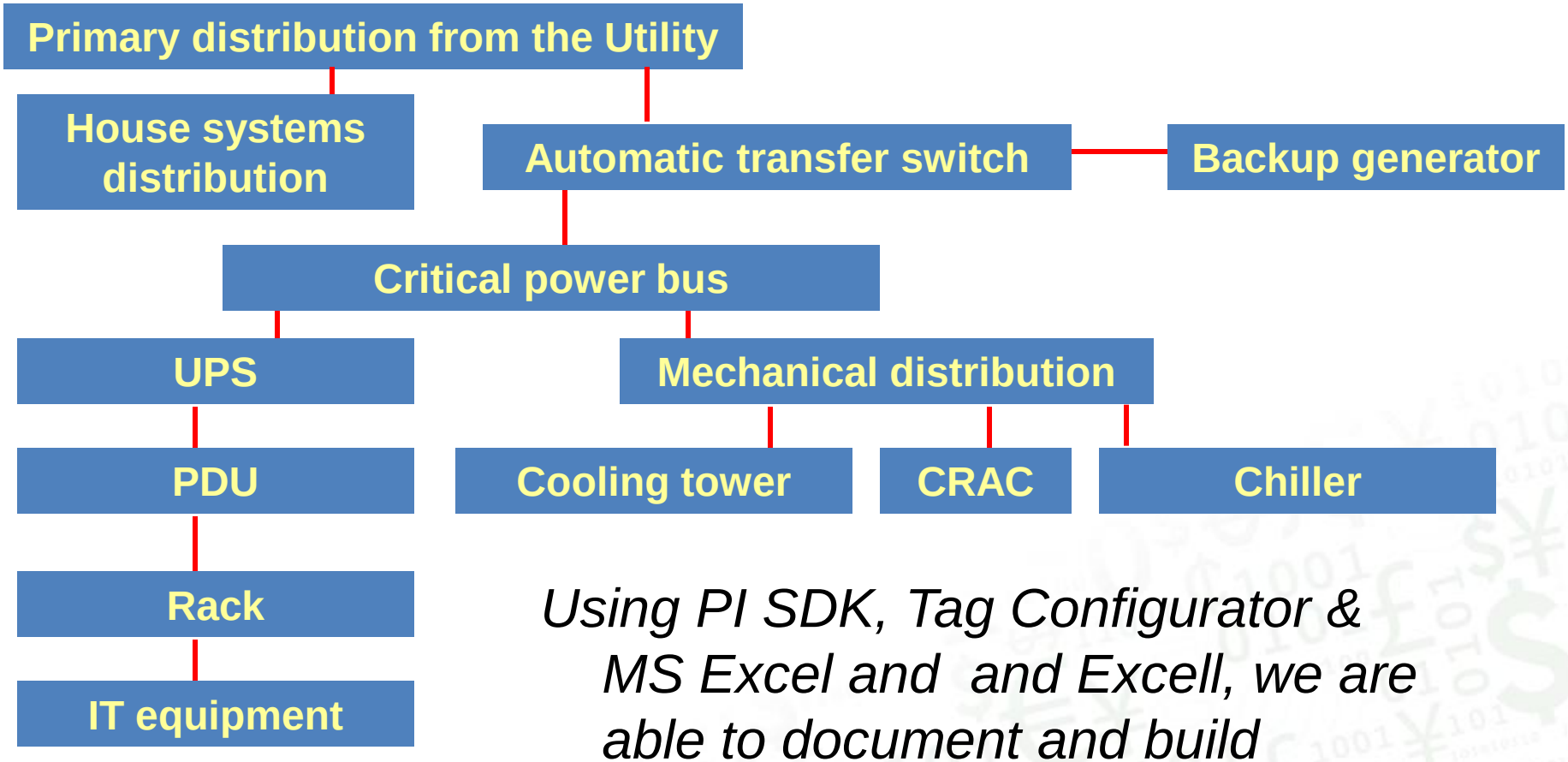
- *Building the Monitoring system*

The result:

How do people use it?

Where to from here?

Building the Monitoring System- Electrical Network - 138KV to 110V



Using PI SDK, Tag Configurator & MS Excel and and Excell, we are able to document and build 60,000 tags in 20 minutes.

