Towards a Closed-Loop Automation for Service Assurance with the DxAGENT

Korian Edeline, Thomas Carlisi, Justin Iurman,
Benoît Claise, Benoit Donnet

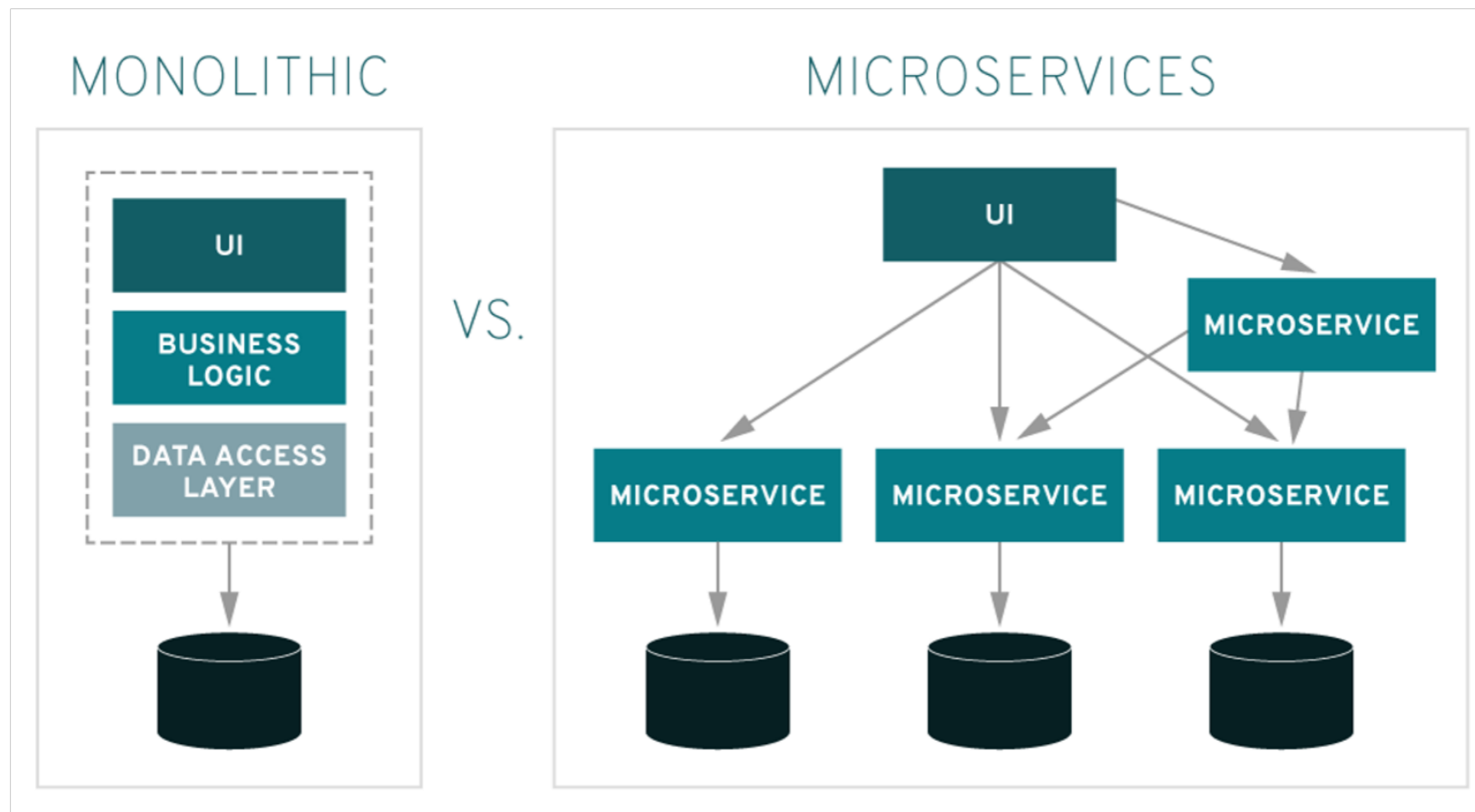LIÈGE université

Agenda

- Motivations
