



QPR

QPR ProcessAnalyzer

Feature Guide

October 2020

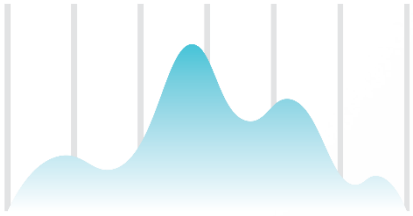
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QPR ProcessAnalyzer Benefits for Process Mining Use Cases

Use Case	Process Improvement	Process KPI Reporting	IT & ERP Development	Digital Transformation	Robotic Process Automation	Auditing & Compliance
Benefits	Discover your as-is processes, their inefficiencies, and compliance issues. Find root causes for problems and efficiently allocate development resources accordingly. Communicate findings to stakeholders through the interactive UI.	Improve the quality of process KPIs. Find root causes of problems and poor performance. Continuously improve process performance by focusing on relevant KPIs. Get notified when a process step is going to take too long, affecting your KPIs.	Reduce risks in all IT and ERP -related projects. Shorten durations of development projects. Reduce maintenance, development and implementation costs. Ensure smooth system migrations.	See how your processes contribute to business outcomes. Get current evidence to continuously make quick, yet thoughtful decisions. Increase the transparency of your operations and monitor the right KPIs. Get access to the right information during the most complex transformations, such as M&As.	Find out which processes are the most suitable and profitable for automation. View automation rates and instantly see the ROI of RPA. Use process insight to streamline end-to-end processes, so that they're RPA ready. Monitor a variety of RPA-related metrics in ready-made RPA presents.	Get 100 percent coverage into all processes and transactions. Mitigate business risk by identifying and improving risks and violations. Reduce compliance costs with faster and more accurate analyses. Use predefined analyses and filters to ensure easy measuring and reporting.

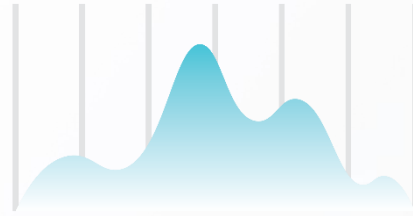
QPR ProcessAnalyzer Benefits for Customers



7x

Piraeus Bank cut their **loan application process from 35 minutes to 5 minutes** on average – meaning seven times faster loan applications - by fixing their process automation problems.

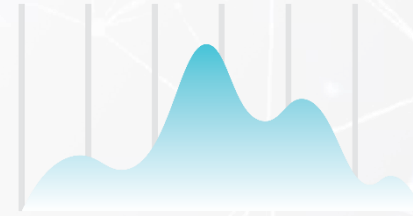
Read full Piraeus Bank customer story [here](#).



60 %

Metsä Board **increased their order lines by 60%** with the same headcount by focusing process improvement activities to the right areas.

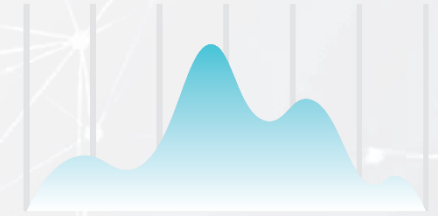
Read full Metsä Board customer story [here](#).



100 %

EY UK got a holistic view of all business processes, **with 100% coverage of transactions** and root causes of inefficiencies, allowing them to predict errors and prioritize actions based on risk.

Read full EY UK customer story [here](#).



€ 100M

Caverion **reduced the average time for delivery to invoicing by 50%** and focused on harmonizing and continuously monitoring processes. The result: A **cash flow boost from freeing up EUR 100 million** of working capital.

Read full Caverion customer story [here](#).

QPR ProcessAnalyzer

Capabilities

- **Discover** and analyze processes
- **Investigate** root causes
- **Build** dashboards, charts and KPIs
- **Act** based on business alerts
- **Operate** your secure and scalable process mining platform



Overview of Capabilities

& Key Features



Discover

- Process Discovery
- Interactive Filtering



Investigate

- Root Causes
- Advanced Process Analytics



Build

- Dynamic Dashboards
- KPI Engine



Act

- Business Actions
- Process Mining Apps



Operate

- Data Connection
- Security & Scalability

Discover

Process Discovery

- Flowchart analysis
- Duration analysis
- Variation analysis
- Trend analysis
- Profiling analysis

Interactive Filtering

- Drill down
- Filter Management
- On/Off filters

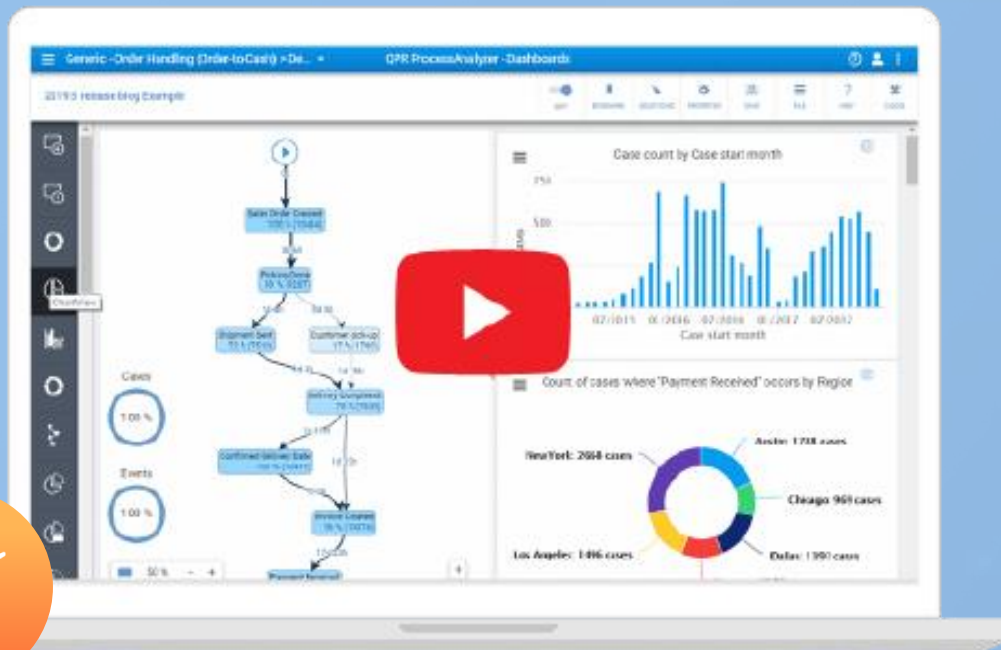


Discover the reality of your processes with **Process Discovery**

- Creates visibility automatically
- Shows dynamic visualizations of your processes as flowcharts
- Enables you to instantly spot bottlenecks and inefficiencies
- Lets you view the most common process variations

Process Discovery Features:

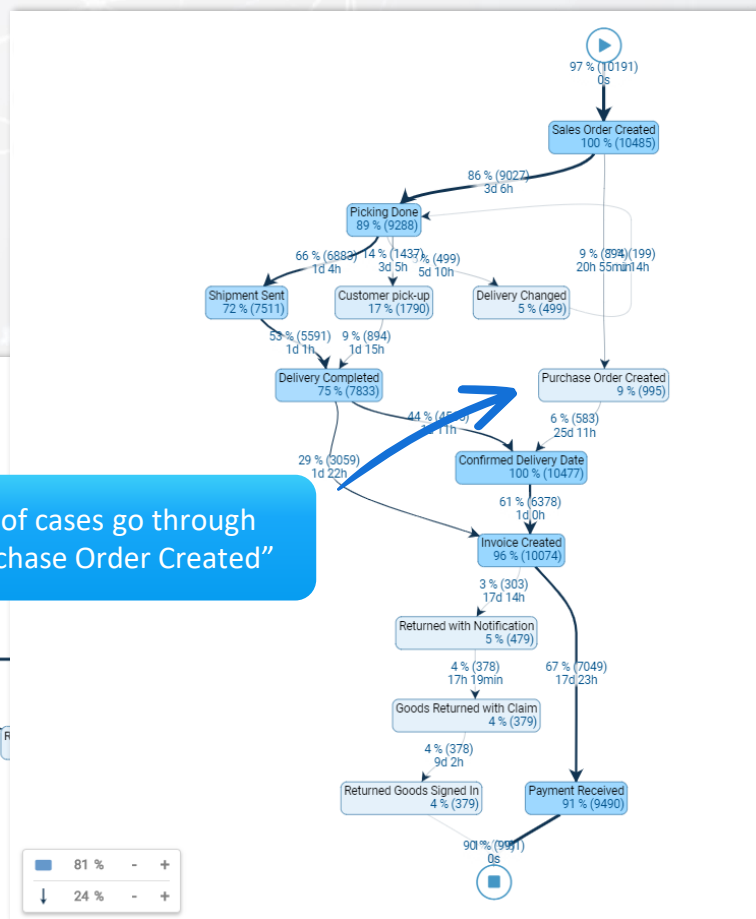
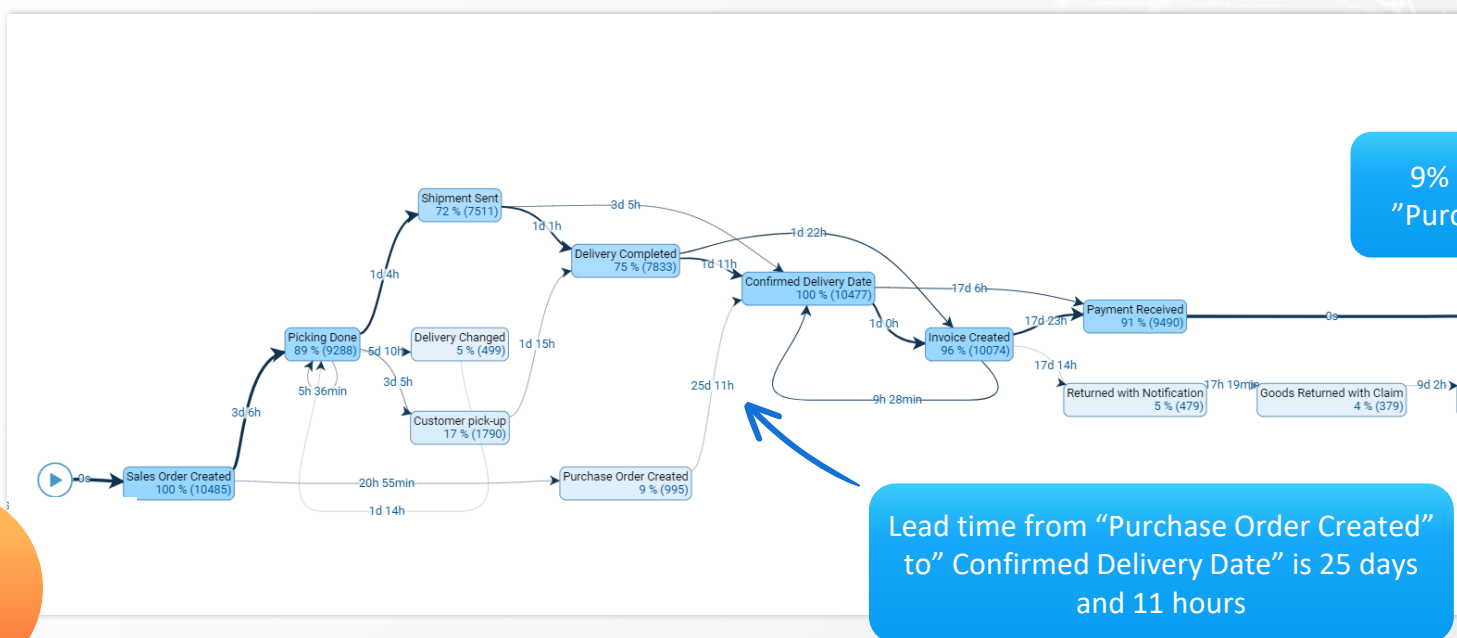
- Flowchart analysis
- Duration analysis
- Variation analysis
- Trend analysis
- Profiling analysis



Process Discovery

Flowchart Analysis

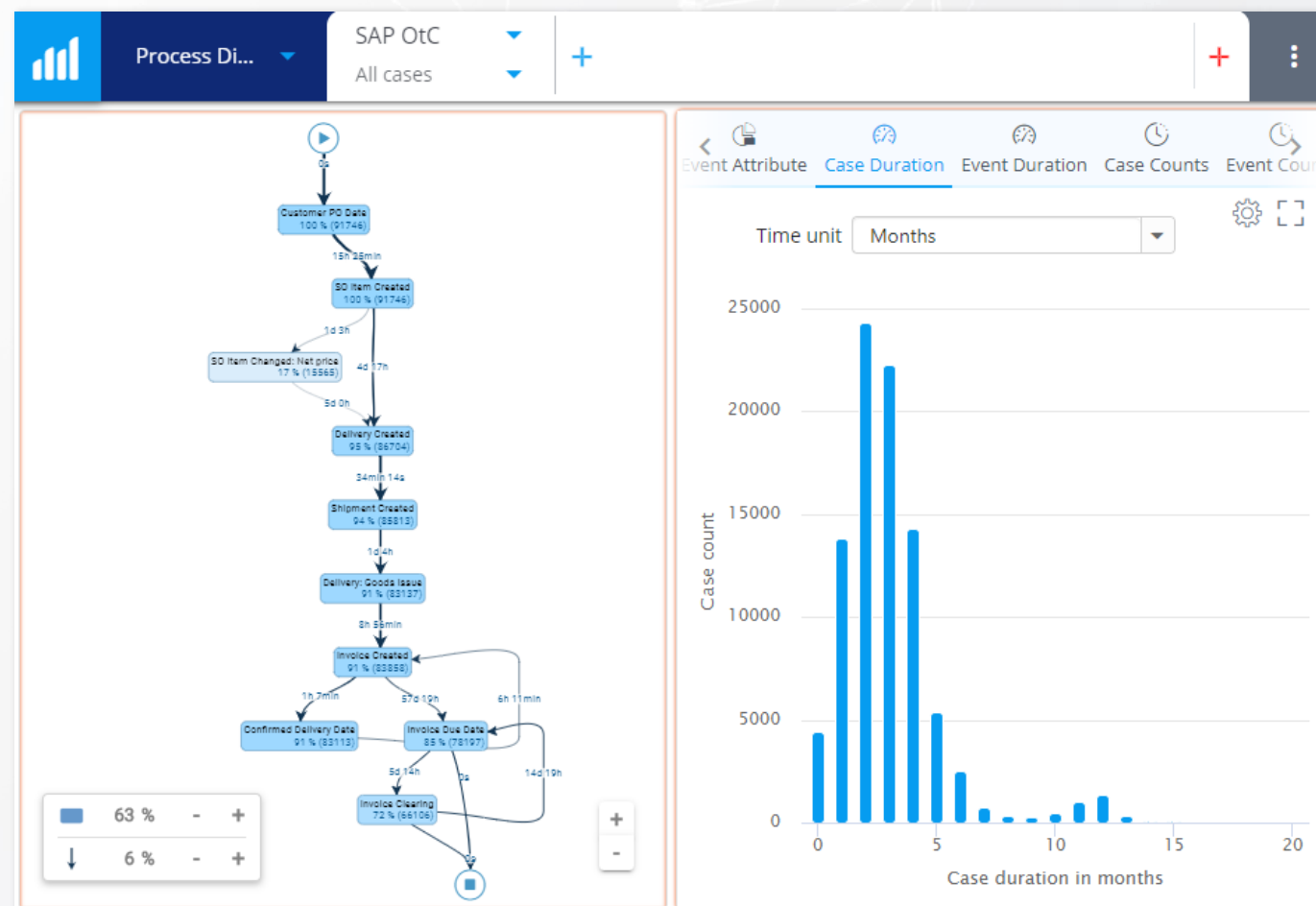
- Creates a dynamic visualization of your as-is process
- Automatically shows rework, process loops, and bottlenecks
- Shows duration, cost, and case amount KPIs of the process – i.e. the time and cost of process steps and the amount of cases going through each step.



