



— 70 years —
1950-2020

OBLIG 2 – IN5130 2021

Rules of the game

- The solution-paper in the form of a single pdf-document should be sent to kst@sintef.no by midnight (24:00) October 21. You may work in groups of maximum three students or you may work alone. Hence, one solution may have up to three names. There should be no collaboration or copying between different groups. Hence, each group should solve the exercise independently.

Gestalt Service (background)

As I tried to explain in Lecture I, modellers need to be aware of the theory of Gestalt psychology. Gestalt psychology implies that the mind understands external stimuli as wholes rather than as the sums of their parts. Gestalt psychology has proposed principles or laws that governs the workings of human perception. In Lecture I we briefly mentioned the following laws:

- Law of proximity: objects that are close are perceived to form a group
- Law of similarity: objects are perceptually grouped together if similar
- Law of closure: objects are perceived as complete ignoring gaps
- Law of symmetry: symmetrical objects are perceptually connected to form a coherent shape

Gestalt Service (background)

There are many more and they are well documented and explained both in the literature and on the internet. See for example:

- <https://www.toptal.com/designers/ui/gestalt-principles-of-design>
- <https://www.usertesting.com/blog/gestalt-principles>

Gestalt Service (background)

Assume we have decided to make a tool to guide modellers on the impact of gestalt principles. The idea is to offer a service that allows modellers to submit models to get them analysed with respect to gestalt principles. The service will not grasp the intended semantics of the models. Hence, it does not know what the models it gets means, but it can nevertheless identify potential "gestalt-traps" and communicate them back to the modellers. When receiving a model, the service will analyse the model and present the result in the form of a report that is sent back to the service user.

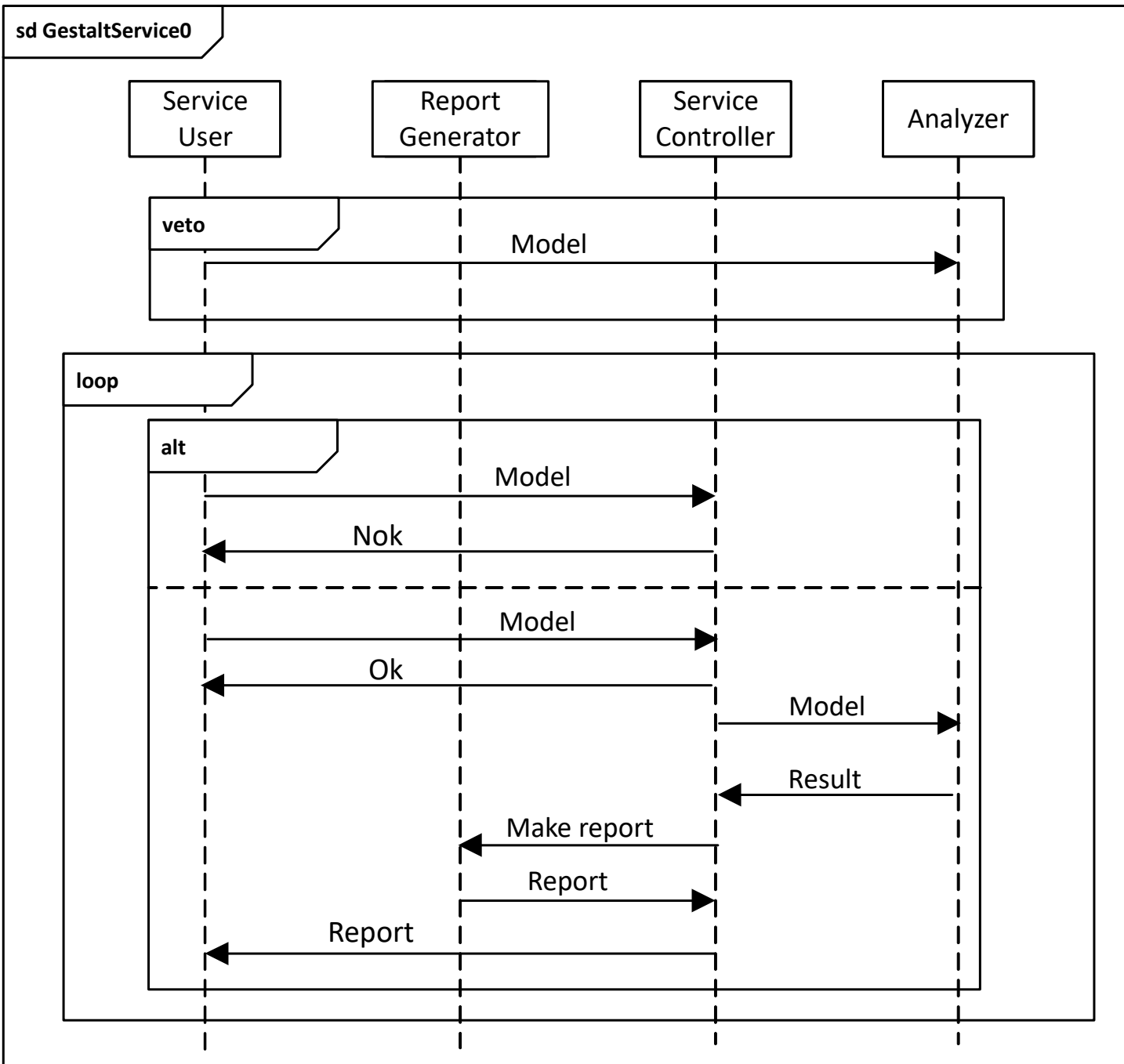
Gestalt Service (background)

