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IN-DEPTH ANALYTICS.  
OPTIMIZED ASSETS.

RtDUET OVERVIEW

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# Tracking downtime & performance



Business  
Challenges

Business Impacts

Best Practice

# Business Challenges



Justifying budget for capital or operational improvements.



Ensuring accurate and immediate KPI calculations.



Measuring continuous improvement projects.



Identifying opportunities to improve equipment utilization.



Reducing non-value-added work by operators.



# Business Impacts



— With data downtime events can be decreased



— Eliminate the root-causes of production inefficiencies



— Reduction of capital requirements



— Better utilization of the inputs of production



— Greater production efficiency results in financial efficiency

# Best Practice



Standardized approach to data capture



Well defined reason codes



Well defined Time Usage Model



Well defined KPIs



Solution approach to implementation

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Implement a  
best practice to  
track downtime

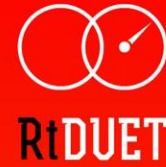
Manual

In House  
Development

Third Party  
Solution



# REAL-TIME EQUIPMENT MONITORING & ASSET PERFORMANCE MANAGEMENT



Manual

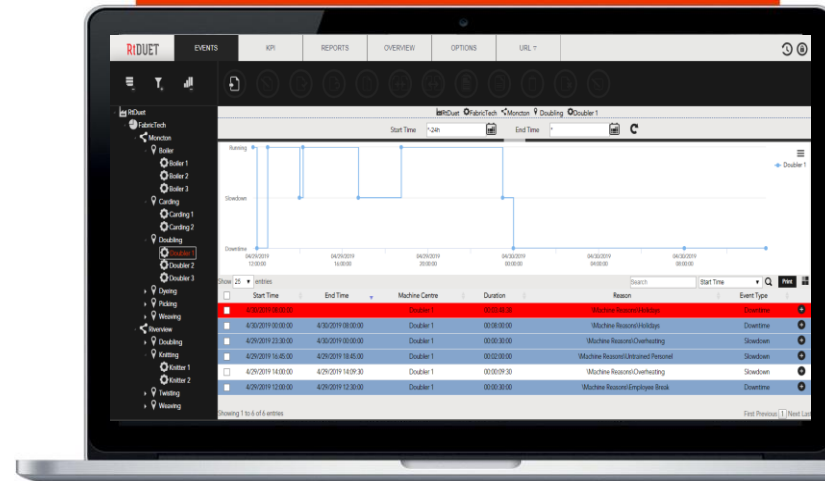
In House  
Development

Third Party  
Solution

- Paper and/or Spreadsheet solution are cumbersome to develop and implement
- Result in inaccurate, inconsistent and lost data
- Creates data that is hard to analyse and/or quantify
- Time consuming solution

*“RtDuet helps us to determine downtime but also to accurately and easily associate production losses for slowdowns and to quickly drill down to root causes for those production losses.”*

*- Ron Butler, Nystar*



# REAL-TIME EQUIPMENT MONITORING & ASSET PERFORMANCE MANAGEMENT

Manual

In House  
Development

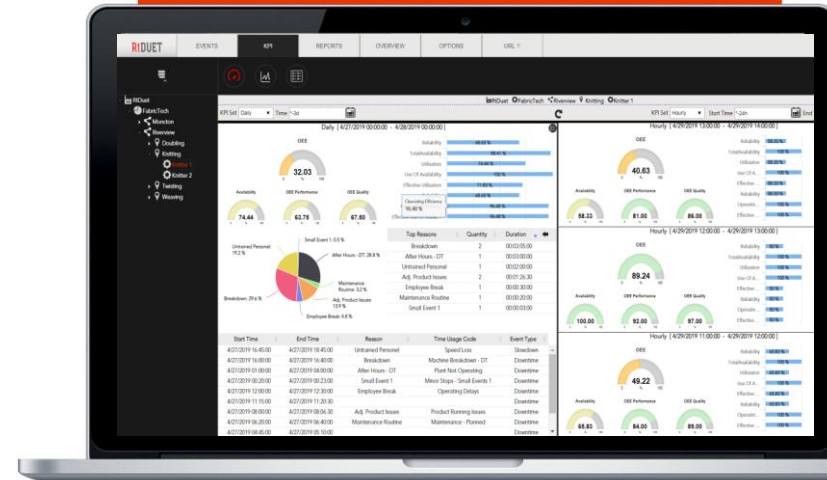
Third Party  
Solution

- Expensive to develop and maintain
- Difficult to integrate with production equipment
- Risky, development typically with one or two people



*“We have ensured data precision in terms of asset performance and can now chase improvements because we know they are real”*

*- David Bartolo, Head Of Asset Intelligence – AGL Energy*





# REAL-TIME EQUIPMENT MONITORING & ASSET PERFORMANCE MANAGEMENT

Manual

In House  
Development

Third Party  
Solution

- Professionally developed and maintained
- Engineered solution that leverages the experience of multiple clients
- Continuous development cycle
- Access to dedicated support
- Higher ROI than the other options



*“RtTECH stood out because they had good experience in industrial environments, the solution worked off the OSIsoft PI System nicely and they were able to meet our timelines”*

