

Operational Ambulance Planning



Scientific Meeting CWI - May 29, 2015
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Emergency Medical Services

1. Accident occurs
2. Closest idle ambulance is sent
3. Ambulance arrives at accident scene
4. Patient may need transport to hospital
5. Ambulance becomes available
and returns to its base location

Typical objective is to minimize the fraction of late arrivals (in our case: > 12 minutes)

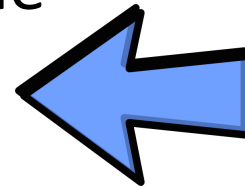
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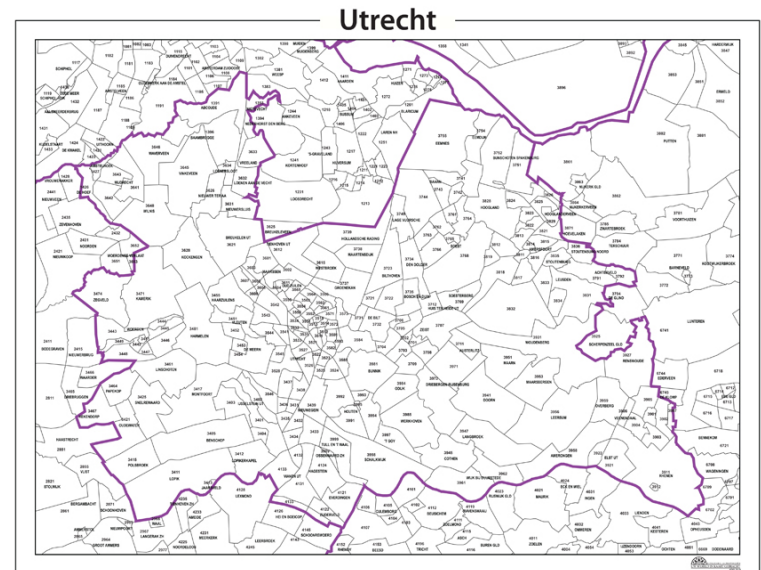
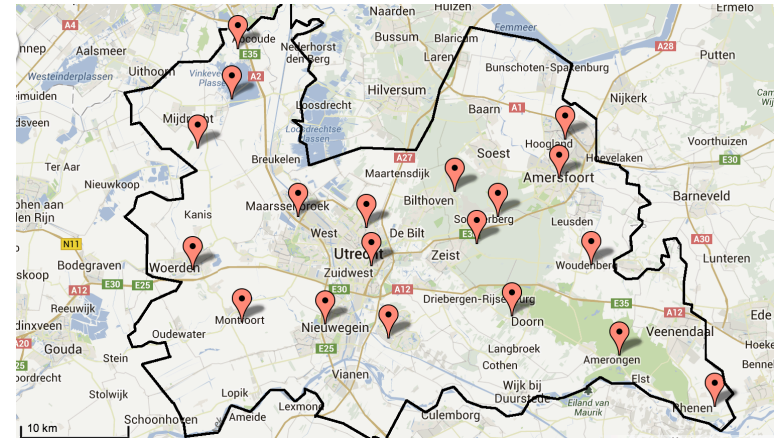


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Operational planning - input

Make a decision based on:

- Current state & location of other ambulances
- Base locations
- Expected demand (# accidents) per location



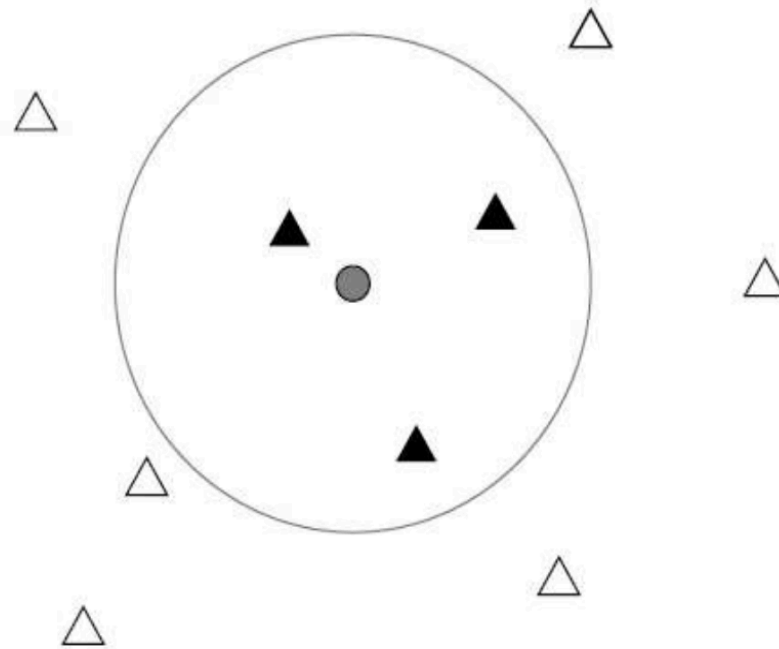
Real-time relocations (DAM)