The models presented in the following address such a gestalt service.

You can solve all the exercises by just looking at the diagrams. Hence, the background above has only been included to give you intuition on what the diagrams are about.

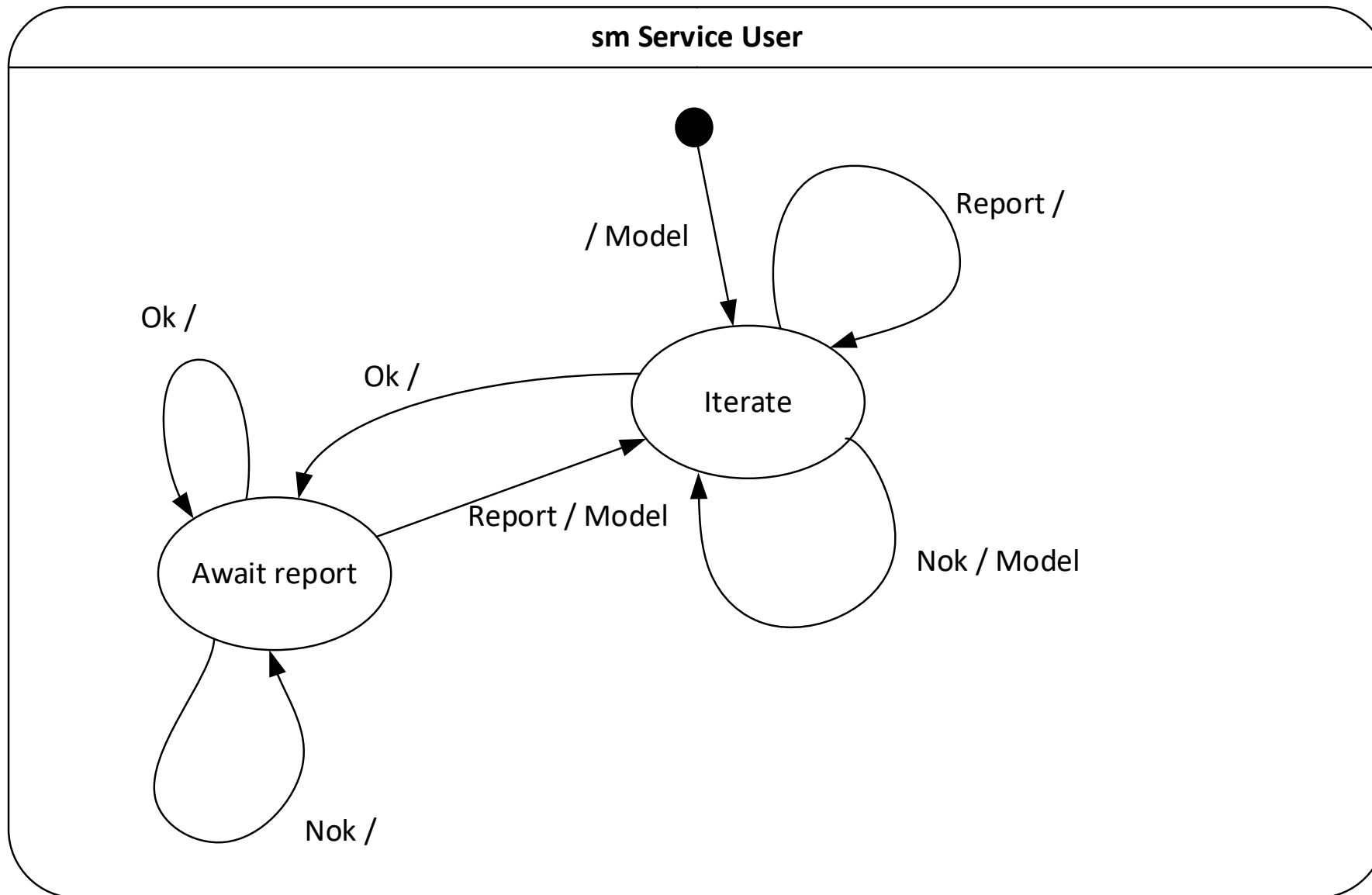
Question 1

- a) Which events may occur as the first event in a positive trace of sd GestaltService0? Explain your answer.
- b) How many positive traces of length less than or equal to 16 are described by sd GestaltService0? Explain your answer.
- c) Which events may occur as the last event in a negative trace of sd GestaltService0? Explain your answer.
- d) Let P16 be the set of **positive** traces described by sd GestaltService0 of length less than or equal to 16. Let N16 be the set of **negative** traces described by sd GestaltService0 of length less than or equal to 16. Is the number of traces in N16 less than, equal to or greater than the number of traces in P16. Explain your answer.



