

2002
OSISOFT USERS CONFERENCE



**EXPANDING
THE POWER OF PI**

MONTEREY CALIFORNIA



OSIsoft[™]

ProTRAQ Web Services for Vendor Managed Inventory

OSI Users Conference 2002

Overview

- VMI as a Business Decision
- Business over the internet and MS .Net
- ProTRAQ as OSI's Product Offering for VMI

Vendor Managed Inventory

- Business Decision
- Benefits for Vendor vs Consumer
- Nature of VMI is multi company
- Security
- MS .Net
- ProTRAQ

Nature of VMI

- Multi company Application
- Collaboration of Data
- Real time data to make decisions
- Automated transfer of Data (EDI)
- Security

Single Vendor/multiple Users

- Large companies
- Corporate standards

Single User/Multiple vendors

- More distributed
- Added value to service

ASP model

- Independent third party to collect and transfer data
- Holds ProTRAQ as a hosted application
- Negotiates agreements between companies
- Industrial Evolution is OSI Partner offering VMI and ProTRAQ

VMI for Consumer

- Illusion of VMI:
The only benefit to the consumer is Reduced Cash Flow
- Other benefits include:
Compare Vendors, easy reporting, familiar data presentation.
Summary reports via email.
Make it easy for vendors to provide consignment by offering a uniformed tracking tool.

VMI for Vendors

- Determine new low levels without risking production interruptions
- Optimize safety stock levels
- Optimize reorder cycles
- Lower total bulk inventory

The Bottom Line

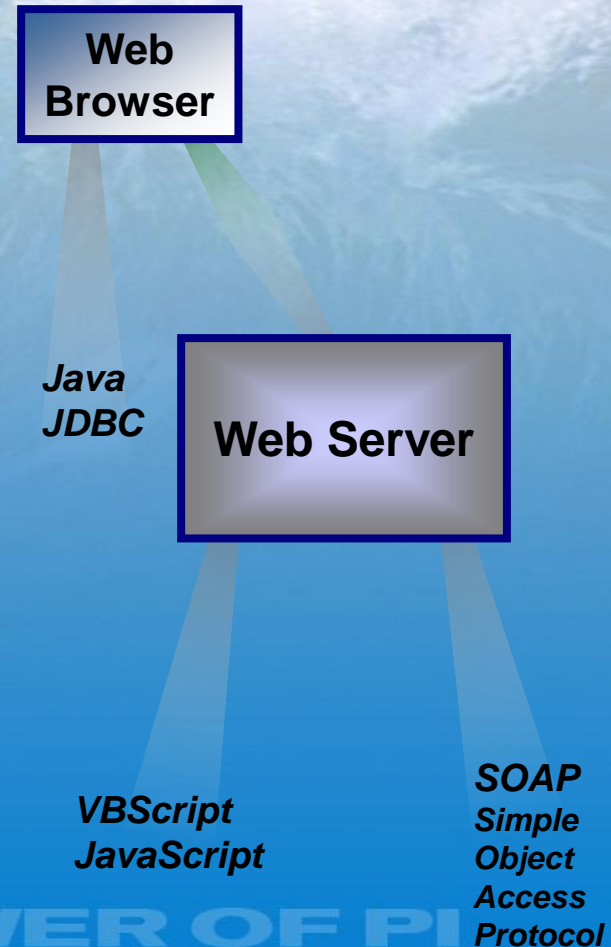
- Bottom Line for User:
 - NOT TIED TO ONE COMPUTER
 - Move to any computer to look at your data to help make decisions Flexibility
- Bottom line for Technology:
 - Do less work in the browser Flexibility

MS .Net, ICE, and Application Framework

- Web Services
 - Facilitate data transfer over the internet
 - Enforce database security through firewalls
- Applications sharing framework
 - Define a tank (or vessel) once
 - Templates

Data Retrieval

- Web servers
 - Process data requests
 - Connect to Data Sources
 - Query the Data Source
 - Return Results to the Browser
- Request Connections
 - VBScript / JavaScript
 - Java (can bypass server)
 - SOAP



Types of Connections

Standard Database Connections

- Open Database Connectivity (ODBC)
- Java Database Connectivity (JDBC)
- Database Object Linking and Embedding (OLE DB)
- XML

Connection Methods

- – VBScript / JavaScript
- – Java / JavaScript
- – VBScript
- – Visual Basic
- – Web Services

Note: VBScript, JavaScript, and Java applications can use XML, but the actual data gathering doesn't lower overhead or costs.

