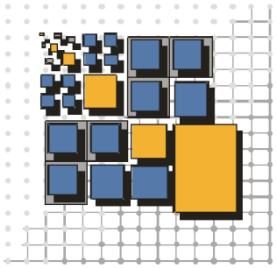
Automatic
Standard Compliance Assessment
of BPMN 2.0 Process Models



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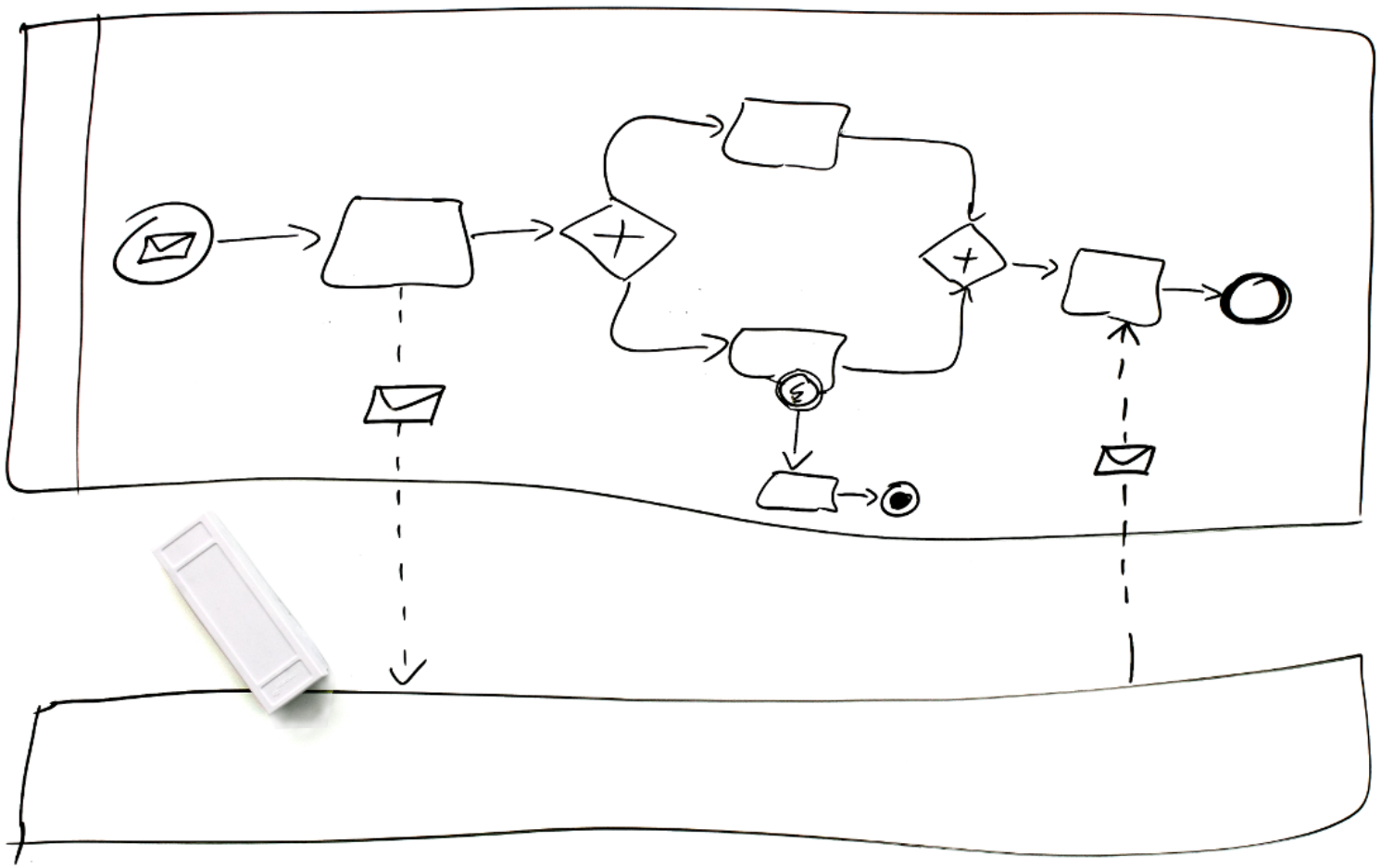
Munich, Germany

