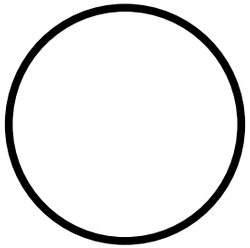
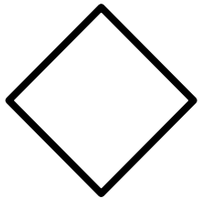
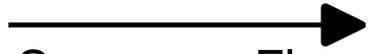
University of Applied Sciences and Arts Northwestern Switzerland
School of Business

BPMN Review

Dr. Serge Schiltz

Agenda

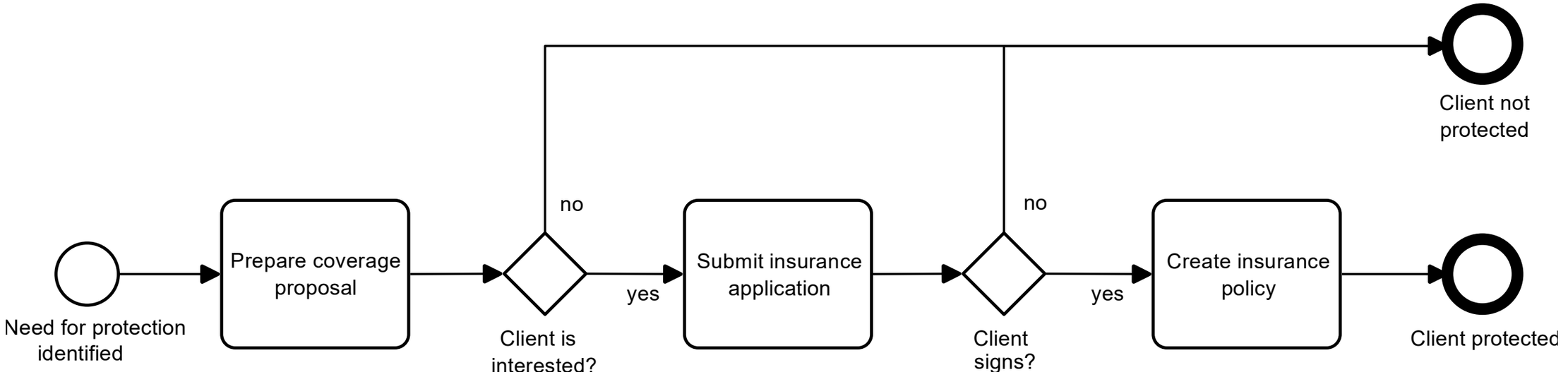
Four core elements

Ereignis	Aktivität	Verzweigung	Sequenzfluss
 Event	 Activity	 Gateway	 Sequence Flow

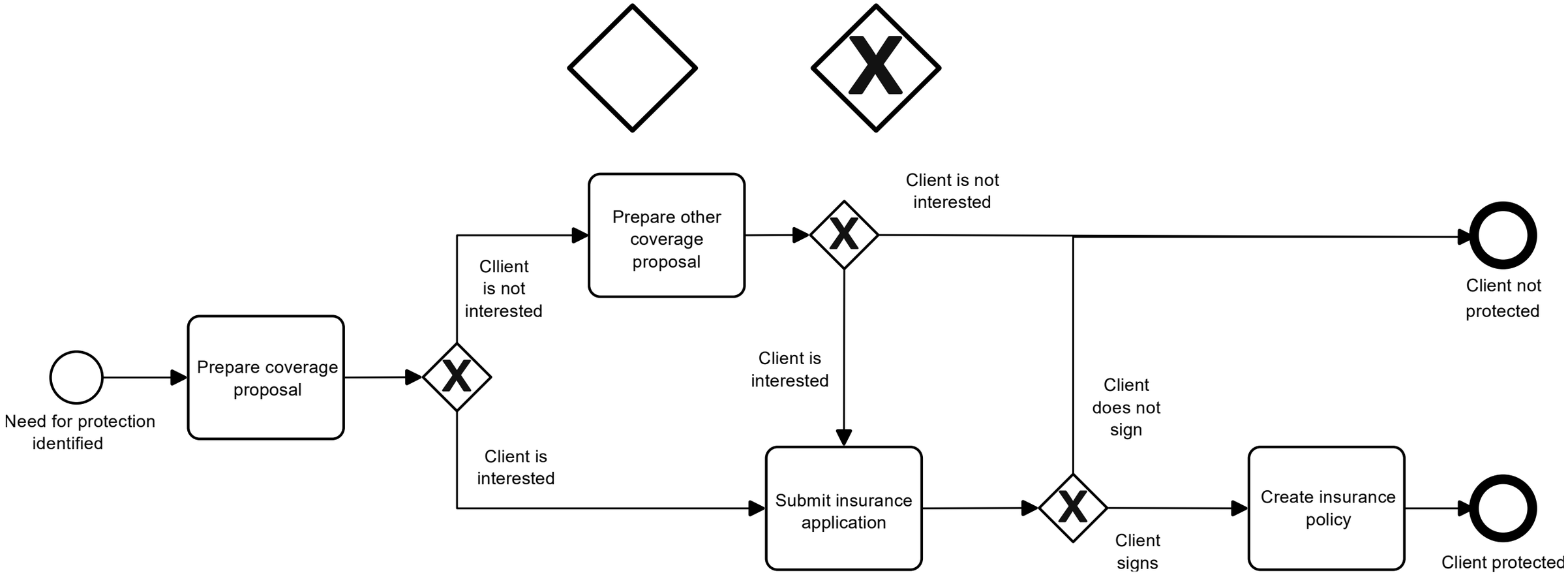
The most simple BPMN process

Start and end events

Simple (exclusive) gateway

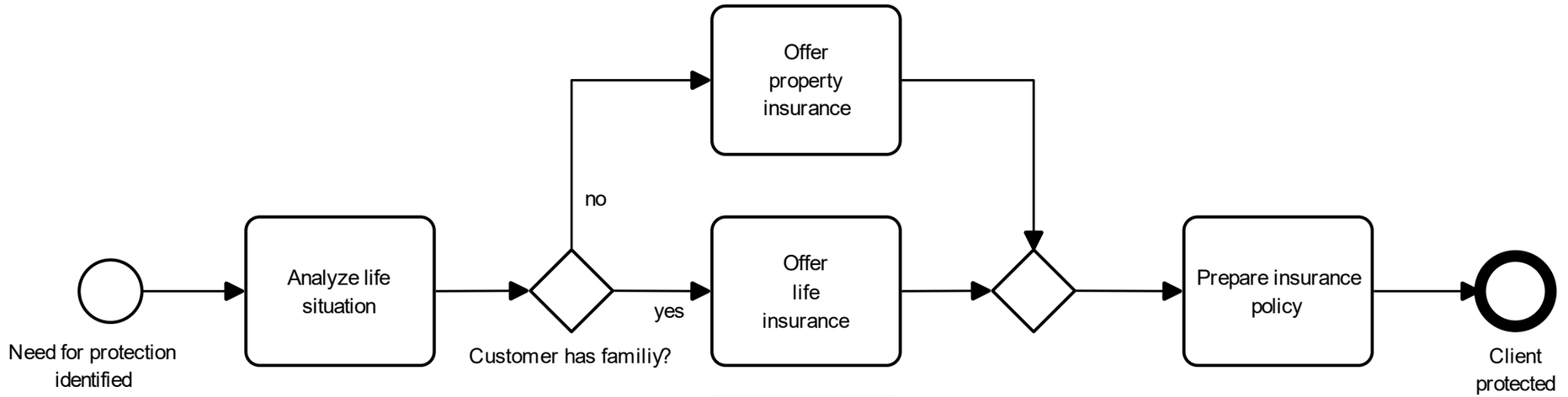


Representation variants exclusive gateway



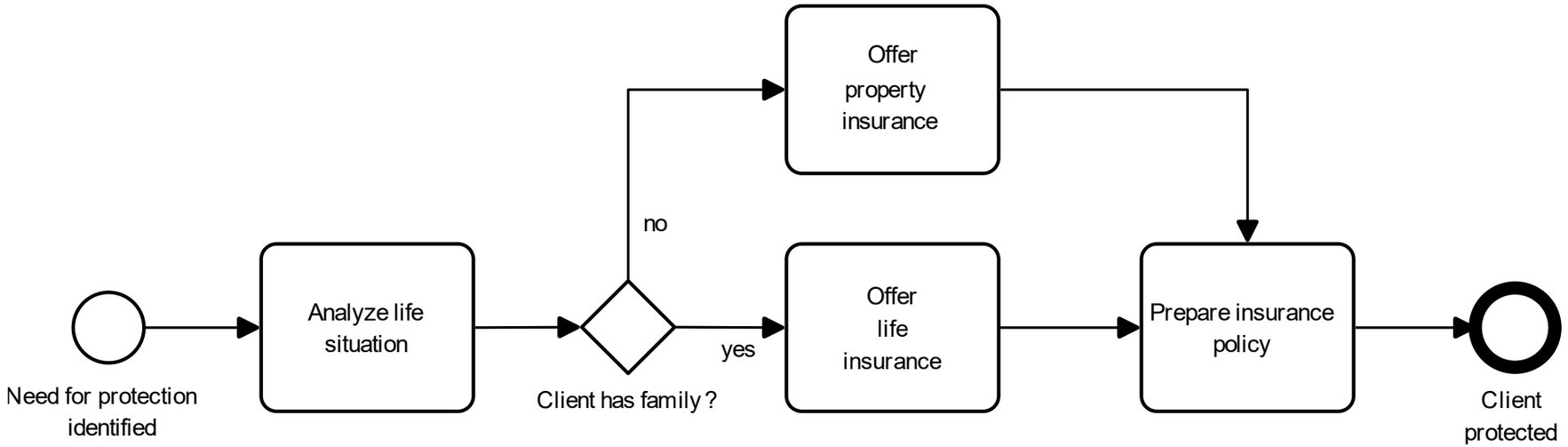
Exclusive gateway: Synchronization

(a)

