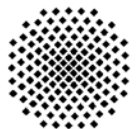


Compliance in BPM & Views on Business Processes

IBM Technology Partnership Center
BPM Day 2011

David Schumm et al.

Institute of Architecture of Application Systems



Universität Stuttgart
Germany

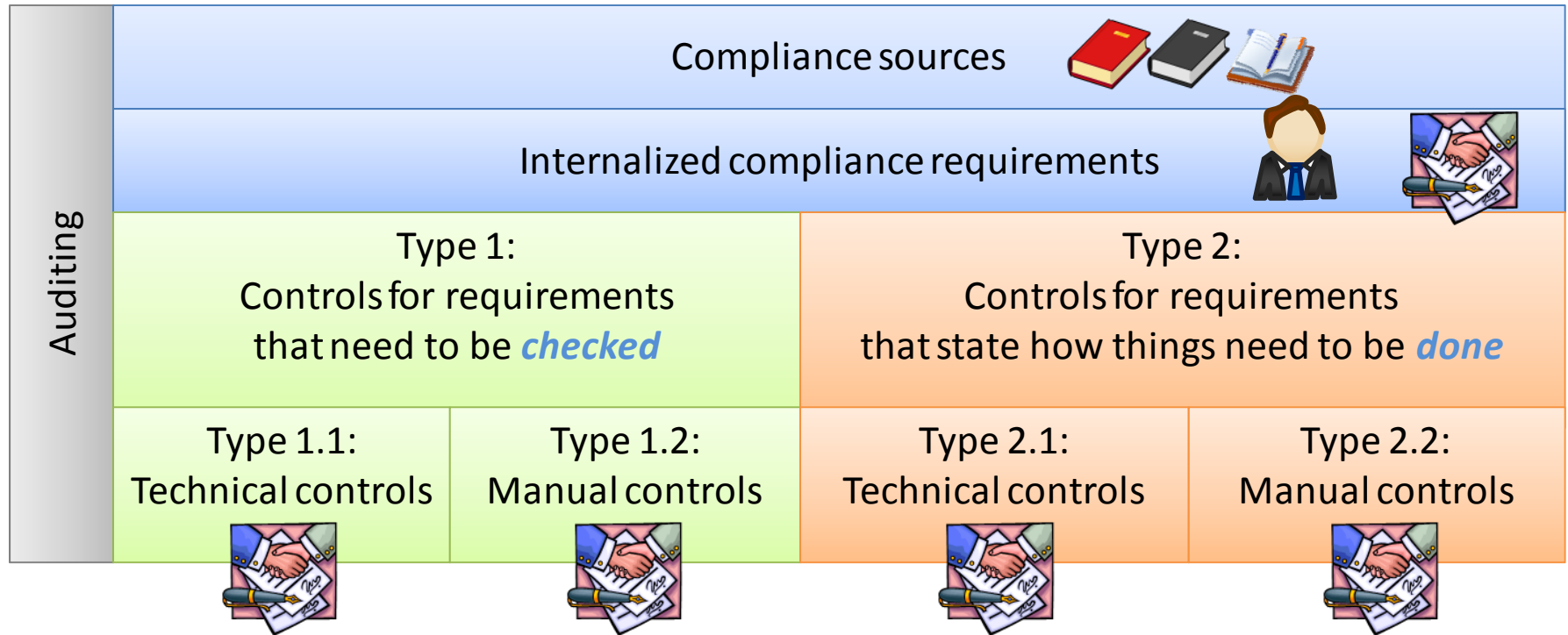
David.Schumm@iaas.uni-stuttgart.de

Overview

- Compliance in BPM
- Views on Business Processes
- Views for Compliance in BPM
- Some Impressions from “Real Life”
- Future Perspectives

Compliance in BPM

Introduction: A Compliance Management Model



The Problem: Compliance of Business Processes

- Compliance – adhering to requirements
- Various different actions have to be taken to prevent and detect compliance violations
- Compliance has an impact on all components in the IT infrastructure of a company
- Compliance also has an impact on the business processes which run outside of IT systems
- Goal: Enable compliance of business processes
 - Support of frequently changing requirements
 - Support for traceability and compliance monitoring
 - Keeping the process models clean
 - Reusable solutions

Examples for Lack of Compliance

- Received gifts
- Terrorist financing
- Insider trading
- Conflict of interests



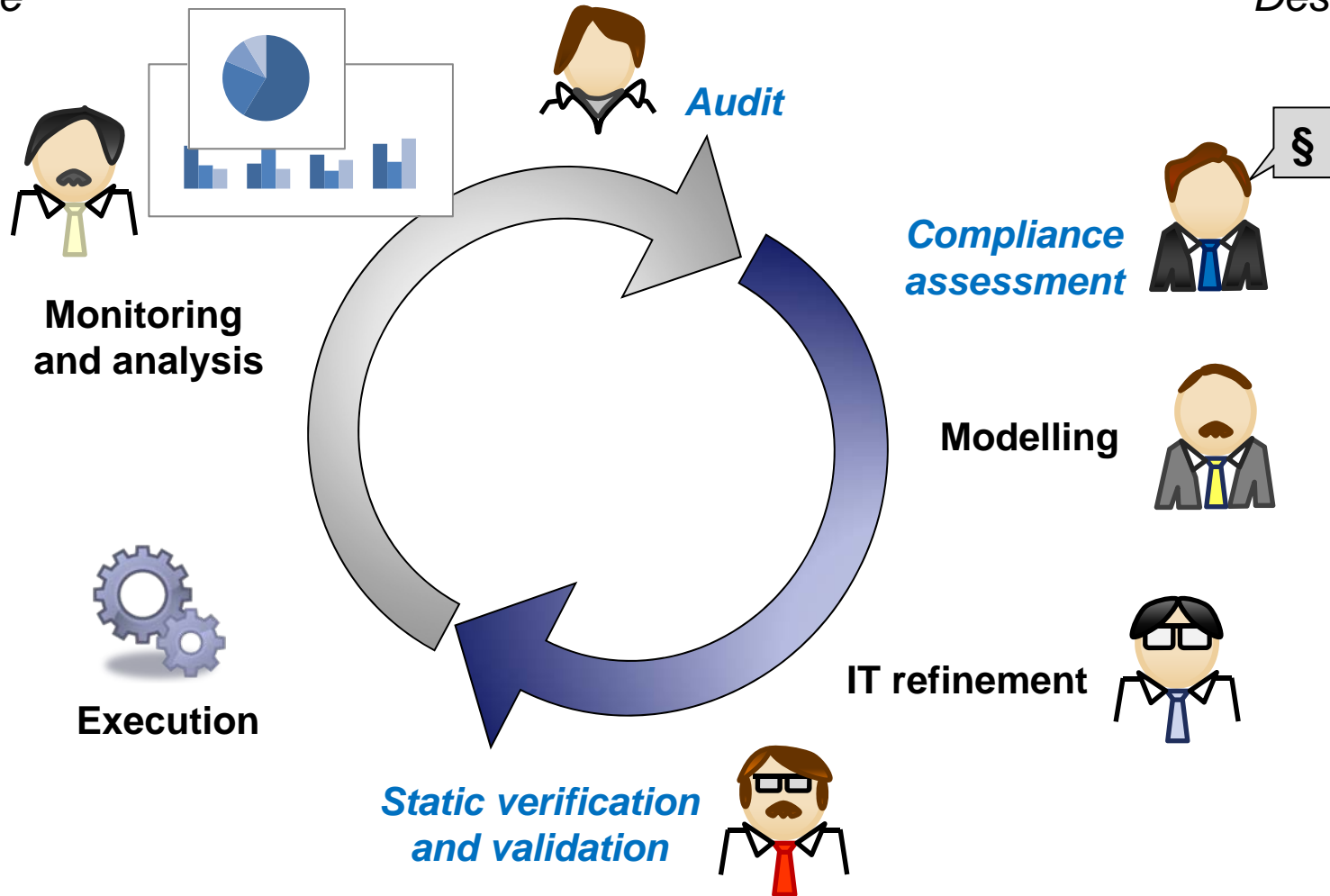
Compliance Requirements

- Sources and types of compliance requirements
 - Laws, regulations, internal policies, ...
 - Security, privacy, trust, licensing, ...
- Compliance controls
 - Segregation of duties
 - Approvals and checks
 - ...
- Requirements on different levels of abstraction
 - General requirements (e.g., use a secure protocol)
 - Specific requirements (e.g., use Kerberos protocol)
 - *Compliance expert* translates compliance requirements to technical specifications

