



QPR PD/EA Excel Integration

User's guide

Company Confidential

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1 Introduction

QPR PD/EA Excel Integration add-on enables implementation of analysis and reporting solutions over Microsoft Excel. This support is realized by scripts for import and export of model structures between QPR ProcessDesigner or QPR EnterpriseArchitect and Microsoft Excel.

Solution-specific integrations are configured using a declarative reporting language. The reporting language declares what kinds of model elements, attributes, relations and connectors between the elements are exported or imported between QPR PD/EA and Microsoft Excel. The configuration and solution-specific integrations is done by solution experts. End-users of the implemented reporting and analysis solutions need not to be aware of the configuration details or the reporting language.

This document provides instructions for configuring and utilizing QPR PD/EA Excel Integration solutions.

2 Add-on requirements

- QPR ProcessDesigner 2015.1 or QPR EnterpriseArchitect 2015.1
- Microsoft Excel client
- .Net Framework 3.5 support

The scripts have been developed and tested over Microsoft Excel 2013.

3 Add-on installation

The add-on is implemented as two separate scripts for export and import. The scripts are included in the add-on package. The export script is named *ExcelIntegrationExport.qprpsc* and the import script is named *ExcelIntegrationImport.qprpsc*.

The scripts should be copied to a place in the file system that is accessible by their intended users. For example, the default location for QPR EA 2015.1 scripts is *C:\ProgramData\QPR Software\QPR 2015\2015.1\Clients\pgscripts*, assuming the client is installed in default location).

The scripts are usable after copying to appropriate place. No other configuration needs to be done.

The scripts require .Net Framework 3.5 support. **Having .Net Framework 4 support is not sufficient due to changes in the framework and their default configuration.** In Windows 8.1 systems this support must be enabled explicitly. The .Net Framework 3.5 is enabled in Windows 8.1 systems as follows:

- Start *Turn Windows features on or off* application;
 - E.g. go to start screen and type *turn windows features* and select the application from the suggestions appearing on the right-hand part of the screen.
- Click the checkmark on for feature *".NET Framework 3.5 (includes .NET 2.0 and 3.0)* (see Figure X below);
- Click *OK* on the dialog;
- Now Windows starts installing the .NET Framework 3.5 support.

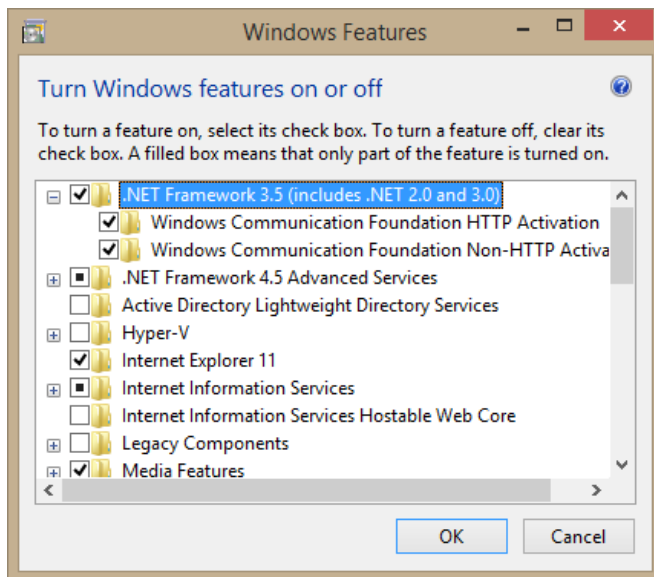


Figure 1: Enabling .NET Framework 3.5 support.

3.1 Deploying scripts as procedures

The scripts can be deployed to be run as procedures as well. For this purpose one needs sufficient rights for creating new model element types for the required procedures and configuring the template accordingly.

The contents of the scripts can then be copied to the created procedures, and customized appropriately. Using the scripts with appropriate customizations may significantly enhance the user experience of domain-specific Excel integration solutions. Implementation of such solutions is not described in this document.

4 Operation principle

The operation of the QPR PD/EA Excel Integration is based on interpretation of report specifications, typically retrieved from Excel workbooks, and retrieval, update or creation of model structures in QPR PD/EA models.

Typical workflow for exporting model structures to Microsoft Excel is as follows:

1. Solution provider (e.g. consultant) creates an Excel workbook that contains appropriate report specifications. Each report specification corresponds to a sheet in the Excel workbook to be generated. Report specifications are declared in a sheet named *QPR Configuration*; each sheet is defined in a distinct row.
2. End-user is running QPR ProcessDesigner or QPR EnterpriseArchitect and has opened a model. Now the end-user executes the *ExcelIntegrationExport.qprpsc* script (or same functionality provided as a procedure).
3. In the default case, the PD/EA client will now ask for an Excel reporting template to be used. From the file dialog, the end-user selects the Excel workbook created by the solution provider.
4. The *ExcelIntegrationExport.qprpsc* script reads the Excel workbook. If it finds a sheet named *QPR Configuration*, it reads the report specifications contained.
5. The export script crawls the active model for each report specification and creates sheets to hold the model elements conforming to the specification.
6. The script notifies the user when the export is ready; the Excel workbook is automatically saved to the home folder of the user with a distinctive name.

Typical workflow for importing model structure from Microsoft Excel to QPR PD/EA model is as follows:

1. Solution provider (e.g. consultant) creates an Excel workbook that contains appropriate report specifications. Each report specification corresponds to a sheet in the Excel workbook to be generated. Report specifications are declared in a sheet named *QPR Configuration*; each sheet is defined in a distinct row.
2. Data is created to sheets conforming to the report specifications. The data can be provided either using the export script, manually, or from 3rd party systems using an appropriate integration to Excel.
3. End-user is running QPR ProcessDesigner or QPR EnterpriseArchitect and has opened a model. Now the end-user executes the *ExcelIntegrationImport.qprpsc* script (or same functionality provided as a procedure).
4. In the default case, the PD/EA client will now ask for an Excel reporting template to be used. From the file dialog, the end-user selects the Excel workbook with all the data in the sheets.
5. The import script goes through all the Excel sheets, and updates the model contents of the active model according to the contained report specifications.
6. The script notifies the user when the import is ready. The active model now contains the data corresponding to the Excel workbook.

The script implementations are based on the QPR API (see *QPR Developer's Guide*). Thus the constraints related to reading, setting or updating element attribute values are the same as with the API. For example, the *Owner* system relations cannot be set through the API, and thus, not through the *ExcelIntegrationImport.qprpsc* script. It is the responsibility of the integration solution provider to take these constraints into account, and design the report specifications and Excel workbooks in such a way (e.g. using Excel cell protection) that the end-user experience becomes flawless.

5 Reporting language specification

Analysis and reporting solutions are configured with a reporting language. The reporting language is a declarative, domain-specific language that is used for specifying what kind of model structures can be exchanged between QPR PD/EA and Microsoft Excel.

The structure and contents of the report specification blocks are described in the following. In the grammar description, the following notational conventions are used:

- Keywords are written in bold: e.g. **report** or **columns**;
- Identifiers are denoted with ID, where an identifier begins with an alphabet and may contain numbers after the first character;
- Integers are denoted with INT
- Alternatives between elements are denoted with bar '|': e.g. True | False denotes a choice between boolean constants for true and false;
- Multiplicity of elements:
 - ? = optional (i.e. at most one)
 - * = zero or more
 - + = at least one
 E.g. ID+ denotes one or more identifiers
- Grouping of elements is declared with parentheses: INT (. INT)? specifies a floating point

Each report specification is contained within a report block. A report specification contains an optional set of report options, at least one columns specifications, and at least one query specifications. The basic structure for report specifications is given below. A report name may not contain any whitespaces. The report name corresponds to a sheet name in an Excel workbook. The structure of a report specification is described below.

```

report ReportName {
    Options
    Column specifications
    Query specifications
}

```

ReportName is a string that does not contain any whitespaces. *Option*, *Column specifications* and *Query specifications* refer to the corresponding specification block descriptions described in subsections below.

5.1 Options block

One or more report options can be declared in a report specification. Options block may contain one or more *Option* elements, as described in Table 5.1 Options block. Each *Option* is separated from each other by a semicolon.

```

report ReportName {
    Option (; Option)*
    Column specifications
    Query specifications
}

```

where

Option:

```

CreateInstanceAlways (= True | False)?
| CreateInstanceGrouping (= True | False)?
| ExportOnly
| InstanceDiagramType = "Diagram Name"
| InstanceHolderCollection = "Diagram Collection Name"

```

Table 5.1 Options block

The *Option* element may be any of the alternatives described in Table 5.2 Option values.

