

2002
OSISOFT USERS CONFERENCE



**EXPANDING
THE POWER OF PI**

MONTEREY CALIFORNIA



OSIsoft™

..since we last met

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Telecommunications Wisdom

- Two Key Parameters
 - Speed and Latency
 - Speed -> Fix w/Hardware
 - Latency -> Fix w/Software
- Architecture is Everything
 - Cell Phone Example

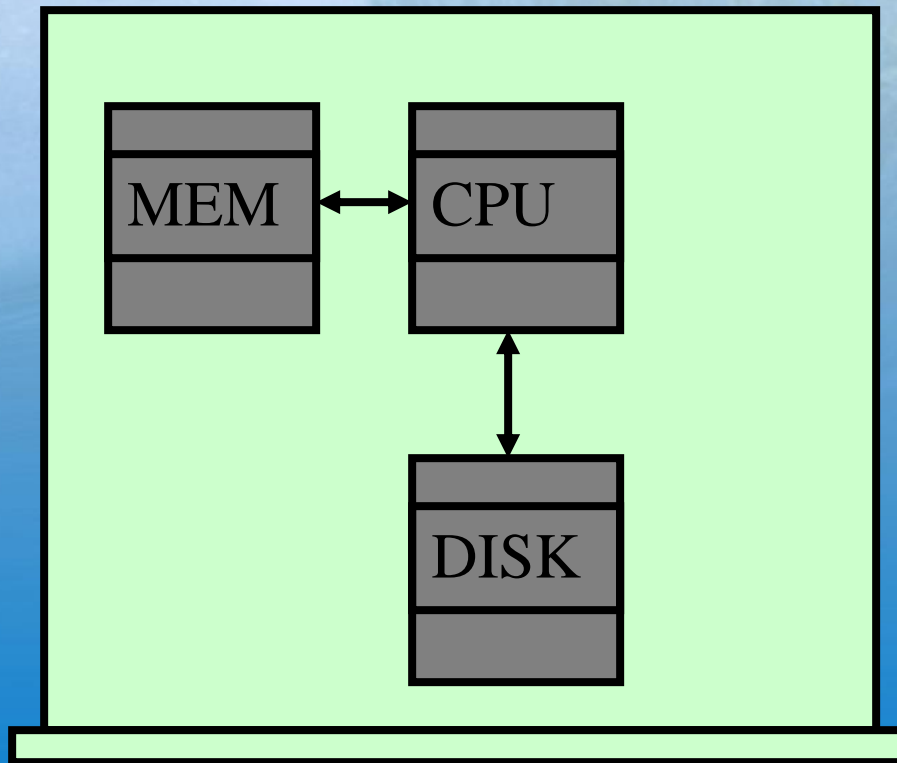
Speed From Hardware (Gigabit Ethernet)

- Gigabit Ethernet
 - 1.44 GHz current speed
 - 2.0 GHz new IBM internal
 - 30.0 GHz adopted new standard
 - 30.0 GHz = 20,000 T-1 lines
- Users Will Eat Up Capacity Faster Than Can Generate
- C/S, GUI, XML are all Bandwidth Hungry

