

“Real-time Enabling” Your Enterprise Business Systems

Andriy Stephanchuk & Dr. Hendrik Hamann IBM

Michael Appleby & Peter Huyen SAP

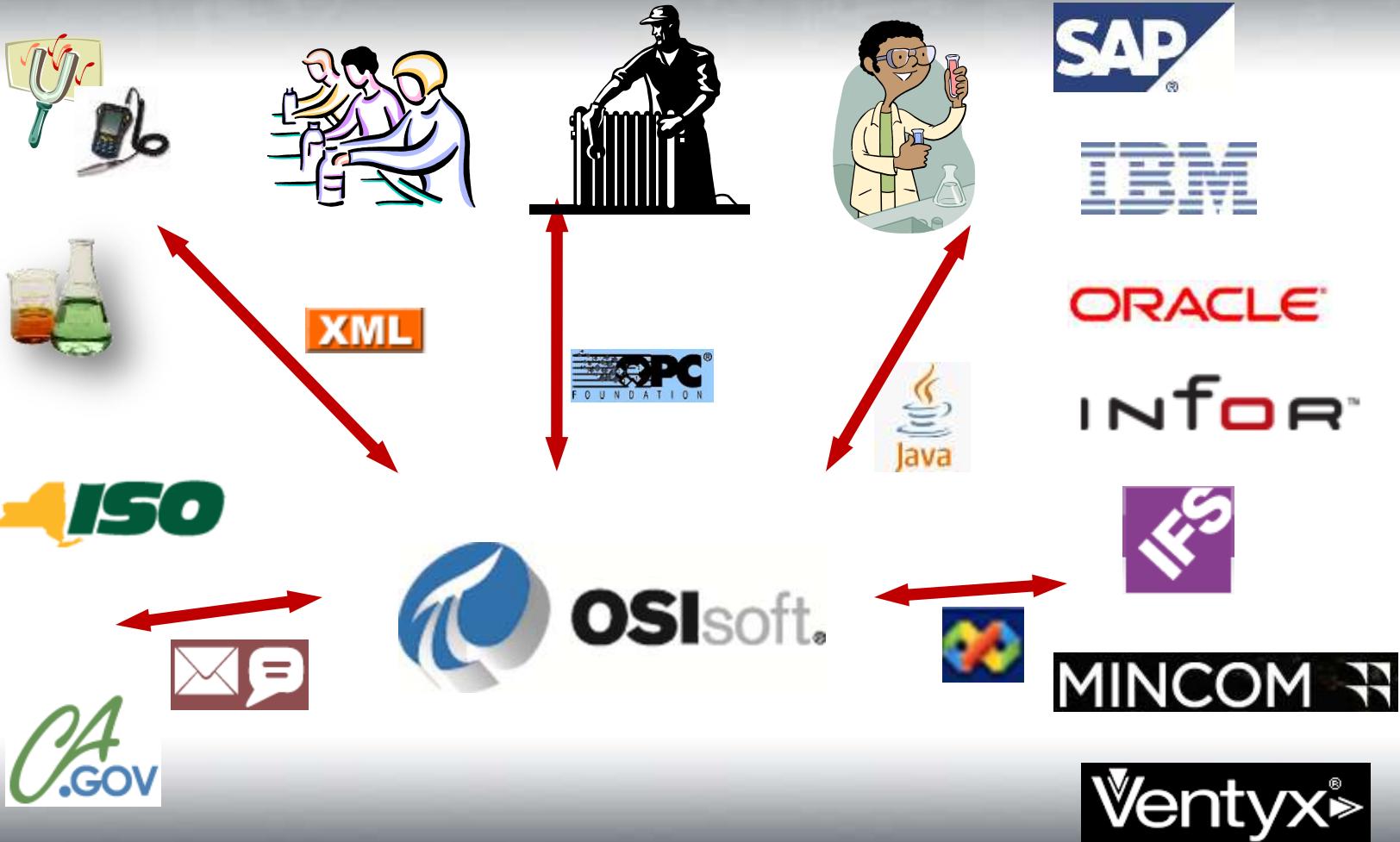
Gopal GopalKrishnan, P.E. OSIsoft



Enterprise Integration and PI Data Access

Compliance Reporting Lab Calibration

Production Maintenance Quality



osisoft.

ERP and Asset Management Systems

PI Data Access

PI Web Services 2010

XML



PI OLEDB Enterprise 2010



PI JDBC 2010



PI OPC

PI Notification - Delivery Channels



PI SDK, AF SDK, AN SDK



End User Licensing : PI System Access (PSA)

Developer Licensing : vCampus Subscription

Aspects of Enterprise Business Integration

Data



Events



Visualization



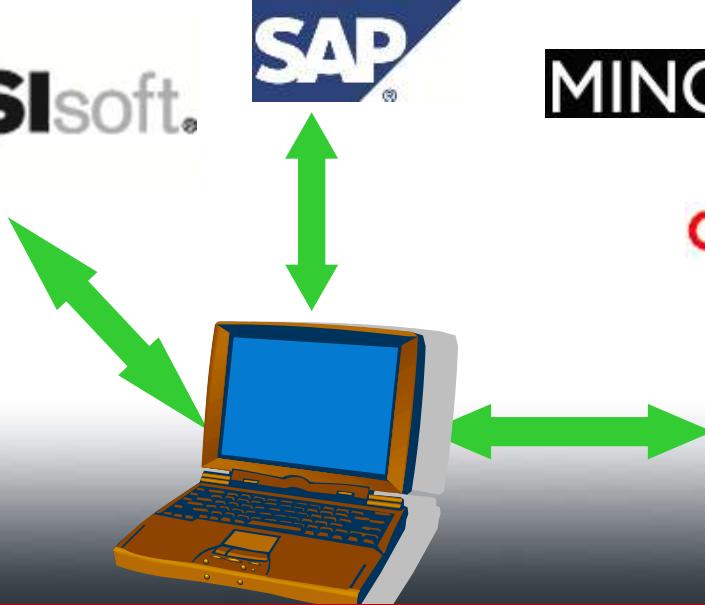
OSIsoft.



MINCOM The MINCOM company logo, featuring the word "MINCOM" in a black, sans-serif font next to a small square icon.

ORACLE

IBM



Push vs. Pull + optional Middleware

- PI Data/Events

- Push



vs.

Pull



- None
 - Microsoft BizTalk
 - SAP MII (and PCo)
 - IBM Websphere ESB
 - Oracle Fusion
 - TIBCO
 -



Use Cases and Demos



- MMT (Mobile Management Technology)
 - PI SDK (polling now, later migrate to sign-up for update)
- Cognos (Green Sigma initiative)
 - PI JDBC (via Tivoli Agent) to Tivoli Data Warehouse
- Business Objects – Xcelsius
- Carbon Impact (CI)
- SAP ERP (Production PP/PI, Maintenance PM, Quality QM)
 - All Integration using SAP MII
 - » Uses XML – you supply or it generates from PI data



IBM MMT

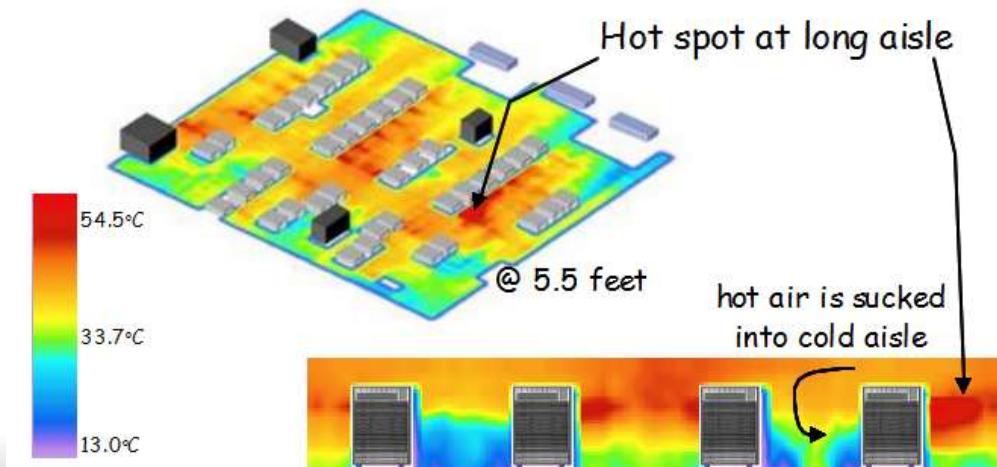
IBM MMT Agenda

- MMT Introduction
- PI – MMT Integration
 - MMT Architecture
 - Integrated Modeling Environment
 - PI data feeds
- PI enabled Analytics
 - PI data visualization in MMT
 - Power and Heat Distributions
 - Asset management
- Conclusion

MMT Introduction

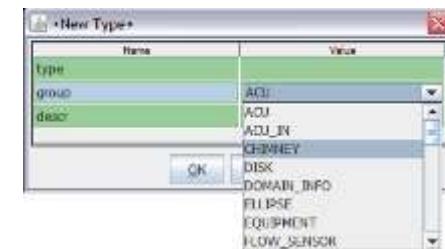
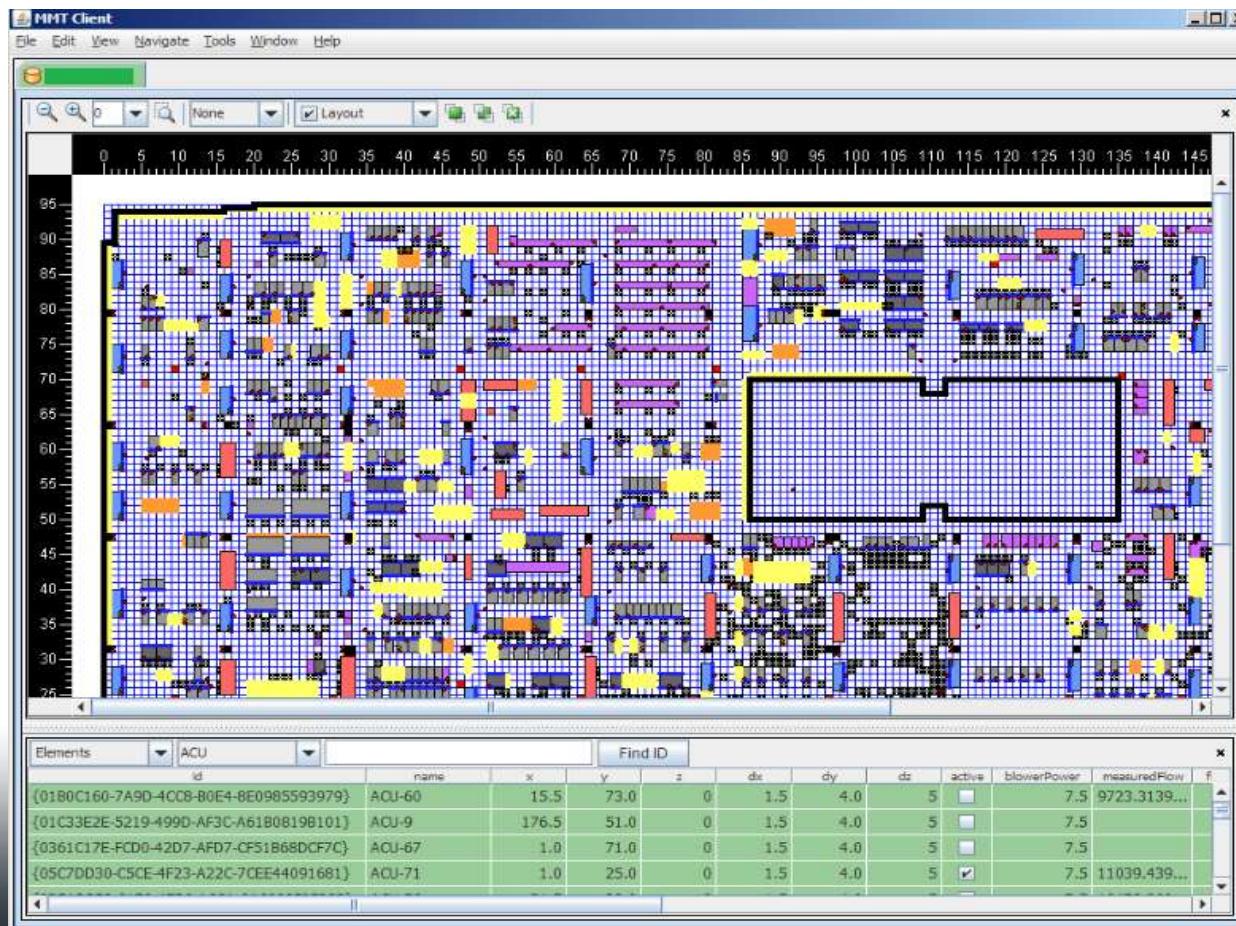
Mobile Measurement Technology

Optimize data center thermal profile to reduce energy consumption.

