

# 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

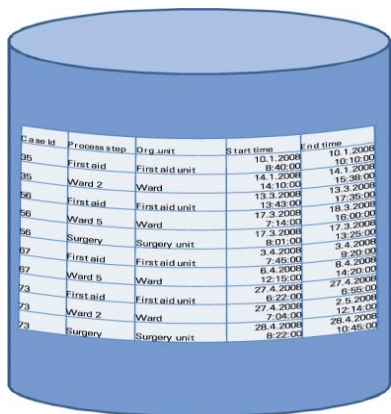
Automated Business Process Discovery

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

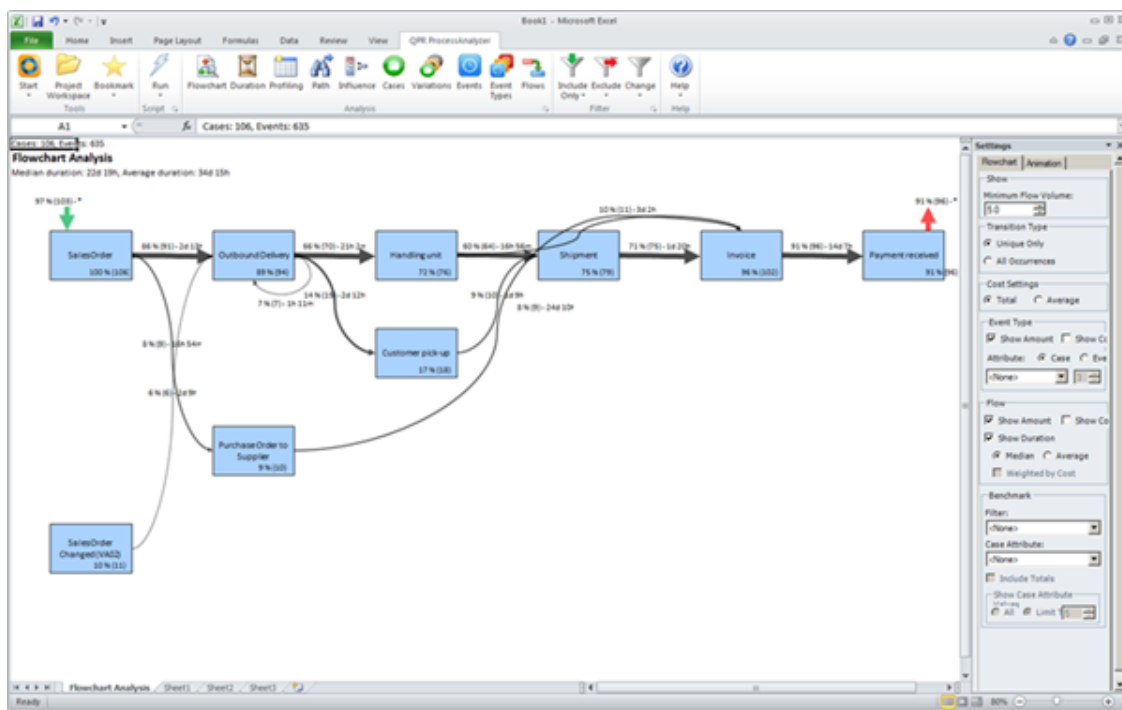
Combine both for optimized result

# 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	First aid	First aid 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 15:28:00
35	First aid	First aid unit	13.3.2008 13:43:00	13.3.2008 17:35:00
36	First aid	Ward 5	17.3.2008 7:14:00	17.3.2008 18:00:00
36	Surgery	Surgery unit	17.3.2008 7:14:00	17.3.2008 13:25:00
37	First aid	First aid unit	3.4.2008 3:4.2008	3.4.2008 8:20:00
37	Ward 5	Ward	7.45.2008 6.4.2008	6.4.2008 14:20:00
73	First aid	First aid unit	27.4.2008 12:15:00	27.4.2008 8:55:00
73	Ward 2	Ward	7.04.2008 6.22.2008	2.5.2008 12:14:00
73	Surgery	Surgery unit	28.4.2008 8:22:00	28.4.2008 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

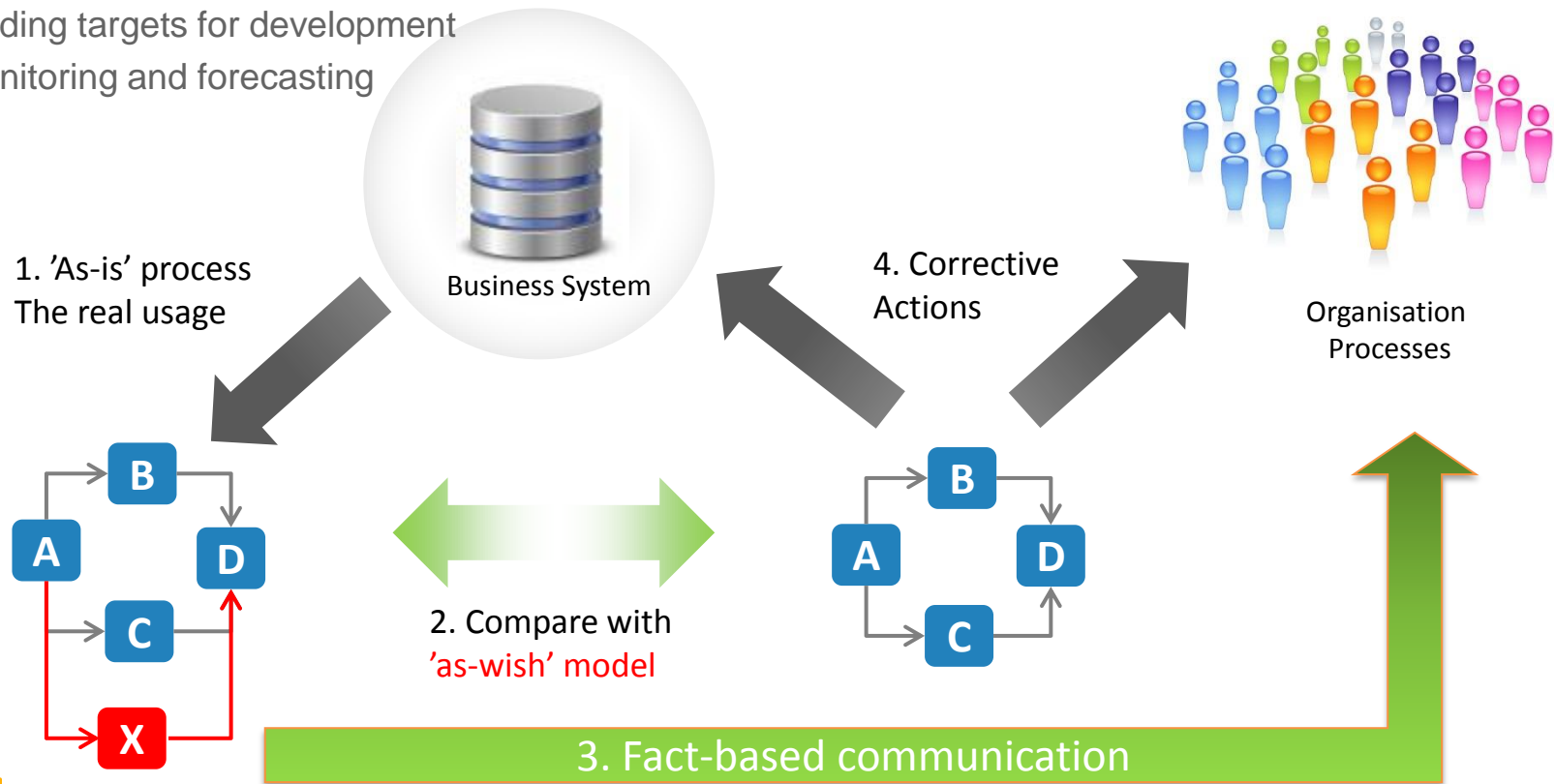
- System redocumentation
- Baseline analysis

# 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

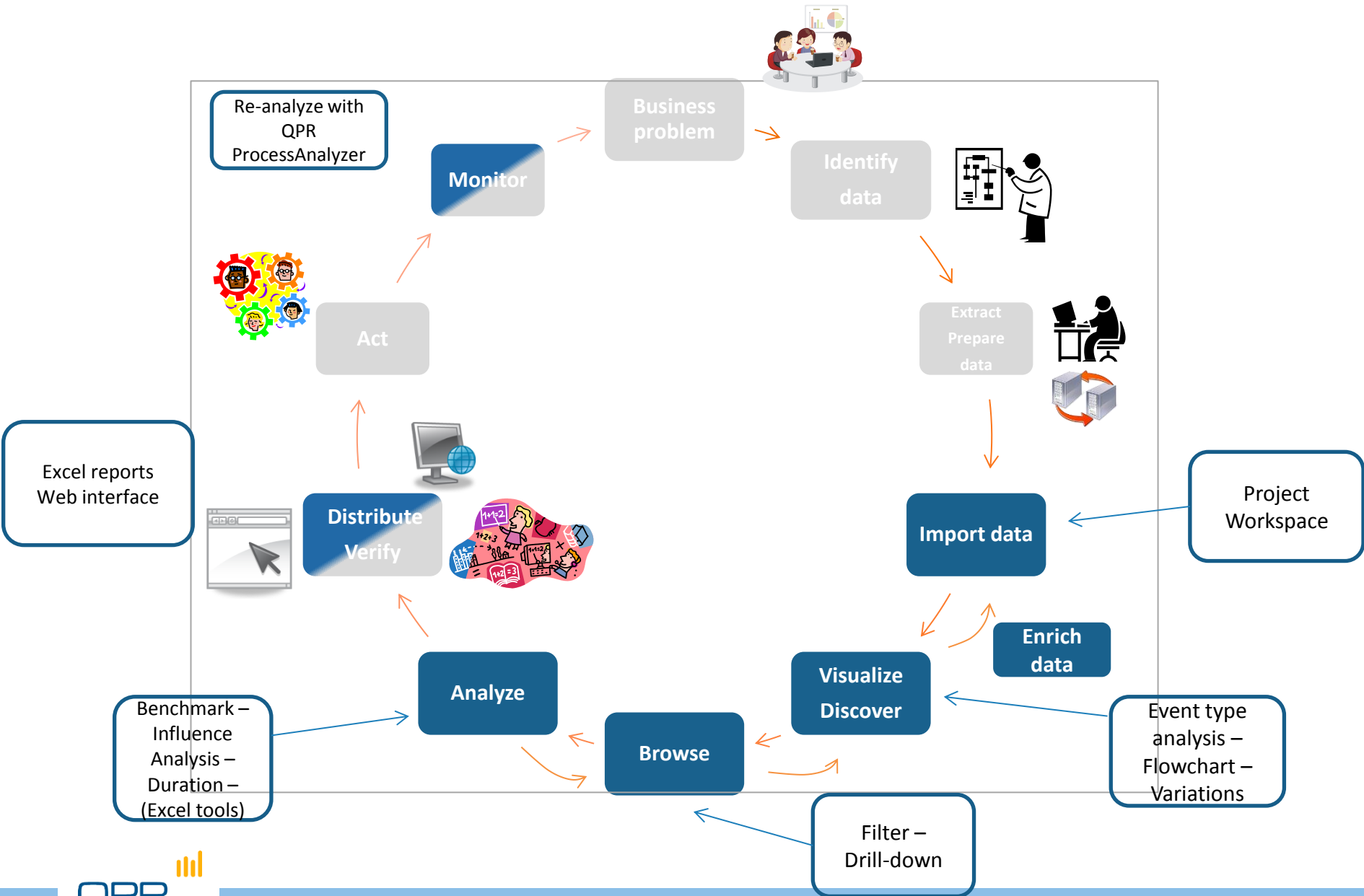




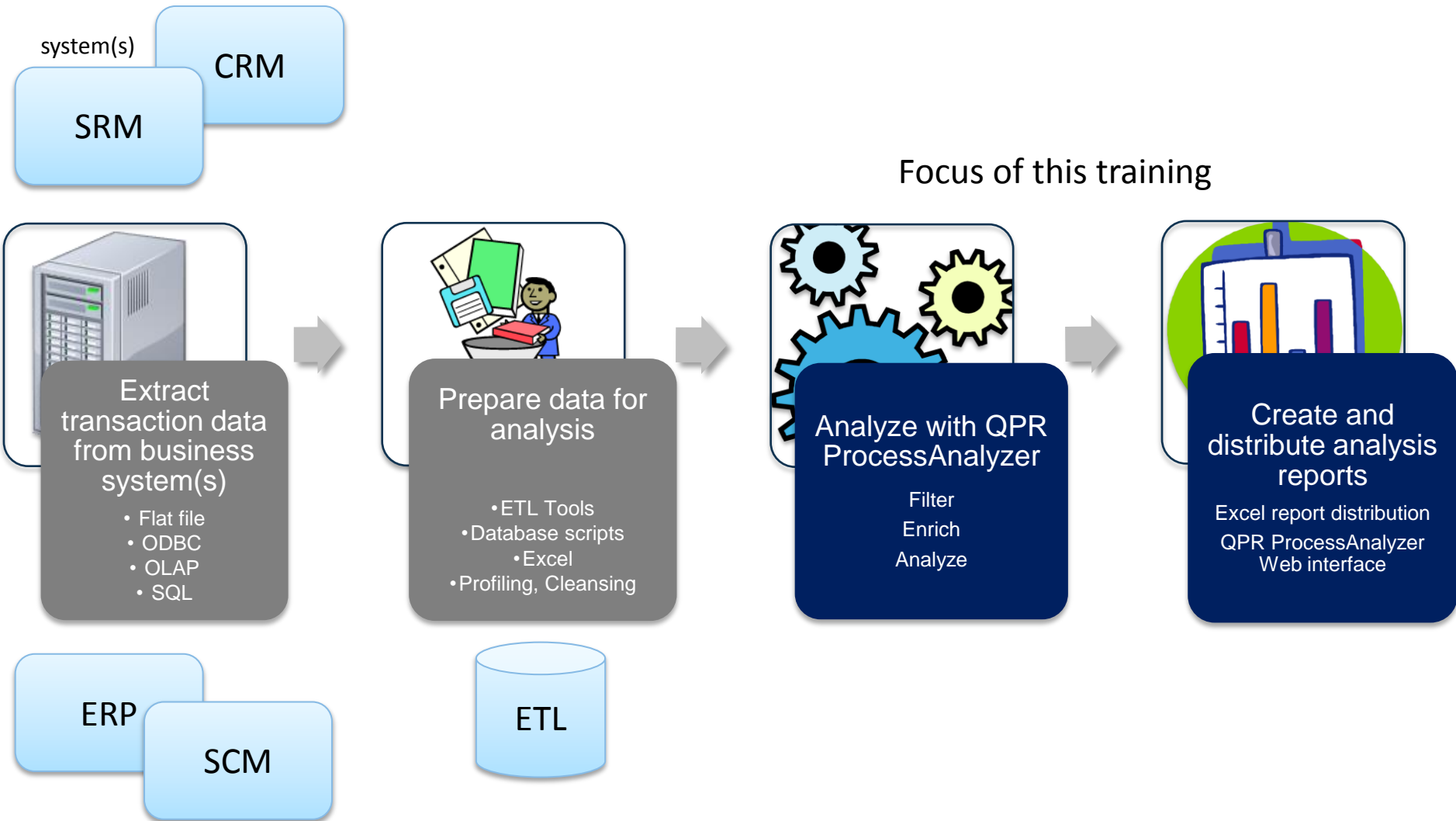
# Focus of the training

QPR ProcessAnalyzer and Business Process Management

# QPR ProcessAnalyzer and the analytical BPM cycle



# Focus of the training

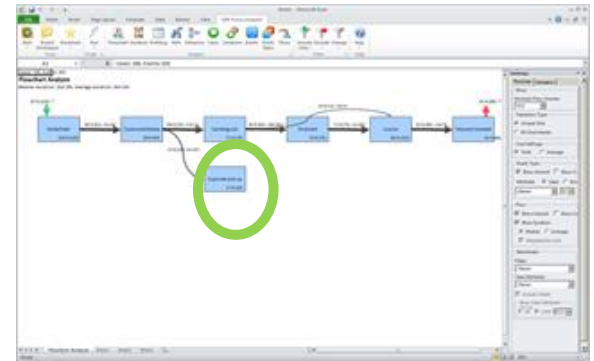
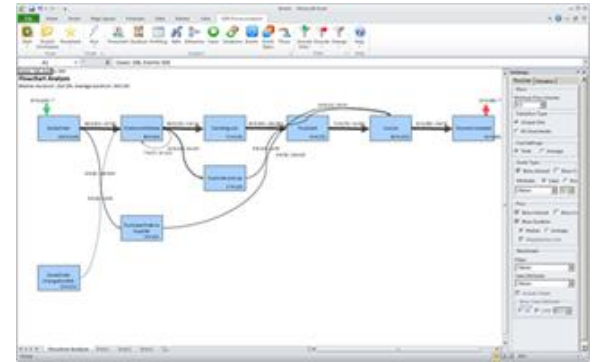


# Steps in more detail

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

# 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 columns for 'Order ID', 'Customer Group', 'Product Group', 'Sales Order', 'Production Order', 'Production', 'Delivery', and 'Customer pick-up'. The data is color-coded, with red indicating high values and blue indicating low values. The table is titled 'Influence Analysis' and shows the impact of various factors on the process.

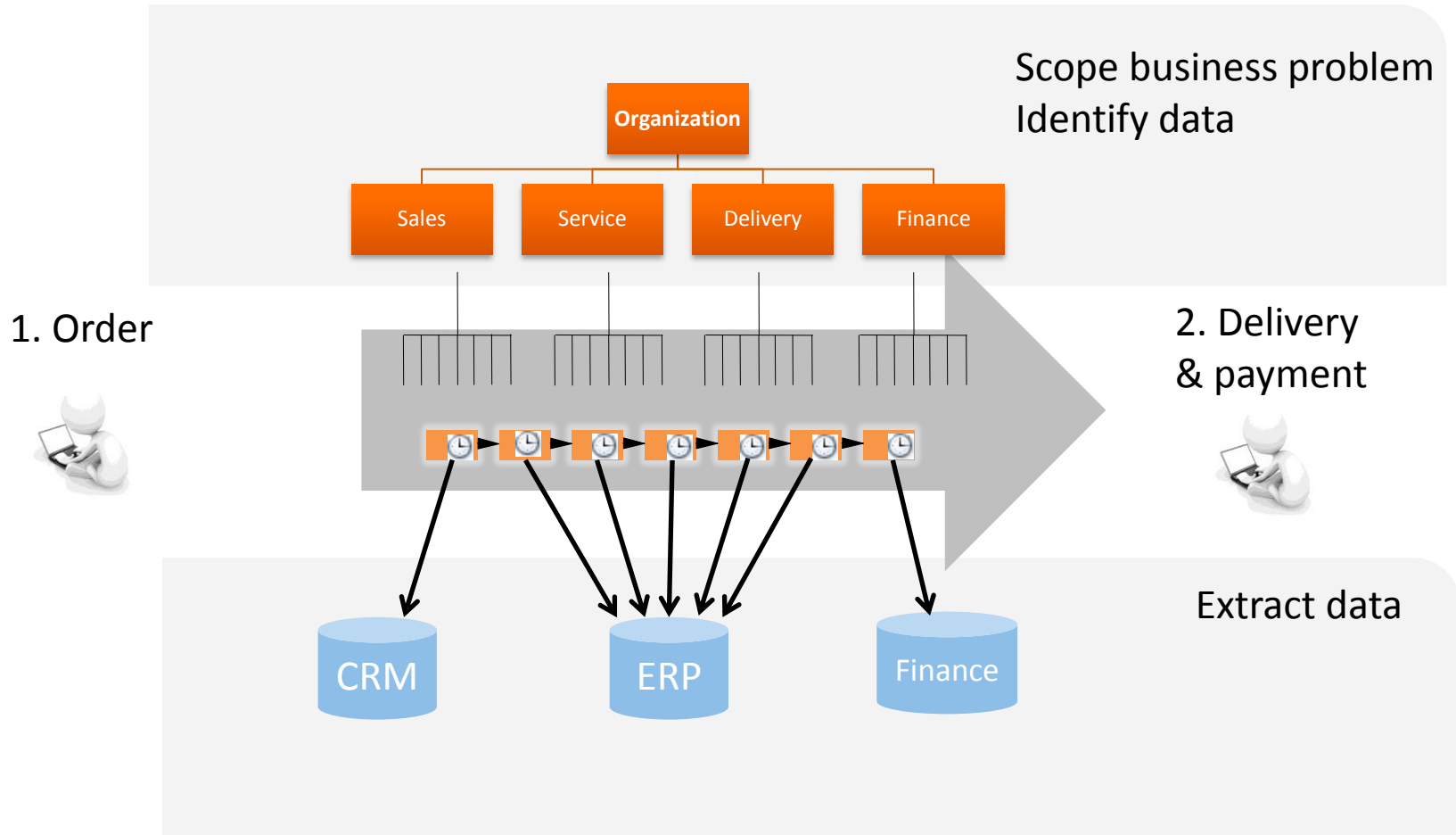
Order ID	Customer Group	Product Group	Sales Order	Production Order	Production	Delivery	Customer pick-up
1	Customer Group	Product Group	100	100	100	100	100
2	Customer Group	Product Group	100	100	100	100	100
3	Customer Group	Product Group	100	100	100	100	100
4	Customer Group	Product Group	100	100	100	100	100
5	Customer Group	Product Group	100	100	100	100	100
6	Customer Group	Product Group	100	100	100	100	100
7	Customer Group	Product Group	100	100	100	100	100
8	Customer Group	Product Group	100	100	100	100	100
9	Customer Group	Product Group	100	100	100	100	100
10	Customer Group	Product Group	100	100	100	100	100
11	Customer Group	Product Group	100	100	100	100	100
12	Customer Group	Product Group	100	100	100	100	100
13	Customer Group	Product Group	100	100	100	100	100
14	Customer Group	Product Group	100	100	100	100	100
15	Customer Group	Product Group	100	100	100	100	100
16	Customer Group	Product Group	100	100	100	100	100
17	Customer Group	Product Group	100	100	100	100	100
18	Customer Group	Product Group	100	100	100	100	100
19	Customer Group	Product Group	100	100	100	100	100
20	Customer Group	Product Group	100	100	100	100	100
21	Customer Group	Product Group	100	100	100	100	100
22	Customer Group	Product Group	100	100	100	100	100
23	Customer Group	Product Group	100	100	100	100	100
24	Customer Group	Product Group	100	100	100	100	100
25	Customer Group	Product Group	100	100	100	100	100
26	Customer Group	Product Group	100	100	100	100	100
27	Customer Group	Product Group	100	100	100	100	100
28	Customer Group	Product Group	100	100	100	100	100
29	Customer Group	Product Group	100	100	100	100	100
30	Customer Group	Product Group	100	100	100	100	100
31	Customer Group	Product Group	100	100	100	100	100
32	Customer Group	Product Group	100	100	100	100	100
33	Customer Group	Product Group	100	100	100	100	100
34	Customer Group	Product Group	100	100	100	100	100
35	Customer Group	Product Group	100	100	100	100	100
36	Customer Group	Product Group	100	100	100	100	100
37	Customer Group	Product Group	100	100	100	100	100
38	Customer Group	Product Group	100	100	100	100	100
39	Customer Group	Product Group	100	100	100	100	100
40	Customer Group	Product Group	100	100	100	100	100
41	Customer Group	Product Group	100	100	100	100	100
42	Customer Group	Product Group	100	100	100	100	100
43	Customer Group	Product Group	100	100	100	100	100
44	Customer Group	Product Group	100	100	100	100	100
45	Customer Group	Product Group	100	100	100	100	100
46	Customer Group	Product Group	100	100	100	100	100
47	Customer Group	Product Group	100	100	100	100	100
48	Customer Group	Product Group	100	100	100	100	100
49	Customer Group	Product Group	100	100	100	100	100
50	Customer Group	Product Group	100	100	100	100	100

# QPR ProcessAnalyzer in practice

Example of Order-to-Cash analytics



# Scoping: Order-to-Cash process



Import

Visualize  
Discover

Select  
Filter

Analyze

# Import data

The screenshot shows the QPR ProcessAnalyzer interface with a data table. The table has the following columns: Case ID, Activity, Start Time, AMF User, Organization, Region, Cost, Account Manager, Product Group, and Customer Group. The data rows are color-coded by activity type: blue for handling units, yellow for invoices, purple for shipments, and green for sales orders.

Case ID	Activity	Start Time	AMF User	Organization	Region	Cost	Account Manager	Product Group	Customer Group
220876	Handling unit	17.11.2011 8	4 Timothy	Delivery	New York	1141	William Davis	Shirts	Kids
220876	Invoice	18.11.2011 15	1 Sharon	Finance	Los Angeles	625	William Davis	Shirts	Kids
220876	Outbound Delivery	14.11.2011 4	5 James	Delivery	New York	1124	Patricia White	Socks	Men
220876	Customer pick-up	17.11.2011 8	8 James	Sales	Austin	89	William Davis	Socks	Kids
220876	Shipment	17.11.2011 14	7 Shipment Unit	Delivery	Los Angeles	422	William Davis	Shoes	Women
220876	Sales Order	11.11.2011 18	7 Greg	Sales	New York	1208	Patricia White	Shoes	Women
220876	Payment received	20.11.2011 0	7 Sharon	Finance	Los Angeles	687	William Davis	Socks	Kids
238100	Delivery Changed	1.7.2011 8	4 Greg	Delivery	New York	1060	Patricia White	Shirts	Men
238100	Handling unit	2.7.2011 20	2 Timothy	Delivery	Houston	1003	Patricia White	Hats	Men
238100	Invoice	4.7.2011 16	7 Sharon	Finance	Chicago	897	Patricia White	Hats	Men
238100	Outbound Delivery	27.6.2011 18	4 James	Delivery	Chicago	588	Mary Wilson	Socks	Women
238100	Shipment	3.7.2011 9	7 Shipment Unit	Delivery	Chicago	801	Mary Wilson	Shoes	Women
238100	Sales Order	25.6.2011 13	7 Greg	Sales	New York	1132	Mary Wilson	Hats	Kids
339339	Handling unit	14.7.2011 11	1 Timothy	Delivery	New York	352	Paul Jones	Shoes	Women
339339	Invoice	17.7.2011 1	7 Sharon	Finance	New York	215	Patricia White	Shirts	Men
339339	Outbound Delivery	14.7.2011 4	8 James	Delivery	New York	1124	Patricia White	Jeans	Men
339339	Shipment	15.7.2011 17	9 Shipment Unit	Delivery	Dallas	341	Paul Jones	Shirts	Kids
339339	Sales Order	10.7.2011 18	0 Greg	Sales	New York	622	Paul Jones	Jeans	Women
339339	Payment received	24.7.2011 2	9 Sharon	Finance	Houston	228	Mary Wilson	Hats	Kids
371564	Handling unit	11.10.2011 18	3 Timothy	Delivery	New York	191	Patricia White	Hats	Men
371564	Invoice	16.10.2011 0	5 Sharon	Finance	Houston	834	Mary Wilson	Hats	Kids
371564	Outbound Delivery	10.10.2011 8	4 James	Delivery	Austin	78	Paul Jones	Jeans	Women
371564	Shipment	15.10.2011 8	2 Shipment Unit	Delivery	Houston	239	Patricia White	Shirts	Kids
371564	Sales Order	8.10.2011 8	8 Greg	Sales	Dallas	645	Patricia White	Hats	Men
371564	Payment received	22.10.2011 21	1 Sharon	Finance	Houston	773	Patricia White	Hats	Men
553614	Handling unit	2.11.2011 1	0 Timothy	Delivery	Los Angeles	982	Patricia White	Jeans	Men
553614	Invoice	4.11.2011 12	3 Sharon	Finance	Chicago	524	Mary Wilson	Jeans	Women
553614	Outbound Delivery	21.10.2011 15	1 James	Delivery	Austin	89	Mary Wilson	Hats	Kids
553614	Outbound Delivery	31.10.2011 12	5 James	Delivery	Los Angeles	742	William Davis	Shoes	Women
553614	Sales Order Changed (WAG)	28.10.2011 19	7 Greg	Sales	New York	890	Patricia White	Shirts	Men
553614	Shipment	2.11.2011 14	9 Shipment Unit	Delivery	Houston	356	Patricia White	Socks	Men
553614	Sales Order	30.10.2011 17	5 Greg	Sales	Austin	507	Linda Jackson	Socks	Kids

Case ID

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.