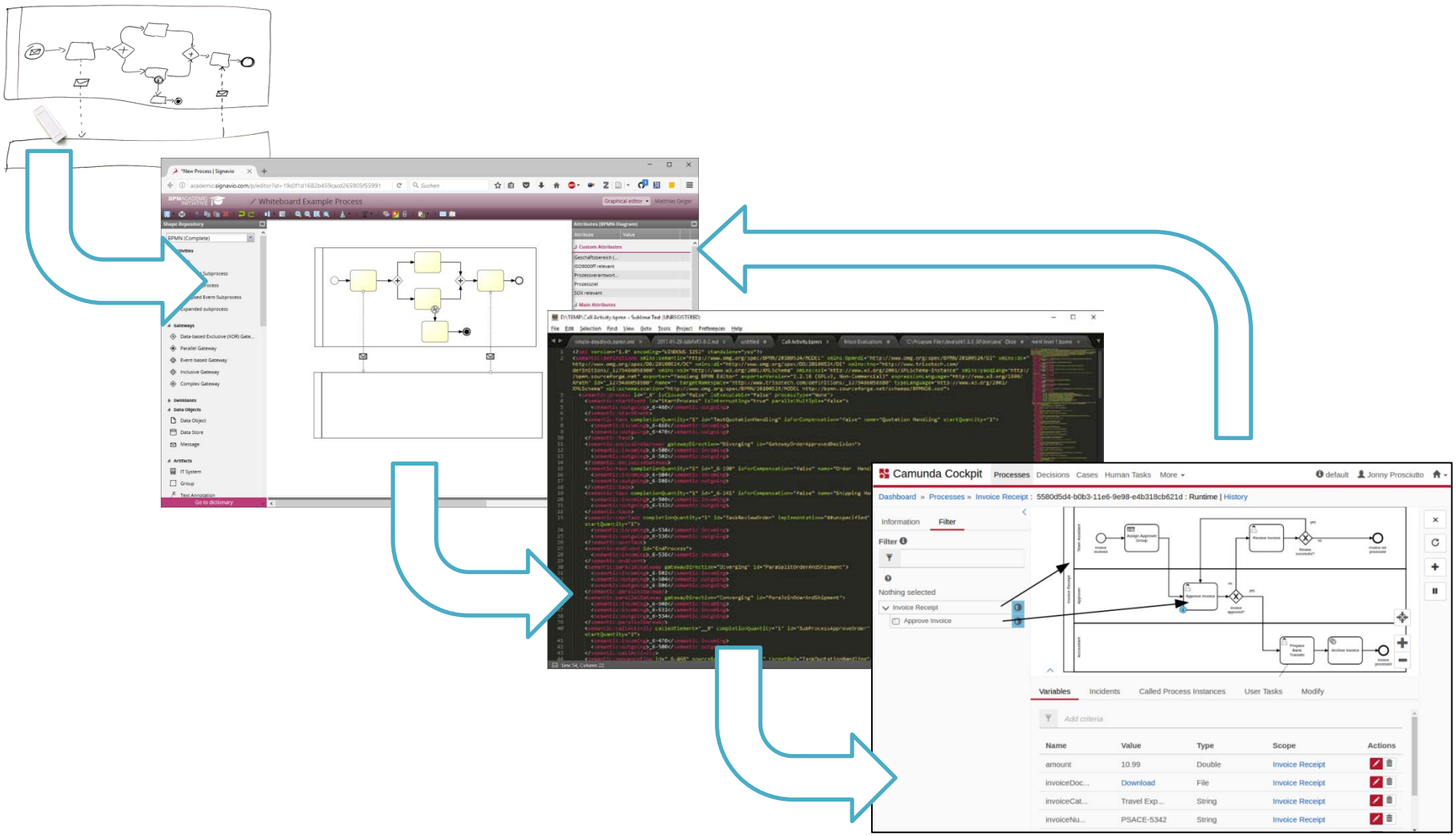
Outline

- Why is **standard compliance relevant?**
- Why is it **hard to assess?**
- How can you **check compliance automatically?**
- What about **actual standard compliance** in published process collections?
- What is **still missing?**