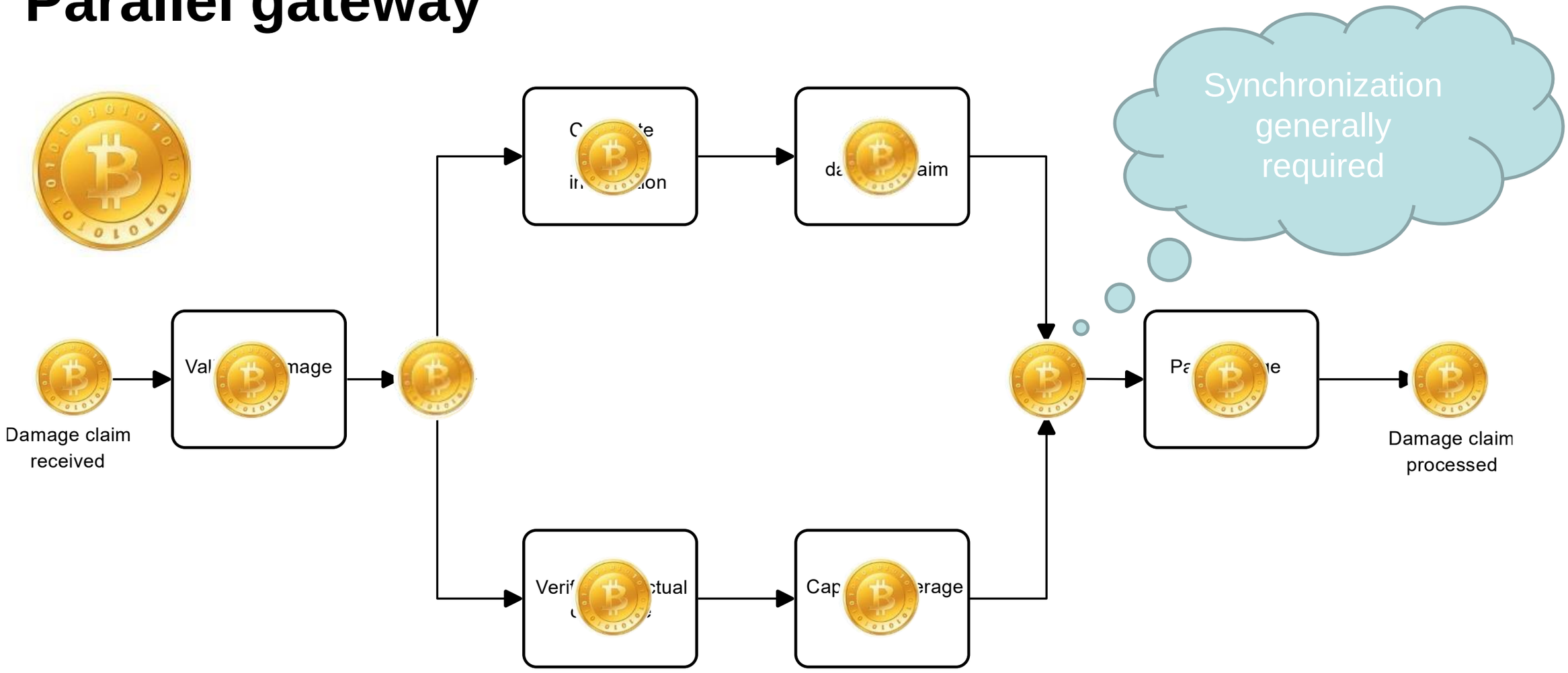


or

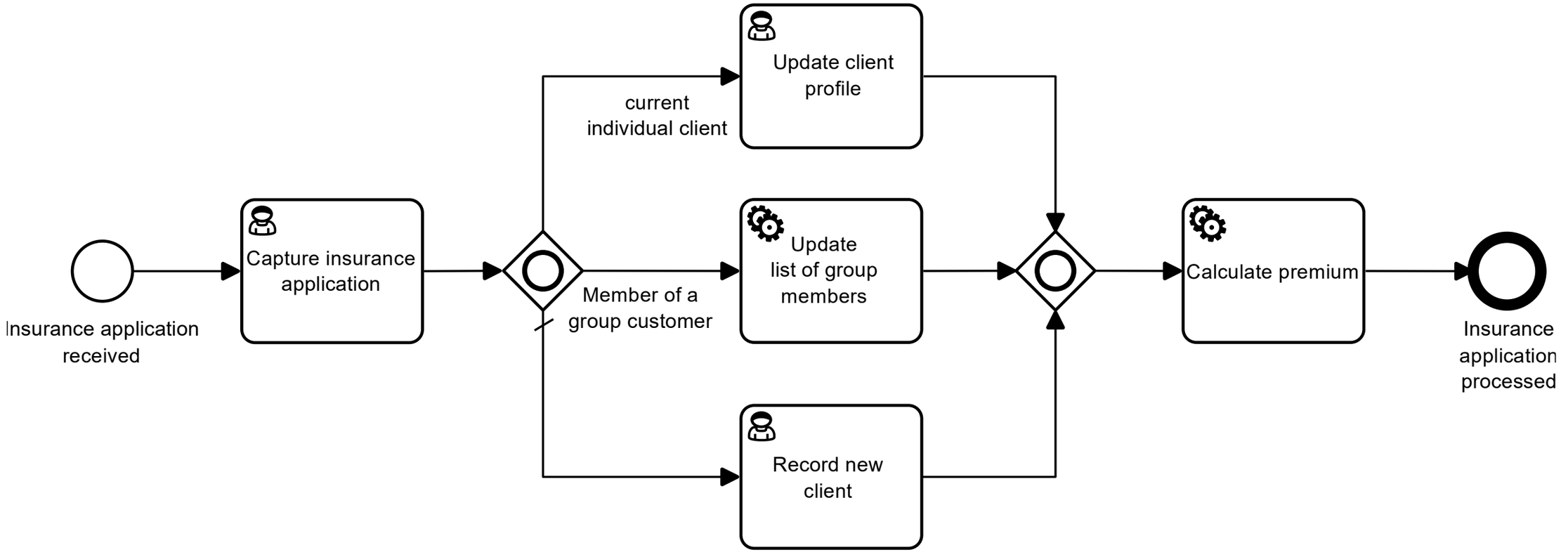
(b)



Parallel gateway



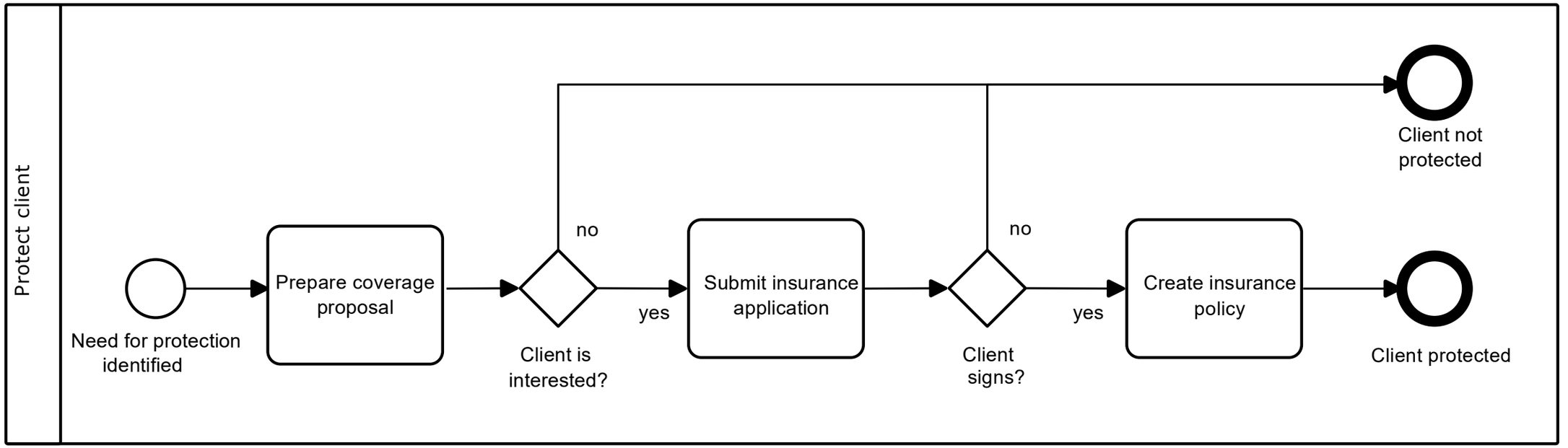
Inclusive gateway



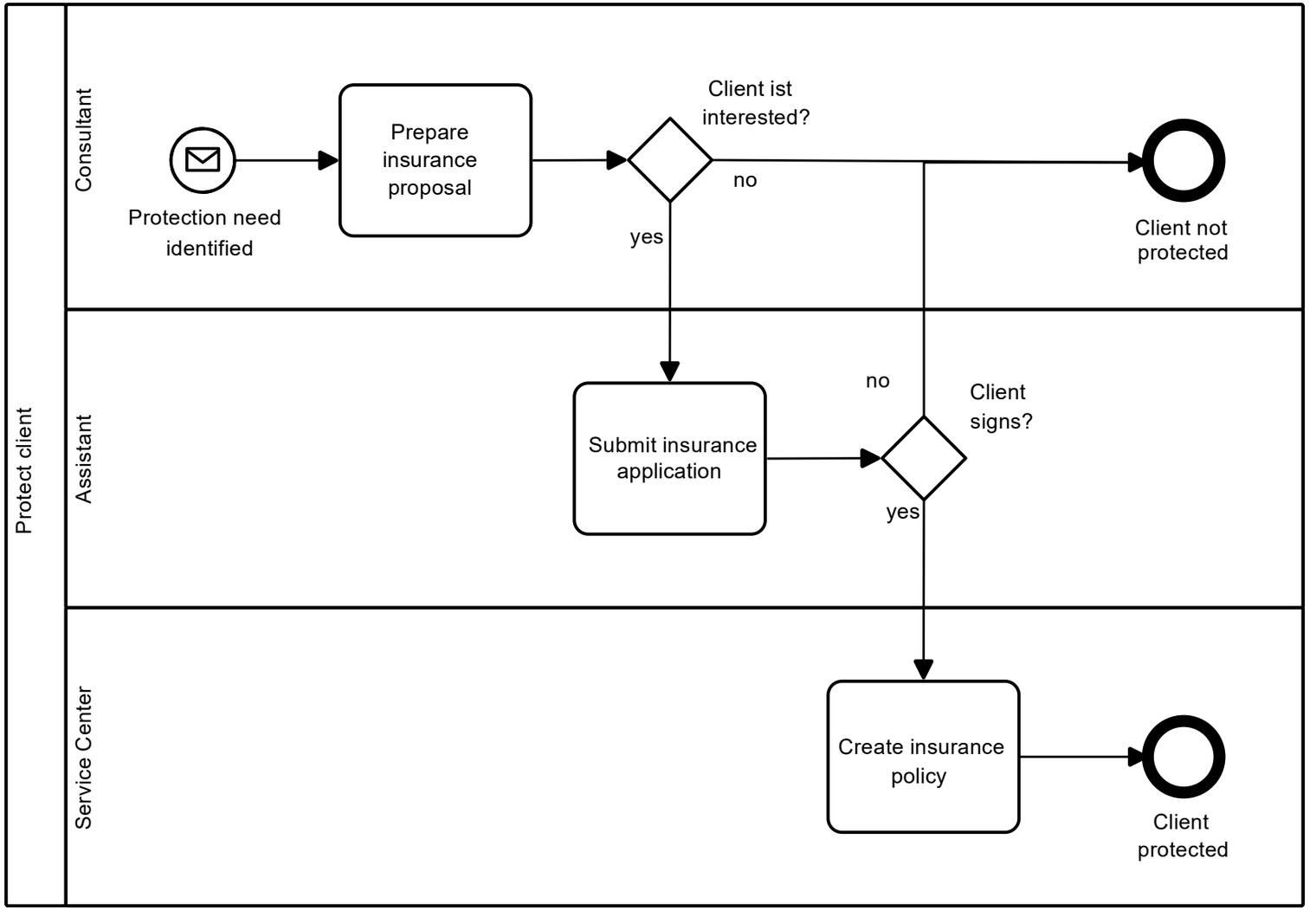
Agenda

1. BPMN Basics
2. Collaborations, Participants, and Roles
3. Events
4. Hierarchical Modeling
5. Tasks and Activities
6. Event-Based Processing
7. Process Data and Comments
8. Practical Hints
9. Pointers

