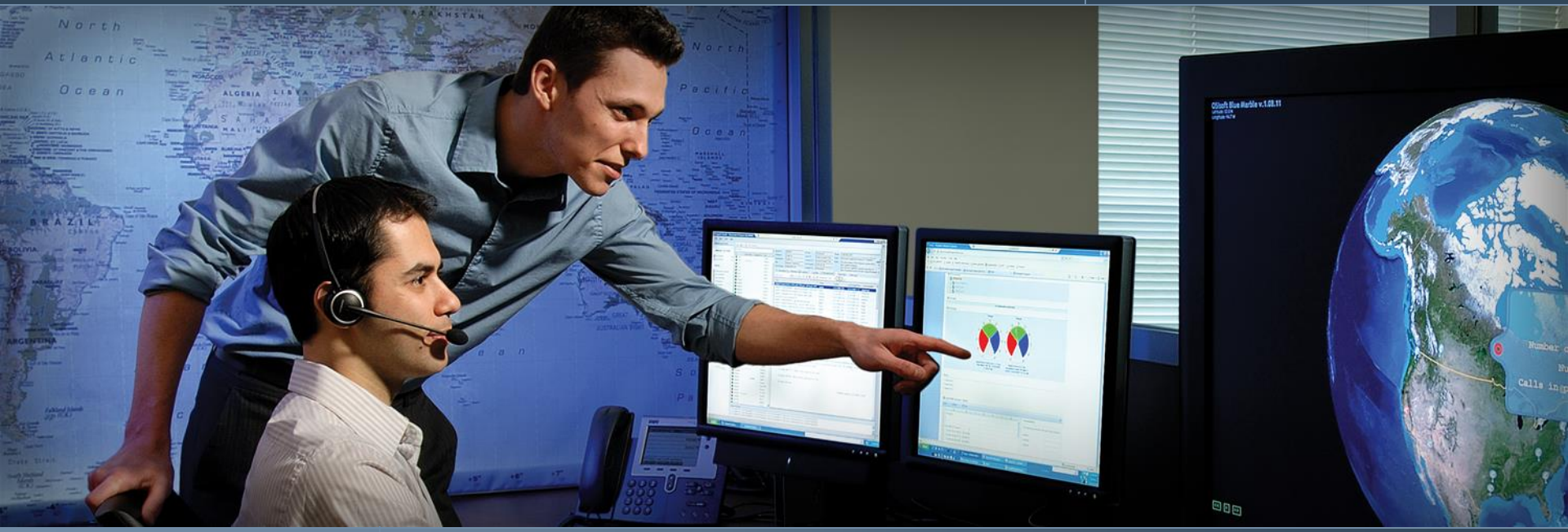
Regional Seminar Series
Southern California



OSIsoft Enterprise Agreement

Anthony Narag
Sr. Manager, Operations Information Systems
Amgen

January 21, 2010

Empowering Business in Real Time.

Leveraging OSIsoft Systems

Somewhere, something incredible is waiting to be known.

Carl Sagan

Data is what allows us to know that we have arrived.

Our Mission…

… to serve patients

Marie
Enbrel® (etanercept)

Chanitra
EPOGEN® (Epoetin alfa)

Tony
Sensipar® (cinacalcet HCl)

Amgen: A Biotechnology Pioneer

- Founded in 1980, Amgen was one of the first biotechnology companies to successfully discover, develop and make protein-based medicines
- Today, we're leading the industry in its next wave of innovation by:
  - Developing therapies in multiple modalities
  - Driving cutting-edge research and development
  - Continuing to advance the science of biotechnological manufacturing

Our Values Drive Our Success

Amgen Values

- Be science-based
- Compete intensely and win
- Create value for patients, staff, and stockholders
- Be ethical
- Trust and respect each other
- Ensure quality
- Work in teams
- Collaborate, communicate, and be accountable

Benefits to Millions of Patients

EPOGEN (EPOETIN ALFA)

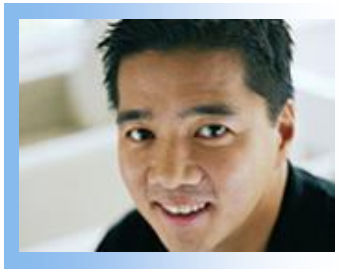
Kineret (anakinra)

Sensipar (cinacalcet HCl) Tablets 30mg 60mg 90mg

NEUPOGEN (FILGRASTIM)

Neulasta (pegfilgrastim)

Kepivance (palifermin)

