

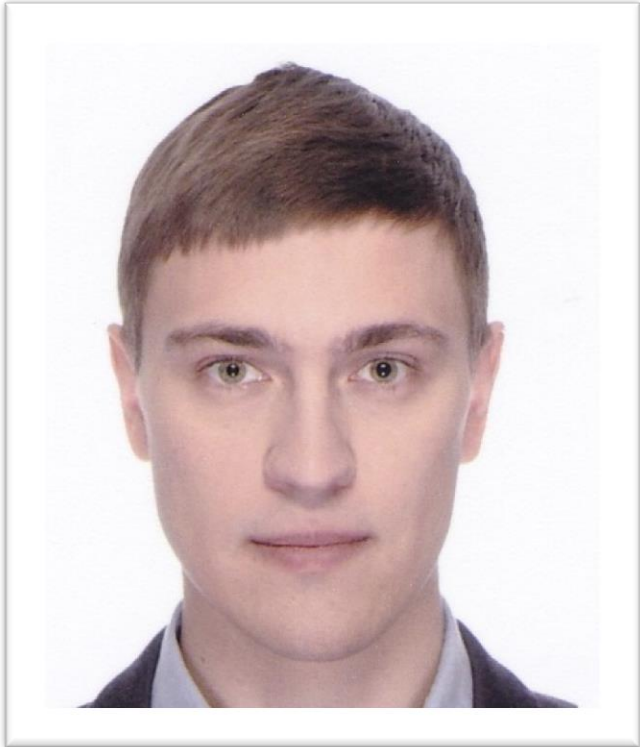


# Generating Reports from Model Data

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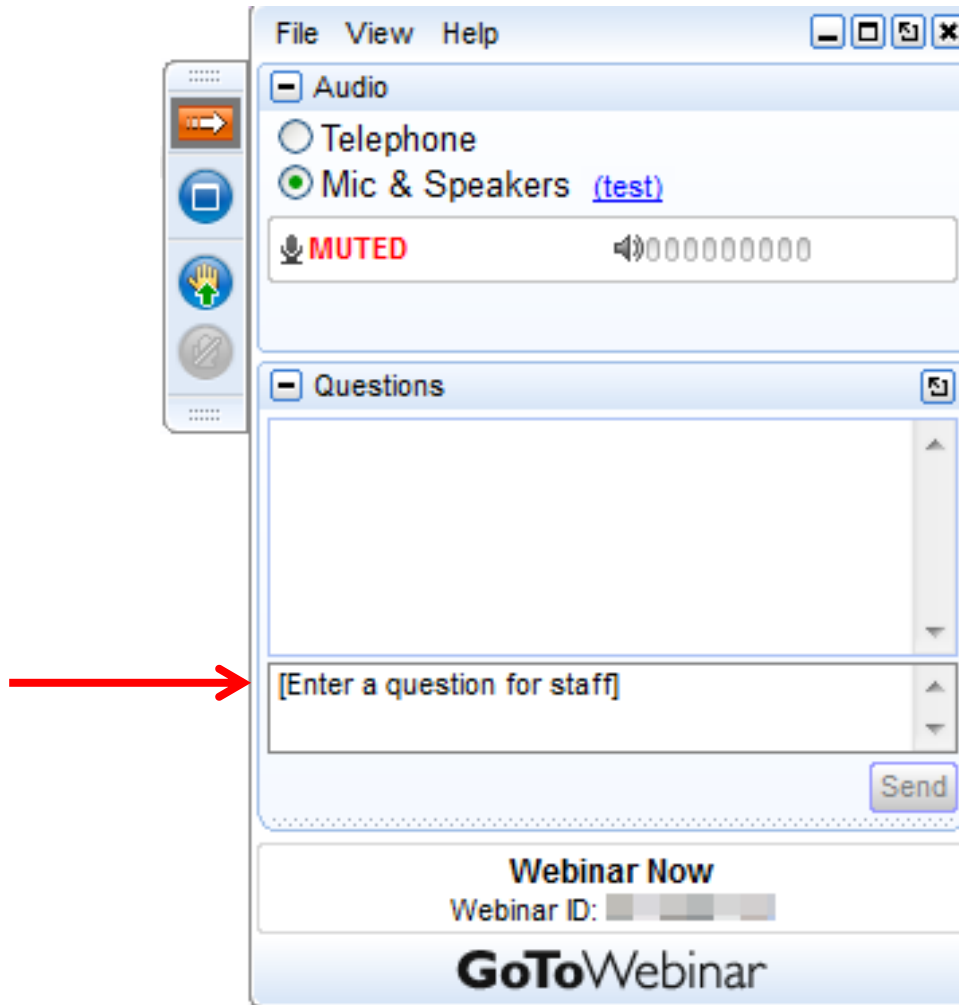
# About Presenter



