



2003
OSISOFT USERS CONFERENCE

Microsoft .NET & OSISOFT PI

Tracking Catalyst Use, Corporate Planes & more

Roland Heersink

CEO, Industrial Evolution

.NET Applications with PI

- *What is .NET?*
- *How does .NET fit with PI?*
- *A few examples:*
 - *Filtering real-time data for Prediction (Optyxx)*
 - *Monitoring catalyst performance (Haldor Topsoe)*
 - *Tracking the corporate plane (OSIsoft)*
- *Limitations & new developments*



Microsoft .NET and OSIsoft PI

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What is .NET?

- *Microsoft technology set for connecting information, people, systems, and devices*
 - *a.k.a. .NET framework*
- *Uses XML web services – individual applications that connect to each other over the Internet*
 - *XML = formatted text messaging*



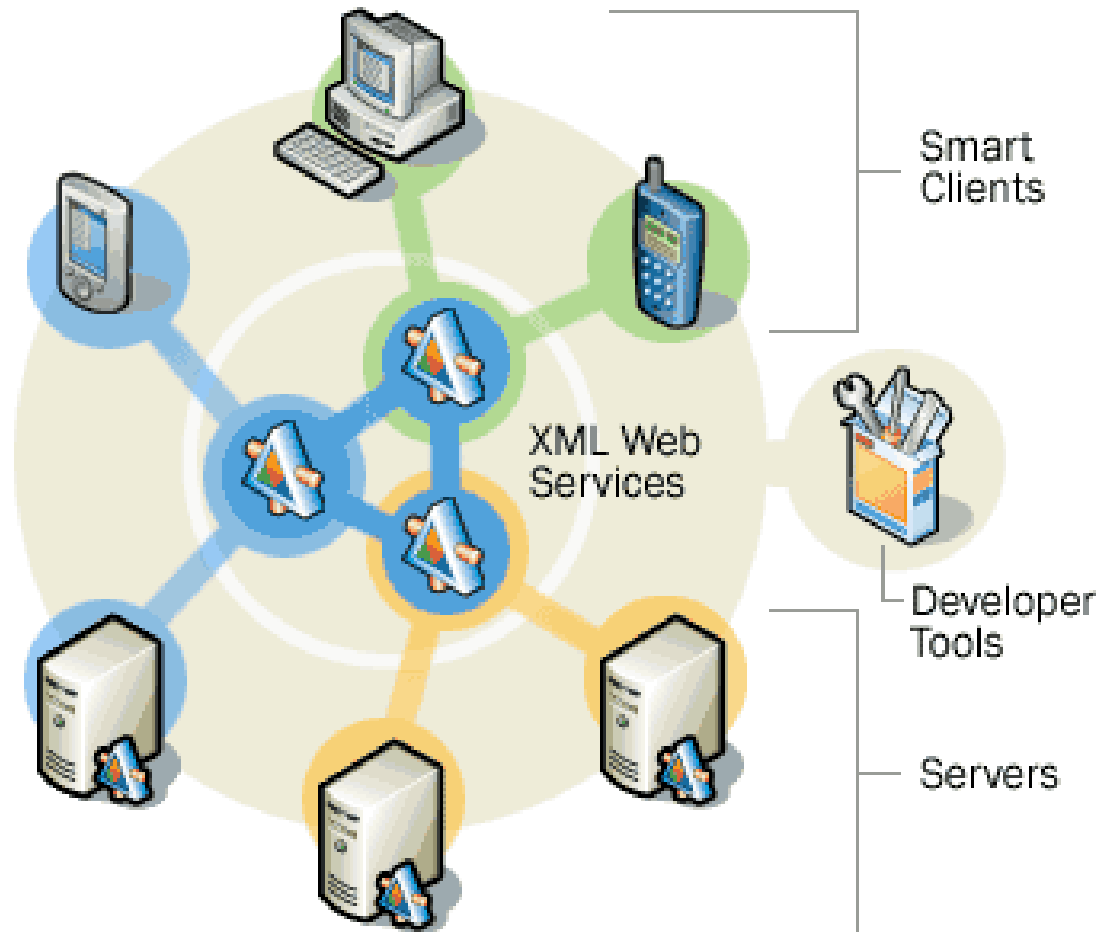
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What is .NET?



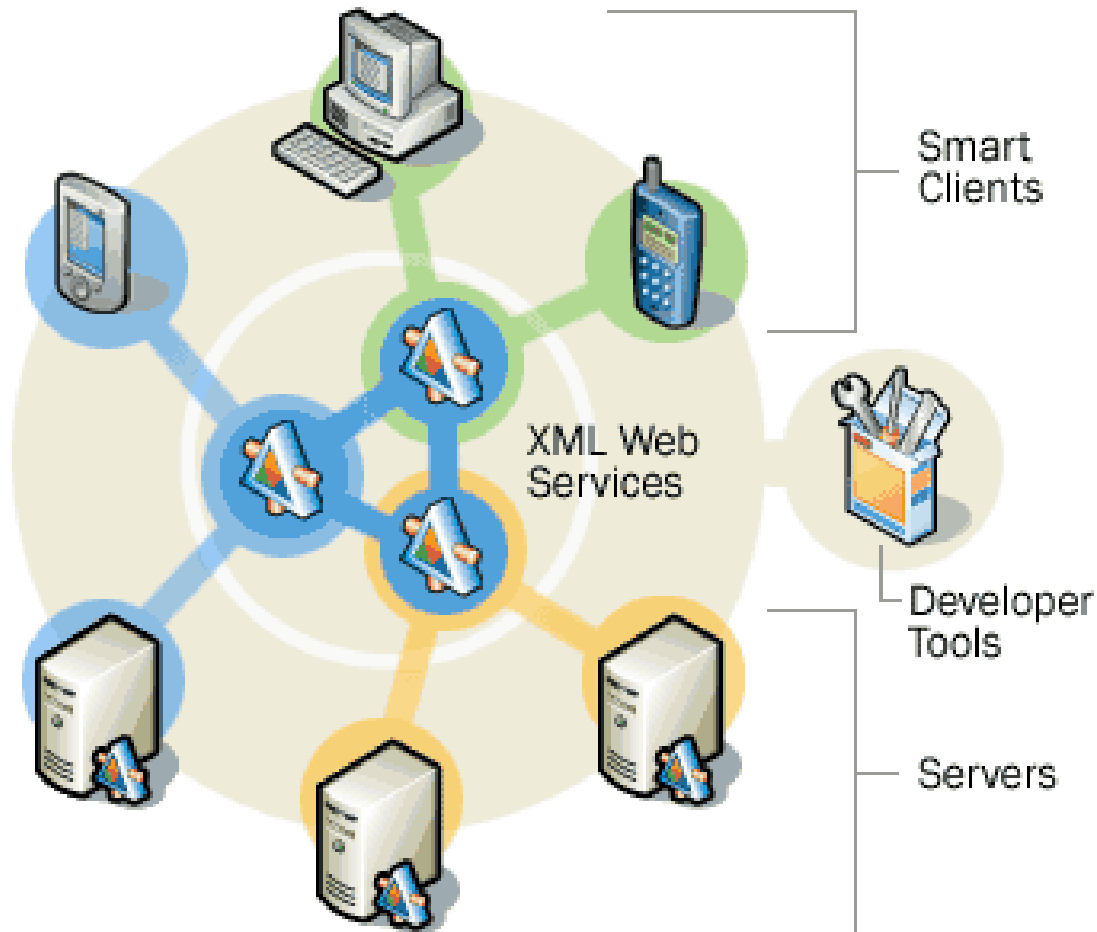
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What is .NET?

