



Tank-to-Boardroom: Inventory Management Comes of Age!

***A web service strategy featuring
OSIsoft Technologies
&
Industrial Evolution Services***

Roland Heersink
CEO, Industrial Evolution

OSIsoft User Conference
Monterey, March 2002



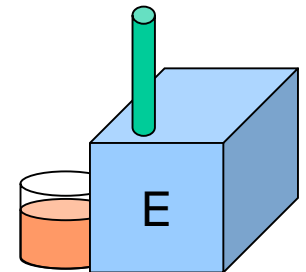
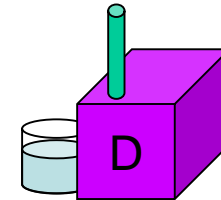
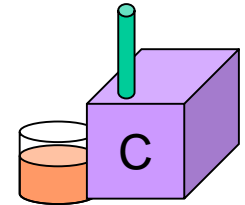
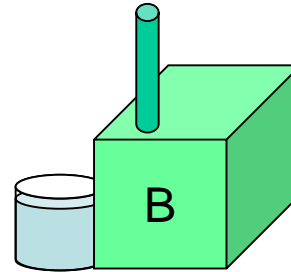
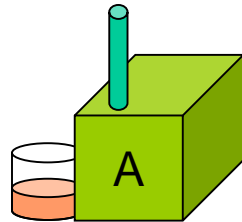


Presentation Outline

- Inventory management
 - What is it?
 - Typical solutions
- OSIsoft / Industrial Evolution approach
 - Solution components
 - How it all fits together
- BASF Mexicana implementation

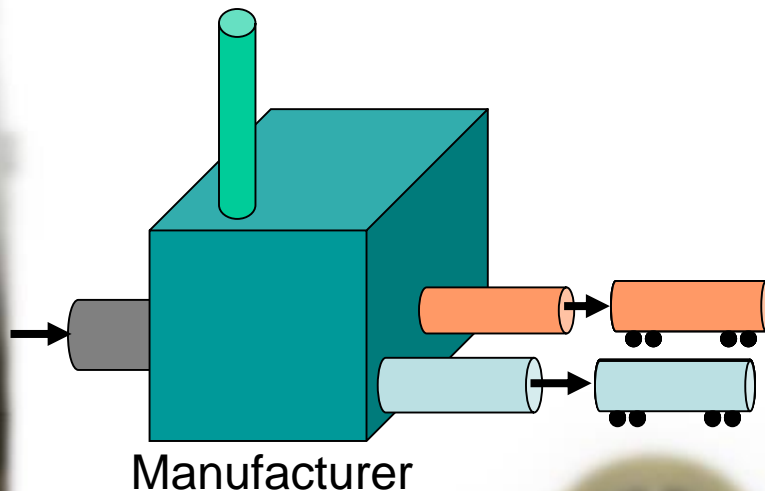


What is Inventory Management?

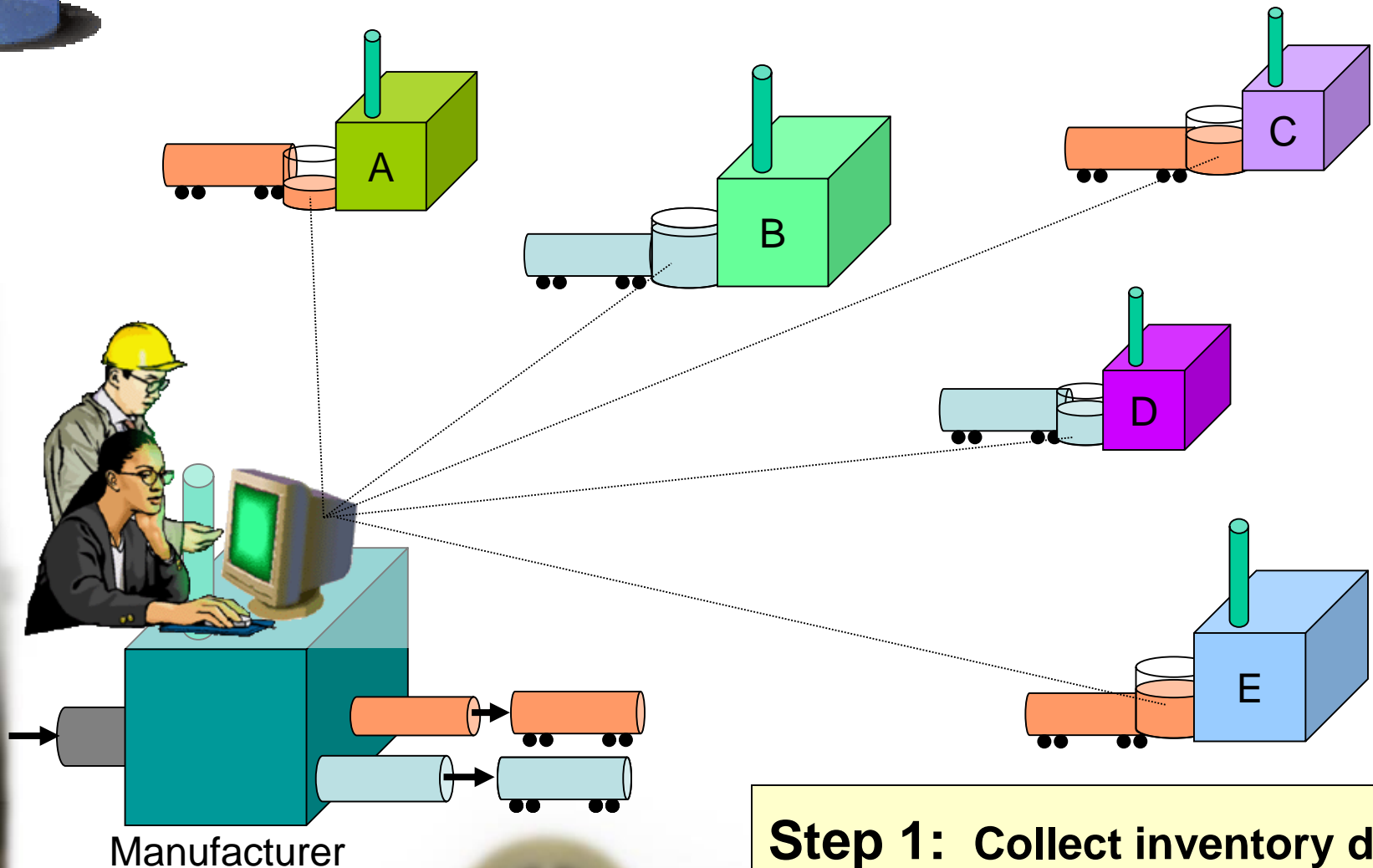


Challenge:

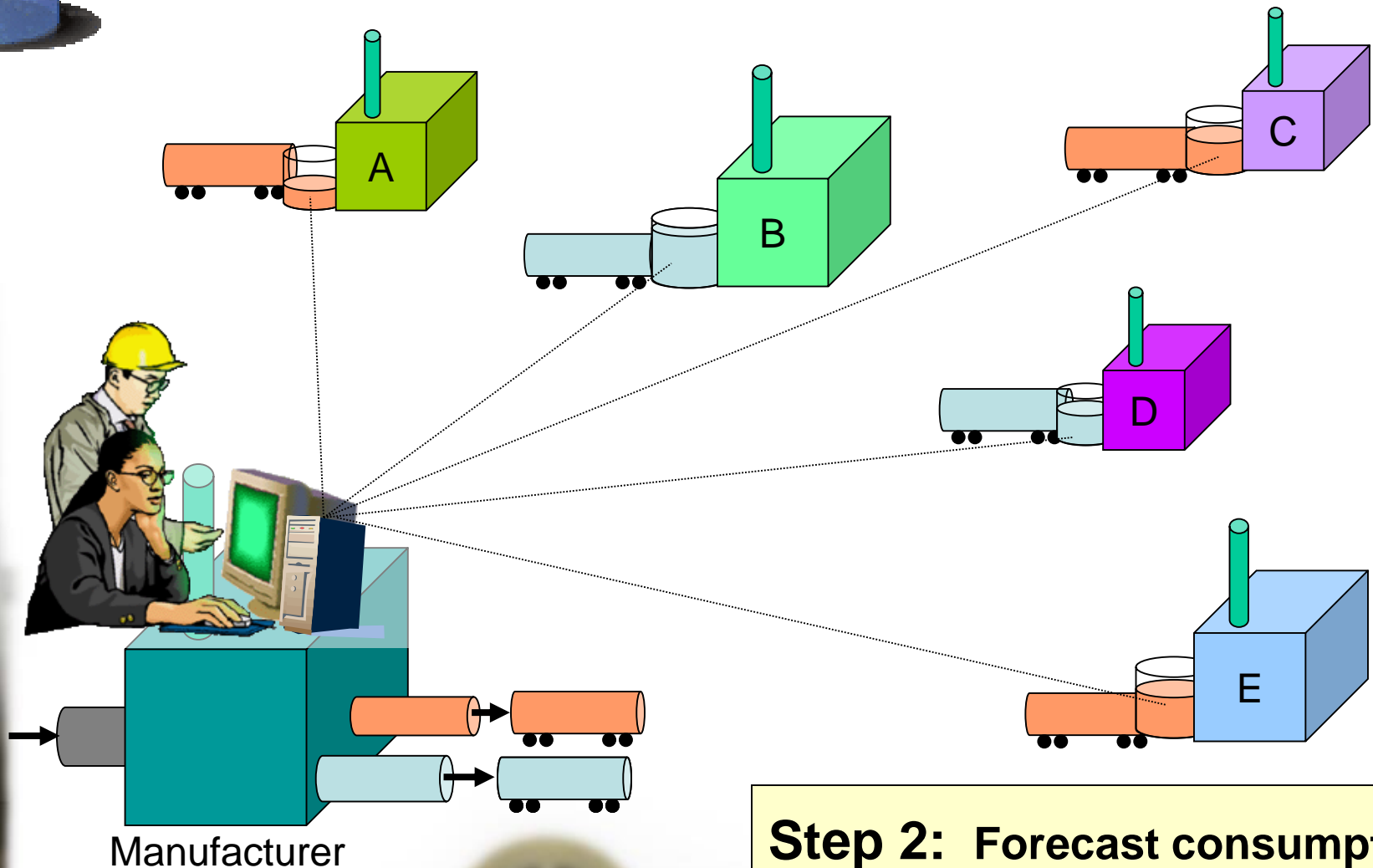
Match production & deliveries
to customer demand



What is Inventory Management?