Question 2

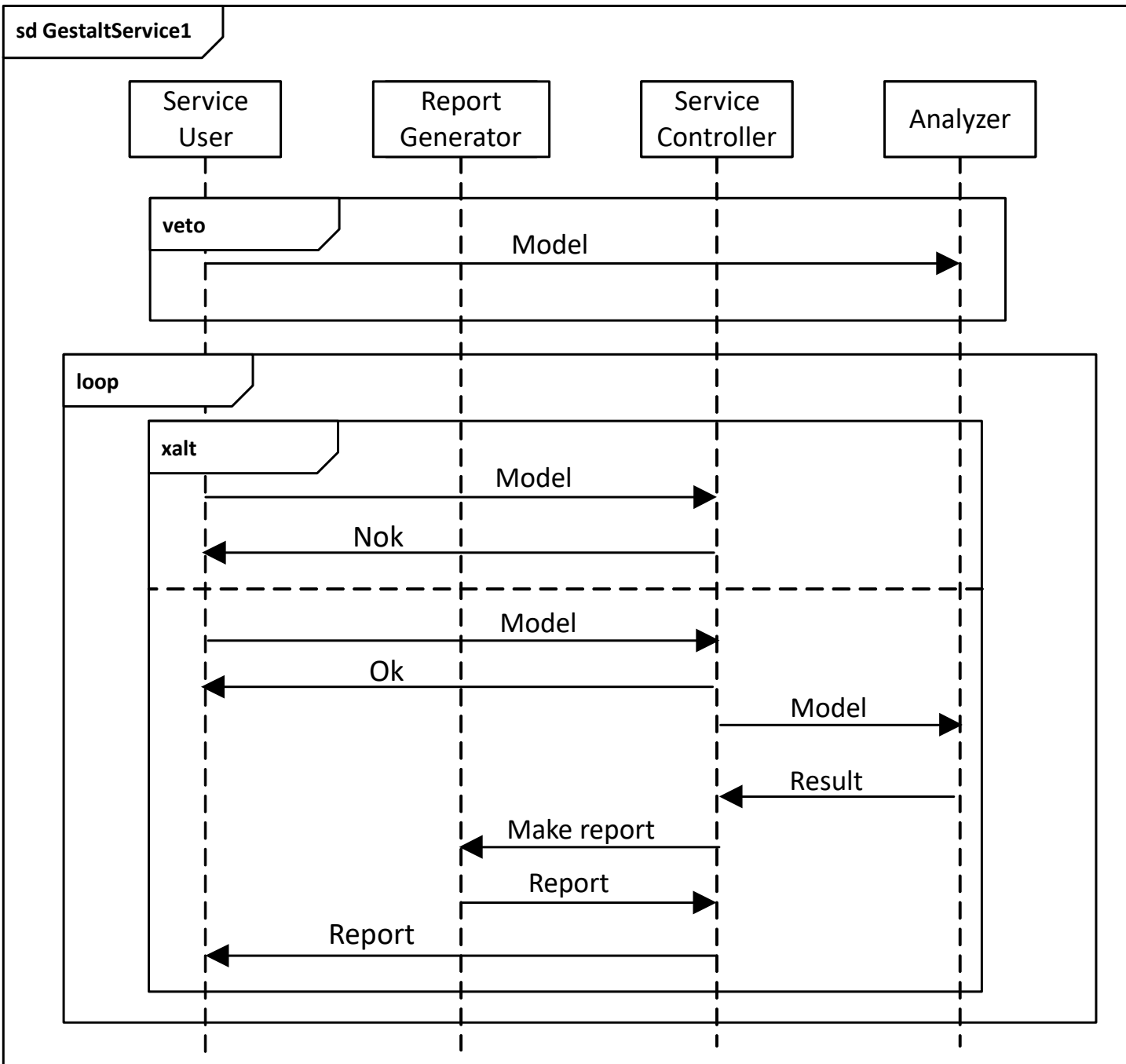
- a. Which events may occur as the first event in a positive trace of sm Service User? Explain your answer.
- b. Assume the only messages that can be sent to sm Service User are Ok, Nok, Report (e.g. it may receive any number of these messages but no other message). How many positive traces of length less than or equal to 3 are described by sm Service User? Explain your answer.
- c. Assume the only messages that can be sent to sm Service User are Ok, Nok, Report (e.g. it may receive any number of these messages but no other message). How many negative traces of length less than or equal to 3 are described by sm Service User? Explain your answer.



Question 3

Consider sd GestaltService1.

- a) Argue why sd GestaltService1 is a better model than sd GestaltService0.
- b) Is sd GestaltService1 a refinement of sd GestaltService0? If so, what kind?
Explain your answer.