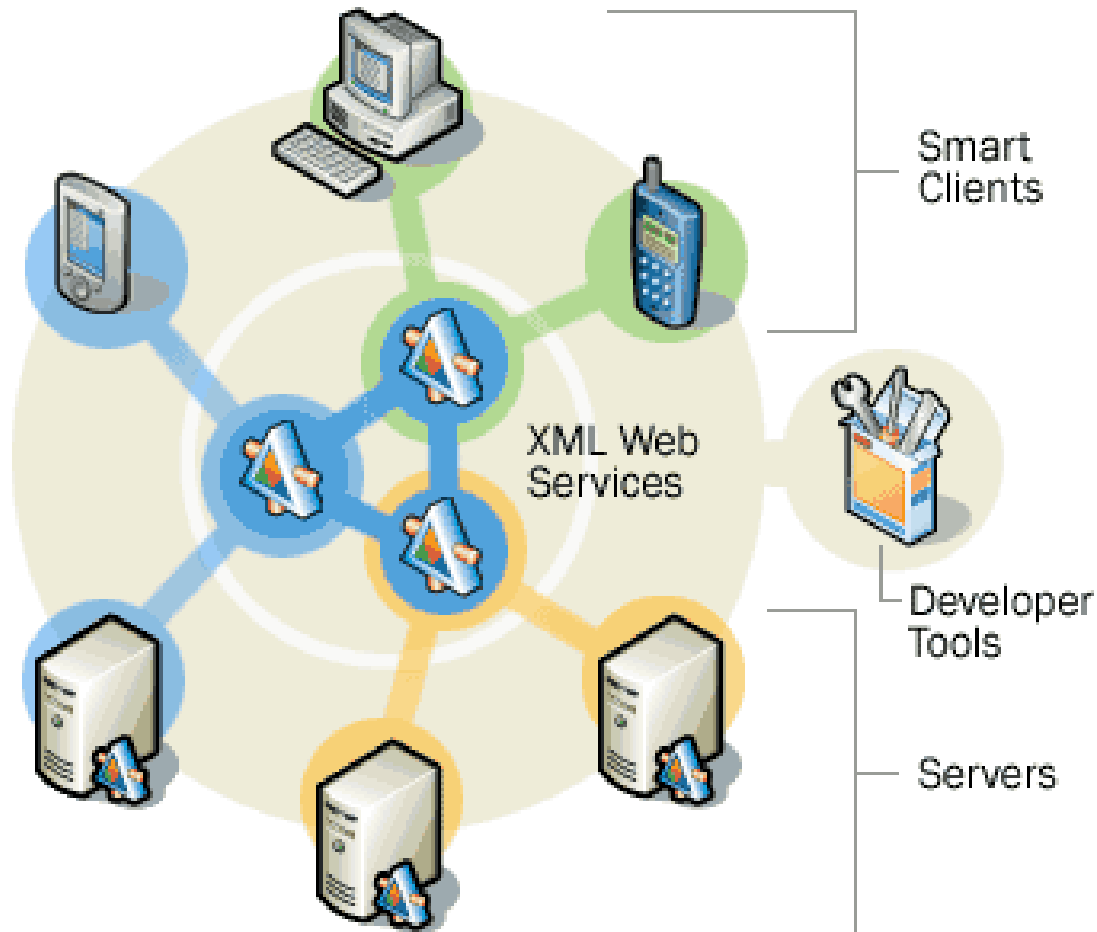


XML Web Services

- applications
- used with other XML web services
- used with “smart clients”

Example:
Microsoft MapPoint

What is .NET?



Smart” Clients

- Access & use XML web services
- application software & operating systems
- PCs, PDAs, etc.