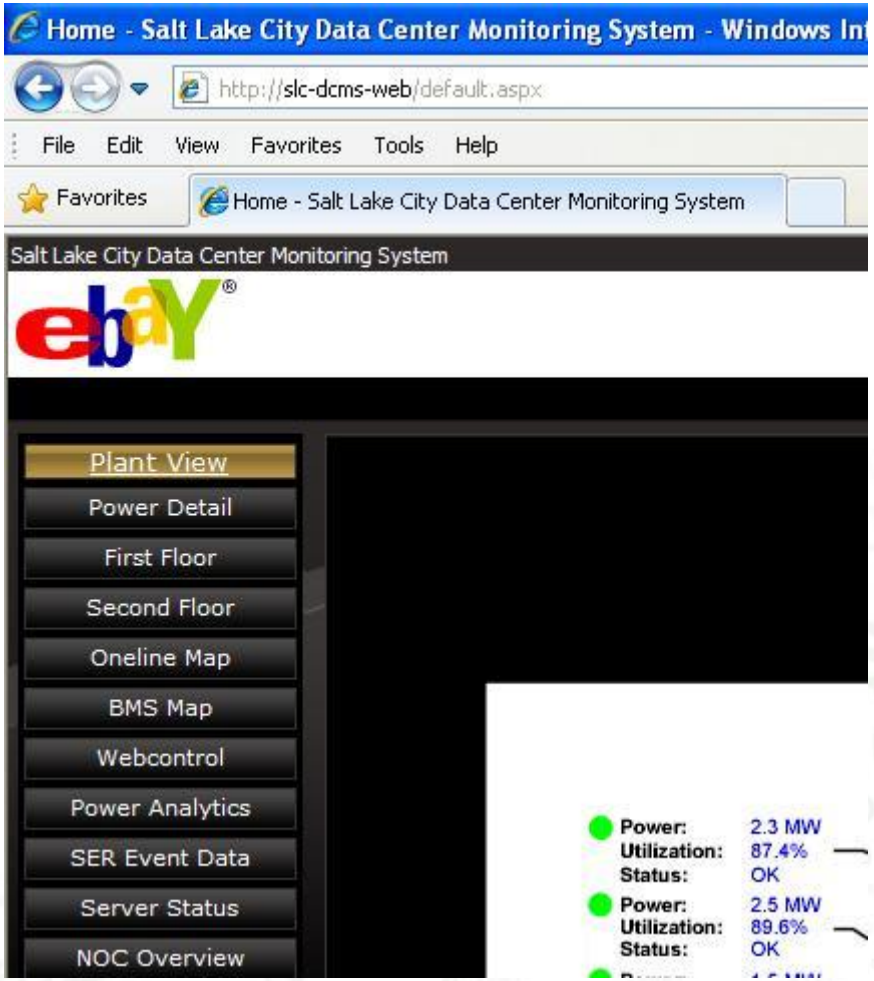
Building the screens

Using PI Web Parts, Processbook and 3rd party tools such as AutoCad,

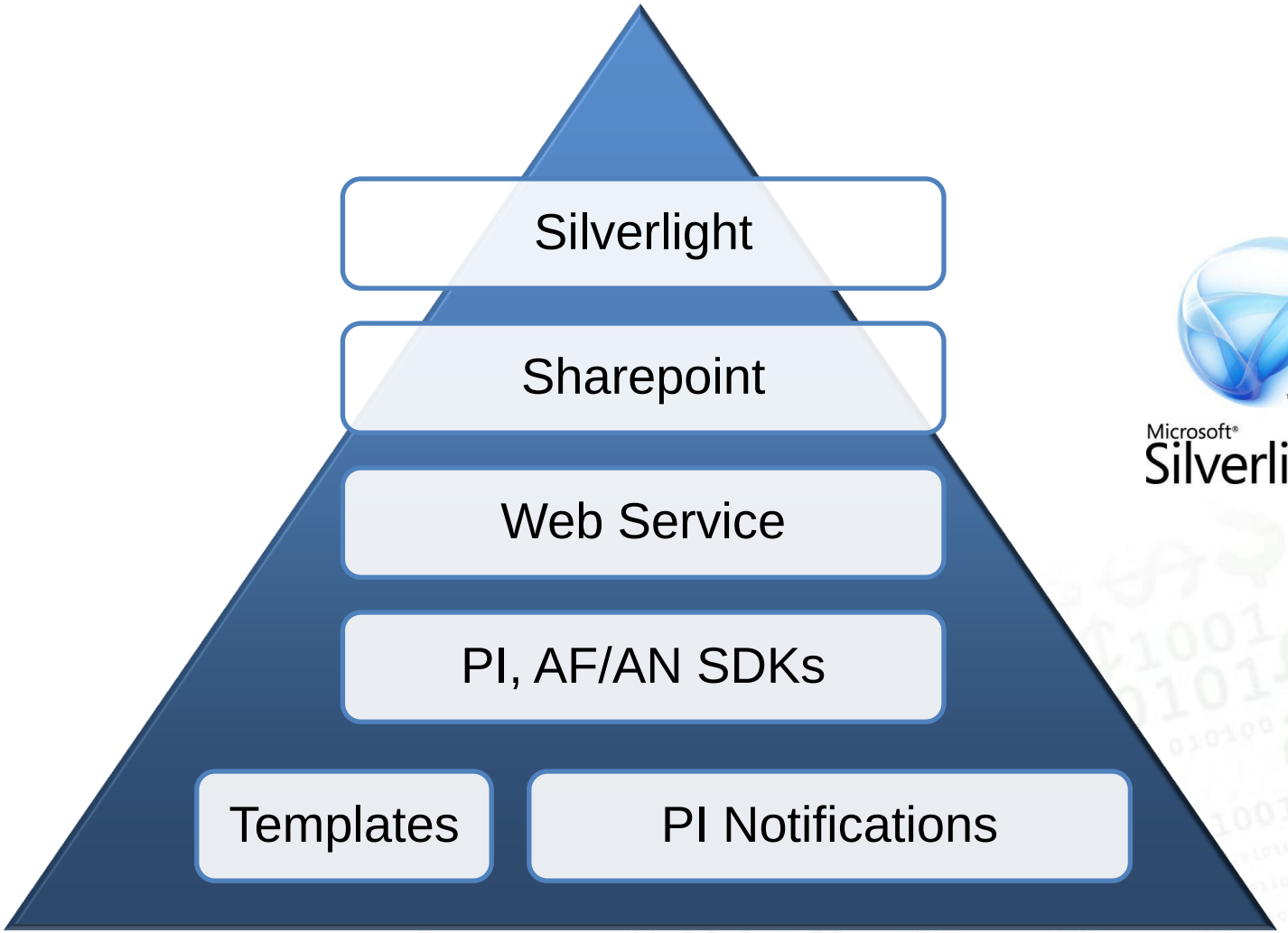
we built a 200 page web site

We focused on Sharepoint and Silverlight architecture and tools.

We converted CAD files directly into screens



Building the Notifications



Microsoft® Silverlight™

Special Situation:

Monitoring the Primary Utility Feeds

eBay and Utility
wanted to exchange
power levels

Solution:
bi-directional info
transfer with Utility

138kv utility feed

Agenda

eBay requirements

Monitoring Architecture

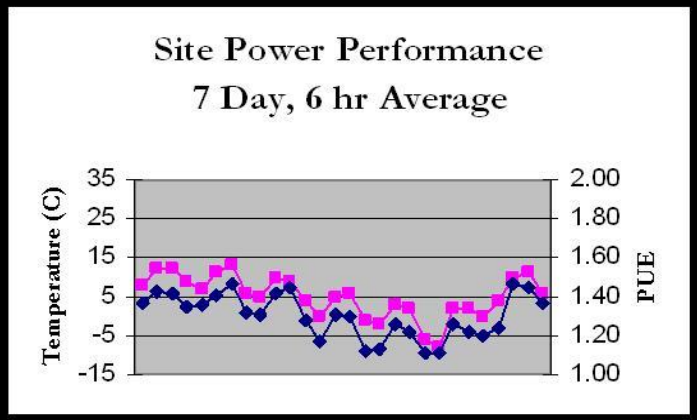
Building the Monitoring system

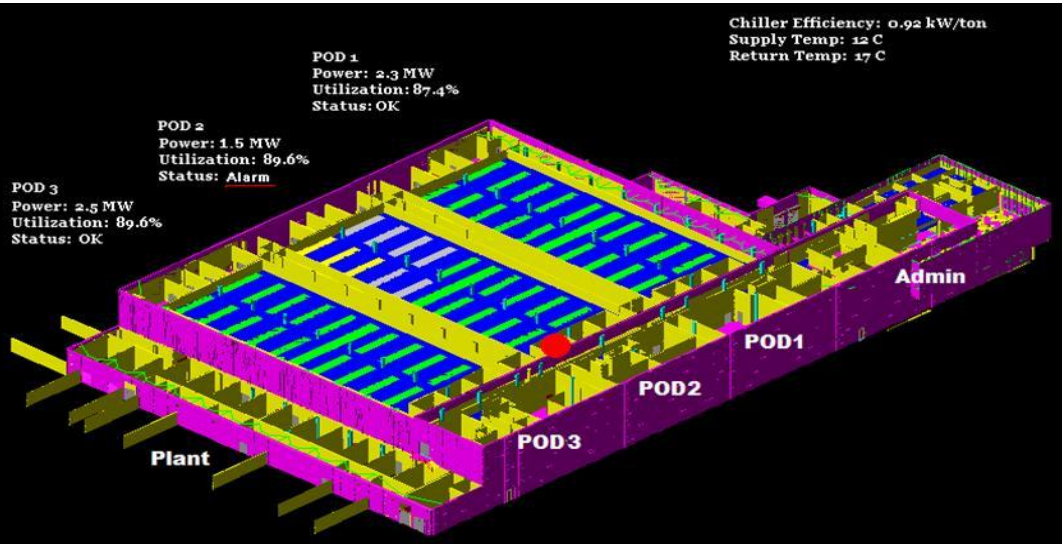
- *The result:*

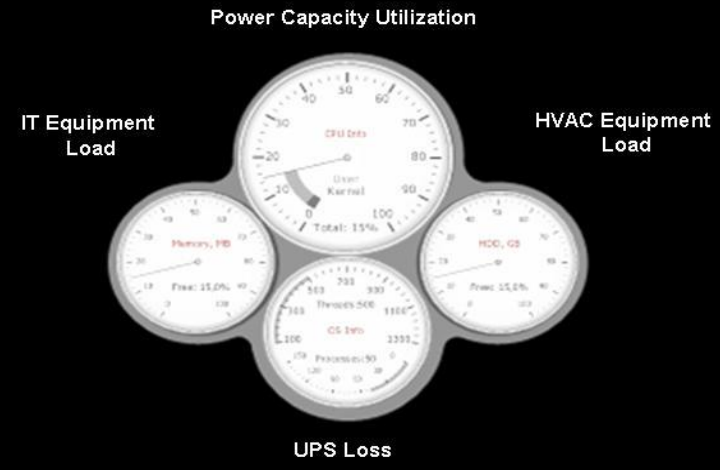
  How do people use it?

Where to from here?

Network Ops Center Main Screen





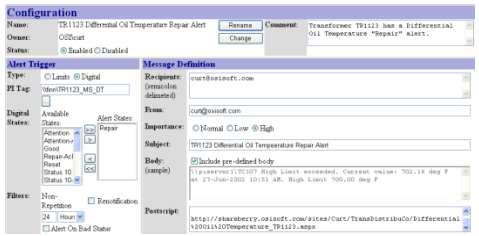


Current PUE
1.37

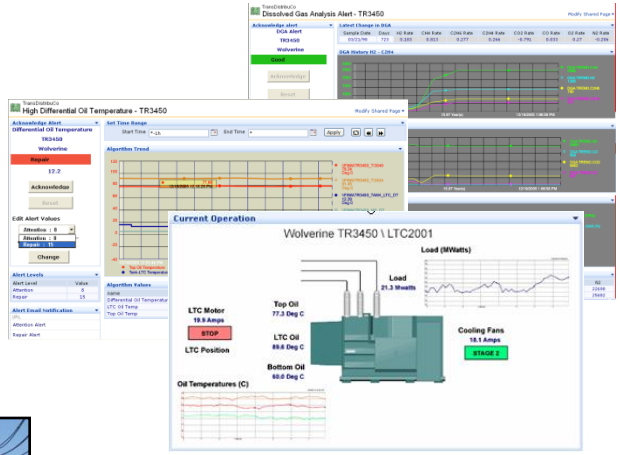