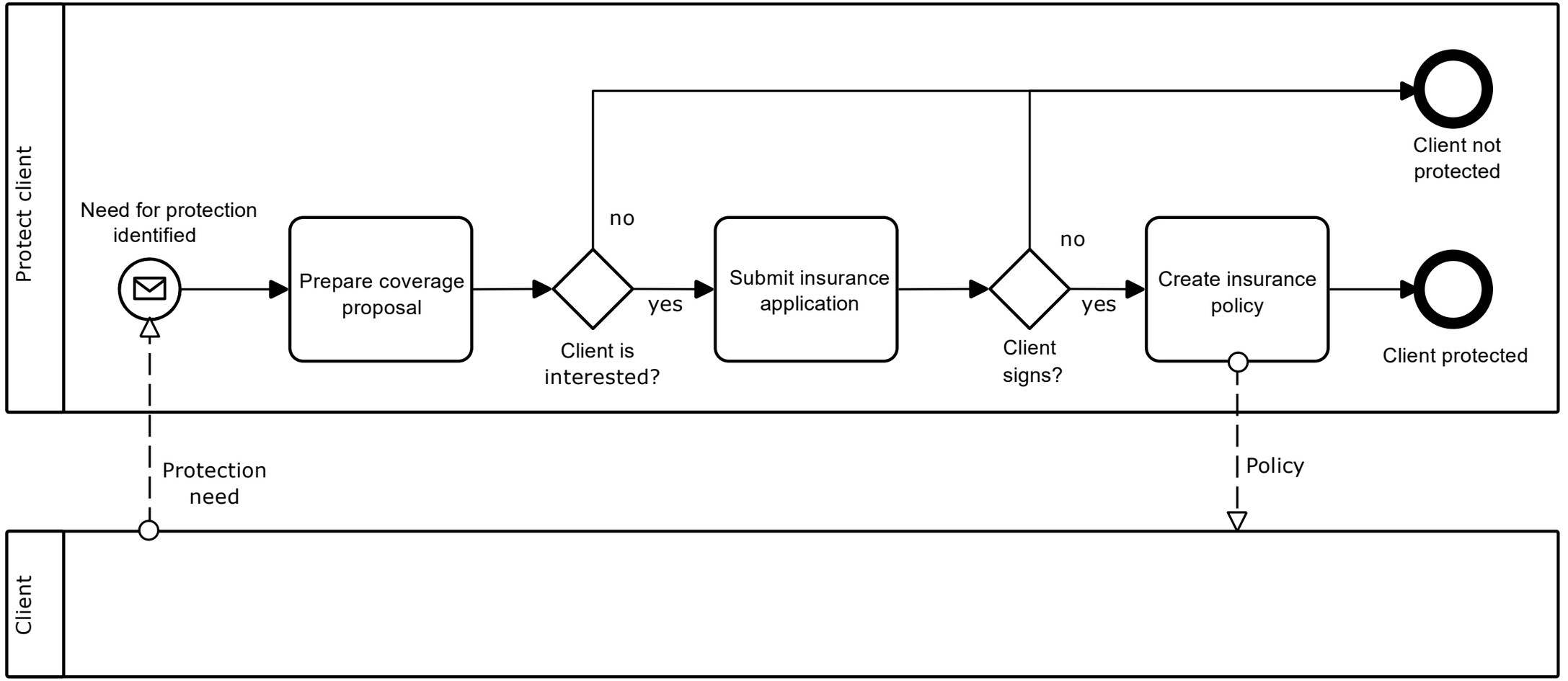
Pool concept: Private process



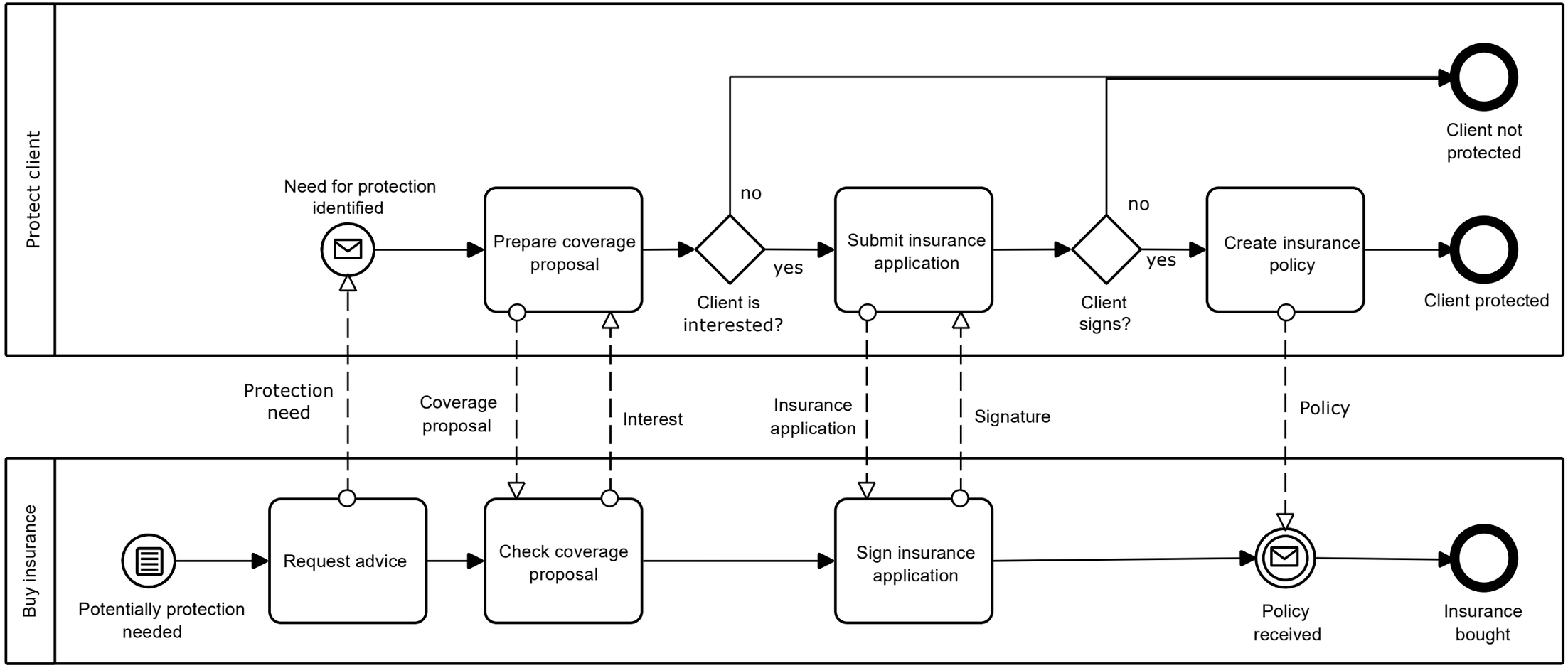
Lanes


Protect client
Consultant
Assistant
Service Center
Protection need identified
Prepare insurance proposal
Client ist interested?
no
yes
Client not protected
Submit insurance application
no
Client signs?
yes
Create insurance policy
Client protected

Public processes



Process interaction: Collaboration



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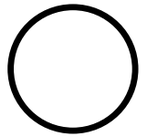
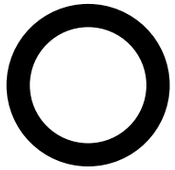
Classical events with variants

Start events			End events	
 None start event	 Message start event	 Timer start event	 None end event	 Message end event
Generic	Message (catching)	Timer	Generic	Message (throwing)

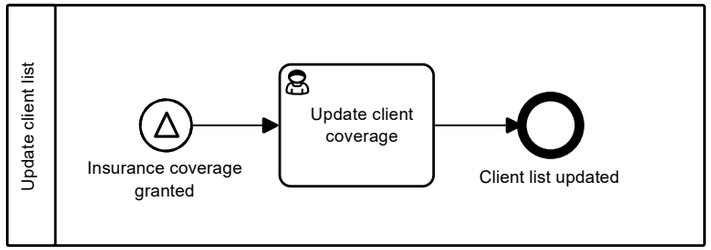
Event variants

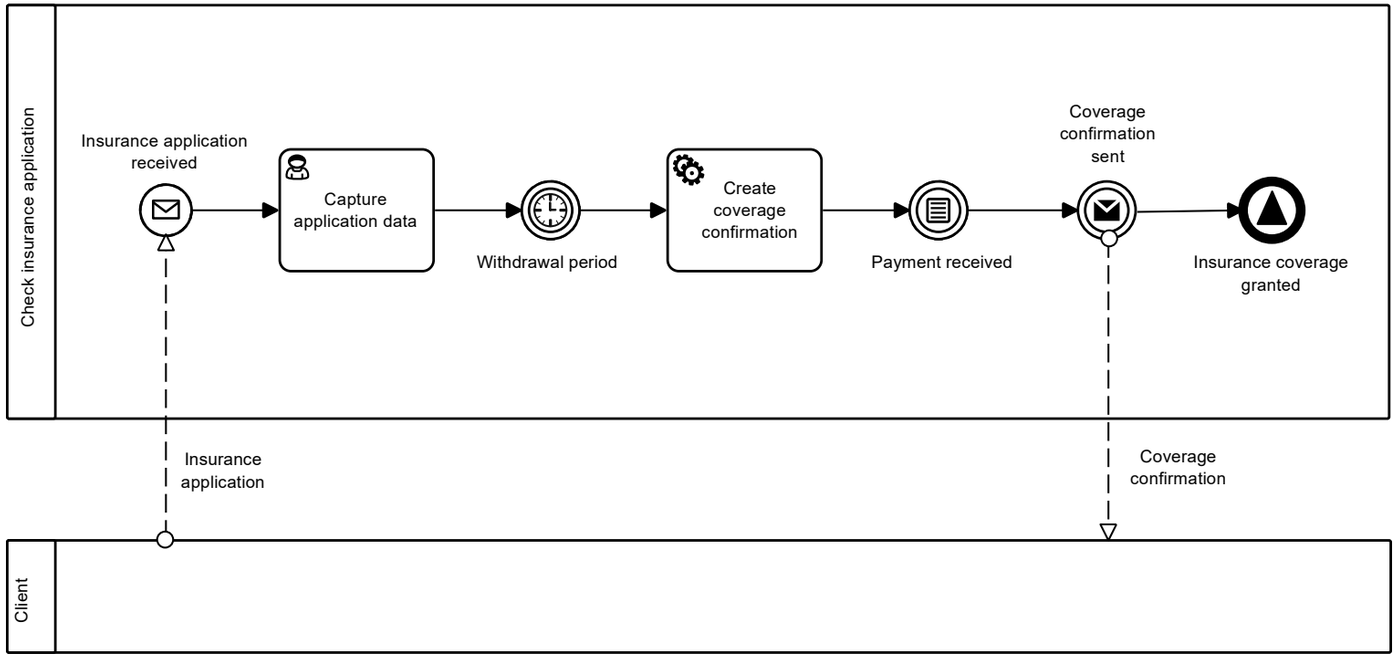
	Start event	Intermediate event		End event
		Catching	throwing	
Timer	 Timer start event	 Timer intermediate event		
Message	 Message start event	 Catching message intermediate event	 Throwing message intermediate event	 Message end event
Condition	 Condition start event	 Condition intermediate event		
Signal	 Signal start event	 Catching signal intermediate event	 Throwing signal intermediate event	 Signal end event

Message, signal and condition

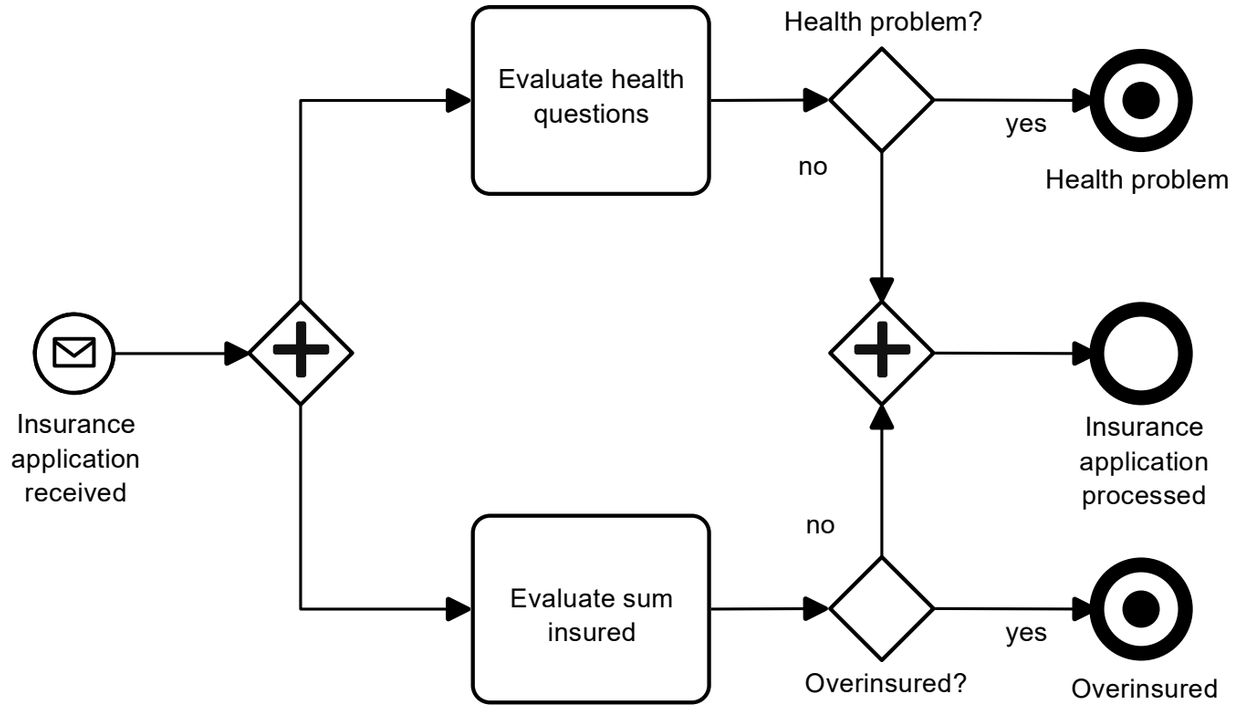
Trigger	Explanation
 Message	A message is addressed to a specific process participant (or process). This can, but does not have to react to the message. Messages cannot be sent within the same process.
 Signal	Signals are sent out without knowing who will receive them; they are "to all" messages (also called broadcast). In principle, it is conceivable that the same process, if it performs several tasks in parallel, receives a signal that it has sent out itself and reacts to it.
 Condition	Conditions are the generalization of triggers: as soon as a condition is met, generally data reach specified values, the process is started or continued.

