

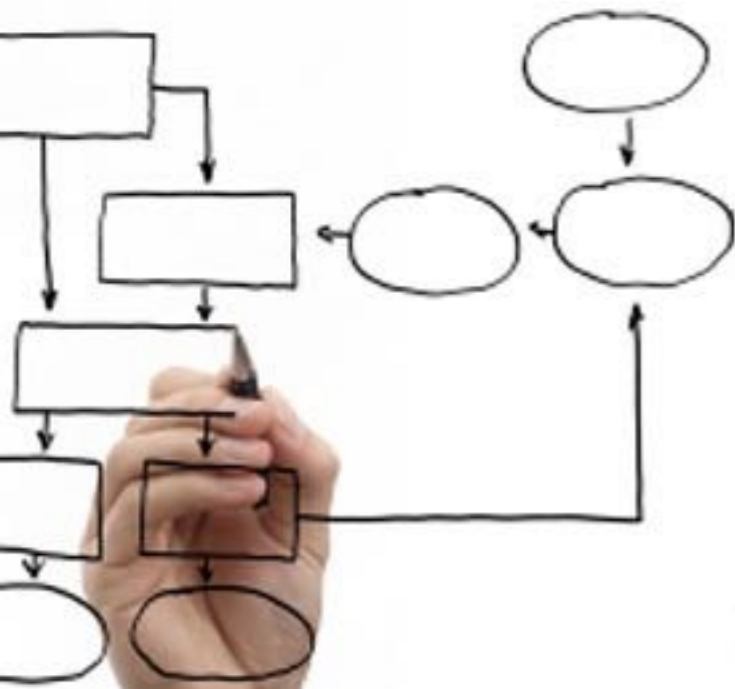
Business Processes Modelling

MPB (6 cfu, 295AA)

Roberto Bruni

<http://www.di.unipi.it/~bruni>

02 - Examples



Insurance claim example

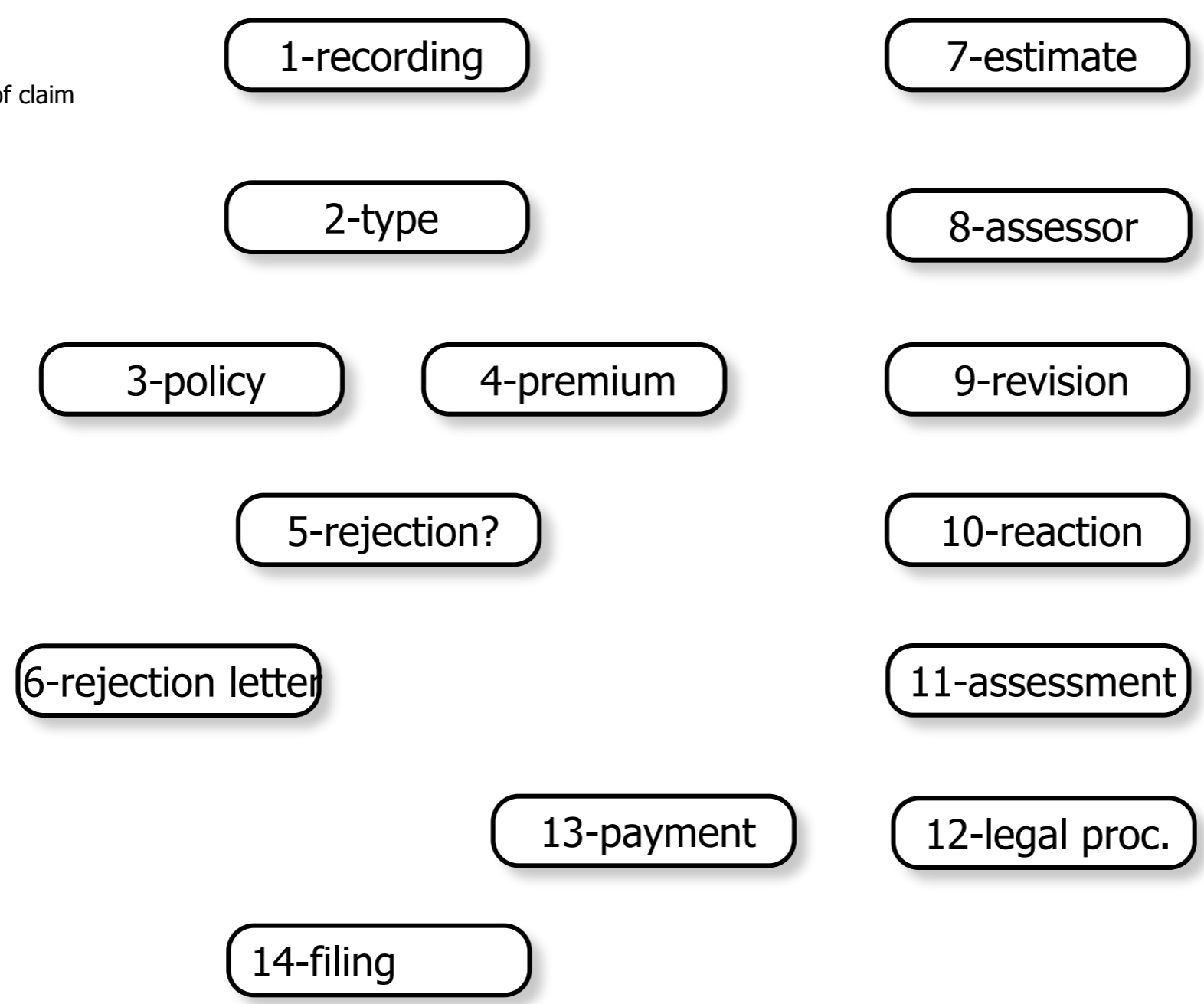
Sect.1.3 of Workflow Management: Models, Methods, and Systems

An example: insurance claim

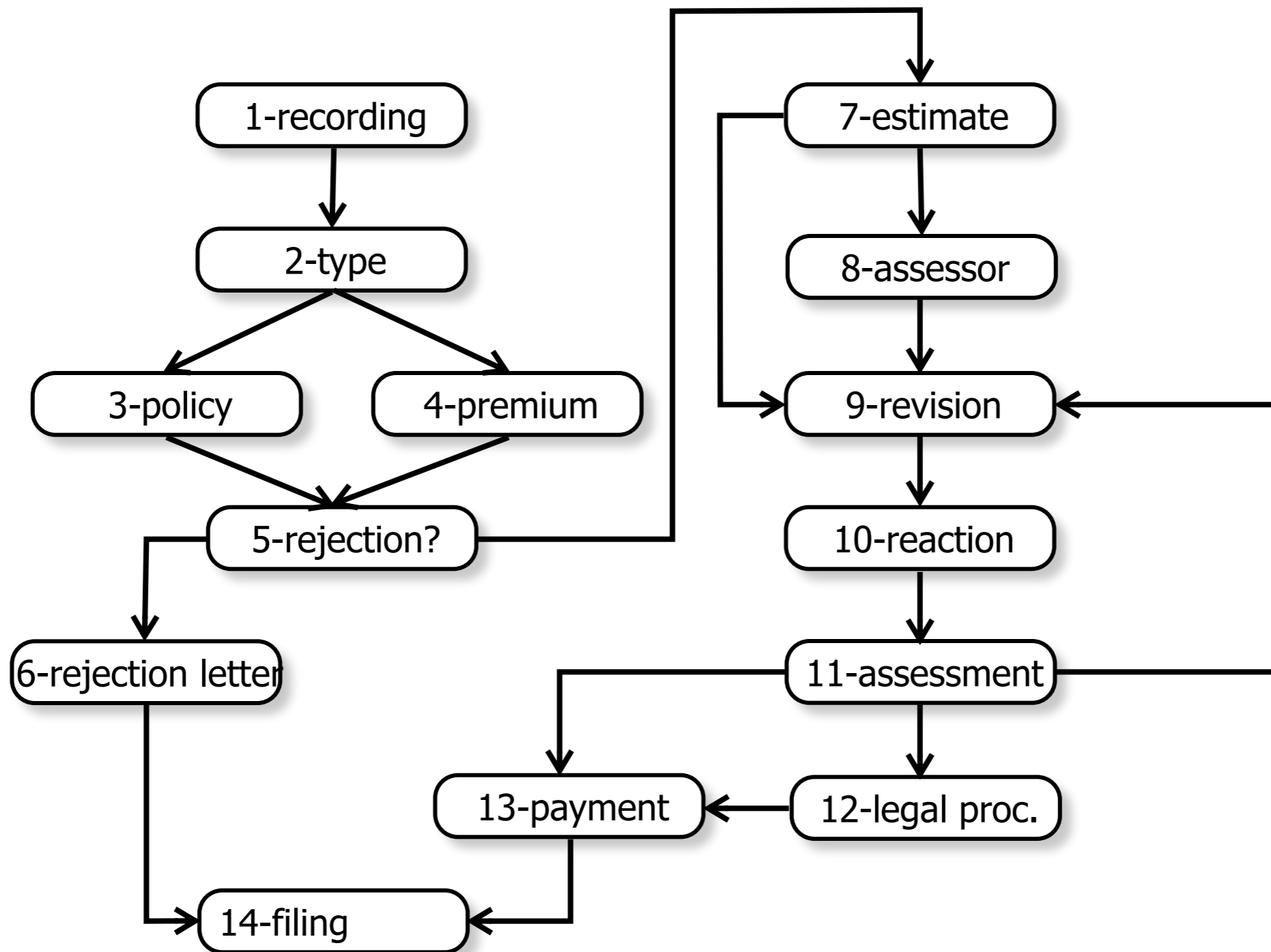
1. **recording** the receipt of the claim
2. establishing the **type** of the claim
3. checking covering of client's **policy**
4. checking the **premium** (payments up to date?)
5. **rejection**, if 3 or 4 has negative result
6. producing a **rejection letter**
7. roughly **estimate** the amount to be paid, if 3 & 4 have positive results
8. appointment of an **assessor**, if needed
9. **revision** of the amount offered to the client
10. recording client's **reaction**
11. **assessment** of objection: decision to revise 9 or take legal action 12
12. **legal proceedings**
13. **payment** of claim
14. **filing** and closure of claim