Example:
Windows XP

.NET & PI

- *The PI System is being designed to provide information as a .NET server*
 - *Examples:*
 - *PI ICE: provide displays etc. as web services*
 - *PI UDS: provide data as a web service*
- *Users can already write their own .NET applications to work with PI*
 - *Examples:*
 - *Data Screening Application*
 - *Catalyst Monitoring Application*
 - *Flight Tracking Application*



Microsoft .NET and OSIsoft PI

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Data Screening Application (Optyxx)

- *Optyxx delivers real-time performance management services to paper mills*
- *Industrial Evolution has developed OSIsoft-based infrastructure for Optyxx applications*
 - *Data collected in real-time from paper mills*
 - *Applications run on central server*
 - *Output stored back in PI for viewing/transfer*
- *Rigorous modeling techniques used*
 - *Requires high-quality real-time data from mill*
 - *Data screening application is key component*



Microsoft .NET and OSIsoft PI

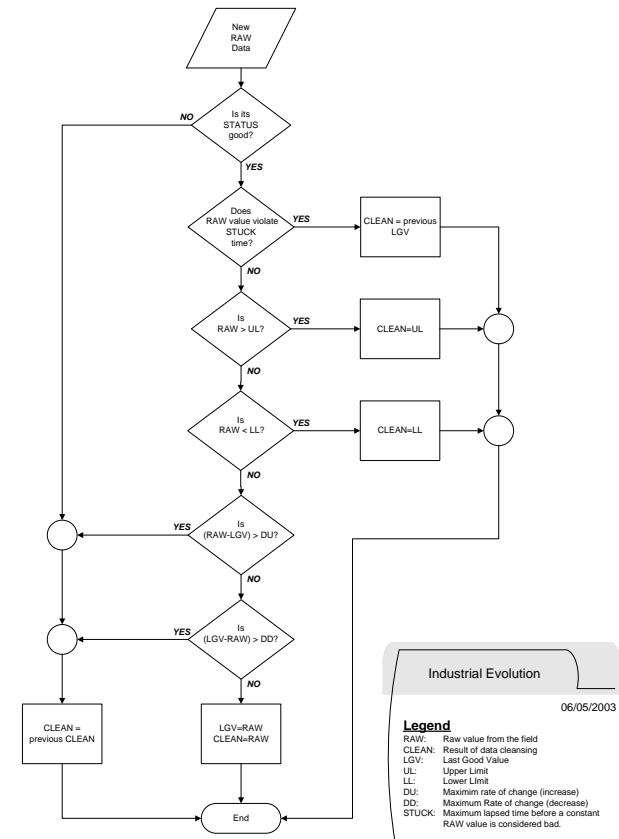
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Data Screening Application (Optyxx)

- *Data Screening scope:*
 - *Monitor key input variables*
 - *Apply user-defined rules*
 - *Store adjusted/approved data*
- *Sample application*
 - *East coast paper mill*
 - *523 points*
 - *10-second monitoring cycle*
 - *1-5 rules applied per variable*



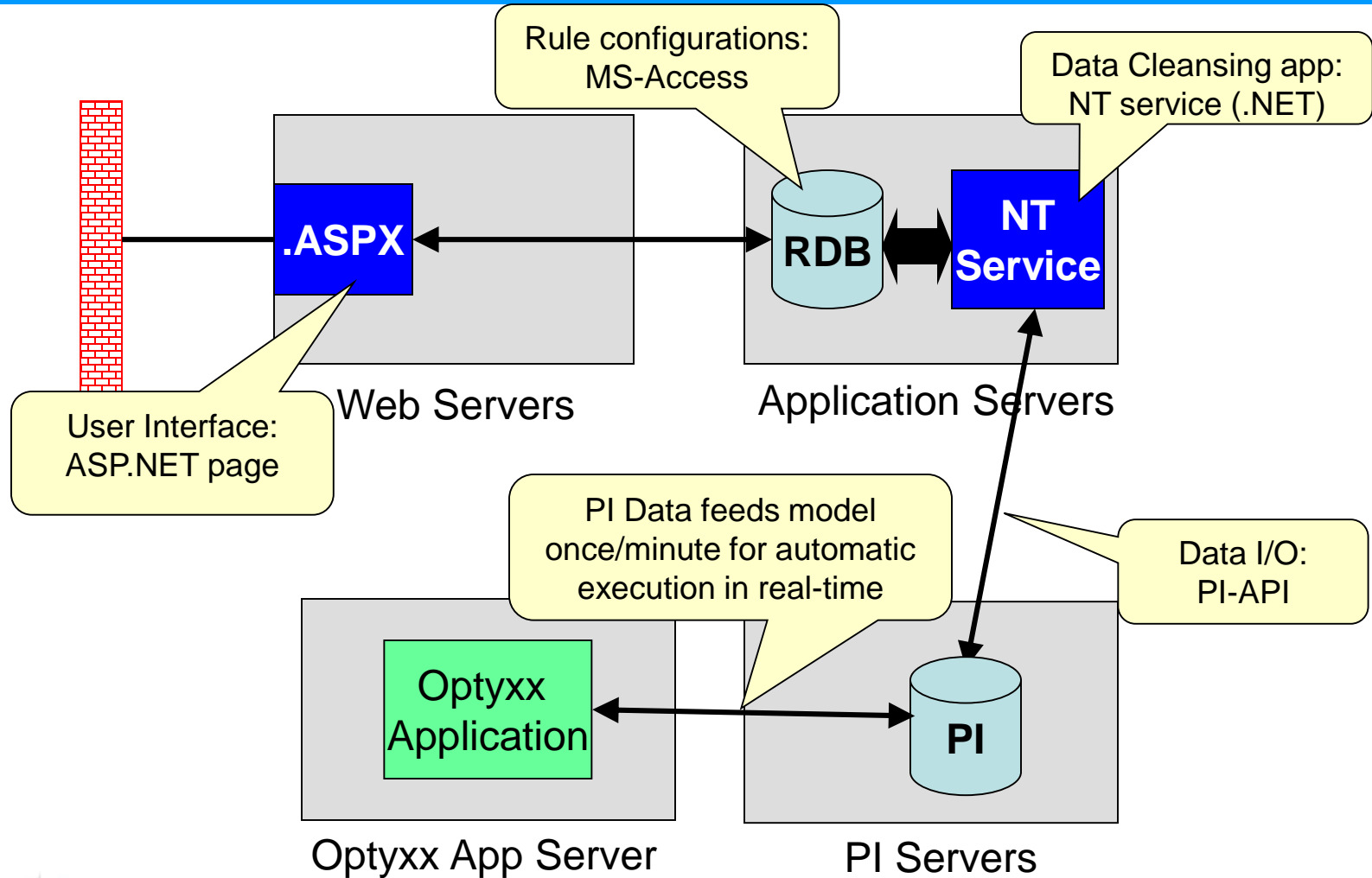
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Data Screening Application (Optyxx)



Data Screening Application (Optyxx)

OPTYXX Model - Microsoft Internet Explorer

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Optyxx Paper Machine Analysis LogOut | Content | Layout | Settings

Dashboard View

- ICEPublic
 - Dashboards
 - ICEData
 - Introduction
- ICEPrivate
 - Model Pages
 - Mill Overview
 - Pulping Area
 - Papemaking Area
 - Waste & Recovery
 - Data Check
 - Case Studies

Paper Machine #1 - Air Dry Toa Mark

Descriptor	Value
Rawstock Production	3405.
Total Variable Cost (\$/day)	1754.
Total Fixed Cost (\$/day)	1165.
Total Papermaking (\$/day)	496.

