

QPR ProcessAnalyzer

How the product works

Agenda

Material for ~6-8 hours training with hands-on exercises

- Preliminaries
 - Introductions
 - Making sure that the environment works
- Introduction to Automatic Business Process Discovery (ABPD)
 - Why ABPD: application areas
 - How: the analysis process
 - Focus: the scope of this training
- Architecture of QPR ProcessAnalyzer
- Starting QPR ProcessAnalyzer
 - Basic concepts
 - Data: format and import
- Discovery and Filtering
 - Flowchart and Path
 - Creating Filters
- Analysis
 - Profiling
 - Influence
 - Bottleneck analysis
 - Drill-in: cases and events
- Keeping on track with things (1)
 - Filter management
 - Bookmarks
- Distributing the results
 - Web interface
- Keeping on track with things (2)
 - Models and Projects, Export
 - User management and user rights
- Enrichment - advanced example
 - Export cases
 - Import new case attribute
- Exercises & Further Information

Introduction

Automatic Business Process Discovery and
QPR ProcessAnalyzer

Traditional world meets automated discovery

Traditional world



Workshops

Subjective 'as-wish'
Time consuming
Vulnerable to human interpretation

Automated discovery



ABPD

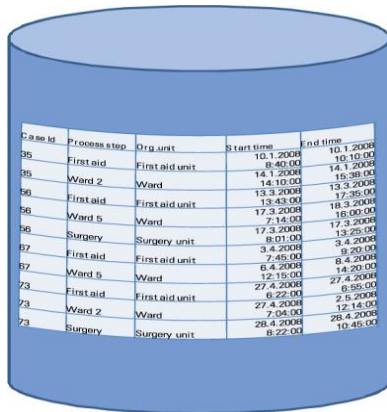
Automated Business Process Discovery

Exact 'as-is' process flowchart
Instant process insight
Captures process metrics
Uses facts stored in IT systems

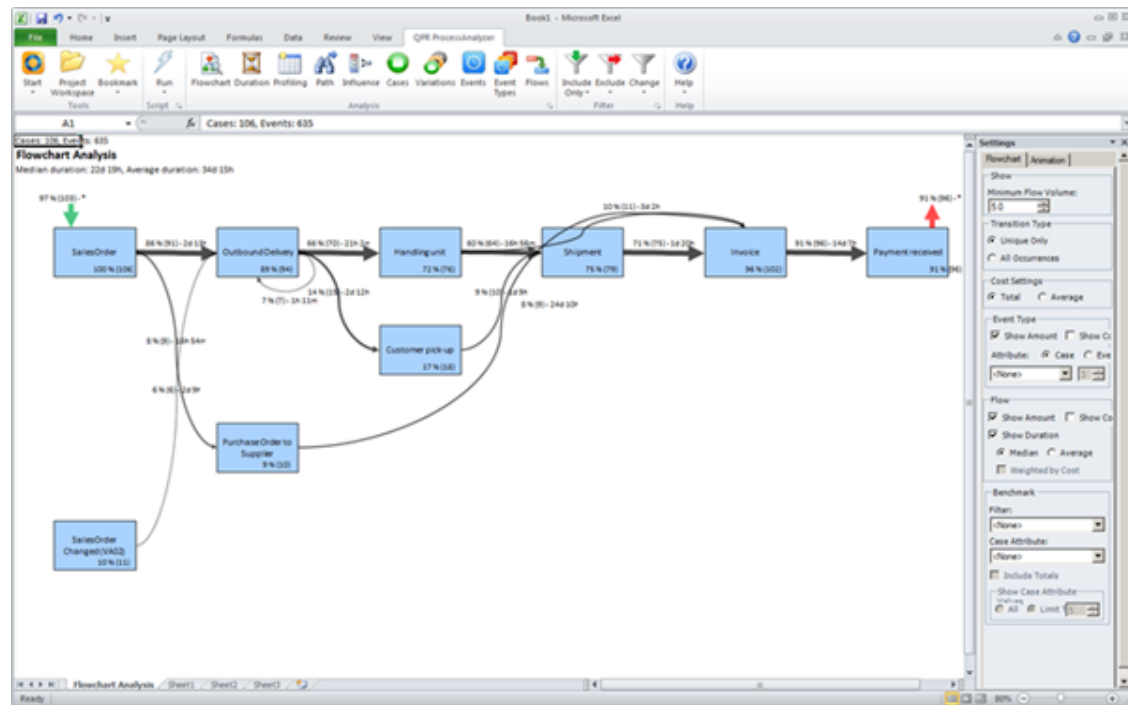
Combine both for optimized result

Automated Business Process Discovery

- Automated Business Process Discovery (ABPD) is a method for analyzing and visually representing processes based on data stored in log files
 - Automatically draws process charts and shows process variations
 - Shows resource use over time and in different process steps
 - Visualizes flows using advanced techniques
 - Shows congestions and bottlenecks
 - Allows drill-down to individual cases



Case Id	Process step	Org. unit	Start time	End time
35	Firstaid	Firstaid unit	10.1.2008 8:40:00	10.1.2008 10:10:00
35	Ward 2	Ward	14.1.2008 14:10:00	14.1.2008 15:38:00
56	Firstaid	Firstaid unit	13.3.2008 13:43:00	13.3.2008 17:35:00
56	Ward 5	Ward	17.3.2008 7:14:00	17.3.2008 18:00:00
56	Surgey	Surgey unit	17.3.2008 8:01:00	17.3.2008 13:25:00
67	Firstaid	Firstaid unit	3.4.2008 7:40:00	3.4.2008 8:20:00
67	Ward 5	Ward	6.4.2008 12:15:00	6.4.2008 16:20:00
73	Firstaid	Firstaid unit	27.4.2008 6:22:00	27.4.2008 12:14:00
73	Ward 2	Ward	27.4.2008 7:04:00	28.4.2008 10:45:00
73	Surgey	Surgey unit	28.4.2008 8:22:00	10.45:00



Application areas

Process improvement

- Reduce costs
- Reduce variations and deviations
- Improve productivity
- Reduce lead times
- e.g. LEAN, Six Sigma etc.

Regulatory compliance

- Conformance
- Internal auditing

Enterprise Architecture

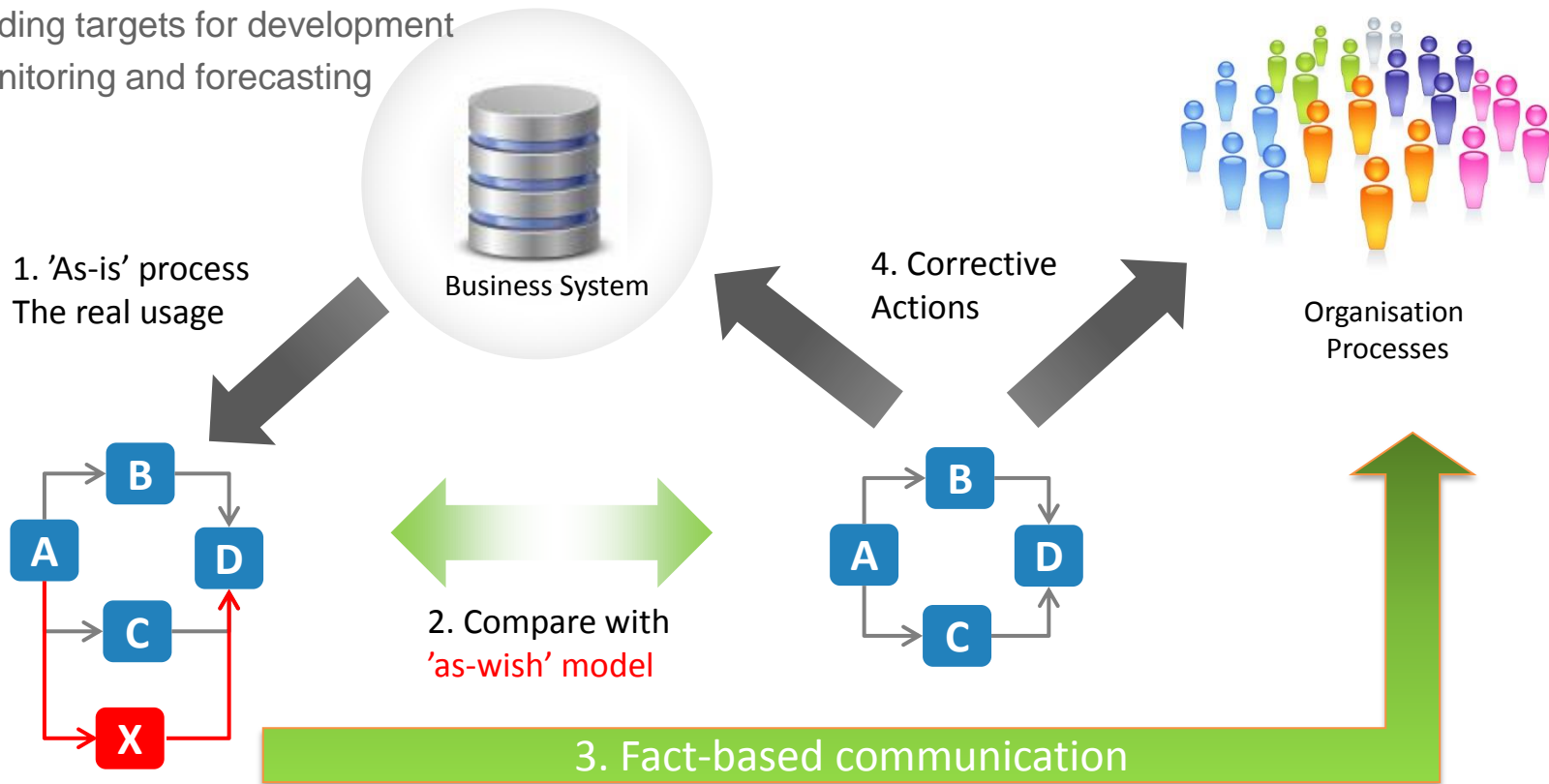
- System redocumentation
- Baseline analysis

Deliverables and benefits

Deliverable	Contents	Benefits
Business Process models	How activities are performed establishing end-to-end processes	Understand current processes, identify best practice, identify problems and bottlenecks, improve processes.
Organizational models	How various organizational units co-operate	Understand and improve cross-organizational co-operation, remove bottlenecks.
IT System documentation	Show how various IT systems are actually used during the process	Document and validate IT system usage, educate users, develop IT systems.
Performance metrics	Basic measures including processing times, waiting times	Review performance, set clear goals and manage improvement initiatives.
Segment Analysis	Comparison reports showing the differences between selected segments	Understand segments and improve segment-specific procedures.

Supports fact-based communication and process management

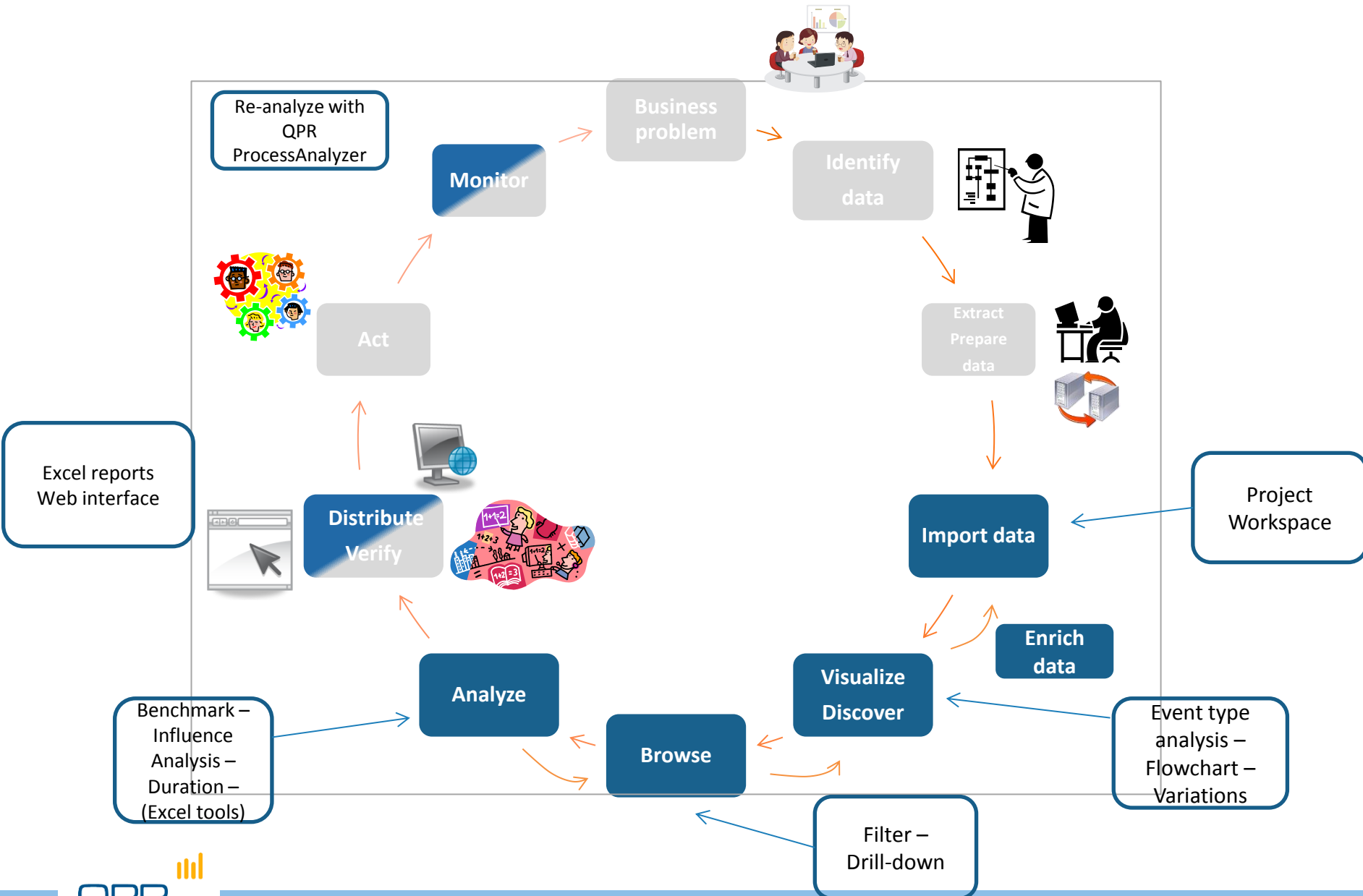
- QPR ProcessAnalyzer provides
 - quantitative facts about the process* - compared with opinions or qualitative assessments
- Use the information in:
 - Coaching the organization
 - Finding targets for development
 - Monitoring and forecasting



Focus of the training

QPR ProcessAnalyzer and Business Process Management

QPR ProcessAnalyzer and the analytical BPM cycle



Focus of the training

system(s)

CRM

SRM

Focus of this training

Extract transaction data from business system(s)

- Flat file
- ODBC
- OLAP
- SQL

Prepare data for analysis

- ETL Tools
- Database scripts
- Excel
- Profiling, Cleansing

Analyze with QPR ProcessAnalyzer

Filter
Enrich
Analyze

Create and distribute analysis reports

Excel report distribution
QPR ProcessAnalyzer
Web interface

ERP

SCM

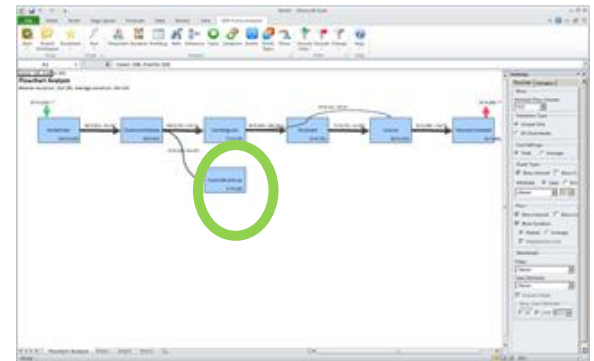
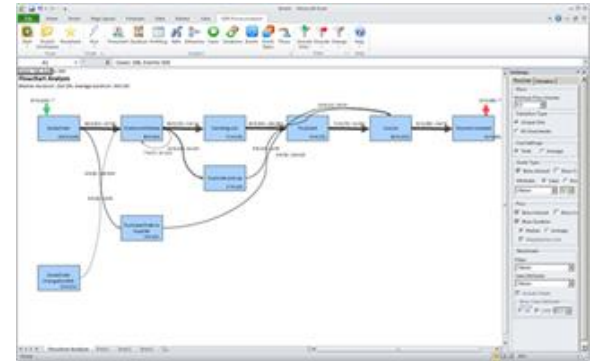
ETL

Steps in more detail

Business problem	<ul style="list-style-type: none">• Define the problem and stakeholders• Translate the business questions into analysis questions
Identify data	<ul style="list-style-type: none">• Scope the analysis in technical sense• Find relevant data in source systems• Find key experts and documents
Extract data	<ul style="list-style-type: none">• Extract the data from the source system, and• Load it into preparation environment
Prepare data	<ul style="list-style-type: none">• Prepare the data for QPR ProcessAnalyzer by transformation to Cases, Events and Attributes that match the analysis questions
Import data	<ul style="list-style-type: none">• Import Event and Case data into QPR ProcessAnalyzer
Process analysis	<ul style="list-style-type: none">• Validate the quality, completeness, and relevance of the data and transformations• Discover - Browse - Filter - Drill-in - Examine Cases - Analyze• Enrich the data by creating new attributes
Verify	<ul style="list-style-type: none">• Check that the results are adequate from the organization, source system, and reporting systems
Distribute	<ul style="list-style-type: none">• Distribute the results of the analysis (Excel reports & web interface)
Act	<ul style="list-style-type: none">• Plan and implement beneficial actions for business process
Monitor	<ul style="list-style-type: none">• Follow the effect of the the actions by repeating the analysis cycle using QPR ProcessAnalyzer and/or by other means

Summary

- ▶ Helicopter-view **discovery**
 - The **actual process visualized** based on your data
 - See relevant **metrics in process context**
- ▶ Process **details** and **analysis**
 - Interactive browsing, filtering, selection
 - Viewpoints into bottlenecks, variations and deviations
 - Drill-down, case-based reasoning
- ▶ Fact-based **communication** means
 - Discovery of the problem areas of the process, based on the data → **no longer speculative**
 - Distribute the results to organization

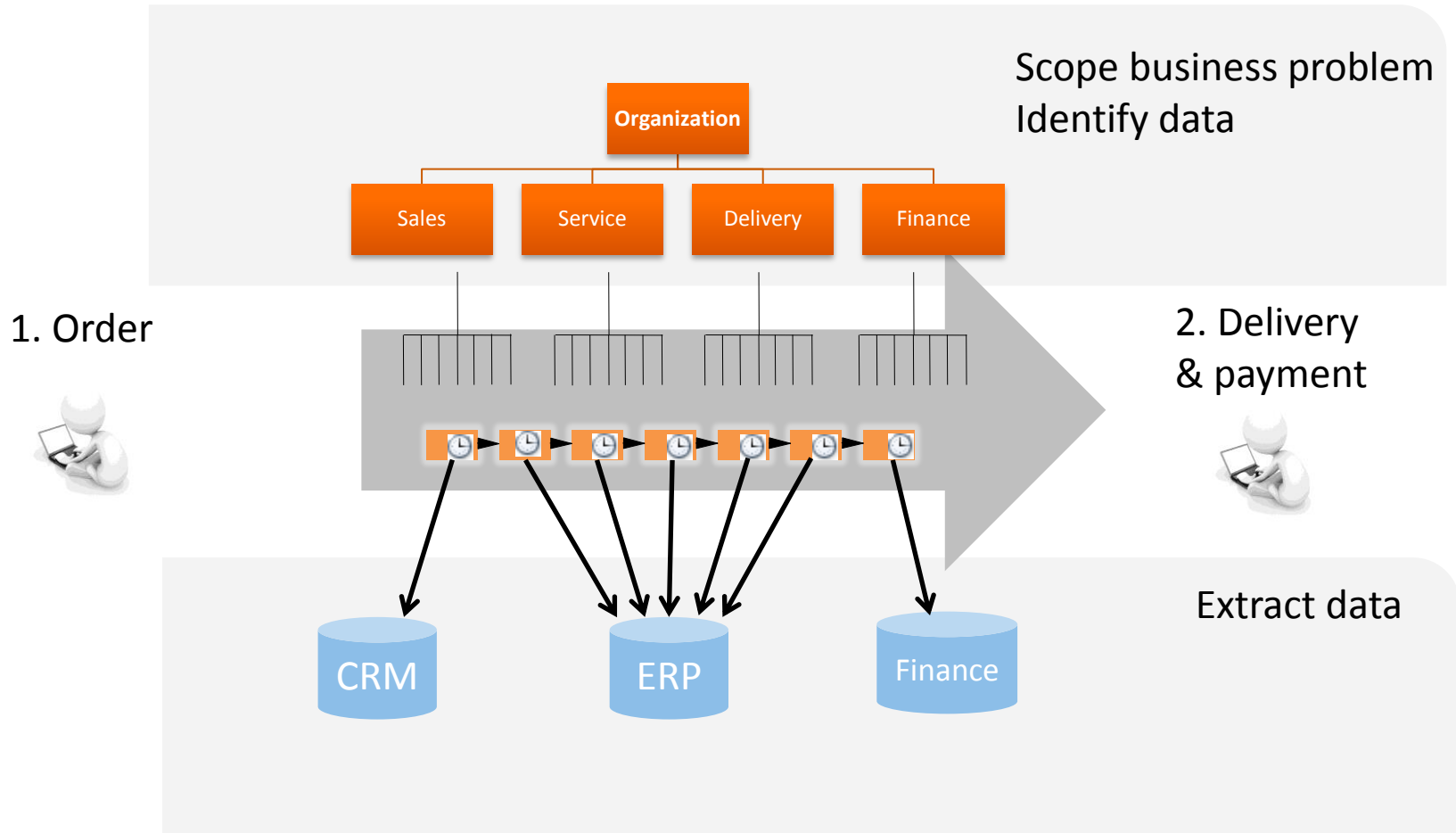
A screenshot of the QPR software interface showing a data table. The table has multiple columns, including 'Step', 'Start', 'End', 'Duration', 'Frequency', 'Variation', and 'Deviation'. The data is presented in a grid format with a color-coded heatmap background, where red indicates higher values and blue indicates lower values. The table is titled 'Influence Analysis' and shows data for various process steps and their associated metrics.

QPR ProcessAnalyzer in practice

Example of Order-to-Cash analytics



Scoping: Order-to-Cash process



Import data

Import

Visualize
Discover

Select
Filter

Analyze

Case ID

The screenshot shows the QPR ProcessAnalyzer interface with an Excel spreadsheet. The spreadsheet has columns for Case ID, Activity, Start Time, End Time, User, Organization, Region, Cost, Account Manager, Product Group, and Customer Group. The data is organized into rows representing different process events.

Case ID	Activity	Start Time	End Time	User	Organization	Region	Cost	Account Manager	Product Group	Customer Group
220876	Handling unit	17.11.2011 8:04	17.11.2011 8:04	Timothy	Delivery	New York	1341	William Davis	Shirts	Kids
220876	Invoice	18.11.2011 15:01	18.11.2011 15:01	Sharon	Finance	Los Angeles	625	William Davis	Shirts	Kids
220876	Outbound Delivery	14.11.2011 4:05	14.11.2011 4:05	James	Delivery	New York	1134	Patricia White	Socks	Men
220876	Customer pick-up	17.11.2011 8:08	17.11.2011 8:08	James	Sales	Austin	89	William Davis	Socks	Kids
220876	Shipment	17.11.2011 14:07	17.11.2011 14:07	Shipment Unit	Delivery	Los Angeles	423	William Davis	Shoes	Women
220876	Sales Order	11.11.2011 18:07	11.11.2011 18:07	Greg	Sales	New York	1208	Patricia White	Shoes	Women
220876	Payment received	20.11.2011 0:07	20.11.2011 0:07	Sharon	Finance	Los Angeles	687	William Davis	Socks	Kids
238100	Delivery Changed	1.7.2011 8:04	1.7.2011 8:04	Greg	Delivery	New York	1060	Patricia White	Shirts	Men
238100	Handling unit	2.7.2011 20:02	2.7.2011 20:02	Timothy	Delivery	Houston	1003	Patricia White	Hats	Men
238100	Invoice	4.7.2011 15:07	4.7.2011 15:07	Sharon	Finance	Chicago	997	Patricia White	Hats	Men
238100	Outbound Delivery	27.6.2011 18:04	27.6.2011 18:04	James	Delivery	Chicago	588	Mary Wilson	Socks	Women
238100	Shipment	5.7.2011 9:07	5.7.2011 9:07	Shipment Unit	Delivery	Chicago	801	Mary Wilson	Shoes	Women
238100	Sales Order	25.6.2011 13:07	25.6.2011 13:07	Greg	Sales	New York	1132	Mary Wilson	Hats	Kids
399339	Handling unit	24.7.2011 11:01	24.7.2011 11:01	Timothy	Delivery	New York	352	Paul Jones	Shoes	Women
399339	Invoice	17.7.2011 1:07	17.7.2011 1:07	Sharon	Finance	New York	215	Patricia White	Shirts	Men
399339	Outbound Delivery	14.7.2011 4:09	14.7.2011 4:09	James	Delivery	New York	1124	Patricia White	Jeans	Men
399339	Shipment	15.7.2011 17:09	15.7.2011 17:09	Shipment Unit	Delivery	Dallas	341	Paul Jones	Shirts	Kids
399339	Sales Order	10.7.2011 18:00	10.7.2011 18:00	Greg	Sales	New York	622	Paul Jones	Jeans	Women
399339	Payment received	24.7.2011 2:09	24.7.2011 2:09	Sharon	Finance	Houston	228	Mary Wilson	Hats	Kids
371564	Handling unit	11.10.2011 18:01	11.10.2011 18:01	Timothy	Delivery	New York	191	Patricia White	Hats	Men
371564	Invoice	16.10.2011 0:05	16.10.2011 0:05	Sharon	Finance	Houston	834	Mary Wilson	Hats	Kids
371564	Outbound Delivery	10.10.2011 8:04	10.10.2011 8:04	James	Delivery	Austin	78	Paul Jones	Jeans	Women
371564	Shipment	13.10.2011 8:02	13.10.2011 8:02	Shipment Unit	Delivery	Houston	239	Patricia White	Shirts	Kids
371564	Sales Order	8.10.2011 8:08	8.10.2011 8:08	Greg	Sales	Dallas	645	Patricia White	Hats	Men
371564	Payment received	22.10.2011 21:01	22.10.2011 21:01	Sharon	Finance	Houston	773	Patricia White	Hats	Men
553614	Handling unit	2.11.2011 1:01	2.11.2011 1:01	Timothy	Delivery	Los Angeles	982	Patricia White	Jeans	Men
553614	Invoice	4.11.2011 12:03	4.11.2011 12:03	Sharon	Finance	Chicago	534	Mary Wilson	Jeans	Women
553614	Outbound Delivery	21.10.2011 15:01	21.10.2011 15:01	James	Delivery	Austin	69	Mary Wilson	Hats	Kids
553614	Outbound Delivery	31.10.2011 12:05	31.10.2011 12:05	James	Delivery	Los Angeles	742	William Davis	Shoes	Women
553614	Sales Order Changed (KOD)	28.10.2011 18:07	28.10.2011 18:07	Greg	Sales	New York	890	Patricia White	Shirts	Men
553614	Shipment	2.11.2011 14:09	2.11.2011 14:09	Shipment Unit	Delivery	Houston	356	Patricia White	Socks	Men
553614	Sales Order	20.10.2011 17:05	20.10.2011 17:05	Greg	Sales	Austin	507	Linda Jackson	Socks	Kids

Event type
(activity name)

Timestamp

Optional: attributes,
e.g. product group, organization
unit, site, resources

- Note: MS Excel can show up to 1 million rows.

Import

Visualize
Discover

Select
Filter

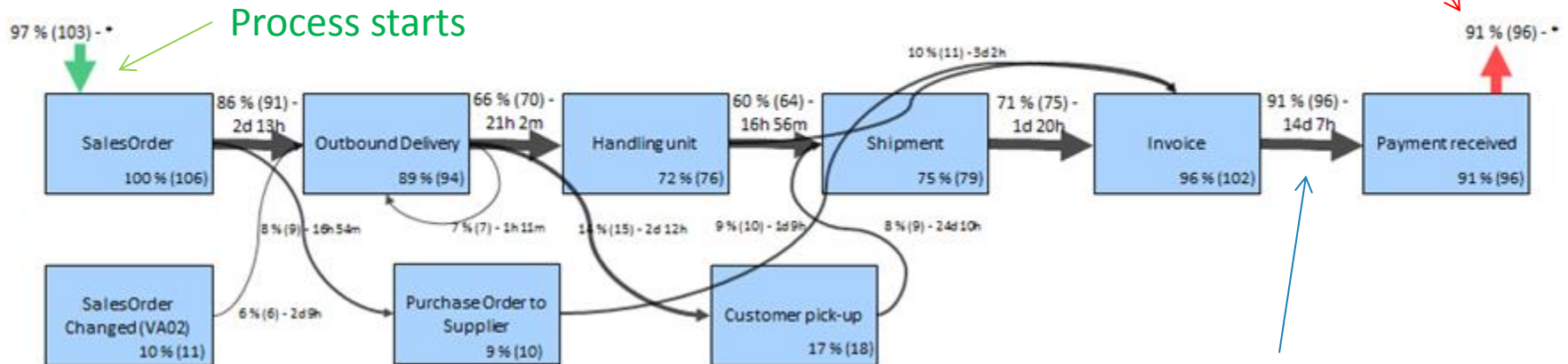
Analyze

Visualize – Discover - Select

Cases: 106, Events: 635

Flowchart Analysis

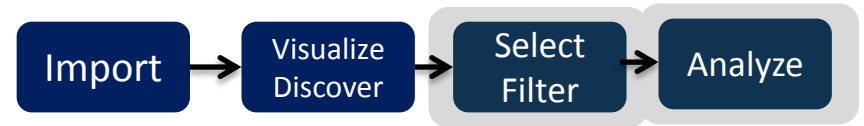
Median duration: 22d 19h, Average duration: 34d 15h



Number of instances through this specific event type

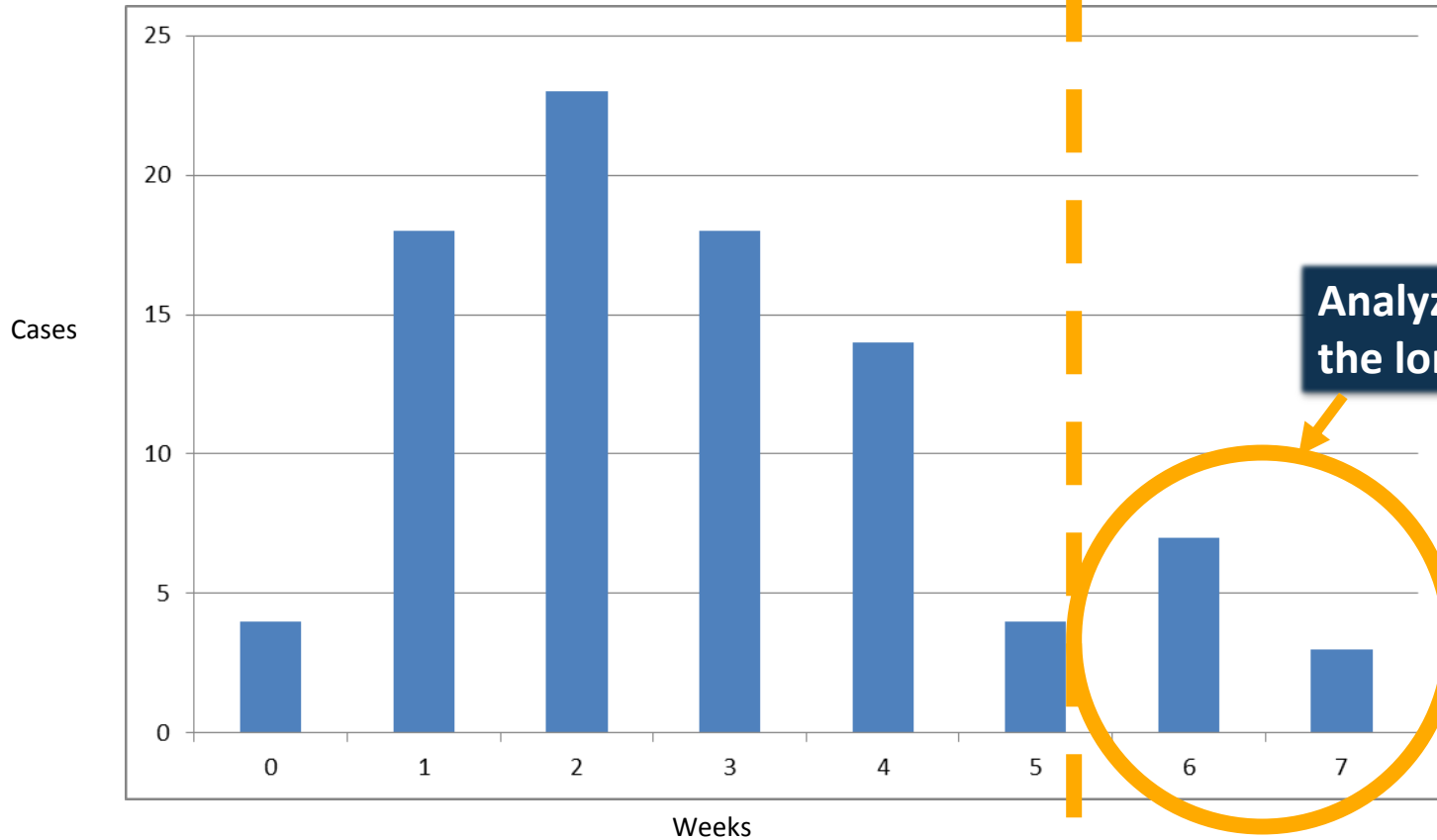
Number of instances and median time between events

Select - Analyze



0-5 weeks

Cases over 5 weeks



Analyze: What causes the long duration?