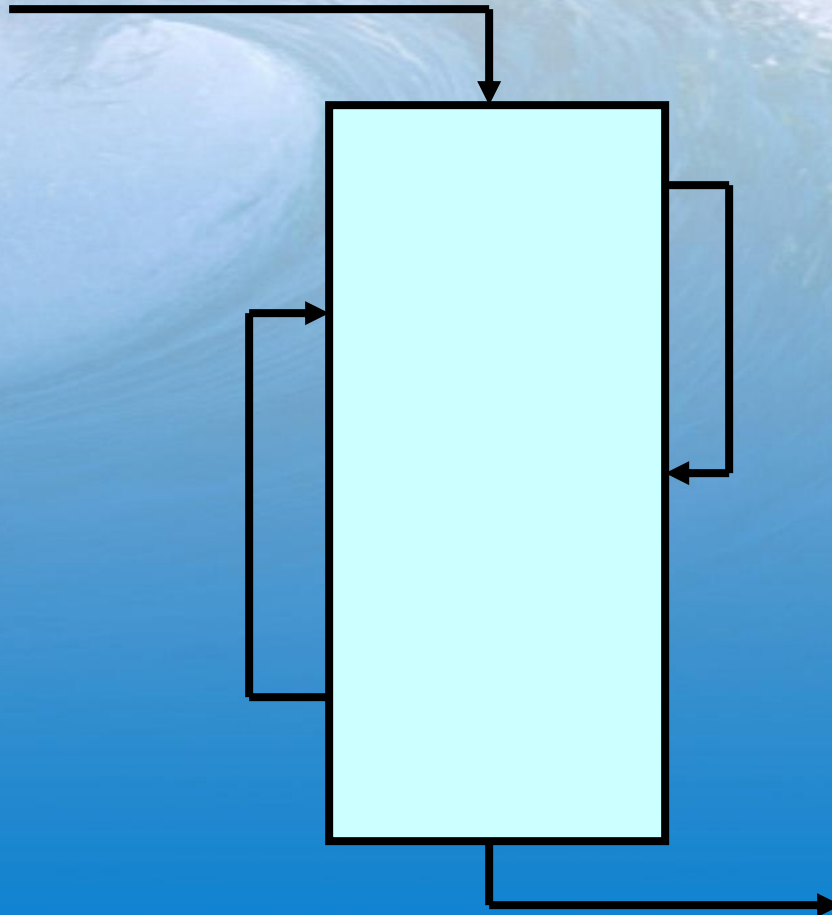
Architecture

- Architecture is Everything
- Peer to Peer Example
 - Internet Never Expected Users to be Servers
- Microsoft.NET is a Development Environment
- Supports New Architecture (Web Services)
- World Expert Coming Next
- Why Should PI Users be Interested in Microsoft.NET
- Review History

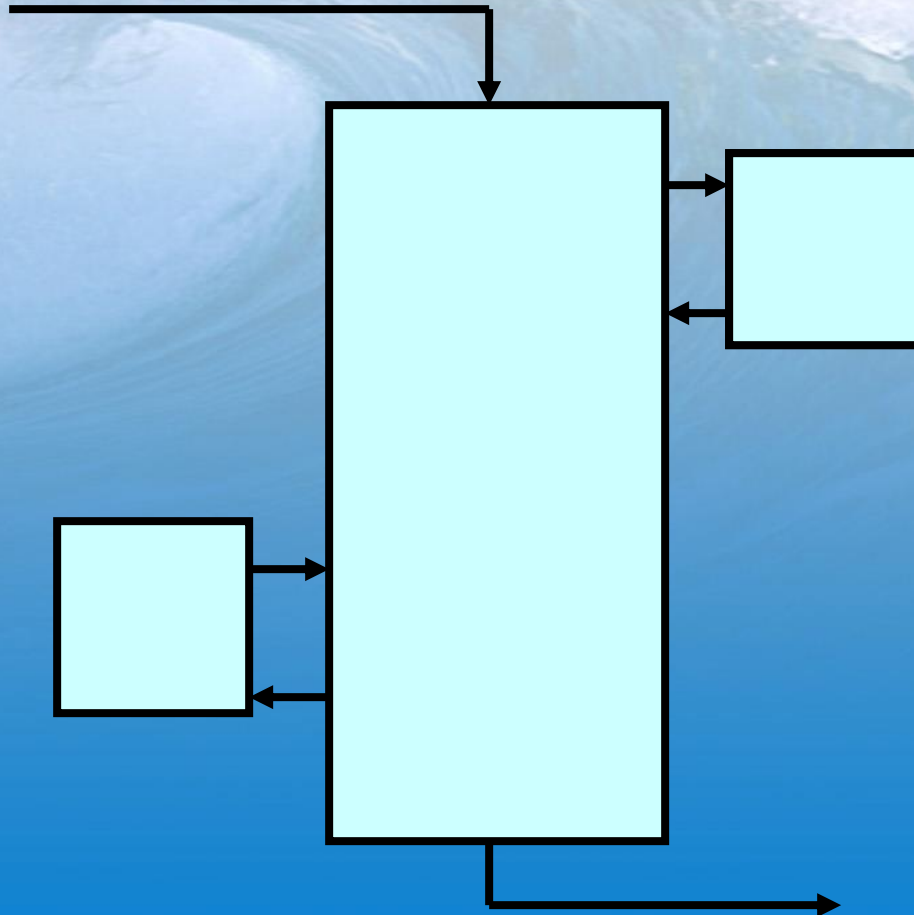
History of Computer Hardware (1964)