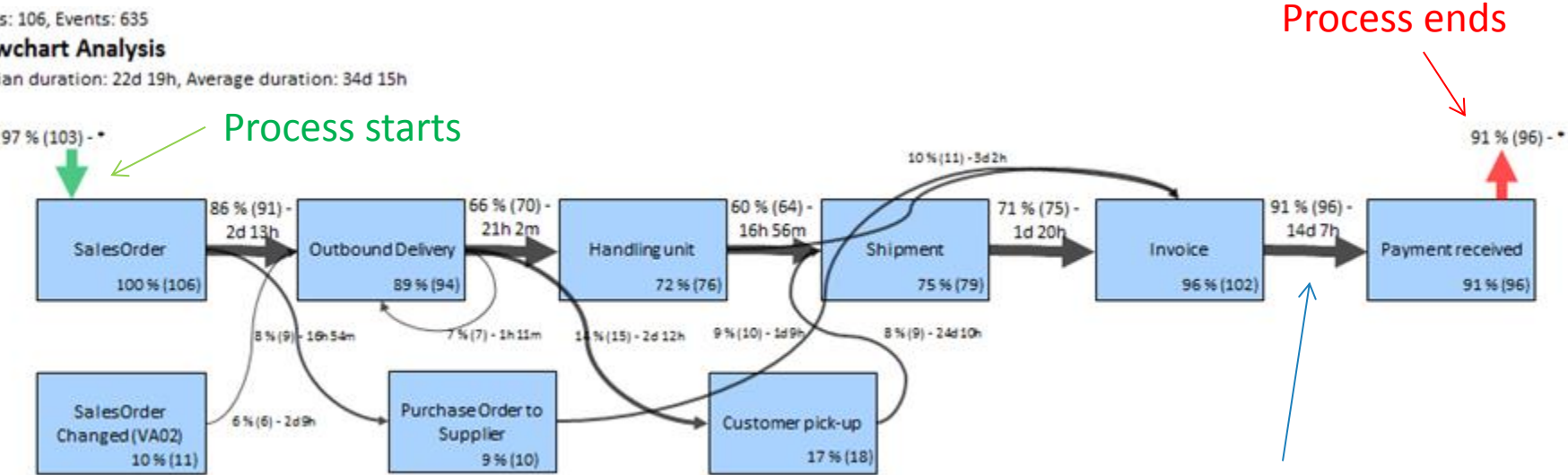


# Visualize – Discover - Select

Cases: 106, Events: 635

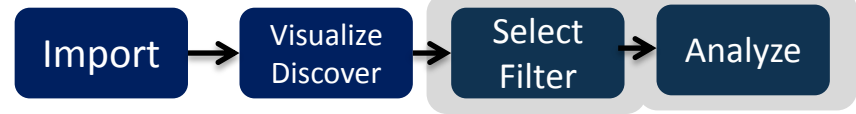
## Flowchart Analysis

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



Number of instances through this specific event type

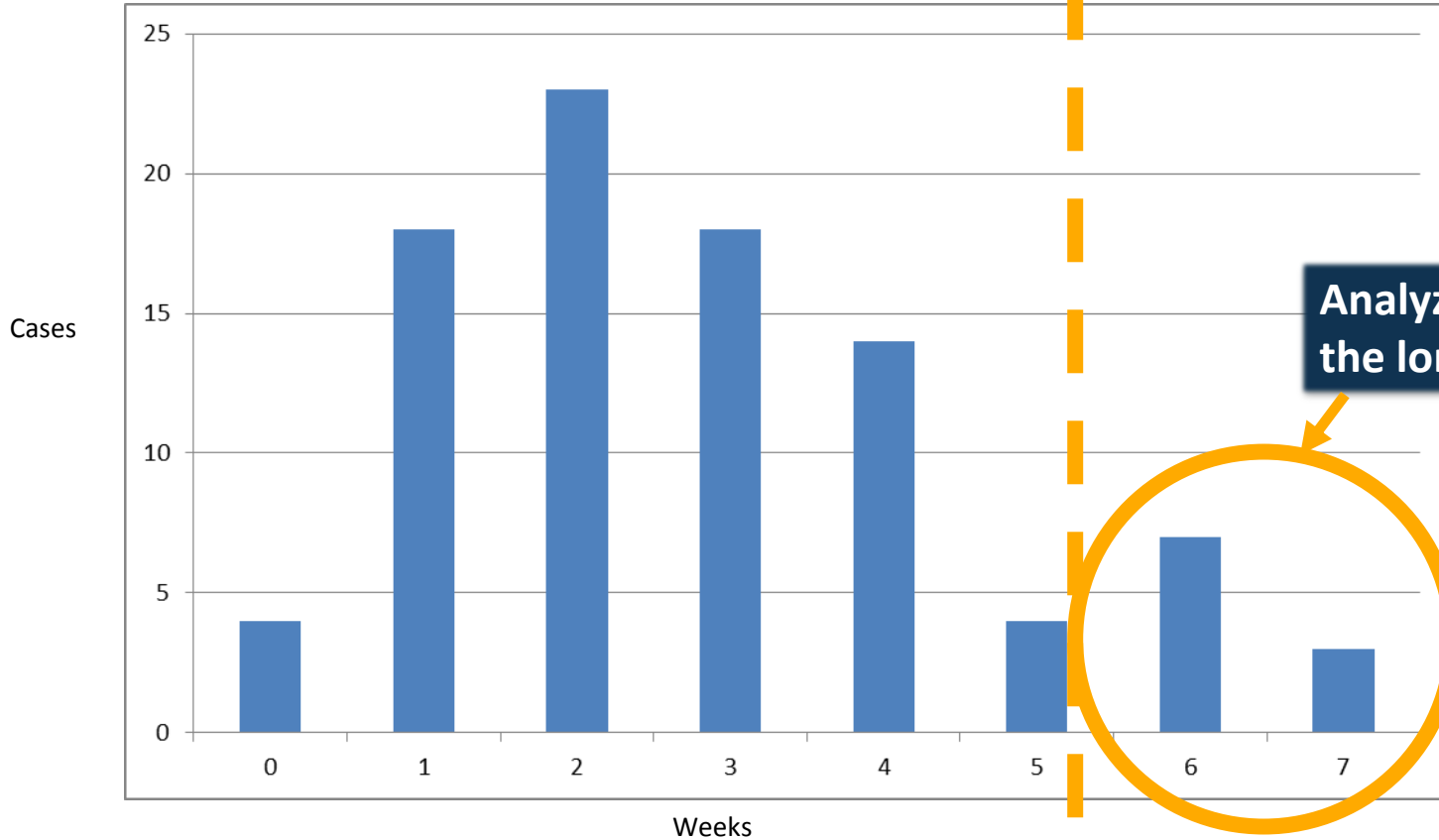
Number of instances and median time between events



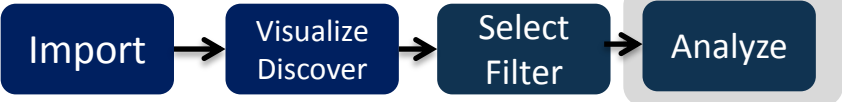
# Select - Analyze

0-5 weeks

Cases over 5 weeks



Analyze: What causes the long duration?



# 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 %
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	15	0	15	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

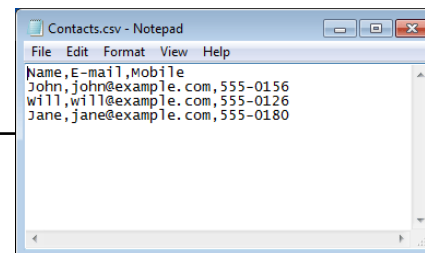


QPR SAP Connector

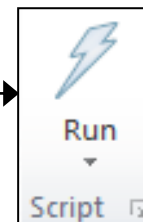
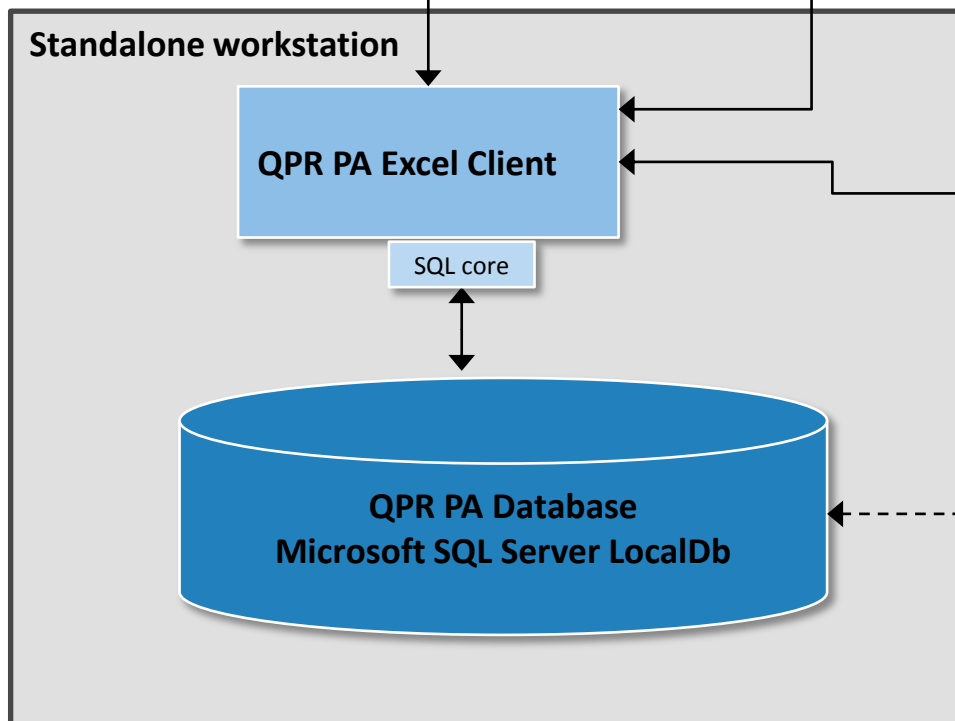
WINSHUTTLE™



Excel UI, import and reporting



Text file



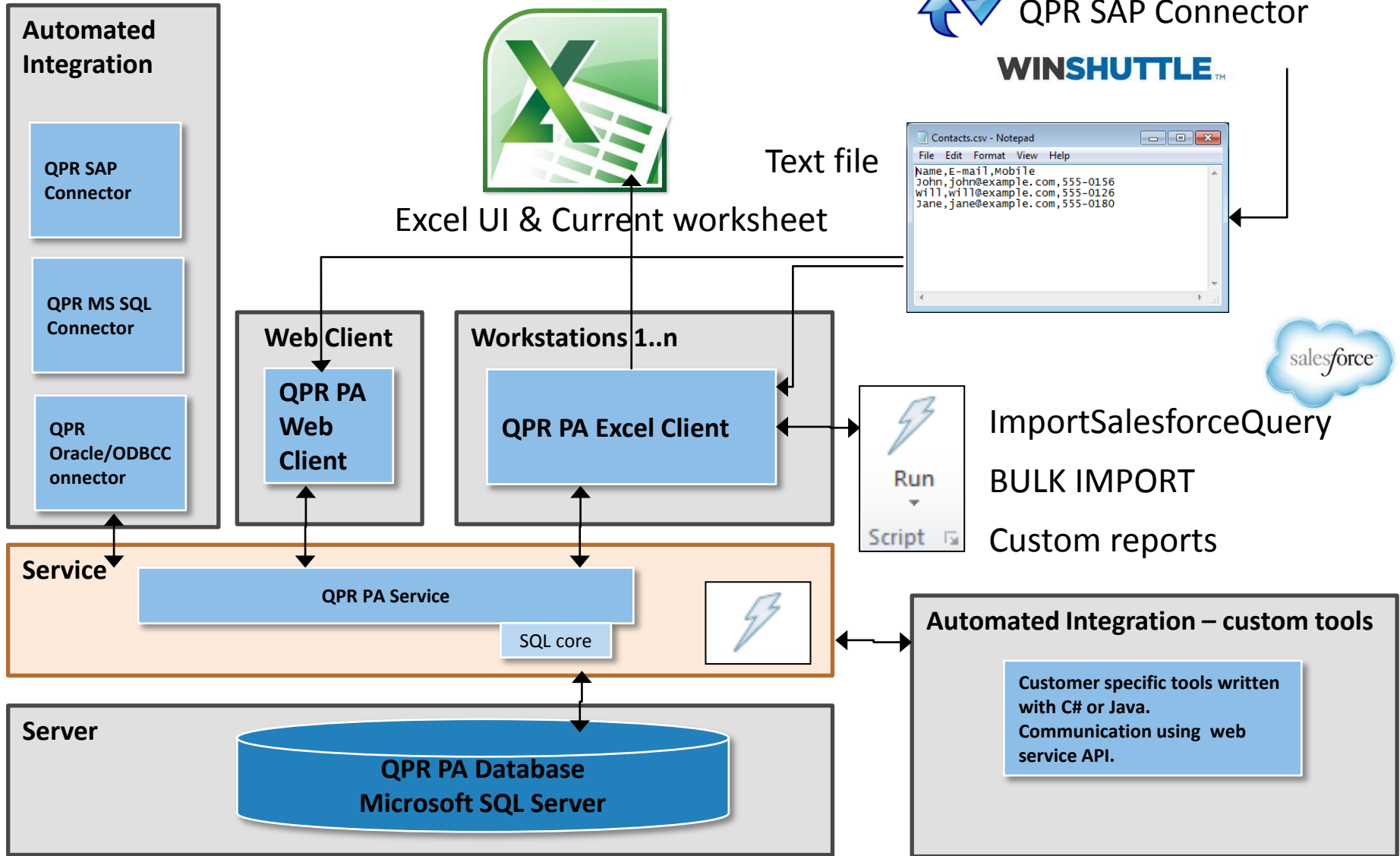
ImportSalesforceQuery  
BULK IMPORT  
Custom reports



# QPR ProcessAnalyzer Pro



WINSHUTTLE™



# QPR ProcessAnalyzer Database

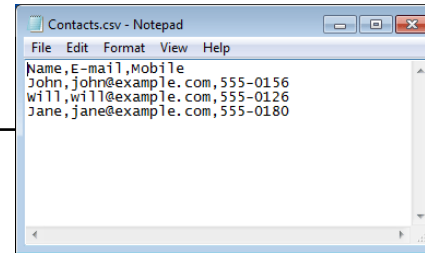


QPR SAP Connector

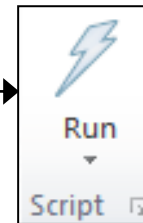
WINSHUTTLE™



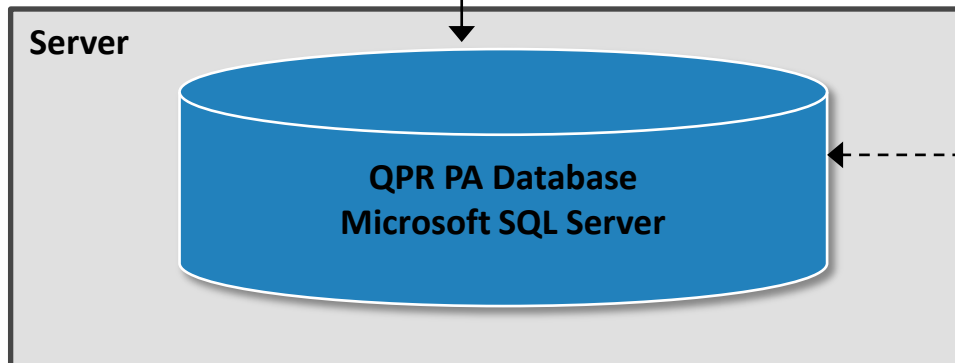
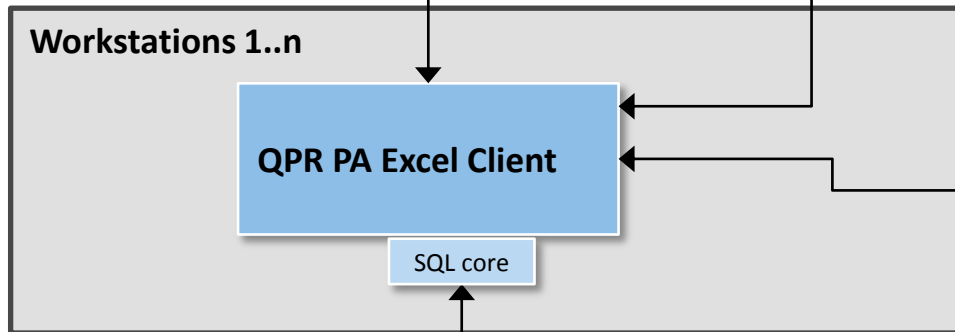
Excel UI, import and reporting



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

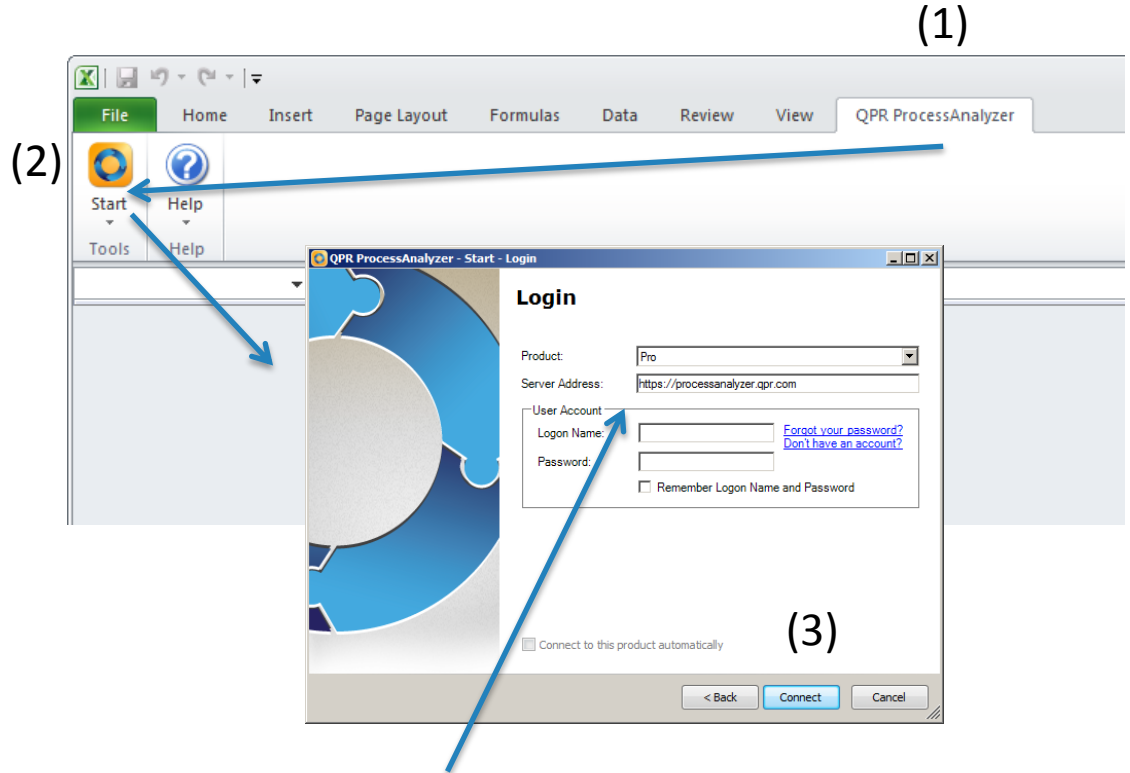
Product activation



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

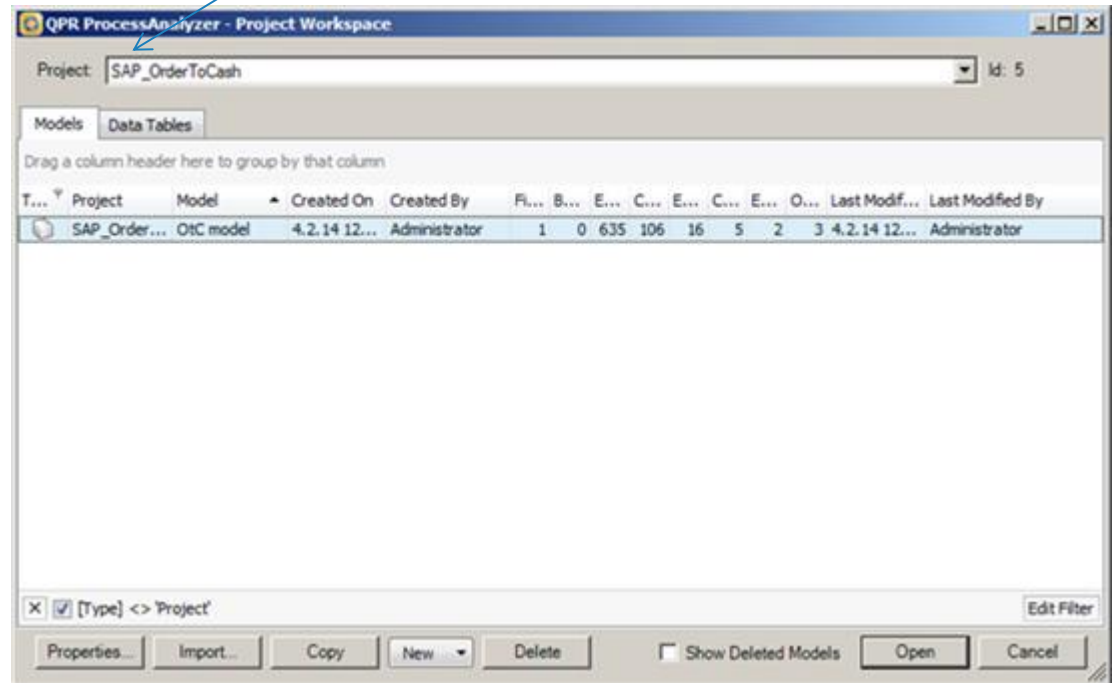
- Tip: In certain circumstances MS Office may deactivate add-ins. If the tab for already installed ProcessAnalyzer disappears, check the status of QPR ProcessAnalyzer add-in from MS Office Excel options.

# 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)

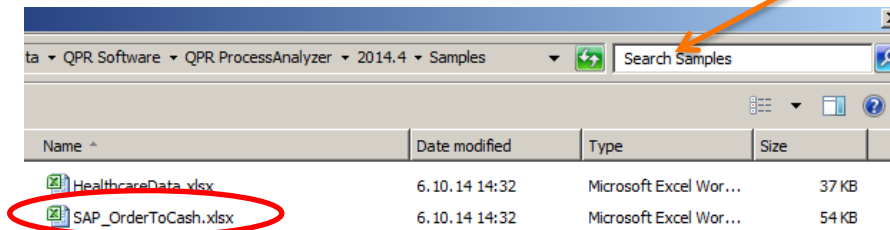
Available models



# Getting demo data



WIKI



- ▶ 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)

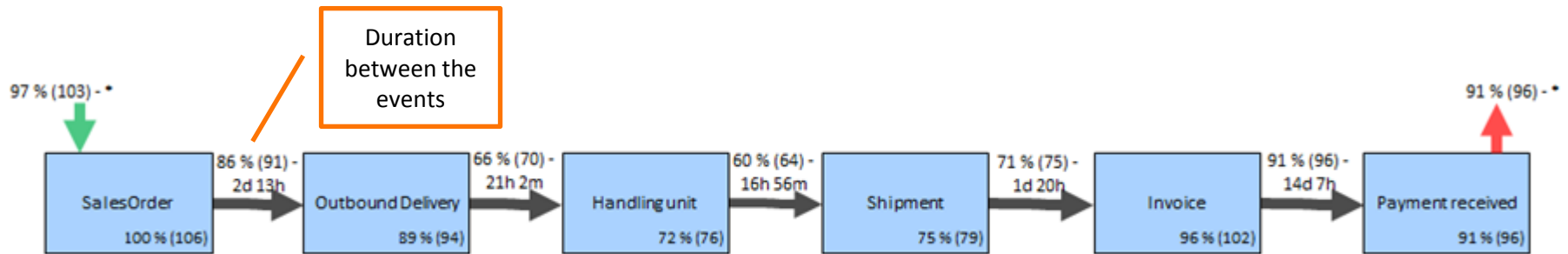
The explanations:  
What is this case?

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

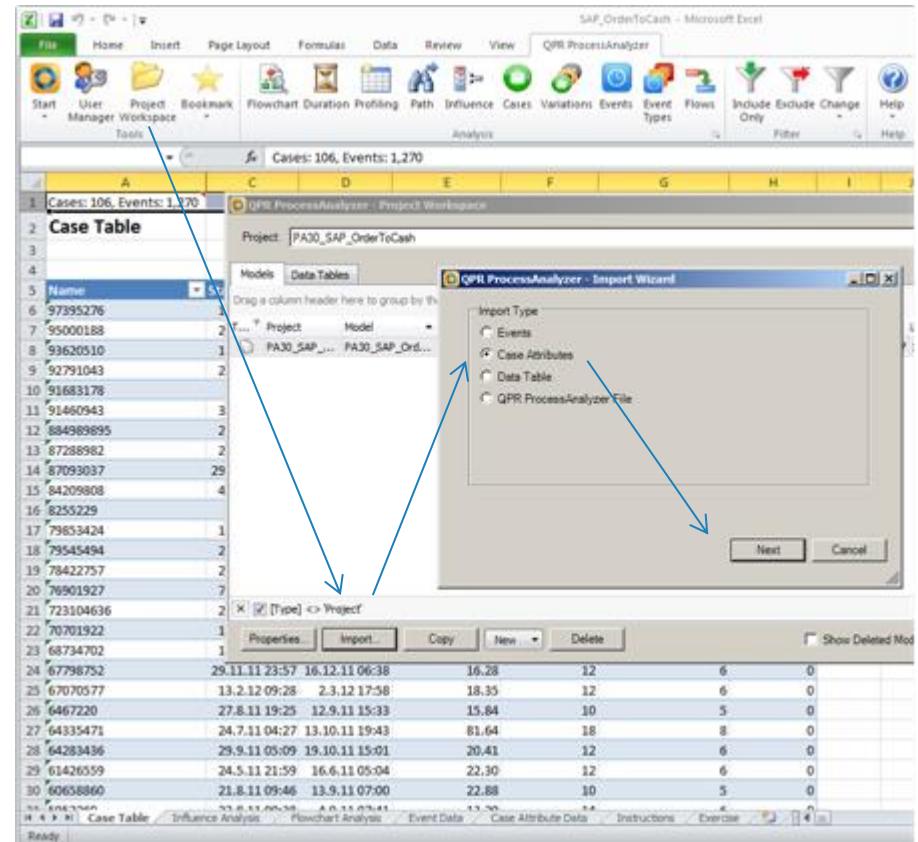
Event data with timestamps

- ▶ **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

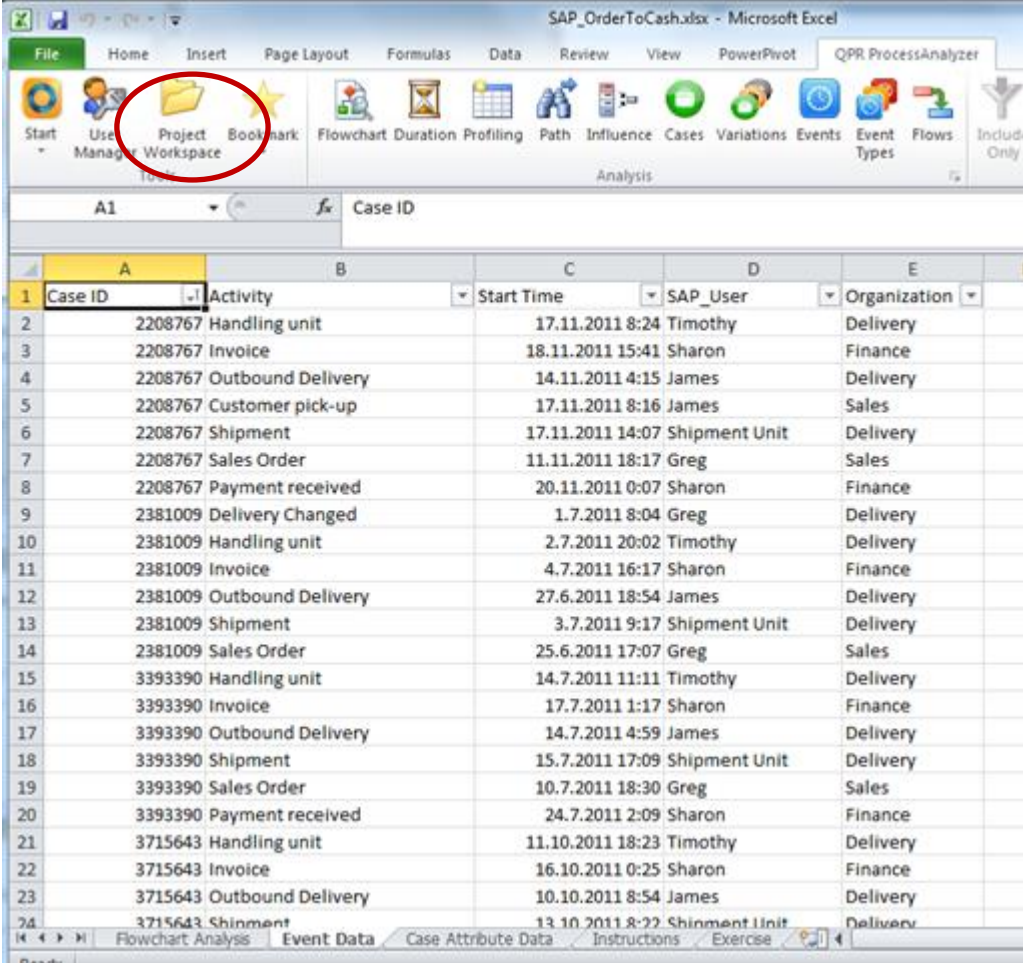
# Import data from Excel sheets

- ▶ 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!

