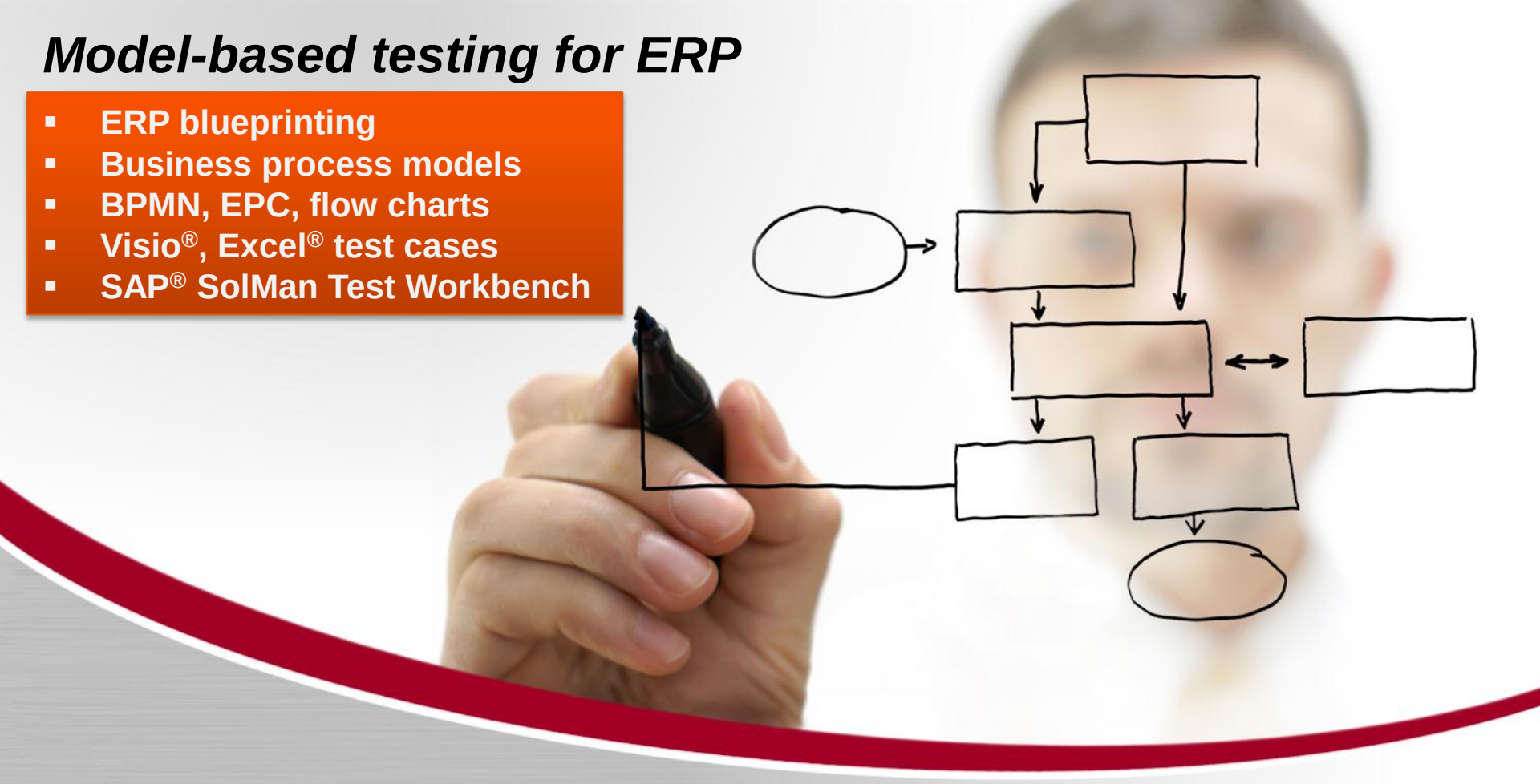
Model-based testing for ERP

- ERP blueprinting
- Business process models
- BPMN, EPC, flow charts
- Visio®, Excel® test cases
- SAP® SolMan Test Workbench