Process Discovery

Duration Analysis

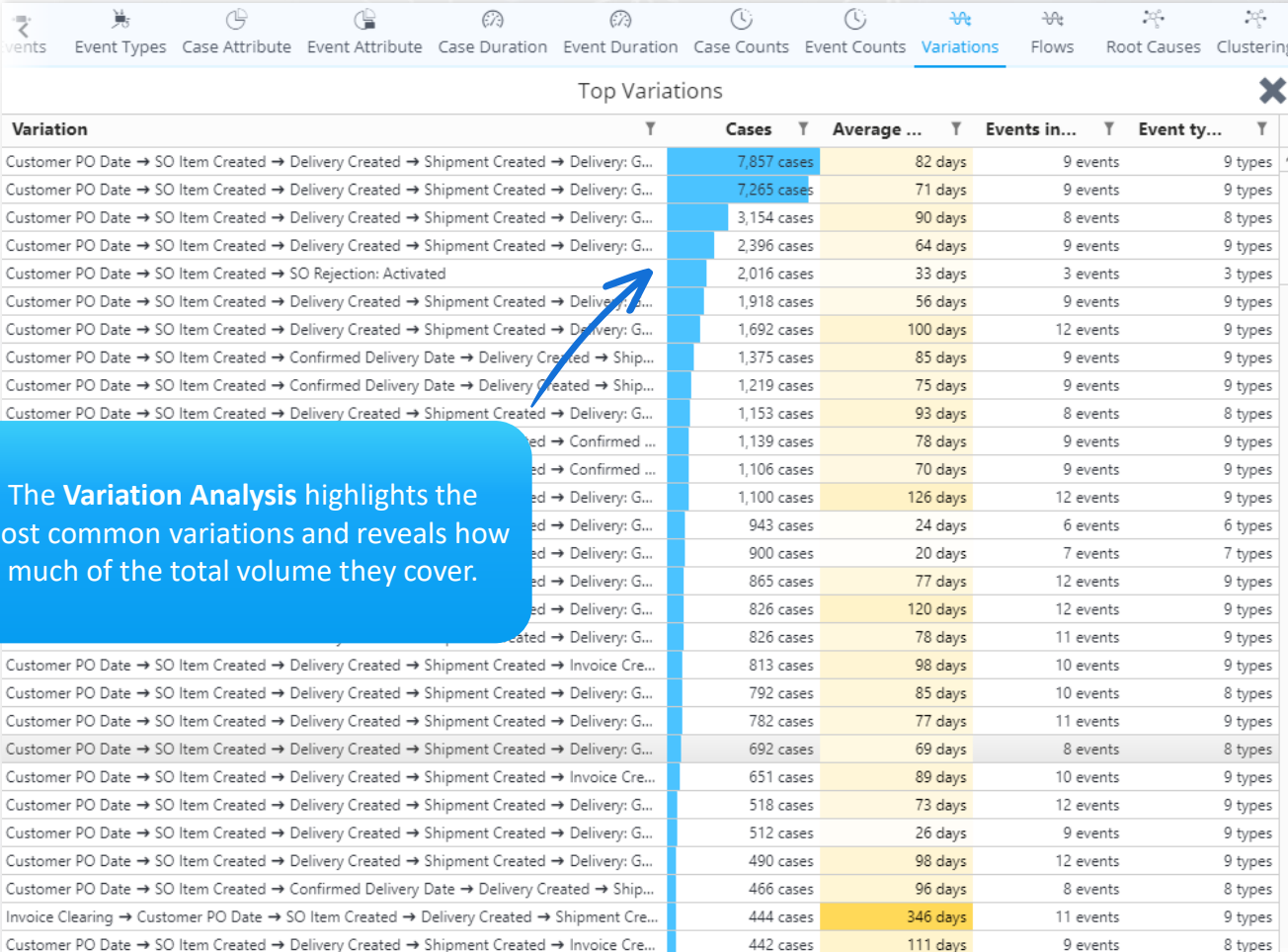
- Shows how long cases take, how many of them fall in each duration slot (for example, how many cases fall within the longest duration slot), and the most common duration of a case.
- Instantly spot problems in a process: a long duration is a clear indicator of issues.



Process Discovery

Variation Analysis

- Reveals all the different variations that processes in organizations have (more than you would ever imagine).
- Pinpoints what the most common flows look like in an easy-to-read way and shows how much of the total volume they actually cover.



Top Variations

Variation	Cases	Average ...	Events in...	Event ty...
Customer PO Date → SO Item Created → Delivery Created → Shipment Created → Delivery: G...	7,857 cases	82 days	9 events	9 types
Customer PO Date → SO Item Created → Delivery Created → Shipment Created → Delivery: G...	7,265 cases	71 days	9 events	9 types
Customer PO Date → SO Item Created → Delivery Created → Shipment Created → Delivery: G...	3,154 cases	90 days	8 events	8 types
Customer PO Date → SO Item Created → Delivery Created → Shipment Created → Delivery: G...	2,396 cases	64 days	9 events	9 types
Customer PO Date → SO Item Created → SO Rejection: Activated	2,016 cases	33 days	3 events	3 types
Customer PO Date → SO Item Created → Delivery Created → Shipment Created → Delivery: G...	1,918 cases	56 days	9 events	9 types
Customer PO Date → SO Item Created → Delivery Created → Shipment Created → Delivery: G...	1,692 cases	100 days	12 events	9 types
Customer PO Date → SO Item Created → Confirmed Delivery Date → Delivery Created → Ship...	1,375 cases	85 days	9 events	9 types
Customer PO Date → SO Item Created → Confirmed Delivery Date → Delivery Created → Ship...	1,219 cases	75 days	9 events	9 types
Customer PO Date → SO Item Created → Delivery Created → Shipment Created → Delivery: G...	1,153 cases	93 days	8 events	8 types
Customer PO Date → SO Item Created → Delivery Created → Shipment Created → Delivery: G...	1,139 cases	78 days	9 events	9 types
Customer PO Date → SO Item Created → Delivery Created → Shipment Created → Delivery: G...	1,106 cases	70 days	9 events	9 types
Customer PO Date → SO Item Created → Delivery Created → Shipment Created → Delivery: G...	1,100 cases	126 days	12 events	9 types
Customer PO Date → SO Item Created → Delivery Created → Shipment Created → Delivery: G...	943 cases	24 days	6 events	6 types
Customer PO Date → SO Item Created → Delivery Created → Shipment Created → Delivery: G...	900 cases	20 days	7 events	7 types
Customer PO Date → SO Item Created → Delivery Created → Shipment Created → Delivery: G...	865 cases	77 days	12 events	9 types
Customer PO Date → SO Item Created → Delivery Created → Shipment Created → Delivery: G...	826 cases	120 days	12 events	9 types
Customer PO Date → SO Item Created → Delivery Created → Shipment Created → Delivery: G...	826 cases	78 days	11 events	9 types
Customer PO Date → SO Item Created → Delivery Created → Shipment Created → Invoice Cre...	813 cases	98 days	10 events	9 types
Customer PO Date → SO Item Created → Delivery Created → Shipment Created → Delivery: G...	792 cases	85 days	10 events	8 types
Customer PO Date → SO Item Created → Delivery Created → Shipment Created → Delivery: G...	782 cases	77 days	11 events	9 types
Customer PO Date → SO Item Created → Delivery Created → Shipment Created → Delivery: G...	692 cases	69 days	8 events	8 types
Customer PO Date → SO Item Created → Delivery Created → Shipment Created → Invoice Cre...	651 cases	89 days	10 events	9 types
Customer PO Date → SO Item Created → Delivery Created → Shipment Created → Delivery: G...	518 cases	73 days	12 events	9 types
Customer PO Date → SO Item Created → Delivery Created → Shipment Created → Delivery: G...	512 cases	26 days	9 events	9 types
Customer PO Date → SO Item Created → Delivery Created → Shipment Created → Delivery: G...	490 cases	98 days	12 events	9 types
Customer PO Date → SO Item Created → Confirmed Delivery Date → Delivery Created → Ship...	466 cases	96 days	8 events	8 types
Invoice Clearing → Customer PO Date → SO Item Created → Delivery Created → Shipment Cre...	444 cases	346 days	11 events	9 types
Customer PO Date → SO Item Created → Delivery Created → Shipment Created → Invoice Cre...	442 cases	111 days	9 events	8 types

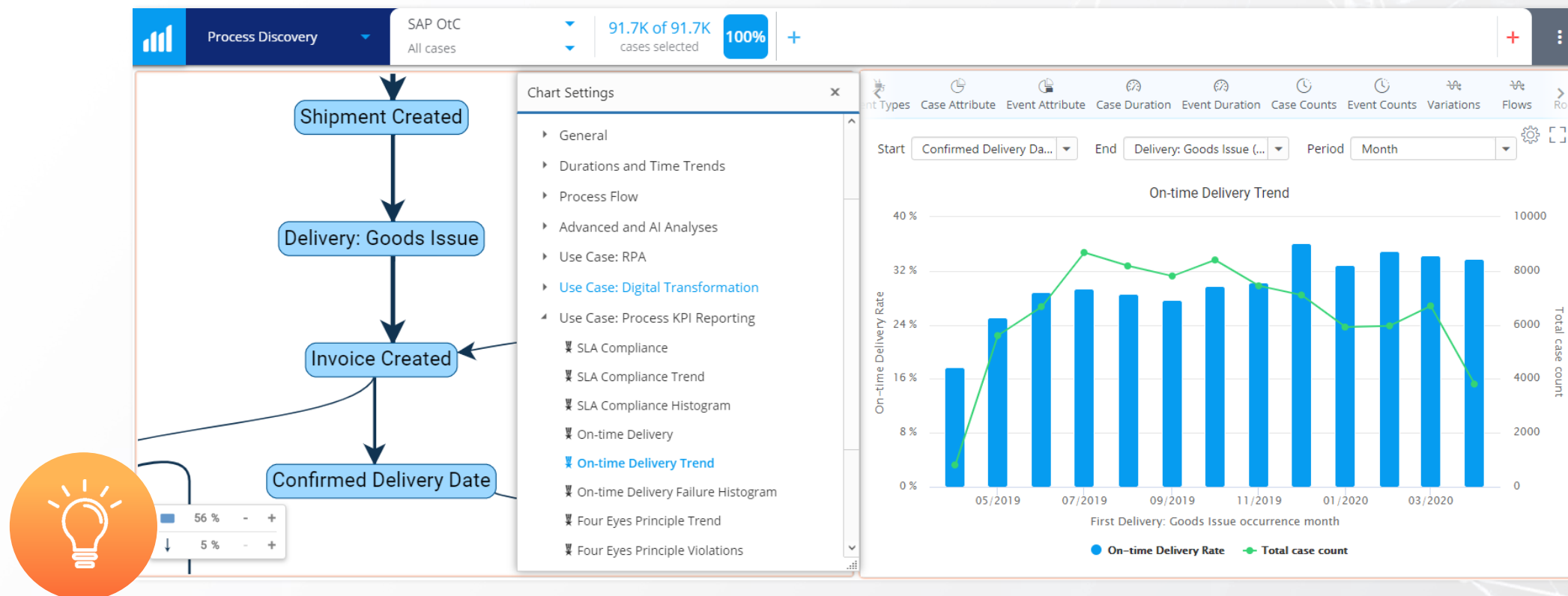
The Variation Analysis highlights the most common variations and reveals how much of the total volume they cover.



Process Discovery

Trend Analysis

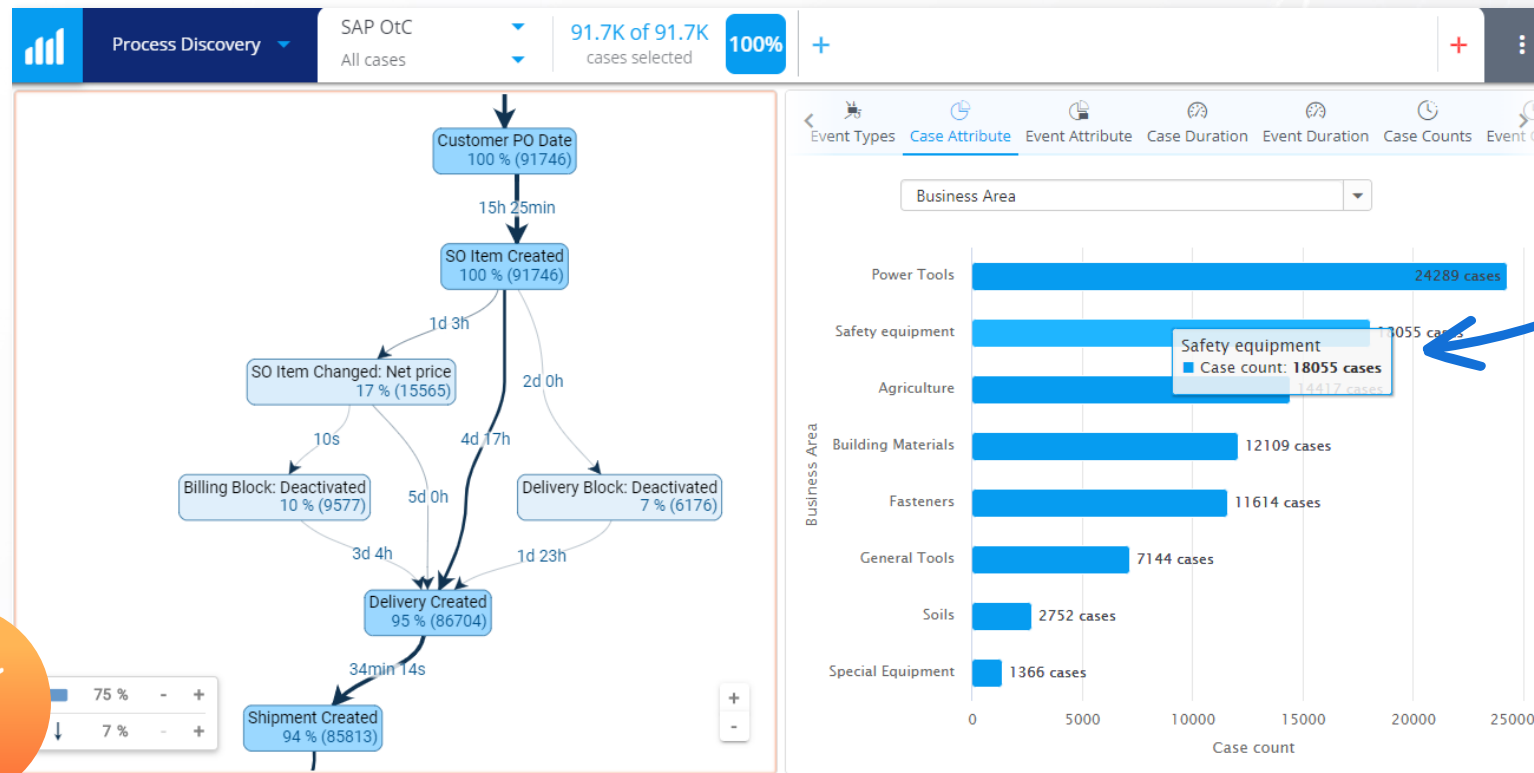
- Shows how processes have changed over time, i.e. cases that start to occur more frequently at certain times.
- Is available for e.g. SLA trends, compliance trends, or on-time delivery trends.



Process Discovery

Profiling Analysis

- Reveals process attributes, and how much they occur in a process.
- Shows e.g. number of cases account managers handle, or cases go through certain regions.
- Helps to understand and validate the process data, to then make appropriate selections.



The **Profiling Analysis** reveals process attributes in a process. See for instance how many cases there are in each business area.



