

“Real-time Enabling” Your Enterprise Business Systems

Andriy Stephanchuk & Dr. Hendrik Hamann IBM
Michael Appleby & Peter Huyen SAP
Gopal GopalKrishnan, P.E. OSIssoft

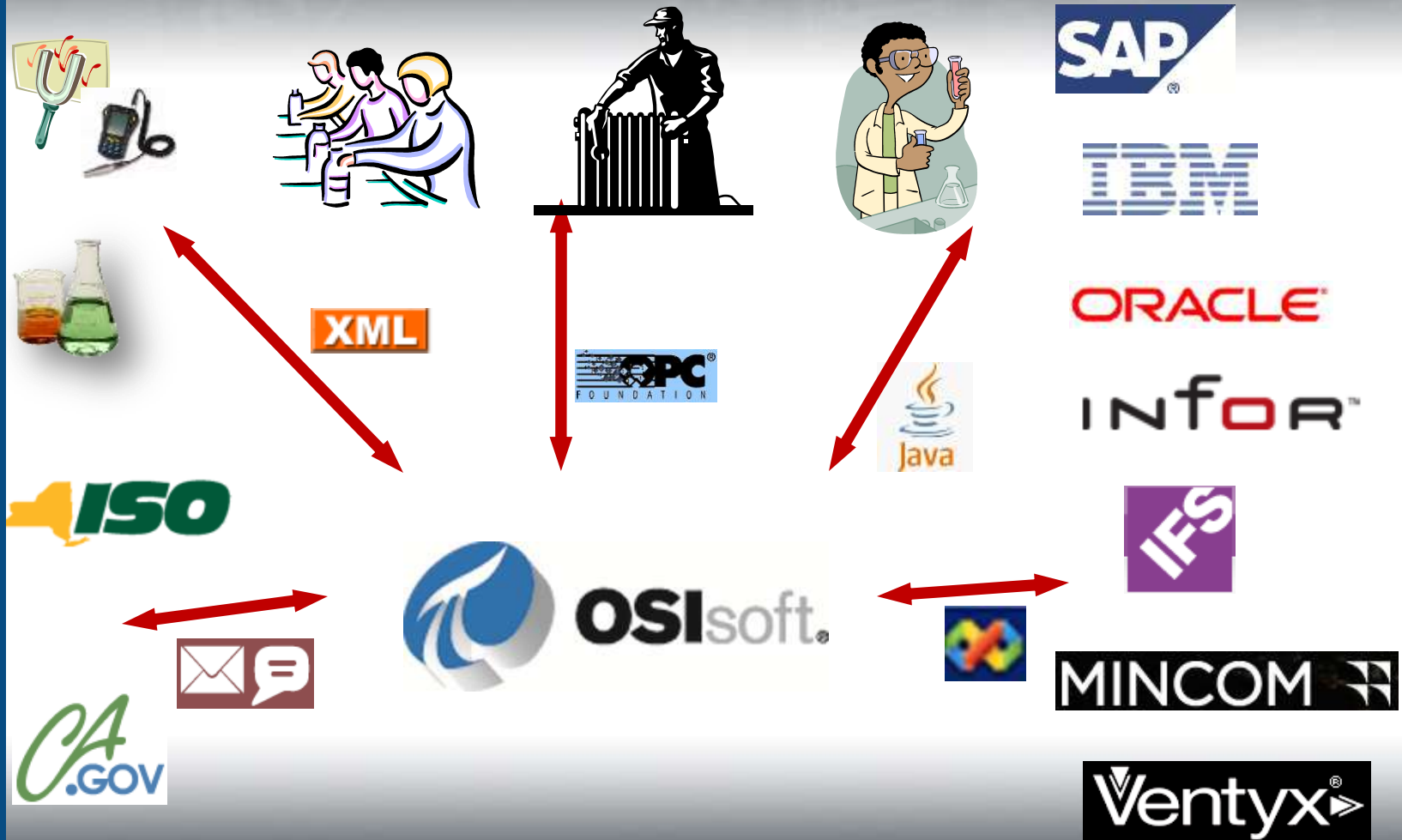


Enterprise Integration and PI Data Access

Production Maintenance Quality

Compliance Reporting Lab Calibration

ERP and Asset Management Systems



PI Data Access

PI Web Services 2010



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



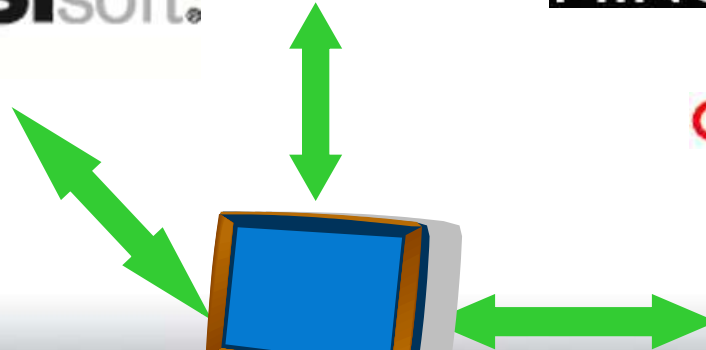
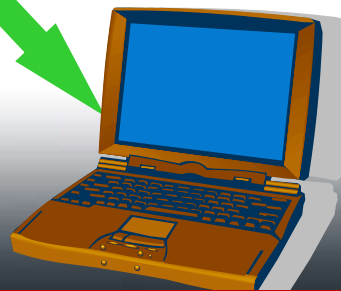
OSIsoft



MINCOM

ORACLE

IBM



Push vs. Pull + optional Middleware

- PI Data/Events

- Push

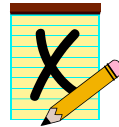


vs.

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

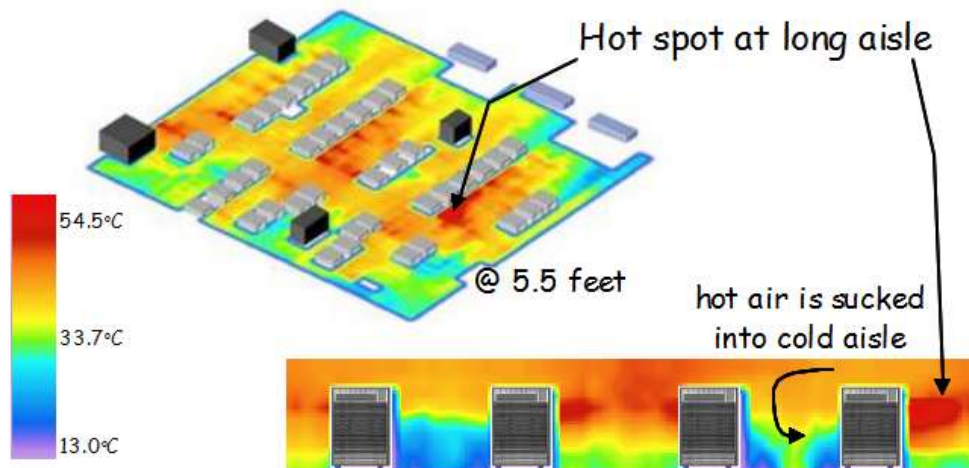
IBM MMT Agenda

- 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

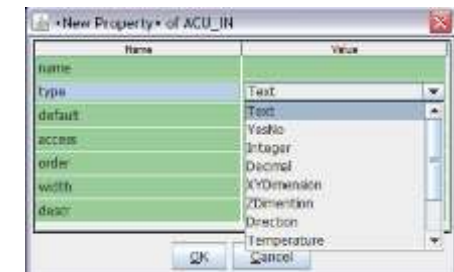
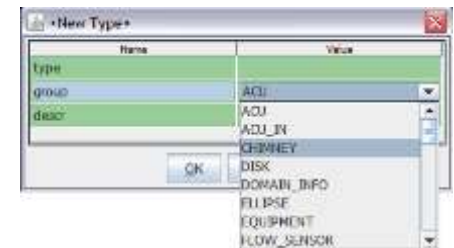
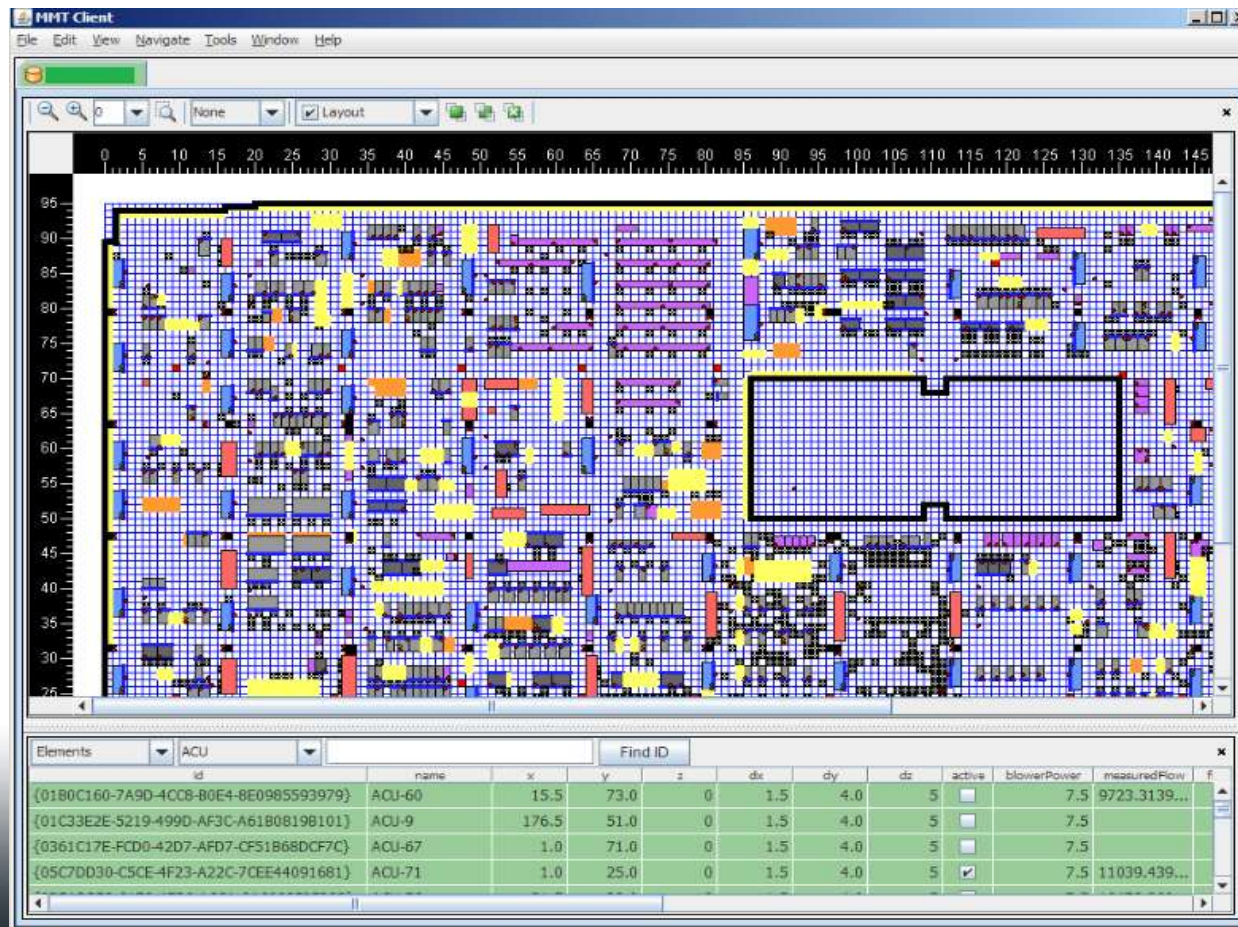
Mobile Measurement Technology

Optimize data center thermal profile to reduce energy consumption.

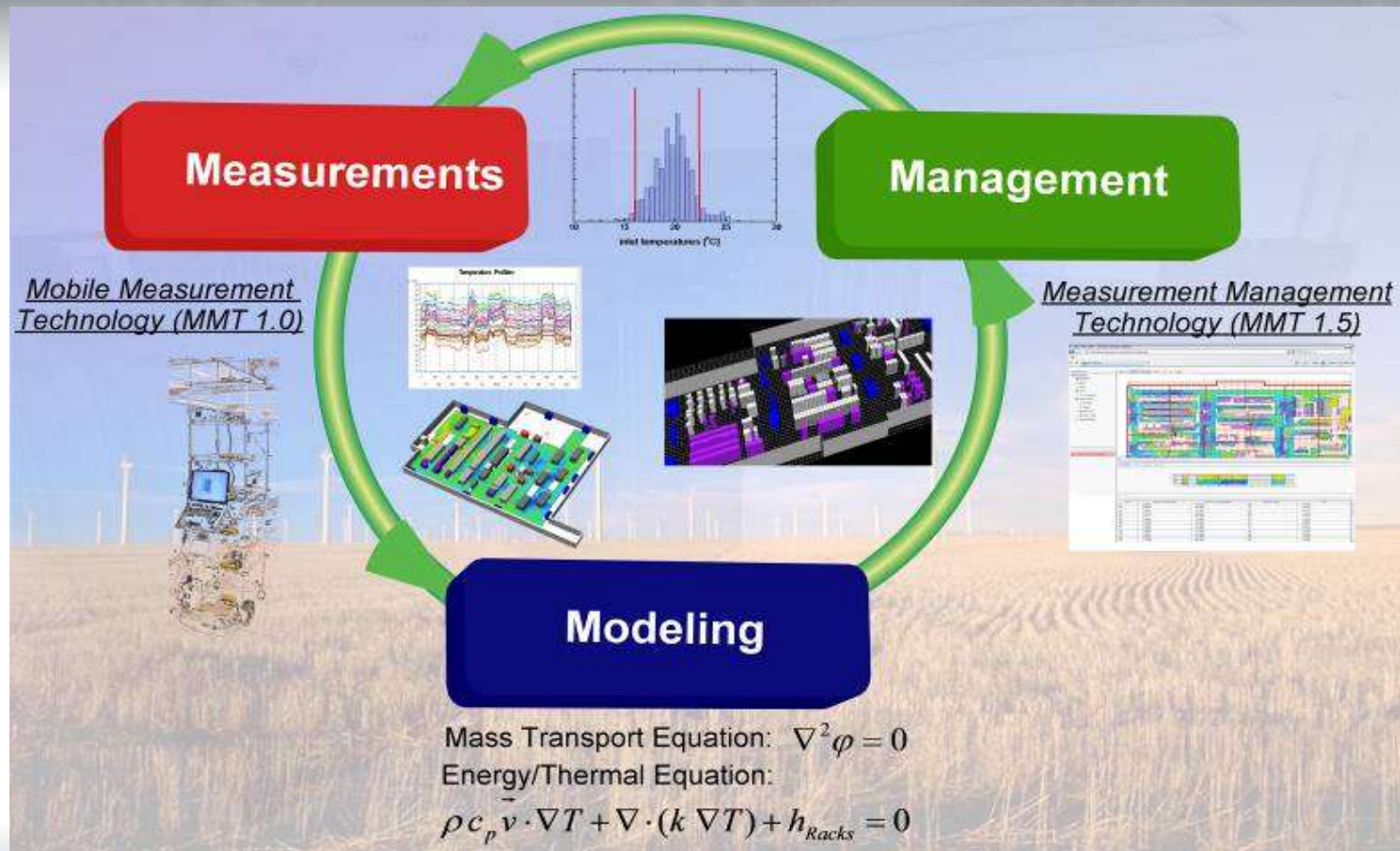


MMT Introduction

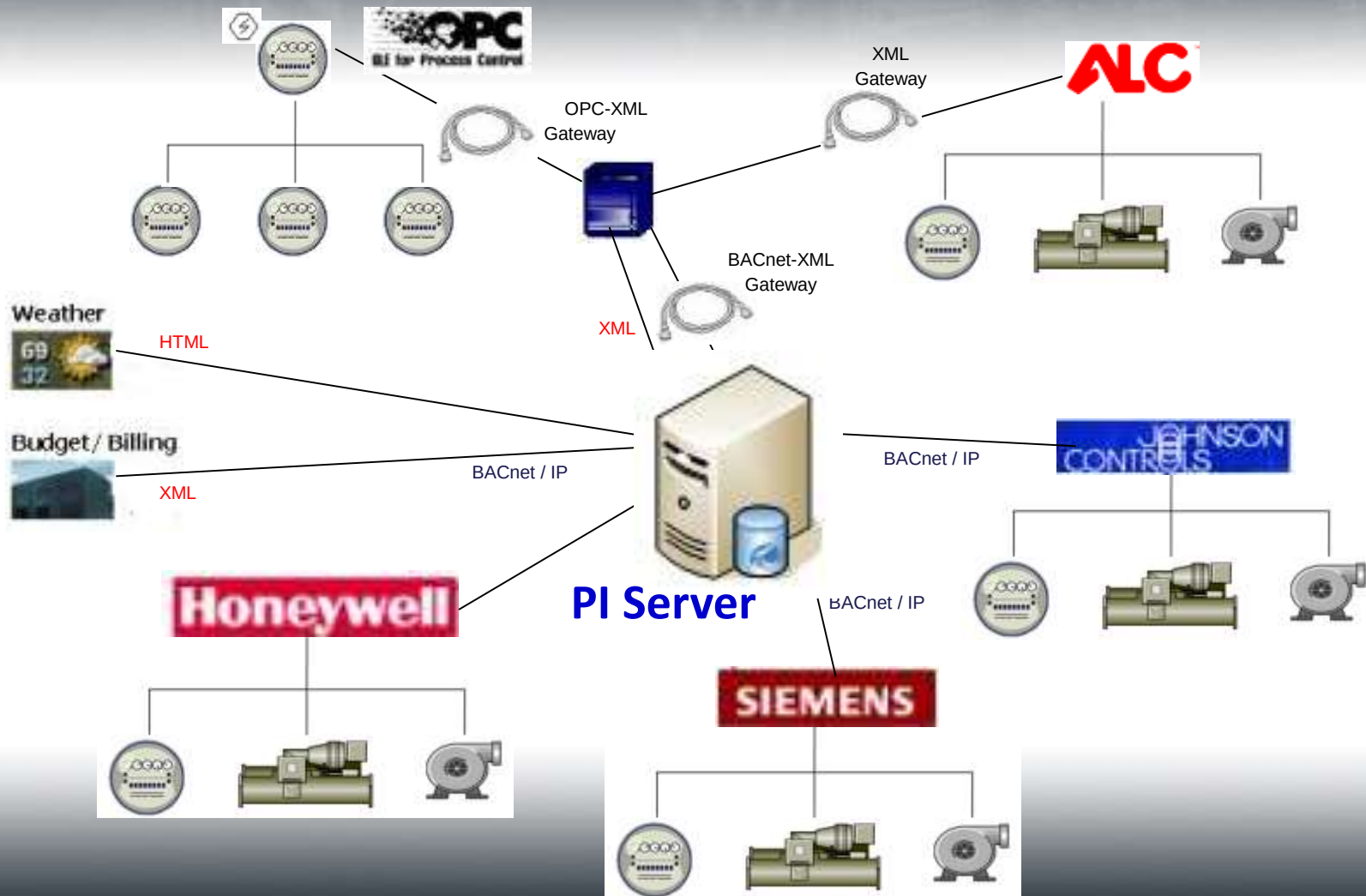
Data Model Manager – defines different types and their properties:



Next step – Real-time MMT

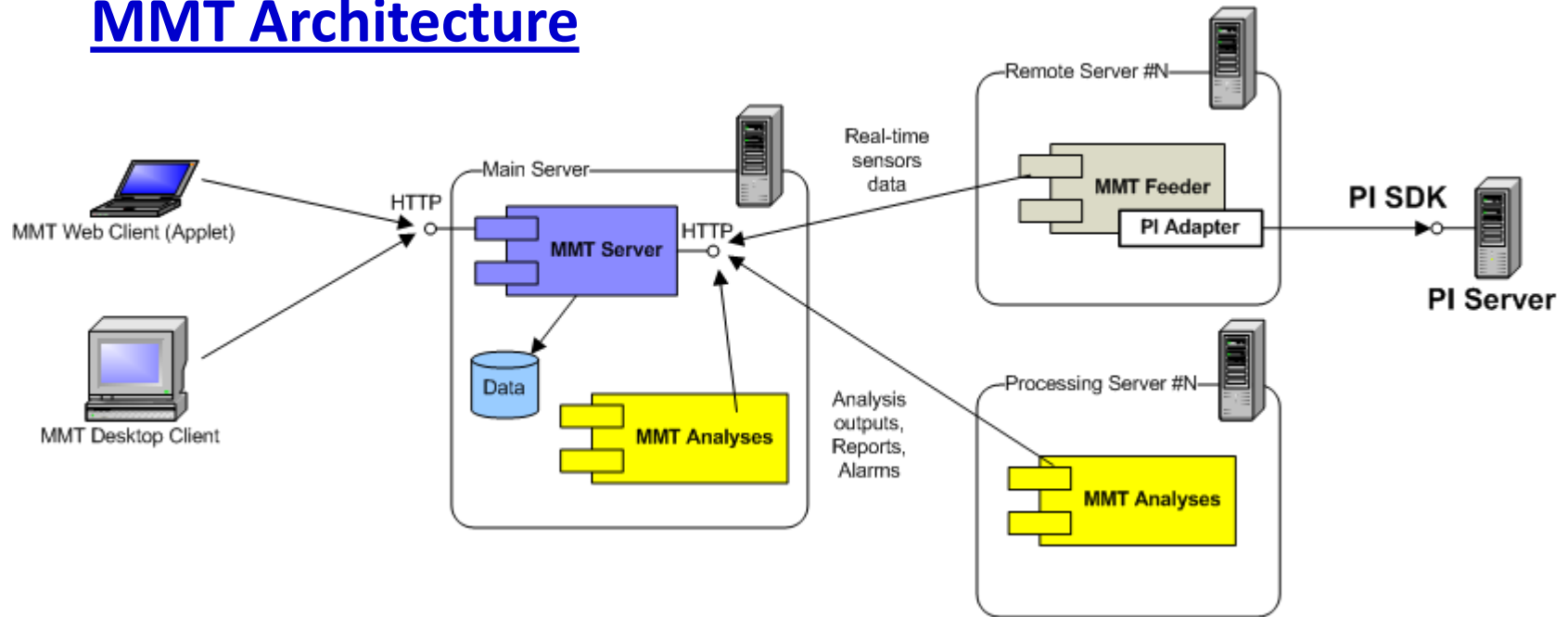


Next step – Real-time MMT

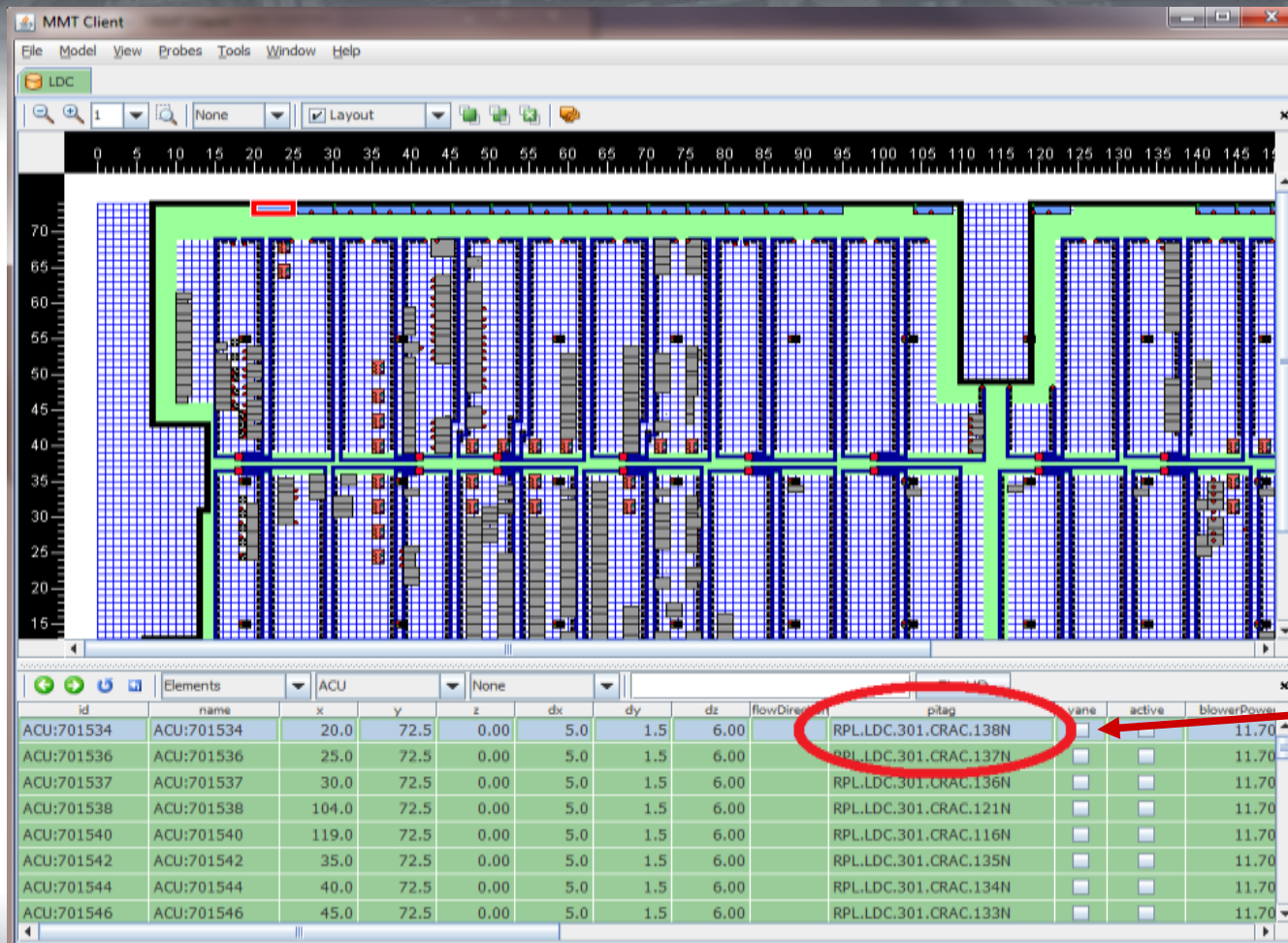


PI-MMT Integration

MMT Architecture



PI data feeds



Configure
PI Adapter

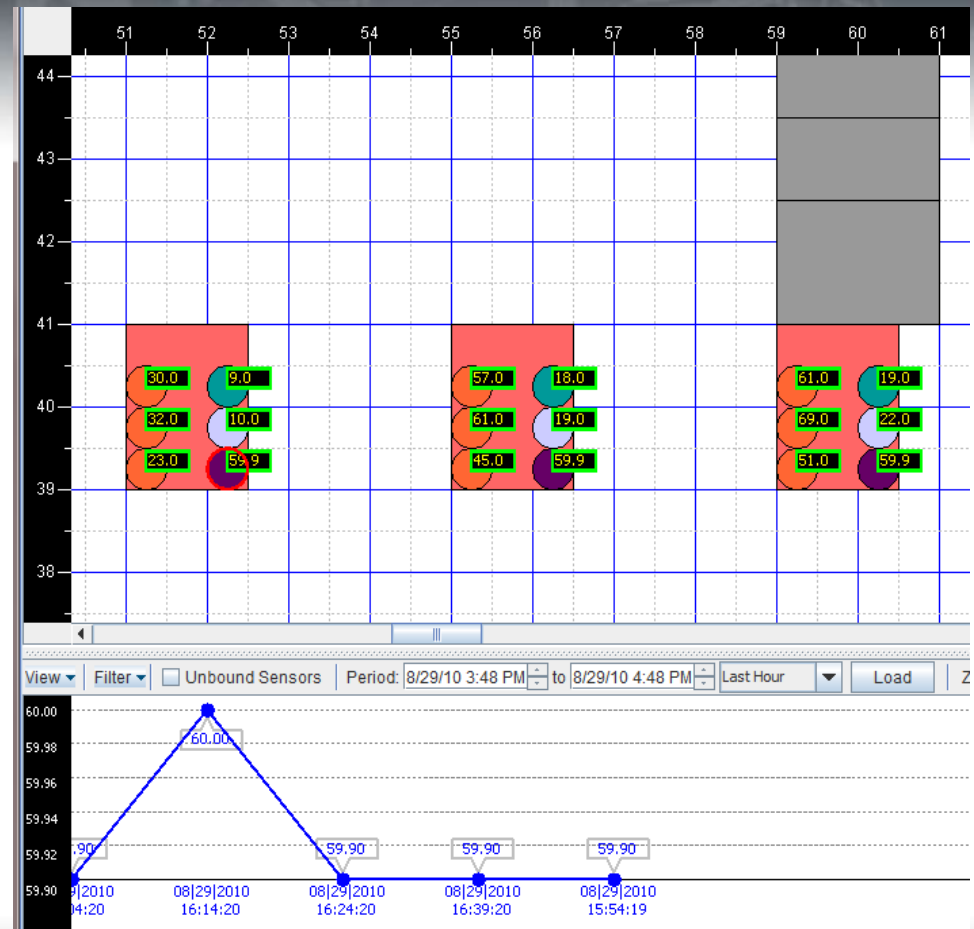
PI data feeds

CRAC Points:

- Fan speed
- Return temperature
- Supply temperature

PDU Points:

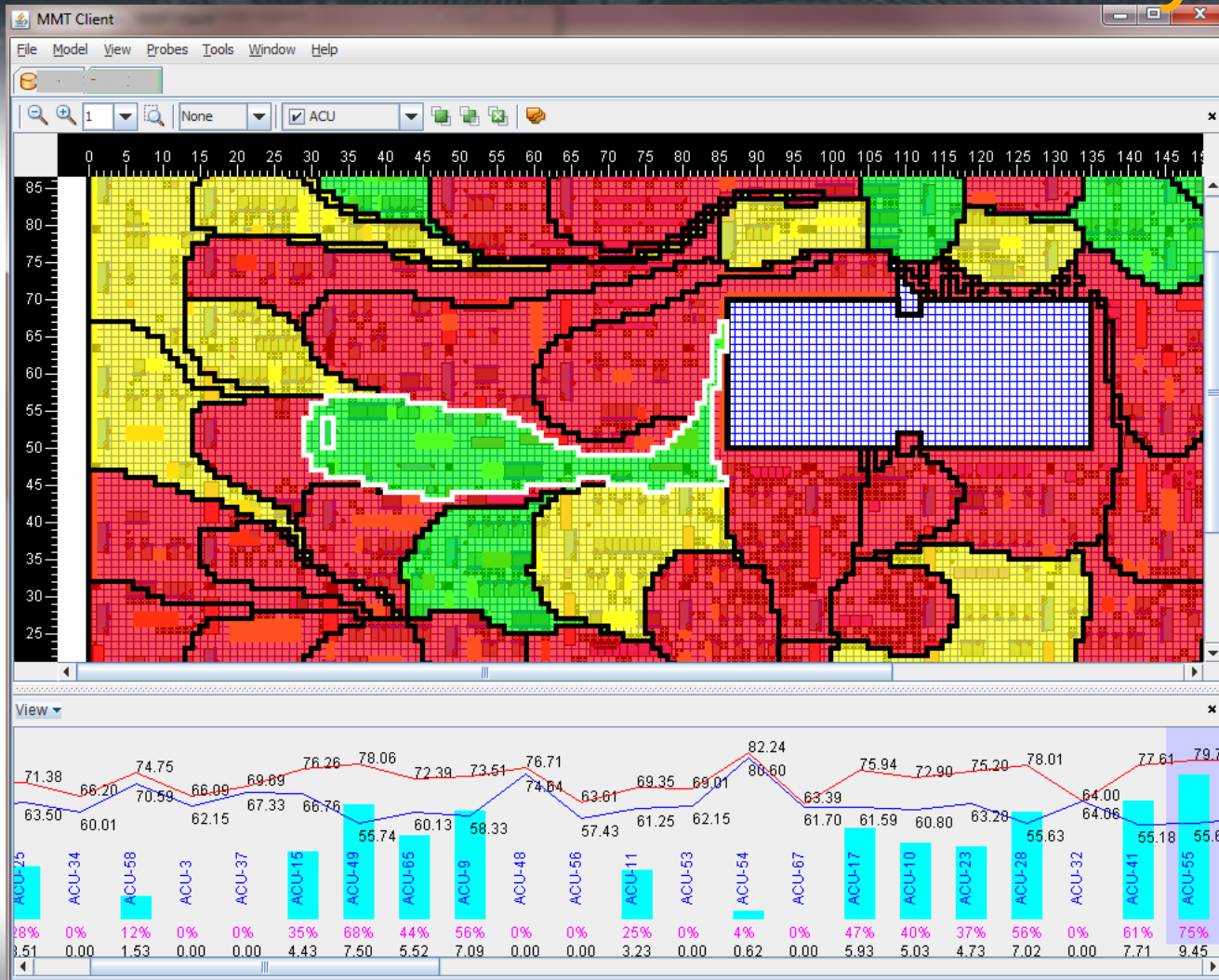
- Current A,B,C
- Voltage AB, BC, CA
- Total Power
- ... panels and circuits



