

# Process Makna - A Semantic Wiki for Scientific Workflows

**Adrian Paschke, Zhili Zhao**

Corporate Semantic Web (AG-CSW)  
Institute for Computer Science,  
Freie Universität Berlin

[paschke@inf.fu-berlin.de](mailto:paschke@inf.fu-berlin.de)

<http://www.inf.fu-berlin.de/groups/ag-csw/>



# Overview

---

- ***Motivation - Scientific Workflows***
- ***e-Science Use Cases***
- ***Implementation***

# Motivation

---

- BPM tools do not enacted correctly to knowledge-intensive scientific workflows.
- Scientific processes are subject to frequent changes and exceptions.
- Traditional BPM approaches provide limited support for coordination, collaboration and integration.

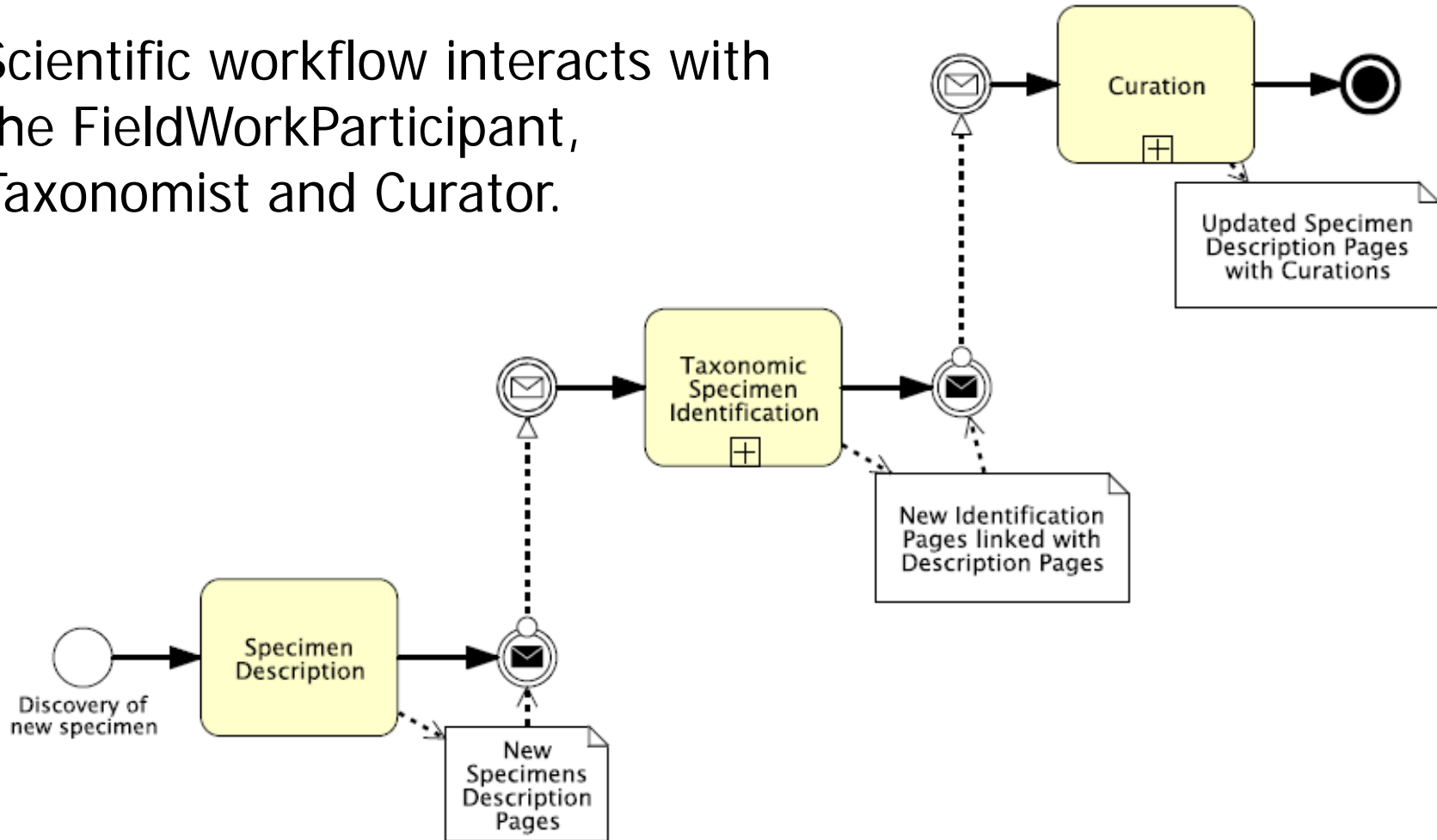
# Proposal

---

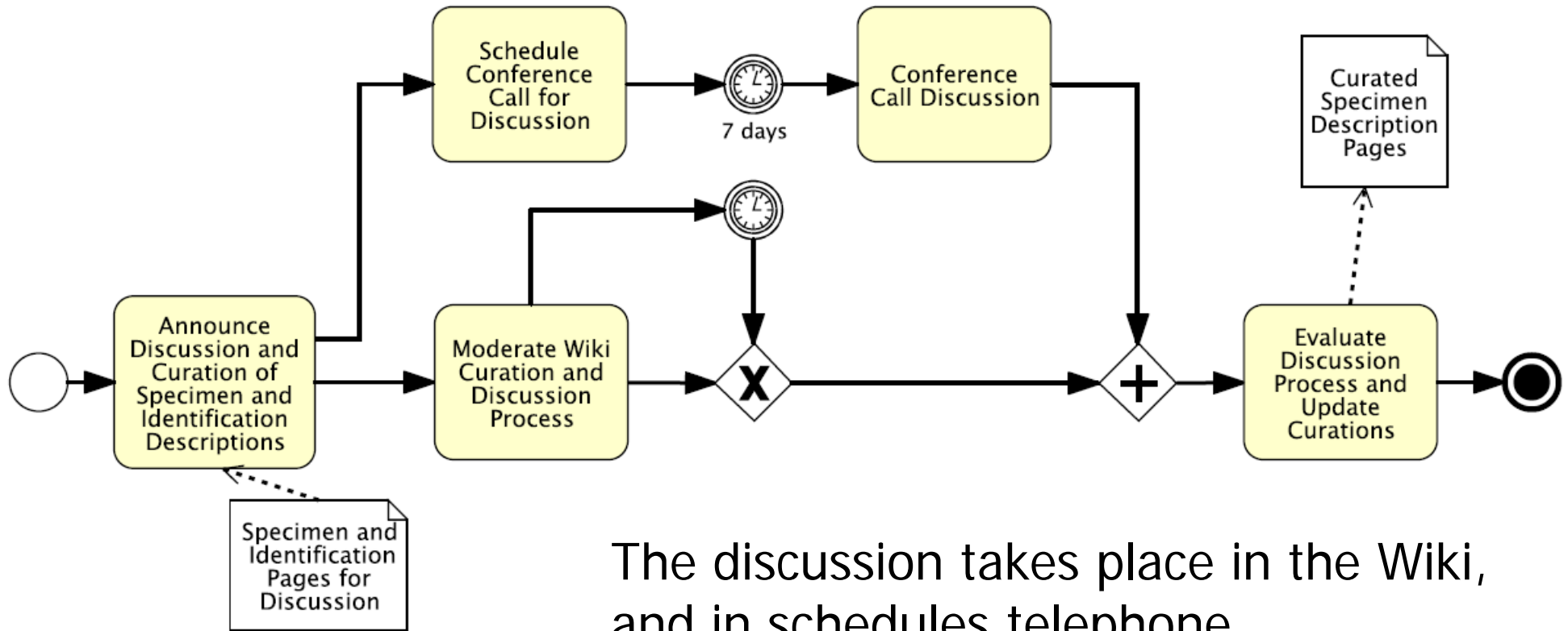
Integration of the Makna Semantic Wiki  
with a BPM workflow system.

# Use Case: Specimen Processing

Scientific workflow interacts with the FieldWorkParticipant, Taxonomist and Curator.



# Coordination / Discussion Process



The discussion takes place in the Wiki, and in schedules telephone conference calls.

# Integration the semantic Wiki with BPM

---

- Semantic Workflow Annotation and Rule Integration