Various events in the process

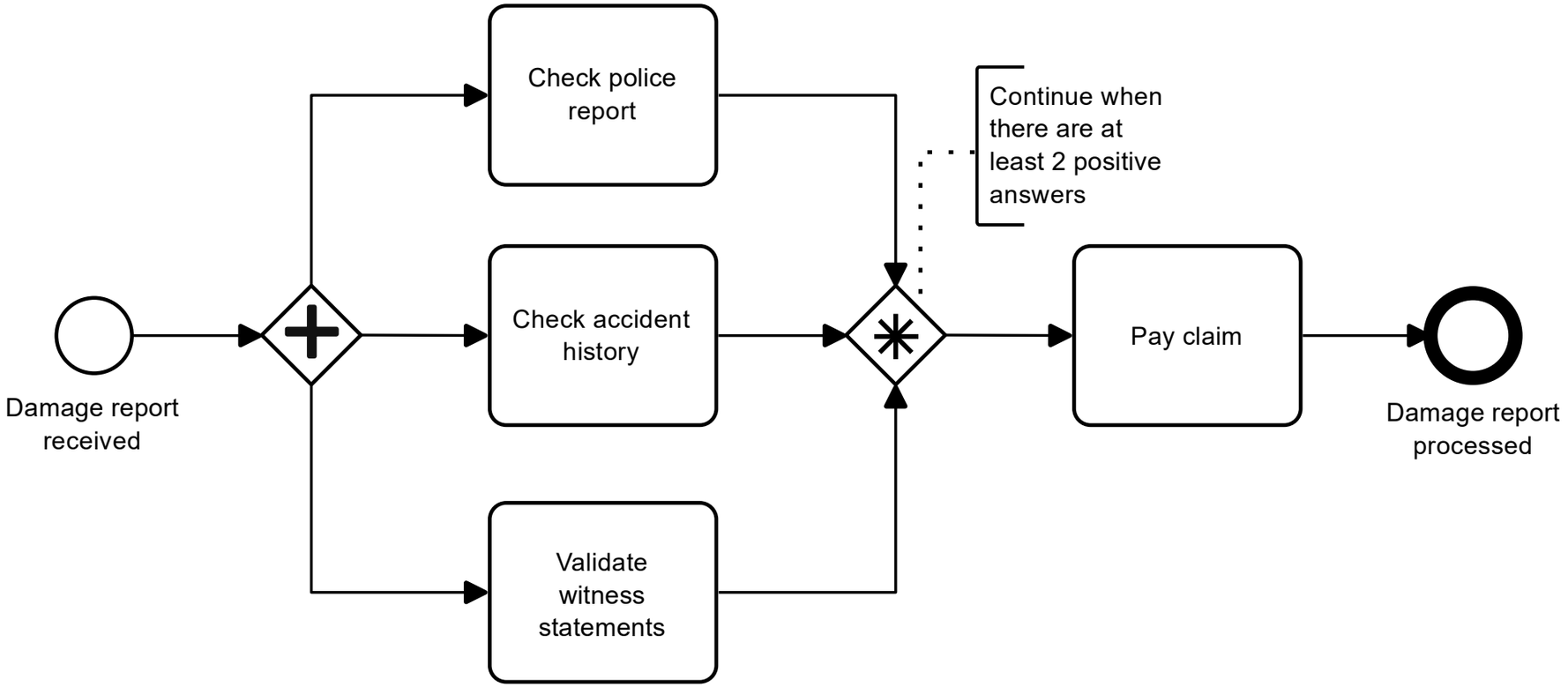




Special: Terminating end event



Complex gateway



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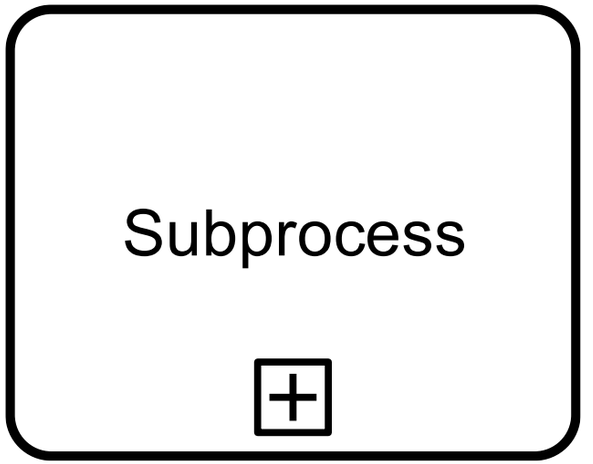
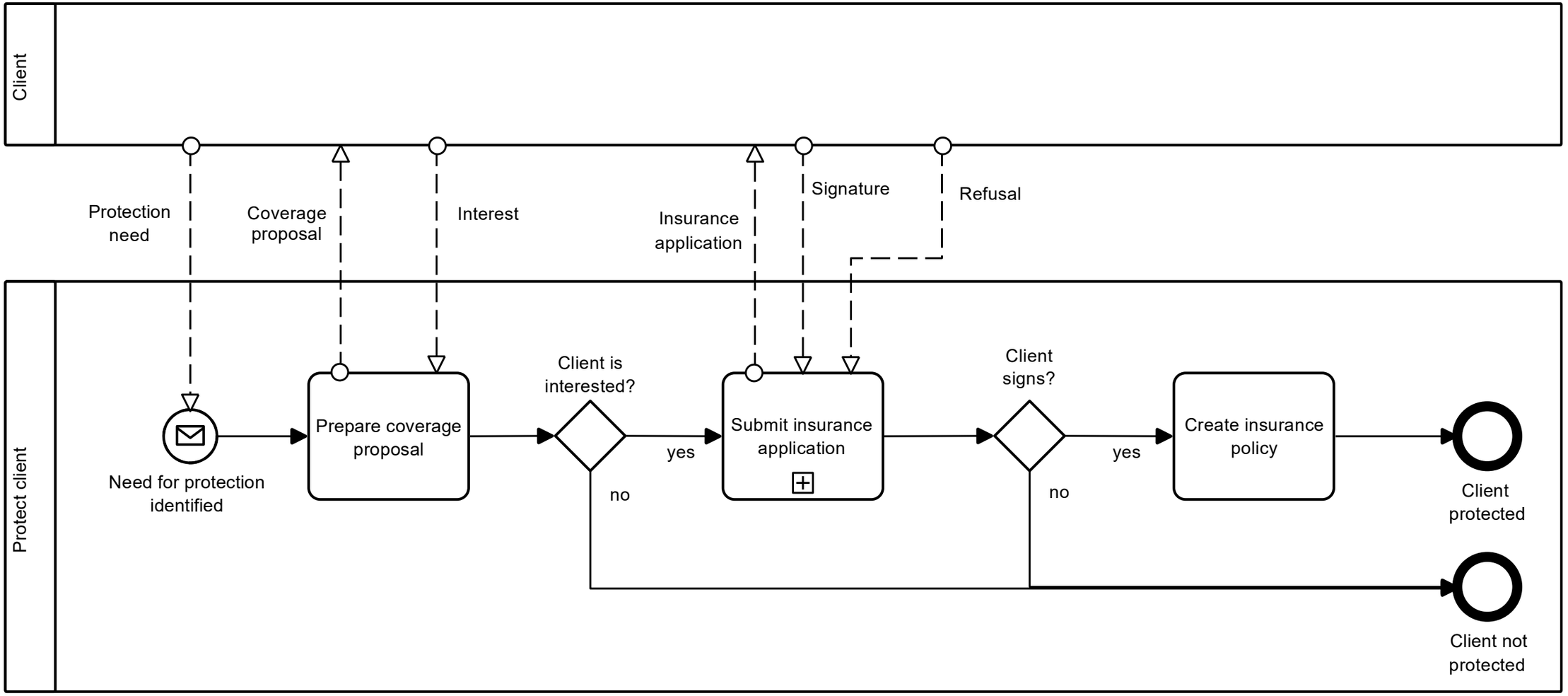
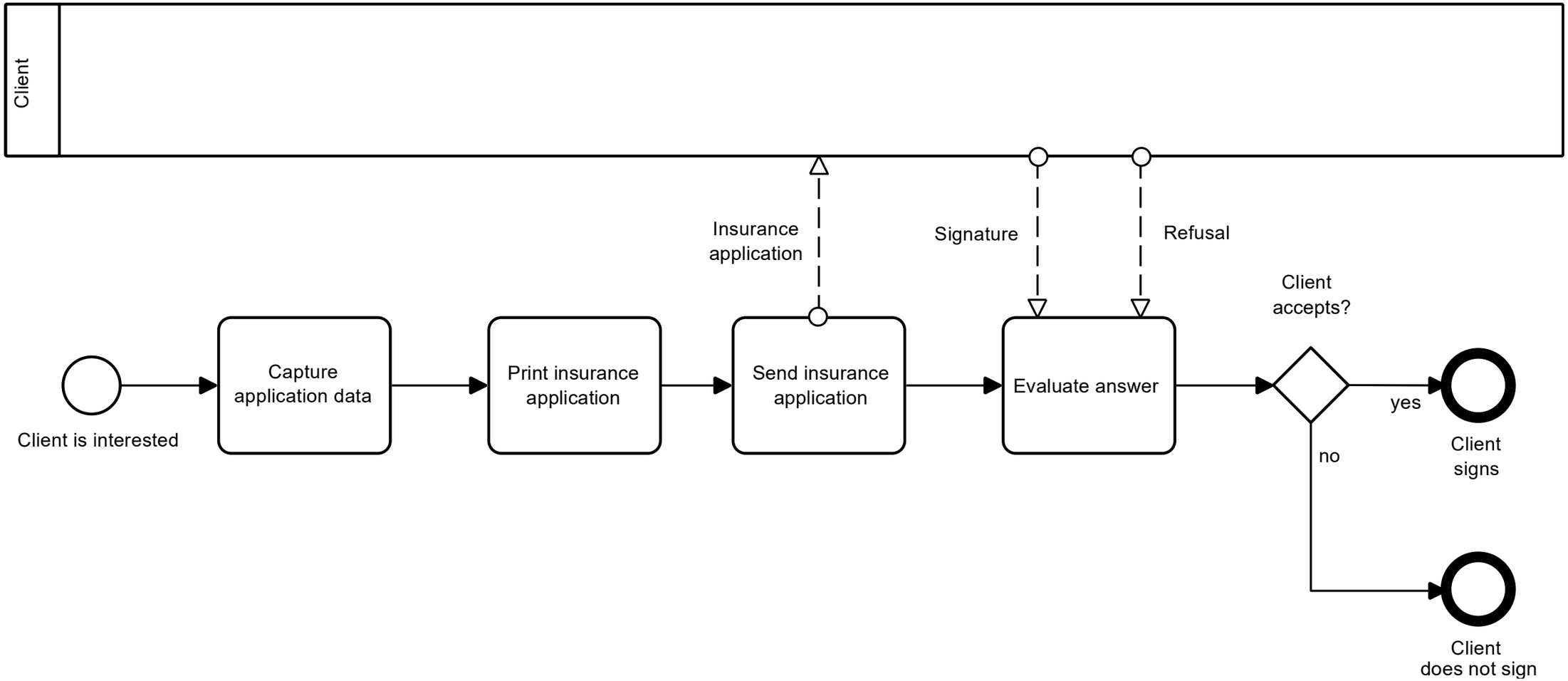
Hierarchical modeling