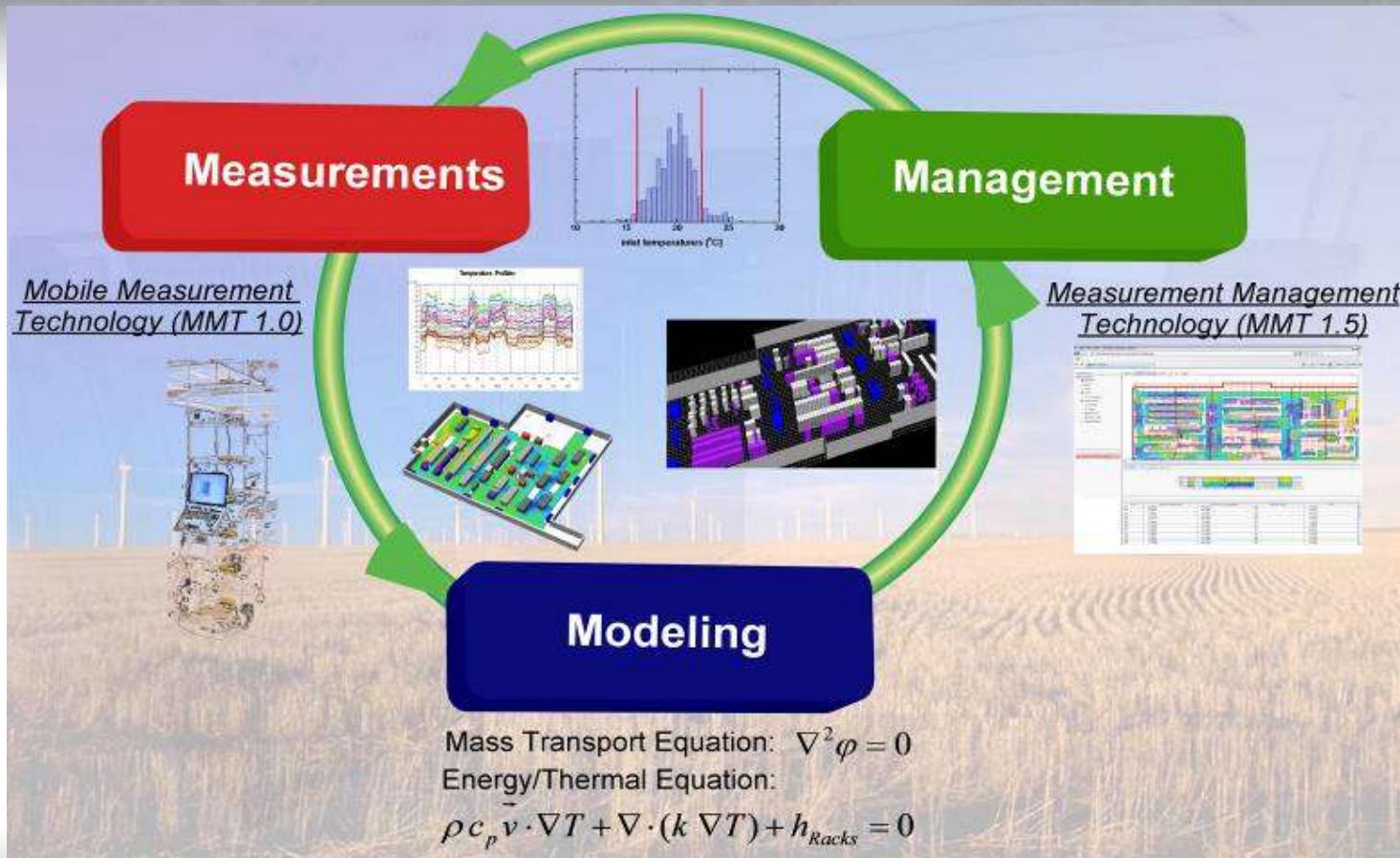


MMT Introduction

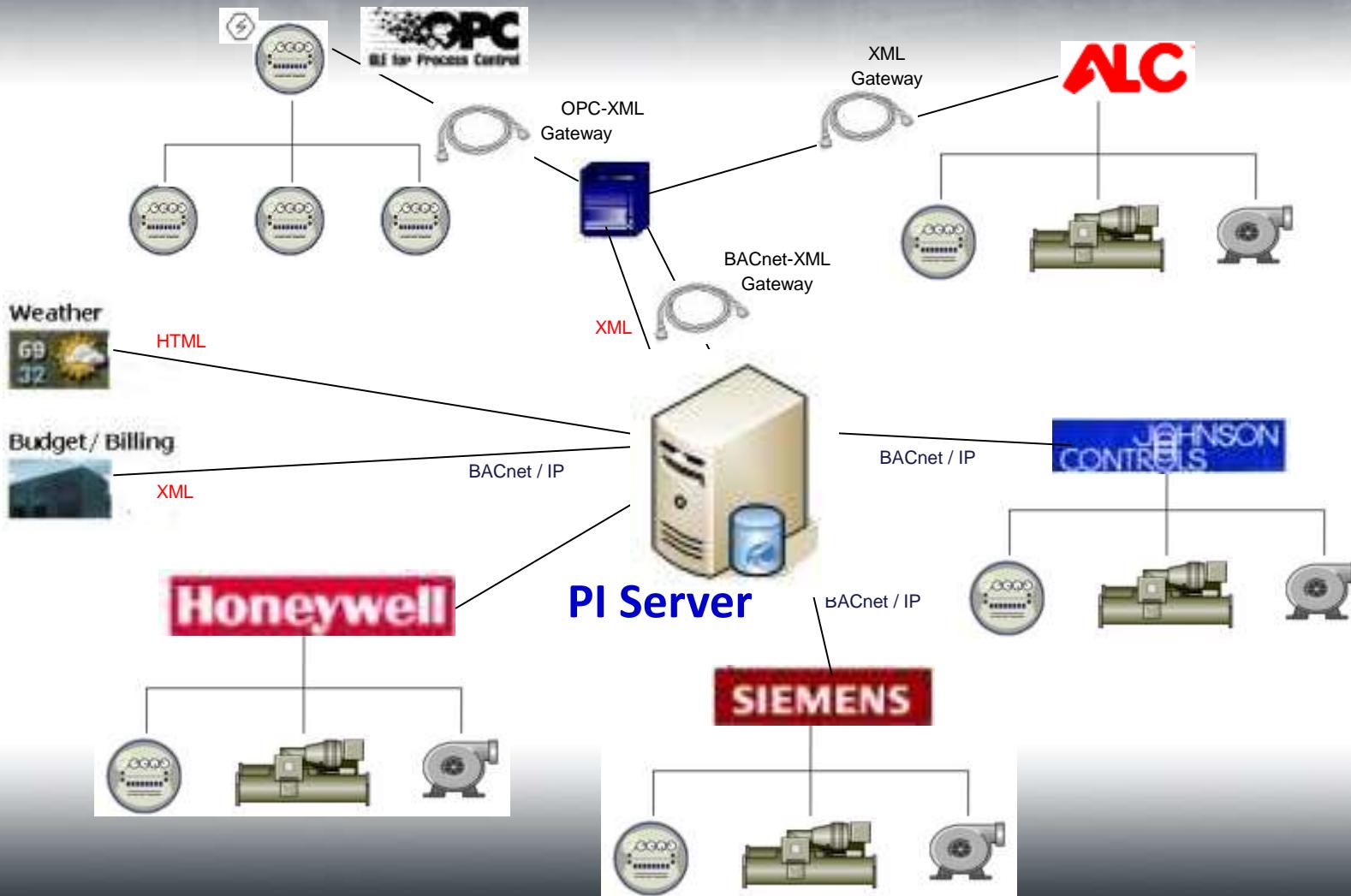
Data Model Manager – defines different types and their properties:



Next step – Real-time MMT

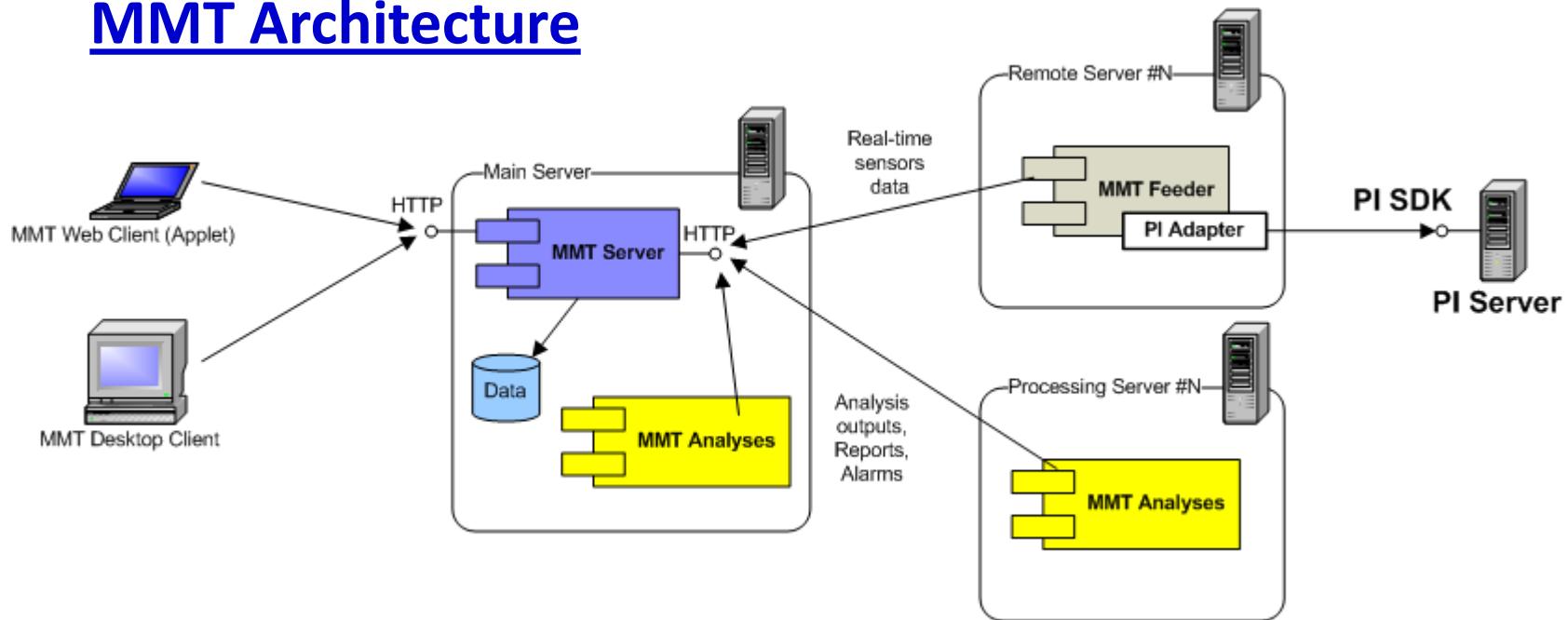


Next step – Real-time MMT

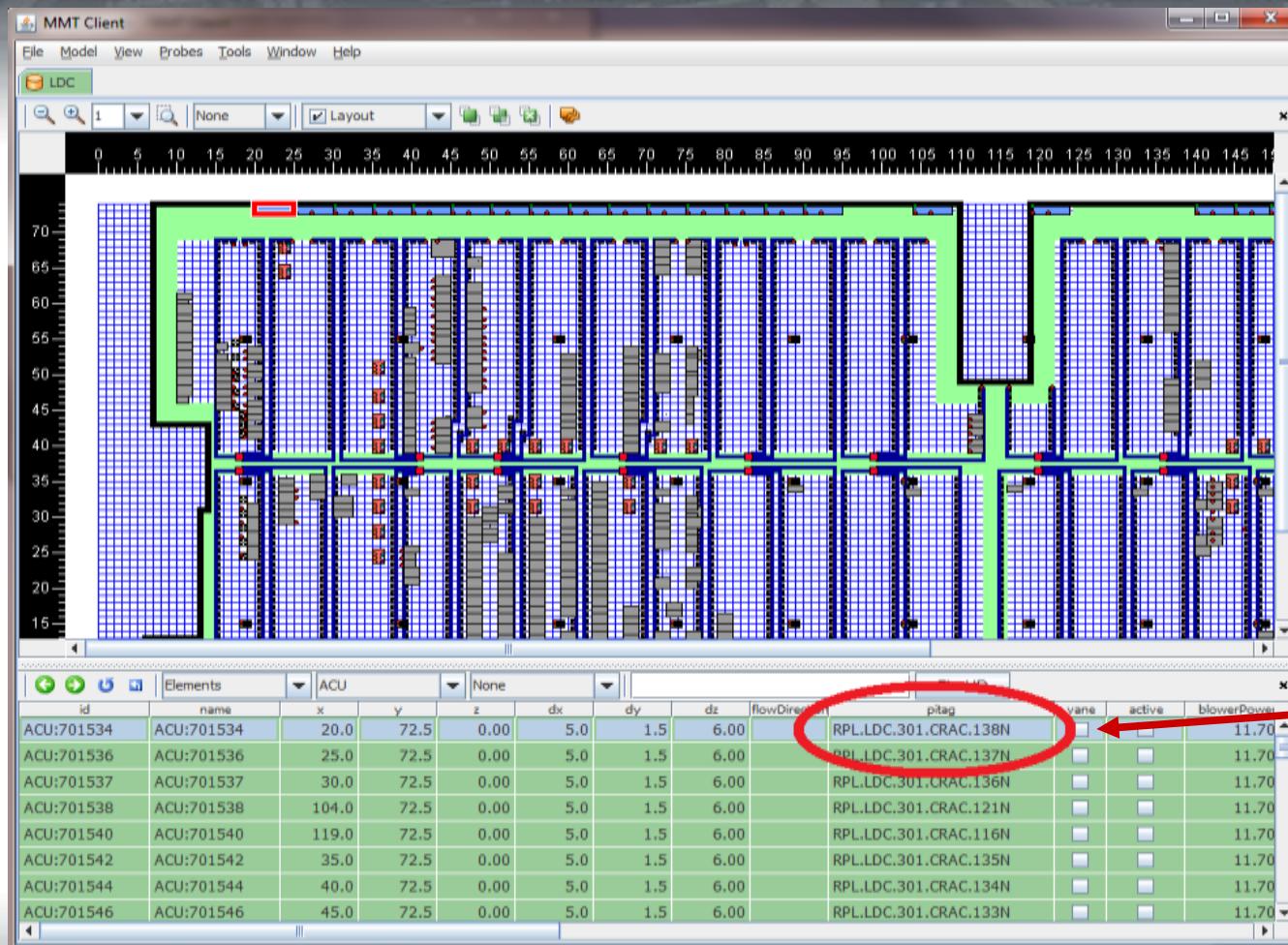


PI-MMT Integration

MMT Architecture



PI data feeds



Configure
PI Adapter

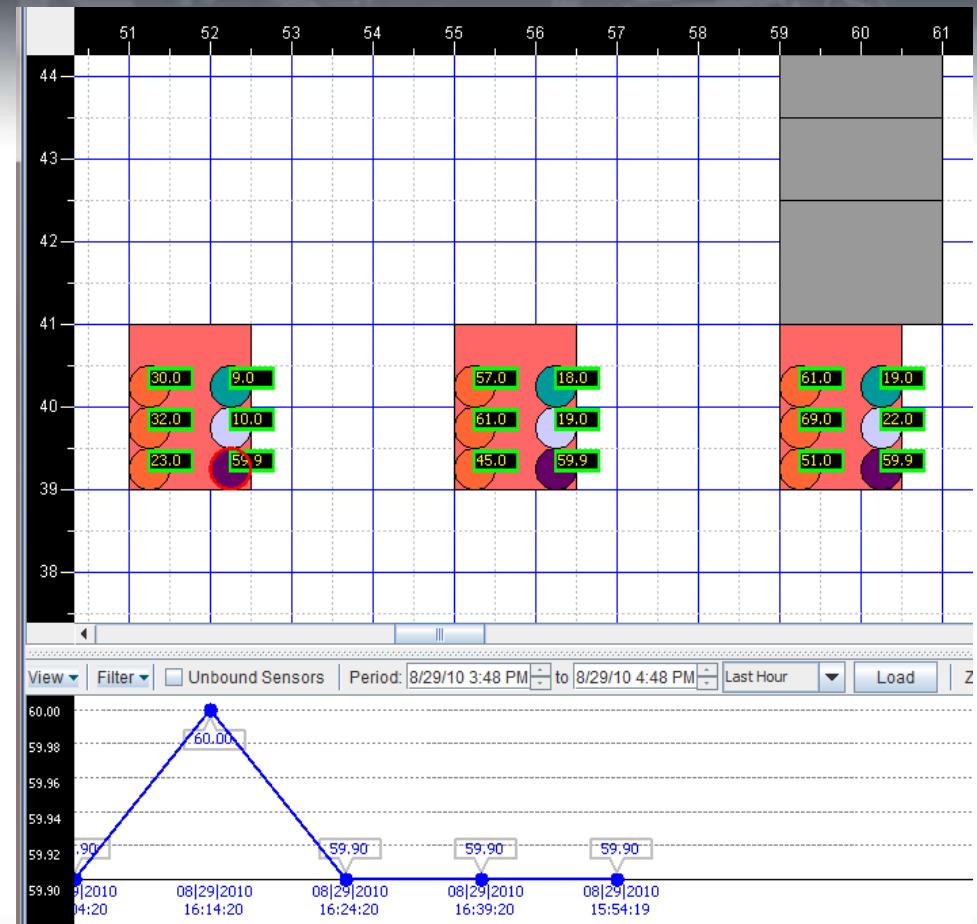
PI data feeds

CRAC Points:

- Fan speed
- Return temperature
- Supply temperature

PDU Points:

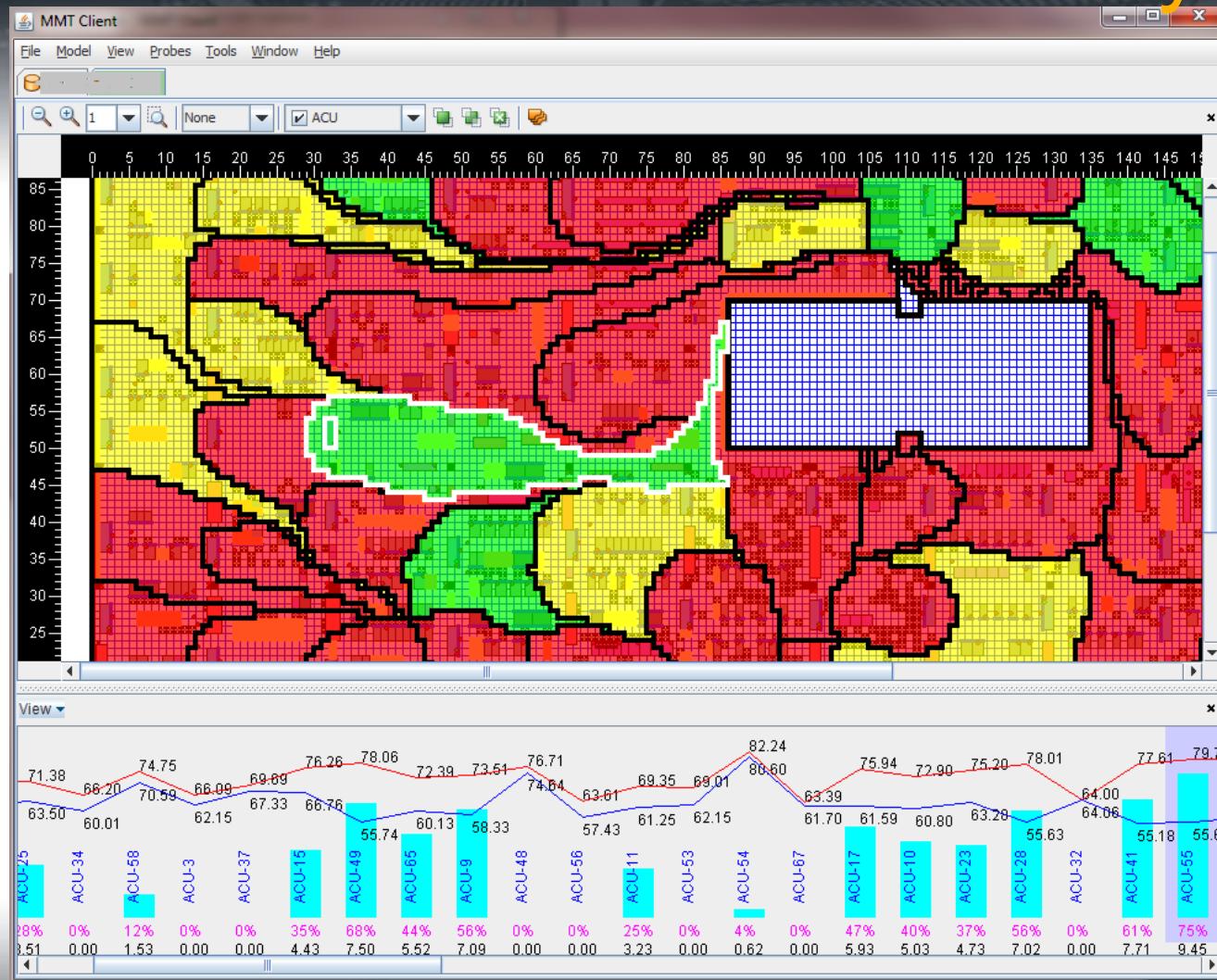
- Current A,B,C
- Voltage AB, BC, CA
- Total Power
- ... panels and circuits



