Uptime, Downtime and Event Tracking

Presented by

Sean Rowlands
Regional Director, Australasia
RtTech Software Inc.

RtTech
RtTech Software

- RtTech is a company formed in November 2011 as a spin-off of ADM’s Software division.
- Develops software products to improve **asset availability**, **utilization** and **utilities consumption**
- Based in NB, Canada
- Sales Offices in Australia and UK
- Customers in 13 countries (6 in Europe).
- OSIsoft and RtTech Software are partners. Our products are based on PI Server, PI AF, PI Event Frames, Microsoft .Net Technology
RtTech Software

• Developers of:
  – **RtDuet**: Downtime Monitoring and Maintenance & Reliability KPI calculator
  – **RtEMIS**: Industrial Energy Management Information System
RtDuet – What does it do?

• Downtime Monitoring and Maintenance & Reliability KPIs like Availability, Utilization, OEE, MTBF, MTTR,…
• Automatically captures downtime events complete with associated equipment, problem, cause and category
• Generates standardized, real time reports for maintenance and capital planning
• Seamlessly shares data with other MES applications and databases through Web services.
Benefits of RtDuet

- Enables prioritization of reasons for Down Time and Reduced Rate
- Identifies issues preventing plant to meet production goals
- Calculates automatically and in real time Reliability and Maintenance KPIs based on equipment data
- Increases data quality and efficiency of data collection
- Increases data accessibility and enables effective data analysis
- Reduction of non-value added work by operators/supervisors
- Integrates seamlessly with your existing infrastructure
- Flexible to meet reporting needs
Downtime in Operations

- **Equipment Stoppages**
  - Unplanned maintenance (breakdowns)
  - Scheduled maintenance
  - Operational delays (blockages, shift change)
  - Non-scheduled time
  - Idle (Energy supply, feed supply, stock-bound)

- **Equipment Slowdowns**
  - Aging equipment
  - Poor quality feed
  - Bottlenecks
Typical scenarios

- Paper log sheets / Excel based solution
  - Inaccurate information
  - Time consuming
  - Sheets are lost
  - Comments can not be analysed or quantified
- Downtime collation time consuming
- Uncontrolled information
- Home grown reporting systems are expensive to develop and maintain.
About RtDuet

Downtime and Maintenance KPI Calculator
About RtDuet - Downtime

• Automatically generates operational performance information
About RtDuet - Downtime

- Exposes business logic using a configuration environment driven by templates
About RtDuet - Downtime

• Delivers Information
About RtDuet – Maintenance KPI

• RtDuet is configured with the client’s Time Usage Model TUM
• The TUM:
  • Determines how downtime events need to be classified
  • Determines how Maintenance KPIs are calculated
About RtDuet – Maintenance KPI

Effective Utilisation = \frac{Operating Time (OT)}{Calendar Time (CT)} \times 100\%

Operating Efficiency = \frac{Operating Time (OT)}{Utilised Time (UT)} \times 100\%

Effective Use of Availability = \frac{Operating Time (OT)}{Available Time (AT)} \times 100\%

MTBF = \frac{Utilised Time (UT)}{\text{Number of Breakdowns (Count of ULF Events)}} \text{ Hours}

MTTR\text{f} = \frac{\text{Unscheduled Loss Failures (Hours ULF)}}{\text{Number of Breakdowns (Count of ULF Events)}} \text{ Hours}

MTBS = \frac{Utilised Time (UT)}{\text{Total Count of All Events Causing Stoppage}} \text{ Hours}
About RtDuet – Maintenance KPI
About RtDuet – Maintenance KPI

• RtDuet uses the classified events to calculate the KPIs mentioned before.
• All data is stored in the PI System allowing for the creation of Dashboards using the OSIsoft visualization tools.
About RtDuet – Maintenance KPI
About RtDuet – Maintenance KPI

[Graph showing maintenance KPIs over time with data points for different dates and times, including metrics like Availability, Utilization, OEE, and OEE Quality.]

(Right) OSIsoft PI System Roadshow 2014
(C) Copyright 2014, OSIsoft, LLC.
RtDuet Sample Reports
RtDuet Sample Reports
RtDuet – What’s New!

1st Generation
- Stand Alone Application
- PI Tags for outputs and comments
- Excel Reports

2nd Generation
- PI ACE
- Recalculation
- Excel Reports

3rd Generation
- Logic Tables
- Annotations
- New interface
- Improved reporting

4th Generation
- PI Batch
- Web Interface
- Configuration Toolkit
- Web Service
- SAP Integration

5th Generation
- PI AF
- Event Frames
- Calculation Engine

RtTech
RtDuet – What’s New!