*- Andrew Cooper, P. Eng - New Gold , New Afton Mine*



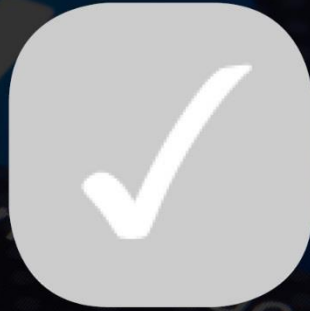


RiDUET

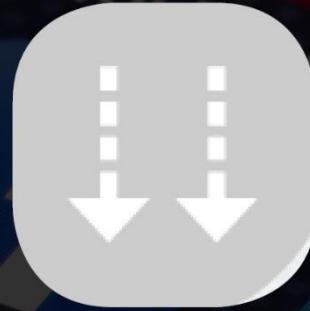
# INDUSTRIAL APPS TO



Optimize  
asset  
utilization



Reduce  
downtime  
+ slowdowns



Reduce  
energy  
cost



Increase  
worker  
productivity

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# REAL-TIME EQUIPMENT MONITORING & ASSET PERFORMANCE MANAGEMENT

Connect

Monitor

Analyze



# REAL-TIME EQUIPMENT MONITORING & ASSET PERFORMANCE MANAGEMENT

Connect

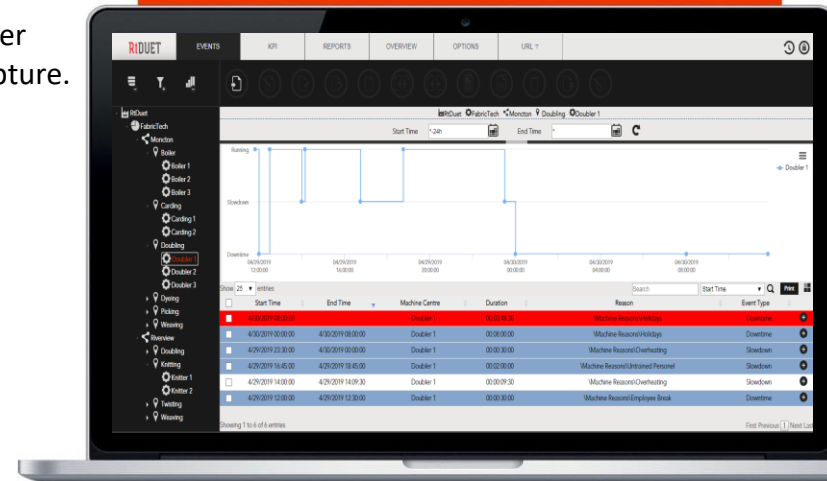
Monitor

Analyze

- **Multiple-source monitoring**  
Integrates with OSIsoft PI data historian to aggregate environment, production and operation data.
- **Real-time machine data capture**  
Takes advantage of PI's connectivity to over 400 protocol types for automatic data capture.



*"I compare RtDUET to an app on your phone. The right apps make the phone so much more useful"*  
- David Bartolo, Head Of Asset Intelligence – AGL Energy





# REAL-TIME EQUIPMENT MONITORING & ASSET PERFORMANCE MANAGEMENT

Connect

Monitor

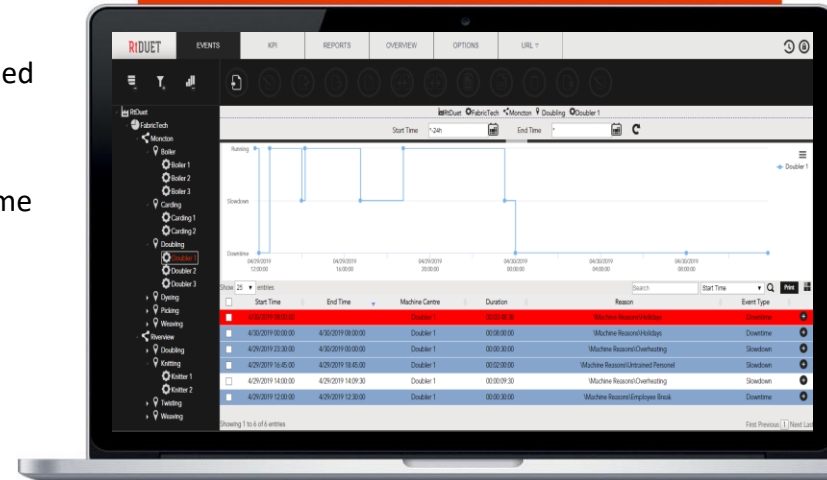
Analyze

- **Asset monitoring**  
Monitors equipment 24/7 for any stoppages and/or production losses due to delays or quality
- **Auto-classified downtime**  
Downtime events can be automatically classified when event meets predetermined criteria
- **Supports PI notification**  
Customized alerts to any device in real-time

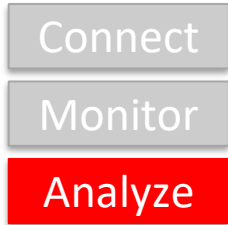


*“Understanding where the ‘bad actors’ lie in your process is critical to improving overall plant availability and production levels. In a large-large scale distributed plant, a centralized tool for capturing and reporting on operational delays is essential”*

*- Paul Yaroshak, Barrick Gold, Pueblo Viejo Mine*



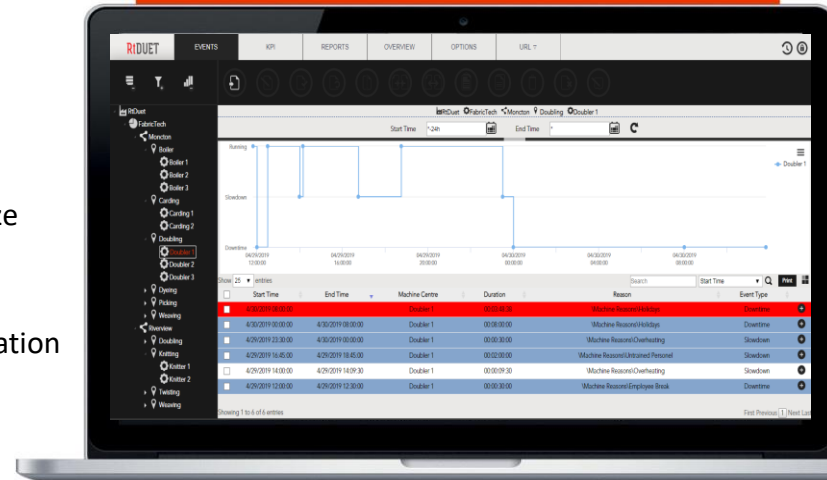
# REAL-TIME EQUIPMENT MONITORING & ASSET PERFORMANCE MANAGEMENT



- **Output KPIs to PI Tags**  
Allowing further analysis in PI
- **Output to external reporting tools**  
Allowing further analysis in third party tools such as Power BI, Excel etc.
- **KPI Dashboard**  
Real-time visualization of production performance
- **Information Timeline**  
Events displayed chronologically to analyze asset performance and repairs
- **Web-based interface**  
Accessible anytime via secure web application
- **Perato Charting**  
in support of root cause analysis