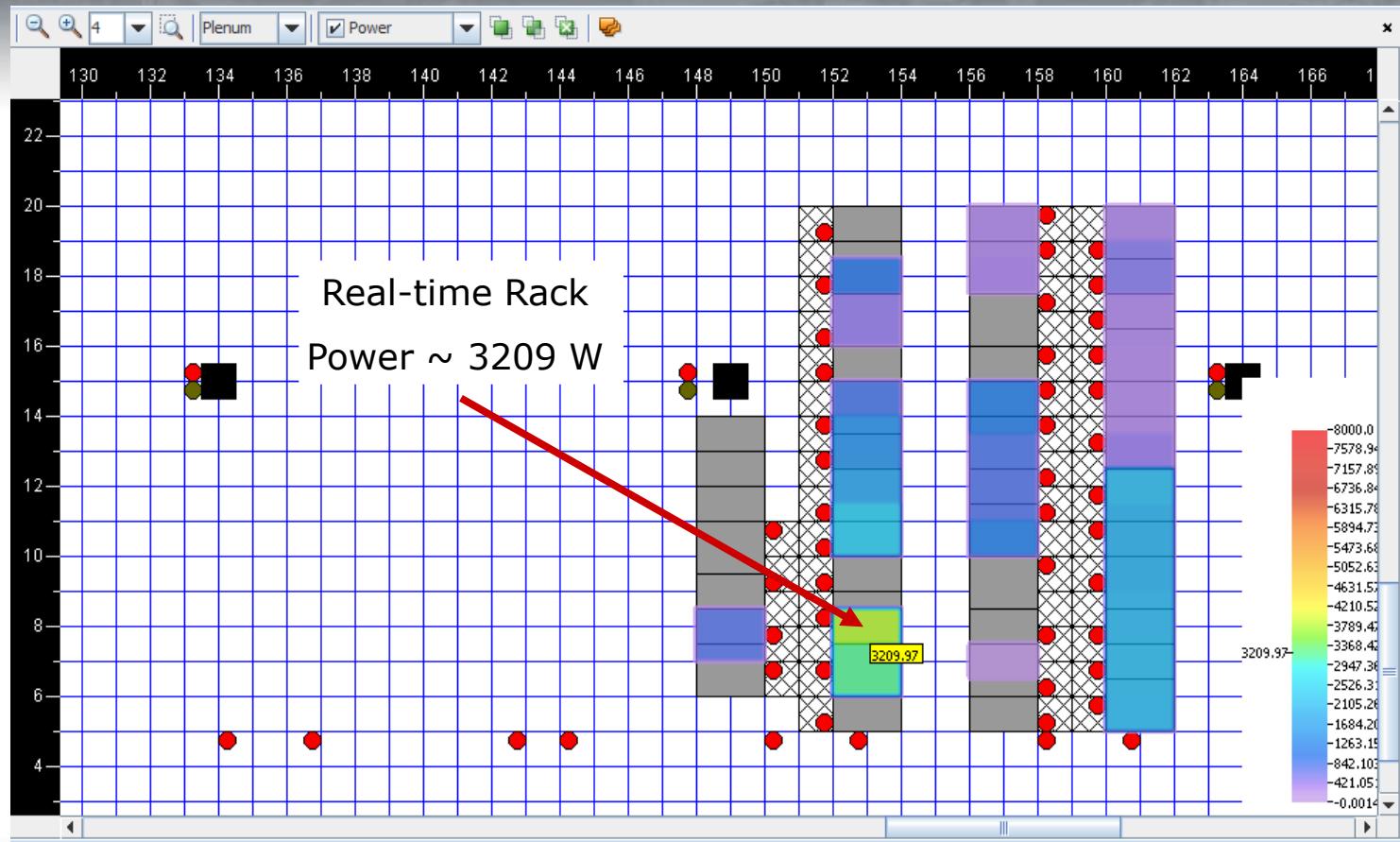
PI data visualization in MMT



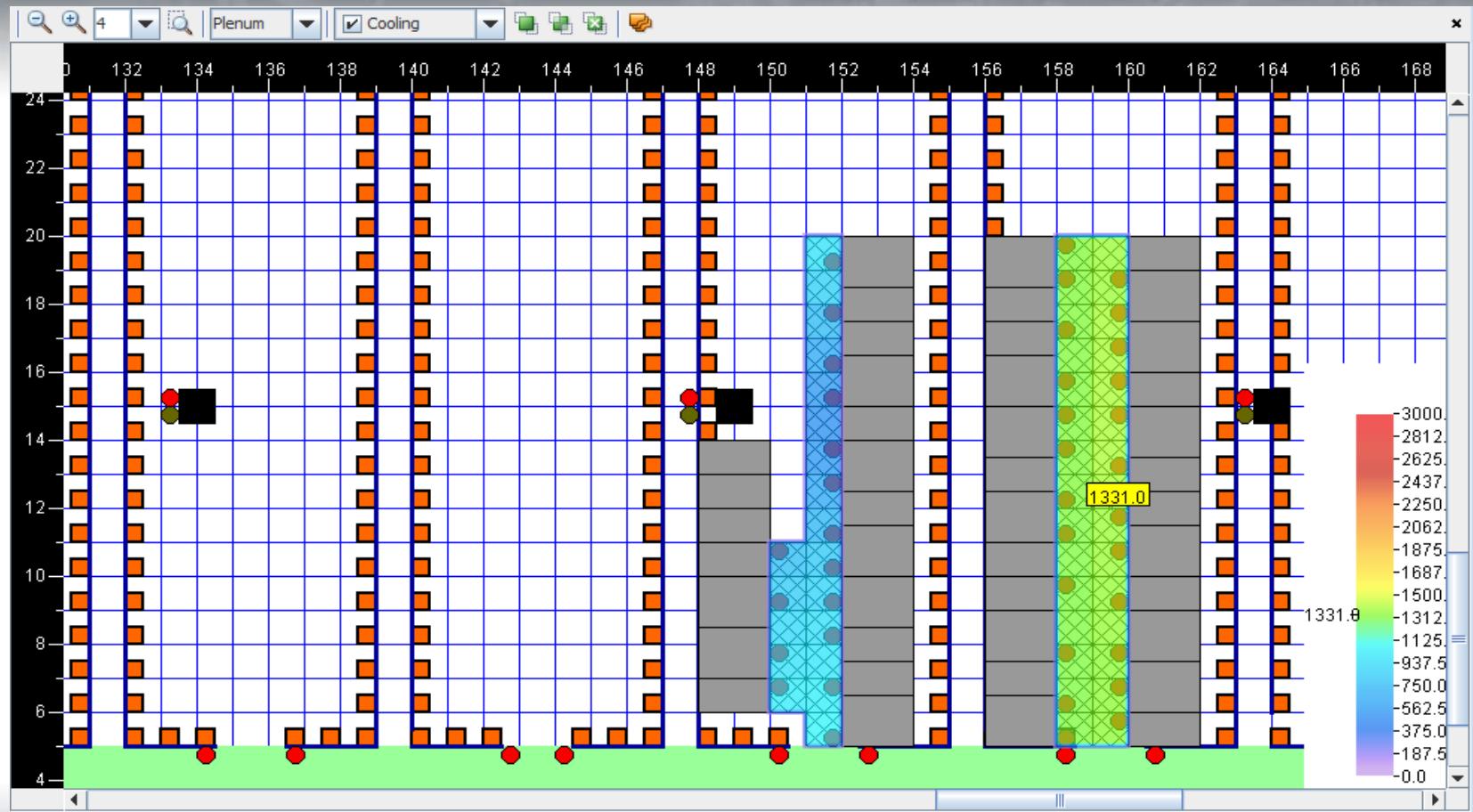
CRAC Zones & Efficiency



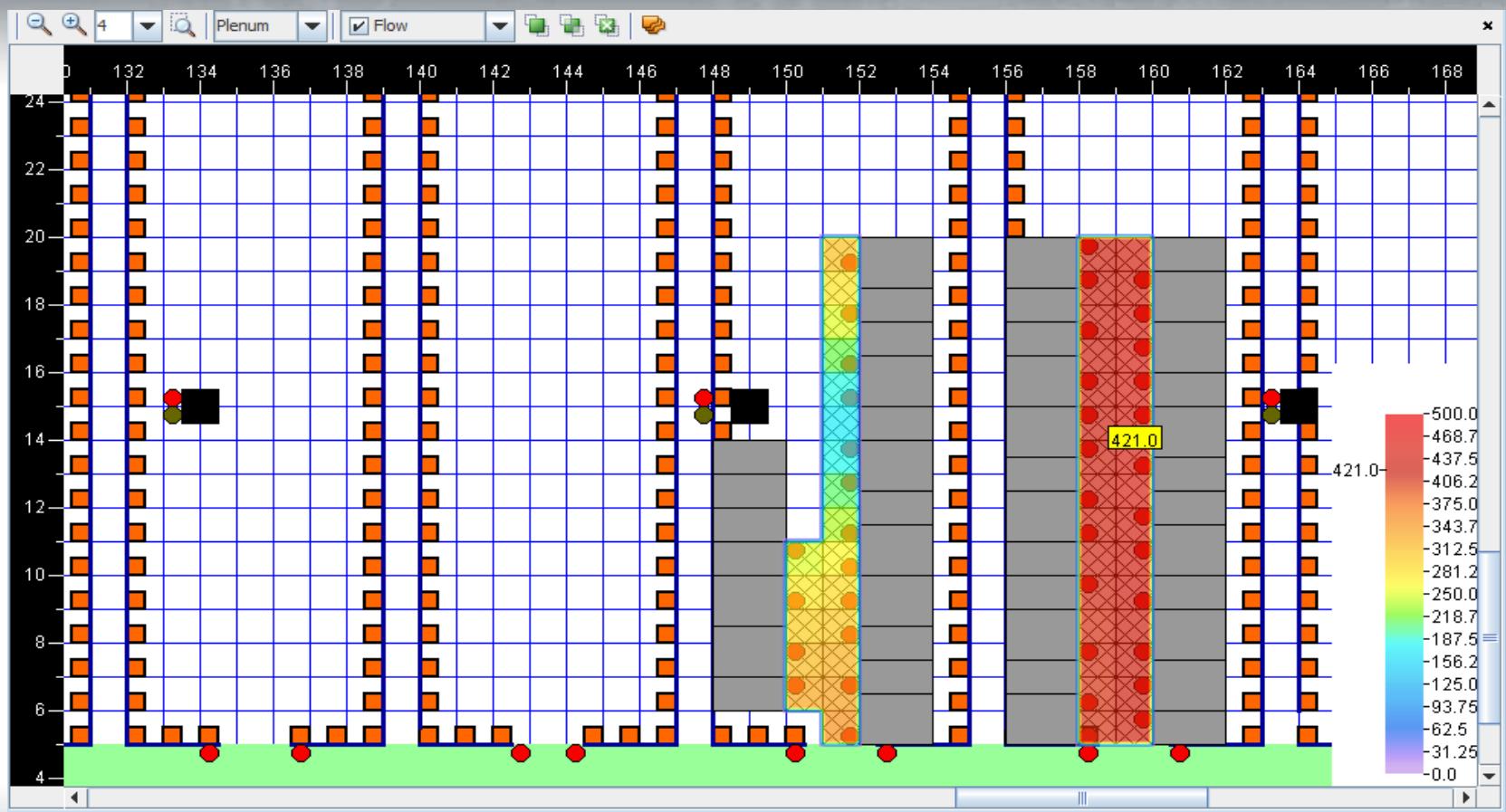
Power Distribution Analytics



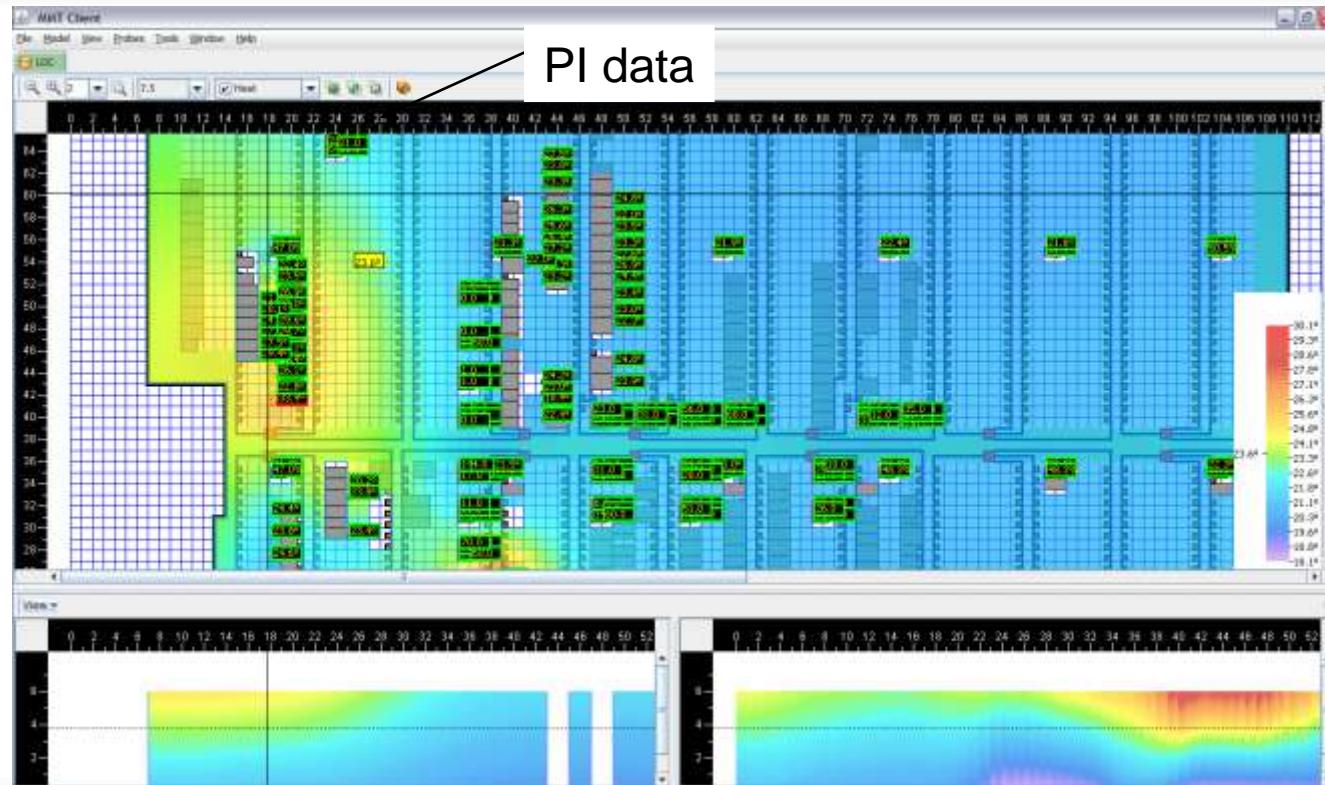
Cooling Analytics



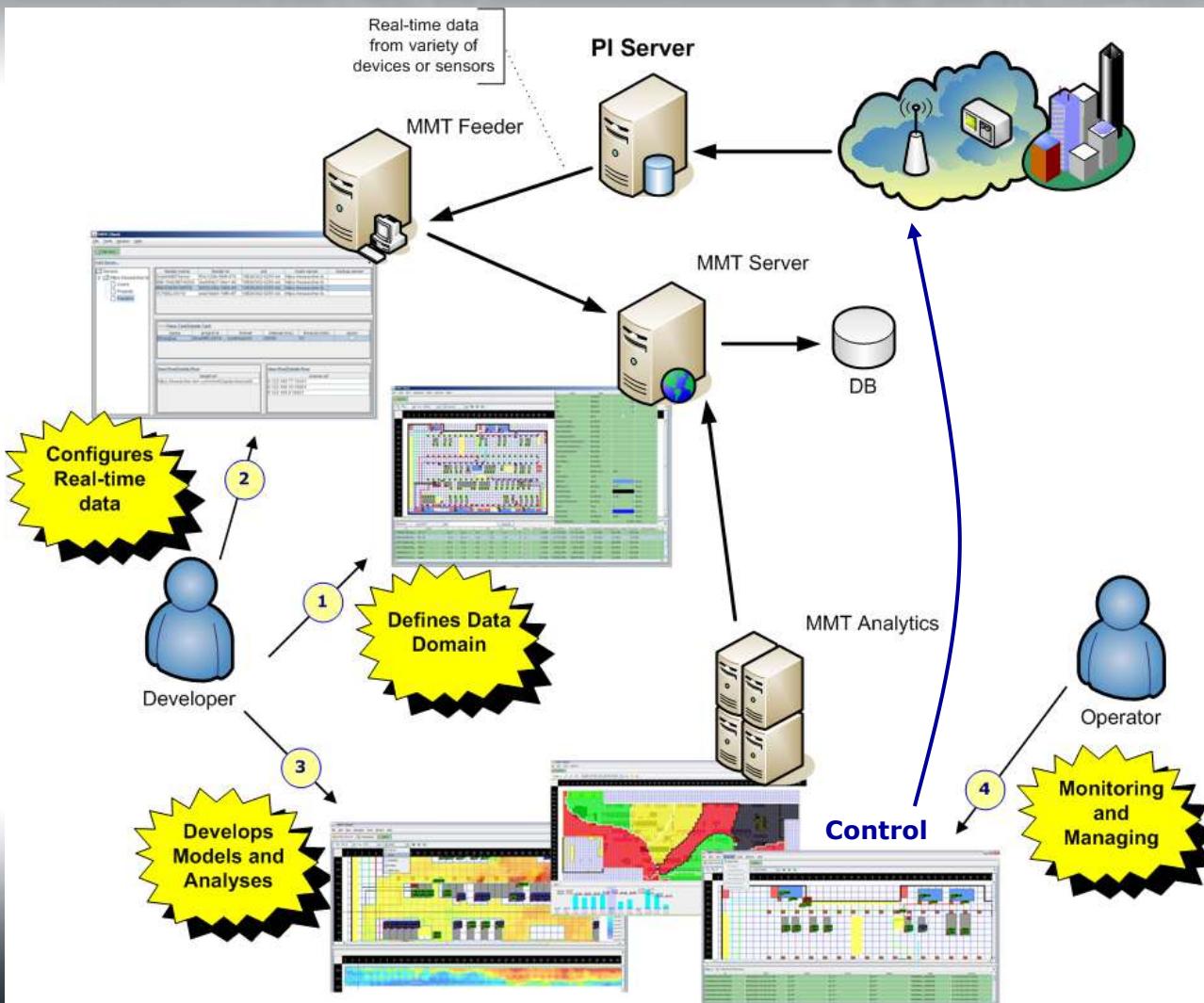
Flow Analytics



Heat Distribution Analytics



Integrated Modeling Environment



A tool/platform to define data models, read real-time data, plug-in analyses and visualization, deploy it to customers.