Benchmark: Static solution (“return to home base”)

Need an expression that tells us where this ambulance is most useful.

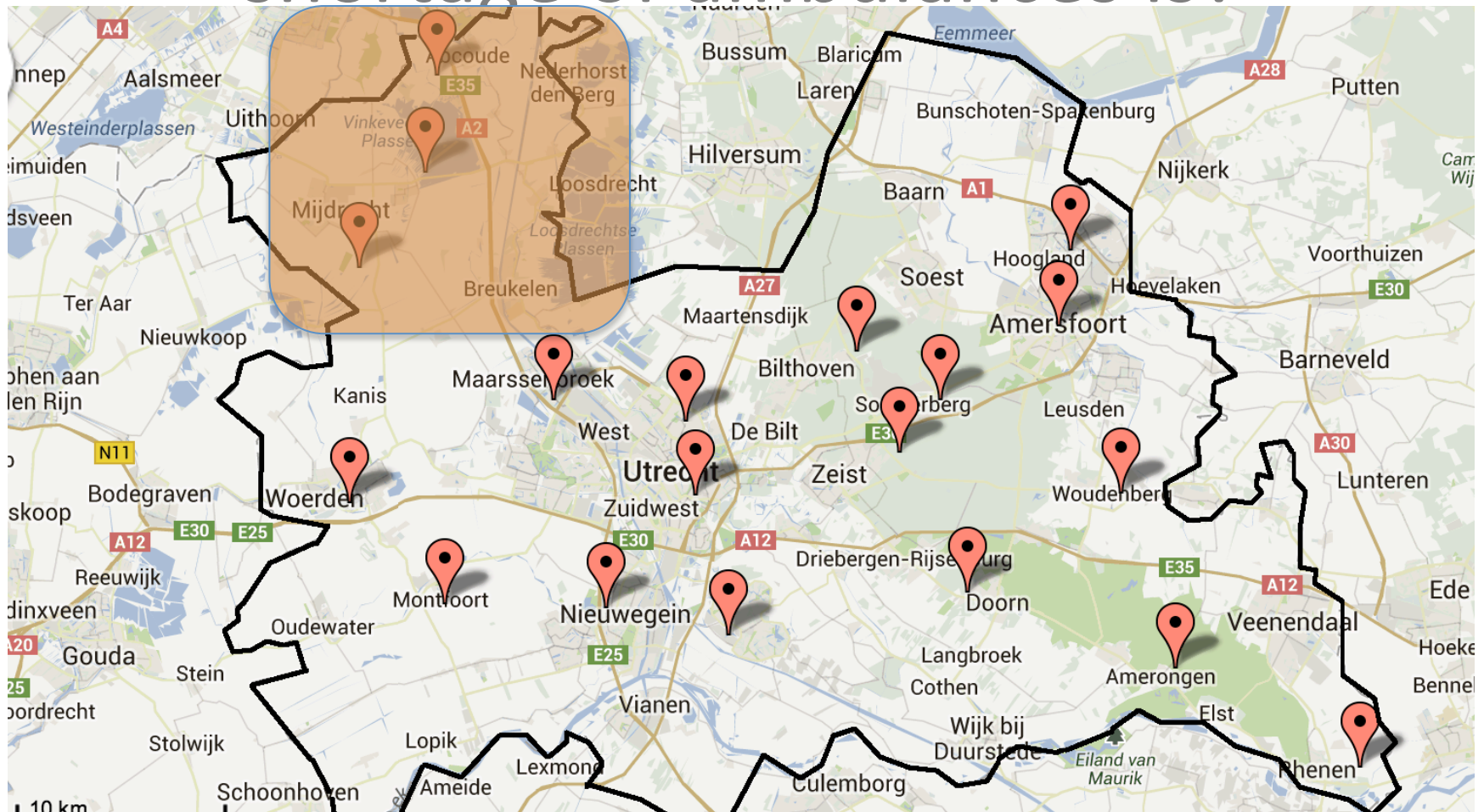
Use simulation to validate results.