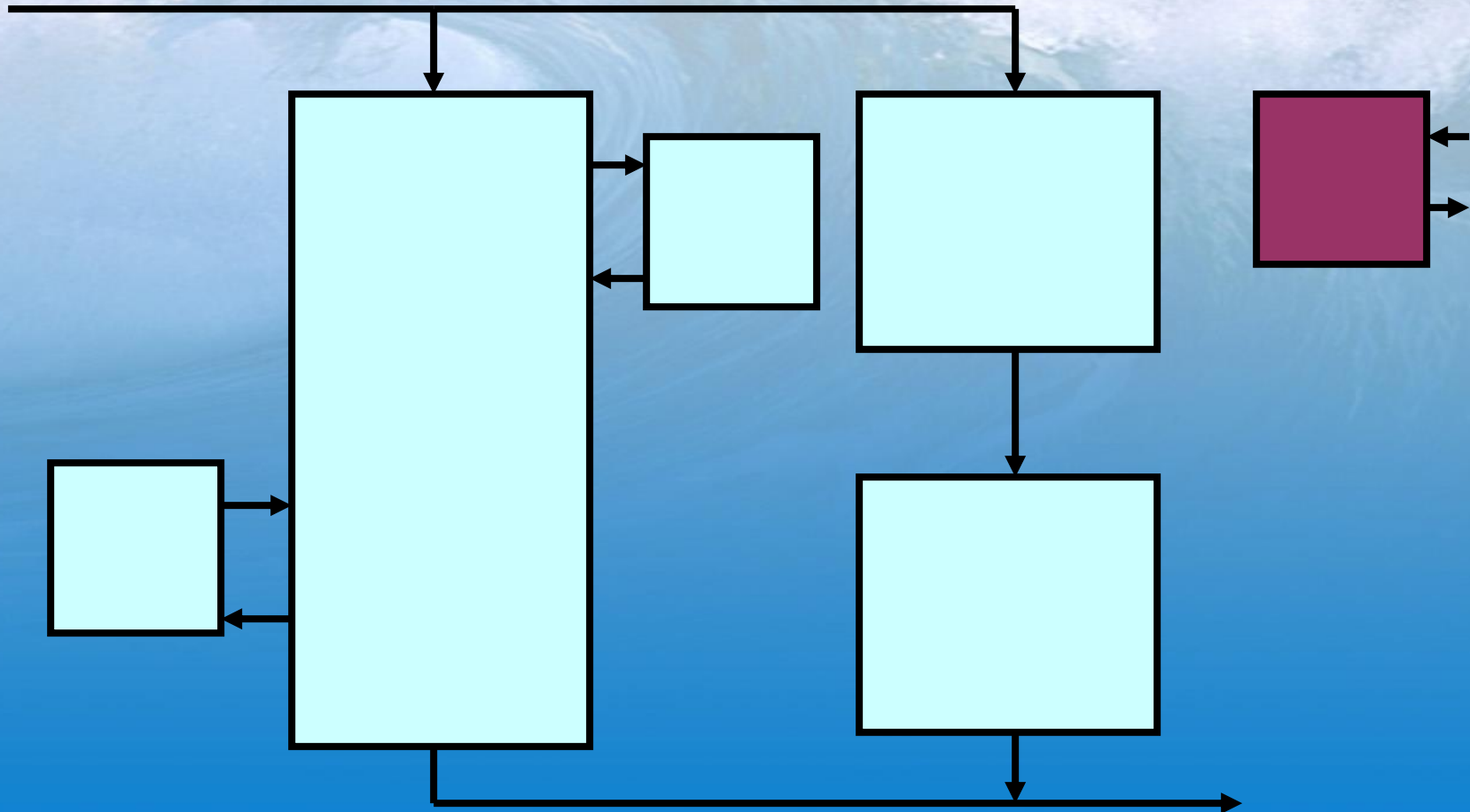
Early Software - Single Stream Programs



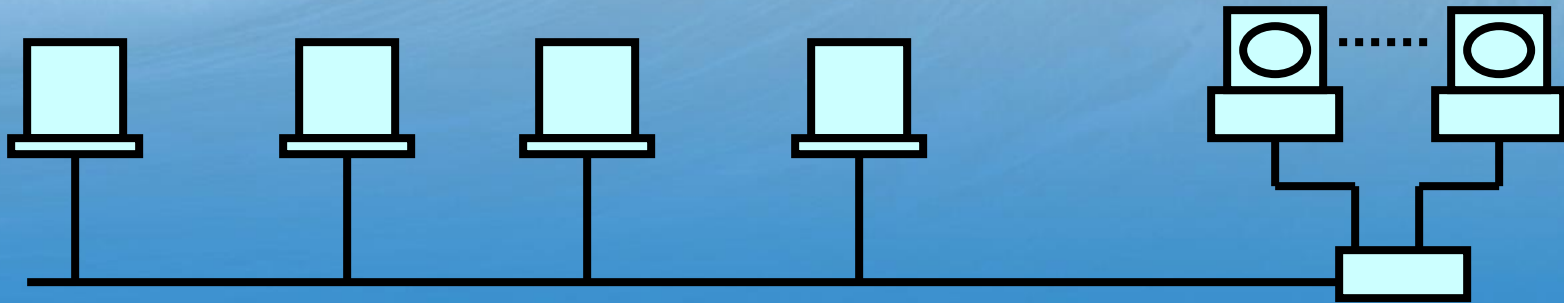
