



SINTEF

OBLIG-II Refinement

Figure 1

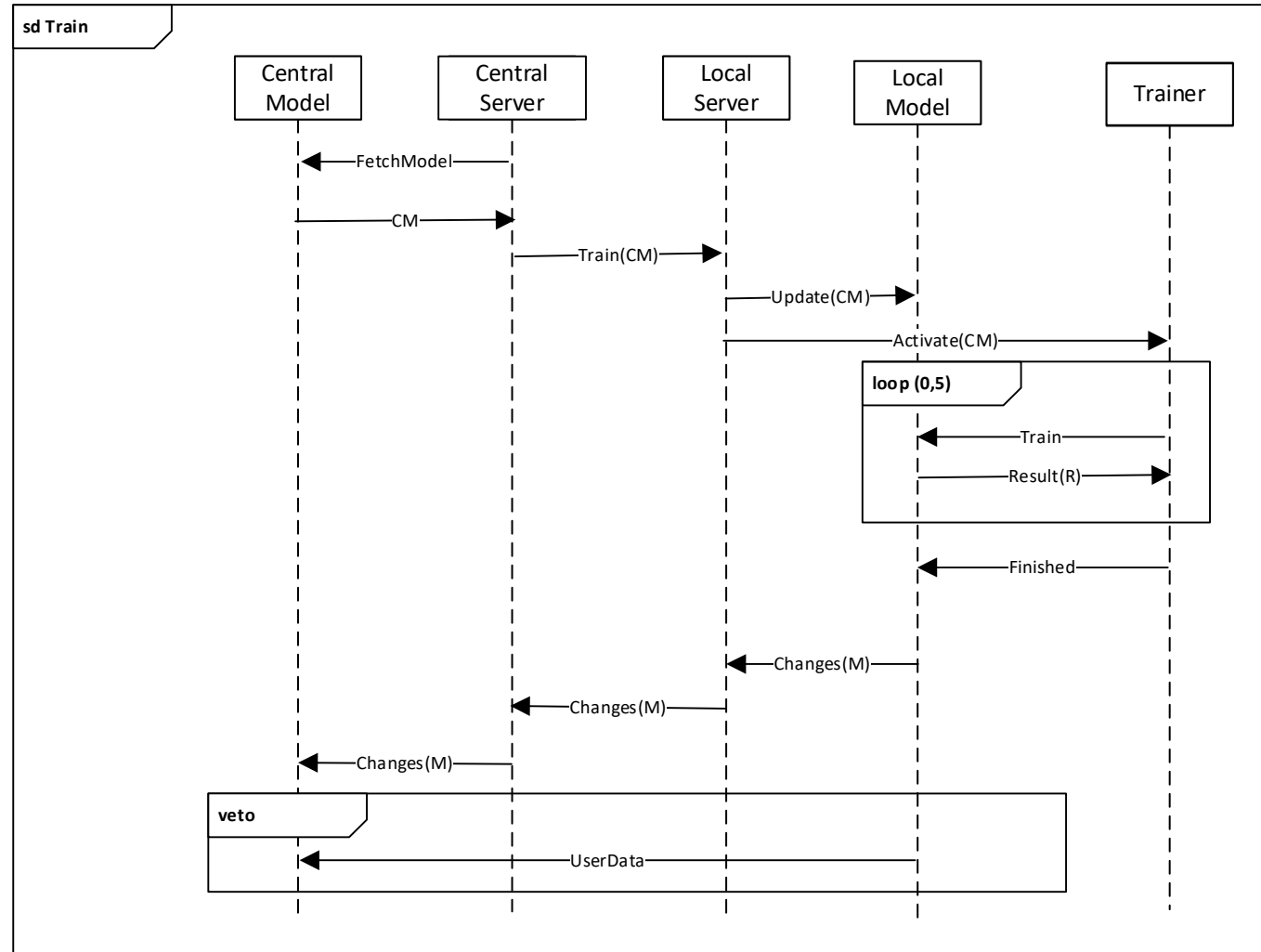


Figure 2

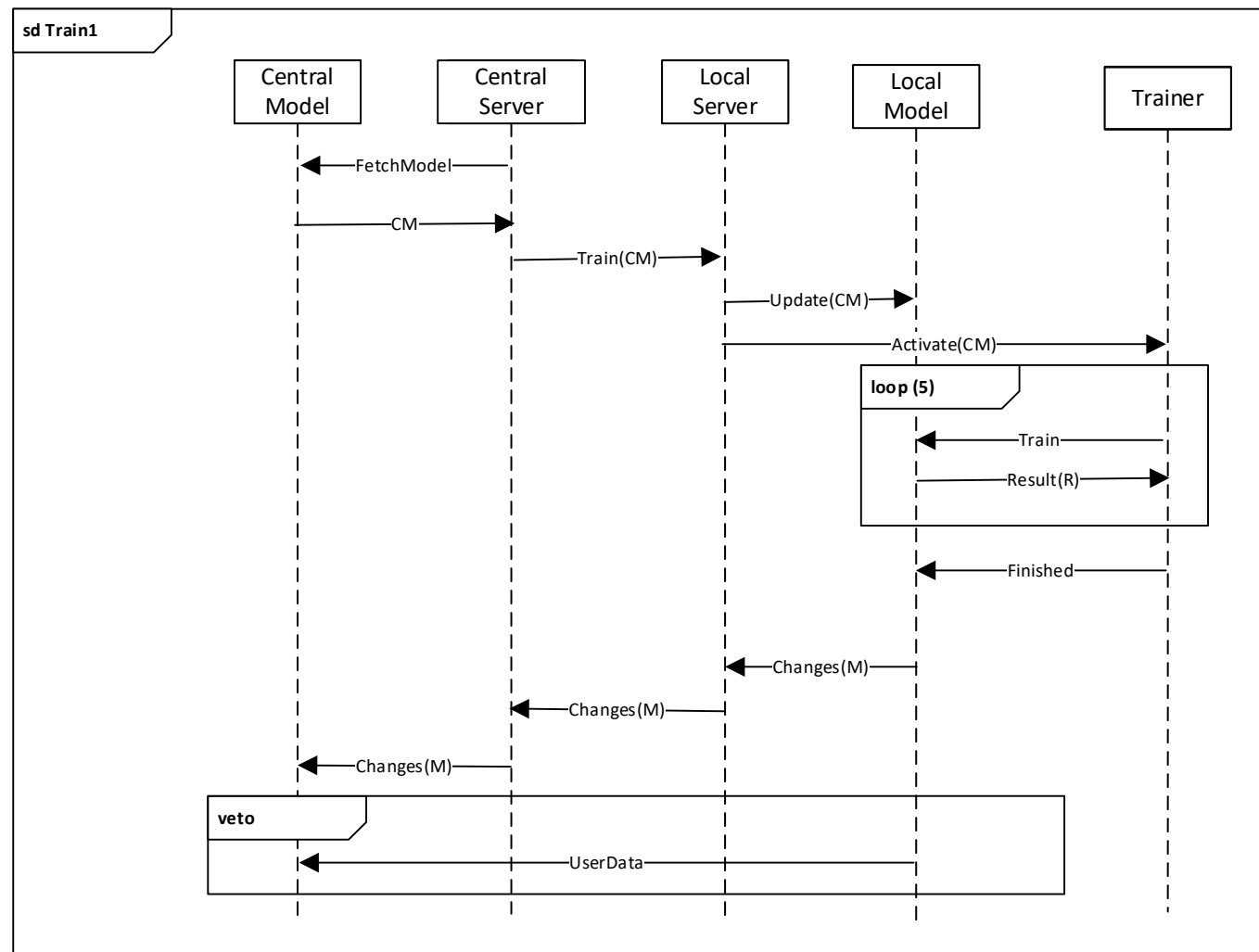