Announcements:

1. Data for demonstration only
2. December PM assigned
3. November PM complete
4. None

Adding a Rack: Data Flow



Alert Notification
Work Order Generation

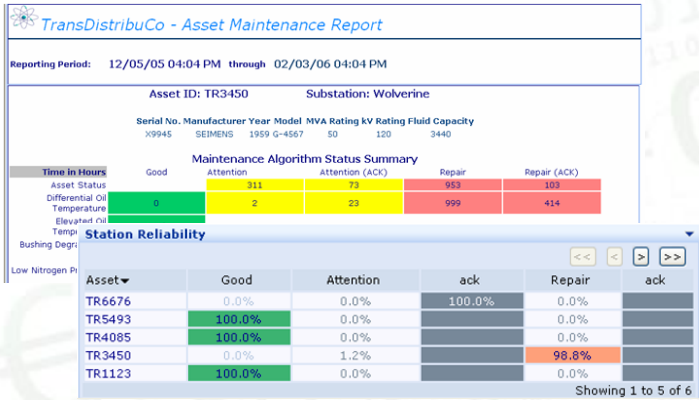


Integrated Asset Information

Disolved Gas Analysis

Sample Date	H2	CH4	C2H6	C2H4	C2H2	CO2	CO			
09/26/90	193	115	137	38	<1	3004	223			
08/01/94	279	185	164	51	<1	4213	341			
03/06/95	489	399	320	109	<1	1652	315			
03/28/96	1258	1980	590	369	<1	6524	530			
03/21/98	1390	2568	790	561	<1	5952	554	927	24651	6361