- **CreateInstanceAlways** (= True | False)?: Create an instance to the instance diagram always during an import. Default value is True, if not defined explicitly. Used during import.
- **CreateInstanceGrouping** (= True | False)?: Create group elements in the instance diagram around created instances. Default value is True, if not defined explicitly. Used during import.
- **ExportOnly**: Declares that the results of the report are not to be imported. Enables creation of read-only reports that may have e.g. results of multiple queries within a single report (corresponds to an Excel sheet).
- **InstanceDiagramType** = "Diagram Name": Name of the instance diagram type. E.g. *Application Area Diagram*. Used during import.
- **InstanceHolderCollection** = "Diagram Collection Name": Name of the diagram collection that will hold the created instance diagram. E.g. *Application Areas*. Used during import.

Table 5.2 Option values

5.2 Columns specifications block

Columns specifications block contains declarations that are used for mapping model elements attributes to columns in an Excel sheet. The columns specifications are given within a block denoted by keyword **columns**. The grammar for columns specifications is described in Table 5.3 Columns specifications.

```

report ReportName {
  Options
  columns {
    ColumnSpec (, ColumnSpec)*
  }
  Query specifications
}
where
ColumnSpec: ColumnName : ID (= DefaultValue)
ColumnName: Quoted string.
DefaultValue: Either a quoted string or integer value.

```

Table 5.3 Columns specifications

Each column specification is of form "*Column name*" : *ColumnId* (=default value)?. The column name corresponds to a column name in the Excel sheet, while *ColumnId* is a column identifier that is used in query specifications to assign values between Excel cells and model element attributes. Column specifications are separated from each other by commas (,).

5.3 Query specifications block

Query specifications block contains one or more model queries. Each model query defines a path of one or more components connected by links. Components in a query are either model elements (e.g. process steps or conforming to user-defined element types) or connectors, while links correspond to relational attributes.

Query specifications are contained in a block denoted by **queries** keyword, as described in Table 5.4 Queries specifications. Each query specification consists of an optional scope declaration, and a query specification. When multiple queries are specified within a *queries* block the result will hold a set union of the corresponding queries.

An element filter declaration followed by an optional attribute specification part. The scope declaration can be either **\$diagram**, **\$active** or **\$ID**.

```

report ReportName {
  Options
  Column specifications
  queries {
    QuerySpec (; QuerySpec)*
  }
}
where

```

| |
|--|
| <i>QuerySpec: (Scope)? PathQuery</i> |
| <i>Scope: \$(diagram active ID)</i> |
| <i>PathQuery: ElementSpec (/ LinkSpec / ElementSpec)*</i> |
| <i>ElementSpec: [ElementFilter] ({AttributeSpecs})?</i> |
| <i>ElementFilter: FilterSpec (, FilterSpec)*</i> |
| <i>FilterSpec: PropertyName (ComparisonOp Value)?</i> |
| <i>ComparisonOp: = < > !=</i> |
| <i>Value: Quoted string or integer value.</i> |
| <i>AttributeSpecs: AttributeSpec (, AttributeSpec)*</i> |
| <i>AttributeSpec: PropertyPath (=> ID)?</i> |
| <i>PropertyPath: PropertyName (/ PropertyName)*</i> |
| <i>PropertyName: AttributeName diagram parentdiagram outgoingflows incomingflows</i> |
| <i>AttributeName: Unquoted string (may contain spaces).</i> |
| <i>LinkSpec: PropertyName / RelConnectorResolution</i> |
| <i>RelConnectorResolution: # RelAttrName (< >) ConnectorName</i> |
| <i>RelAttrName: PropertyName</i> |
| <i>ConnectorName: PropertyName</i> |

Table 5.4 Queries specifications

Diagram-specific scope denoted by **\$diagram** means that model structure export is constraint to the diagram currently selected by the user. Scope denoted by **\$active** means that the export is constrained to the specific model element currently selected by the user. Finally, if the scope is of form **\$ID**, where ID is an identifier (an unquoted string with no whitespaces), the export is limited to paths that begin from the model element identified by symbol specified in the ID part of the scope element.

A path query contains at least one element specification. Typically the first element specification is followed by a link specification and another element specification. The element and link specifications are separated by slashes (/). A path query effectively defines a path between model elements where each model element is related to the next one through a relational attribute (the link specification).

An element specification comprises an element filter and an optional set of attribute specifications. During export an element filter is used for selecting appropriate model element from the active scope. If model element conforms to the filter, it is selected to the set of filtered elements. If a link specification is defined, a new scope is created from the set of filtered elements: for each filtered element, if a relational attribute is found as defined by the link specification, the target element of the relational attribute is put to a new model scope. Such an alternation between filtering and linking of elements in scopes and filtered sets happens iteratively, until a path query is completely traversed.

Result of a path query contains all complete paths that begin from the initial scope and have all the necessary links and intermediate elements to reach the end of the query. No incomplete paths are included in the result. If the model doesn't contain any paths conforming to the element and link specifications, the result set will be empty.

An element filter contains one or more filter specifications. A filter specification declares either a filter based on the type of the element or property value of the element. If a type restriction is used, the filter specification is simply a *PropertyName* that refers to an element type name defined in the model template, e.g. *Business Process*. In the case of property value comparison, the filter specification is for example *Business Value > 200000*; in this example case, only elements are selected whose *Business Value* attribute has an integer value that is more than 200000. Comparison is supported between integers, strings and dates with comparison operators '=' (equal), '<' (less than), '>' (greater than) and '!=' (not equal).

Individual filters in a filter specification are interpreted as conjunctive, i.e. an element must conform to all element filters to be included in the result. For example, a filter specification of *Resource type, name != "CEO", name != "CFO"* matches elements that are of type "Resource type" and do not have a value "CEO" or "CFO" in the *name* attribute.

An attribute specification defines a mapping between model element attributes and columns defined in the columns specifications. Each attribute specification defines a mapping between a property path and column identifier.

In the simple case, the path corresponds to an immediate attribute name. For example, an attribute specification *Name => cpname* maps the value of a model element property named *Name* to a column identified by *cpname* in column specifications.

Property names can be names of any properties in model elements that are accessible by the QPR API *GetProperty* method (see QPR *Developer's Guide*). In addition, the scripts provide a few hardcoded property names to retrieve often required information associated with model elements. These hardcoded property names are:

- **diagram**: fetches the diagram image of the element identified by the preceding property path;
- **parentdiagram**: returns the parent diagram element of the element identified by the preceding property path;
- **outgoingflows**: returns the set of outgoing connectors associated by the current element; and
- **incomingflows**: returns the set of incoming connectors associated by the current element.

Property paths can be used to fetch property values not residing immediately at the current element. For example **parentdiagram/diagram** fetches the diagram image associated with the parent diagram of the current element; this is quite typical use case for exporting diagram images associated with individual model elements. Each diagram is exported only once in the resulting Excel workbooks during exports.

Finally, link specifications correspond to relational attributes linking model elements the active model. Firstly, a link specification can define a name of a relational attribute. For example path query *[Subprocess]{name => cpname}/owner/[Resource type]{name => cpowner}* defines a path between *Subprocess* and *Resource type* through a relational attribute named *owner* and contained in sub-process elements.

Secondly, a link specification can be used for definition of a relational connector resolution. A relational connector resolution returns the connector associated with the relational attribute, instead of returning the target element of the relational attribute. A relational connector resolution begins with a hash (#), followed by the name of the relational attribute (*RelAttrName*), a connector direction mark (< for incoming and >, and a connector name (*ConnectorName*). For example a relational connector resolution **#from>Aggregation (Group)** returns the set of outgoing *Aggregation (Group)* connectors that have set values in *from* relational attribute of the current element.

6 Configuration of Excel integrations

Integration between QPR ProcessDesigner/EnterpriseArchitect is configured using an Excel workbook that contains report specifications as declared in Chapter 5. The Excel workbook containing the report configurations is a macro-enabled workbook that contains:

- A sheet named "QPR Configuration" that holds the report specifications; and
- One or more sheets that contain data according to the report specifications (in case of import from Excel)

The sheet containing the report specifications contains one column with the first column acting as a header. The report specifications are declared beginning from the second row of the first column. Each row contains an individual report specification and each report specification represents an Excel sheet. The name of a report corresponds to an Excel sheet name. An example workbook view is illustrated in Figure 2: An example workbook containing report specifications.