The screenshot displays the QPR ProcessAnalyzer software interface. The main window shows a project workspace with a table of data. Overlaid on this is the 'QPR ProcessAnalyzer - Import Wizard' dialog box. The 'Import Type' section is circled in red, showing three options: 'Events' (selected), 'Case Attributes', and 'QPR ProcessAnalyzer File'. The 'Source' section shows three options: 'Current Worksheet' (selected), 'Database via SQL Query', and 'Text File'. The 'Next' button is highlighted in the 'Import Wizard' dialog, and an arrow points from it to the 'Next' button in the 'QPR ProcessAnalyzer - Import Wizard' dialog.

Start Time	SAP_User	Organization
17.11.11 0		
18.11.11 1		
14.11.11 0		
17.11.11 0		
17.11.11 1		
11.11.11 1		
20.11.11 0		
1.7.11 0		
2.7.11 2		
4.7.11 1		
27.6.11 1		
3.7.11 0		
25.6.11 1		
14.7.11 1		
17.7.11 0		
14.7.11 0		
15.7.11 1		
10.7.11 1		
24.7.11 0		
11.10.11 1		
16.10.11 0		
10.10.11 0		
13.10.11 0		
8.10.11 00:20:09	Greg	Finance
22.10.11 21:22	Sharon	Finance
2.11.11 01:00	Timothy	Delivery
4.11.11 12:10	Sharon	Finance

# (1) Import Events and Event attributes

## ▶ Create a new model

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

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

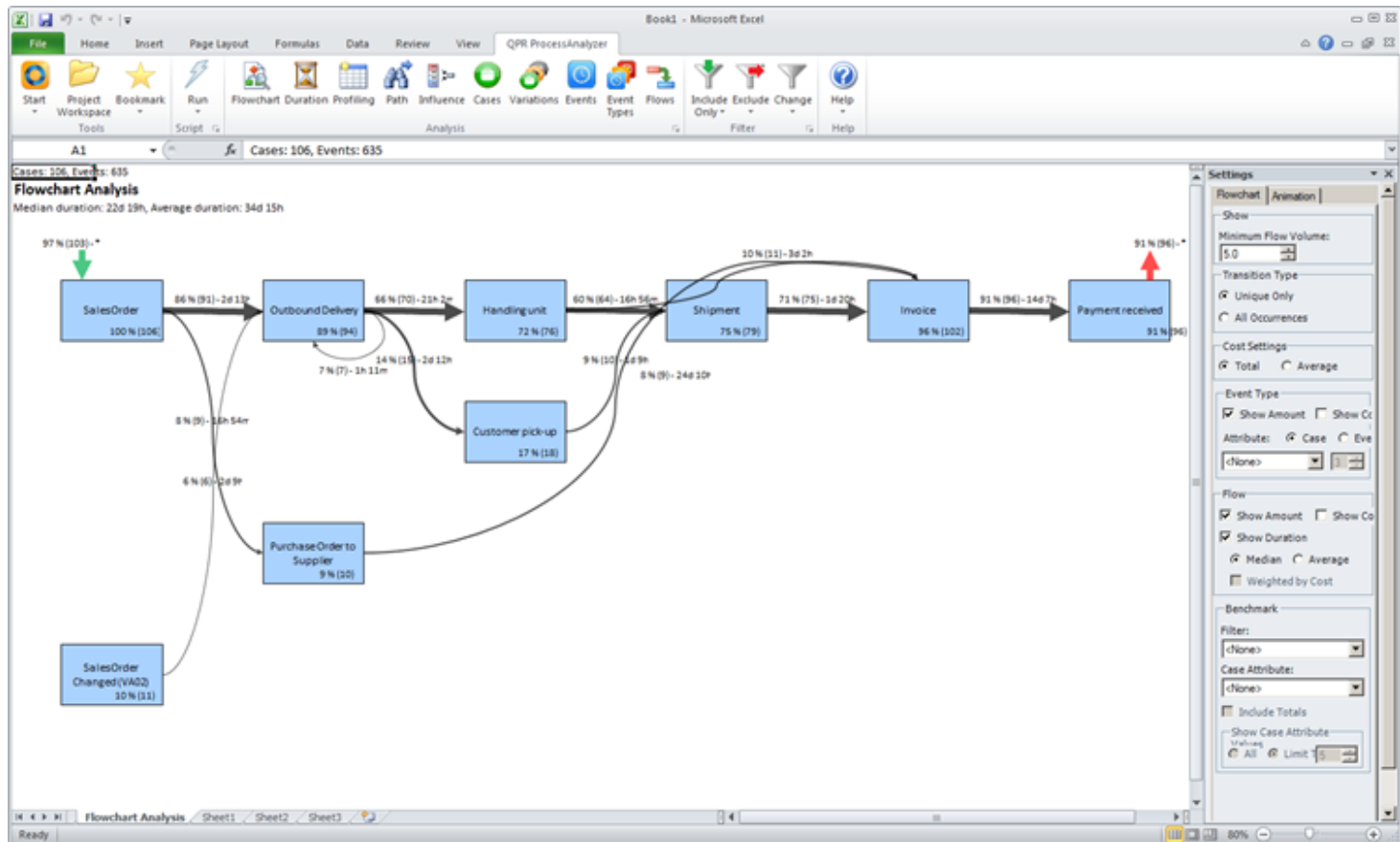
Previous Import Cancel

2. Give a name for the model.

3.

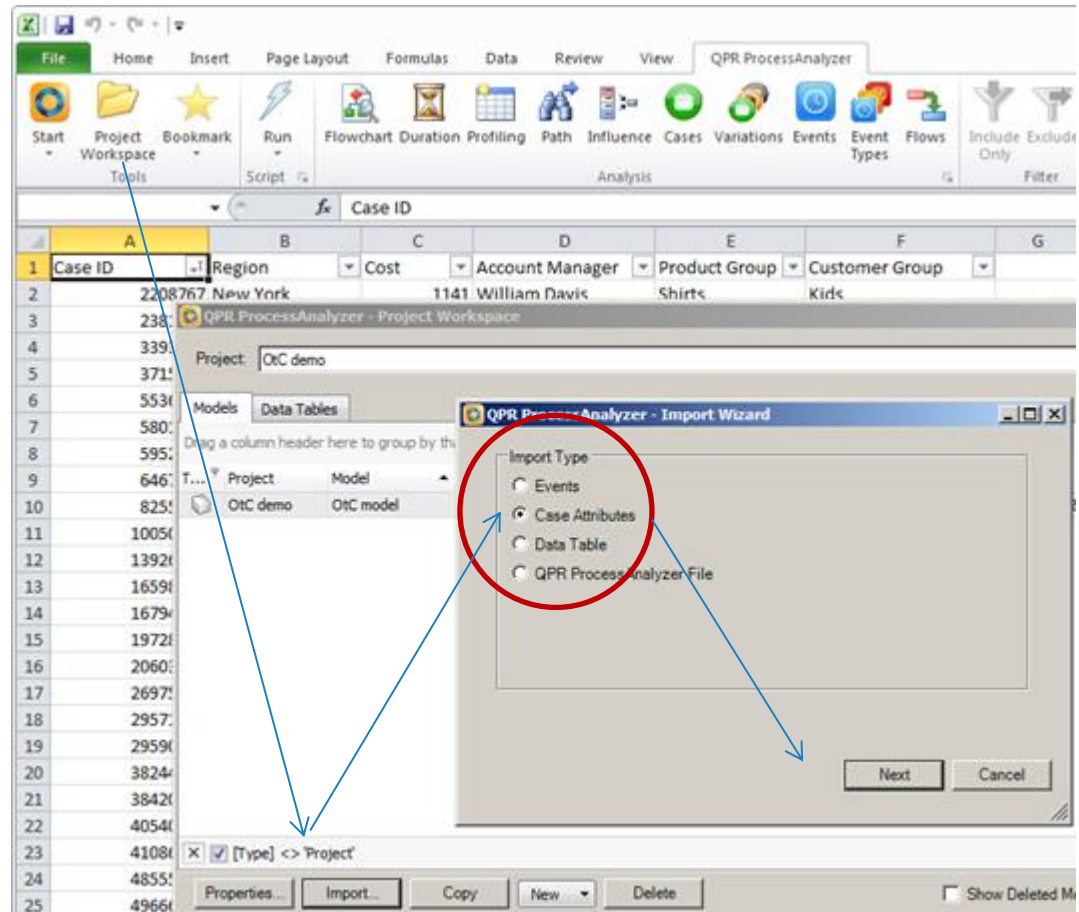
# Process Model

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



## (2) Import Case attributes

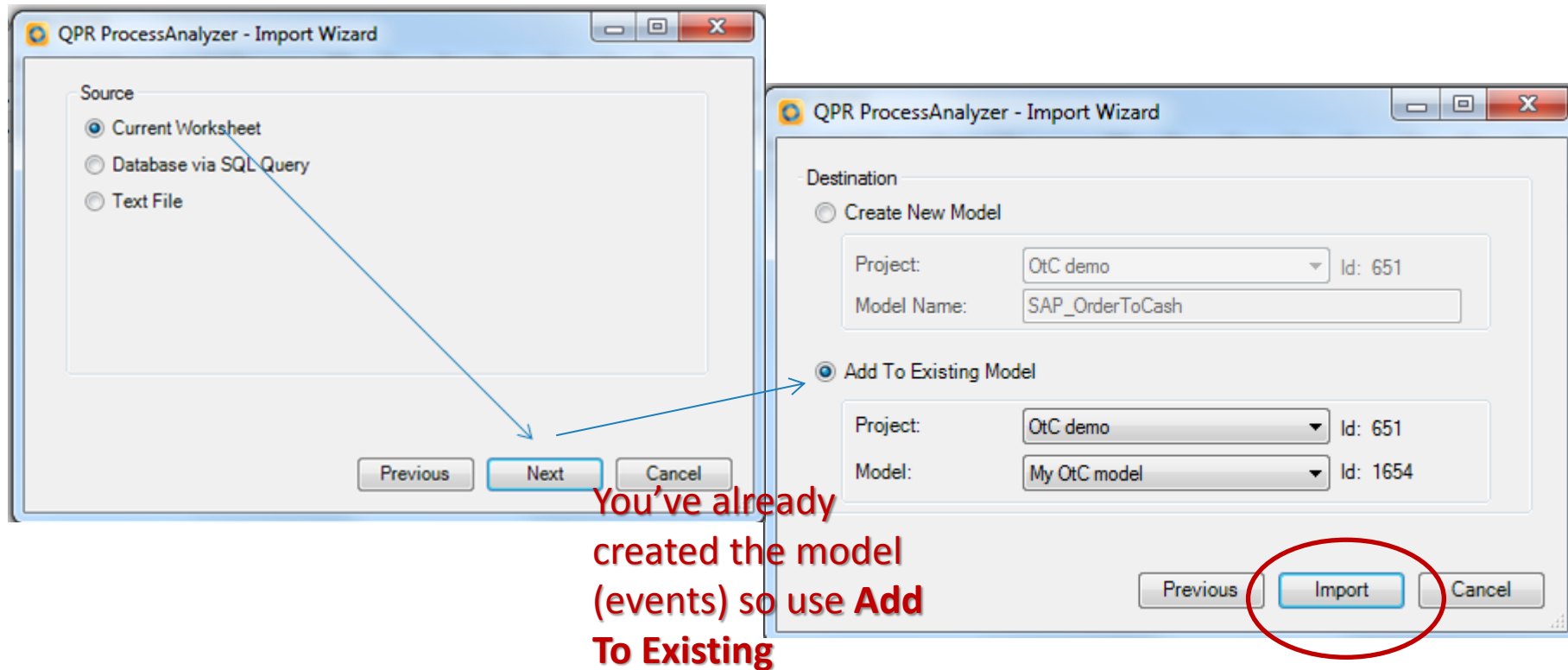
- ▶ Select the sheet with Case attributes
- ▶ Select "Project Workspace"
- ▶ Proceed as with events but remember to select "Case Attributes"





## (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

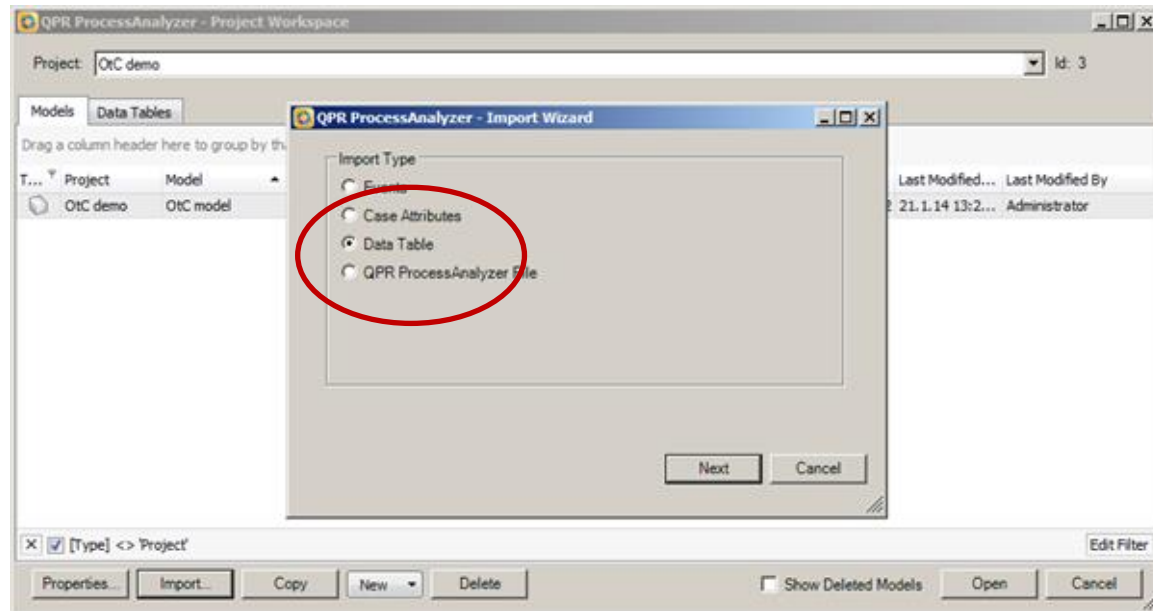
- There must not be
  - Missing case ID for any line
  - Missing timestamp for any line
- If you load events in several batches, these are *always appended* to data
  - You don't have to prepare and load all data at once, but you can load it in several batches
  - **You cannot add new event attributes 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 interface. The main window shows a flowchart analysis with nodes: Sales Order (100% (106)), Outbound Delivery (89% (94)), Purchase Order to Supplier (9% (10)), and Sales Order Changed (VA02) (10% (11)). Transitions are labeled with percentages and durations. A red circle highlights the 'Script' tab in the top menu bar. An inset window titled 'QPR ProcessAnalyzer - Script Manager' is open, showing a list of scripts. A specific script is selected, and its properties are shown in a sub-window titled 'QPR ProcessAnalyzer - Script Properties'. The script name is 'with durations', ID is 20004, and the script code is visible. The script code is as follows:

```
print 'Start. Use filter ' + convert(char,@_FilterId)

(SELECT 'AnalysisType', '6') UNION ALL
(SELECT 'MaximumCount', '0') UNION ALL
(SELECT 'FilterId', convert(char,@_FilterId)) UNION ALL
(SELECT 'TargetTable', '#event')
--GetAnalysis

print 'Copied Events'

select #event.[Case],#event.[Event type],#event.[Start time],
ROW_NUMBER() OVER(PARTITION BY [Case] ORDER BY [Start Time],[Event Type] ASC)
into #rep from #event:

print 'Removed default fields & added ranknum'

insert into #rep (([Case],[Event type],[Start Time],rank_num)
select [Case], 'START' as [Event type],min([Start time]) as [Start time], 0 as
insert into #rep (([Case],[Event type],[Start Time],rank_num)
```

For more information on ETL scripts, see Wiki



# Discovery

Flowchart

Path Analysis

Selecting, Filtering

# Analysis Tools used & Excel sheets

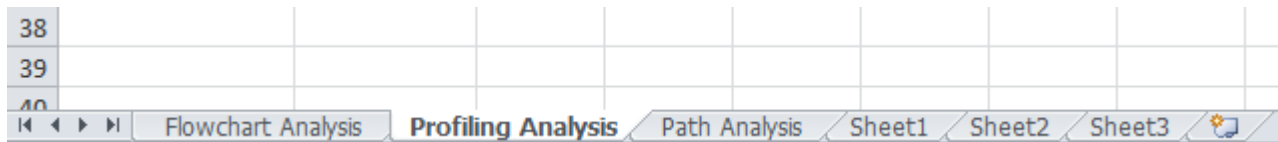
- In this section, we use three Analysis tools (Flowchart, Profiling, and Path) from the Tools ribbon
- Whenever you start an analysis, the result will appear on a specific Excel sheet
- When you re-run the analysis, the corresponding sheet gets overwritten
- Tip: If you wish to save an analysis result,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

## Management

## Analysis tools

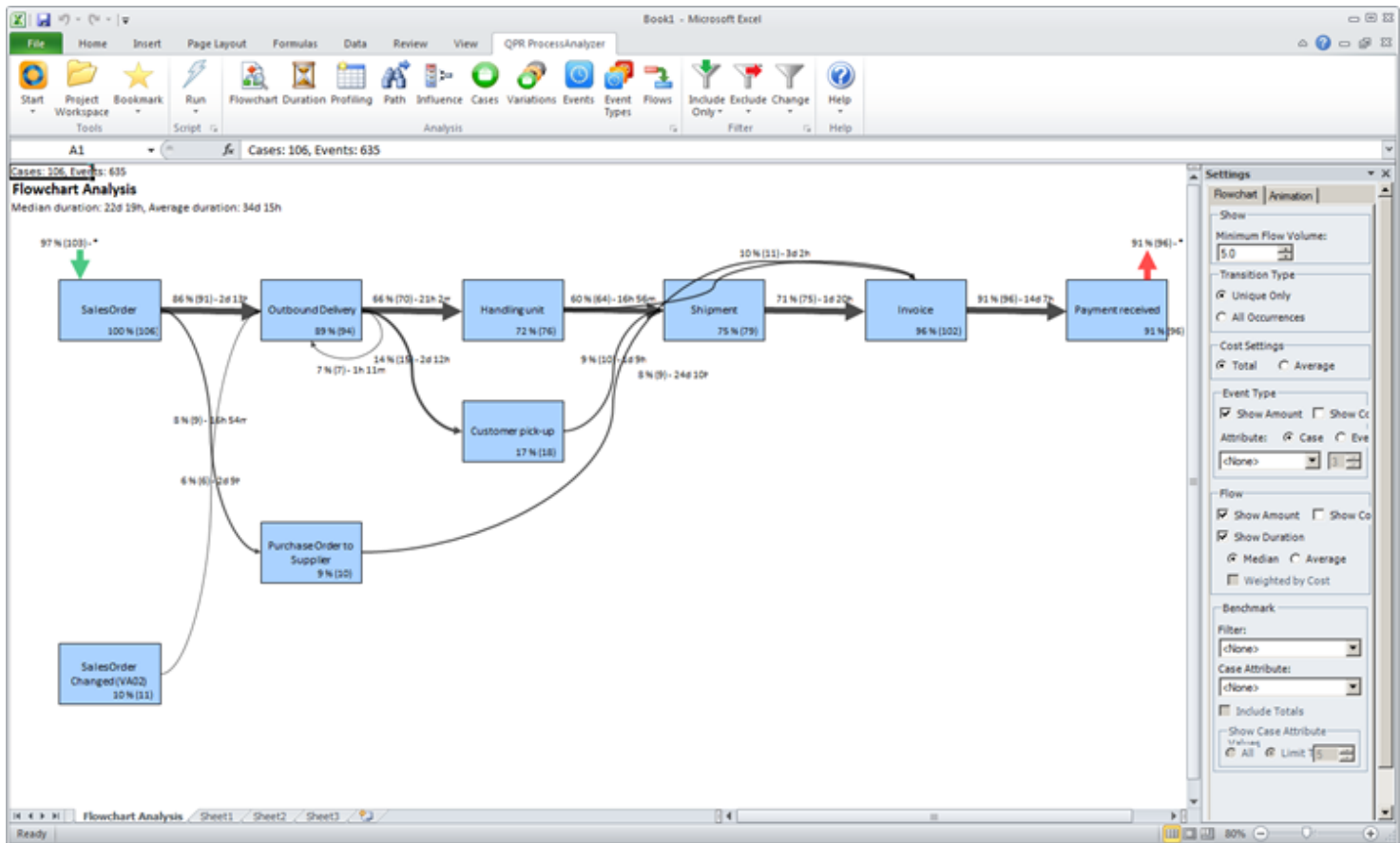
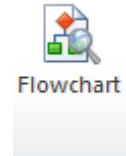