Why is **standard compliance relevant?**

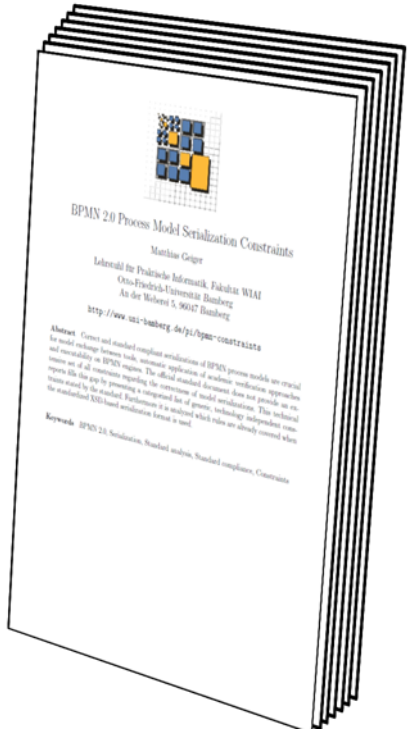


Why is **standard compliance relevant?**



Why is it **hard to assess**?

1. **Complexity** of the specification
2. **Quality** of the specification
3. **No reference implementation**, no certification authority
4. ~~**Not even a list of all constraints**~~



How can you **check compliance automatically?**

1. Basic **structural, cardinality, and value constraints**
2. **Reference integrity**
3. Extended, more **complex constraints**

How can you **check compliance automatically?**

*What about using an **XML schema validation?***

1. Basic **structural, cardinality, and value constraints** ✓
2. **Reference integrity** ✗
3. Extended, more **complex constraints** ✗

How can you **check compliance automatically?**

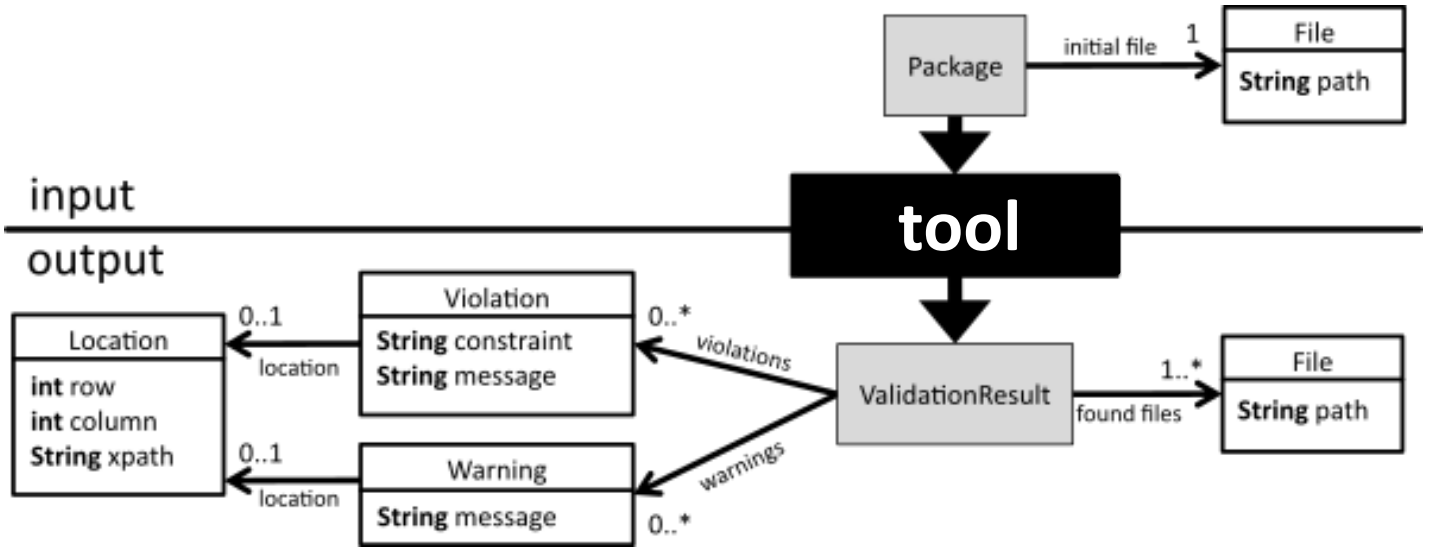
*What about using a **state-of-the-art modeling tool?***

1. Basic **structural, cardinality, and value constraints** ✓
2. **Reference integrity** +/-
3. Extended, more **complex constraints** +/-

How can you

check compliance automatically?