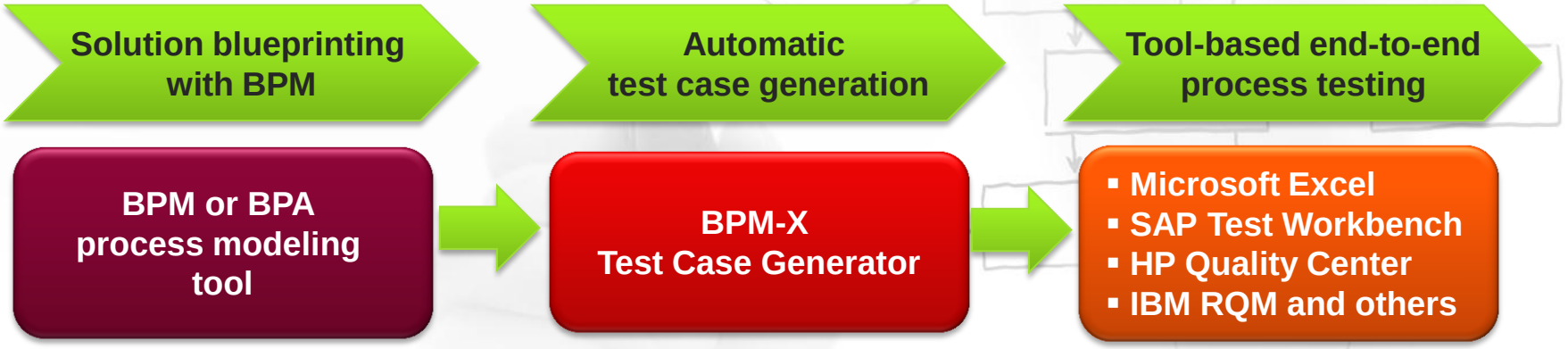


Process model-based automatic generation of end-to-end test cases for regression and integration testing of ERP solutions