- ✓ Oracle-Certified Java SE Programmer
- ✓ OMG-Certified UML Professional Modeler
- ✓ Develops MagicDraw platform
- ✓ Develops Report Templates for customers

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# Q&A: Type your questions here



# What's this Webinar About?

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- Report templates and how to generate them
- Creating new report template
- Basics of Velocity script (VTL)
- Accessing model data by using VTL

# What Is a Report Template



A text (script) file that describes what the output should look like.

Business Architecture Report  
Date: \$date.get("MMMMMdd, yyyy") Revision: \$Revisions.lastChild.name

## 4 Processes

Resources in Processes:

Name	Id	Related Resources
#forrow(\$process in \$sorter.humanSort(\$BPMNprocesses, "id")) \$process name	\$process id	#foreach(\$element in \$process.getOwnedElement()) #if(\$report.getAppliedStereotypeBy(\$element, "Lane Set")) #if(\$report.getAppliedStereotypeBy(\$element, "Resource")) • \$report.getIconFor(\$element.represents)\$element.represents.name #end #foreach(\$lane in \$element.getSubpartition()) #if(\$report.getAppliedStereotypeBy(\$lane, "Resource")) • \$report.getIconFor(\$lane.represents)\$lane.represents.name #end #if(\$lane.getSubpartition().size()>0) #foreach(\$inner in \$lane.getSubpartition()) #if(\$report.getAppliedStereotypeBy(\$inner, "Resource")) • \$report.getIconFor(\$inner.represents)\$inner.represents.name #end #end #end #end #end #end #endrow

```

#end
#set($BPMNprocesses = $report.filterElement($elements, ["BPMN Process"]))
#set($BPMNprocessesArray = $array.createArray($BPMNprocesses))
#set($BPMNprocess = $list.get($BPMNprocessesArray, 0))
#if($BPMNprocess)
#foreach($BPMNprocess in $sorter.sort($BPMNprocesses, "id.asc"))
#set($mainDiagram = $array.createArray())
#set($innerDiagram = $array.createArray())
#set($void = $array.addCollection($mainDiagram, $BPMNprocess.ownedDiagram))
#diagrams($BPMNprocess)
#macro (diagrams $element)

```

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Business Architecture Report  
Date: November 20, 2015 Revision: 0.1

## 3 Processes

Resources in Processes:

Name	Id	Related Resources
Procurement Process		• Buyer
Order handling		

### Process Procurement Process

#### Diagram Procurement Process

Procurement Process  
This diagram describes Procurement Process by displaying process with a responsible Participant.

Figure 1. Procurement Process

#### Process Activities:

Name	Description	Properties
Collect Order		Resources: • Buyer
Order Shipping		Resources: • Buyer
Verify if Order May be Fulfilled		Resources: • Buyer
Approve Order		Resources: • Buyer
Ship Order		Resources: • Buyer

### Process Order handling

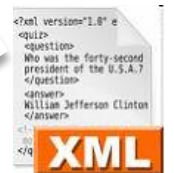
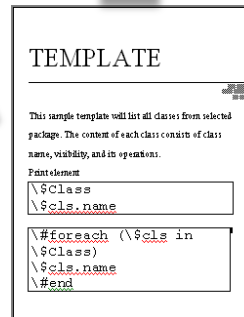
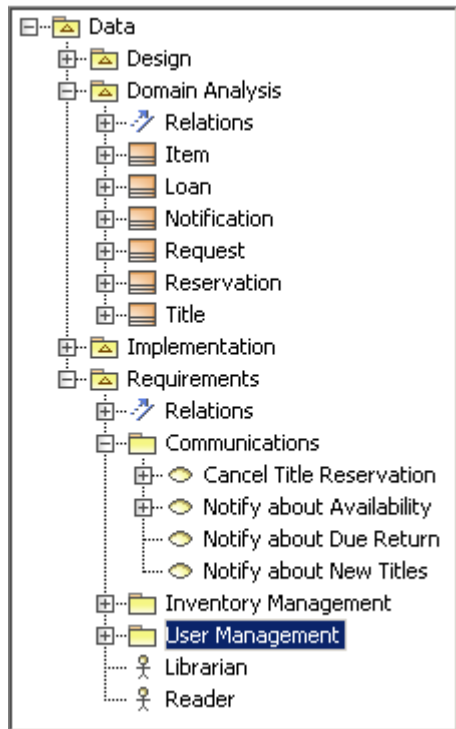
#### Diagram Order handling