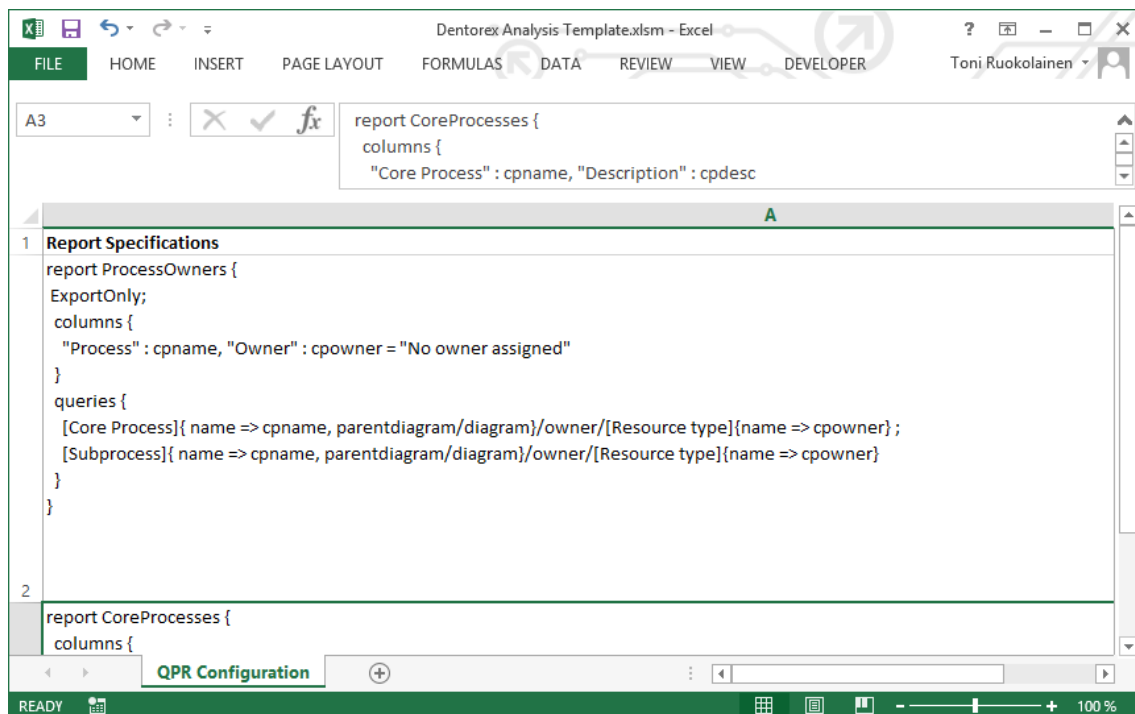


Figure 2: An example workbook containing report specifications.

6.1 Using export pre- and post-processing macros

During Excel export, the *ExcelIntegrationExport.qprpsc* script checks if specifically named macros exist in the Excel workbook containing the report configurations. If found, a macro function named *PreProcessing* (with one parameter) is executed before the export operation, and a macro function named *PostProcessing* (with one parameter) is called after the export operation. The parameters are not configurable nor set automatically by the export and import scripts. Parameter values can be set dynamically by solution provided via customization of the scripts.

Using the pre- and post-processing macros the solution provider may include complex processing to the export process. For example, data can be first fetched from 3rd party systems using the pre-processing macro function, then data is imported from the QPR PD/EA, and these separate data sets are conjoined in the post-processing macro function. Especially, data analysis and charting can be enabled using the post-processing macro functions. For example, pivot charts could be created by the macro functions based e.g. on application component costs and other attributes. An example of post-processing macro function in Microsoft Visual Basic for Applications is illustrated in Figure 3: Developing a post-processing macro function in VBA.

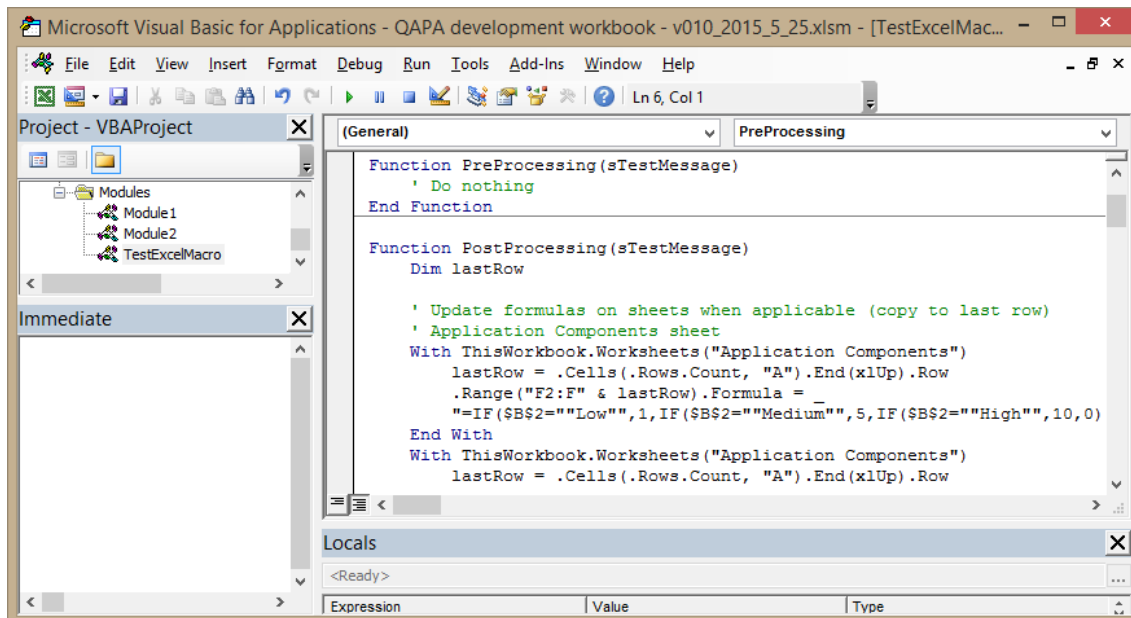


Figure 3: Developing a post-processing macro function in VBA.

7 Example Excel Integration template usage

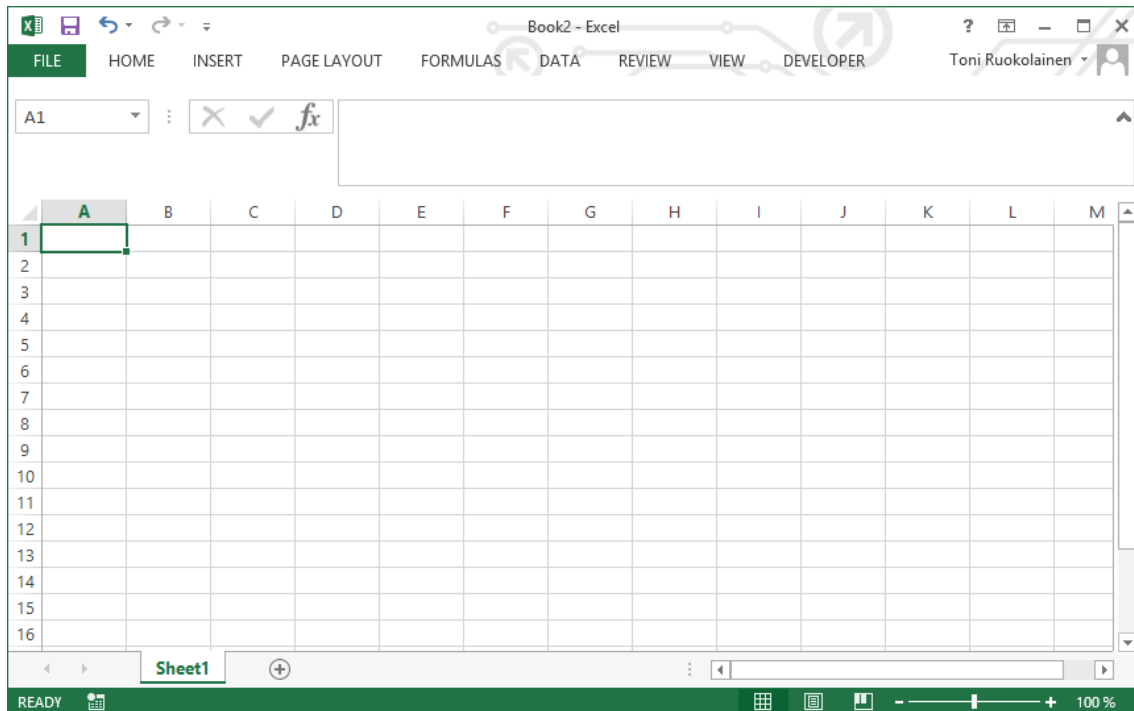
Application of Excel integration using the *ExcelIntegrationExport.qprpsc* and *ExcelIntegrationImport.qprpsc* scripts are defined in the following. The scenario is based on the Dentorex model delivered with the QPR ProcessDesigner and QPR EnterpriseArchitect clients. The scenario provides step-by-step instructions for typical round-trip integration between QPR PD/EA and Microsoft Excel.