How can you **check compliance automatically?**



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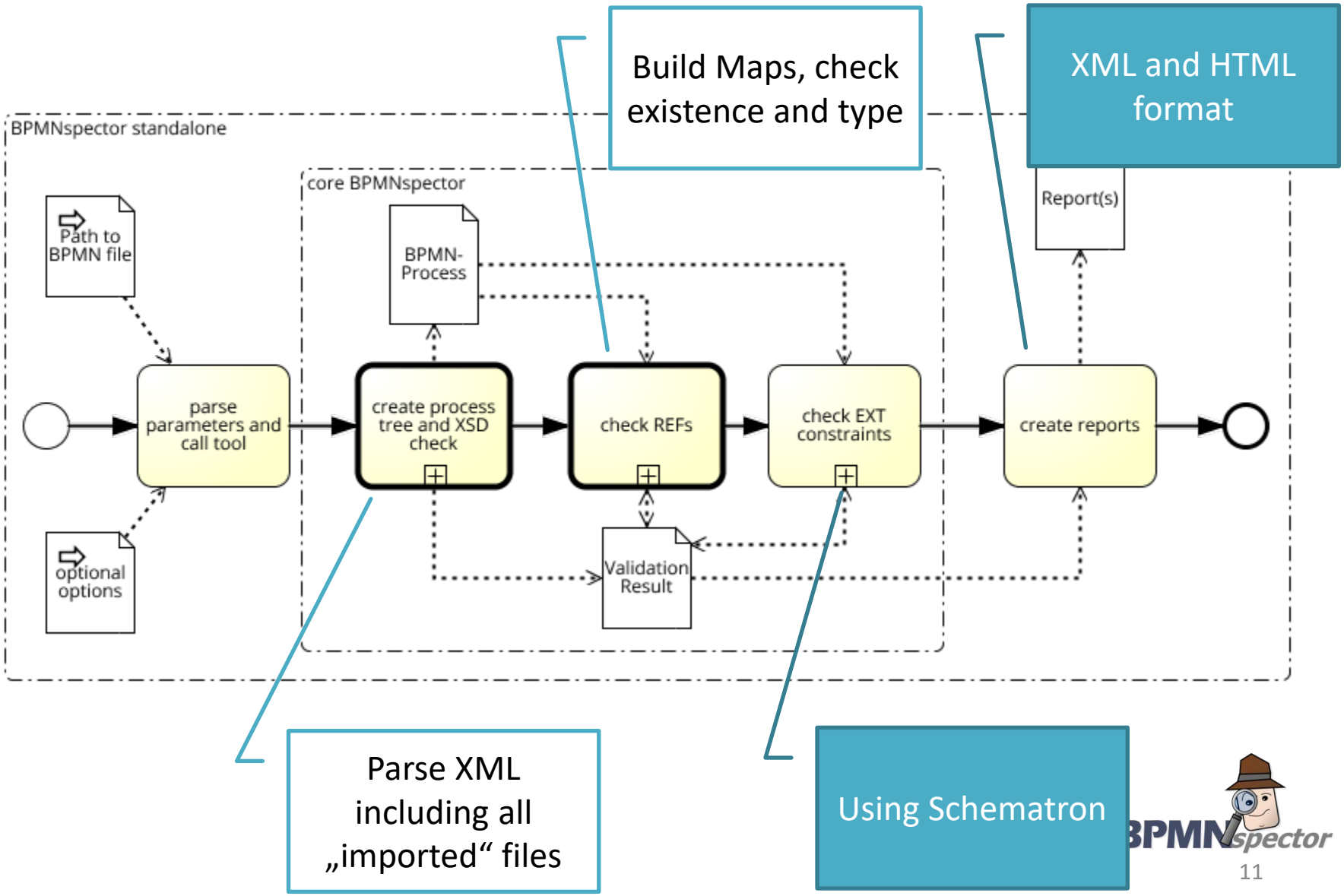