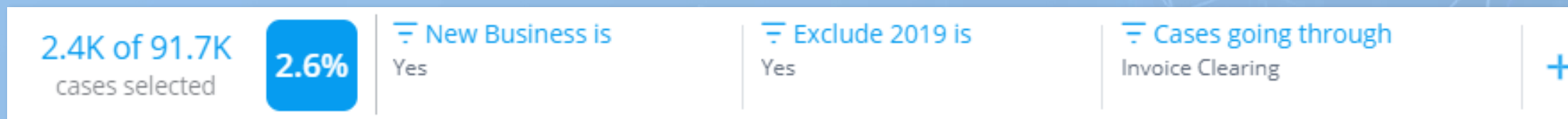
Make selections to discover any part of a process with:

Interactive Filtering

- Makes it easier to analyze large process mining models, which can contain a lot of event types. It is easier to analyze one business problem by using a **filter**, which shows only a limited amount of event types.
- Are saved in the top bar, and can easily be turned **on & off**
- Allows you to **drill down** to specific parts of an analysis by simply selecting the part of the process you want to discover.

Interactive Filtering Features:

- Drill down
- Filter Management
- On/off filters

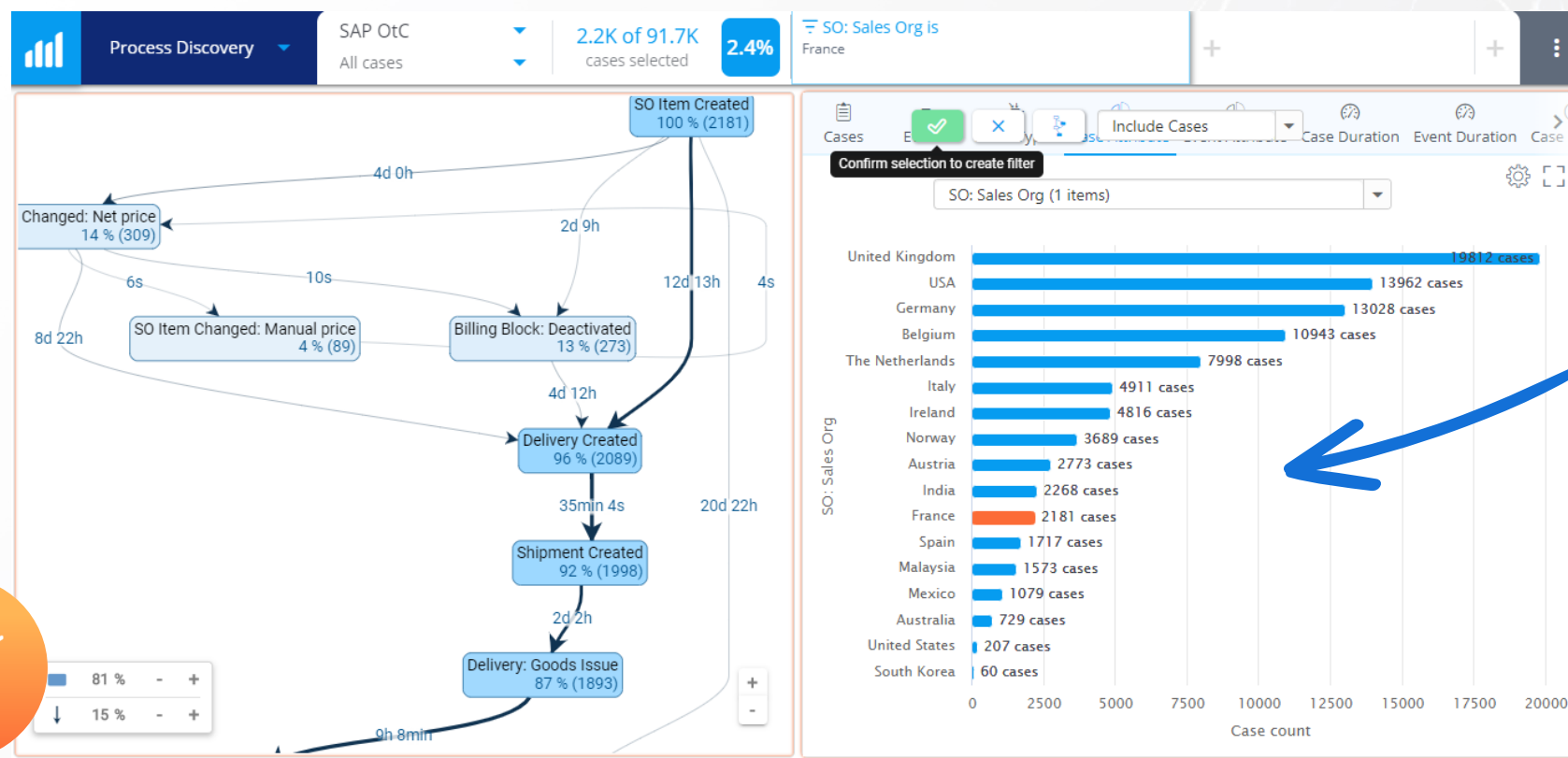


Filters that can easily be turned on & off

Interactive Filtering

Drill Down

- Limits data used for the analysis by drilling down to a meaningful set of cases.
- Allows you to drill down based on any dimension in the process model: if you want to examine the process in a certain region, you can do so by including only those cases.



1) Select the region you want to drill down to (in this case France) and confirm selection.

2) The analysis will then change to reflect the selection you made. You can still drill down further, even to inspect individual events.



Interactive Filtering

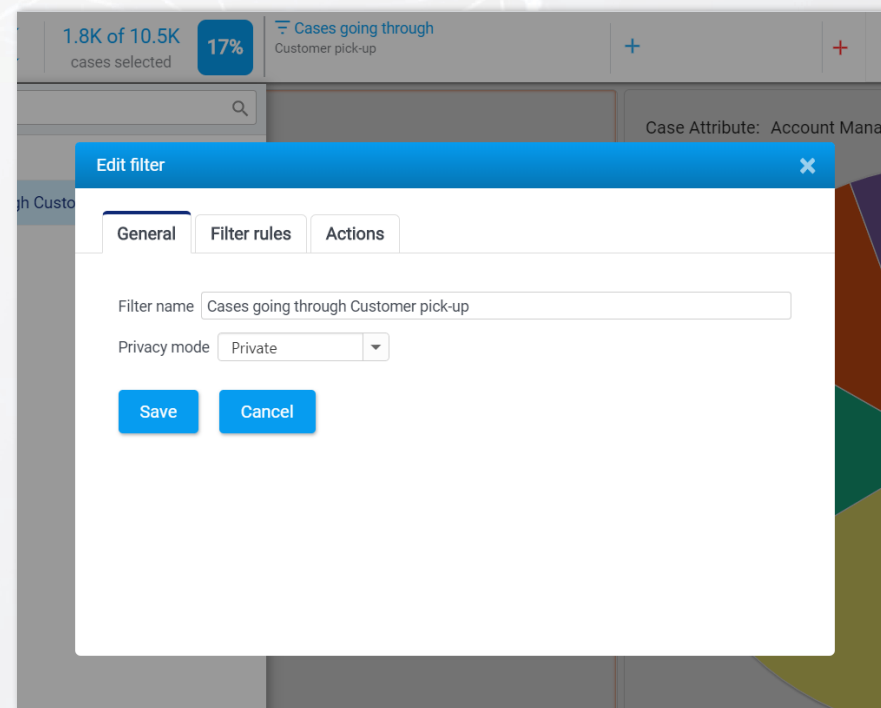
Filter Management

Whenever the analyst makes business findings – like bottlenecks, repeating cases, unnecessary work, or an RPA opportunity - it is convenient to **store the business finding as a filter** for later use.

- Filters can easily be saved with privacy level settings “**private**” (visible to the current user only), “**public**” (visible to everyone who have access to the model) and “**model default**” (default filter when a model is opened)
- Filters may contain an unlimited amount of filter rules
- Filter rules are visible in the top menu: individual filter rules can be edited or deleted directly from the menu.
- Filters support QPR ProcessAnalyzer Expression Language, which allows usage of fully customized filtering conditions.
- Filters can be exported and imported.

The favorite filters can be saved and easily **applied to other models**.

Saved filters use the most recent data loaded into the model. This allows the analyst to instantly review useful analysis findings once the new data has loaded.



Recap: Discover

Process Discovery

- Flowchart analysis
- Duration analysis
- Variation analysis
- Trend analysis
- Profiling analysis

Interactive Filtering

- Drill down
- Filter Management
- On/Off filters



Next: Investigate

Root Causes

- For Case attributes
- For Flowchart
- Weighted by case cost
- For Duration

Advanced Process Analytics

- Conformance Analysis
- Enhanced BPMN
- Clustering Analysis
- Predicted Long Cases



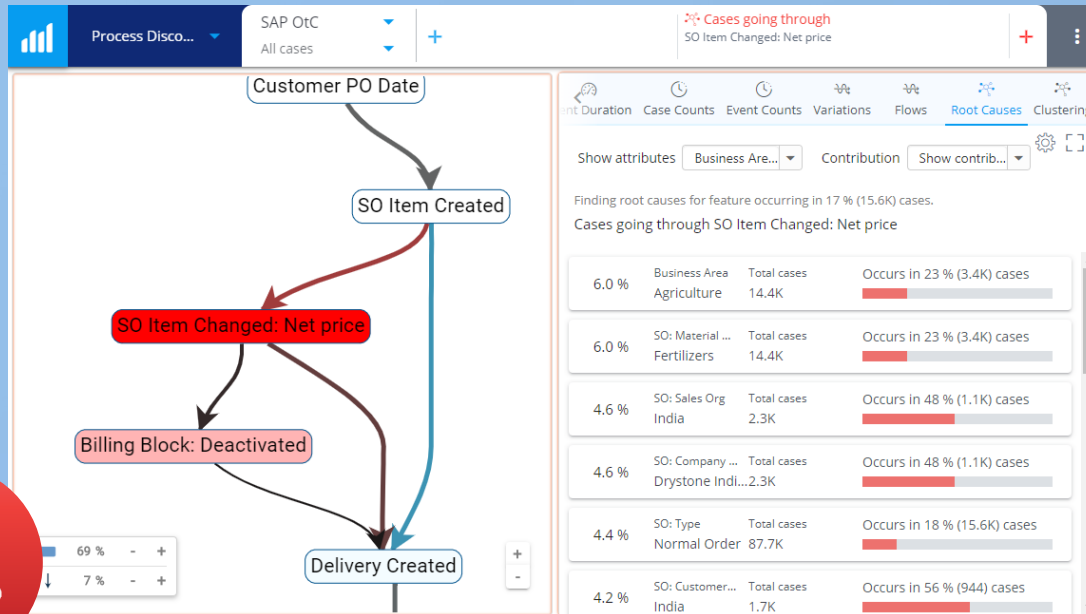
Find reasons behind any issues in the process with Root Causes

- QPR ProcessAnalyzer uses the available data to point out Root Causes for process issues – i.e. areas for improvement
- Root Causes are shown for all analyses, reports, and KPIs
- Explore Root Causes for any given analysis result – Conformance issues, Maverick buying, Long Lead Times, etc.

Root Cause Features:

- For Case attributes
- For Flowchart
- Weighted by case cost
- For Duration

QPR ProcessAnalyzer includes the most advanced and comprehensive Root Cause analysis available: ready-made Root Cause Analysis is integrated with all other analyses and reports.



Root Causes for Case Attributes

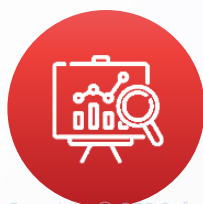
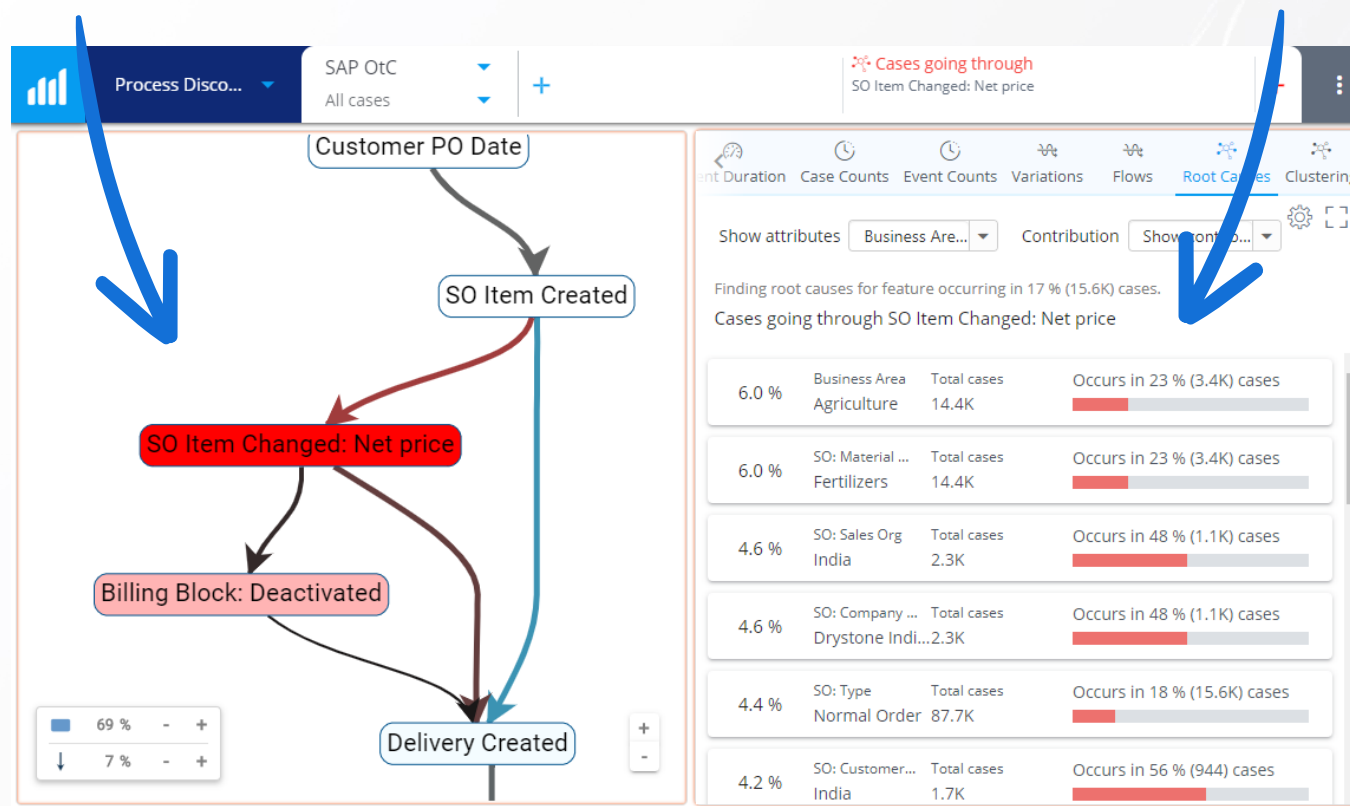
1. Choose cases going through:
"SO Item Changed: Net Price"

2. Root Cause analysis shows that changing the
net price occurs the most within "Agriculture",
"Fertilizers", and "India"