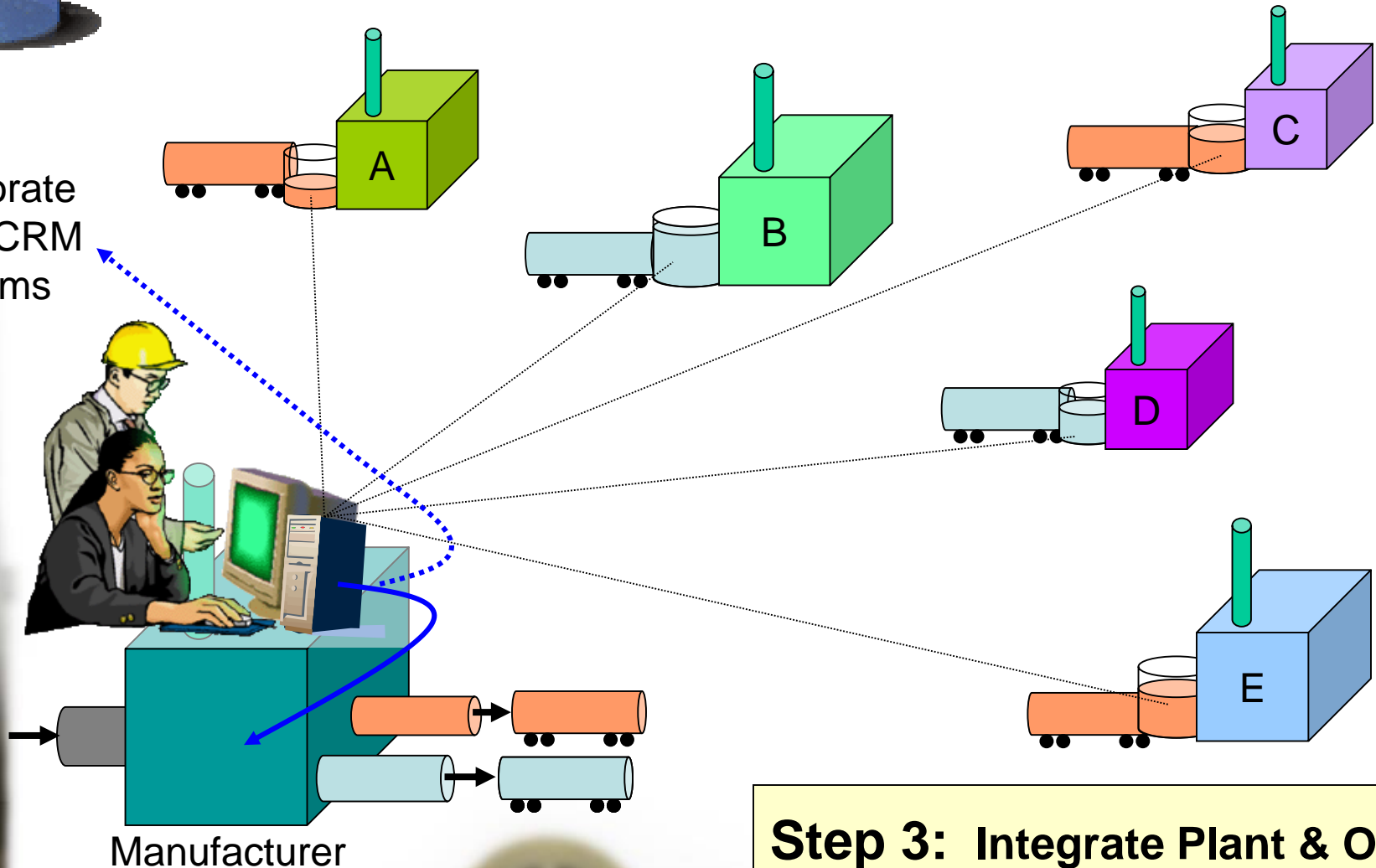
What is Inventory Management?



Step 2: Forecast consumption

What is Inventory Management?

Corporate
ERP/CRM
Systems

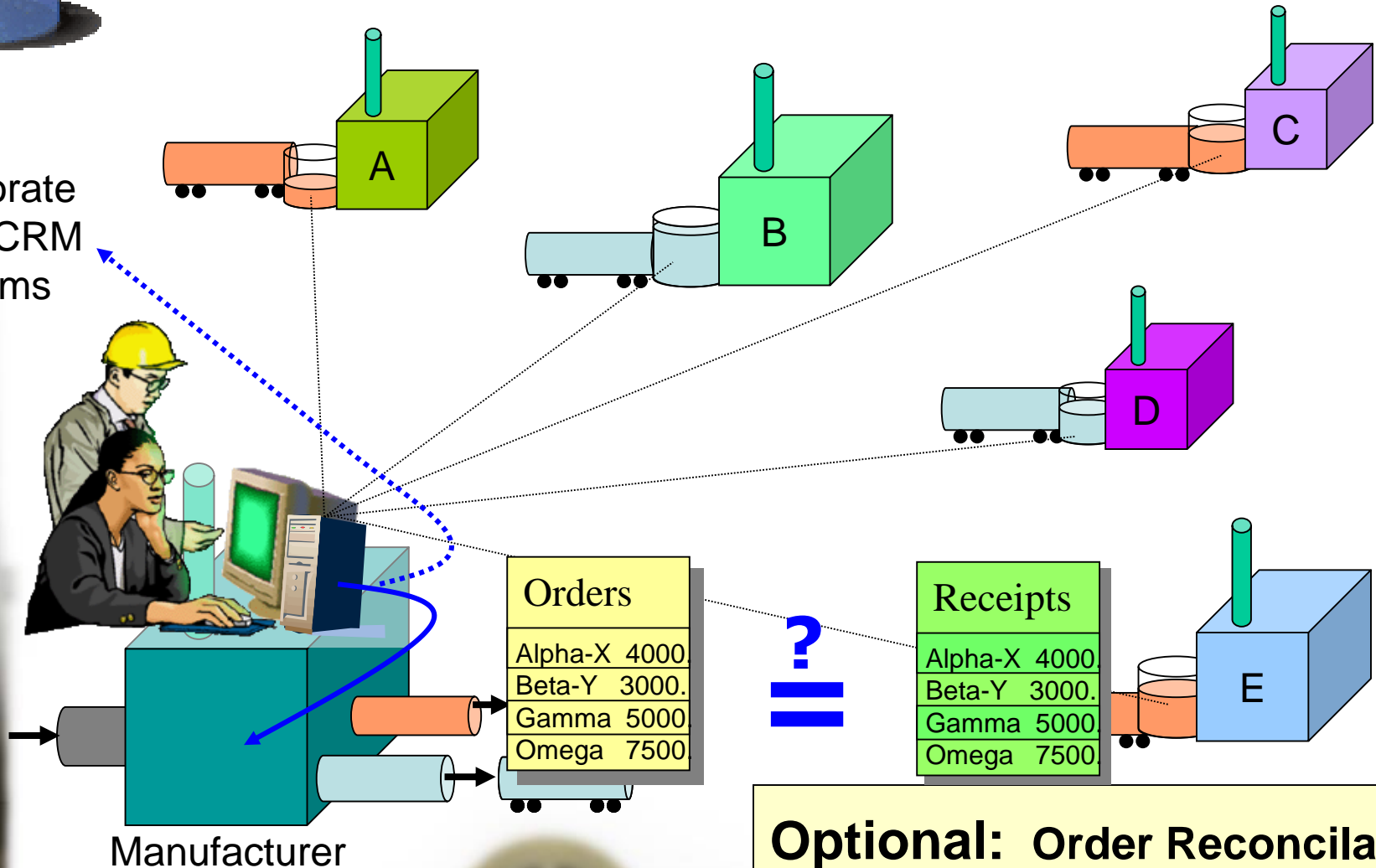


OSIsoft User Conference
Monterey, March 2002



What is Inventory Management?

Corporate
ERP/CRM
Systems



Why do Inventory Management?

