Hierarchical Declarative Modelling with Refinement and Sub-processes.

BPM 2014

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Joint work with Tijs Slaats & Thomas Hildebrandt
IT University of Copenhagen, Exformatics
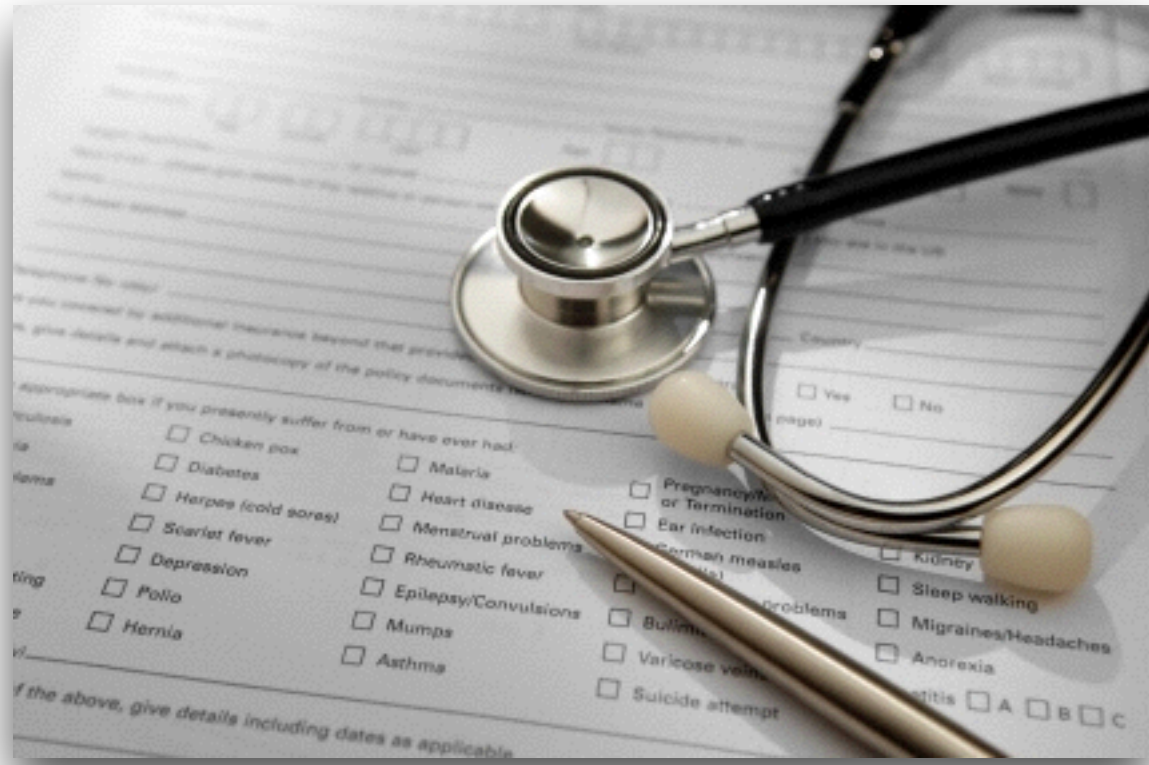
Compliance & Flexibility

What is it that so scares the staff of the Finance Department?

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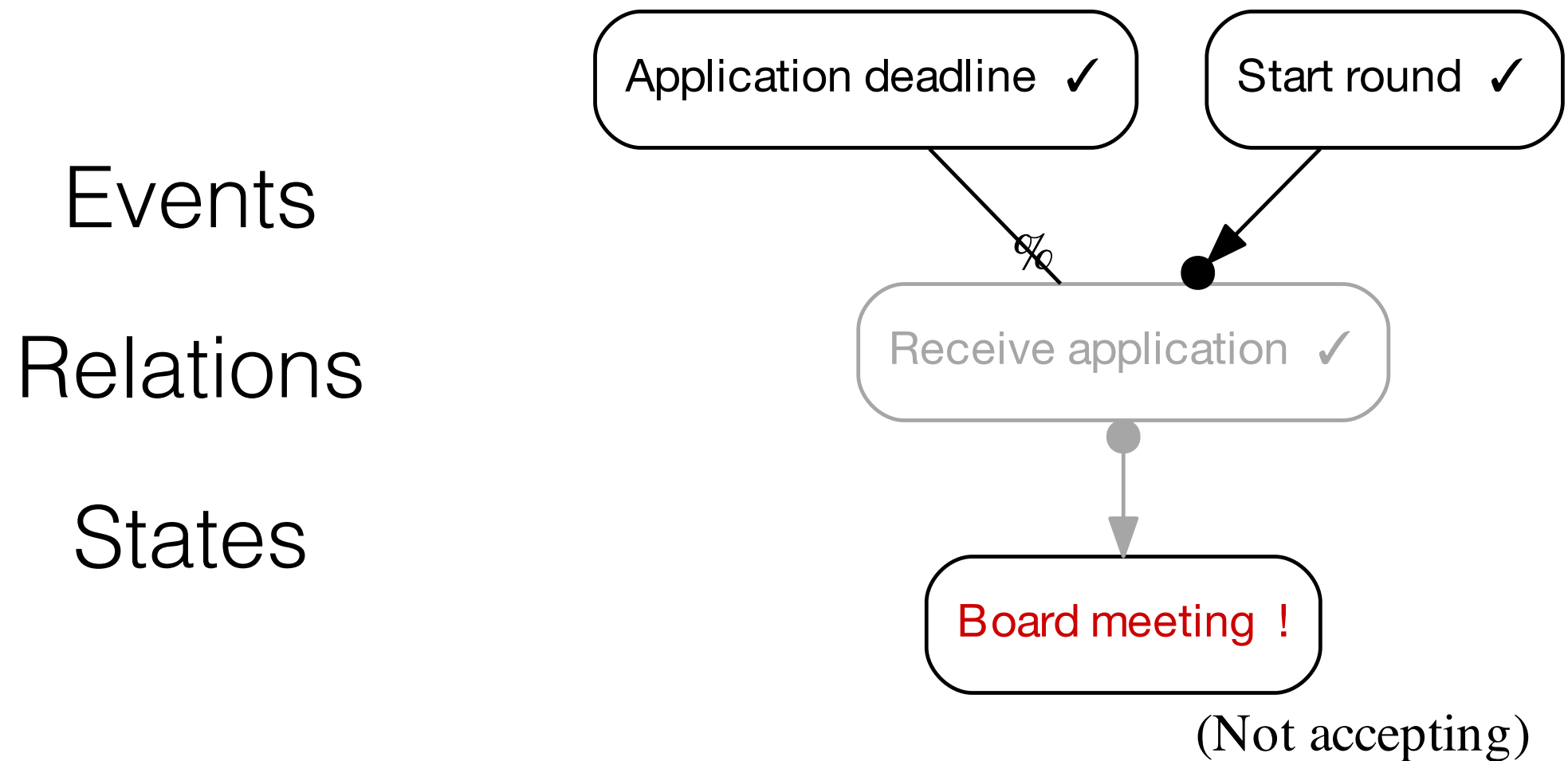
The auditors!