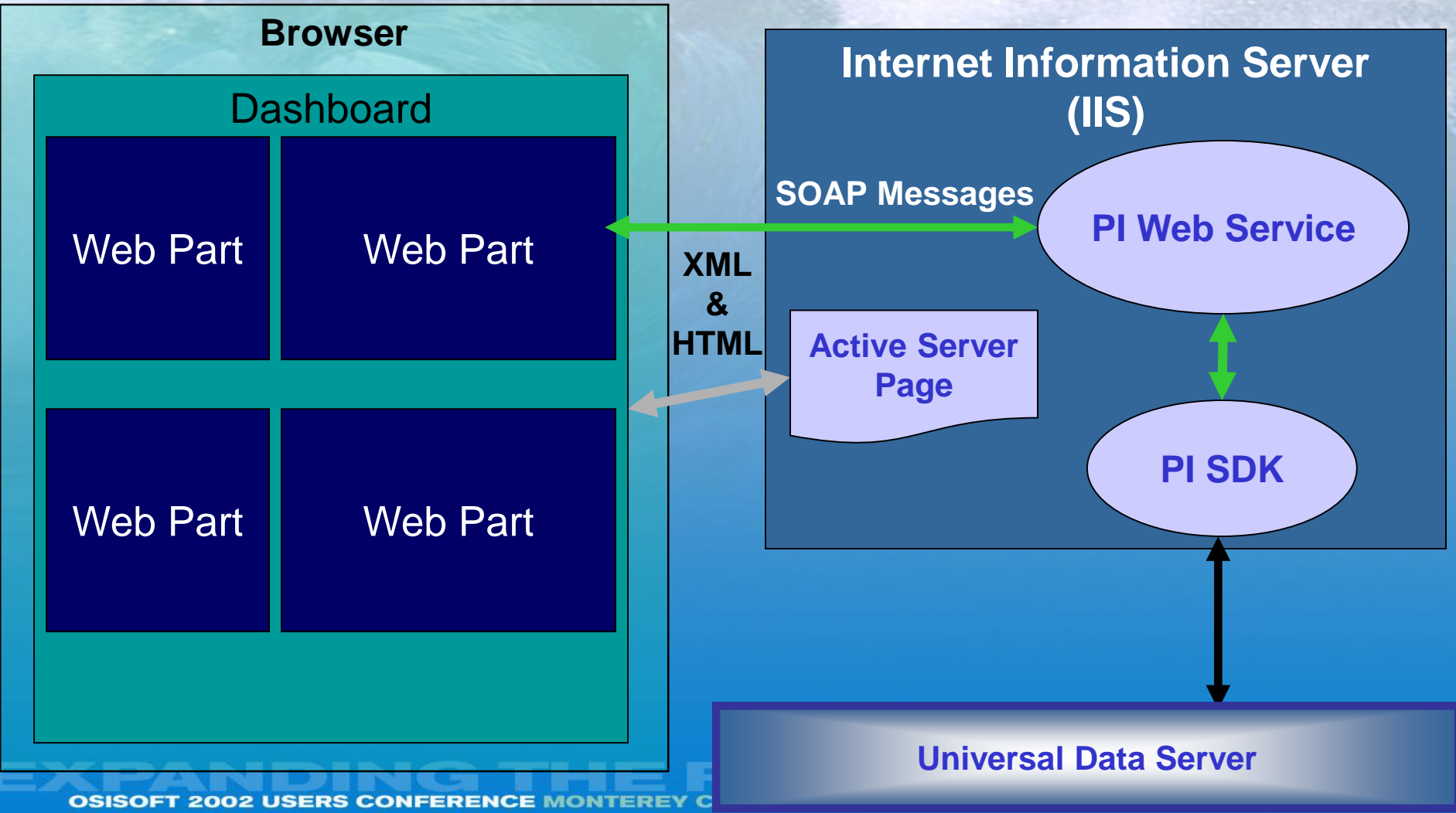
Web Services are the Future

- Web Services are
 - Modular programs that help perform complex tasks
 - Located and invoked over the Web
- Simple Object Access Protocol (SOAP)
 - How to connect to a Web Service
 - A platform neutral Remote Procedure Call (RPC)
 - Like an XML version of COM and DCOM

OSIsoft Thin Client

- The Interactive Configurable Environment (PI ICE)
 - Product includes developers toolkit
- Uses W3C Standard technology
- Extends your Decision Infrastructure
- Parts interact with one another
- Leverages your investment
 - Re-use PI ProcessBook Displays
 - Low overhead and training costs
 - Maintainable

ICE Dataflow



More Internet Standards...

- Scalable Vector Graphics (SVG)
 - New standard for creating vector graphics on the web
 - Look for SVG in AutoCAD, ProcessBook, or Visio
 - Allows scripting, events, and more to be handled on the image
 - Placing in ICE is as simple as “Save As SVG” in PI ProcessBook!
- ProcessBook SVG displays
 - Use Web Services
 - Preserve most elements (except ActiveX Controls and VBA code)
 - Are dynamic

More Infrastructure...

- PI ICE uses Windows Authentication
- PI ICE is user configurable
 - Each user can trend different data
 - Each user can choose
 - Layout
 - Color scheme
 - Which process graphics they would like to see
 - Or not...
 - All parts of ICE can be restricted based on user login rights

Application Framework

- Applications share framework on plant data
- Define tank once, Sigmafine and ProTRAQ share model.
- Model is exposed to other applications as well.
- ProTRAQ is a plug in to AF

Why the Application Framework