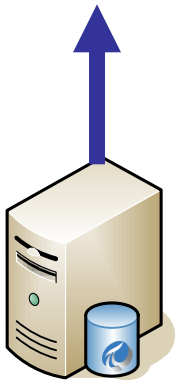
Asset Information Structure (PI and RDB)



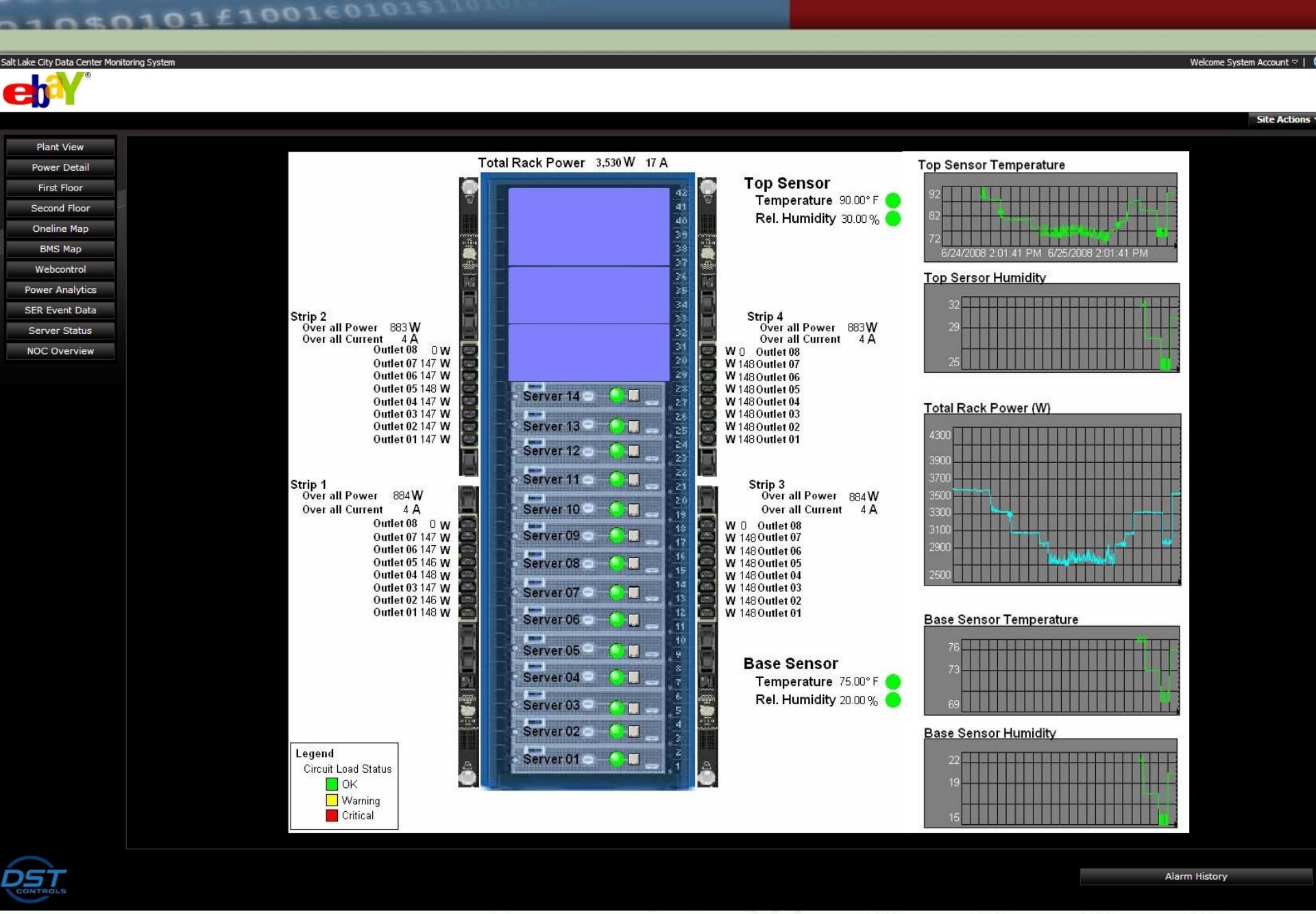
Asset	Good	Attention	ack	Repair	ack
TR6676	0.0%	0.0%	100.0%	0.0%	
TR5493	100.0%	0.0%		0.0%	
TR4085	100.0%	0.0%		0.0%	
TR3450	0.0%	1.2%		98.8%	
TR1123	100.0%	0.0%		0.0%	