RIGSREVISIONEN

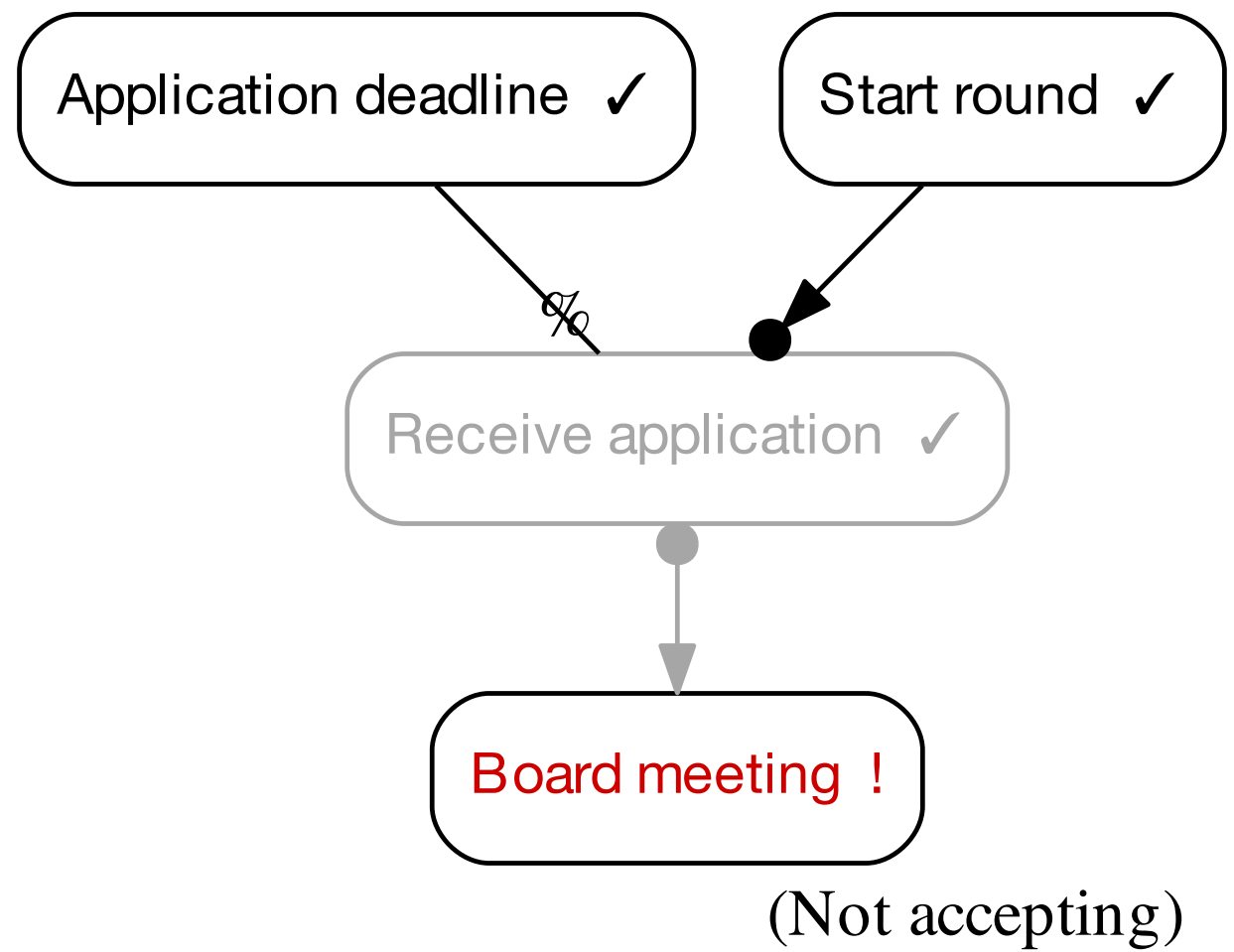# 1. DCR Graphs

DCR Graphs, Formally

Events

Relations

States

Events

Relations

States

Application deadline ✓   Start round ✓

Receive application ✓

Board meeting !

(Not accepting)

7

Design-time = run-time

Events

Relations

States

Application deadline ✓

Start round ✓

Receive application ✓

Board meeting !