Subroutines



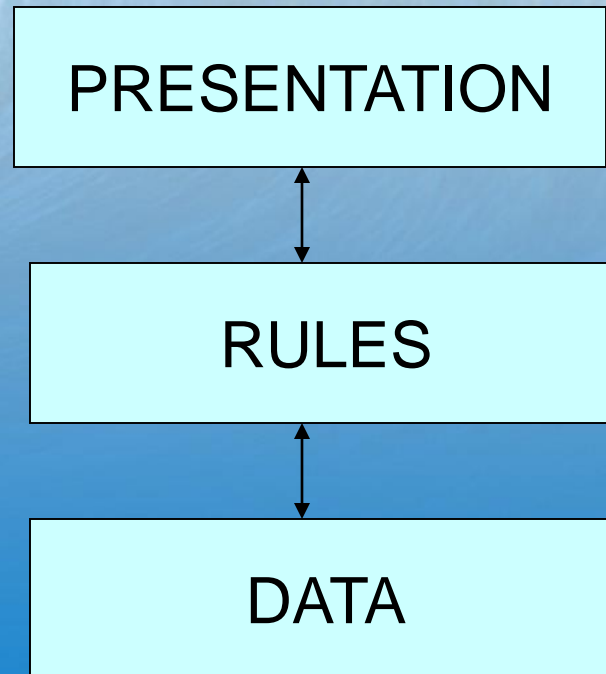
Multitasking/Multiuser (PI2)