Papemaking Costs - P#1 - Air Dry Toa Mark

Descriptor	Value
Fixed Cost (\$/ton)	4.25
Electricity (\$/ton)	2.31
Chemicals (\$/ton)	0.98
Steam (\$/ton)	0.78
Coproduct sale (\$/ton)	0.60
Total Manufacturing Cost (\$/ton)	11.80

OPTYXX Predictions - Base Sheet

Descriptor	Value	Engineering Units
MD Breaking Length	22.18	km
CD Breaking Length	18.24	km
MD/CD Ratio	1.054	
Apparent Density	0.089	BW/cal
MD Elastic Modulus	54.25	%
CD Elastic Modulus	52.07	%
MD Tear	28.81	gr
CD Tear	15.50	gr
Burst	41.10	psi
Air Permeability	11.45	
Opacity	62.56	%R
Brightness	41.25	%R
L Hunter	999.0	
a Hunter	999.0	
b Hunter	999.0	
Whiteness Hunter	999.0	

OPTYXX Predictions - Machine

Descriptor	Value
Paper Production ADT	1249.4
Cost this stage per ton	2.78
Total Cumul. Cost (\$/ton)	11.81

Time Range

Start: *-30d

End: *

Apply

Optimizing Paper Mill Operations.
Minimum Risk. Maximum Profitability.

Optyxx break through

Powered by **Industrial Evolution**

Internet

Data Screening Application (Optyxx)

OPTYXX Model - Microsoft Internet Explorer

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Optyxx Paper Machine Analysis LogOut | Content | Layout | Settings

UL	LL	DU	DD	DB	Tag	Description	Eng. Unit	Upper Limit	Lower Limit	Delta Up	Delta Down	Deadband (hrs)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	054L-27-HC0616AOP	9SV Cldy To Whndr TP&Rf Tnk	%	100.00	0.00	0.20	0.20	5.00
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	054L-27-HC0616B	9 Fwtr Mu To Sv Cldy Chst	%	100.00	0.00	0.20	0.20	5.00
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	054L-27-HC0617	9 Fwtr Mu To Sv Clr Chst	%	100.00	0.00	0.20	0.20	5.00
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	054L-27-HC0617B	9 Tknr To Savall Clr Chst	%	100.00	0.00	0.20	0.20	5.00
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	054L-27-HC0632A	9 PM Operator % Broke SP	%	100.00	0.00	0.20	0.20	5.00
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	054L-27-HC0809C	TBD	TBD	300	0	0	0	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	054L-27-HC0816C	TBD	TBD	300	0	0	0	5
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	054L-27-JC0408	TBD	TBD	300	0	0	0	5
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	054L-27-JC0471	9 HARDWOOD REFINER 1 KW	KW	700	0	0.20	0.20	5.00
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	054L-27-JC0481	9 HARDWOOD REFINER 3 KW	KW	700.00	0	0.20	0.20	5.00
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	054L-27-JC0486	9 HARDWOOD REFINER 2 KW	KW	700	0	0.20	0.20	5.00
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	054L-27-JC0809	SPARE PINE REFINER KW	KW	600.00	0.00	0.20	0.20	5.00
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	054L-27-KC0422	9 HARDWOOD RAW STOCK CONS.	%	6	3.00	0.20	0.20	5.00
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	054L-27-KC0432	9 HW BL CHEST CONS.	%	6	3	0.20	0.20	5.00
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	054L-27-KC0463	9 COATED BROKE CHEST CONS.	%	6	3	0.20	0.20	5.00

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35

The user can enable & disable rules...

...or change any rule limits as required

Optimizing Paper Mill Operations.
Minimum Risk. Maximum Profitability.

Powered by Industrial Evolution

Internet

Catalyst Monitoring Application (HT)

- *Haldor-Topsoe sells catalyst and catalyst-monitoring services to process plants*
- *Industrial Evolution has developed OSIssoft-based infrastructure for hosting of Haldor-Topsoe monitoring calculations*
 - *Data collected in real-time from process plant*
 - *Applications run on central server*
 - *Output stored back in PI for viewing/transfer*
- *Proprietary “secrets” used in H-T models*
 - *Engineers review & adjust incoming data*
 - *Select data suitable for analysis & run models*



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Catalyst Monitoring Application (HT)

- *Data Presentation scope:*
 - *Present real-time & historical hourly-averages*
 - *Allow engineer adjustment of collected data*
 - *Store adjusted data for model use*
- *Sample application*
 - *Gulf coast oil refinery*
 - *463 PI points collected*
 - *1-minute data collection frequency*
 - *Approx. once-a-week data viewing & use*