(Not accepting)
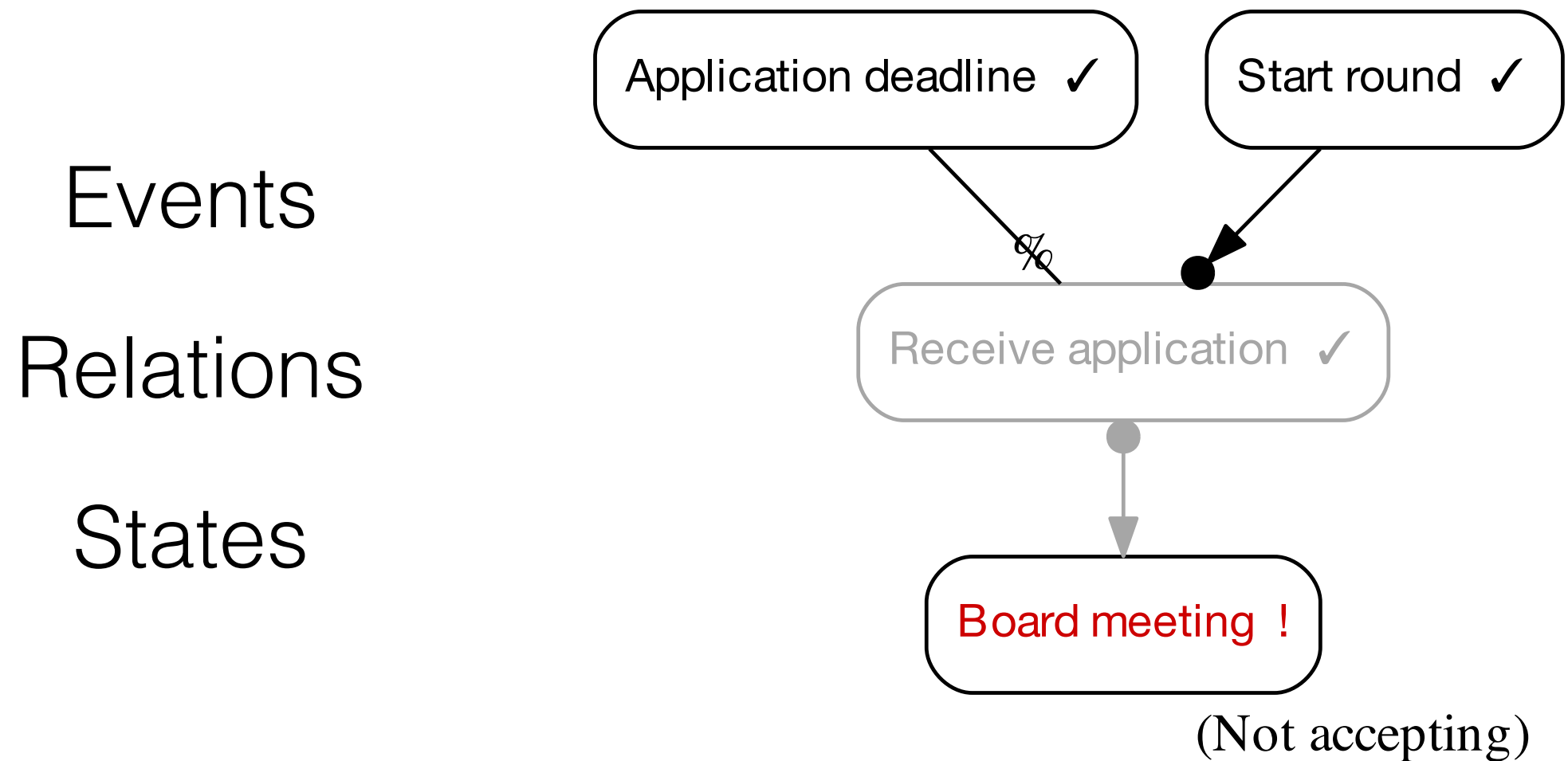
Language of a DCR Graph

Language of a DCR Graph

《S R B》 ok

Application deadline   Start round

%

Receive application

Board meeting

(Accepting)
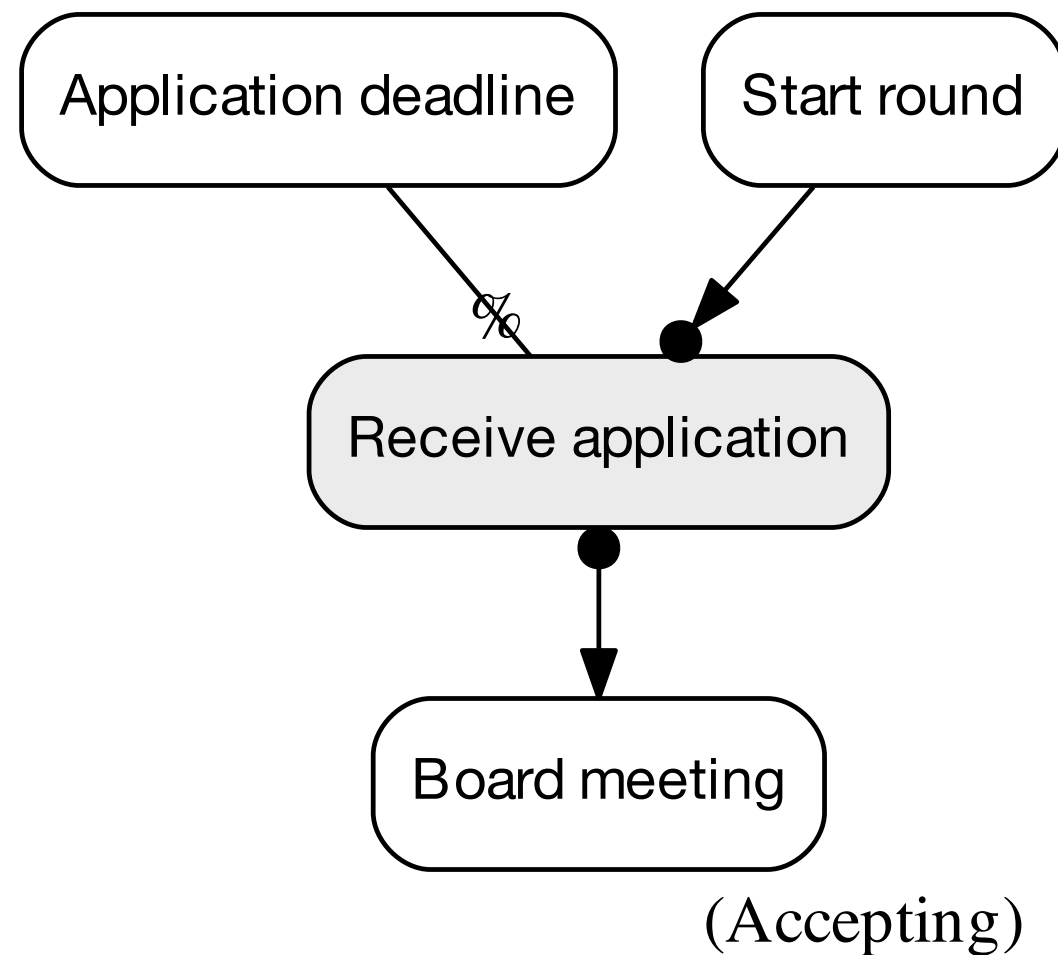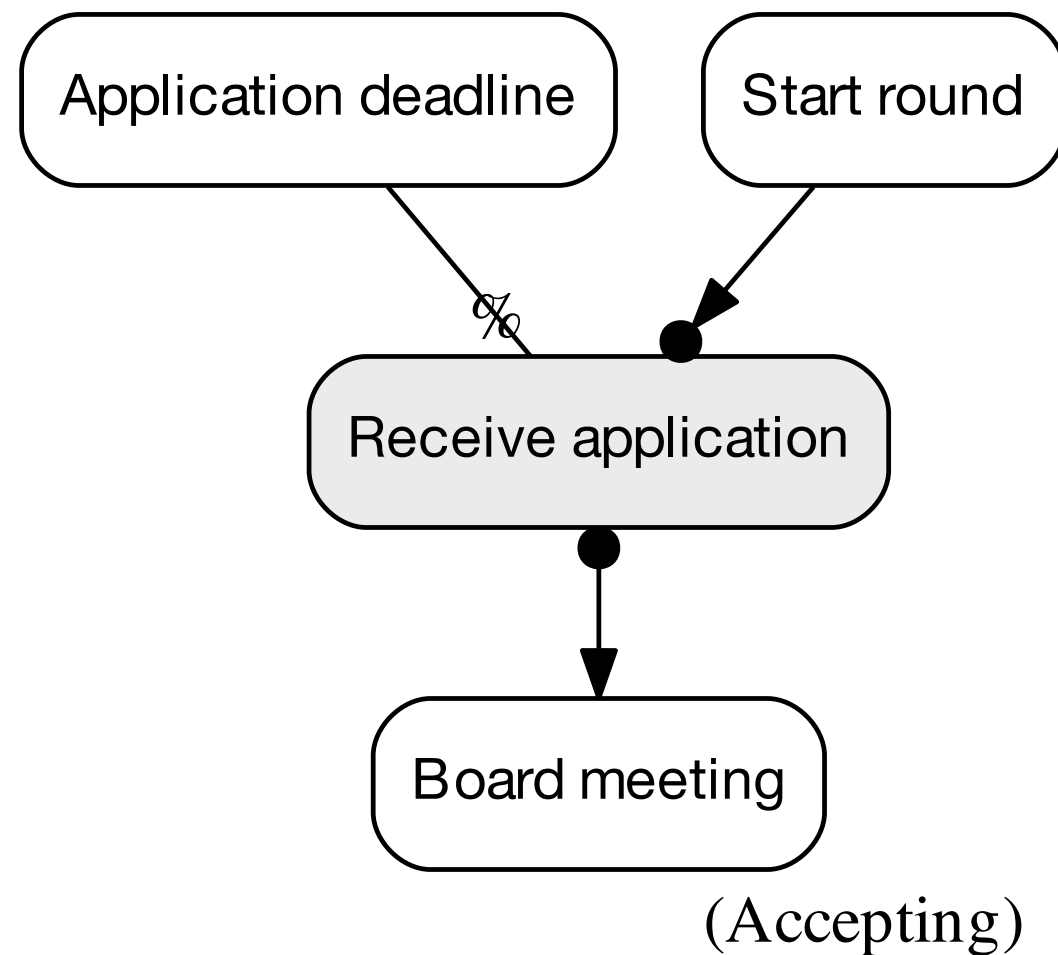
Language of a DCR Graph