Compliance in the Business Process Life Cycle

Runtime

Design Time

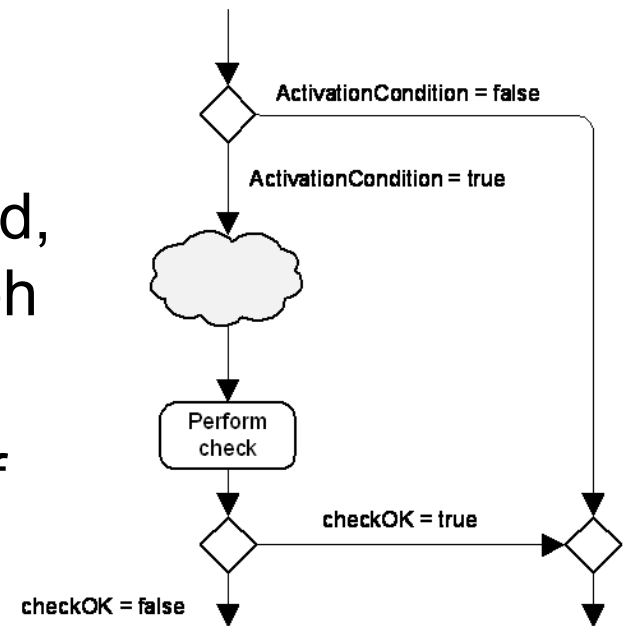


Benefits of Achieving Compliance

- Process awareness – what are the processes?
- Process insight – how do the processes run?
- Prevention – how to design compliant processes?
- Improved reputation
 - Our company acts lawful
 - The privacy of our customers is protected
 - Our processes are compliant with SOX
 - ...

Compliance Fragments

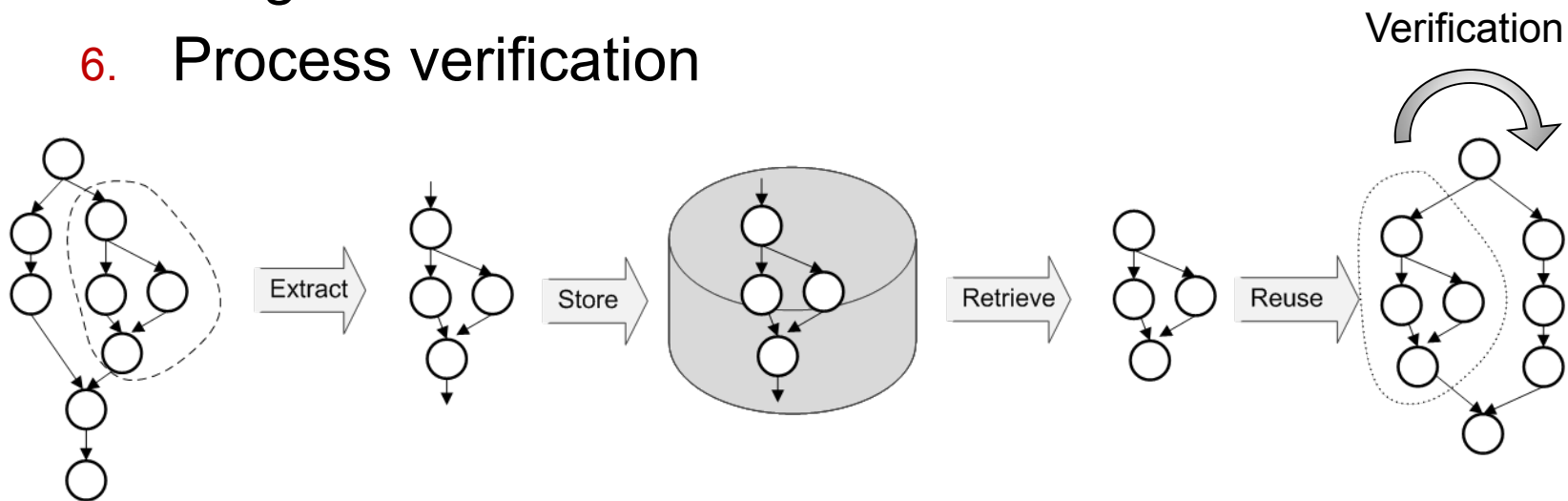
- We propose using process fragments for compliance in BPM
- A compliance fragment is a connected, possibly underspecified process graph
- Not necessarily executable
- A compliance fragment is made up of
 - Activities
 - Regions: activity placeholders
 - Control edges defining control dependencies
 - Multiple incoming and outgoing control edges on activities



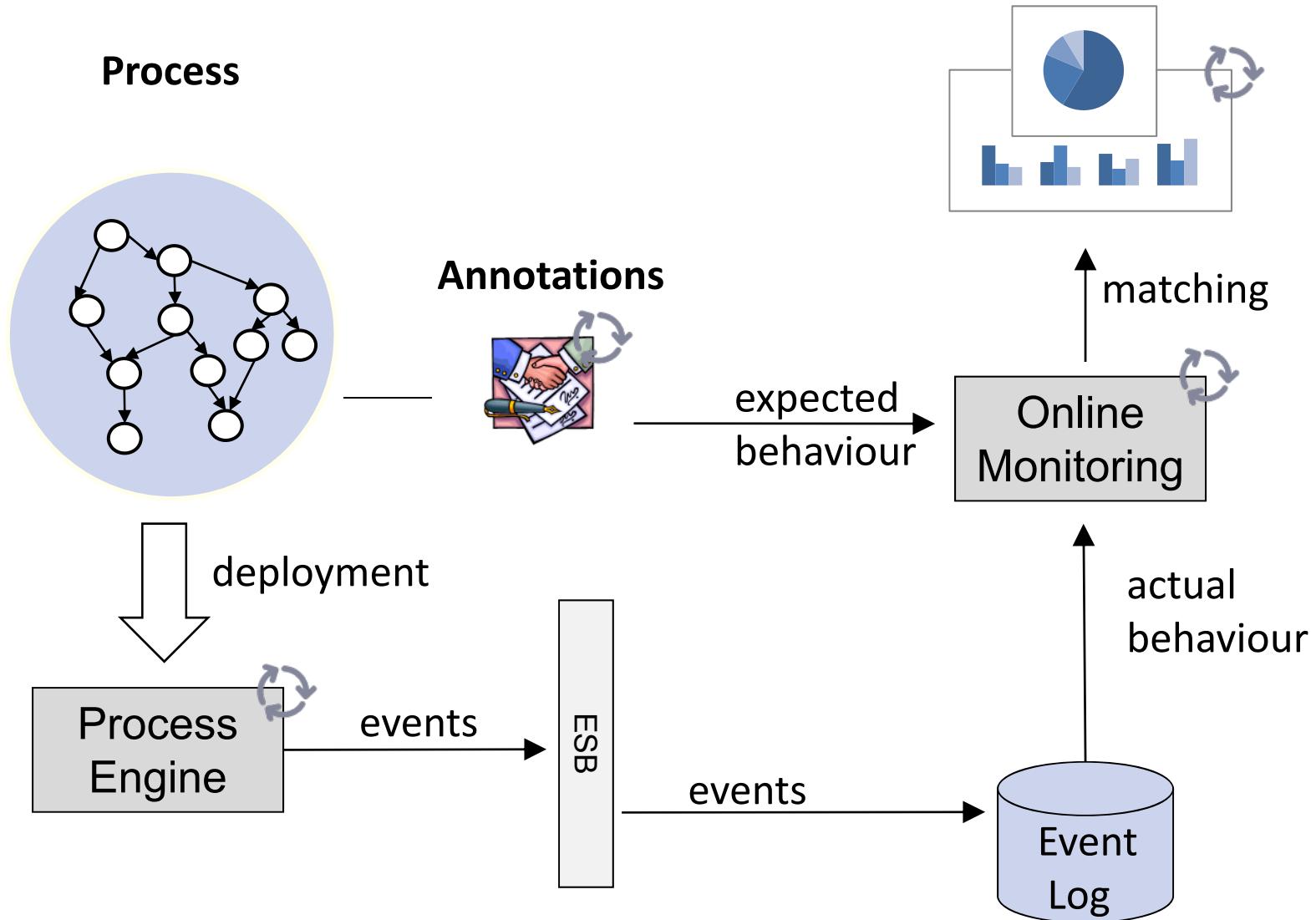
Creation and Reuse of Compliance Fragments