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# MagicDraw Report Generation



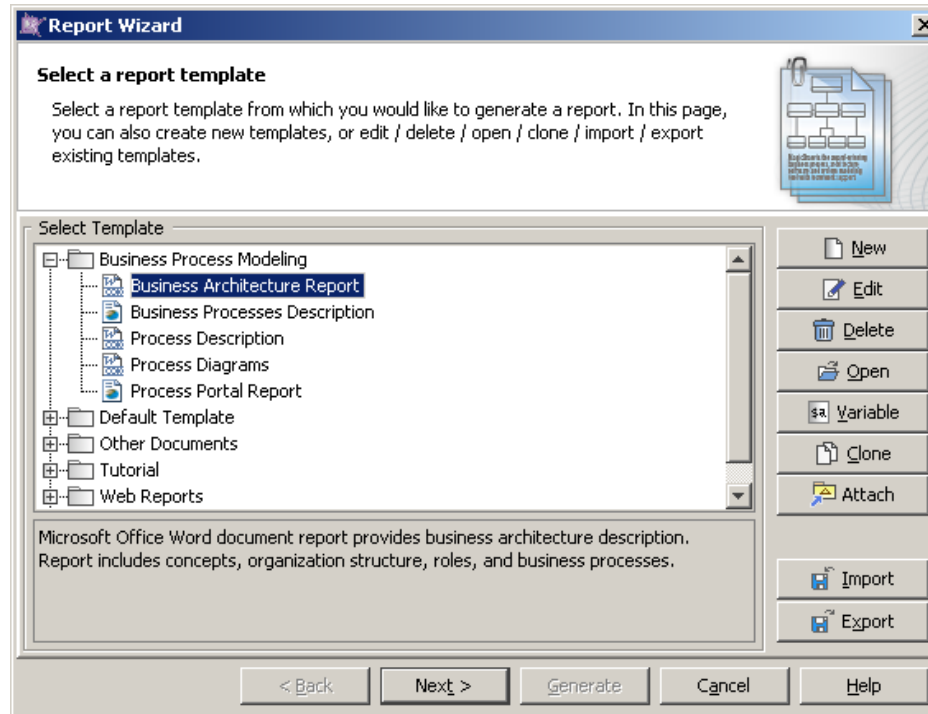
- generate Microsoft Office, Open Office, HTML or any plain text based (XML, JSON, CSV...) report from the model data



# Generating Report in MagicDraw



- Report Wizard dialog:



- Right-click menu in Containment tree
- Automated: generate.bat/.sh script

# What is Velocity (VTL)?

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- **Velocity is a Java-based template engine**
- **Script used to reference objects defined in Java**
- **MagicDraw is written in Java**  
VTL accesses the model which is represented by Java objects
- **Created and developed by Apache**  
<http://velocity.apache.org>



# Variables



"\$" character followed by an *Identifier*. Examples:

`$element`

`$x1`

`$sub_system`

- Define template variables in Report Wizard
- Define in script using `#set` directive

```
#set($name = "Magic Draw")
```

```
#set($version = 18.5)
```

```
#set($name = $number) ## $name becomes 18.5
```

# Directives: Conditions



```
#if (<condition>
    print/do A
#elseif (<alternative condition>)
    print/do B
#else
    print/do C
#end
```

**Comparison operators:** ==, !=, >, >=, <, <=

**Logical AND:** &&

**Logical OR operator:** ||

# Directives: Looping



- **#foreach(\$e in \$allElements) ... #end**
- **#forrow() .. #endrow**  
custom directive to generate table rows
- **#forcol() (Spreadsheets only) ... #endcol**  
custom directive to generate table columns

# Directives: Macro Commands



- Define a **reusable segment** of a VTL template

```
#macro (<yourMacroName> [$param1 $param2 ...])  
...  
#end
```