《S R B》 ok

《R B》 not ok

Language of a DCR Graph

《S R B》 ok

《R B》 not ok

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《S R B》 ok

《R B》 not ok

《A R》 not ok

Language = Compliance

《S R B》 ok

《R B》 not ok

《A R》 not ok

2. Composition & Run-time Adaptation

Application

Modtager
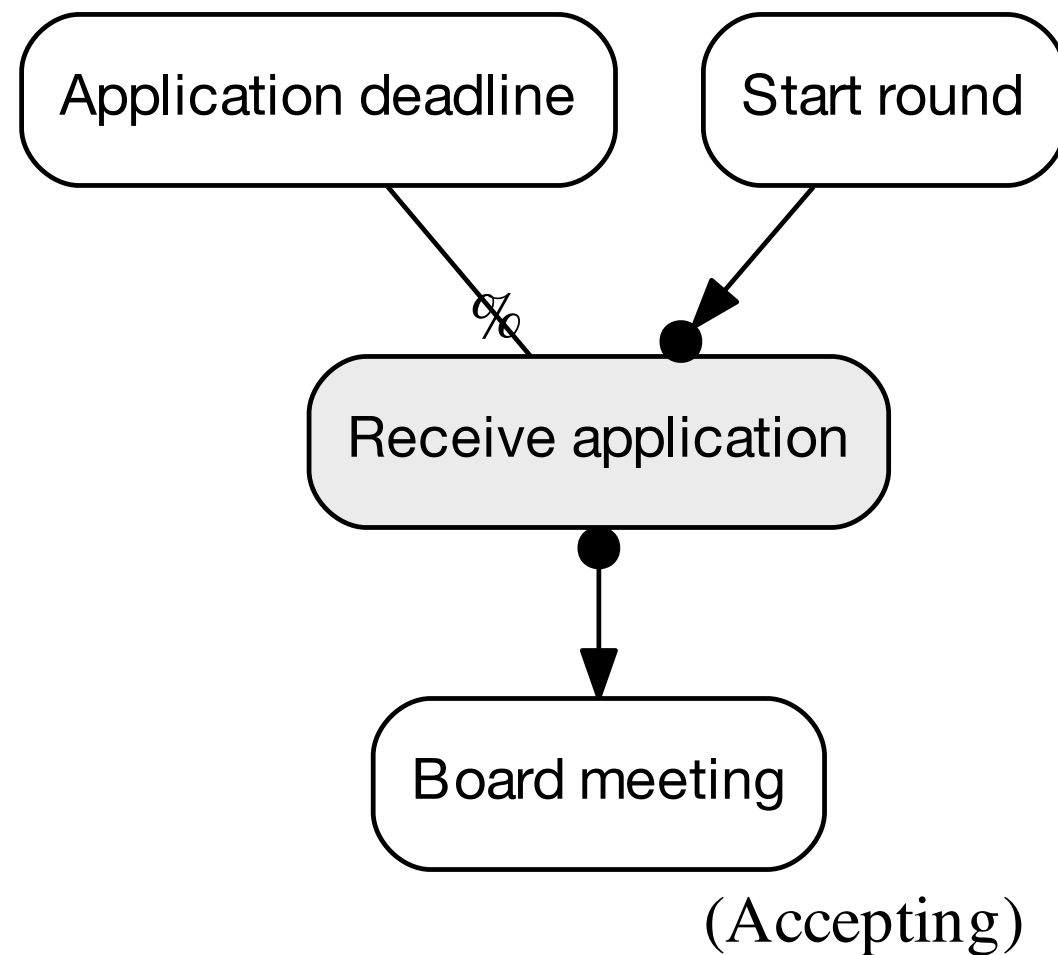