BPM-Xchange® for seamless interoperability and model transformation

BPM-Xchange®
...linking process worlds

Model-based testing for ERP solutions

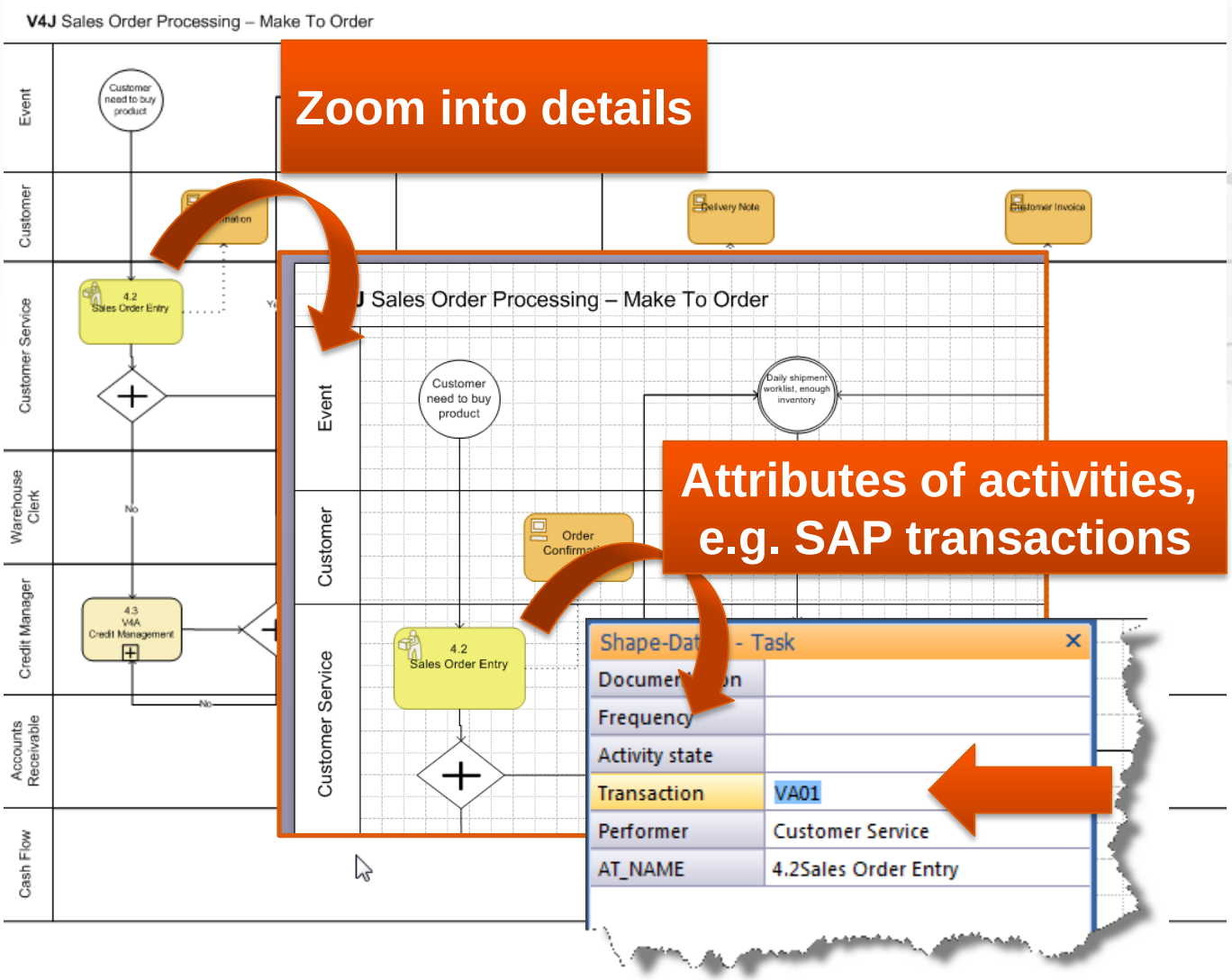


Generation of end-to-end scenarios (test cases) for

- **regression testing**
- **integration testing**

based upon existing business process models

Business process models from ERP blueprinting



Why model-based testing?

Costs

- Manual test case creation → high project efforts
- Traditional design of test-cases → blocks qualified and costly team members
- Insufficient integration testing → low production efficiency & high maintenance costs

Risks

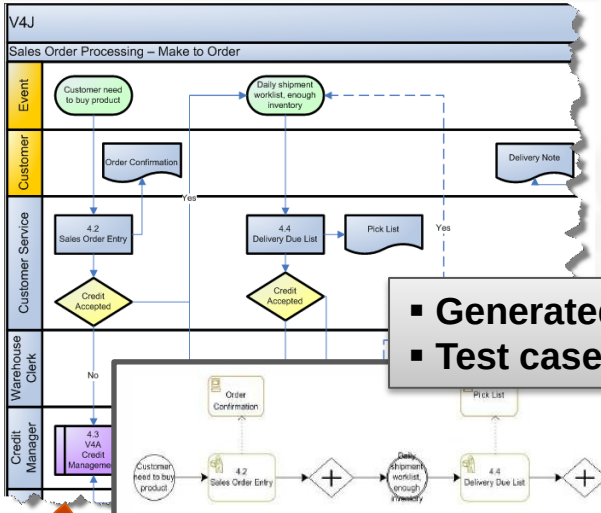
- Not all test cases are captured…
- …incomplete test cases → impact on production environment
- Untested scenarios & technical interfaces → failures in productive processes
- Untested changes of risk-related processes (e.g. SOX) → critical consequences

Quality

- Bad test coverage → low software quality → high business impact
- Incomplete matching of the test data → increases negative impact
- Insufficient reviews of work products & deliverables → negative impact is increased

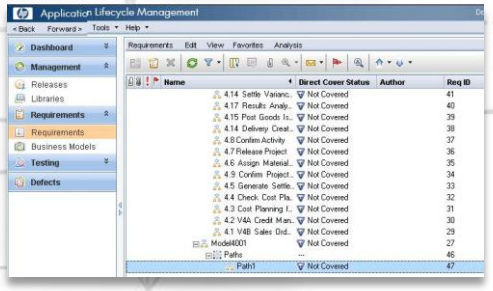
BPM-X generated deliverables and integration