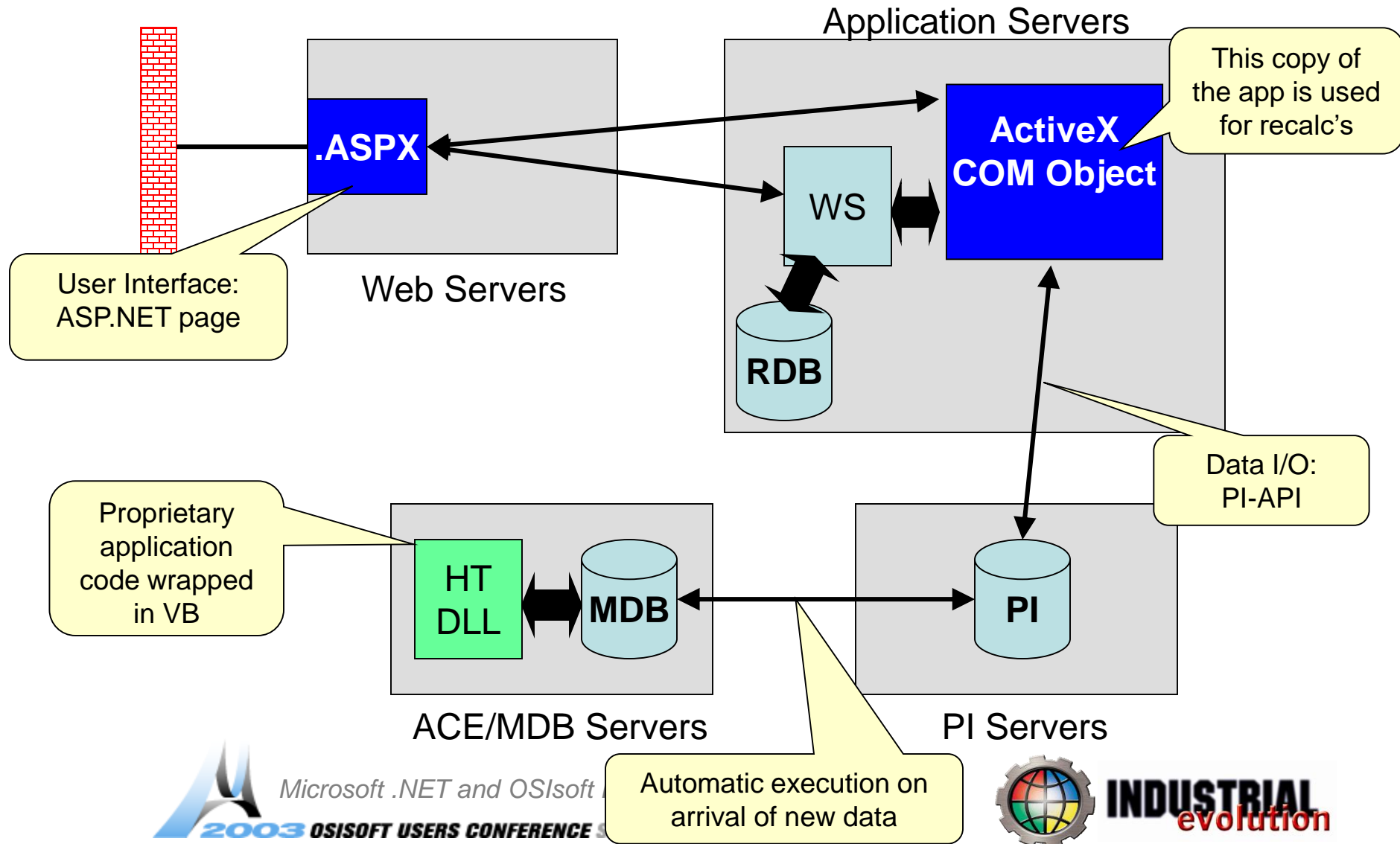
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Catalyst Monitoring Application (HT)



Catalyst Monitoring Application (HT)

Demo - IE Applications Site - Microsoft Internet Explorer

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System Requirements

Customer Refinery – Diesel Hydrotreater Input Data Validation Table – Daily Averages

Table1	Table2	Table3																		
Date	600+	Nin	B2OT	Feed	IBP	MeABP	10	30	50	60	70	80	90	95	RD	SiO2	B2UDT	NIV	Sout	%Coker
09-Apr-03	15.9	477	654.7	50.0	139.5	475.5	314.5	409.7	482.7	514.7	547.0	582.4	624.9	661.0	931.3	0.66	27.3	0.04	0.0354	26.9
10-Apr-03	15.9	477	658.0	50.0	139.5	475.5	314.5	409.7	482.7	514.7	547.0	582.4	624.9	661.0	930.4	0.66	28.7	0.04	0.0361	27.9
11-Apr-03	15.6	477	652.6	50.4	134.9	472.9	310.4	405.6	479.6	512.3	545.9	581.2	624.2	660.6	933.0	0.66	27.4	0.04	0.0347	28.6
12-Apr-03	15.6	477	663.6	49.6	134.9	472.9	310.4	405.6	479.6	512.3	545.9	581.2	624.2	660.6	934.6	0.66	28.4	0.04	0.0404	27.6
13-Apr-03	15.6	477	657.2	49.0	134.9	472.9	310.4	405.6	479.6	512.3	545.9	581.2	624.2	660.6	935.4	0.66	28.4	0.04	0.0388	30.1
14-Apr-03	13.5	477	649.2	48.9	132.0	471.3	312.3	410.9	479.4	508.5	540.4	572.8	614.6	648.7	933.9	0.66	27.4	0.04	0.0352	32.8
15-Apr-03	13.5	477	649.4	50.0	132.0	471.3	312.3	410.9	479.4	508.5	540.4	572.8	614.6	648.7	934.3	0.66	26.5	0.04	0.0272	28.2
16-Apr-03	17.4	477	657.3	50.0	140.2	481.0	316.4	415.8	486.4	519.0	554.6	588.6	632.7	668.4	933.2	0.54	27.3	0.20	0.0450	28.4
17-Apr-03	17.4	477	657.2	49.5	140.2	481.0	316.4	415.8	486.4	519.0	554.6	588.6	632.7	668.4	933.9	0.54	28.0	0.20	0.0292	30.7
18-Apr-03	17.4	477	654.8	48.0	140.2	481.0	316.4	415.8	486.4	519.0	554.6	588.6	632.7	668.4	934.7	0.54	27.8	0.20	0.0292	29.9
19-Apr-03	17.4	477	658.1	49.6	140.2	481.0	316.4	415.8	486.4	519.0	554.6	588.6	632.7	668.4	934.2	0.54	27.6	0.20	0.0362	29.4
20-Apr-03	17.4	477	653.0	48.5	140.2	481.0	316.4	415.8	486.4	519.0	554.6	588.6	632.7	668.4	933.1	0.54	28.6	0.20	2.8213	33.2
21-Apr-03	24.4	477	657.1	48.0	130.4	515.2	183.9	236.8	259.8	273.8	287.3	300.5	314.7	326.3	933.6	0.54	27.8	0.20	0.0412	31.7
22-Apr-03	24.4	477	658.1	47.0	151.0	515.2	343.5	459.3	530.6	560.1	586.7	617.3	657.0	686.8	933.6	0.54	26.7	0.20	0.0403	29.7