Filter  
Browse  
Navigate



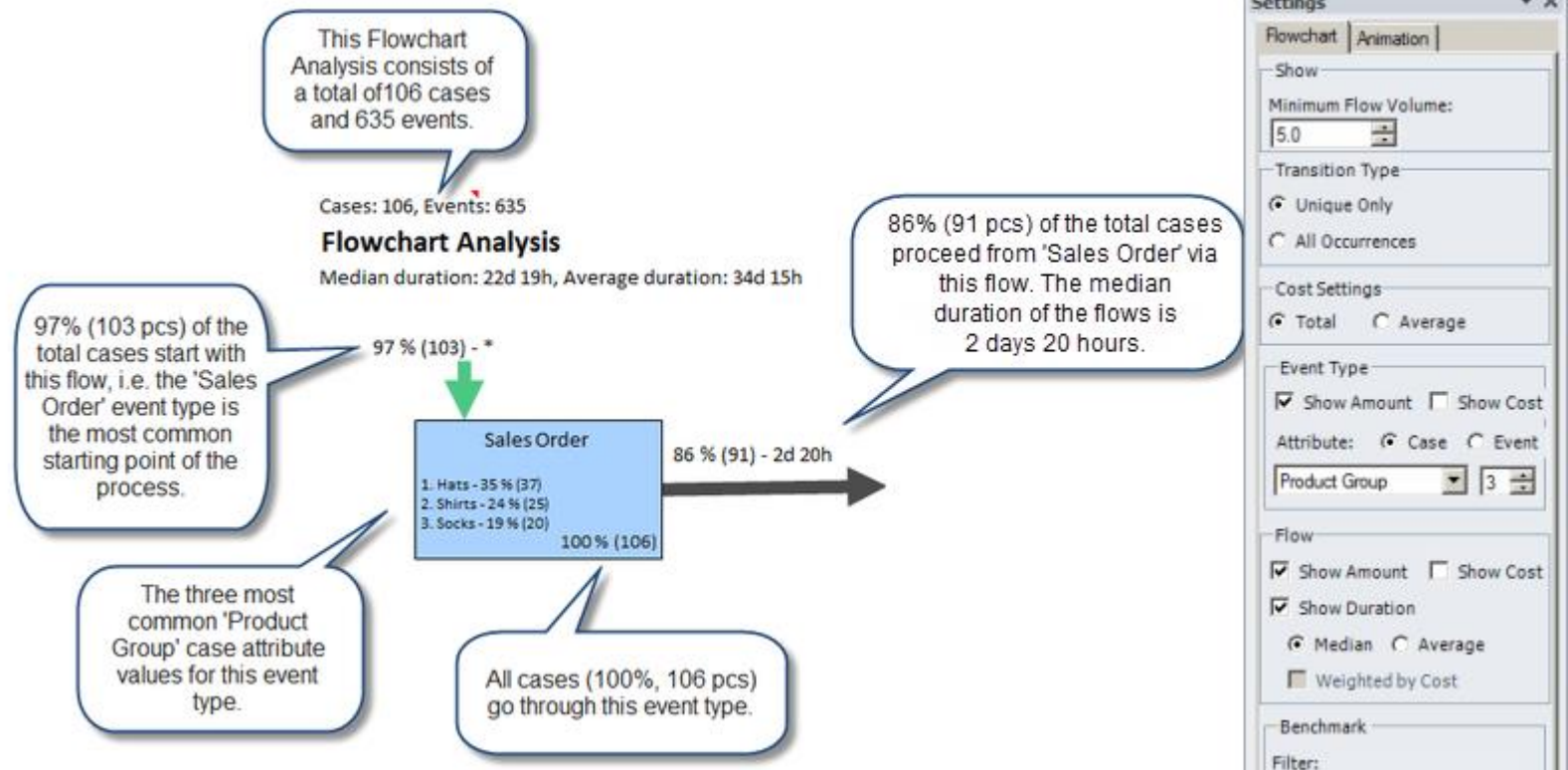
# Flowchart view

You can re-run Flowchart Analysis by clicking



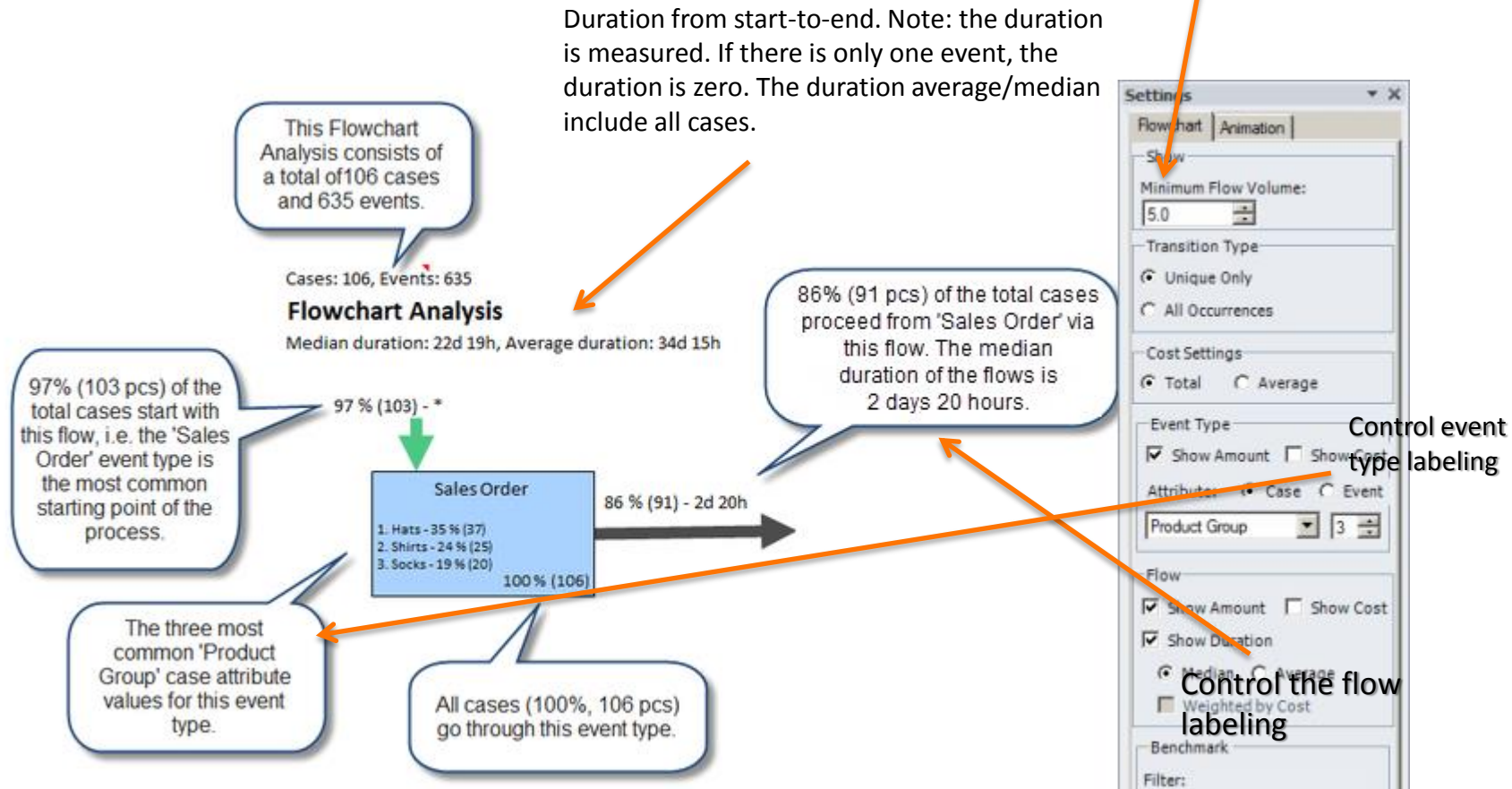
# Basic concepts

## ▶ Flowchart view elements



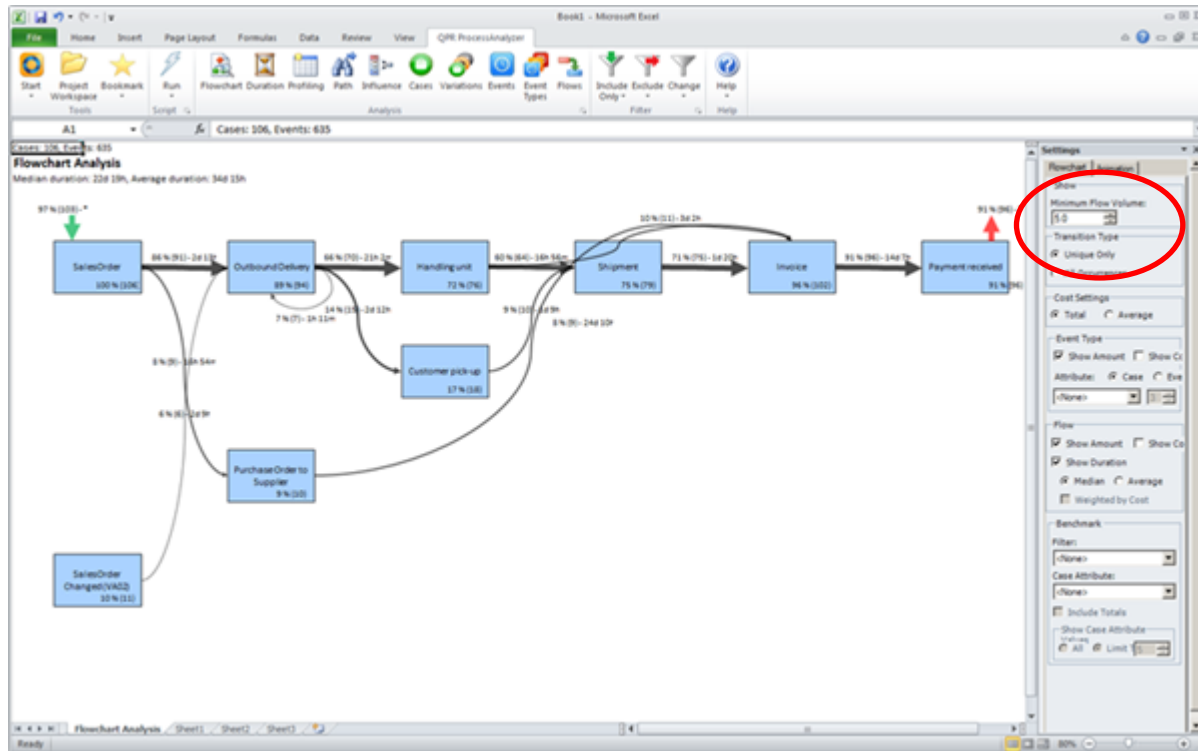
# Basic concepts

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



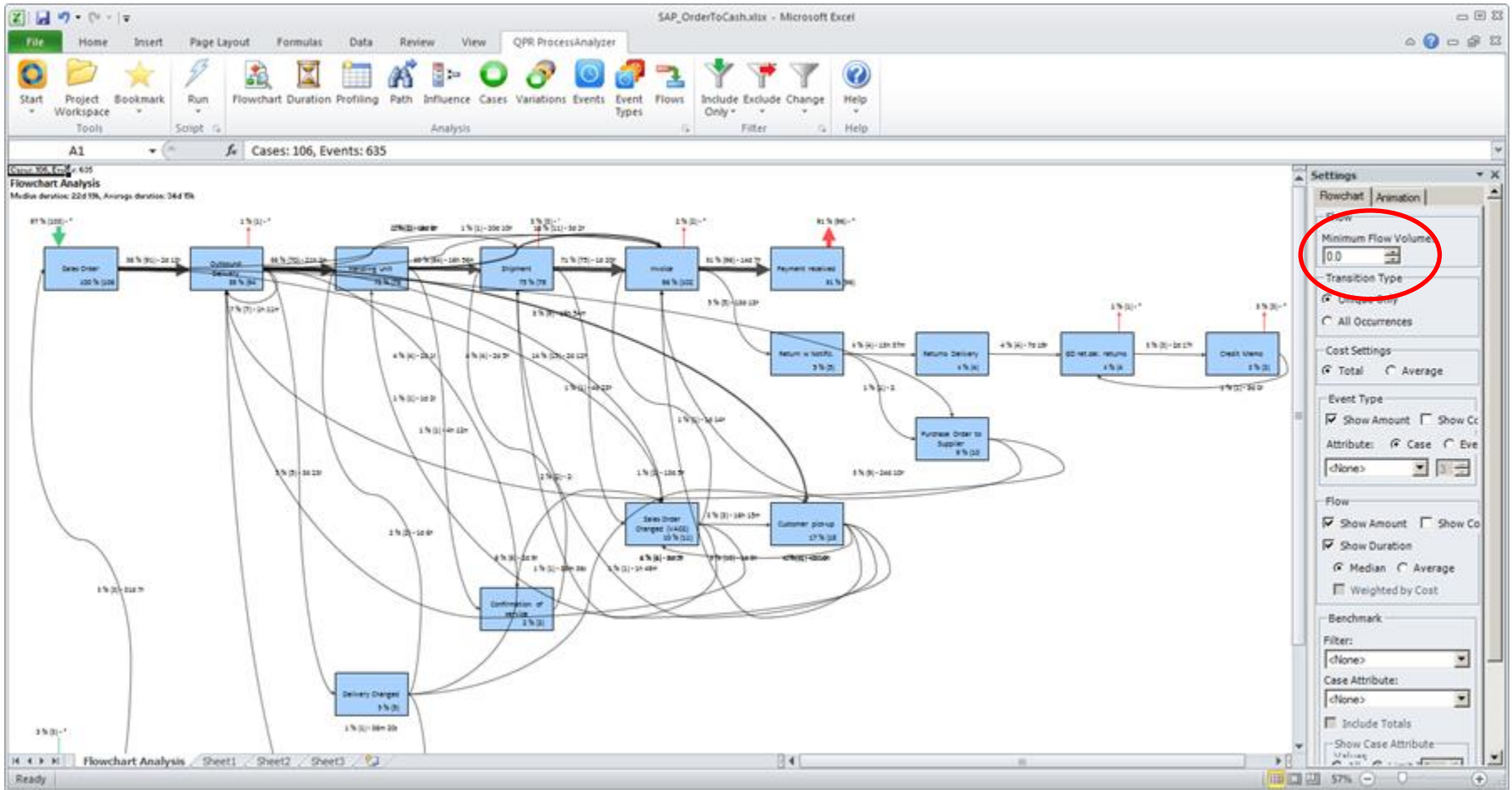
# Example

- ▶ 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.



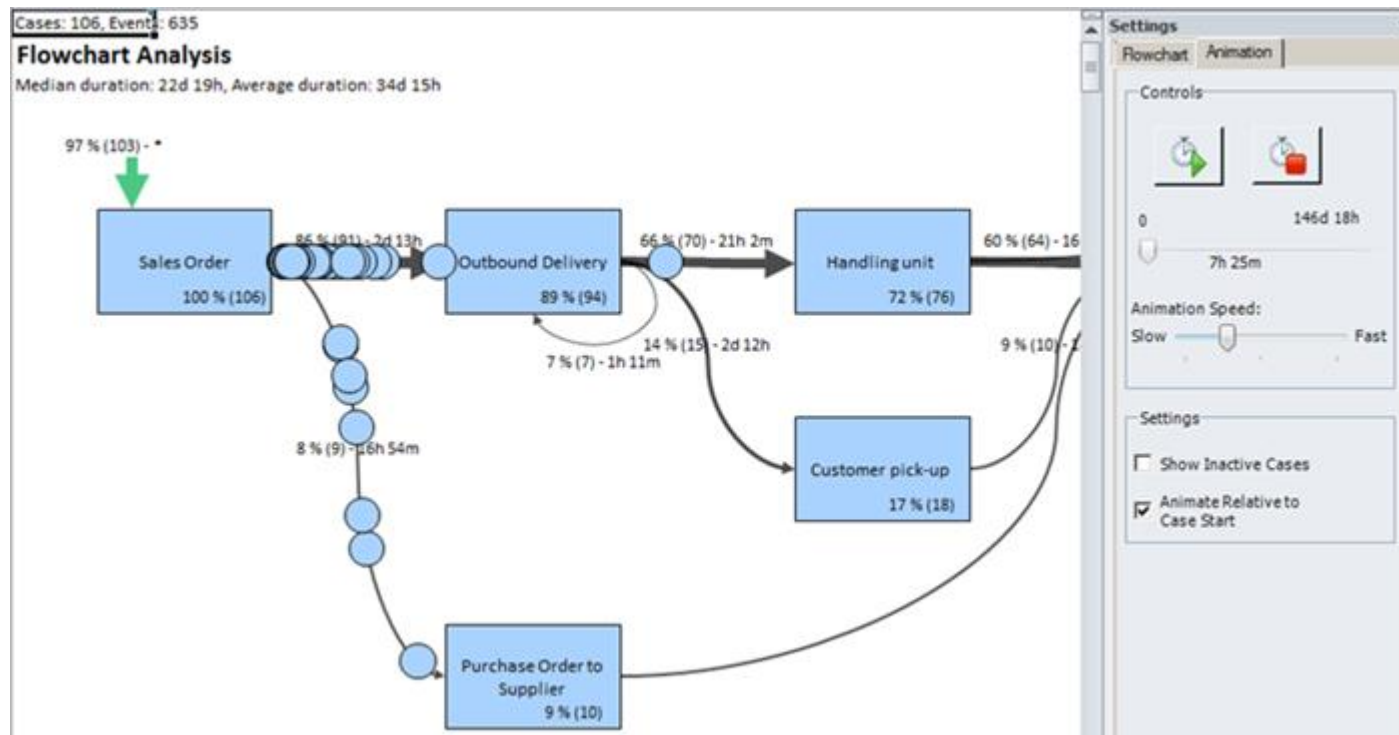
## 2. The spider web 'as-is'

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



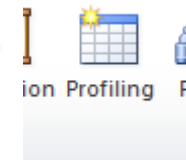
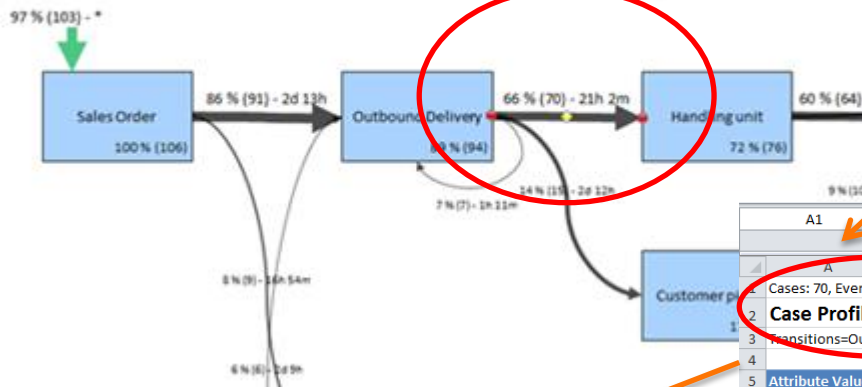
# Drilling-down and analyzing

- ▶ 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

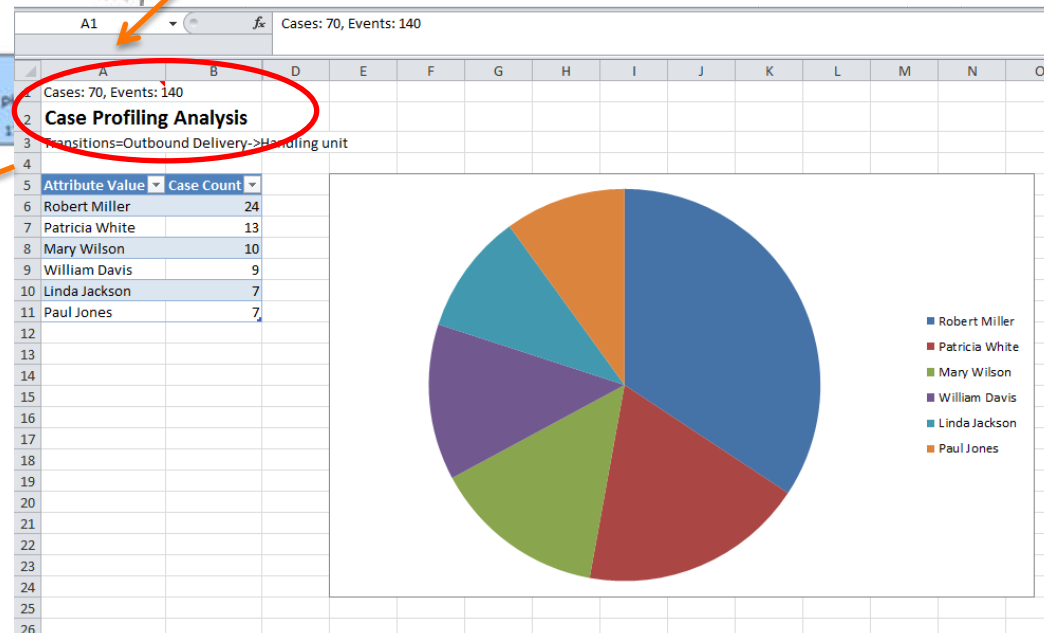
Cases: 106, Events: 635  
**Flowchart Analysis**  
Median duration: 22d 19h, Average duration: 34d 15h



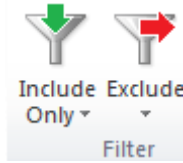
2. Select an analysis

3. The selection to which the analysis applies is shown

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



# Filtering

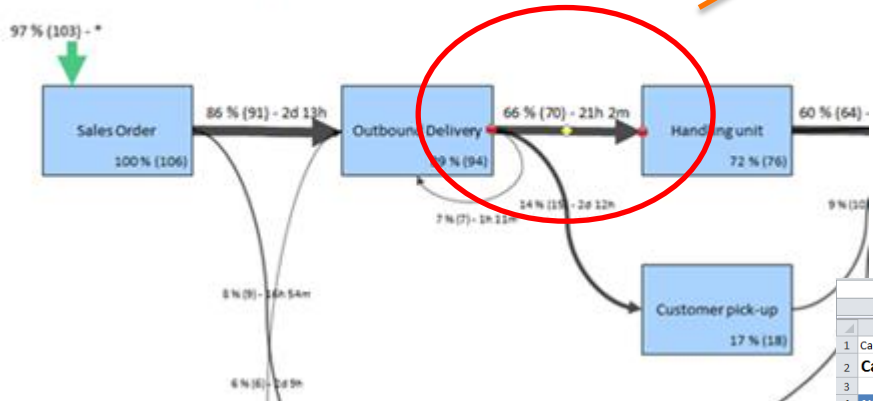


- ▶ A persistent selection can be made by filtering
  - Cases
  - Event types
- ▶ Filtering allows
  - **Concentrating on relevant parts of the process in the context of the analysis task.** Examples:
    - analyze only *Los Angeles* (include only the cases with the case attribute *region=Los Angeles* 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**

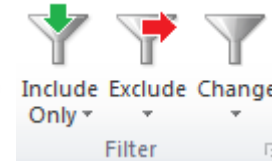
# Filter & Analyze

1. Select an object

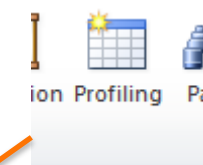
Cases: 106, Events: 635  
**Flowchart Analysis**  
 Median duration: 22d 19h, Average duration: 34d 15h



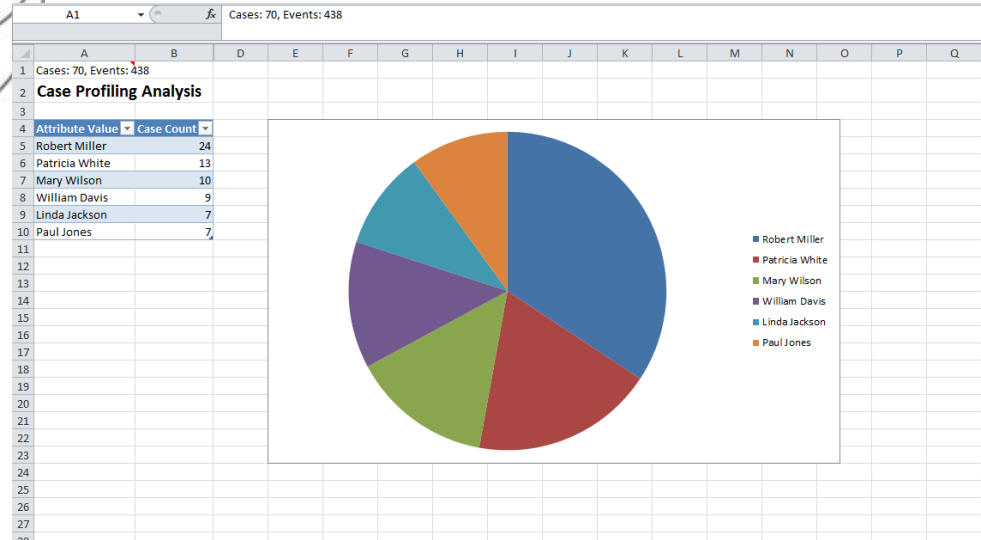
2. Filter (include only cases)



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	
Patricia White	
Mary Wilson	
William Davis	
Paul Jones	
Linda Jackson	

**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)

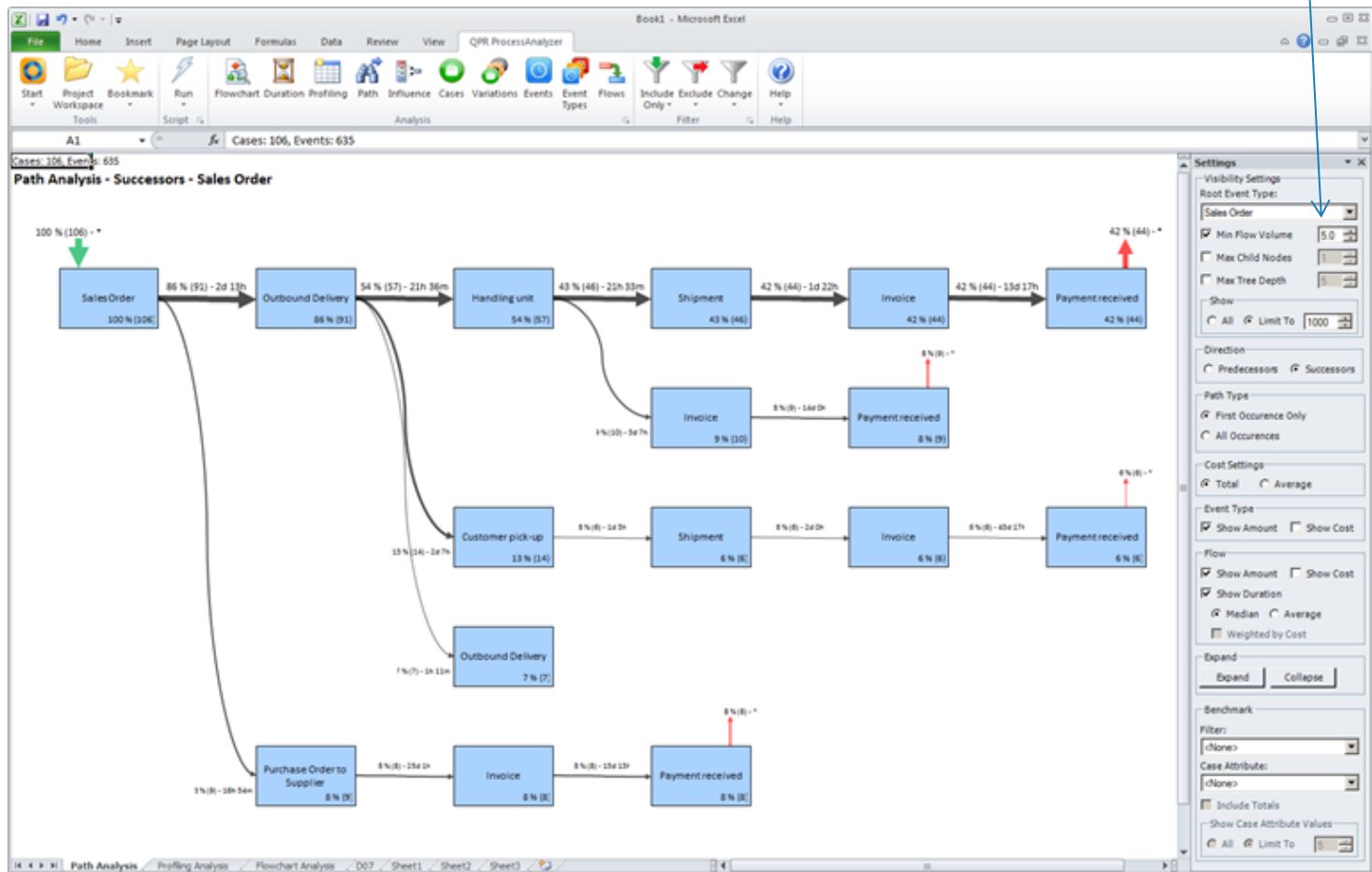
- ▶ Filters can be created almost from any selection made in any analysis view selection
  - A restriction: you cannot select specific *Events* to be filtered (only event types)
- ▶ Filters are applied "on top of each other"
  - i.e. you narrow your event type / case set as you proceed
  - Filters are 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

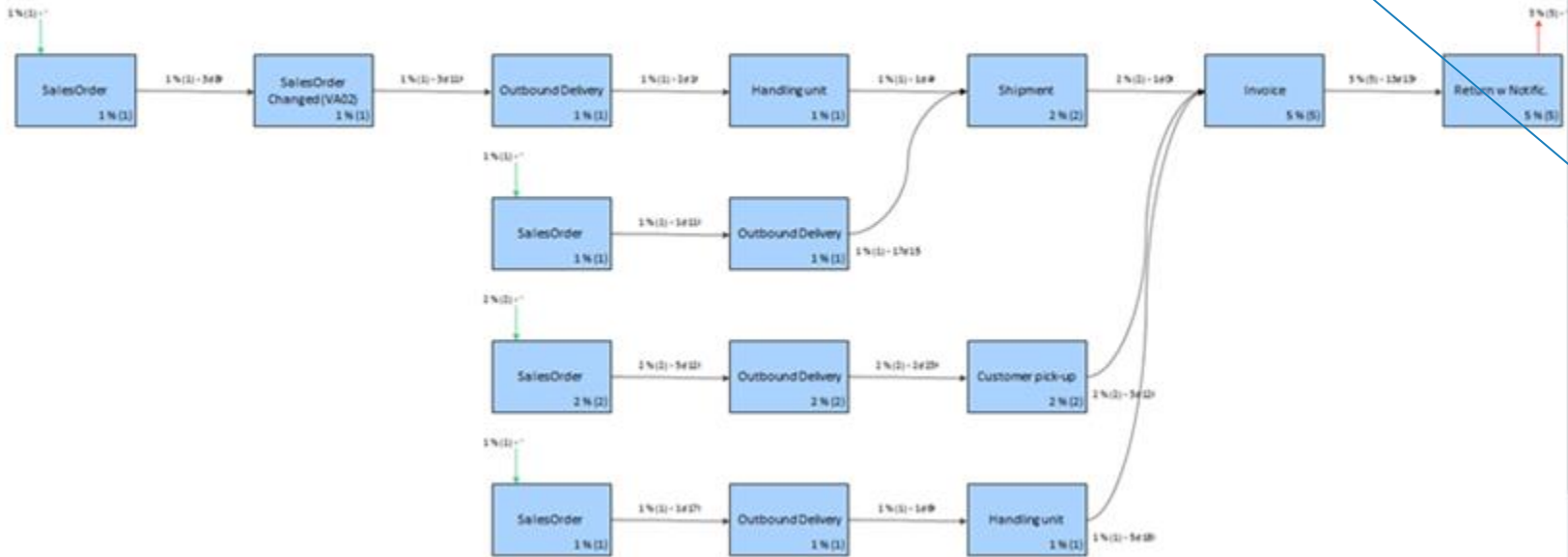
- ▶ You can trace how the process ends up in a certain state

Root node (one or all)

Note that you can see paths to an event type

Cases: 106, Events: 635

Path Analysis - Predecessors - Return w Notific.