Import

Visualize
Discover

Select
Filter

Analyze

Root causes

Influence Analysis

Event Types=Purchase Order to Supplier

Long duration occurs frequently

Total		106	10	96	9 %				
Case Attribute	Attribute Value	Cases #	Selected #	Compared #	Selected %	Difference %	Contribution #	Contribution %	
Product Group	Jeans	12	6	6	50 %	41 %	5	49 %	
Region	Austin	18	4	14	22 %	13 %	2	23 %	
Account Manager	Linda Jackson	8	2	6	25 %	16 %	1	12 %	
Cost	414...830	35	3	32	9 %	-1 %	0	-3 %	
Customer Group	Men	36	4	32	11 %	2 %	1	6 %	
Region	New York	27	3	24	11 %	2 %	0	5 %	
Account Manager	Mary Wilson	18	2	16	11 %	2 %	0	3 %	
Account Manager	Paul Jones	9	1	8	11 %	2 %	0	2 %	
Customer Group	Women	31	3	28	10 %	0 %	0	1 %	
Account Manager	Robert Miller	34	3	31	9 %	-1 %	0	-2 %	
Account Manager	Patricia White	24	2	22	8 %	-1 %	0	-3 %	
Cost	414...830	35	3	32	9 %	-1 %	0	-3 %	
Region	Dallas	14	1	13	7 %	-2 %	0	-3 %	
Product Group	Shirts	25	2	23	8 %	-1 %	0	-4 %	
Cost	18...413	36	3	33	8 %	-1 %	0	-4 %	
Region	Chicago	16	1	15	6 %	-3 %	-1	-5 %	
Customer Group	Kids	39	3	36	8 %	-2 %	-1	-7 %	
Region	Los Angeles	18	1	17	6 %	-4 %	-1	-7 %	
Product Group	Shoes	12	0	12	0 %	-9 %	-1	-11 %	
Account Manager	William Davis	13	0	13	0 %	-9 %	-1	-12 %	
Region	Houston	13	0	13	0 %	-9 %	-1	-12 %	
Product Group	Hats	37	2	35	5 %	-4 %	-1	-15 %	
Product Group	Socks	20	0	20	0 %	-9 %	-2	-19 %	

Neutral
relation

Long duration occurs infrequently

Architecture

- QPR ProcessAnalyzer Xpress
- QPR ProcessAnalyzer Database
- QPR ProcessAnalyzer Pro

QPR ProcessAnalyzer product options

- ▶ **QPR ProcessAnalyzer Xpress**

- The stand-alone version

- ▶ **QPR ProcessAnalyzer Pro**

- Uses a QPR ProcessAnalyzer web service

- ▶ **QPR ProcessAnalyzer Database**

- Uses a direct database connection to an MS SQL Server

QPR ProcessAnalyzer Xpress



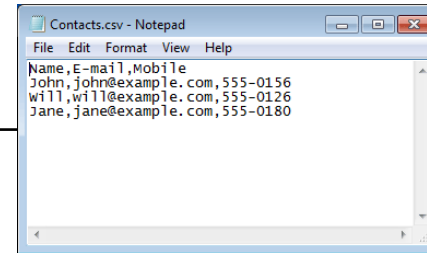
QPR SAP Connector

WINSHUTTLE™



Excel UI, import and reporting

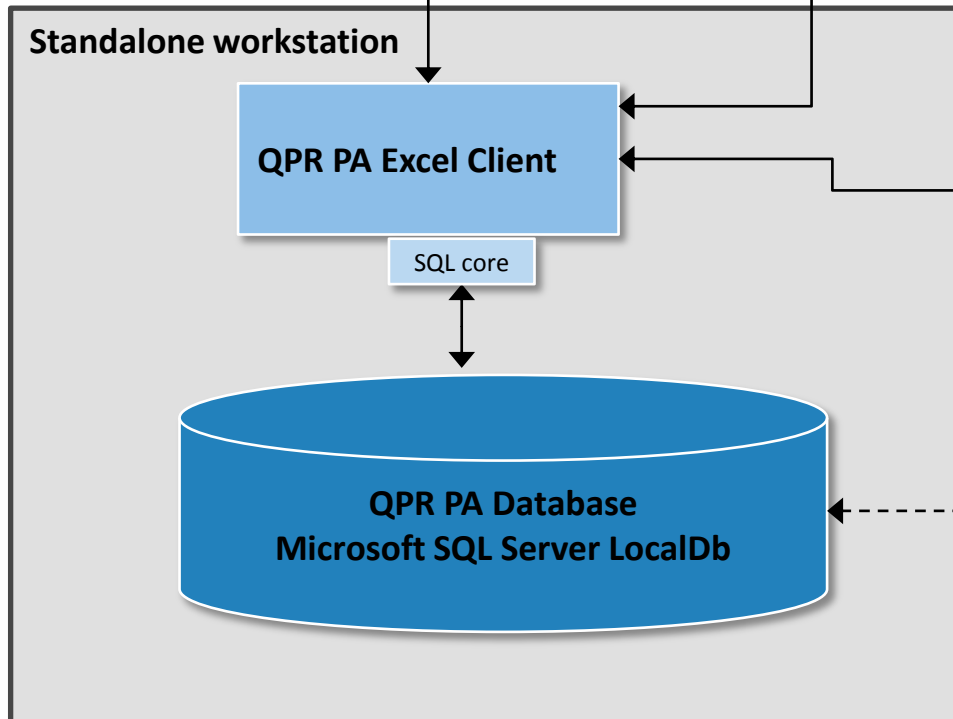
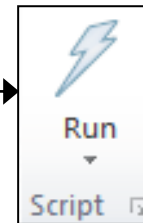
Text file



ImportSalesforceQuery

BULK IMPORT

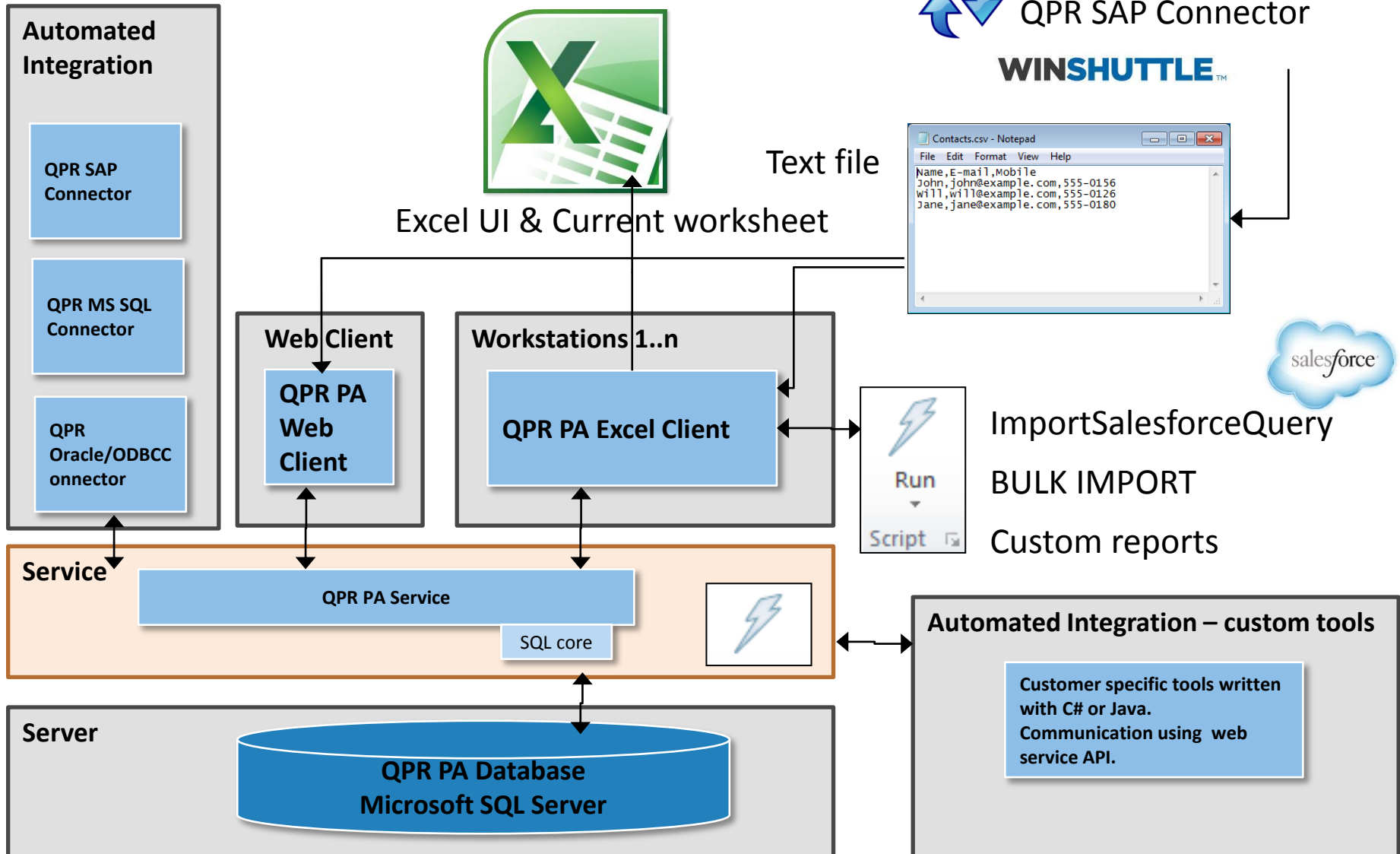
Custom reports



QPR ProcessAnalyzer Pro



WINSHUTTLE™



QPR ProcessAnalyzer Database



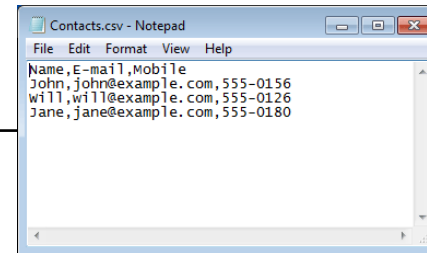
QPR SAP Connector

WINSHUTTLE™



Excel UI, import and reporting

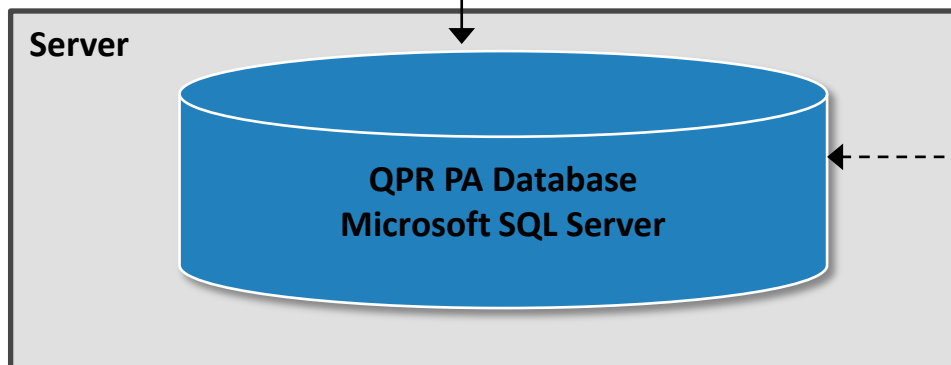
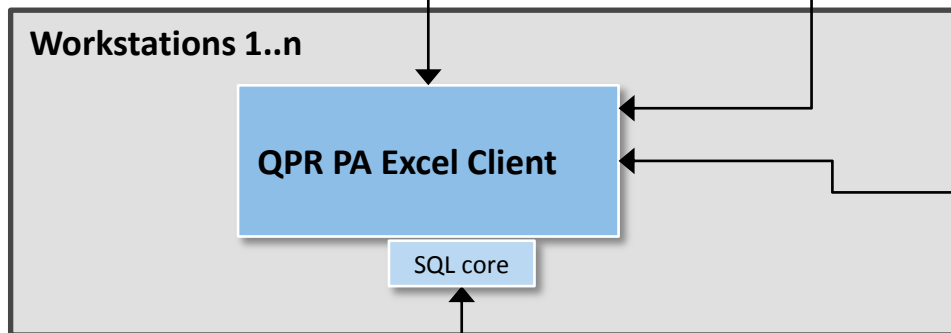
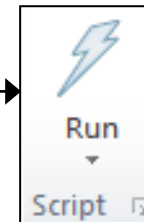
Text file



ImportSalesforceQuery

BULK IMPORT

Custom reports



Getting started

Starting QPR ProcessAnalyzer

Loading the data

Creating a model

Explore, ask, analyze, show!

- ▶ QPR ProcessAnalyzer is an interactive ABPD tool for “making questions and finding answers” on process data by
 - **exploring (discovering, visualizing, and browsing)** the process in a holistic, visual way
 - **making analysis** on process features and causal relations
 - **drilling into details**
- ▶ Analysts’ business is to
 - obtain appropriate data in right format
 - find out and state the relevant “questions for data”
 - find the answers by using QPR ProcessAnalyzer
 - come up with more questions and findings
 - help stakeholders and other experts to understand the results

Functions needed to get started

Log in / out

View session information and operation log

Select project / process model

Import data from Excel sheets to ProcessAnalyzer

WIKI (user manual)

Demo data

Version information

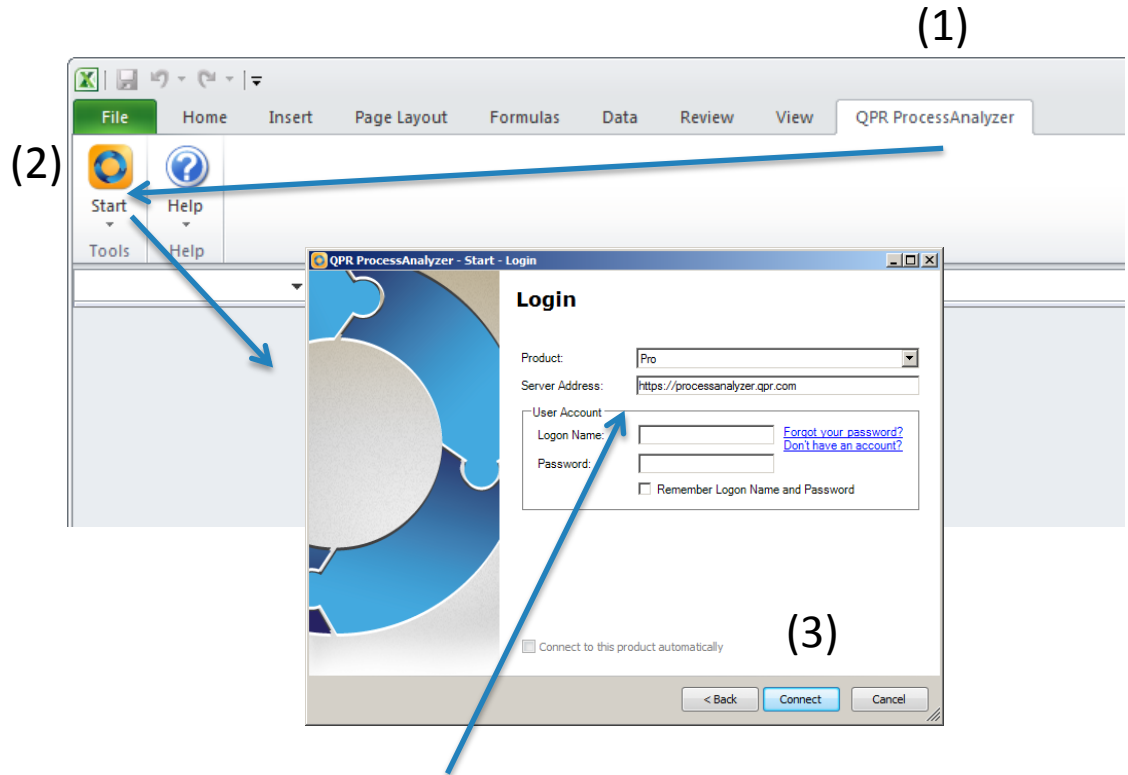
Product activation



Change password
User management

Start

- Excel add-in starts from the tab (1)
- Select "Start" to give your credentials either as a Pro (= the cloud service) or Xpress user (= the standalone version)
- If you use the Xpress version, product activation is first required
- For logging out, select Start > Logout



Default address for the web service (in Pro version)

In special configurations the address may be different

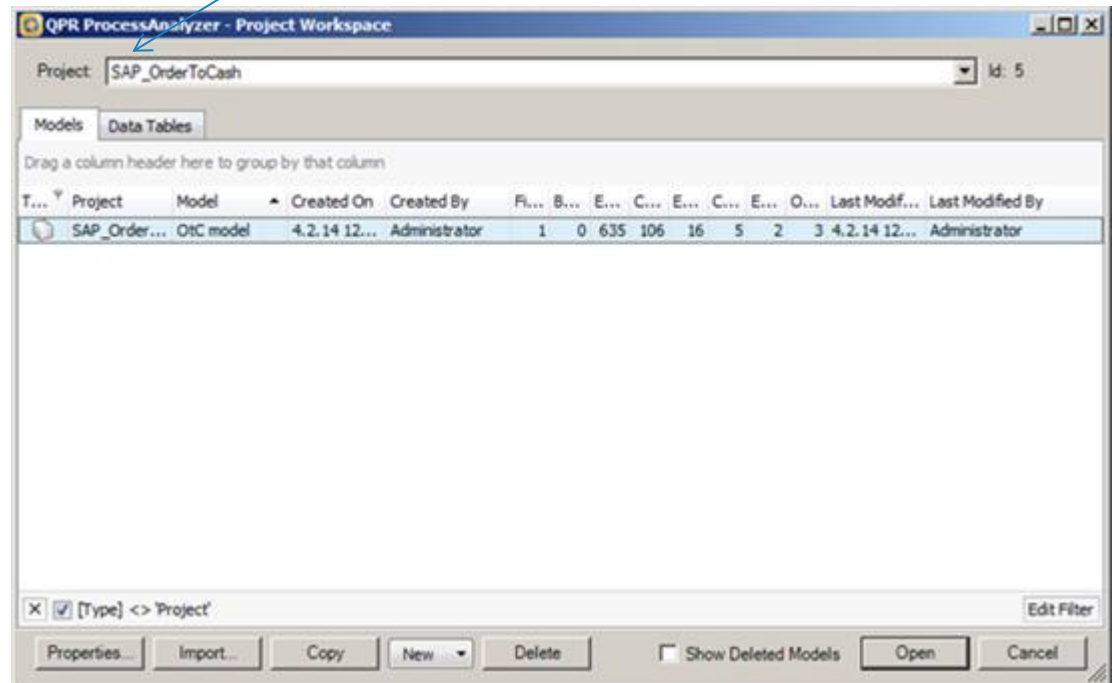
- Tip: In certain circumstances MS Office may deactivate add-ins. If the tab for already installed ProcessAnalyzer disappears, check the status of QPR ProcessAnalyzer add-in from MS Office Excel options.

Start

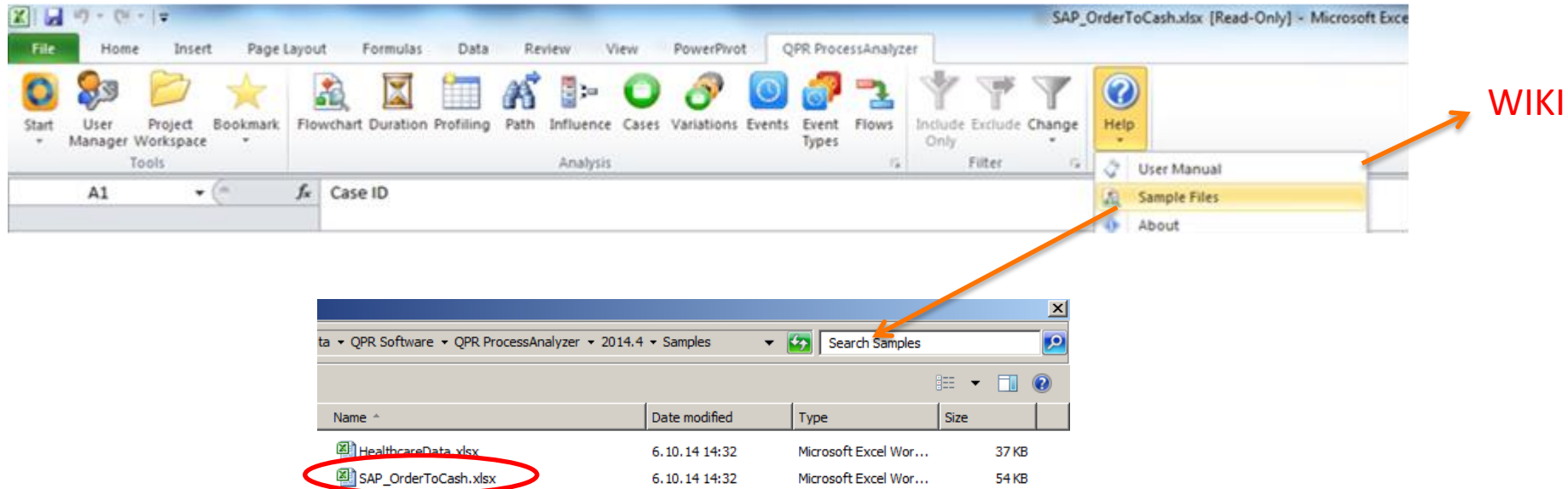
- The Excel add-in connects to the QPR ProcessAnalyzer service. Once the connection is established successfully, the Project Workspace dialog appears. (Note that the contents of the listed projects may vary from the screenshot below.)
- Click "Open" to open the highlighted model or "Cancel" to proceed without opening.

Active project (collection of process analysis models)

Available models



Getting demo data



The screenshot shows the Microsoft Excel interface with the QPR ProcessAnalyzer ribbon. The Help menu is open, and the 'Sample Files' option is highlighted. An arrow points from this option to a file explorer window. The file explorer window shows a list of sample files, with 'SAP_OrderToCash.xlsx' circled in red.

Name	Date modified	Type	Size
HealthcareData.xlsx	6.10.14 14:32	Microsoft Excel Wor...	37 KB
SAP_OrderToCash.xlsx	6.10.14 14:32	Microsoft Excel Wor...	54 KB

- ▶ Let's start with built-in sample file for OtC process
- ▶ Select "Help" from ribbon and load Sample file "SAP_OrderToCash"
 - Tip: for documentation & instructions refer to QPR ProcessAnalyzer Wiki
 - Wiki opens from "User Manual"
- ▶ In the Excel file:
 - Event data, Case data
 - Short instructions
 - Exercise questions

Cases and Event types, Events, and Timestamps

Relation of QPR ProcessAnalyzer data and
process visualization

Summary of QPR ProcessAnalyzer data concept

Event data

(compulsory)

The process:
How did this case proceed?

A sequence of Events

Data
Multiple rows for each Case
Optional Event attributes apply to individual events

Case data

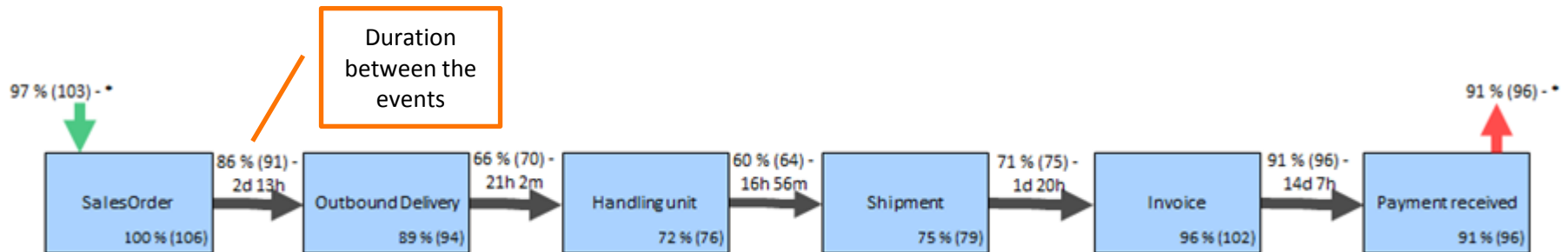
(optional)

The explanations:
What is this case?

A set of Case attributes

Data
One row for a Case
Attributes describe the complete case

A case is a sequence of events



Case	Event Type	Start Time
114483567	Sales Order	24.5.11 02:25
79545494	Sales Order	24.5.11 09:38
61426559	Sales Order	24.5.11 21:59
2003679498	Sales Order	25.5.11 09:03
884989895	Sales Order	26.5.11 16:09
2003679498	Outbound Delivery	27.5.11 02:31
79545494	Outbound Delivery	27.5.11 03:31
114483567	Outbound Delivery	27.5.11 04:21

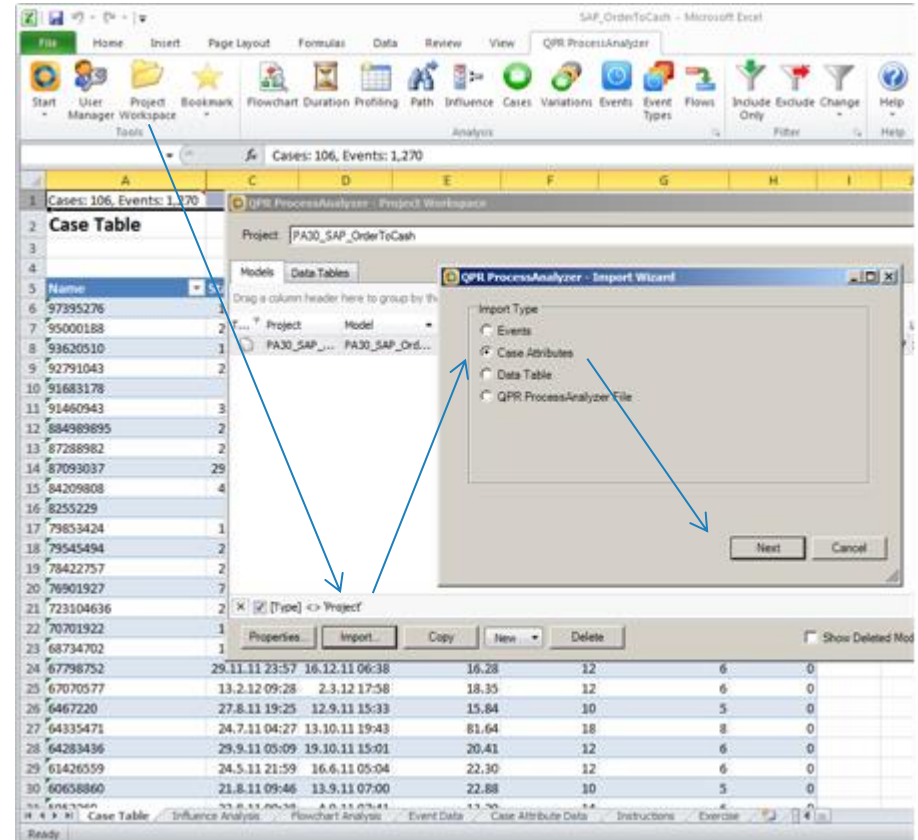
Event data with timestamps

- ▶ **Event type** = name of an event ("activity name")
- ▶ **Event** = specific event with a timestamp
- ▶ **Duration** = time between successive event timestamps
- ▶ There is only one timestamp associated with an activity
 - Tip: if the start and end times of an activity are of importance, code them as two events e.g. Sales Order (start) / Sales Order (end)

Import

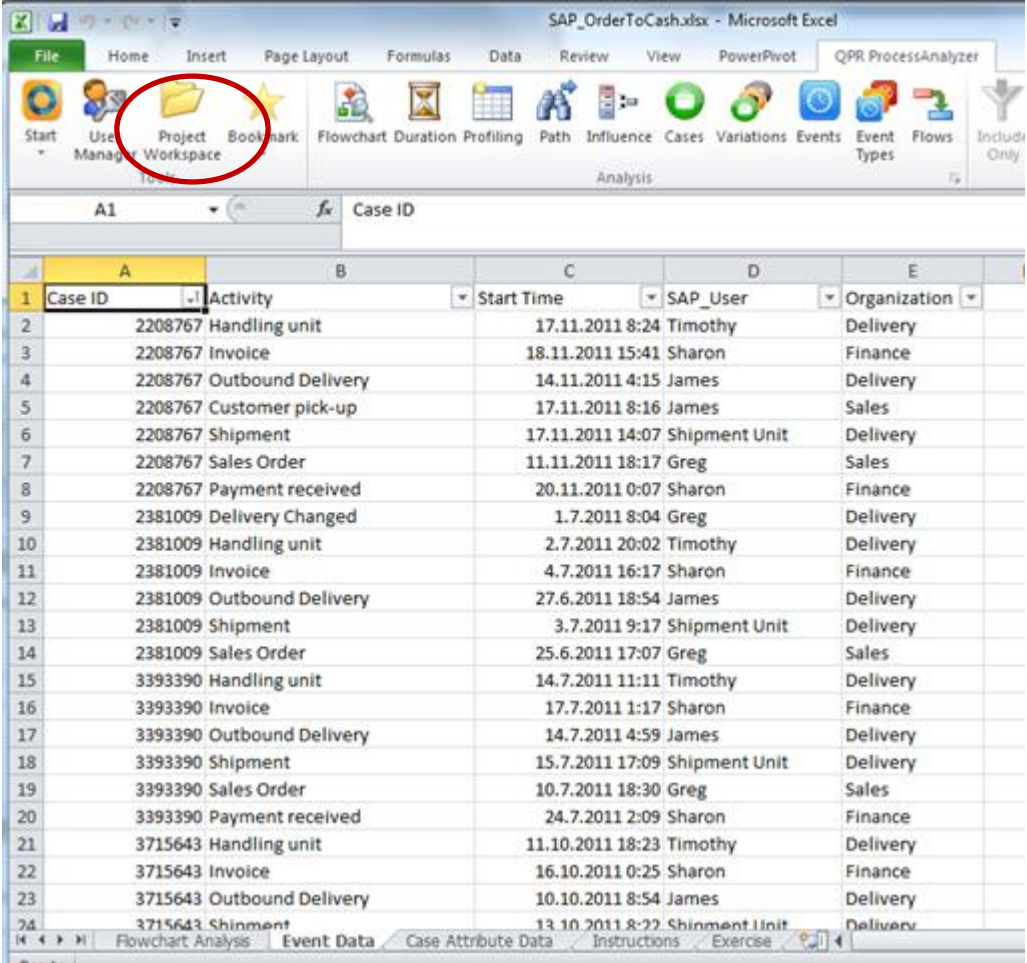
Import data from Excel sheets

- ▶ Open "Project Workspace"
- ▶ Select "Import"
 - Note: what is in the project/model list is not of importance here
- ▶ Select Events, Case Attributes or Data Table
 - Example figure applies to "Case Attributes"
- ▶ The fourth radio button "QPR ProcessAnalyzer File" is meant for Exported Model
 - see Wiki



(1) Import Events and Event attributes

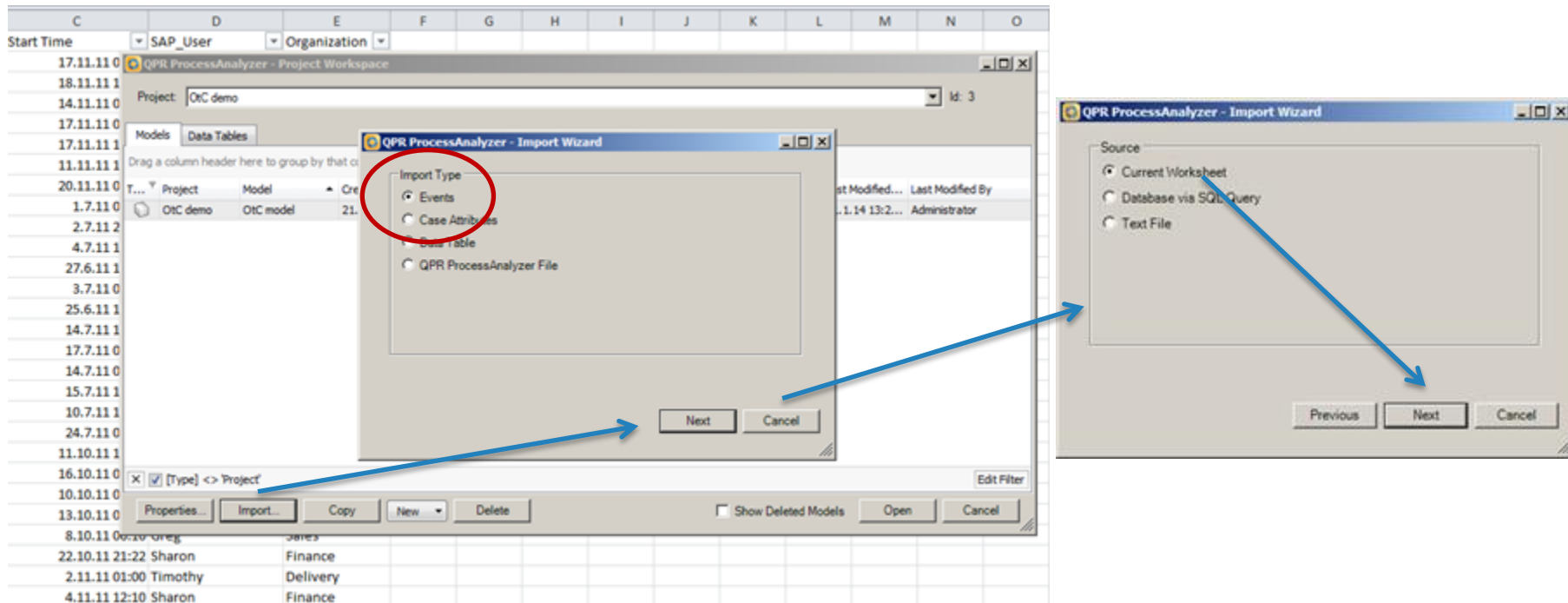
- ▶ Select the sheet with Events and Event attributes
- ▶ Select "Project Workspace"
- ▶ Note: what is in the project/model list is not of importance here...