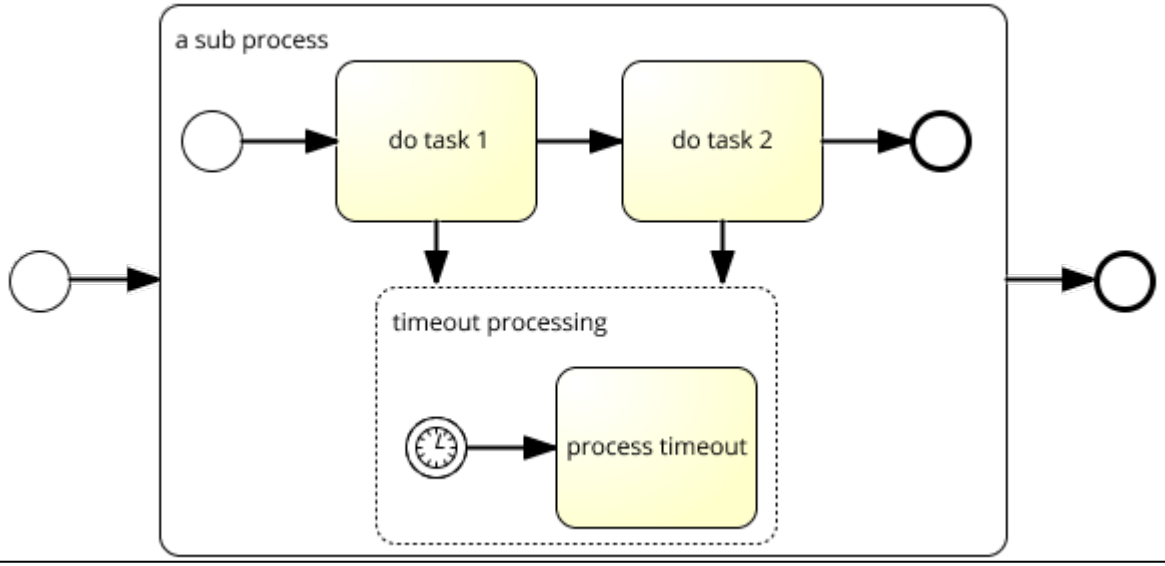
How can you **check compliance automatically?**

A.57 Rule EXT.057: EventSubProcessNoSequenceFlows

Rule #			Conf.Level	
EXT.057			proc	
Label:	EventSubProcessNoSequenceFlows			
	Affected Element:	SubProcess		
	Attribute/Sub Element:	-		
Constraint:	An Event Sub-Process MUST NOT have any incoming or outgoing Sequence Flows.			
	(Pre-) Condition:	the process is an EventSubProcess, e.g., triggeredByEvent=true		
	Source:	"An Event Sub-Process MUST NOT have any incoming or outgoing Sequence Flows."		
			Chapter	pg.
			10.2.5	177

```
<iso:pattern name="EXT.057">
    <iso:rule context="bpmn:subProcess[@triggeredByEvent='true']">
        <iso:assert test="not(bpmn:incoming) and not(bpmn:outgoing)" diagnostics="id">
           EXT.057|An Event Sub-Process MUST NOT have any incoming or outgoing Sequence Flows.
        </iso:assert>
    </iso:rule>
</iso:pattern>
```