How to determine where the shortage of ambulances is?

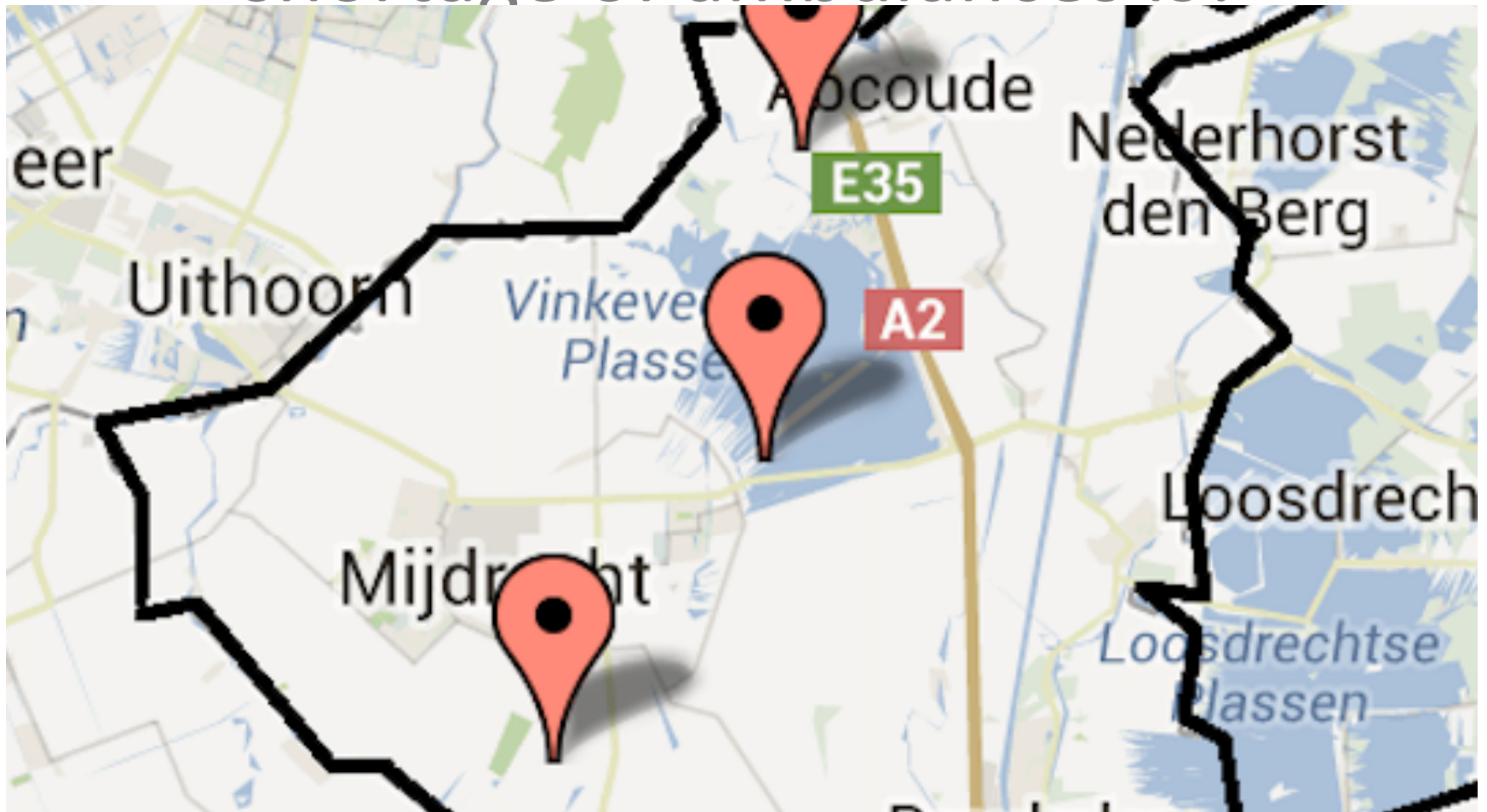


- Geselecteerde standplaats