Case ID	Activity	Start Time	SAP_User	Organization
2208767	Handling unit	17.11.2011 8:24	Timothy	Delivery
2208767	Invoice	18.11.2011 15:41	Sharon	Finance
2208767	Outbound Delivery	14.11.2011 4:15	James	Delivery
2208767	Customer pick-up	17.11.2011 8:16	James	Sales
2208767	Shipment	17.11.2011 14:07	Shipment Unit	Delivery
2208767	Sales Order	11.11.2011 18:17	Greg	Sales
2208767	Payment received	20.11.2011 0:07	Sharon	Finance
2381009	Delivery Changed	1.7.2011 8:04	Greg	Delivery
2381009	Handling unit	2.7.2011 20:02	Timothy	Delivery
2381009	Invoice	4.7.2011 16:17	Sharon	Finance
2381009	Outbound Delivery	27.6.2011 18:54	James	Delivery
2381009	Shipment	3.7.2011 9:17	Shipment Unit	Delivery
2381009	Sales Order	25.6.2011 17:07	Greg	Sales
3393390	Handling unit	14.7.2011 11:11	Timothy	Delivery
3393390	Invoice	17.7.2011 1:17	Sharon	Finance
3393390	Outbound Delivery	14.7.2011 4:59	James	Delivery
3393390	Shipment	15.7.2011 17:09	Shipment Unit	Delivery
3393390	Sales Order	10.7.2011 18:30	Greg	Sales
3393390	Payment received	24.7.2011 2:09	Sharon	Finance
3715643	Handling unit	11.10.2011 18:23	Timothy	Delivery
3715643	Invoice	16.10.2011 0:25	Sharon	Finance
3715643	Outbound Delivery	10.10.2011 8:54	James	Delivery
3715643	Shipment	13.10.2011 8:22	Shipment Unit	Delivery

(1) Import Events and Event attributes

- ▶ Ensure that the "current worksheet" is the one that includes the proper data!



(1) Import Events and Event attributes

► Create a new model

QPR ProcessAnalyzer - Import Wizard

Destination

☒ Create New Model

Project: OtC demo Id: 651

Model Name: My OtC model

☐ Add To Existing Model

Project: OtC demo Id: 651

Model: OtC demo Id: 1635

Previous Import Cancel

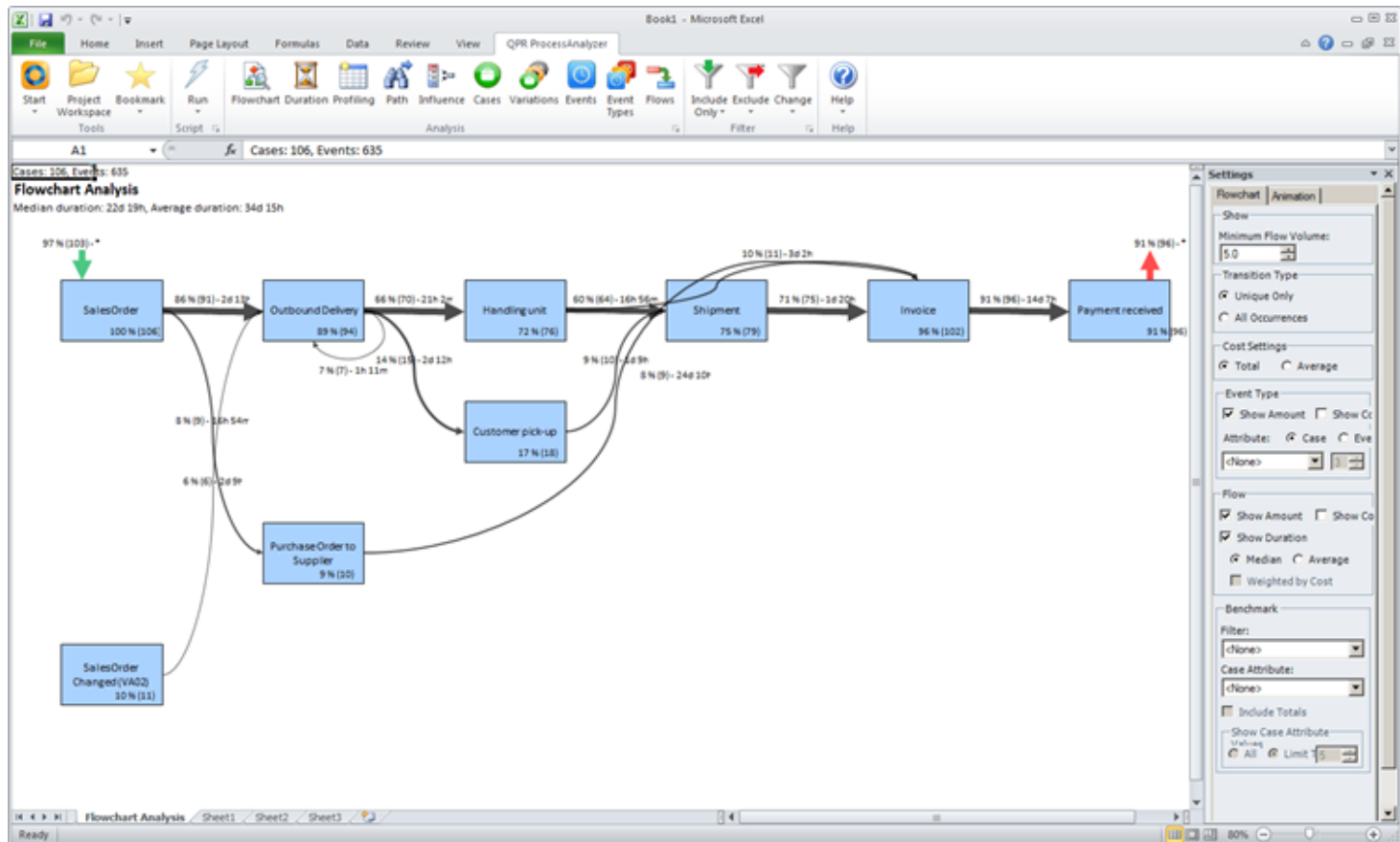
1. Select Project. Models are organized into Projects. (You have similar access rights to all models within a project.)

2. Give a name for the model.

3.

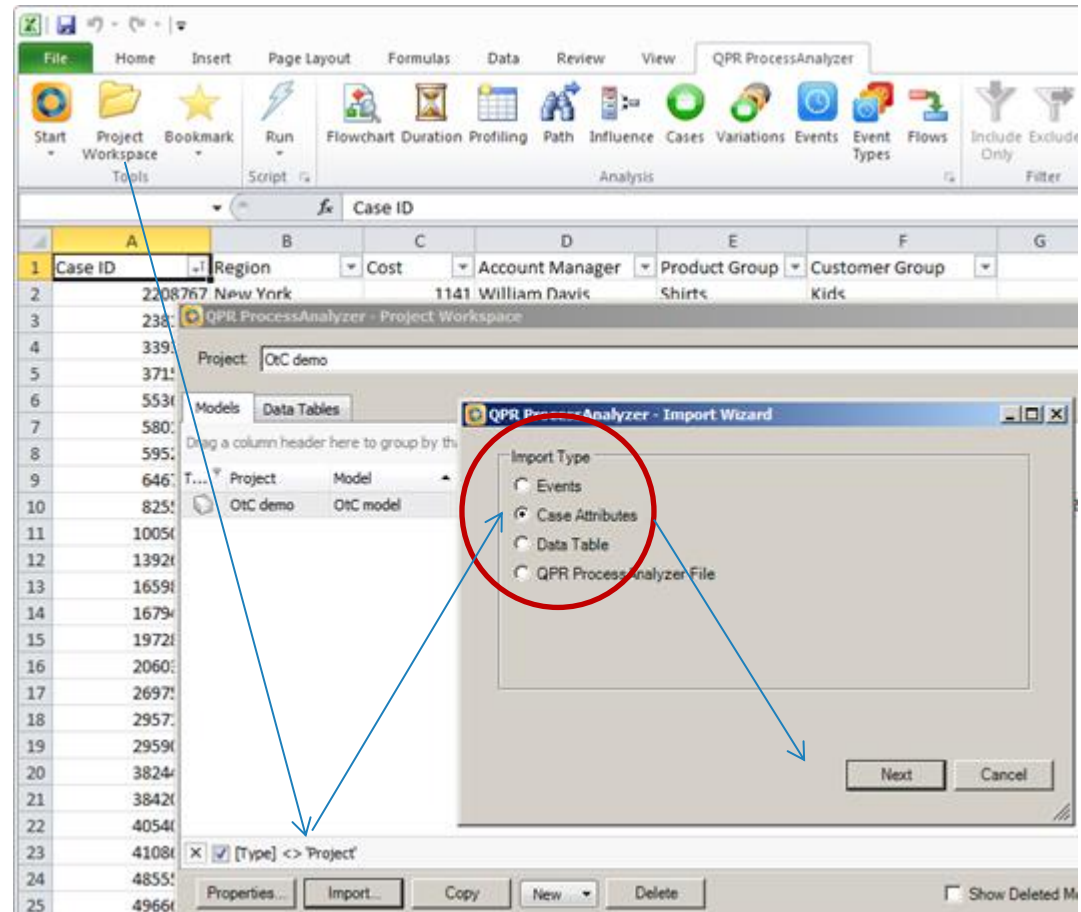
Process Model

- ▶ Your first model! QPR ProcessAnalyzer automatically renders the Flowchart Analysis



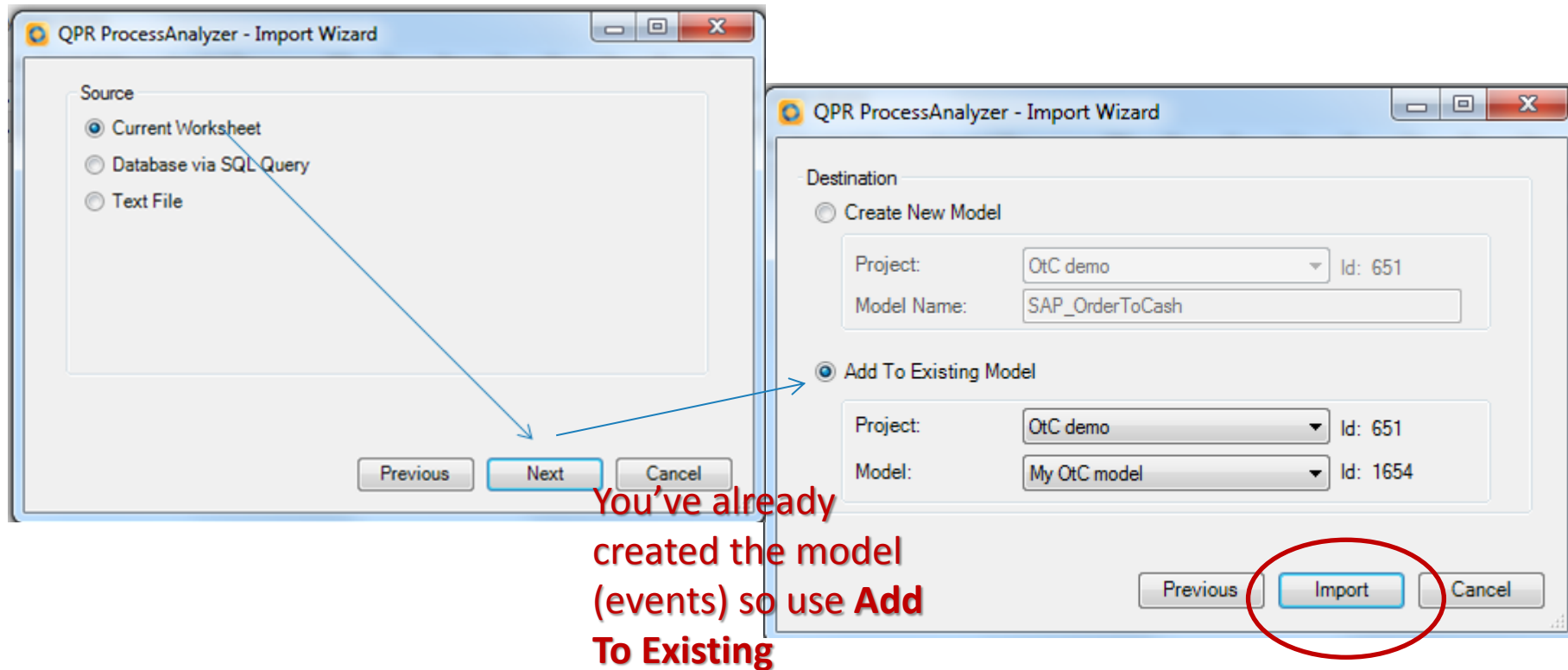
(2) Import Case attributes

- ▶ Select the sheet with Case attributes
- ▶ Select "Project Workspace"
- ▶ Proceed as with events but remember to select "Case Attributes"



(2) Import Case attributes

- ▶ Ensure that the "current worksheet" is the one that includes the proper data



Details

Details and advanced features of data load and data format

Case vs. Event attributes in practice

▶ Conceptually

- Case attribute refers to a complete Case
- Event attribute refers to an individual Event

▶ Technically

- An attribute can be used as a Case attribute if it can have only one value during one Case
 - Example: Opportunity creator is conceptually related only to Order creation but can be used as a Case attribute (since it can't get several values during a case)

▶ Current usage in analysis tools

- *Case attributes can be used in Influence Analysis and Benchmarking, Profiling, Flowcharts, and Case Analysis functionality*
- Currently Event attributes have more limited use: Flowcharts and Profiling
 - Note: Even if some attribute is "conceptually" associated with an event, it can be used in analytics as a Case attribute as far as the technical specification holds. That is, the attribute value must be unambiguous for one Case.

Load data (format details)

▶ Event data

- Excel sheet format
 - First line must have a header
 - First three columns are always reserved for CaseID, Event type name, and Timestamp in this order. Yet there must be a label, it may be whatever.
 - Timestamp must be in date/time format
 - There may be additional Event Attributes. Their label is taken as the labeling in Process Analyzer.
 - There is a reserved, special label "Cost" that defines Event Cost
- Format (CSV, MS SQL)
 - Refer to Wiki <http://devnet.qpr.com/pawiki/index.php/Workspace>

▶ Case data

- Excel sheet format
 - First line must have a header
 - First column is always reserved for CaseID. Yet there must be a label, it may be whatever.
 - From 2nd, 3rd, ... columns are the Case attributes. Their label is taken as the labeling in Process Analyzer.
 - There is a reserved, special label "Cost" that defines [Case] Cost.
- Format (CSV, MS SQL)
 - Refer to Wiki <http://devnet.qpr.com/pawiki/index.php/Workspace>

Load data (format and functional details)

▶ Event data

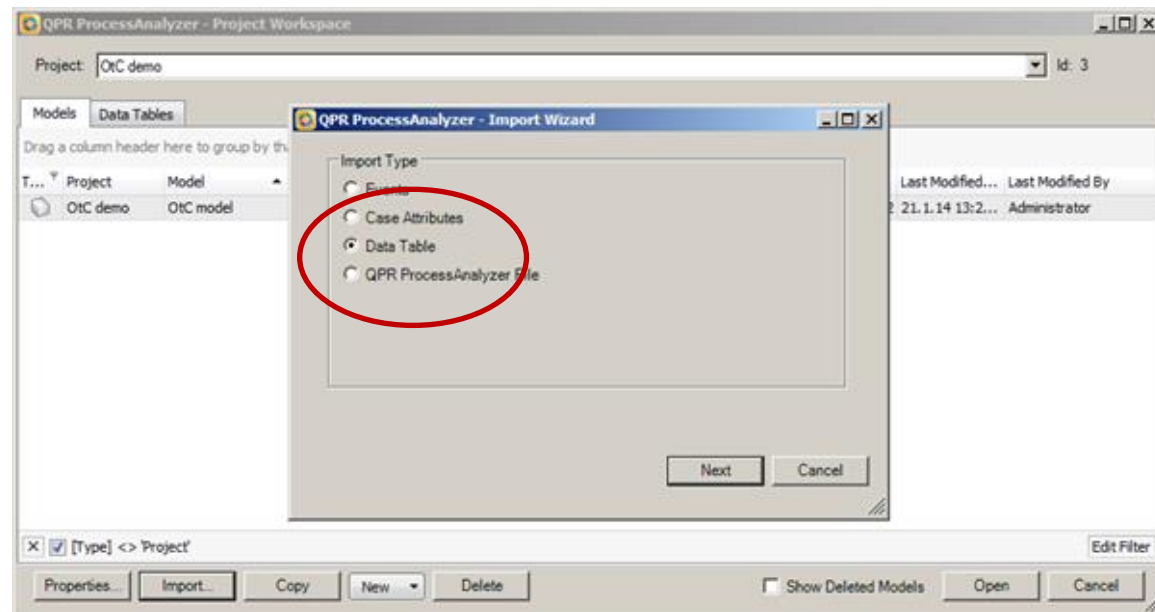
- There must not be
 - Missing case ID for any line
 - Missing timestamp for any line
- If you load events in several batches, these are *always appended* to data
 - You don't have to prepare and load all data at once, but you can load it in several batches
 - **You cannot add new event attributes for existing events nor overwrite existing ones**
- You cannot remove events from the model
 - Tip: If you make a mistake, and don't want to start a new model from scratch – load only the erroneous event type again on a new name and exclude the invalid event type in analysis

▶ Case data

- There must not be
 - Duplicate case IDs in the same file
 - Missing case ID for any line
- There may be case IDs for which there are no Events in the model. These are stored, but not used in analysis.
- Loading additional case data
 - **Case attributes are recognized by their labels:** they may appear in whatever order but remember that the first column is always the case ID, no matter what its label is.
 - For existing case IDs and attributes: if you load the same case IDs again, the data is overwritten
 - If there are new case attributes, these are appended
 - **You can add new case attributes to existing cases and overwrite existing values**
- You cannot remove a case attribute from the model

Data Table Import

- ▶ Data Tables are user-defined tables tied to projects in QPR ProcessAnalyzer Service
- ▶ You need Administrator rights to the project to import them
- ▶ Imported tables can be used in scripts



More advanced: SQL and CSV

- ▶ Direct import from CSV files or MS SQL database
 - If data is readily in MS SQL database / CSV, one will skip the redundant step of importing it to Excel and again to ProcessAnalyzer
 - Especially useful with large amounts of data (no Excel restrictions)
- ▶ See Wiki for instructions

Manage scripts

- ▶ Scripts allow user to develop ETL scripts in their own context and share the ready-made scripts inside a project

1. Access Script Manager from the Script tab

The screenshot displays the QPR ProcessAnalyzer software interface. At the top, the Microsoft Excel ribbon is visible with the 'Script' tab highlighted. Below the ribbon, a flowchart titled 'Flowchart Analysis' shows a process flow with nodes: 'Sales Order' (100% (106)), 'Outbound Delivery' (89% (94)), 'Purchase Order to Supplier' (9% (10)), and 'Sales Order Changed (VA02)' (10% (11)). Arrows indicate the flow between these nodes with associated percentages and counts. Overlaid on the flowchart are two windows: 'QPR ProcessAnalyzer - Script Manager' and 'QPR ProcessAnalyzer - Script Properties'. The 'Script Manager' window shows a list of scripts with columns for Name, Context, and Date. The 'Script Properties' window shows details for a script named 'Path durations' (Id: 20004), including its GUID, support link, group, tags, and a description. The script code is displayed in a text area, showing a complex SQL query for path analysis. The 'Run' button is visible at the bottom of the 'Script Properties' window.

For more information on ETL scripts, see Wiki

Discovery

Flowchart

Path Analysis

Selecting, Filtering

Analysis Tools used & Excel sheets

- In this section, we use three Analysis tools (Flowchart, Profiling, and Path) from the Tools ribbon
- Whenever you start an analysis, the result will appear on a specific Excel sheet
- When you re-run the analysis, the corresponding sheet gets overwritten
- Tip: If you wish to save an analysis result, rename the sheet on a non-reserved name.

Management

Analysis tools

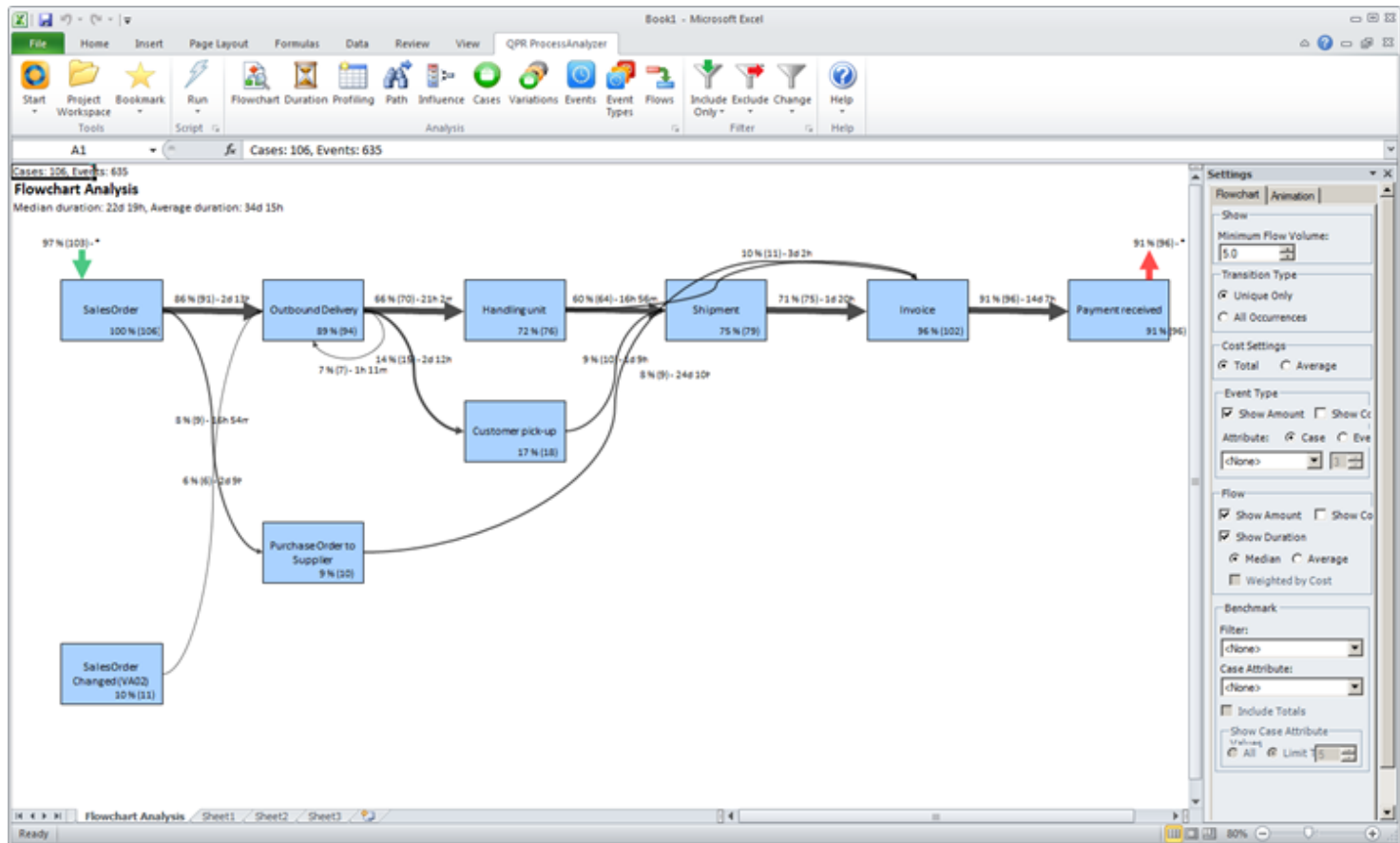
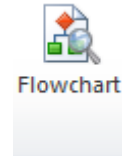


Filter
Browse
Navigate



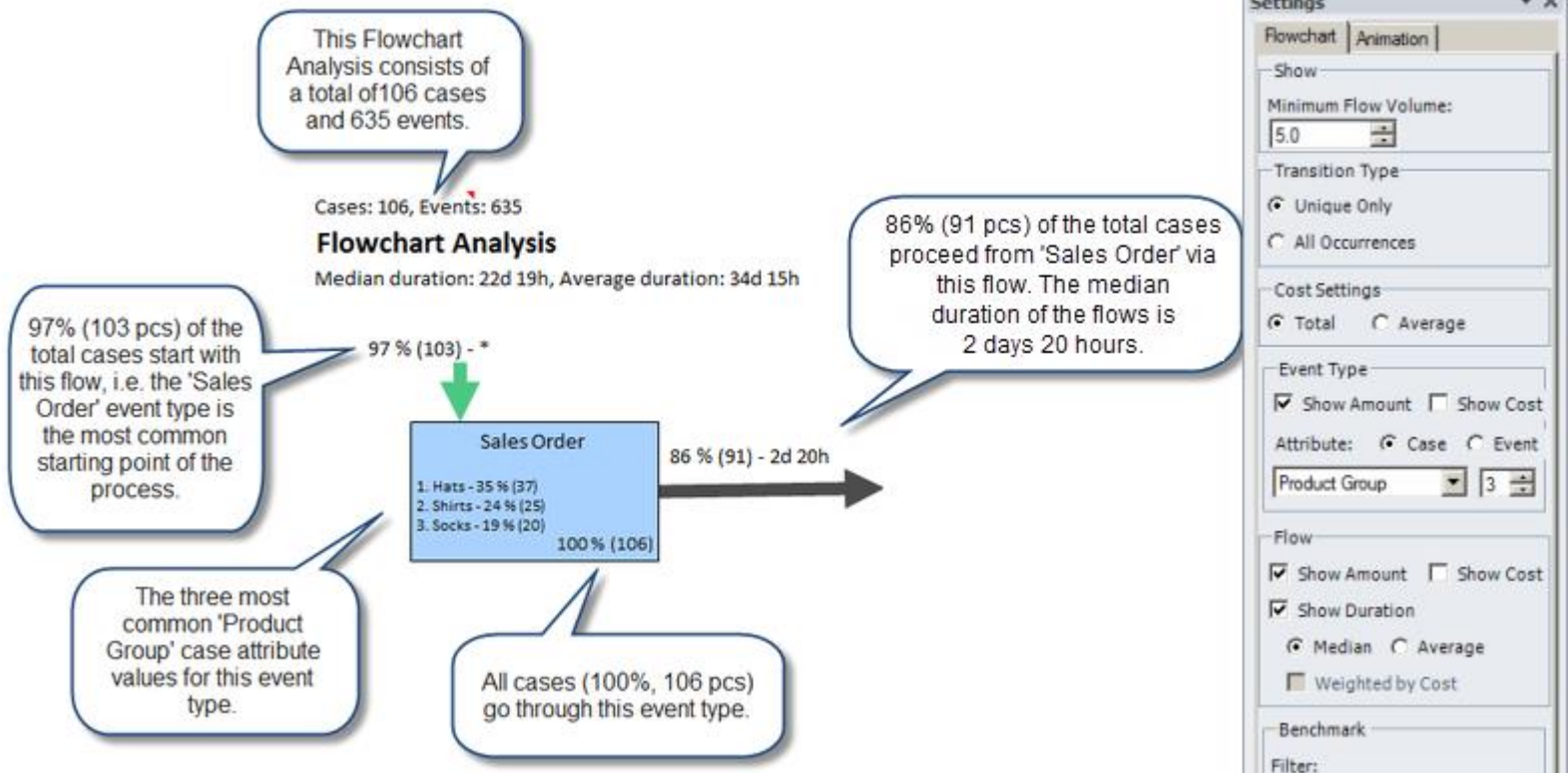
Flowchart view

You can re-run Flowchart Analysis by clicking



Basic concepts

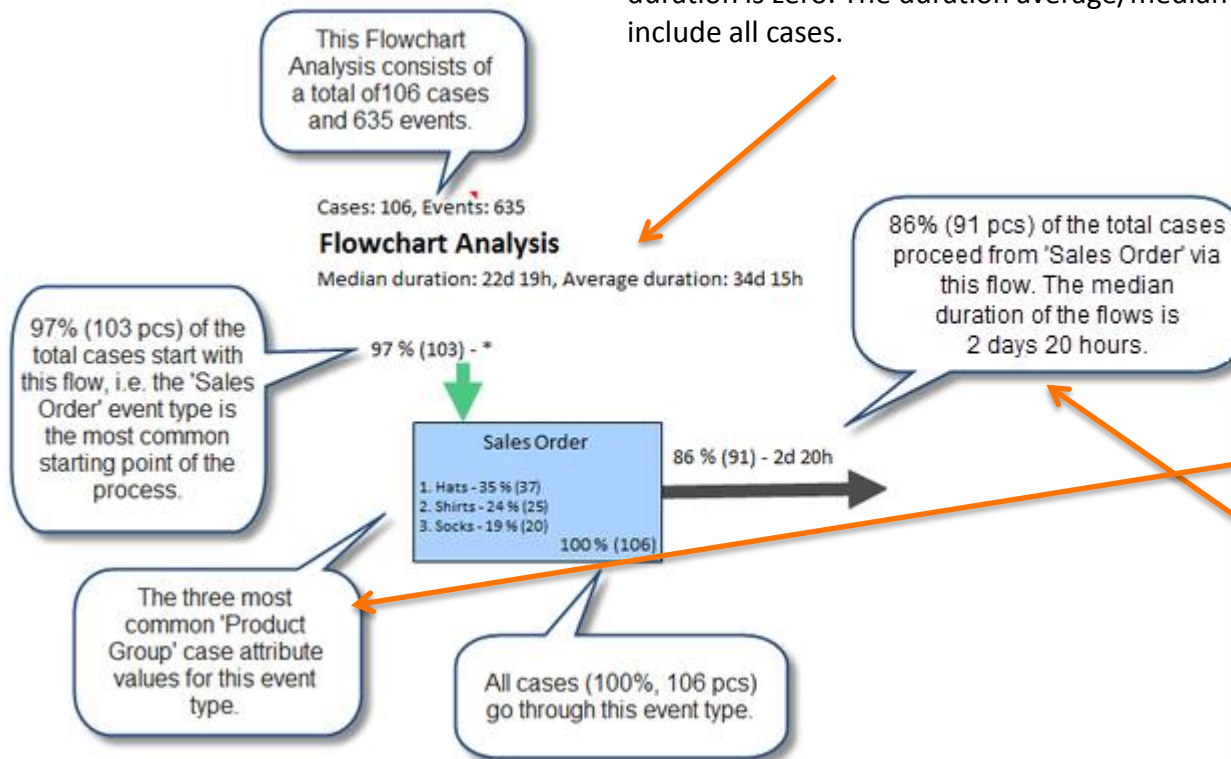
► Flowchart view elements



Basic concepts

Don't show flows that involve less than 5% of cases

Duration from start-to-end. Note: the duration is measured. If there is only one event, the duration is zero. The duration average/median include all cases.