Settings

Visibility Settings

Root Event Type: Return w Notific

Min Flow Volume 100

Max Child Nodes

Max Tree Depth

Show

All  Limit 1000

Direction

Predecessors  Successor

Path Type

First Occurrence Only

All Occurrences

Cost Settings

Total  Average

Event Type

Show Amount  Show Cost

Flow

Show Amount  Show Cost

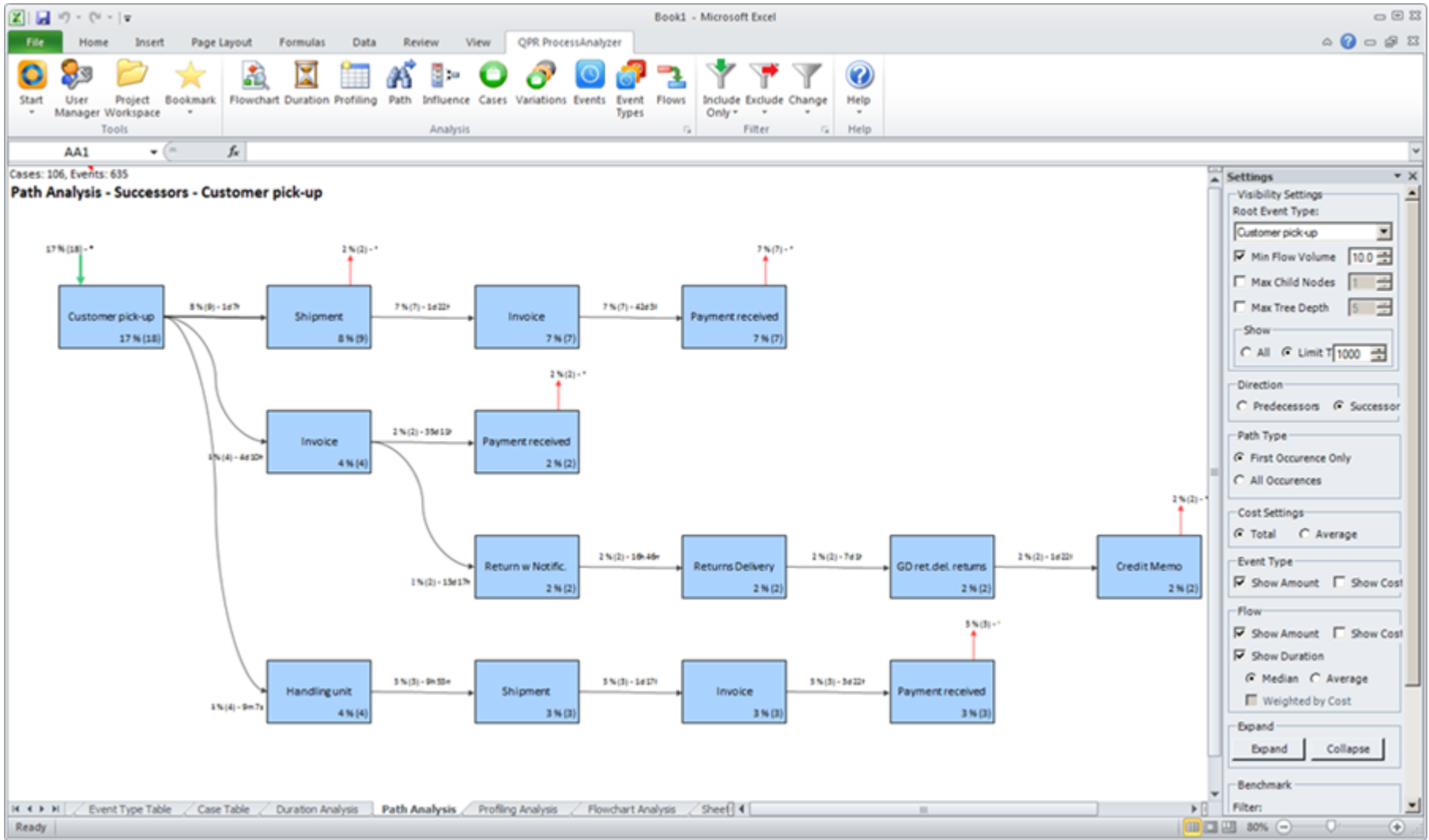
Show Duration

Median  Average

Weighted by Cost

Expand

Expand  Collapse



## Path

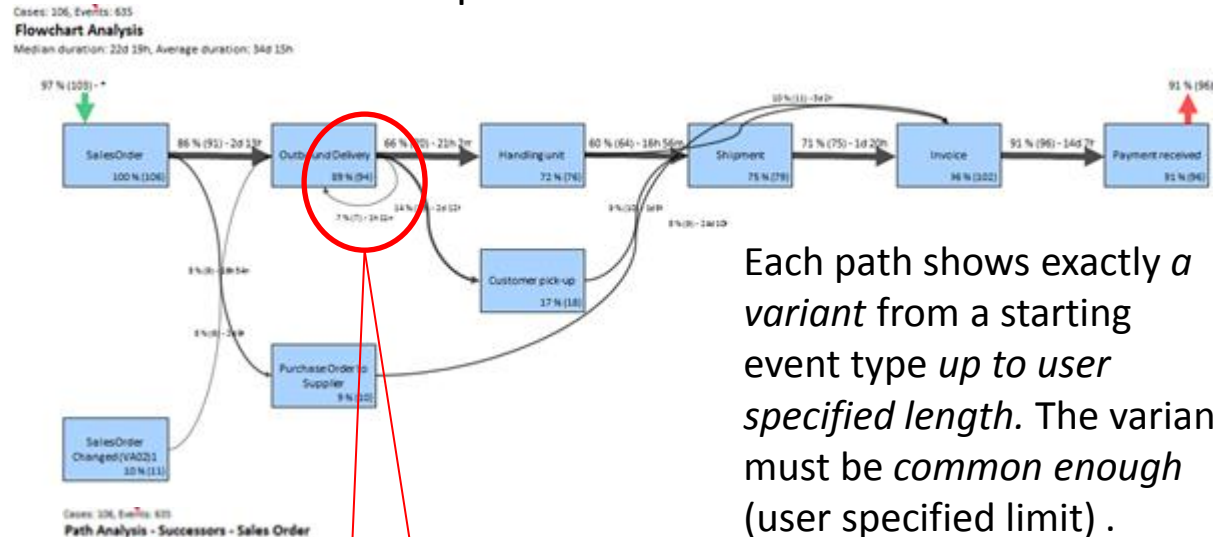
Look at the variation and see what process steps usually follow or lead to the variation.

# 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"



Each path shows exactly *a variant* from a starting event type *up to user specified length*. The variant must be *common enough* (user specified limit).

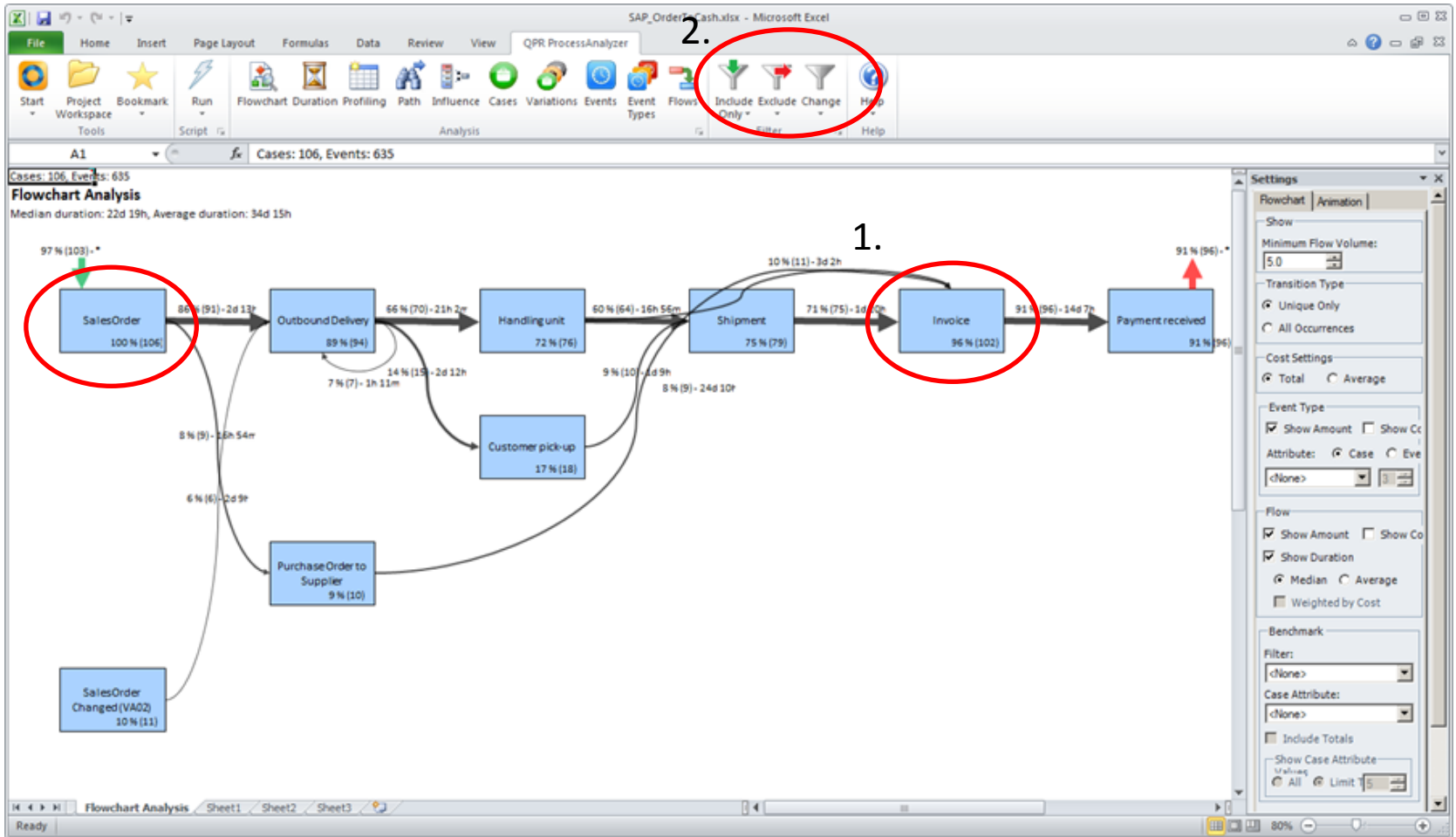
## Path view

- 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

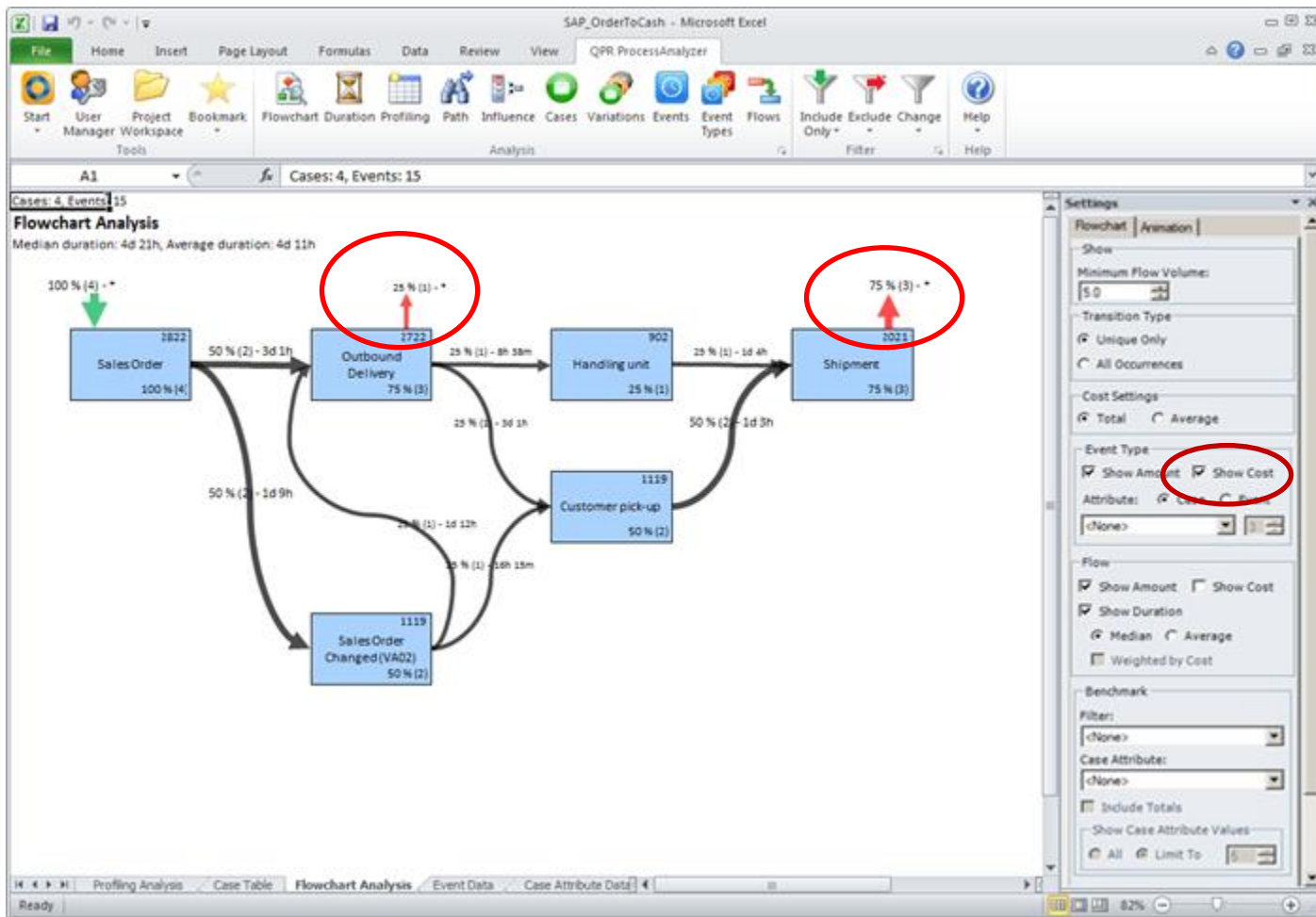
- ▶ Step 3. **How big percentage of orders is invoiced?**
  - Find out what percentage of orders are not invoiced.
  - Find out what happens in the process linked with the value of the missing invoices.



## 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

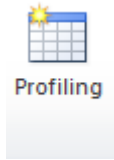
Validation

Analysis functions

# Profiling the data

Event types  
Profiling

# Profiling

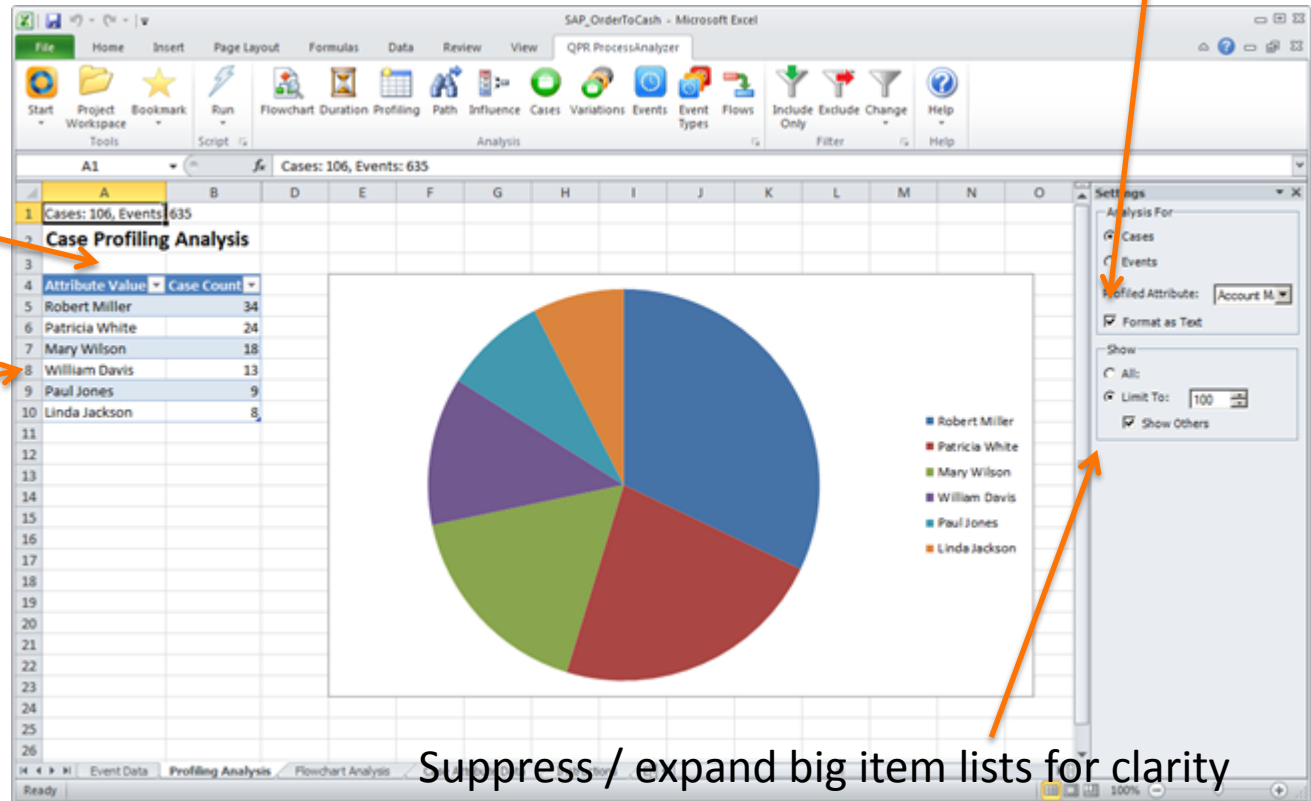


- ▶ Use for understanding or validating the data
- ▶ Making appropriate selections / filters
- ▶ Drill-down
- ▶ Statistics

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

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

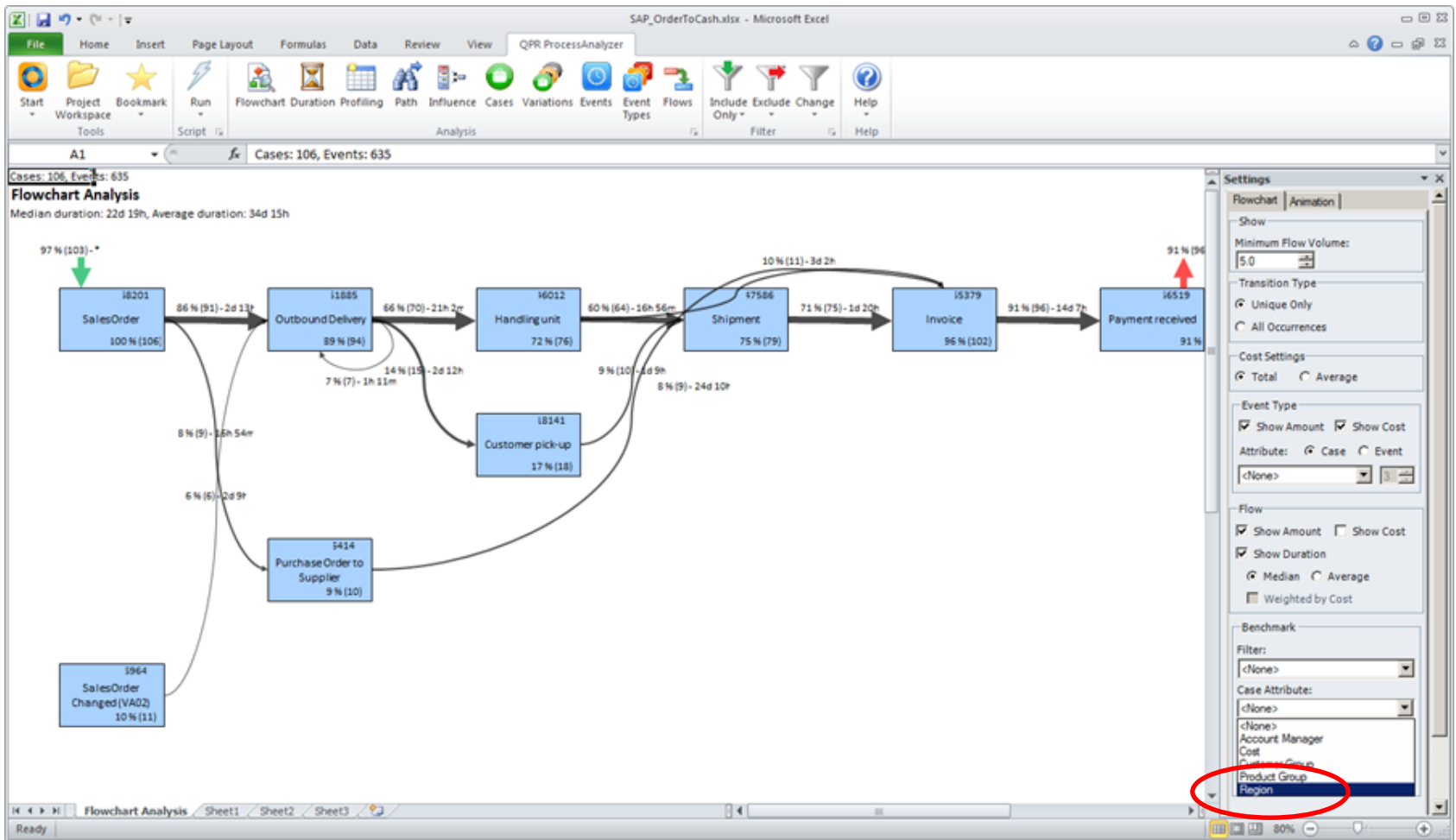
# Benchmarking

Paths / Flowchart  
Conformance



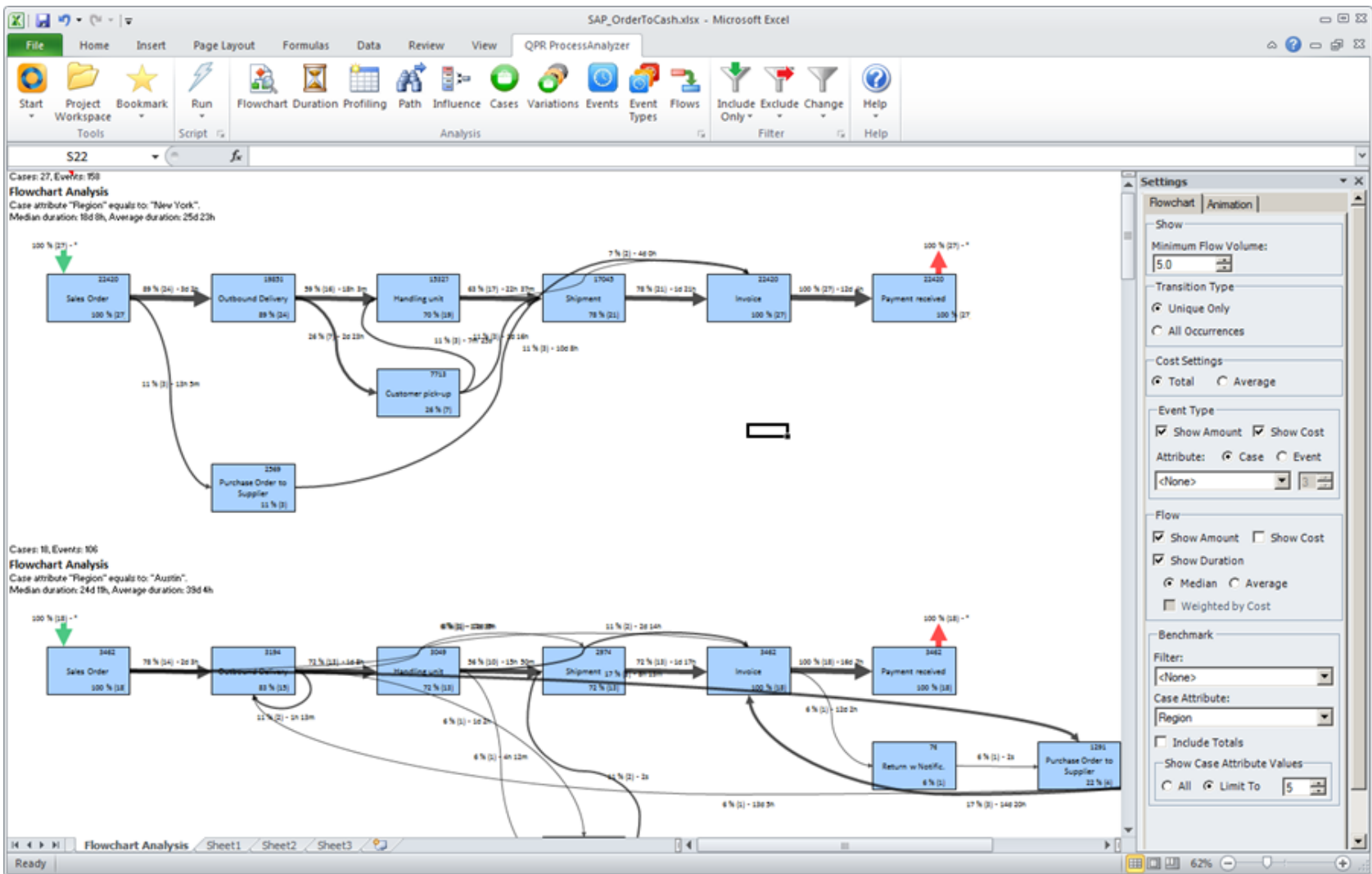
# Benchmarking

- ▶ 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

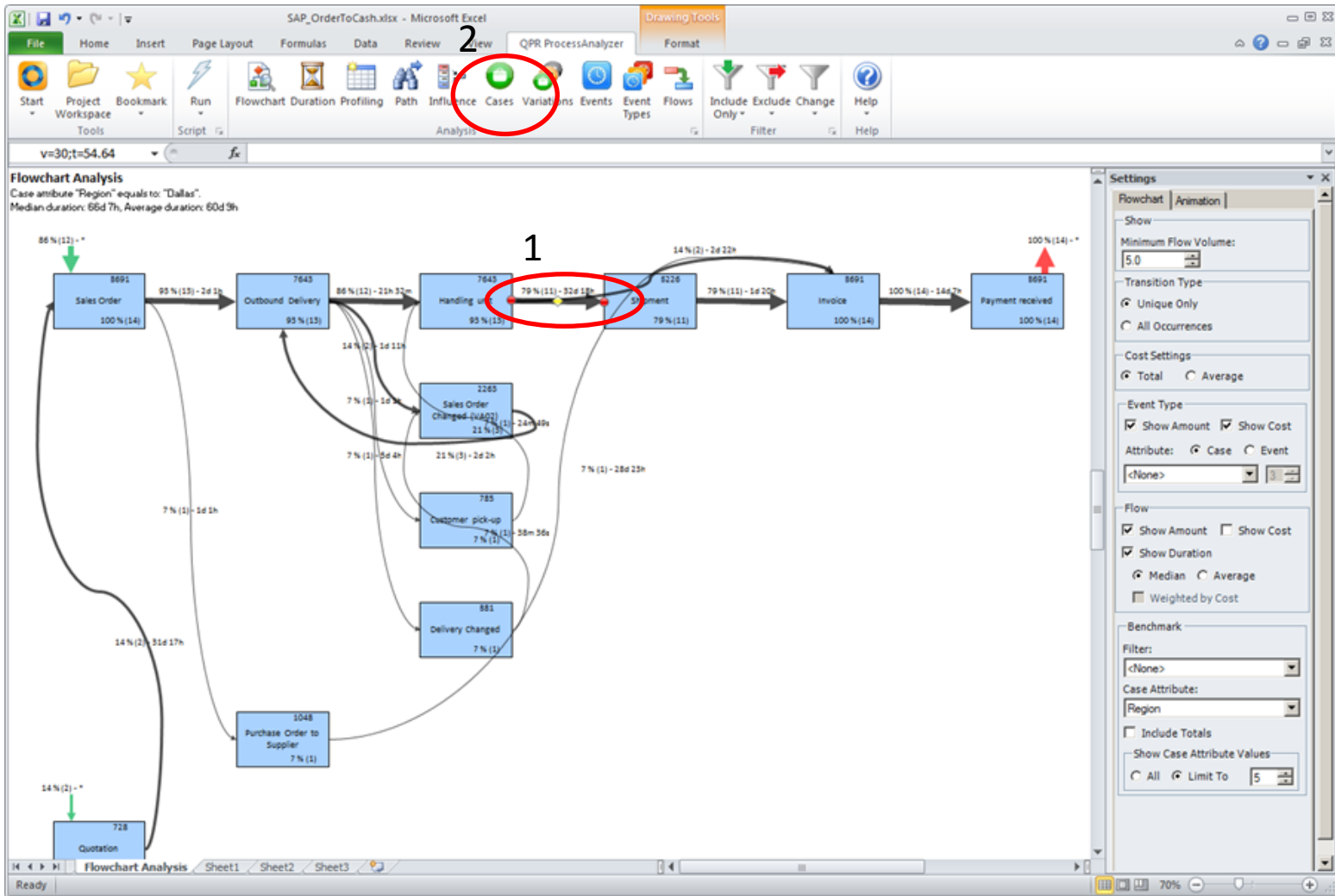
From the Flowchart Analysis view, go to Benchmark section and select Region as the Case Attribute.