How can you **check compliance automatically?**




```
<subProcess id="EventSub" triggeredByEvent="true" ...>
   <incoming>SeqFlow_Sub_Task1_EventSub</incoming>
   <incoming>SeqFlow_Sub_Task2_EventSub</incoming>
   <startEvent id="Timer_Start" isInterrupting="true" name="">
      <outgoing>SeqFlow_Timer_Start_Task</outgoing>
      <timerEventDefinition id="some_id"/>
```

```
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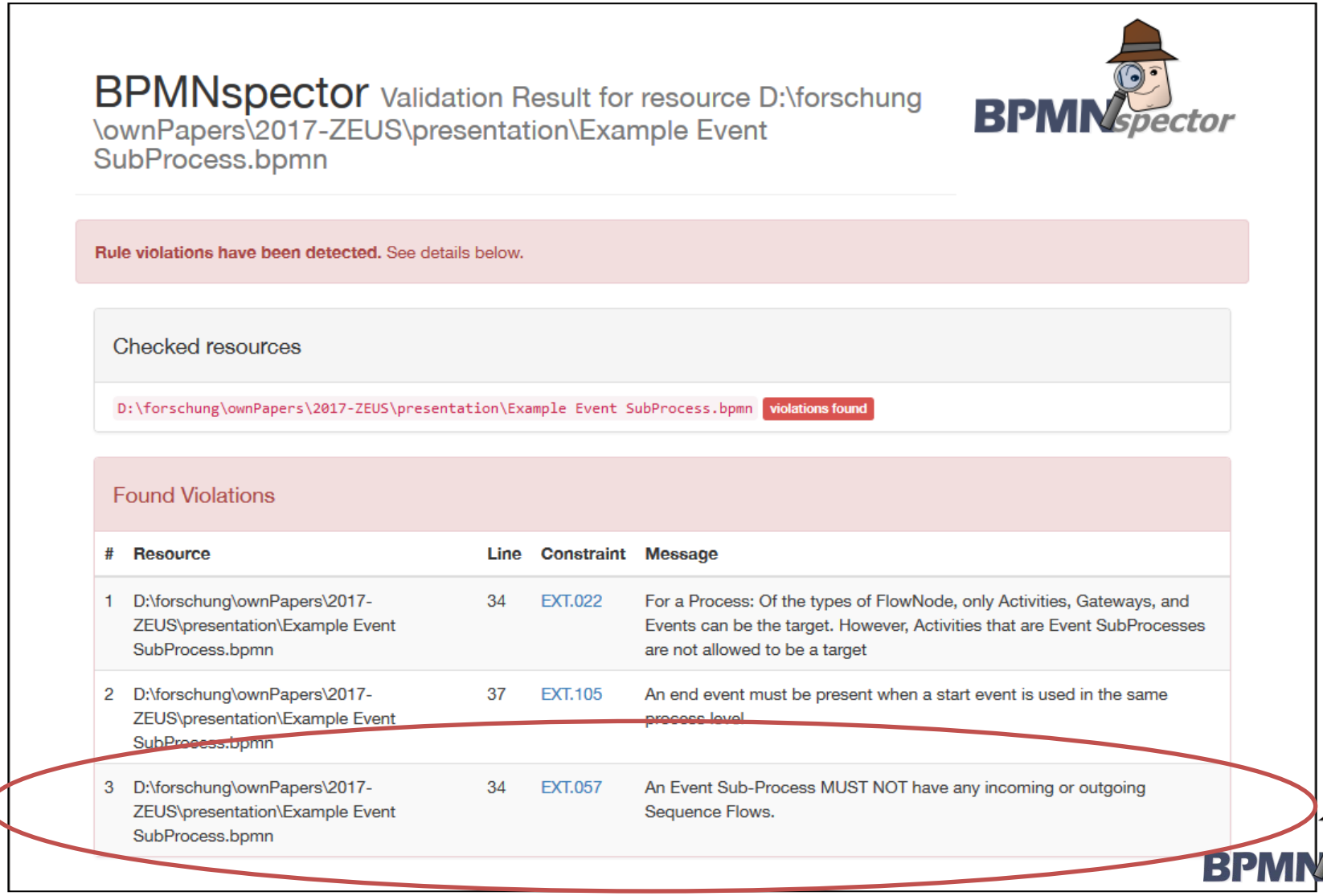
How can you **check compliance automatically?**



BPMNspector Validation Result for resource D:\forschung\ownPapers\2017-ZEUS\presentation\Example Event SubProcess.bpmn

Rule violations have been detected. See details below.

Checked resources

D:\forschung\ownPapers\2017-ZEUS\presentation\Example Event SubProcess.bpmn violations found

Found Violations

#	Resource	Line	Constraint	Message
1	D:\forschung\ownPapers\2017-ZEUS\presentation\Example Event SubProcess.bpmn	34	EXT.022	For a Process: Of the types of FlowNode, only Activities, Gateways, and Events can be the target. However, Activities that are Event SubProcesses are not allowed to be a target
2	D:\forschung\ownPapers\2017-ZEUS\presentation\Example Event SubProcess.bpmn	37	EXT.105	An end event must be present when a start event is used in the same process level
3	D:\forschung\ownPapers\2017-ZEUS\presentation\Example Event SubProcess.bpmn	34	EXT.057	An Event Sub-Process MUST NOT have any incoming or outgoing Sequence Flows.