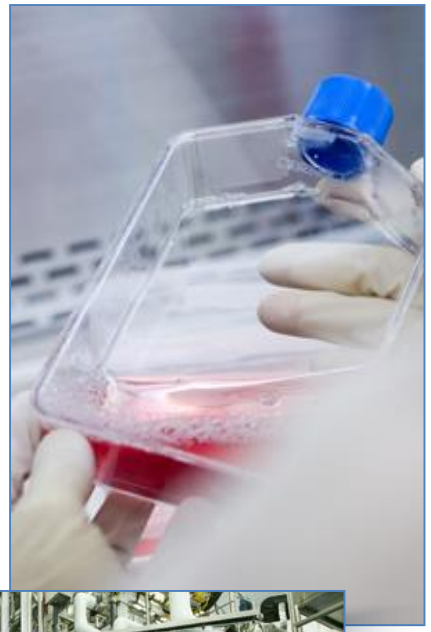


Aranesp (darbepoetin alfa)

Enbrel etanercept

Vectibix (panitumumab)

Leading Biotech Manufacturing



Empowering Business in Real Time.

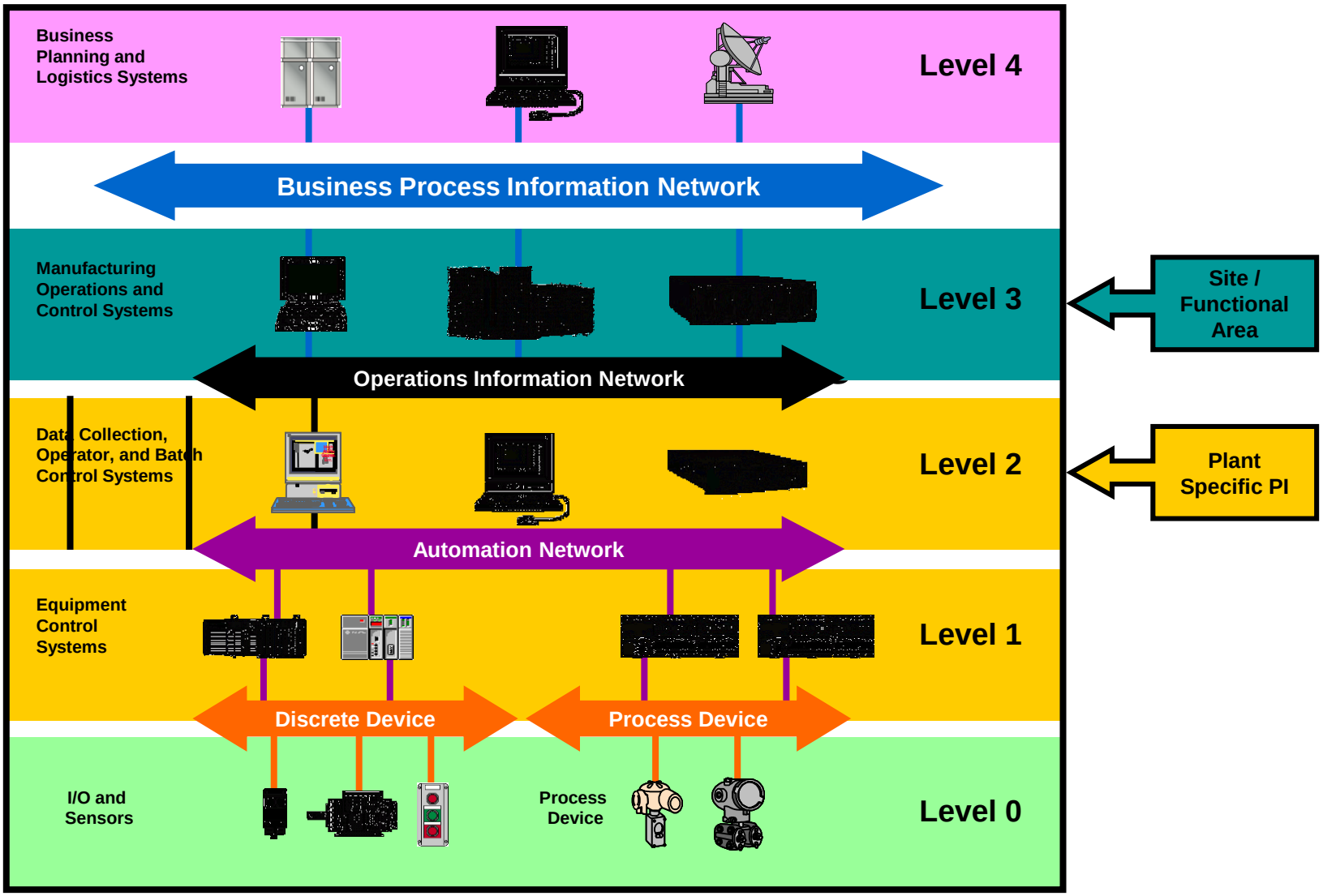
Expanding Manufacturing Base

Empowering Business in Real Time.