For the customer:

- Reduced “excess” inventories
- Lower working capital

For the manufacturer:

- Better inventory control & planning
- Optimized plant operations

For both parties:

- Higher profits

Vendor-Managed Inventory

Corporate
ERP/CRM
Systems

Manufacturer



Solution Components

Centralize

- Collect all inventory measurements into a central location

Reconcile

- Match deliveries & receipts

Forecast

- Predict when next deliveries are required

Integrate

- Send forecast data to corporate planners
- Match plant operations with forecasts

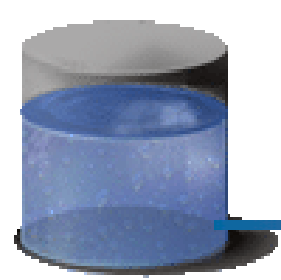


Typical Solutions

Centralize

- Data collection
 - Daily or weekly values collected
 - Electronic capture from PLC, DCS, PI or other
 - Manual entry also possible!
 - Transfer via e-mail, FTP, network connection
- Data centralization
 - Directly to planning systems (ERP)
 - Storage in inventory database





Centralize

- Data collection
 - PI-to-PI, PI-UDS or other as required
 - Real-time data collection
- Data centralization
 - All data stored in a central PI System

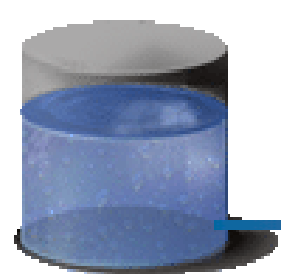


Typical Solutions

Reconcile

- None
- Manual (ugh!)
- Automatic
 - At the off-line business system level
 - At the inventory database level
 - Most often some sort of statistical regression





Our Solution



Reconcile

- ProTRAQ for receipt reconciliation
- Optional: Sigmafine



OSIsoft User Conference
Monterey, March 2002



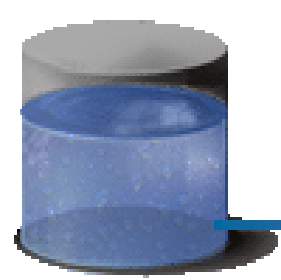


Typical Solutions

Forecast

- None
- Simple difference
 - Level minus fixed consumption rate
- Advanced difference
 - Level minus order rate
- Real-time difference
 - Level minus projected consumption





Forecast

- ProTRAQ software provides the following
 - Volume calculations
 - Receipt identification
 - Consumption rate estimation based on history
 - Time-to-Reorder; minimum delivery time
 - Time-to-Empty

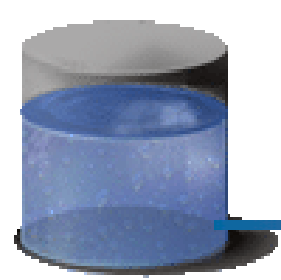


Typical Solutions

Integrate

- None
- With Plant Systems
 - Feedback of inventory forecasts to plant automation/optimization systems
 - Done in real-time
- With Business Systems
 - Data input to order & shipment database of business planning systems
 - Periodic input only; eg. weekly

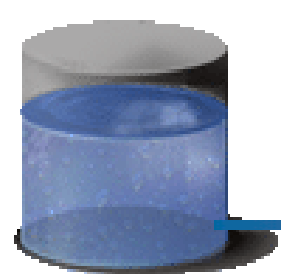




Integrate

- With Plant Systems
 - Directly to local PI System or other historian using PI-to-PI or PI-UDS
 - No direct access by any user to on-site systems!
- With Business Systems
 - Direct bi-directional communications with corporate ERP systems (like SAP or other) via RLink
 - Generate order requests
 - Receive order plans

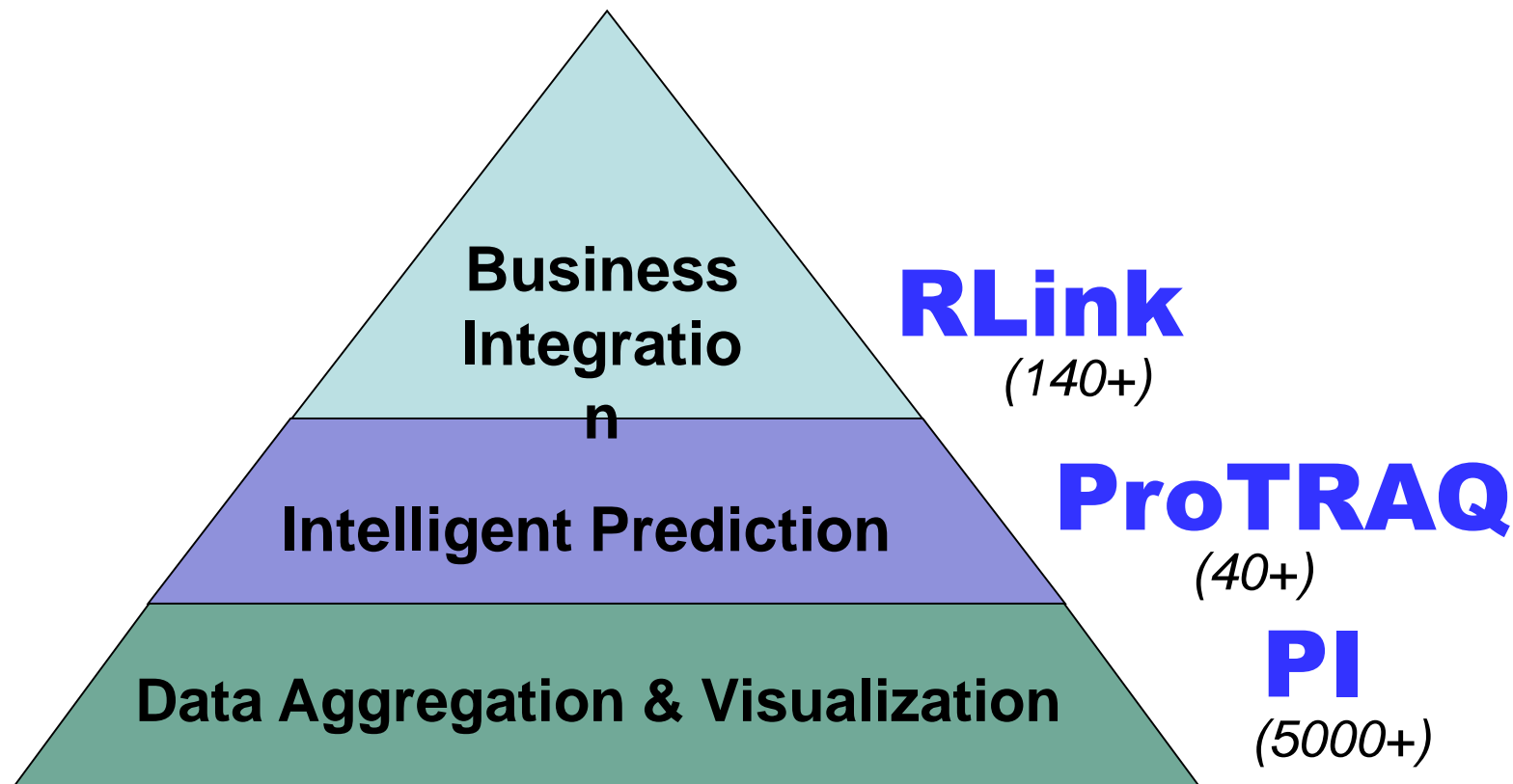




Our Solution



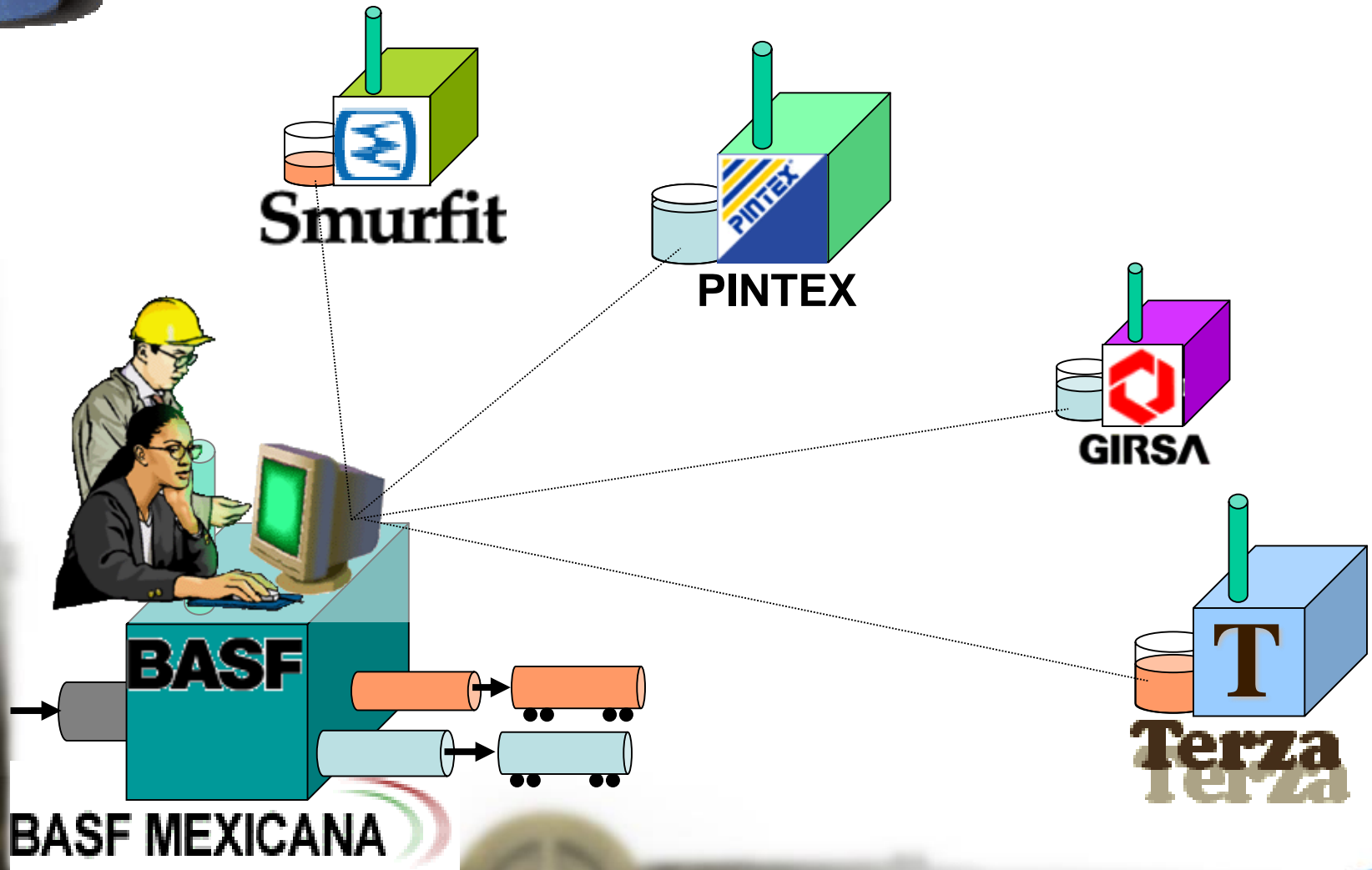
- Putting it all together, we have:



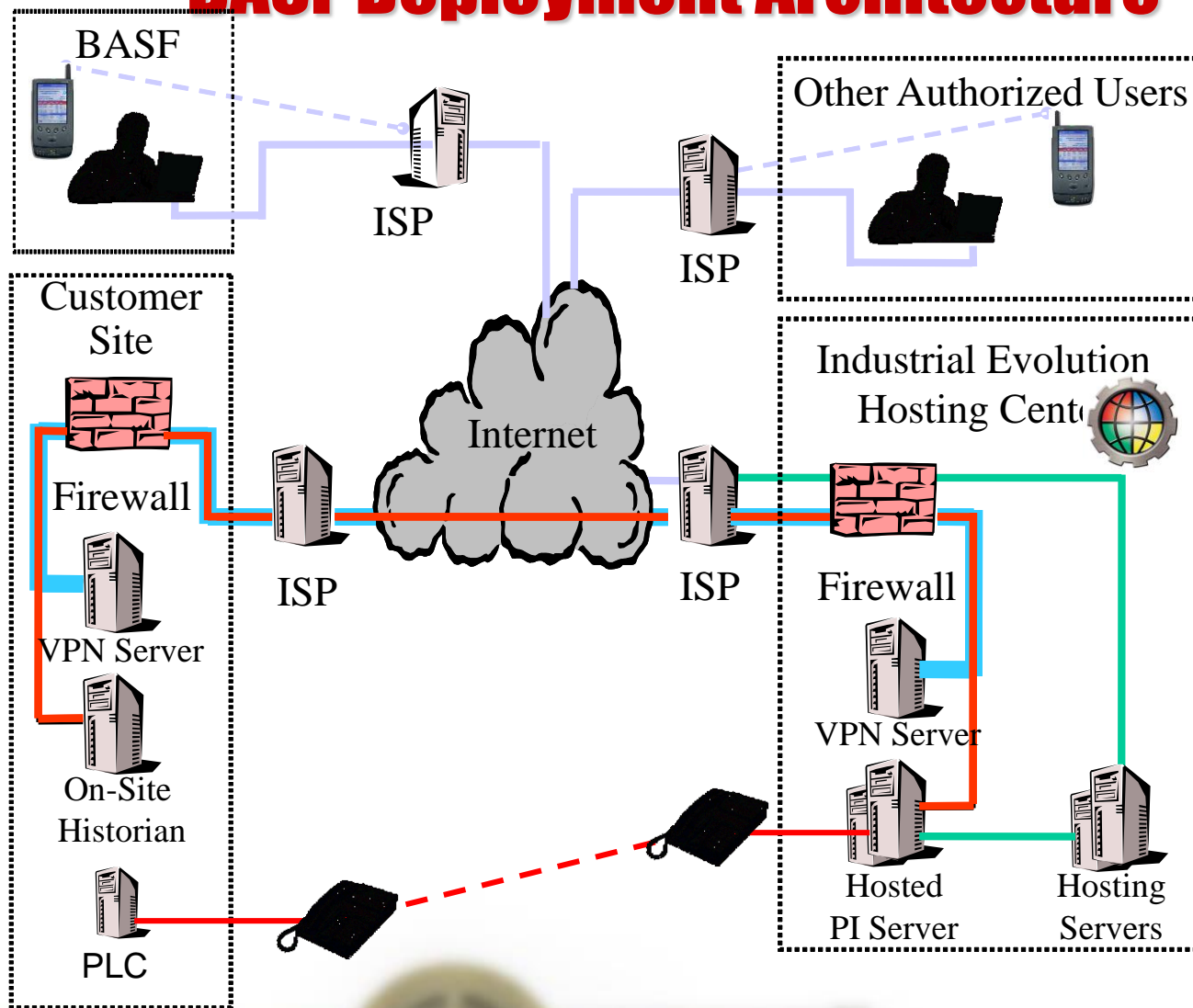
OSIsoft User Conference
Monterey, March 2002