■ Phases for creation and usage of fragments

1. Fragment identification
2. Fragment extraction or design
3. Fragment storage
4. Fragment retrieval
5. Fragment reuse
6. Process verification



Runtime Compliance Checking



Modification for compliance required

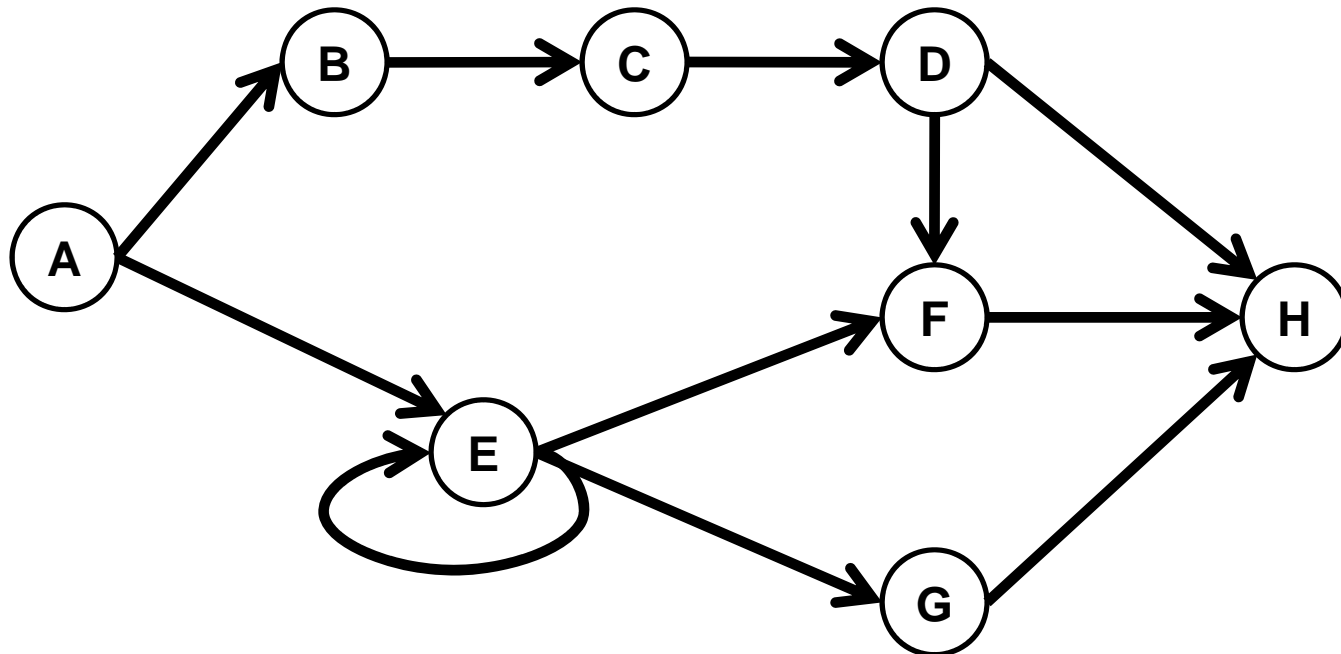
Views on Business Processes

The Problem: Increasing Complexity in BPM

- Complexity of business processes is increasing fast
- Up to hundreds of activities contained in a process
- Multiple cross-cutting concerns need to be considered
 - Security
 - Compliance
 - Performance
- Analytical data is available but needs to be considered in its context: the business process
 - Data regarding the execution and performance
 - Data regarding organizational aspects
 - ...
- Process views are a means to abstract from details and make complex processes easier to understand

Getting Started with Process Views

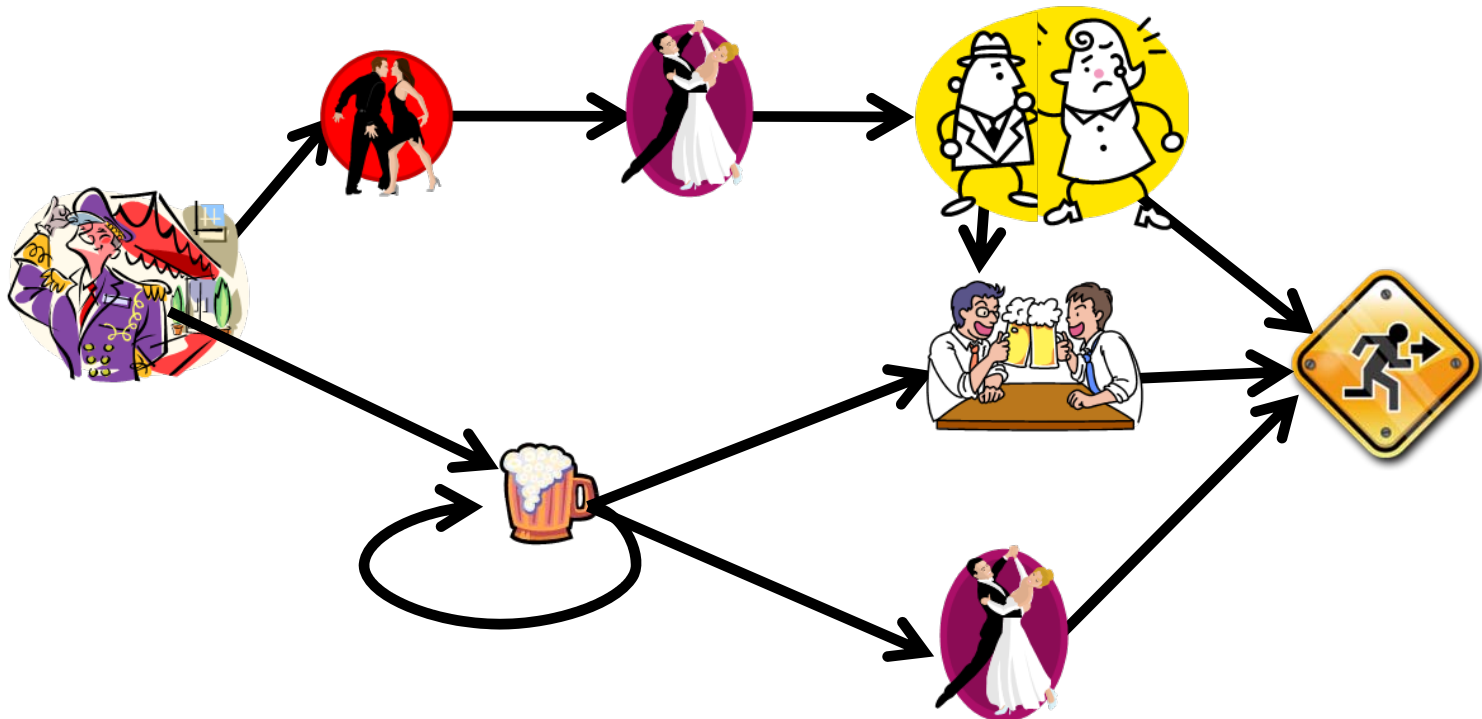
The Process: Alice, Bob and Peter went to a Club



Is the process clear? No...? Maybe a view can help...