Business process procedure

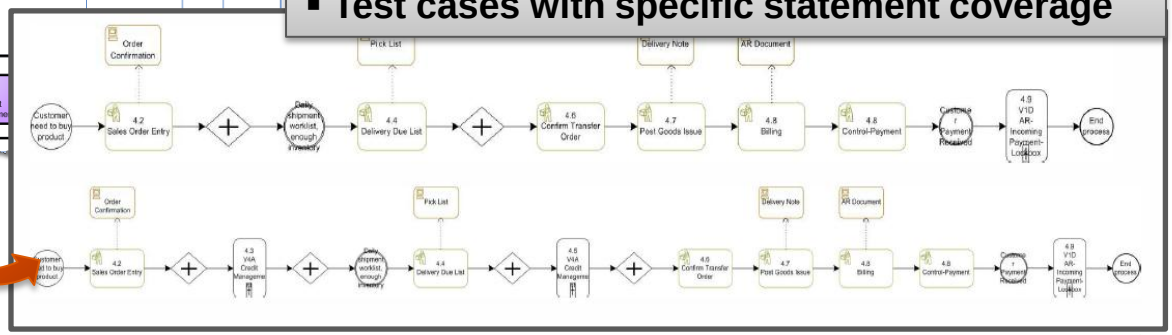


Integrate

HP Quality Center

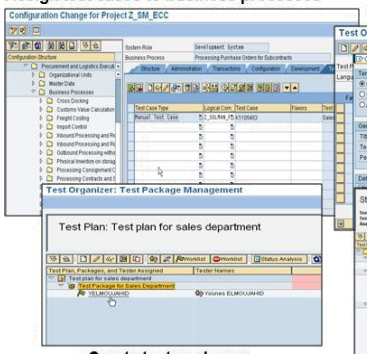


- Generated end-to-end test scenarios
- Test cases with specific statement coverage