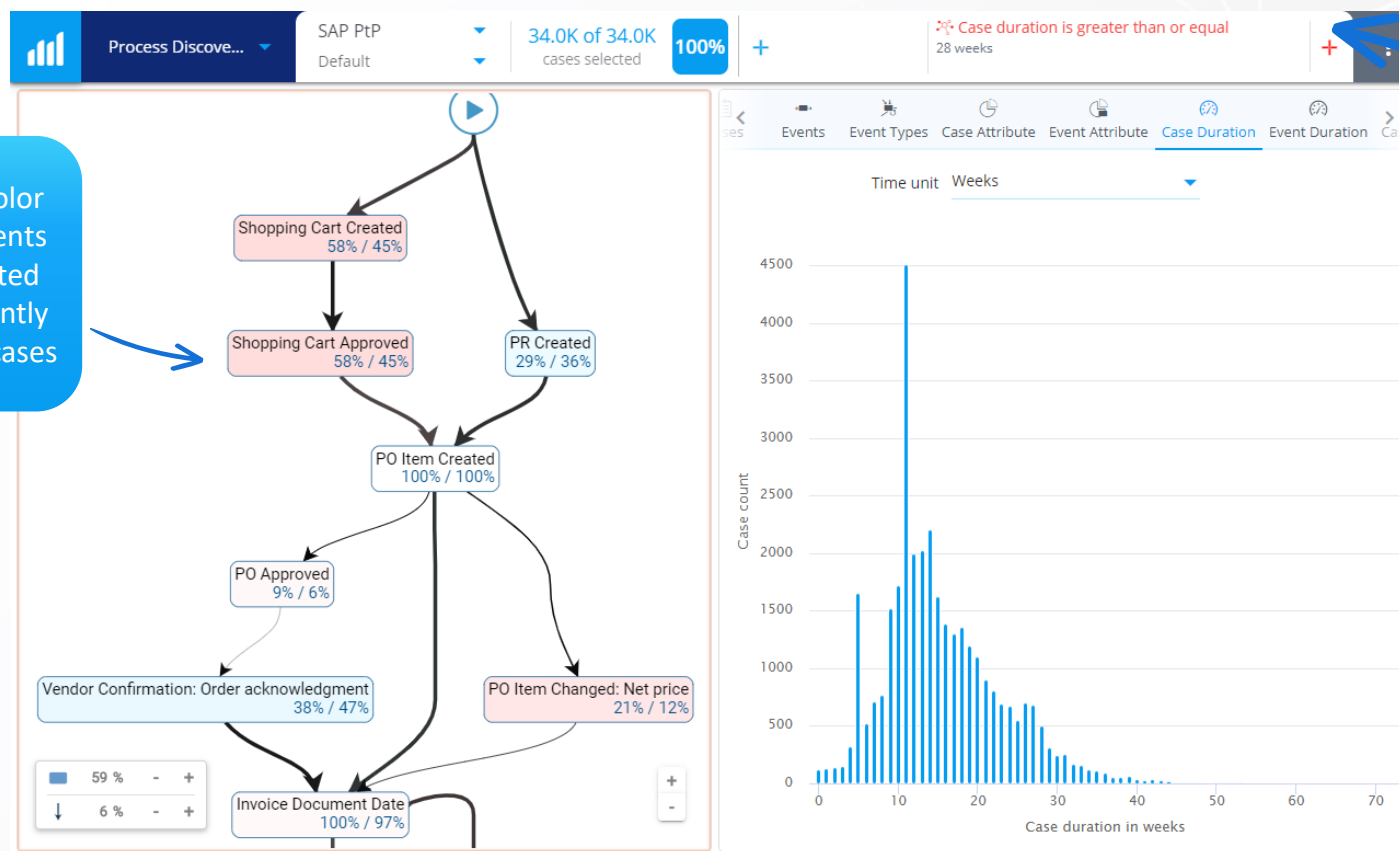
Root Cause analysis lets you know, for instance, that late deliveries are mostly caused by one geographical area.

You can then pick that area and look within it to see what is causing the problem – maybe all the cases going through a specific person are late, or perhaps one very specific product group is causing issues?

By using the root cause analysis, you'll find the problem area in detail.



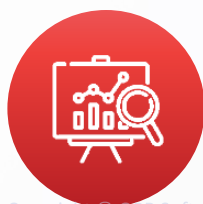
Root Causes for Flowcharts



2. The red color indicates events that are visited more frequently for selected cases

1. The duration for problematic cases is 28 weeks or longer.

Root Cause analysis for flowcharts shows which activities lead to identified process problems.



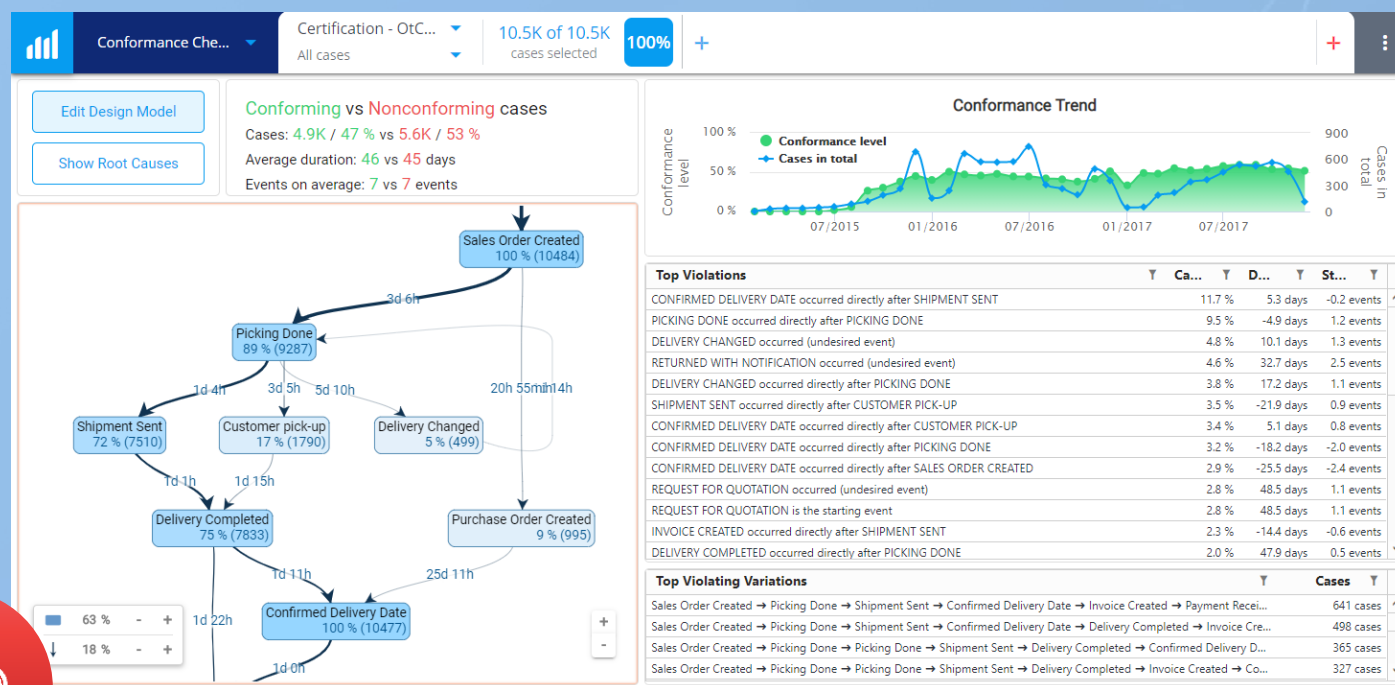
Details about Root Cause analysis: https://devnet.onqpr.com/pawiki/index.php/Root_Causes

Investigate all parts of your processes with Advanced Process Analytics

- Analyze Process Conformance
- Use AI-based Clustering Analysis
- View predictions for cases

Advanced Process Analytics Features:

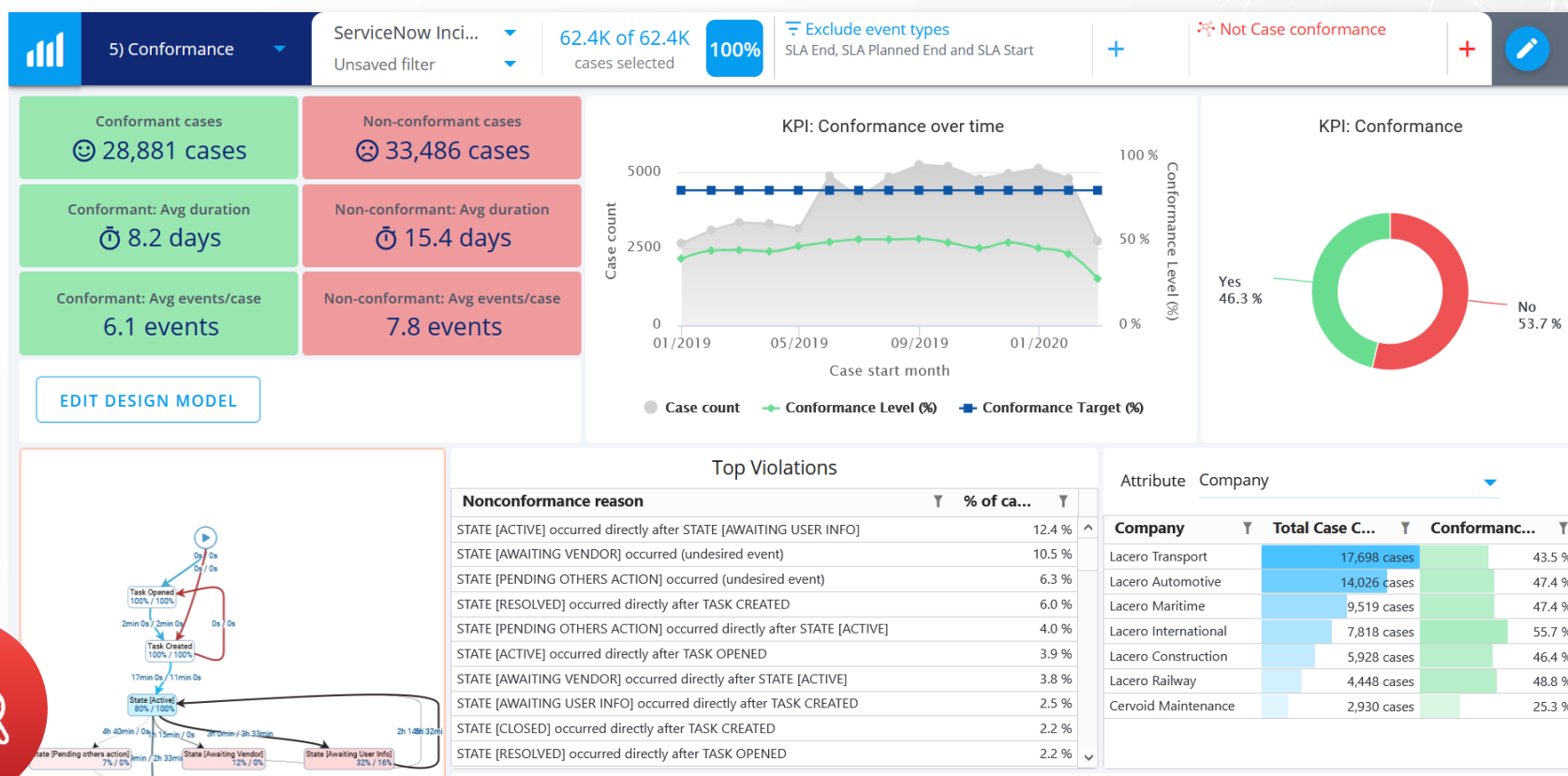
- Conformance Analysis
- Enhanced BPMN
- Clustering Analysis
- Predicted Long Cases
- Comprehensive Presets



Advanced Process Analytics

Conformance Analysis

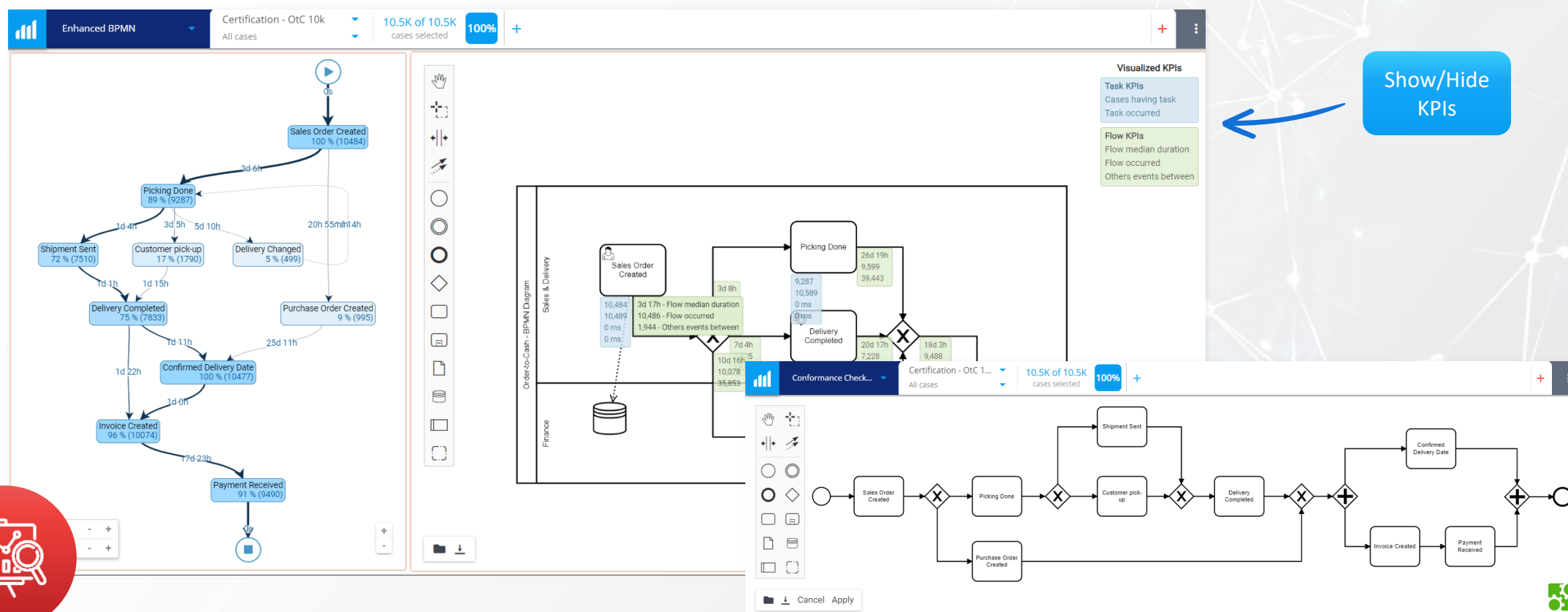
- Compares the as-designed process (editable with the built-in BPMN Editor) with the as-is process
- Shows conformance trends, top violations, reasons for nonconformance, and more.