- ▲ Gedekt vraagpunt
- △ Ongedekt vraagpunt

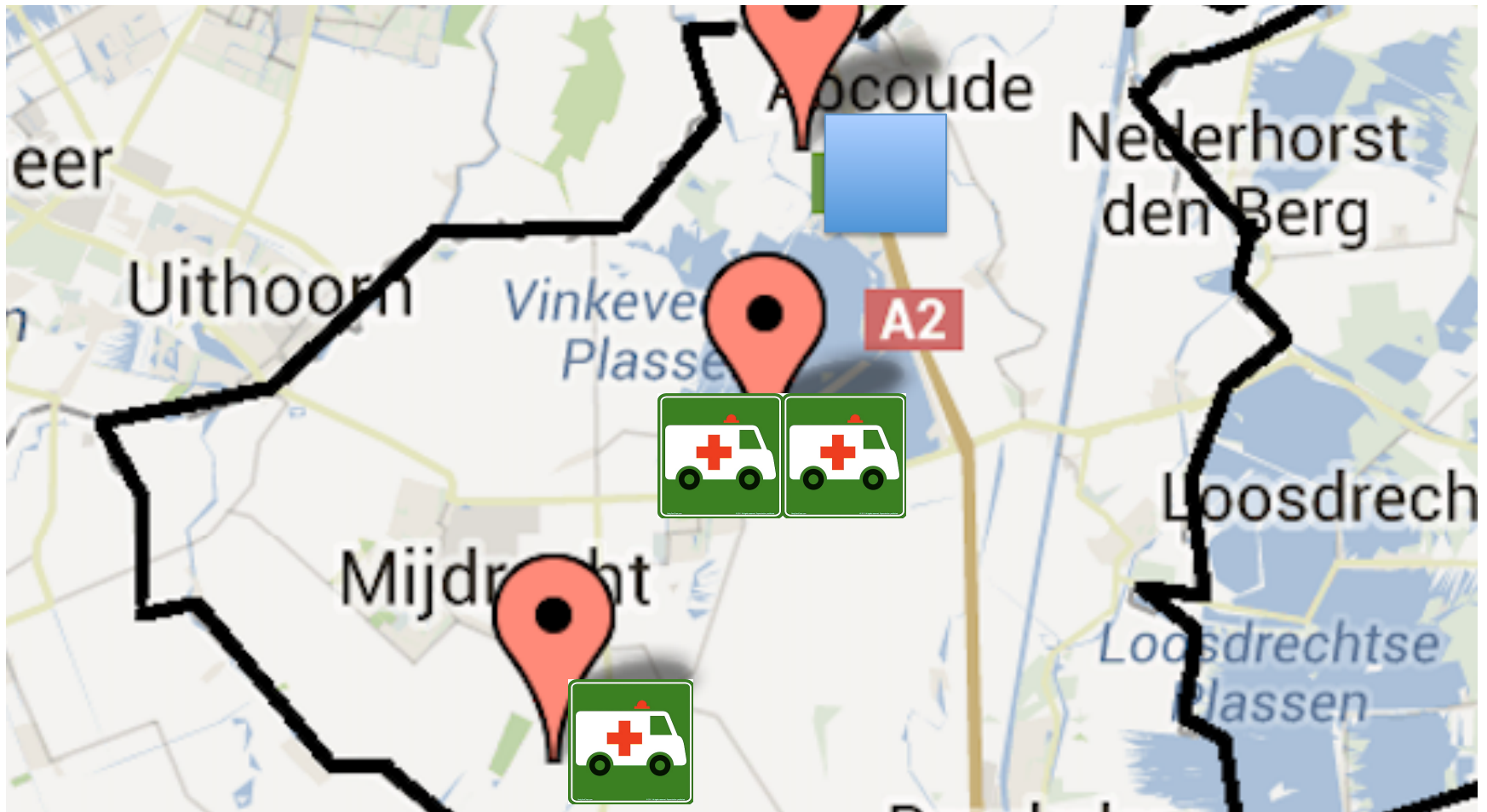
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