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Tasks

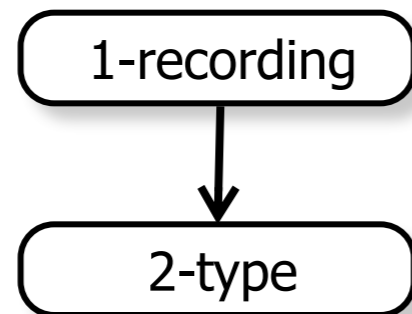


Order / links

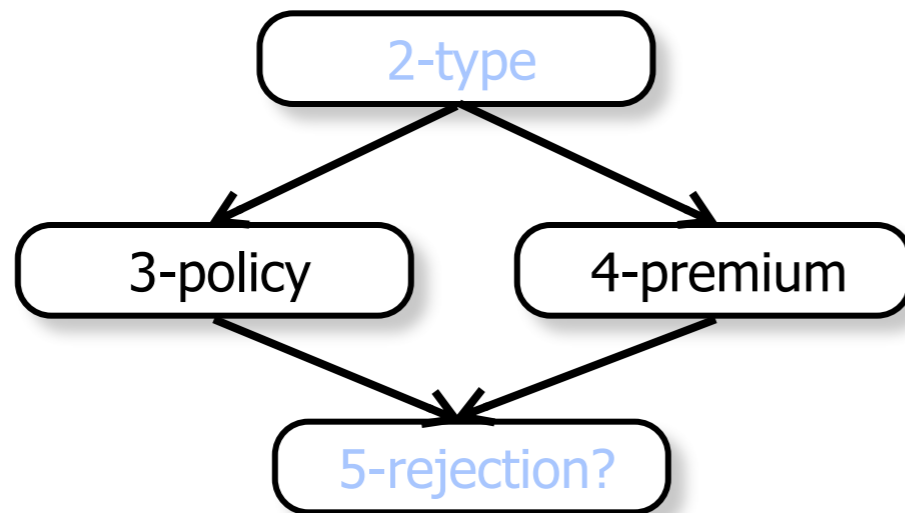


Some link patterns

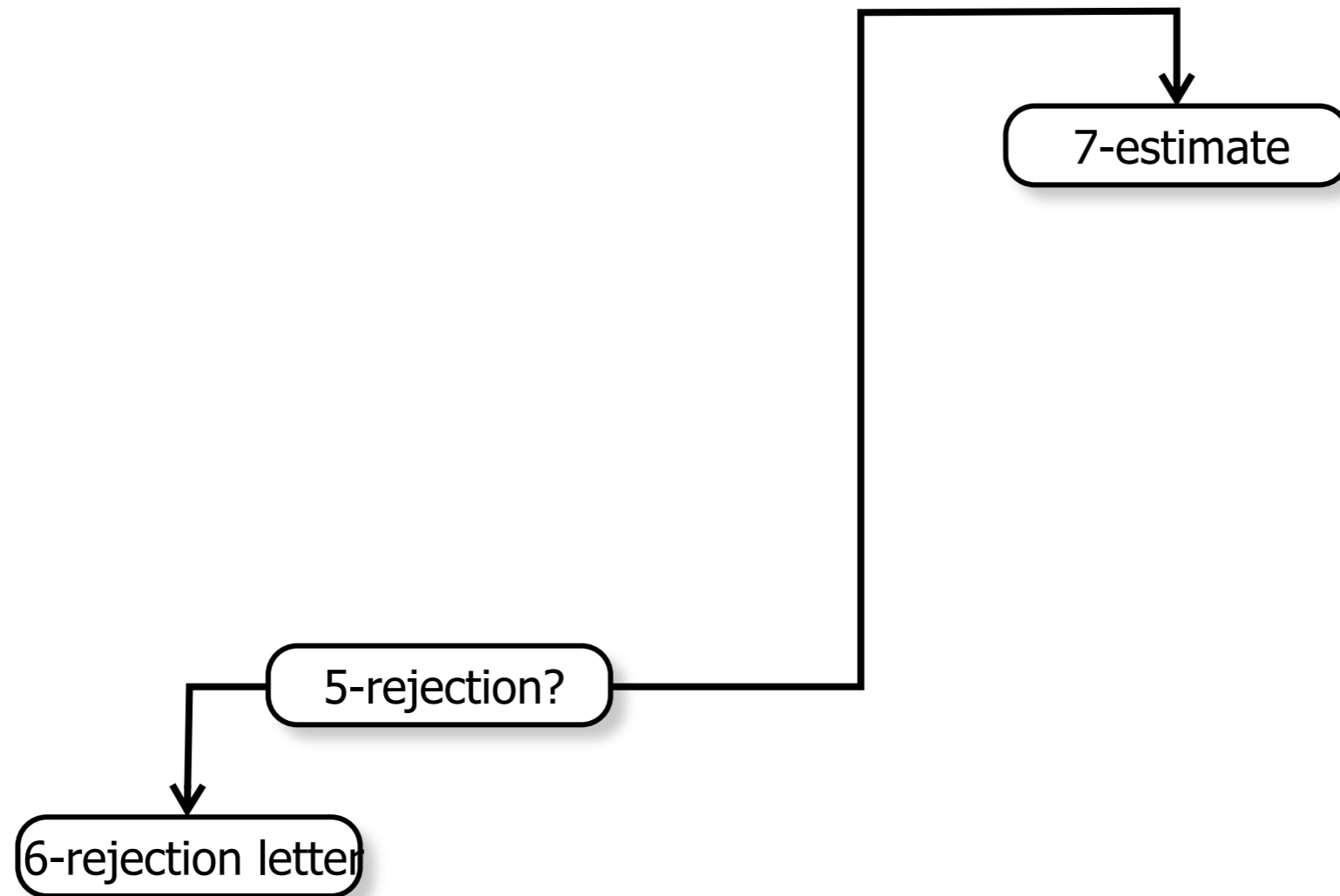
Sequence



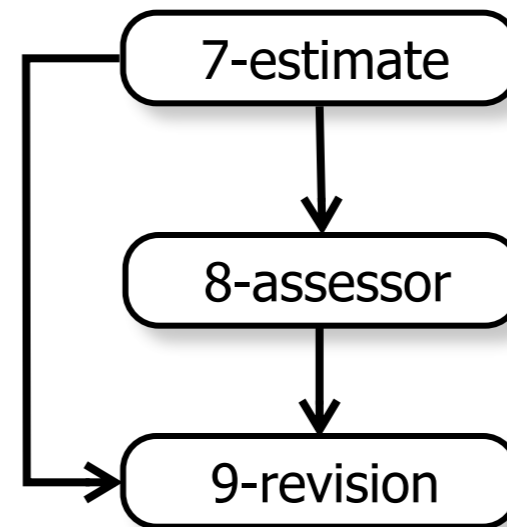
Parallel