Advanced Process Analytics

Enhanced BPMN

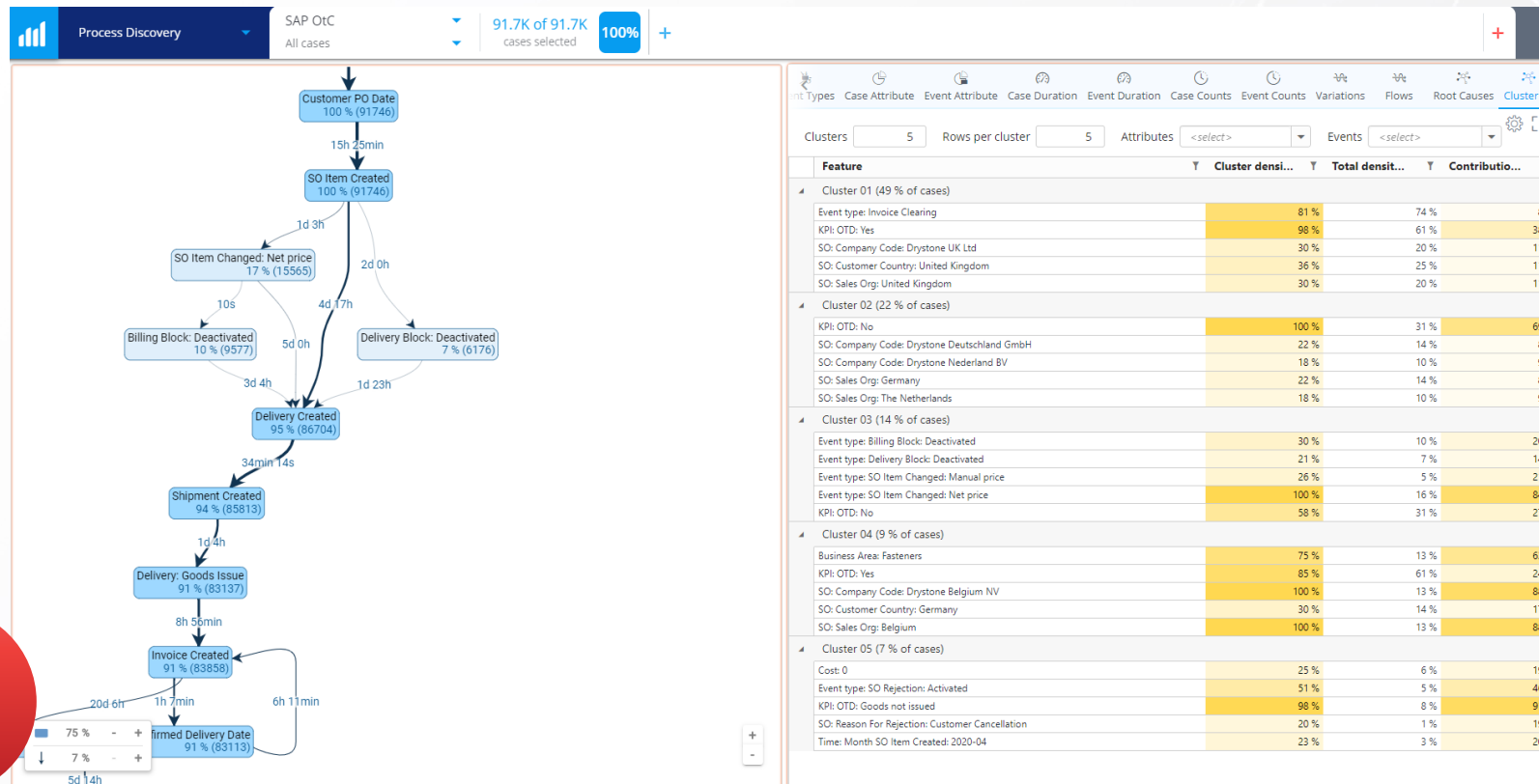
- Draw or import/export diagrams with the integrated BPMN editor
- Augment traditional BPMN diagrams with dynamic KPI information



Advanced Process Analytics

Clustering Analysis

- Provides in-depth information about the process you're analyzing and its characteristics
- Helps the data analyst detect quality issues in the source data, unwanted cases, or desired best practices -> easily and quickly focus your analysis to the right areas.



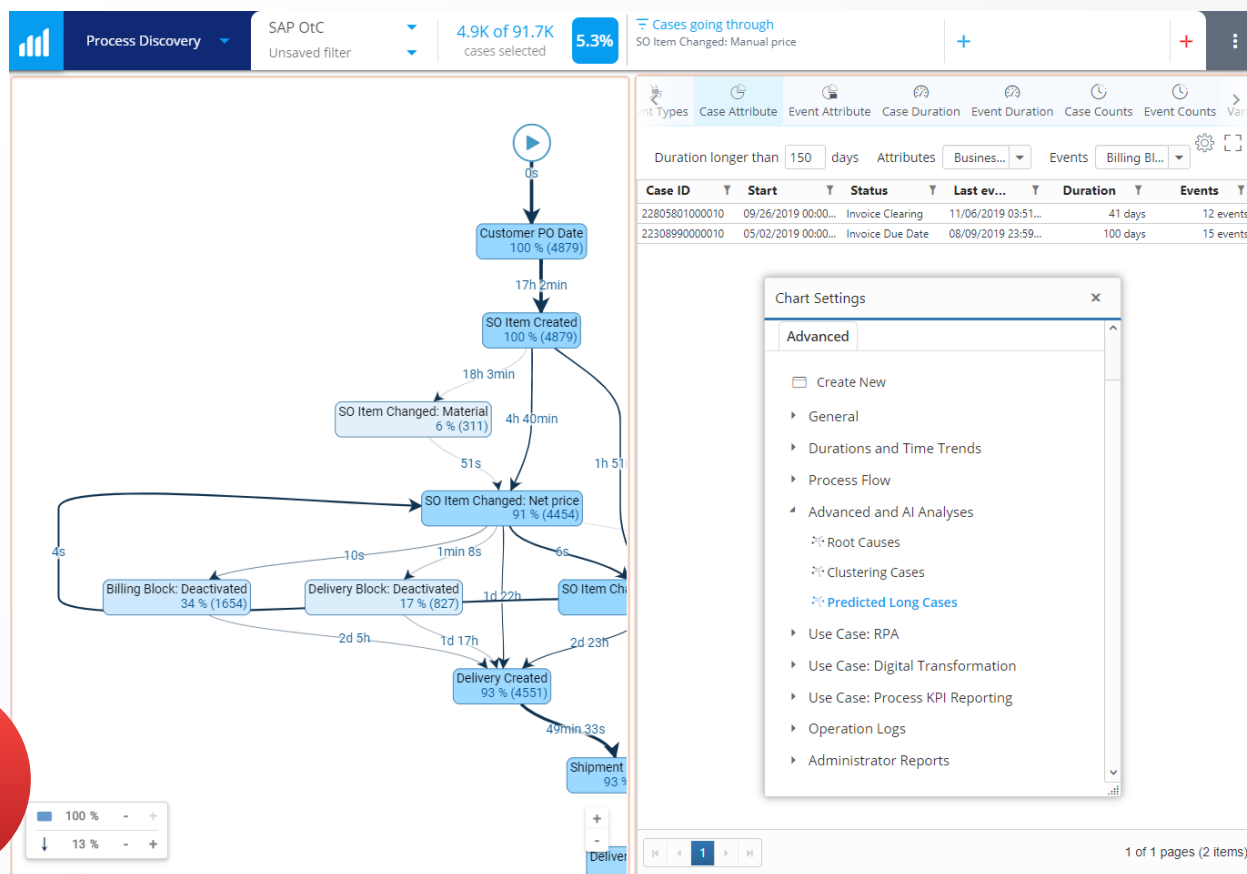
Cluster 1



Advanced Process Analytics

Predicted Long Cases

- QPR ProcessAnalyzer uses Machine Learning algorithms to predict long cases. In this example, you see two cases that are predicted to last longer than 150 days.



Two cases that are predicted to last longer than 150 days.



Recap: Investigate

Root Causes

- For Case attributes
- For Flowchart
- Weighted by case cost
- For Duration

Advanced Process Analytics

- Conformance Analysis
- Enhanced BPMN
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- Predicted Long Cases



Next: Build

Dynamic Dashboards

- Charts
- Chart Presets
- Dashboard Designer

KPI Engine

- KPI Expression Language
- Machine Learning
- In-memory Processing



Build and customize

Dynamic Dashboards

- Are extremely user-friendly: examples are available, anyone can build a dashboard
- Allow you to link dashboards to one another and build applications
- Collect KPIs and presents them dynamically

“With QPR ProcessAnalyzer dashboards, you see the process and the flow in action, as compared to traditional BI reporting. Process Mining provides the flexible bit that explores, but also monitors the right KPIs”

– John Gilmartin, Financial Epicor Analyst, WD-40

Dynamic Dashboards Features:

- Charts
- Chart Presets
- Dashboard Designer

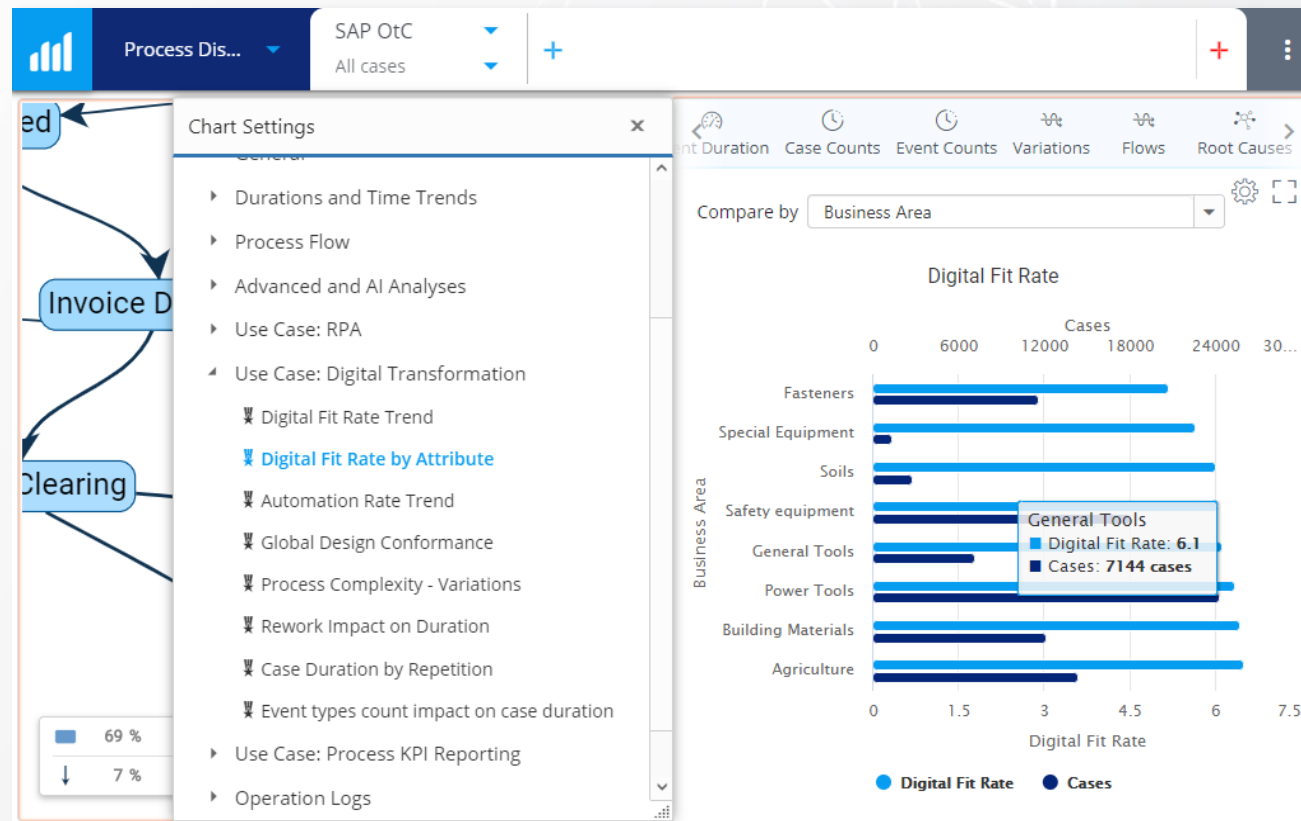


Dynamic Dashboards

Charts

- Show KPIs in visually appealing way to meet specific business needs.
- Are available for a variety of use cases – ranging from Robotic Process Automation to Digital Transformation and Process KPI Reporting
- Are fully customizable.

Charts are available for a variety of use cases. The **Digital Fit Rate Chart** allows you to benchmark your business using any available attribute – in this example, to identify areas with high amounts of manual events per case.



Dynamic Dashboards

Chart Presets

- Are available in QPR ProcessAnalyzer as ready-made charts for different use cases.
- Can be customized: add your own dimensions, selections and what-if scenario capabilities.
- Using Chart Presets, you can, for example:
 1. Find out which processes you should automate next and monitor KPIs related to RPA
 2. Instantly spot violations of Service Level Agreements, on-time deliveries, and the Four Eye Principle, and find root causes for these violations
 3. Track your Digital Transformation's impact on business outcomes



Dynamic Dashboards

Dashboard Designer

- Lets you drag-and-drop dashboard elements and link them to data to create visually appealing dashboards.
- Allows you to quickly update existing dashboards and modify them.
- Dashboard building blocks:
 - **Flowcharts** that show as-is process
 - **Charts** that show discover and advanced analytics
 - **Data Grids** that shows table formatted analyses
 - **Filters and drop-down list selectors** that allow user selections
 - **Dashboard links** that build applications consisting of multiple dashboards

Dashboard Designer supports importing and exporting individual dashboards and entire applications, consisting of several dashboards.



Build KPI Engine

- Calculate any process KPI values to meet all KPI reporting needs
- Build easy-to-use applications for business users by linking multiple dashboards to together
- Create KPIs using the intuitive KPI Wizard

KPI Engine Features:

- KPI Expression Language
- Machine Learning
- In-memory Processing



KPI Engine

KPI Expression Language

- Calculates process KPI metrics for deeper understanding of process improvement points.

Chart Settings

Expression: [Edit](#)

Additional root expression: [Edit](#)

4. Manual Events # (variable: manual)

Events with specific event attribute value

Attribute: Automation

Value: Manual

Show: Count

5. Automated (variable: automaticsDuration)

Custom expression

Expression: [Edit](#)

Additional root expression: [Edit](#)

Manual (variable: manualsDuration)

Expression: [Edit](#)

Cost Savings by Automation

Activity Cost per Hour:

Event...	Previ...	Savings	Auto...	Man...
Invoice Clearing	Invoice Due D...	65,954,040 €	23 %	30,561 events
Customer PO ...	Invoice Clearing	36,956,694 €	1 %	3,515 events
Invoice Clearing	Confirmed Del...	27,959,496 €	38 %	8,991 events
Invoice Clearing	Invoice Created	10,602,436 €	33 %	13,449 events
Shipment Crea...	Delivery Created	7,443,950 €	0 %	82,316 events
Invoice Created	Confirmed Del...	5,255,757 €	53 %	10,067 events
SO Item Chan...	SO Item Created	4,893,377 €	4 %	9,349 events
Delivery Creat...	Confirmed Del...	4,391,563 €	14 %	8,606 events
Invoice Clearing	Invoice Clearing	3,499,231 €	9 %	6,282 events
Invoice Created	Shipment Crea...	2,892,724 €	20 %	7,016 events
SO Item Chan...	SO Item Created	2,643,692 €	2 %	2,542 events
Customer PO ...	SO Item Created	2,278,238 €	0 %	202 events
Delivery Block...	SO Item Created	2,146,232 €	3 %	3,319 events
SO Rejection: ...	SO Item Created	2,034,858 €	2 %	3,506 events
Invoice Created	Invoice Created	1,631,044 €	62 %	5,156 events
SO Item Chan...	SO Item Chan...	1,440,849 €	25 %	1,500 events
SO Item Creat...	Billing Block: D...	1,274,585 €	1 %	281 events
SO Rejection: ...	SO Rejection: ...	1,109,566 €	2 %	129 events
SO Item Chan...	SO Item Chan...	908,813 €	1 %	493 events
Shipment Crea...	SO Item Created	894,313 €	1 %	880 events
Delivery: Good...	Shipment Crea...	771,672 €	22 %	50,569 events
Delivery Block...	Customer PO ...	669,774 €	4 %	298 events
Delivery Block...	SO Item Chan...	657,234 €	2 %	1,201 events
Billing Block: ...	SO Item Chan...	653,394 €	1 %	3,123 events

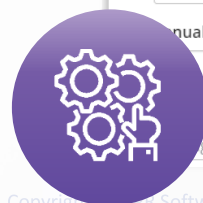
1 of 2 pages (238 items)

Expression

Reference: Properties and functions, Generic objects, ProcessAnalyzer objects

Average(_Where(Attribute("<#AutomationAttribute>")==\"Automatic\"),(Timestamp - PreviousInCase.Timestamp).TotalHours)

[Apply](#) [Cancel](#)



In-Memory Accord.NET

QPR ProcessAnalyzer's Machine Learning and Predictions capabilities support the use of Accord.NET for creating predictions relating to each business need. These capabilities utilize existing process data to create a machine learning prediction model, capable of predicting case-level problems even before they occur. These process predictions can be integrated into dashboards and email notifications, enabling the stakeholders to see them and instantly follow up on them.