Showing 1 to 5 of 6

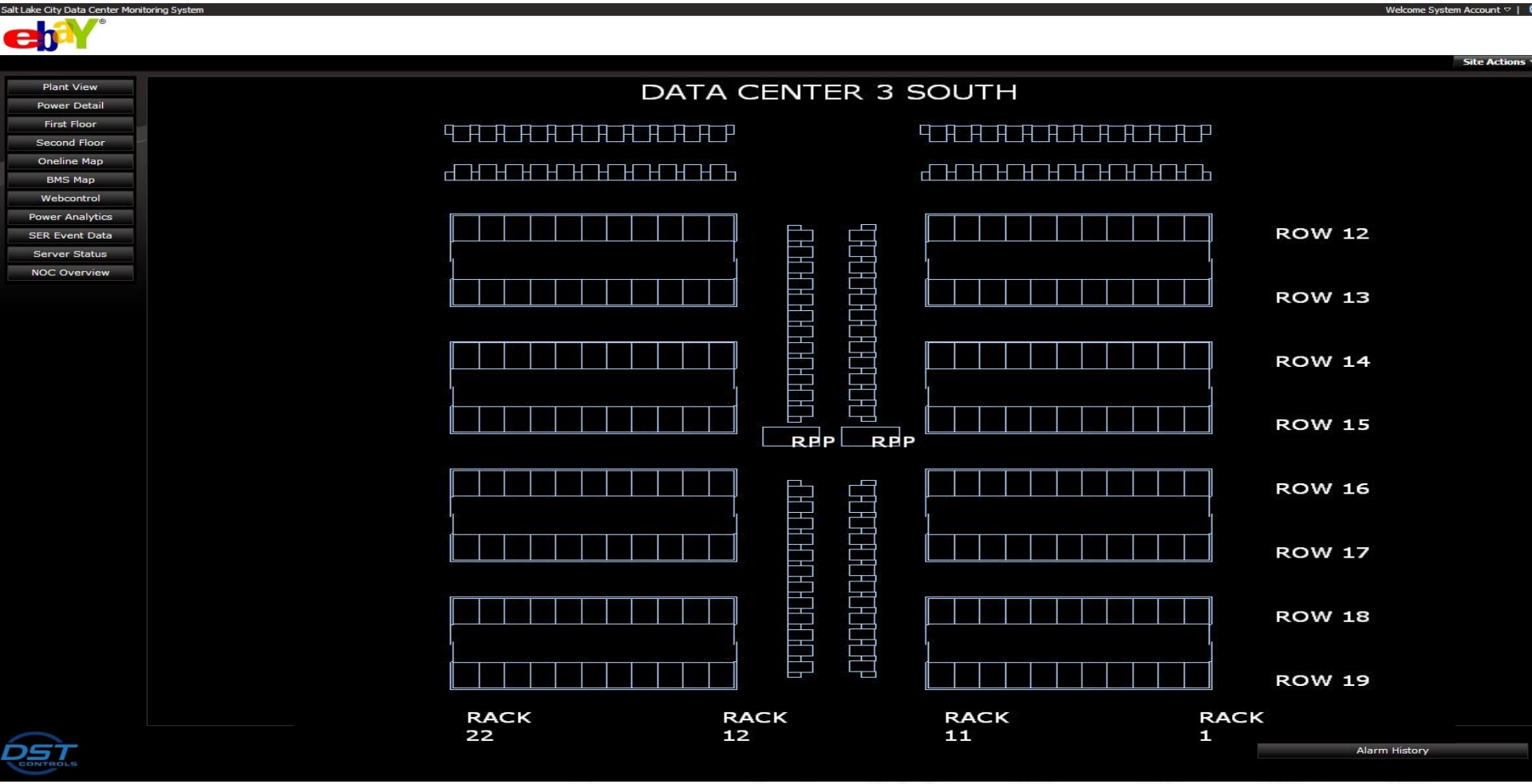
Asset Reliability



Real-time Rule Assessment



Rack Installed !