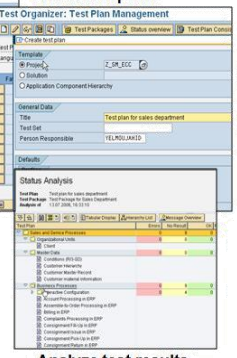
SAP Test Workbench

Assign test cases to business processes



Create test packages and assign testers

Create test plans



Analyze test results

Generate

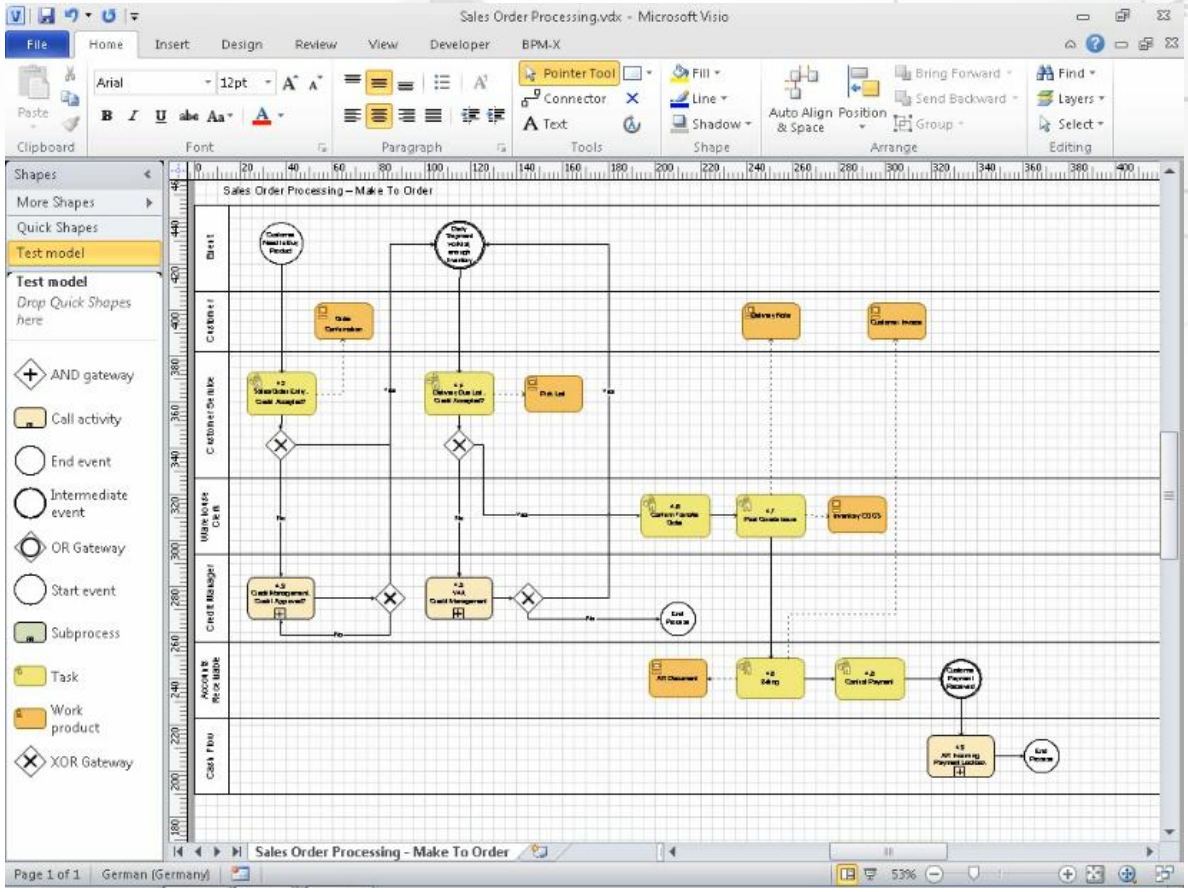
- Excel sheets per test case

	A							
1	Model Name	Test Nr						
2	V4J		1					
3								
4	Nr	Activity	T-Code	Input	Output	Passed	Failure	
5	1	Customer need to buy product						
6	2	4.2 Sales Order Entry	VA01		Order Confirmation			
7	3	4.3 V4A Credit Management	V4A					
8	4	4.3 V4A Credit Management	V4A					
9	5	Daily shipment worklist, enough inventory						
10	6	4.4 Delivery Due List	VL10C		Pick List			
11	7	4.5 V4A Credit Management	V4A					
12	8	4.5 V4A Credit Management	V4A					
13	9	Daily shipment worklist, enough inventory						
14	10	4.4 Delivery Due List	VL10C					
15	11	4.6 Confirm Transfer Order						
16	12	4.7 Post Goods Issue	VL06O		Inventory COGS, Delivery Note			
17	13	4.8 Billing			AR Document			
18	14	4.8 Control-Payment						
19	15	Customer Payment Received						
20	16	4.9 V1D AR-Incoming Payment-Lockbox	V1D					
21	17	End process						