Settings

Flowchart | Animation

Show

Minimum Flow Volume: 5.0

Transition Type

☒ Unique Only
☐ All Occurrences

Cost Settings

☒ Total ☐ Average

Event Type

☒ Show Amount ☐ Show Cost

Attributes: ☒ Case ☐ Event

Product Group: 3

Flow

☒ Show Amount ☐ Show Cost
☒ Show Duration

☐ Median ☒ Average
☐ Weighted by Cost

Benchmark

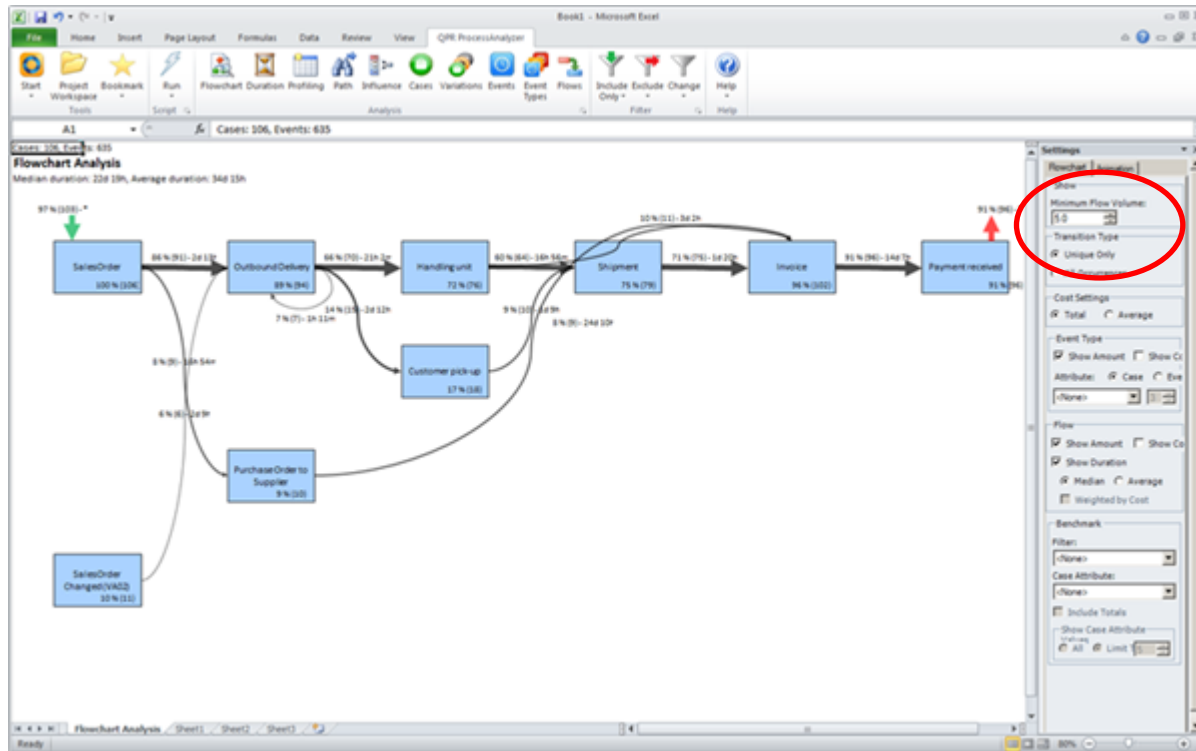
Filter:

Control event type labeling

Control the flow labeling

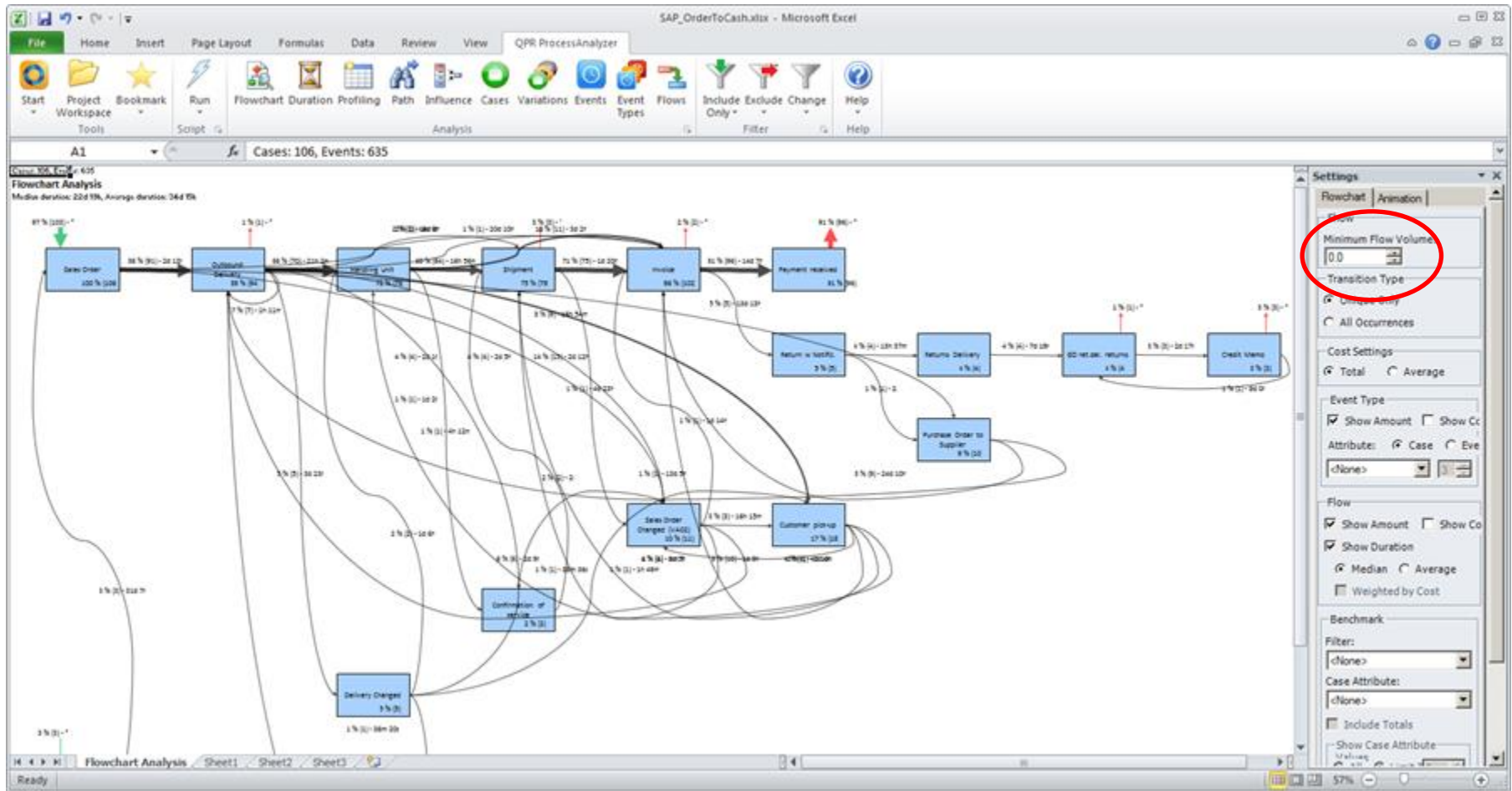
Example

- ▶ Show the data – event ID etc.
 - Look at the high level 'as-is' image which is simple
 - Lower the flow volume from 5.0 to 0.0 and see how “the spider web” appears and the reality is not as simple as one expects it to be
 - Example of **conformance mapping**:
 - The organizations/process owners/analysts can see if the created process model matches reality
 - Add also the Cost/ Case attribute information to the event type



1. 'as-is' situation

Here is the current process. It looks fairly clean and functioning.
Note that the minimum flow volume is at 5 – change it to 0.

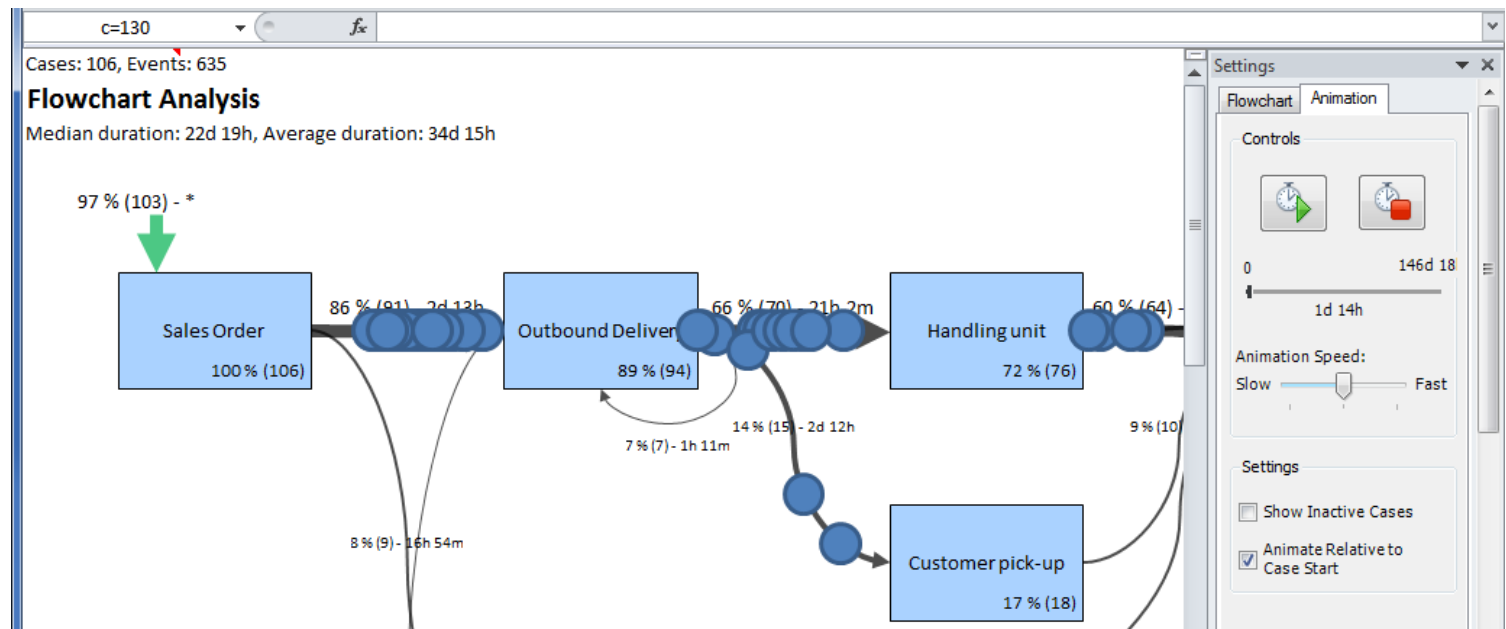


2. The spider web 'as-is'

With 0 as the Flow Volume, the real status of the process flow is clearly shown with all its deviations.

Flowchart animation

- ▶ Shows the execution of cases according to their sequence and timestamp durations
- ▶ Helps in visualizing bottlenecks and problems in the process



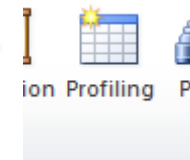
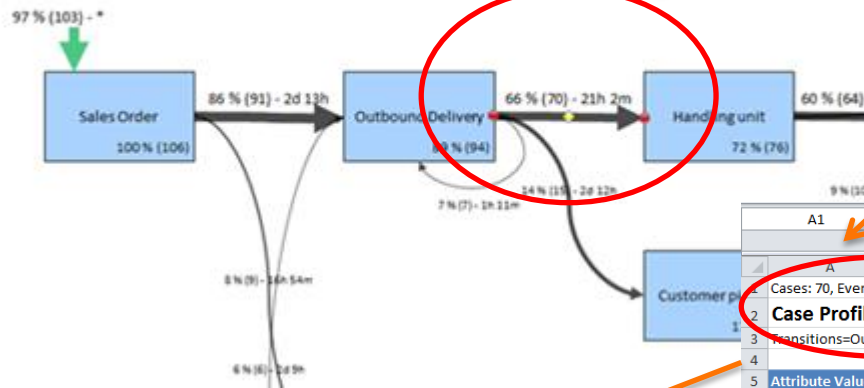
Drilling-down and analyzing

- ▶ From most analysis views you can select
 1. graphical objects (event type boxes, flow arrows, and/or start/termination arrows)
 2. cells from tables
- ▶ After selection, you can start any other analysis tool from the ribbon
 - The analysis is now performed once on the subset of data that you just selected
 - In order to continuously use a specific subset of data for analysis, you use Filters: Include and Exclude
- ▶ Tip: In addition to selecting the objects from the Flowchart view you can for example
 - Select specific variations in the Variations view
 - select Influence to know the characteristic attributes for these variations
 - select Duration to see the cycle time of the variation
 - Select a certain path in the Path view and check all cases (Case Analysis) or that go through this path
 - Example: see from which sub-variations (possibly labeled using event attributes) one arrives to a certain event type

Select & Analyze

1. Select an object

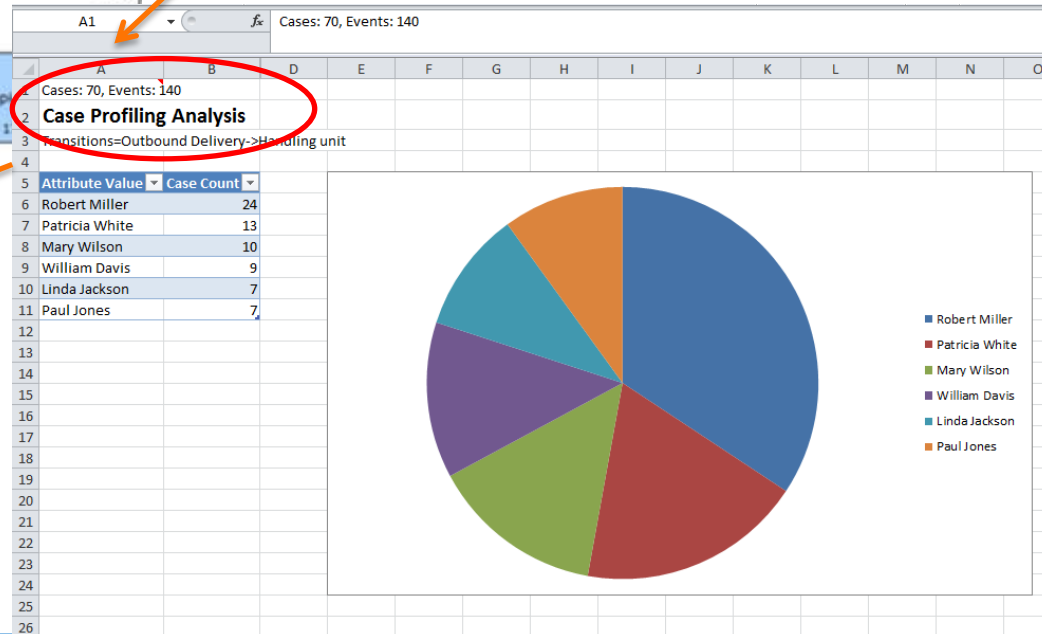
Cases: 106, Events: 635
Flowchart Analysis
Median duration: 22d 19h, Average duration: 34d 15h



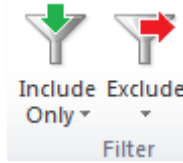
2. Select an analysis

3. The selection to which the analysis applies is shown

4. Next time you open the Flowchart, the selection is reset



Filtering

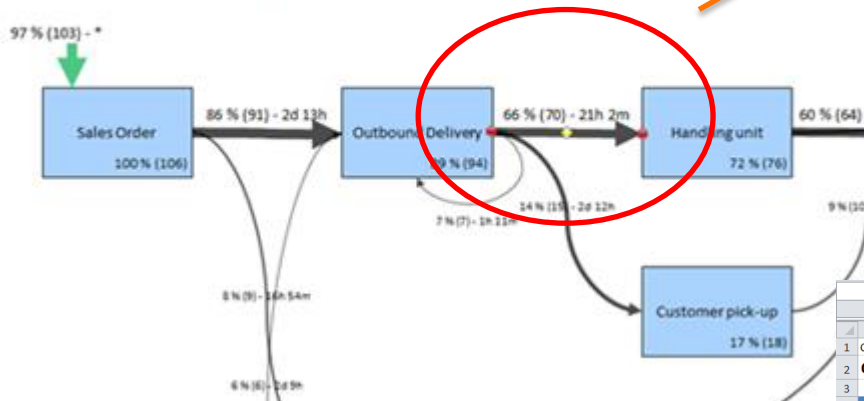


- ▶ A persistent selection can be made by filtering
 - Cases
 - Event types
- ▶ Filtering allows
 - **Concentrating on relevant parts of the process in the context of the analysis task.** Examples:
 - analyze only *Los Angeles* (include only the cases with the case attribute *region=Los Angeles* in the Profiling view)
 - analyze only the cases not yet invoiced (exclude cases that contain event "Invoiced" in Event Type table or Flowchart...)
 - analyze the full lead time between Sales order and Picking request (exclude other event types)
 - **Cleansing erroneous or exceptional behavior**

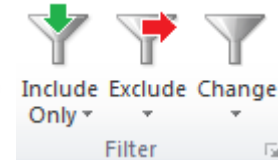
Filter & Analyze

1. Select an object

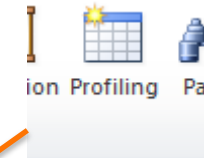
Cases: 106, Events: 635
Flowchart Analysis
Median duration: 22d 19h, Average duration: 34d 15h



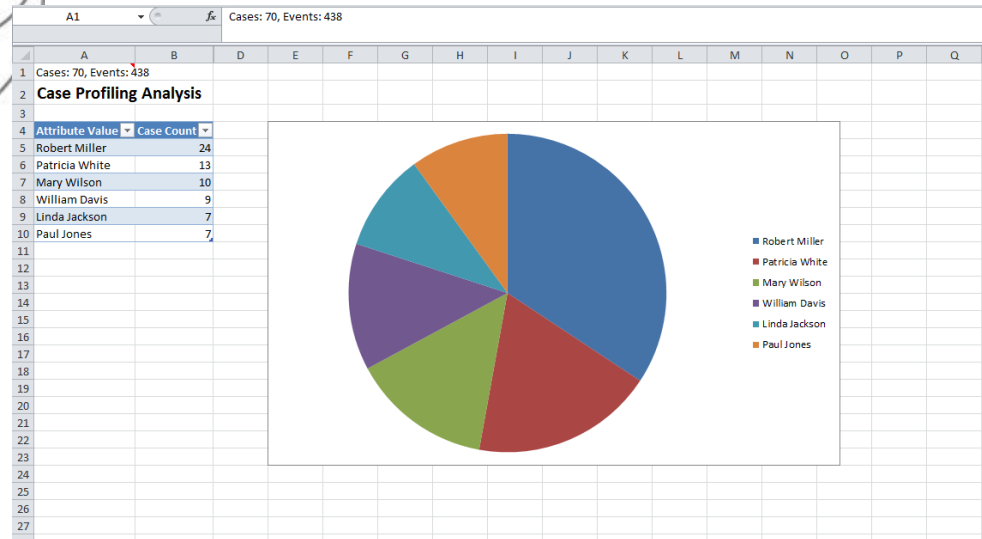
2. Filter (include only cases)



3. Select an analysis



4. Next time you open the Flowchart, the filter persists



Filtering

- ▶ Note that there is now no selection label
 - *Cell A1* shows that there is a filter
 - Filter appears to Filter stack
- ▶ We'll come back to this later on

Cases: 106, Events: 635

Case Profiling Analysis

Attribute Value	Count
Robert Miller	1
Patricia White	1
Mary Wilson	1
William Davis	1
Paul Jones	1
Linda Jackson	1

Profiling Analysis

Processing time: 0,067 seconds
Created: 22.1.2014 8:42:24
Filter name: Default (Id=39123)
Model name: OtC demo (Id=25400)
Model created: 22.1.2014 8:40:32
Cases: 106 Total, 106 Visible
Events: 635 Total, 635 Visible
Activities: 16 Total, 16 Visible

AnalysisType=10
MaximumCount=100
FilterId=39123
ViewType=Case Table
ShowRelativeStart=False
ConfidencePercentage=50
SelectedActivityCounts=
SelectedCaseAttributes=
SelectedEventAttributes=
IncludeDurations=True
DurationType=0
DurationWeightedByCost=False
CostType=0
ShowCostForFlow=False
ShowCostForEventType=False
ShowAmountForFlow=True
ShowAmountForEventType=True
MinTransitionUsagePercentage=0.05
TransitionType=0
IncludeLayout=False
IncludeStatistics=False
ProcessAnalysisType=4
SelectedAttributeType=924869
AttributeName=Account Manager
TotalEventCount=635
TotalCaseCount=106
DatabaseId=dcf4daa5-136b-45ae-b819-c749a14034a6

Filters (details)

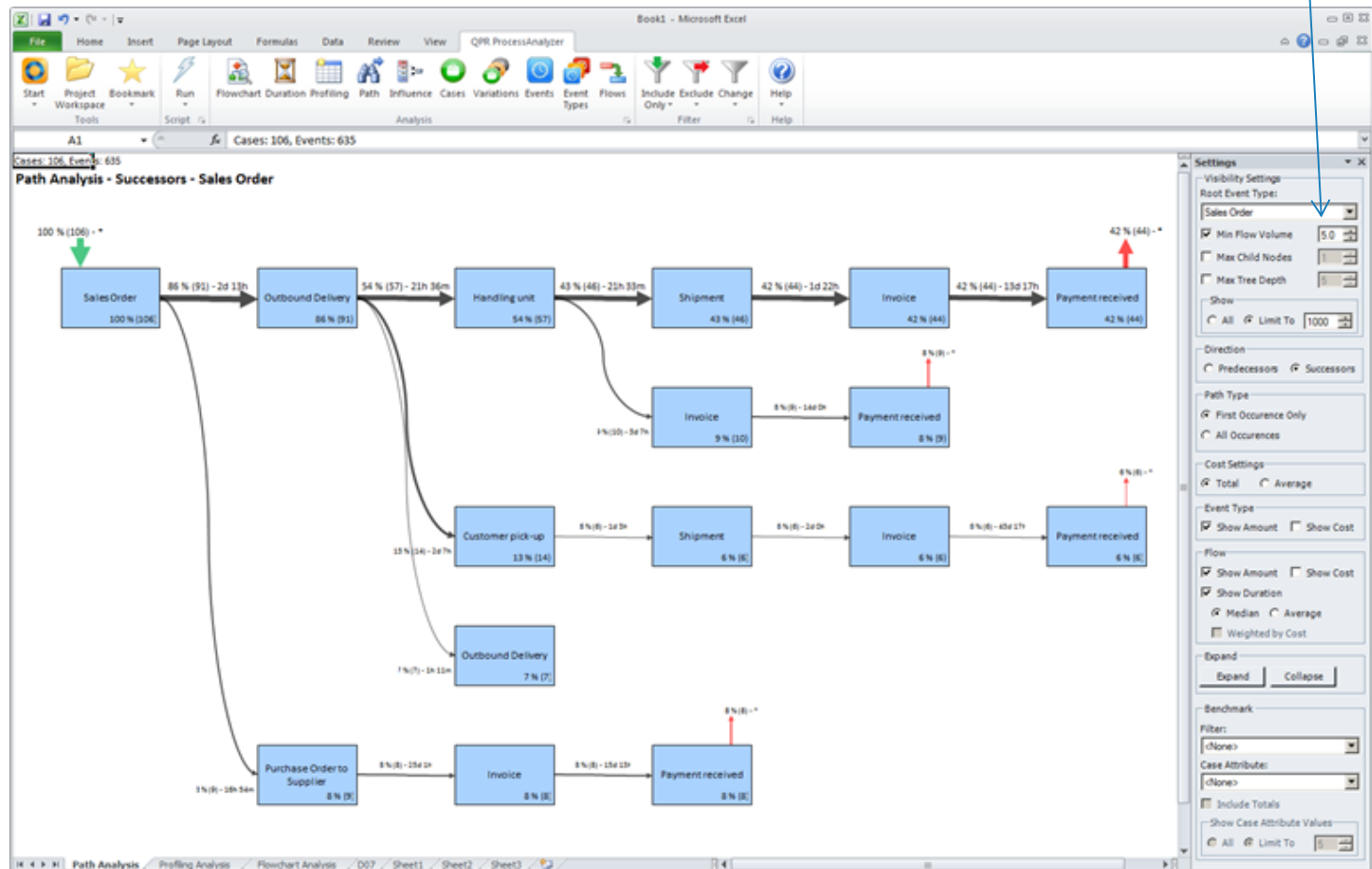
- ▶ Filters can be created almost from any selection made in any analysis view selection
 - A restriction: you cannot select specific *Events* to be filtered (only event types)
- ▶ Filters are applied "on top of each other"
 - i.e. you narrow your event type / case set as you proceed
 - Filters are collected into a stack, and you can recall an earlier filter whenever you wish
- ▶ You can specifically remove the previously made case, event type, or variation filter from the current filtered view
- ▶ When including cases by selecting several Event Types, QPR ProcessAnalyzer uses AND operation: you pick cases that include all of the selected events

Path view



- ▶ Another "helicopter view" for variation oriented view

Flow volume

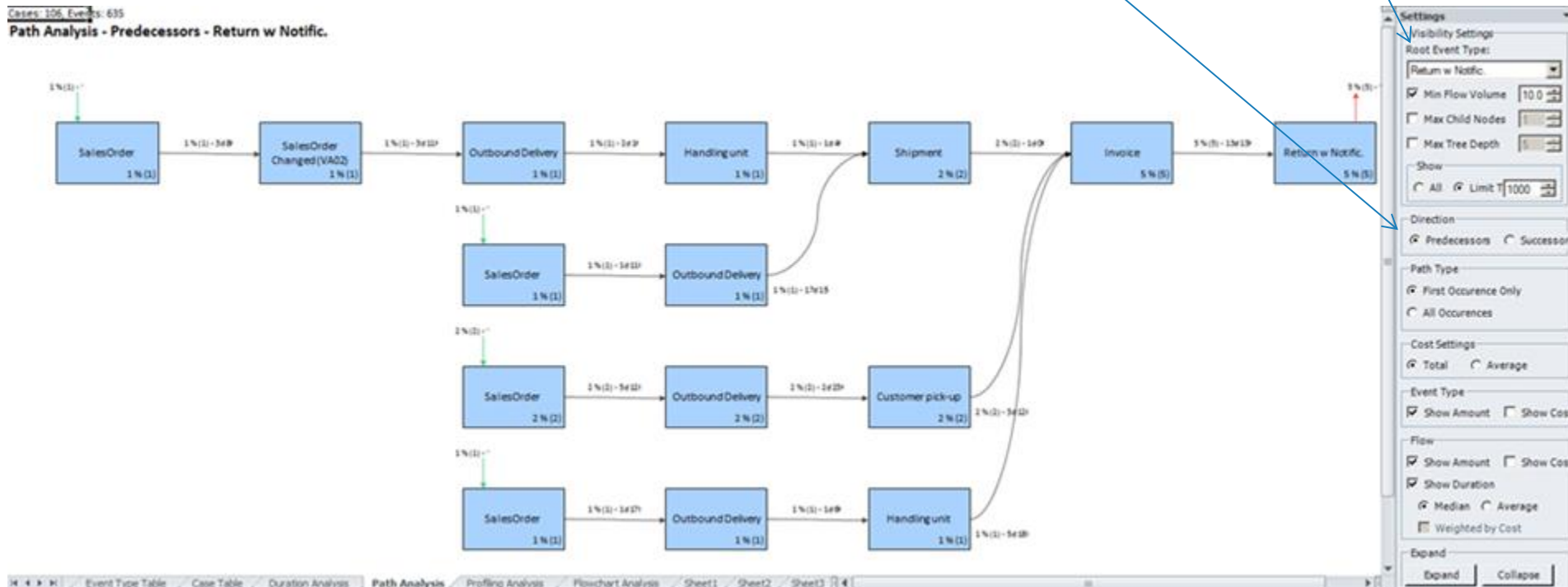


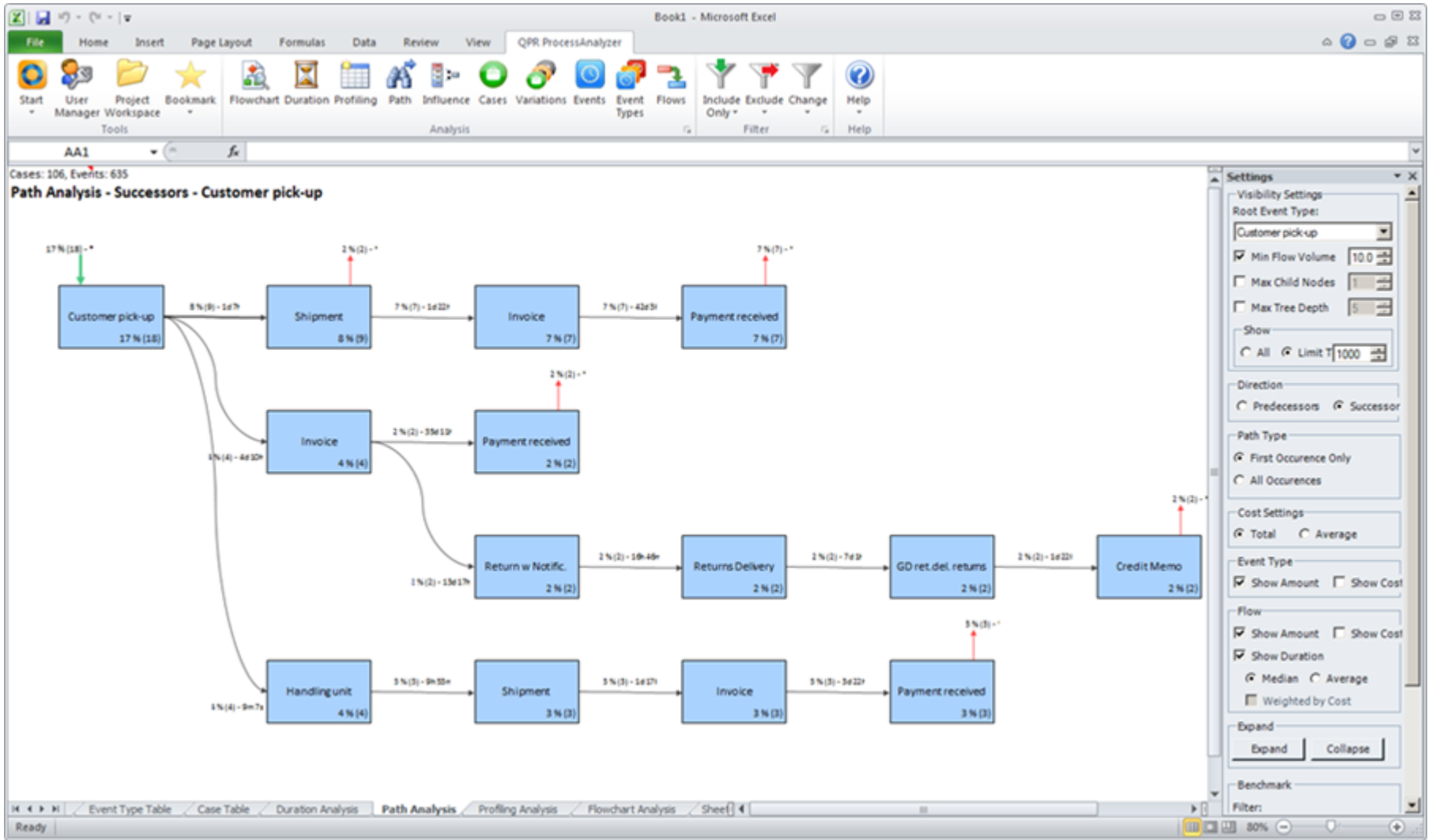
Successor / predecessor paths

- ▶ You can trace how the process ends up in a certain state

Root node (one or all)

Note that you can see paths to an event type





Path

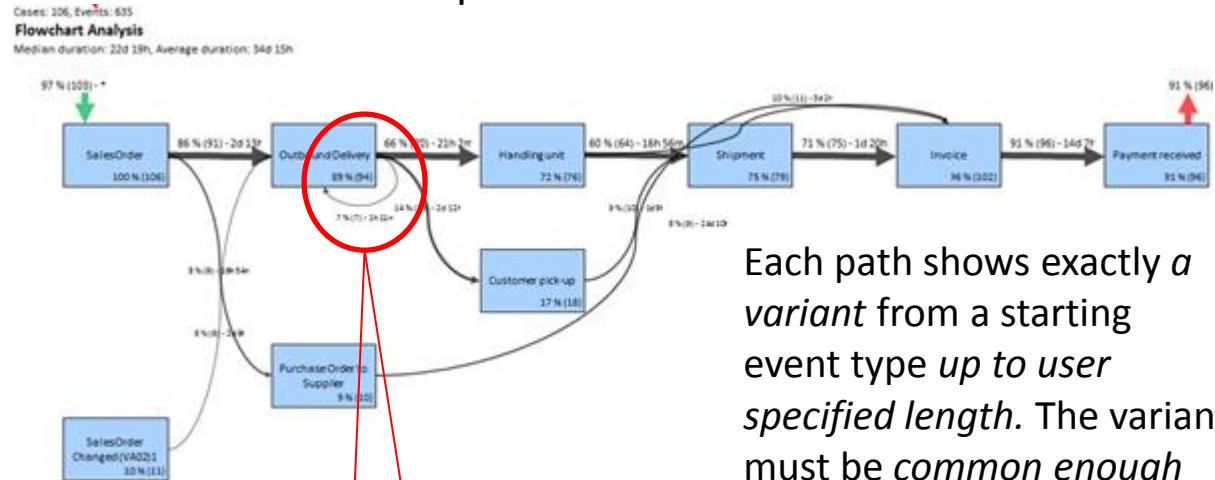
Look at the variation and see what process steps usually follow or lead to the variation.