- The Application Framework provides a structured environment for application development:
 - Provides support for reusable applications
 - Supports model structures
 - Provides the development for applications that are easily maintainable
 - Integrates with ProcessBook

Applying the Application Framework

- Steps in developing a Plug-in
 - Define the model
 - Define the element templates
 - Define the attributes for the type of element (level and volume for a tank)
 - Define categories for grouping and querying capability
 - Define the elements
 - Define the data references (PI tag for volume)
 - Define the analysis plug-in

Defining Element Templates

- From the process overview the element templates are defined and created based on the vessel type
 - The element templates are used to define the equipment
 - Vertical conical bottom tank, vertical flat bottom, horizontal with flat ends, horizontal with 2 end caps, rectangular
 - Define template for new vessel
 - Strapping tables
 - The element templates include attributes
 - PI input tags
 - PI output tags
 - Process limit values
 - Other data sources
 - Supports categories
 - Adds structure and defines grouping

Analysis Plug-In

- The code that executes the logic or rules and writes the results back to PI that can be viewed through the client applications
- ProTRAQ VMI Application monitors the level inputs from each tank and calculates volume
- From Volume
 - usage, time until reorder or critical volume, etc

ProTRAQ then and now

- Acquired with QCS
- Based on PI2 technology
- 10 years in business
- Migrate to this generation with new releases