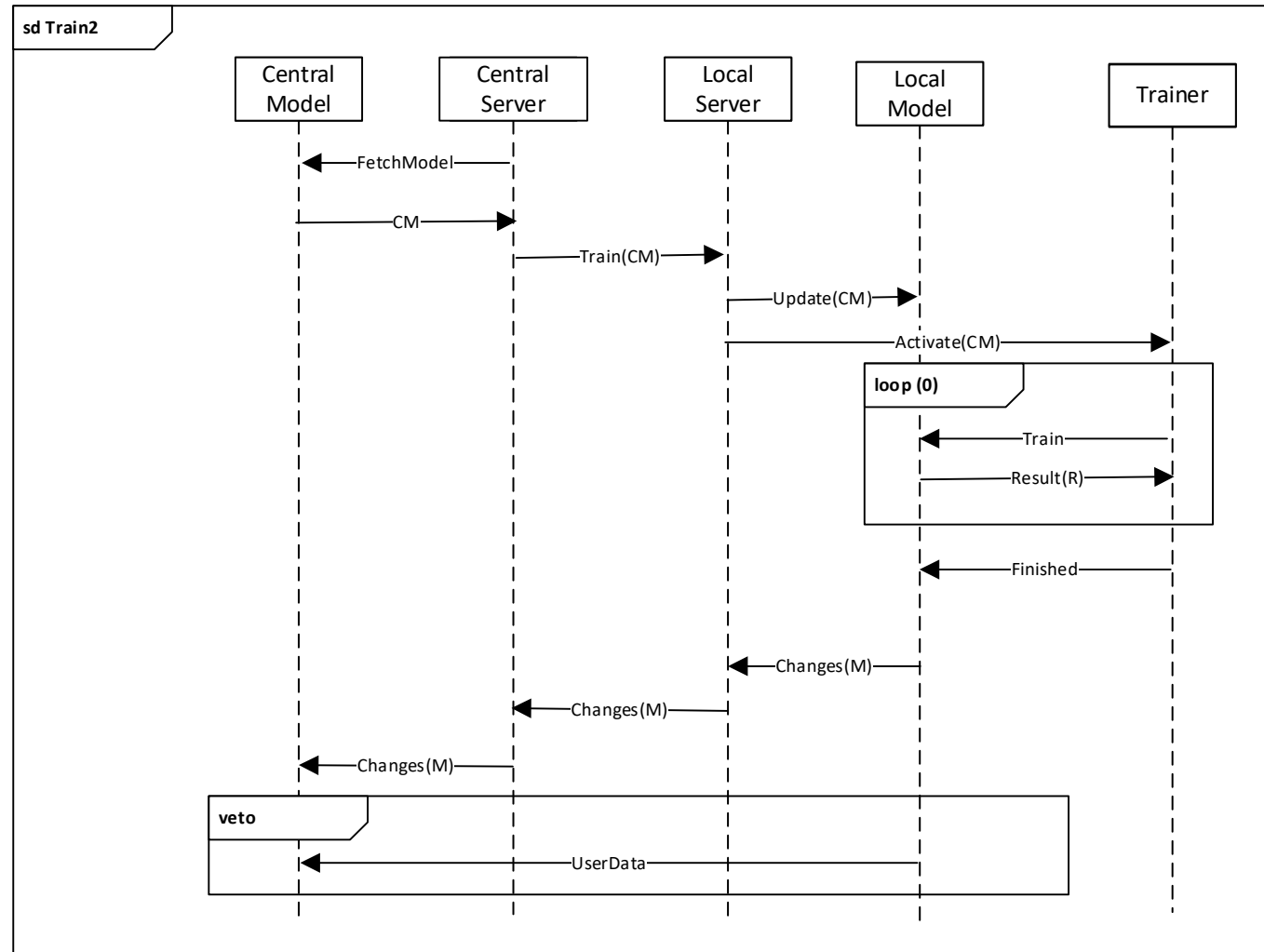