IBM – MMT - Conclusions

Use Cases and Demos

- MMT (Measurement Management Technologies)
 - PI SDK (polling now, later migrate to sign-up for update)
- Cognos (Green Sigma initiative)
 - PI JDBC (via Tivoli Agent) to Tivoli Data Warehouse
- Business Objects – Xcelsius
- Carbon Impact (CI)
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 - All Integration using SAP MII
 - » Uses XML – you supply or it generates from PI data



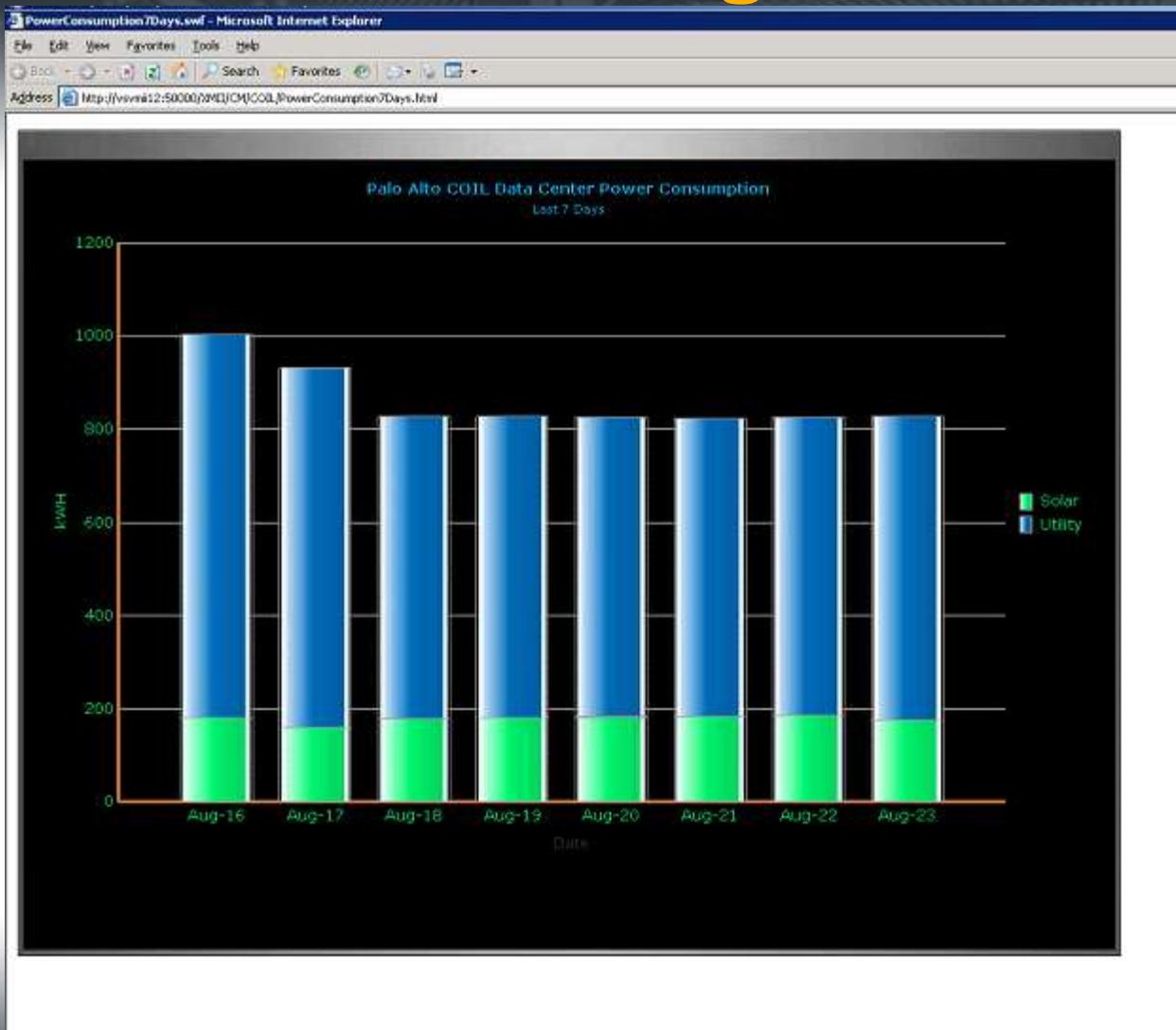
SAP – Xcelsius integration via MII

The screenshot displays two overlapping web browser windows. The top window, titled 'User Management, SAP AG - Microsoft Internet Explorer', shows a login screen for 'SAP NetWeaver'. It features a photograph of a man in a suit, a text input field for 'User ID' containing 'I821303', a password input field containing '*****', and a 'LogOn' button. The bottom window, titled 'MII Portal - Microsoft Internet Explorer', shows the 'MII Menu'. The menu includes options like 'SAP - Appleby, Michael', 'Energy', 'Administrator', 'Welcome, I821303', and a list of services: System Management, Security Services, Data Services (which is highlighted), Source Control Service, Message Services, Visualization Services, Navigation Services, and Support. To the right of the menu is a promotional box for 'SAP MANUFACTURING' with the subtext 'SAP MANUFACTURING INTEGRATION & INTELLIGENCE', a version note 'Version 12.1.5 Build(??)', and a photo of two people looking at a computer screen. The SAP logo is visible in the top right corner of the portal window.

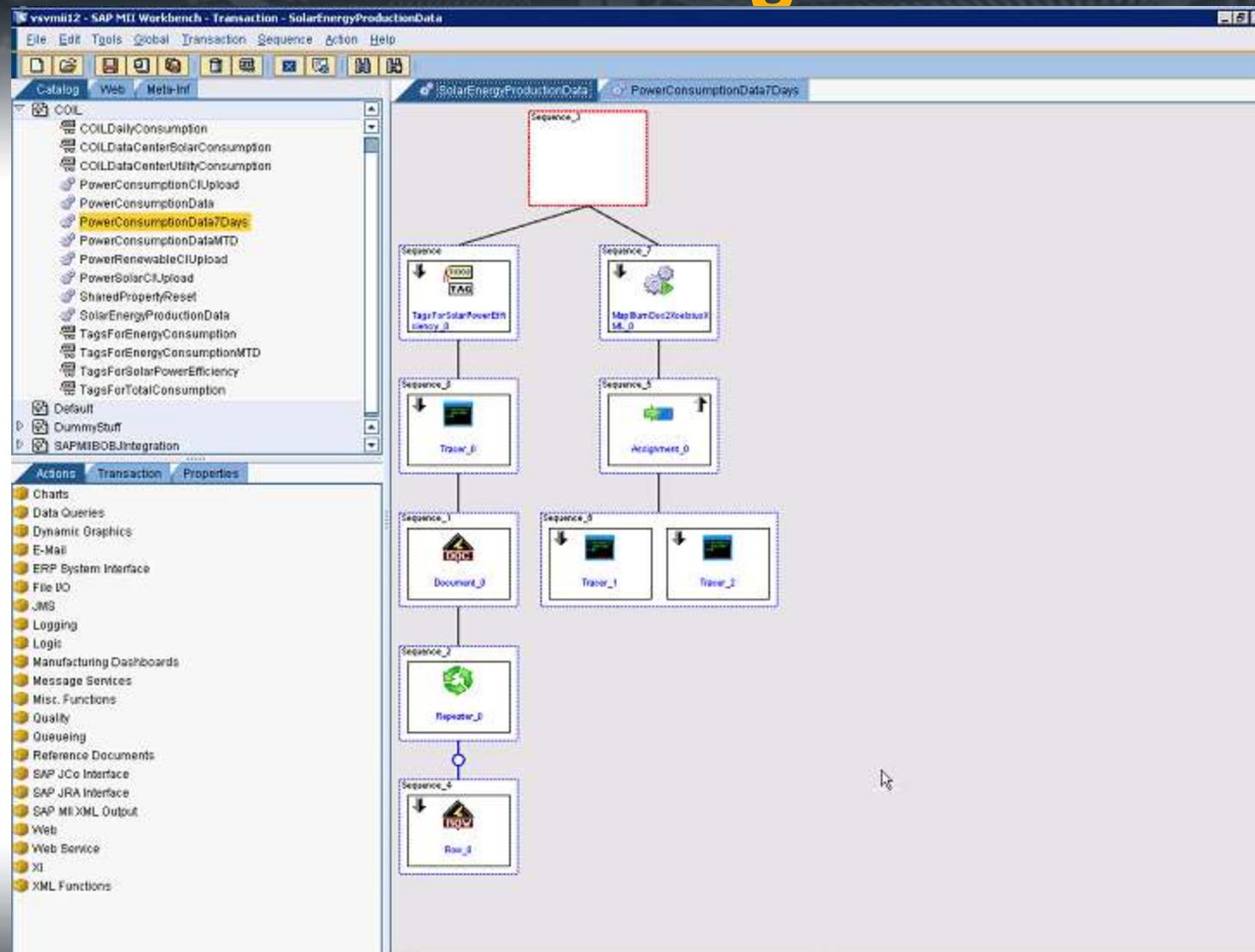
SAP – Xcelsius integration via MII



SAP – Xcelsius integration via MII



SAP – Xcelsius integration via MII



OSIsoft

SAP – Xcelsius integration via MII

The screenshot shows the SAP Xcelsius interface for creating dashboards. On the left, the 'Components' tree view lists various chart types like Charts, Containers, and Selectors. The main area displays a bar chart titled 'Solar Power Generation' with the subtitle '06/28/2010 07:10'. The Y-axis is labeled 'Solar Power Produced (kWh)' and ranges from 30 to 80. The X-axis shows 12 data points represented by green bars. Below the chart is an Excel-style spreadsheet with columns A through P and rows 1 through 16. Cell A2 contains the URL: <http://vsxmii12-50000/XMII/Runner?Transaction=COII/SolarEnergyProductionData&OutputParameter=OutputXML&IllumLoginName=xcelsius&IllumLoginPassword=st>. The status bar at the bottom indicates 'Document loaded'.

SAP – Xcelsius integration via MII

The screenshot shows the SAP Xcelsius 2010 application window. At the top, the title bar reads "SolarPowerGenerationStretch.xls - Xcelsius 2010". The menu bar includes File, SAP, Edit, View, Format, Data, and Help. Below the menu is a toolbar with various icons for file operations, themes, colors, and preview. On the left, a "Components" panel lists categories like Favorites, Charts, Containers, Selectors, Single Value, Maps, Text, Other, Art and Backgrounds, and Web Connectivity. An "Object Browser" panel shows a single item: "Panel Container 1". The main area contains a bar chart titled "Solar Power Generation" with the subtitle "06/28/2010 07:00". The Y-axis is labeled "Solar Power Produced (kWh)" and ranges from 30 to 80. The X-axis has 12 bars representing different time intervals. Below the chart is an Excel spreadsheet with data starting from row 13. The columns are labeled I through W. Row 13 contains headers: I1, J1, K1, L1, M1, N1, O1, P1, Q1, R1, S1, T1, U1, V1, W1. Row 14 contains the first data point: I13, J13, K13, L13, M13, N13, O13, P13, Q13, R13, S13, T13, U13, V13, W13. The data continues down to row 28.

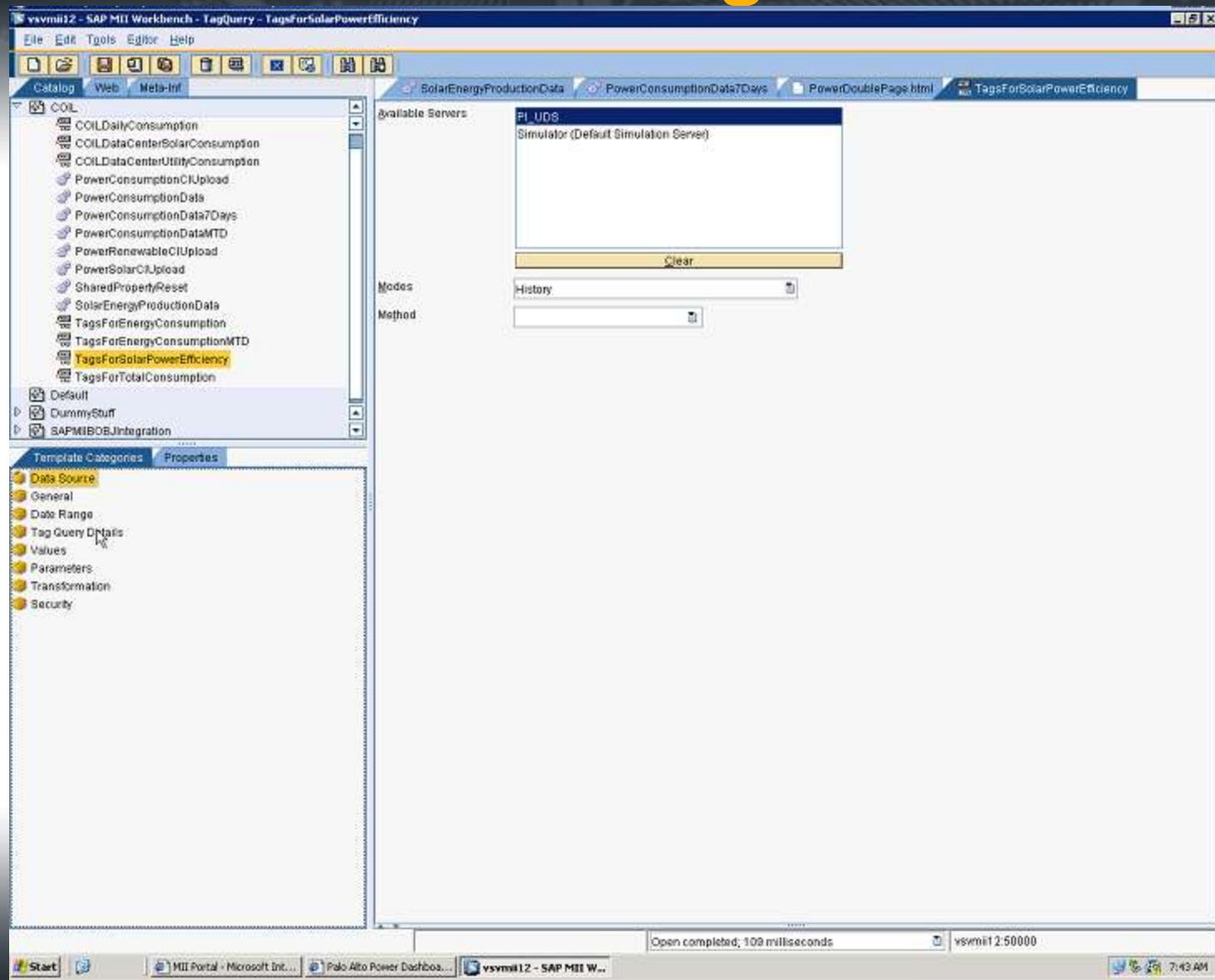
I13	J13	K13	L13	M13	N13	O13	P13	Q13	R13	S13	T13	U13	V13	W13
1	StringTime													
14	06/27/2010 07:31	10.05054	10.24953	9.973937	-0.0198	0.973111	201.2527	0.07403	0.238866	17.46447	15.65006	237.325	07:31	
15	06/27/2010 08:31	26.99589	28.88275	28.14183	-0.06989	0.974347	403.1827	0.099255	0.249984	20.25878	26.80383	237.318	08:31	
16	06/27/2010 09:31	44.15223	46.59353	45.326	-0.05529	0.972796	593.0897	0.110354	0.127139	22.37083	41.06254	237.312	09:31	
17	06/27/2010 10:31	61.30856	62.91864	60.99344	-0.02626	0.969402	748.041	0.121494	0.115405	24.60158	51.76568	237.305	10:31	
18	06/27/2010 11:31	70.27859	73.84016	71.51773	-0.03068	0.968548	832.616	0.125123	0.153588	27.7504	39.34138	237.299	11:31	
19	06/27/2010 12:31	74.69189	78.40094	75.91914	-0.04966	0.968345	858.7844	0.128928	0.305349	29.86506	64.52553	237.301	12:31	
20	06/27/2010 13:31	74.2954	78.43236	75.93618	-0.05568	0.968174	851.7018	0.12931	0.362841	31.19086	65.96112	237.303	13:31	
21	06/27/2010 14:31	68.28301	72.38349	70.09284	-0.06005	0.968354	821.267	0.12325	0.333814	32.05844	65.32545	237.305	14:31	
22	06/27/2010 15:31	59.12309	61.80317	59.97172	-0.04533	0.970367	748.439	0.1171	0.359101	31.98679	61.89966	237.307	15:31	
23	06/27/2010 16:31	47.362	51.3949	49.92	-0.08515	0.971303	651.464	0.10777	0.377237	31.9354	59.4426	237.309	16:31	
24	06/27/2010 17:31	47.362	51.3949	49.92	-0.08515	0.971303	651.464	0.10777	0.377237	31.9354	59.4426	237.311	17:31	
25	06/27/2010 18:31	47.362	51.3949	49.92	-0.08515	0.971303	651.464	0.10777	0.377237	31.9354	59.4426	237.313	18:31	
26	06/27/2010 19:31	47.362	51.3949	49.92	-0.08515	0.971303	651.464	0.10777	0.377237	31.9354	59.4426	237.315	19:31	
27	06/27/2010 20:31	47.362	51.3949	49.92	-0.08515	0.971303	651.464	0.10777	0.377237	31.9354	59.4426	237.317	20:31	
28	06/27/2010 21:31	47.362	51.3949	49.92	-0.08515	0.971303	651.464	0.10777	0.377237	31.9354	59.4426	237.319	21:31	