Aliased Tags

PI Module Database Editor - Microsoft Internet Explorer

File Edit View Favorites Tools Help

← Back → Search Favorites Media

Address C:\Program Files\pipc\smt\MDBEditor\MDBEditor.html

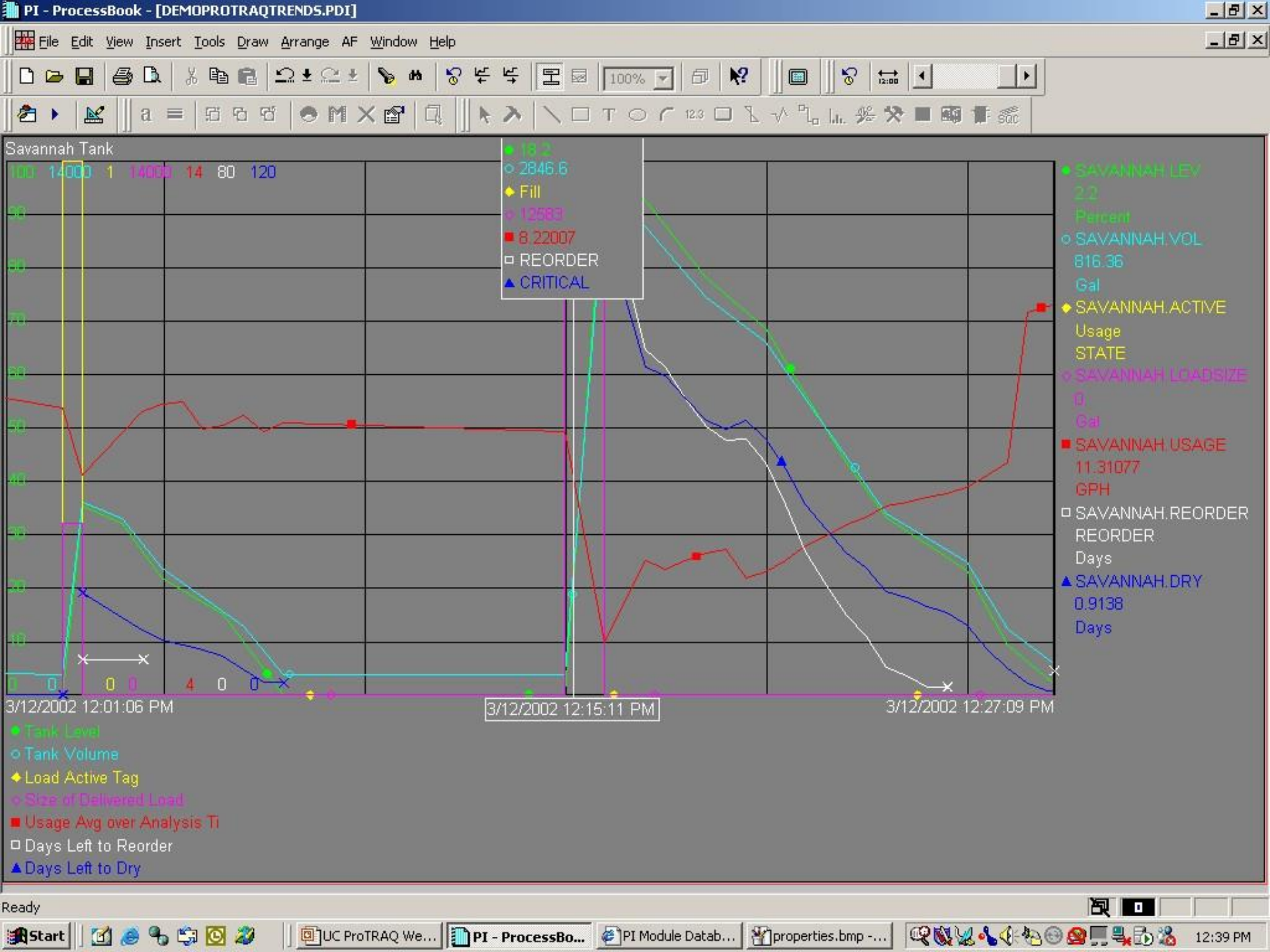
Savannah Tank

Folder Items

- My Module Databases
 - localhost
 - PI BatchDB
 - PI ModuleDB
 - %OSI
 - Tanks
 - Cleveland Tank
 - Johnson City Tank
 - San Leandro Tank
 - Savannah Tank
 - Seattle Tank
- Register PI Servers