Getting Started with Process Views

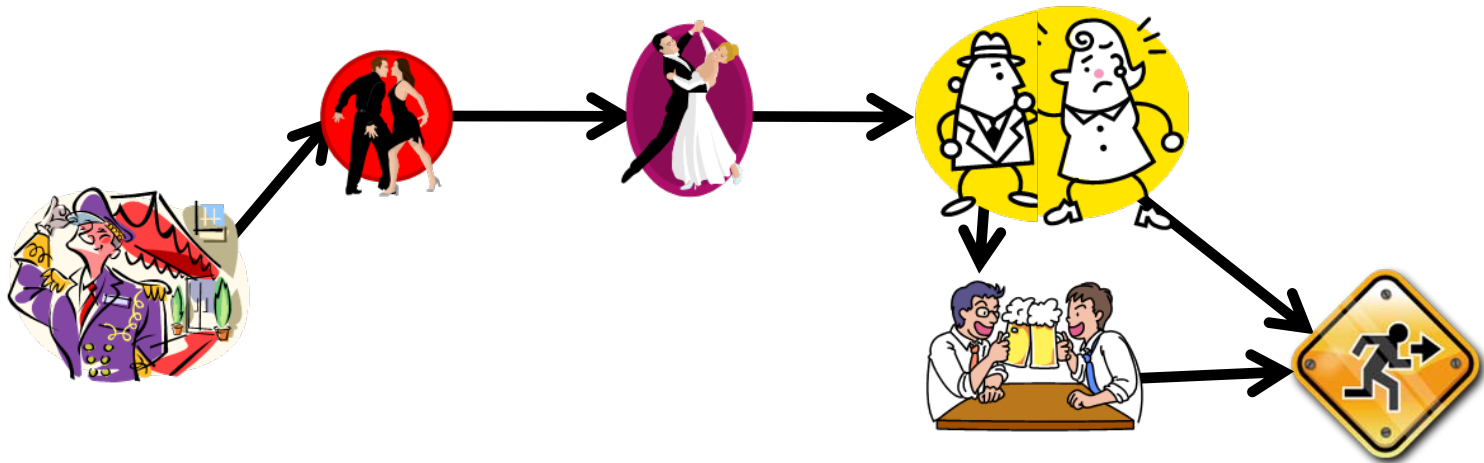
A view on the model: *change shapes*



Better! But which activities are executed by Bob?

Getting Started with Process Views

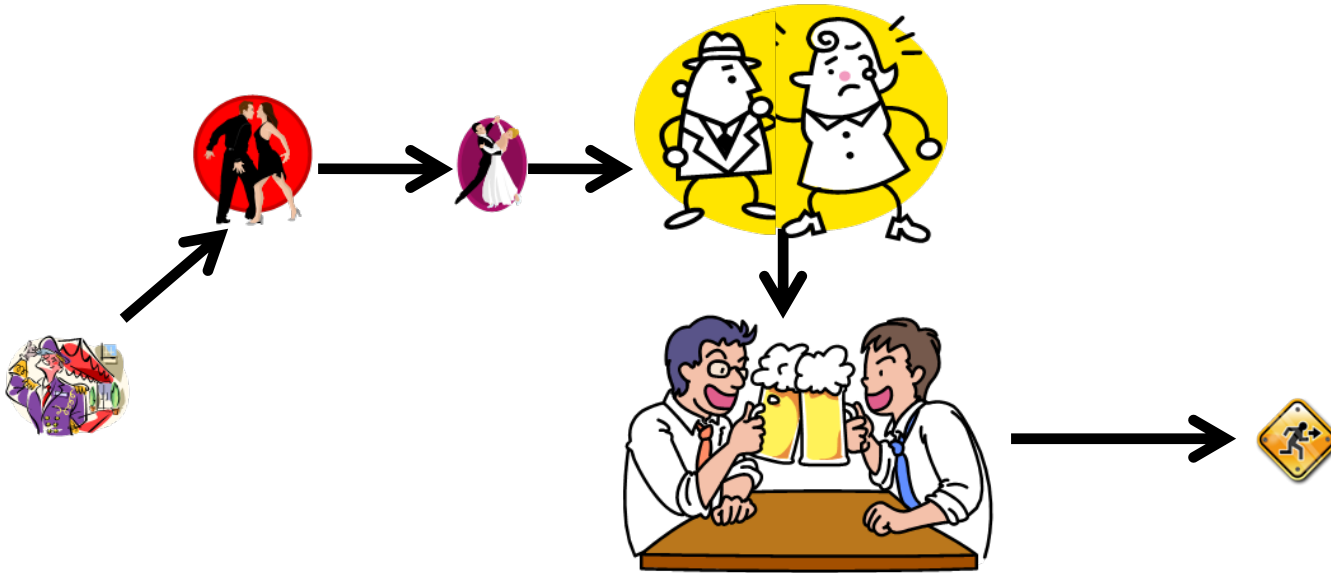
A view on the model: *omission of structures unrelated to Bob*



Great! And how long did each activity take?

Getting Started with Process Views

A view on an instance: *bind shape size to augmentation*



Ok, thanks!

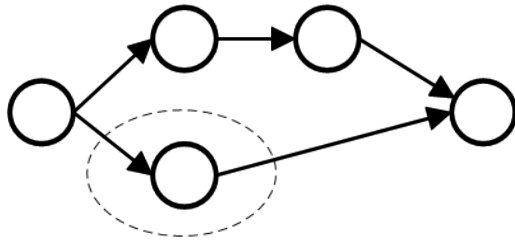
Process Views: What can they be used for?

*“Process views are the graphical presentation of the result obtained after specific **transformations** have been applied to a process model”*

- Manifold purpose of process views
 - Summarize information
 - Filter information
 - Translate information
 - Link information

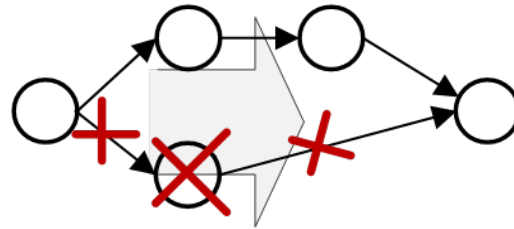
Process view transformation terminology

Original process

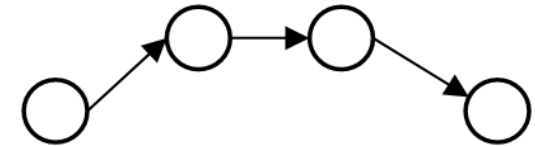


Target set

View transformation



Process view

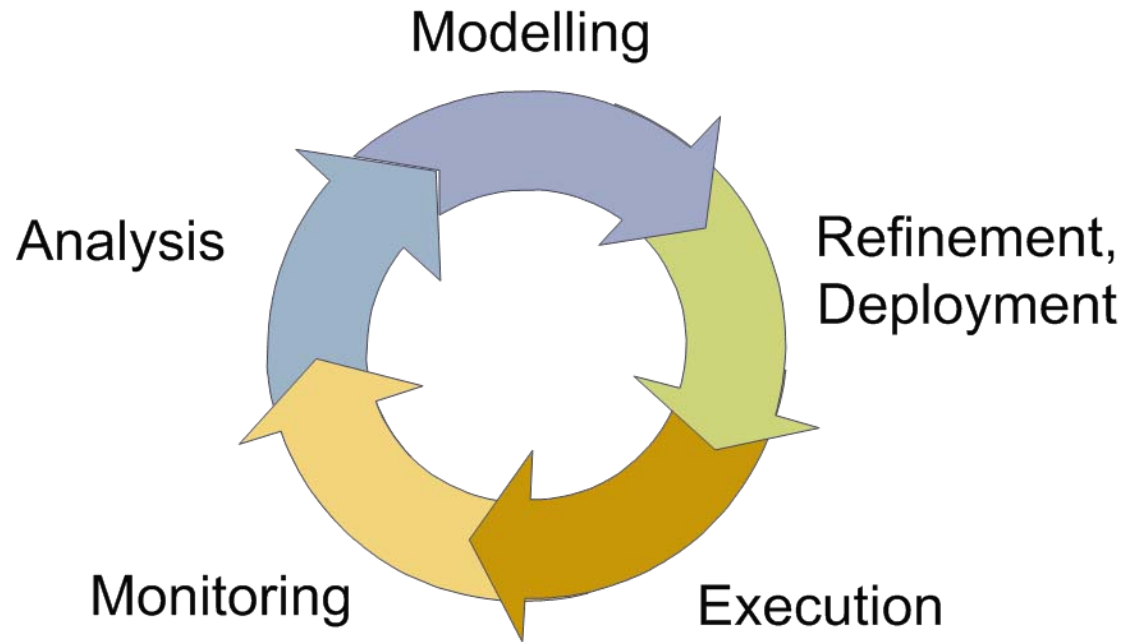


Process Viewing Patterns

- Except for “aggregation” and “omission”, view transformation techniques are *implicitly* applied
- No common ground
 - Approaches and tools are hard to compare
 - Different languages are used
- Process viewing patterns
 - *Elementary* forms of process view transformations
 - Frequently applied practice in process view applications and scientific approaches
- Process viewing patterns can be used to
 - specify the design of process views
 - benchmark process view approaches or tools