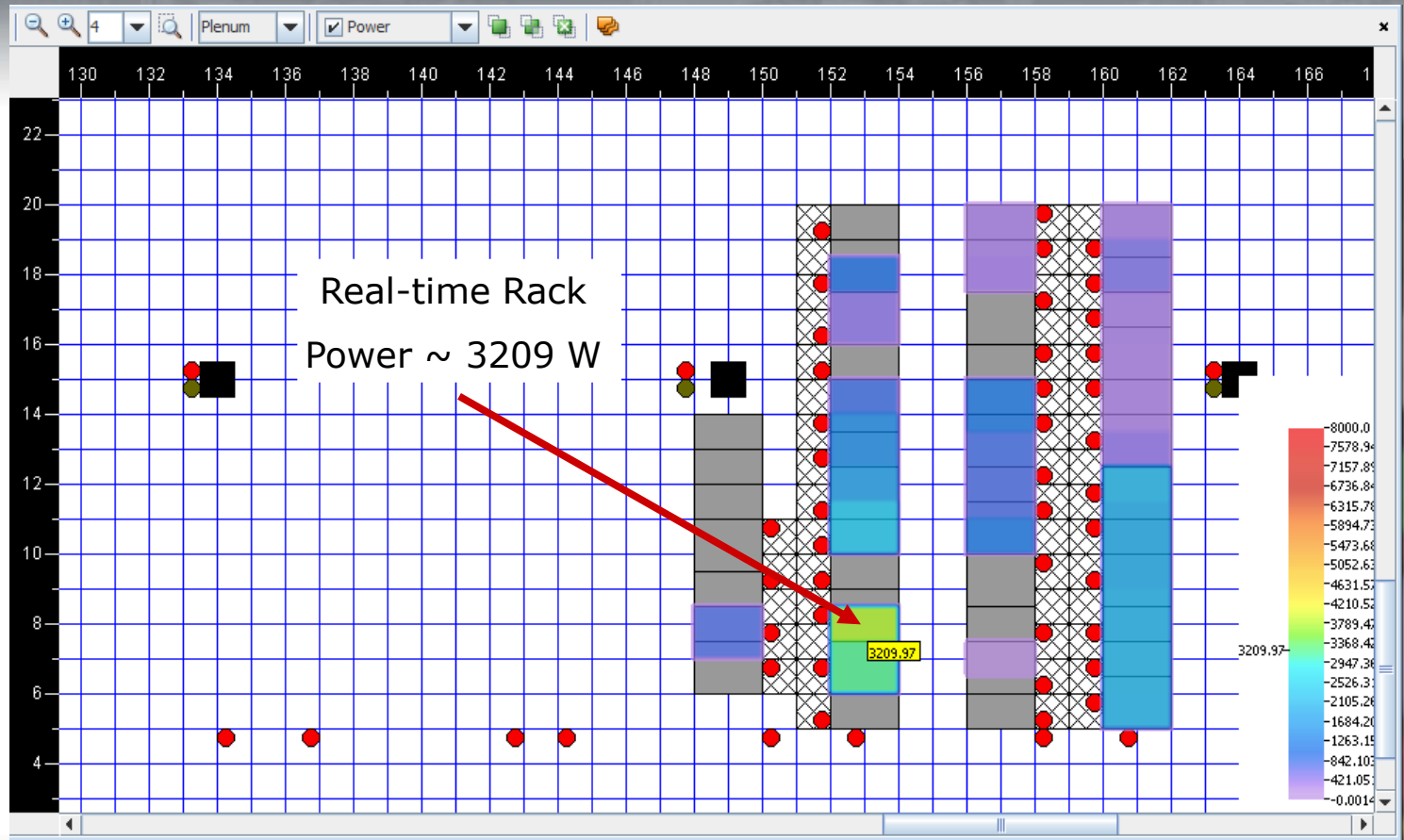
PI data visualization in MMT



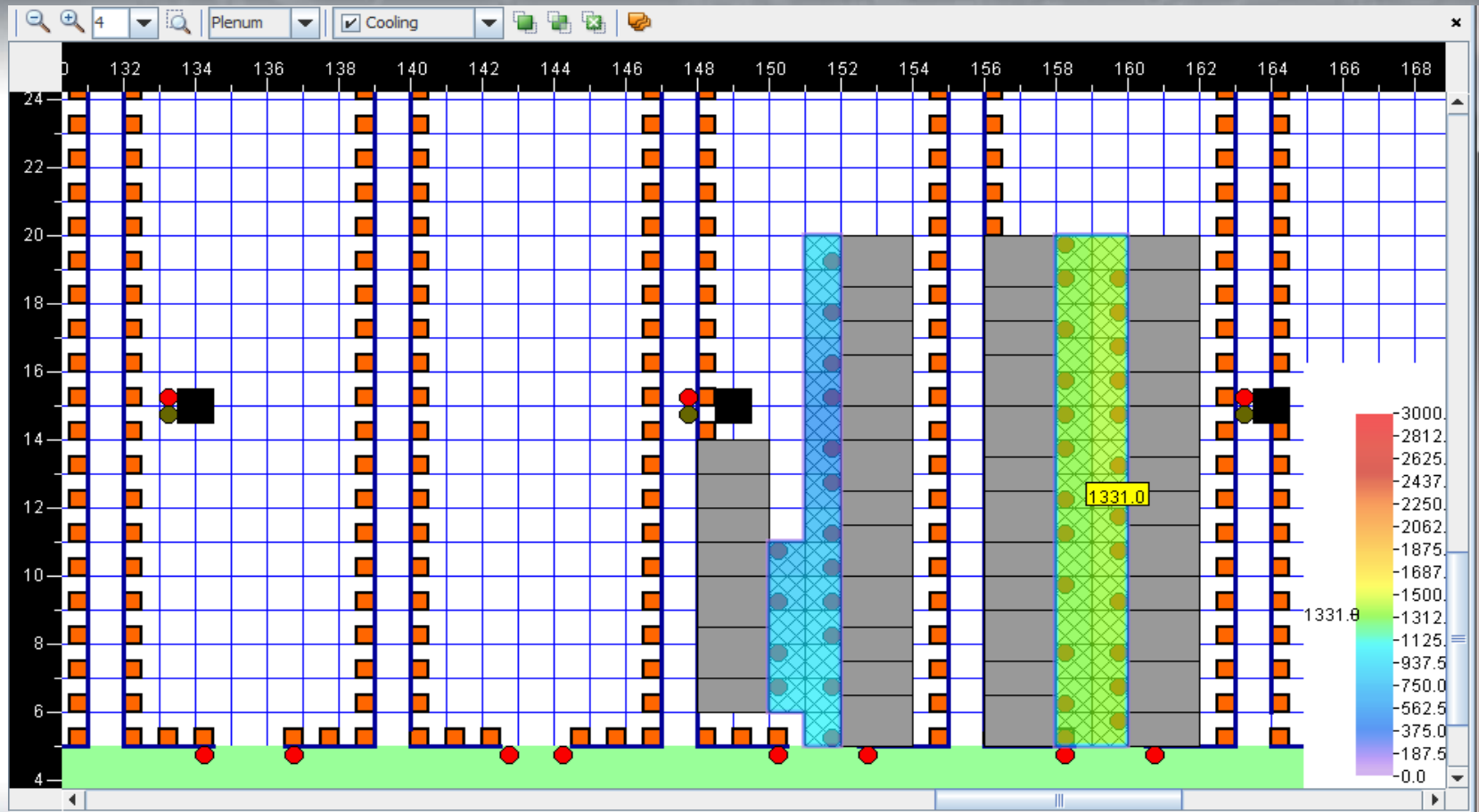
CRAC Zones & Efficiency



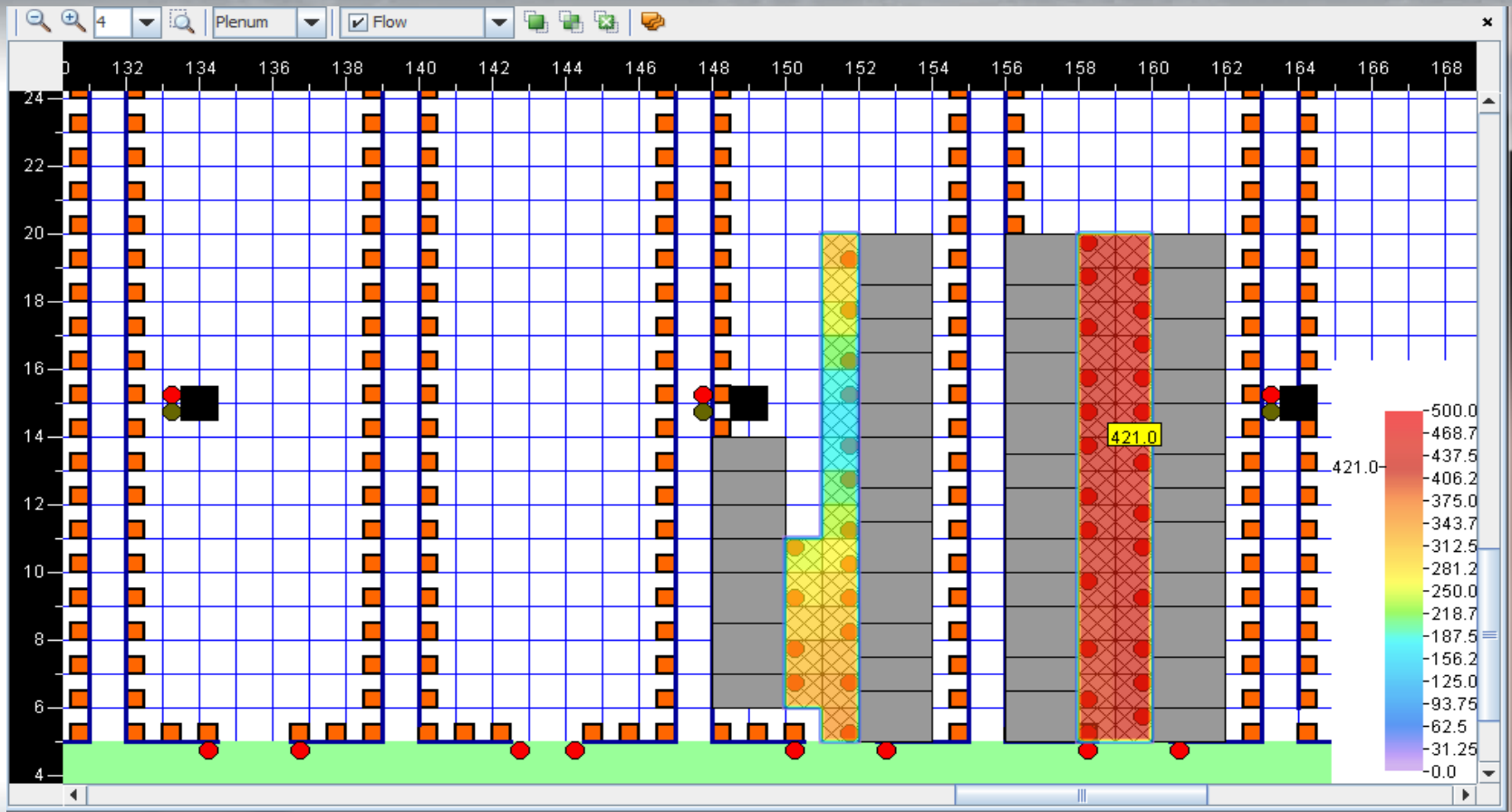
Power Distribution Analytics



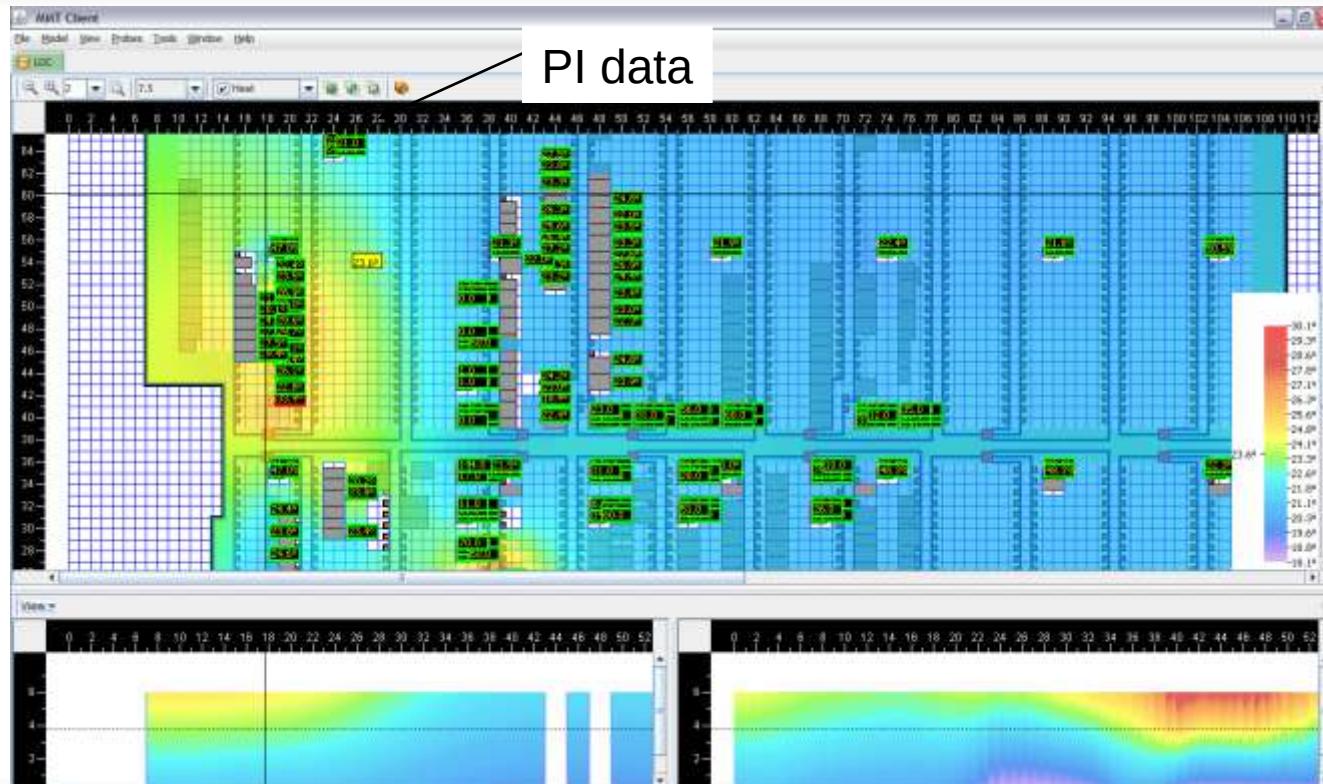
Cooling Analytics



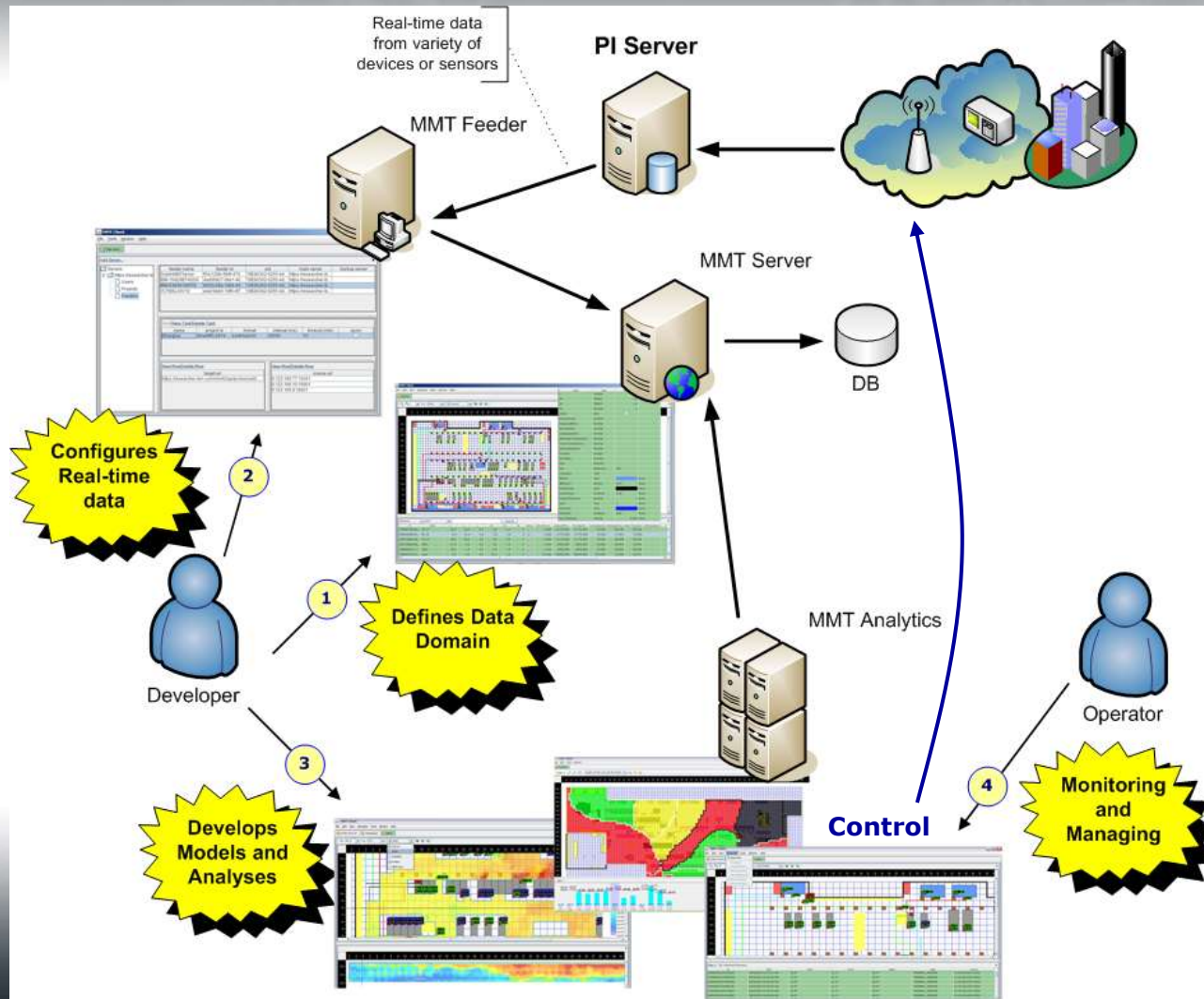
Flow Analytics



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

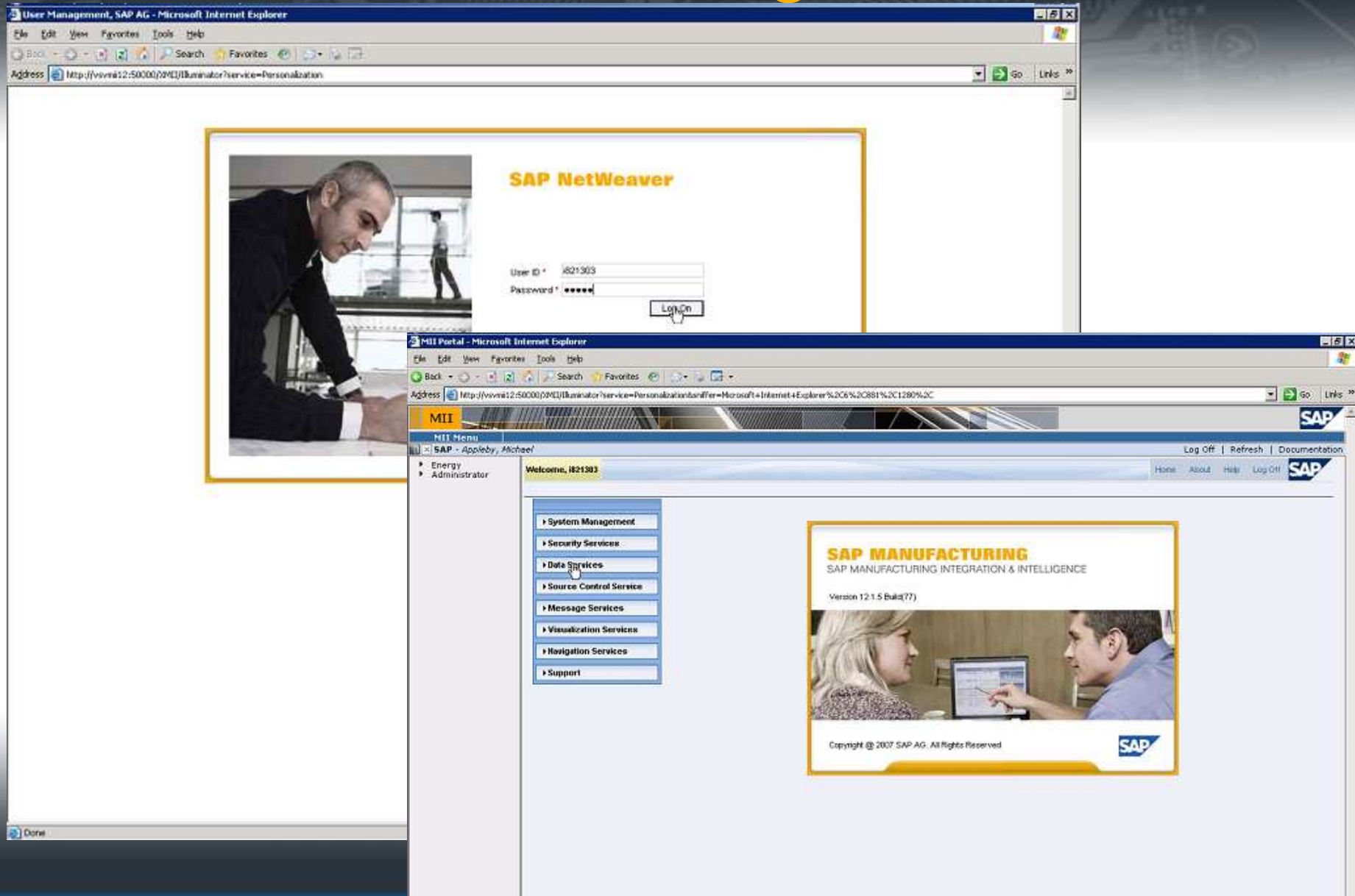


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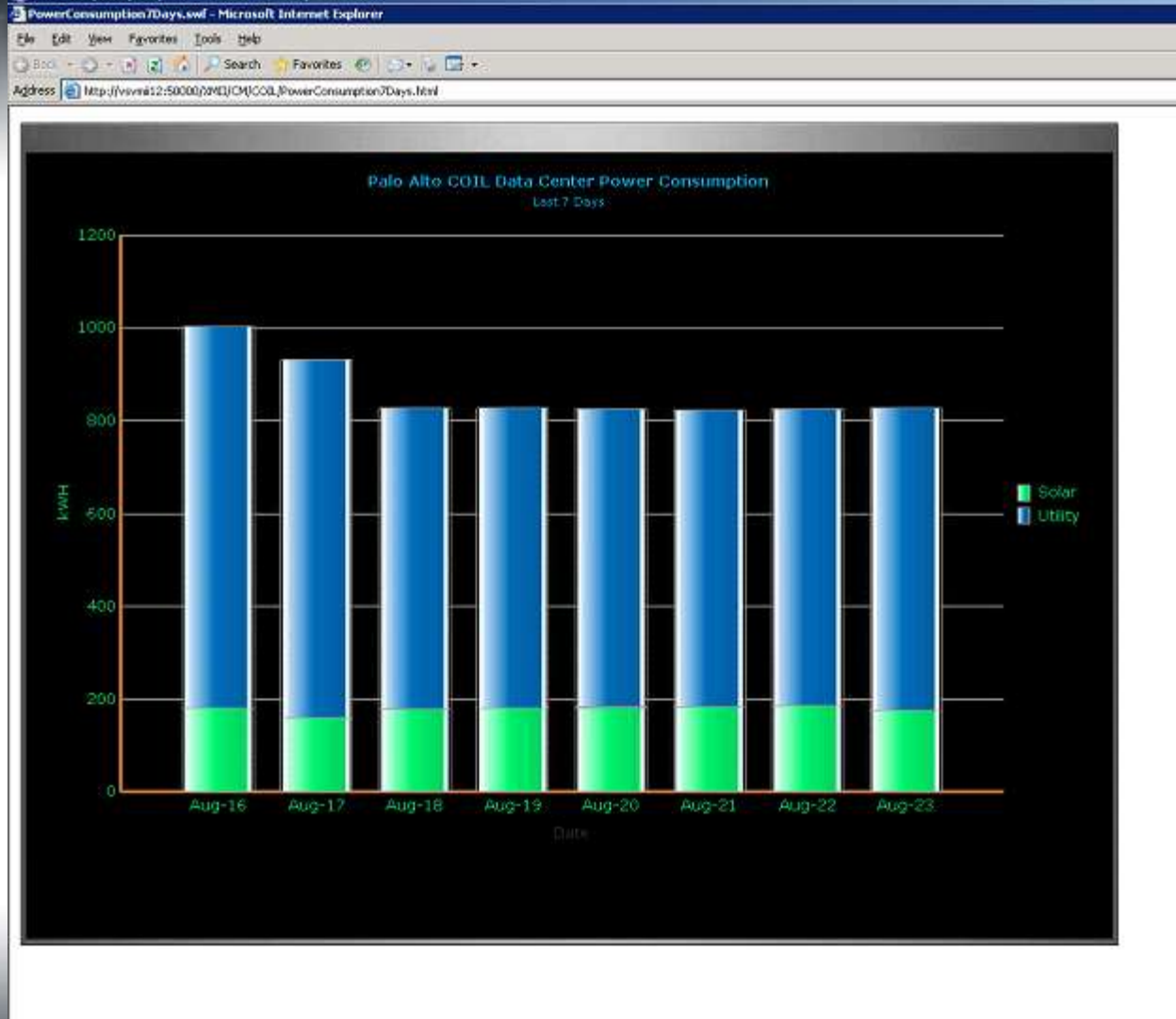
SAP – Xcelsius integration via MII