7.1 Creating the report specifications Excel workbook

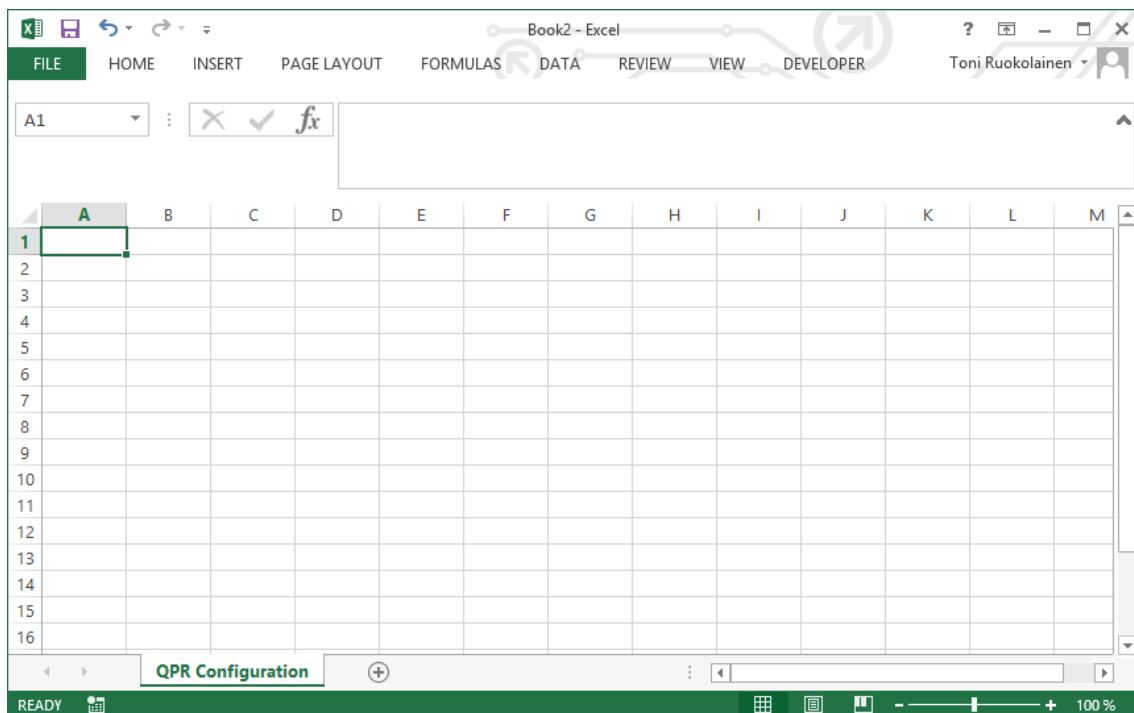
Steps for creating the report specifications Excel workbook:

- 1) Rename the default sheet to QPR Configuration
- 2) Open Microsoft Excel and create a new blank workbook

7.1.1 Open Microsoft Excel and create a new blank workbook



7.1.2 Rename the default sheet to QPR Configuration



7.1.3 Fill in the report specifications

At column A1 type "Report Specifications"

In the next rows in column A type in the report specifications from the following tables. The order of the reports does not matter, although it denotes the order of the Excel sheets to be created during exports.

```
report CEOProcesses {
  ExportOnly;
  columns {
    "Process" : cpname
  }
  queries {
    [Subprocess]{ name => cpname}/owner/[Resource type, name = "CEO"];
    [Core Process]{ name => cpname}/owner/[Resource type, name = "CEO"]
  }
}
```

Table 7.1

The report corresponding to Table 7.1 will contain all core and sub-process elements what are owned by CEO.

```
report CFOProcesses {
  ExportOnly;
  columns {
    "Process" : cpname
  }
  queries {
    [Subprocess]{ name => cpname}/owner/[Resource type, name = "CFO"] ;
    [Core Process]{ name => cpname}/owner/[Resource type, name = "CFO"]
  }
}
```

Table 7.2

The report corresponding to Table 7.2 will contain all core and sub-process elements that are owned by CFO.

```
report ProcessOwners {
  ExportOnly;
  columns {
    "Process" : cpname, "Owner" : cpowner = "No owner assigned"
  }
  queries {
    [Subprocess]{ name => cpname, parentdiagram/diagram}/owner/[Resource type, name !=
    "CEO", name != "CFO"]{name => cpowner} ;
    [Core Process]{ name => cpname, parentdiagram/diagram}/owner/[Resource type, name
    != "CEO", name != "CFO"]{name => cpowner}
  }
}
```

Table 7.3

The report corresponding to Table 7.3 will contain all core and sub-process elements that are not owned by CEO or CFO.

```
report CoreProcesses {
  columns {
    "Core Process" : cpname, "Description" : cpdesc
  }
}
```

```
}
queries {
  [Core Process]{ name => cpname, Description => cpdesc}
}
}
```

Table 7.4

The report corresponding to Table 7.4 will contain all core process elements with descriptions.

```
report RisksForCoreProcesses {
  columns {
    "Core Process" : cpname, "Description" : cpdesc, "Risk for Core Process" : cprisk, "Risk
    Category" : riskcat
  }
  queries {
    [Core Process]{ name => cpname, Description => cpdesc}/Risk for Core
    Process/[Risk]{name => cprisk, Risk Category => riskcat }
  }
}
```

Table 7.5

The report corresponding to Table 7.5 will contain all core processes that have a risk associated with them. Process description and risk category is shown in the report.

```
report MultiQueryReport {
  columns {
    "Core Process" : cpname, "Description" : cpdesc
  }
  queries {
    [Core Process]{ name => cpname, Description => cpdesc} ;
    [Core Process]{ name => cpname, Description => cpdesc}
  }
}
```

Table 7.6

The report corresponding to Table 7.6 will contain all core processes twice. This is just to show the functionality of import during multi-query reports. Any elements in multi-query reports are neglected during import.

```
report ControlsSinceSep {
  columns {
    "Control" : cname, "Description" : cdesc, "Date of last test" : cdate
  }
  queries {
    [Control, Control Test Date (Last) > "1.9.2014" ]{ name => cname, Description => cdesc,
    Control Test Date (Last) => cdate}
  }
}
```

Table 7.7

The report corresponding to Table 7.7 will contain control elements, their descriptions and dates of last test. Only controls that have been tested after 1st September 2014 are included in the report.

```
report ControlsBeforeSep {
  columns {
    "Control" : cname, "Description" : cdesc, "Date of last test" : cdate
  }
  queries {
    [Control, Control Test Date (Last) < "1.9.2014" ] { name => cname, Description => cdesc,
    Control Test Date (Last) => cdate}
  }
}
```

Table 7.8

The report corresponding to Table 7.8 will contain control elements, their descriptions and dates of last test. Only controls that have been tested before 1st September 2014 are included in the report.

```
report ControlsAtFirstSep {
  columns {
    "Control" : cname, "Description" : cdesc, "Date of last test" : cdate
  }
  queries {
    [Control, Control Test Date (Last) = "1.9.2014" ] { name => cname, Description => cdesc,
    Control Test Date (Last) => cdate}
  }
}
```

Table 7.9

The report corresponding to Table 7.9 will contain control elements, their descriptions and dates of last test. Only controls that have been tested exactly at 1st September 2014 are included in the report.

```
report ControlsNotAtFirstSep {
  columns {
    "Control" : cname, "Description" : cdesc, "Date of last test" : cdate
  }
  queries {
    [Control, Control Test Date (Last) != "1.9.2014" ] { name => cname, Description => cdesc,
    Control Test Date (Last) => cdate}
  }
}
```

Table 7.10

The report corresponding to Table 7.10 will contain control elements, their descriptions and dates of last test. Only controls that have been tested in date different from 1st September 2014 are included in the report.