Amgen's History with OSIsoft

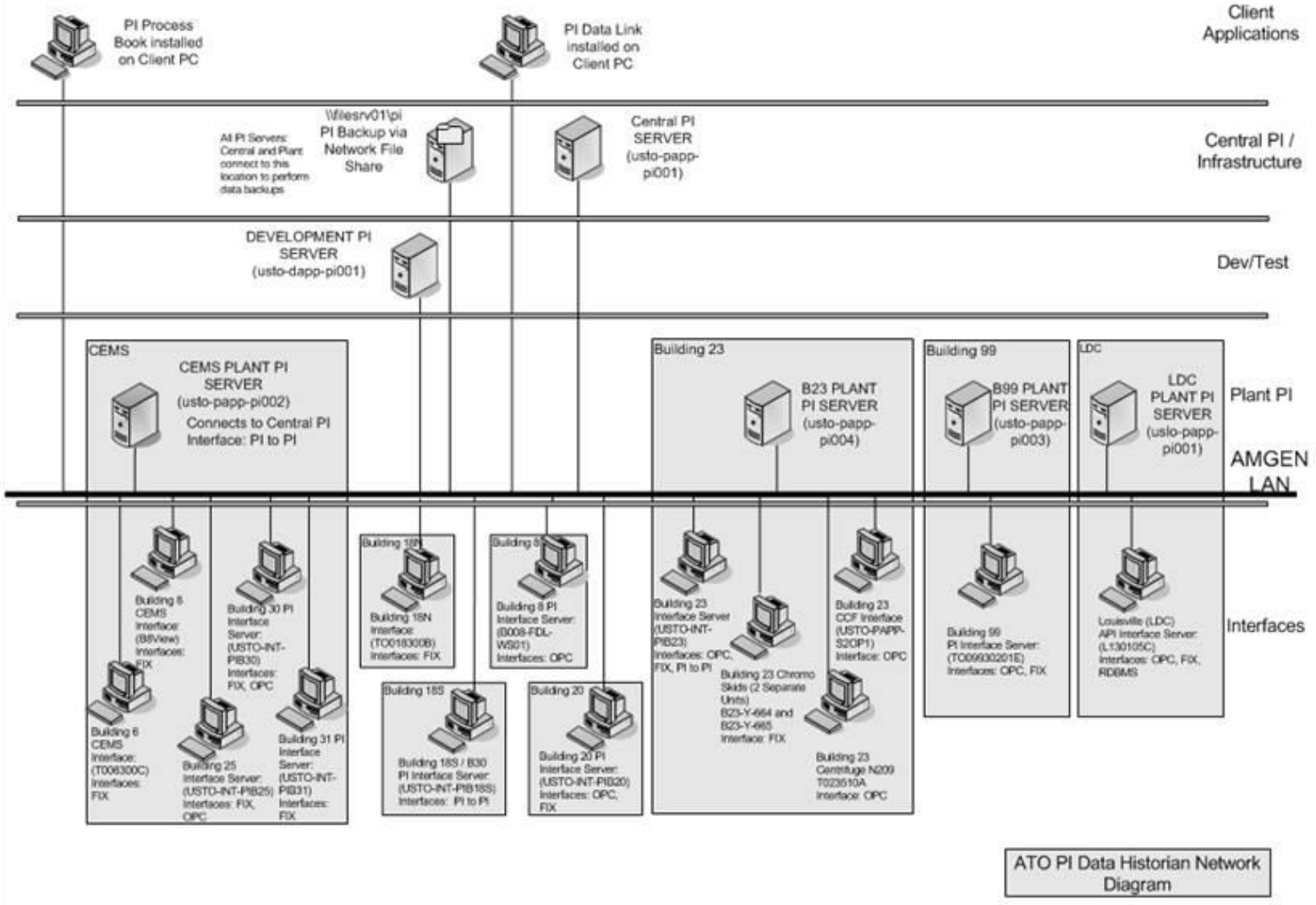
- Amgen selected OSIsoft's PI as our standard data historian platform in 2001
- Corporate pricing agreement in effect from 2001 - 2006
- All manufacturing sites deployed PI to collect process data
- Entered into an Enterprise Agreement with OSIsoft
- OSIsoft engaged in major upgrade in Thousand Oaks in 2009

Enterprise Integration



Empowering Business in Real Time.

USTO PI System Architecture



Empowering Business in Real Time.