  - insert semantic concepts into the workflow model at runtime
  - complex business logic can be declaratively represented by reaction rules
- Semantic Flow Conditions
  - BPEL only supports the flow conditions with Boolean expressions
  - rule-based expressiveness for complex declarative flow conditions is possible

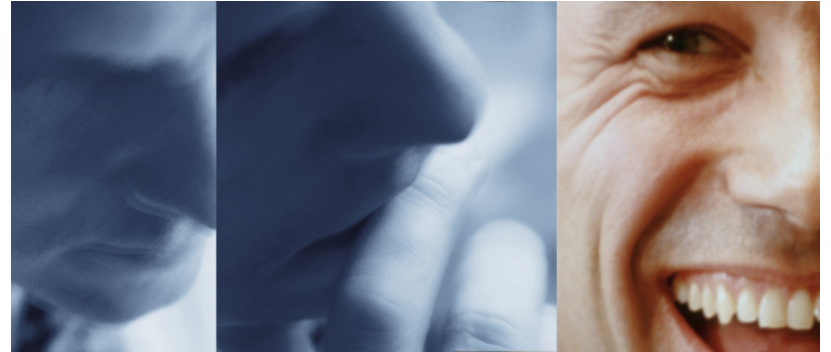
- 
- Semantic Assignments
    - responsibility assignment matrix
    - *AssignmentHandler*
  - Semantic Search and Presentation of Workflow Individuals
    - formatting SPARQL XML responses with XSLT
    - JSPWiki-Plugin enables to present the tasks and process instances in the Wiki
  - Rule-based Workflow Execution
    - extend BPEL and exploit Reaction RuleML
    - Rule Responder ESB middleware with the Prova rule engine



# Summary

---

- Novel combination of a BPM system with a Semantic Web Wiki
- Exploits the user-friendliness a Wiki
- Exploits the power of semantic technologies (rules, ontologies) with respect to declarative representing and retrieving knowledge
- Exploits the power of BPM to explicitly model and execute/manage scientific workflows
- support for coordination, collaboration and integration in scientific workflows



# Questions?