*“RtDUET was very easy to install, it was easy to deploy. The technical assistance was there every step of the way. A real success story for us.”*

*- David Bartolo, Head Of Asset Intelligence – AGL Energy*



# Architecture





# Leverage the Power of PI

- **RtDUET leverages OSIsoft PI to deliver downtime KPIs such as OEE**
- **RtDUET implements a state of the art calculation engine using PI data and complex trigger logic to ensure accurate downtime tracking**
- **RtDUET is an extension to PI allowing users to use PI tools to visualize results or allow RtDUET to embed PI tools within its web interface**





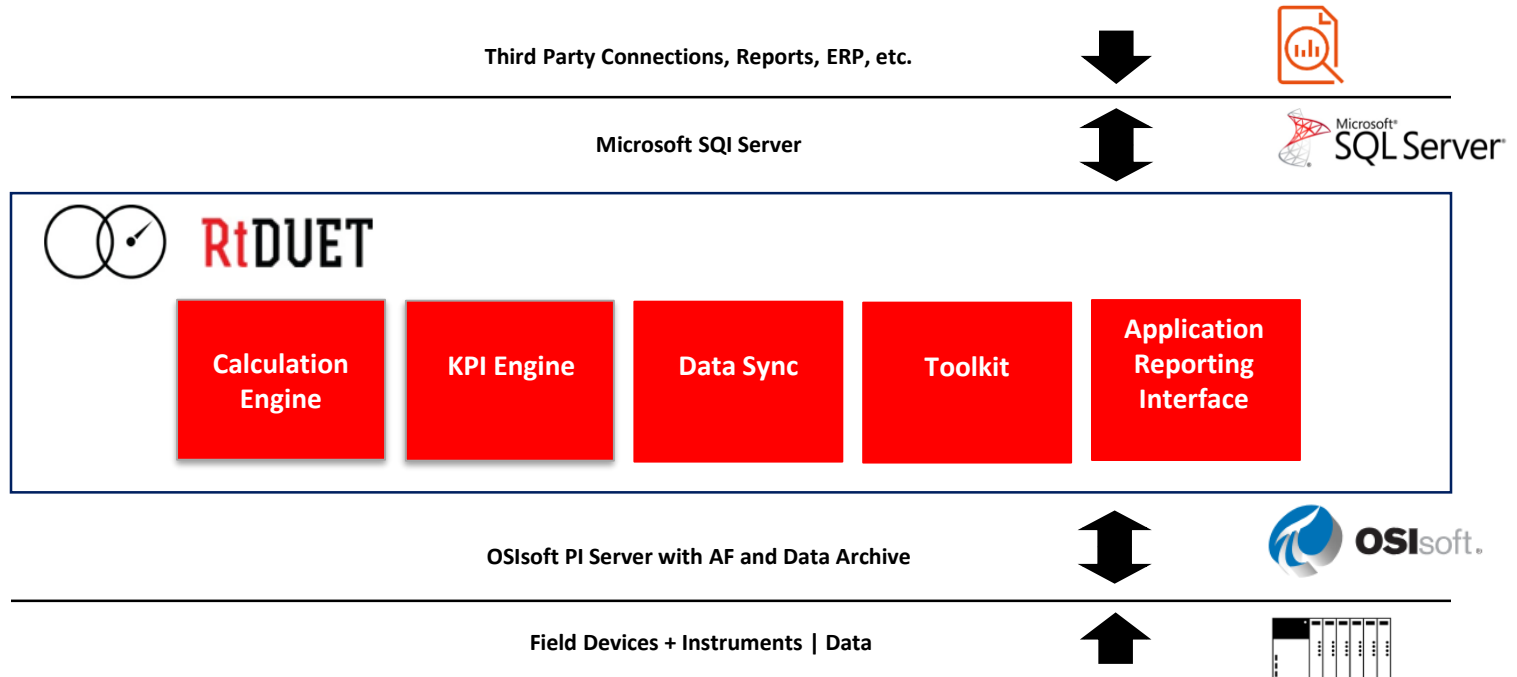
**RtDUET**


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## Why OSIsoft PI?

- **OSIsoft and RtDUET have a long partnership history**
- **OSIsoft's PI Historian is the market leader**
- **The PI architecture is optimized to allow the easy integration of programs like RtDUET**
- **It provides a framework with pre defined connections upstream and downstream of the Historian**
- **These connections reduce overall cost and risk**