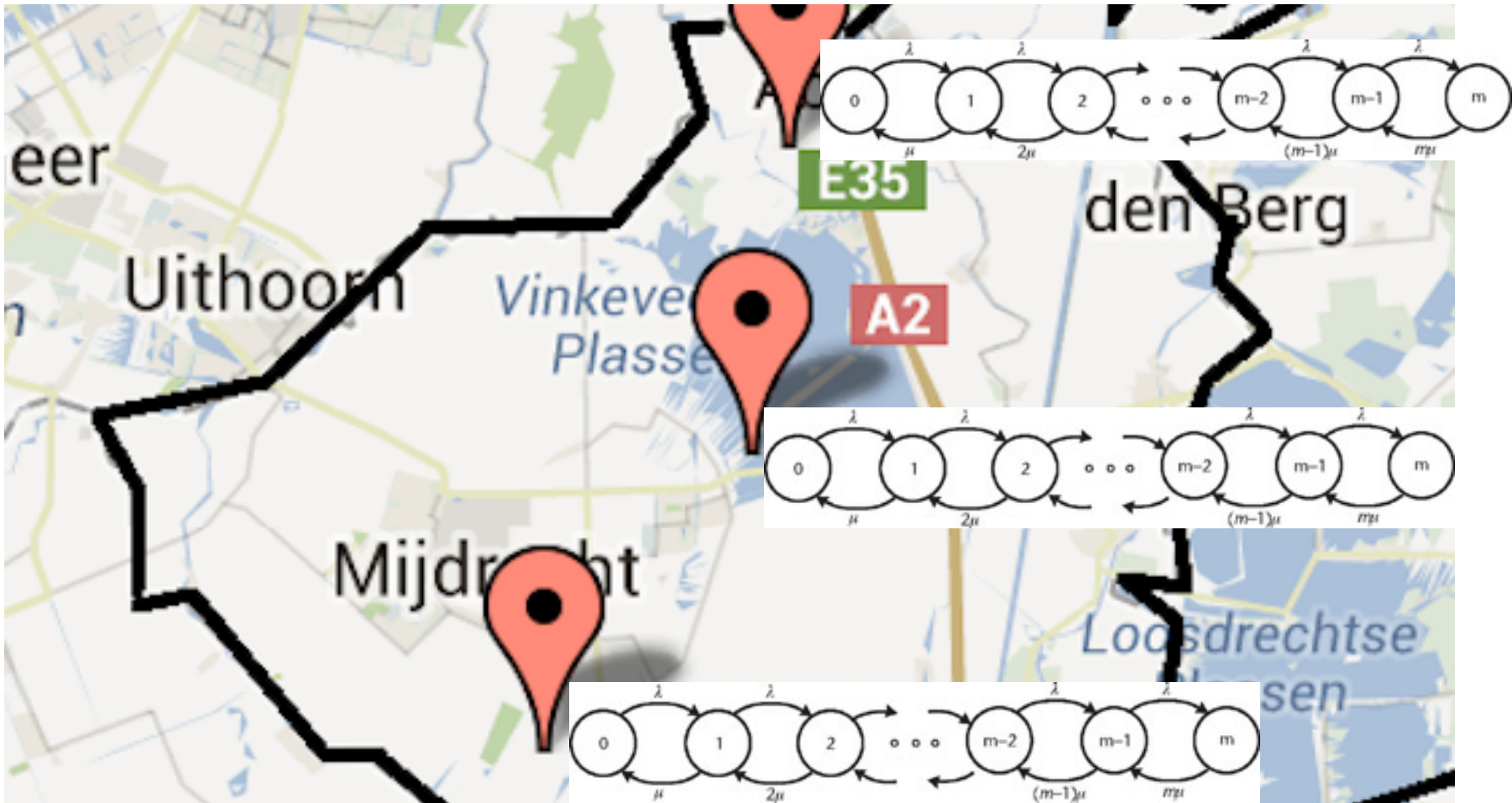
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Independent operators?