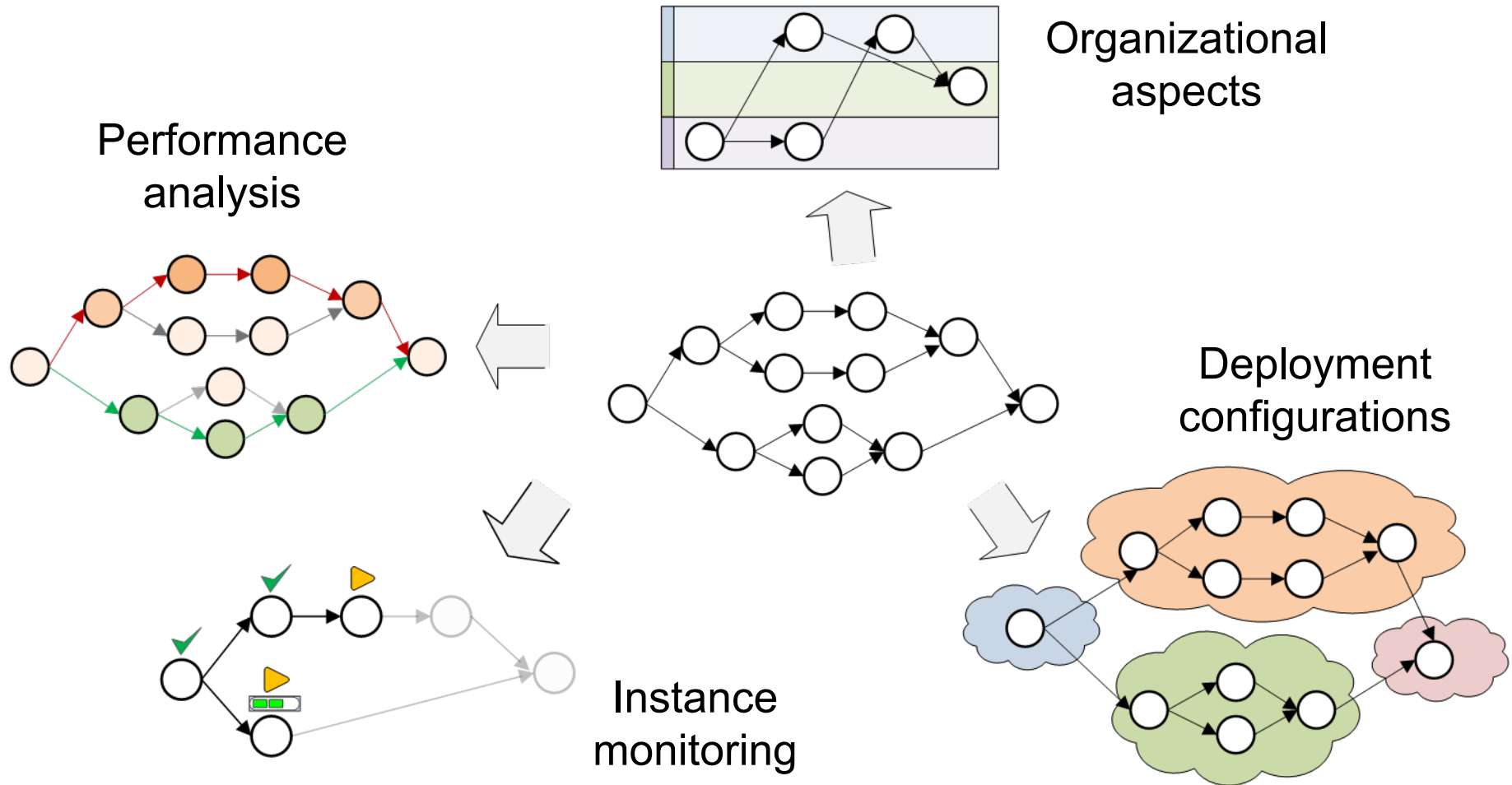
Process Views – Some Examples

- Process views can be used *along the life cycle* of business processes



Process Views – Some Examples

- Process views can be used *along the life cycle* of business processes



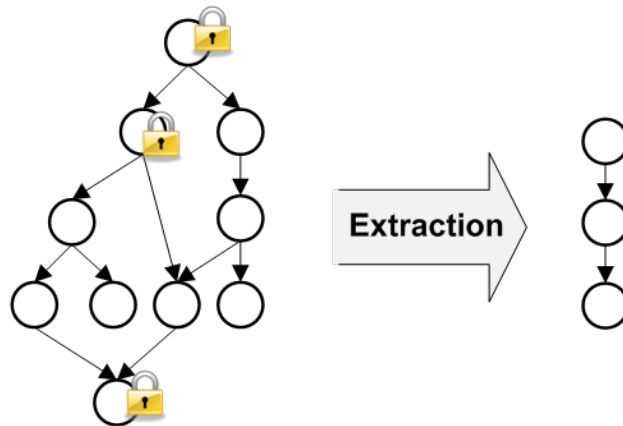
Views for Compliance in BPM

The Problem: Managing Compliance Fragments

- Extraction – Create reusable compliance fragments
- Reuse – Make a given process compliant
- Highlighting – Demonstrate compliance to an auditor
- Hiding – Show an unpolluted view on a process
- *Process views* provide a means for extraction, highlighting and hiding

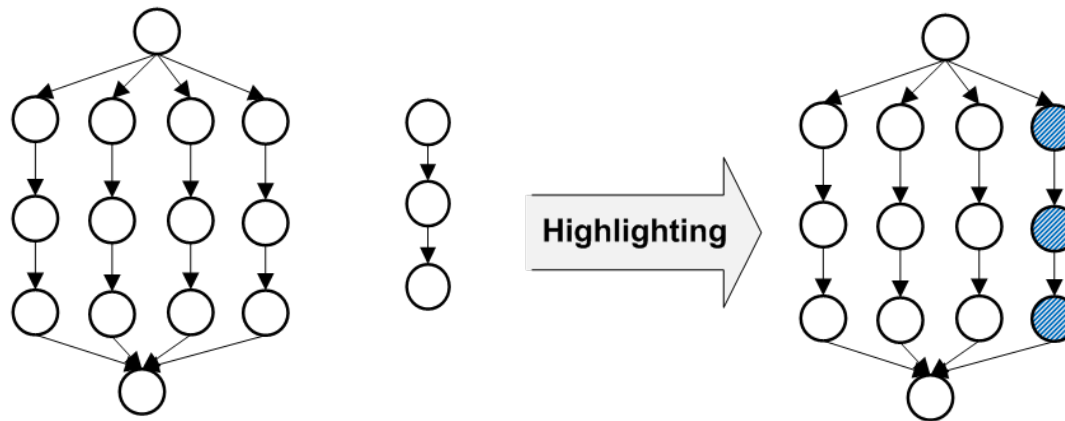
View for Extraction of Compliance Fragments

- Some parts of a process related to compliance are *reusable* and therefore shall be extracted
- Solution
 - At first the structures need to be specified, which shall be extracted for later reuse (preservation)
 - In the next step *all* other structures are omitted
 - The result can be stored in a repository



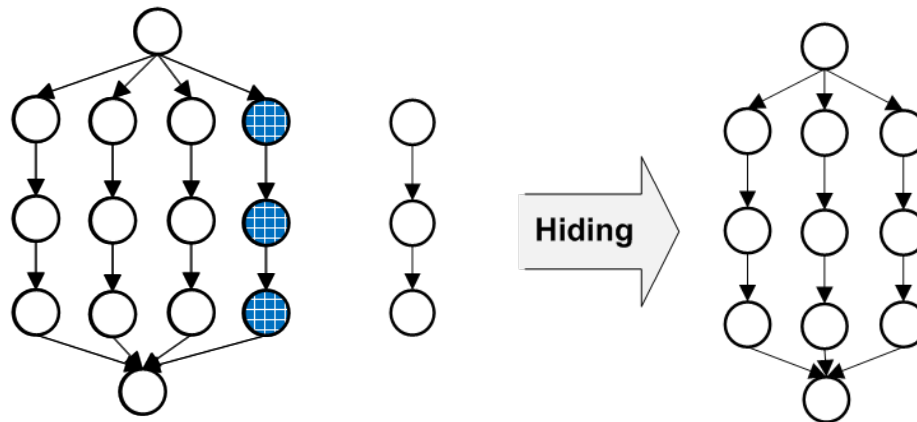
View for Highlighting of Compliance Fragments