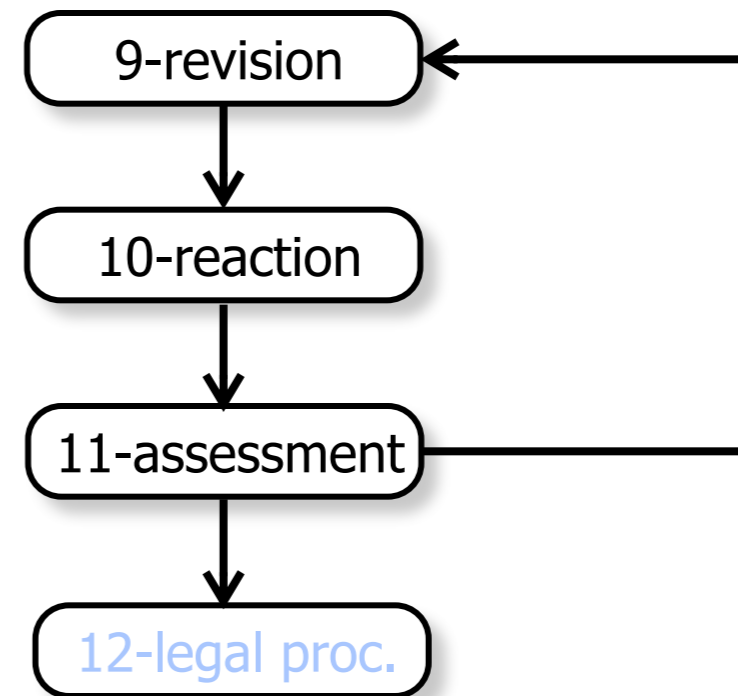
Selection



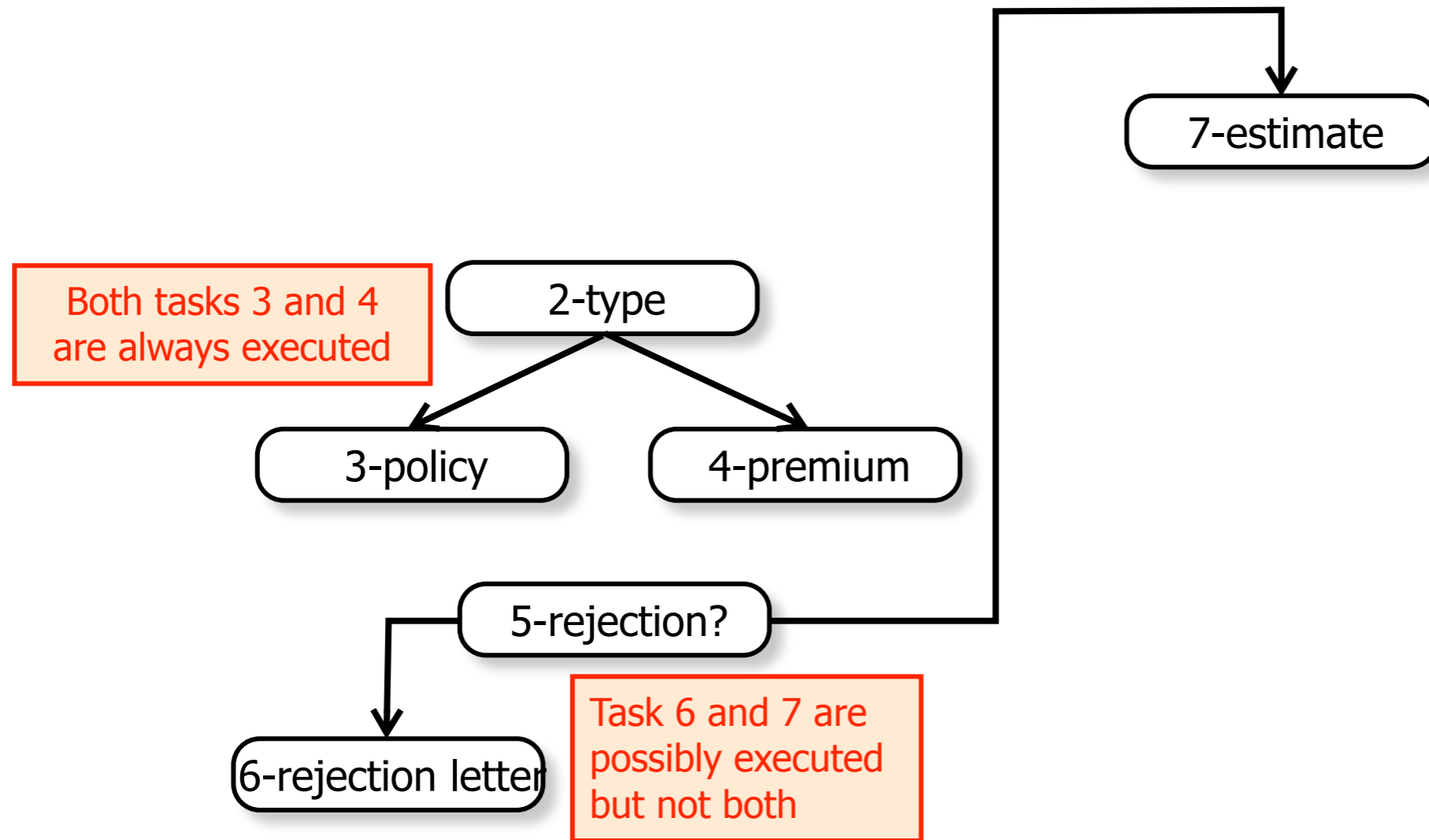
Another selection



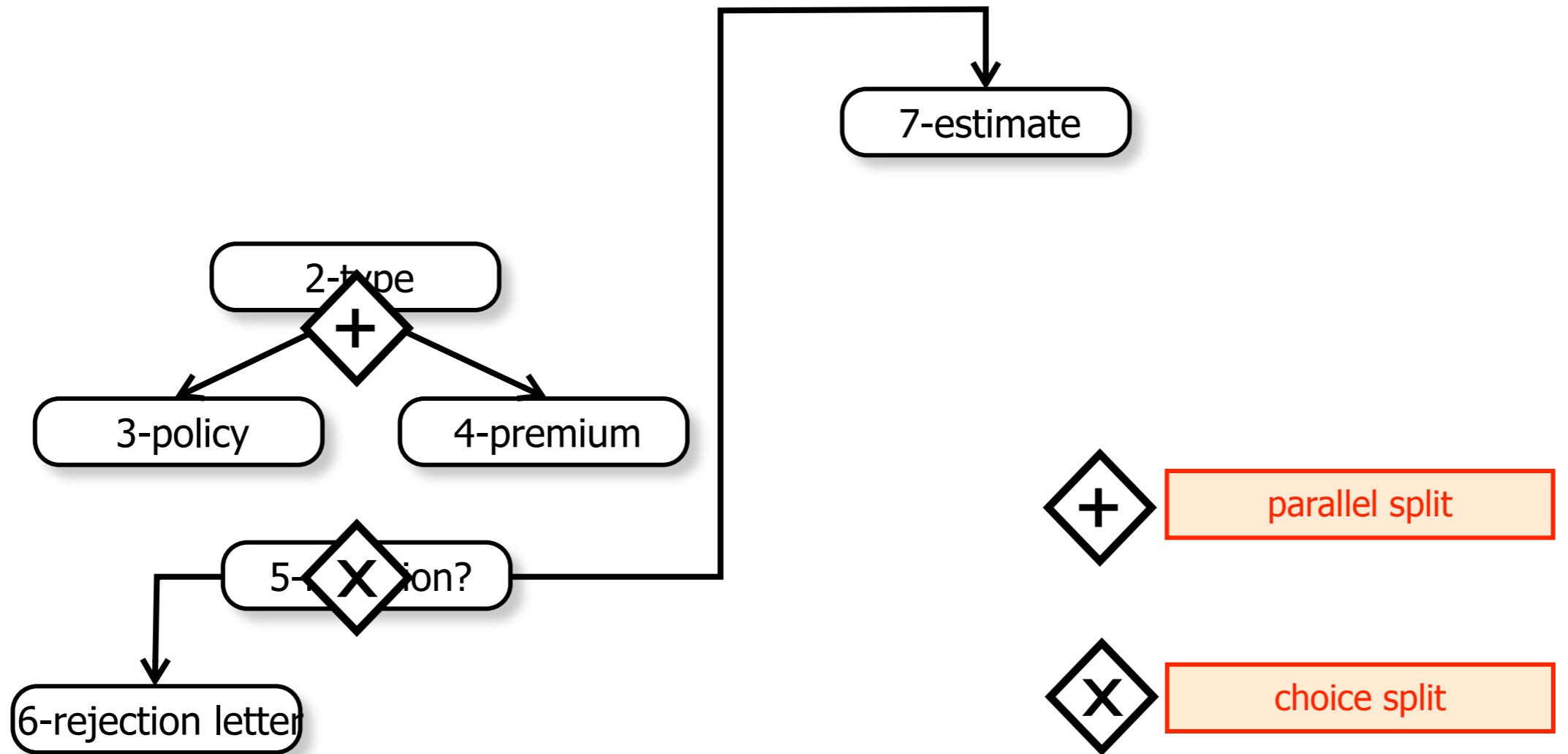
Iteration



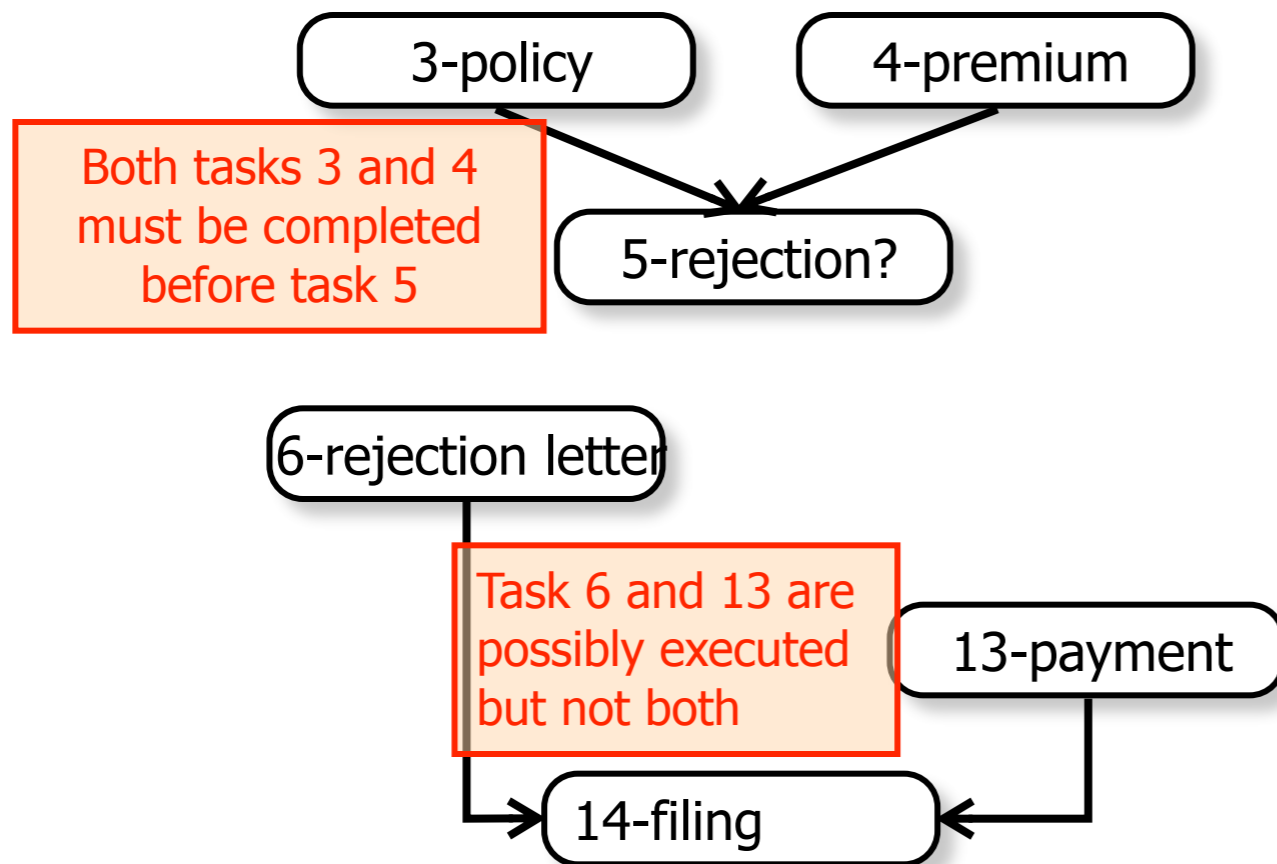
Ambiguity!



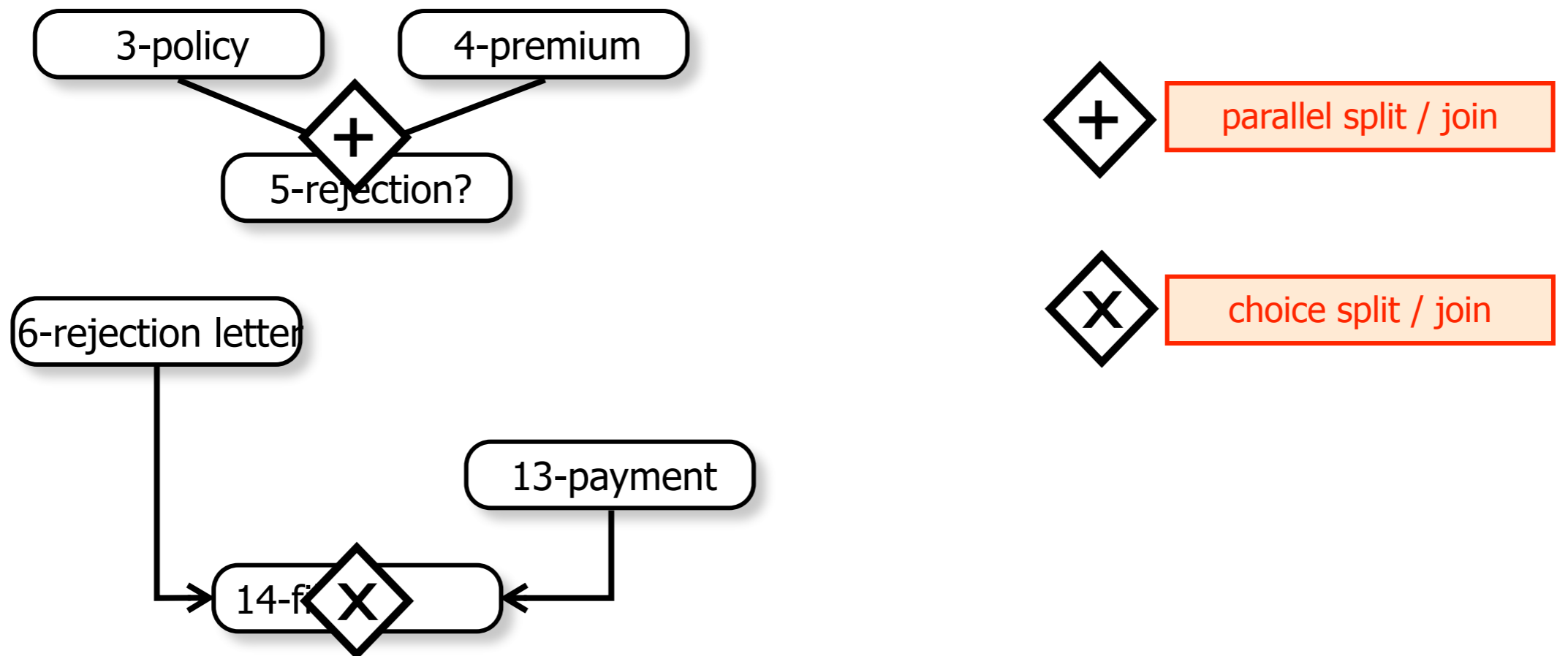
Disambiguation



Ambiguity!