SAP – Xcelsius integration via MII

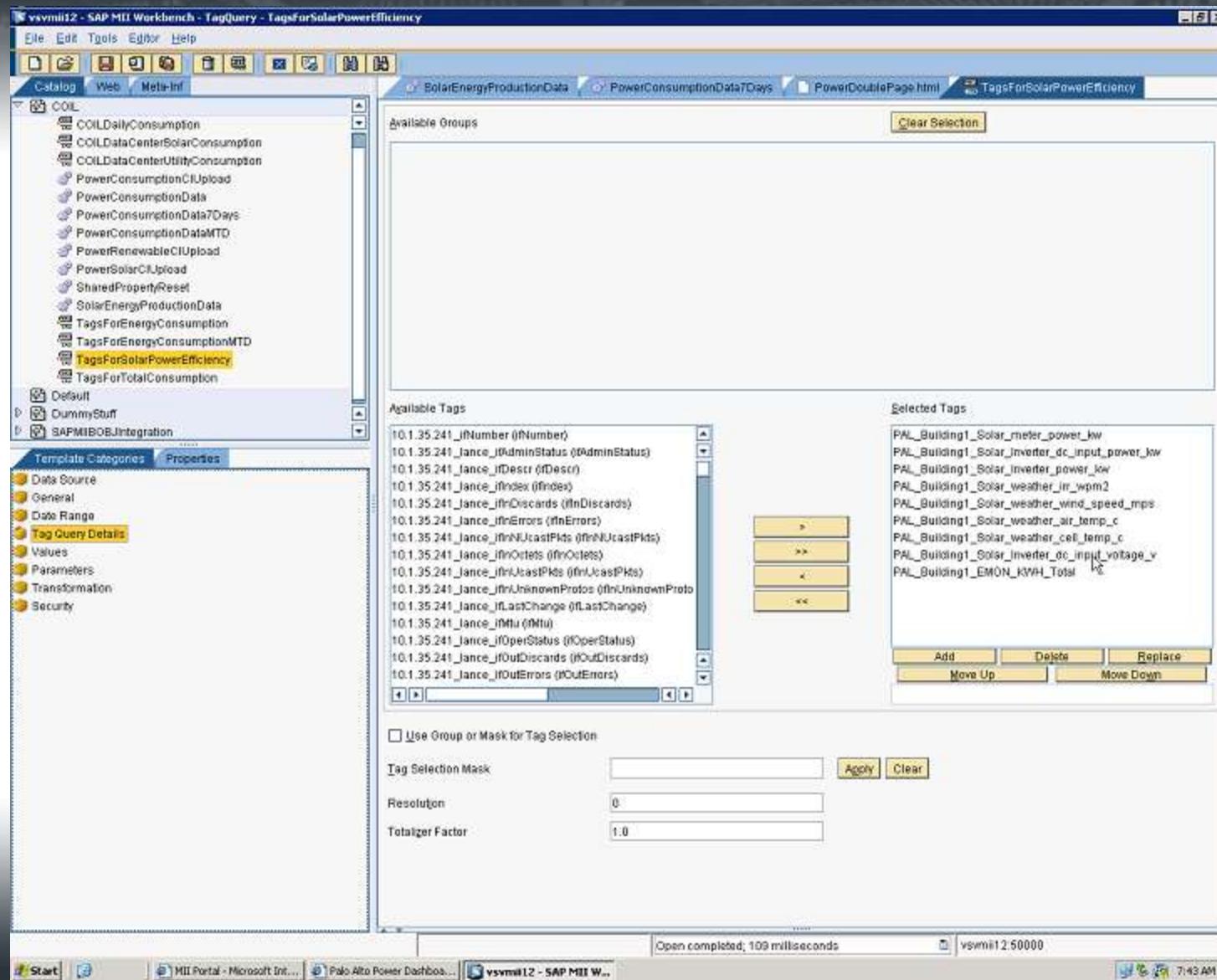
The screenshot shows the SAP - Xcelsius integration interface. On the left, there's a navigation pane with categories like Favorites, Charts, Containers, Selectors, Single Value, Maps, Text, Other, Art and Backgrounds, and Web Connectivity. Below it is an Object Browser showing a Panel Container 1. In the center, there's a chart titled "Solar Power Generation" showing power produced in kWh over time. To the right of the chart is a "Data Manager" dialog box. The dialog has tabs for Definition and Usage. Under Definition, the XML Data is named "SolarEnergyData" and the XML Data URL is "Connectors!\$A\$2". The MIME Type is set to "text/xml". There are two sections under "Enable Load": one for "SAPMII_1" and another for "SAPMII_2". Both sections have "Name" fields and "Range" fields. A "Preview XML" button is available. At the bottom of the dialog is a "Import Named Ranges" button. Below the dialog, a spreadsheet window is open, showing data from row 13 to 28. The columns include StringTime (containing dates and times like 06/27/2010 07, 06/27/2010 08, etc.) and various numerical values.

	StringTime	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
13																													
14																													
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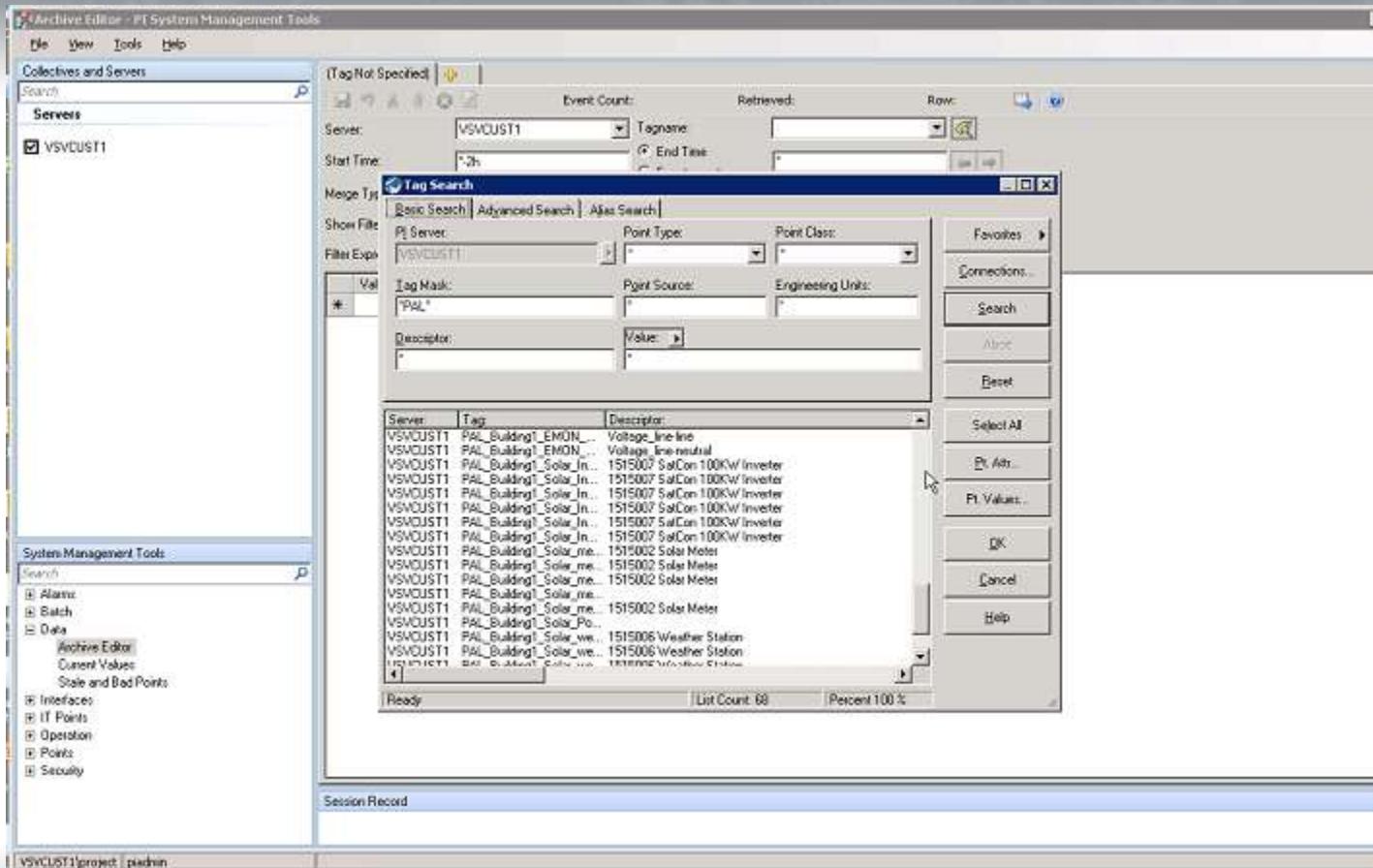
SAP – Xcelsius integration via MII



SAP – Xcelius integration via MII



SAP – Xcelsius integration via MII



Where PI geeks meet...

OSIsoft

SAP – Xcelsius integration via MII

The screenshot shows the SAP MII Workbench interface for TagQuery. The title bar indicates the connection is to `vsvmi12.dmspal.sap.corp:2050 - Remote Desktop`. The main window displays the `TagsForSolarPowerEfficiency` query results.

The left sidebar shows the Catalog tree, which includes nodes for COIL, Default, DummyStuff, and SAPMIBOBJIntegration. Under COIL, several tags are listed, with `TagsForSolarPowerEfficiency` highlighted. Below the Catalog tree are categories: Data Source, General, Date Range, Tag Query Details (highlighted), Values, Parameters, Transformation, and Security.

The central area shows the `Available Groups` and a `Query Results - COIL/TagsForSolarPowerEfficiency` dialog box. The dialog box contains a table with data from Rowset 1, showing the following data:

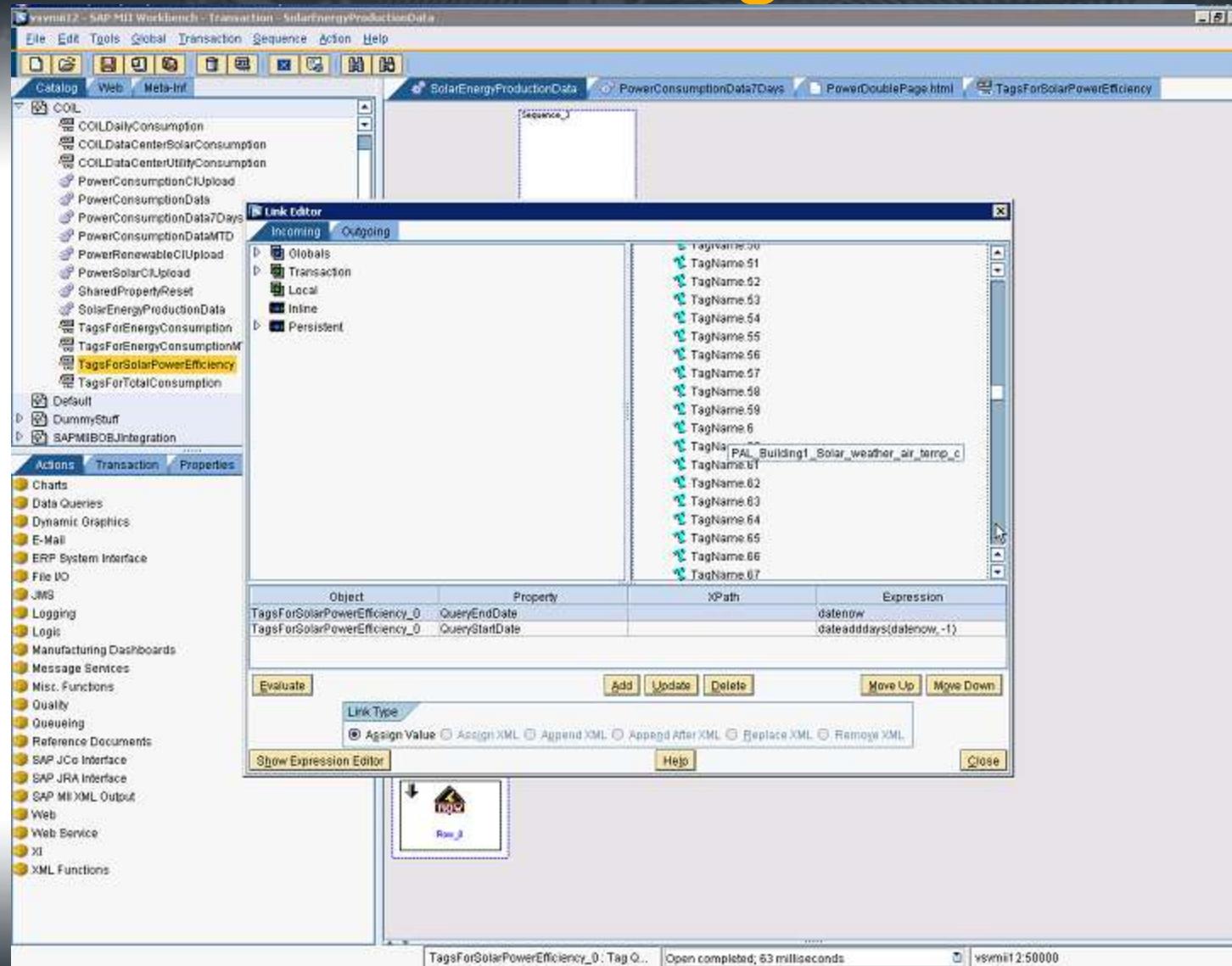
Datetime	PAL_Building1_Solar_PowerCOILPerc
2010-08-23T07:47:45	3.541767035617
2010-08-23T08:47:45	8.797183036004
2010-08-23T09:47:45	14.052587999573
2010-08-23T10:47:45	19.308012009867
2010-08-23T11:47:45	23.164728184673
2010-08-23T12:47:45	23.04052734375
2010-08-23T13:47:45	22.916328430176
2010-08-23T14:47:45	20.474586486816
2010-08-23T15:47:45	15.806186676025
2010-08-23T16:47:45	10.889312744141
2010-08-23T17:47:45	6.173606504364
2010-08-23T18:47:45	1.45005970775
2010-08-23T19:47:45	0.287323236485
2010-08-23T20:47:45	0.246276974678
2010-08-23T21:47:45	0.205230712891
2010-08-23T22:47:45	0.164184436202

The dialog box also shows a list of selected tags: `PAL_Building1_Solar_PowerCOILPerc` and `PAL_Building1_EMON_Energy_delivered`.

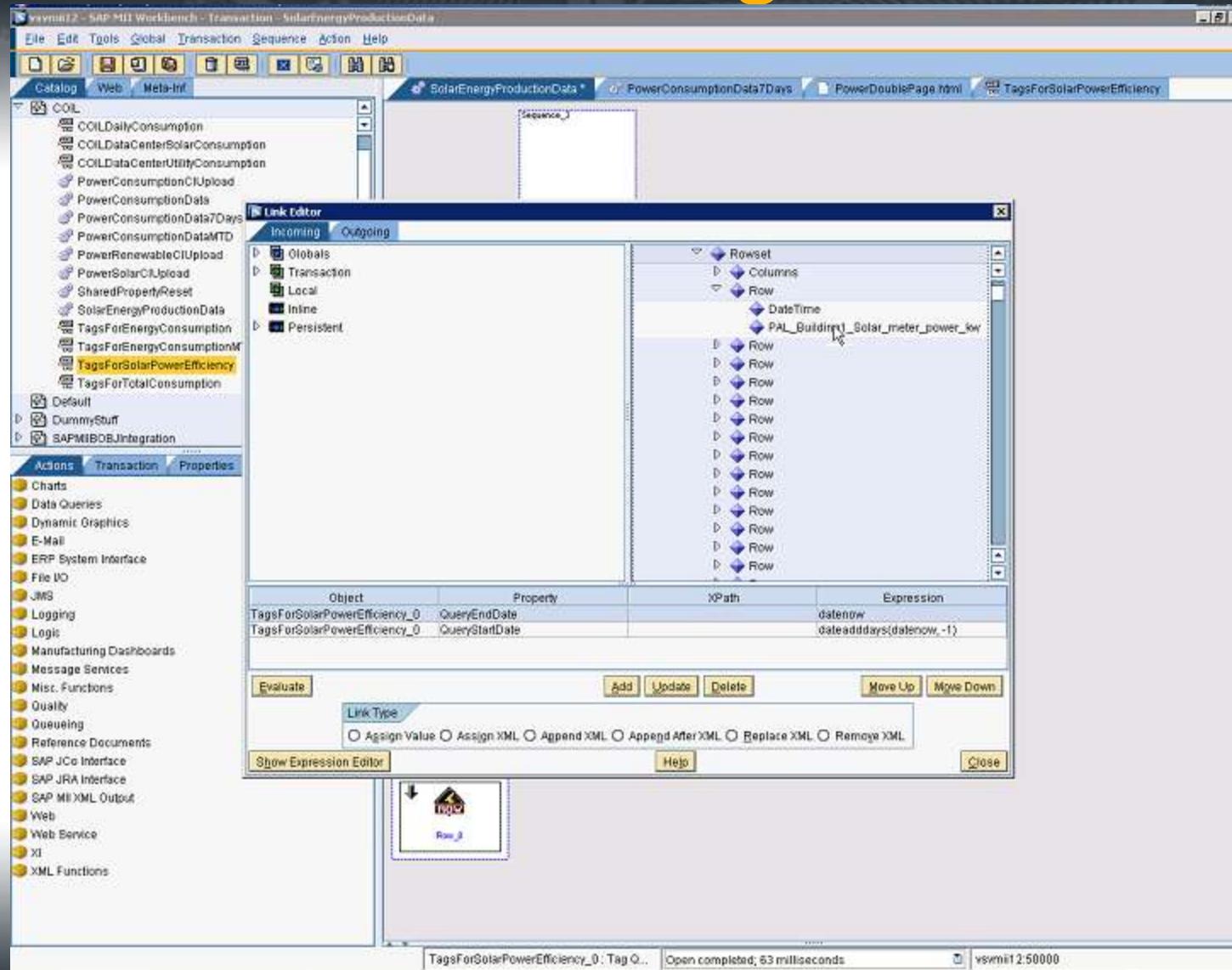
The bottom section of the dialog box contains buttons for Add, Delete, Replace, Move Up, and Move Down, along with a processing status message: `Processing complete`.