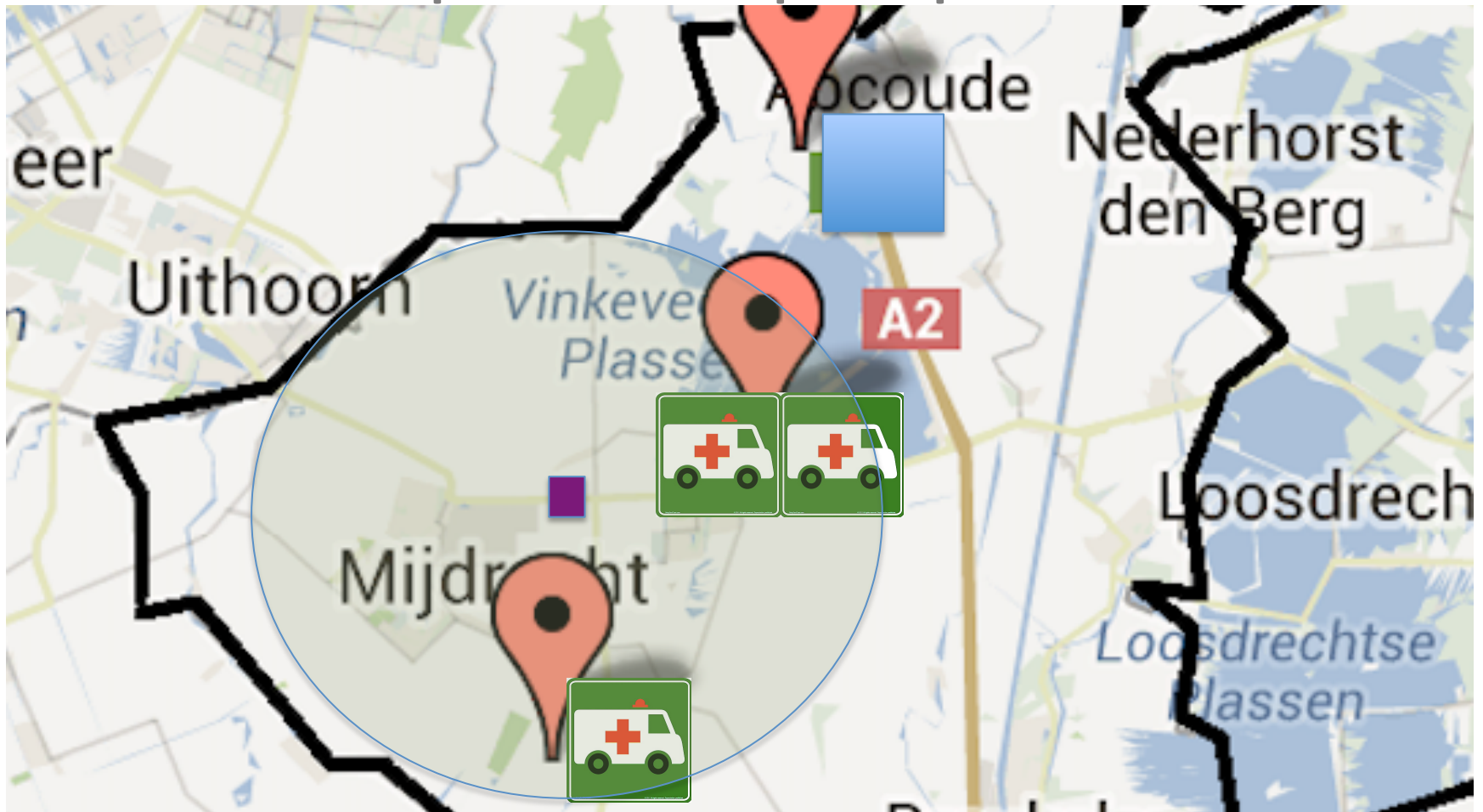
Erlang loss functions?



Erlang loss functions?



View the problem from the patient's perspective



CWI

REPRO

Thank you for your attention