Disambiguation



Orchestration

Business process models are performed in a single organization by definition

Thus, the **ordering of activities** can be controlled by a **business process management system** as a **centralized** software component run by the organization

This kind of control is called **orchestration**

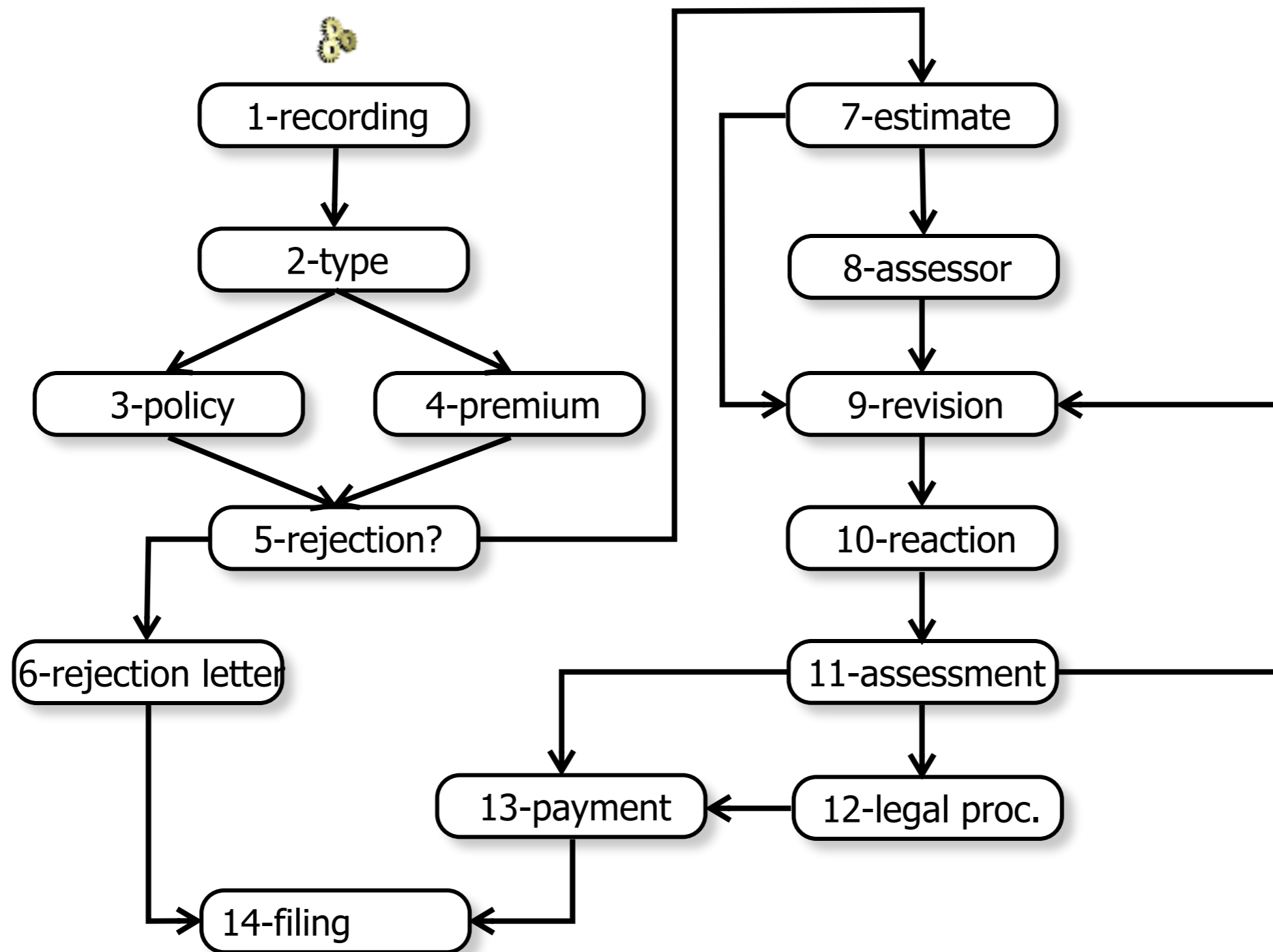
Orchestration

Orchestration is about describing and executing a single view point model

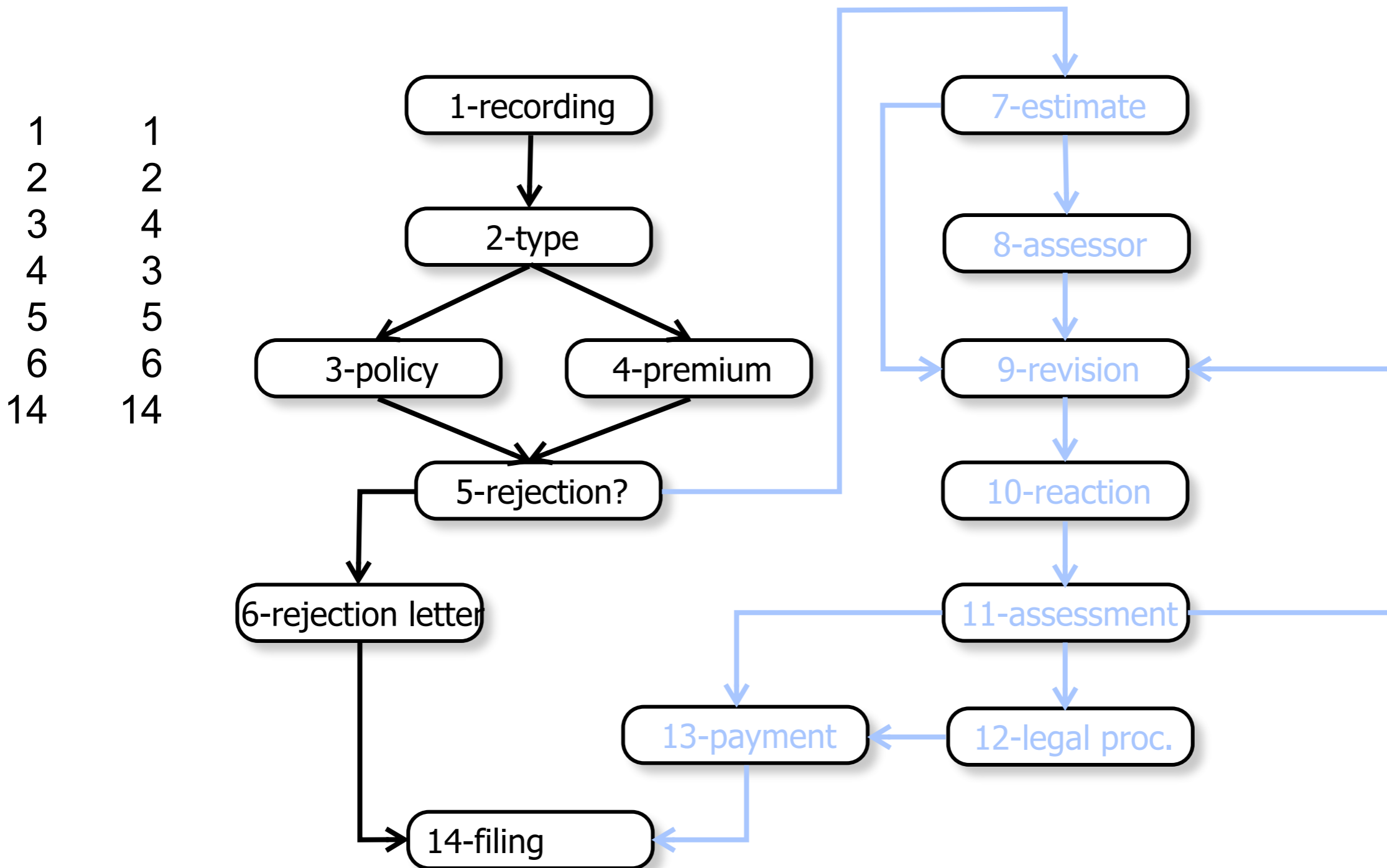
The analogy is with the conductor who centrally controls the musicians in an orchestra



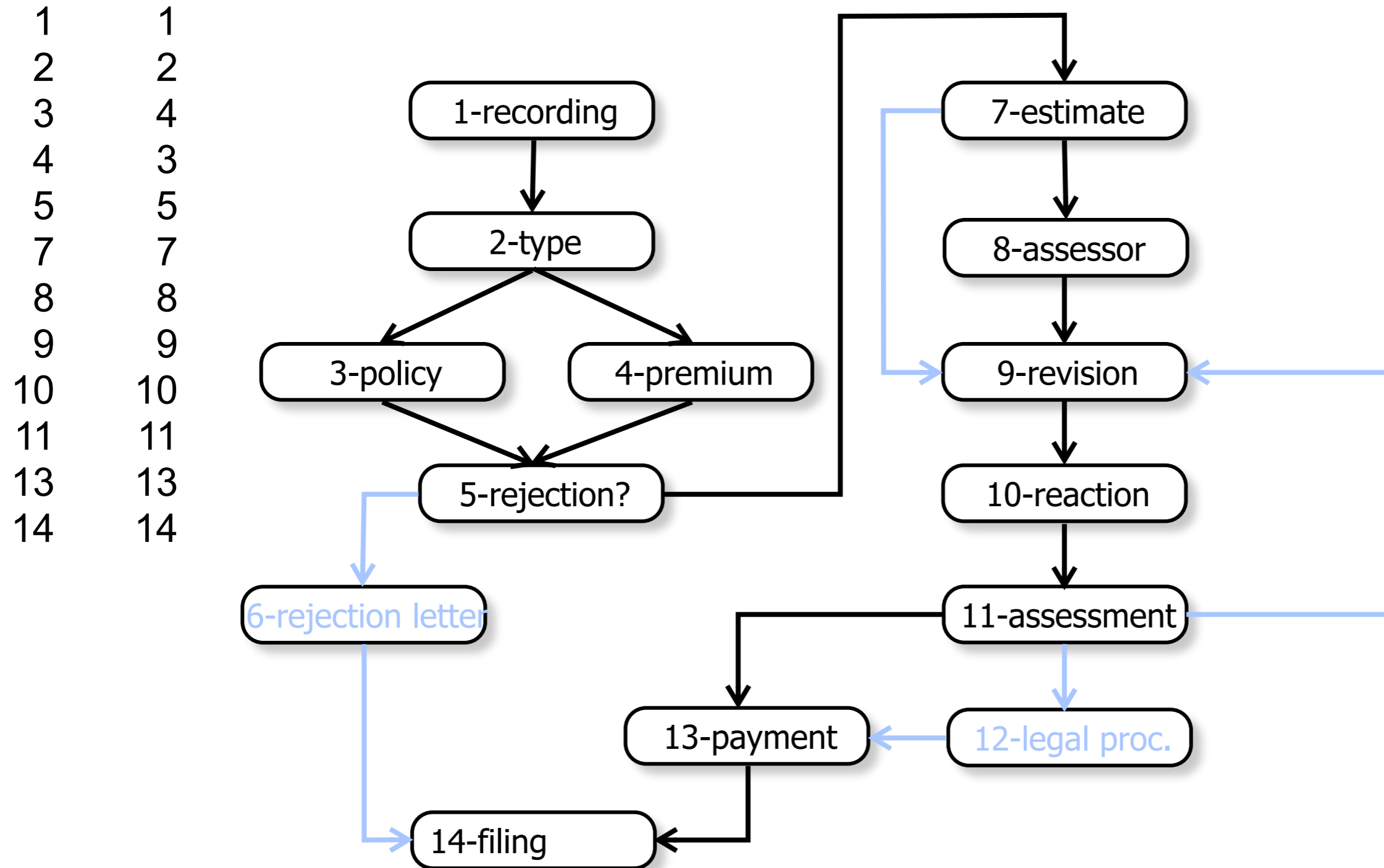
Executing the model



A process instance



Another instance



Workflow management coalition (WfMC)