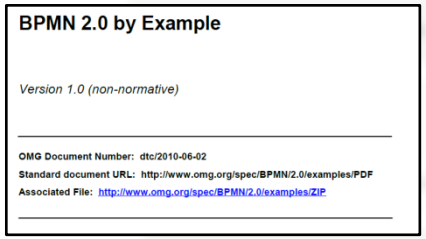
How can you

check compliance automatically?

With BPMNspector*:*

1. Basic **structural and cardinality constraints** ✓
2. **Reference integrity** ✓
3. Extended, more **complex constraints** ✓

What about **actual standard compliance** in published process collections?

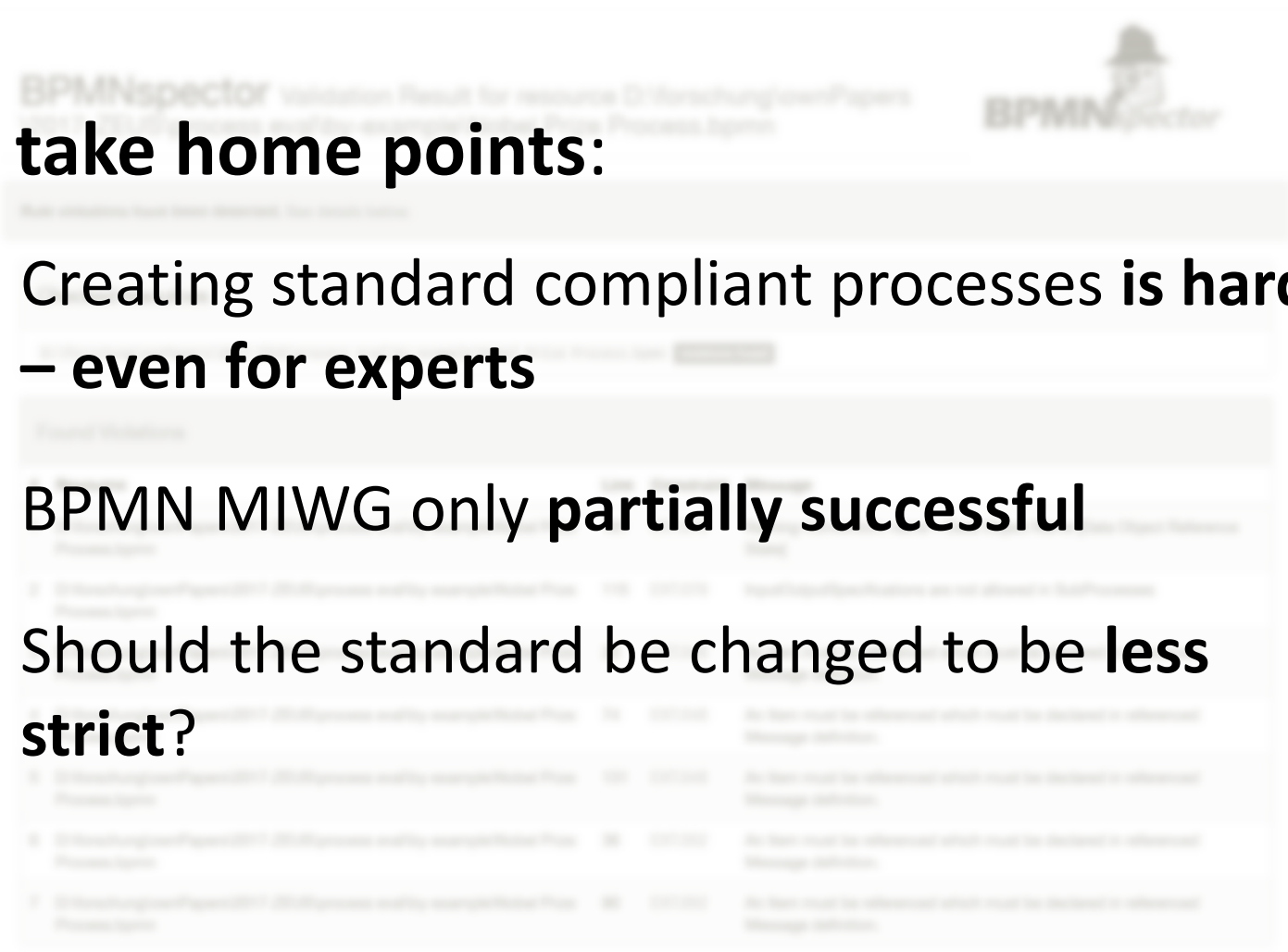
	# of models	*valid*	*invalid*
	26	16	10
OMG BPMN MIWG	12	8	4
QuDiMo ...because quality matters!	32	0	32

What about **actual standard compliance** in published process collections?

Some **frequent problems**:

- Schema invalid
- **Omission of mandatory elements** (esp. for executable processes)
- **invalid SeqFlows** (wrong implementation, invalid or missing connections)

What about **actual standard compliance** in published process collections?



Some **take home points**:

- Creating standard compliant processes **is hard – even for experts**
- BPMN MIWG only **partially successful**
- Should the standard be changed to be **less strict**?

What is **still missing?**

- What about **behavioral properties?**
- What about **integrating BPMNspector into modeling tools and engines?**
- Are the **findings representative?**

Thank you for your attention.

Any **questions**?

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BPMNspector.org