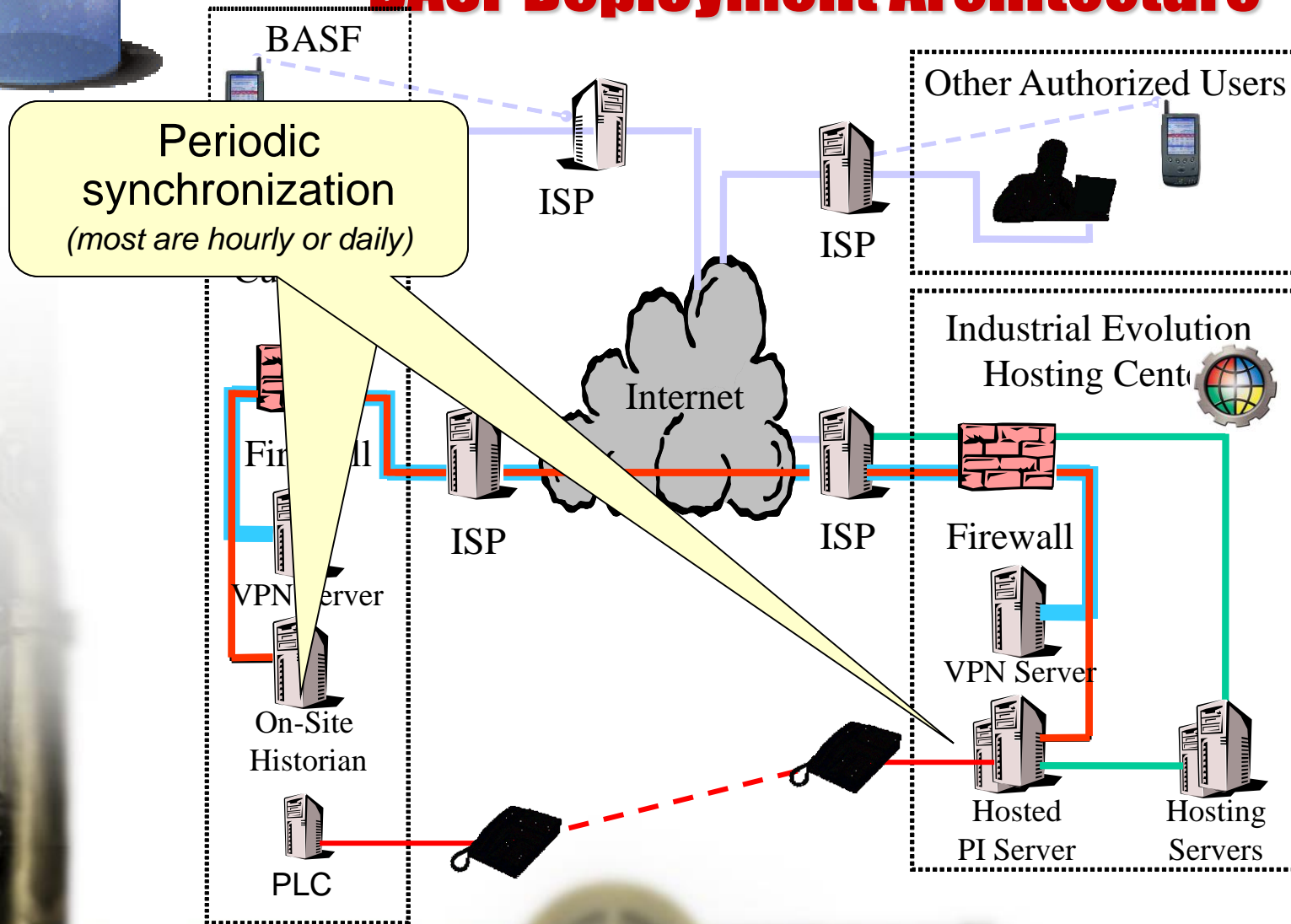
BASF Mexicana



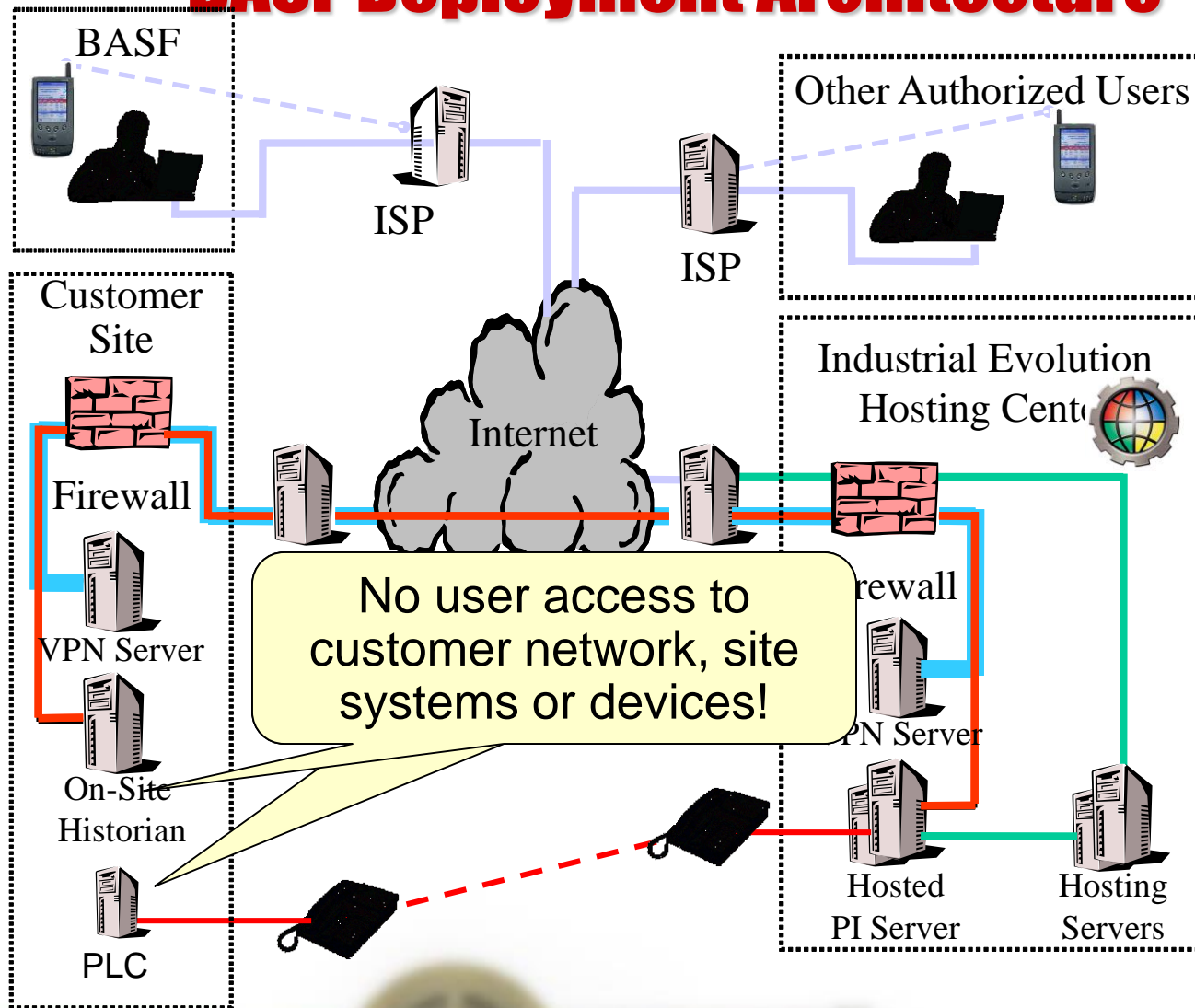
BASF Deployment Architecture



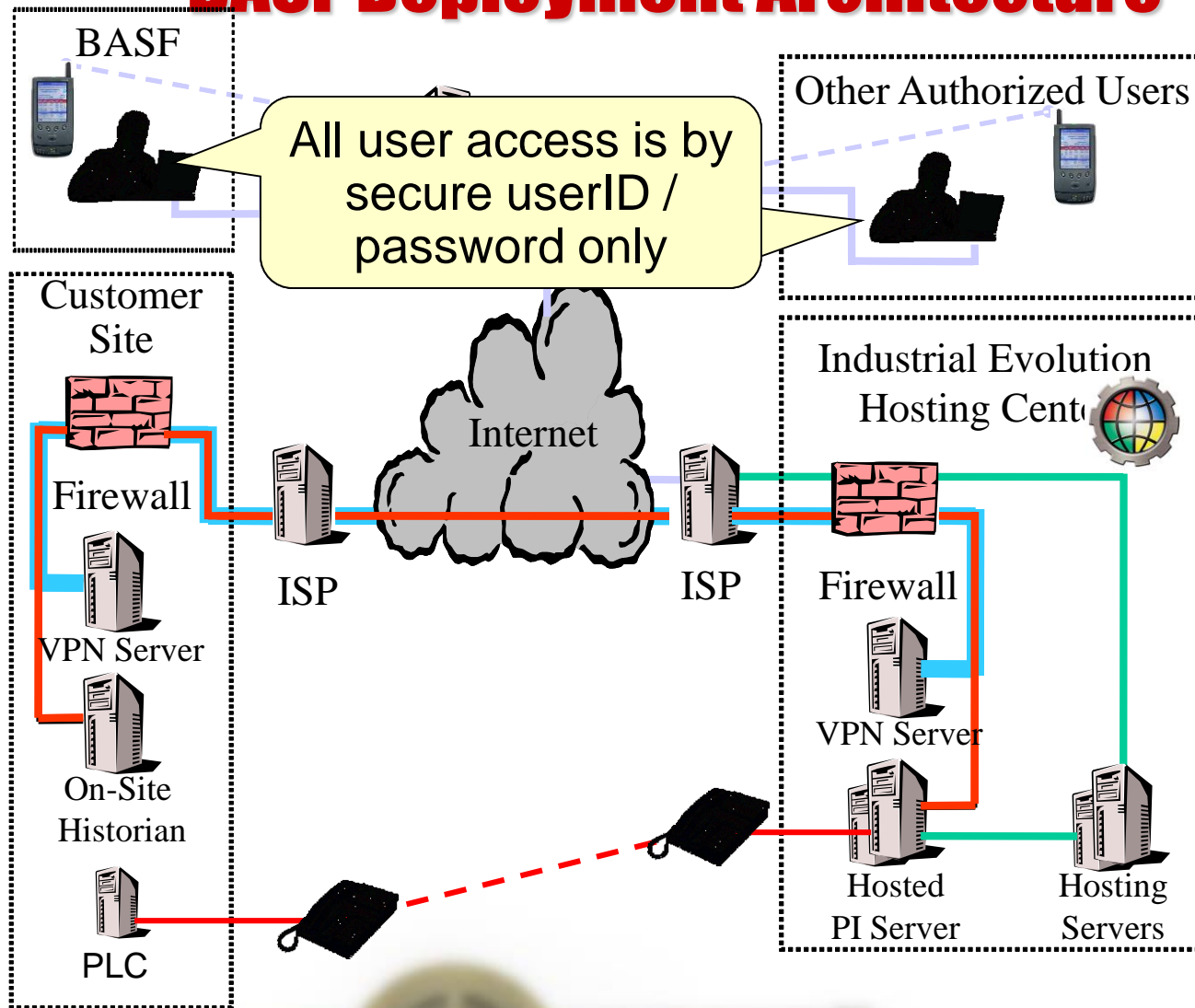
BASF Deployment Architecture



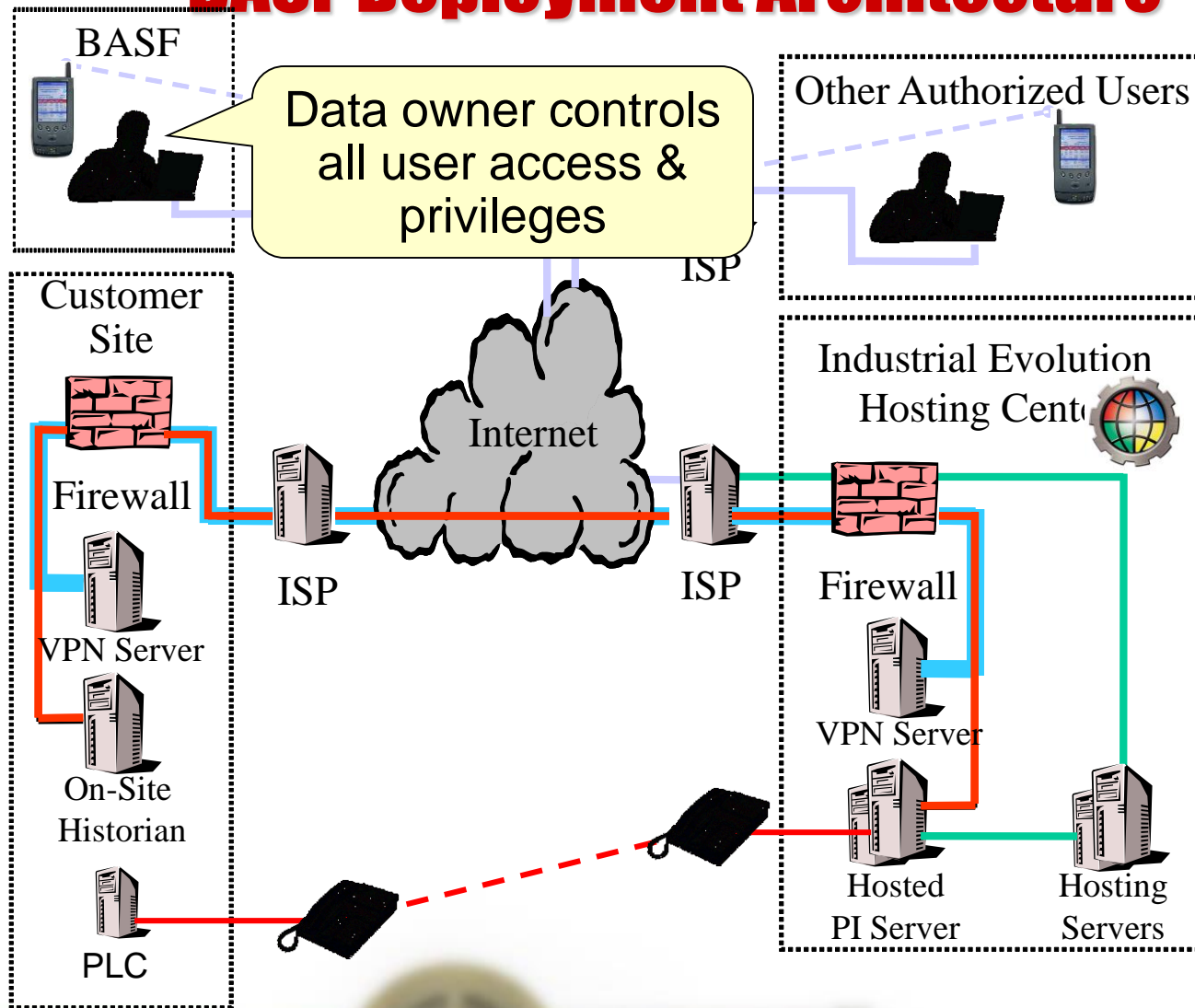
BASF Deployment Architecture



BASF Deployment Architecture



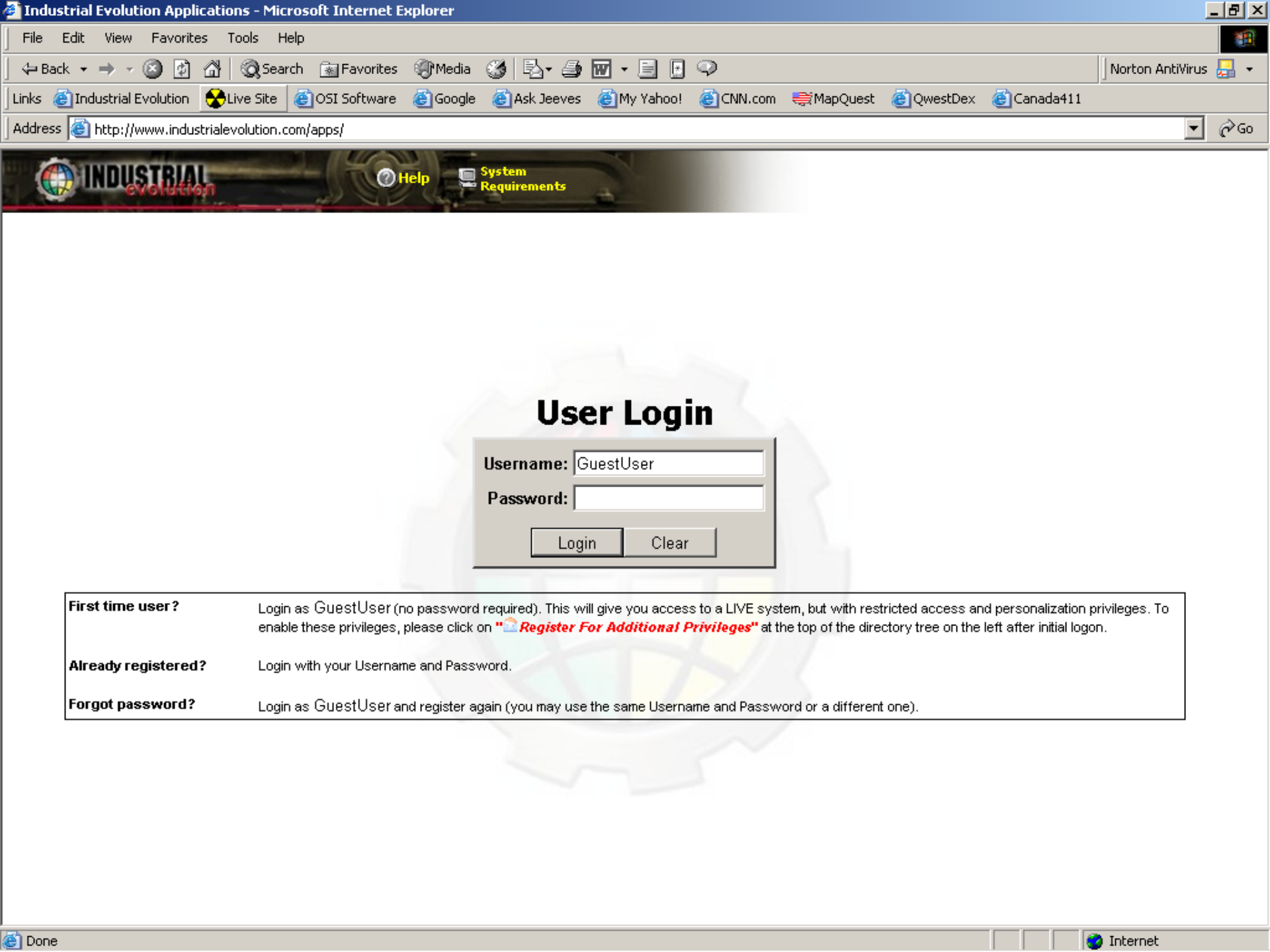
BASF Deployment Architecture





BASF Deployment

- Look at typical inventory views
 - Taken from:
www.industrialevolution.com/apps
in the “GCP Industries” folder



User Login

Username:

Password:

Login Clear

First time user?	Login as GuestUser (no password required). This will give you access to a LIVE system, but with restricted access and personalization privileges. To enable these privileges, please click on " Register For Additional Privileges " at the top of the directory tree on the left after initial login.