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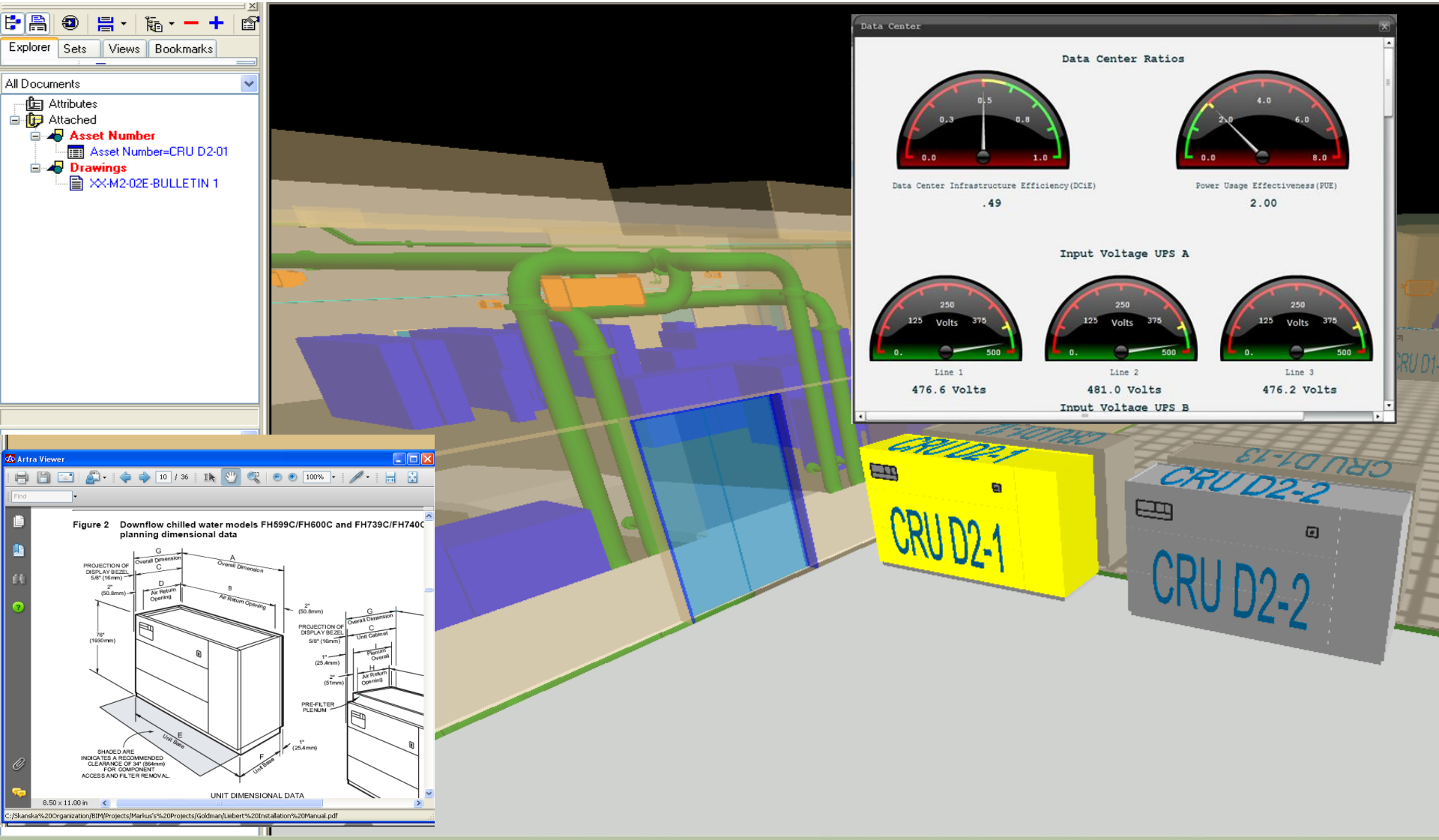
The result:

How do people use it?

➢ *Where to from here?*

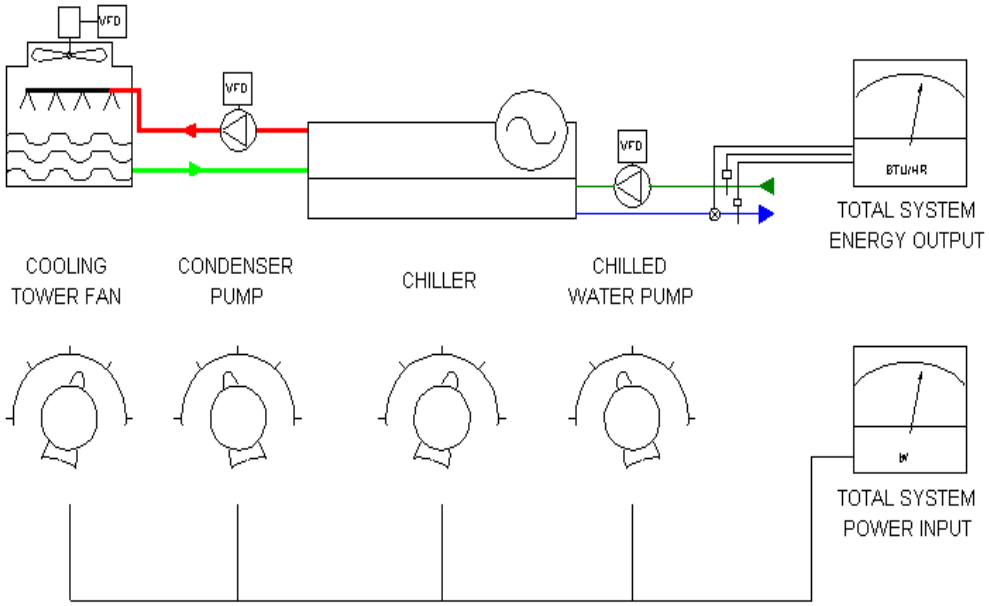
Link Building design (BIM) to real time data center monitoring systems.