Sub-Modules PI Aliases PI Properties

PIAlias Name	Tag Name	Server	Snapshot Value	Snapshot Time
Level	Savannah.LEV	localhost	0.6650169	3/12/2002 12:33:30 PM
Volume	Savannah.VOL	localhost	624.1367	3/12/2002 12:33:30 PM
LoadActive	Savannah.Active	localhost	Usage	3/12/2002 12:28:00 PM
Reorder	Savannah.Reorder	localhost	REORDER	3/12/2002 12:33:30 PM
Dry	Savannah.Dry	localhost	0.3067119	3/12/2002 12:33:30 PM
Usage	Savannah.Usage	localhost	11.45981	3/12/2002 12:33:30 PM
LoadSize	Savannah.LoadSize	localhost	0	3/12/2002 12:28:00 PM



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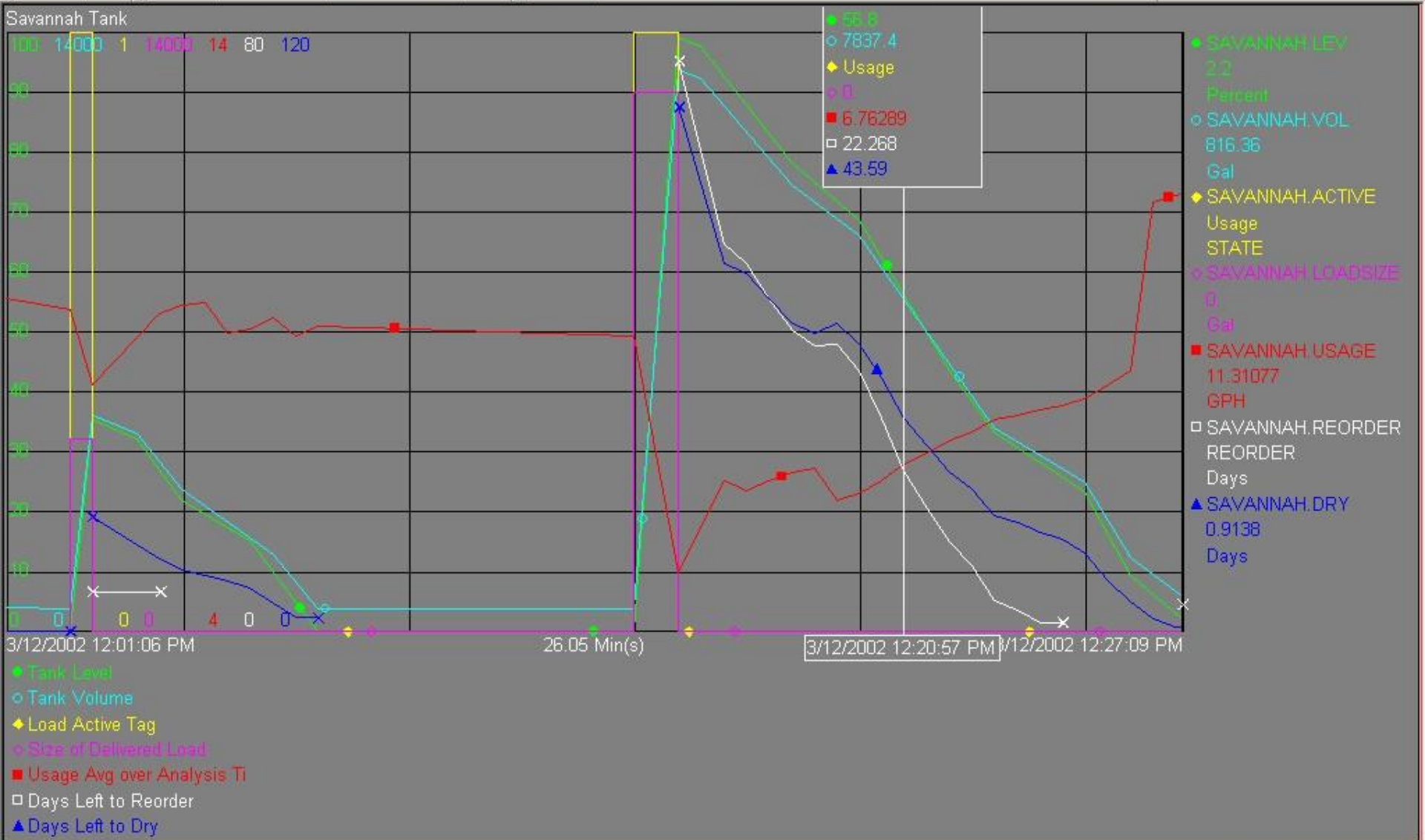
Sub-Modules | PI Aliases | PI Properties