# Architecture





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# Comprehensive Feature Set



Tool Kit

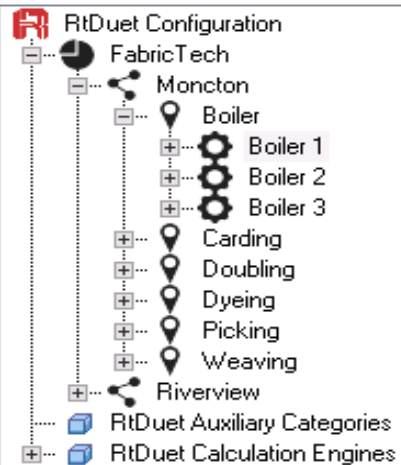
Application Reporting  
Interface

Data Sync

KPI Engine

Calculation Engine

File Tools Help



Toolkit



Interface



Data Sync



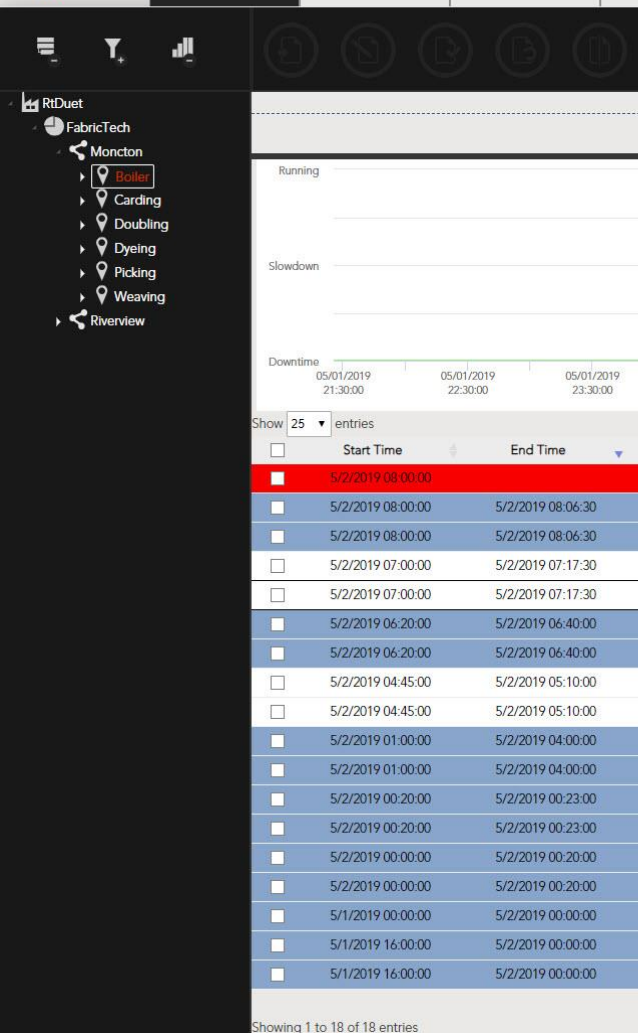
KPI Engine

Calc  
Engine

# Toolkit

- Used to configure the application inclusive of:
  - Asset Hierarchy
  - Machine Centers and Triggers
  - Auto Entries
  - Auxiliary Tags
  - Reason Trees
  - Time Usage Model
  - Security





Toolkit



Interface



Data Sync



KPI Engine



Calc Engine

# Application Reporting Interface

- Primary users interface allowing the following:
  - Event Maintenance
  - KPI Visualization
  - Root Cause Analysis

Toolkit  
3.2.1.1

ARI  
3.2.9.5

Calc Engine  
3.2.1.0

KPI Engine  
3.2.2.0

Report Sync  
3.2.1.0

### Report Sync settings

#### Service Instances

Display Name	Description
RtDuet Report Sync	
RtDuet Report Sync Boiler	RtDuet F
RtDuet Report Sync Carding	RtDuet F

DEBUGGING

LOGFILEPATH C:\RTD

MAXAUDITRECORDS 5000

SYNCSERVERID

SQLDATEISVARCHAR

#### AFCredentials : AFServer

Server Name RT-A

Domain\User rttech

Password

Database Name RtDU



Toolkit



Interface



Data Sync



KPI Engine



Calc Engine

## Data Sync

- Bi directional data sync with database to allow RtDUET to leverage third party tools, Excel, Power BI, Tableau, etc.



RtDuet

FabricTech

- Moncton
  - Boiler
  - Carding
  - Doubling
  - Dyeing
  - Picking
  - Weaving
- Riverview



Show 25 entries

Source MC	Start Time	Availability
<input type="checkbox"/> Weaver 5	5/1/2019 00:00:00	100.00 %
<input type="checkbox"/> Weaver 2	5/1/2019 00:00:00	100.00 %
<input type="checkbox"/> Weaver 1	5/1/2019 00:00:00	100.00 %
<input type="checkbox"/> Picker 2	5/1/2019 00:00:00	100.00 %
<input type="checkbox"/> Picker 1	5/1/2019 00:00:00	100.00 %
<input type="checkbox"/> Dyer 2	5/1/2019 00:00:00	100.00 %
<input type="checkbox"/> Dyer 1	5/1/2019 00:00:00	100.00 %
<input type="checkbox"/> Doubler 3	5/1/2019 00:00:00	100.00 %
<input type="checkbox"/> Doubler 2	5/1/2019 00:00:00	100.00 %
<input type="checkbox"/> Doubler 1	5/1/2019 00:00:00	100.00 %
<input type="checkbox"/> Carding 2	5/1/2019 00:00:00	100.00 %
<input type="checkbox"/> Carding 1	5/1/2019 00:00:00	100.00 %
<input type="checkbox"/> Boiler 3	5/1/2019 00:00:00	100.00 %
<input type="checkbox"/> Boiler 2	5/1/2019 00:00:00	100.00 %
<input type="checkbox"/> Boiler 1	5/1/2019 00:00:00	100.00 %
<input type="checkbox"/> Weaver 5	4/30/2019 00:00:00	100.00 %
<input type="checkbox"/> Weaver 2	4/30/2019 00:00:00	100.00 %
<input type="checkbox"/> Weaver 1	4/30/2019 00:00:00	100.00 %
<input type="checkbox"/> Picker 2	4/30/2019 00:00:00	100.00 %
<input type="checkbox"/> Picker 1	4/30/2019 00:00:00	100.00 %
<input type="checkbox"/> Dyer 2	4/30/2019 00:00:00	100.00 %
<input type="checkbox"/> Dyer 1	4/30/2019 00:00:00	100.00 %
<input type="checkbox"/> Doubler 3	4/30/2019 00:00:00	100.00 %
<input type="checkbox"/> Doubler 2	4/30/2019 00:00:00	100.00 %
<input type="checkbox"/> Doubler 1	4/30/2019 00:00:00	100.00 %