Flowchart vs. Path view

Loops and recursions are easily spotted on Flowchart but "opened" in Path view

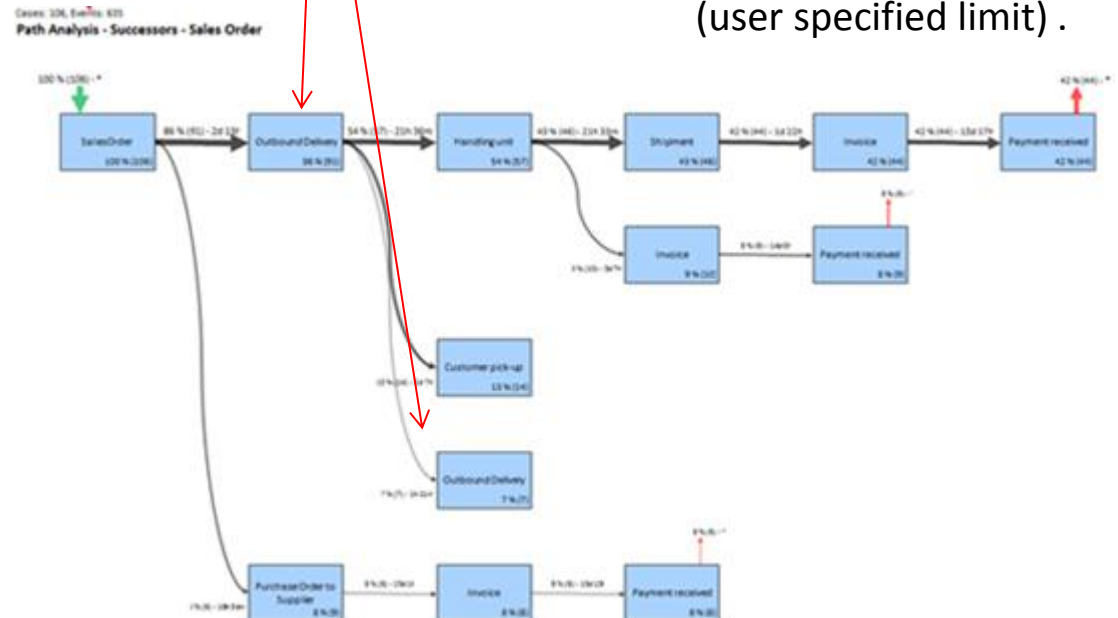
Flowchart view

- Ideal for overview
- Capable of compactly showing all transitions and event types
- Each event type and transition type shown only once
- Based on the same transition table as "Flows"



Path view

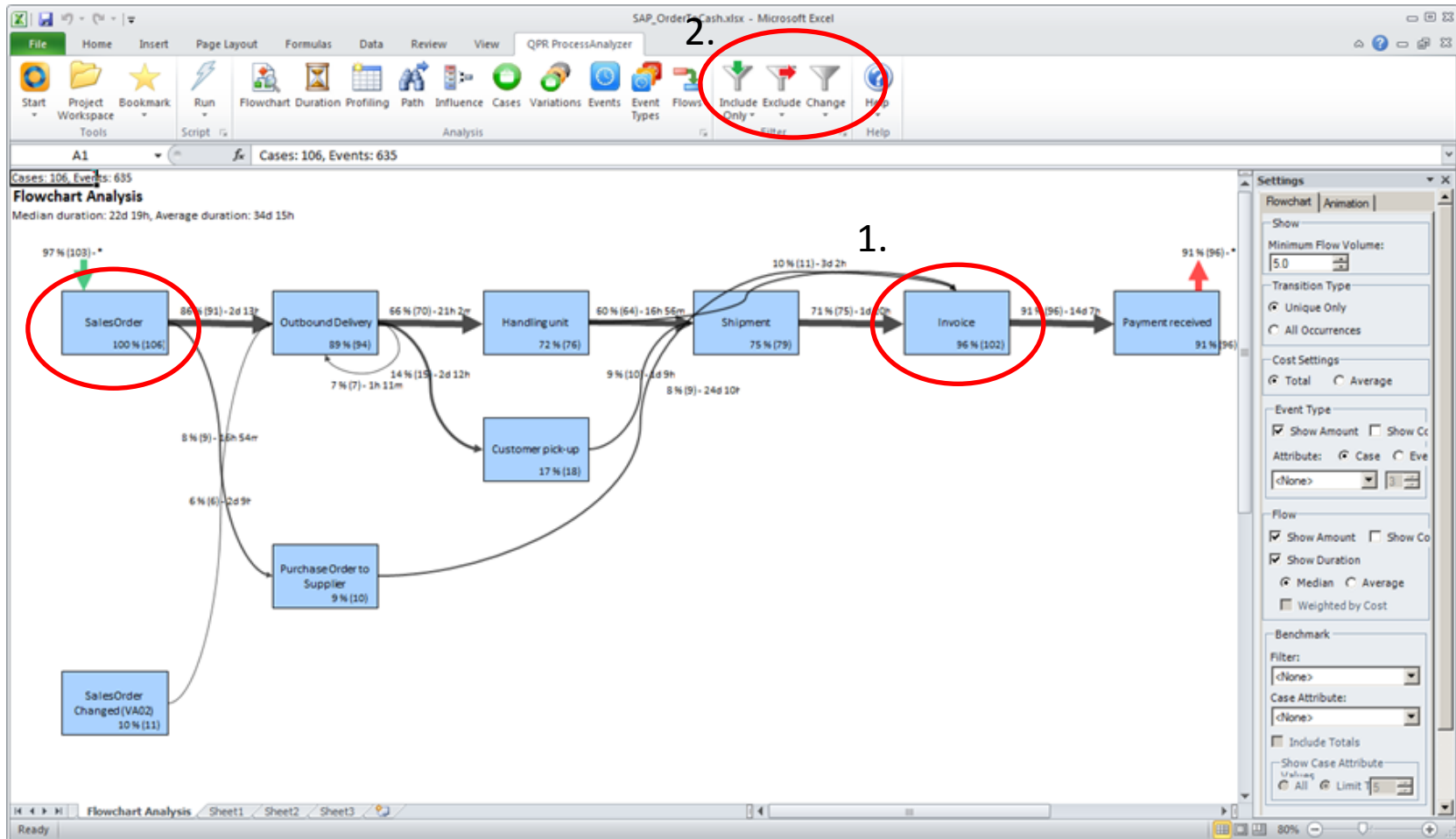
- Ideal for getting precise understanding of process variations in a structured manner
- Capable of showing all variants unambiguously
- Event and transition types reappear
- Based on tree structure either from or to some event type



Example

The scene

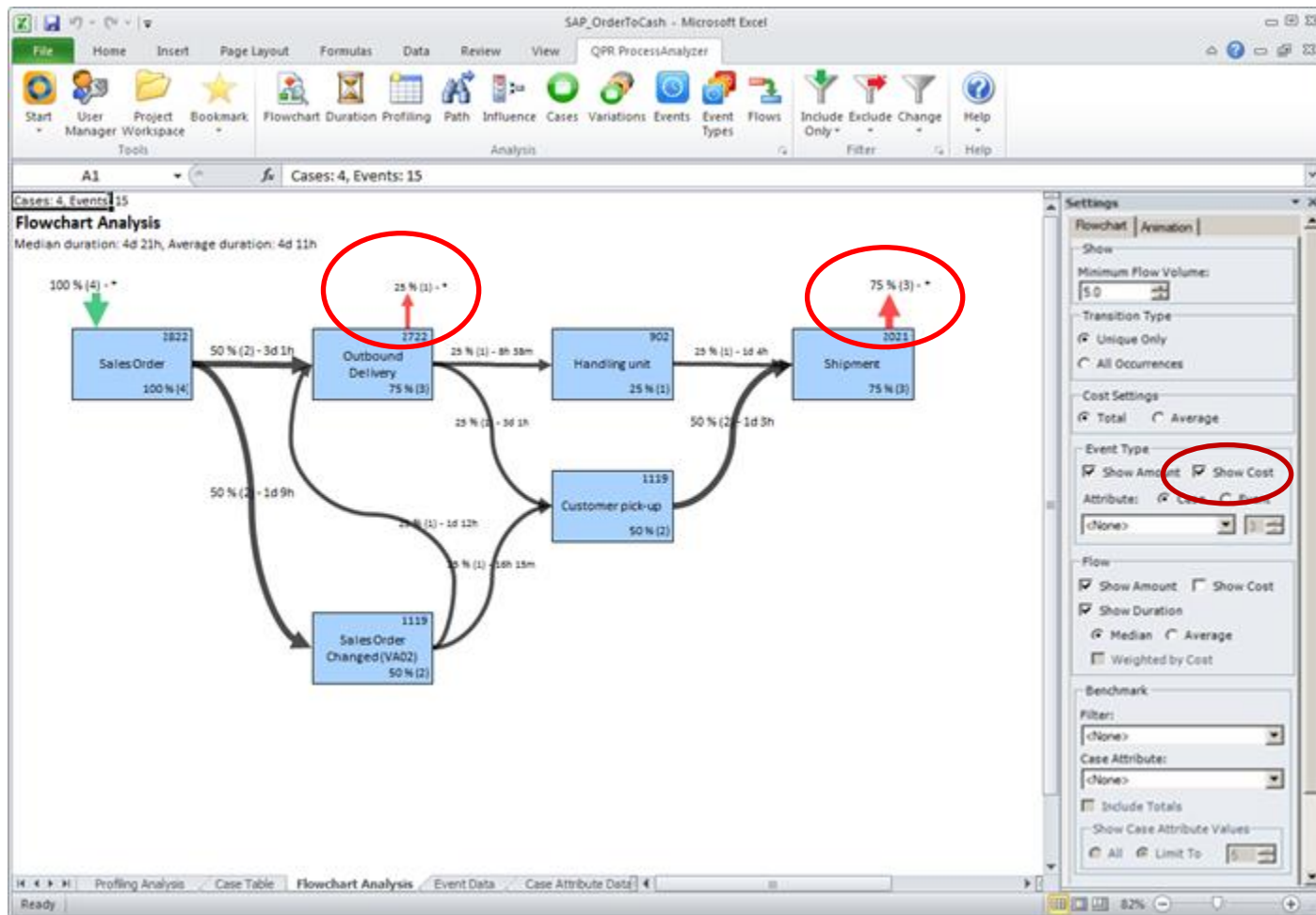
- ▶ Step 3. **How big percentage of orders is invoiced?**
 - Find out what percentage of orders are not invoiced.
 - Find out what happens in the process linked with the value of the missing invoices.



Not all orders invoiced

From the Flowchart Analysis, you can directly see that from Sales Order, 96% are invoiced. What happens to the 4% which are not invoiced? This needs further investigation:

1. Choose Invoice Event Type
2. Click on Exclude



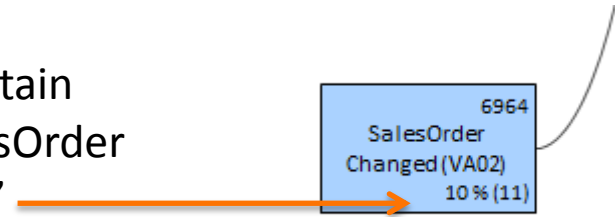
Not all orders invoiced

You can see how the process goes for the orders that are not invoiced and also the monetary value that is lost. One case is lost in Outbound Delivery and three shipped out without invoices.

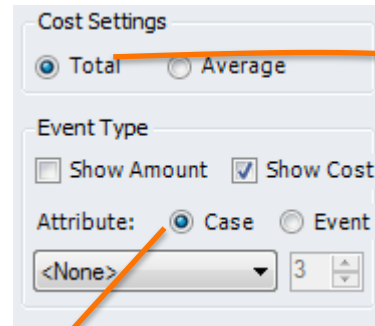
Case Cost

- ▶ Case cost is imported to the model in Case attribute data
- ▶ Use column name Cost
- ▶ The Flowchart / Path / Flows / Event Types views compute and show the sum cost of cases that include the specified event type
- ▶ (Event cost is imported in Event Attributes)

Eleven cases contain
event type "SalesOrder
Changed (VA02)"



6964
SalesOrder Changed (VA02)
10 % (11)



Cost Settings

☒ Total ☐ Average

Event Type

☐ Show Amount ☒ Show Cost

Attribute: ☒ Case ☐ Event

<None> 3

The **case** cost **sum** is 6964

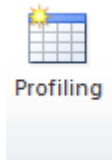
Analysis

Validation
Analysis functions

Profiling the data

Event types
Profiling

Profiling

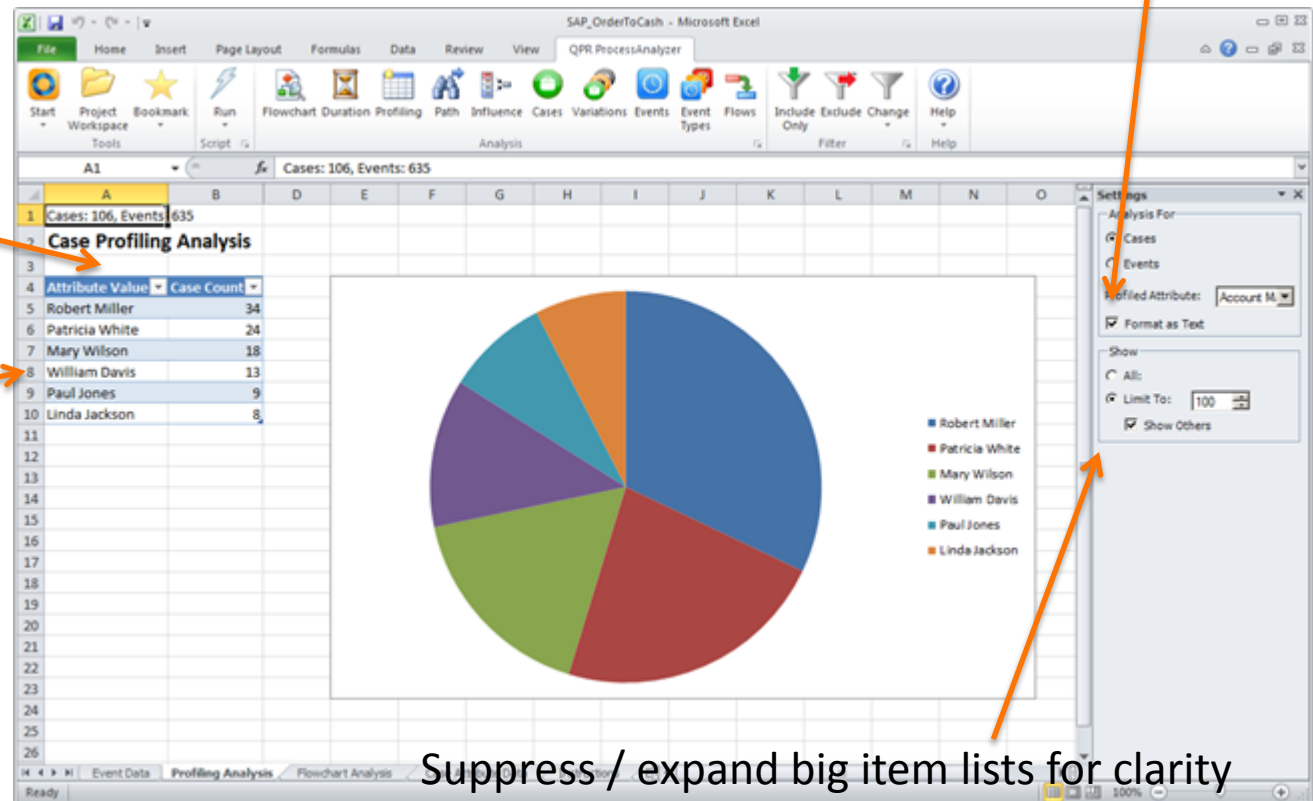


- ▶ Use for understanding or validating the data
- ▶ Making appropriate selections / filters
- ▶ Drill-down
- ▶ Statistics

Sort as text or numbers?

Sort / filter

Select for filtering or analysis focus



Suppress / expand big item lists for clarity

Event type



Note: the default is to show 20 most common event types. Change to "All" to see all event types.

Sum of Case Cost for unique cases that contain this event type

Number of events of this type (incl. repetitions)

Number of Cases containing this event type

Select for filtering or analysis focus

Event Type Table							
Name	Count	Unique Count	Event Cost	Unique Event Cost	Case Cost	Unique Case Cost	
Outbound Delivery	107	94	0	0	68260	61885	
Sales Order	106	106	0	0	68201	68201	
Invoice	103	102	0	0	65455	65379	
Payment received	96	96	0	0	56519	56519	
Shipment	79	79	0	0	47586	47586	
Handling unit	76	76	0	0	46012	46012	
Customer pick-up	19	18	0	0	19015	18141	
Sales Order Changed (VA02)	11	11	0	0	6964	6964	
Purchase Order to Supplier	10	10	0	0	6414	6414	
Delivery Changed	5	5	0	0	2711	2711	
GD ret.del. returns	5	4	0	0	10194	7814	
Return w Notific.	5	5	0	0	7890	7890	
Credit Memo	4	3	0	0	9392	7012	
Returns Delivery	4	4	0	0	7814	7814	
Quotation	3	3	0	0	1004	1004	
Confirmation of service	2	2	0	0	147	147	

Event Type Analysis Settings

Analysis Type

☐ Chart
 ☒ Table

Show

☒ All:
 ☐ Limit To: 20

Columns

☐ Show Relative Start

Confidence

50%

Advanced notes

Attribute and process data validation

Attribute check

▶ Objective

- avoid GIGO (garbage in – garbage out)
- Ensure that you understand the meaning of case and event attributes

▶ Tools: QPR ProcessAnalyzer Profiling (+ SQL + other data tools)

▶ Questions

- What does this attribute mean?
 - What is this variable type (nominal, float, number, time)
 - What are the codes that appear in the data
- What is the distribution? Does it affect the analysis?
- Some questions:
 - Is the distribution correct (or at least possible)
 - Are there *outliers* (*"too big"*, *"too small"*) or *erroneous values*?
 - Are there missing values, is it ok?
 - Should zero, or some other values, be treated separately?

Process sanity-check & initial analysis

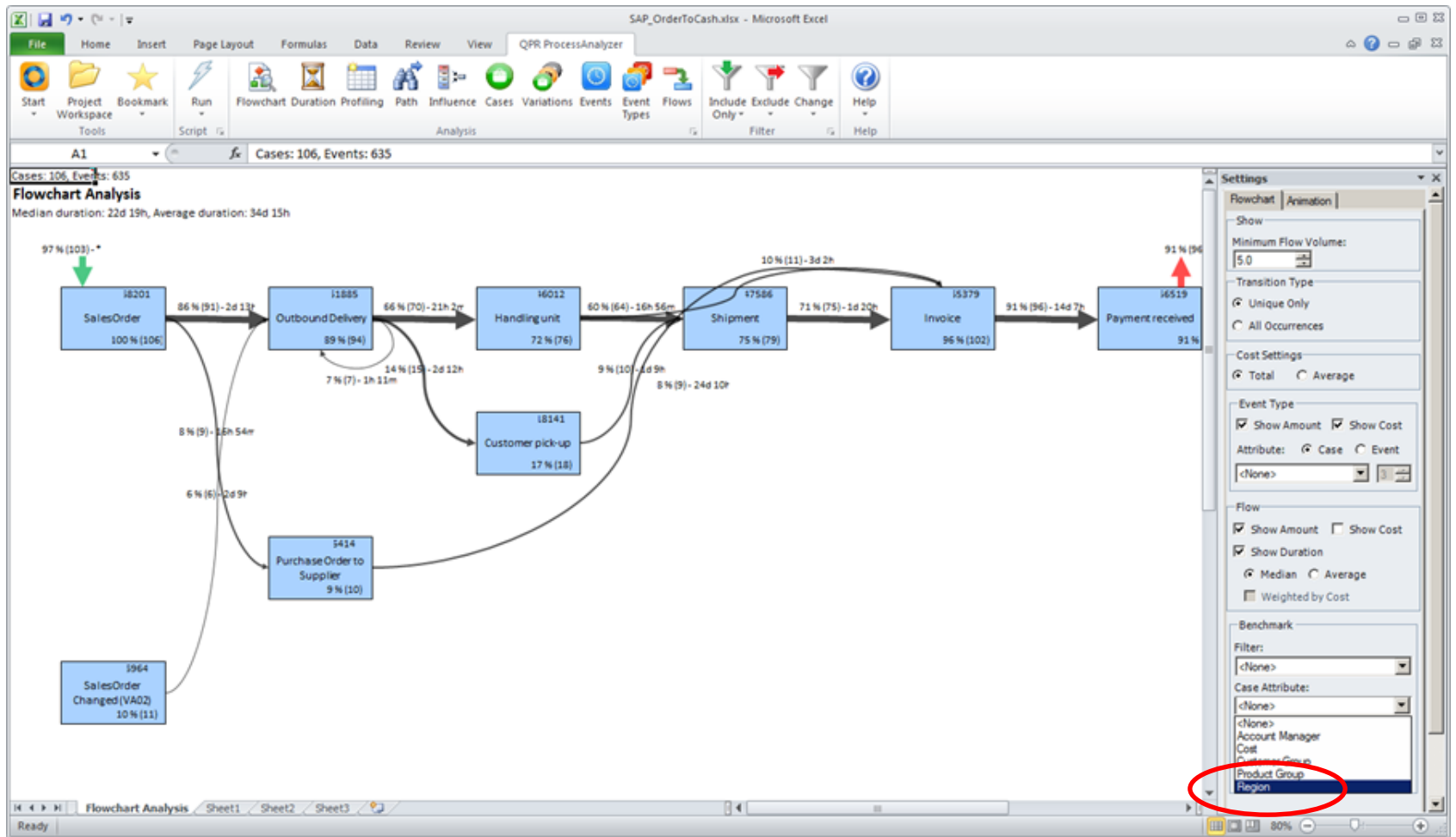
- **Objective: Enable analytics: avoid GIGO, enrich the process model with relevant attributes / events**
 - Tools: QPR ProcessAnalyzer + Excel (+ SQL, other data tools)
- Often the data to ProcessAnalyzer is acquired through several steps and include lots of processing
- Event Types
 - Is the volume ok / Check frequency of events
 - Do you understand the meaning of the activities?
- Cases
 - Number of cases started / ended in the time frame
 - Look for gaps / spikes / trends
 - Check typical case length (cycle time) vs. the available data time window
- Process
 - Verify with a process expert
 - Is the ABPD visualization realistic at all?
 - Are the lead times realistic?
 - Check resolution (only date available vs. time)
 - Check zero lead time ordering inconsistencies
 - Are we missing something essential?
- Create features that are necessary for the analysis
 - Filter unnecessary events / cases
 - Cleanse or reshape data
 - Make more transformations (events / cases)
 - Reacquire data

Benchmarking

Paths / Flowchart
Conformance

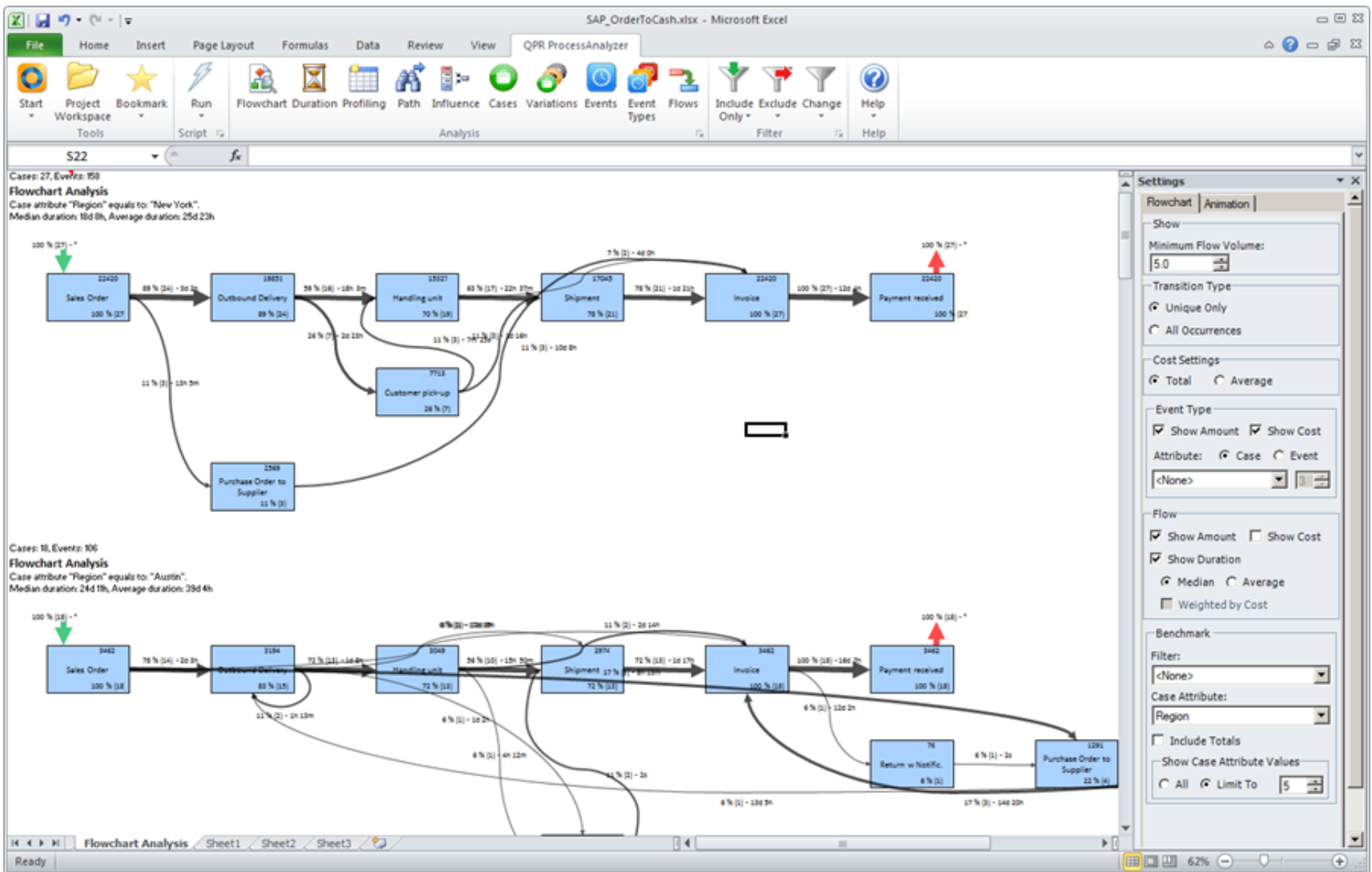
Benchmarking

- ▶ Going back to Flowchart, users are able to benchmark and compare processes based on system's users or case attributes
- ▶ In one view the users can see how the processes are performing depending on the comparison criteria



Bottleneck / Conformance discovery - Benchmark

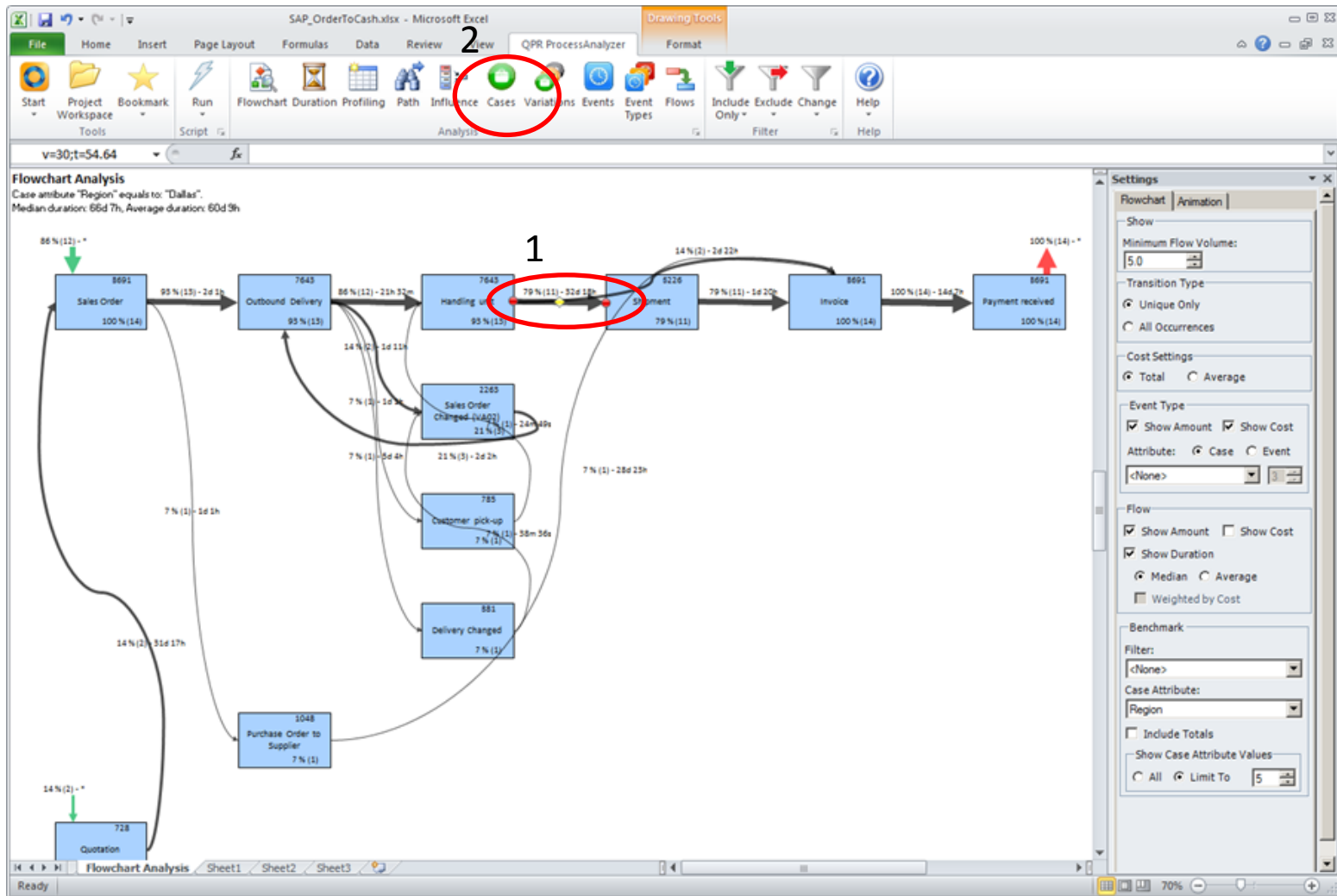
From the Flowchart Analysis view, go to Benchmark section and select Region as the Case Attribute.



Bottleneck Discovery / Conformance - Benchmark

Now you can see the process per Region and compare the performance of those locations. It seems that New York and Austin are performing fairly well.

Scroll down to find Dallas.



Bottleneck discovery - benchmark

Dallas: There we can see that time between Handling Unit and Shipment takes over 31 days.

Click on the arrow and then select the Cases tab.

SAP_OrderToCash - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View QPR ProcessAnalyzer

Start User Project Bookmark Flowchart Duration Profiling Path Influence Cases Variations Events Event Types Flows Include Exclude Change Help

Tools Analysis Filter Help

A1 Cases: 11, Events: 11

1 Cases: 11, Events: 11

2 Case Table

3 Case Attribute 'Region'=Dallas;Transitions=Handling unit->Shipment

4

Name	Start Time	End Time	Duration Days	Event Count	Event Type Count	Event Cost
67288982	31.7.11 21:29	1.10.11 06:46	61.39	6	6	0
84209808	8.11.11 05:56	8.1.12 17:08	61.47	6	6	0
76901927	9.11.11 16:09	10.1.12 07:57	61.66	6	6	0
64335471	2.8.11 14:26	3.10.11 20:04	62.23	9	8	0
49666677	10.7.11 15:31	11.9.11 09:41	62.76	7	7	0
29571917	17.12.11 06:40	19.1.12 01:00	32.76	6	6	0
189988453	4.12.11 22:39	5.12.11 04:18	0.24	6	6	0
173907248	29.11.11 15:24	30.11.11 08:20	0.71	6	6	0
169510961	6.11.11 18:47	7.11.11 00:29	0.24	7	7	0
124256122	12.2.12 06:58	12.2.12 20:08	0.55	8	7	0
133182340	5.7.11 12:37	6.7.11 06:46	0.76	8	7	0

16

17

18

19

20

Profiling Analysis Case Table Flowchart Analysis Event Data Case Attribute Data Instructions

Ready

Settings

Show

All

Limit To: 1000

Columns

Event Count for Event Type: <None>

Case Attributes: <None>

Event Attributes: <None>

Duration Groups

Second Minute

Hour Day

Week Month

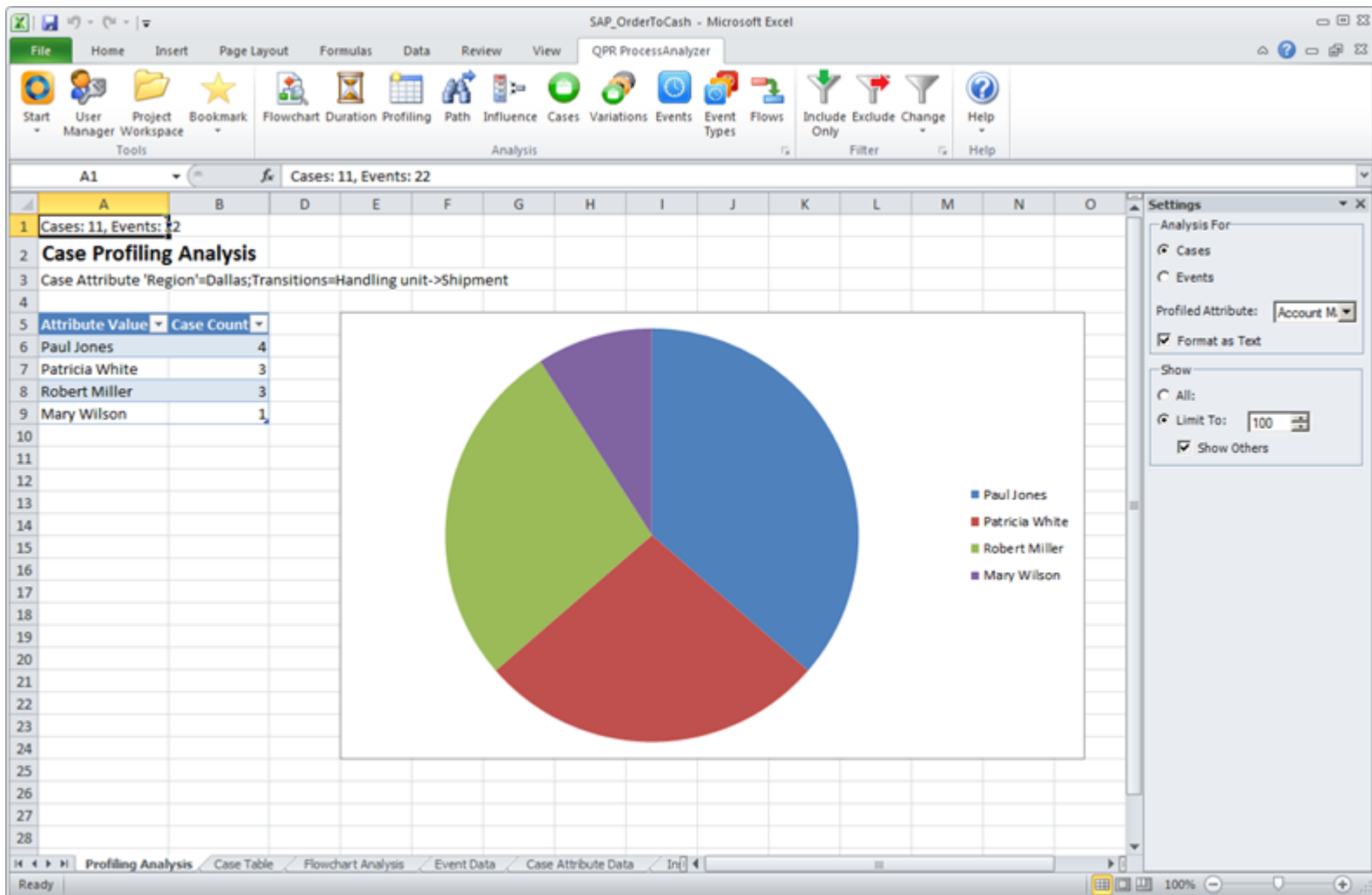
Quarter Year

Starts

Weekday Month

Bottleneck discovery - benchmark

From the Cases tab, identify the specific cases which allow you to discover what attributes are behind these cases and finally the root cause. Select the Profiling tab.