The footer of the dialog box shows the URL: `http://vsvmi12:50000/MII/Illuminator?QueryTemplate=COIL%2FTagsForSolarPowerEfficiency`.

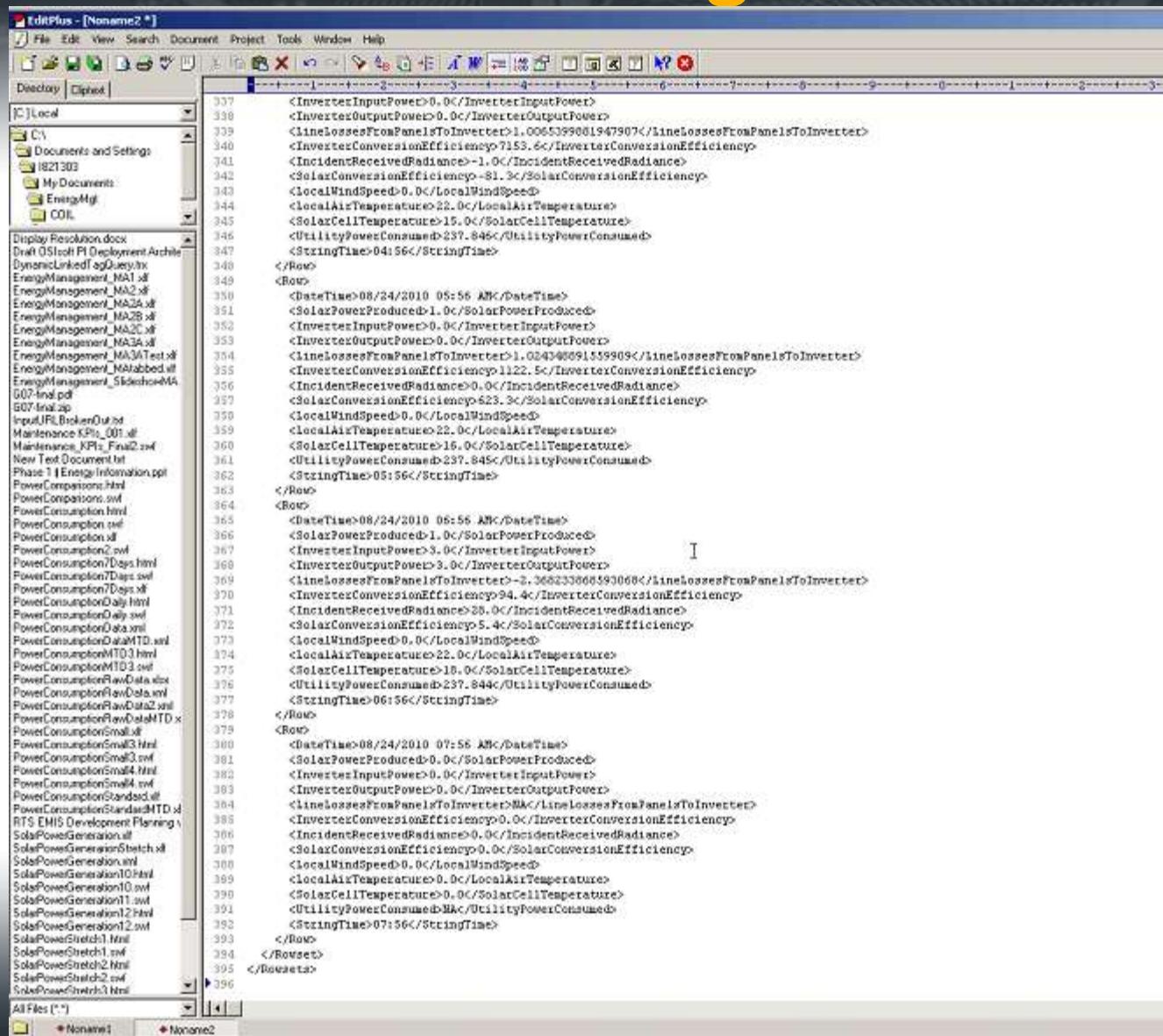
SAP – Xcelsius integration via MII



SAP – Xcelsius integration via MII

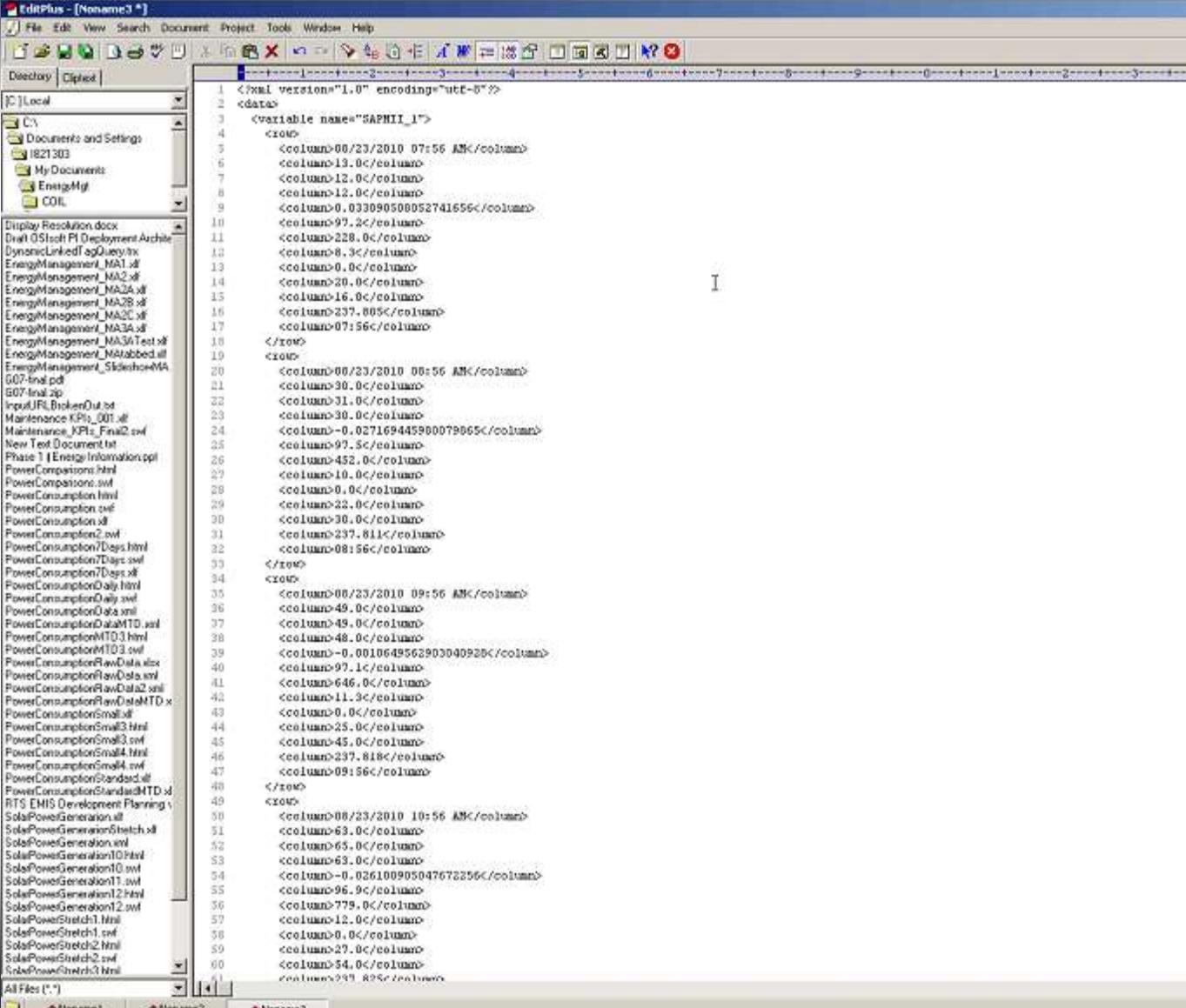


SAP – Xcelsius integration via MII



OSIsoft

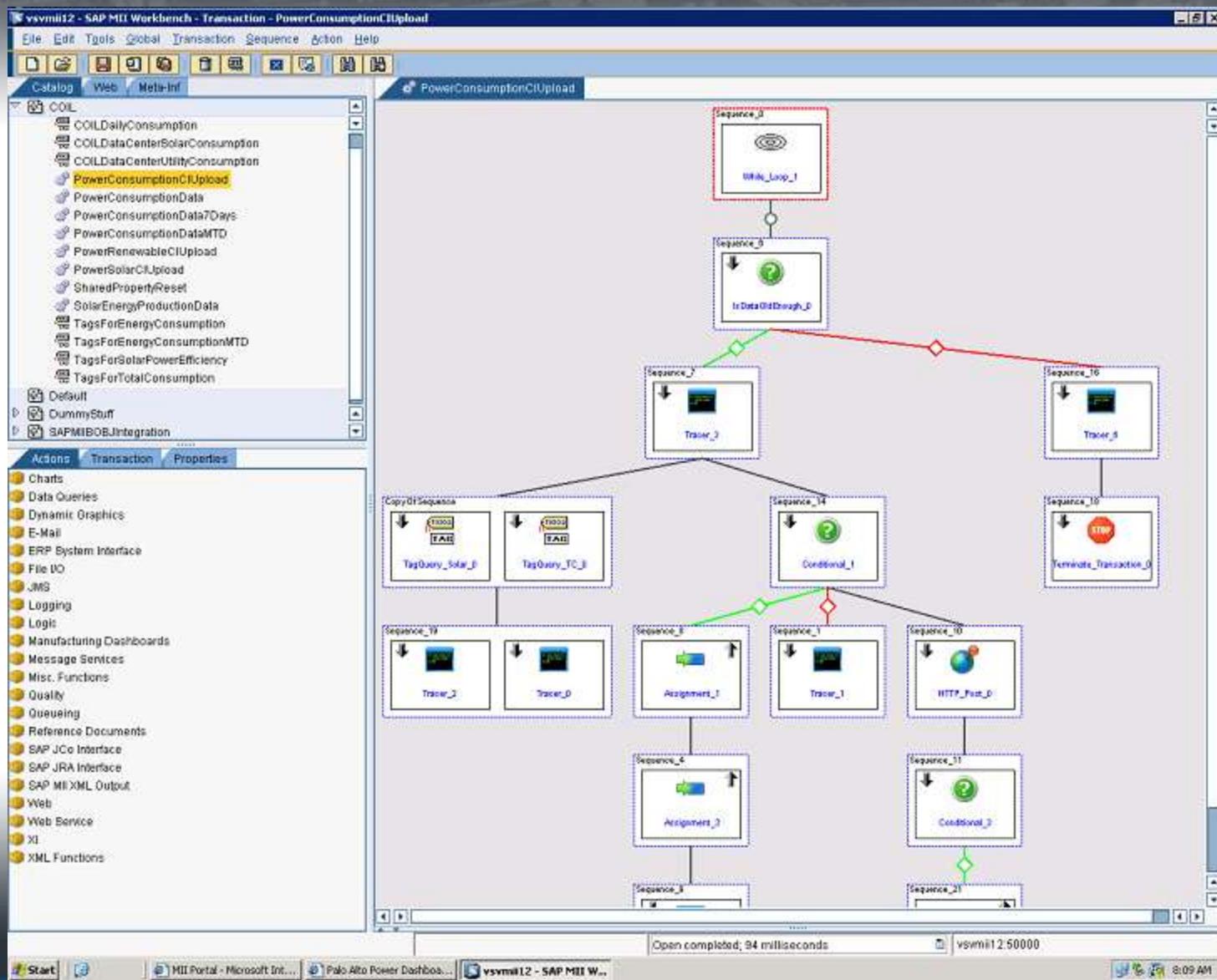
SAP – Xcelsius integration via MII



The screenshot shows a Windows desktop environment with a taskbar at the bottom. On the taskbar, there are icons for Start, Task View, File Explorer, Edge browser, File History, Task Scheduler, Task Manager, and a system icon. The main window is titled "EditPlus - [Noname3 *]" and contains a large amount of XML code. The code is a series of rows and columns, likely representing a data structure or schema. The XML includes declarations like `<?xml version="1.0" encoding="utf-8"?>` and `<?xsd:schema?>`. It defines variables such as `variable name="SAPMII_1"`, creates rows and columns, and includes numerical values like `0.033090500052741556</column>` and `0.027169445980079065</column>`. The code is color-coded for syntax highlighting. The file path in the left sidebar is C:\Local\Documents and Settings\1821303\My Documents\EnergyMgt\COI. The status bar at the bottom shows "All Files (*.*)".

```
<?xml version="1.0" encoding="utf-8"?>
<?xsd:schema?>
<variable name="SAPMII_1">
<row>
<column>08/23/2010 07:56 AM</column>
<column>19.0c</column>
<column>12.0c</column>
<column>12.0c</column>
<column>0.033090500052741556</column>
<column>97.2c</column>
<column>228.0c</column>
<column>8.3c</column>
<column>0.0c</column>
<column>20.0c</column>
<column>16.0c</column>
<column>237.805c</column>
<column>07:56c</column>
</row>
<row>
<column>08/23/2010 08:56 AM</column>
<column>30.0c</column>
<column>31.0c</column>
<column>30.0c</column>
<column>-0.027169445980079065</column>
<column>97.5c</column>
<column>452.0c</column>
<column>10.0c</column>
<column>0.0c</column>
<column>22.0c</column>
<column>30.0c</column>
<column>237.811c</column>
<column>08:56c</column>
</row>
<row>
<column>08/23/2010 09:56 AM</column>
<column>49.0c</column>
<column>49.0c</column>
<column>48.0c</column>
<column>-0.0010649562903040928c</column>
<column>97.1c</column>
<column>646.0c</column>
<column>11.3c</column>
<column>0.0c</column>
<column>25.0c</column>
<column>45.0c</column>
<column>237.818c</column>
<column>09:56c</column>
</row>
<row>
<column>08/23/2010 10:56 AM</column>
<column>63.0c</column>
<column>65.0c</column>
<column>63.0c</column>
<column>-0.026100905047672256c</column>
<column>96.9c</column>
<column>779.0c</column>
<column>12.0c</column>
<column>0.0c</column>
<column>27.0c</column>
<column>54.0c</column>
<column>237.825c</column>
</row>
<row>
```

SAP – Carbon Impact integration via MII

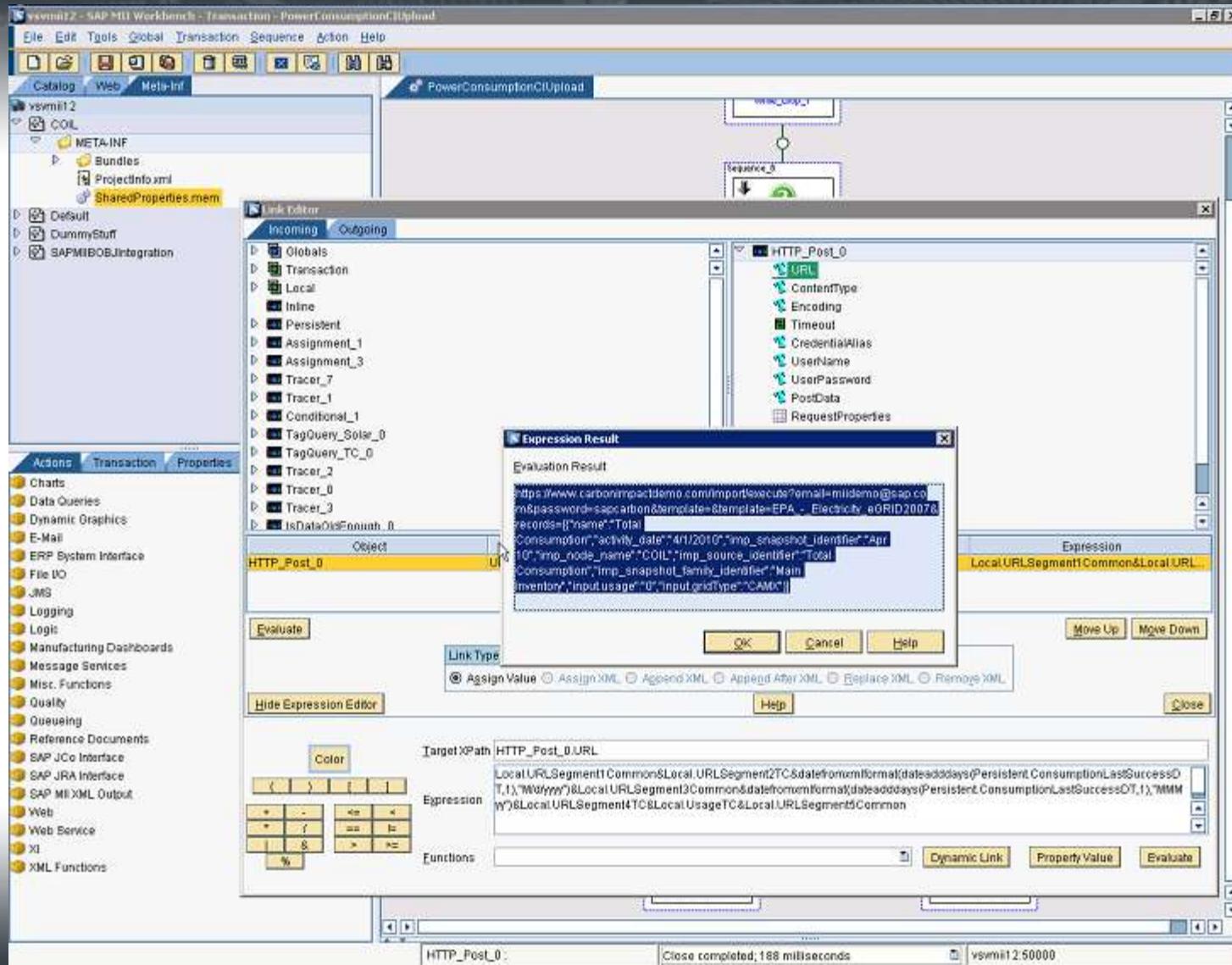


SAP – Carbon Impact integration via MII

The screenshot shows the SAP MII Portal interface in Microsoft Internet Explorer. The left sidebar contains a navigation menu with sections like System Management, Security Services, Data Services, Source Control Service, Message Services, Visualization Services, Navigation Services, and Support. The main content area is titled "Shared Memory" and displays a table of data. The table has columns for Project, Namespace, Name, Type, Storage Type, and Value. The data shown is related to energy consumption and renewable energy uploads for a project named COIL.