Showing 1 to 25 of 105 entries



Toolkit



Interface



Data Sync



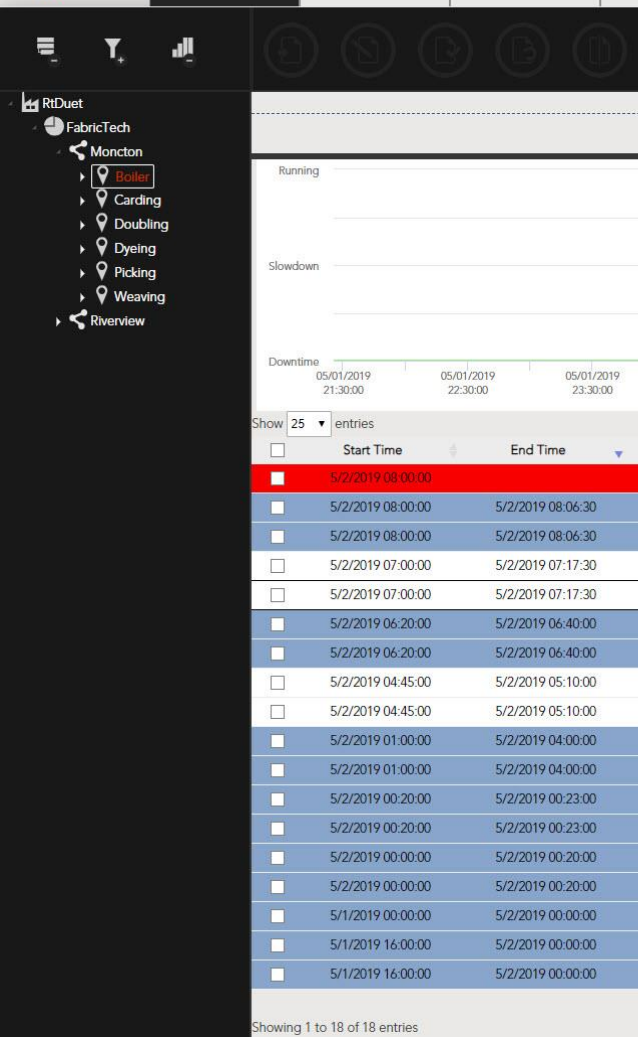
KPI Engine



Calc Engine

## KPI Engine

- Uses downtime events to automatically calculate maintenance and reliability KPIs
- Supports a number of standard KPIs such as OEE, MTBF, Reliability, Availability, Utilization, etc.
- Aggregates KPI up the asset hierarchy
- Output KPIs to PI tags



Toolkit



Interface



Data Sync



KPI Engine



Calc Engine

## Calculation Engine

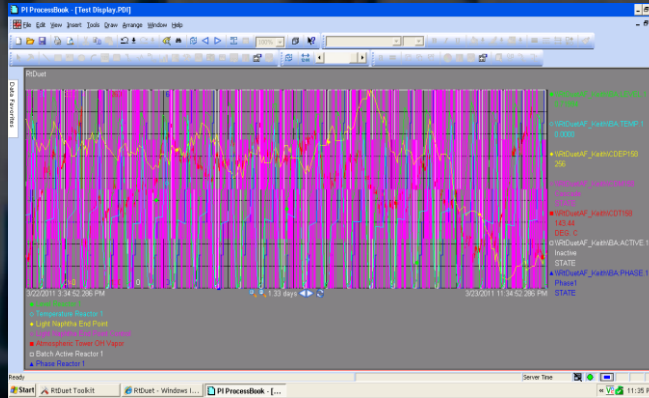
- Monitors equipment status and creates downtime events based on trigger logic and priorities
- Supports auto split and auto classification
- Eliminates minimum events based on pre defined durations
- Determines relative downtime



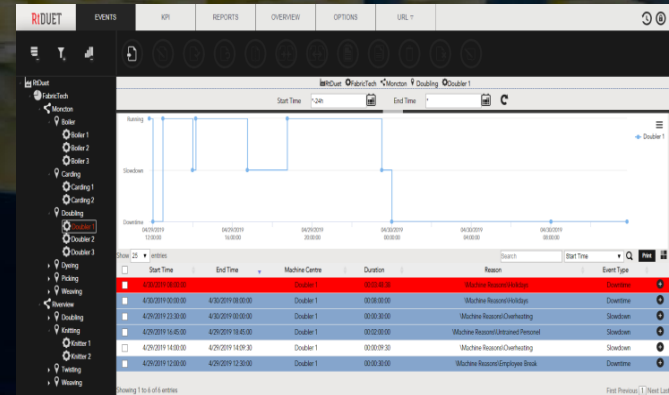
An Example



## Plant Data from OSIsoft PI

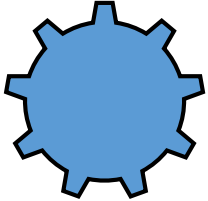


- RtDUET generates event frame records from Plant Data
- Context added to the event frames to transform plant data into actionable data