Founded in the '90s by vendors, users, academia:
fix standard for Wf representation and execution

<http://www.wfmc.org>

Workflow Management Coalition

WfMC

Workflow

Definition: a **workflow** is the automation of a business process, in whole or in part,

during which documents, information, or tasks are passed from one participant to another for action,

according to a set of procedural rules



Workflow management system

Definition: a **workflow management system**

is a software system

that defines, creates, and manages Wfs execution,
running on one or more workflow engines,

able to interpret the workflow definition,

able to interact with workflow participants, and

able to invoke the use of IT tools and applications

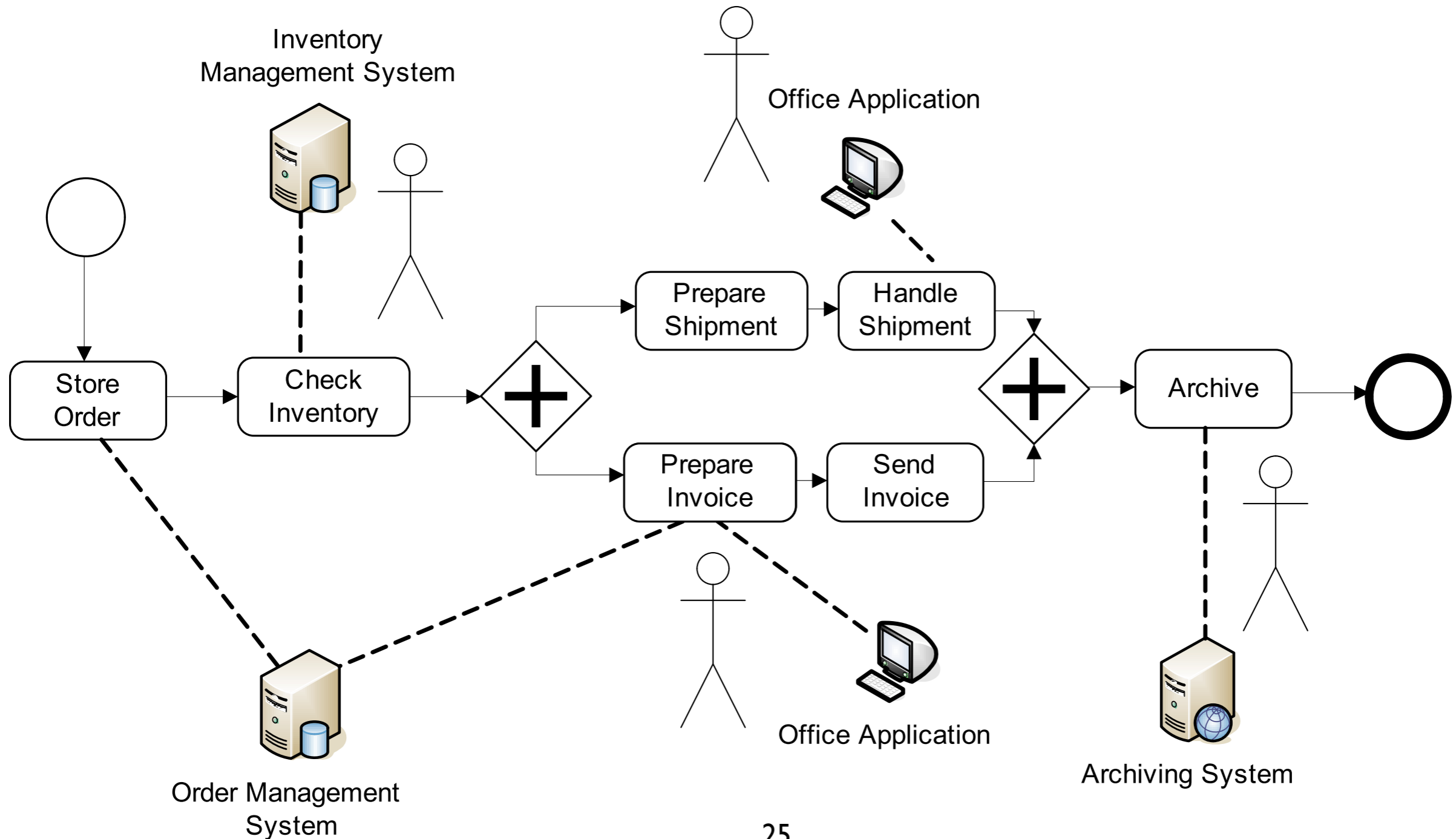


Kinds of workflow

Definition: a **system workflow** consists of activities that are implemented by software systems without any user involvement

Definition: Workflows in which humans are actively involved and interact with information systems are called **human interaction workflows**.

Example: Human interaction workflow



Human interaction workflows

Goal:

support automation by driving the human activities
according to the process model

Benefits:

reduce idle periods
avoid redundant work
improve human/machine work integration

Roles

Roles are groups of employees that qualify for being responsible of certain activities.

Increased flexibility:
different persons can cover the same role at different time in different cases

Human collaboration

When task performed by humans are involved in the workflow, it is not sufficient to equip workers with adequate software:

their collaboration must be supported

shared data repositories and work handover can speed-up office procedure considerably

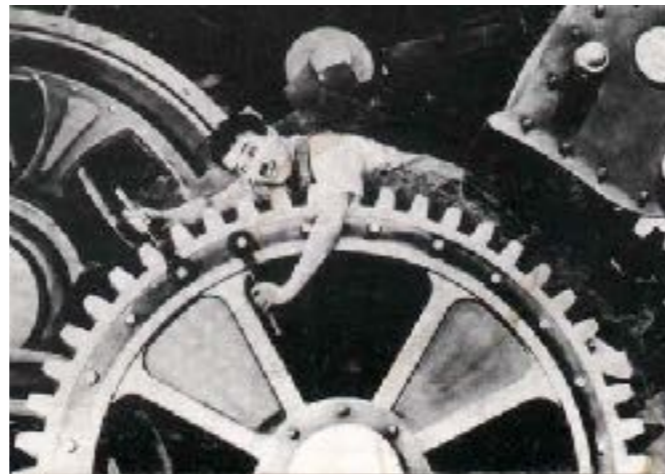
Some limitations

Problems with knowledge workers:

User acceptance issues

Machine burdening of workers

Little room for creativity
and flexibility



Exercise



Travel agency orchestration:

define a series of task for

booking a flight, a hotel and optionally a car, with

the possibility

to change dates,

to cancel the booking,

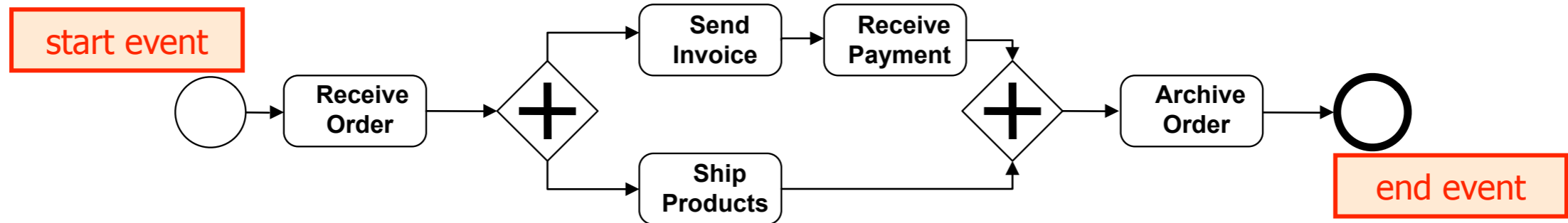
to confirm the booking.

Then, draw a process diagram relating the tasks.