Save the Excel resulting workbook as a macro-enabled workbook (with xlsx file-ending). The resulting workbook should look something as illustrated in Figure 4: Example report after configuration.

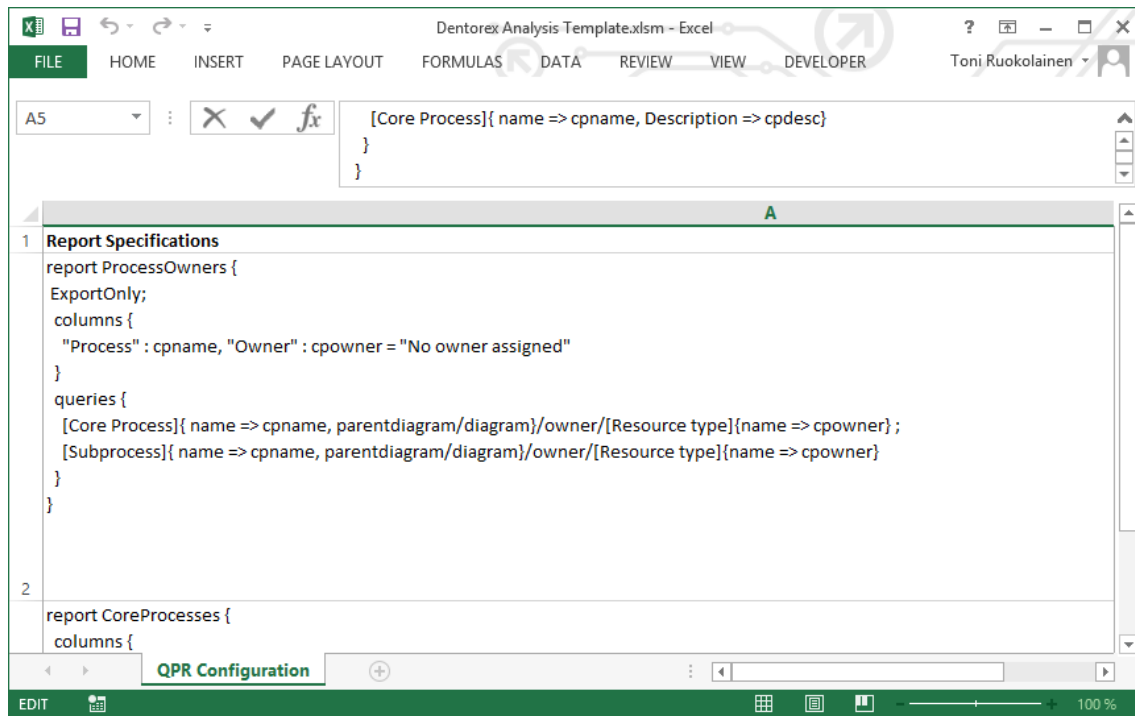
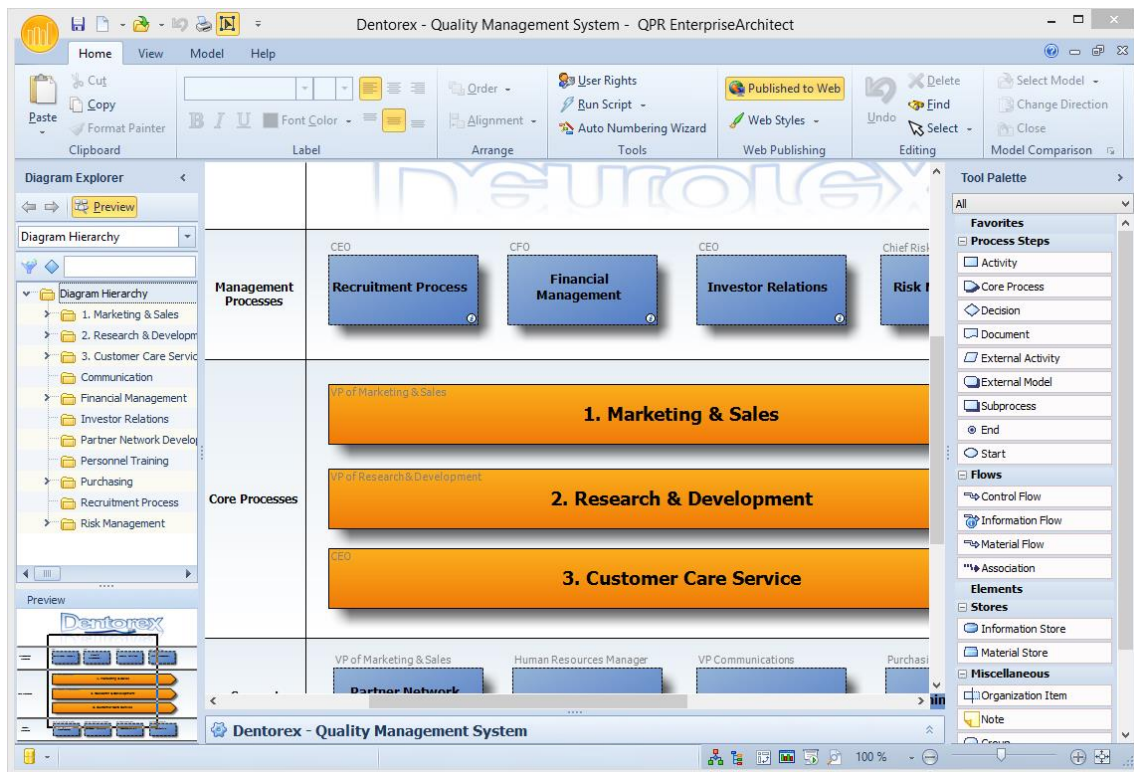


Figure 4: Example report after configuration.