# Equipment Stoppage

Machine Center 1

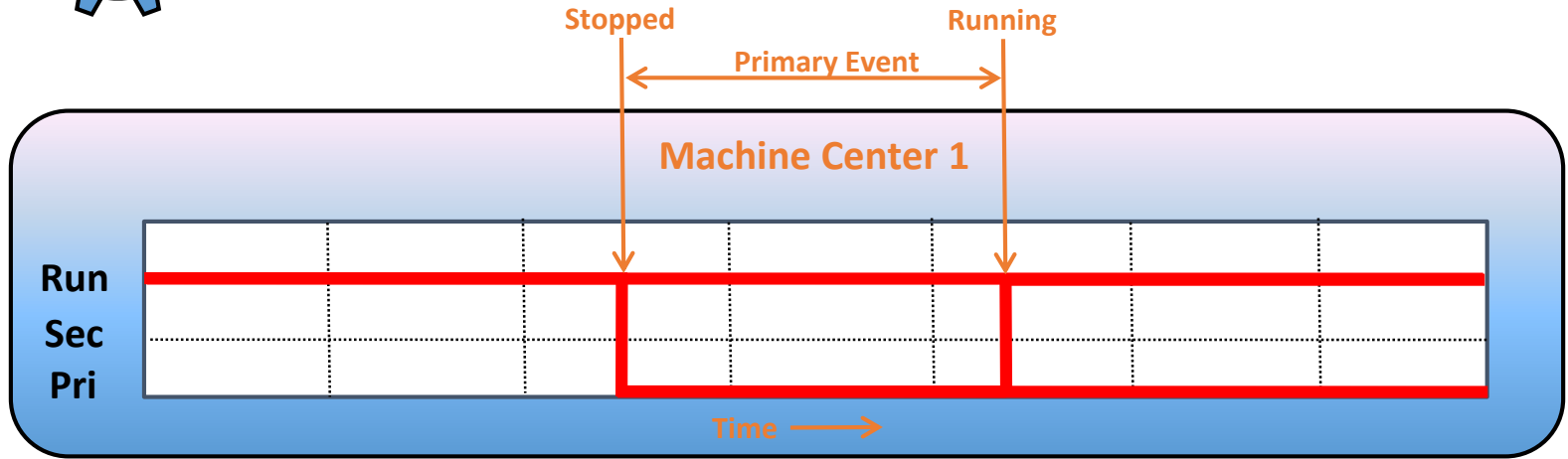


PI Tag 1  
Digital State



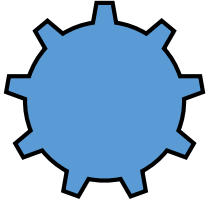
Machine Center 1  
Primary Trigger 1

PI Tag 1 = Stopped



# Equipment Slowdown

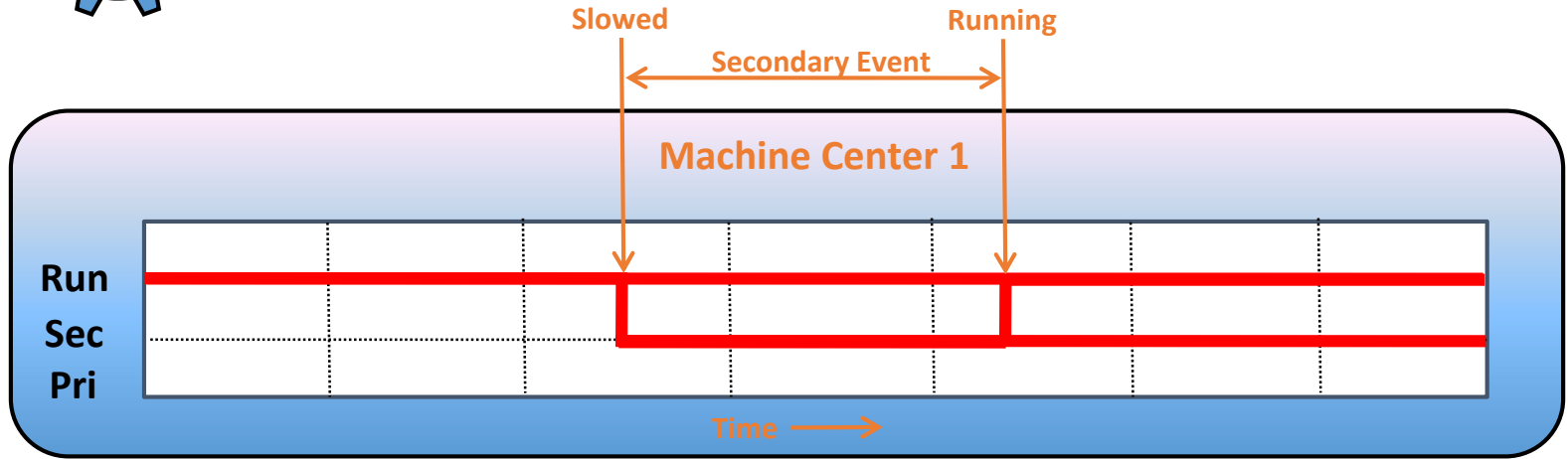
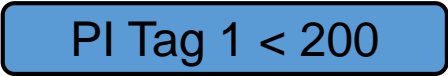
Machine Center 1



PI Tag 1  
RPM

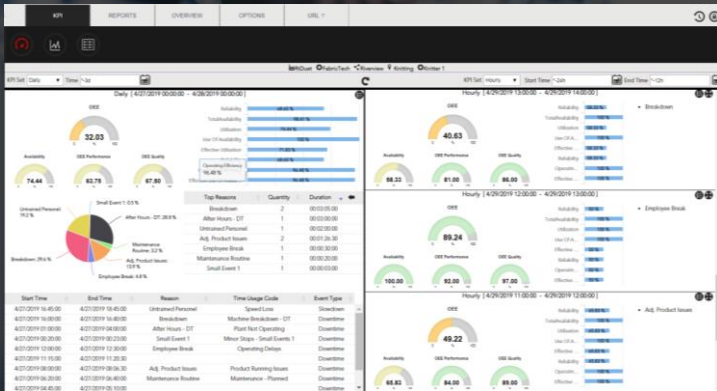


Machine Center 1  
Secondary Trigger 1



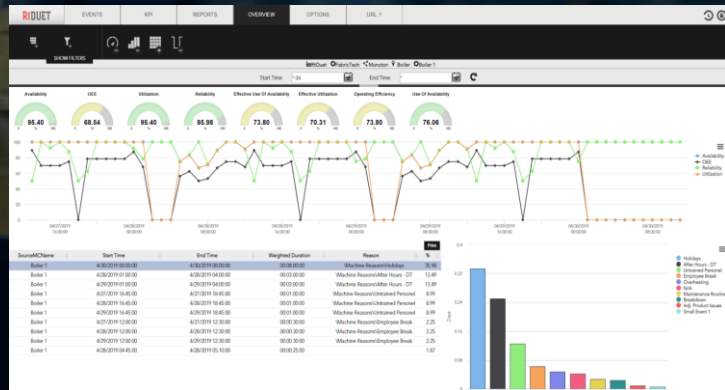


# Optimize Performance – Reduce Downtime – Increase Profitability



KPI Dashboard

- RtDUET provides insightful reports allowing Users to take corrective action to:
  - Decrease unplanned downtime
  - Implement asset maintenance strategies
  - Meet production targets



