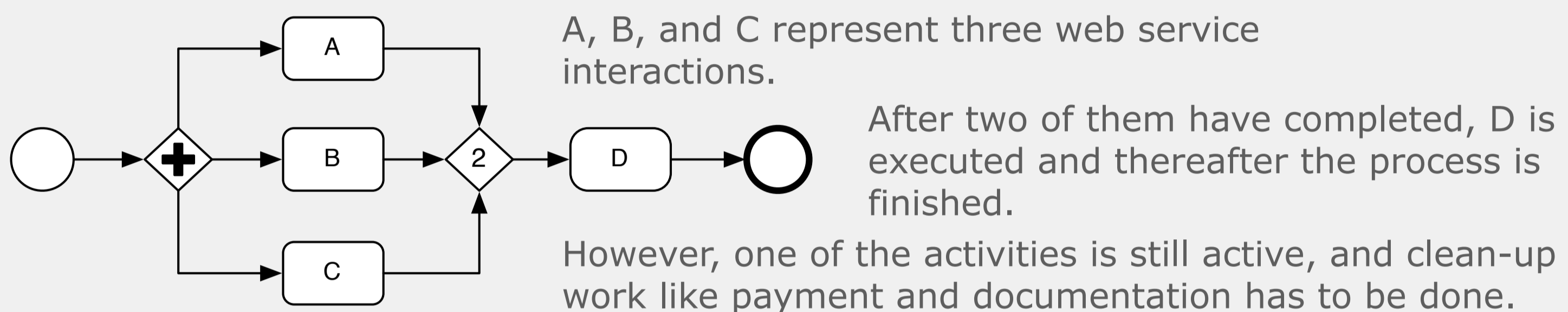# Lazy Soundness

A Prototypical Tool-Chain

Lazy Soundness is a new kind of soundness dealing with so called left-behind or lazy activities. Since these activities can be active while the final activity of the business process has already been reached, processes containing these activities can never be sound. Lazy soundness provides a criterion to prove business processes containing these activities to be free of deadlocks and livelocks.

Problem

A business process containing Discriminator, N-out-of-M, or Multiple Instances without Synchronization patterns (called the critical patterns), such as

A, B, and C represent three web service interactions.

After two of them have completed, D is executed and thereafter the process is finished.

However, one of the activities is still active, and clean-up work like payment and documentation has to be done.

As the remaining activity contradicts the soundness definition, we can not use existing tools to verify the sample business process. Still, automated verification regarding deadlocks and livelocks is quite important even if you employ one of the critical patterns in your business process.

Solution

Lazy Soundness proves business processes containing the critical patterns (and all others) to be free of deadlocks and livelocks. Technically, it abstracts from all internals of the process and just considers the initial and final node. The abstracted process is verified using bisimulation techniques.
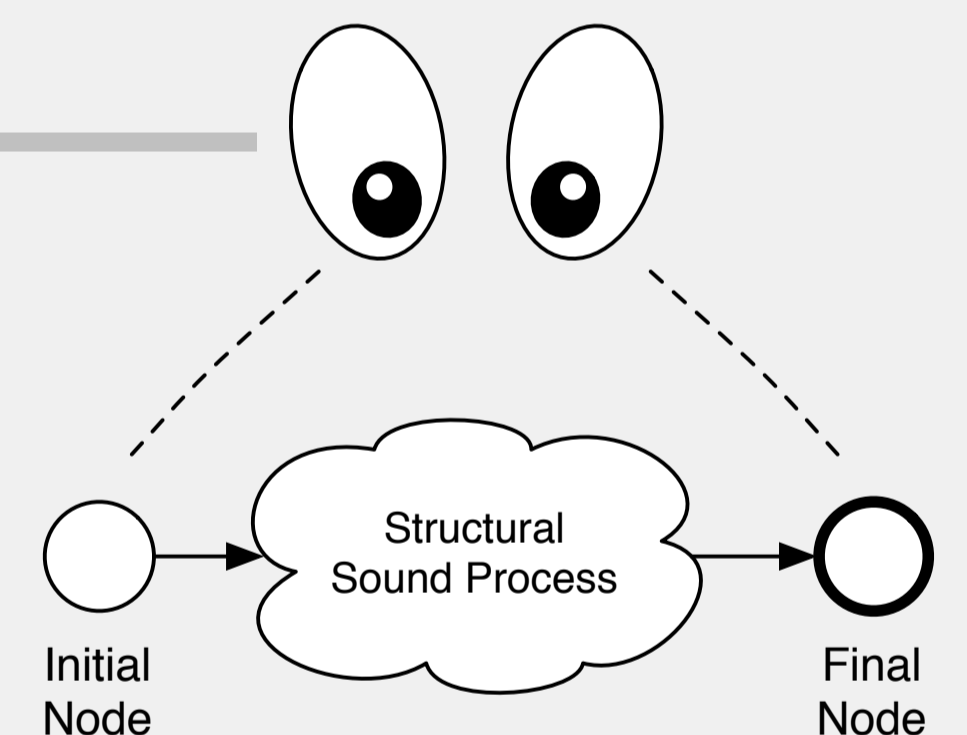
Lazy soundness has been implemented in a prototypical tool chain at our research group. We provide a graphical editing of business processes using BPMN, automatically formalize BPM diagrams into pi-calculus expressions, and use existing tools to decide lazy soundness for a given business process.

Demo Presentation:
Thursday, Sep 7 10:30am, Room EI10

The theoretical background of Lazy Soundness will be presented on Tuesday, September 5 16:30am, Room EI9.

Prof. Dr. Mathias Weske
Frank Puhlmann
Business Process Technology Group
Hasso Plattner Institute
Campus Griebnitzsee
14482 Potsdam, Germany
http://bpt.hpi.uni-potsdam.de

HPI Hasso Plattner Institut

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