PIProperty Name	Value	Datatype
Tank Diameter	126	Double
Tank Height	254	Double
Instrument Height	10	Double
Instrument Span	235	Double
Take Out Height	10	Double
Total Capacity	13710.48	Double
Measurable Capacity	12684.89	Double
UnMeasurable Capa...	539.78	Double
Tank Shape	Vertical Flat Bottom	String
RTU ID	3578	Double
Reorder Volume	4000	Double
Usage Analysis Period	1	Integer
Demo Rate Factor	3600	Integer

File Edit View Insert Tools Draw Arrange AF Window Help

100%

12:00



ERP Integration

- ProTRAQ is a data source for Rlink to SAP
- Vendor installed Rlink
- Consumer installed Rlink
- ASP model

SELLER

SAP
Generates Delivery Docs

RLINK for VMI

Customer	Material Movements
GetList	CreateFromData
GetDetail	Cancel
Sales Order	GetItems
CreatefromDat2	DetDetail
ChangefromData	Code 03 Goods Issue
GetList	Code 04 Transfer Posting
GetStatus	Code 06 Reversal

PI

PI-ACE
 Total actual by customer, location, product
 Total shipped by customer, location, product
 Total used by customer, location, product
 Project reorder times by customer, location, product
 Total actual by customer, product
 Total shipped by customer
 Total used by customer
 Total in transit my mean, customer, location, product
 Strapping Tables
 Temperature and Pressure Corrections

Web Front End for VMI

Status screen
Shows tanks logical and actual by customer, location, product

Sales Orders
Shows list of order and allows confirmation of arrival and reversal or change

Shipment Status
Shows status of shipments

Configuration
Tanks, Alarm Levels etc

Reconciliation
Accounting Inventory vs Actual

Status Updates
 Ships
 Truck
 Rail
 Pipeline

ProTRAQ
 Projects Inventory Requirements

Tank Inventory

SAP

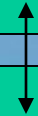


RLINK for VMI

<p>Purchase Order</p> <ul style="list-style-type: none"> CreateFromData1 Change GetList GetDetail Release GetReleaseInfo ResetRelease GetItemsForRelease GetItems 	<p>Material Movements</p> <ul style="list-style-type: none"> CreateFromData Cancel GetItems DetDetail Code 01 Receipt for PO Code 04 Transfer Posting Code 05 Other Goods Receipt Code 06 Reversal
<p>Functional Location</p> <ul style="list-style-type: none"> Tank Details 	

PI

PI-ACE



- Total actual by customer, location, product
- Total shipped by customer, location, product
- Total used by customer, location, product
- Project reorder times by customer, location, product
- Total actual by customer, product
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- Total used by customer
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Web Front End for VMI

- Status screen
Shows tanks logical and actual by customer, location, product
- Purchase Orders
Shows list of order and allows confirmation of arrival and reversal or change
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Shows status of shipments
- Configuration
Tanks, Alarm Levels etc
- Reconciliation
Accounting Inventory vs Actual



ProTRAQ
Projects Inventory Requirements

Tank Inventory

- Status Updates**
- Ships
 - Truck
 - Rail
 - Pipeline

RLINK has the following components compatible with SAP

- Customers
- Sales Orders
- Material List and Alias
- Purchase Orders
- Mapping to PI
- Movements
- Functional Location Details
- Accounting Inventories (Location in SAP needs clarification as well as where the updates would be posted)

In Conclusion

- ProTRAQ is plug-in to AF
- Data stored in PI, Lan and Wan available through Process Book and ICE
- Multi company application lends itself to ASP model application
- Look for Beta and Released with AF later this year