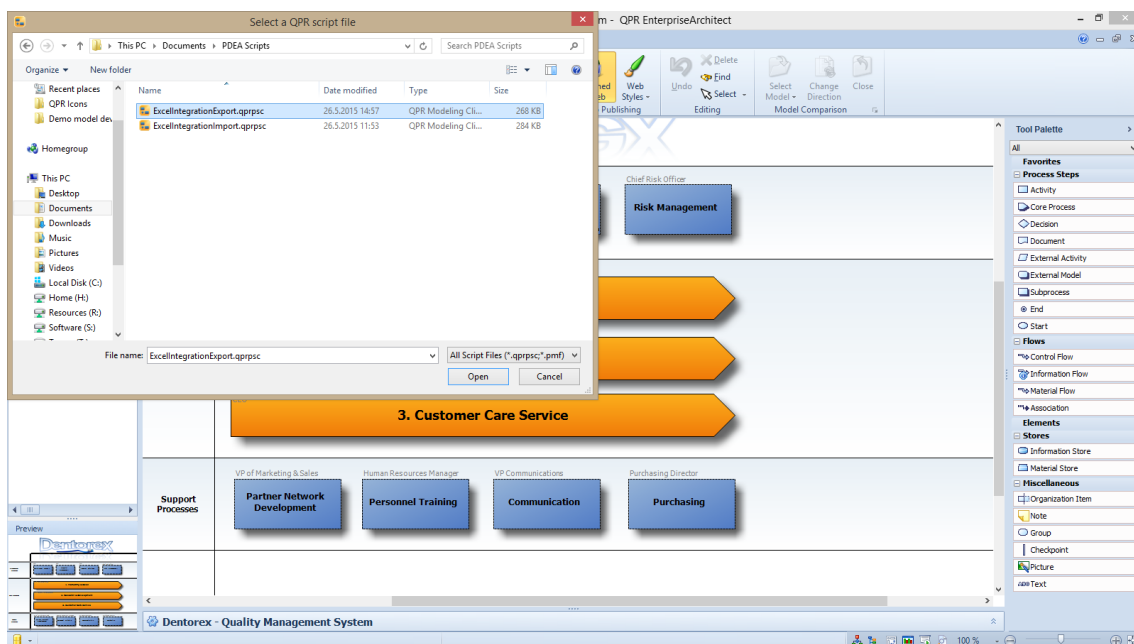
7.2 Exporting Dentorex model contents

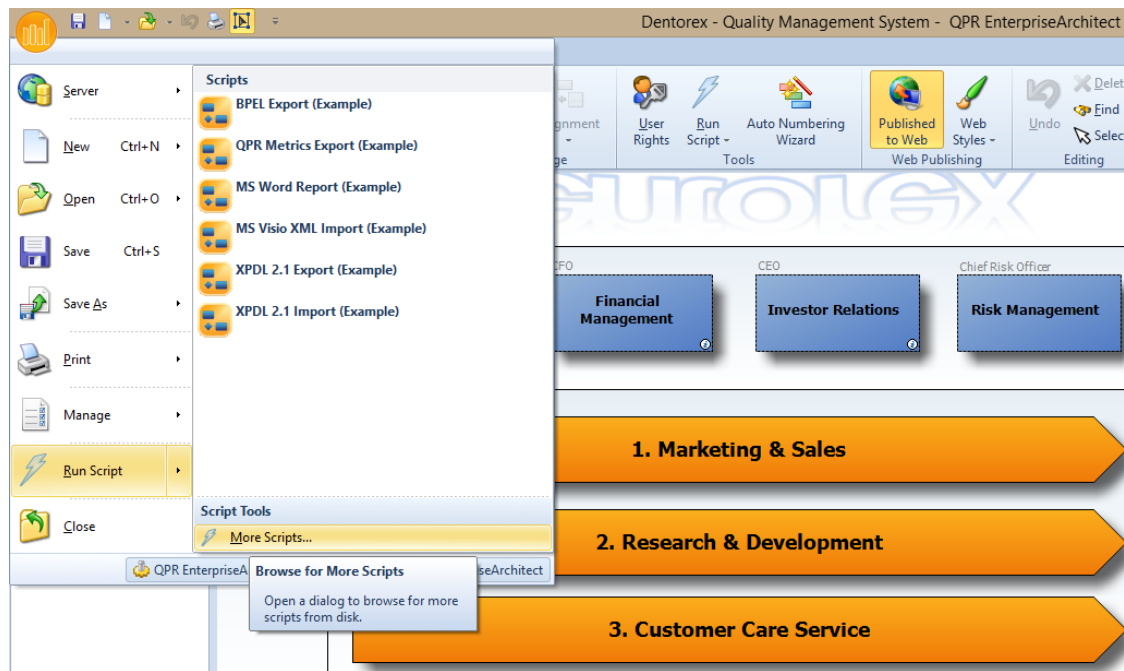
7.2.1 Open the Dentorex demo model

First open QPR ProcessDesigner or QPR EnterpriseArchitect, and then open the Dentorex demo model.