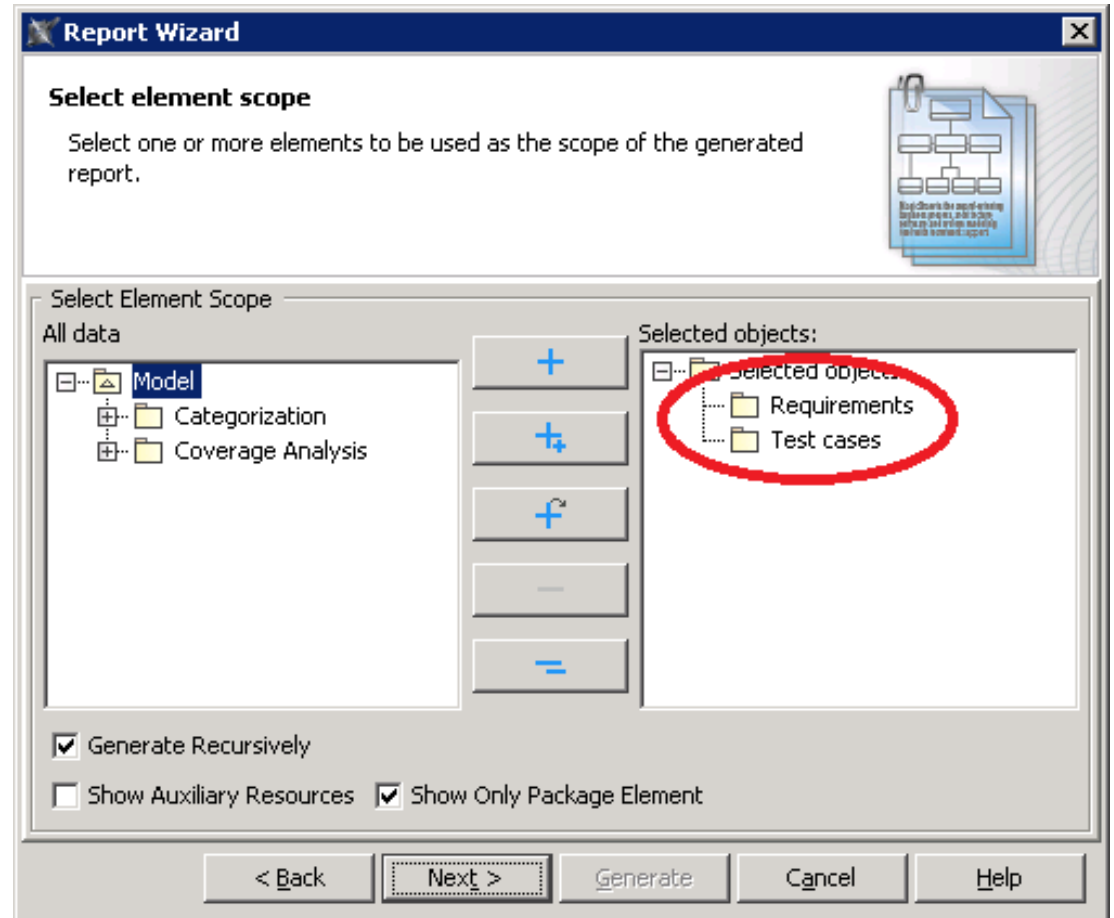
- Usage

```
#yourMacroName ($p1 , $p2)
```

# Accessing In-Scope Model Elements



- **\$packageScope**  
The selected Packages



# Accessing In-Scope Model Elements



- **\$elements**

list of all elements in scope recursively

- **\$<Type>**

all elements in scope of the specified type, for example:

**\$Diagram** - all Diagram elements in scope

**\$UseCase** - all Use Case elements in scope

**\$Block** - all Block elements in scope

...

# Spacing (MS Word)



## How to locate and get rid of empty lines?

- Show Paragraph Marks



- Look for whitespaces before/after script statements

**1**  
#set(\$exists=false)##locate·Overview·diagram¶

#foreach(\$d·in·\$Diagram)¶

**2** → #if(\$diagram.name.startsWith("Overview"))¶

**3** .....#set(\$exists=true)¶

**4** ·#end¶

#end·¶

**5**

# Printing Property Values - Step 1



## 1) Locate a property in the Specification dialog

**Specification of Requirement properties**

Specify properties of the selected Requirement in the properties specification table. Choose the Expert or All options from the Properties drop-down list to see more properties.