PI Systems

- Thousand Oaks
  - 1 Central PI server
  - 4 Building-level PI servers
  - 15 Interface servers
  - 40+ source systems
  - 250 users
  - > 25,000 tags

- Corporate Wide:
  - 17 PI servers
  - > 1,000 users
  - > 150k tags

PI Usage

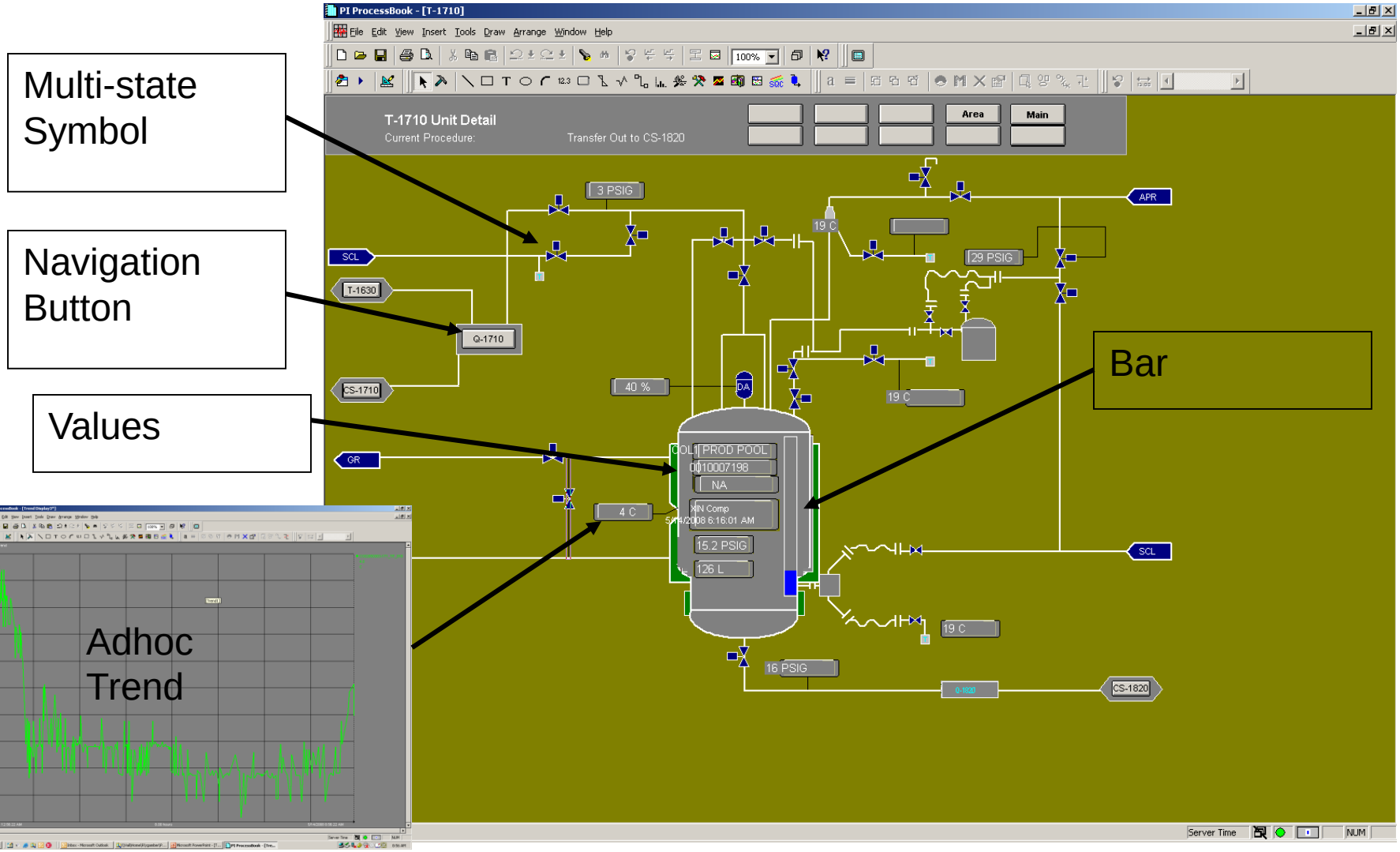
Applications	AWA	AFR	ATO	ACO	AML	ARI
Batch Reports		X			X	X
Alarm Excursion Reporting	X	X			X	
Real-time Trends	X	X	X	X	X	X
Embedded Actiview Trends			X		X	
Real-time Batch Trends				X		
Real-time Multi-Variate Analysis						X
Real-time Event Notification				X		
Chromatography Transition Analysis				X	X	
Historical Performance Analysis	X	X	X	X	X	X
Plant Data Warehouse				X	X	X
Use Based Maintenance				X		
Energy Management/Usage				X		X

Sample User Generated Applications

Purification Real Time Monitoring

- **Business Value**
  - Allows staff to view the current process from their desks
- **Technologies Used**
  - PI ProcessBook
    - Multi-state objects, bars, values, navigation buttons
    - VB for adhoc trends (DevNet download)
- **Development Process**
  - Screen capture of SCADA graphic
  - Overlaid symbols

Real Time Graphics



Empowering Business in Real Time.