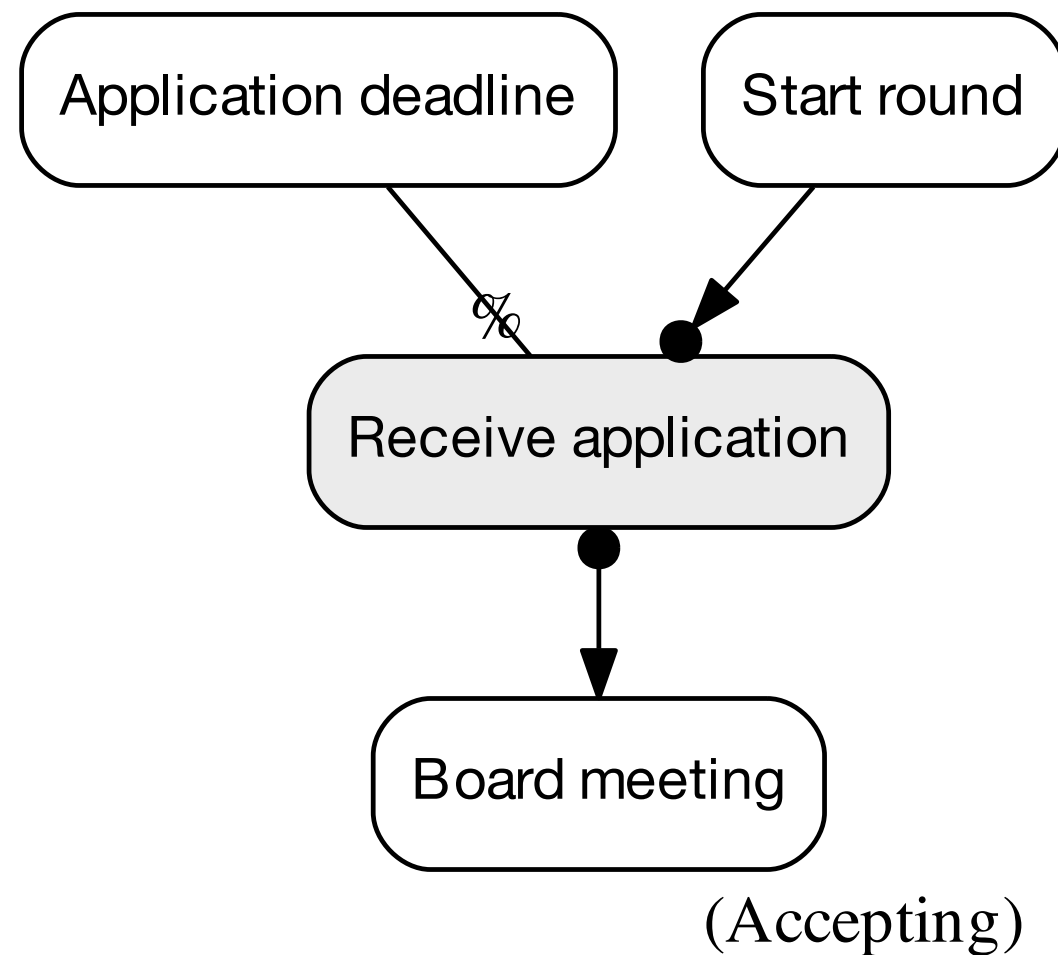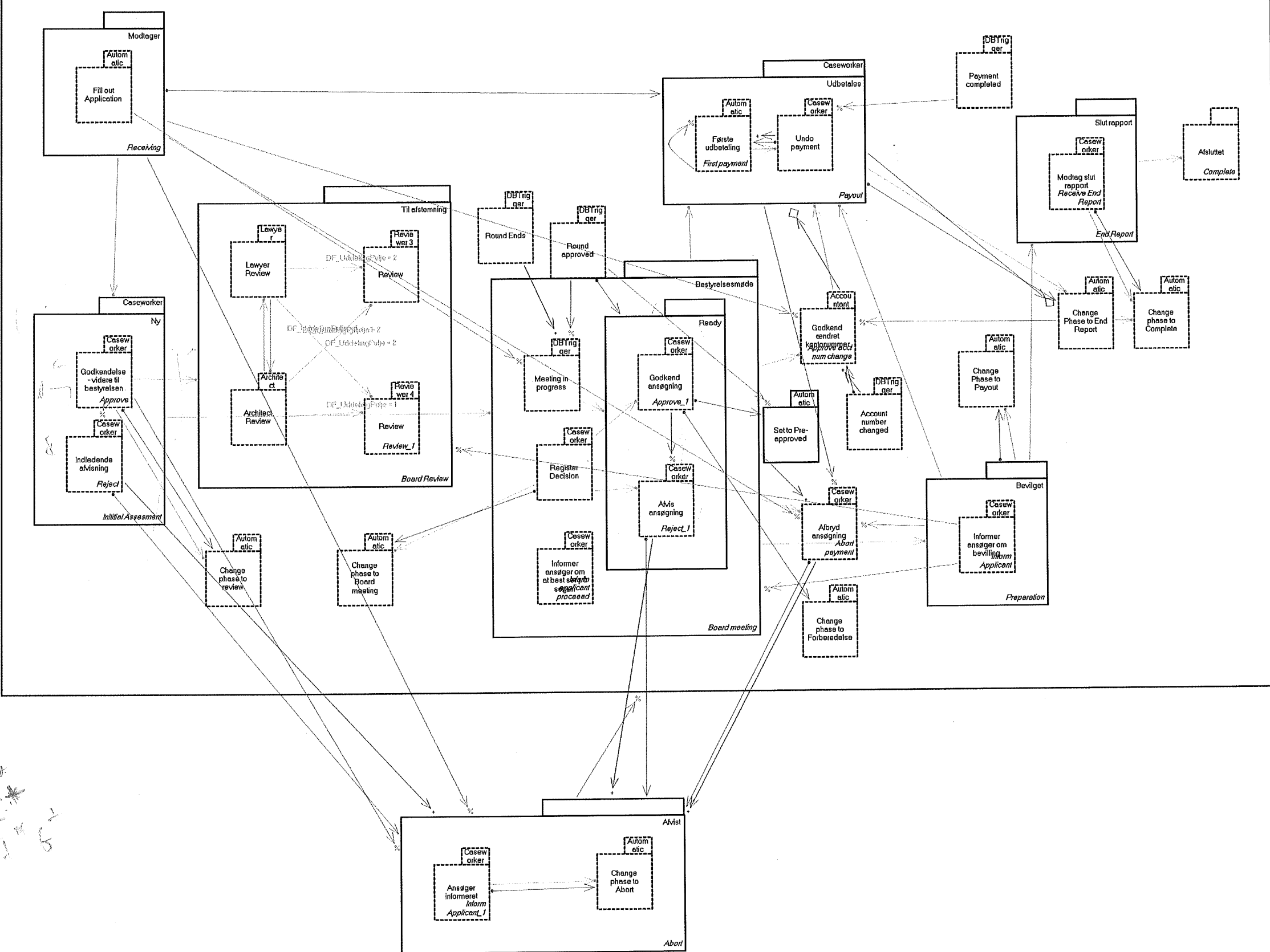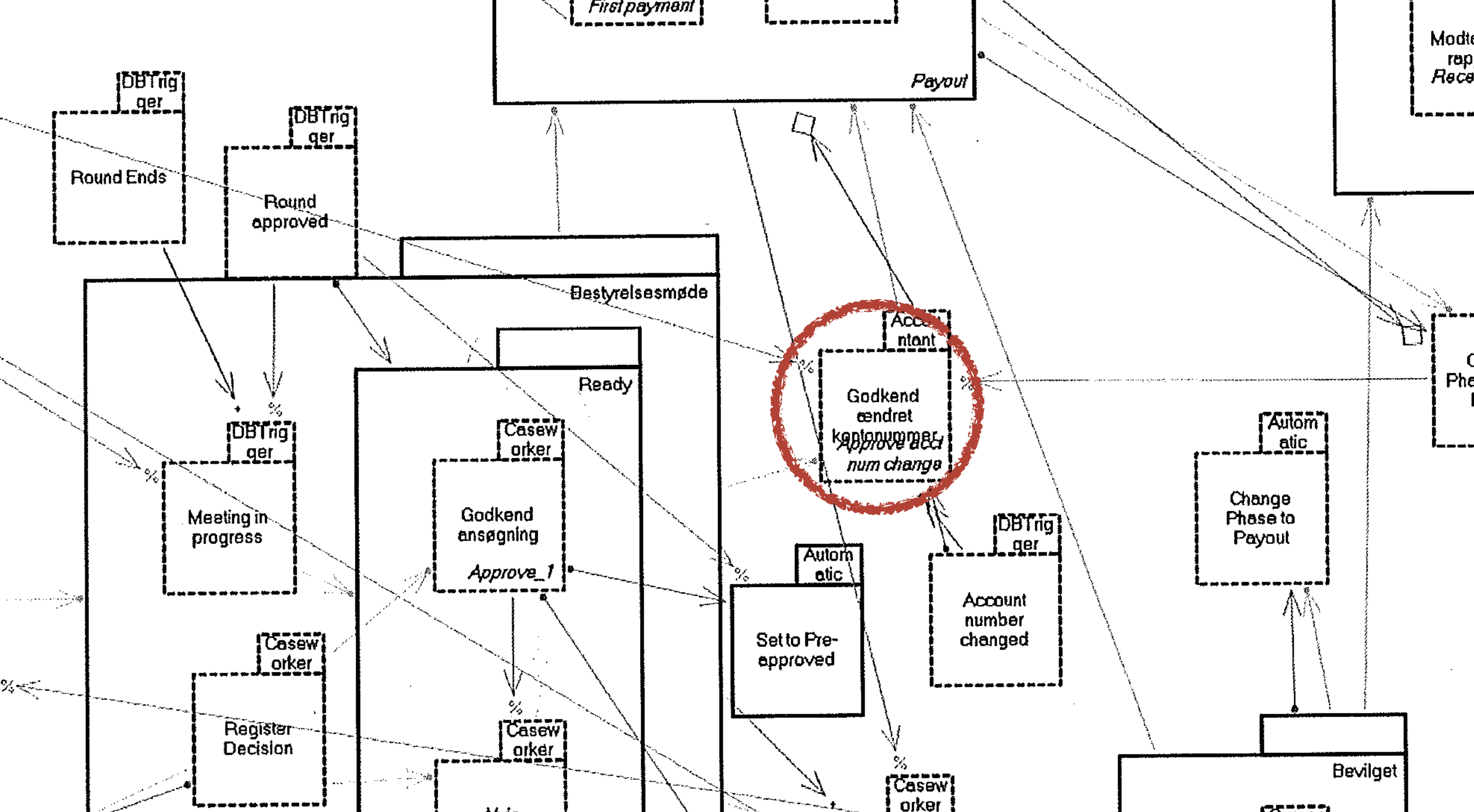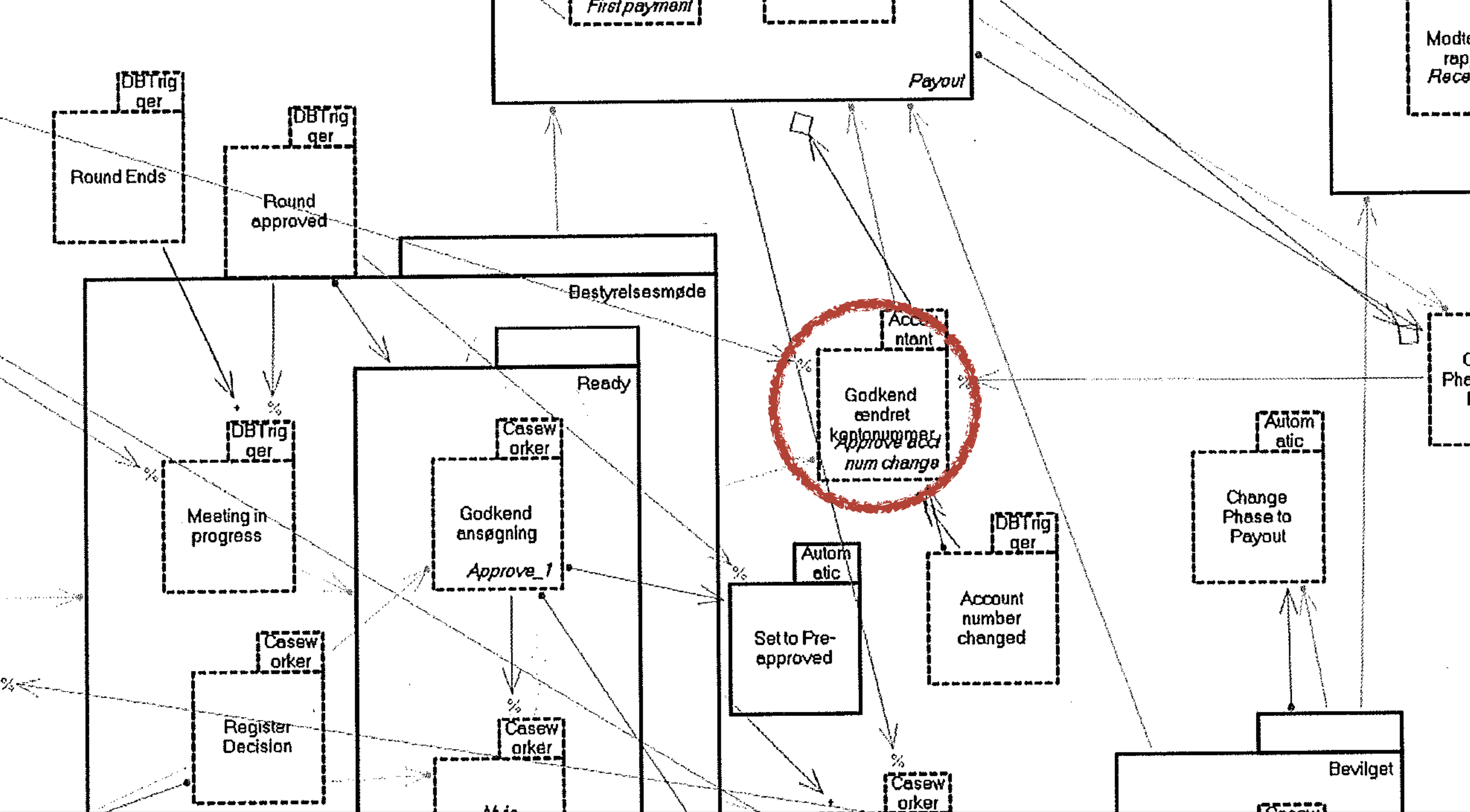
Automatic
Fill out Application