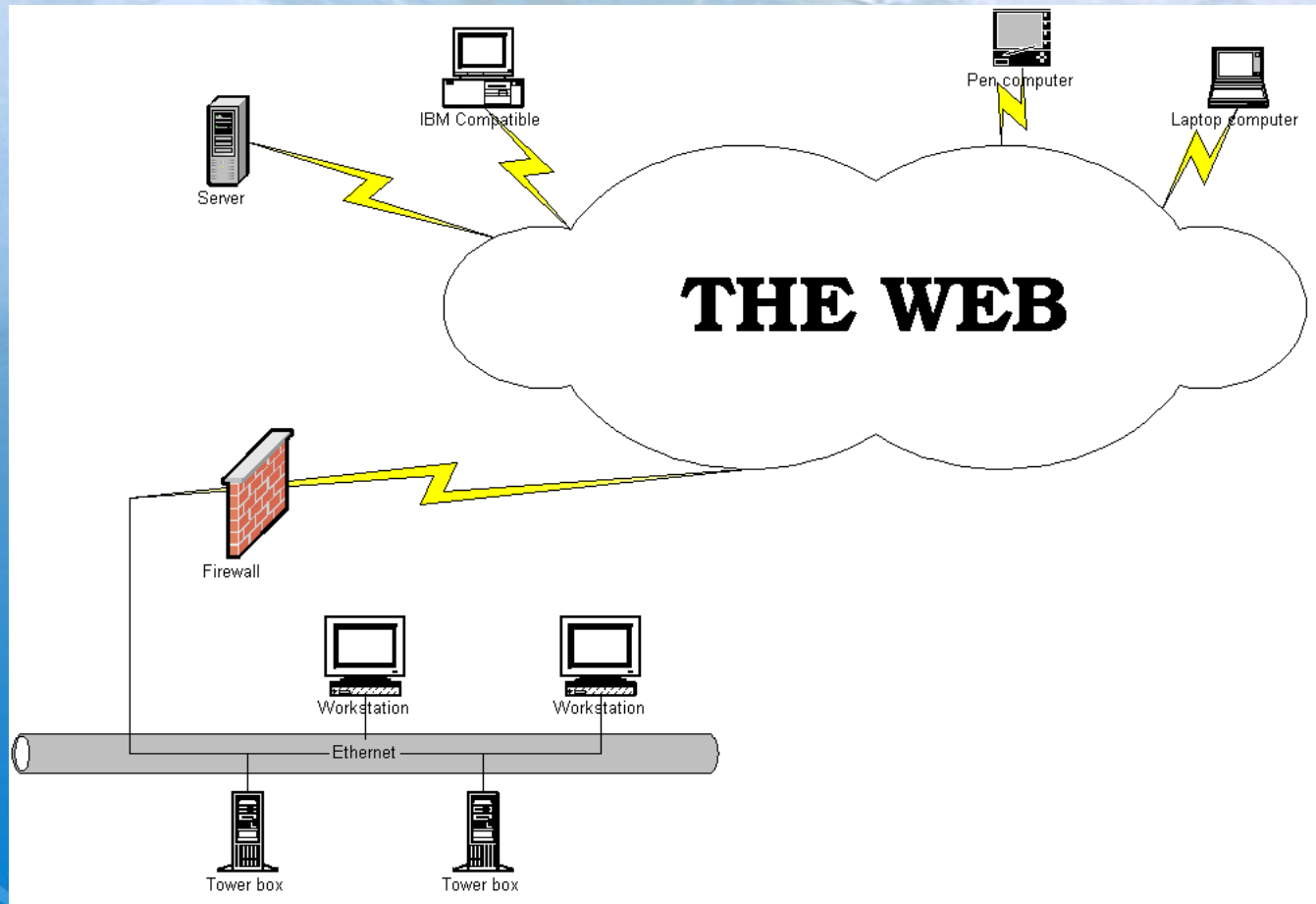
Networks (X-Windows, C/S)



N-Tier (SAP R/3, Prof Donovan)