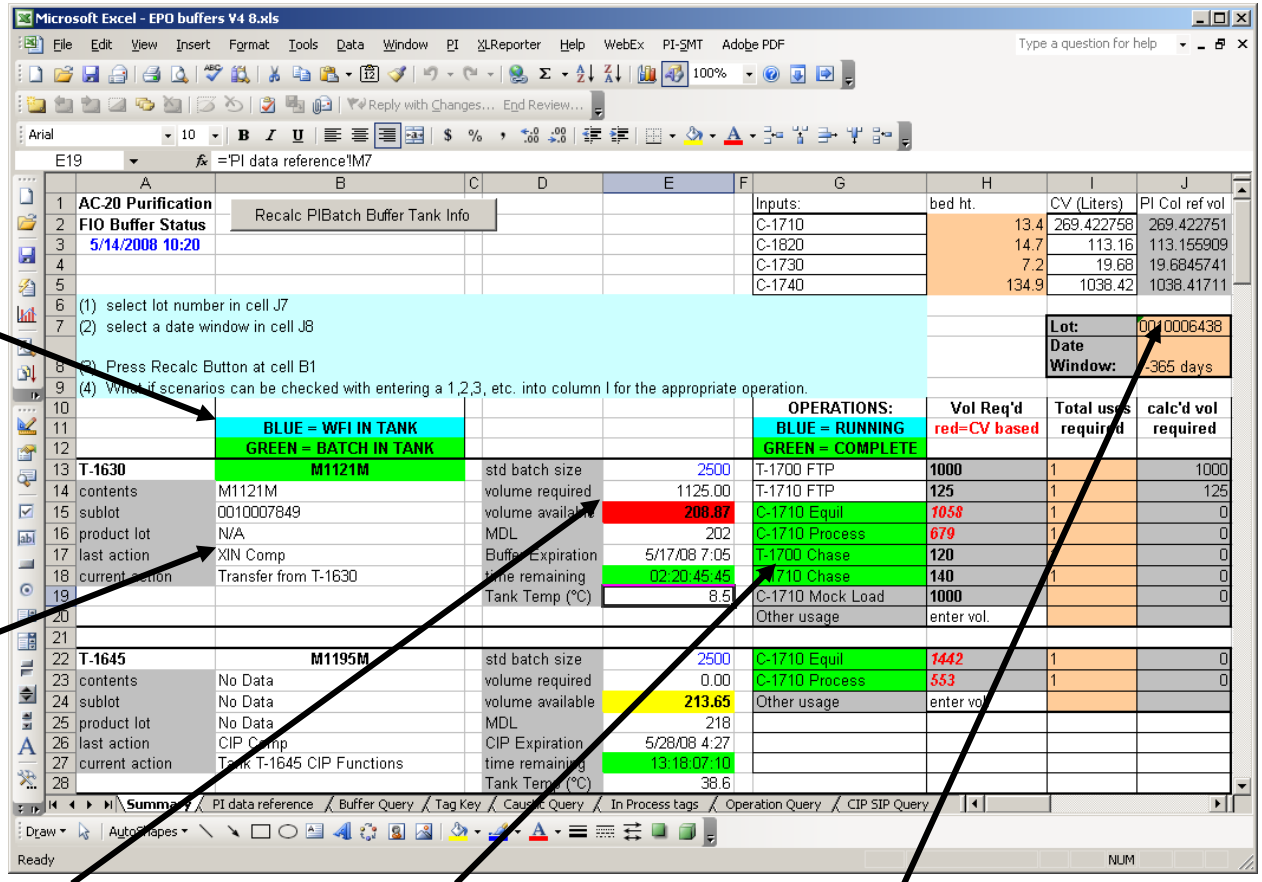
Buffer Usage Monitoring

- **Business Value**
  - Provides an overview of work in process, equipment status, and identifies remaining material requirements to assess against availability identifying potential shortfalls
- **Technologies Used**
  - PI Datalink
    - Compressed data, current values, archive values
    - Batch searches
    - Excel functions, conditional formatting, data validation
    - VB for sequencing execution
- **Development Process**
  - Converted paper based tracking