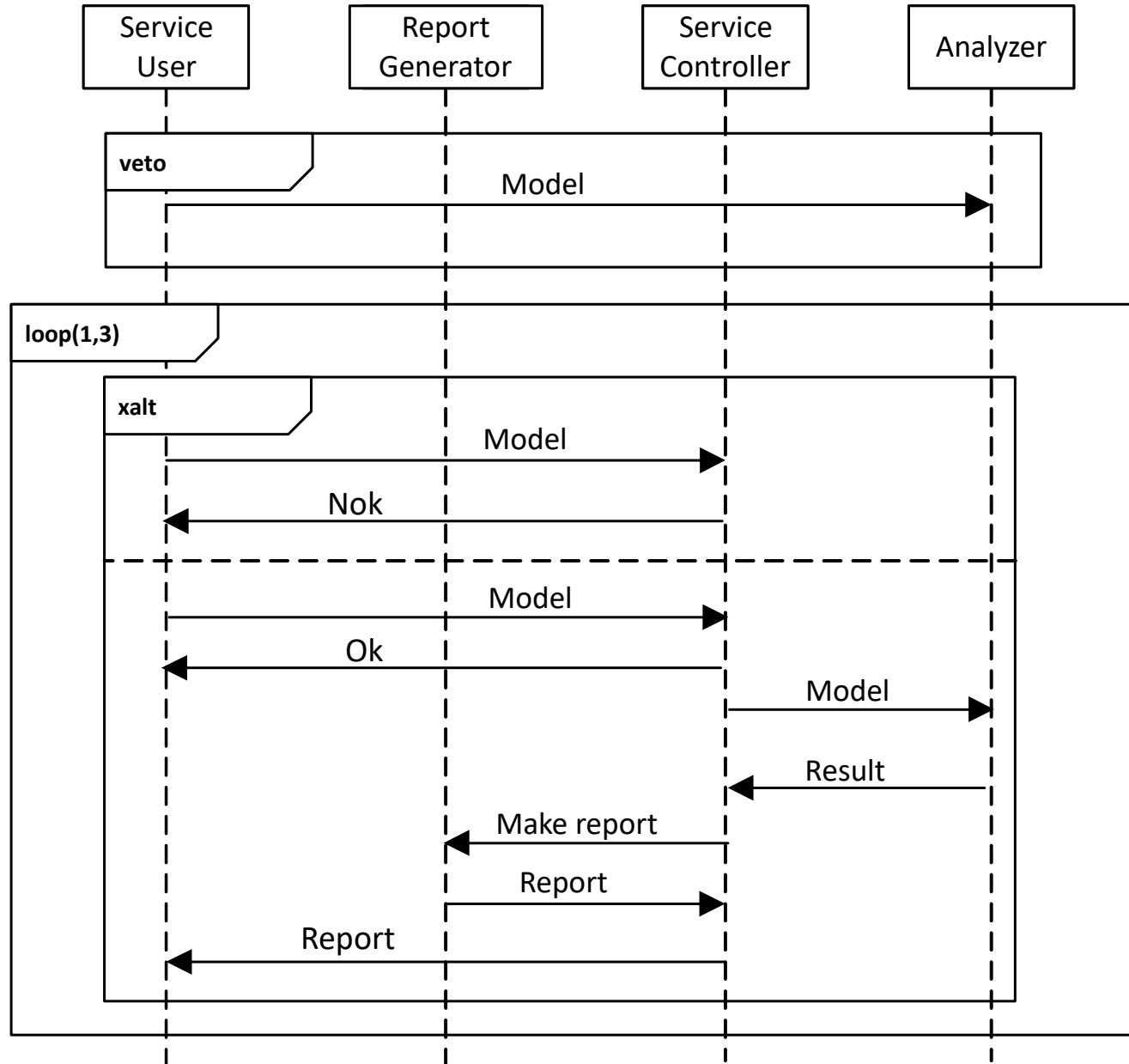


Question 4

Consider sd GestaltService2.

- a) How many interaction obligations are there in the semantics of sd GestaltService2? Explain your answer.
- b) Is GestaltService1 a refinement of GestaltService2? If so, what kind? Explain your answer.