Project	Namespace	Name	Type	Storage Type	Value
COIL		ConsumedTagName	string	Persistent	PAL_Building1_EMON_Energy_delivered
COIL		ConsumptionDataUpload	xml	Persistent	
COIL		ConsumptionLastSuccessDT	timestamp	Persistent	2010-08-23T00:00:00
COIL		DataServerName	string	Persistent	PL_UDS
COIL		RenewableDataUpload	xml	Persistent	
COIL		RenewableLastSuccessDT	timestamp	Persistent	2010-08-23T00:00:00
COIL		RenewableTagName	string	Persistent	PAL_Building1_EMON_Energy_delivered
COIL		SolarDataUpload	xml	Persistent	
COIL		SolarLastSuccessDT	timestamp	Persistent	2010-08-23T00:00:00

SAP – Carbon Impact integration via MII



SAP – Carbon Impact integration via MII

SAP Carbon Impact-Operational Activities - Windows Internet Explorer
https://www.carbonimpactdemo.com/inventory/activity/main?current_time=Tue+Aug+24+11%3A08%3415+0400+2010&hierarchy_id=150278&snapshot_id=16659&type=InvOpsActivity

File Edit View Favorites Tools Help

SAP Carbon Impact Operational Activities

Welcome MII: Your role is Administrator at MII Demo

SAP Carbon Impact

Site Map Glossary Setup Assistant Sign Out

Main Inventory (v1) > Aug 10 Activities

MII Demo Operations

MII Demo Operations

Rollup MII Demo Operations Activities

27.0 metric tons CO2e

Total Consumption Renewable Solar

Rollup Activities Page 1 of 23

ID	Activity	Start Date	End Date	Source	Scope	Waste	Amount
3855189	Total Consumption	Aug 01, 2010		Total Consumption	Scope 2	CO2	328 kg
3855189	Total Consumption	Aug 01, 2010		Total Consumption	Scope 2	N2O	3.66 g
3855189	Total Consumption	Aug 01, 2010		Total Consumption	Scope 2	CH4	13.7 g
3855190	Total Consumption	Aug 04, 2010		Total Consumption	Scope 2	CO2	329 kg
3855190	Total Consumption	Aug 04, 2010		Total Consumption	Scope 2	CH4	13.7 g
3855190	Total Consumption	Aug 04, 2010		Total Consumption	Scope 2	N2O	3.67 g
3855191	Total Consumption	Aug 02, 2010		Total Consumption	Scope 2	CO2	330 kg
3855191	Total Consumption	Aug 02, 2010		Total Consumption	Scope 2	CH4	13.8 g
3855191	Total Consumption	Aug 02, 2010		Total Consumption	Scope 2	N2O	3.68 g
3855193	Total Consumption	Aug 03, 2010		Total Consumption	Scope 2	CO2	329 kg
3855193	Total Consumption	Aug 01, 2010		Total Consumption	Scope 2	CH4	13.7 g
3855193	Total Consumption	Aug 03, 2010		Total Consumption	Scope 2	N2O	3.67 g
3855194	Total Consumption	Aug 05, 2010		Total Consumption	Scope 2	CO2	329 kg
3855194	Total Consumption	Aug 05, 2010		Total Consumption	Scope 2	N2O	3.68 g
3855194	Total Consumption	Aug 05, 2010		Total Consumption	Scope 2	CH4	13.8 g
3855195	Total Consumption	Aug 06, 2010		Total Consumption	Scope 2	CO2	330 kg
3855195	Total Consumption	Aug 06, 2010		Total Consumption	Scope 2	CH4	13.8 g
3855195	Total Consumption	Aug 06, 2010		Total Consumption	Scope 2	N2O	3.68 g

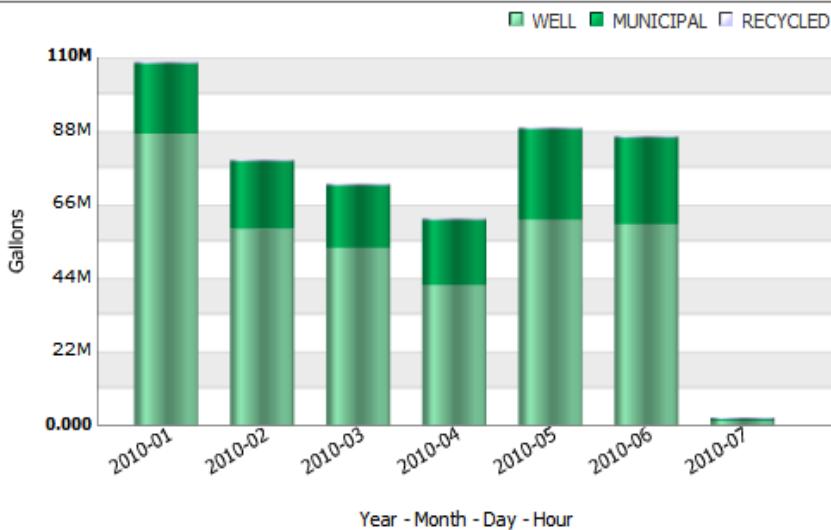
Done Internet 100%

SAP – PM, PP/PI, QM

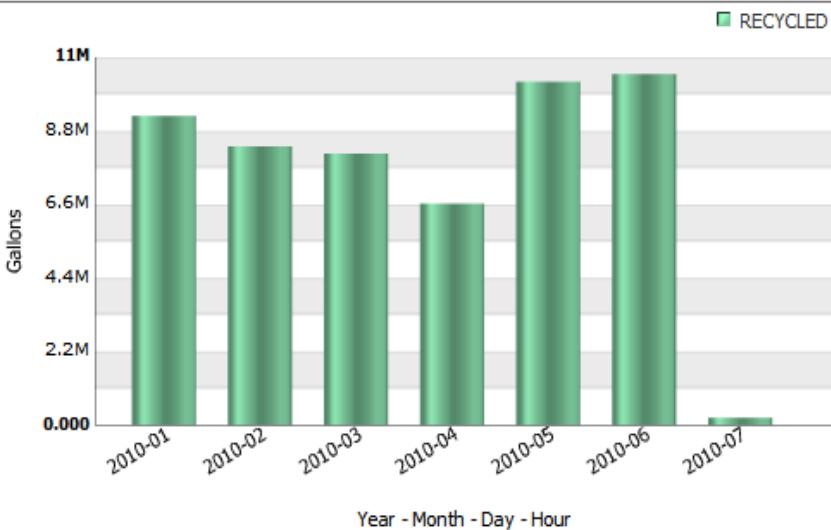
IBM Ireland – Green Sigma

PI JDBC → Tivoli Data Warehouse → Cognos BI

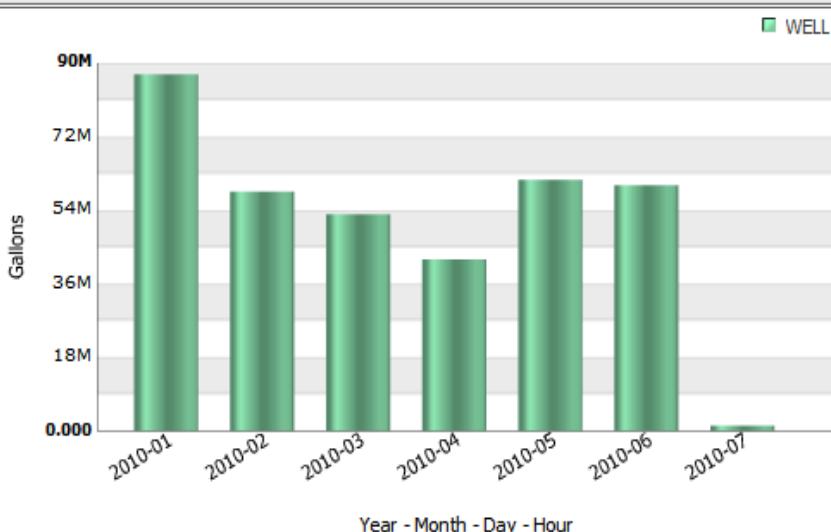
EFK : INCOMING WATER



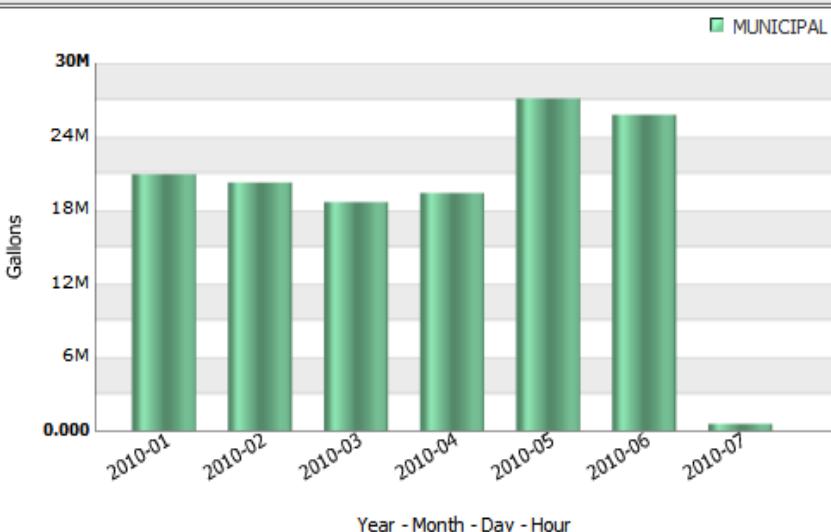
EFK : RECYCLED USAGE



EFK : WELL USAGE



EFK : MUNICIPAL USAGE



The screenshot shows a Java development environment with the following details:

- Toolbar:** Standard icons for file operations (New, Open, Save, Print, Find, Replace, Copy, Paste, Cut, Undo, Redo), project navigation (Up, Down, Left, Right, Home, End, Back, Forward), and code editing (Search, Sort, Filter, Comment, Uncomment, Format, Run, Stop, Breakpoint).
- Menubar:** File, Edit, Source, Refactor, Navigate, Search, Project, Data, Run, Window, Help.
- Project Explorer:** Shows files Main.java, DI_list.java, *PIGSDemo.java, and PITest.java.
- Code Editor:** Displays Java code for a database connection and query execution. The code uses JDBC to connect to a database and execute a complex SQL query involving multiple well tags.

```
int recordCount = 0;
String url = "jdbc:sqlplus://9.255.255.255:5461/Data Source=PIDataSRC;user=greensigma;password=greensigma ; Integrated Security=SSPI";
String driver = "com.osisoft.jdbc.Driver";
Statement stmt; ResultSet rs;
Properties plist = new Properties();

plist.put("LogConsole", "True"); // optionally switch on debug info
//plist.put("LogLevel", "3"); // 3=Fine
plist.put("user", "greensigma");
plist.put("password", "greensigma");

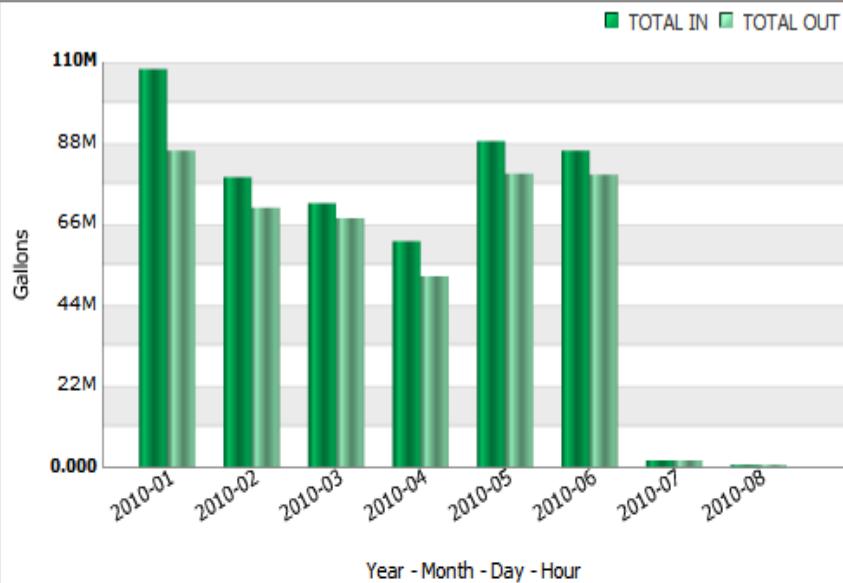
try {
    Class.forName(driver).newInstance();
    // System.out.println("About to Create Connection");
    con = DriverManager.getConnection(url, plist);
    // System.out.println("Creating Statement");
    stmt = con.createStatement(ResultSet.TYPE_SCROLL_INSENSITIVE, ResultSet.CONCUR_READ_ONLY);

    rs = stmt.executeQuery("SELECT tag, value, time FROM picomp2 WHERE tag in " +
        "('E56.27.S317_INFNTNK_FIT114','E53.60.44.S323_DRW_FLW_FT01','B315_CUP_MPW_INFL_FLOW1_S'," +
        "'B315_CUP_MPW_INFL_FLOW2_S','C60.57.01.S690WELL_WELL-01_FI-0101'," +
        "'C60.57.01.S690WELL_WELL-02_FI-0201'," +
        "'C60.57.01.S690WELL_WELL-04_FI-0401'," +
        "'C60.57.01.S690WELL_WELL-05_FI-0501_FILTERED'," +
        "'C60.57.01.S690WELL_WELL-05A_FI-0501_FILTERED'," +
        "'C60.57.01.S690WELL_WELL-06_FI-0601'," +
        "'C60.57.01.S690WELL_WELL-07_FI-0701'," +
        "'C60.57.01.S690WELL_WELL-23_FI-2301'," +
        "'C60.57.01.S690WELL_WELL-25_FI-2501'," +
        "'C60.57.01.S690WELL_WELL-14_FI-1401'," +
        "'C60.57.01.S690WELL_WELL-14A_FI-1401_FILTERED'," +
        "'C60.57.01.S690WELL_WELL-16_FI-1601'," +
        "'C60.57.01.S690WELL_WELL-890_FI-8901'," +
        "'C60.57.01.S690WELL_WELL-20_FI-2001_FILTERED'," +
        "'C60.57.01.S690WELL_WELL-20A_FI-2001_FILTERED'," +
        "'C60.57.01.S690WELL_WELL-21_FI-2101'," +
        "'C60.57.01.S690WELL_WELL-22_FI-2201'," +
        "'C60.57.01.S690WELL_WELL-10_FI-1001'," +
        "'C60.57.01.S690WELL_WELL-12_FI-1201'," +
        "'S317MP17:S317_EFFTNK_FIT127'," +
        "'S317MP17:S317_EFFTNK_FIT127A'," +
        "'E55.01.S325_EQ_TNK_T3_FLOW'," +
        "'E55.01.S325_EQ_TNK_T4_FLOW'," +
        "'E55.01.S325_FT-9'," +
        "'E55.01.S325_FT-10'" +
        " and time > '2010-08-26 00:00:00' and time < '2010-08-26 01:00:00');");
    System.out.println("      Start of Output      ");
}
```