BPM-Xchange® ...linking process worlds

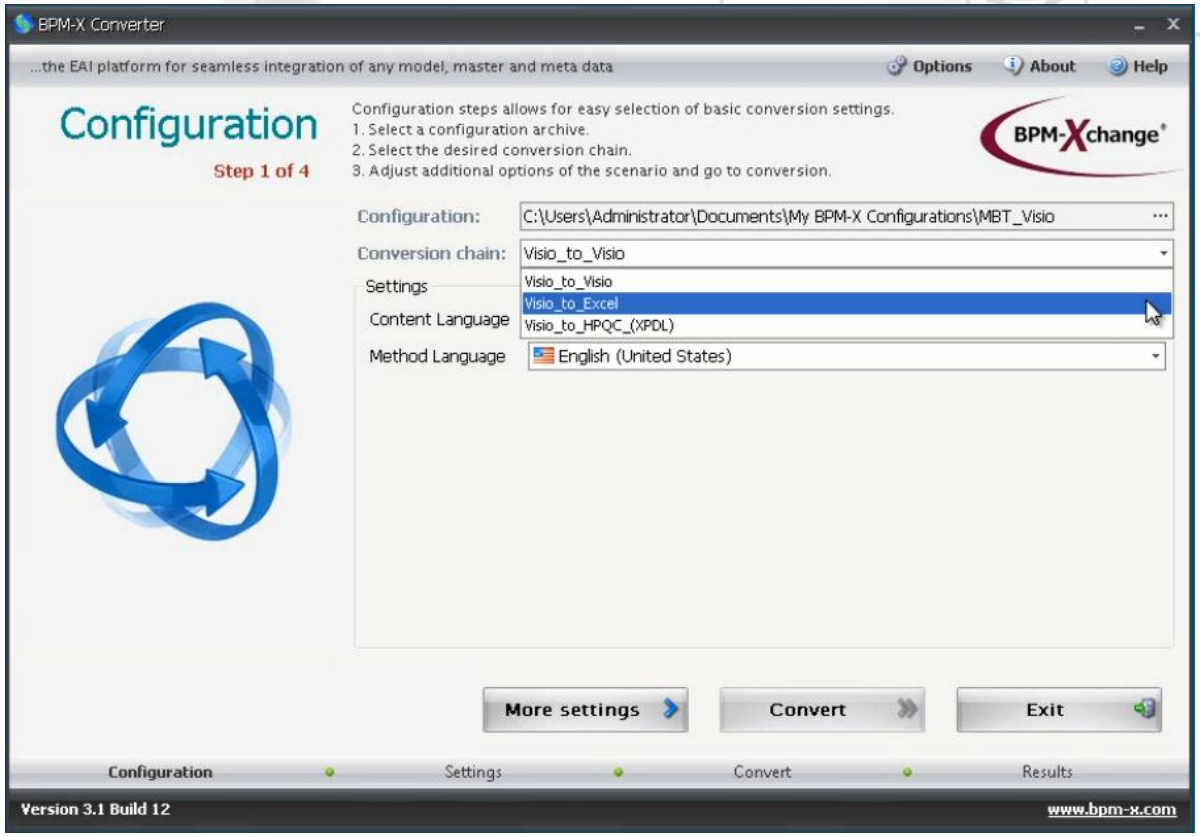
Demo: existing process models

Sample BPMN business process model (provided in Visio® format):



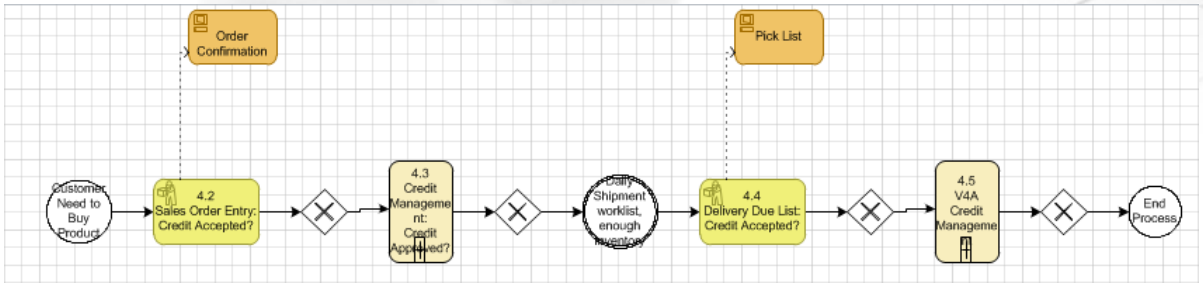
Demo: BPM-X Test Case Generator

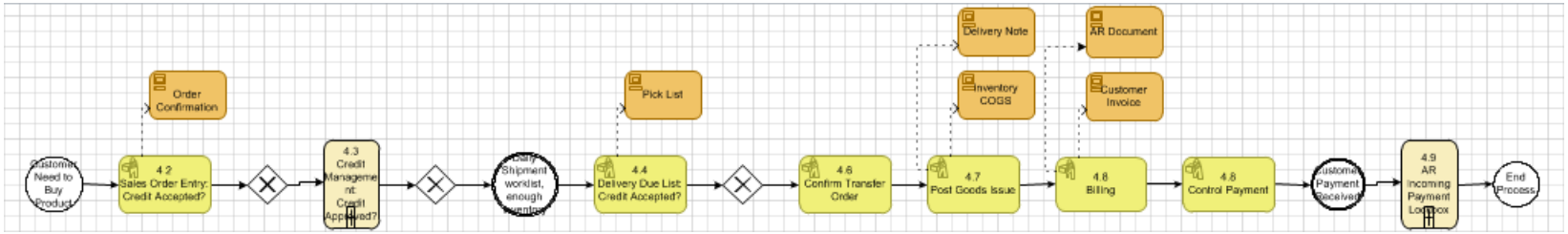
The **BPM-X Test Case Generator** is a software operation of the **BPM-X Converter**:



Demo: generated test cases in Visio® format

For the test case generation the **coverage algorithm** has been set to **branch coverage**, i.e. each business activity and decision is taken into account.
From the sample process model, these Visio®-based test cases have been automatically generated:





Demo: generated test cases in Excel® format

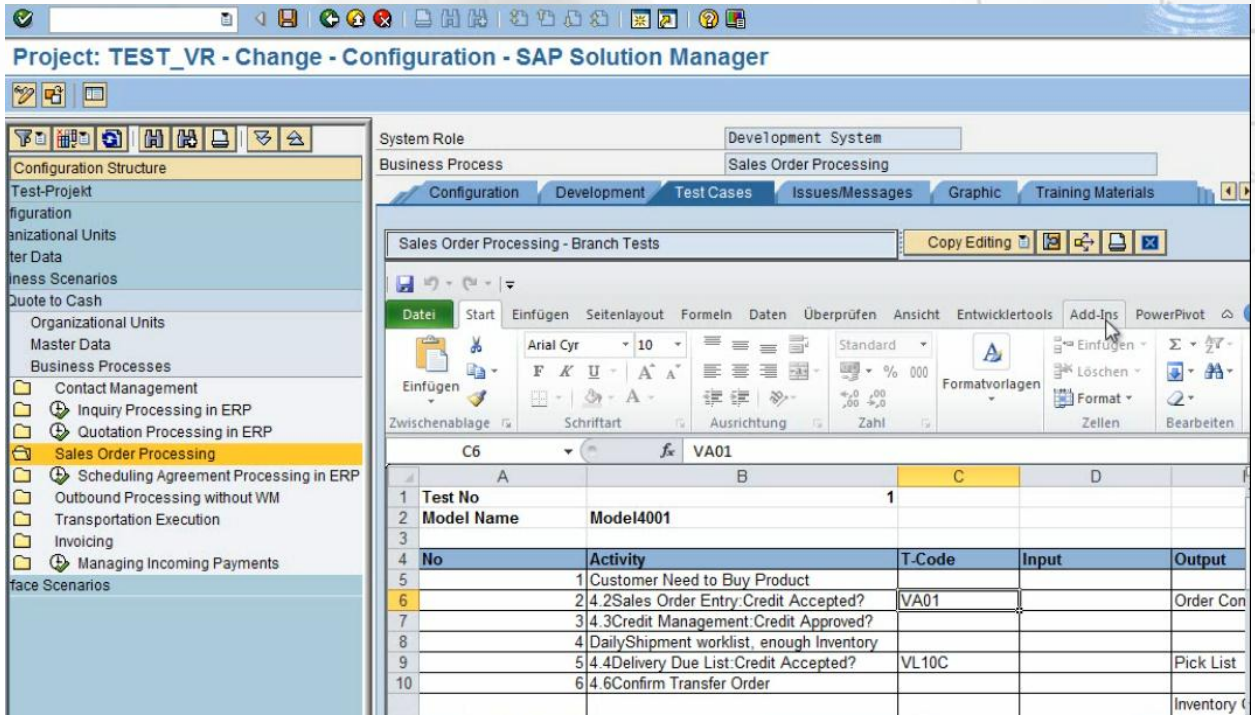
Again, the **test case coverage algorithm** has been set to **branch coverage**. The test cases may either go into different worksheets of a single Excel® file or into separate Excel® files.
From the sample process model, these Excel®-based test cases have been automatically generated:

	A	B	C	D	E	F	G	H
1	**Test No**	**2**						
2	**Model Name**	**Model47001**						
3								
4	**No**	**Activity**	**T-Code**	**Input**	**Output**	**Passed**	**Failed**	
5	1	Customer Need to Buy Product						
6	2	4.2Sales Order Entry:Credit Accepted?	VA01		Order Confirmation			
7	3	4.3Credit Management:Credit Approved?						
8	4	DailyShipment worklis						
9	5	4.4Delivery Due List:C						
10	6	4.5V4ACredit Manage						
11	7	End Process						
12								

	A	B	C	D	E	F	G	H
1	**Test No**	**1**						
2	**Model Name**	**Model4001**						
3								
4	**No**	**Activity**	**T-Code**	**Input**	**Output**	**Passed**	**Failed**	
5	1	Customer Need to Buy Product						
6	2	4.2Sales Order Entry:Credit Accepted?	VA01		Order Confirmation			
7	3	4.3Credit Management:Credit Approved?						
8	4	DailyShipment worklist, enough Inventory						
9	5	4.4Delivery Due List:Credit Accepted?	VL10C		Pick List			
10	6	4.6Confirm Transfer Order						
11	7	4.7Post Goods Issue	VL06O		Inventory COGS Delivery Note			
12	8	4.8Billing	VF04		Customer Invoice AR Document			
13	9	4.8Control Payment						
14	10	Customer Payment Received						
15	11	4.9AR Incoming Payment Lockbox						
16	12	End Process						
17								

Demo: upload test cases into SAP® Solution Manager

The automatically generated Excel®-based test cases may easily be uploaded into SAP® Solution Manager:

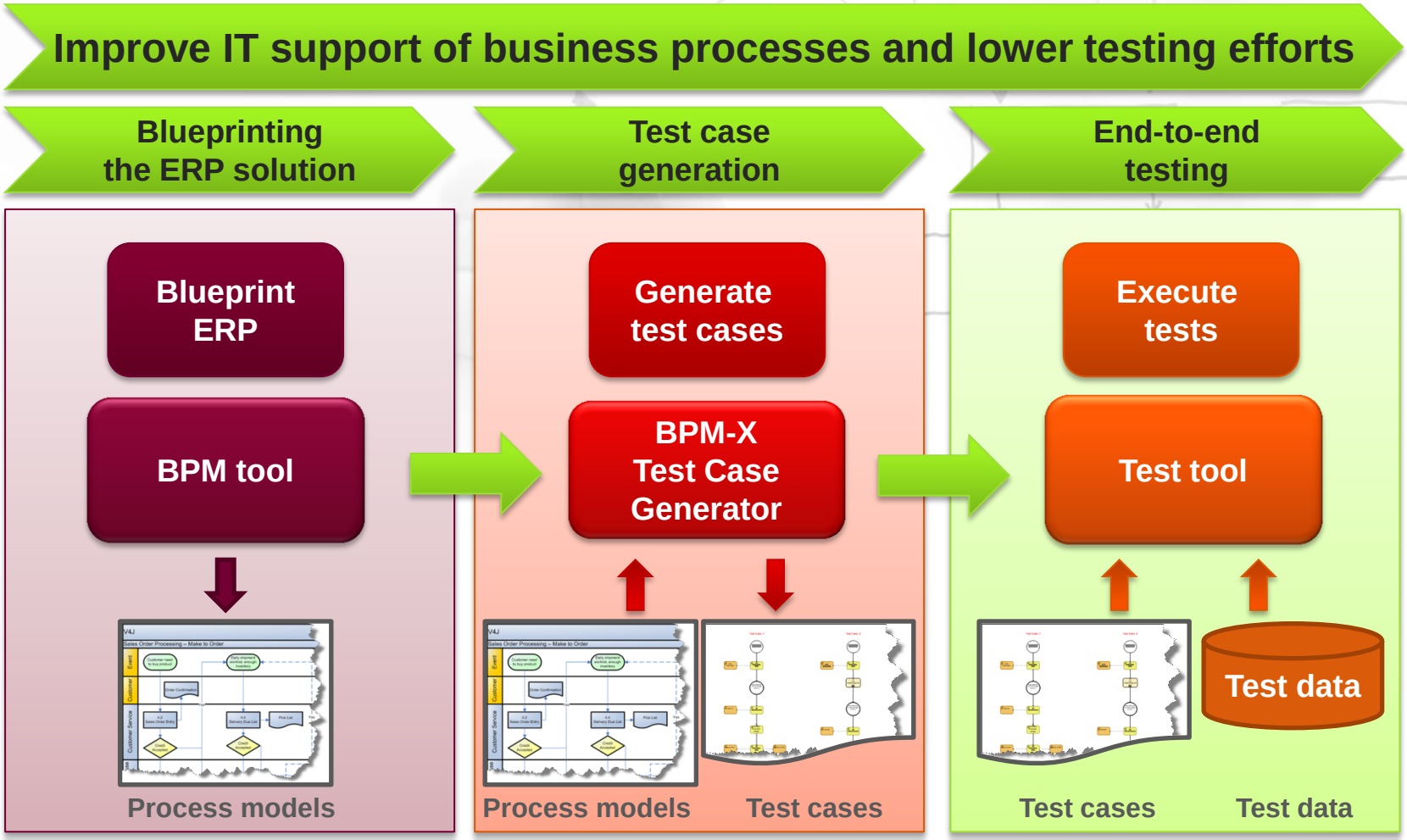


Value proposition for model-based testing

Reuse business knowledge to improve test quality and reduce QA costs

- **Reuse existing business process models – not dependent upon the BPM/BPA tool or modeling language used**
- **Option to select different test case coverage algorithms: statement, branch, path, …**
- **Create deliverables as end-to-end models – Excel files and BPMN/XPDL models**
- **Identify ERP transactions, technical interfaces, input/output work products (data) for testing in a process flow**
- **Integrates with the SAP Solution Manager – Testing Workbench, HP Quality Center, IBM Rational Quality Manager, …**

Lessons learned about model-based testing



Providing the best tools for model and meta data management

Ask for a white paper or webinar:

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Model-based testing for ERP

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