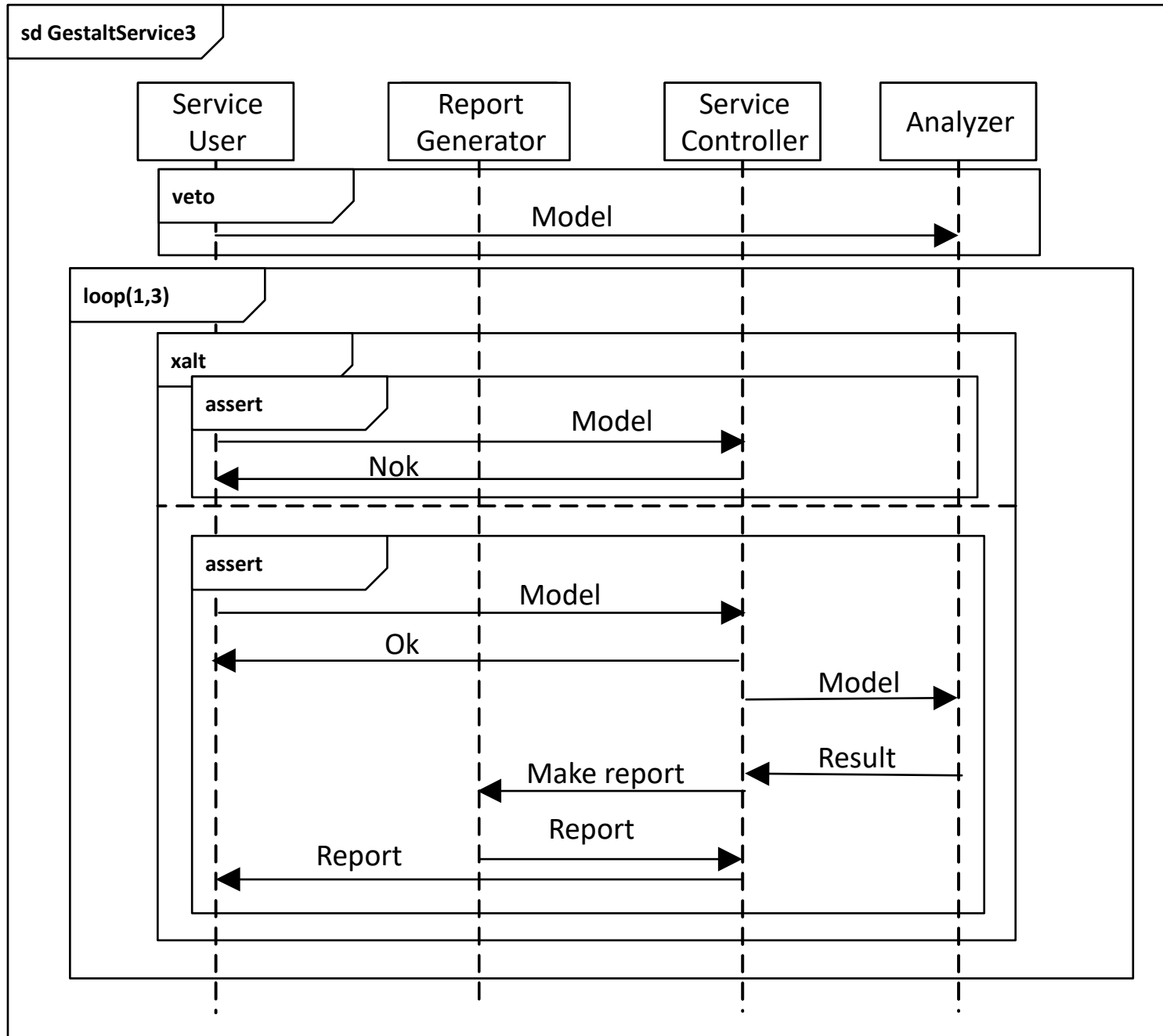
sd GestaltService2



Question 5

Consider sd GestaltService3.

- a) What is the minimal length of a negative trace described by sd GestaltService3?
Explain your answer.
- b) What is the maximal length of a negative trace described by sd GestaltService3?
Explain your answer.
- c) Is sd GestaltService3 a refinement of GestaltService2? If so, what kind? Explain your answer.





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Teknologi for et bedre samfunn