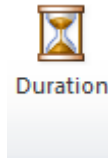
Bottleneck discovery - benchmark

With Profiling Analysis, you can see e.g. which account managers have been responsible for the cases, allowing you to get to the root cause of the delayed deliveries.

Duration

Performance and bottlenecks

Duration

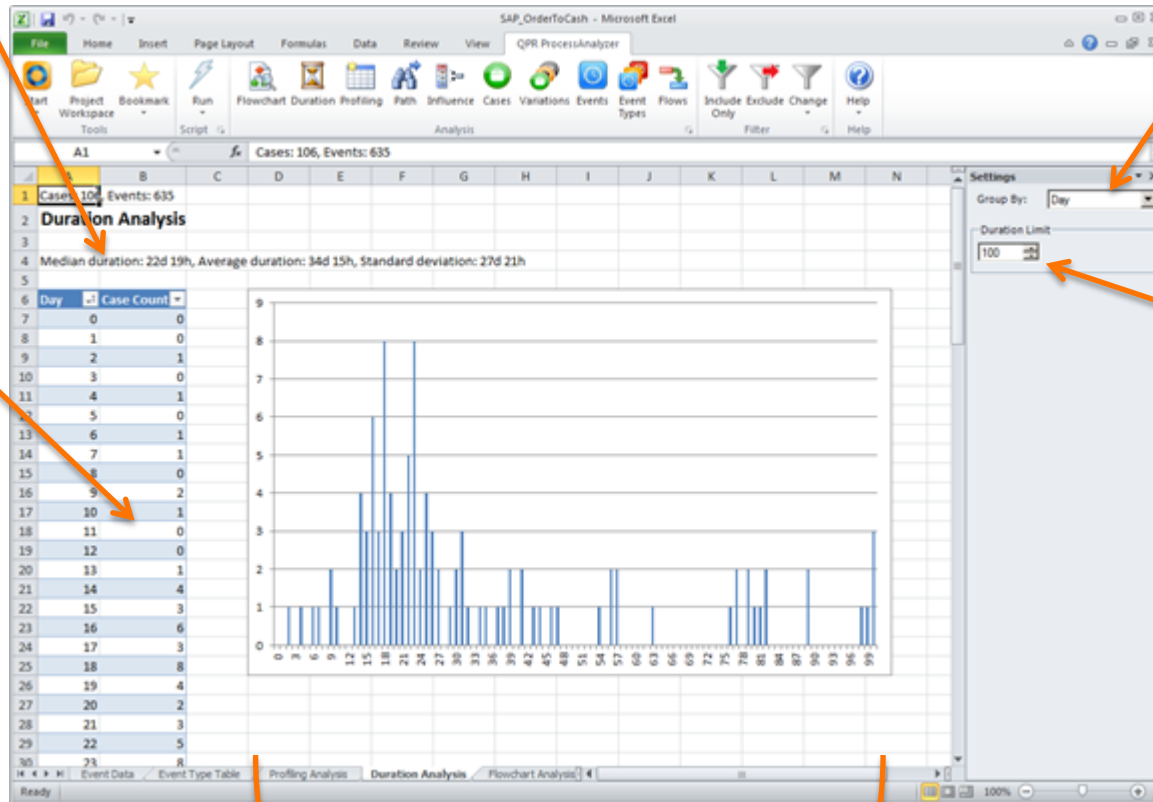


Total duration: average / median / std of Durations from first event to last in each Case

Select resolution

Currently rounded to nearest integer; (in future ceiling)

Select for filtering or analysis focus



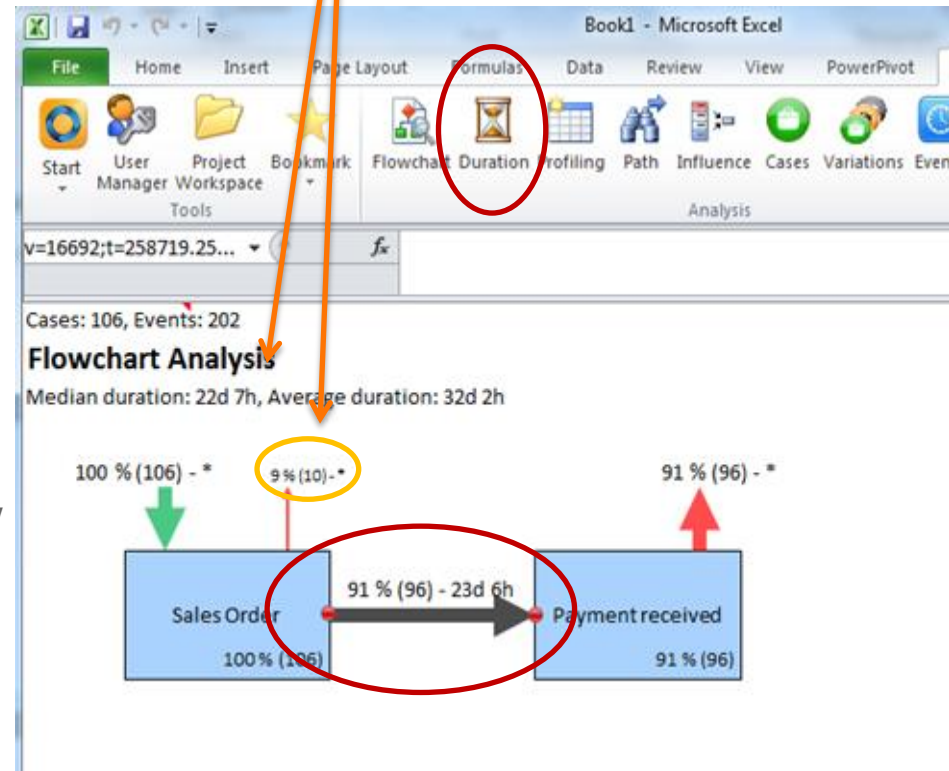
Collect values bigger than this to last bin

Distribution

Duration

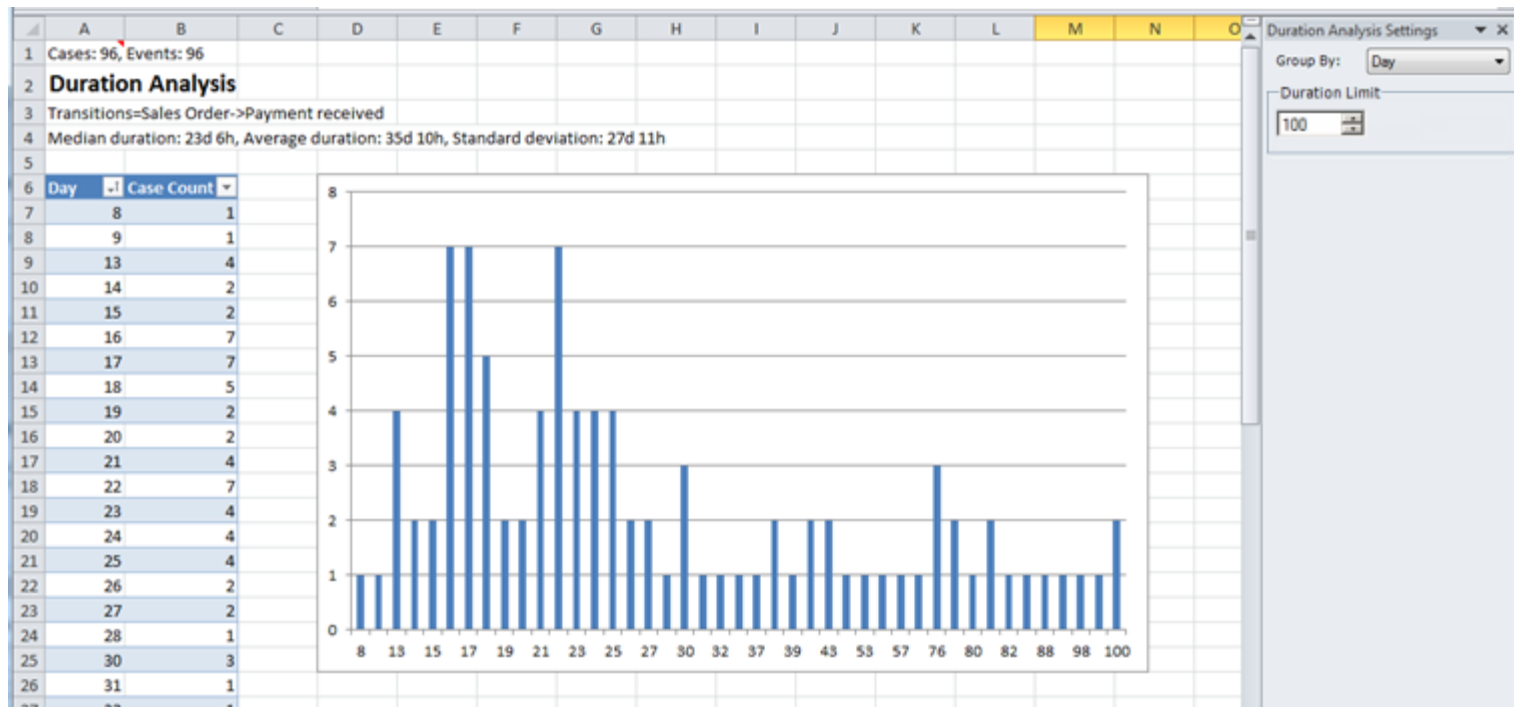
- ▶ Problem: we wish to see specifically the lead time "Sales order – Payment received"
 - Flowchart with all event types shows lead times for immediate transitions
- ▶ Include only the wanted start / end event types (Sales Order, Payment received)
 - Note: 9% of cases do not reach Payment received
 - These contribute 0s to average / median!
 - Select the flow order-payment
 - Run "duration"

Includes zero durations!!



Duration

- ▶ Final total lead time analysis for Sales Order – Payment received
 - 96 cases include a path from Sales Order to Payment received



Duration

► Note:

- QPR ProcessAnalyzer always uses full calendar time between event timestamps
- It is currently not possible to count time "on office hours only" or other similar logic
- In order to emulate this kind of logic, the original data should be manipulated accordingly

Flows

Tabular reports

Detailed metrics and comparison

Advanced: Pivot table trick

► Use Excel pivot table to analyze the Flows table

- Example of detailed comparison of process flow by account manager
- Applies also to lead times etc.

The screenshot shows an Excel spreadsheet with a PivotTable and the PivotTable Field List task pane. The PivotTable is set up with 'Row Labels' and 'Column Labels' (Account Manager). The 'Sum of Count' is calculated for each combination of process flow and account manager.

Row Labels	Linda Jackson	Mary Wilson	Patricia White	Paul Jones	Robert Miller	William Davis	Grand Total
Sum of Count							
Confirmation of service							
Shipment	1			1			2
Credit Memo					4		4
GD ret. del. returns					3		3
Customer pick-up		3	6	1	7	2	19
Handling unit			2	1		1	4
Invoice		1	1		2		4
Sales Order Changed (VA02)					1		1
Shipment		2	3		4	1	10
Delivery Changed		2	2			1	5
Customer pick-up		1					1
Handling unit		1				1	2
Outbound Delivery				1			1
Sales Order Changed (VA02)			1				1
GD ret. del. returns		1			4		5
Credit Memo					4		4
Handling unit		7	11	15	8	24	76
Confirmation of service				1			1
Invoice			2	2	4	1	11
Shipment		7	9	13	5	20	64
Invoice		8	16	23	9	35	103
END					2		2
Payment received		8	15	23	9	31	96
Return w. Notific.			1		4		5
Outbound Delivery		8	18	24	8	35	107
Confirmation of service			1				1
Customer pick-up				6	1	6	15
Delivery Changed			2	2		1	5
END			1				1
Handling unit		7	10	13	7	24	70
Invoice				1			1
Outbound Delivery		1	4			2	8
Sales Order Changed (VA02)				1	2	1	4
Shipment				1	1		2
Payment received		8	15	23	9	31	96

The PivotTable Field List task pane on the right shows the following configuration:

- Choose fields to add to report:**
 - ☒ Start
 - ☒ End
 - ☐ Id
 - ☐ View
 - ☐ Occurrence
 - ☒ Account Manager
 - ☐ Event Attribute
 - ☐ End Event Attribute
 - ☒ Count
 - ☐ Successor Probability
 - ☐ Predecessor Probability
 - ☐ Median Duration
 - ☐ Average Duration
 - ☐ Duration Std. Deviation
 - ☐ Average Maintenance Duration
- Drag fields between areas below:**
 - Report Filter:** (Empty)
 - Column Labels:** Account Man...
 - Row Labels:** Start, End
 - Values:** Sum of Count
- ☐ Defer Layout Update
-

Influence Analysis

Explanations

Root causes

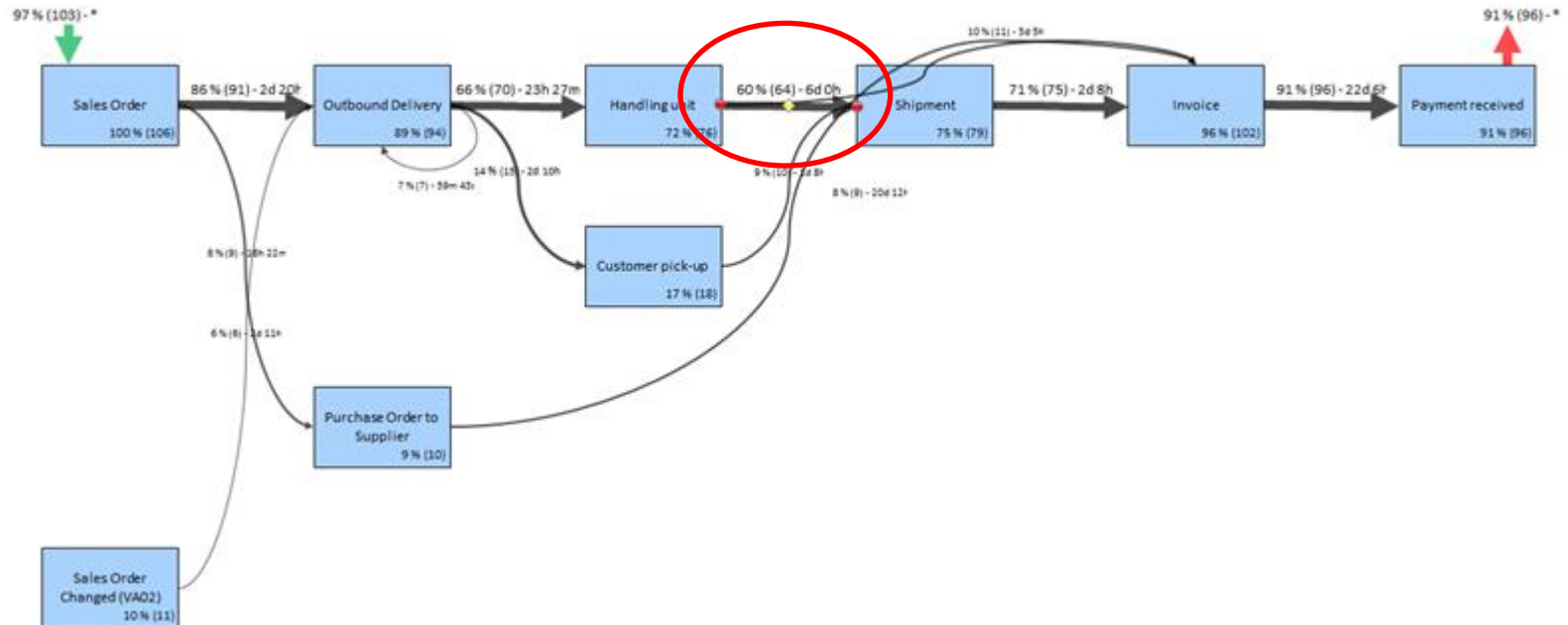
Influence

- ▶ To ease and speed up the discovery, we have ready-made analyses in the product
- ▶ Variations
 - how many there really are: have a holistic look
- ▶ Root cause analysis
 - Look at a variation from the model and discover which case attributes have an impact (and how much) to the variations
 - Script: say that how easily users can drill down from the flowchart to 'deeper' information
 - The influence analysis allows for quick prioritization of corrective actions and gives an inclination of where the problem lies straight from the product – no need for extensive/time-consuming process mining/data mining/calculations etc.

Cases: 106, Events: 635

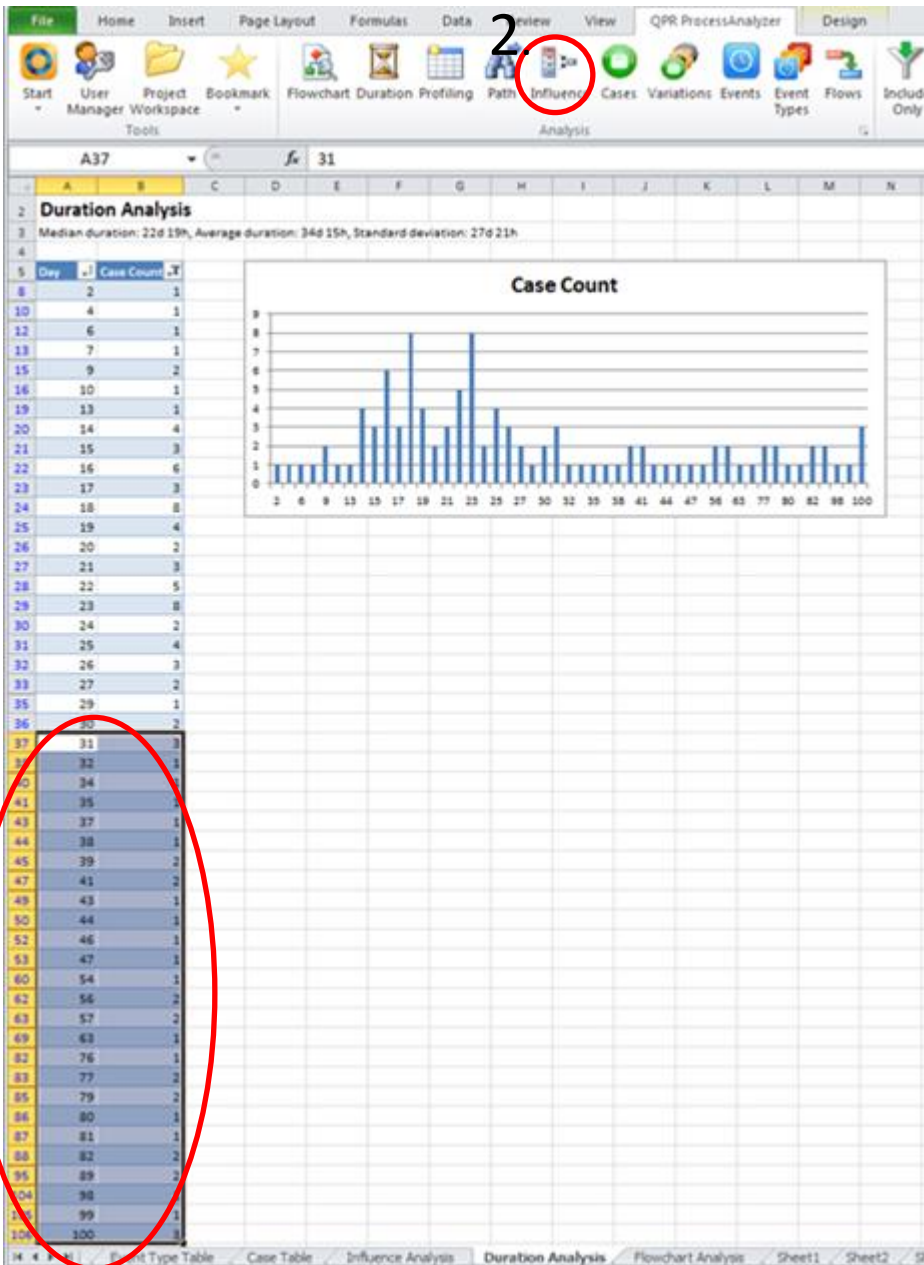
Flowchart Analysis

Median duration: 22d 19h, Average duration: 34d 15h



Bottleneck discovery (duration)

Notice that it takes 6 days, in most cases, from the Handling Unit to go to Shipment. That is unusual and needs further investigation. Select the Duration tab.



Bottleneck discovery

In the Duration Analysis you can see all cases and their duration. Discover that there are deliveries taking more than 30 days...

1. Select those cases from the table.
2. Click the Influence tab.

	A	B	C	D	E	F	G	H	I	J	K
1	Cases: 106, Events: 635										
2	Influence Analysis										
3	Durations (Group by Day)=31, 32...(24 more);Maximum Duration=100										
4											
5	Total		106	38	68	36%					
6	Case Attribute	Attribute Value	Cases #	Selected #	Compared #	Selected %	Difference %	Contribution #	Contribution %		
7	Region	Dallas	14	10	4	71%	36%	5	13%		
8	Cost	414...830	35	15	20	43%	7%	2	6%		
9	Region	Chicago	16	8	8	50%	14%	2	6%		
10	Account Manager	Linda Jackson	8	5	3	63%	27%	2	6%		
11	Product Group	Jeans	12	6	6	50%	14%	2	4%		
12	Product Group	Shirts	25	10	15	40%	4%	1	3%		
13	Customer Group	Kids	39	15	24	38%	3%	1	3%		
14	Account Manager	Paul Jones	9	4	5	44%	9%	1	2%		
15	Account Manager	Patricia White	24	9	15	38%	2%	0	1%		
16	Customer Group	Women	31	11	20	35%	0%	0	0%		
17	Account Manager	Robert Miller	34	12	22	35%	-1%	0	0%		
18	Product Group	Hats	37	13	24	35%	-1%	0	-1%		
19	Product Group	Shoes	12	4	8	33%	-3%	0	-1%		
20	Region	Austin	18	6	12	33%	-3%	0	-1%		
21	Cost	414...830	35	12	23	34%	-2%	-1	-1%		
22	Region	Houston	13	4	9	31%	-5%	-1	-2%		
23	Customer Group	Men	36	12	24	33%	-3%	-1	-2%		
24	Account Manager	Mary Wilson	18	5	13	28%	-8%	-1	-4%		
25	Region	Los Angeles	18	5	13	28%	-8%	-1	-4%		
26	Account Manager	William Davis	13	3	10	23%	-13%	-2	-4%		
27	Cost	18...413	36	11	25	31%	-5%	-2	-5%		
28	Product Group	Socks	20	5	15	25%	-11%	-2	-6%		
29	Region	New York	27	5	22	19%	-17%	-5	-12%		
30											
31											
32											
33											
34											
35											
36											
37											
38											
39											
40											
41											
42											
Event Type Table Case Table Influence Analysis Duration Analysis Flowchart Analysis Sheet1 Sheet2 SN 4											

Bottleneck discovery (influence)

You can see that "Dallas" is strongly related to deliveries with an exceptionally long lead time.

Details of Influence view

▶ Contribution

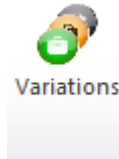
- Make a selection in the data (by using cases, event types, variations etc.)
 - The selected group = S, others = O
- Contribution calculation counts first the number cases in S and O.
 - Say that #S = 100 and #B = 900. (S = 10% of all cases)
- Select an attribute value, e.g. "User"
- Contribution calculation proceeds by counting how many cases belong to S for each distinct value of the selected attribute "User".
 - Say that for User = Mary there are 50 cases altogether, 25 S's and 25 O's
 - If the attribute "User" would not affect anything at all, one expects there to be $10\% \times 50 = 5$ S's and $90\% \times 50 = 45$ O's.
- The attribute values are now ordered according to the difference between the observed = 25 and neutral assumption = 5 $\Rightarrow + 20$
- In some cases the relative frequency might be more useful

▶ Subset

- Done for any type of variable if #unique values > # of subsets x 10
- The values are sorted and splitted into equal size bins
- Say that you have values 1-1000, subset = 3 \Rightarrow There would be three bins: 1-333, 333-666, 666-1000
- Note
 - Sound only for ordered attributes
 - ...but currently done for any type of variable (e.g. Names), even if it does not make sense
 - This should be remembered especially if you use selection "All"

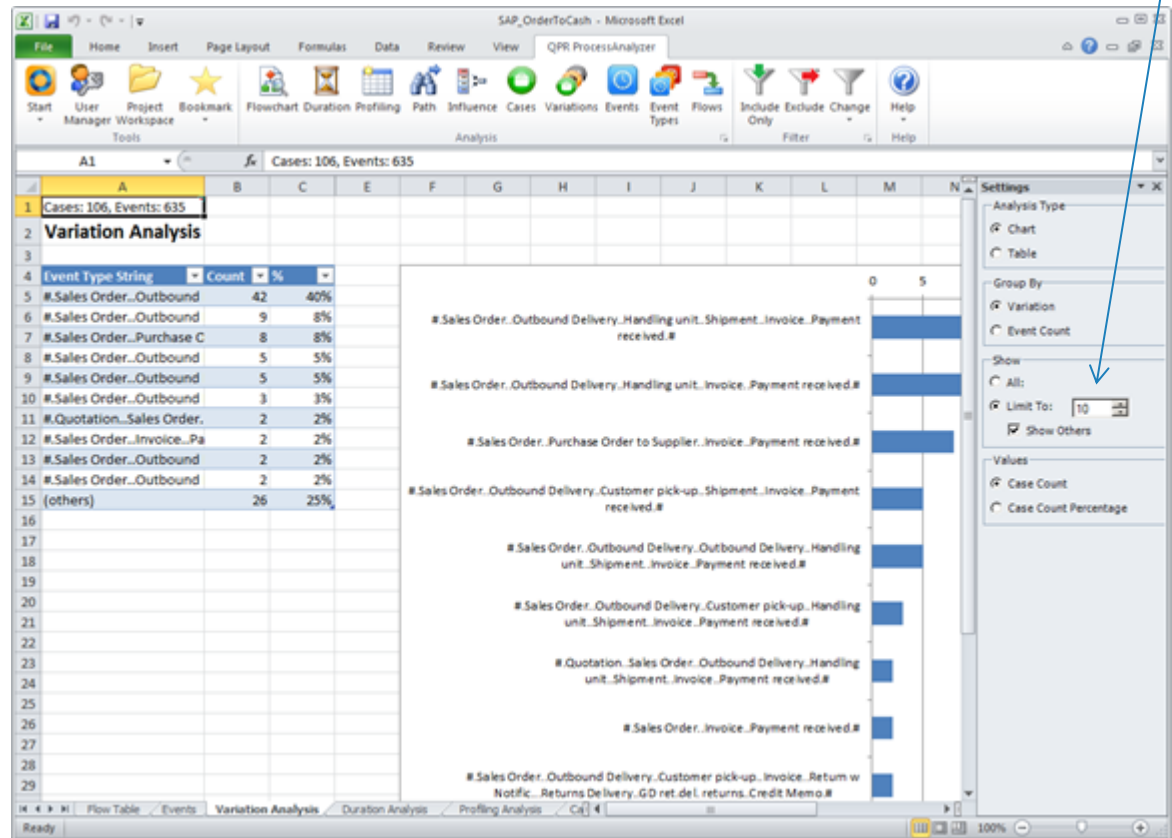
Variation Analysis

Variations



- ▶ A variation is a unique sequence of events
 - The attributes and durations may differ
- ▶ Use for detailed conformance checking
- ▶ The distribution describes process heterogeneity

Change to
expand /
suppress the list



Case Analysis Events

Drill-down
Statistics
Enrichment

Case Analysis



▶ Case based reasoning

- Drill-down to individual case level and check the data (attributes)

▶ Use for creating data for further analysis

- Example: classify by event type combinations
 - Count change events and compare durations for different combinations of changes etc.
- Example: Create new case attributes
 - Make new attributes based on old and import them
 - Examples:
 - currency conversion
 - classify cases based on total duration
 - classify cases based on start month / end month

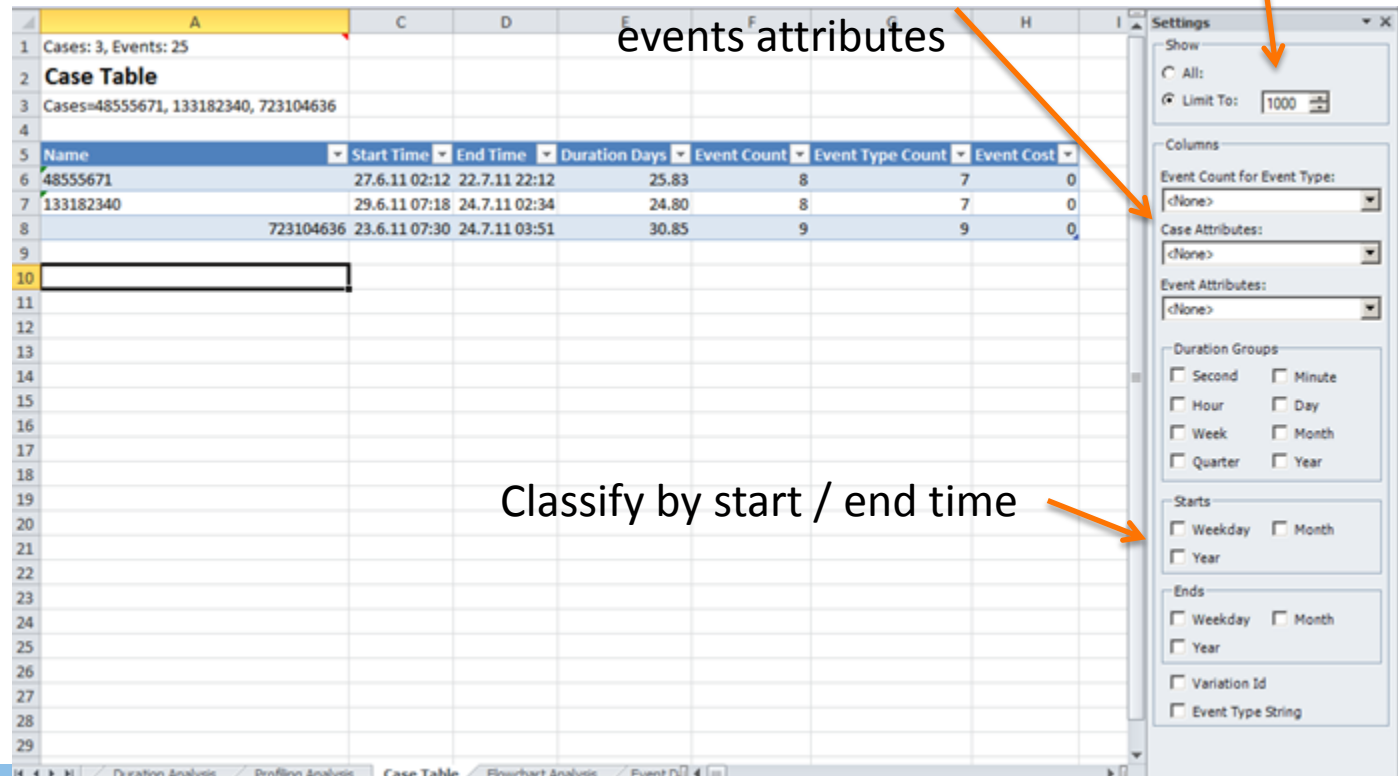
Case Analysis



- ▶ Drill-down to individual case level and check the data (attributes)
- ▶ Use for creating data for statistical analysis
- ▶ Create new case attributes

Characterize case by
number of events or
events attributes

Remember to
set to "All" if you
require all
cases!



The screenshot displays the 'Case Table' in the QPR software. The table has columns for Name, Start Time, End Time, Duration Days, Event Count, Event Type Count, and Event Cost. Three cases are listed with their respective event data. The 'Settings' panel on the right is open, showing options for 'Show' (set to 'All'), 'Limit To' (1000), and various filters for columns, duration groups, and starts/ends.