The Web



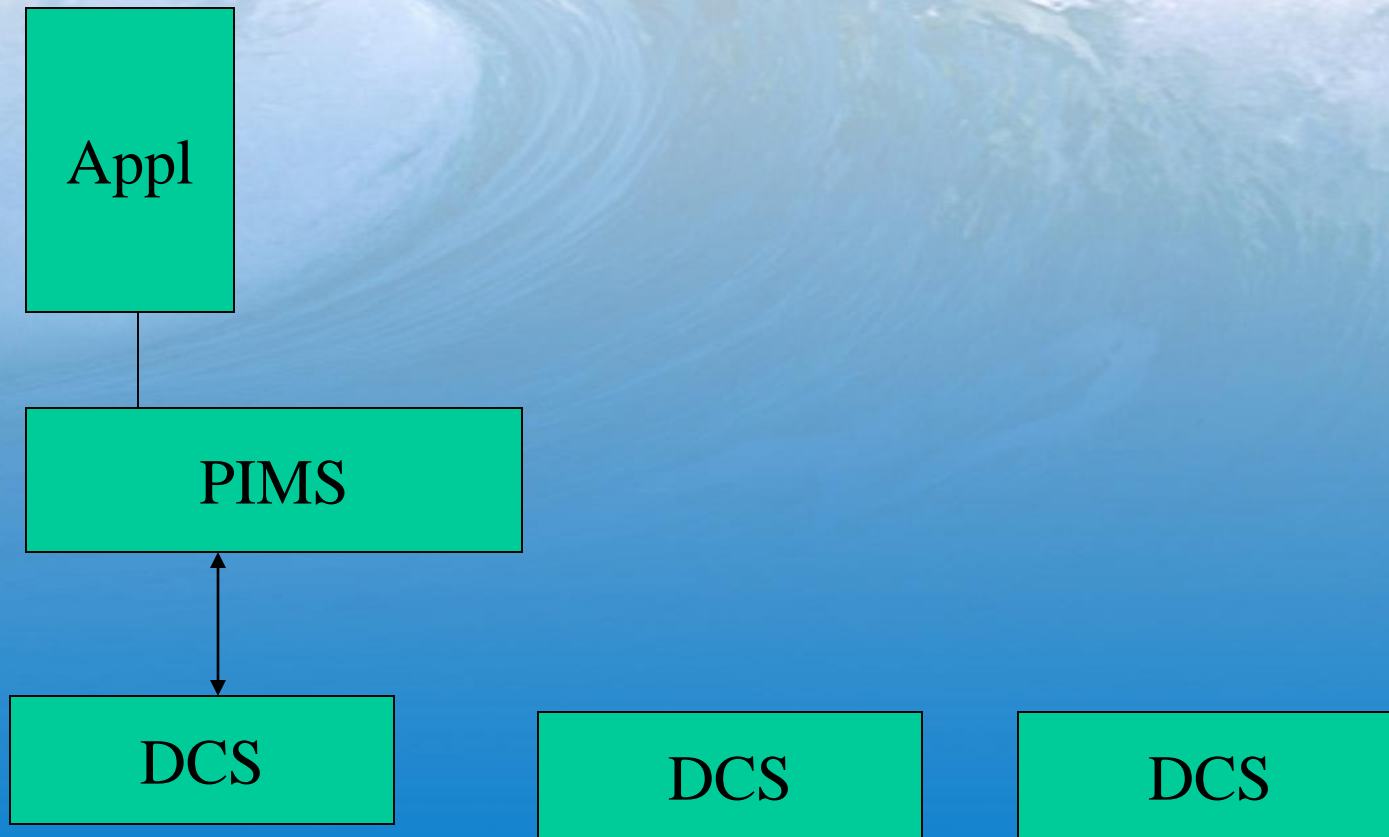
How to Cope – Build an Infrastructure

- Why Do This
- Engineering => Managing Risk to Implement Technology
- Infrastructure => Safety Factor – Allows Modification of Design
- 95% Software Function Delivered after Release
- So What Makes Something an Infrastructure