• 2013
  – AF 2.4 and AF 2.5 → AF 2.6
  – PI HA with PI SDK 1.4 or higher.
  – Windows 8 and Server 2012 (x64 and x86) / SQL Server 2012
  – Failover RtDuet Calculation engine support.
  – Multi Language Support

• 2014
  – Launch in Cloud (Windows Azure)
  – New Graphics
  – New Data Interface (dlls, Excel Add ins... etc)
  – Smart Work Flow
RtDuet Customers
Questions
RtDuet – New User Interface

• RtTech User Interface
  – Complete Overhaul
  – AF 2.5 / AF 2.6
  – Increased Performance
  – .Net 4.0/4.5 platform
RtDuet – New Support / Installs

- RtTech Version Check
  - Used for Support
  - Prerequisites check
  - Customer can perform self check before calling RtTech.
RtDuet – New Excel Add in

• Excel Add in
  – Downtime and KPI
  – No coding required
  – Easy filtering
  – Excel 2007/2010
  – Automatic refresh
RtDuet – New SQL Sync

- SQL Sync
  - DT Records
  - KPI Records
  - Reason Tree
  - Root Category
  - Asset Tree
RtDuet – New dll interface

• COM enabled dll:
  – Custom Apps
  – Excel VBA
  – Rapid Development
RtDuet – New Multi Language

- English
- French
- Spanish
- Russian
- Italian
- Dutch
RtDuet – New Web Service

• Web Service
  – Improved XML structure
  – JSON
  – Improved query filters
  – Improved PI Tag Data
RtDuet – New IT Monitoring

• RtTech IT Asset Monitor
  – 3rd Quarter 2014
  – Internal application support for computers, laptops, servers.
  – Windows service or interactive client.
  – Stores information centrally via an AF connection or an imported xml file.
RtDuet – New IT Monitoring

• RtTech IT Asset Monitor
  – Results are stored centrally
  – Provides auditing information for standardized application versions.
  – Provides easy non-compliant email reports.
RtDuet – New IT Monitoring

- RtTech IT Asset Monitor
  - Centralized list of all RtTech applications and versions.
  - Centralized list of all PI Client component versions.
New – Smart Work Flow

- 3rd Quarter 2014
- Works with both RtDuet and RtEMIS.
Contact Us

Keith Flynn CTO
keith@rttechsoftware.com
+1 902-817 1725

Pablo Asiron CEO
pablo@rttechsoftware.com
+1 506-232 3791
Extra Slides
RtDuet

• Downtime Monitoring and Maintenance & Reliability KPIs like Availability, Utilization, OEE, MTBF, MTTR,…
• Key facts:
  – ~30 installations in 11 countries in industries like Mining, Pulp and Paper, Chemicals, Manufacturing, Power
  – Staple clients: Irving, Cargill, BHP Billiton, Xstrata, Glencore, Michelin, Barrick Gold, Syngenta
  – Based in AF and Event Frames
  – First application in production at a customer site based in Event Frames (Dec 2010)
  – RtDuet can not be installed without a PI System
  – All RtDuet data is stored in the PI System
Why Manage Downtime

• Increased plant efficiency and performance
• Improved safety
• Extended asset life cycle
• Availability is a key maintenance and reliability metric
• Reduced Unplanned Maintenance
• Reduced maintenance costs
• Improved product quality
• Greater visibility of asset performance
• Working smarter rather than harder
Downtime in Operations

- **Equipment Stoppages**
  - Unplanned maintenance (breakdowns)
  - Scheduled maintenance
  - Operational delays (blockages, shift change)
  - Non-scheduled time
  - Idle (Energy supply, feed supply, stock-bound)

- **Equipment Slowdowns**
  - Aging equipment
  - Poor quality feed
  - Bottlenecks
Typical scenarios

• Paper log sheets / Excel based solution
  – Inaccurate information
  – Time consuming
  – Sheets are lost
  – Comments can not be analysed or quantified
• Downtime collation time consuming
• Uncontrolled information
• Home grown reporting systems are expensive to develop and maintain.
RtDuet Benefits

• Transforms Operational Data into Actionable Information to:
  – Optimize Performance
  – Reduce Downtimes
  – Reduce Operator workload
  – Standardized Information
  – Increase Profits
New – Smart Work Flow
New – Smart Work Flow
New – Smart Work Flow
New – Smart Work Flow

<table>
<thead>
<tr>
<th>Work Flow</th>
<th>Rule Name</th>
<th>Created Date</th>
<th>Active</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emis Work Flow</td>
<td>Emis Negative CUSUM</td>
<td>14/01/2014 11:36:21 AM</td>
<td>true</td>
</tr>
</tbody>
</table>

Showing 1 to 1 of 1 entries
New – Smart Work Flow
New – Smart Work Flow
New – Smart Work Flow
New – Smart Work Flow
New – Smart Work Flow
New – Smart Work Flow
New – Cloud Services
New – Cloud Services
New – Cloud Services
THANK YOU