[https://devnet.onqpr.com/pawiki/index.php/Machine Learning Functions in Expression Languagez](https://devnet.onqpr.com/pawiki/index.php/Machine_Learning_Functions_in_Expression_Languagez)



Open R

Machine Learning is also available using Open R library.



```
(SELECT 'AnalysisType', 'S') UNION ALL
(SELECT 'ModelId', CAST(@_ModelId as NVARCHAR(255))) UNION ALL
--(SELECT 'SelectedActivityCounts', '') UNION ALL
(SELECT 'SelectedCaseAttributes', '') UNION ALL
(SELECT 'MaximumCount', '0') UNION ALL
(SELECT 'TargetTable', '#Cases') UNION ALL
(SELECT 'UseSqlVariants', 'false')
--#GetAnalysis

declare @numberOfClusters varchar(255);
set @numberOfClusters = '2';

declare @clusteringScript nvarchar(max);
set @clusteringScript = N'
install.packages("clustMixType", dependencies=TRUE, repos="http://cran.rstudio.com/")
library("clustMixType")
data <- InputDataSet[, (names(InputDataSet) %in% c("Name", "X.Id.", "Start.Time", "End.Time", "Cluster", "Duration.Days"))]
factorColumns <- sapply(data[, sapply(data, is.factor)], as.character)
factorColumns[is.na(factorColumns)] <- "NULL"
data[, sapply(data, is.factor)] <- data.frame(factorColumns, stringsAsFactors = TRUE)
clustering <- kproto(data.frame(data[, " + @numberOfClusters + ", lambda = 50)
caseClusters <- data.frame(InputDataSet[, "Name"])
caseClusters$Cluster <- as.factor(clustering$cluster)
OutputDataSet<-caseClusters';

(SELECT 'ModelId', CAST(@_ModelId as NVARCHAR(255))) UNION ALL
(SELECT 'Append', 'True')
EXEC sp_execute_external_script @language = 'R',
    @script = @clusteringScript,
    @input_data_1 = N'SELECT * FROM #Cases'
WITH RESULT SETS ((Name nvarchar(max), Cluster int));
--#ImportCaseAttributes
```

[https://devnet.onqpr.com/pawiki/index.php/Open R in QPR ProcessAnalyzer](https://devnet.onqpr.com/pawiki/index.php/Open_R_in_QPR_ProcessAnalyzer)



KPI Engine

In-Memory Processing

Supports advanced algorithms that make the processing faster.



Recap: Build

Dynamic Dashboards

- Charts
- Chart Presets
- Dashboard Designer

KPI Engine

- KPI Expression Language
- Machine Learning
- In-memory Processing



Next: Act

Business Actions

- Email Alerts
- Business Notifications
- RPA Triggers

Process Mining Apps

- SAP Order-to-Cash
- SAP Purchase-to-Pay
- SAP Accounts Payable
- ServiceNow



Act

Business Actions

Business Actions are used to notify people that action is needed when:

- a)** an individual case is going the wrong way
- b)** an RPA enabled process starts failing
- c)** policies/rules are violated
- d)** KPIs are below target

Business Action Features:

- Email alerts
- Notifications



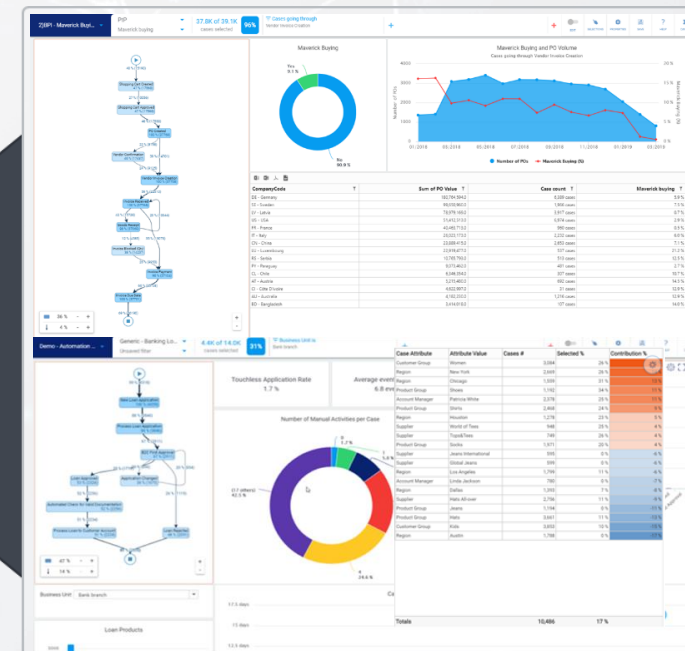
Business Actions

Email Alerts

- Provides immediate alerts when problems emerge
- Are sent based on customer-specific settings.
- Can be scheduled as e.g. daily or weekly reports or alerts based on thresholds.
- Can be customized based on the organization's needs: the alerts can contain links to reports and dashboards, full report attachments or email body texts.



QPR ProcessAnalyzer



Act

Process Mining Apps

- Provide fine-tuned analyses for your specific processes
- Connect to data sources with ready-made connectors
- Deliver actionable reports to implement changes
- Allow monitoring of process deviations

Process Mining Applications consist of:

1. Data Connector to Source System

- Systems such as SAP, Oracle, ServiceNow, Salesforce etc.

2. Dashboard Collection

- All use cases of process mining, such as Automation and BPI, etc.

3. Predefined KPIs

- Dozens of powerful KPIs such as OTD, Maverick Buying, etc.

4. User Documentation and Training Material

- Video Recordings, How-to-Guides and Quality Docs.

Process Mining Applications:

- SAP Order-to-Cash
- SAP Purchase-to-Pay
- SAP Accounts Payable
- SAP Production
- ServiceNow Incidents
- Oracle EBS OtC
- Oracle NetSuite AR
- MS Dynamics AX OtC
- Loan Application (Banking)
- Workday Talent Acquisition



Process Mining Apps

SAP Order-to-Cash

Offer your customers the seamless experience they expect.

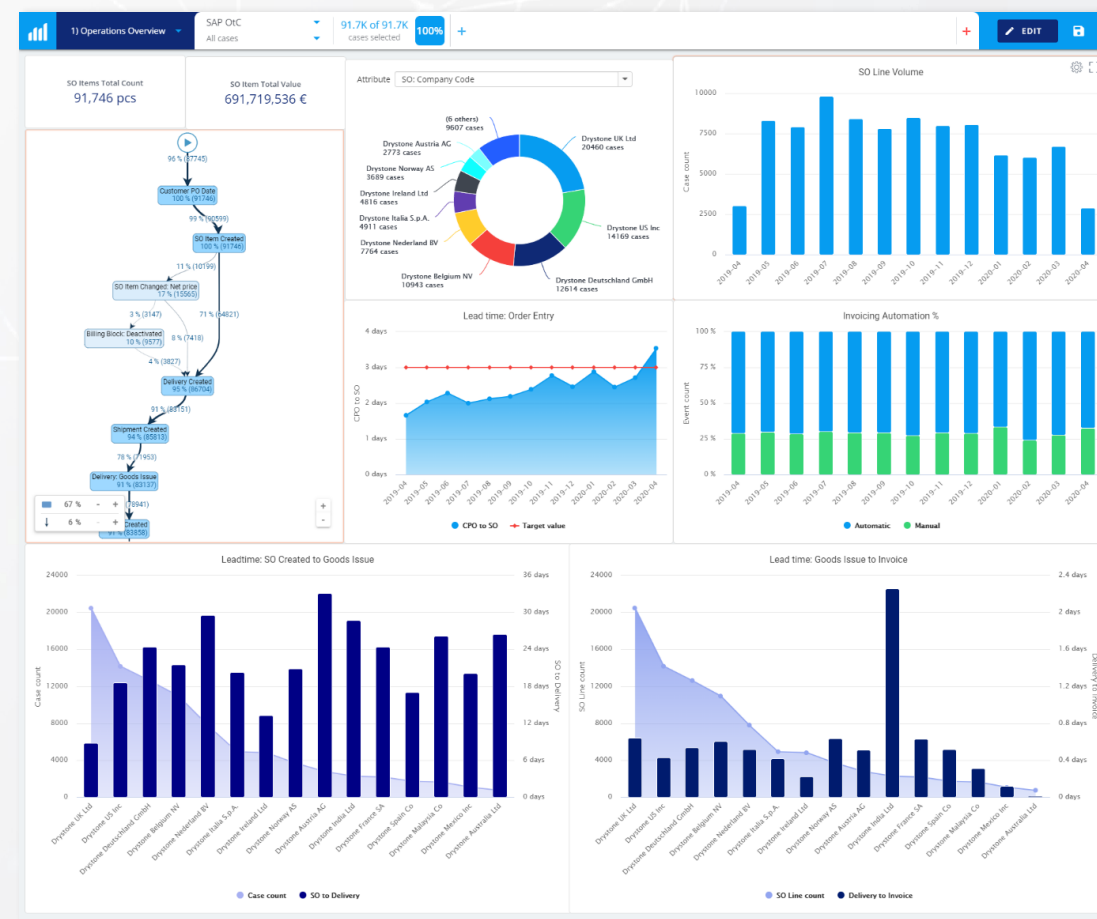
With this application, you will be able to:

- Monitor and improve lead times for delivery, invoice booking, and order booking.
- Find automation opportunities and rack your RPA initiatives with case, events and variation automation insights.
- Easily view price changes and trends, together with their root causes.



More information:

- <https://www.qpr.com/solutions/order-to-cash-process-mining>
- <https://www.qpr.com/blog/process-mining-on-order-to-cash-process>



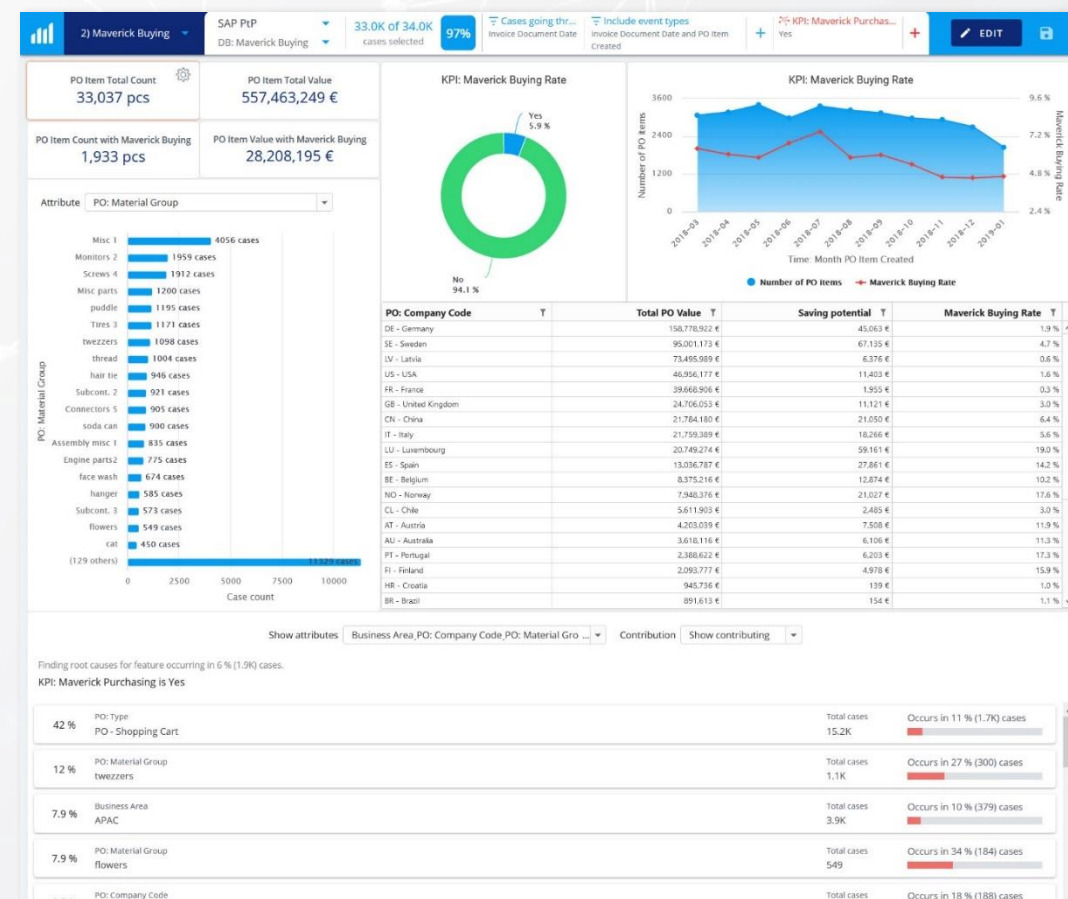
Process Mining Apps

SAP Purchase-to-Pay

Increase Purchase-to-Pay efficiency and gain significant cost savings.

With this application, you will be able to:

- Spot Maverick buying and its root causes
- Monitor payment terms and price changes
- Dig deep into KPIs of automation rates, process step cycles and PO item change rates



More information:

- <https://www.qpr.com/solutions/purchase-to-pay-process-mining>
- <https://www.qpr.com/blog/process-mining-for-purchase-to-pay-process>

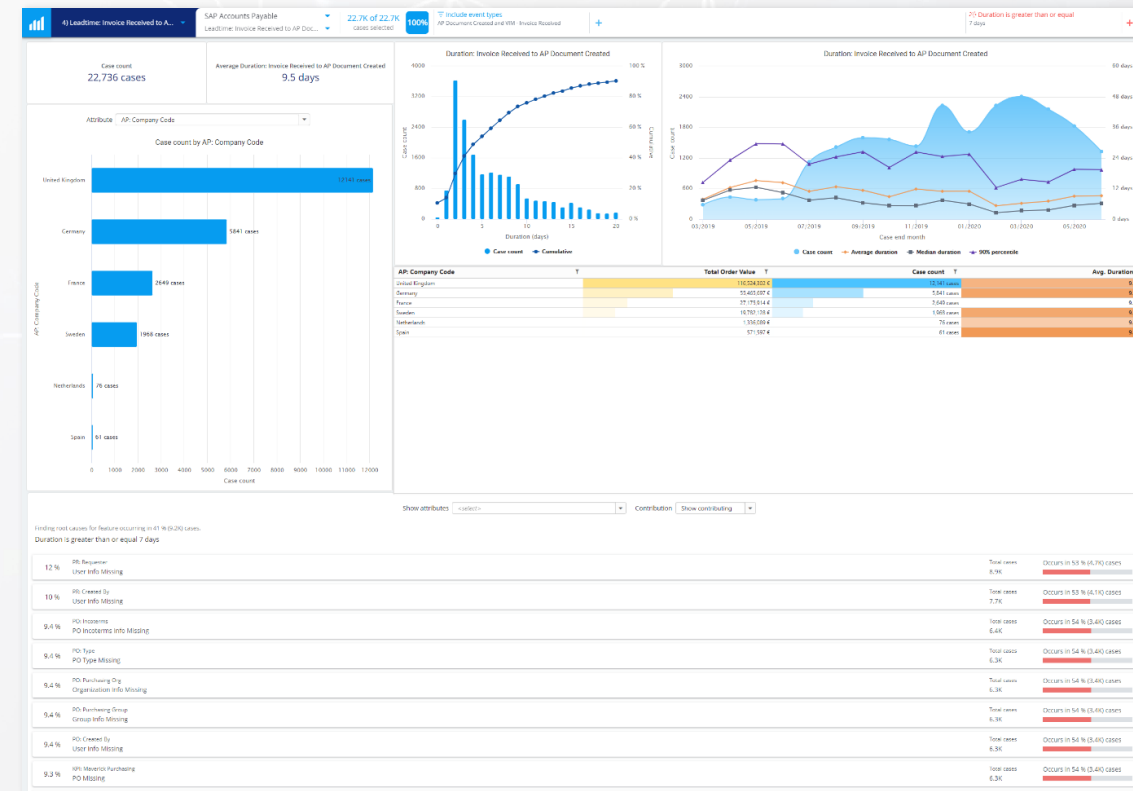
Process Mining Apps

SAP Accounts Payable

Analyze cash discounts, early or duplicate payments, PO penetration rates, and AP automation rates.