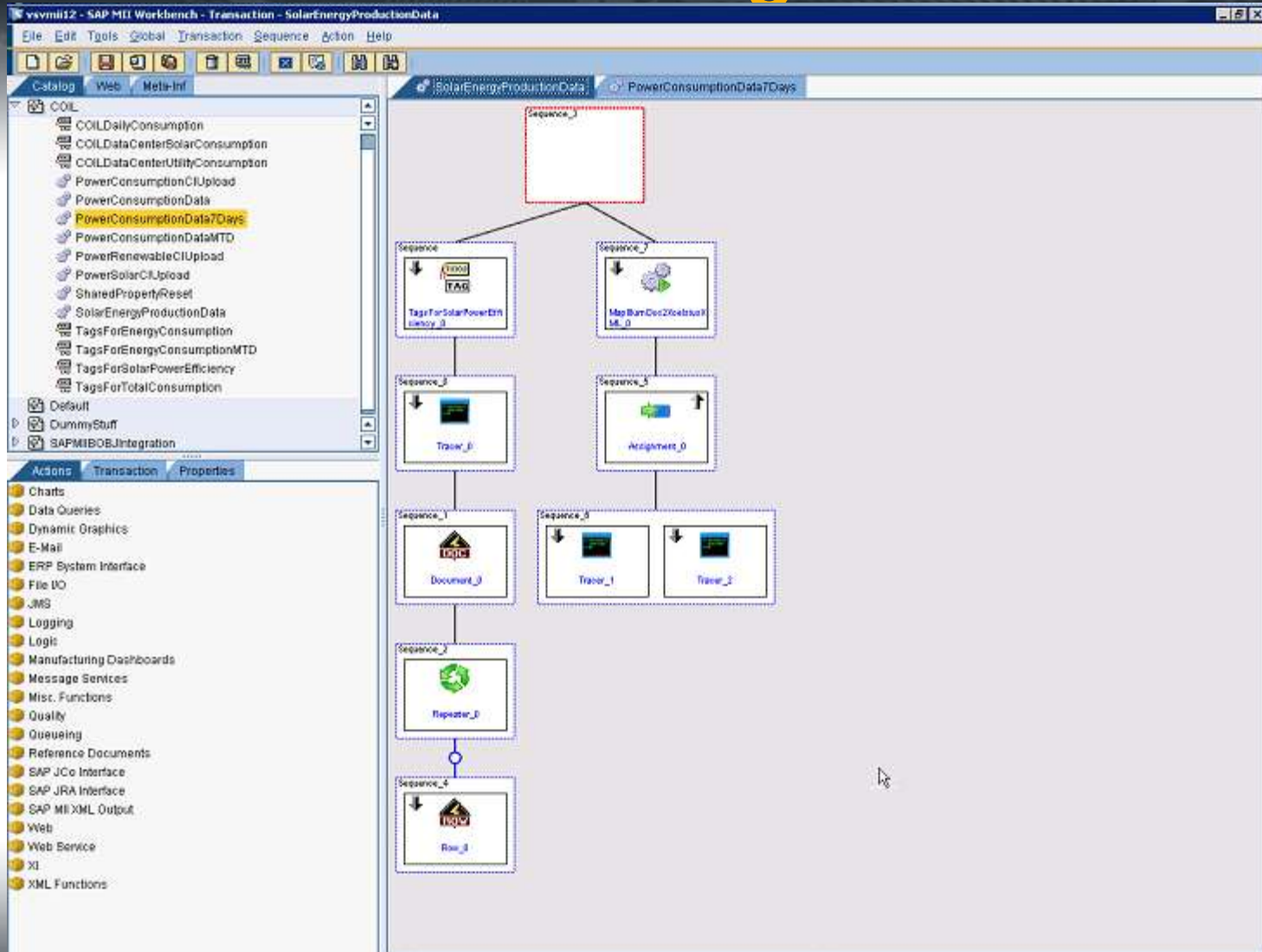
SAP – Xcelcius integration via MII



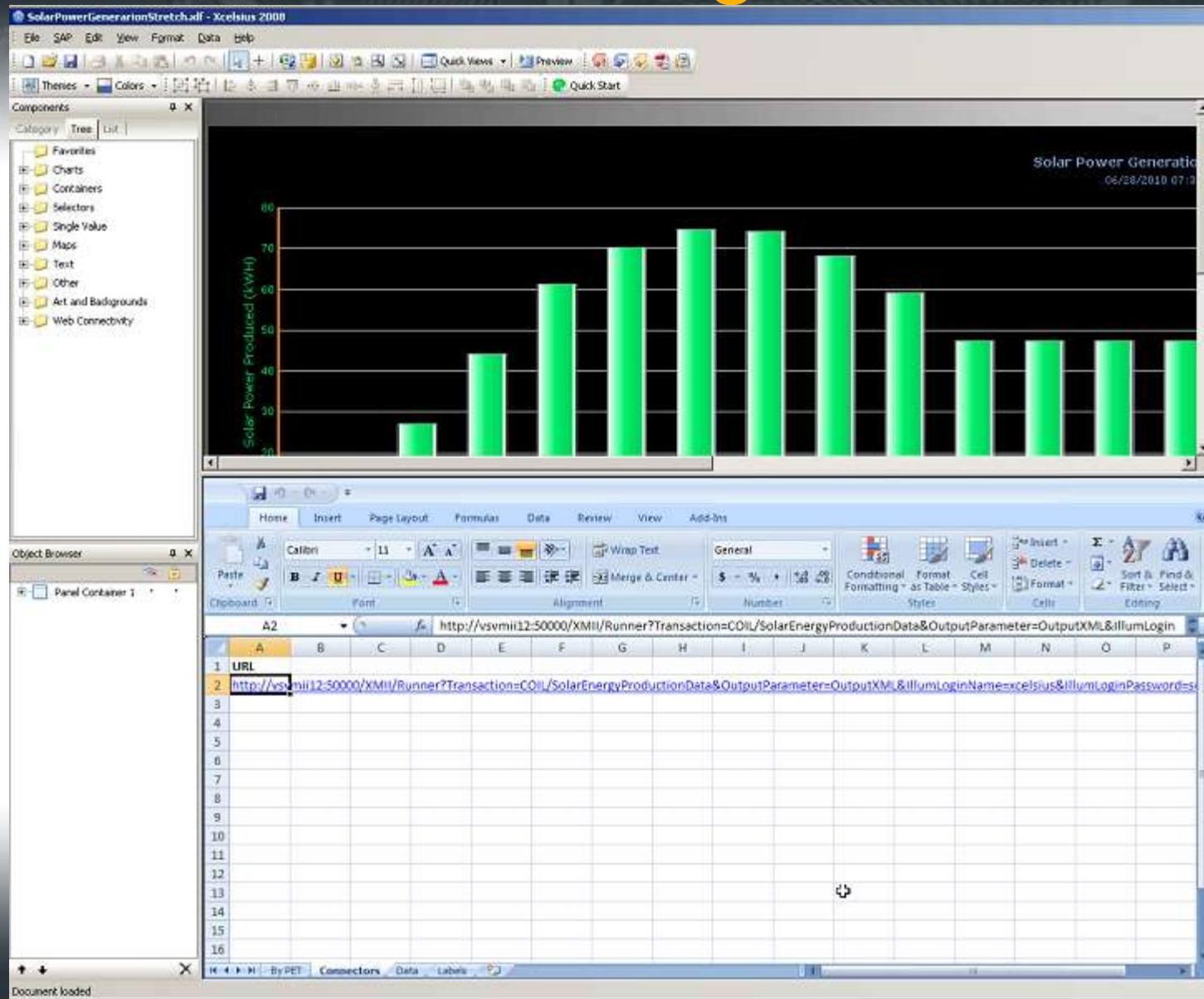
SAP – Xcelsius integration via MII



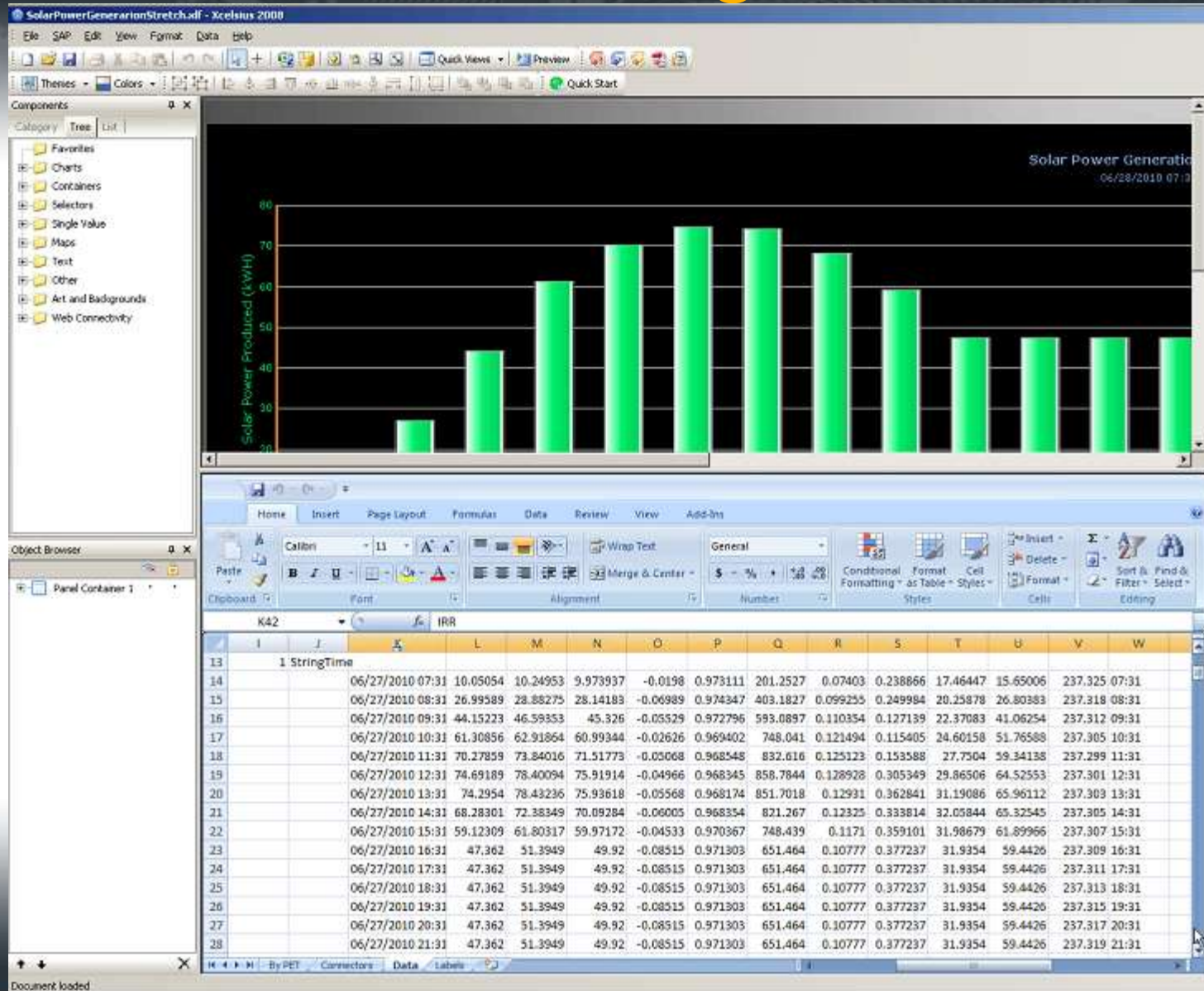
SAP – Xcelsius integration via MII



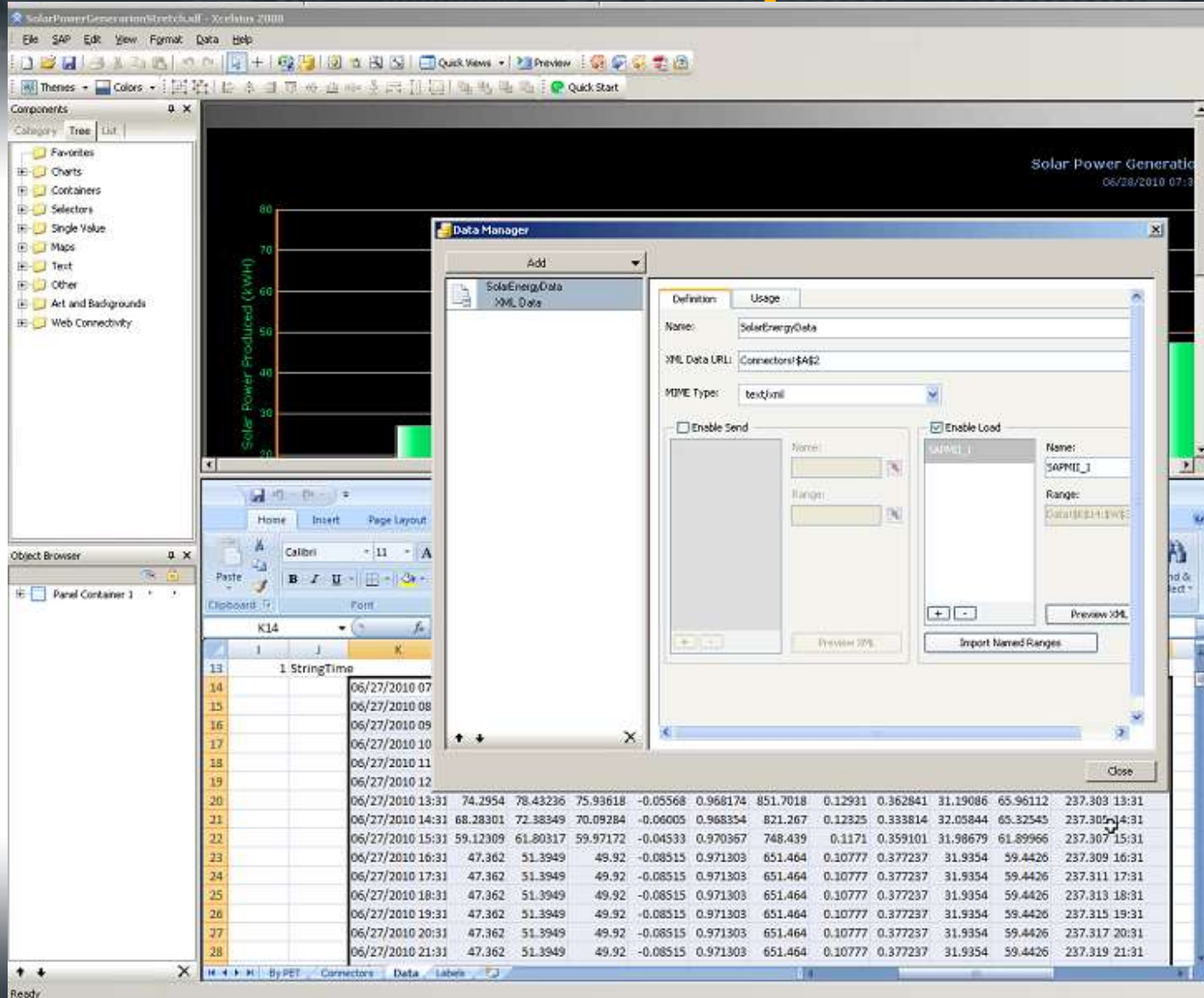
SAP – Xcelsius integration via MII



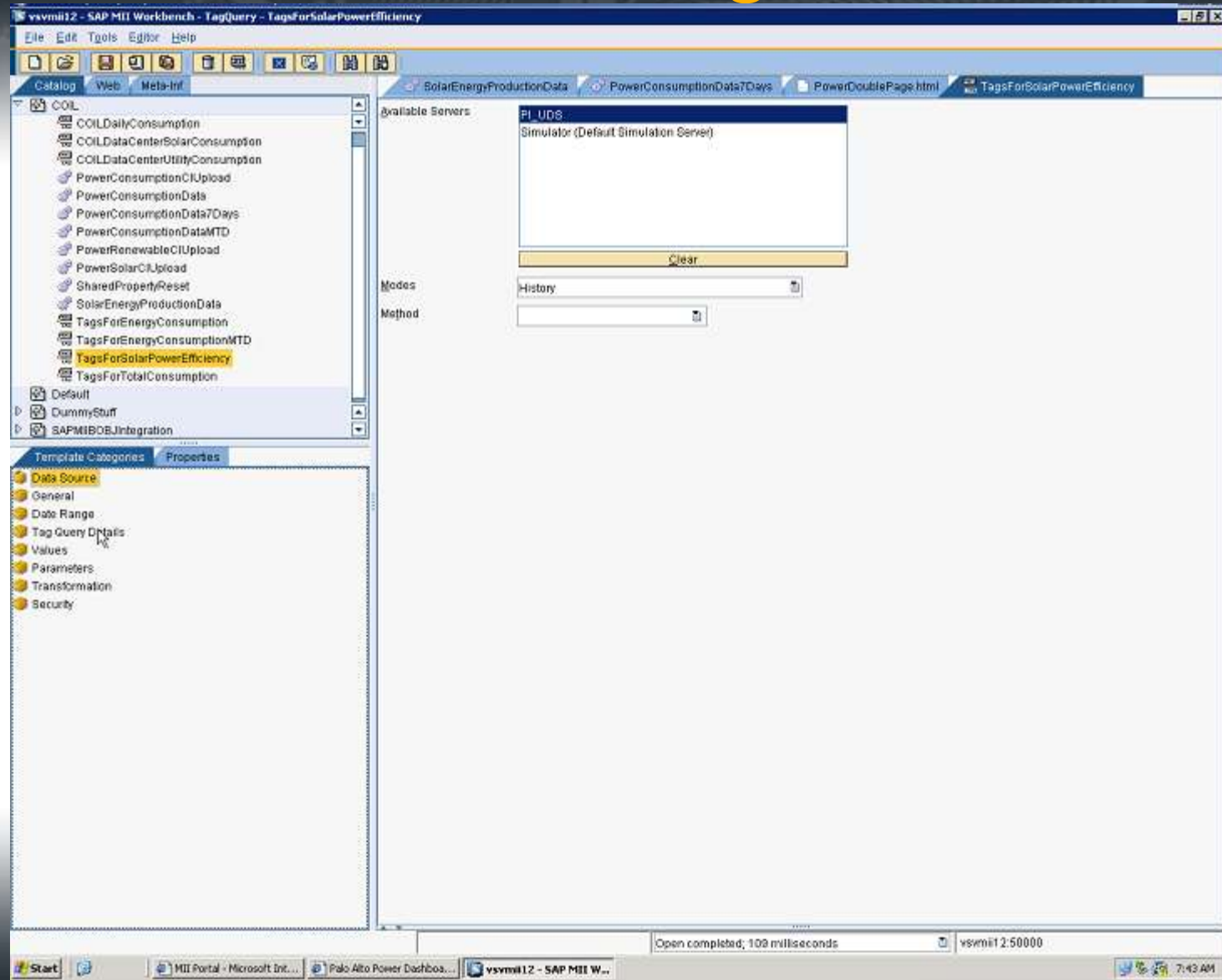
SAP – Xcelsius integration via MII



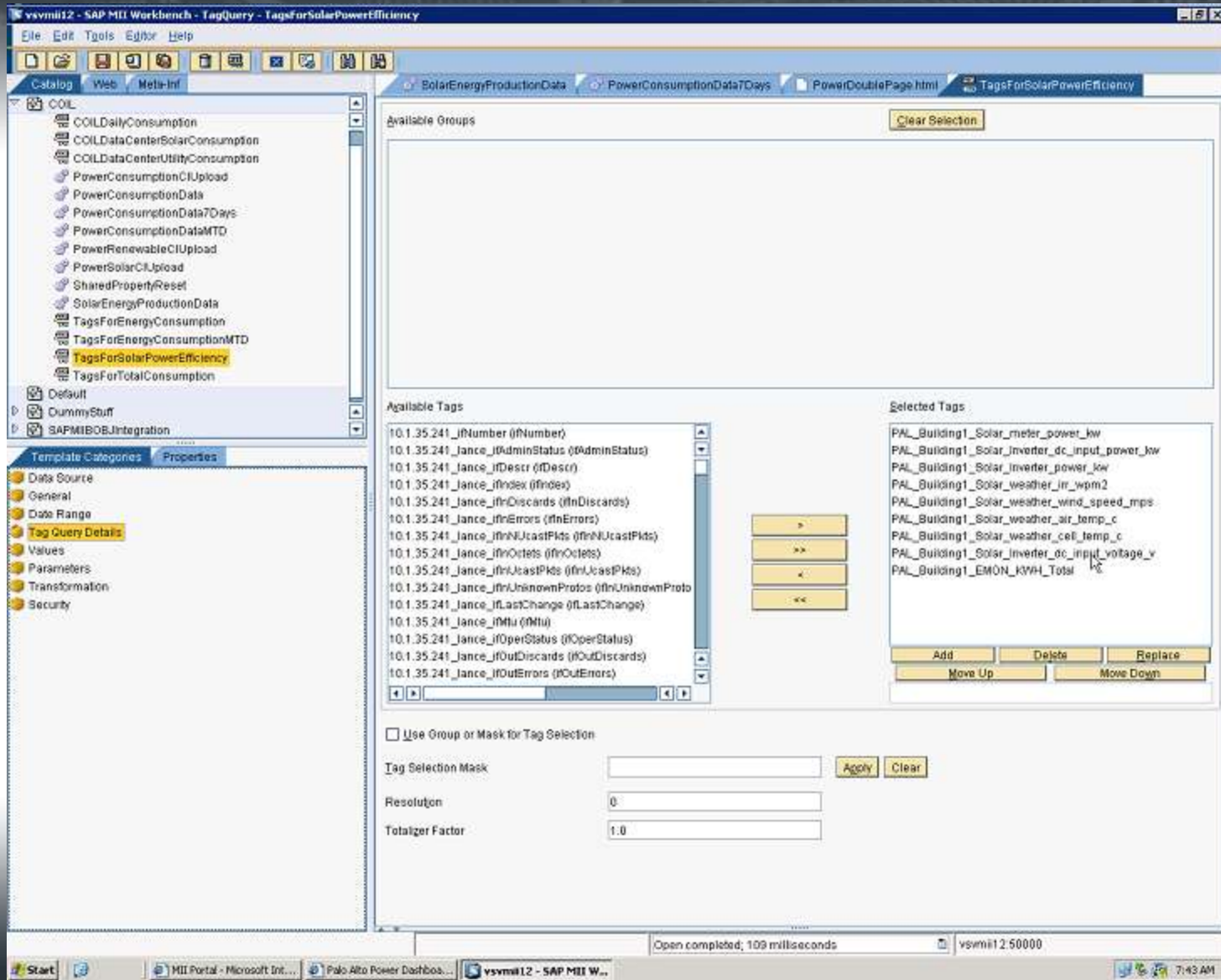
SAP – Xcelsius integration via MII



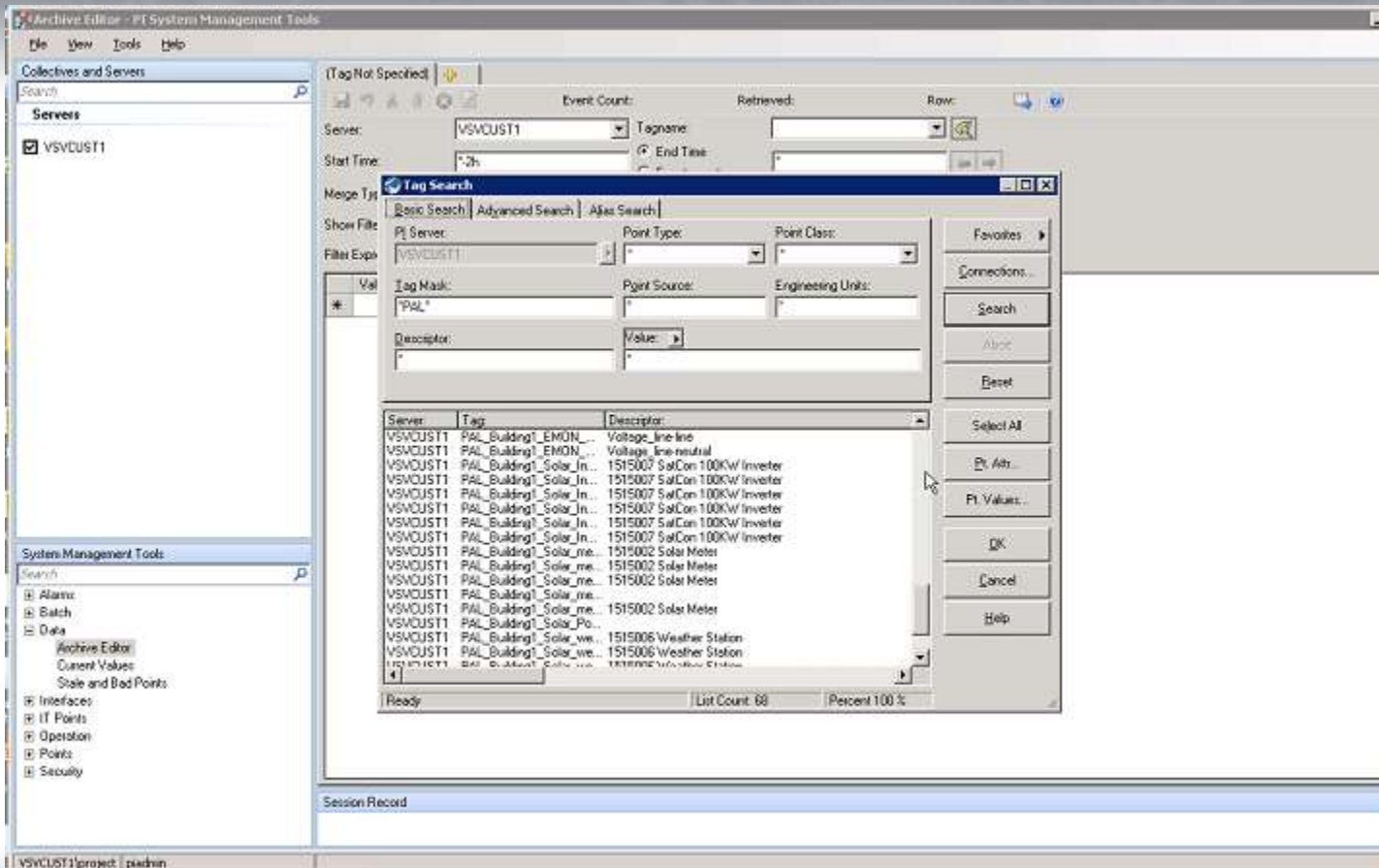
SAP – Xcelcius integration via MII



SAP – Xcelsius integration via MII



SAP – Xcelsius integration via MII

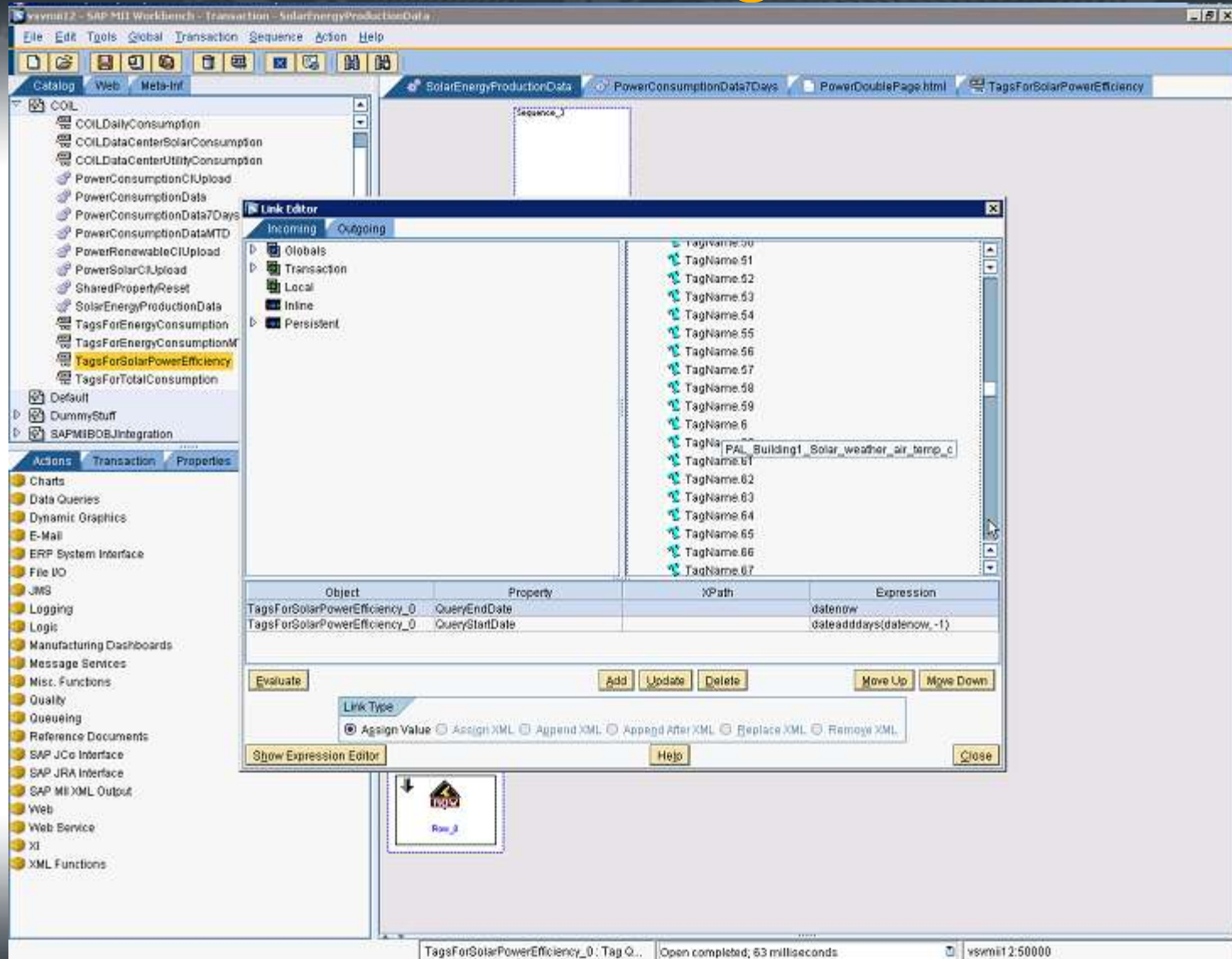


SAP – Xcelsius integration via MII

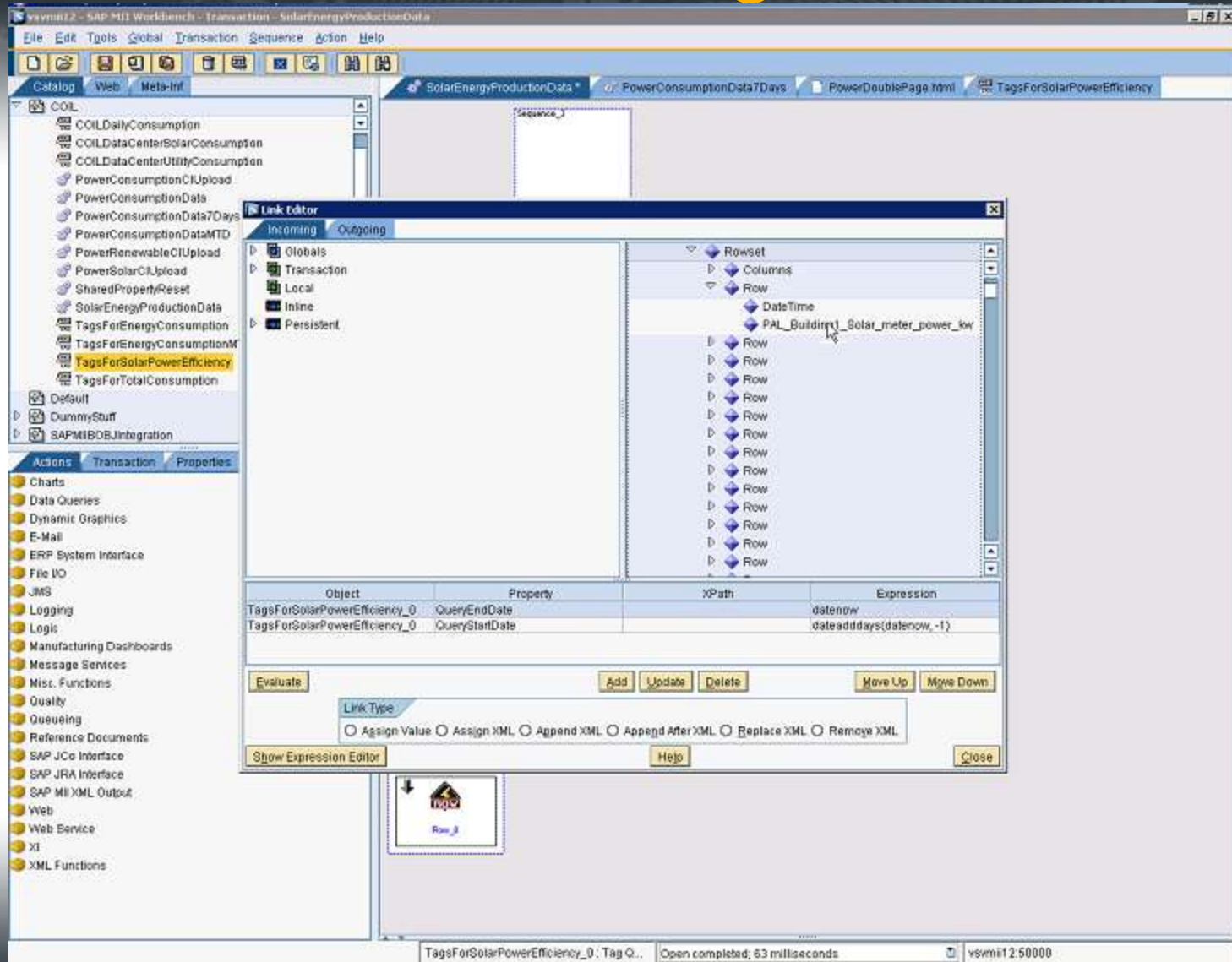
The screenshot displays the SAP MII Workbench interface. On the left, a catalog tree shows various data sources under the 'COIL' folder, with 'TagsForSolarPowerEfficiency' selected. The main workspace shows a 'Query Results' dialog for the query 'COIL/TagsForSolarPowerEfficiency'. The query URL is 'http://vsmit2:50000/OMU/Illuminator?QueryTemplate=COIL%2FTagsForSolarPowerEfficiency'. The results are displayed in a table with two columns: 'DateTime' and 'PWL_Building1_Solar_PowerCOILPerc'. The table contains 15 rows of data. Below the table, there are buttons for 'Add', 'Delete', 'Replace', 'Move Up', and 'Move Down'. The status bar at the bottom indicates 'Processing Test...' and 'vsmit2:50000'.

DateTime	PWL_Building1_Solar_PowerCOILPerc
2010-08-23T07:47:45	3.541767835617
2010-08-23T08:47:45	8.797183036004
2010-08-23T09:47:45	14.052587999573
2010-08-23T10:47:45	19.308012008667