Buyer & Reseller example

Sect.1.1 of Business Process Management: Concepts, Languages, Architectures

Example: Reseller



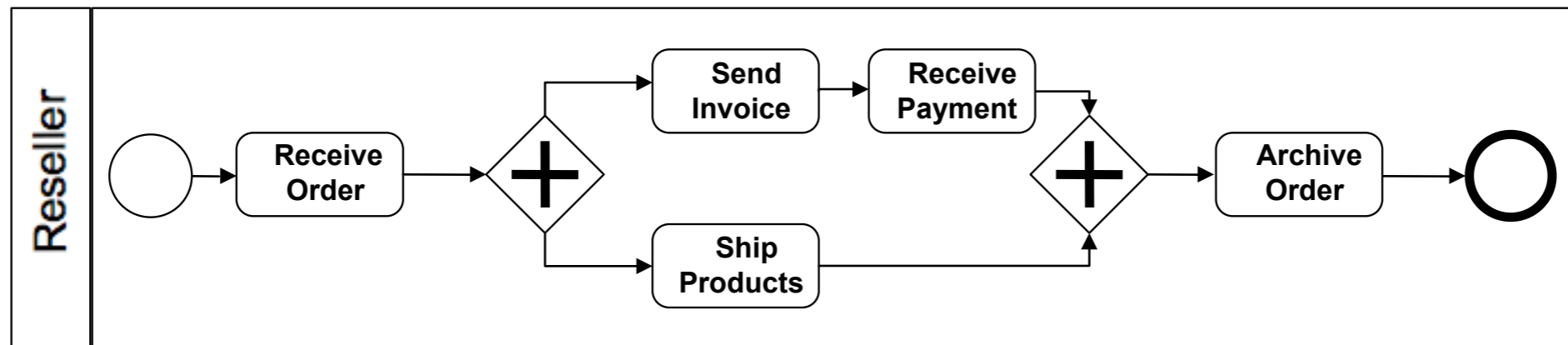
start event

We move to
BPMN-like syntax

end event

Example: Reseller

pool

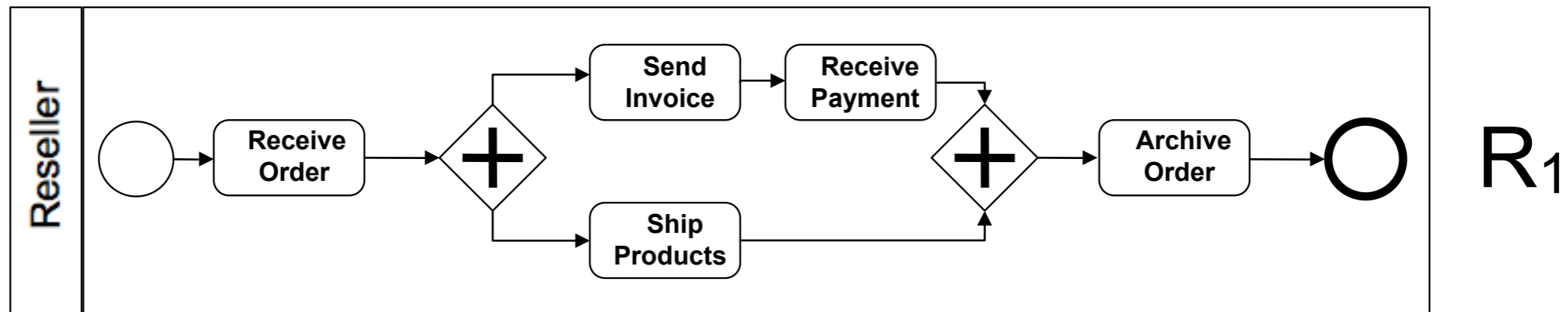


We move to
BPMN-like syntax

A **pool** is a rectangle
that encloses a business process

(it can be divided in **lanes**
to distribute tasks to different actors)

Example: Reseller

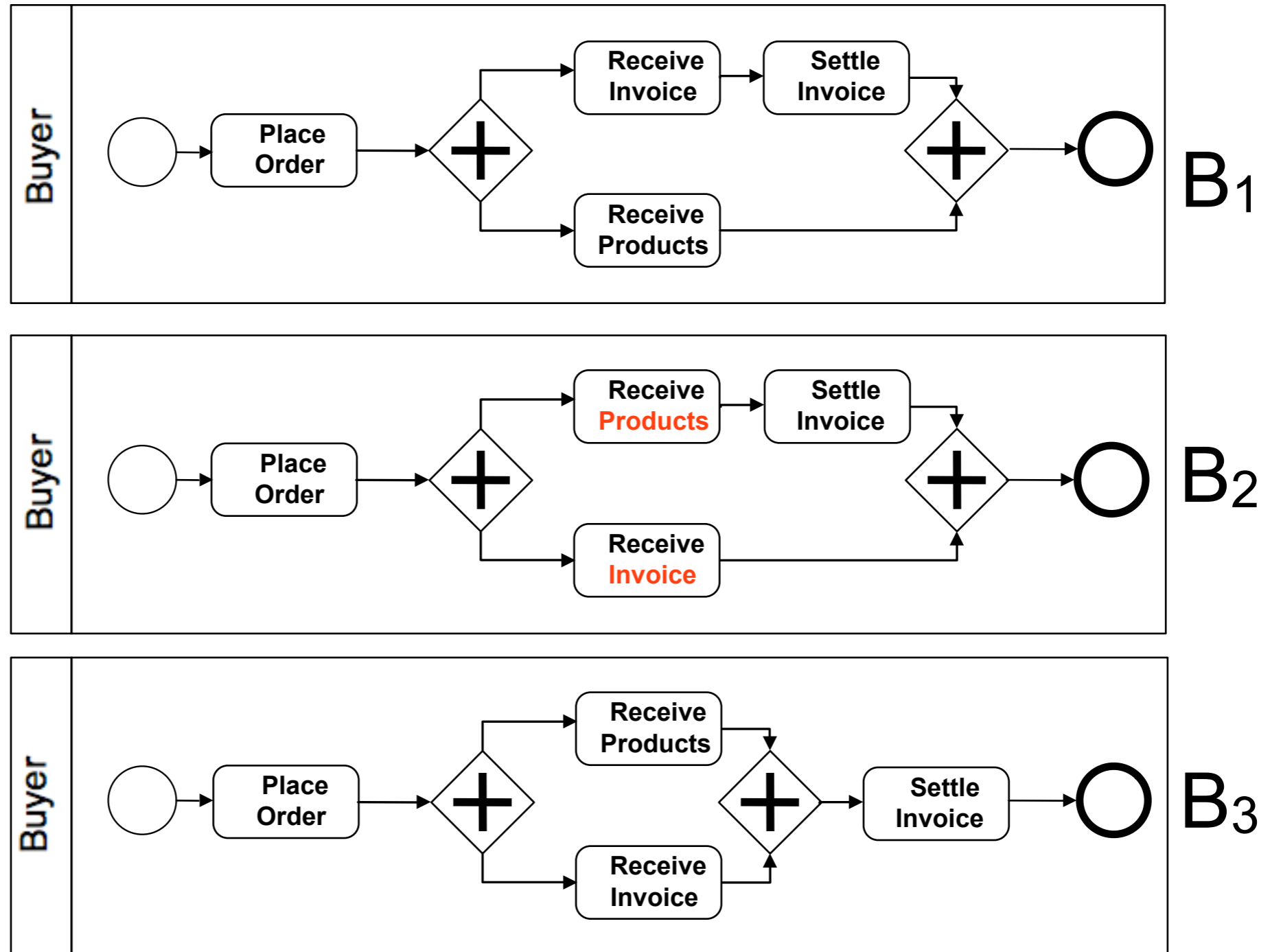


A reseller can use the business process model above to configure the business process management system accordingly

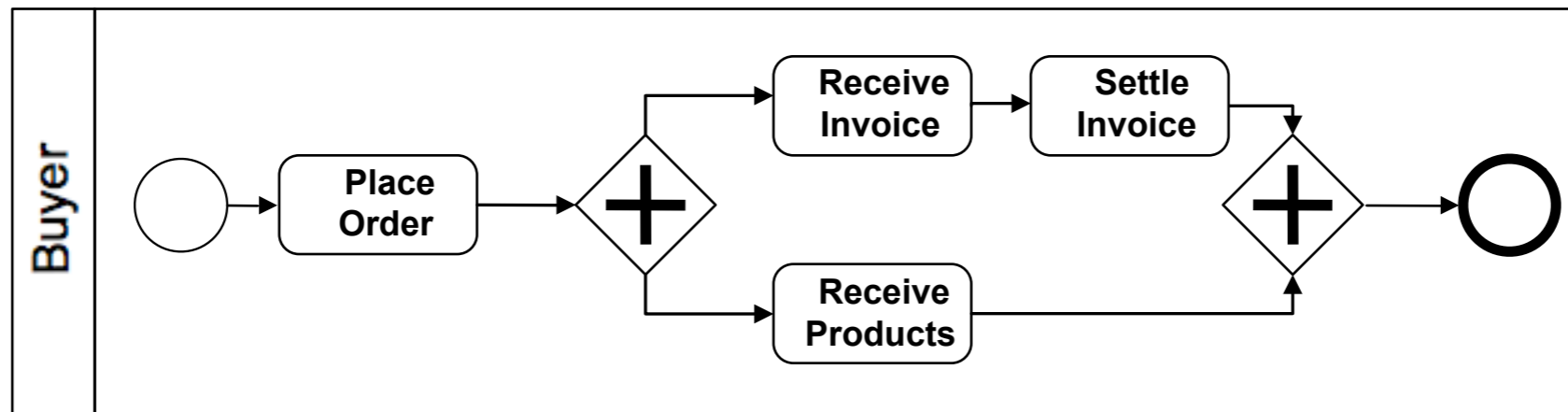
All instances will be executed as specified (after receiving the order, send and ship activities are concurrently executed)

Example: Buyers

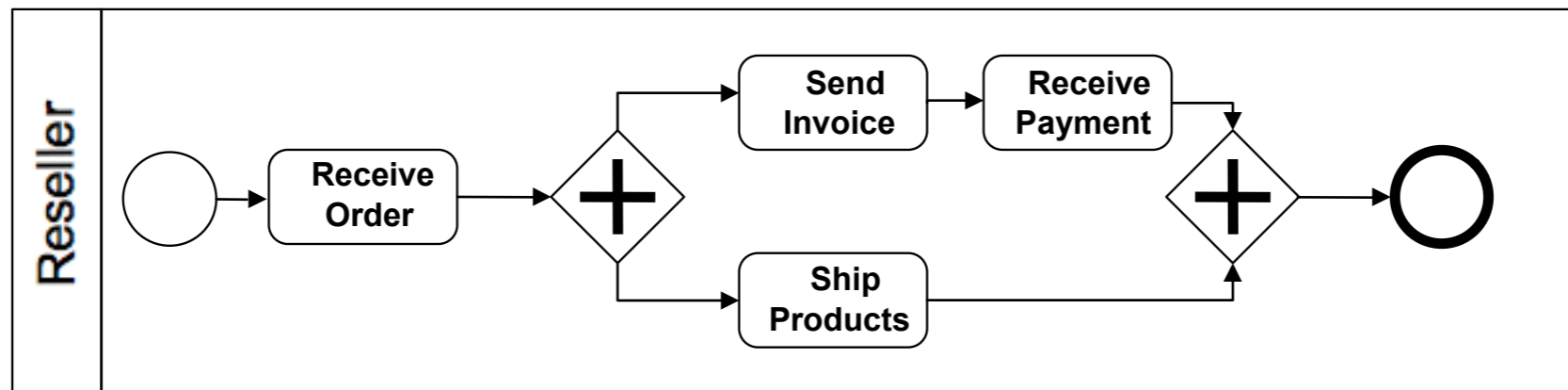
Different processes are possible, but... do they all make sense?



Buyer & Reseller



Separately developed processes need to communicate!