Name	Start Time	End Time	Duration Days	Event Count	Event Type Count	Event Cost
48555671	27.6.11 02:12	22.7.11 22:12	25.83	8	7	0
133182340	29.6.11 07:18	24.7.11 02:34	24.80	8	7	0
723104636	23.6.11 07:30	24.7.11 03:51	30.85	9	9	0

Settings panel options:

- Show: ☒ All
- Limit To: 1000
- Columns: Event Count for Event Type: <None>
- Case Attributes: <None>
- Event Attributes: <None>
- Duration Groups: ☐ Second, ☐ Minute, ☐ Hour, ☐ Day, ☐ Week, ☐ Month, ☐ Quarter, ☐ Year
- Starts: ☐ Weekday, ☐ Month, ☐ Year
- Ends: ☐ Weekday, ☐ Month, ☐ Year
- Variation Id: ☐
- Event Type String: ☐

Classify by start / end time

Event Analysis



- ▶ Retrieve events for most detailed check

Case	Event Type	Start Time	Cost	Total Cost
114483567	Sales Order	24.5.11 02:25	0	451
79545494	Sales Order	24.5.11 09:38	0	620
61426559	Sales Order	24.5.11 21:59	0	507
2003679498	Sales Order	25.5.11 09:03	0	2380
884989895	Sales Order	26.5.11 16:09	0	2723
2003679498	Outbound Delivery	27.5.11 02:31	0	2380
79545494	Outbound Delivery	27.5.11 03:31	0	620
114483567	Outbound Delivery	27.5.11 04:21	0	451
61426559	Outbound Delivery	27.5.11 17:35	0	507
214692511	Sales Order	28.5.11 00:27	0	1191
79545494	Handling unit	28.5.11 04:00	0	620
2003679498	Handling unit	28.5.11 09:12	0	2380
61426559	Handling unit	29.5.11 02:09	0	507
91460943	Sales Order	30.5.11 04:06	0	565
61426559	Shipment	30.5.11 14:48	0	507
214692511	Outbound Delivery	31.5.11 04:01	0	1191
38244356	Sales Order	1.6.11 01:36	0	228
61426559	Invoice	1.6.11 06:35	0	507
91460943	Outbound Delivery	1.6.11 09:16	0	565
214692511	Handling unit	1.6.11 15:04	0	1191
79545494	Invoice	1.6.11 16:42	0	620
91460943	Handling unit	2.6.11 01:05	0	565
163174049	Sales Order	2.6.11 04:39	0	995
214692511	Shipment	2.6.11 12:02	0	1191

Keeping on track with things

Filter management

Bookmarks

Keeping on track with things

▶ Filters

- Each time you include/exclude, a new filter is created to the filter stack.
- You can select any of the filters at any stage for analysis, and even rename them for convenience.
- Complete filter stack opens from the ribbon
 - You can edit and view filter details in "Properties"

▶ Bookmarks

- Filters do not store any other information on analysis views than the case/event type selection
- *Bookmark stores the Analysis view* (Flowchart, Profile, Influence,...) as such (=the analysis type + the filter + any parameter selections). When you create a bookmark, you may rename it for convenience.

▶ Status info: Cell A1

- The comment box shows details of the current analysis
- *Attach the text into possible questions sent to Customer Care*

Manage filters

Managing / tracking filters

"Change" button gives a quick list

See Wiki for details

The screenshot shows the QPR ProcessAnalyzer interface within a Microsoft Excel window. The 'Filter' button in the top ribbon is highlighted with an orange arrow pointing to the 'Filters Manager' dialog box. This dialog box contains a table of filters and a 'Properties' button. Another orange arrow points from the 'Properties' button to the 'Filter Properties' dialog box, which allows for renaming filters and adding descriptions.

1. Click to open Filters Manager

2. Select filter

3. Rename/ Add description etc.

And /or show properties...

Name	Publ...	Crea...	Created By	Bo...	Ca...	Ev...	Var...	Op...	Las...	Last Modified By
Default.2	Private	13.2....	johan@audicon	0	0	0	26	2	13...	johan@audicon
Default.1	Private	13.2....	johan@audicon	0	105	0	0	3	13...	johan@audicon
Default	Mode...	12.2....	johan@audicon	0	0	0	0	17	12...	johan@audicon

6h

11

QPR ProcessAnalyzer - Filters Manager

Drag a column header here to group by that column

Name	Publi...	Crea...	Created By
▷ Default.2.1	Private	13.2....	johan@audi
▷ Default.2	Private	13.2....	johan@audi
▷ Default.1	Private	13.2....	johan@audi
▷ Default	Mode...	12.2....	johan@audi

QPR ProcessAnalyzer - Filter Properties

Name: Default.2.1 Id: 16573

Project: OtC demo Id: 651

Model: OtC demo Id: 1635 Properties...

Sample Percentage: 100

Description:

QPR ProcessAnalyzer - Filter Rules

Filter	Filter Type	Created On	Created By	Analysis	Parameters	O...
Default.2.1	ExcludeCases	13.2.201...	johan@audicon	Profiling	Case Attribute 'Cost'=5, 6, 7	2
Default.2	IncludeVari...	13.2.201...	johan@audicon	Process	Transitions=Outbound Delivery->Handling unit	1

Recalculation Recalculate Show Filters...

OK Cancel

See the set of rules that defines the filter

Close

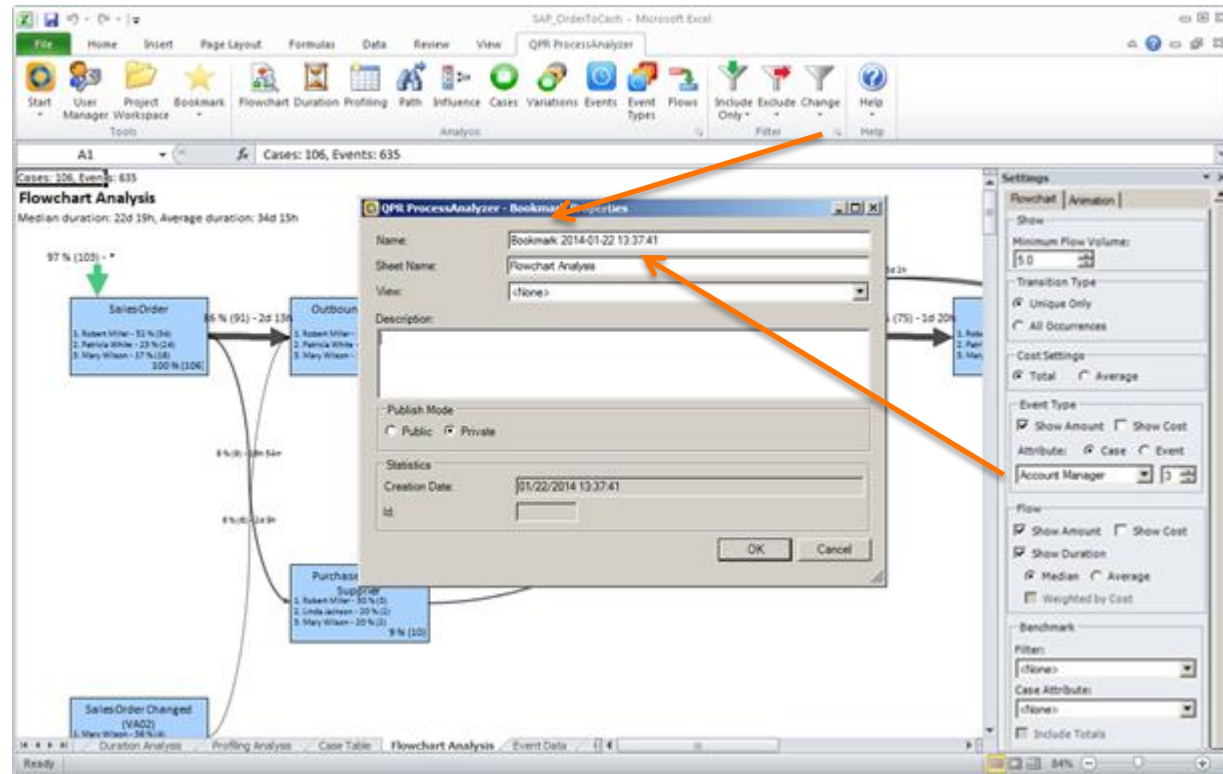
Bookmarks

Bookmarks

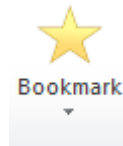


- ▶ Bookmark stores the analysis view
 - Filters
 - Analysis settings

- ▶ Tip:
You can change the default Excel sheet name in order to produce results on a specified sheet and prevent overwriting the on-going analysis.



Bookmarks



Edit bookmarks

Recall a bookmark

The screenshot displays the QPR ProcessAnalyzer application window. The title bar shows 'SAP_OrderToCash' and 'QPR ProcessAnalyz'. The ribbon includes tabs for File, Home, Insert, Page Layout, Formulas, Data, Review, and View. The 'Tools' group contains icons for Start, User Manager Workspace, Project Workspace, and a yellow star icon labeled 'Bookmark'. A dropdown menu is open from the 'Bookmark' icon, showing options: 'New Bookmark...', 'Manage Bookmarks...' (highlighted by a mouse cursor), and 'Exercise 2014-01-22 13:37:41 on 22.1.14 13:43:54 by riikka.pekkinen@qpr.com'. An orange arrow points from the 'Edit bookmarks' text to the 'Manage Bookmarks...' option. Another orange arrow points from the 'Recall a bookmark' text to the 'A1' dropdown menu in the 'Tools' group. Below the ribbon, the 'Cases: 106, Events: 635' status is shown. The main area is titled 'Flowchart Analysis' with a subtitle 'Median duration: 22d 19h, Average duration: 34d 15h'. A green arrow points down to a flowchart element labeled 'SalesOrder', which is part of a sequence including 'Outbound Delivery' and 'Handling unit'. The flowchart shows a 97% (103) completion rate.

Status info

"Cell A1"

- ▶ Provides detailed information on analysis. For example:

- Cases: 106, Events: 635

Case Profiling Analysis

Processing time: 0,067 seconds

Created: 22.1.2014 8:42:24

Filter name: Default (Id=39123)

Model name: OtC demo (Id=25400)

Model created: 22.1.2014 8:40:32

Cases: 106 Total, 106 Visible

Events: 635 Total, 635 Visible

Activities: 16 Total, 16 Visible

Attribute Value

Case

Robert Miller

Patricia White

Mary Wilson

William Davis

Paul Jones

Linda Jackson

AnalysisType=10

MaximumCount=100

FilterId=39123

ViewType=Case Table

ShowRelativeStart=False

ConfidencePercentage=50

SelectedActivityCounts=

SelectedCaseAttributes=

SelectedEventAttributes=

IncludeDurations=True

DurationType=0

DurationWeightedByCost=False

CostType=0

ShowCostForFlow=False

ShowCostForEventType=False

ShowAmountForFlow=True

ShowAmountForEventType=True

MinTransitionUsagePercentage=0.05

TransitionType=0

IncludeLayout=False

IncludeStatistics=False

ProcessAnalysisType=4

SelectedAttributeType=924869

AttributeName=Account Manager

TotalEventCount=635

TotalCaseCount=106

DatabaseId=dcf4daa5-136b-45ae-b819-c749a14034a6

Distributing the results

Distributing Excel reports

Web UI

QPR ProcessAnalyzer Web UI

- ▶ Can be utilized for similar process analysis tasks as Excel add-on, but is especially useful when:
 - you cannot, for some reason, utilize the Excel add-on
 - when your customer – internal or external – cannot utilize the Excel add-on
 - when you present pre-defined analysis results (bookmarks) and want discussion for these results between stakeholders
- ▶ Can be accessed from any modern web browser

How to access Web UI

- ▶ Browse to address <http://processanalyzer.qpr.com/global>
- ▶ Enter your QPR ProcessAnalyzer login name and password to the corresponding fields and click Login



QPR

Login name:

Password:

Login

Welcome

Welcome to QPR ProcessAnalyzer

 **QPR ProcessAnalyzer**
Gain Process Insight !

For latest QPR support resources and software updates, visit usernet.qpr.com.

QPR - Quality. Processes. Results.

QPR Customer Care
QPR Customer Care guarantees that our customers receive maximum value from our software.

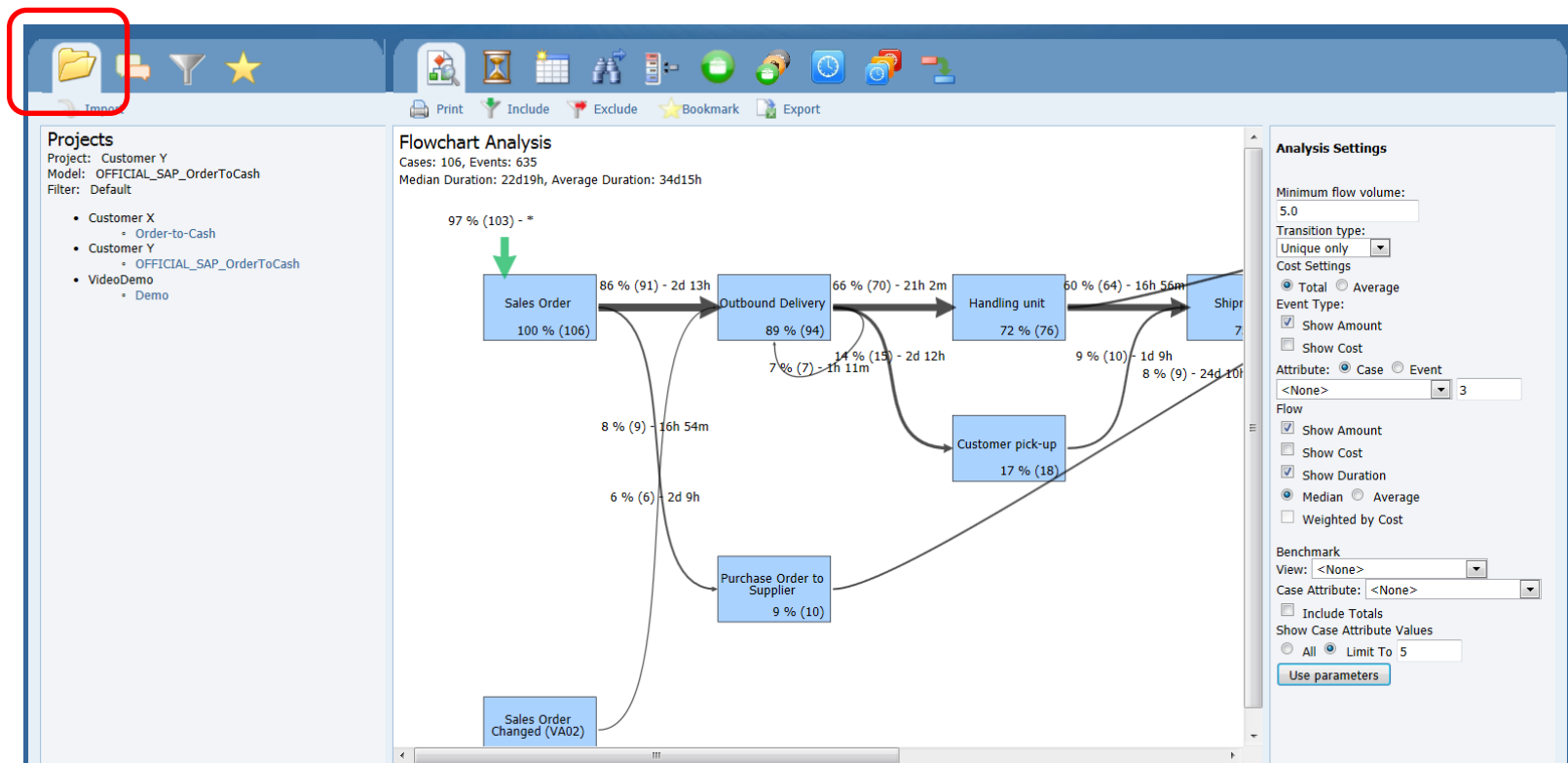
- ▶ Get Support
- ✉ customercare@qpr.com
- ☎ +358 290 001 155

Learn More

- ▶ QPR ProcessAnalyzer home
- ▶ QPR ProcessAnalyzer wiki

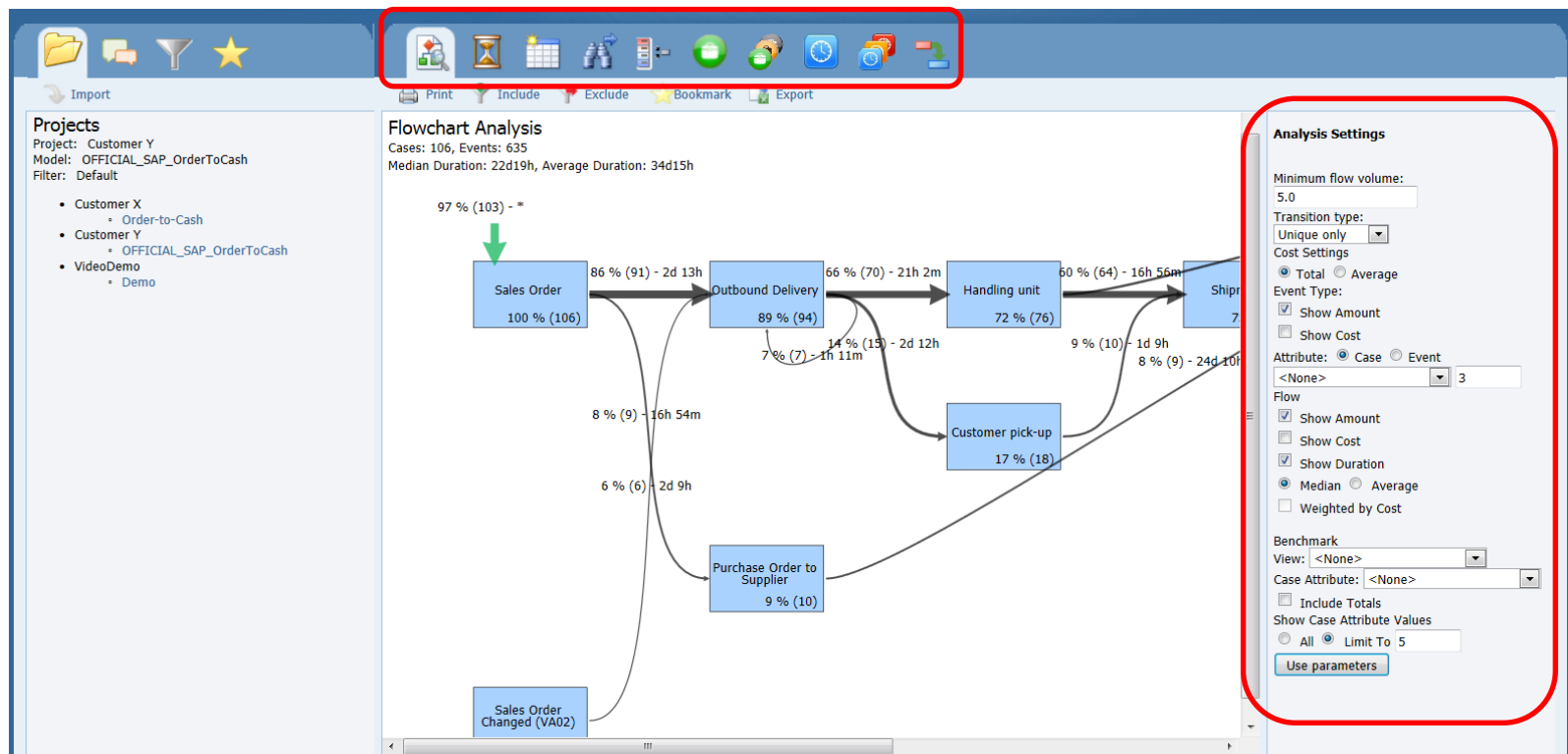
Basic usage

- Once you have logged in, you can access all projects and models that you have access to by selecting the "Projects" folder from top-left corner of the screen



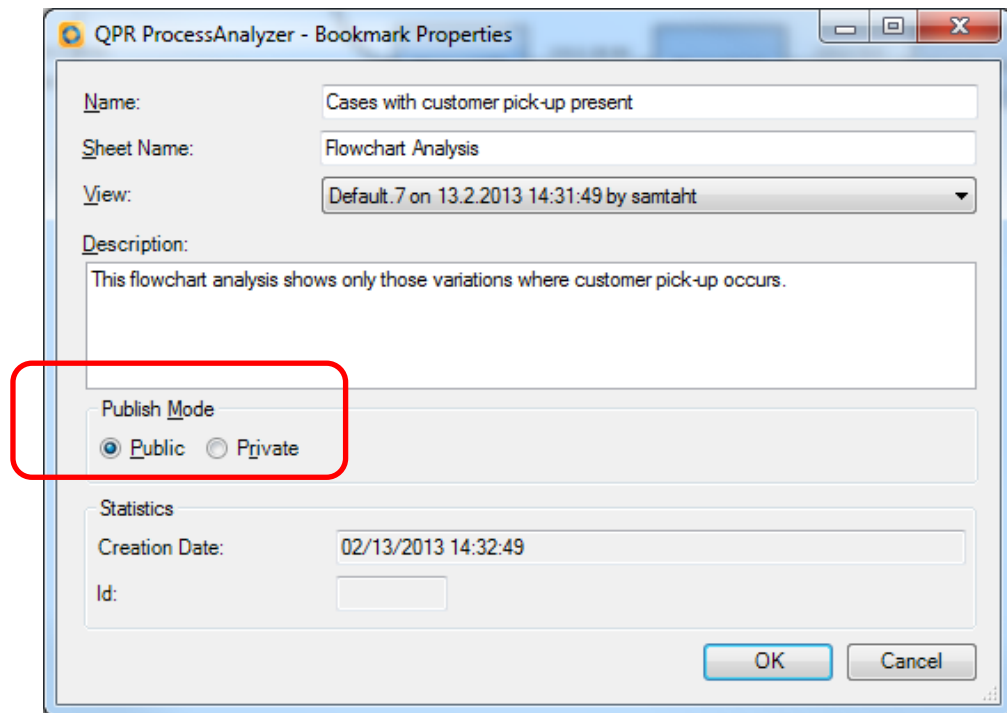
Basic usage

- By clicking the analysis icons on the top of the screen you can access different analyses. You can also change analysis settings from the right-hand side of the screen.



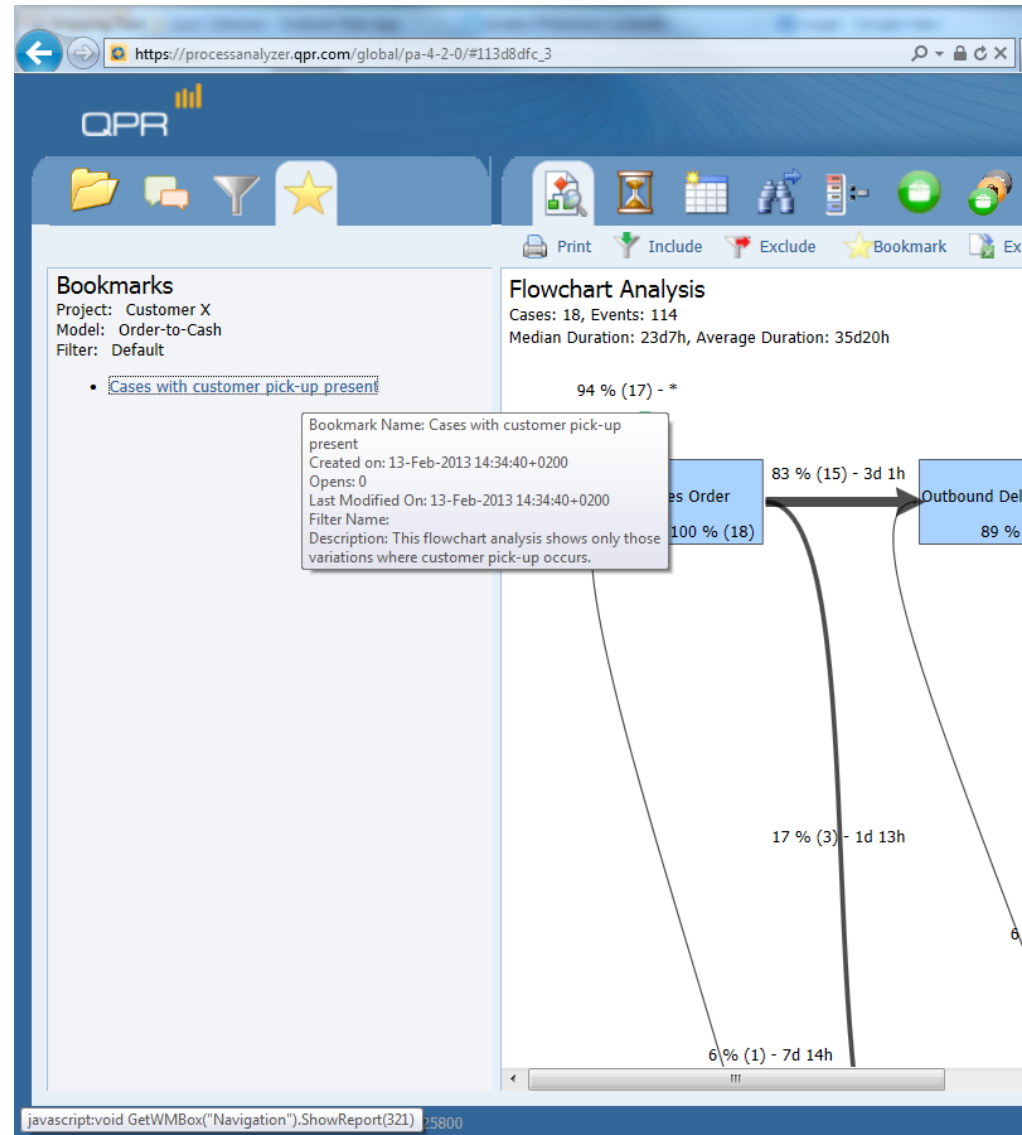
Bookmarking reports

- ▶ When you have created a public bookmark in Excel add-in while creating analyses, these bookmarks are visible to all users that can access the project.



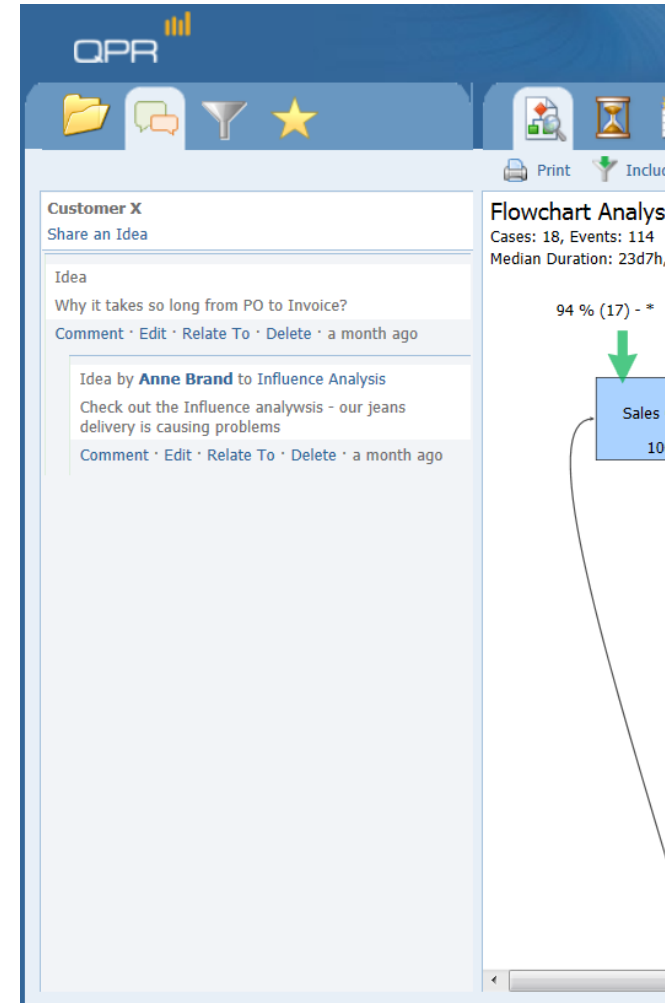
Bookmarking reports

- ▶ After the public bookmark has been saved, it appears in the "Bookmarks" tab of the Web UI.
- ▶ This way, you can deliver analysis results easily to different stakeholders within the organization, or possibly for external organizations.



Collaborating with the analysis results

- ▶ By selecting the "Collaboration" tab on the top right side of the screen, you can communicate with other users that have sufficient rights to the model.
- ▶ You can create new comments, reply to other users' comments, and attach a specific view to a comment by clicking the "Relate To" link when creating or editing a comment.



Keeping on track with things

Models and Projects, Export
User management and user rights

Projects and models

- Project is a folder into which the models are organized
 - Models inherit the project access rights
 - Note: if you move a model from one project to another, it inherits the access rights of its new parent project

Move this model to another project

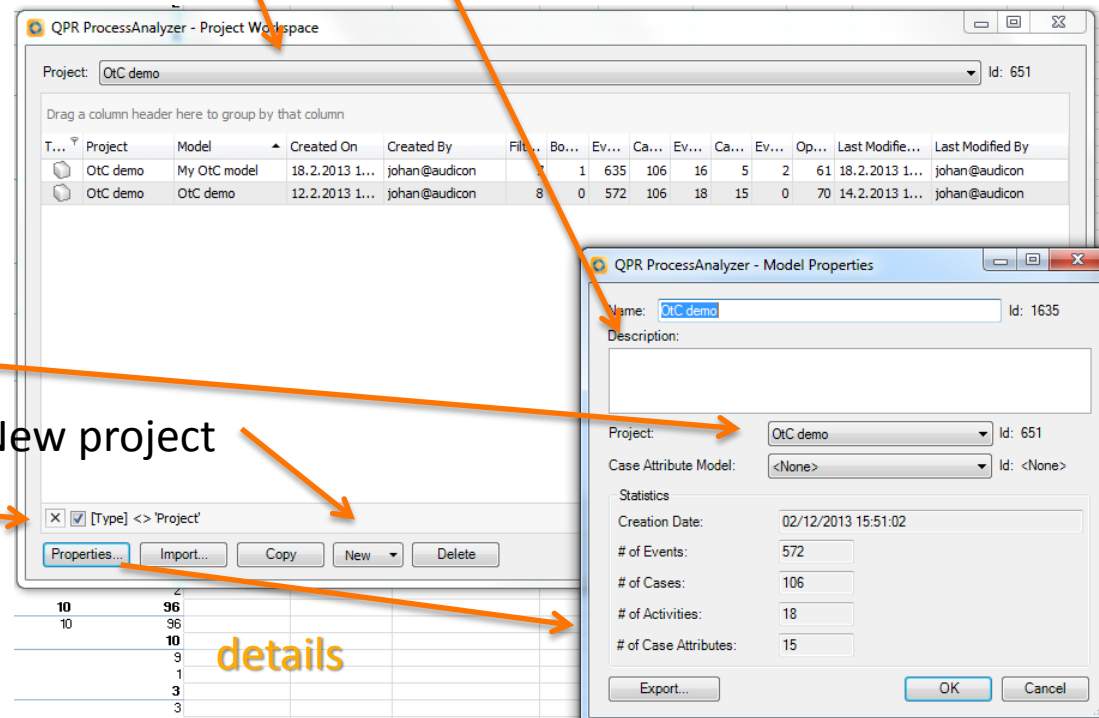
Uncheck to list both projects and models

Switch project

Add comments

New project

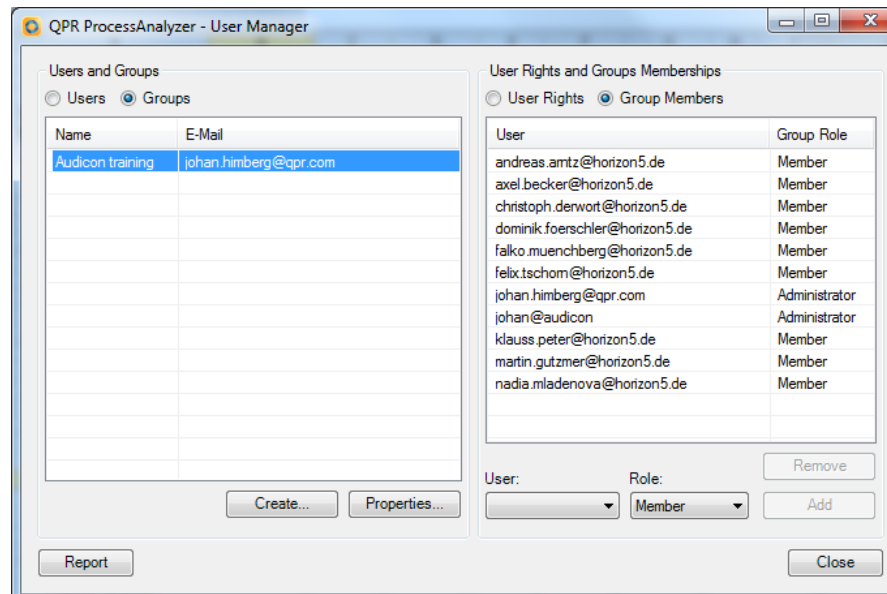
details



Export as pacm-file
(can be imported in "Import")

User management / groups

▶ See WIKI for details



User rights

User Roles and Rights: <All>

The "<All>" level user right refers to the [QPR ProcessAnalyzer Service](#).