2010-08-23T11:47:45	23.164728164673
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	6.173686504364
2010-08-23T18:47:45	1.45805978775
2010-08-23T19:47:45	0.287323236465
2010-08-23T20:47:45	0.246276974678
2010-08-23T21:47:45	0.205230712891
2010-08-23T22:47:45	0.164184436202

SAP – Xcelsius integration via MII



SAP – Xcelsius integration via MII



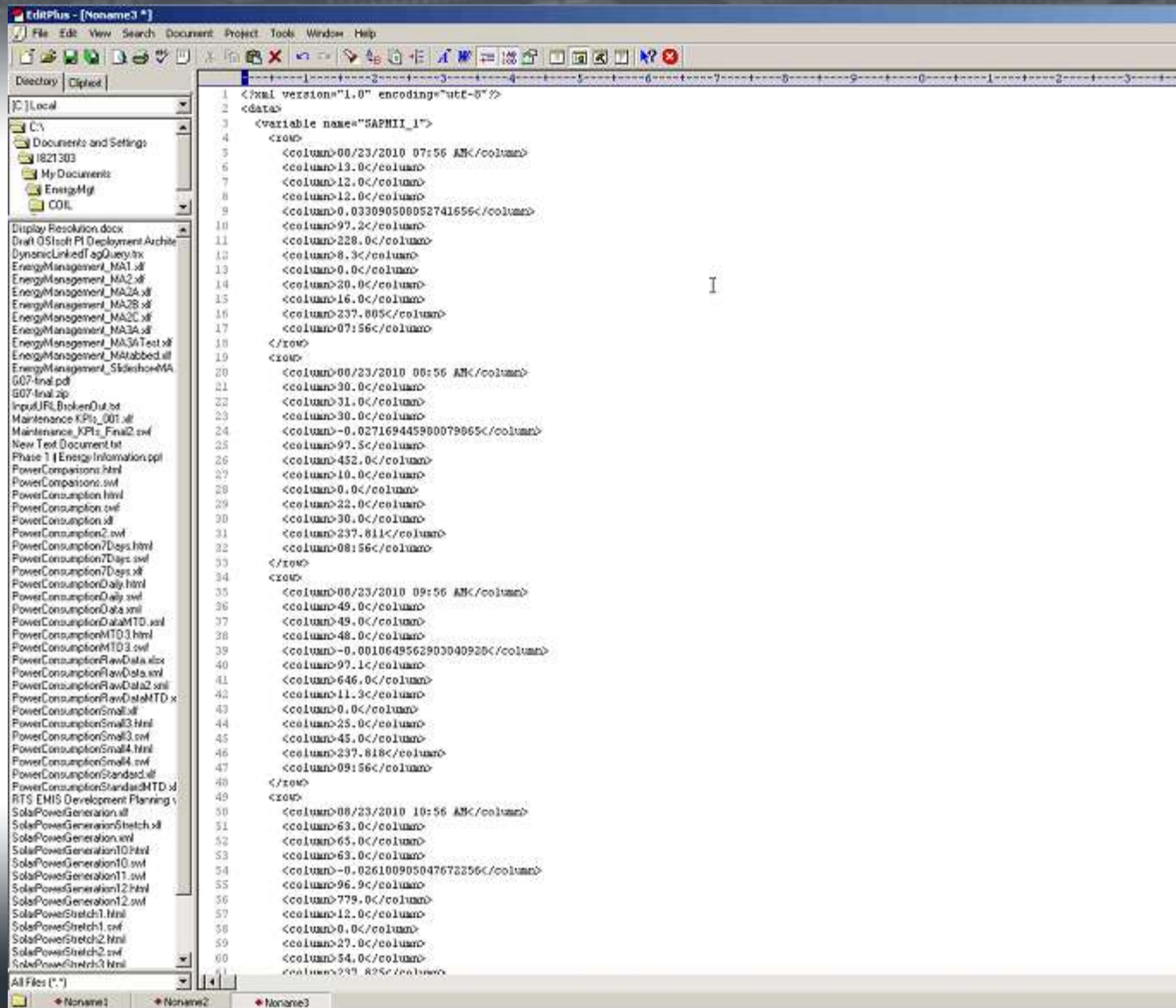
SAP – Xcelsius integration via MII

```

337 <InverterInputPower>0.0</InverterInputPower>
338 <InverterOutputPower>0.0</InverterOutputPower>
339 <LineLossesFromPanelsToInverter>1.0065399081947907</LineLossesFromPanelsToInverter>
340 <InverterConversionEfficiency>7153.4</InverterConversionEfficiency>
341 <IncidentReceivedRadiance>1.0</IncidentReceivedRadiance>
342 <SolarConversionEfficiency>81.3</SolarConversionEfficiency>
343 <LocalWindSpeed>0.0</LocalWindSpeed>
344 <LocalAirTemperature>22.0</LocalAirTemperature>
345 <SolarCellTemperature>15.0</SolarCellTemperature>
346 <UtilityPowerConsumed>237.846</UtilityPowerConsumed>
347 <StringTime>04:56</StringTime>
348 </Row>
349 <Row>
350 <DateTime>08/24/2010 05:56 AM</DateTime>
351 <SolarPowerProduced>1.0</SolarPowerProduced>
352 <InverterInputPower>0.0</InverterInputPower>
353 <InverterOutputPower>0.0</InverterOutputPower>
354 <LineLossesFromPanelsToInverter>1.024340691559909</LineLossesFromPanelsToInverter>
355 <InverterConversionEfficiency>1122.5</InverterConversionEfficiency>
356 <IncidentReceivedRadiance>0.0</IncidentReceivedRadiance>
357 <SolarConversionEfficiency>623.3</SolarConversionEfficiency>
358 <LocalWindSpeed>0.0</LocalWindSpeed>
359 <LocalAirTemperature>22.0</LocalAirTemperature>