**Project Categorization**

Properties: All

All General Classifiers	
Owning Template Parameter	
Name	Project Categorization
Id	TWCAT150
Text	Project Categorization
Owned Member	<ul style="list-style-type: none"><li>TWCAT150.1 Category Definition [Categorization::Re</li><li>TWCAT150.2 Category Types [Categorization::Requir</li><li>TWCAT150.3 Project Management GUI [Categorizatio</li><li>TWCAT150.4 Category Properties [Categorization::Re</li><li>TWCAT150.5 Category Management [Categorization::</li><li>TWCAT150.6 Category Permissions [Categorization::F</li></ul>
Applied Stereotype	Requirement [Class] [SysML::Requirements]
Base Classifier	
Visibility	public
Is Active	<input type="checkbox"/> false
Is Abstract	<input type="checkbox"/> false
Use Case	
Template Parameter	
Owned Comment	

Type here to filter properties

Close Back Forward Help

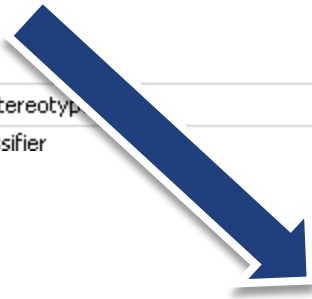


# Printing Property Values - Step 2



- 2) Convert the property name by:
  - a) removing spaces between words (if any)
  - b) starting with lowercase character

text	
Owned Member	<ul style="list-style-type: none"><li><input type="checkbox"/> TWCAT150.1 Category Definition [Categorization::Re</li><li><input type="checkbox"/> TWCAT150.2 Category Types [Categorization::Requir</li><li><input type="checkbox"/> TWCAT150.3 Project Management GUI [Categorizatio</li><li><input type="checkbox"/> TWCAT150.4 Category Properties [Categorization::Re</li><li><input type="checkbox"/> TWCAT150.5 Category Management [Categorization:</li><li><input type="checkbox"/> TWCAT150.6 Category Permissions [Categorization::F</li></ul>
Applied Stereotyp	<ul style="list-style-type: none"><li><input type="checkbox"/> Requirement [Class] [SysML::Requirements]</li></ul>
Base Classifier	



```
#set($value = $req.ownedMember)
```

# Additional Properties



Element Owner	Property Name	Function
Diagram	image	To return the diagram's image.
Diagram	diagramType	To return the diagram's type.
Element	image	To generate the element's image or to print an empty text if the element does not refer to any diagram.
Element	elementType	To return a name of an element's type (metaclass / stereotype) in lowercase letters and without spaces. For example: <ul style="list-style-type: none"><li>• return "usecase" for a Use Case</li><li>• return "class" for a Class</li><li>• return "callbehavioraction" for a Call Behavior Action</li><li>• return "flowport" for a Flow Port (a stereotype defined in SysML)</li></ul>
Element	humanName	To return an element's human readable name, which is a string concatenation between the human element type and the element's name.
Element	humanType	To return an element's type in a human readable format.
Element	appliedStereotype	To return an applied stereotype of an element.
Element	activeHyperlink	To return an active hyperlink of an element.
Element	hyperlinks	To return all hyperlinks attached to an element.
Element	todo	To return an element's ToDo attribute in text format.

# Report Helper Tool



- Retrieve stereotype property with spaces in name

```
$report.getStereotypeProperty($el, "Stereotype Name", "tag Name")
```

- **\$report** provides access to more utility methods

```
$report.filterElement($elements, ["Use Case", "Actor"])
```

```
$report.filterDiagram($Diagram, ["Class Diagram"])
```

```
$report.getDiagramElements($diagram)
```

```
$report.containsStereotype($el, "Extended Requirement")
```

```
$report.isRelationship($el)
```

```
$report.isEmpty($object)
```

...

# More Helper Tools



- **\$project**

  - `$project.getName()`

- **\$sorter**

  - `$sorter.humanSort($Requirements, "id")`

- **\$date**

  - `$date.get('yyyy-M-d H:m:s')`

- **\$array**

  - `#set($newList = $array.createArray())`

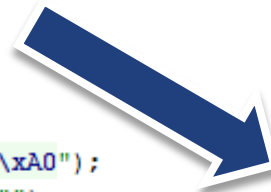
...

# Custom Report Tool



```
3 import com.nomagic.magicreport.engine.Tool;
4 import java.util.regex.Pattern;
5
6 public class CustomReportTool extends Tool
7 {
8     public String removeWhiteSpace(String text)
9     {
10         Pattern pattern = Pattern.compile("\\s|\\xA0");
11         return pattern.matcher(text).replaceAll("");
12     }
13 }
```

1



3



```
#import ("myTool", "com.yourcompany.CustomReportTool")
#set($noSpaces = $myTool.removeWhiteSpace("Text with spaces"))
```





## Report Template Creation Tutorial:

<install\_dir>/manual/MagicDraw ReportWizard Template Creation Tutorial.pdf

## Report Template User Guide (API):

<install\_dir>/manual/MagicDraw ReportWizard UserGuide.pdf

## Online Documentation:

<https://docs.nomagic.com/display/MD185/Report+Wizard+Documentation>