- For an *audit* only particular structures are of interest
- An emphasis of the corresponding structures is required
- Solution
 - Binding of the properties of process structures to shape colors
 - Set the characteristics that steer the visualization accordingly



View for Hiding of Compliance Fragments

- Multiple artifacts related to compliance possibly *pollute* a process model
- These structures do not represent the work that should actually be carried out in the process
- Solution
 - *Omission* of nodes and artifacts that match a particular predicate $P: P(x) : \#t / \#f$
 - P defines the characteristics of a polluting structure



Some Impressions from “Real Life”

A Compliance Requirement for a Loan Approval

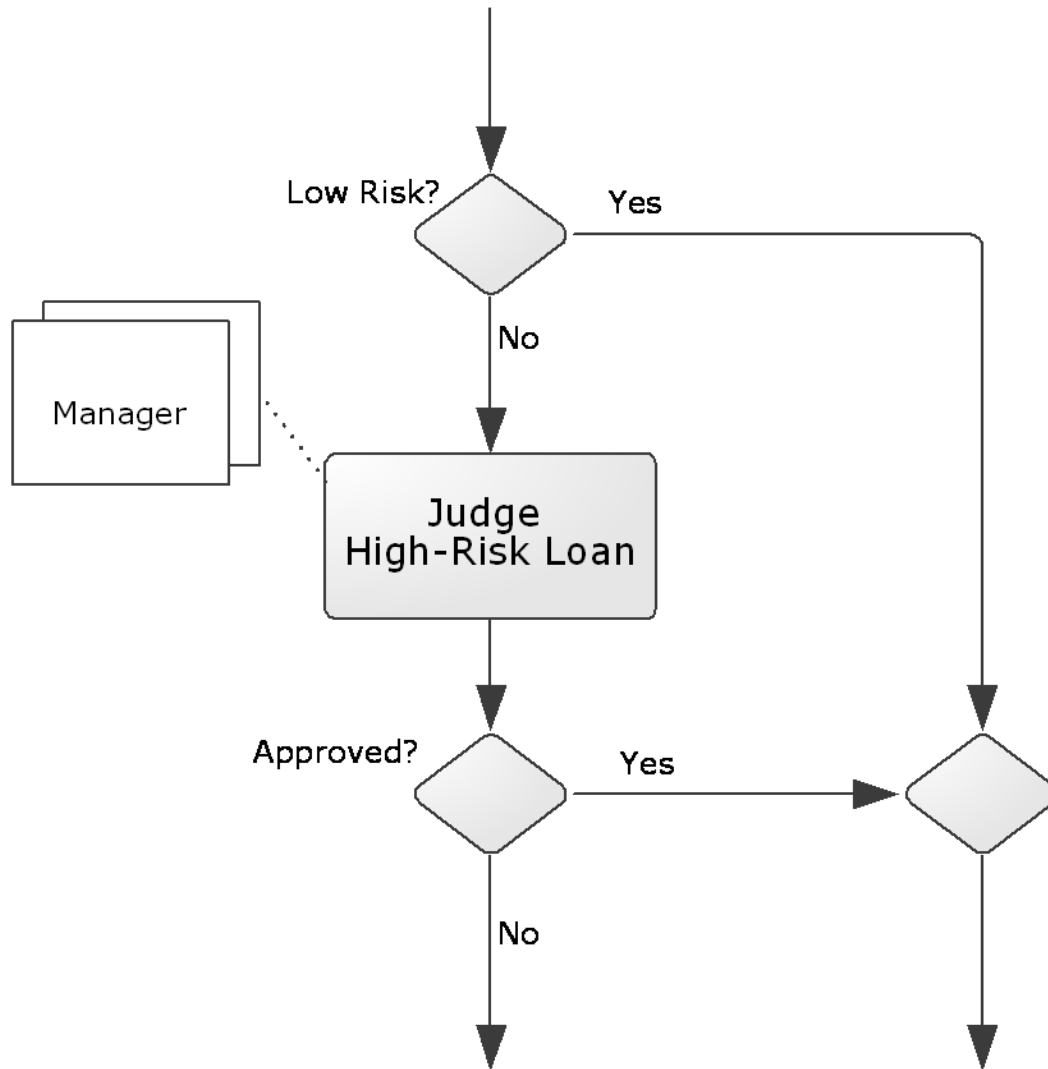
The branch office manager checks whether risks are acceptable and makes the final approval of the request

A Formal Compliance Rule

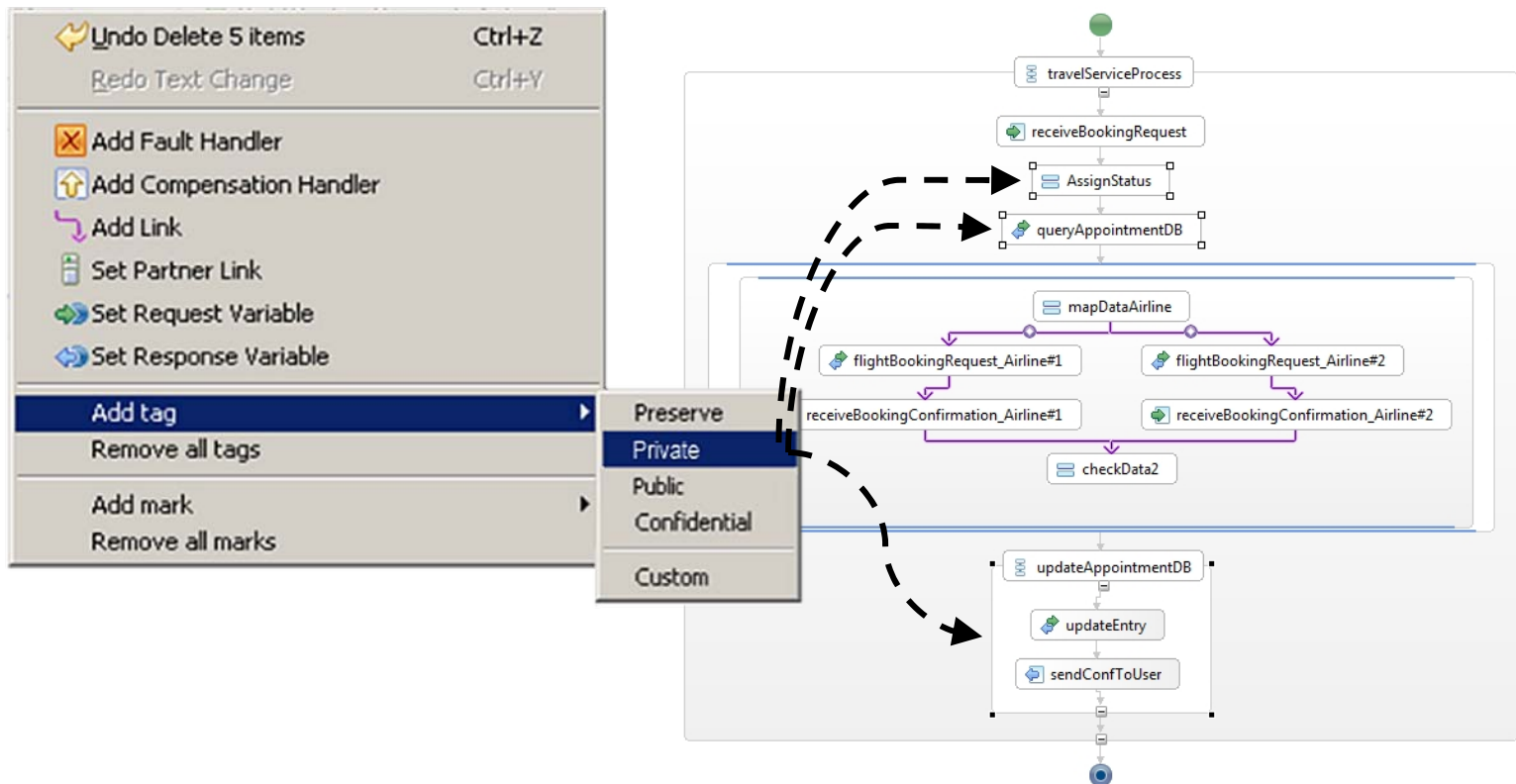
$G((\text{JudgeHighRiskLoan} \wedge \text{Approved} = \text{"Yes"}) \vee$
 $(\neg \text{SignOfficiallyLoanContract.Role('Manager')} \cup$
 $(\text{JudgeHighRiskLoan} \wedge \text{Approved} = \text{"Yes"}))) \wedge$
 $G((\text{JudgeHighRiskLoan} \wedge \text{Approved} = \text{"No"}) \vee$
 $(\neg \text{DeclineDueToHighRisk.Role('Manager')} \cup$
 $(\text{JudgeHighRiskLoan} \wedge \text{Approved} = \text{"No"})))$