Receiving

Caseworker
Udbetales

Automatic
Første udbetaling
First payment

Caseworker
Undo payment

Payout

DBTrigger
Payment completed

Slut rapport

Caseworker
Modtag slut rapport
Receive End Report

End Report

Afsluttet

Complete

Til afstemning

Lawyer
Lawyer Review

Reviewer 3
Review

DF_UddelingPulje = 2

DF_UddelingPulje = 2

DF_UddelingPulje = 2

Architect
Architect Review

Reviewer 4
Review

Review_1

Board Review

DBTrigger
Round Ends

DBTrigger
Round approved

Bestyrelsesmøde

DBTrigger
Meeting in progress

Ready

Caseworker
Godkend ansøgning
Approve_1

Accountant
Godkend ændret kontonummer
Approve num change

DBTrigger
Account number changed

Caseworker
Register Decision

Caseworker
Afvis ansøgning
Reject_1

Automatic
Set to Pre-approved

Caseworker
Afbryd ansøgning
Abort payment

Automatic
Change Phase to Payout

Caseworker
Ny

Caseworker
Godkendelse - videre til bestyrelsen
Approve

Caseworker
Indledende afvisning
Reject

Initial Assesment

Automatic
Change phase to review

Automatic
Change phase to Board meeting

Caseworker
Informer ansøger om at best skal godkende
Inform applicant proceed

Bevilget

Caseworker
Informer ansøger om bevilling
Inform Applicant

Preparation

Automatic
Change phase to Forberedelse

Board meeting

Automatic
Change Phase to End Report

Automatic
Change phase to Complete

Afvist

Caseworker
Ansøger informeret
Inform Applicant_1

Automatic
Change phase to Abort

Abort

First payment

Payout

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Round Ends

DBTrig
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Round
approved

Bestyrelsesmøde

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Payout

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ansøgning

Approve_1

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Abort
payment

Bevilget

Casew
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Informer
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Inform
Applicant

Casew
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Informer
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Change