Overview

# Deployment

Workshop

Configuration

Commissioning  
and Training

Continuous  
Improvement



# Deployment

## Workshop

## Configuration

## Commissioning and Training

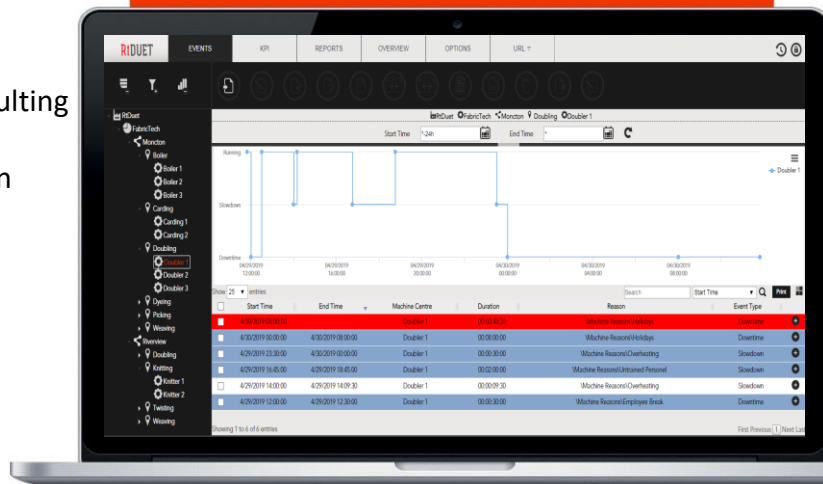
## Continuous Improvement

- RtTECH will schedule a remote design workshop
- Based on the results of workshop an installation configuration will be developed including:
  - A summary of basic functions
  - System architecture
  - A list of initial machine centers
  - Reporting requirements
  - A time usage model (TUM) and resulting KPI's
  - Integration plan to existing historian
  - Configurations for:
    - Asset hierarchy
    - Machine centers
    - Reason trees
    - Time Usage Model
    - Security
    - Custom Attributes



*“I compare RtDUET to an app on your phone. The right apps make the phone so much more useful”*

*- David Bartolo, Head Of Asset Intelligence – AGL Energy*



# Deployment

Workshop

Configuration

Commissioning  
and Training

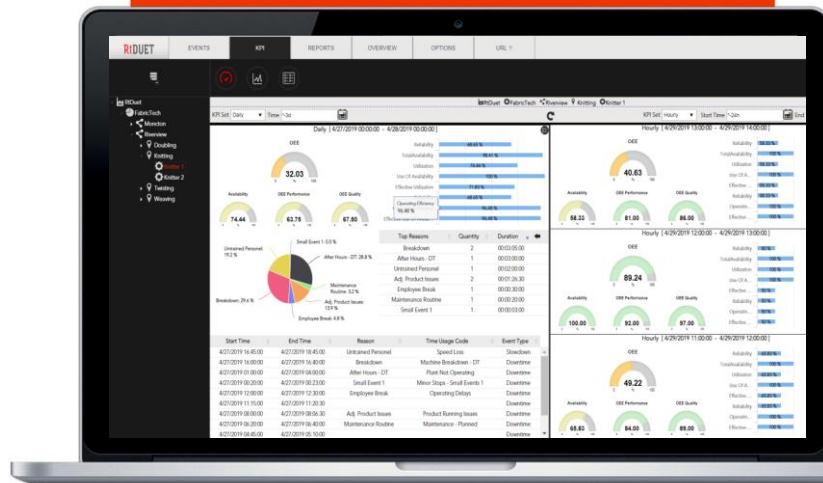
Continuous  
Improvement

- The configuration stage tasks will be executed remotely as per the installation document and includes the following tasks:
  - Install license and RtDUET
  - Install license and PI OEM
  - Configure Asset Hierarchy
  - Configure Machine Centers and associated triggers
  - Configure Auto Entries
  - Configure Auxiliary Tags
  - Configure Reason Trees
  - Configure Time Usage Model,
  - Configure Security



*“Understanding where the ‘bad actors’ lie in your process is critical to improving overall plant availability and production levels. In a large-large scale distributed plant, a centralized tool for capturing and reporting on operational delays is essential”*

*- Paul Yaroshak, Barrick Gold, Pueblo Viejo Mine*





# Deployment

Workshop

Configuration

Commissioning  
and Training

Continuous  
Improvement

- Commissioning of the system inclusive of the following steps:
  - Perform SAT with Client representative
  - Revise Machine Center Triggers
- Once the system is commissioned RtTECH will schedule a training session.
- Training is focused on:
  - Coding events in RtDUET
  - Managing Security and Users
  - Editing configuration of RtDUET



*“RtDUET was very easy to install, it was easy to deploy. The technical assistance was there every step of the way. A real success story for us.”*

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# Deployment



Workshop

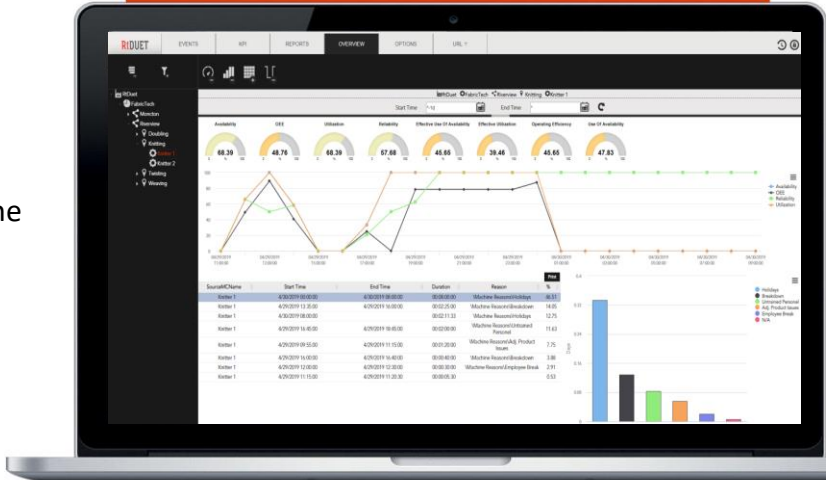
Configuration

Commissioning and Training

Continuous Improvement

- A continuous improvement workshop increases the chance of success
- The objective of the continuous improvement workshop is to further the use of RtDuet by using actual data to drive results
- The following tasks will be undertaken by RtTECH in the continuous improvement workshop:
  - Analyze data (3 months minimum)
  - Root Cause Determination
  - Identify opportunities to improve the process
  - Formulate Action Plans

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# Use Cases





## CASE STUDY



AGL is one of Australia's leading integrated energy companies. With 175 years in business, AGL has a diverse portfolio including retail and merchant energy businesses, power generation assets and gas.

### CHALLENGE:

- Rapid growth from 300-10,000 MW results in disconnected operations
- Unable to share data across sites
- Lacked industry compliance (IEEE + NERCs)

### SOLUTION:

- RtDuet for asset management
- Multiple site installation
- Integration with existing process log-books
- Standardized KPI calculation across sites

5% data accuracy gain

Compliant with industry standards (IEEE + NERCs)





## CASE STUDY

# RioTinto

Argyle Diamond Mine is one of Australia's oldest diamond mines and is one of the world's largest supplier of diamonds and the world's largest supplier of natural coloured diamonds.