*The „Compliance Request Language“ has been developed
by Tilburg University in the course of the COMPAS project*

A Compliance Fragment

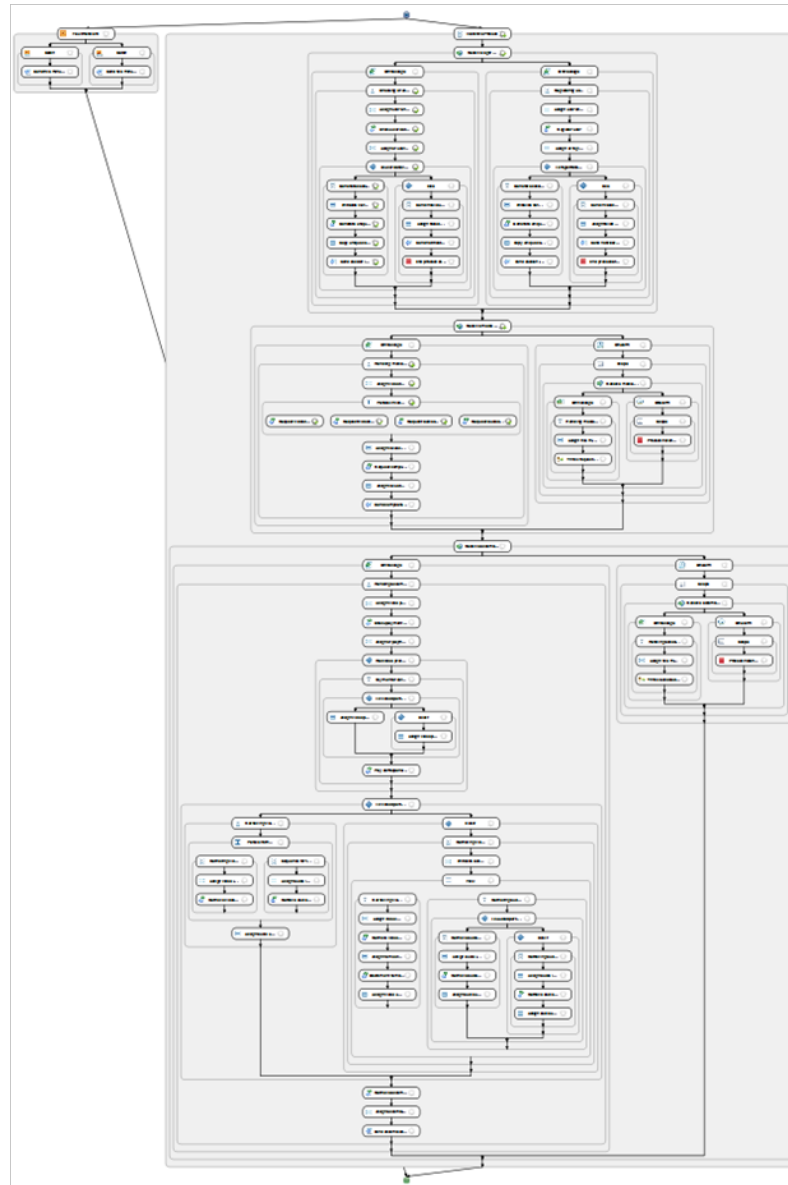


Tagging of the Process Model to Ease Extraction

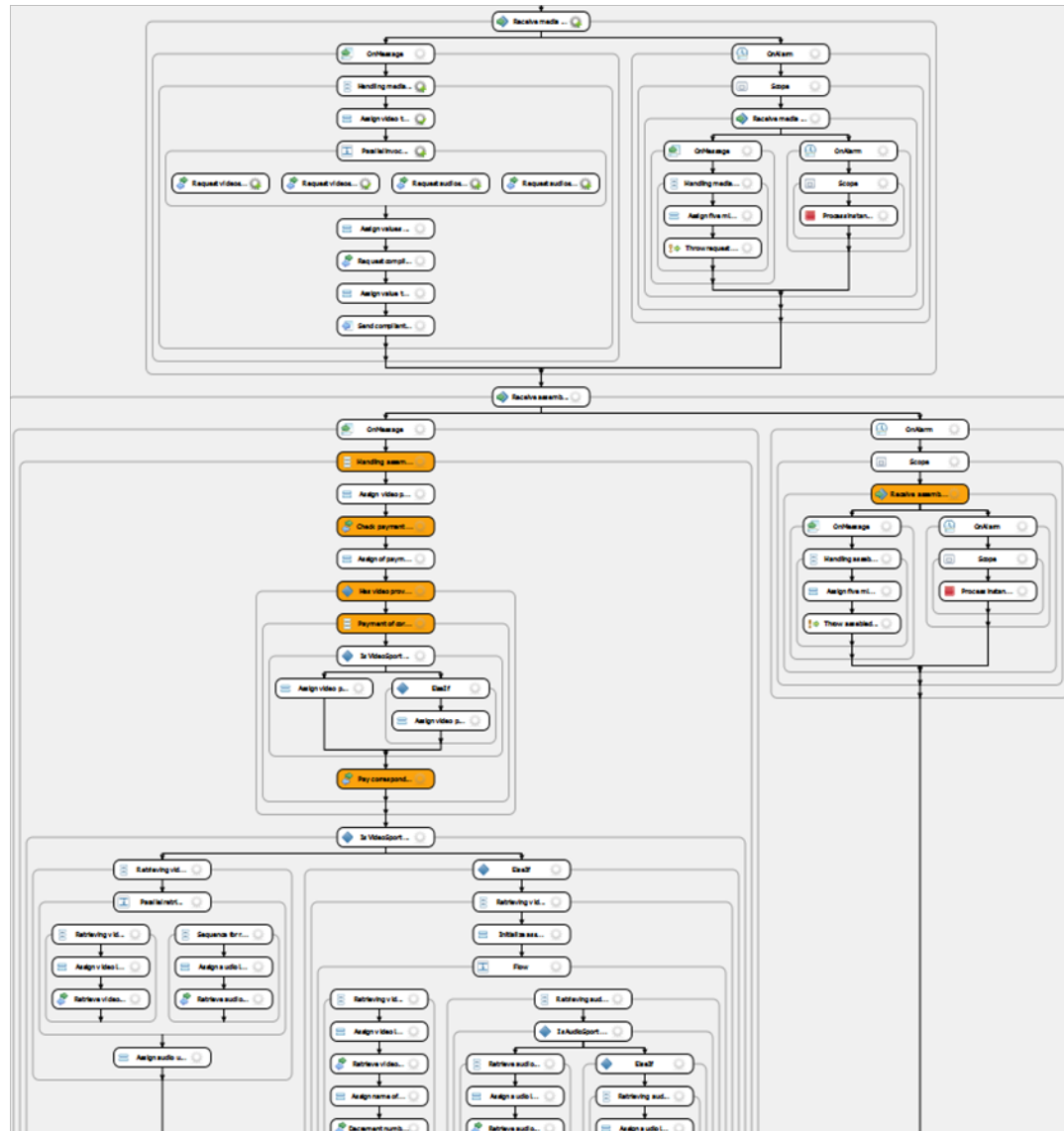


The tool for abstraction of BPEL processes has been developed by Alexander Streule in the course of his diploma thesis