With this application, you will be able to:

- Reduce manual labor of matching documents
- Save costs by processing invoices before cash discount due dates are missed
- Maximize your compliance by reducing Maverick purchasing & increasing PO penetration level
- Cut your lead times by half by uncovering bottlenecks during each step of the process.



More information:

- <https://www.qpr.com/blog/process-mining-on-accounts-payable-process>

Process Mining Apps

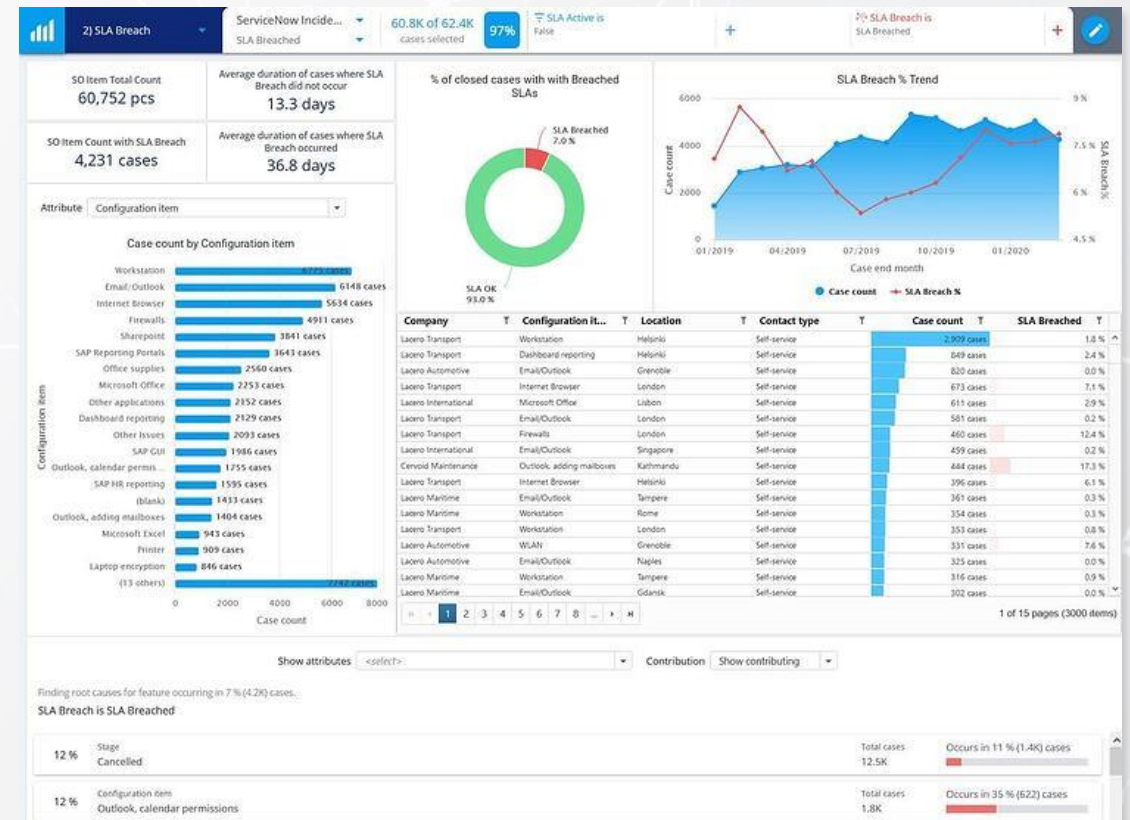
ServiceNow



Ensure a fact-based scrutiny of Service Management processes.

With this application, you will be able to:

- Spot SLA breaches and Compliance violations
- Identify root causes for any inefficiencies
- Monitor lead times between process steps



More information:

- <https://www.qpr.com/solutions/service-management>

Recap: Act

Business Actions

- Email alerts
- Notifications

Process Mining Apps

- SAP Order-to-Cash
- SAP Purchase-to-Pay
- SAP Accounts Payable
- ServiceNow



Next: Operate

Data Connection

- QPR Connectors
- Data Collection
- Flexible ETL platform
- Excel Integration

Security & Scalability

- User Administration & Security
- Access Settings
- Case-level Permissions
- Audit Logs
- Model Manager
- Deployment Options
- License Types
- Dynamic Sampling



Operate

Data Connection

You often need to use data from multiple sources to gain a full understanding of your end-to-end processes.

If you're e.g. using several on-premise SAP ERP systems, one Salesforce cloud solution, a few custom SQL applications, some excel files and IoT devices, QPR ProcessAnalyzer supports all – and any combination - of them.



Data Connection Features

- QPR Connectors
- Data Collection
- Flexible ETL platform
- Excel Integration

QPR ProcessAnalyzer supports:

- Open APIs
- Integration Platform for ETL
- Connect to both modern and legacy systems
- Automated real-time loading
- No data use limits
- In-memory flash models



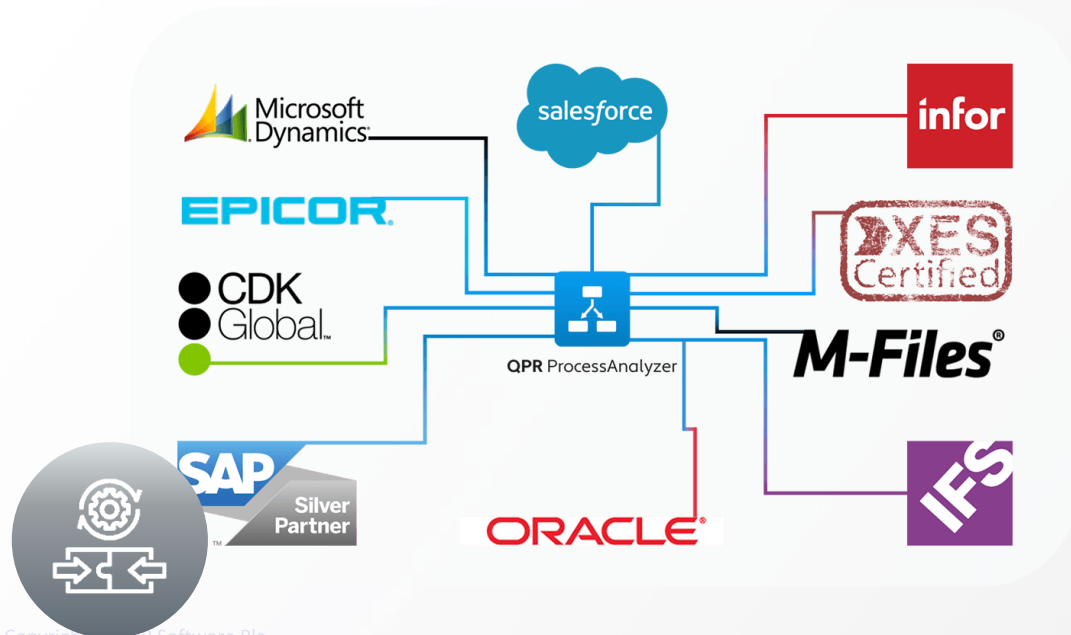
Data Connection

QPR Connectors

- Enable you to easily connect to all your data sources and combine data from them to create process mining models.
- Systematically transfer data from source systems to the QPR ProcessAnalyzer server, enabling data quality validation and real-time analysis.
- Make ETL operations swift and simple.

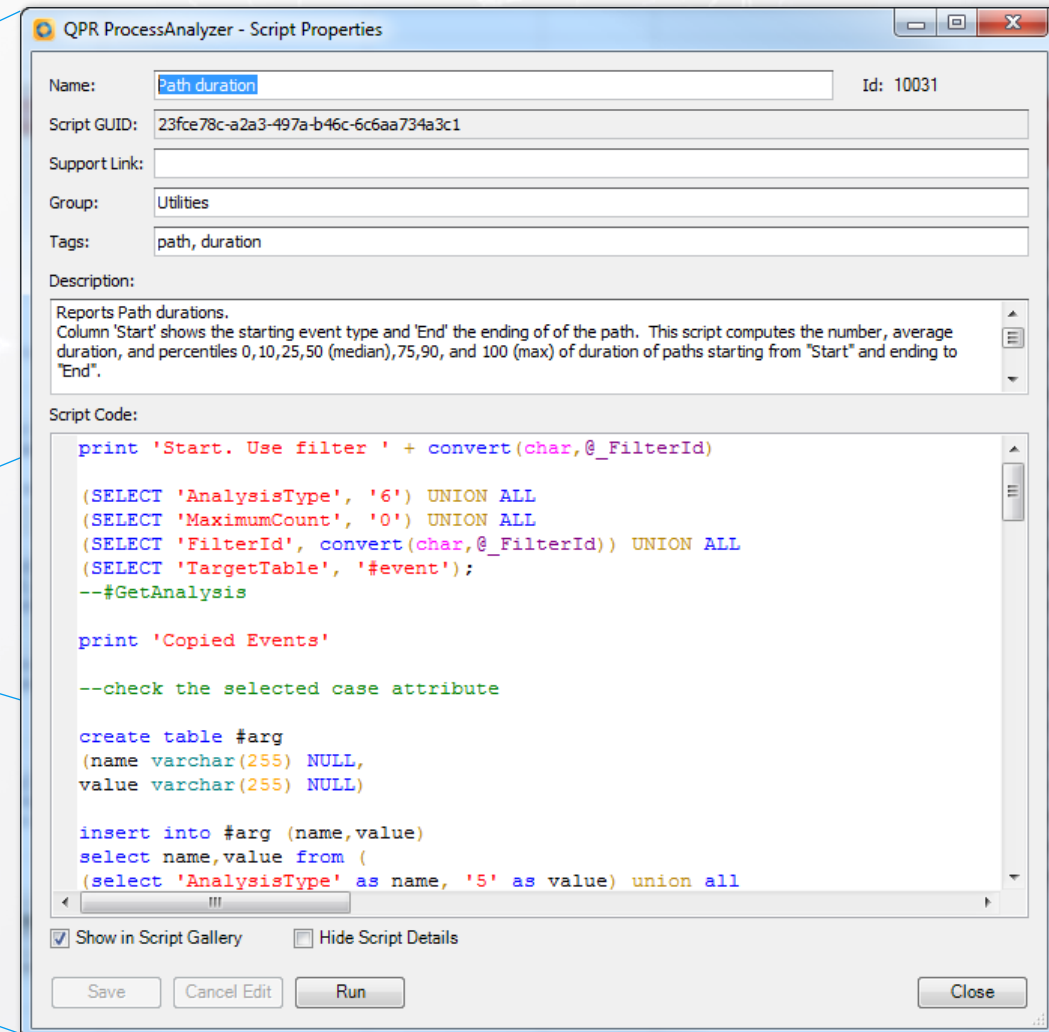
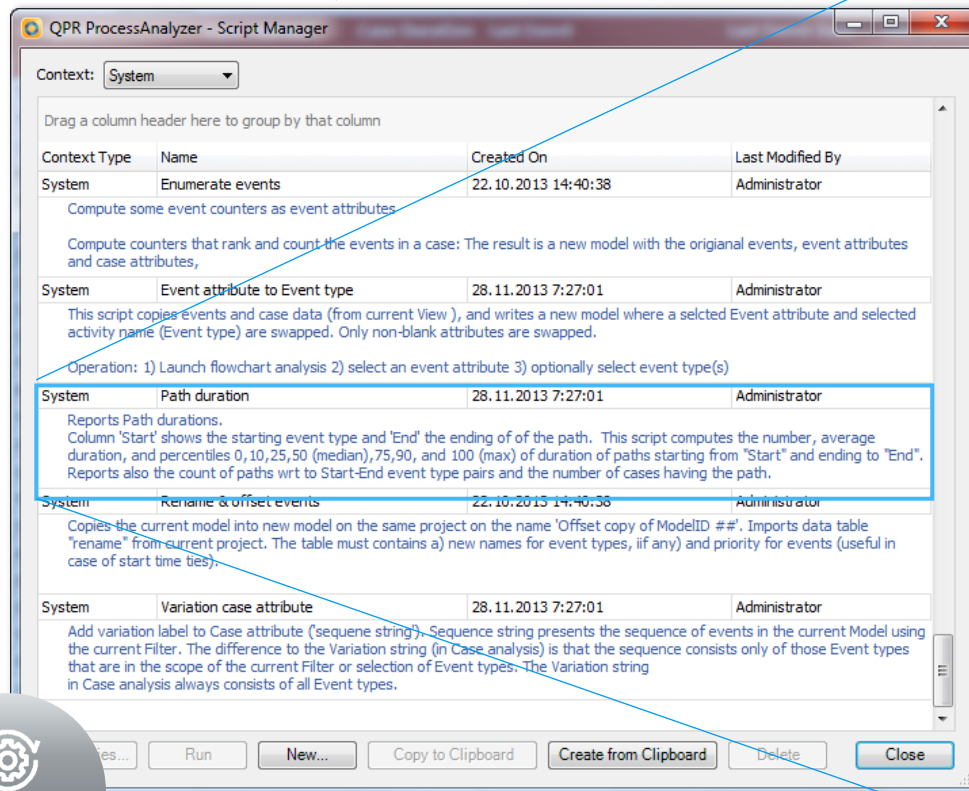
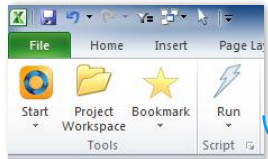
List of Connectors

- [Microsoft Dynamics AX](#)
- [Microsoft Dynamics NAV](#)
- [SAP](#)
- [Oracle](#)
- [Oracle Netsuite](#)
- [Salesforce](#)
- [Epicor](#)
- [ServiceNow](#)
- [Infor M3](#)
- [IFS](#)
- [Microsoft SQL Server](#)
- [CDK AutoMaster](#)
- [XES](#)
- [M-Files](#)



Data Connection

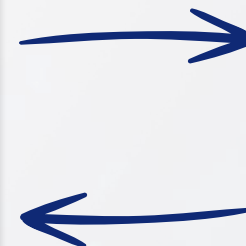
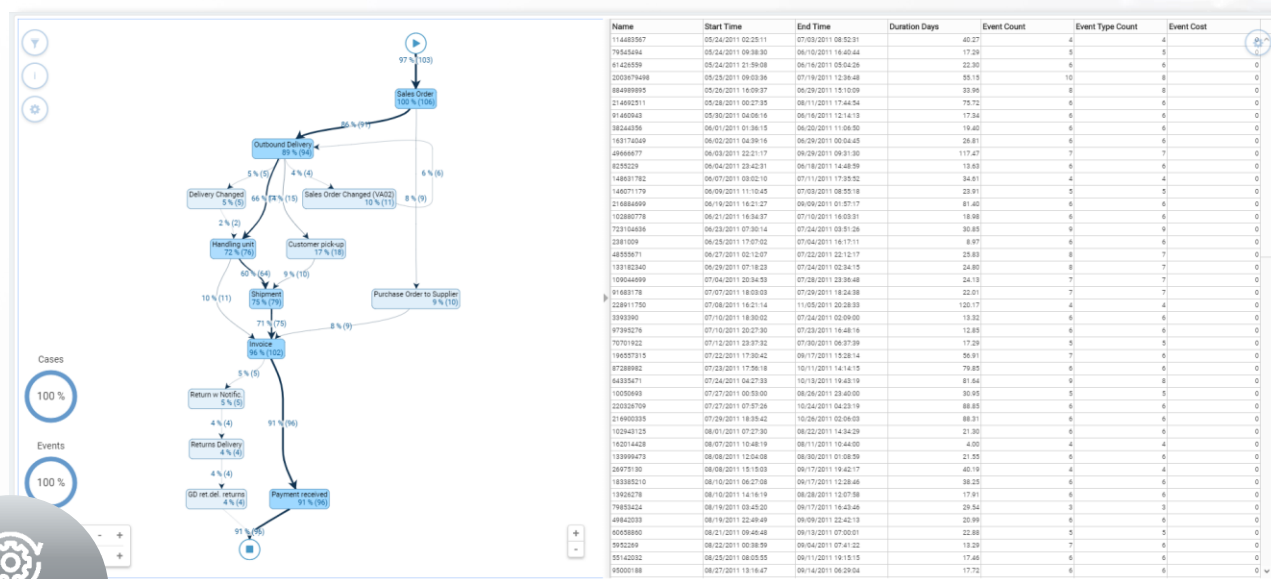
Flexible ETL Platform



Data Connection

Microsoft Excel Integration

- Allow you to smoothly export the data into Excel and continue your analysis with the spreadsheet tools.
- You can also do this the other way around: if you have data in Excel, you can upload this data to QPR ProcessAnalyzer and again continue your analysis there instead.