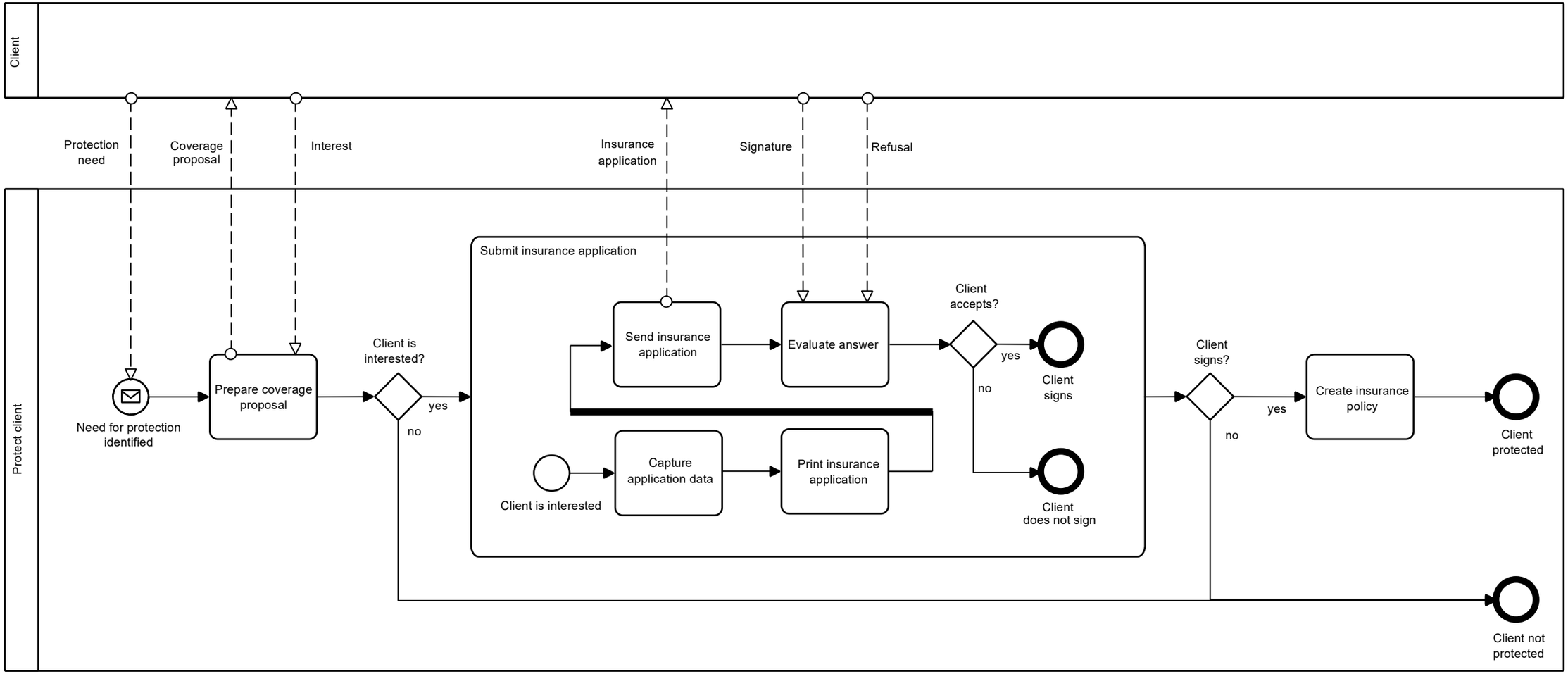
Hierarchical modeling: Main process



Hierarchical modeling: Subprocess



Expanded Subprocess

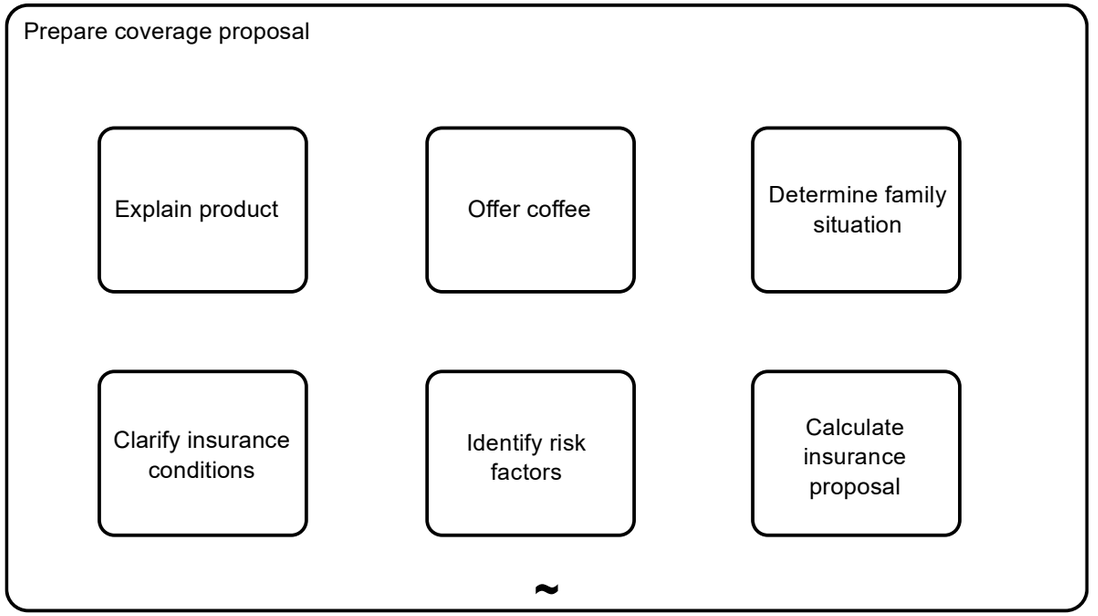


Reuse: Call activity

- The diagram of a "normal" subprocess is included in the diagram of the main process.
- Thus, for reuse, the subprocess must be given its own diagram.
- Such a reusable process is self-contained and thus may have its own pool.

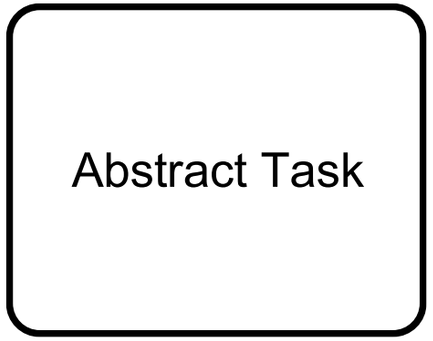
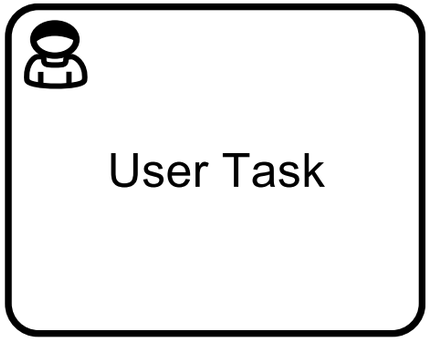
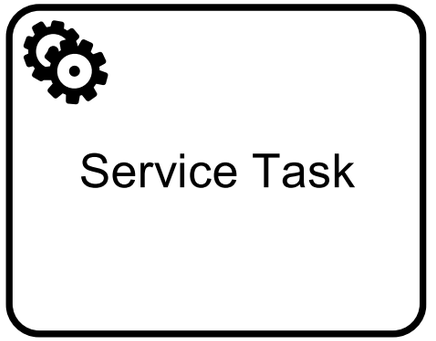
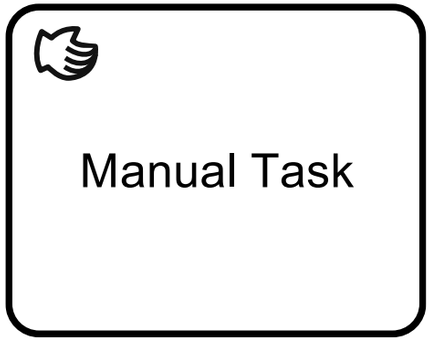
Ad hoc Subprocess

- Adhoc subprocesses do not contain events and sequence flows.
- Each activity can be performed once, multiple times or not at all.
- The performer of the process determines in which order and how often the individual activities are executed.
- A condition defines when the ad hoc subprocess can be completed (e.g. the offer is calculated).
- Suitable for knowledge workers and consulting activities.
- Careful: No panacea!

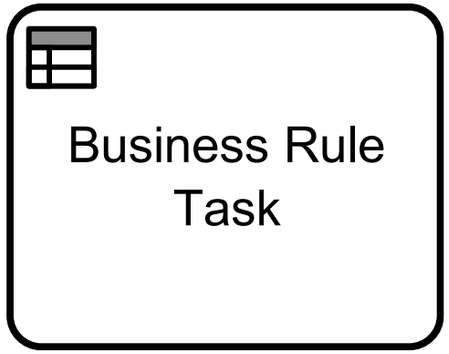


Agenda

Tasks of the descriptive level

Abstract task	User task	Service task	Manual task
			

Business rule task



Originally specialization of the service task:

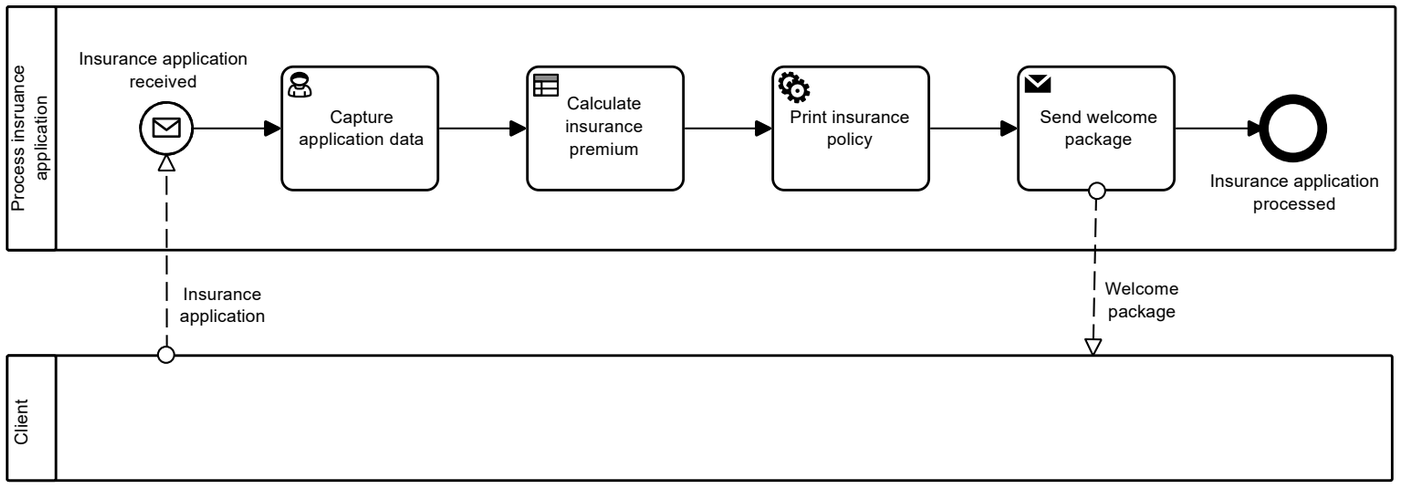
- Calling a business rule automated by means of a rule engine

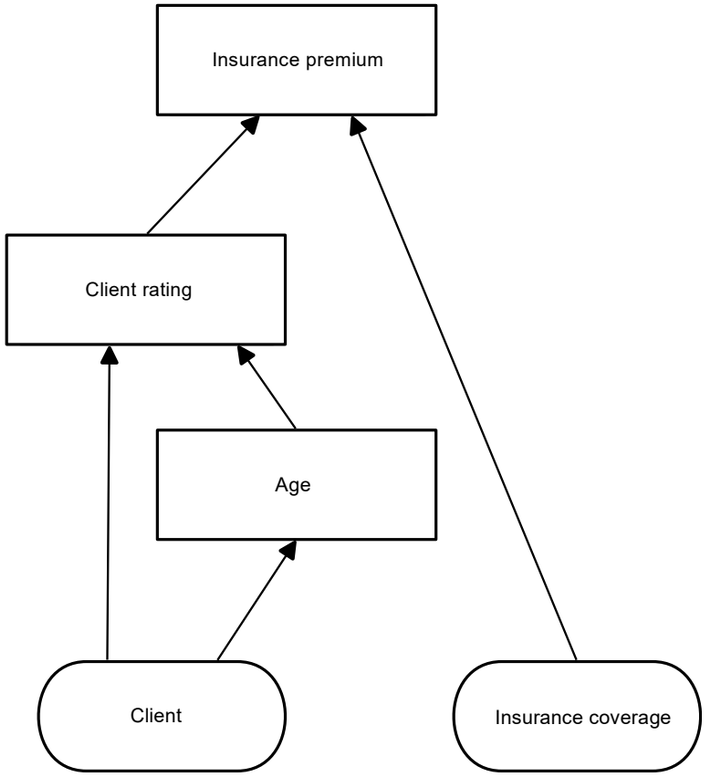
Today reference to a modeled or automated business rule:

- Supplies input data to a rules engine and accepts the outcome calculated by it.

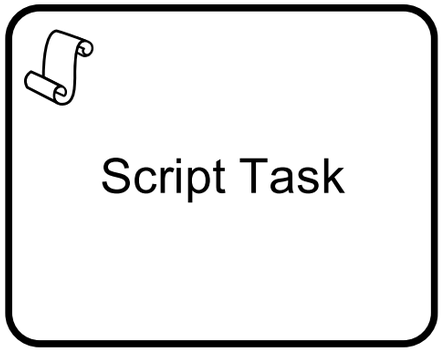
Connection point from BPMN to DMN (Decision Model and Notation).

Business rule task in a process





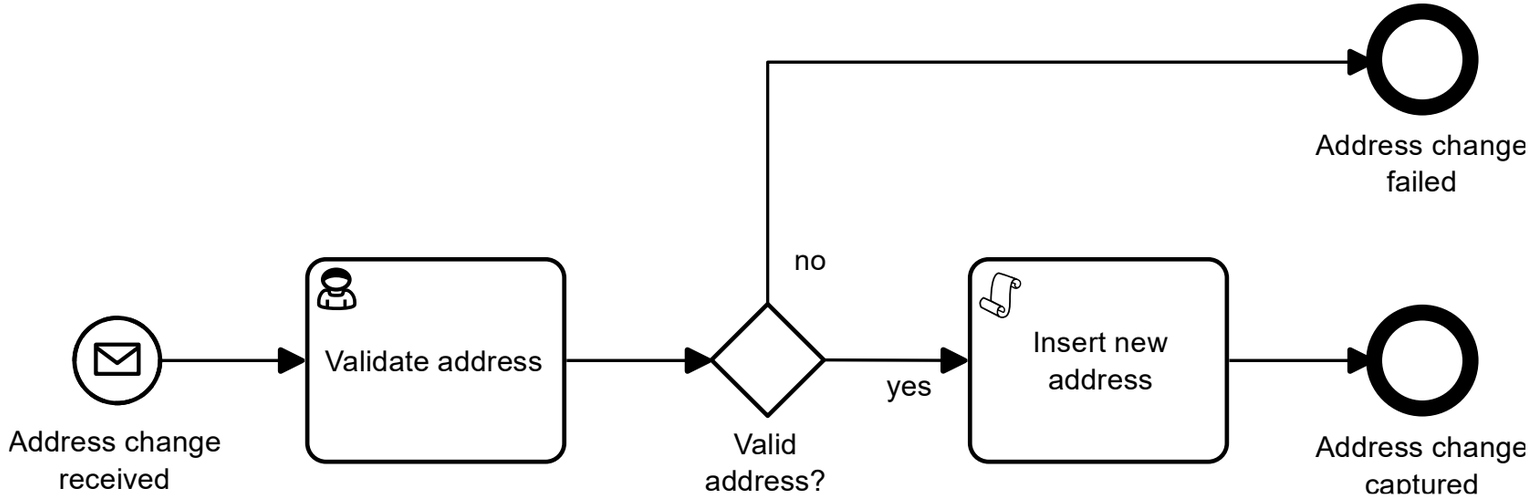
Script task



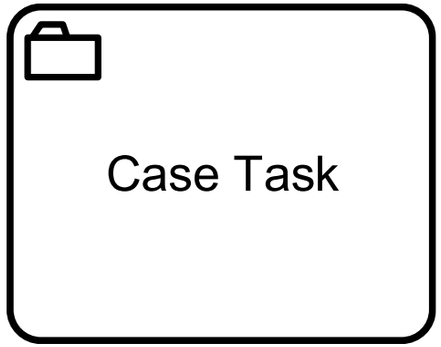
Variants of an automated task:

- A *service task* invokes a published service (e.g. via REST call).
- A *script task* executes a script (e.g. Java, JavaScript, FEEL, Python, etc.) directly in the process engine.