360 <SolarCellTemperature>16.0</SolarCellTemperature>
361 <UtilityPowerConsumed>237.846</UtilityPowerConsumed>
362 <StringTime>05:56</StringTime>
363 </Row>
364 <Row>
365 <DateTime>08/24/2010 06:56 AM</DateTime>
366 <SolarPowerProduced>1.0</SolarPowerProduced>
367 <InverterInputPower>3.0</InverterInputPower>
368 <InverterOutputPower>3.0</InverterOutputPower>
369 <LineLossesFromPanelsToInverter>-2.368233868593068</LineLossesFromPanelsToInverter>
370 <InverterConversionEfficiency>94.4</InverterConversionEfficiency>
371 <IncidentReceivedRadiance>28.0</IncidentReceivedRadiance>
372 <SolarConversionEfficiency>5.4</SolarConversionEfficiency>
373 <LocalWindSpeed>0.0</LocalWindSpeed>
374 <LocalAirTemperature>22.0</LocalAirTemperature>
375 <SolarCellTemperature>18.0</SolarCellTemperature>
376 <UtilityPowerConsumed>237.846</UtilityPowerConsumed>
377 <StringTime>06:56</StringTime>
378 </Row>
379 <Row>
380 <DateTime>08/24/2010 07:56 AM</DateTime>
381 <SolarPowerProduced>0.0</SolarPowerProduced>
382 <InverterInputPower>0.0</InverterInputPower>
383 <InverterOutputPower>0.0</InverterOutputPower>
384 <LineLossesFromPanelsToInverter>NA</LineLossesFromPanelsToInverter>
385 <InverterConversionEfficiency>0.0</InverterConversionEfficiency>
386 <IncidentReceivedRadiance>0.0</IncidentReceivedRadiance>
387 <SolarConversionEfficiency>0.0</SolarConversionEfficiency>
388 <LocalWindSpeed>0.0</LocalWindSpeed>
389 <LocalAirTemperature>0.0</LocalAirTemperature>
390 <SolarCellTemperature>0.0</SolarCellTemperature>
391 <UtilityPowerConsumed>NA</UtilityPowerConsumed>
392 <StringTime>07:56</StringTime>
393 </Row>
394 </Rowset>
395 </Rowset>
396