Role	Create Project	Create Model	Import Model	Import Data	View Model	Create Filters/Analyze Model	Delete Model
Administrator	✓	✓	✓	✓	✓	✓	✓
Model Creator	✓	✓	✓	✓			
Evaluator	✓	✓	✓	✓			

- Evaluator and Model Creator get the project Administrator role for the projects that he/she creates (see User Roles and Rights for Individual Projects below). He/she can delete models in the created projects only.
- There is a maximum number of 10 models the Evaluator can create, and each model can contain a maximum of 1000 events, event attributes, and case attributes each.

User Roles and Rights for Individual Projects

Role	Create/Import Models	Assign User Roles	View Models	Create Filters/Analyze Model	Import Data	Delete Model
Administrator	✓	✓	✓	✓	✓	✓
Analyzer			✓	✓		
Designer			✓	✓	✓	✓
Viewer			✓			

- Note that the Administrator role here refers to the project.

Enrichment of the data

Advanced example

Problem

- ▶ We wish to
 - Evaluate how many cases start /month

Retrieve case data

Make sure that you get everything (set to "All" if more than 1000 events)

The screenshot shows the SAP OrderToCash - Microsoft Excel interface with the QPR ProcessAnalyzer ribbon. The ribbon includes tabs for Tools (Start, User Manager Workspace, Project, Bookmark), Analysis (Flowchart, Duration Profiling, Path, Influence, Cases, Variations, Events, Event Types, Flows), and Filter (Include Only, Exclude Only, Change). The main data area displays a table with the following columns: Name, Start Time, End Time, Duration Days, Event Count, Event Type Count, and Event Cost. The table contains 27 rows of data. A Settings dialog box is open on the right, showing the 'Show' section with 'All' selected and 'Limit To' set to 1000. The 'Columns' section shows 'Event Count for Event Type' set to '<None>', 'Case Attributes' set to '<None>', and 'Event Attributes' set to '<None>'. The 'Duration Groups' section has checkboxes for Second, Minute, Hour, Day, Week, Month, Quarter, and Year. The 'Starts' section has checkboxes for Weekday, Month, and Year. The 'Ends' section has checkboxes for Weekday, Month, and Year. The 'Variation Id' and 'Event Type String' checkboxes are also present.

	Name	Start Time	End Time	Duration Days	Event Count	Event Type Count	Event Cost
1	Cases: 106, Events: 635						
2	Case Table						
3							
4							
5							
6	97395276	10.7.11 20:27	23.7.11 16:48	12.85	6	6	0
7	95000188	27.8.11 13:16	14.9.11 06:29	17.72	6	6	0
8	93620510	17.1.12 13:47	3.2.12 18:29	17.20	5	5	0
9	92791043	22.1.12 10:51	10.2.12 23:18	19.52	8	7	0
10	91683178	7.7.11 18:03	29.7.11 18:24	22.01	7	7	0
11	91460943	30.5.11 04:06	16.6.11 12:14	17.34	6	6	0
12	884989895	26.5.11 16:09	29.6.11 15:10	33.96	8	8	0
13	87288982	23.7.11 17:56	11.10.11 14:14	79.85	6	6	0
14	87093037	29.10.11 11:15	4.11.11 18:53	6.32	5	5	0
15	84209808	4.11.11 04:20	19.1.12 05:29	76.05	6	6	0
16	8255229	4.6.11 23:42	18.6.11 14:48	13.63	6	6	0
17	79853424	19.8.11 03:45	17.9.11 16:43	29.54	3	3	0
18	79545494	24.5.11 09:38	10.6.11 16:40	17.29	5	5	0
19	78422757	28.1.12 14:27	21.2.12 06:46	23.68	4	4	0
20	76901927	7.11.11 05:24	22.1.12 08:46	76.14	6	6	0
21	723104636	23.6.11 07:30	24.7.11 03:51	30.85	9	9	0
22	70701922	12.7.11 23:37	30.7.11 06:37	17.29	5	5	0
23	68734702	11.1.12 15:22	17.1.12 10:42	5.81	4	4	0
24	67798752	29.11.11 23:57	16.12.11 06:38	16.28	6	6	0
25	67070577	13.2.12 09:28	2.3.12 17:58	18.35	6	6	0
26	6467220	27.8.11 19:25	12.9.11 15:33	15.84	5	5	0
27	64335471	24.7.11 04:27	13.10.11 19:43	81.64	9	8	0

Make a new case attribute

► Use Start Month

The screenshot displays the SAP OrderToCash - Microsoft Excel interface. The main data table is as follows:

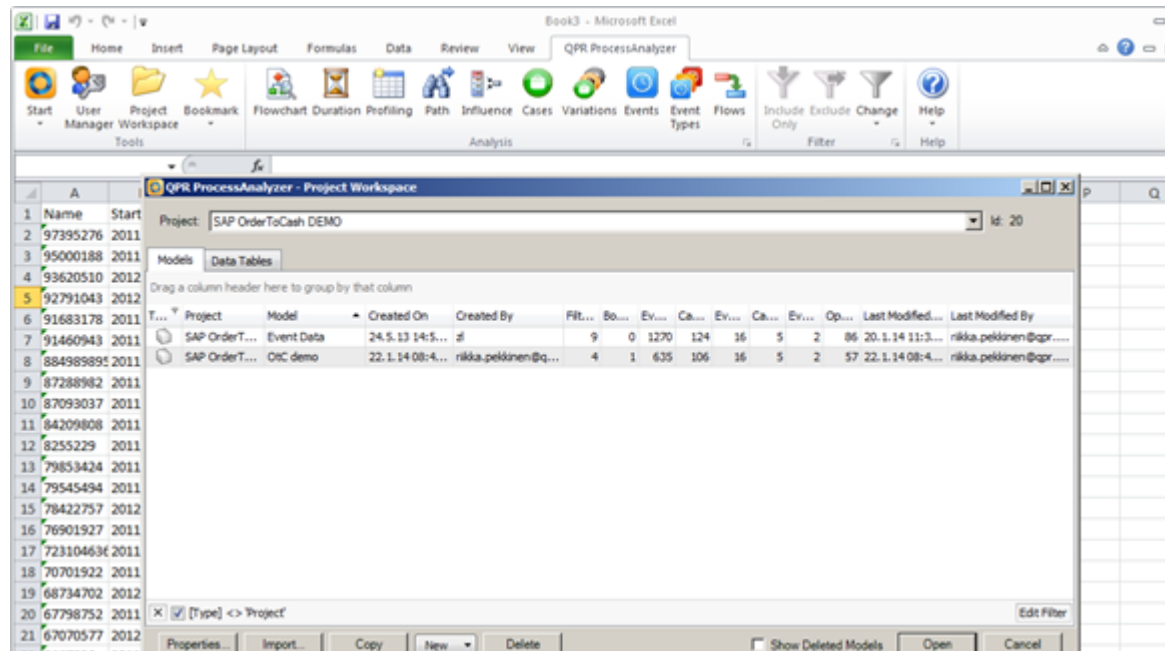
	End Time	Duration Days	Event Count	Event Type Count	Event Cost	StartMonth
6	23.7.11 16:48	12.85	6	6	6	0 2011/07
7	14.9.11 06:29	17.72	6	6	6	0 2011/08
8	3.2.12 18:29	17.20	5	5	5	0 2012/01
9	10.2.12 23:18	19.52	8	7	7	0 2012/01
10	29.7.11 18:24	22.01	7	7	7	0 2011/07
11	16.6.11 12:14	17.34	6	6	6	0 2011/05
12	29.6.11 15:10	33.96	8	8	8	0 2011/05
13	11.10.11 14:14	79.85	6	6	6	0 2011/07
14	4.11.11 18:53	6.32	5	5	5	0 2011/10
15	19.1.12 05:29	76.05	6	6	6	0 2011/11
16	18.6.11 14:48	13.63	6	6	6	0 2011/06
17	17.9.11 16:43	29.54	3	3	3	0 2011/08
18	10.6.11 16:40	17.29	5	5	5	0 2011/05
19	21.2.12 06:46	23.68	4	4	4	0 2012/01
20	22.1.12 08:46	76.14	6	6	6	0 2011/11
21	24.7.11 03:51	30.85	9	9	9	0 2011/06
22	30.7.11 06:37	17.29	5	5	5	0 2011/07
23	17.1.12 10:42	5.81	4	4	4	0 2012/01
24	16.12.11 06:38	16.28	6	6	6	0 2011/11
25	2.3.12 17:58	18.35	6	6	6	0 2012/02
26	12.9.11 15:33	15.84	5	5	5	0 2011/08
27	13.10.11 19:43	81.64	9	8	8	0 2011/07

The Settings panel on the right shows the following configuration:

- Show: ☒ Limit To: 1000
- Columns: Event Count for Event Type: <None>
- Case Attributes: <None>
- Event Attributes: <None>
- Duration Groups: ☐ Second, ☐ Minute, ☐ Hour, ☐ Day, ☐ Week, ☐ Month, ☐ Quarter, ☐ Year
- Starts: ☐ Weekday, ☒ Month, ☐ Year
- Ends: ☐ Weekday, ☐ Month

Prepare data for import

- ▶ Make an "importable" data set
- ▶ Copy to an empty sheet
 - Delete extra information and headers
- ▶ Import as Case attributes



Book3 - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View QPR ProcessAnalyzer

Tools: Start, User Manager, Project Manager, Bookmark, Flowchart, Duration Profiling, Path, Influence, Cases, Variations, Events, Event Types, Flows, Include Only, Exclude, Change, Filter, Help

QPR ProcessAnalyzer - Project Workspace

Project: SAP OrderToCash DEMO Id: 20

Models Data Tables

QPR ProcessAnalyzer - Import Wizard

Drag a column header here to group by this

Import Type

- ☐ Events
- ☒ Case Attributes
- ☐ Data Table
- ☐ QPR ProcessAnalyzer File

Last Modified... Last Modified By

20.1.14 11:3... rikka.pelkonen@qpr...

22.1.14 08:4... rikka.pelkonen@qpr...

Properties... Import... Copy New Delete

Flowchart Analysis Sheet1 Sheet2 Sheet3

Name	Start
97395276	2011
95000188	2011
93620510	2012
92791043	2012
91683178	2011
91460943	2011
88498989	2011
87288982	2011
87093037	2011
84209808	2011
8255229	2011
79853424	2011
79545494	2011
78422757	2012
76901927	2011
72310463	2011
70701922	2011
68734702	2012
67798752	2011
67070577	2012
6467220	2011
64335471	2011/07
64283436	2011/09
61426559	2011/05
60658860	2011/08
5952269	2011/08
59019408	2011/10

Book3 - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View QPR ProcessAnalyzer

Tools: Start, User Manager, Project Manager, Bookmark, Flowchart, Duration Profiling, Path, Influence, Cases, Variations, Events, Event Types, Flows, Include Only, Exclude, Change, Filter, Help

QPR ProcessAnalyzer - Project Workspace

Project: SAP OrderToCash DEMO Id: 20

Models Data Tables

QPR ProcessAnalyzer - Import Wizard

Drag a column header here to group by this

Source

- ☒ Current Worksheet
- ☐ Database via SQL Query
- ☐ Text File

Last Modified... Last Modified By

20.1.14 11:3... rikka.pelkonen@qpr...

22.1.14 08:4... rikka.pelkonen@qpr...

Previous Next Cancel

Properties... Import... Copy New Delete

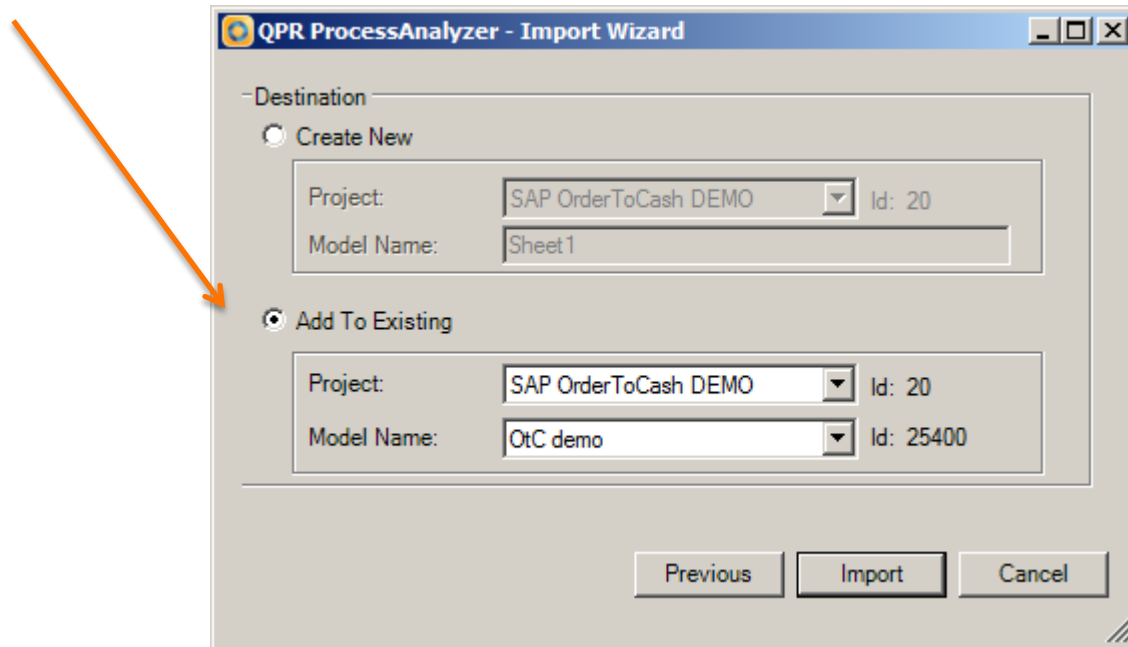
Show Deleted Models Open Cancel

Flowchart Analysis Sheet1 Sheet2 Sheet3

Name	Start
97395276	2011
95000188	2011
93620510	2012
92791043	2012
91683178	2011
91460943	2011
88498989	2011
87288982	2011
87093037	2011
84209808	2011
8255229	2011
79853424	2011
79545494	2011
78422757	2012
76901927	2011
72310463	2011
70701922	2011
68734702	2012
67798752	2011
67070577	2012
6467220	2011
64335471	2011/07
64283436	2011/09
61426559	2011/05
60658860	2011/08
5952269	2011/08
59019408	2011/10

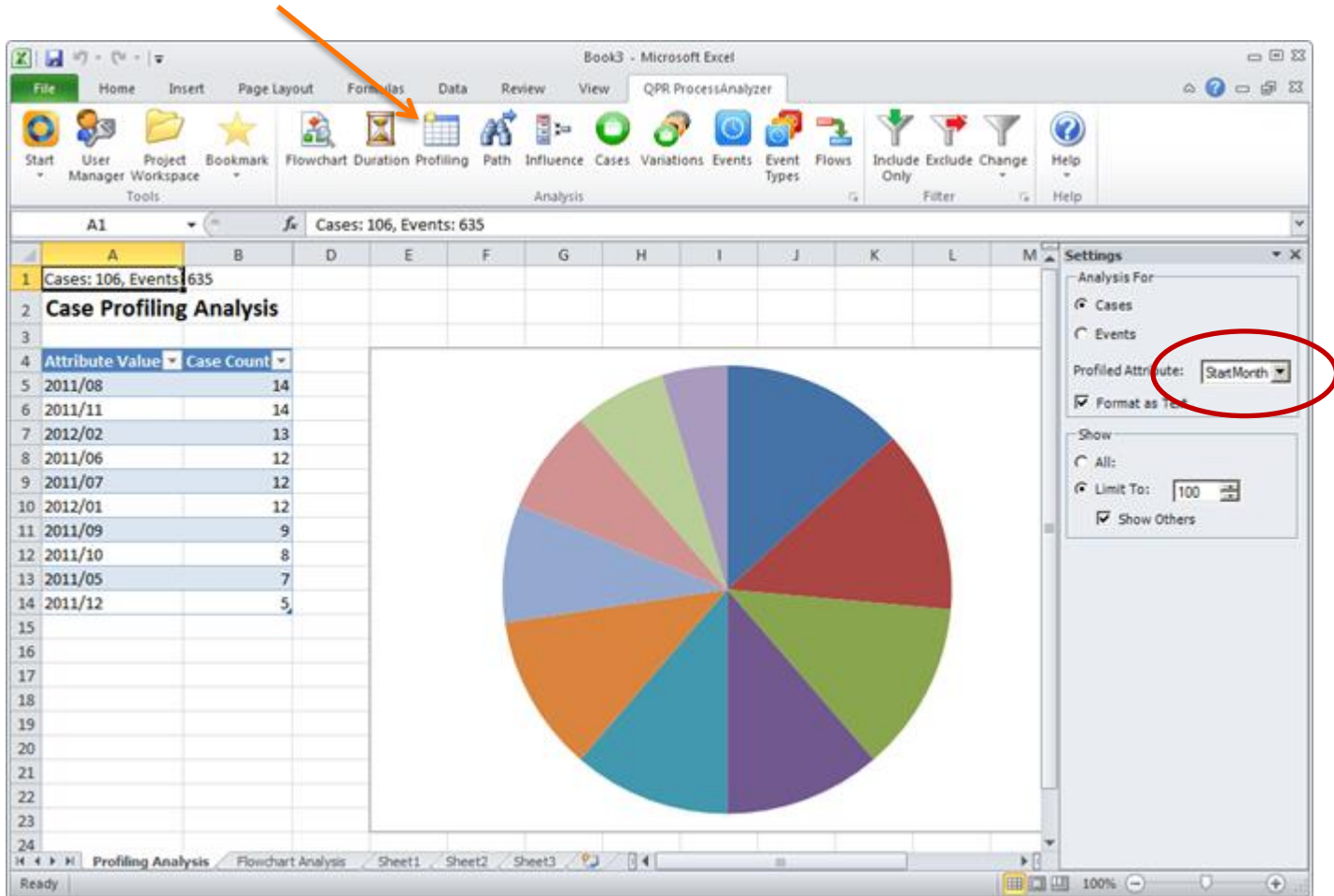
Import

- ▶ Remember to choose "Add to Existing"
 - Project / model name may be different in the screenshot than in your example



Profile

- ▶ Profile the new case attribute "Start Month"



Excel tricks...

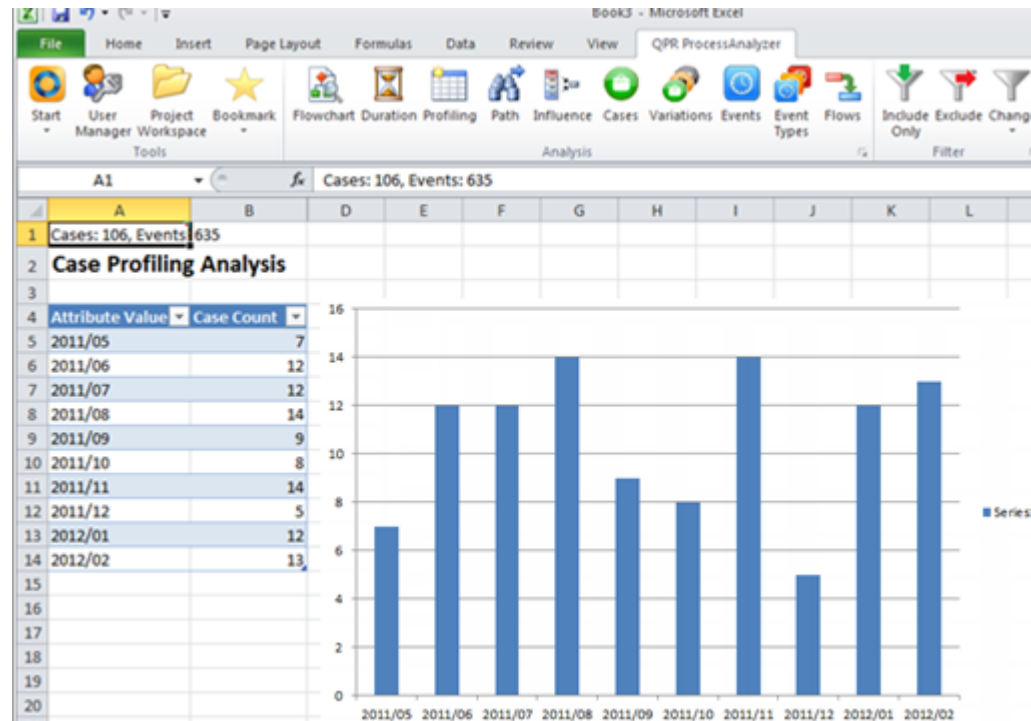
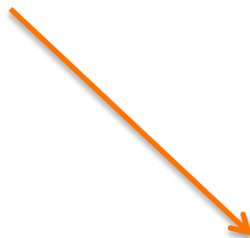
- ▶ Tip: Change the graph in Excel
 - Pie chart is not good for time series data



Final statistics

- ▶ Sort and you'll see number of Orders /month
 - Typical thing to do when validating the consistency between the source system and QPR ProcessAnalyzer

sort



Advanced

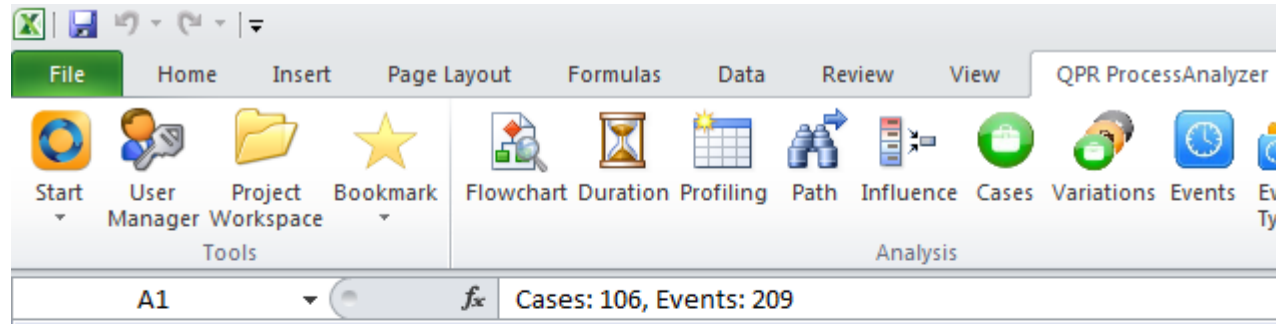
Compare monthly lead times

Problem

- ▶ We wish to
 - benchmark the OtC process by start month
 - compare the monthly cycle time

...continue

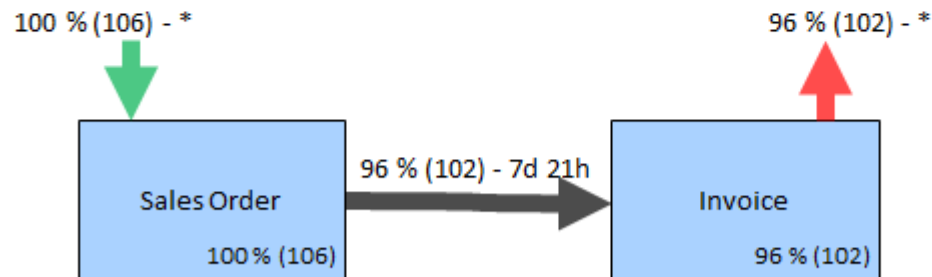
- ▶ Select the lead time of interest by appropriate filtering



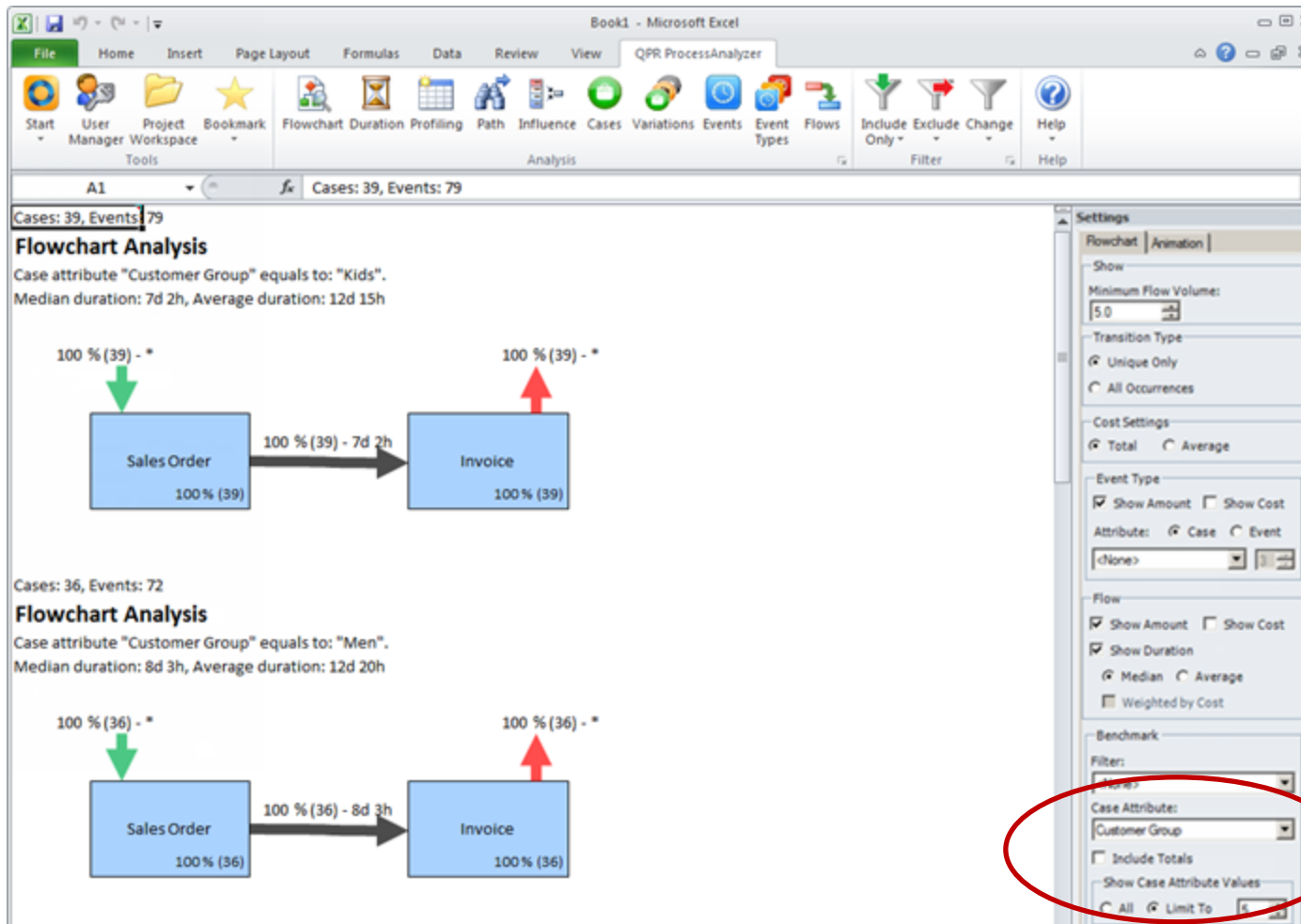
Cases: 106, Events: 209

Flowchart Analysis

Median duration: 7d 18h, Average duration: 12d 13h

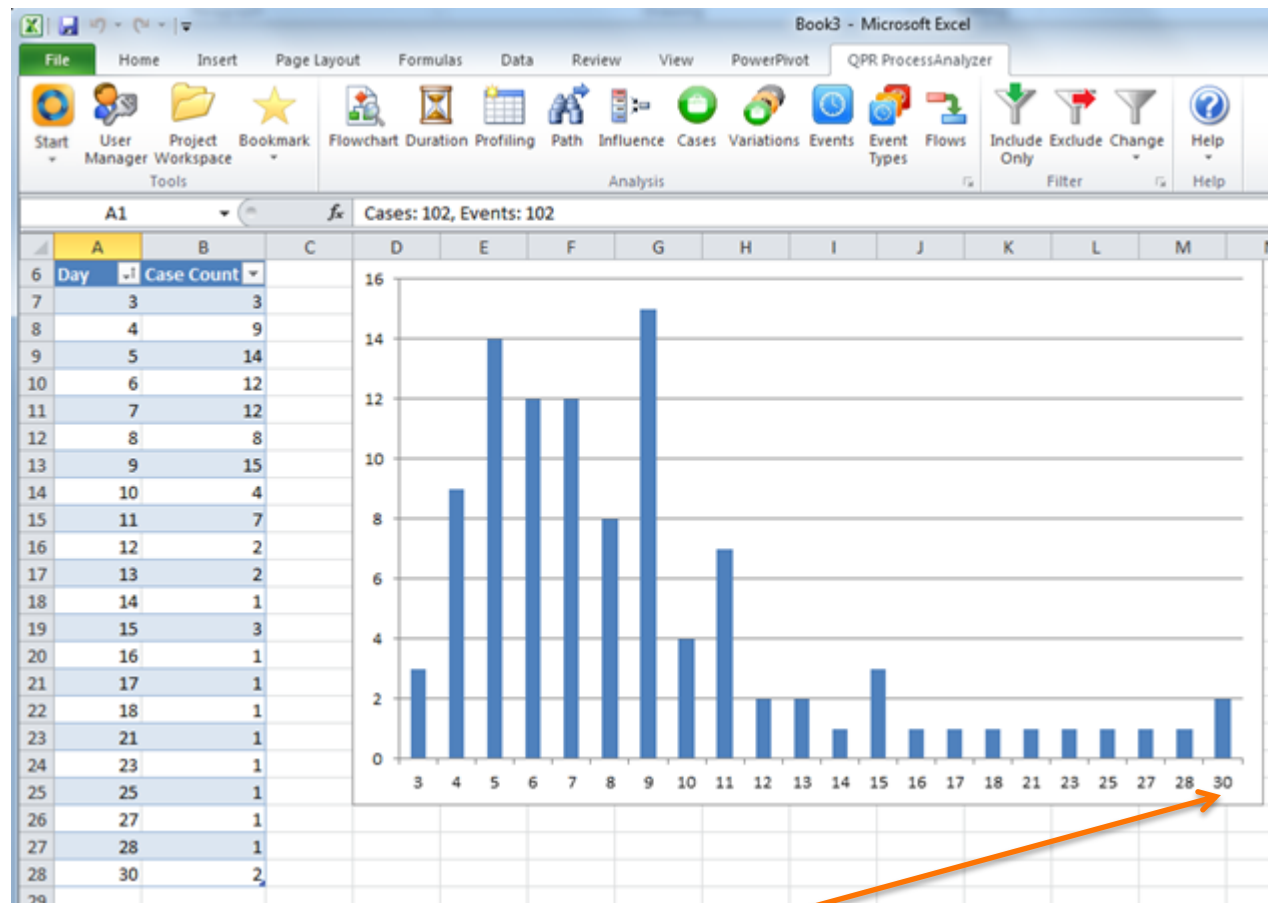


Benchmark



Check time-window consistency

- ▶ Check how long lead times exist
- ▶ Filter if necessary



Flows

- ▶ Use the flow report to make nice graphs

The screenshot shows the QPR ProcessAnalyzer ribbon in Microsoft Excel. The 'Flows' icon is circled in red. Below the ribbon, a 'Flow Table' is displayed with the following data:

Start	End	Customer Group	Count	Successor Probability	Predecessor Probability	Median Duration	Average
START	Sales Order	Kids	39	100.00 %	100.00 %	0	
Sales Order	END	Women	4	12.90 %	12.90 %	0	
Sales Order	Invoice	Women	27	87.10 %	100.00 %	8.556	
Invoice	END	Men	36	100.00 %	100.00 %	0	
START	Sales Order	Women	31	100.00 %	100.00 %	0	
Invoice	END	Kids	39	97.50 %	100.00 %	0	
Sales Order	Invoice	Kids	39	100.00 %	97.50 %	7.096	
Sales Order	Invoice	Men	36	100.00 %	100.00 %	8.135	
Invoice	END	Women	27	100.00 %	87.10 %	0	
START	Sales Order	Men	36	100.00 %	100.00 %	0	
Invoice	Invoice	Kids	1	2.50 %	2.50 %	26.696	

The 'Settings' pane on the right is also visible, with the 'Case Attribute' dropdown set to 'Customer Group' and the 'Start Event Attribute' dropdown set to '<None>'. These two dropdowns are circled in red.

Exercises

Further information

Individual exercises

The data in this Excel workbook can be used to find answers to following 10 exercise questions:

1. How big percentage of orders is invoiced?
2. What product is most often delivered by Supplier?
3. What are the 3 most common reasons for the order to be returned by customer ("Return w Notific.")
4. Which customer group is most likely to change their Order?
5. What is the total cost of all Sales Orders?
6. What is the total cost of Orders that are returned with notification?
7. What is the most important reason for OrderToCash process to last for more than 80 days?
8. Comparing to average orders, what is the main reason for those orders to take so much time?
9. What is the most common process variation and how many orders belong to that variation?
10. What is the Order Number (name) of the order where the sales order is changed after the shipment has been done?

QPR ProcessAnalyzer Certification Test

- ▶ By taking this test, you can certify yourself as a QPR ProcessAnalyzer Business User
- ▶ The test measures your knowledge in the key concepts of QPR ProcessAnalyzer and proficiency in using the software for analyzing data
- ▶ The test is available from QPR Customer Care on request
- ▶ For more information, see Wiki

Further Information

- ▶ Wiki: <http://devnet.qpr.com/pawiki>
- ▶ Support area: <http://www.qpr.com/products/qpr-processanalyzer-support.htm>
- ▶ ABPD group in LinkedIn:
<http://www.linkedin.com/groups/Automated-Business-Discovery-Professionals-3325777>