Launch Calendar

-14d 09-Apr-03 22-Apr-03 +14d

Page loads all at once – over 800+ separate PI-API calls

Data is retrieved for dates as requested by the user

Done Internet

Catalyst Monitoring Application (HT)

Demo - IE Applications Site - Microsoft Internet Explorer

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System Requirements

Customer Refinery – Diesel Hydrotreater Input Data Validation Table – Daily Averages

Date	600+	Nin	B2OT	Feed	IBP	MeABP	10	30	50	60	70	80	90	95	RD	SiO2	B2UDT	NIV	Sout	%Coker
01-Apr-03	19.8	362	627.6	41.0	135.9	493.0	315.7	431.8	504.6	536.8	570.2	599.1	643.8	675.2	928.2	1.14	17.5	2.58	0.0388	0.0
02-Apr-03	14.6	183	623.5	40.0	164.0	478.1	324.9	416.1	485.2	515.4	545.8	576.9	619.4	655.3	928.5	0.81	17.0	0.19	0.3244	0.0
03-Apr-03	14.6	183	660.4	41.9	164.0	478.1	324.9	416.1	485.2	515.4	545.8	576.9	619.4	655.3	931.6	0.81	28.1	0.19	0.0072	33.8
04-Apr-03	8.4	183	654.2	48.9	132.3	448.0	290.1	381.2	450.3	480.5	517.3	552.8	593.5	623.7	932.0	0.81	27.9	0.19	0.0105	29.2
05-Apr-03	8.4	183	661.2	50.4	132.3	448.0	290.1	381.2	450.3	480.5	517.3	552.8	593.5	623.7	933.2	0.81	27.2	0.19	0.0099	29.2
06-Apr-03	8.4	183	657.8	50.1	132.3	448.0	290.1	381.2	450.3	480.5	517.3	552.8	593.5	623.7	929.5	0.81	27.2	0.19	0.0194	26.8
07-Apr-03	16.0	183	653.2	50.9	133.3	478.3	310.1	401.2	470.3	500.5	551.2	583.8	624.1	659.5	931.4	0.81	25.0	0.19	0.0576	22.5
08-Apr-03	16.0	183	653.8	50.0	133.3	478.3	310.1	401.2	470.3	500.5	551.2	583.8	624.1	659.5	931.3	0.81	26.1	0.19	0.0294	21.3
09-Apr-03	15.9	477	654.7	50.0	139.5	475.5	310.1	401.2	470.3	500.5	547.0	582.4	624.9	661.0	931.3	0.66	27.3	0.04	0.0354	26.9
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12-Apr-03	15.6	477	663.6	49.6	134.9	472.9	310.1	401.2	470.3	500.5	545.9	581.2	624.9	661.0	930.4	0.66	28.7	0.04	0.0361	27.9

[Edit Value](#)
[Reset Value](#)
[Discard Row](#)
[Reset Row](#)
[Trend Daily Value](#)
[Trend Raw Value](#)
[Preview Output](#)
[Arrange Tables](#)

Launch Calendar

-12d 01-Apr-03 12-Apr-03 +12d

Authorized users can

- review input data
- edit any data points
- discard individual points
- discard entire rows
- trend any variables
- export any variable to EXCEL

Done Internet

Catalyst Monitoring Application (HT)

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INDUSTRIAL evolution **System Requirements**

Customer Refinery – Diesel Hydrotreater Input Data Validation Table – Daily Averages

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01-Apr-03	19.8	362	627.6	41.0	135.9	493.0	315.7	431.8	504.6	536.8	570.2	599.1	643.8	675.2	928.2	1.14	17.5	2.58	0.0388	0.0
02-Apr-03	14.6	183	623.5	40.0	164.0	478.1	324.9	416.1	485.2	515.4	545.8	576.9	619.4	655.3	928.5	0.81	17.0	0.19	0.3244	0.0
03-Apr-03	14.6	183	660.4	41.9	164.0	478.1	324.9	416.1	485.2	515.4	545.8	576.9	619.4	655.3	931.6	0.81	28.1	0.19	0.0072	33.8
04-Apr-03	8.4	183	654.2	48.9	132.3	448.0	111	382.3	451.8	486.1	517.3	552.8	593.5	623.7	932.0	0.81	27.9	0.19	0.0105	29.2
05-Apr-03	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
06-Apr-03	8.4	183	657.8	50.1	132.3	448.0	296.3	382.3	451.8	486.1	517.3	552.8	593.5	623.7	929.5	0.81	27.2	0.19	0.0194	26.8
07-Apr-03	16.0	183	653.2	50.9	133.3	478.3	313.9	417.0	482.7	517.8	551.2	583.8	624.1	659.5	931.4	0.81	25.0	0.19	0.0576	22.5
08-Apr-03	16.0	183	653.8	50.0	133.3	478.3	313.9	417.0	482.7	517.8	551.2	583.8	624.1	659.5	931.3	0.81	26.1	0.19	0.0294	21.3
09-Apr-03	15.9	477	654.7	50.0	139.5	475.5	314.5	409.7	482.7	517.0	547.0	582.4	624.9	661.0	931.3	0.66	27.3	0.04	0.0354	26.9
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12-Apr-03	15.6	477	663.6	49.8	134.9	472.9	310.4	405.6	479.6	512.2	547.0	581.2	624.2	660.6	934.6	0.66	28.4	0.04	0.0404	27.6