```

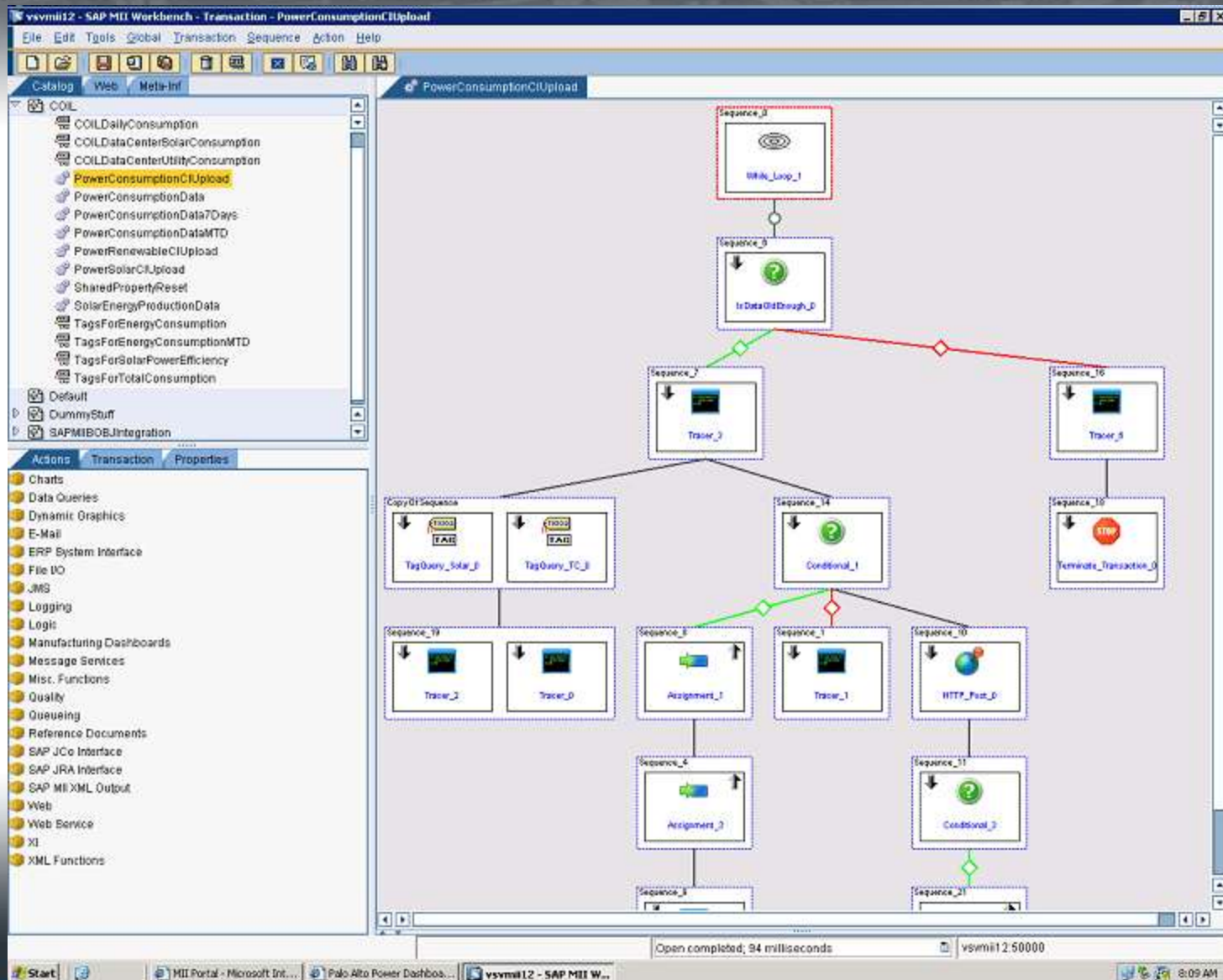
SAP – Xcelsius integration via MII



The screenshot shows an XML editor window titled "editPlus - [Noname3 *]". The left pane displays a file explorer with a directory tree. The right pane shows an XML document with the following content:

```
<?xml version="1.0" encoding="utf-8"?>
<data>
  <variable name="SAPHII_1">
    <zone>
      <column>00/23/2010 07:56 AM</column>
      <column>13.0</column>
      <column>12.0</column>
      <column>12.0</column>
      <column>0.03309050052741656</column>
      <column>97.2</column>
      <column>228.0</column>
      <column>8.3</column>
      <column>0.0</column>
      <column>20.0</column>
      <column>16.0</column>
      <column>237.805</column>
      <column>07:56</column>
    </zone>
    <zone>
      <column>00/23/2010 08:56 AM</column>
      <column>30.0</column>
      <column>31.0</column>
      <column>30.0</column>
      <column>-0.02716944590079065</column>
      <column>97.5</column>
      <column>452.0</column>
      <column>10.0</column>
      <column>0.0</column>
      <column>22.0</column>
      <column>30.0</column>
      <column>237.811</column>
      <column>08:56</column>
    </zone>
    <zone>
      <column>00/23/2010 09:56 AM</column>
      <column>49.0</column>
      <column>49.0</column>
      <column>48.0</column>
      <column>-0.0010649562903040920</column>
      <column>97.1</column>
      <column>646.0</column>
      <column>11.3</column>
      <column>0.0</column>
      <column>25.0</column>
      <column>45.0</column>
      <column>237.818</column>
      <column>09:56</column>
    </zone>
    <zone>
      <column>00/23/2010 10:56 AM</column>
      <column>63.0</column>
      <column>65.0</column>
      <column>63.0</column>
      <column>-0.026100905047672256</column>
      <column>96.9</column>
      <column>779.0</column>
      <column>12.0</column>
      <column>0.0</column>
      <column>27.0</column>
      <column>54.0</column>
      <column>237.825</column>
    </zone>
  </variable>
</data>
```


SAP – Carbon Impact integration via MII



SAP – Carbon Impact integration via MII

The screenshot shows the MII Portal interface in a Microsoft Internet Explorer browser window. The address bar displays a URL starting with 'http://www12:50000/...'. The page title is 'MII Portal - Microsoft Internet Explorer'. The SAP logo is visible in the top right corner. The left sidebar contains a navigation menu with categories like Energy, 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 with the following columns: Project, Namespace, Name, Type, Storage Type, and Value. The table contains several rows of data, including entries for 'ConsumedTagline', 'ConsumptionDataUpload', 'ConsumptionLastSuccessDT', 'DataServerName', 'RenewableDataUpload', 'RenewableLastSuccessDT', 'RenewableTagline', 'SolarDataUpload', and 'SolarLastSuccessDT'. A tooltip is visible over the 'Value' column, stating 'Scheduler Table has 7 columns and 10 rows'. The bottom of the page shows a 'Last Update' timestamp of '8/24/10 8:09:51 AM PDT' and buttons for 'Filter', 'Refresh', and 'Help'.

Project	Namespace	Name	Type	Storage Type	Value
COIL		ConsumedTagline	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_UIDS
COIL		RenewableDataUpload	xml	Persistent	
COIL		RenewableLastSuccessDT	timestamp	Persistent	2010-08-23T00:00:00
COIL		RenewableTagline	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

The screenshot displays the SAP MII Workbench interface for configuring a transaction named 'PowerConsumptionUpload'. The left sidebar shows a project tree with folders like 'COIL', 'META-INF', and 'Bundles'. The main workspace shows a sequence diagram with an 'HTTP_Post_0' action. An 'Expression Result' dialog box is open, showing the evaluation result of an expression. The expression is a URL that includes various parameters and a complex path for data retrieval. The 'Link Editor' dialog box is also open, showing the 'Incoming' tab with a list of objects and the 'Outgoing' tab with a list of properties. The 'Link Type' section shows options for 'Assign Value', 'Assign XML', 'Append XML', 'Append After XML', 'Replace XML', and 'Remove XML'. The 'Target XPath' is set to 'HTTP_Post_0.URL'. The 'Expression' field contains a complex XPath expression that concatenates various URL segments and parameters. The 'Functions' section shows a list of functions and buttons for 'Dynamic Link', 'Property Value', and 'Evaluate'.

Expression Result

Evaluation Result

```
https://www.carbonimpactdemo.com/import/locust?email=mildemo@sap.com&password=sapsaction&template=template-EPA - Electricity &ORID2007&records=[{"name":"Total Consumption","activity_date":"4/1/2010","imp_snapshot_identifier":"Apr 10","imp_node_name":"COIL","imp_source_identifier":"Total Consumption","imp_snapshot_family_identifier":"Main Inventory","input_usage":"0","input_gridType":"CAMB"}]
```

Link Editor

Incoming Outgoing

Object

- Globals
- Transaction
- Local
- Inline
- Persistent
- Assignment_1
- Assignment_3
- Tracer_7
- Tracer_1
- Conditional_1
- TagQuery_Solse_0
- TagQuery_TC_0
- Tracer_2
- Tracer_0
- Tracer_3
- IsDataOldEnough_0

HTTP_Post_0

Link Type

Assign Value ☒ Assign XML ☐ Append XML ☐ Append After XML ☐ Replace XML ☐ Remove XML

Hide Expression Editor

Color

Target XPath

HTTP_Post_0.URL

Expression

LocalURLSegment1CommonsLocalURLSegment2TC&datefromxmlformat(dateadddays(PersistentConsumptionLastSuccessDT,1),MM/yyyy)&LocalURLSegment3Common&datefromxmlformat(dateadddays(PersistentConsumptionLastSuccessDT,1),MM/yyyy)&LocalURLSegment4TC&LocalUsageTC&LocalURLSegment5Common

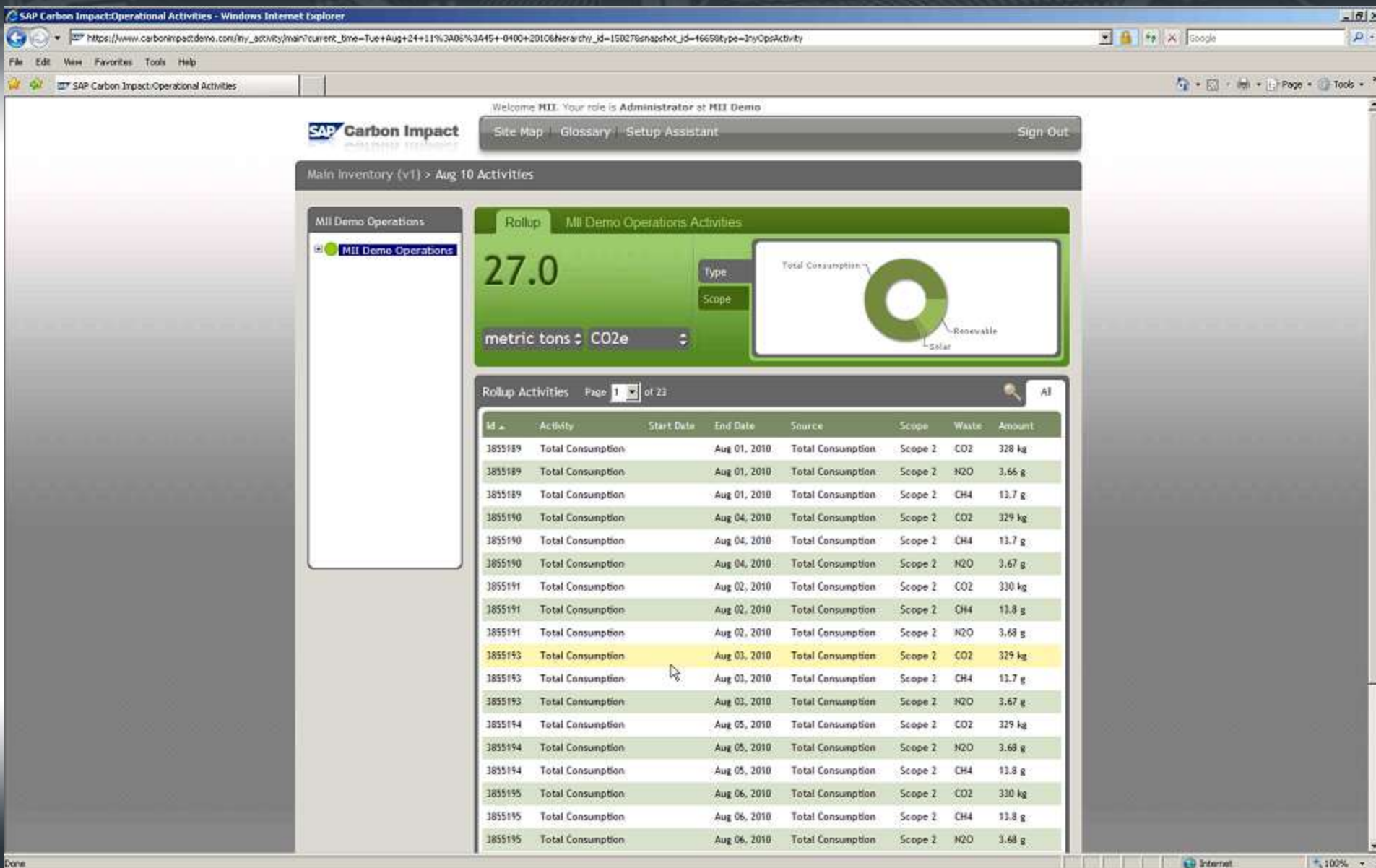
Functions

Dynamic Link Property Value Evaluate

Close completed; 188 milliseconds

vsml12:50000

SAP – Carbon Impact integration via MII



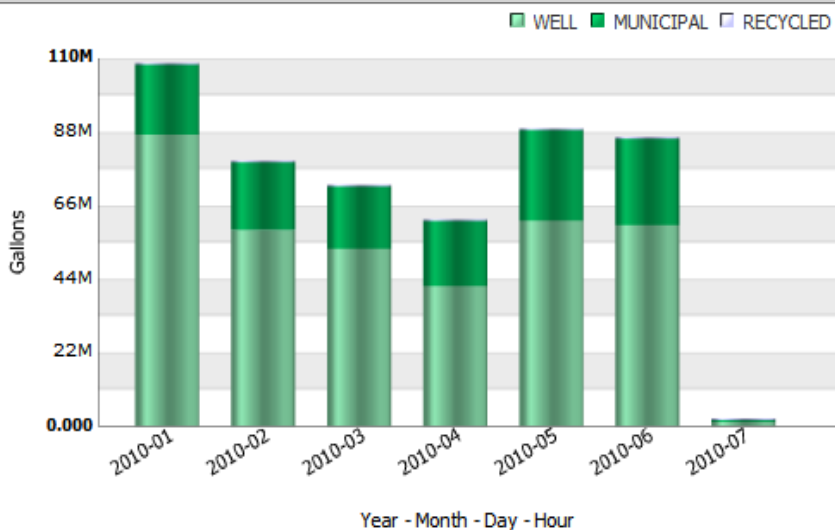
SAP – PM, PP/PI, QM

IBM Ireland – Green Sigma

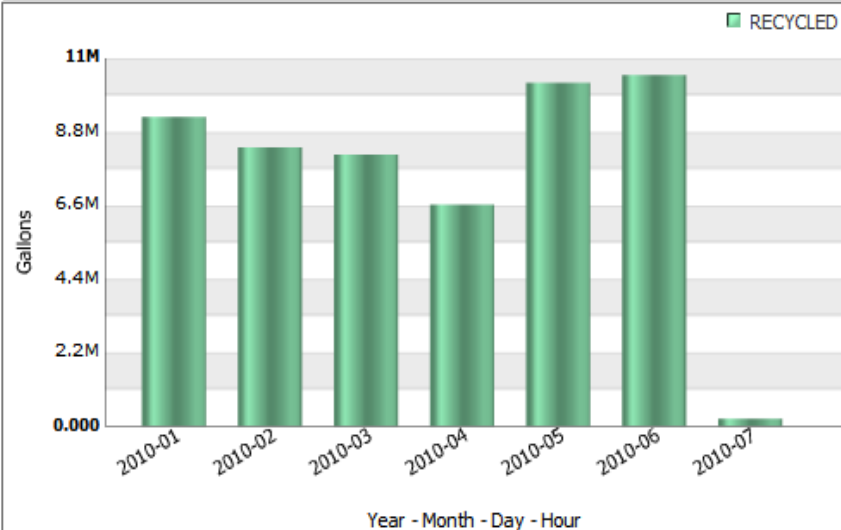
PI JDBC → Tivoli Data Warehouse → Cognos BI