Already registered?	Login with your Username and Password.
Forgot password?	Login as GuestUser and register again (you may use the same Username and Password or a different one).



Help

System Requirements



- GCP Industries
 - Inventory Overview
 - By Customer
 - By Product

Inventory Overview By Customer

Select a customer from the drop-down list:



Toll-Free User Support
+1 (866) IND-EVOL



Help

System
Requirements

- GCP Industries
 - Inventory Overview
 - By Customer
 - By Product

Inventory Overview By Customer

Select a customer from the drop-down list:

— Choose a Customer —

— Choose a Customer —

All Customers

Amnesty Chemicals

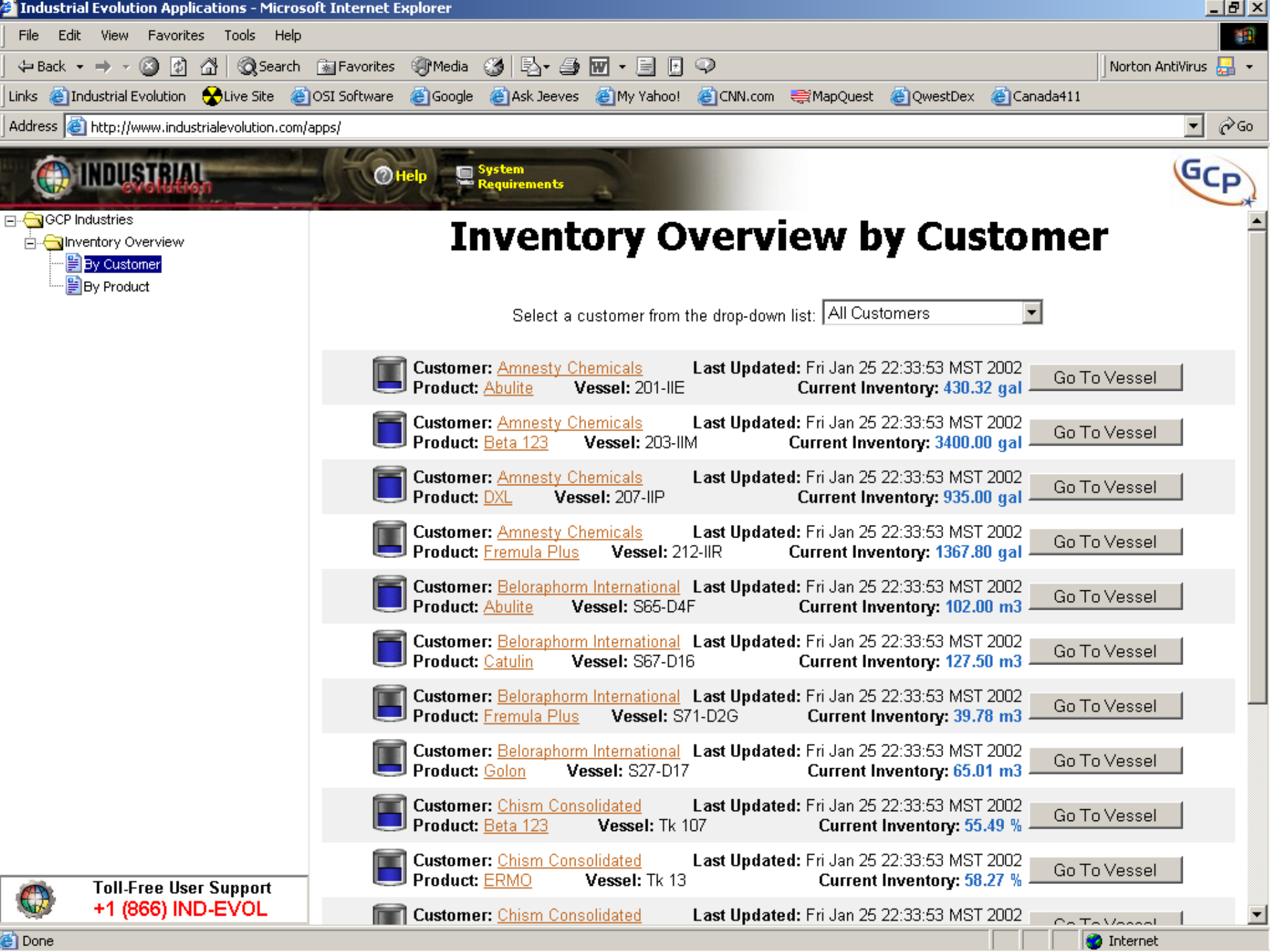
Beloraphorm International

Chism Consolidated

Delonby Inc.