Script task in a process



Case task



Is not part of the official BPMN standard, but is discussed in OMG committees with regard to further development.

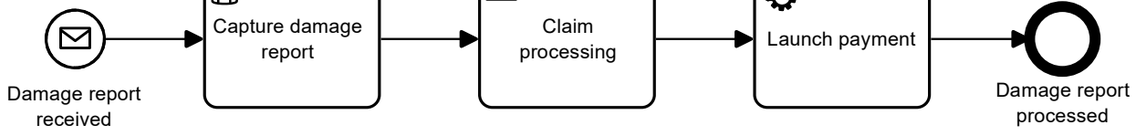
Connection point to CMMN (Case Management Model and Notation):

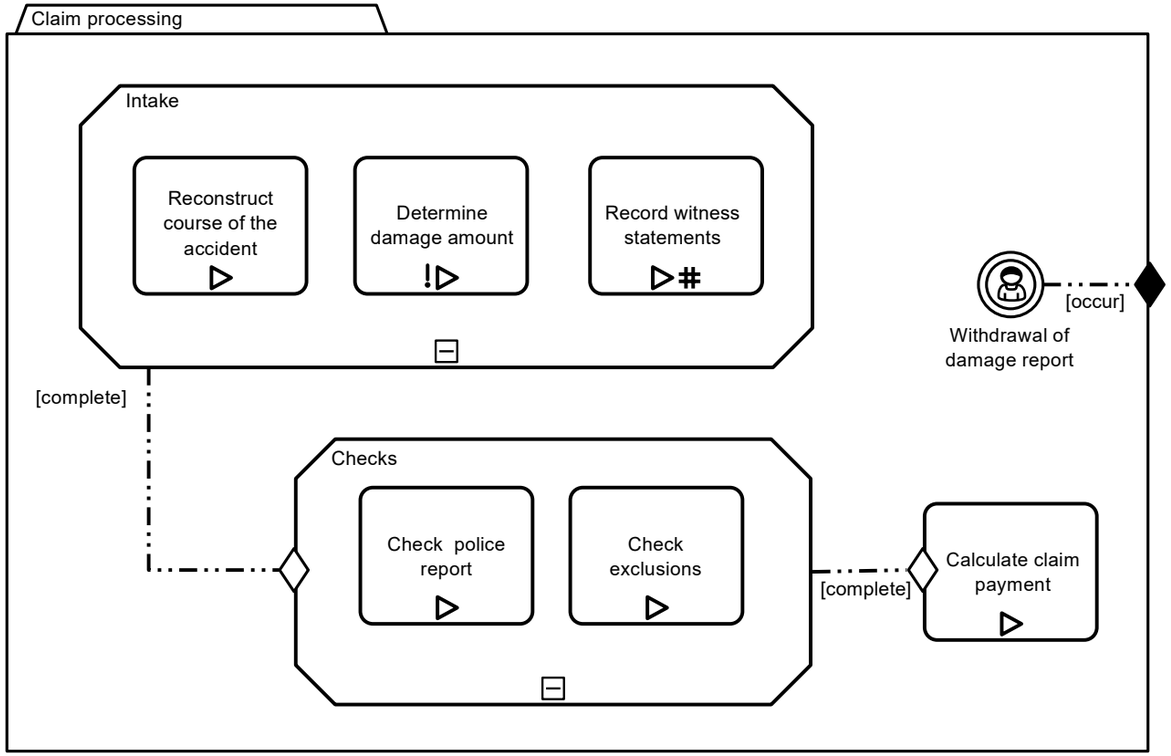
- Call of a case model

Case models in CMMN are the logical evolution of the adhoc subprocess of BPMN.

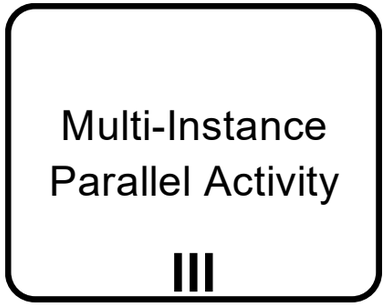
Unlike the adhoc subprocess of BPMN, CMMN case models can be automated.

Case task in a process



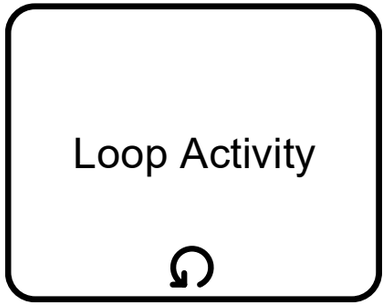


Repetitive activities



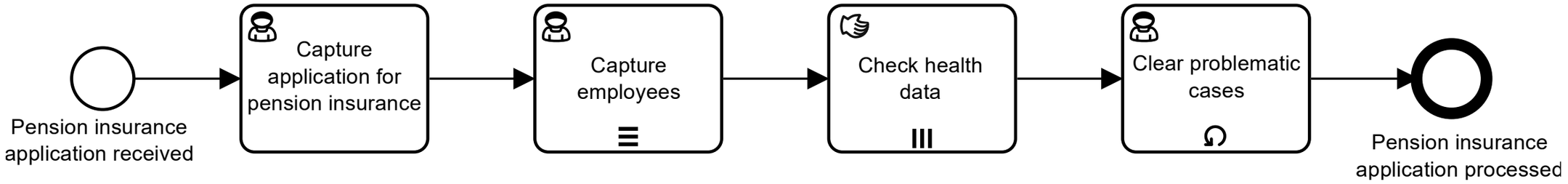
Parallel multiple instance activity :
Multiple instances of this activity can be executed in parallel (condition: the performer has the means to do so). When entering the activity, the number of instances to be executed must be known.

Sequential multiple instance activity :
Multiple instances of this activity are executed sequentially i.e. one after the other. When entering the activity, the number of instances to be executed is known.



Loop activity :
The activity is repeated until a defined condition is met (e.g. "< 10"). The number of repetitions is usually not yet known before entering the activity.

The repetitive activities in a process



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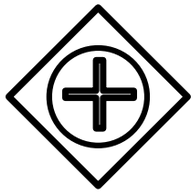
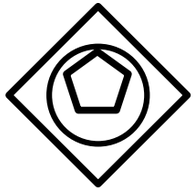
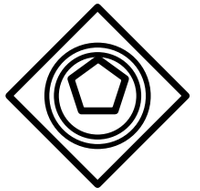
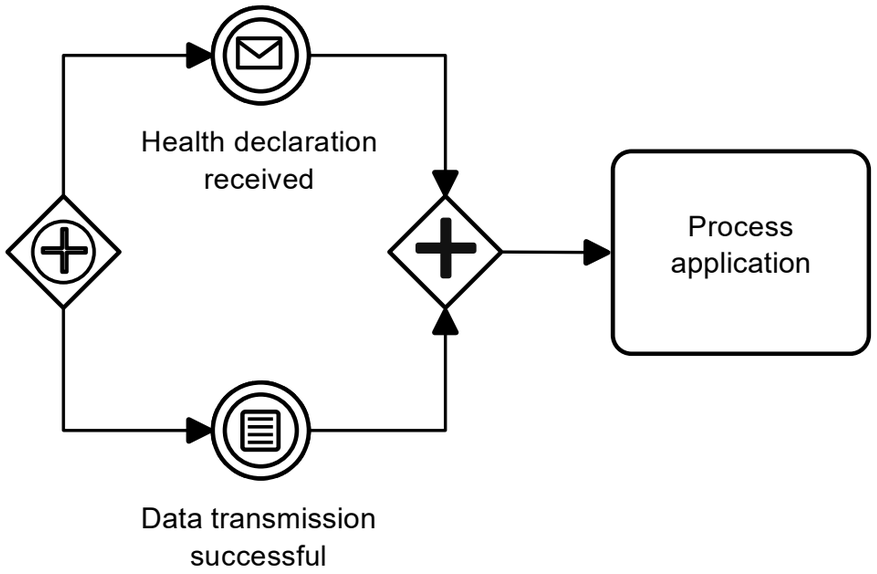
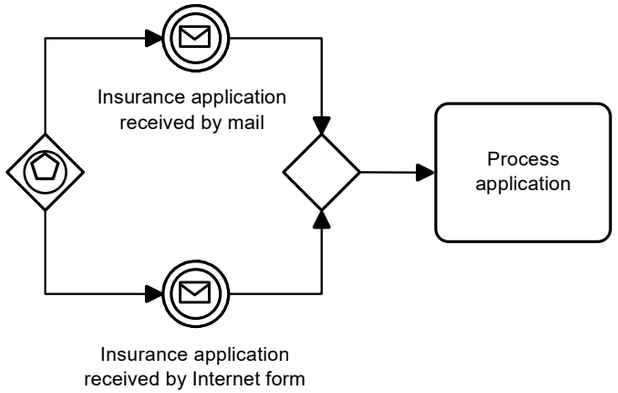
Event-based gateways

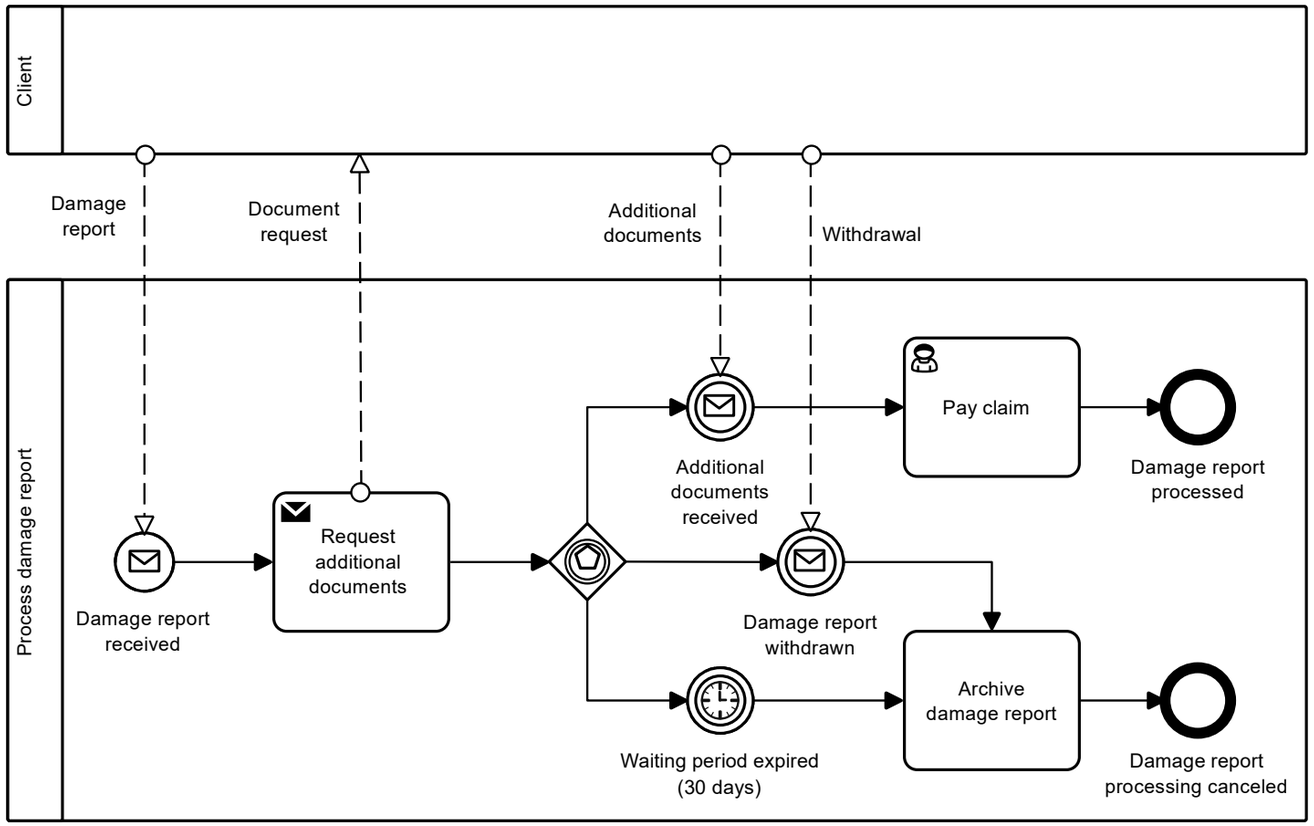
Event-based parallel gateway (instantiating)	Event-based exclusive gateway (instantiating)	Event-based exclusive gateway (non-instantiating)
 Parallel event-based start event	 Exclusive event-based start gateway	 Exclusive event-based intermediate event