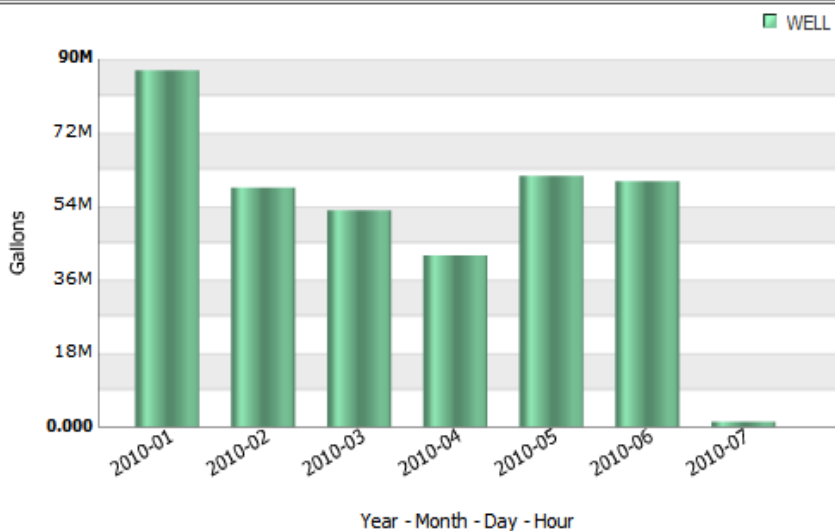
EFK : INCOMING WATER



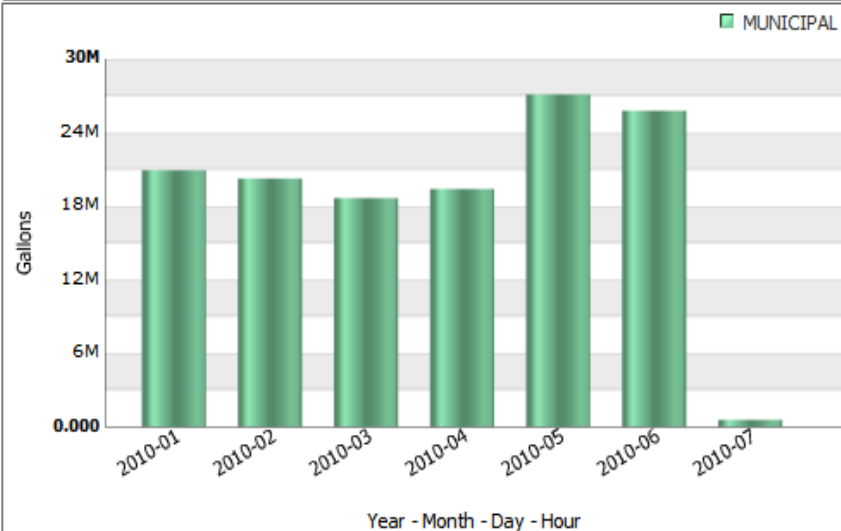
EFK : RECYCLED USAGE



EFK : WELL USAGE



EFK : MUNICIPAL USAGE



```

int recordCount = 0;
String url = "jdbc:psql://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);

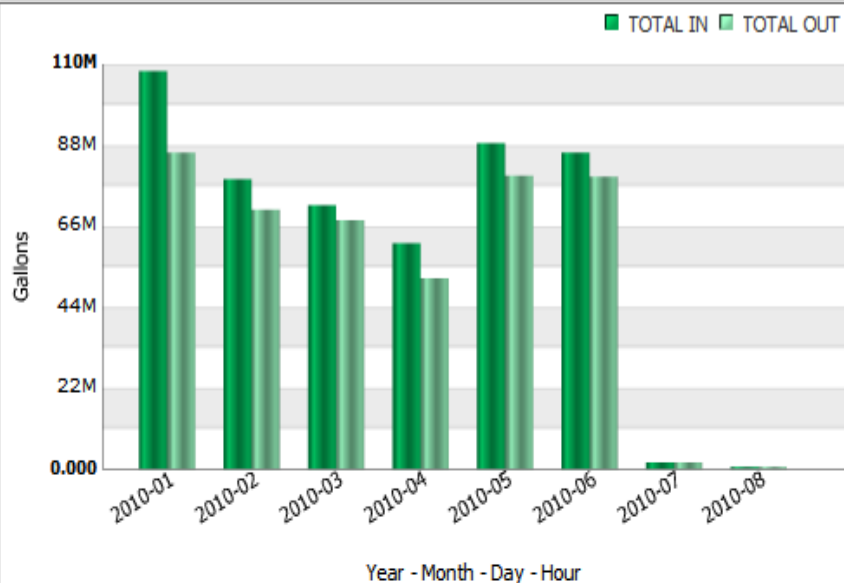
    rs = stmt.executeQuery("SELECT tag, value, time FROM picomp2 WHERE tag in " +
        "('E56.27.S317 INFTNK FIT114','E53.60.44.S323 DRW FLW FT01','B315 CUP MPW INFL_FLOW1_S'," +
        "'B315 CUP MPW INFL_FLOW2_S','C60.57.01.S690WELL_WELL-01_FI-0101'," +
        "'C60.57.01.S690WELL_WELL-02_FI-0201'," +
        "'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");
}

```

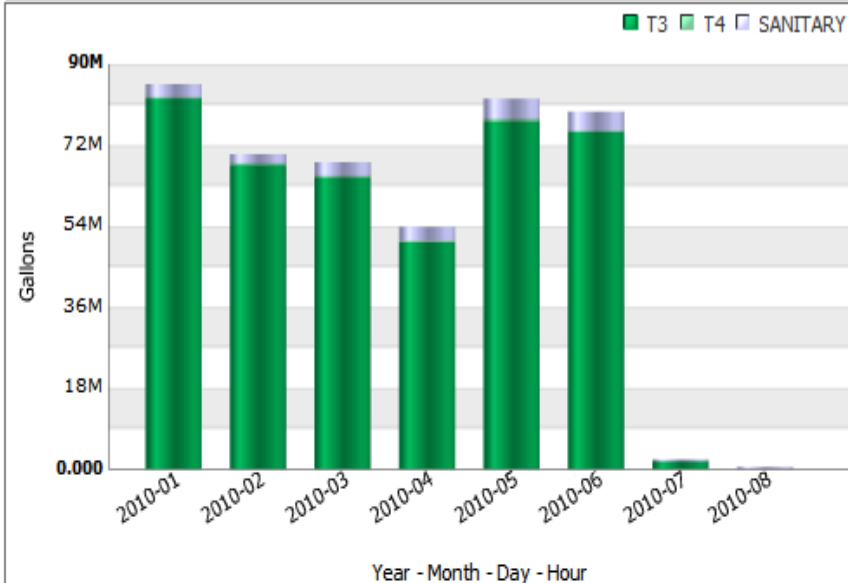
```
C:\WINDOWS\system32\cmd.exe

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 02:34:37"
"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"
```

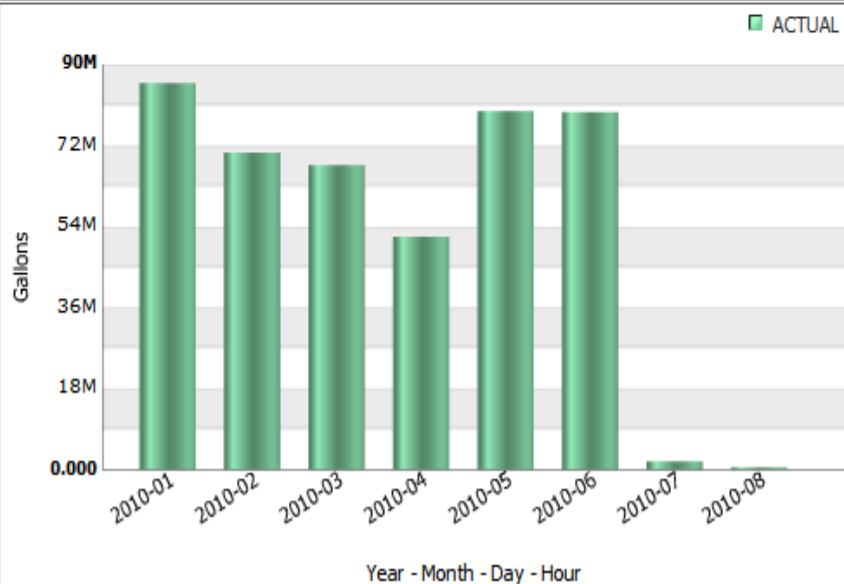

EFK : DISCHARGE TOTAL IN / TOTAL OUT



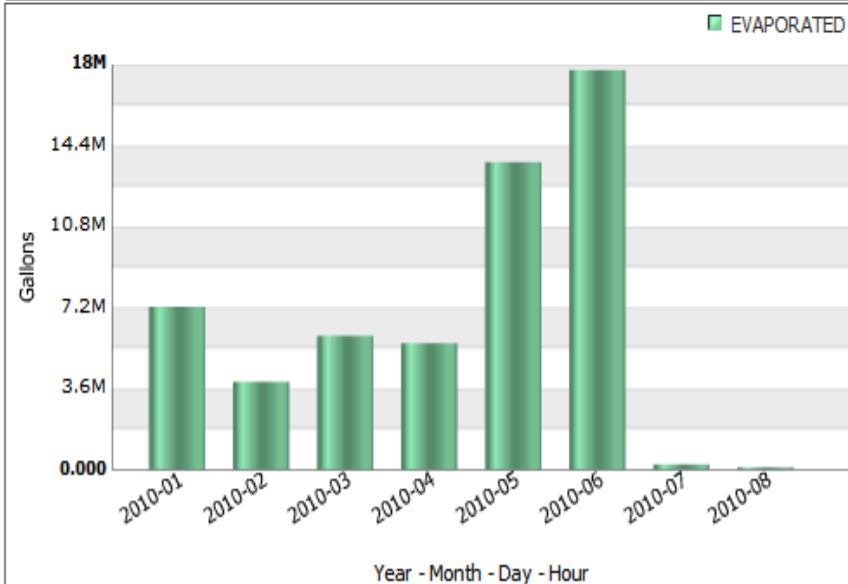
EFK : DISCHARGE COMPOSITE



EFK : DISCHARGE ACTUAL



EFK : DISCHARGE EVAPORATED WATER





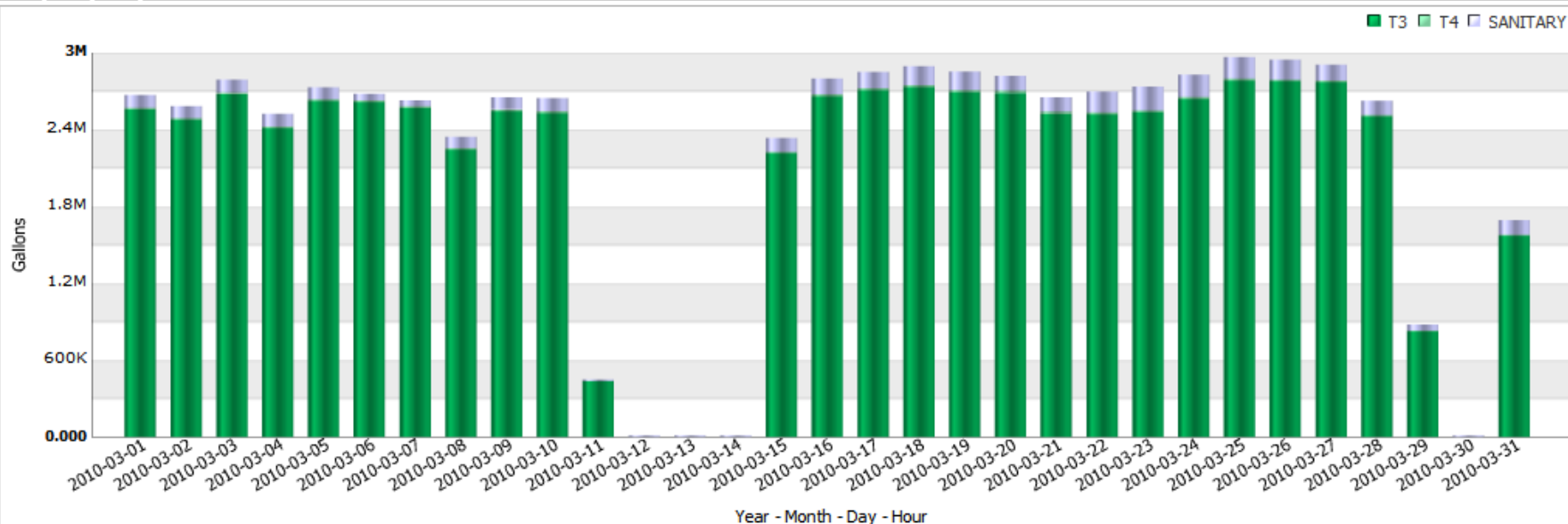
EFK : DISCHARGE COMPOSITE

Activities



Dimension Filters

Change Categories



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



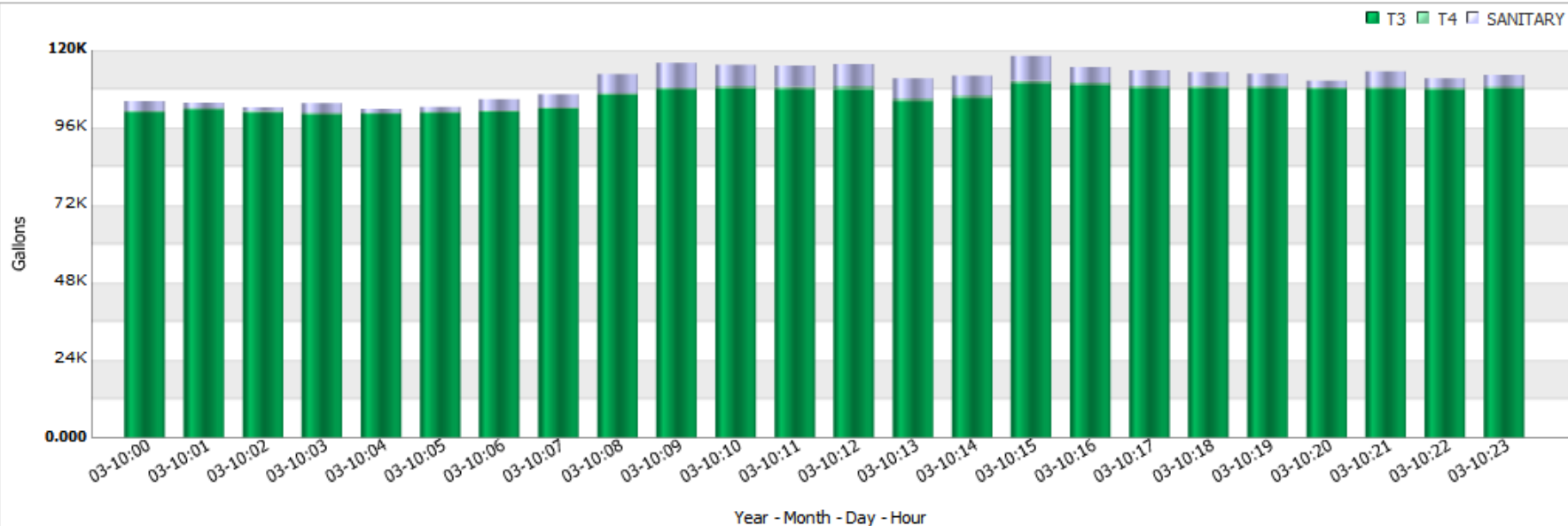
T3 and T4 and SANITARY by "Hour"

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®