Figure 3





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Question 1

- 1a) What is the length of the shortest positive trace described by sd Train? Explain your answer.
- 1b) What is the length of the shortest negative trace described by sd Train? Explain your answer.
- 1c) Assume the loop of sd Train iterates exactly five times as specified in sd Train1. How many positive traces do we get? Explain your answer.
- 1d) Assume the loop of sd Train iterates exactly zero times as specified in sd Train2. How many negative traces do we get? Explain your answer.

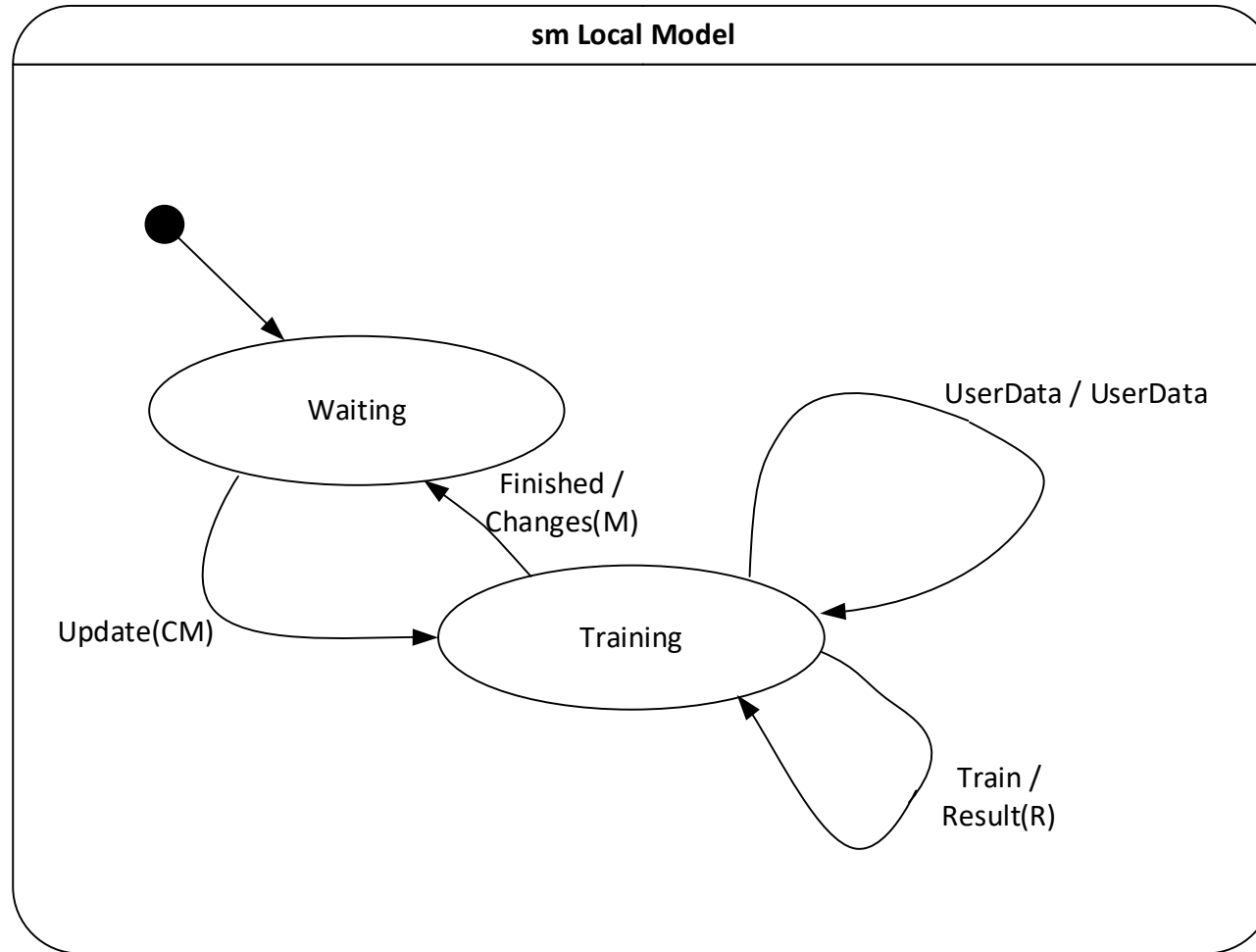


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Question 2

- 2a) Explain how to change sd Train into a sequence diagram sd Train3 with no veto construct so that sd Train3 and sd Train have identical semantics.
- 2b) Explain how to change sd Train into a sequence diagram sd Train4 with no loop construct so that sd Train4 and sd Train have identical semantics.
- 2c) Explain to what extent any pair of Train, Train1 and Train2 as presented in Question 1 can be related by refinement?