Toll-Free User Support
+1 (866) IND-EVOL



Industrial Evolution Applications - Microsoft Internet Explorer



File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Media Print W Document Mail

Norton AntiVirus

Links Industrial Evolution Live Site OSI Software Google Ask Jeeves My Yahoo! CNN.com MapQuest QwestDex Canada411

Address http://www.industrialevolution.com/apps/ Go

 [Help](#) [System Requirements](#) 

GCP Industries












Inventory Overview


By Customer

By Product

Inventory Overview by Customer

Select a customer from the drop-down list:

	Customer: Amnesty Chemicals Product: Abulite	Last Updated: Fri Jan 25 22:33:53 MST 2002 Vessel: 201-IIE	Current Inventory: 430.32 gal	Go To Vessel
	Customer: Amnesty Chemicals Product: Beta 123	Last Updated: Fri Jan 25 22:33:53 MST 2002 Vessel: 203-IIM	Current Inventory: 3400.00 gal	Go To Vessel
	Customer: Amnesty Chemicals Product: DXL	Last Updated: Fri Jan 25 22:33:53 MST 2002 Vessel: 207-IIP	Current Inventory: 935.00 gal	Go To Vessel
	Customer: Amnesty Chemicals Product: Fremula Plus	Last Updated: Fri Jan 25 22:33:53 MST 2002 Vessel: 212-IIR	Current Inventory: 1367.80 gal	Go To Vessel
	Customer: Beloraphorm International Product: Abulite	Last Updated: Fri Jan 25 22:33:53 MST 2002 Vessel: S65-D4F	Current Inventory: 102.00 m3	Go To Vessel
	Customer: Beloraphorm International Product: Catulin	Last Updated: Fri Jan 25 22:33:53 MST 2002 Vessel: S67-D16	Current Inventory: 127.50 m3	Go To Vessel
	Customer: Beloraphorm International Product: Fremula Plus	Last Updated: Fri Jan 25 22:33:53 MST 2002 Vessel: S71-D2G	Current Inventory: 39.78 m3	Go To Vessel
	Customer: Beloraphorm International Product: Golon	Last Updated: Fri Jan 25 22:33:53 MST 2002 Vessel: S27-D17	Current Inventory: 65.01 m3	Go To Vessel
	Customer: Chism Consolidated Product: Beta 123	Last Updated: Fri Jan 25 22:33:53 MST 2002 Vessel: Tk 107	Current Inventory: 55.49 %	Go To Vessel
	Customer: Chism Consolidated Product: ERMO	Last Updated: Fri Jan 25 22:33:53 MST 2002 Vessel: Tk 13	Current Inventory: 58.27 %	Go To Vessel
	Customer: Chism Consolidated	Last Updated: Fri Jan 25 22:33:53 MST 2002		Go To Vessel

 Toll-Free User Support
+1 (866) IND-EVOL

Done Internet

Industrial Evolution Applications - Microsoft Internet Explorer


File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Media

Norton AntiVirus

Links Industrial Evolution Live Site OSI Software Google Ask Jeeves My Yahoo! CNN.com MapQuest QwestDex Canada411

Address http://www.industrialevolution.com/apps/ Go



INDUSTRIAL evolution

Help

System Requirements

GCP Industries

Inventory Overview












By Customer

By Product


GCP

Inventory Overview by Customer

Select a customer from the drop-down list: All Customers


	Customer: Amnesty Chemicals Product: Abulite	Last Updated: Fri Jan 25 22:34:24 MST 2002 Vessel: 201-IIE Current Inventory: 424.45 gal	Go To Vessel
	Customer: Amnesty Chemicals Product: Abulite	Last Updated: Fri Jan 25 22:34:24 MST 2002 Vessel: 201-IIE Current Inventory: 424.45 gal	Go To Vessel
	Customer: Amnesty Chemicals Product: Abulite	Last Updated: Fri Jan 25 22:34:24 MST 2002 Vessel: 201-IIE Current Inventory: 424.45 gal	Go To Vessel
	Customer: Amnesty Chemicals Product: Abulite	Last Updated: Fri Jan 25 22:34:24 MST 2002 Vessel: 201-IIE Current Inventory: 424.45 gal	Go To Vessel
	Customer: Amnesty Chemicals Product: Abulite	Last Updated: Fri Jan 25 22:34:24 MST 2002 Vessel: 201-IIE Current Inventory: 424.45 gal	Go To Vessel
	Customer: Amnesty Chemicals Product: Abulite	Last Updated: Fri Jan 25 22:34:24 MST 2002 Vessel: 201-IIE Current Inventory: 424.45 gal	Go To Vessel
	Customer: Amnesty Chemicals Product: Abulite	Last Updated: Fri Jan 25 22:34:24 MST 2002 Vessel: 201-IIE Current Inventory: 424.45 gal	Go To Vessel
	Customer: Amnesty Chemicals Product: Abulite	Last Updated: Fri Jan 25 22:34:24 MST 2002 Vessel: 201-IIE Current Inventory: 424.45 gal	Go To Vessel
	Customer: Amnesty Chemicals Product: Abulite	Last Updated: Fri Jan 25 22:34:24 MST 2002 Vessel: 201-IIE Current Inventory: 424.45 gal	Go To Vessel
	Customer: Amnesty Chemicals Product: Abulite	Last Updated: Fri Jan 25 22:34:24 MST 2002 Vessel: 201-IIE Current Inventory: 424.45 gal	Go To Vessel
	Customer: Amnesty Chemicals Product: Abulite	Last Updated: Fri Jan 25 22:34:24 MST 2002 Vessel: 201-IIE Current Inventory: 424.45 gal	Go To Vessel

Customer Details: Amnesty Chemicals -- Web Page Dialog



INDUSTRIAL evolution

Details



Amnesty Chemicals Details

Company Name:

Amnesty Chemicals

Company Name (long version):

Amnesty Chemicals Inc.

Division:

Friction Materials

Contact Name:

Pedro Garcia

Contact Title:

Supply Chain Manager

Contact Address:

AmChem House
P.O. Box 144
New Orleans LA 71127
USA

Contact Tel:

+1 (504) 555-1234

Contact Fax:


+1 (504) 555-6789

Contact Email:

pzgarcia@amchem.com

Update

Close



Toll-Free User Support
+1 (866) IND-EVOL

Done

Internet



Help

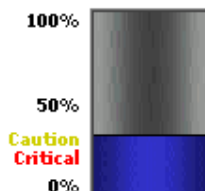
System
Requirements

- GCP Industries
 - Inventory Overview
 - By Customer
 - By Product

Vessel Details

Customer: [Amnesty Chemicals](#)
Product: [Abulite](#)
Vessel: [201-IIE](#)

Select another product:
Select another vessel:



Last Updated:	Fri Jan 25 22:36:01 MST 2002
Level:	33.98%
Volume:	424.80 gal
Low Caution Level:	375 gal
Critical Level:	250 gal
Capacity:	1250 gal

[Customer Overview](#)[Product Overview](#)

Toll-Free User Support
+1 (866) IND-EVOL



Help

System Requirements

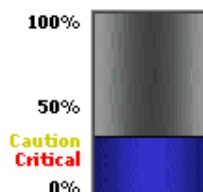


- GCP Industries
 - Inventory Overview
 - By Customer
 - By Product

Vessel Details

Customer: [Amnesty Chemicals](#)
Product: [Abulite](#)
Vessel: [201-IIE](#)

Select another product:
Select another vessel:



Last Updated: Fri Jan 25 22:41:15 MST 2002
Level: 33.90%
Volume: **423.78 gal**
Low Caution Level: 37
Critical Level: 25
Capacity: 125

1 Day
1 Week
1 Month
Calendar

BuzzMe

Help

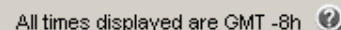
Customer Overview

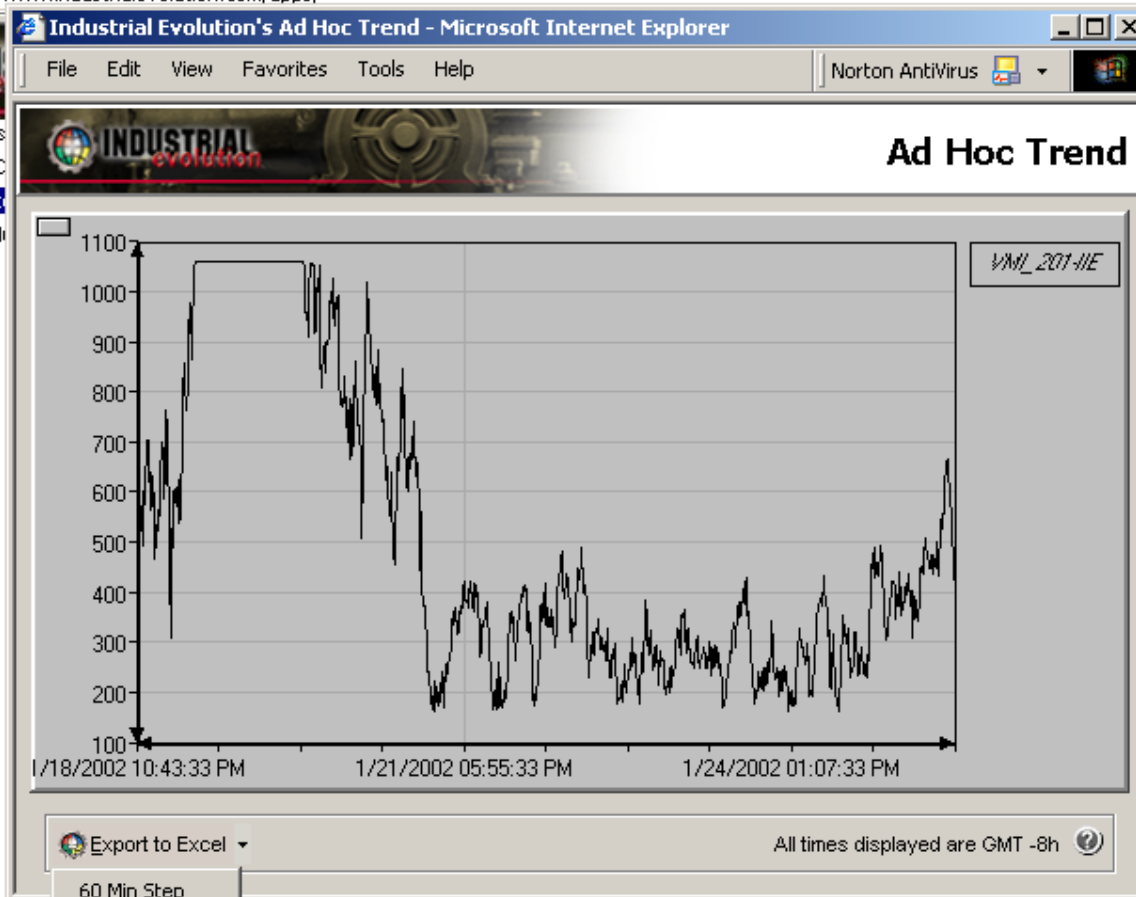
Product Overview



Toll-Free User Support
+1 (866) IND-EVOL

Norton Antivirus

 Internet



Select another product: Abulite
Select another vessel: 201-IIE

Last Updated: Fri Jan 25 22:42:08 MST 2002
Level: 34.60%
Volume: **432.52 gal**
Caution Level: 375 gal
Critical Level: 250 gal
Capacity: 1250 gal

view



Toll-Free User Support
+1 (866) IND-EVOL



Loading MS-Excel...