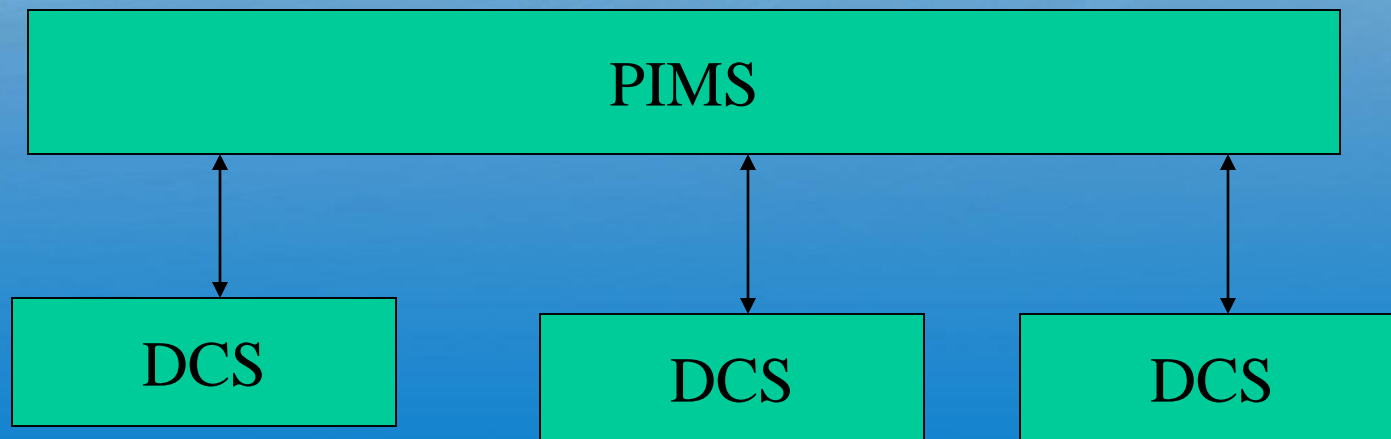
Infrastructure vs Project

- Project – Specified by RFQ
 - Obsolete before installed
 - Only time current when RFQ written
 - Vertical Applications
- Infrastructure
 - Horizontal

Application Project



Infrastructure



Solution – Engineer for Safety

- Engineering – Management of risk to allow progress
- Psychological Textbook Explanation “You can not see what your mind has not experienced before, and you will not see that which calls forth unpleasant emotions.”
- Consider Some “Unpredictable Events”

How Can This Happen

- Sizing Before/After Project
- Turbine – range 4 pts to 30,000
- Paper Machine – range 100 pts to 25,000
- LIMS – Every test x sample points – 8,000 tags
- GUI – Range 4 – 500 simultaneous users

How Can This Happen?

- Equity Changes
 - Company “Standardizes”
 - Plants Bought and Sold
 - Parts of Plants Sold
 - Flows Become Custody Transfers
 - Internal Systems Disappear
 - Conflict with Other “Standards”

How Can This Happen

- System Changes
 - Companies “Standardize”
 - New Systems Go Lowest Bidder
 - Units Come with Systems
 - Vendors Disappear
 - Same Vendor, but New, Incompatible System
 - Systems Change Scope (e.g. DCS adds PLC logic)

How Can This Happen

- Regulatory Changes
 - Data Treatment Specified by Law
 - EPA
 - OSHA
 - FDA
 - State Option
 - Different Data Required
 - Required Management of Change
 - Required 21 CFR Part 11

How Can This Happen

- Projects Build on Each Other
 - Start as Unit
 - Expand to Plant
 - Expand to Corporate
 - Expand to JV
 - Expand to eBusiness

How Can This Happen

- Adding Applications
 - Applications Turn Clients to Servers (e.g. Napster)
 - Neural Nets
 - PCS
 - SPC
 - APC
 - Can Have specific demands (e.g. fidelity, spacing, no bad data, . . .)

How Can This Happen

- Adding Events
 - Batch Monitor
 - Custody TX
 - Alarms
 - Event Logs
 - Operator Changes

Real World Example

- Codelco
- All Sites Agreed
- Network, MS Desktop, PI
- Many Projects/Month/Site
- <http://.....>

What To Look For

- Tools for Web Display (SVG, PDA Support, ICE, ActiveView)
- Tools for Application Development (AF, SDK, ICE, ModuleDB, ACE)
- Integration w/Legacy Environment (OLE DB Provider, COM Connector, I/F)
- Maintenance Tools (SMT, APS, I/F, Network Monitor)
- Upgrades to PI Tools (DataLink, SQC, Batch Templates, Audit Trail)
- . . And more

Value On Top of PI

- RLink
- ProTRAQ
- Batch Templates
- 21 CFR Part 11 Reporting
- Tracker Models
- Network Monitoring
- Batch Monitoring
- Manual Logger

New Agreements

- Base Historian
 - Just Historian
 - Faster, Smaller Footprint
 - Emerson Process Management to Discuss
- ICE Implementation
 - IE/Kesler Engineering Web Views

Characteristics of a PI Infrastructure

- Open Networked Access to All Data and Structures Exposed to Network (API, SDK, ModuleDB, UNIINT)
- Computational Tools (PE, ACE)
- Protection of Investment (SVG, Upgrades)
- Maintenance Tools (SMT, APS, Perf Counters, Net Flow, IS Monitor)
- BUT – Path to the Future (VS.NET)

Summary

- Software Projects – Oxymoron
- 95% After Release of v 1.0
- S/W Life – 20 yrs+
- Plant Wide – Commitment not a Project