“Green Plant” *by Skanska*

Green Plant Technology:

Controls + Calculus + Experience =
Breakthrough Efficiency

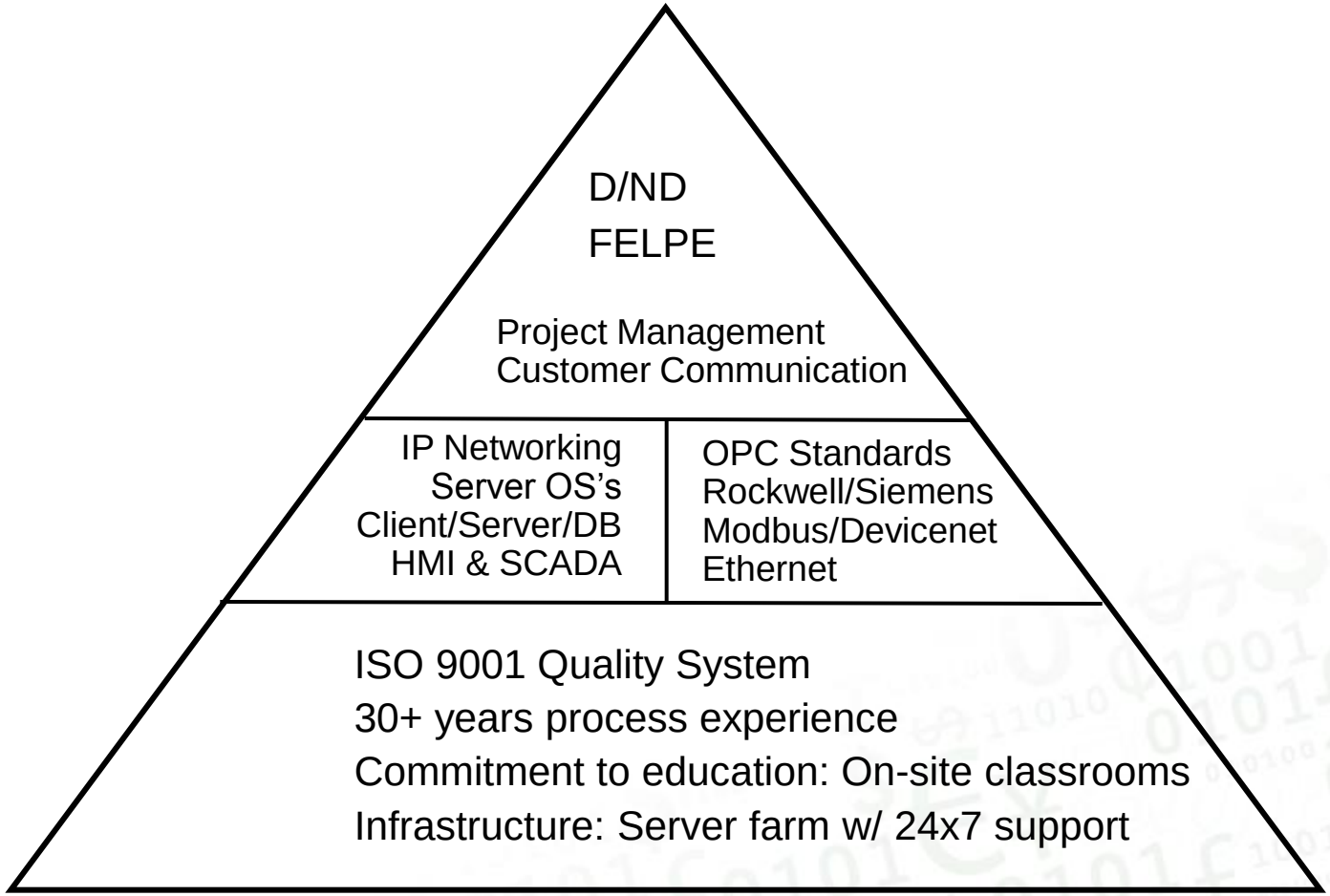


“The chiller sequencing algorithms developed by Skanska are very advanced.

Your team’s understanding of chiller system operation is similar to that of chiller manufacturer engineering personnel”

Carrier

Who is DST Controls?



Questions ?