Gateways as start events

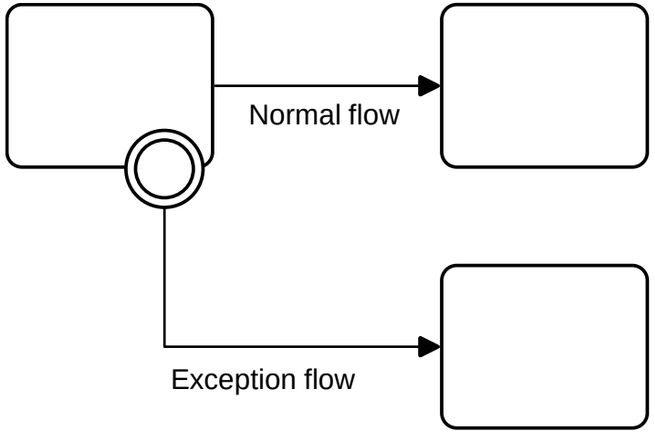




Event-based gateway as intermediate event

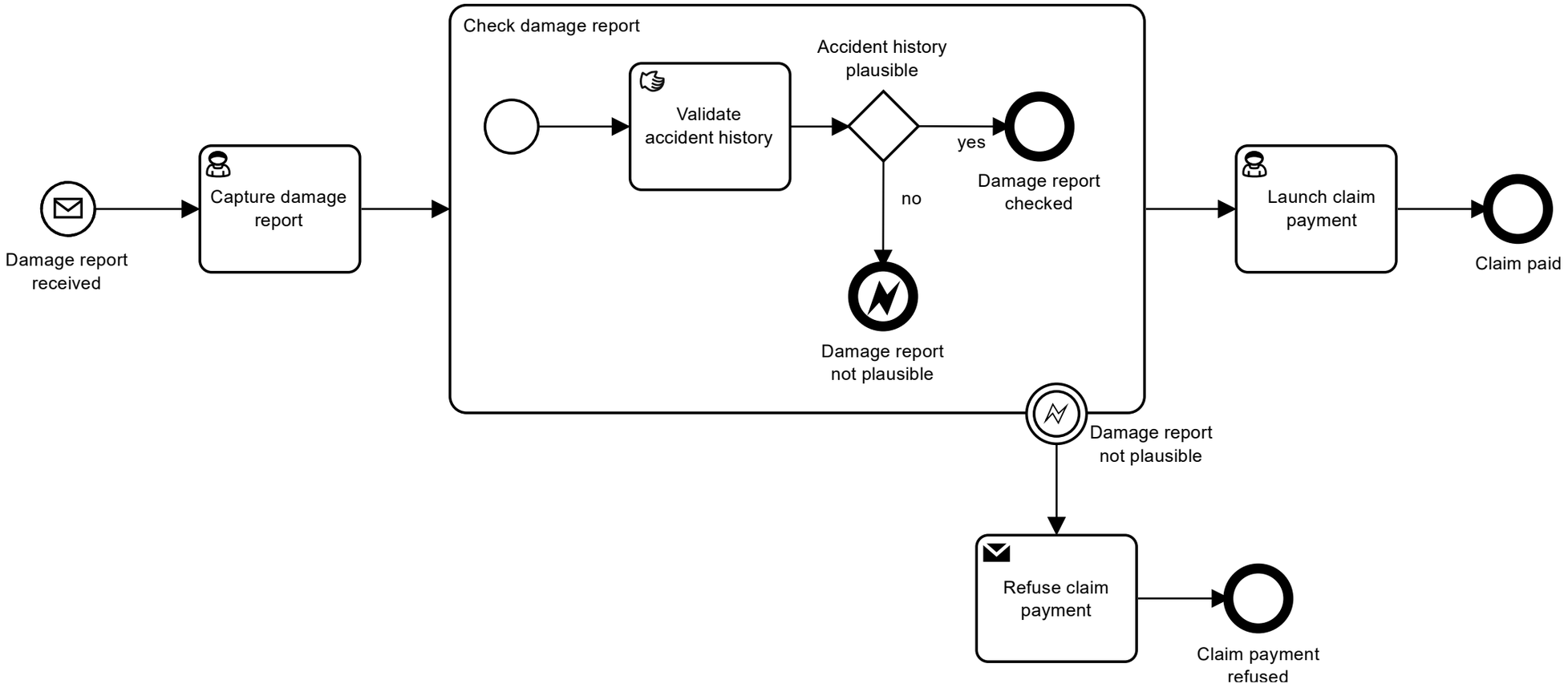


Boundary intermediate events

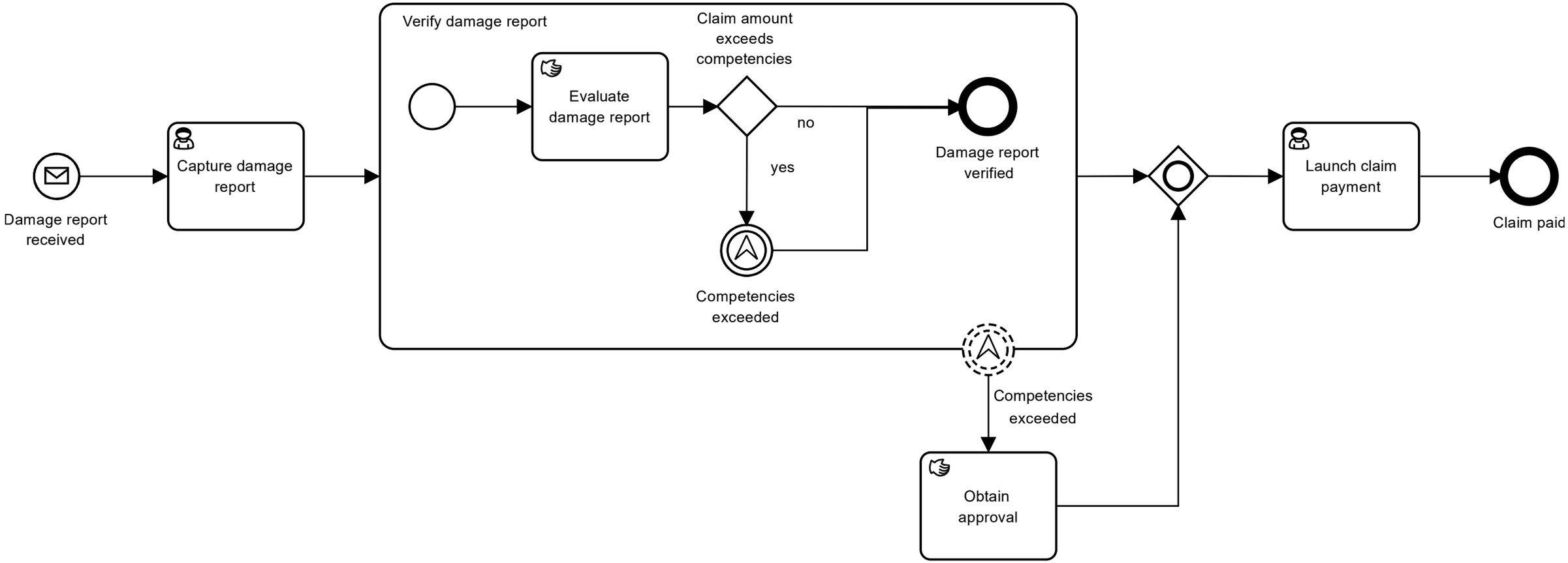


External to activity				Mixed		Internal to activity	
Interrupting boundary message event	Interrupting boundary timer event	Interrupting boundary condition event	Interrupting boundary signal event	Interrupting boundary multiple event	Interrupting boundary parallel event	Interrupting boundary escalation event	Interrupting boundary error event
Non-interrupting boundary message event	Non-interrupting boundary timer event	Non-interrupting boundary condition event	Non-interrupting boundary signal event	Non-interrupting boundary multiple event	Non-interrupting boundary parallel event	Non-interrupting boundary escalation event	Non-interrupting boundary cancellation event