## 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.

The screenshot shows the QPR ProcessAnalyzer ribbon in Microsoft Excel. The 'Profiling' tab is highlighted with a red circle. The main spreadsheet displays a 'Case Table' with the following data:

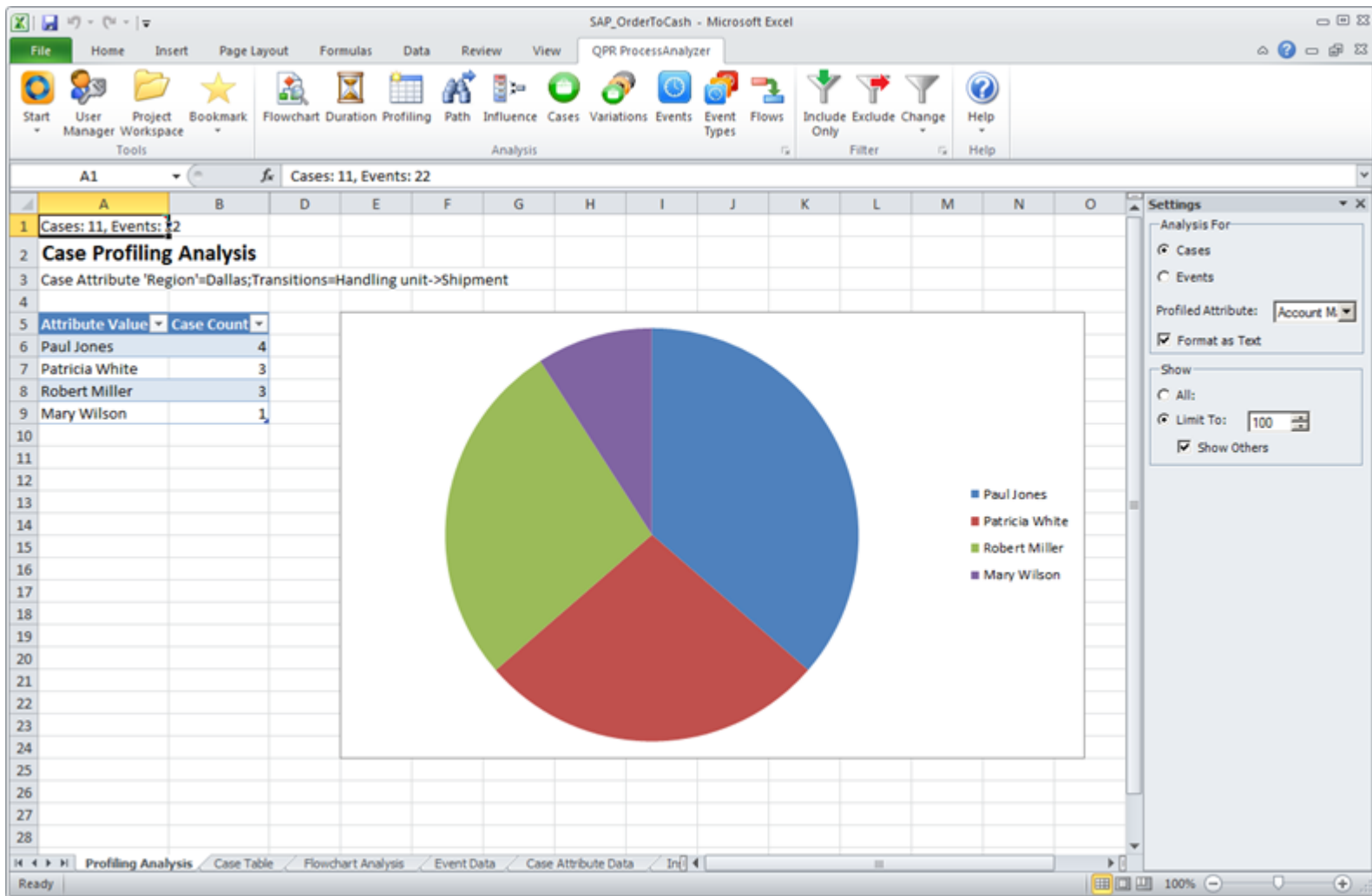
Name	Start Time	End Time	Duration Days	Event Count	Event Type Count	Event Cost
67288982	31.7.11 21:29	1.10.11 06:46	61.39	6	6	0
84209808	8.11.11 05:56	8.1.12 17:08	61.47	6	6	0
76901927	9.11.11 16:09	10.1.12 07:57	61.66	6	6	0
64335471	2.8.11 14:26	3.10.11 20:04	62.23	9	8	0
49666677	10.7.11 15:31	11.9.11 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

The 'Settings' pane on the right shows the following 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

## 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.



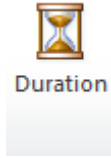
## Bottleneck discovery - benchmark

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

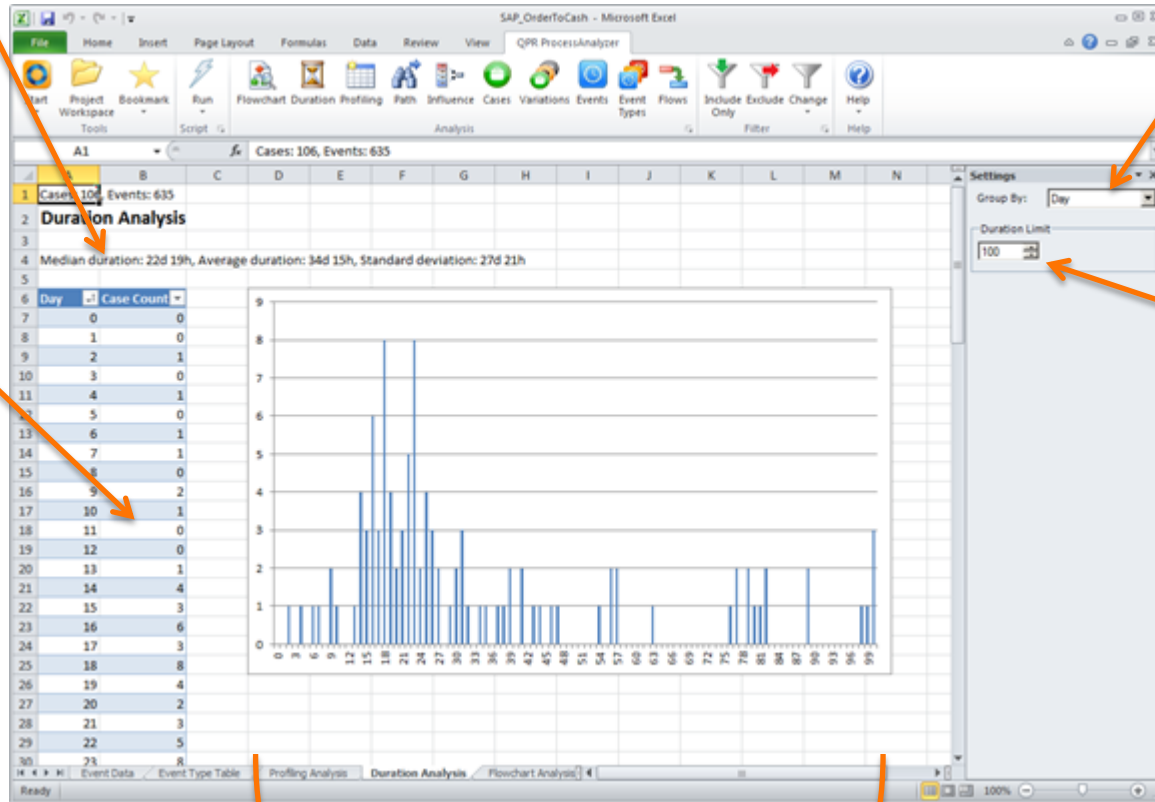


Total duration: average / median / std of Durations from first event to last in each Case

Select resolution

Currently rounded to nearest integer; (in future ceiling)

Select for filtering or analysis focus



Collect values bigger than this to last bin

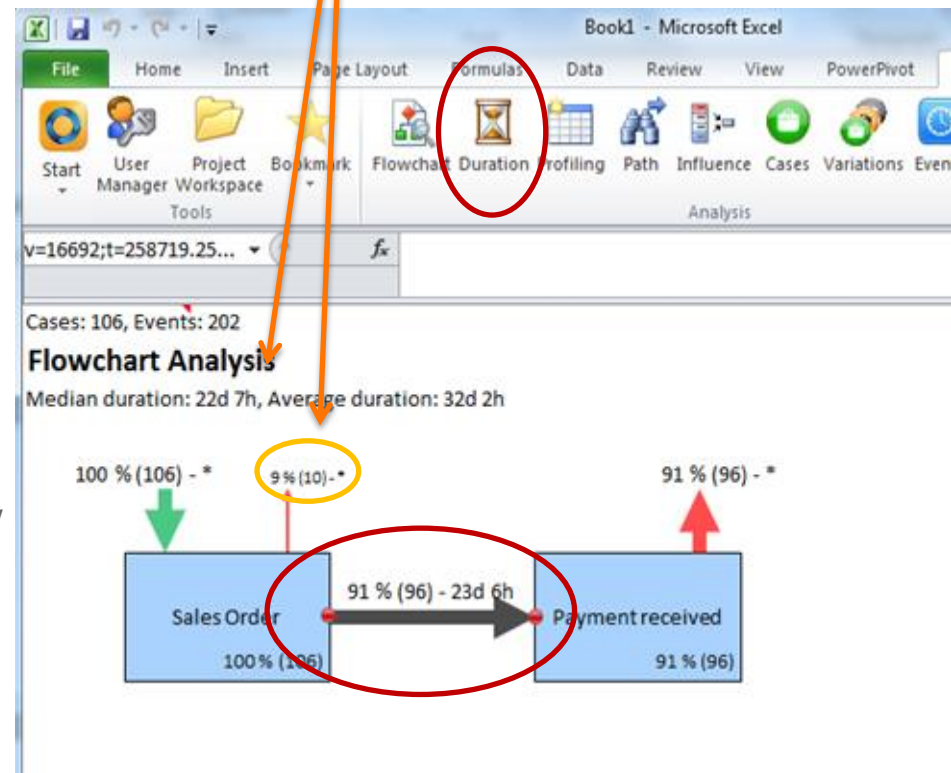
Distribution



# Duration

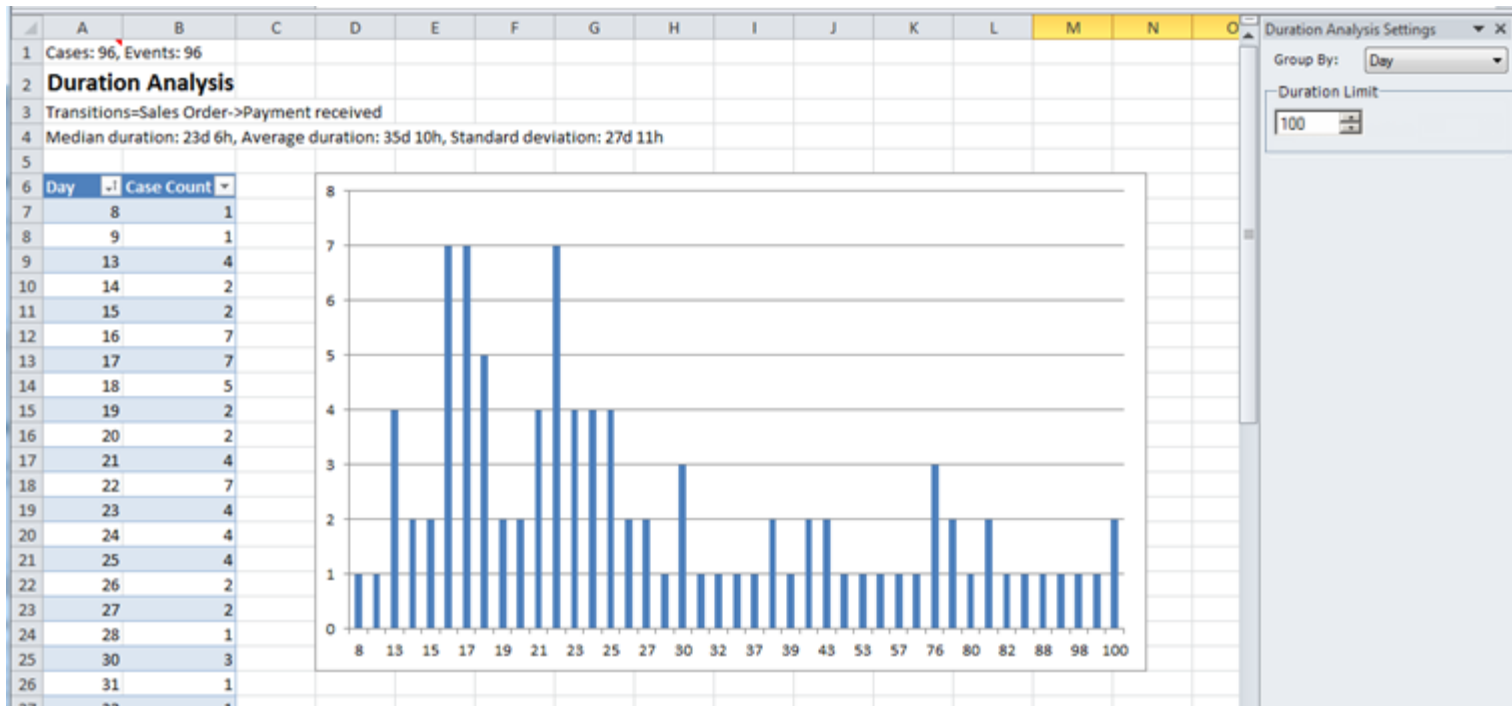
- ▶ Problem: we wish to see specifically the lead time "Sales order – Payment received"
  - Flowchart with all event types shows lead times for immediate transitions
- ▶ Include only the wanted start / end event types (Sales Order, Payment received)
  - Note: 9% of cases do not reach Payment received
    - 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:

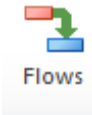
- QPR ProcessAnalyzer always uses full calendar time between event timestamps
- It is currently not possible to count time "on office hours only" or other similar logic
- In order to emulate this kind of logic, the original data should be manipulated accordingly

# Flows

Tabular reports

Detailed metrics and comparison

# Flows



- ▶ Shows the Flowchart in tabular format
- ▶ Ideal for detailed conformance checking
- ▶ "Pivot table trick" (see next slide)

Benchmarking!

The screenshot displays the QPR software interface. The top menu bar includes options like Start, User Manager Workspace, Project, Bookmark, Flowchart, Duration Profiling, Path, Influence, Cases, Variations, Events, Event Types, Flows, Include Only, Exclude, Change, and Help. Below the menu is a toolbar with icons for these functions. The main window shows a spreadsheet titled 'A55' with a 'Flow Table' containing the following data:

Start	End	Count	Successor Probability	Predecessor Probability	Median Duration	Average Du
Return w Notific.	Returns Delivery	4		80	100	0,567361111
Sales Order Changed (VA02)	Outbound Delivery	6	54,54545455	5,607476636	2,411828704	2,4
Shipment	Sales Order Changed (VA02)	1	1,265822785	9,090909091	4,981689815	4,9
GD ret.del. returns	END	1	20	0,943396226	0	
Outbound Delivery	Outbound Delivery	8	7,476635514	7,476635514	0,038958333	0,0
Return w Notific.	Purchase Order to Supplier	1	20	10	2,31481E-05	2,3
Sales Order	Invoice	2	1,886792453	1,941747573	8,3853125	8
Sales Order	Purchase Order to Supplier	9	8,490566038	90	0,704201389	0,6
Delivery Changed	Sales Order Changed (VA02)	1	20	9,090909091	0,026805556	0,0
GD ret.del. returns	Credit Memo	4	80	100	1,942083333	1,8
Purchase Order to Supplier	Outbound Delivery	1	10	0,934579439	13,24388889	13,
Outbound Delivery	Customer pick-up	15	14,01869159	78,94736842	2,538506944	2,4
Payment received	END	96	100	90,56603774	0	
Shipment	Invoice	75	94,93670886	77,81553388	1,851296296	7,2

On the right side, the 'Flow Analysis Settings' panel is visible, showing options for 'Show', 'Minimum Flow Volume' (0.0), 'Show Occurrence', 'Cost Settings' (Total selected), and 'Benchmark' (Filter: <None>).

# 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 displays an Excel spreadsheet with a PivotTable summarizing data from a 'Flows' table. The PivotTable is structured with 'Sum of Count' as the value field, 'Confirmation of service' as the column labels, and 'Handling unit' as the row labels. The data is summarized by account manager (Linda Jaskor, Mary Wilso, Patricia Wh, Paul Jon, Robert Mill, William Dav) and a Grand Total. The PivotTable Field List on the right shows the configuration: Start, End, Account Manager, and Count are selected for the report. The 'Report Filter' is set to 'Account Man...' and the 'Values' field is set to 'Sum of Count'.

Confirmation of service	Linda Jaskor	Mary Wilso	Patricia Wh	Paul Jon	Robert Mill	William Dav	(blank)	Grand Total
Sum of Count								
Row Labels								
Confirmation of service	1			1				2
Shipment	1			1				2
Credit Memo					4			4
END					3			3
GD ret. del. returns					1			1
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
END			1					1
Handling unit		7	11	15	8	24	11	76
Confirmation of service				1				1
Invoice			2	2	2	4	1	11
Shipment	7		9	13	5	20	10	64
Invoice	8	16	23	9	35	12		103
END						2		2
Payment received	8	15	23	9	31	10		96
Return w. Notific.		1			4			5
Outbound Delivery	8	18	24	8	35	14		107
Confirmation of service			1					1
Customer pick-up				6	1	6	2	15
Delivery Changed			2	2		1		5
END			1					1
Handling unit	7	10	13	7	24	9		70
Invoice			1					1
Outbound Delivery	1	4			2	1		8
Sales Order Changed (VA02)				1	2	1		4
Shipment				1	1			2
Payment received	8	15	23	9	31	10		96

# Influence Analysis

Explanations

Root causes

# Influence

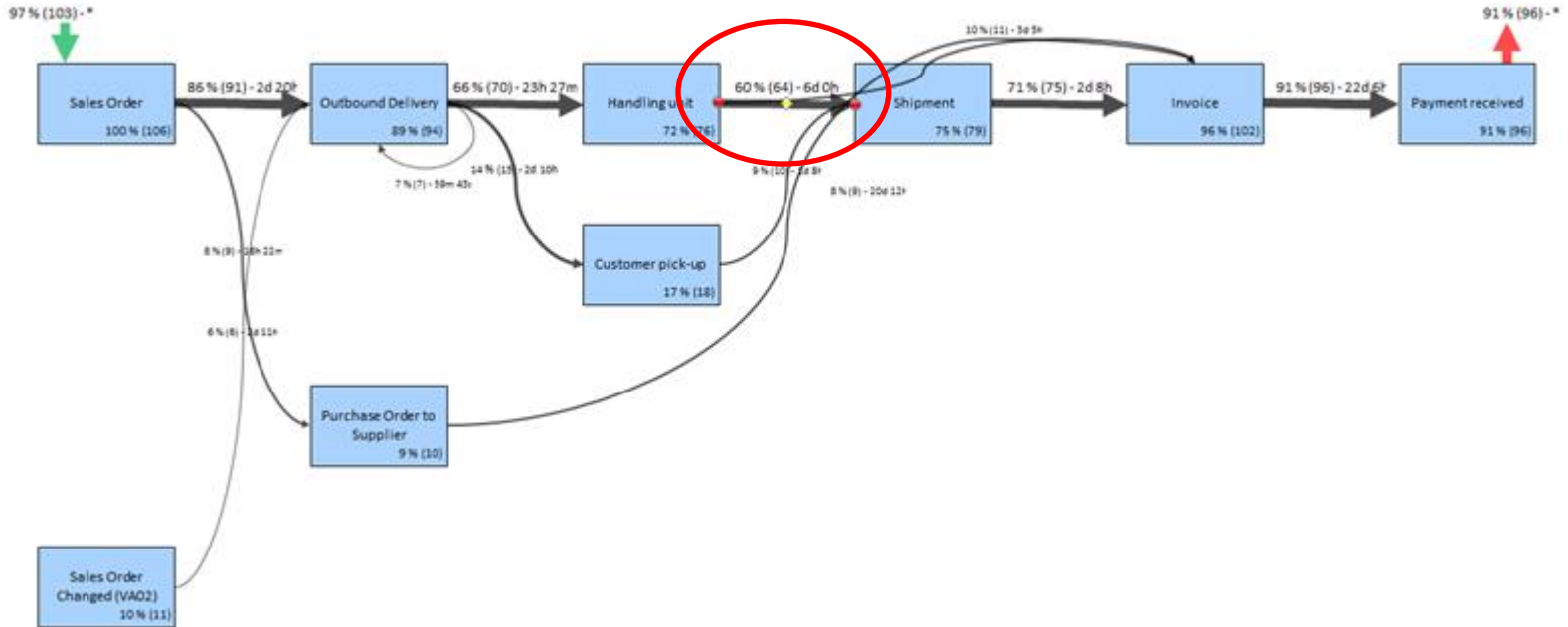
- ▶ To ease and speed up the discovery, we have ready-made analyses in the product
- ▶ Variations
  - how many there really are: have a holistic look
- ▶ Root cause analysis
  - Look at a variation from the model and discover which case attributes have an impact (and how much) to the variations
  - Script: 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

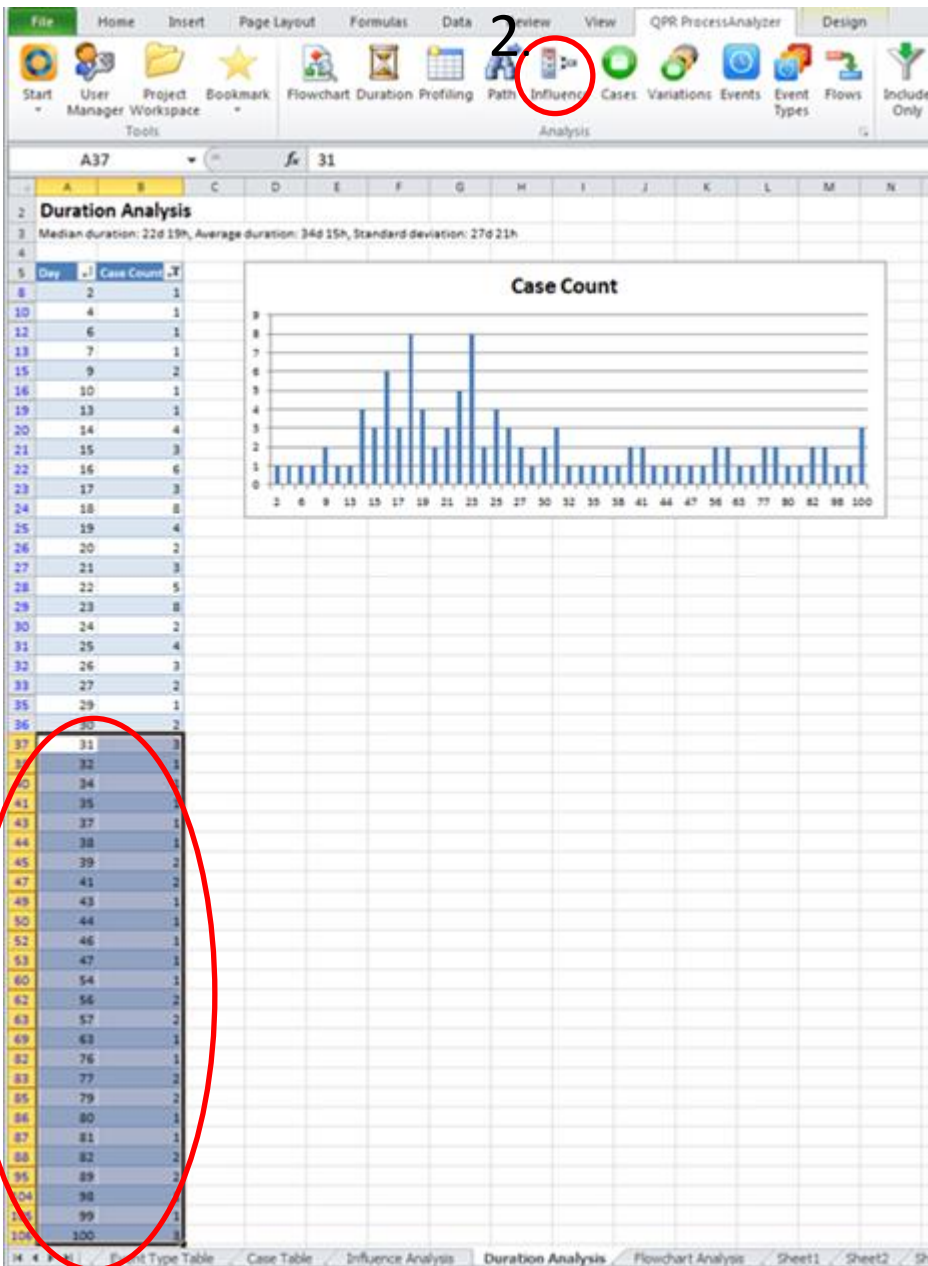
### Flowchart Analysis

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.

1.

	A	B	C	D	E	F	G	H	I	J	K
1	Cases: 106, Events: 635										
2	<b>Influence Analysis</b>										
3	Durations (Group by Day)=31, 32...[24 more];Maximum Duration=100										
4											
5	Total		106	38	68	36%					
6	Case Attribute	Attribute Group	Cases #	Selected #	Compared #	Selected %	Difference %	Contribution #	Contribution %		
7	Region	Dallas	14	10	4	71%	36%	5	13%		
8	Region	Chicago	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											

## Bottleneck discovery (influence)

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

# Details of Influence view

## ▶ Contribution

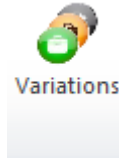
- Make a selection in the data (by using cases, event types, variations etc.)
  - The selected group = S, others = O
- Contribution calculation counts first the number cases in S and O.
  - Say that #S = 100 and #B = 900. (S = 10% of all cases)
- Select an attribute value, e.g. "User"
- Contribution 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  $10\% * 50 = 5$  S's and  $90\% * 50 = 45$  O's.
- The attribute values are now ordered according to the difference between the observed = 25 and neutral assumption = 5 => + 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 => 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"

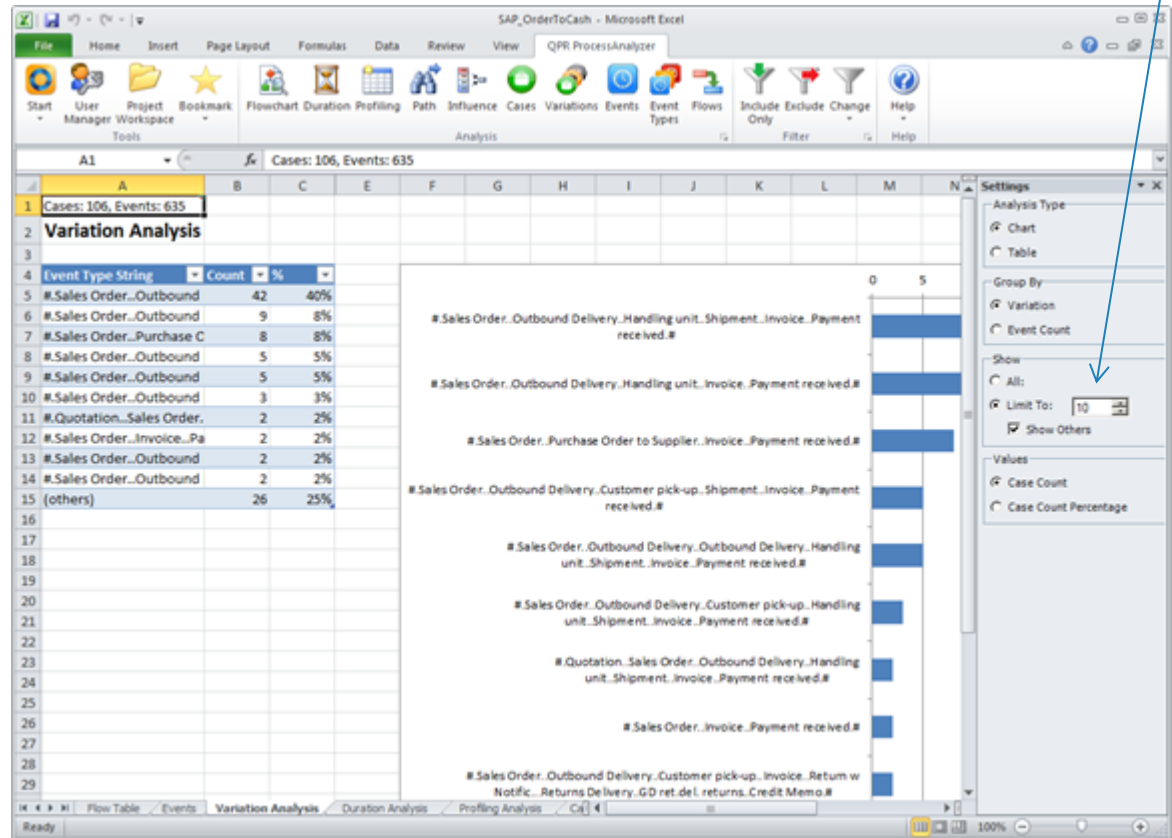
# Variation Analysis

# 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

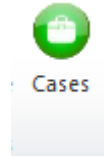
Change to expand / suppress the list



# 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

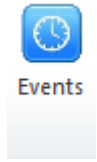
Remember to set to "All" if you require all cases!