Preparation

Design-time = run-time

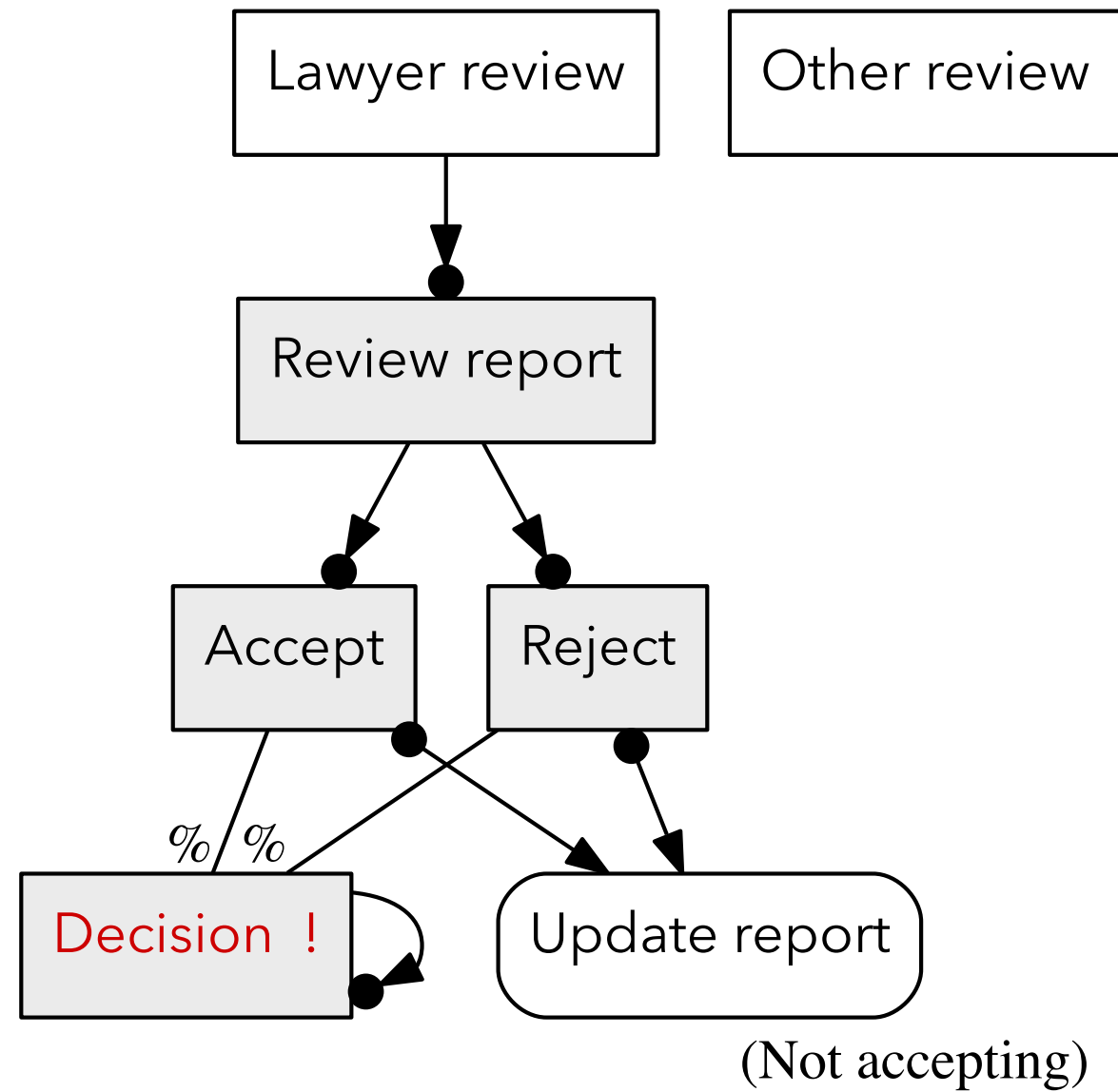**Composition = Graph union***

Adaptation & Compliance

Adaptation & Compliance

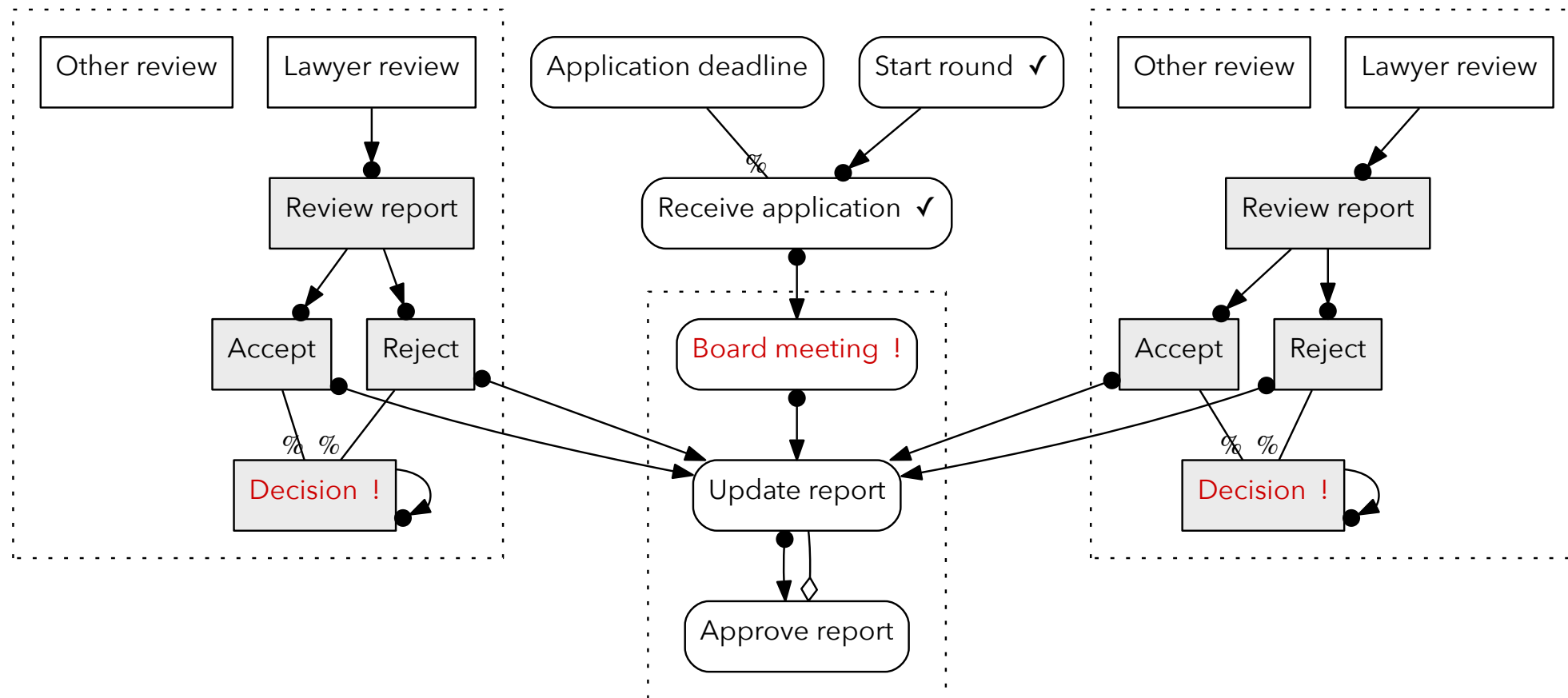- Don't allow anything you wouldn't allow before.

Adaptation & Compliance

- Don't allow anything you wouldn't allow before.

- New language restricted to old activities should be contained in old language

3. Subprocesses

Instantiation & local events

(Not accepting)

Sub-processes are concurrent

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Conclusion

Summary

Summary

- Declarative model

Summary

- Declarative model

- … with safe run-time adaptation

Summary

- Declarative model

- … with safe run-time adaptation

- … and instantiable, concurrent subprocesses.

Future/ongoing work

- Model-checking

- Data, communication

- Usability

- Distribution/true concurrency

Thank you!

Questions?