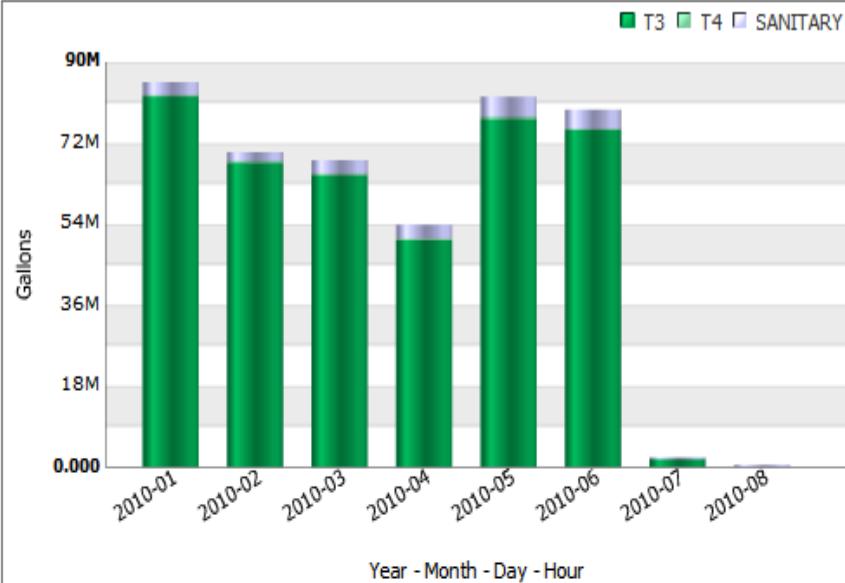
C:\WINDOWS\system32\cmd.exe

```
C:\>Atemp>java -jar PIData.jar
"B315_CUP_MPW_INFL_FLOW2_S",272.0,"2010-08-26 02:38:55"
"C60.57.01.S690WELL_WELL-01_FI-0101",197.0,"2010-08-26 02:30:36"
"C60.57.01.S690WELL_WELL-02_FI-0201",108.0,"2010-08-26 02:35:34"
"C60.57.01.S690WELL_WELL-05A_FI-0501_FILTERED",0.0,"2010-08-26 02:35:39"
"C60.57.01.S690WELL_WELL-10_FI-1001",2.0,"2010-08-26 02:31:36"
"C60.57.01.S690WELL_WELL-10_FI-1001",101.0,"2010-08-26 02:32:35"
"C60.57.01.S690WELL_WELL-10_FI-1001",2.0,"2010-08-26 02:33:35"
"C60.57.01.S690WELL_WELL-10_FI-1001",289.0,"2010-08-26 02:34:34"
"C60.57.01.S690WELL_WELL-10_FI-1001",3.0,"2010-08-26 02:35:34"
"C60.57.01.S690WELL_WELL-10_FI-1001",3.0,"2010-08-26 02:40:35"
"C60.57.01.S690WELL_WELL-14A_FI-1401_FILTERED",0.0,"2010-08-26 02:36:05"
"C60.57.01.S690WELL_WELL-16_FI-1601",43.0,"2010-08-26 02:32:19"
"C60.57.01.S690WELL_WELL-20_FI-2001_FILTERED",0.0,"2010-08-26 02:36:05"
"C60.57.01.S690WELL_WELL-20A_FI-2001_FILTERED",0.0,"2010-08-26 02:36:05"
"C60.57.01.S690WELL_WELL-21_FI-2101",345.0,"2010-08-26 02:32:19"
"C60.57.01.S690WELL_WELL-22_FI-2201",258.0,"2010-08-26 02:32:19"
"E53.60.44.S323_DRW_FLW_FT01",230.43956,"2010-08-26 02:30:39"
"E53.60.44.S323_DRW_FLW_FT01",239.01099,"2010-08-26 02:30:56"
"E53.60.44.S323_DRW_FLW_FT01",194.5055,"2010-08-26 02:31:13"
"E53.60.44.S323_DRW_FLW_FT01",233.73627,"2010-08-26 02:31:54"
"E53.60.44.S323_DRW_FLW_FT01",219.23077,"2010-08-26 02:32:12"
"E53.60.44.S323_DRW_FLW_FT01",176.37363,"2010-08-26 02:32:38"
"E53.60.44.S323_DRW_FLW_FT01",212.96703,"2010-08-26 02:32:53"
"E53.60.44.S323_DRW_FLW_FT01",236.04396,"2010-08-26 02:33:10"
"E53.60.44.S323_DRW_FLW_FT01",222.52747,"2010-08-26 02:33:38"
"E53.60.44.S323_DRW_FLW_FT01",227.8022,"2010-08-26 02:33:53"
"E53.60.44.S323_DRW_FLW_FT01",205.05495,"2010-08-26 02:34:32"
"E53.60.44.S323_DRW_FLW_FT01",236.37363,"2010-08-26 02:35:10"
"E53.60.44.S323_DRW_FLW_FT01",227.47253,"2010-08-26 02:35:36"
"E53.60.44.S323_DRW_FLW_FT01",198.13187,"2010-08-26 02:35:53"
"E53.60.44.S323_DRW_FLW_FT01",220.21979,"2010-08-26 02:36:10"
"E53.60.44.S323_DRW_FLW_FT01",224.5055,"2010-08-26 02:36:35"
"E53.60.44.S323_DRW_FLW_FT01",191.20879,"2010-08-26 02:36:50"
"E53.60.44.S323_DRW_FLW_FT01",226.15384,"2010-08-26 02:37:07"
"E53.60.44.S323_DRW_FLW_FT01",201.75824,"2010-08-26 02:37:31"
"E53.60.44.S323_DRW_FLW_FT01",200.43956,"2010-08-26 02:37:49"
"E53.60.44.S323_DRW_FLW_FT01",235.05495,"2010-08-26 02:38:00"
"E53.60.44.S323_DRW_FLW_FT01",233.73627,"2010-08-26 02:38:20"
"E53.60.44.S323_DRW_FLW_FT01",219.56044,"2010-08-26 02:38:42"
"E53.60.44.S323_DRW_FLW_FT01",244.94505,"2010-08-26 02:38:58"
"E53.60.44.S323_DRW_FLW_FT01",197.8022,"2010-08-26 02:39:37"
"E53.60.44.S323_DRW_FLW_FT01",234.06593,"2010-08-26 02:39:54"
"E53.60.44.S323_DRW_FLW_FT01",222.1978,"2010-08-26 02:40:11"
"E53.60.44.S323_DRW_FLW_FT01",228.79121,"2010-08-26 02:40:54"
"E55.01.S325_EQ_TNK_T3_FLOW",2245.0,"2010-08-26 02:31:01"
"E55.01.S325_EQ_TNK_T3_FLOW",2281.0,"2010-08-26 02:32:58"
"E55.01.S325_EQ_TNK_T3_FLOW",2413.0,"2010-08-26 02:33:58"
"E55.01.S325_EQ_TNK_T3_FLOW",2143.0,"2010-08-26 02:34:58"
"E55.01.S325_EQ_TNK_T3_FLOW",2303.0,"2010-08-26 02:35:58"
"E55.01.S325_EQ_TNK_T3_FLOW",2339.0,"2010-08-26 02:36:58"
"E55.01.S325_EQ_TNK_T3_FLOW",2425.0,"2010-08-26 02:37:57"
"E55.01.S325_EQ_TNK_T3_FLOW",2048.0,"2010-08-26 02:38:57"
"E55.01.S325_EQ_TNK_T3_FLOW",2349.0,"2010-08-26 02:39:58"
"E55.01.S325_FT-10",2460.0,"2010-08-26 02:31:01"
"E55.01.S325_FT-10",2410.0,"2010-08-26 02:34:58"
"E55.01.S325_FT-10",2463.0,"2010-08-26 02:36:58"
```

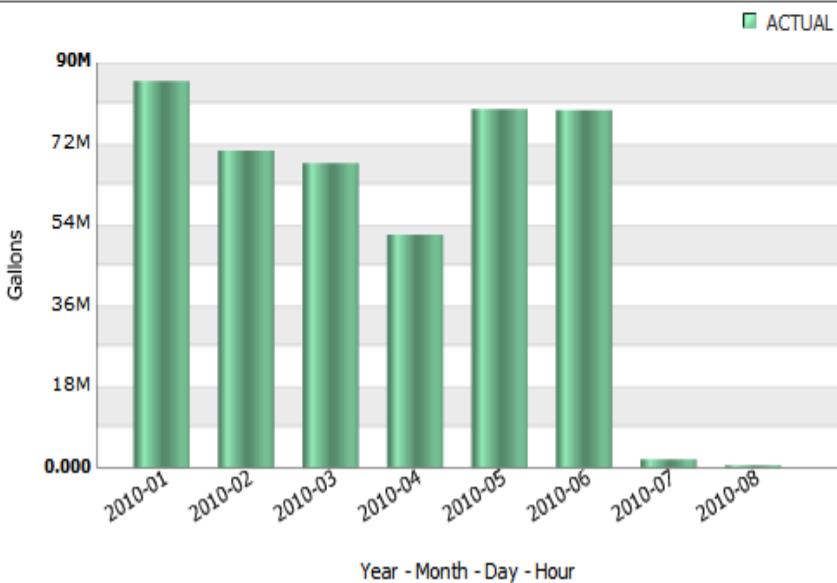
EFK : DISCHARGE TOTAL IN / TOTAL OUT



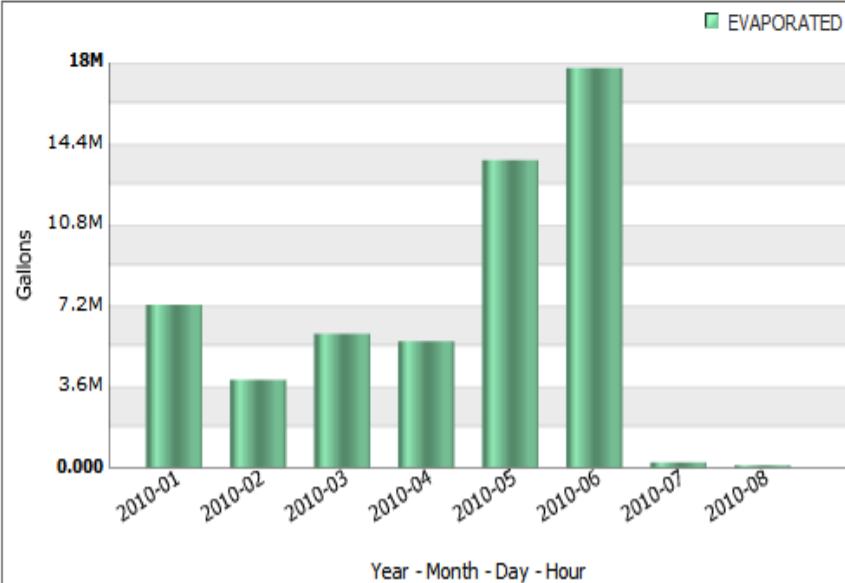
EFK : DISCHARGE COMPOSITE



EFK : DISCHARGE ACTUAL

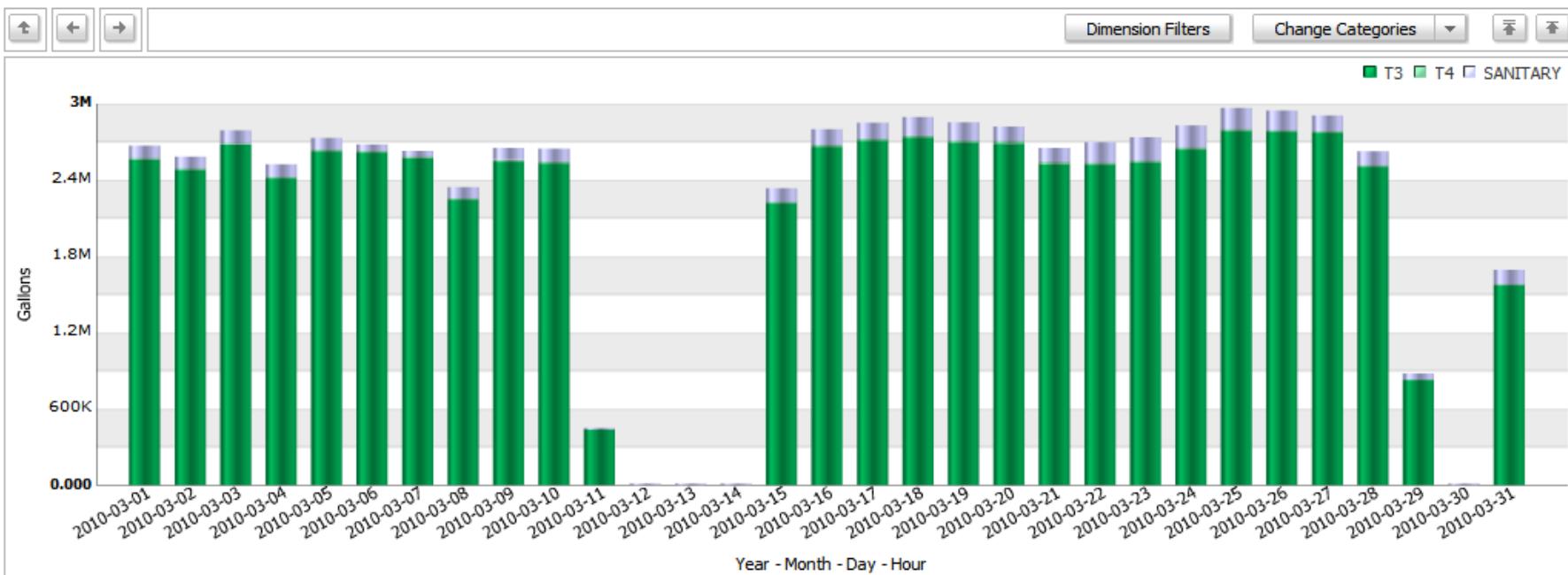


EFK : DISCHARGE EVAPORATED WATER



EFK : DISCHARGE COMPOSITE

Activities ▾



Applied Filters:

Dublin - DateTime DIM.MONTH = 2010-03
for Dublin - DateTime DIM.YEAR = 2010

"Day"	T3	T4	SANITARY
2010-03-01	2,556,849.606	15,232.668	97,576.662
2010-03-02	2,475,528.378	15,153.384	93,007.428
2010-03-03	2,678,712.162	14,135.922	98,966.64
2010-03-04	2,410,578.504	13,524.498	97,448.748
2010-03-05	2,624,473.926	14,315.304	92,895.894

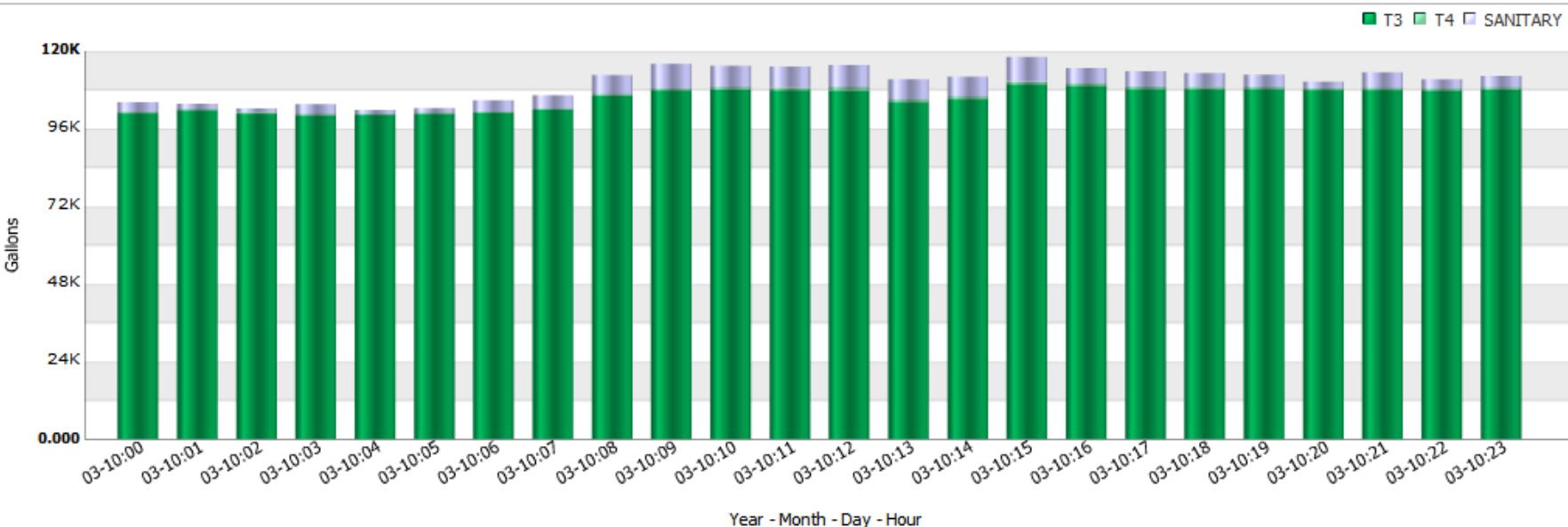
T3 and T4 and SANITARY by "Hour"

Activities ▾



Dimension Filters

Change Categories ▾



Applied Filters:



Dublin - DateTime DIM.Day = 2010-03-10
for Dublin - DateTime DIM.Month = 2010-03 and Dublin - DateTime DIM.YEAR = 2010

"Hour"	T3	T4	SANITARY
03-10-00	100,746.312	508.23	2,977.5
03-10-01	101,547.906	542.496	1,650
03-10-02	100,664.112	525.516	1,020
03-10-03	100,006.662	555	2,940
03-10-04	100,201.428	433.332	1,140



Thank You!

OSIsoft®