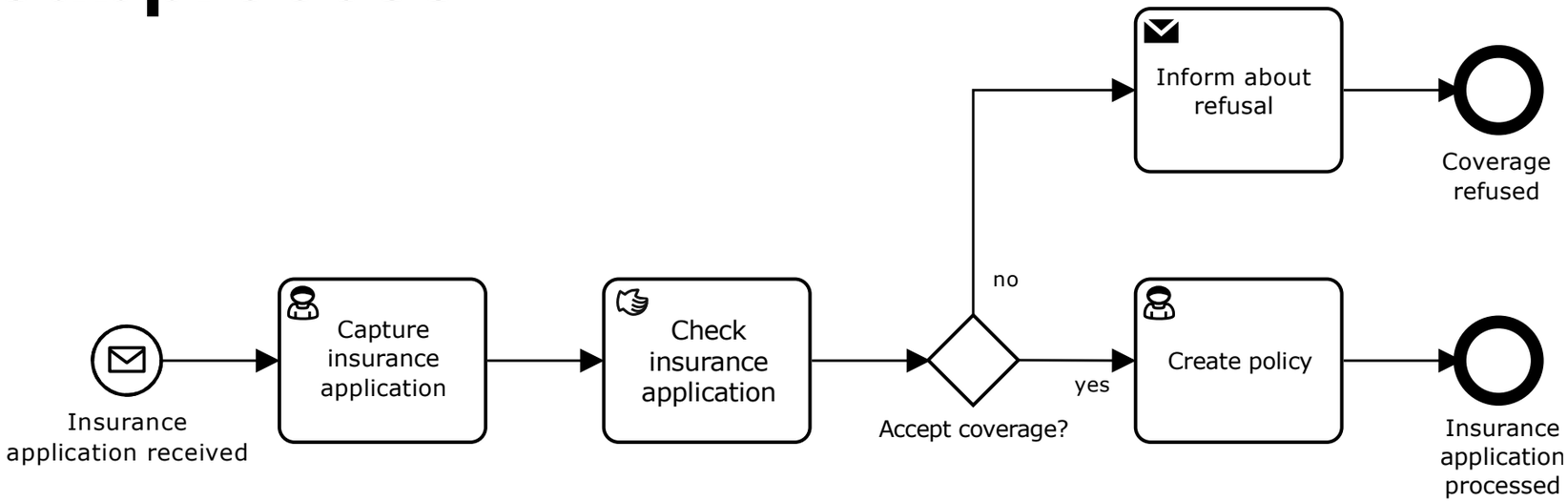
Interruption in subprocess

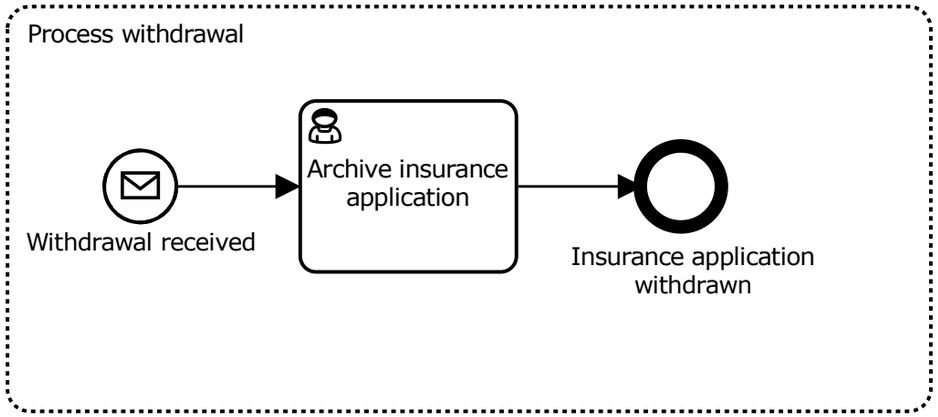


Addition to the subprocess



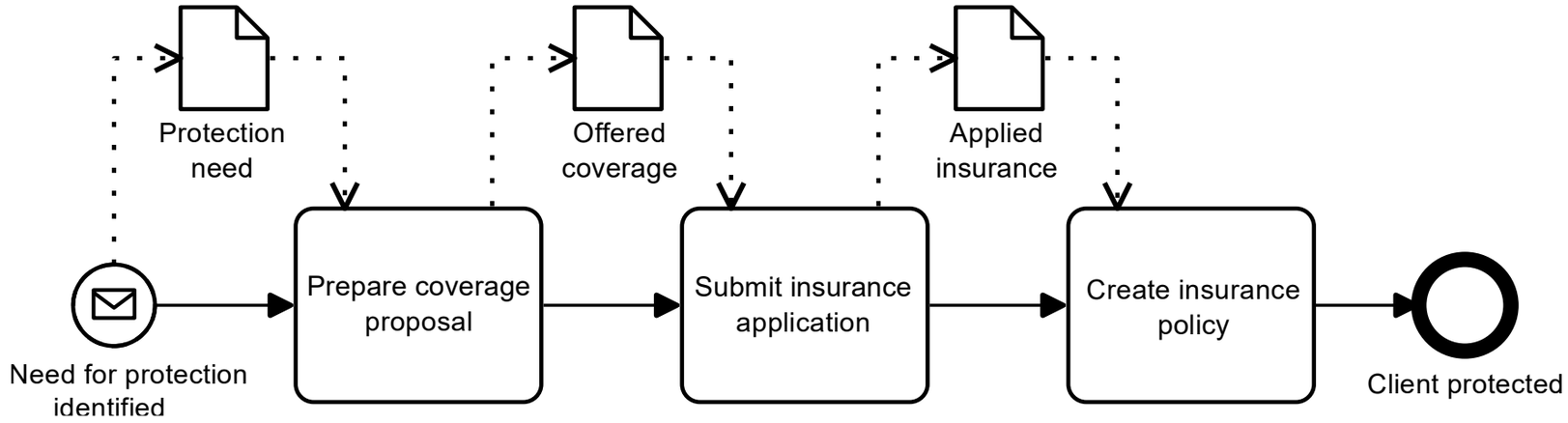
Event subprocess



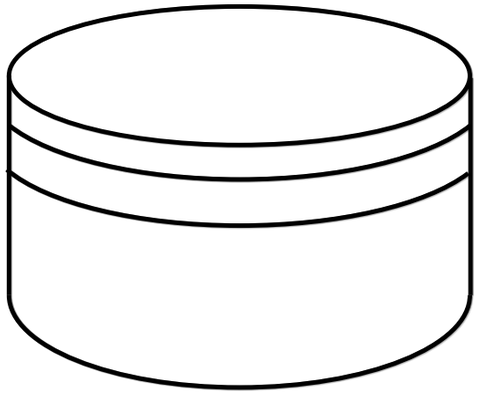


Agenda

Data flow with data objects



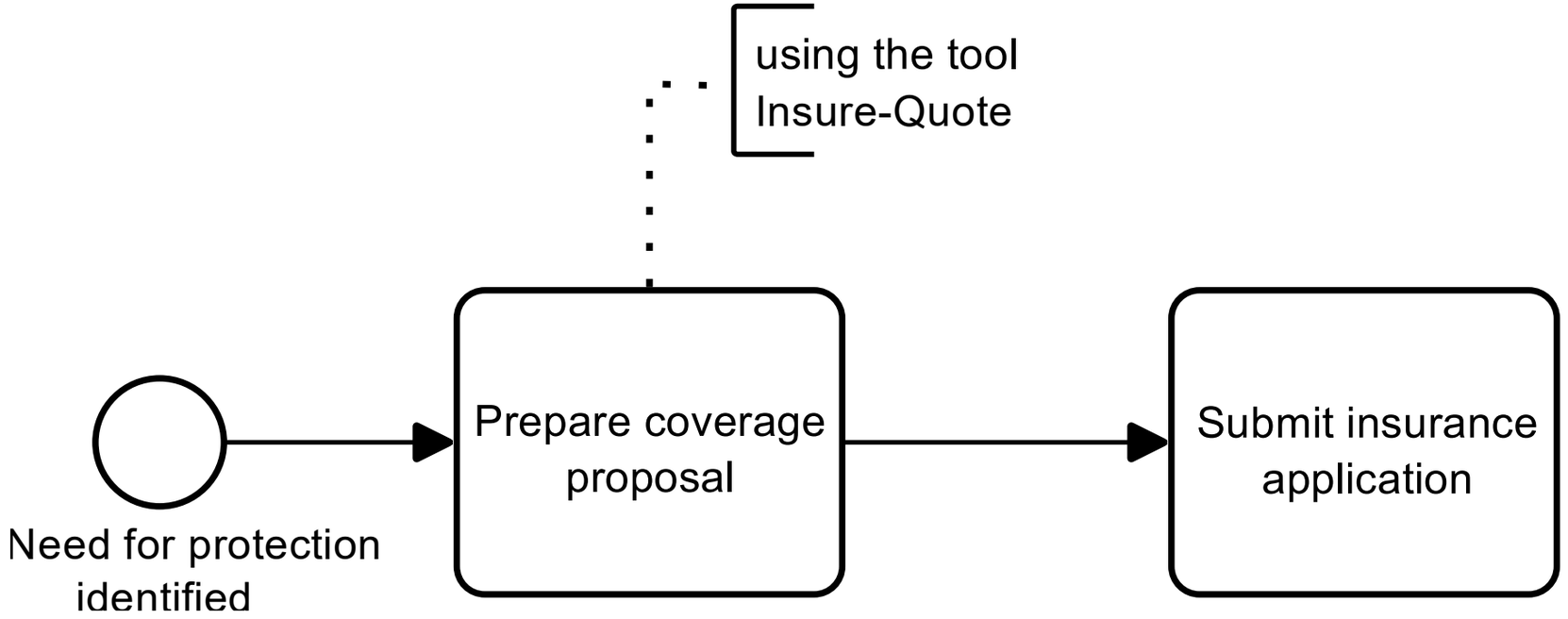
Data store



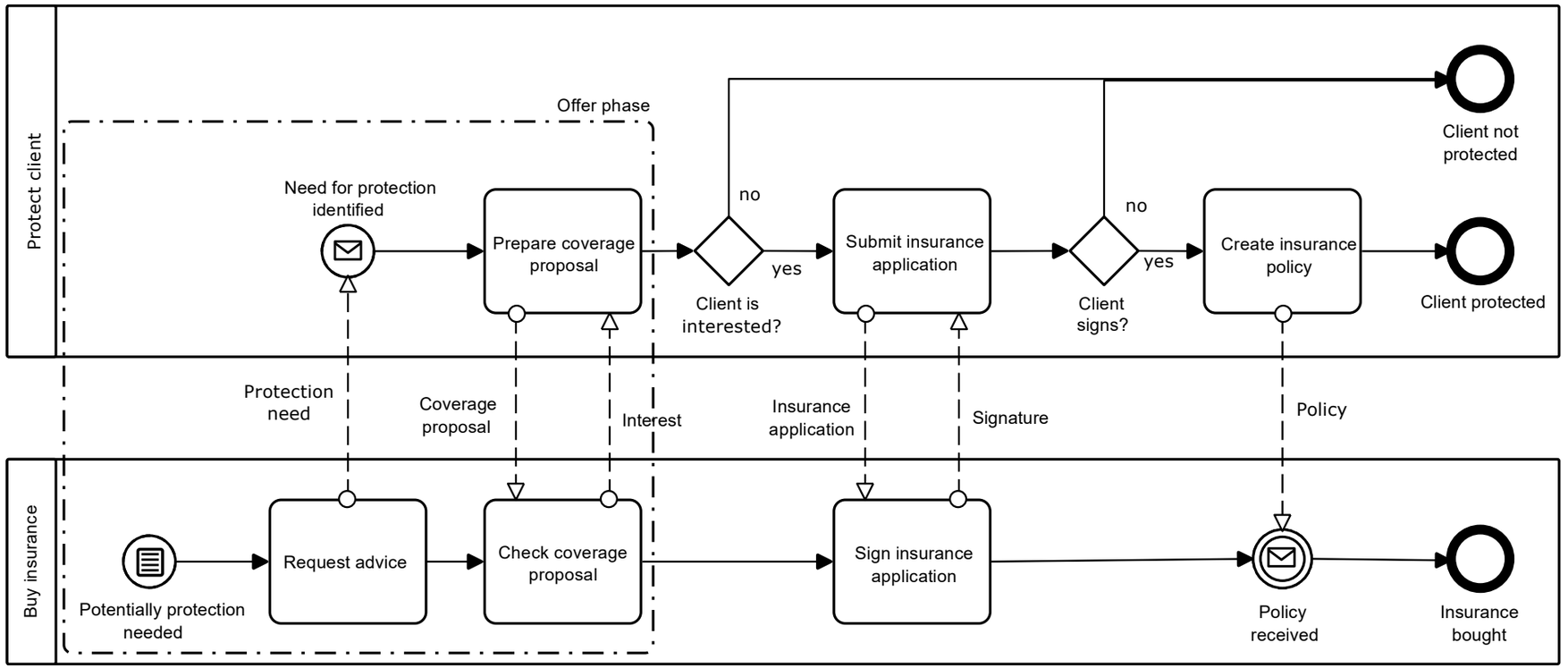
Data Store

- The lifespan of the data objects is limited to the runtime of a process instance.
- Data stores, on the other hand, "survive" process execution.
- They correspond to the use of a database or a repository.
- Data stores can be used to bridge different execution times or frequencies of processes.

Comments (Text annotations)



Grouping


Protect client
Offer phase
Need for protection identified
Prepare coverage proposal
Client is interested?
no
yes
Submit insurance application
Client signs?
no
yes
Create insurance policy
Client not protected
Client protected
Protection need
Coverage proposal
Interest
Insurance application
Signature
Policy
Buy insurance
Potentially protection needed
Request advice
Check coverage proposal
Sign insurance application
Policy received
Insurance bought

Agenda

Hints for practical use

- Determine target group
- Intended use
- Modular modeling (model hierarchy)
- Model size and direction
- Lanes
- Toolbox
- Conventions

Process framework

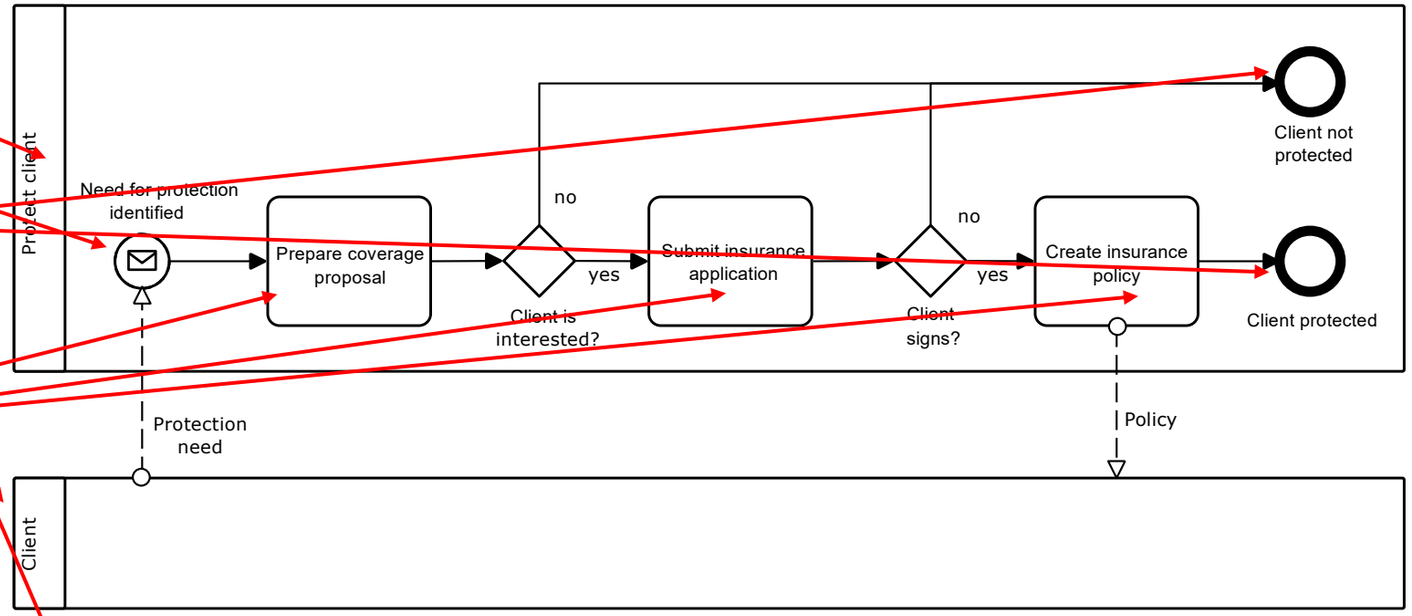
What does the process do?

What triggers the process?

How does the process end?

With whom does the process interact?

Granularity and thread?



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Agenda

More on BPMN (and Business Process Management in General)

- Aligned with OMG's BPM certification (Fundamental Level), which is the only "official" BPMN certification
- Covers Descriptive and Analytical BPMN 2.0 and general BPM topics
- Original in German, translated to English and French
- Available in book stores or on Amazon … or through the author