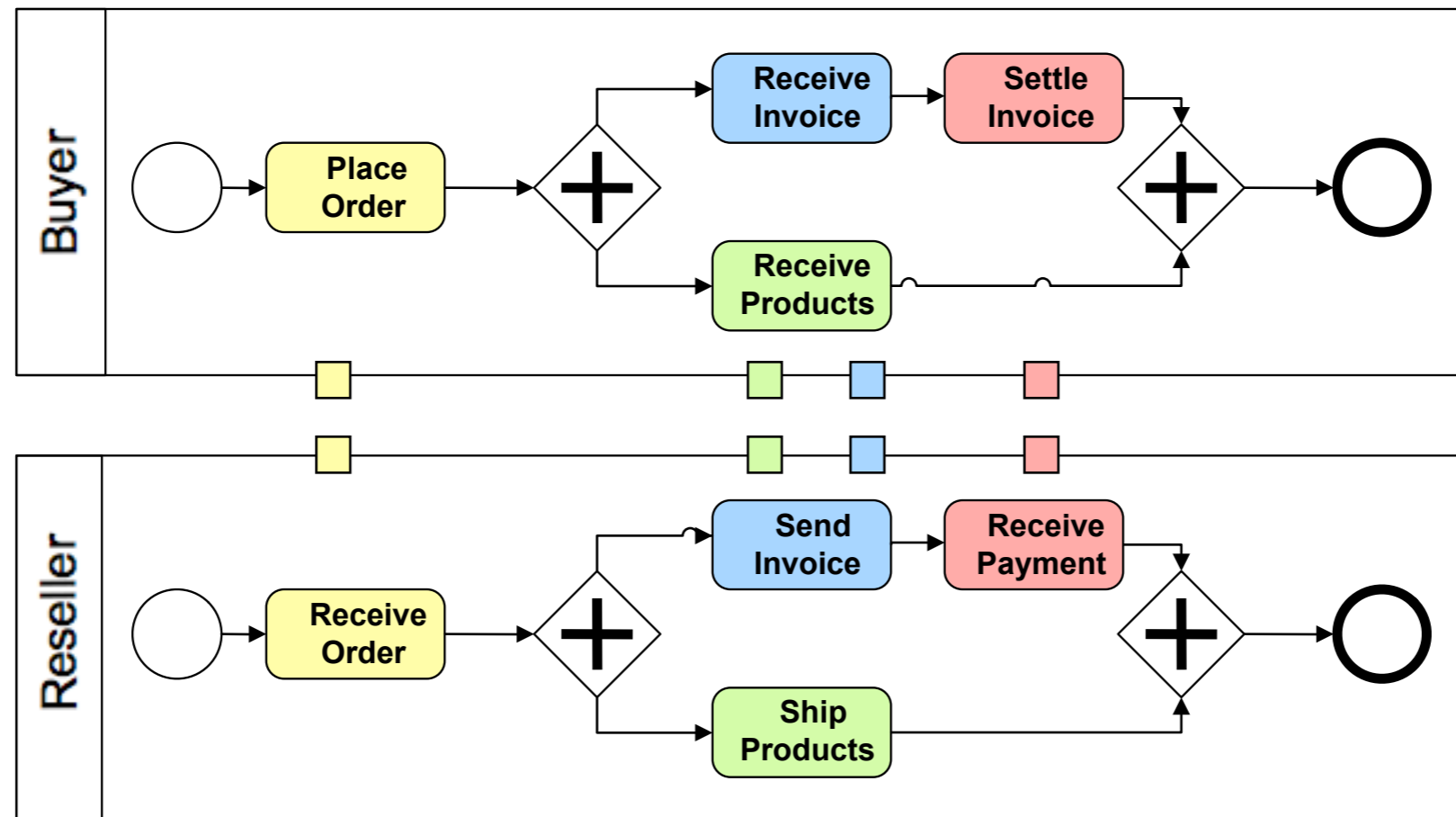
Cross-organization interaction

Each business process is enacted by one
organization

Business processes can interact with each other

Interacting activities of business processes must
be related together

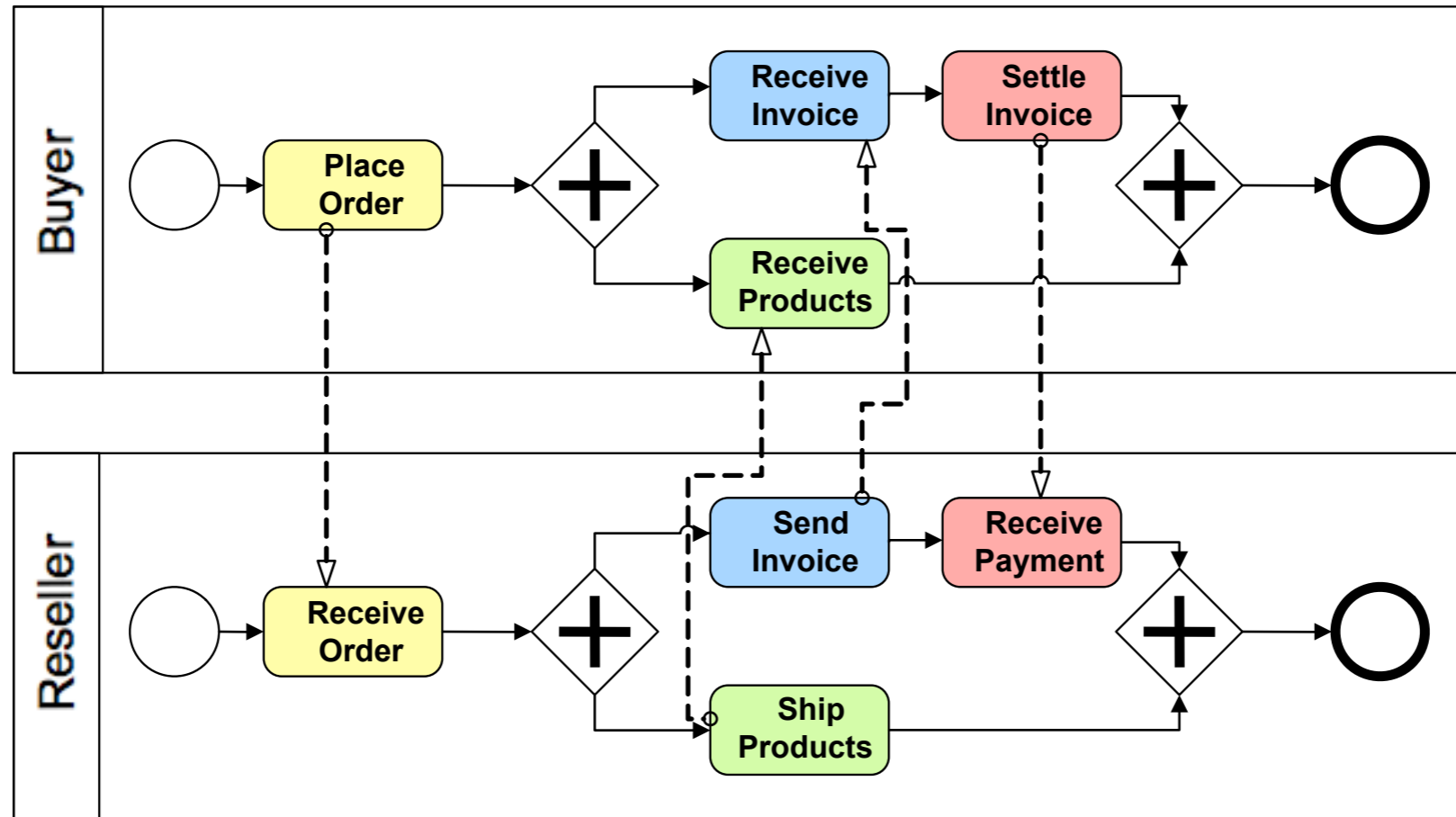
Interacting processes



Interacting processes can exchange information (electronic messages, physically transported objects)

Interacting processes

We move to BPMN-like syntax



Message flow is represented by dotted arcs

Choreography

The interactions of a set of business processes are specified in a **process choreography**

Difference w.r.t. orchestration:

the absence of a central agent that controls the activities in the business processes involved

For the interaction to be realized correctly, the interacting business processes better **be aware and agree upon the choreography in advance**

Choreography

Choreography is about describing a global model
(multi-point view)

The analogy is with the dancers who behave
autonomously, but follow their parts in the choreography



Choreography diagram

Choreography diagrams allow for multiple concrete implementations, with different software support

Old-fashioned order: a buyer browses a paper catalogue of a reseller, then fills a postcard and sends it by snail mail and pay by bank transfer

e-commerce: a buyer browses an online web catalogue, fills a virtual basket and an electronic form (billing information) and presses the submit button. The goods themselves may be intangible (e-books, music, video, software)

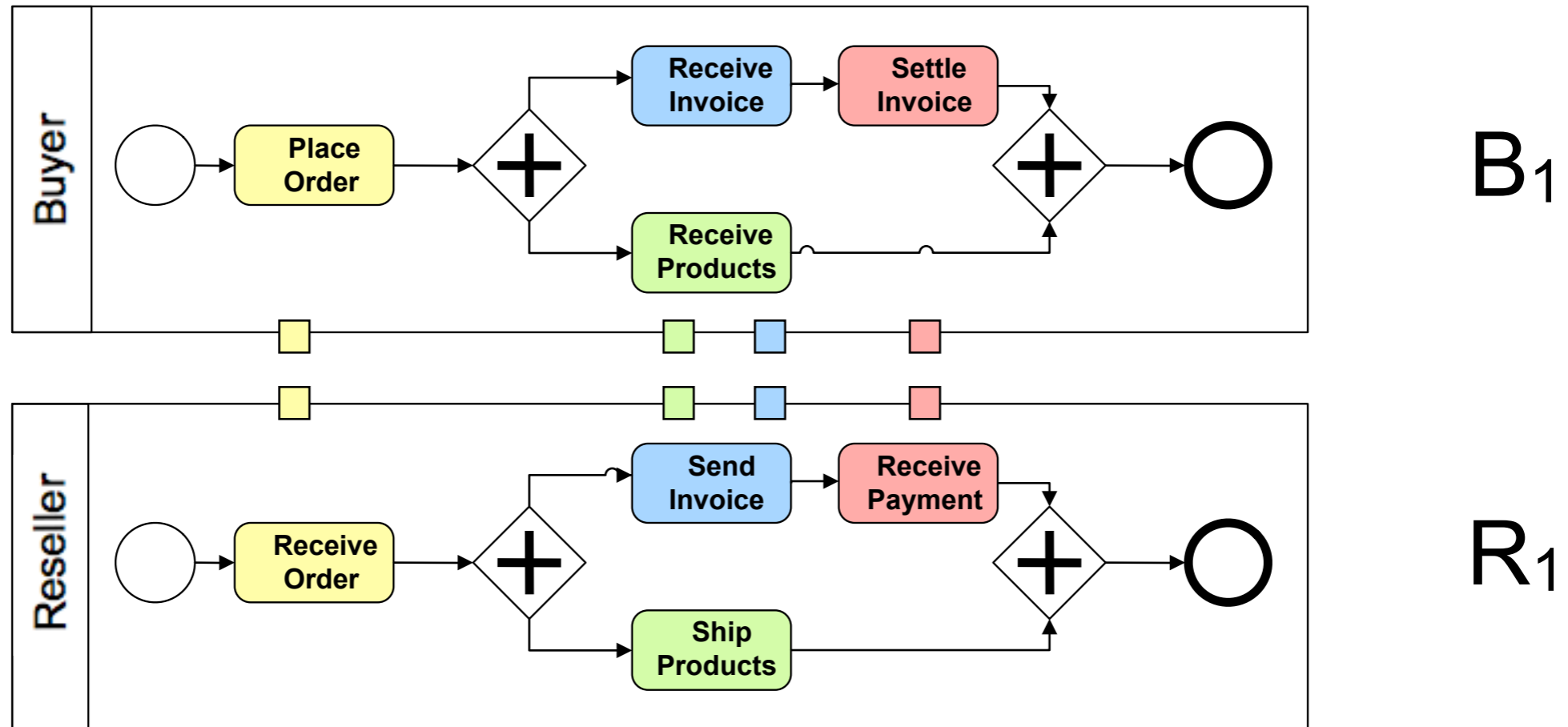
Interaction issues

As said, interacting business processes must be aware and agree upon the choreography