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 data. The 'Settings' panel on the right is open, showing options for 'Show' (All), 'Limit To' (1000), 'Columns', 'Event Count for Event Type', 'Case Attributes', 'Event Attributes', 'Duration Groups', 'Starts', 'Ends', 'Variation Id', and 'Event Type String'. Arrows point from the text annotations to the 'All' radio button and the 'Starts' section in the settings panel.

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

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

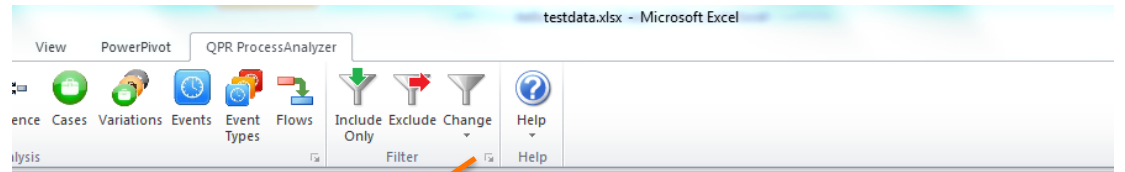
- The comment box shows details of the current analysis
- *Attach the text into possible questions sent to Customer Care*

# Manage filters

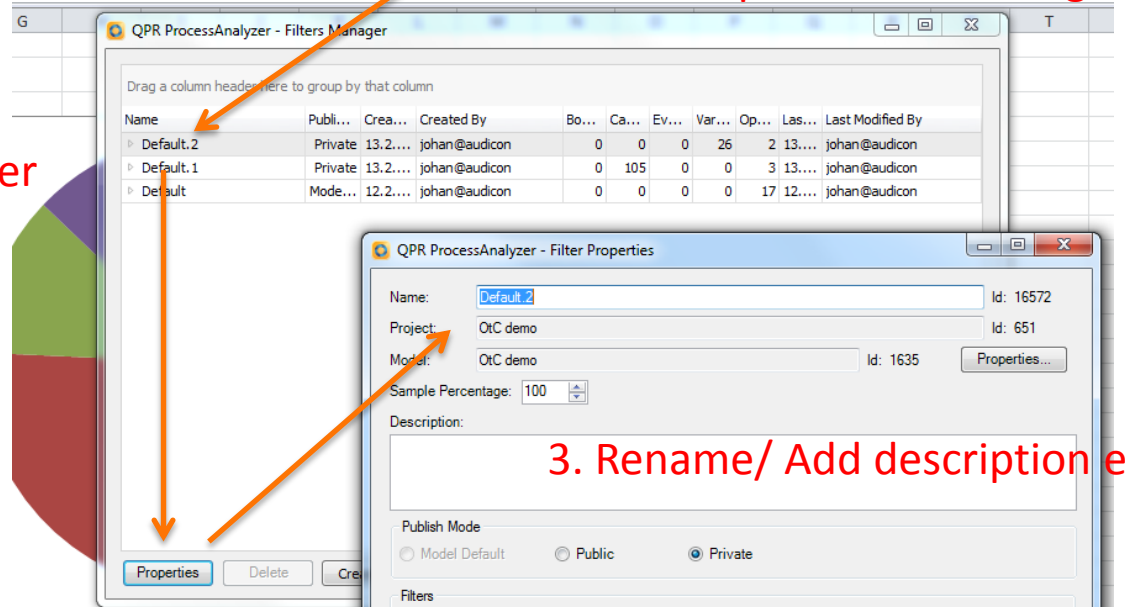
# Managing / tracking filters

"Change" button gives a quick list

See Wiki for details



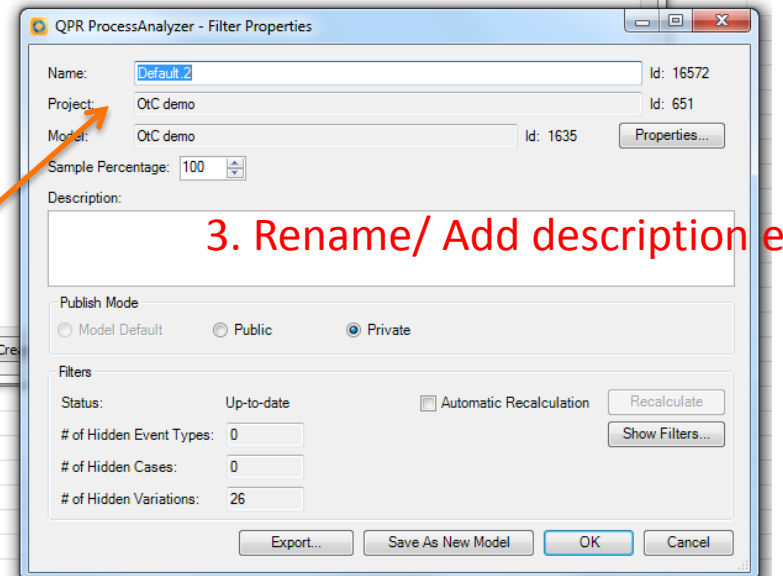
1. Click to open Filters Manager



2. Select filter

3. Rename/ Add description etc.

And /or show properties...



The screenshot displays three overlapping windows from the QPR ProcessAnalyzer application:

- QPR ProcessAnalyzer - Filters Manager:** A window with a table of filters. A black arrow points to the first row, 'Default.2.1'. The table has columns for Name, Publication, Creation, and Created By.
- QPR ProcessAnalyzer - Filter Properties:** A dialog box for editing a filter. It shows fields for Name (Default.2.1), Project (OtC demo), Model (OtC demo), and Sample Percentage (100). It also includes a Description text area and buttons for Properties, OK, and Cancel.
- QPR ProcessAnalyzer - Filter Rules:** A dialog box showing a table of filter rules. An orange arrow points from the 'Show Filters...' button in the Filter Properties dialog to this window. The table lists filter names, types, creation dates, creators, analysis types, and parameters.

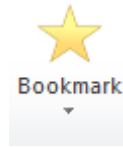
See the set of rules that defines the filter

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

# Bookmarks

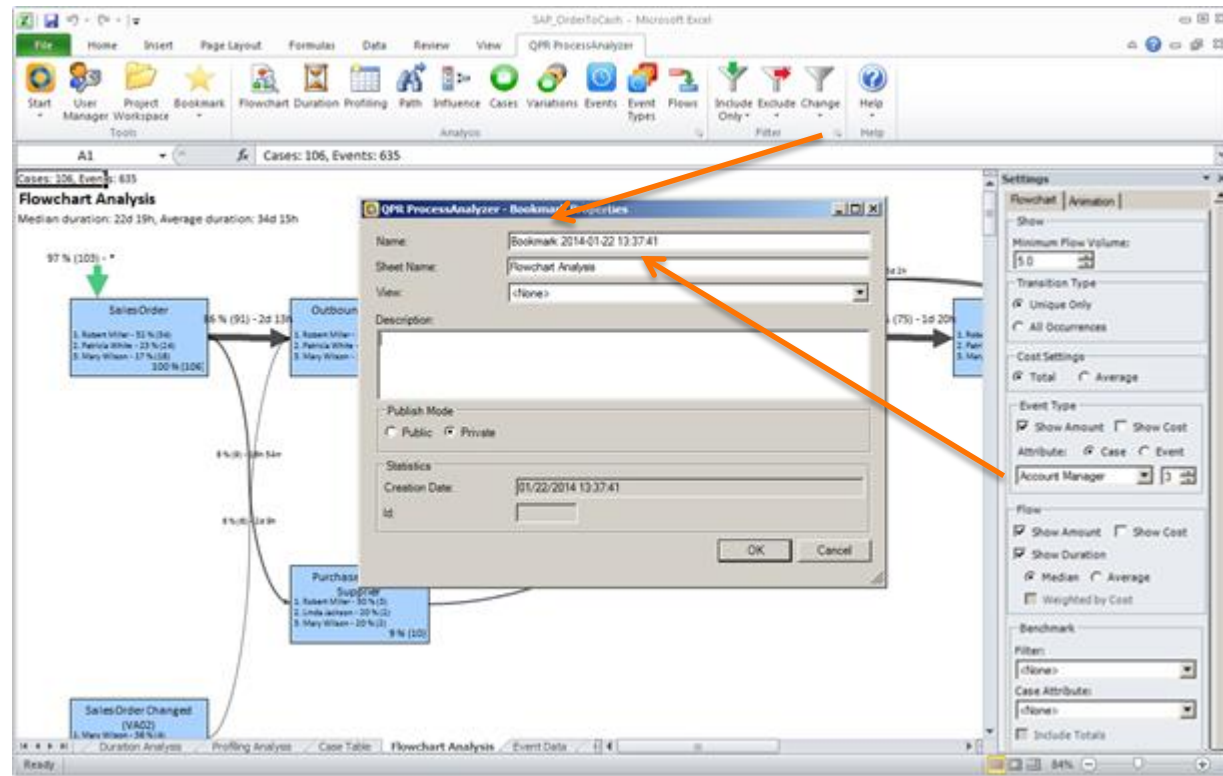


# Bookmarks

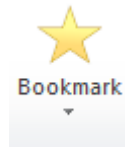


- ▶ Bookmark stores the analysis view
  - Filters
  - Analysis settings

- ▶ 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.

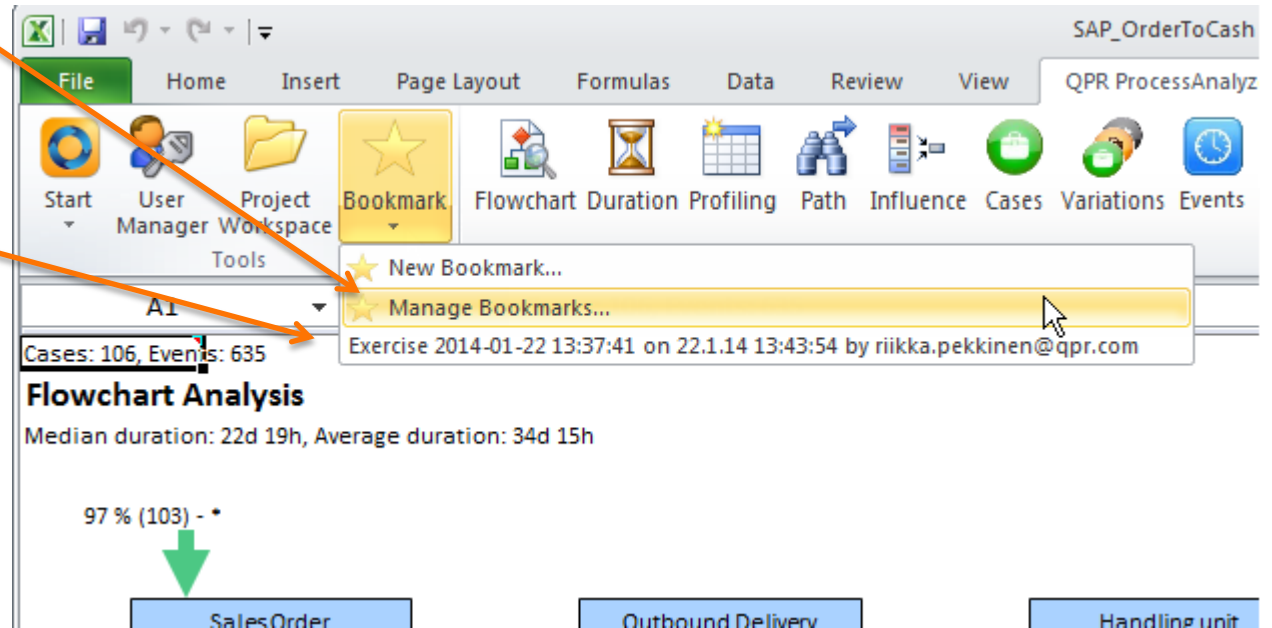


# Bookmarks



Edit bookmarks

Recall a bookmark



The screenshot shows the SAP OrderToCash software interface. 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, and a yellow 'Bookmark' icon with a star. A dropdown menu is open from the 'Bookmark' icon, showing options: 'New Bookmark...', 'Manage Bookmarks...' (highlighted), and 'Exercise 2014-01-22 13:37:41 on 22.1.14 13:43:54 by riikka.pekkinen@qpr.com'. Below the ribbon, the 'Flowchart Analysis' section displays 'Cases: 106, Events: 635' and a green arrow pointing to a flowchart with three nodes: 'SalesOrder', 'Outbound Delivery', and 'Handling unit'. The text '97 % (103) -' is positioned above the flowchart.

# Status info

"Cell A1"

# Status cell A1

- ▶ Provides detailed information on analysis. For example:
  - Run time
  - Filter
  - View and model identification
  - Amount of data
  - Analysis parameters
  - Important information for CustomerCare

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

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	
-----	
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](http://usernet.qpr.com).

QPR - Quality. Processes. Results.

**QPR Customer Care**

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

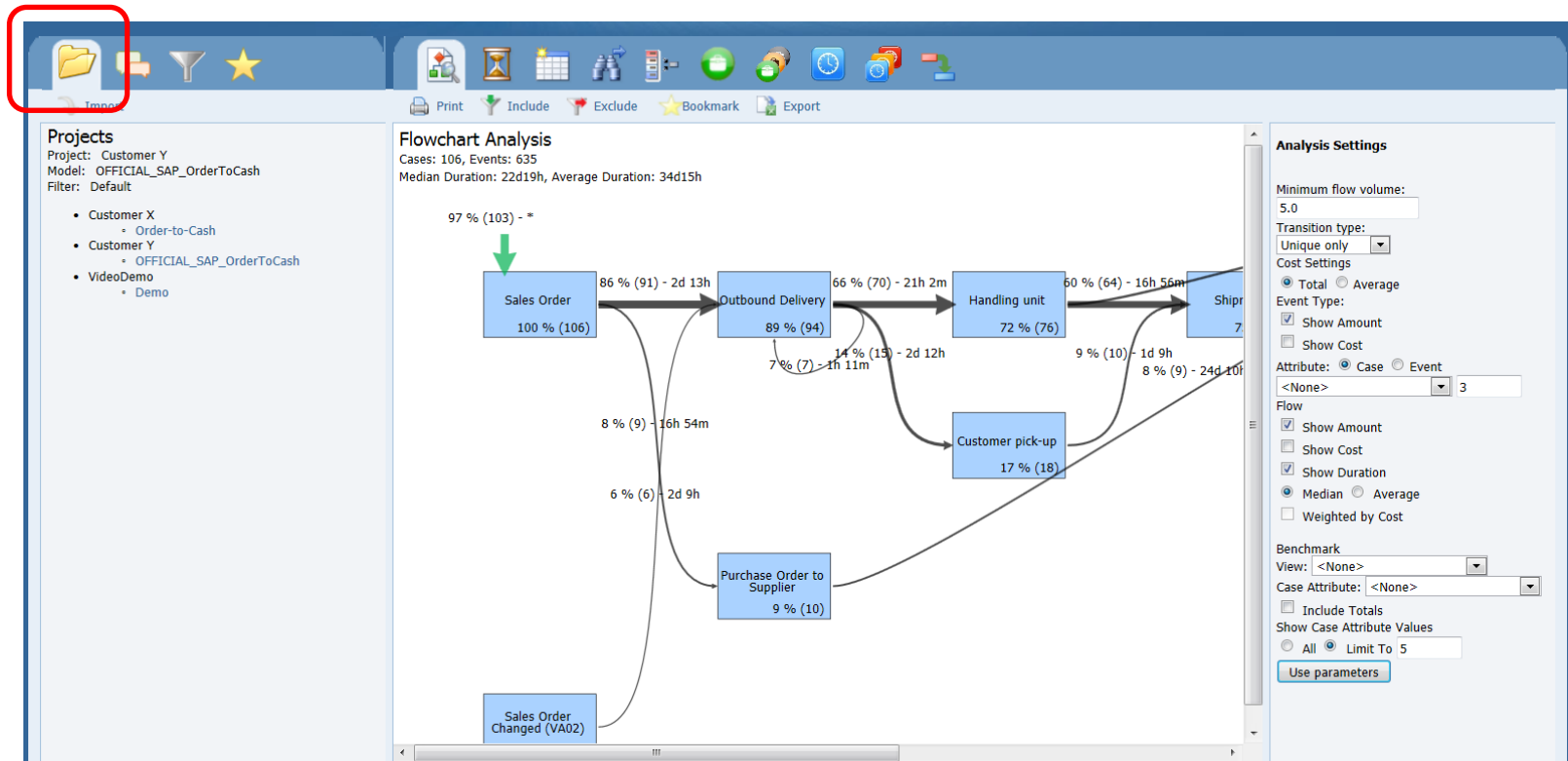
- ▶ Get Support
- ✉ [customercare@qpr.com](mailto:customercare@qpr.com)
- ☎ +358 290 001 155

**Learn More**

- ▶ [QPR ProcessAnalyzer home](#)
- ▶ [QPR ProcessAnalyzer wiki](#)

# Basic usage

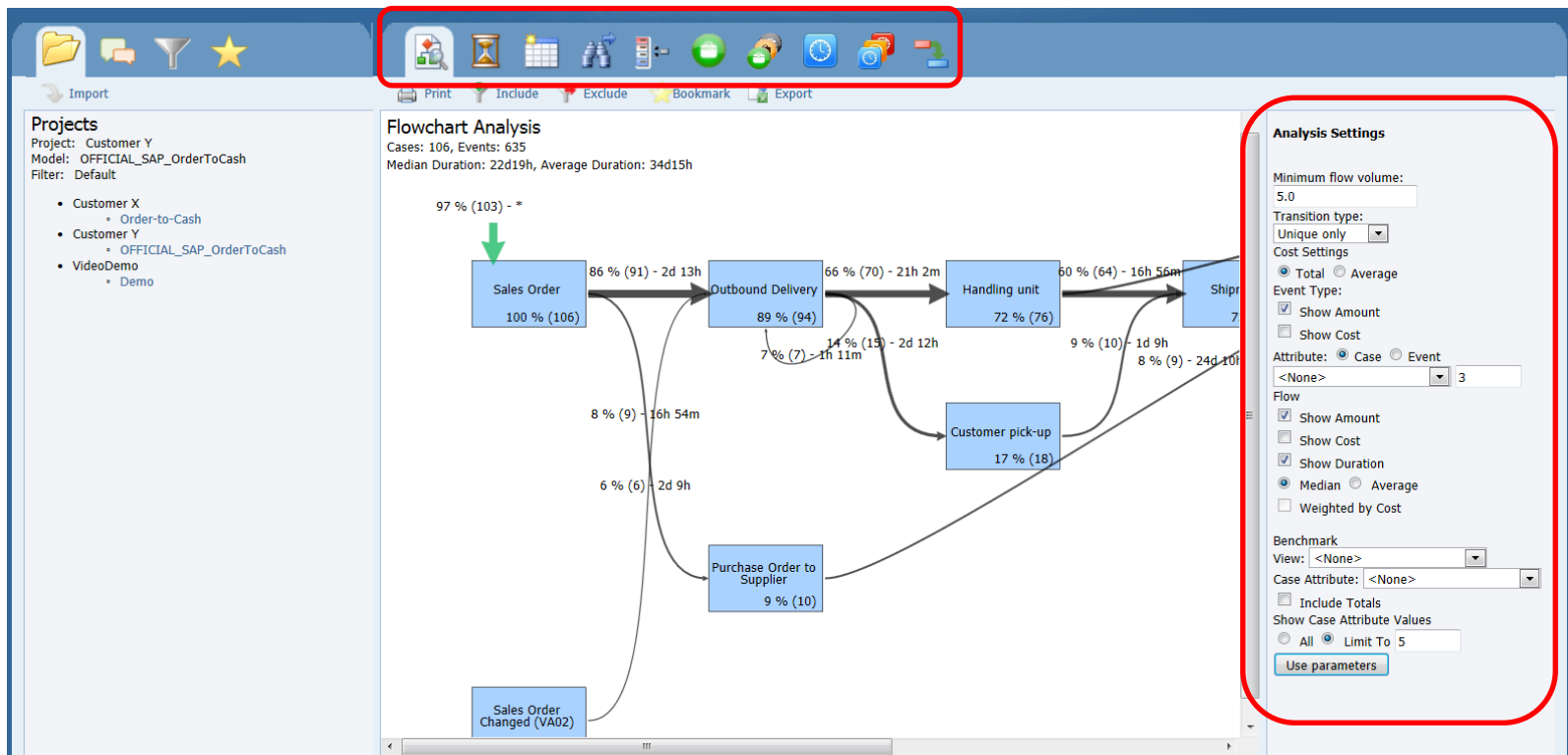
- Once you have logged in, you can access all projects and models that you have access to by selecting the "Projects" folder from top-left corner of the screen





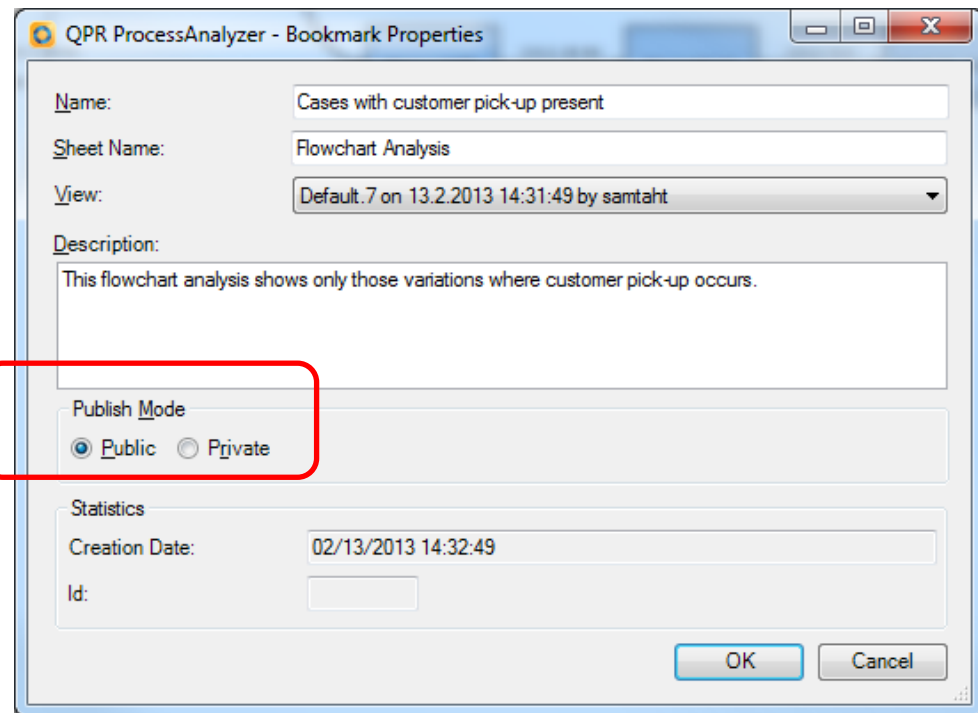
# Basic usage

- 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.



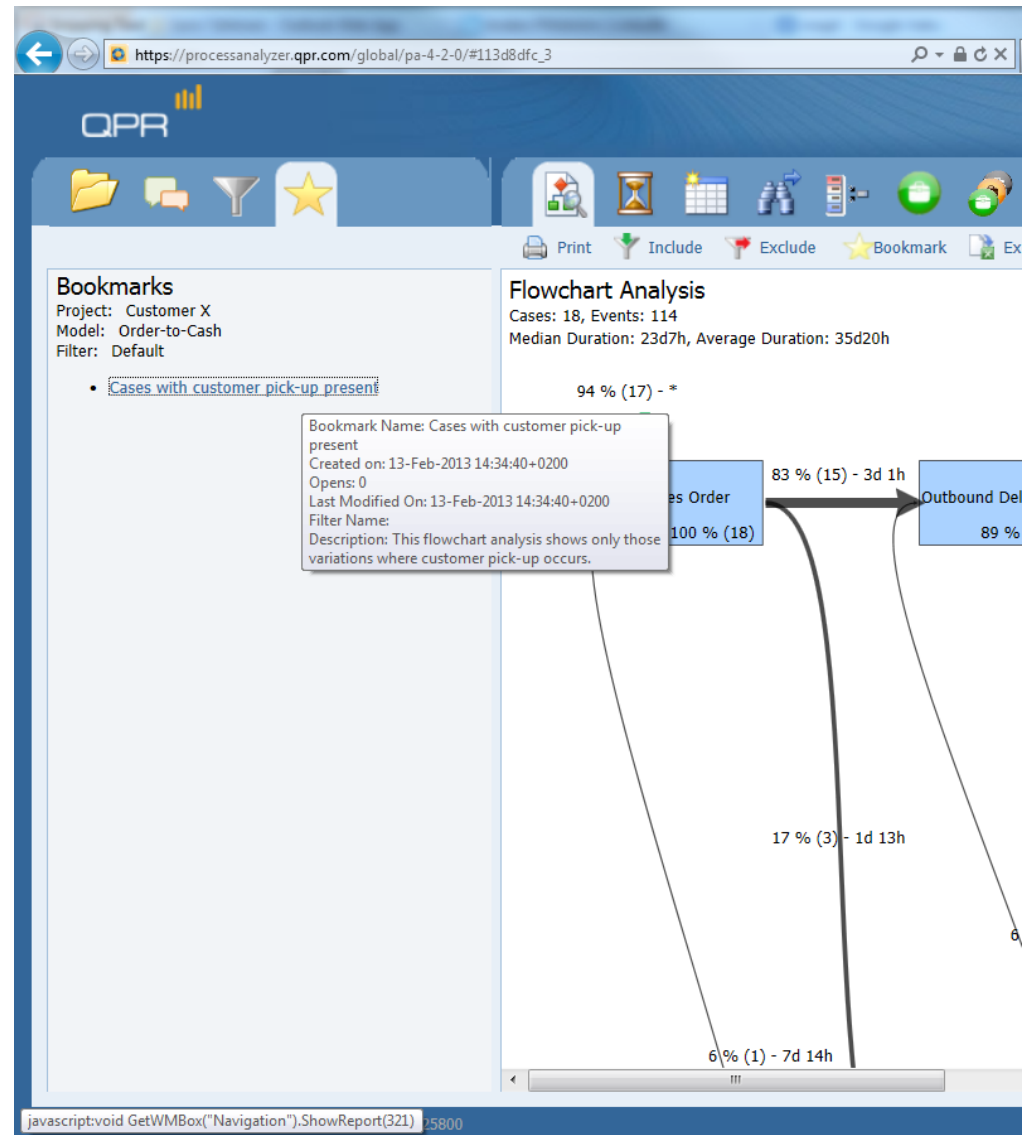
# Bookmarking reports

- ▶ 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.