Buffer Usage

Conditional Formats

Current Values



Excel Functions

Batch Searches

Data Validation

Power Monitoring

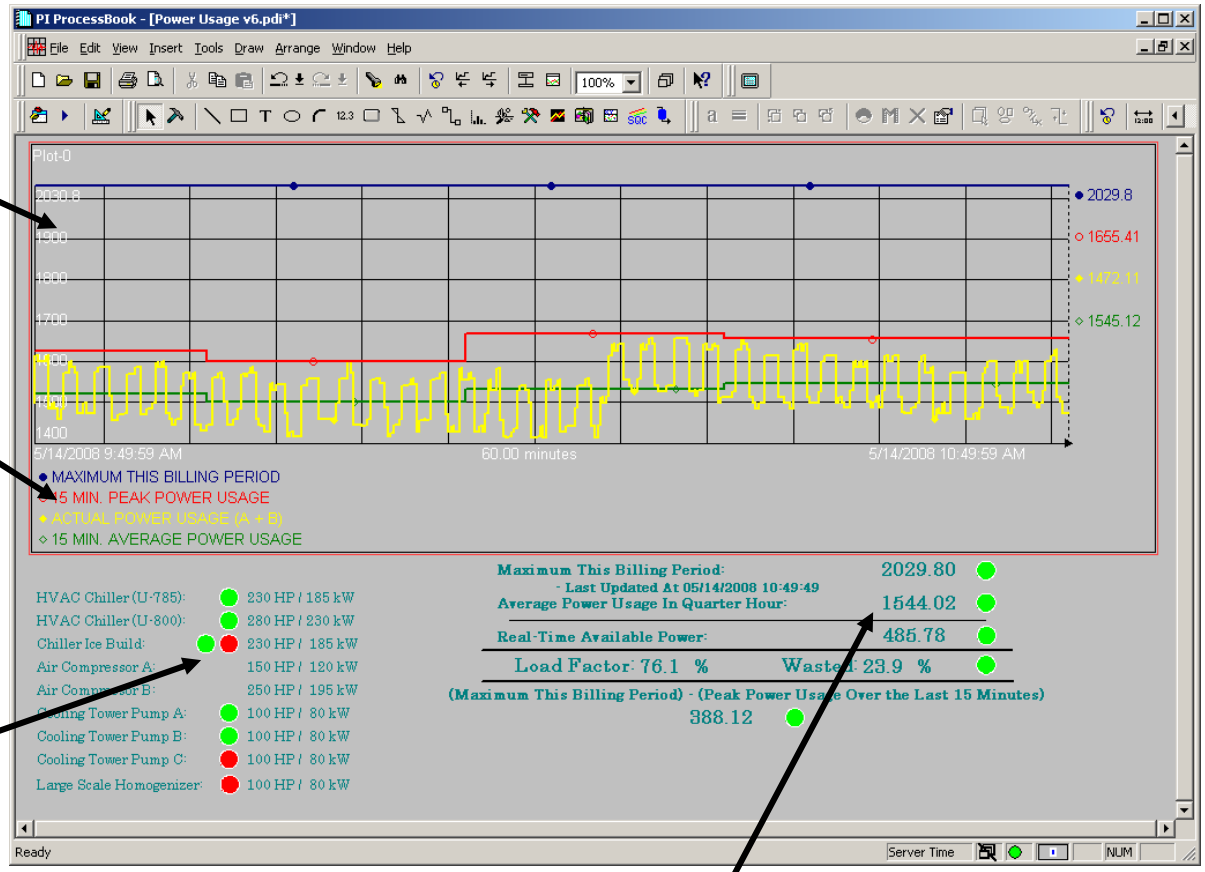
- **Business Value**
  - Tracks power consumption to identify peak load times in an effort to smooth the demand curve
- **Technologies Used**
  - PI ProcessBook
    - Calculation datasets
    - Continuous trends
    - Multi-state objects
    - VB for manual entered peak and associated calculations
- **Development Process**
  - Converted paper based tracking

Power Graphic

Time Based Trend

Calculated Datasets

Multi-State Symbols



VB Variables

Enterprise Agreement (EA)

EA Business Case

- **Opportunity Statement**
  - OSIsoft's PI widely used
    - Batch report generation
    - In-depth process analysis and optimization,
    - Troubleshooting, investigation, and root cause analysis
- **Business Drivers**
  - Supports IS Strategy - key component in:
    - Manufacturing IS blueprint
    - Current integration efforts
  - Cost Savings – decreases overall cost for Amgen