Laurel
-12d 01-Apr-03

PI quality flag allows tracking of changes (edits, discards).
Users can also reset any changed flags to original state as needed

Done Internet

Catalyst Monitoring Application (HT)

Demo - IE Applications Site - Microsoft Internet Explorer

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System Requirements

Customer Refinery – Diesel Hydrotreater Input Data Validation Table – Daily Averages

Table1	Table2	Table3
Date	600+	Nin
01-Apr-03	19.8	362
02-Apr-03	14.6	183
03-Apr-03	14.6	183
04-Apr-03	8.4	183
05-Apr-03	8.4	183
06-Apr-03	8.4	183
07-Apr-03	16.0	183
08-Apr-03	16.0	183
09-Apr-03	15.9	477
10-Apr-03	15.9	477
11-Apr-03	15.6	477
12-Apr-03	15.6	477

Table1	Table2	Table3
B2OT	Feed	IBP
627.6	41.0	135.9
623.5	40.0	164.0
660.4	41.9	164.0
654.2	48.9	132.3
661.2	50.4	132.3
657.8	50.1	132.3
653.2	50.9	133.3
653.8	50.0	133.3
654.7	50.0	139.5
658.0	50.0	139.5
652.6	50.4	134.9
663.6	49.8	134.9

Table1	Table2	Table3
MeABP	10	30
493.0	31	32
478.1	32	32
478.1	32	32
448.0	29	29
448.0	29	29
448.0	29	29
478.3	31	31
478.3	31	31
475.5	31	31
475.5	31	31
472.9	31	31
472.9	31	31

Table1	Table2	Table3
600+	B2WABT	Sin
Nin	B1UDT	DP
B2OT	B2DT	CDP
Feed	Naph	B1IT
IBP	2Oil	RCYC
MeABP	Na	B1MT
10	Kero	API
30	B1LDT	B2MT
50	SepP	SCFB
60	2S	NAPI
70	2API	QNCH
80	B1DT	Coker
90	KAPI	DT
95	NS	B1WABT
RD	2N	B1DT
SIO2	FBP	QDT
B2UDT	B2LDT	WABT
NIV	Fe	H2
Sout	KS	
%Coker	B2IT	

95	RD	SIO2	B2UDT	NIV	Sout	%Coker
675.2	928.2	1.14	17.5	2.58	0.0388	0.0
655.3	928.5	0.81	17.0	0.19	0.3244	0.0
655.3	931.6	0.81	28.1	0.19	0.0072	33.8
623.7	932.0	0.81	27.9	0.19	0.0105	29.2
623.7	933.2	0.81	27.2	0.19	0.0099	29.2
623.7	929.5	0.81	27.2	0.19	0.0194	26.8
659.5	931.4	0.81	25.0	0.19	0.0576	22.5
659.5	931.3	0.81	26.1	0.19	0.0294	21.3
661.0	931.3	0.66	27.3	0.04	0.0354	26.9
661.0	930.4	0.66	28.7	0.04	0.0361	27.9
660.6	933.0	0.66	27.4	0.04	0.0347	28.6
660.6	934.6	0.66	28.4	0.04	0.0404	27.6

Apply

Launch Calendar

-12d 01-Apr-03 12-Apr-03 +12d

Catalyst Monitoring Application (HT)

Demo - IE Applications Site - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Reload Home Search Favorites Media Print View Source

INDUSTRIAL evolution **System Requirements**

Customer Refinery - Diesel Hydrotreater Performance Parameters - Daily Estimates

Date	Confirm	RA	NWABT	API	Sin	H2	DP	B1IT	B1OT	B2IT	B2OT	DT	SCFB	H2PP	HDS	LHSV	MeABP	600+	InP	Feed
09-Apr-03	<input type="checkbox"/>	1.3	634.9	36.3	0.8	85.8	32.4	595.58	623.28	600.75	654.72	81.38	1633.31	812.02	95.6	2.7	475.5	15.9	931.3	49.96
10-Apr-03	<input type="checkbox"/>	1.3	635.3	36.3	0.8	85.8	31.4	594.30	628.92	602.11	657.97	88.34	1606.22	811.23	95.5	2.7	475.5	15.9	930.4	49.96
11-Apr-03	<input type="checkbox"/>	1.4	632.0	37.1	0.8	78.0	33.3	591.96	622.00	596.93	652.58	85.72	1639.26	739.45	95.9	2.7	472.9	15.6	933.0	50.39
12-Apr-03	<input type="checkbox"/>	1.6	626.6	37.1	0.9	78.0	34.7	598.22	630.47	605.52	663.56	90.86	1851.98	740.74	95.4	2.7	472.9	15.6	934.6	49.64
13-Apr-03	<input type="checkbox"/>	1.3	637.3	37.1	0.9	78.0	35.7	596.08	628.39	603.29	657.22	86.18	1910.31	741.39	95.6	2.6	472.9	15.6	935.4	49.00
14-Apr-03	<input type="checkbox"/>	1.3	636.3	36.7	0.8	78.0	34.4	590.51	620.01	595.02	649.23	83.95	1793.03	740.18	95.7	2.6	471.3	13.5	933.9	48.90
15-Apr-03	<input type="checkbox"/>	1.9	618.2	36.7	0.8	78.0	34.7	593.38	620.18	596.05	649.37	80.02	1739.34	740.52	96.6	2.7	471.3	13.5	934.3	49.96
16-Apr-03	<input type="checkbox"/>	0.9	652.8	36.5	0.8	86.7	33.6	600.66	630.12	604.91	657.30	82.45	1782.59	822.16	94.2	2.7	481.0	17.4	933.2	49.96
17-Apr-03	<input type="checkbox"/>	1.4	633.9	36.5	0.8	84.3	34.3	598.10	628.90	603.40	657.23	84.46	1866.47	799.17	96.3	2.7	481.0	17.4	933.9	49.46
18-Apr-03	<input type="checkbox"/>	1.5	629.9	36.5	0.8	84.3	35.1	594.91	625.89	599.95	654.76	85.41	1916.32	799.90	96.5	2.6	481.0	17.4	934.7	47.97
19-Apr-03	<input type="checkbox"/>	1.2	639.0	36.5	0.8	84.3	34.9	599.40	629.04	604.10	658.10	83.63	1811.07	799.46	95.6	2.7	481.0	17.4	934.2	49.57
20-Apr-03	<input type="checkbox"/>	0.0	N/A	36.5	0.8	84.3	33.5	592.89	625.35	596.55	652.96	88.61	1853.42	798.56	-246.7	2.6	481.0	17.4	933.1	48.47
21-Apr-03	<input type="checkbox"/>	1.1	643.4	37.1	0.9	86.8	33.9	596.63	630.43	601.34	657.06	89.93	1882.09	823.57	95.2	2.6	515.2	24.4	933.6	47.96
22-Apr-03	<input type="checkbox"/>	1.0	646.7	37.1	0.8	88.8	34.0	598.07	632.40	602.90	658.07	89.35	1939.52	842.19	95.2	2.5	515.2	24.4	933.6	46.96