In such cases, **the realization of business processes by participants can change without affecting the overall behaviour**

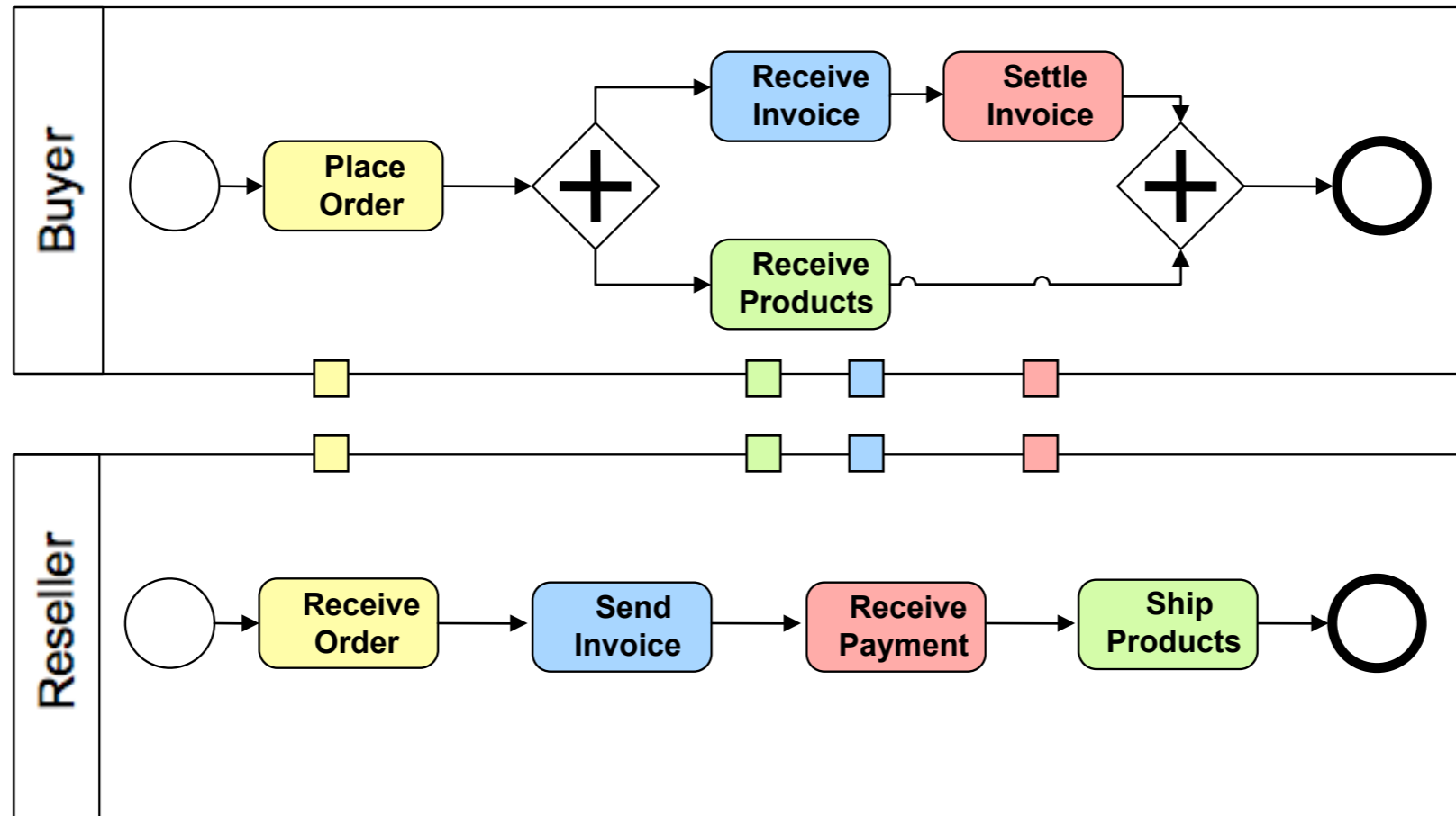
On the other hand, **if the change is not done correctly, then some problems may arise**

Question time



Work fine together!

Question time

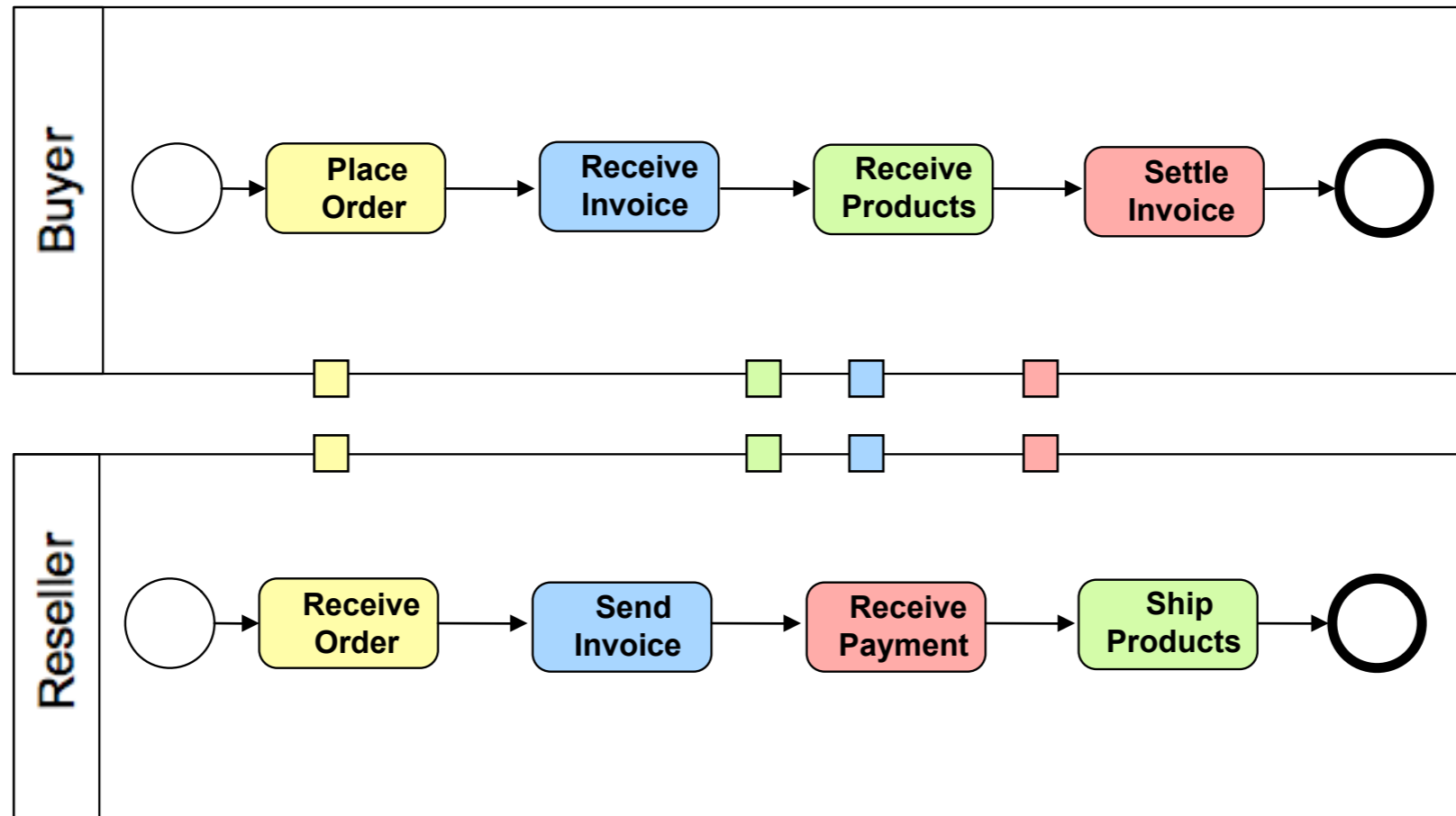


B₁

R₂

Still working fine?

Question time



B₄

R₂

Still working fine?

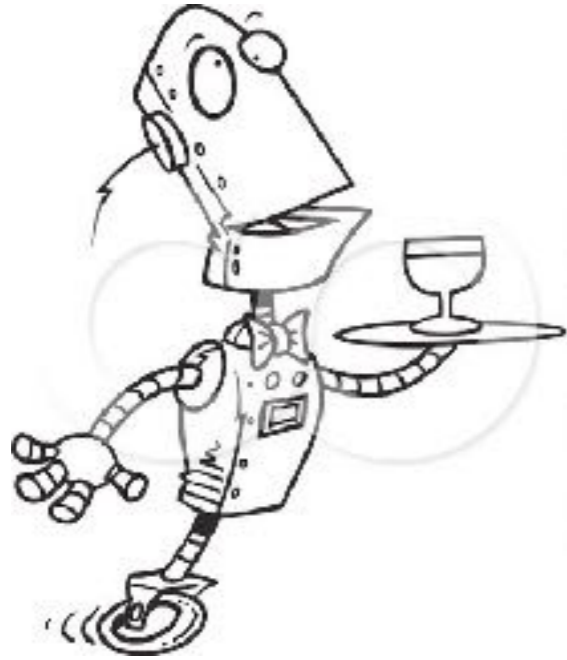
Exercises

In previous slides, we have seen many variants of business processes for resellers (two) and buyers (four).

Build a “compatibility” matrix with two rows and four columns and mark all the combinations for which some problems may arise during the interaction because activities are not implemented in the expected order.

You are also free to consider other process diagrams, by adding the corresponding rows / columns to the matrix.

	B ₁	B ₂	B ₃	B ₄
R ₁	ok			
R ₂	ok			no



Exercise



Coffee break choreography:

Draw the process diagram for a vending machine that accepts a coin, then gives the possibility

(1) to get a coffee or

(2) to insert another coin and get either a cappuccino or a tea.

Draw the process diagrams for a compatible butler robot and a "problematic" butler robot.