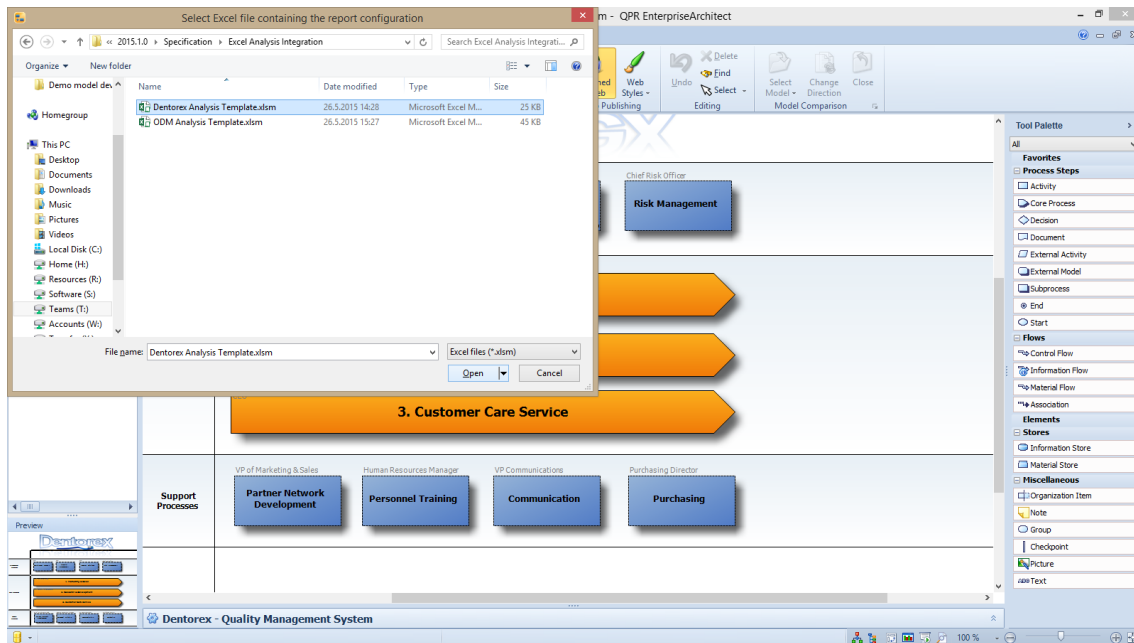


7.2.2 Run the *ExcelIntegrationExport.qprpsc* script

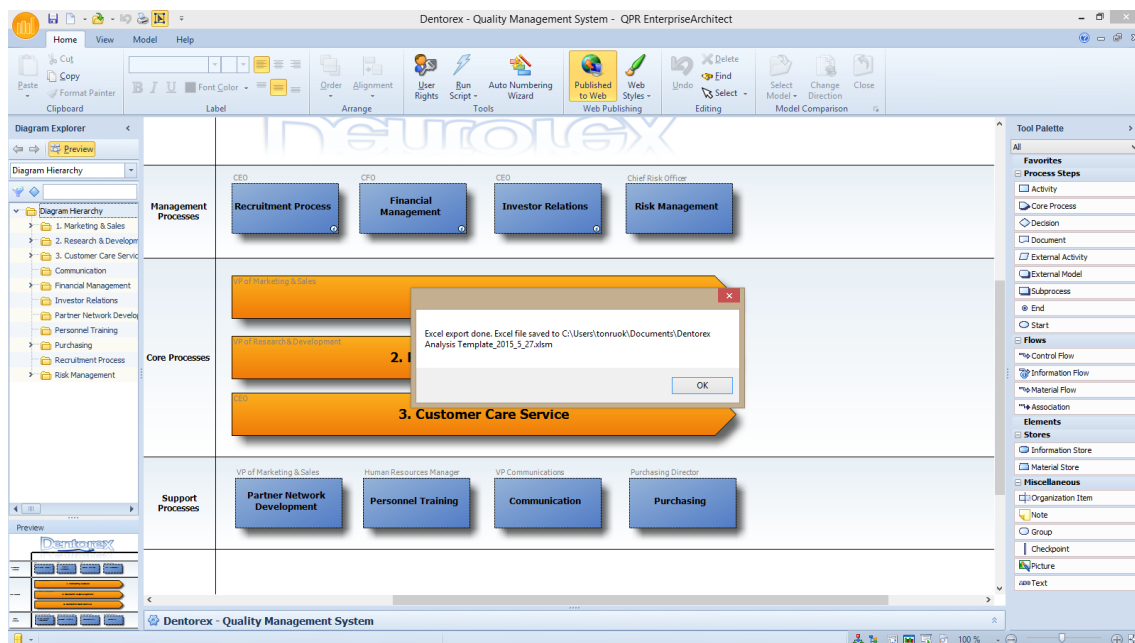




7.2.3 Select the Dentorex integration Excel workbook when asked



7.2.4 Export is ready



7.3 Use the generated Excel workbook for reporting, analysis or data collection

| | A | B | C | D | E | F | G |
|----|---------------------------|---|---|----------------------|---|---|---|
| 1 | Core Process | Description | Risk for Core Process | Risk Category | | | |
| 2 | 1. Marketing & Sales | Sales & Marketing are responsible for m | Poor marketing decisions due to lacking i | Decision making risk | | | |
| 3 | 1. Marketing & Sales | Sales & Marketing are responsible for m | Pricing decisions based on inavailable co | Decision making risk | | | |
| 4 | 1. Marketing & Sales | Sales & Marketing are responsible for m | Pricing decisions based on incorrect cost | Decision making risk | | | |
| 5 | 1. Marketing & Sales | Sales & Marketing are responsible for m | Pricing decisions without consulting cust | Decision making risk | | | |
| 6 | 1. Marketing & Sales | Sales & Marketing are responsible for m | Unauthorized offers by sales personnel | Process risk | | | |
| 7 | 1. Marketing & Sales | Sales & Marketing are responsible for m | Contract violations by distributors | Process risk | | | |
| 8 | 2. Research & Development | R&D's function is to come up with state | Production employee injuries due to po | Process risk | | | |
| 9 | 2. Research & Development | R&D's function is to come up with state | Competitors gaining market share by pro | Environment risk | | | |
| 10 | 2. Research & Development | R&D's function is to come up with state | Environmental pollution due to incorrect | Process risk | | | |
| 11 | 2. Research & Development | R&D's function is to come up with state | Accidents on the production floor | Process risk | | | |
| 12 | 2. Research & Development | R&D's function is to come up with state | Machine operation hazard | Process risk | | | |
| 13 | Marketing | | Ineffective marketing investments due t | Decision making risk | | | |
| 14 | Marketing | | Reputation risk due to improper marketi | Environment risk | | | |
| 15 | Marketing | | Litigation due to misuse of trademarks | Environment risk | | | |
| 16 | 2. Research & Development | | Technology migration risk | Environment risk | | | |
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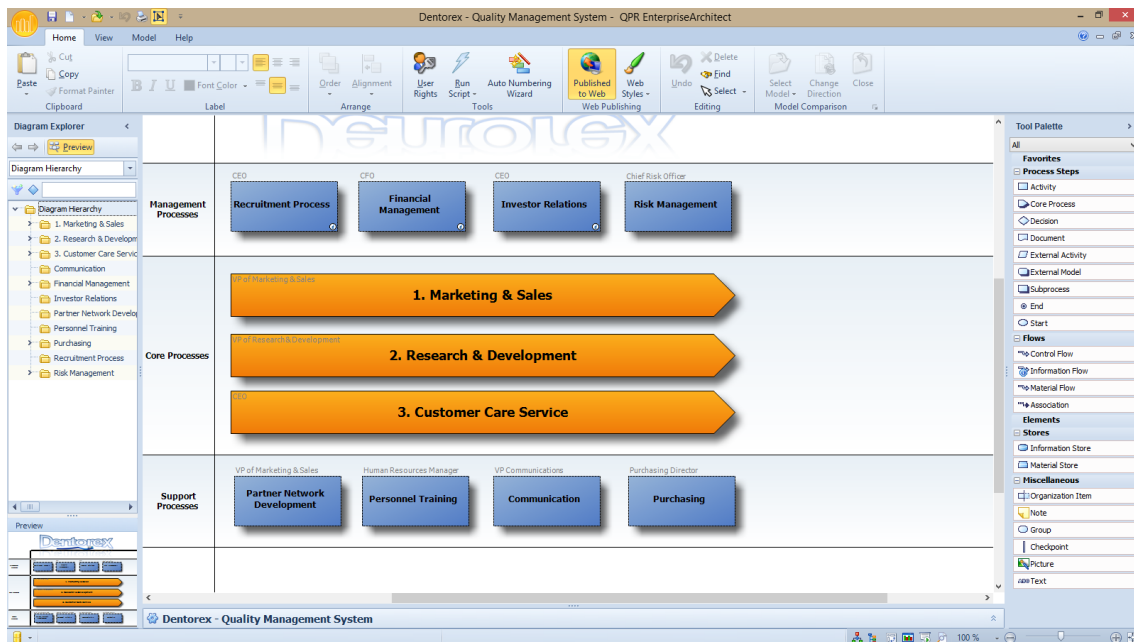
In the above figure, a new R&D risk was identified and added to the Excel sheet. This risk is not yet included in the model.

Export script has created an initial validation list for the Risk Category column. Such validation lists are used in case of enumerated attributes. It should be noted that the validation list does not contain all the enumerated values contained in the corresponding PD/EA enumeration, only

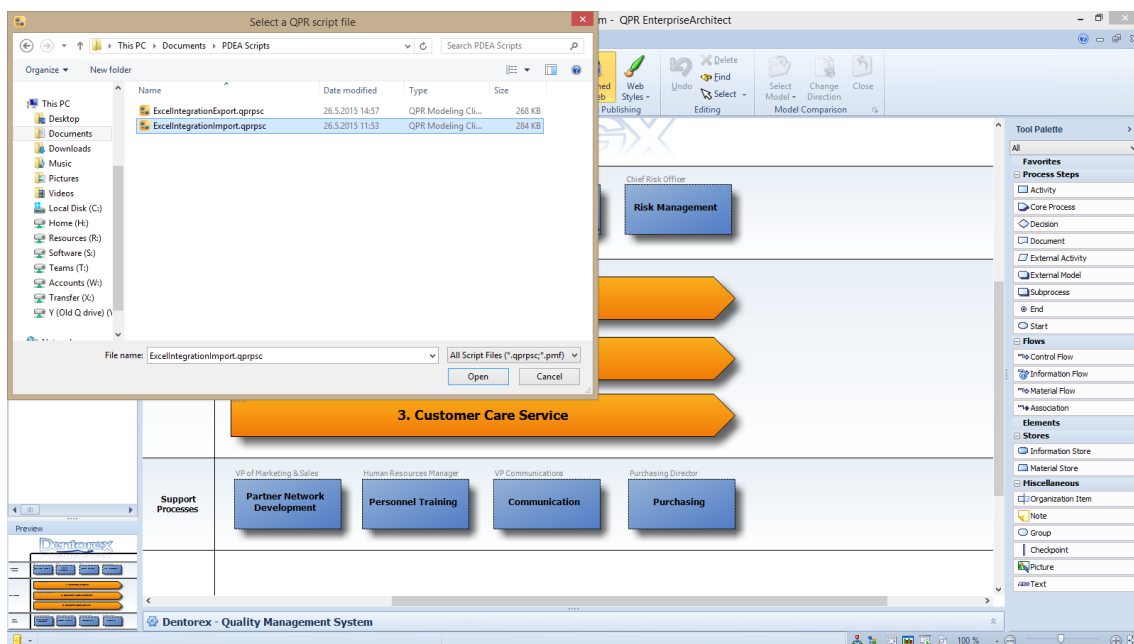
the ones that have been encountered during the export. In the example case, the validation list contains accepted values of "Decision making risk", "Process risk", and "Environment risk". Values can be set e.g. by the post-processing macro functions, or manually in the Excel sheet.