The screenshot displays the QPR software interface. At the top, the QPR logo is visible. Below it, there is a navigation bar with icons for folders, messages, filters, and stars. The main content area is divided into two panels. The left panel, titled "Customer X", contains a "Share an Idea" section. It features an "Idea" titled "Why it takes so long from PO to Invoice?" with a comment from "Anne Brand" that reads "Check out the Influence analysis - our jeans delivery is causing problems". The right panel, titled "Flowchart Analysis", shows a flowchart with a box labeled "Sales" and a value of "10". A green arrow points to this box, and the text "94 % (17) - \*" is displayed above it. The interface also includes a "Print" button and an "Include" button in the top right corner.

# 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

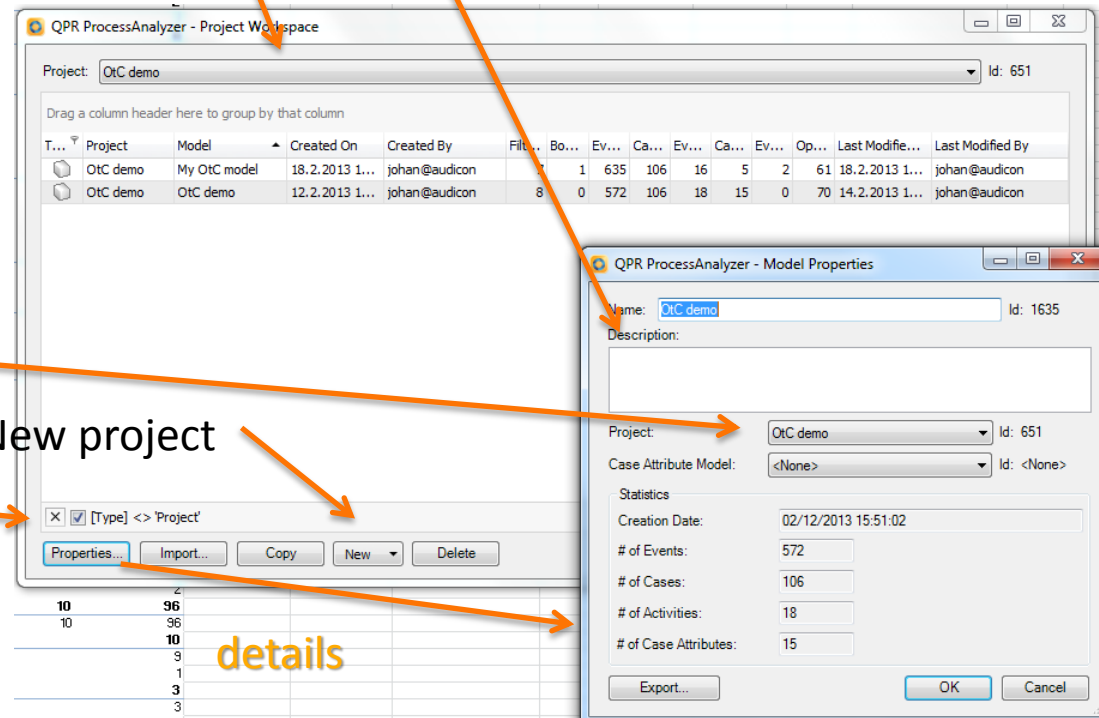
Switch project

Add comments

New project

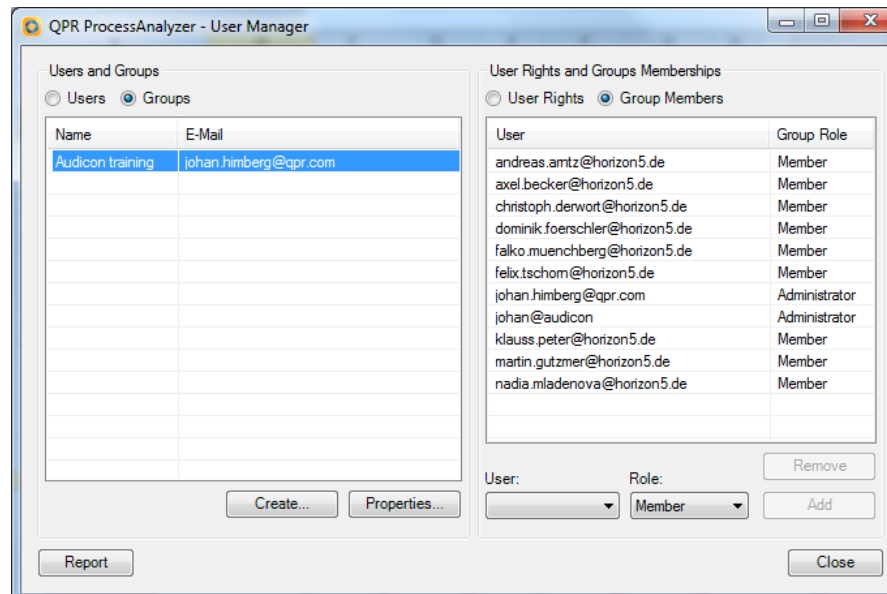
details

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 'Settings' dialog box is open, showing the 'Show' section with 'All' selected and 'Limit To' set to 1000. A blue arrow points from the text above to the 'Limit To' field. The 'Case Table' is visible in the spreadsheet, showing columns for Name, Start Time, End Time, Duration Days, Event Count, Event Type Count, and Event Cost.

Name	Start Time	End Time	Duration Days	Event Count	Event Type Count	Event Cost
97395276	10.7.11 20:27	23.7.11 16:48	12.85	6	6	0
95000188	27.8.11 13:16	14.9.11 06:29	17.72	6	6	0
93620510	17.1.12 13:47	3.2.12 18:29	17.20	5	5	0
92791043	22.1.12 10:51	10.2.12 23:18	19.52	8	7	0
91683178	7.7.11 18:03	29.7.11 18:24	22.01	7	7	0
91460943	30.5.11 04:06	16.6.11 12:14	17.34	6	6	0
884989895	26.5.11 16:09	29.6.11 15:10	33.96	8	8	0
87288982	23.7.11 17:56	11.10.11 14:14	79.85	6	6	0
87093037	29.10.11 11:15	4.11.11 18:53	6.32	5	5	0
84209808	4.11.11 04:20	19.1.12 05:29	76.05	6	6	0
8255229	4.6.11 23:42	18.6.11 14:48	13.63	6	6	0
79853424	19.8.11 03:45	17.9.11 16:43	29.54	3	3	0
79545494	24.5.11 09:38	10.6.11 16:40	17.29	5	5	0
78422757	28.1.12 14:27	21.2.12 06:46	23.68	4	4	0
76901927	7.11.11 05:24	22.1.12 08:46	76.14	6	6	0
723104636	23.6.11 07:30	24.7.11 03:51	30.85	9	9	0
70701922	12.7.11 23:37	30.7.11 06:37	17.29	5	5	0
68734702	11.1.12 15:22	17.1.12 10:42	5.81	4	4	0
67798752	29.11.11 23:57	16.12.11 06:38	16.28	6	6	0
67070577	13.2.12 09:28	2.3.12 17:58	18.35	6	6	0
6467220	27.8.11 19:25	12.9.11 15:33	15.84	5	5	0
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 Microsoft Excel interface with a data table and a settings pane. The data table has the following columns: End Time, Duration Days, Event Count, Event Type Count, Event Cost, and StartMonth. The settings pane is open on the right, showing options for columns, duration groups, and starts.

	D	E	F	G	H	I	J	K
4								
5	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		

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

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

The screenshot shows a Microsoft Excel window with a data table from QPR ProcessAnalyzer. The table is titled 'QPR ProcessAnalyzer - Project Workspace' and contains the following data:

Name	Start	Project	Model	Created On	Created By	Fit...	Bo...	Ev...	Ca...	Ev...	Op...	Last Modified...	Last Modified By		
97395276	2011	SAP OrderToCash DEMO		24.5.13 14:5...	df	9	0	1270	124	16	5	2	86 20.1.14 11:3...	rikka.pekkonen@qpr...	
95000188	2011					4	1	635	106	16	5	2	57 22.1.14 08:4...	rikka.pekkonen@qpr...	
93620510	2012														
92791043	2012														
91683178	2011														
91460943	2011														
884989895	2011														
87288982	2011														
87093037	2011														
84209808	2011														
8255229	2011														
79853424	2011														
79545494	2011														
78422757	2012														
76901927	2011														
723104636	2011														
70701922	2011														
68734702	2012														
67798752	2011														
67070577	2012														

Book3 - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View QPR ProcessAnalyzer

Tools: Start, User Manager, Project Manager, Project Workspace, 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

Drag a column header here to group by th...

Import Type

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

Last Modified... Last Modified By

20.1.14 11:3...	rikka.pekinen@qpr....
22.1.14 08:4...	rikka.pekinen@qpr....

X [Type] <> Project

Properties... Import... Copy New Delete

1	Name	Start
2	97395276	2011
3	95000188	2011
4	93620510	2012
5	92791043	2012
6	91683178	2011
7	91460943	2011
8	884989895	2011
9	87288982	2011
10	87093037	2011
11	84209808	2011
12	8255229	2011
13	79853424	2011
14	79545494	2011
15	78422757	2012
16	76901927	2011
17	72310463	2011
18	70701922	2011
19	68734702	2012
20	67798752	2011
21	6707577	2012
22	6467220	2011
23	64335471	2011/07
24	64283436	2011/09
25	61426559	2011/05
26	60658860	2011/08
27	5952269	2011/08
28	59019408	2011/10

Flowchart Analysis Sheet1 Sheet2 Sheet3

Book3 - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View QPR ProcessAnalyzer

Tools: Start, User Manager, Project Manager, Project Workspace, 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

Drag a column header here to group by th...

Source

- Current Worksheet
- Database via SQL Query
- Text File

Last Modified... Last Modified By

20.1.14 11:3...	rikka.pekinen@qpr....
22.1.14 08:4...	rikka.pekinen@qpr....

Previous Next Cancel

X [Type] <> Project

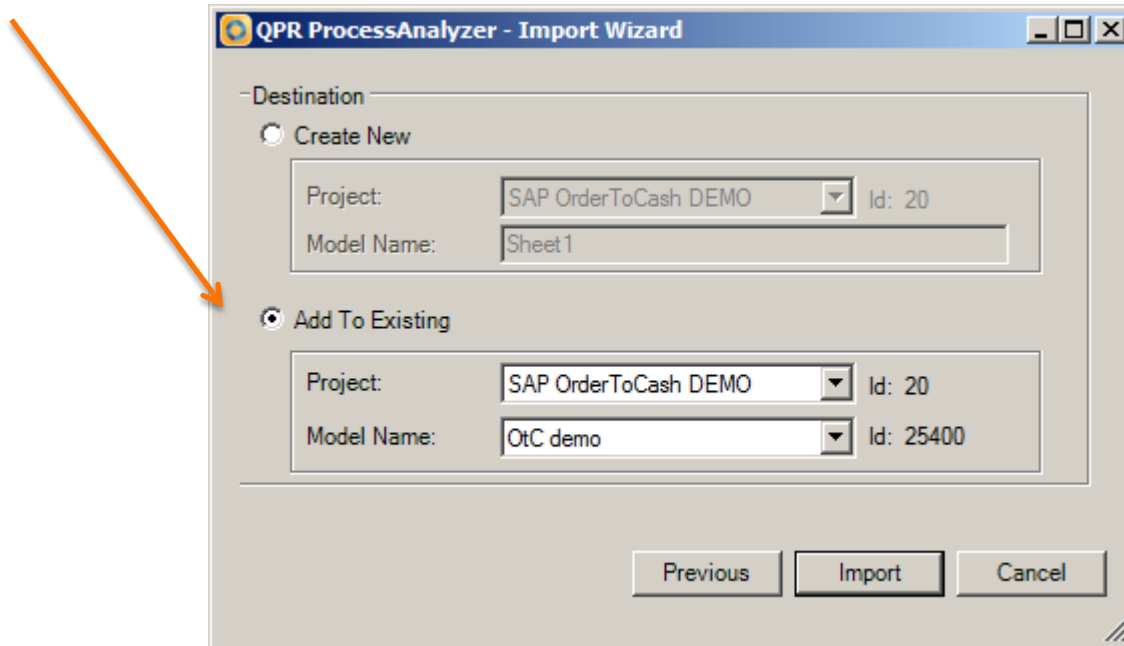
Properties... Import... Copy New Delete Show Deleted Models Open Cancel

1	Name	Start
2	97395276	2011
3	95000188	2011
4	93620510	2012
5	92791043	2012
6	91683178	2011
7	91460943	2011
8	884989895	2011
9	87288982	2011
10	87093037	2011
11	84209808	2011
12	8255229	2011
13	79853424	2011
14	79545494	2011
15	78422757	2012
16	76901927	2011
17	72310463	2011
18	70701922	2011
19	68734702	2012
20	67798752	2011
21	6707577	2012
22	6467220	2011
23	64335471	2011/07
24	64283436	2011/09
25	61426559	2011/05
26	60658860	2011/08
27	5952269	2011/08
28	59019408	2011/10

Flowchart Analysis Sheet1 Sheet2 Sheet3

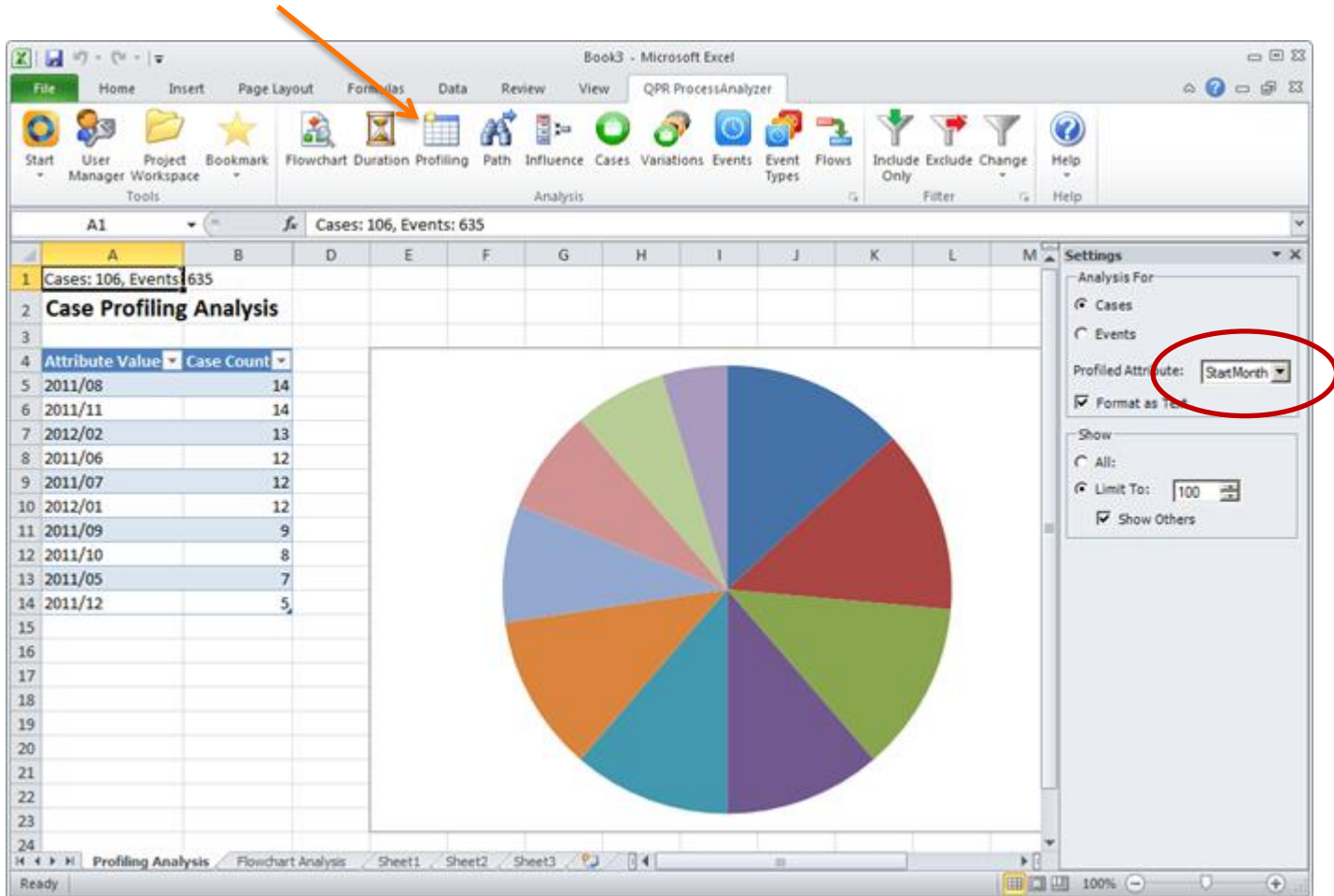
# Import

- ▶ 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

The screenshot shows the Microsoft Excel interface with the 'Change Chart Type' dialog box open. The dialog box is positioned over a pie chart in the spreadsheet. The spreadsheet data is as follows:

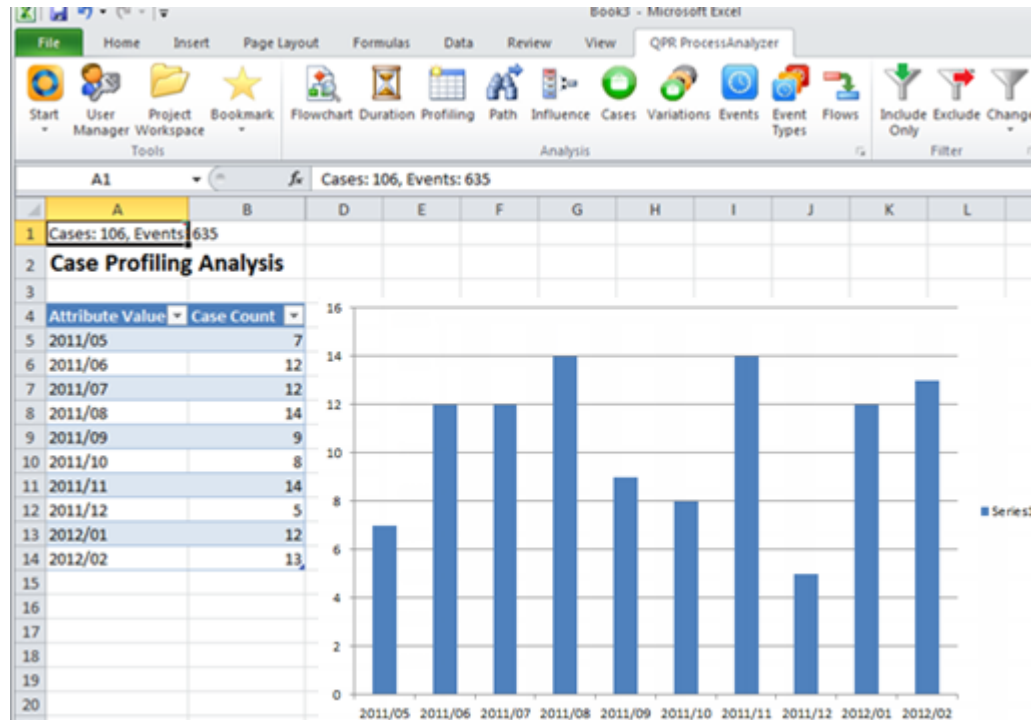
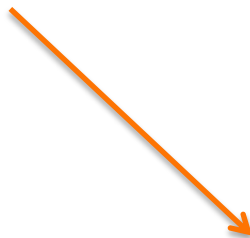
Attribute Value	Case Count
2011/08	14
2011/11	14
2012/02	13
2011/06	12
2011/07	12
2012/01	12
2011/09	9
2011/10	8
2011/05	7
2011/12	5

The 'Change Chart Type' dialog box shows the 'Pie' chart type selected. The 'Settings' pane on the right is also visible, showing options for 'Analysis For' (Cases), 'Profiled Attribute' (StartMonth), and 'Format as Text'.

# 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

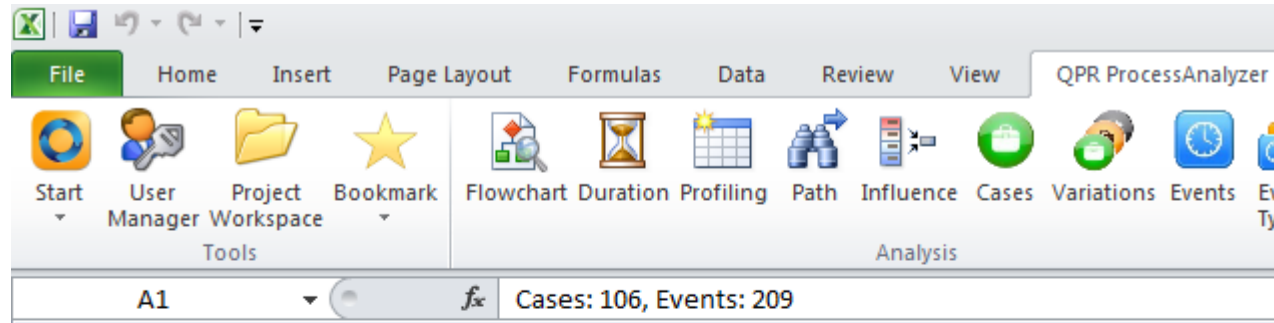
Compare monthly lead times

# Problem

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

...continue

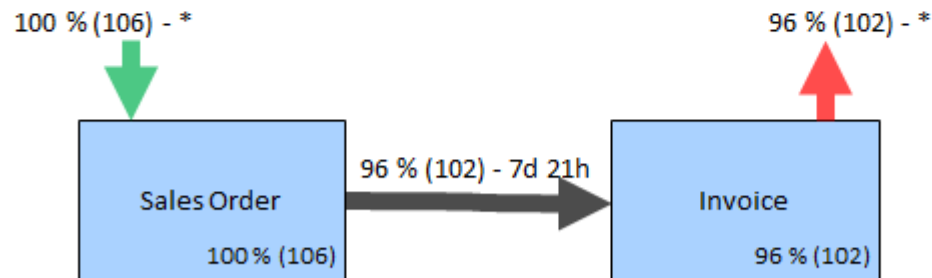
- ▶ Select the lead time of interest by appropriate filtering



Cases: 106, Events: 209

### Flowchart Analysis

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



# Benchmark

Book1 - 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 Only Exclude Change Filter Help

A1 Cases: 39, Events: 79

Cases: 39, Events: 79

### Flowchart Analysis

Case attribute "Customer Group" equals to: "Kids".  
Median duration: 7d 2h, Average duration: 12d 15h

```
graph LR; A[Sales Order  
100% (39)] -- "100% (39) - 7d 2h" --> B[Invoice  
100% (39)];
```

Cases: 36, Events: 72

### Flowchart Analysis

Case attribute "Customer Group" equals to: "Men".  
Median duration: 8d 3h, Average duration: 12d 20h

```
graph LR; A[Sales Order  
100% (36)] -- "100% (36) - 8d 3h" --> B[Invoice  
100% (36)];
```

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

Attribute:  Case  Event

<None>

Flow

Show Amount  Show Cost

Show Duration

Median  Average

Weighted by Cost

Benchmark

Filter: <None>

Case Attribute: **Customer Group**

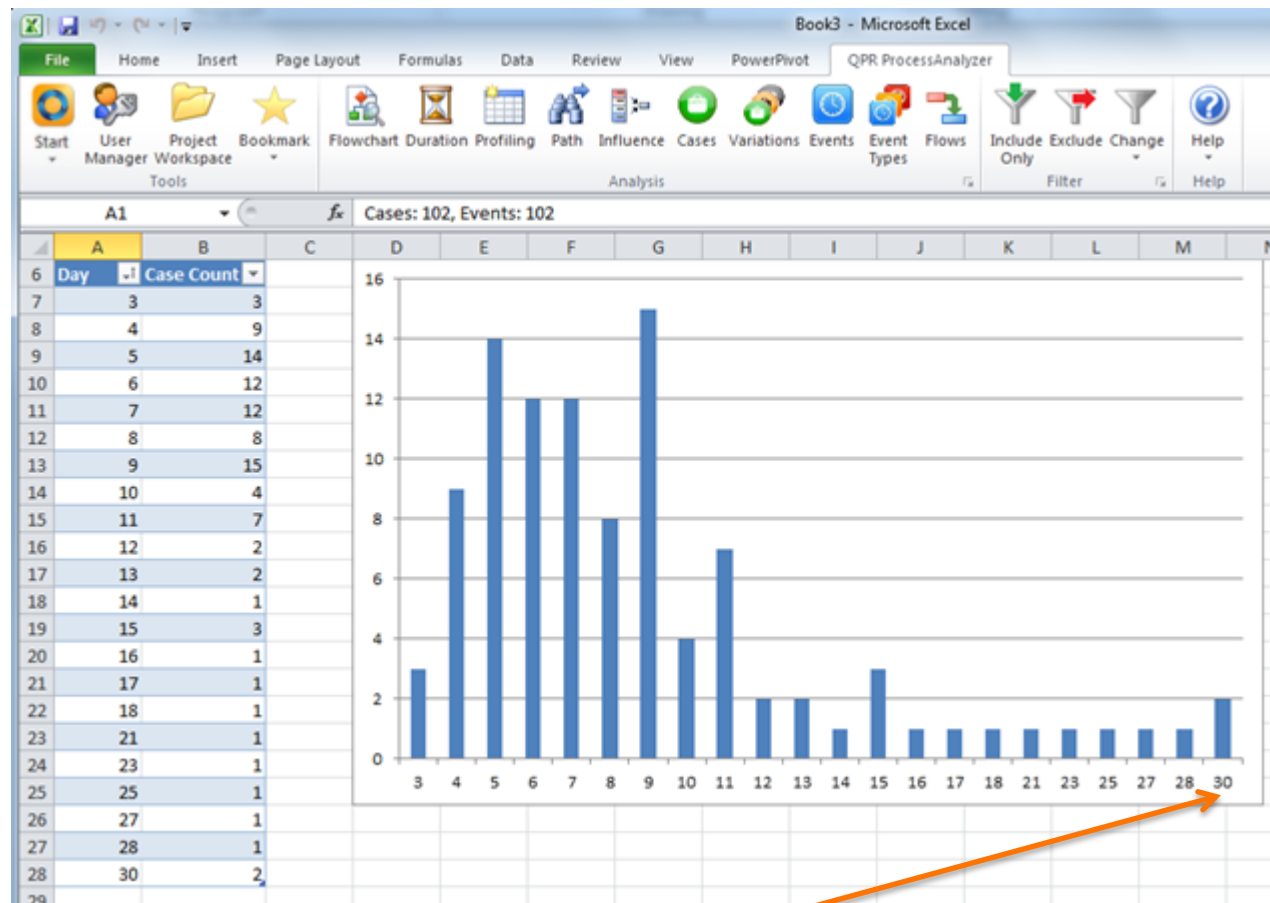
Include Totals

Show Case Attribute Values

All  Limit To 5

# Check time-window consistency

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



# Flows

- ▶ Use the flow report to make nice graphs

The screenshot displays the Microsoft Excel interface with the QPR ProcessAnalyzer ribbon. The 'Flows' icon is circled in red. Below the ribbon, a 'Flow Table' is visible, showing a list of flows with columns for Start, End, Customer Group, Count, Successor Probability, Predecessor Probability, Median Duration, and Average. The 'Settings' panel on the right is also visible, with the 'Case Attribute' dropdown menu circled in red.

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	



# 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>