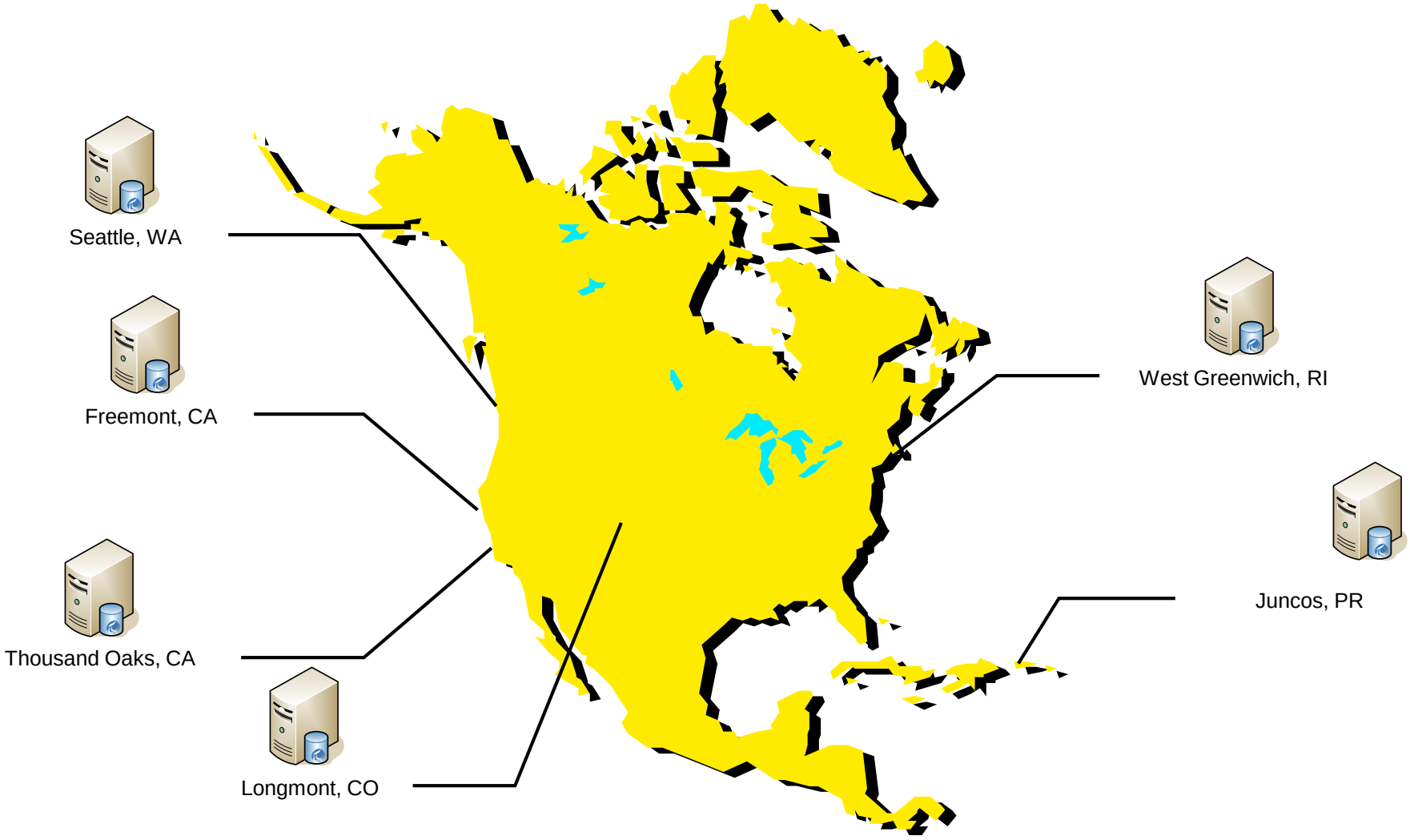
Creating a Positive NPV/ROI

- Tag/server based pricing has limited the adoption of architecture required to support enterprise implementations
- Procurement savings by avoiding many POs, managing bids, etc
- Time saved avoiding individual investment justifications and client license management
- Managed PI with remote support will save system administration time

Unquantified Benefits

- All Program Implementation Services by OSIsoft included
- “Managed PI” – 24/7 System Monitoring Application
- Named OSIsoft Program Manager and Enterprise Architect
- Professional services agreement for consulting and architecture guidance
- Increased access to training and user conferences
- Dedicated OSI resources that helped in data migration
- Escalation of bug fixes found during upgrade
- Leveraged OSI COE
  - Development of standard validation templates
  - White papers and guidance documents