Figure 4





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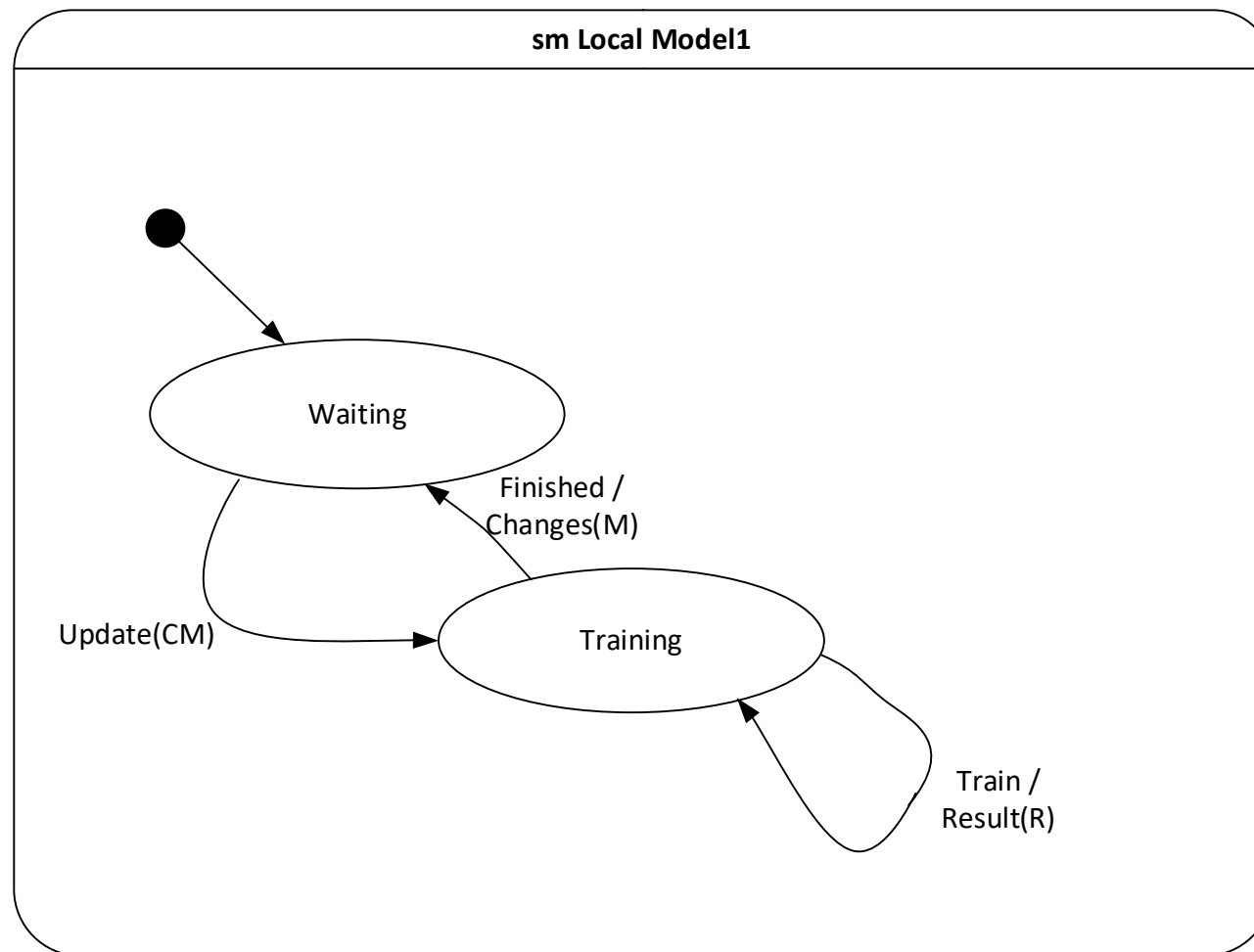
Question 3

- 3a) Describe one positive trace of sm Local Model.
- 3b) Describe one negative trace of sm Local Model.
- 3c) Is sm Local Model consistent with the lifeline Local Model in sd Train? Explain your answer.



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Figure 5





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Question 4

- 4a) sm Local Model1 is obtained from sm Local Model by removing one of its transitions. Is Local Model1 a narrowing of Local Model? Explain your answer.
- 4b) Is it possible to draw a state machine sm Local Model2 so that Local Model2 supplements sm Local Model. Explain your answer.



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