Please wait, loading approximately 2016 values from database...

If Excel fails to load correctly, [click here](#) to close this window.



- GCP Industries
- Inventory C
- By Cust
- By Prod

2:50 MST 2002

44%

8 gal

gal

gal

0 gal



Toll-Free User Support
+1 (866) IND-EVOL

Industrial Evolution's Ad Hoc Trend - Microsoft Internet Explorer

http://www.industrialevolution.com/WebPortal/NetPortal.dll/data/index? - Microsoft Internet Explorer

File Edit View Insert Format Tools Data Go To Favorites Help

Norton AntiVirus

GCP Industries

Inventory C

By Cust

By Prod

A1	TimeStamp		Formula Bar	E	F	G	H	I	J	K	L	M
1	TimeStamp	VMI_201-IIE.STATUS	VMI_201-IIE.VALUE									
2	1/18/2002 22:43	0	596.5165405									
3	1/18/2002 22:48	0	634.0328979									
4	1/18/2002 22:53	0	637.7141113									
5	1/18/2002 22:58	0	705.1264648									
6	1/18/2002 23:03	0	618.3637085									
7	1/18/2002 23:08	0	597.2054443									
8	1/18/2002 23:13	0	625.5725708									
9	1/18/2002 23:18	0	588.8578491									
10	1/18/2002 23:23	0	584.2800293									
11	1/18/2002 23:28	0	575.3971558									
12	1/18/2002 23:33	0	569.7907715									
13	1/18/2002 23:38	0	549.7853394									
14	1/18/2002 23:43	0	548.7123413									
15	1/18/2002 23:48	0	545.5944824									
16	1/18/2002 23:53	0	493.6179199									
17	1/18/2002 23:58	0	437.8755798									
18	1/19/2002 0:03	0	538.2266846									
19	1/19/2002 0:08	0	578.2000122									
20	1/19/2002 0:13	0	602.4086304									
21	1/19/2002 0:18	0	495.355896									
22	1/19/2002 0:23	0	573.9865112									
23	1/19/2002 0:28	0	558.0438232									
24	1/19/2002 0:33	0	611.6782837									
25	1/19/2002 0:38	0	621.8858643									
26	1/19/2002 0:43	0	690.751709									
27	1/19/2002 0:48	0	657.5979004									
28	1/19/2002 0:53	0	704.0405273									
29	1/19/2002 0:58	0	671.9245605									
30	1/19/2002 1:03	0	703.9348755									
31	1/19/2002 1:08	0	658.7633667									
32	1/19/2002 1:13	0	630.8765259									
33	1/19/2002 1:18	0	625.8589478									
34	1/19/2002 1:23	0	620.5402222									
35	1/19/2002 1:28	0	578.1338501									
36	1/19/2002 1:33	0	640.06073									
37	1/19/2002 1:38	0	661.583252									
38	1/19/2002 1:43	0	563.5186157									
39	1/19/2002 1:48	0	547.4755859									

2:50 MST 2002

14%

8 gal

gal

gal

gal

Done

Internet



Help

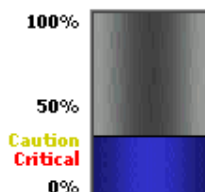
System
Requirements

- GCP Industries
 - Inventory Overview
 - By Customer
 - By Product

Vessel Details

Customer: [Amnesty Chemicals](#)
Product: [Abulite](#)
Vessel: [201-IIE](#)

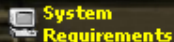
Select another product:
Select another vessel:



Last Updated:	Fri Jan 25 22:36:01 MST 2002
Level:	33.98%
Volume:	424.80 gal
Low Caution Level:	375 gal
Critical Level:	250 gal
Capacity:	1250 gal

[Customer Overview](#)[Product Overview](#)

Toll-Free User Support
+1 (866) IND-EVOL



Vessel Details

Select another product:

Abulite

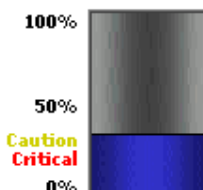
Select another vessel:

Abulite

Beta 123

DXL

Fremula Plus



Last Updated: Fri Jan 25 22:45:49 MST 2002

Level:	34.82%
--------	--------

Volume: 435.27 gal

Low Caution Level:	375 gal
--------------------	---------

Critical Level:	250 gal
-----------------	---------

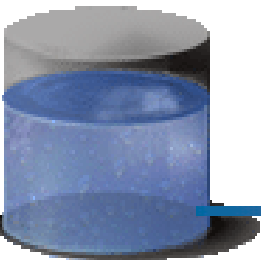
Capacity:	1250 gal
-----------	----------

Customer Overview

Product Overview



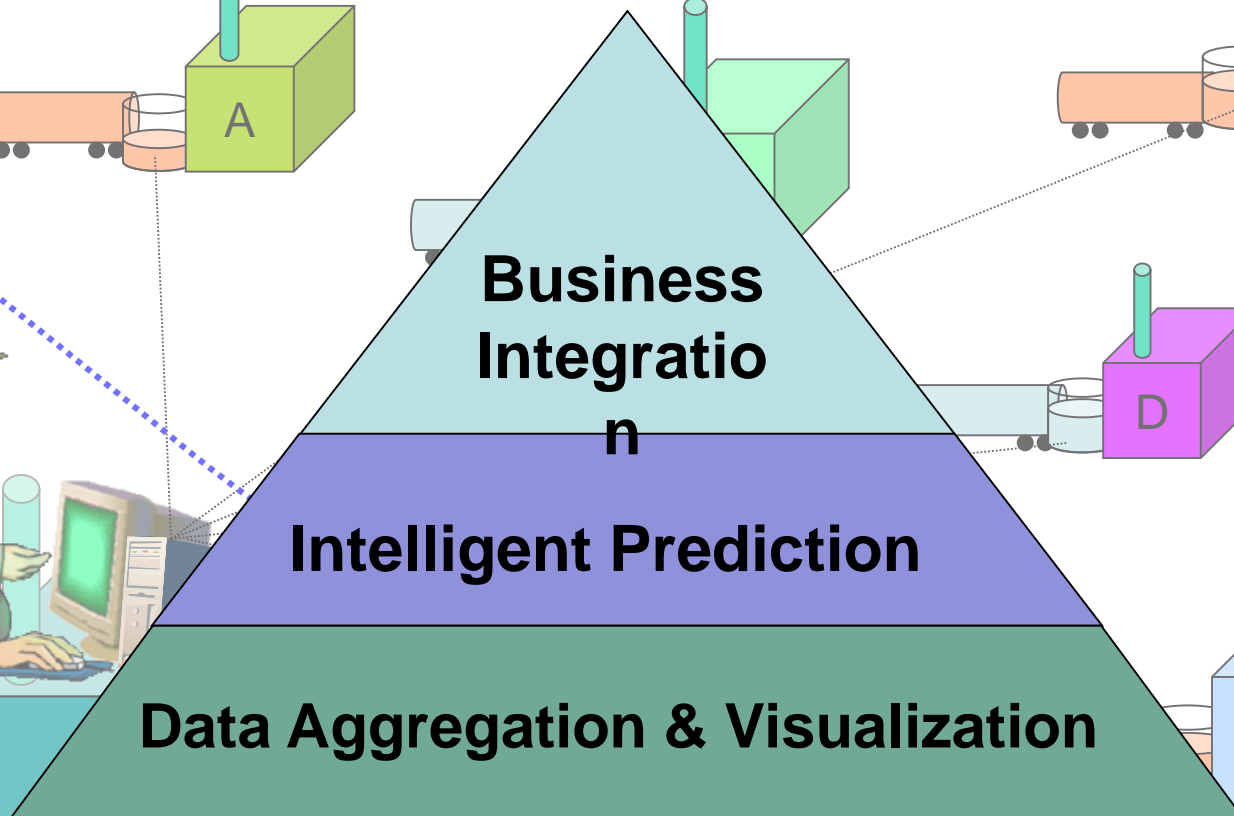
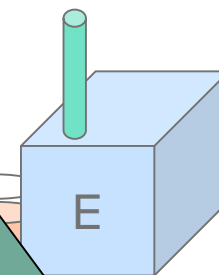
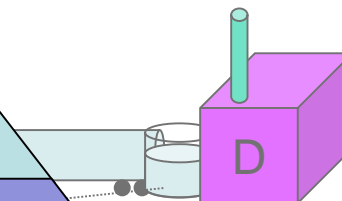
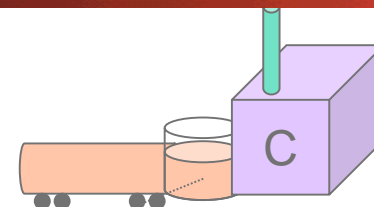
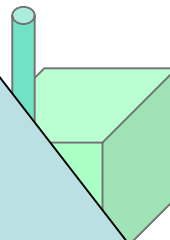
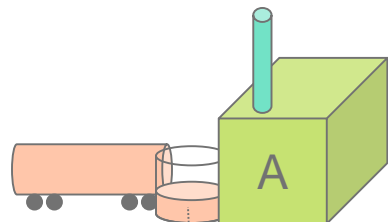
Toll-Free User Support
+1 (866) IND-EVOL



Our Solution



Corporate
ERP/CRM
Systems



Manufacturer

OSIsoft User Conference
Monterey, March 2002