Launch Calendar

-14d 09-Apr-03 22-Apr-03 +14d

Once satisfied, users can make information available to others

Done Internet

Flight Tracking Application (OSIsoft)

- *Original design*
 - *Use Microsoft MapPoint.NET*
 - *Collect data from PI*
 - *Call the web service*
 - *Get back a map based on our input*
 - *Display the map in an ICE web part*



Microsoft .NET and OSIsoft PI

2003 OSISOFT USERS CONFERENCE SAN FRANCISCO CALIFORNIA USA



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evolution

Flight Tracking Application (OSIsoft)

MapPoint.NET

- *a programmable XML Web Service*
- *hosted by Microsoft*
- *presents cartographic & related data*
- *Visual Studio .NET applications*
- *use by creating a web reference to*
<http://service.mappoint.net/find-20/>
 - *WSDL defined input details/structure*
(WSDL = an XML description document)



Microsoft .NET and OSIsoft PI

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Flight Tracking Application (OSIsoft)

- *Problem*
 - *\$15,000 subscription fee from Microsoft*
- *Actual implementation*
 - *Use Microsoft MapPoint server version*
 - *Collect data from PI*
 - *Call the application (once/minute)*
 - *Get back a map based on our input*
 - *Display the map in an ICE web part*



Microsoft .NET and OSIsoft PI

2003 OSIsoft USERS CONFERENCE SAN FRANCISCO CALIFORNIA USA



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Flight Tracking Application (OSIsoft)

Airplane Tracker - Microsoft Internet Explorer provided by AT&T WorldNet Service

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Media Print W Go

Address <http://www.osisoftdemo.com/Dashboard/dashboard.asp?DashboardID=http://www/DAVCatalog/ICE/Public/2-%20Airplane%20Tracker/> Go

 **Airplane Tracker** LogOut | Publish | Adhoc Trend

Airplane Tracker **Flight Details** **Photos**

Dashboard View

- ICE/Private/ice
- ICE/Public
 - 1 - Welcome
 - 2 - Airplane Tracker
 - Flight Details
 - Photos
 - 3 - Building Monitor
 - 4 - Cleveland Weather
 - 5 - JEA Water Plant
 - 6 - Timken

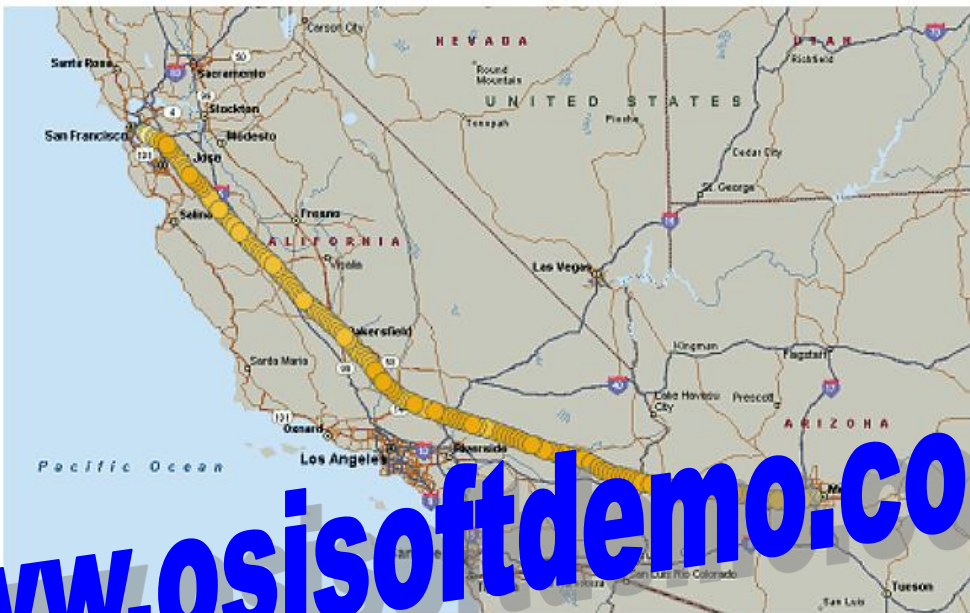
Atmospheric Information

Descriptor	Value	Engineering Units
Distance To Go	Shutdown nmi	
Time to Destination	Shutdown minutes	
Present Longitude	Shutdown Degrees	

Flight Details

Descriptor	Value	Engineering Units
True airspeed	Shutdown knots	
Mach number	Shutdown unit	
Ground Speed	Shutdown knots	
Vertical speed	Shutdown fpm	

Microsoft MapPoint Flight Record



<http://www.osisoftdemo.com/Dashboard/dashboard.asp?DashboardID=http://www/DAVCatalog/ICE/Public/2 - Airplane Tracker/#A> Internet

Start [Taskbar icons] 4:46 PM

Conclusions

- *Early days, but .NET is real*
- *.NET is fast*
 - *No hard stats yet, just first impressions*
- *.NET is secure*
 - *Complies with our standards and yours*
- *.NET will be a part of your future*
 - *OSIsoft are moving to .NET very quickly*