### CHALLENGE:

- Departure of in-house developer rendered existing system inoperable
- Behind on technology advances
- Dependent on user-input

### SOLUTION:

- RtDuet captured, analyzed, downtime
- Event frames record production delays
- Value-based reports

90% of errors automatically reported

Fewer events requiring investigation



## CASE STUDY



Headquartered in Toronto, Canada, Barrick is the world's leading gold mining company, with mines and projects on five continents.

### CHALLENGE:

- Eroding margins push need for operational efficiency
- Unknown production loss areas
- Production loss data inaccurate

### SOLUTION:

- RtDuet for automatic downtime detection
- Automatic calculation of standard metrics
- Integration with existing data historian.

Increased data accuracy

Assists in project justification





## CASE STUDY



Michelin manufactures and sells tires for all types of vehicles ranging from automobiles to the space shuttle. The plant in Granton, Nova Scotia specializes in the manufacturing of semi-finished goods.

### CHALLENGE:

- Manual data recording
- Phantom downtime events
- Data current only at month-end
- Inconsistent downtime coding

### SOLUTION:

- RtDuet for automatic data recording including micro-events
- Real-time data visualization
- Daily reporting

Reduced hours recording data

Delayed CapEx due to improved efficiency



## CASE STUDY



New Gold is an intermediate gold mining company with a New Afton, British Columbia mine that produces gold and copper with a design capacity of 11 000 tonnes per day.

### CHALLENGE:

- New mining location
- Desire to meet ISO 50001 standard
- High standards for operational efficiency

### SOLUTION:

- RtEMIS for Energy Management Information System
- Improved Financial Cost Accounting
- Completed All Fuels Audit prior to implementation

17% decrease in consumption on one machine

Efficient energy reporting





## CASE STUDY

### VERESEN

Also known as PEI Energy, Veresen's district energy systems offer a cost-competitive, cleaner and greener alternative to heating and cooling buildings currently using in-house boilers and chillers.

#### CHALLENGE:

- Failing to meet industry incinerator temperature standards, which results in environmental fines
- Monthly operations reports
- Manual data input

#### SOLUTION:

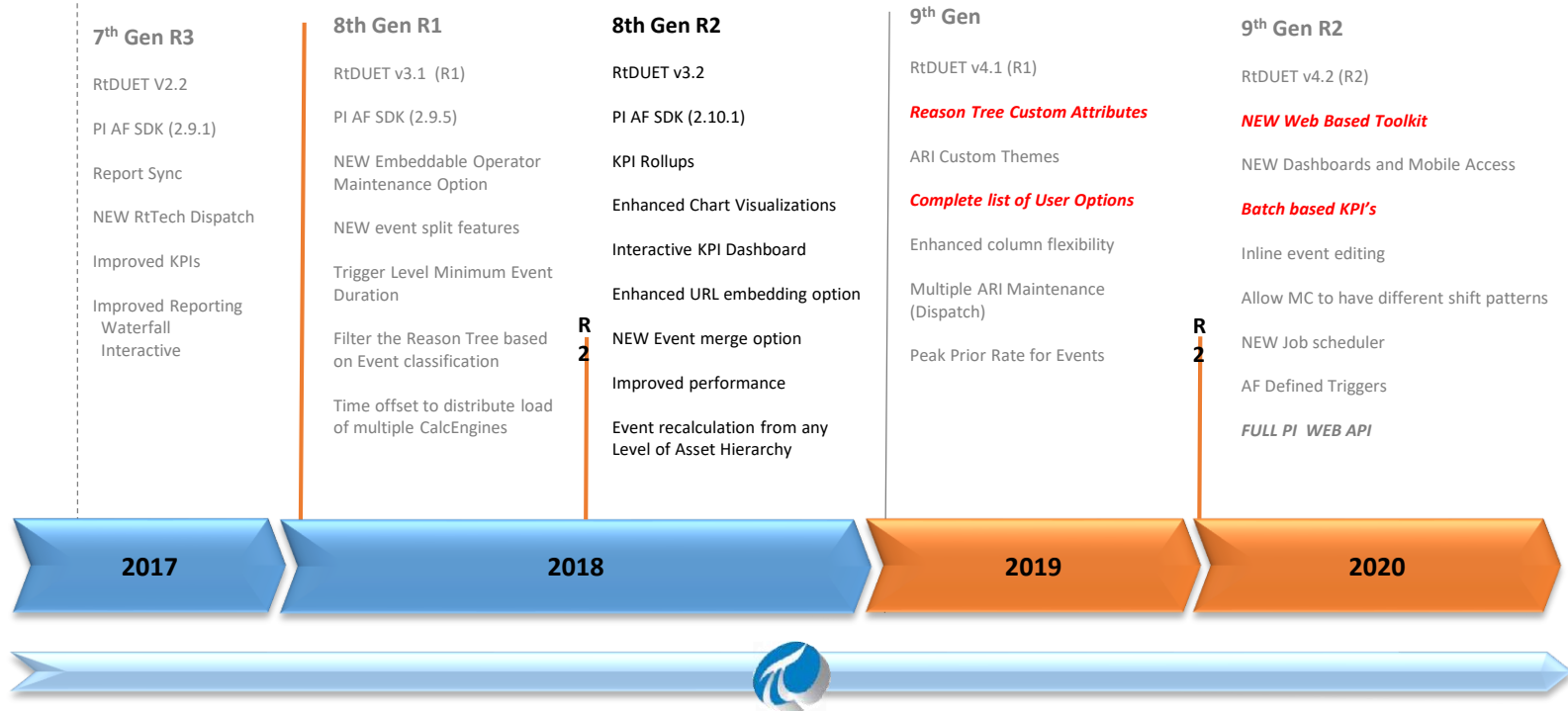
- RtDuet to automatically detect temperature deviations and record
- Automatic alerts and reporting process

Avoided environmental fines by regulating incinerator temperatures

# Roadmap



# Roadmap







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IN-DEPTH ANALYTICS.  
OPTIMIZED ASSETS.

## COMPANY OVERVIEW

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