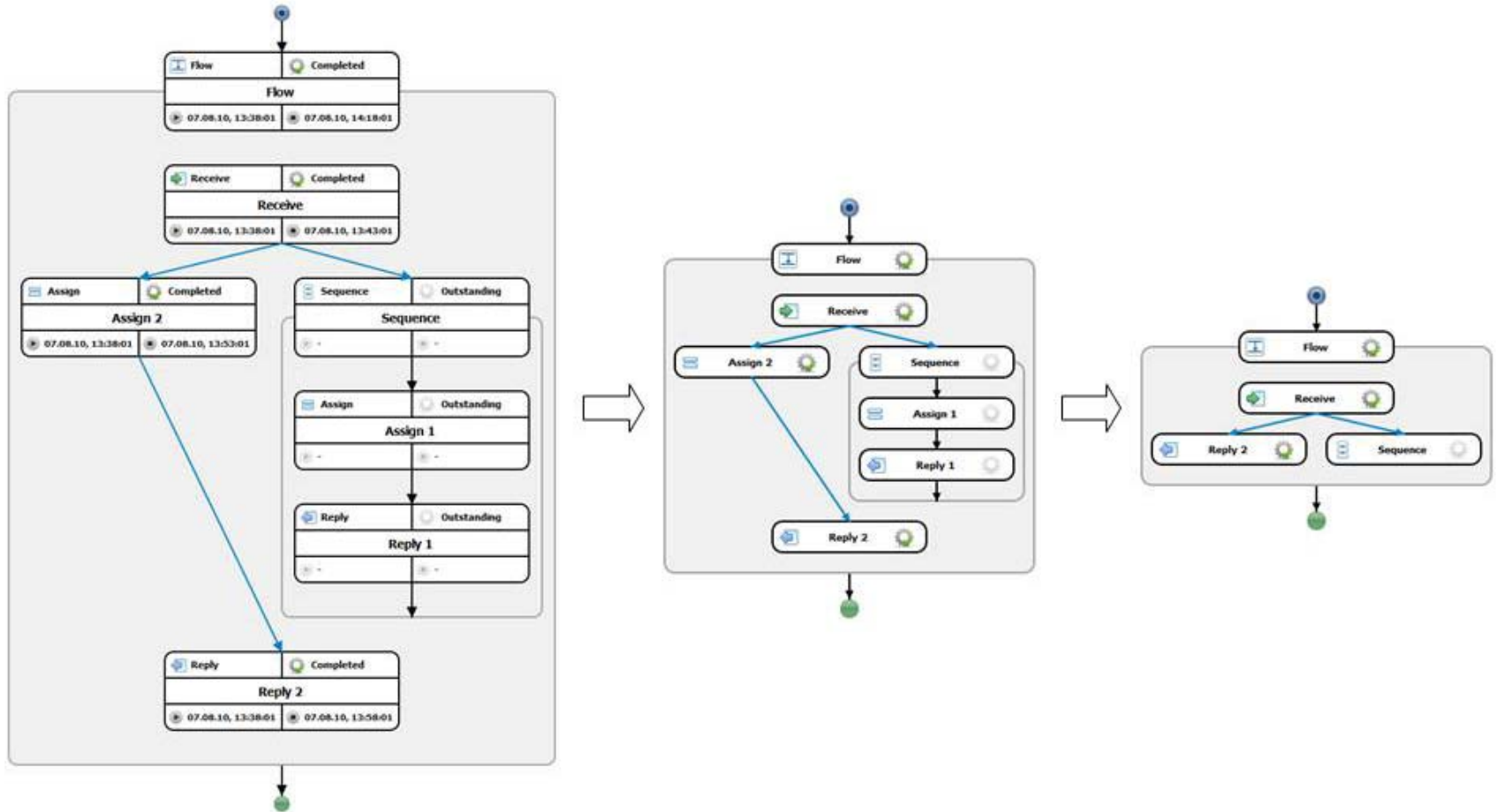
A Complex Process Model



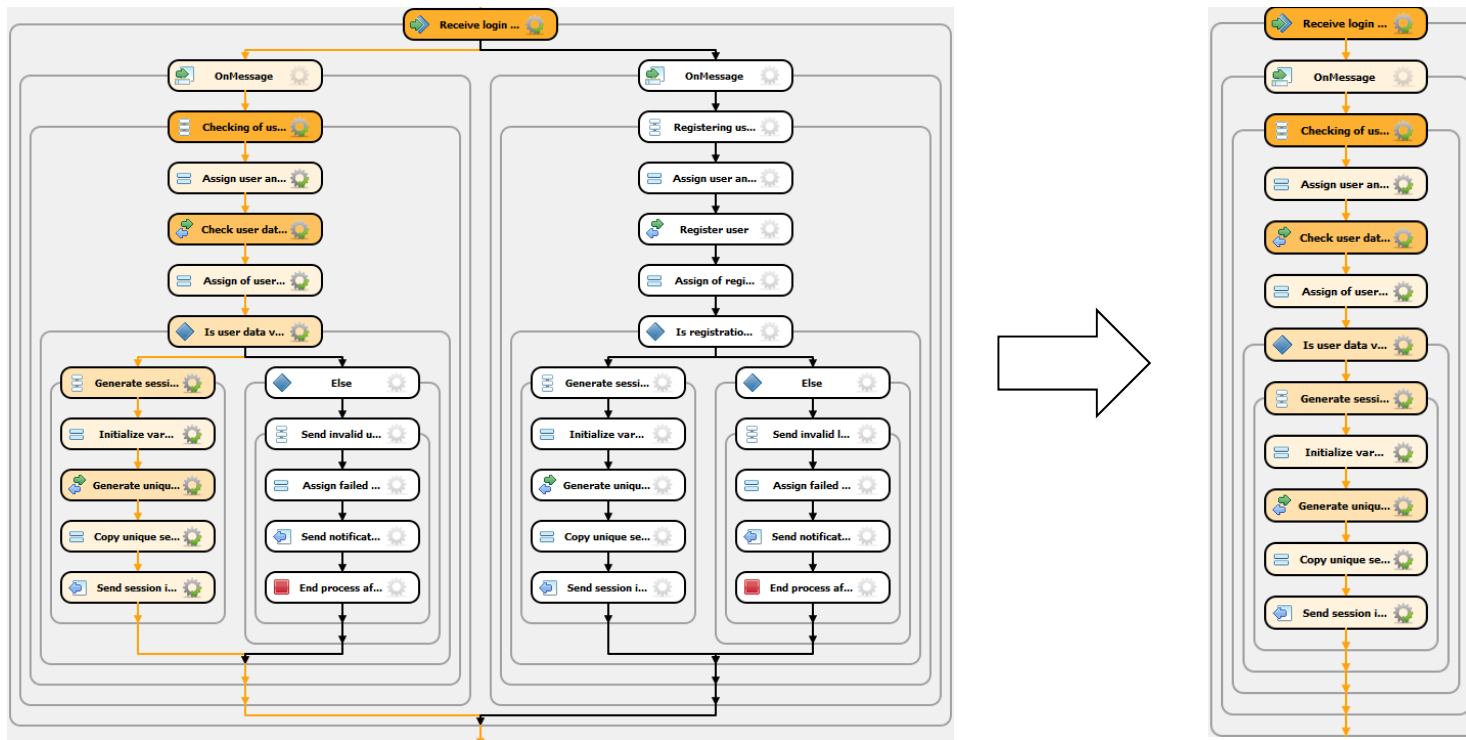
Compliance Fragment Highlighting



Process View Transformations



Process View Transformations



The tool “Business Process Illustrator” has been developed by Gregor Latuske in the course of his diploma thesis

Future Perspectives

The Information Designer: A Novel Role in BPM

- The information designer is a consequence resulting from increasing complexity of BPM
- The information designer...
 - is concerned with information management across the business process life cycle
 - defines and creates views that are tailored to information needs of process stakeholders
 - employs a set of functions which implement view transformation functionality

Finally...

- Papers, prototypes and further slides are available on request via E-Mail and on my personal website at IAAS
 - david.schumm@iaas.uni-stuttgart.de
 - <http://www.iaas.uni-stuttgart.de/institut/mitarbeiter/schumm/index.php>
- Many thanks go to
 - The COMPAS project team
 - The COMPAS team at IAAS
 - The colleagues at IAAS involved in my work
 - The students involved in my research topic

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