Name	Start Time	End Time	Duration Days	Event Count	Event Type Count	Event Cost
97395276	10.7.2011 20:27	23.7.2011 16:48	12,85	6	6	0
95000188	27.8.2011 13:16	14.9.2011 6:29	17,72	6	6	0
93620510	17.1.2012 13:47	3.2.2012 18:29	17,20	5	5	0
92791043	22.1.2012 10:51	10.2.2012 23:18	19,52	8	7	0
91683178	7.7.2011 18:03	29.7.2011 18:24	22,01	7	7	0
91460943	30.5.2011 4:06	16.6.2011 12:14	17,34	6	6	0
884989895	26.5.2011 16:09	29.6.2011 15:10	33,96	8	7	0
87288982	23.7.2011 17:56	11.10.2011 14:14	79,85	6	6	0
87093037	29.10.2011 11:15	4.11.2011 18:53	6,32	5	5	0
84209808	4.11.2011 4:20	19.1.2012 5:29	76,05	6	6	0
8255229	4.6.2011 23:42	18.6.2011 14:48	13,63	6	6	0
79853424	19.8.2011 3:45	17.9.2011 16:43	29,54	3	3	0
79545494	24.5.2011 9:38	10.6.2011 16:40	17,29	5	5	0
78422757	28.1.2012 14:27	21.2.2012 6:46	23,68	4	4	0
76901927	7.11.2011 5:24	22.1.2012 8:46	76,14	6	6	0
723104636	23.6.2011 7:30	24.7.2011 3:51	30,85	9	9	0
70701922	12.7.2011 23:37	30.7.2011 6:37	17,29	5	5	0
68734702	11.1.2012 15:22	17.1.2012 10:42	5,81	4	4	0
67798752	29.11.2011 23:57	16.12.2011 6:38	16,28	6	6	0
67070577	13.2.2012 9:28	2.3.2012 17:58	18,35	6	6	0
6467220	27.8.2011 19:25	12.9.2011 15:33	15,84	5	5	0
64335471	24.7.2011 4:27	13.10.2011 19:43	81,64	9	8	0
64283436	29.9.2011 5:09	19.10.2011 15:01	20,41	6	6	0
61426559	24.5.2011 21:59	16.6.2011 5:04	22,30	6	6	0
60658860	21.8.2011 9:46	13.9.2011 7:00	22,88	5	5	0
5952269	22.8.2011 0:38	4.9.2011 7:41	13,29	7	6	0
59019408	21.10.2011 8:56	8.11.2011 17:06	18,34	6	6	0
5801008	22.2.2012 4:38	6.3.2012 8:00	13,14	7	7	0
5536147	20.10.2011 17:45	4.11.2011 12:10	14,77	7	6	0
55142032	25.8.2011 8:05	11.9.2011 19:15	17,46	6	6	0
54333089	24.1.2012 0:12	7.2.2012 9:24	14,38	6	6	0
53441362	19.1.2012 23:26	2.3.2012 23:33	43,01	4	4	0
52220160	28.8.2011 17:21	10.10.2011 14:10	42,87	4	4	0
512793311	26.9.2011 23:55	3.11.2011 0:41	37,03	8	7	0
49842033	19.8.2011 22:49	9.9.2011 22:42	20,99	6	6	0
49666677	3.6.2011 22:21	29.9.2011 9:31	117,47	7	7	0
48555671	27.6.2011 2:12	22.7.2011 22:12	25,83	8	7	0



Operate

Security & Scalability

- **Open technology based on industry standards**
- ISO-27001 Certified
- Best available and proven technology
- Standard interfaces for integration
- **Multi-tier architecture**
- Maximum scalability from standalone use to an enterprise solution
- Multi-user environment with simultaneous viewing and editing of data
- **Interactive web usage**
- Works on a web browser on desktops and mobile devices
- No installations needed

Security & Scalability Features:

- User Administration & Security
- Access Settings
- Case-level Permissions
- Audit Logs
- Model Manager
- Deployment Options
- License Types
- Dynamic Sampling



Security & Scalability

User Administration & Security

- The QPR deployment solutions can be integrated with customers identity provider using SAML 2.0 (i.e. Azure AD, ADFS).
- Moreover, the cloud computing platform AWS is architected to be the most flexible and secure cloud computing environment available today.

- **Single Sign-On (SSO)**
- **Integrated Windows Authentication (IWA)**
- **Microsoft Active Directory**
- **OpenLDAP 2.3**
- **SAML 2.0 Federated Authentication**



Access Settings through Projects and Groups

You can assign projects and folders to groups or individuals. Our best practice is to always assign these to certain groups; maintaining group rights instead of individual user rights is both more efficient and easier.

	User Groups																				
	Admin & development			Management team			P2P owners			P2P business users			OtC owners			OtC business users			HR users		
	Viewer	Designer	Admin	Viewer	Designer	Admin	Viewer	Designer	Admin	Viewer	Designer	Admin	Viewer	Designer	Admin	Viewer	Designer	Admin	Viewer	Designer	Admin
Projects	OtC Production	✓	✓	✓	✓								✓	✓		✓					
	OtC Development	✓	✓	✓									✓	✓							
	P2P Production	✓	✓	✓	✓		✓	✓		✓											
	P2P Development	✓	✓	✓			✓	✓													
	HR	✓	✓	✓	✓														✓		



Jack is a process owner in OtC, but he also has an HR role in the organization. Through the **groups** "OtC owners" and "HR users", he will have both viewer and designer rights in OtC production and development **projects** and viewer rights only in HR **projects**.



Security & Scalability

Case-level Permissions

- Any case attribute in the model can be used as a basis for permission definitions, and multiple case attributes can be used to limit what users see. You can even limit the visibility of individual cases, if needed.
- Cases that have “Finance” as a Teams case attribute have been defined as visible for users belonging to user group “Finance Team”
- Users in the user group “Marketing” will not see cases with the Teams case attribute “Finance”

Case ID	Account Manager	Team	Region
123456	Jane	Finance	Dallas
234567	Mike	Finance	Dallas
345678	Sam	Marketing	Dallas
456789	John	Marketing	New York
567890	Ashley	Marketing	New York
678901	Kelly	Finance	New York

Jane works as an Account Manager in a Finance team in Dallas.

John works as an Account Manager in a Marketing team in New York.



Security & Scalability

Audit Logs

- User actions in QPR ProcessAnalyzer are logged into the GlassFish log, located in:
- https://devnet.onqpr.com/pawiki/index.php/QPR_UI_Audit_Logging

Examples of logged actions are:

- Successful logins
- Unsuccessful login attempts
- View is opened
- View is created, saved, or deleted
- View is imported successfully
- View is imported unsuccessfully
- User rights segregation and user access groups



Security & Scalability

Model Manager

Use the Model Manager to view and handle models that are loaded into the system. The Model Manager gives an instant list of all the models loaded into the system and shows you which of them are loaded into the memory. Statistical data about each model shows the case amounts and event amounts of each separate model. This report includes an estimate of how much memory each model takes from the server memory. With this data provided by the Model Manager, users can decide which models are loaded into the memory and how much memory that is used on the server.

Usage of the Memory Manager is simple: just select a model and right click to open a context menu, from where you can load a model directly into memory. Need to free up some memory? Just drop a model using the menu and you'll have more memory available for other models. With the Model Manager, administrating your QPR ProcessAnalyzer server and the models in the memory is a breeze – it gives you direct access to controlling memory usage, which makes way for a far more efficient process mining experience.

Model	Project	Memory Demand	Cases	Events	Last Modified	Last Imported
● Dynamics - Order Handling (Order-to-Cash)	SAMPLEFILES	229 MB	12,333 cases	111,319 events	06.09.2018 16:35	06.09.2018 16:35
● Dynamics - Procurement (Procure-to-Pay)	SAMPLEFILES	162 MB	9,902 cases	70,822 events	03.01.2018 16:20	10.10.2017 22:25
● Epicor - Order Handling (Order-to-Cash)	SAMPLEFILES	12.3 MB	373 cases	1,972 events	26.01.2018 15:37	26.01.2018 15:37
● Generic - Application Handling (Permit Approval)	SAMPLEFILES	160 MB	1,199 cases	52,217 events	29.11.2017 15:48	29.11.2017 15:48
● Generic - Banking Loan Applications	SAMPLEFILES	187 MB	14,034 cases	89,936 events	17.01.2019 08:41	17.01.2019 08:41
● Generic - Delivery Request	SAMPLEFILES	634 MB	41,396 cases	396,403 events	18.01.2019 20:47	18.01.2019 20:47
● Generic - Healthcare (Patie)	MPLEFILES	29.2 MB	1,500 cases	9,650 events	29.11.2017 10:05	30.10.2017 11:35
● Generic - Incident Manage	MPLEFILES	7.2 MB	220 cases	1,469 events	30.01.2018 10:51	30.01.2018 10:51
● Generic - Incident Manage	MPLEFILES	8.0 MB	220 cases	1,469 events	29.11.2017 10:08	07.08.2017 16:51
● Generic - Insurance (Claim)	MPLEFILES	141 MB	10,000 cases	68,003 events	10.12.2018 09:58	30.10.2017 14:56
● Generic - Manufacturing (E)	MPLEFILES	445 MB	15,470 cases	259,279 events	29.11.2017 10:04	19.09.2017 11:45
● Generic - Marketing & Sales (Lead-to-Order)	SAMPLEFILES	13.0 MB	700 cases	2,674 events	07.02.2019 16:25	07.02.2019 16:25
● Generic - Marketing (Lead-to-Opportunity)	SAMPLEFILES	8.6 MB	512 cases	1,354 events	29.11.2017 08:41	29.11.2017 08:41
● Generic - Order Handling (OIC)	SAMPLEFILES	185 MB	10,485 cases	72,159 events	20.05.2019 11:56	30.11.2018 16:00
● Generic - Order Handling (Social mining)	SAMPLEFILES	191 MB	10,485 cases	72,159 events	31.01.2019 12:10	29.01.2019 14:09
● Generic - Procurement (Purchase-to-Pay)	SAMPLEFILES	31.5 MB	1,165 cases	9,988 events	27.12.2017 13:06	27.12.2017 13:06
● Generic - Sales (Opportunity-to-Order)	SAMPLEFILES	3.9 MB	150 cases	570 events	22.01.2018 16:19	29.11.2017 08:40
● Infor M3 - Order Handling (Order-to-Cash)	SAMPLEFILES	140 MB	10,486 cases	61,683 events	07.12.2017 16:29	15.11.2017 16:30
● MFiles - Document Management (Document Review)	SAMPLEFILES	17.9 MB	708 cases	4,966 events	29.11.2017 10:09	24.10.2017 08:35



Deployment Options

Choose between the on-premise or cloud solution - QPR's consultants and Customer Care fully supports customers with both deployment options.

QPR ProcessAnalyzer On-Premise

- Collaborative web UI
- Multiuser server environment
- No hard limit for model size
- No limits for database size – runs on Microsoft SQL Server
- Automated data import

More info:

- [QPR ProcessAnalyzer System Requirements](#)
- [Installing QPR ProcessAnalyzer Server](#)

QPR ProcessAnalyzer Cloud

- Collaborative web UI
- Multiuser server environment
- No hard limit for model size
- 500 GB database included (extendable)
- Automated data import
- Customer-specific private cloud available
- Hosted on Amazon Web Services (AWS)
- Automatic updates

More info:

- [QPR Cloud https://www.qpr.com/products/qpr-cloud](https://www.qpr.com/products/qpr-cloud)



Security & Scalability

License Types

- Choose between 3 different user license types for QPR ProcessAnalyzer, based on the kind of tasks you want the users to be able to perform.

License type	Description	Example roles
Dashboard User	Has access to published dashboards and can make selections utilizing predefined filters and dimensions	- Executive - Line manager
Analyst User	Has full access to all analysis functionalities, but not to administrative tasks.	- Process expert - Process analyst - Business manager
Developer User	Has access to the full functionality of QPR ProcessAnalyzer, including all administrative tasks, such as user management, model creation, and more.	- BI / report developer - Data scientist - IT person



Summary of Capabilities

& Key Features



Discover

- Process Discovery
- Interactive Filtering



Investigate

- Root Causes
- Advanced Process Analytics



Build

- Dynamic Dashboards
- KPI Engine



Act

- Business Actions
- Process Mining Apps



Operate

- Data Connection
- Security & Scalability

What our customers use QPR ProcessAnalyzer for

Our customers use QPR ProcessAnalyzer in a variety of **industries** (manufacturing, telecommunications, banking and finance, IT, healthcare, pharma, logistics, and many more), for various **processes** (we currently support 70+ processes, including OtC, P2P, logistics, ITIL service management, marketing and sales, invoicing, and more), for different **use cases** (robotic process automation, process improvement, auditing and compliance, digital transformation, IT and ERP development, and process KPI reporting), and, lastly, a variety of **data sources** (e.g. SAP, Salesforce, and Microsoft Dynamics).

For instance, many of those who were struggling with SAP have found that QPR ProcessAnalyzer helps in:

- Gaining transparency into process flows: *“SAP is gigantic - now we have transparency into how the processes flow in it”*
- SAP consolidation with process discovery: *“Understanding the real processes helped in SAP consolidation”*.

Read all our publicly available customer stories [here](#).



FENNO
VOIMA

VAISALA



dubal
Dubai Aluminium

DIEHL
Aerospace



Caverion



KONECRANES

PIRAEUS BANK



IMPLEMENT
CONSULTING GROUP

NOKIA



KB

Patria

RUUKKI

Increase internal efficiency, customer satisfaction and sales revenue

In our experience, customer success in process mining often leads to **three main types of benefits**. By e.g. increasing process automation rates and reducing the number of invoice corrections or order changes, you can see big improvements in **internal efficiency**.

Moreover, by improving the delivery accuracy and removing transportation blocks that cause late delivery, you will notice an increase in **customer satisfaction**. Finally, by discovering uninvoiced order lines and increasing efficiency as well as order lines, you will see an increase in **sales revenue**.

Higher internal efficiency

Process
automation
rate

+50%

Number of
invoice
corrections

-80%

Better customer experience

Delivery
accuracy
improvement

65% → 80%

Transportation
blocks causing
late delivery

-50%

Increased sales revenue

Uninvoiced
order lines
discovered

€17m

Overall sales
growth

+20%



”

“QPR ProcessAnalyzer is very **intuitive** - after 2-3 hours I was able to do experiments of my own. It's a very user-friendly product.”

-Christof De Groote, Service Manager
Life Insurance, KBC Insurance

”

“I really really love the **root cause analysis**. I think that's one of the major key benefits for me from the QPR ProcessAnalyzer tool.”

-Sander Van Lombeek, Team Lead,
Commercial Credits, KBC Group



Upcoming process mining events and webinars:

<https://www.qpr.com/company/events>

Book an online demo with one of our process mining experts:

<https://www.qpr.com/products/qpr-processanalyzer/demo>

Talk to sales:

<https://www.qpr.com/products/qpr-processanalyzer/talk-to-sales>

Founded
1991

Corporate Headquarters
Helsinki

Stock symbol
QPR1V: Nasdaq, Helsinki

Licenses sold
+1 million

Customers
+2000

Process Mining Recognitions

Forrester Now Tech for Process Mining 2020

Gartner Market Guide Process Mining 2019

Everest Group Peak Matrix 2020

Gartner Market Guide for DTOs 2020