7.4 Import updates from the Excel workbook to the model

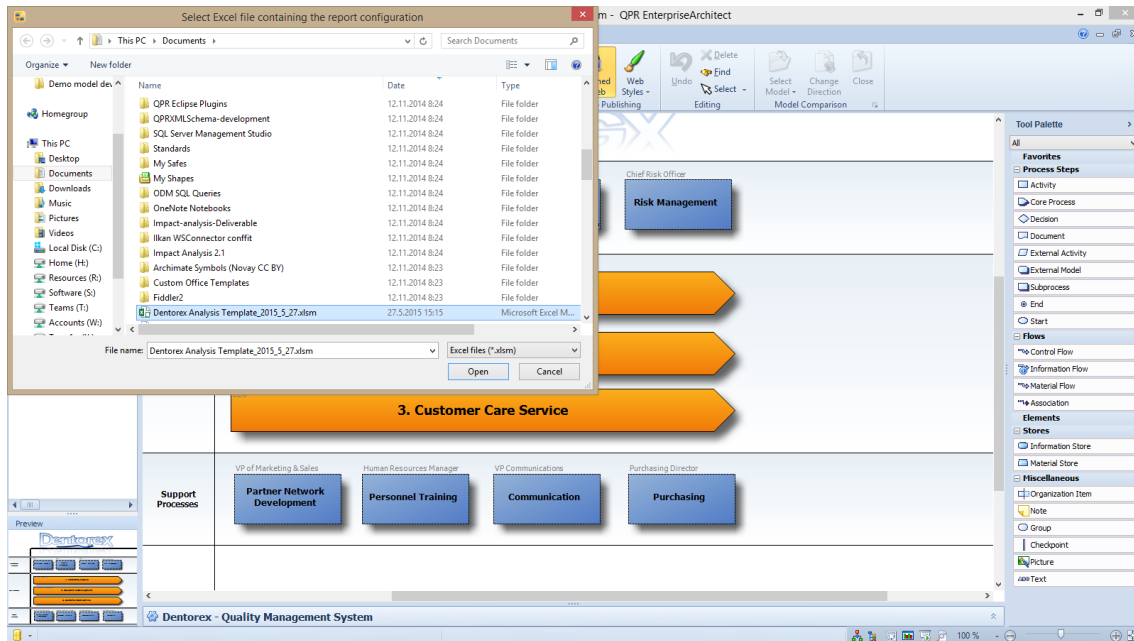
7.4.1 Open the Dentorex model



7.4.2 Run the *ExcelIntegrationImport.qprpsc* script

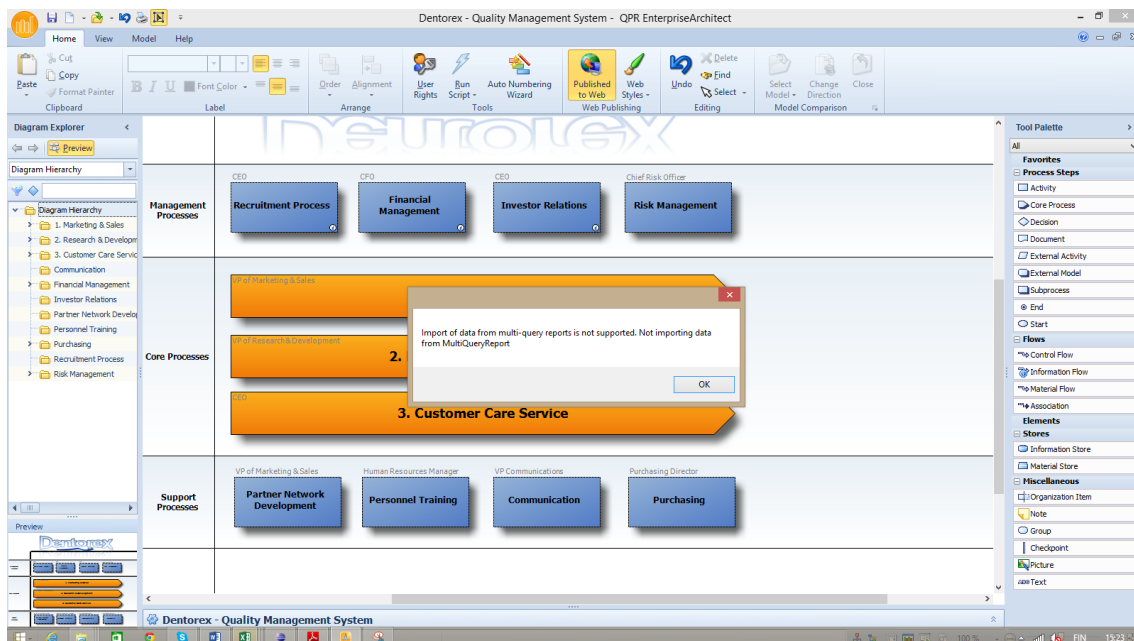


7.4.3 Select the Dentorex Analysis Template Excel workbook that was generated and updated previously



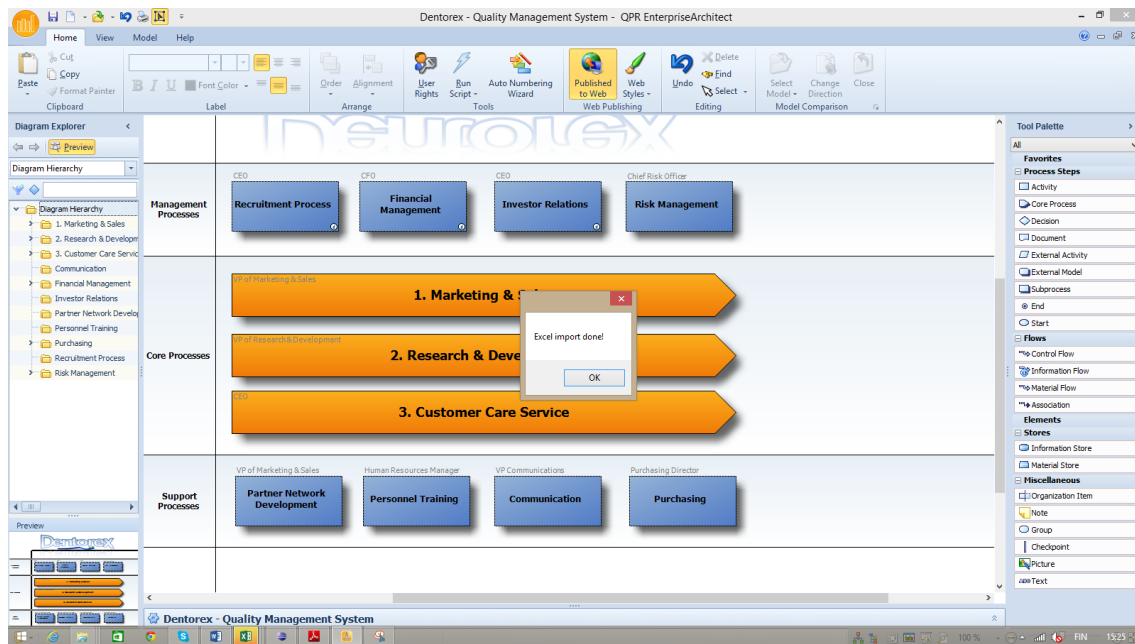
7.4.4 The import script says that multi-query imports are not supported.

Imports are only supported for reports that contain a single query. Multi-query imports might have ambiguous semantics.

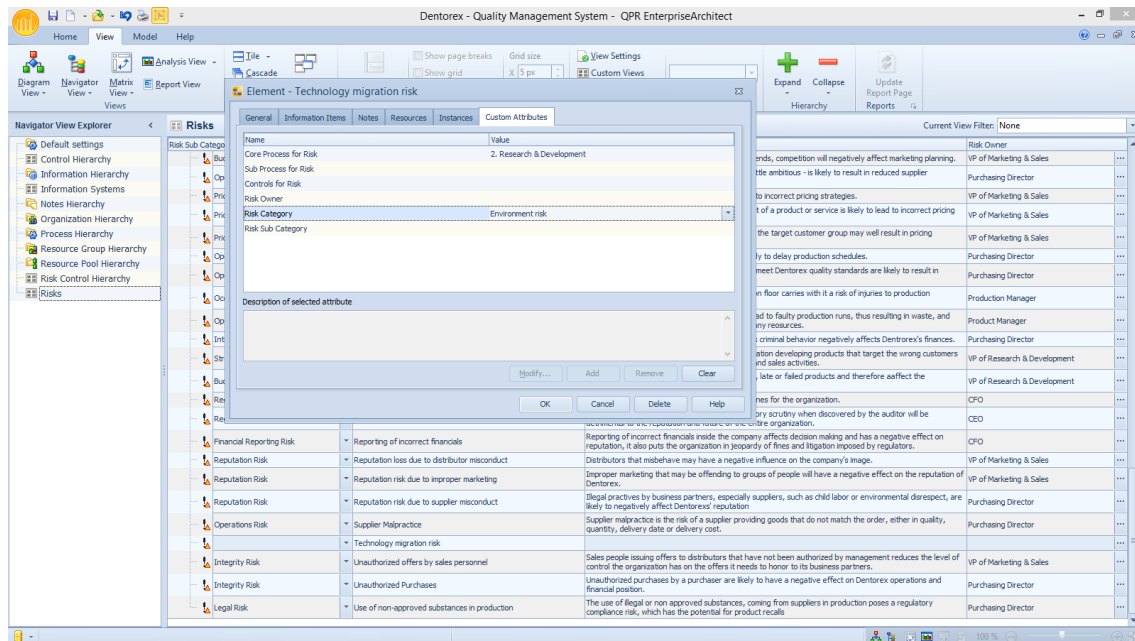


No data is imported from the sheet named *MultiQueryReport* – data from all other sheets are updated to the model.

7.4.5 The import is done



7.4.6 A new risk item was imported to the model and visible in the Risks navigator view



Risk category "Environment risk" was set to the relation relational attribute "Risk category" in the Risk element.