Our Distributed Asset Base

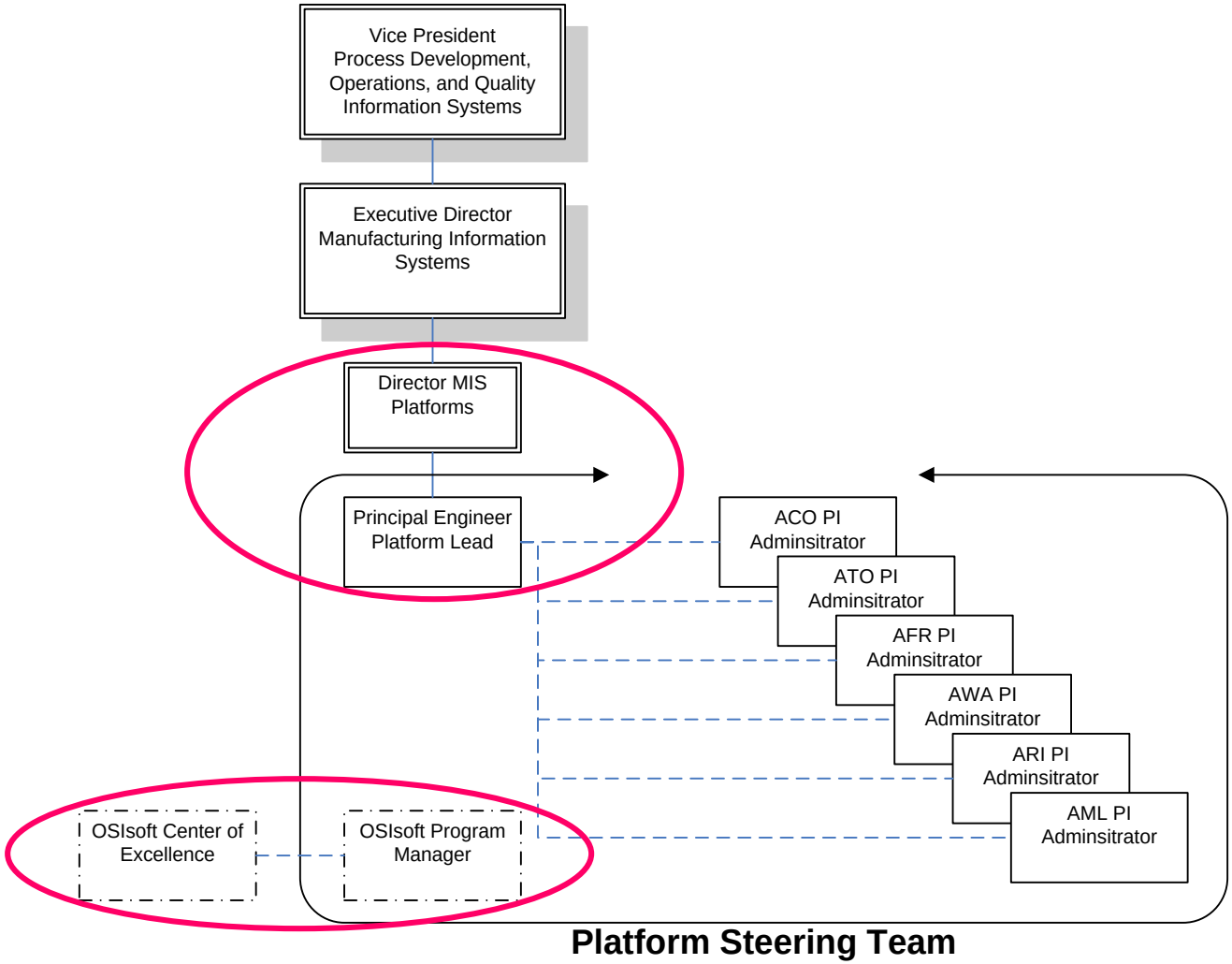


Empowering Business in Real Time.

PI as an Enterprise System

1. Dedicate resources to manage the distributed platforms.
2. Establish a governance structure to manage distributed systems.
3. Build a cross site support team to develop best practices. → **OSIsoft Program Manager**
4. Define standard architectures, configuration, and processes. → **OSIsoft Center of Excellence**
5. Measure adherence to standards as a means of assessing risk.

Organizational Structure



Platform Standard

- Based on Industry Standards S88 & S95
- Aligned to Enterprise Architecture Principles
- Driven by Business Requirements
- Establish a Common Architecture
  - Hardware - build scalable robust storage and retrieval
  - Software - promote application and documentation reuse
- Direction on Configuration
  - Tags and Aliases - naming standards
  - Module Database - equipment model
  - Batch Database - procedural model
  - Security
- Process and Procedures for Use and Administration

Challenges in Standardization

- Establishing Common Configuration Items
- Determining Limits from Automation Vendors
- Legacy Installations - “if it ain’t broke don’t fix it”
- Establishing a Virtual Team
- Validation and Testing Requirements
- Managing the Change Cycle

Vision for the Future

- Consistent implementations across sites that enables growth and provides resilient data access
- All sites leverage managed PI to monitor system performance allowing us to focus on business process improvements
- Develop a distributed shared support model that reduces replication of testing
- Further the user base skill set to improve data based decision making
- Continue to monitor and assess our progress

Thank you

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