- DxAGENT
- Evaluation
- Conclusion

Agenda

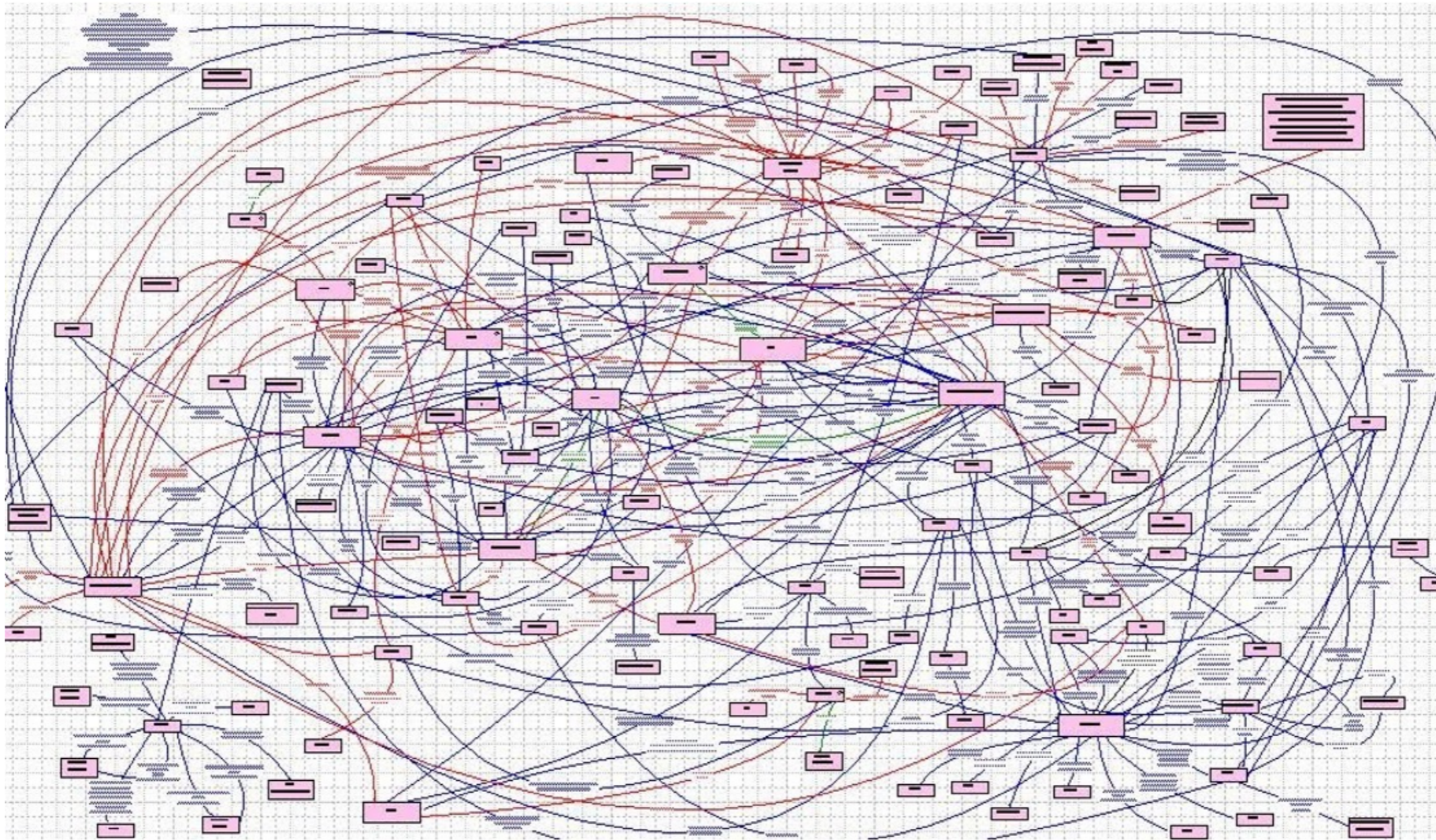- Motivations
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Motivations

- Applications are made of multiple micro-services

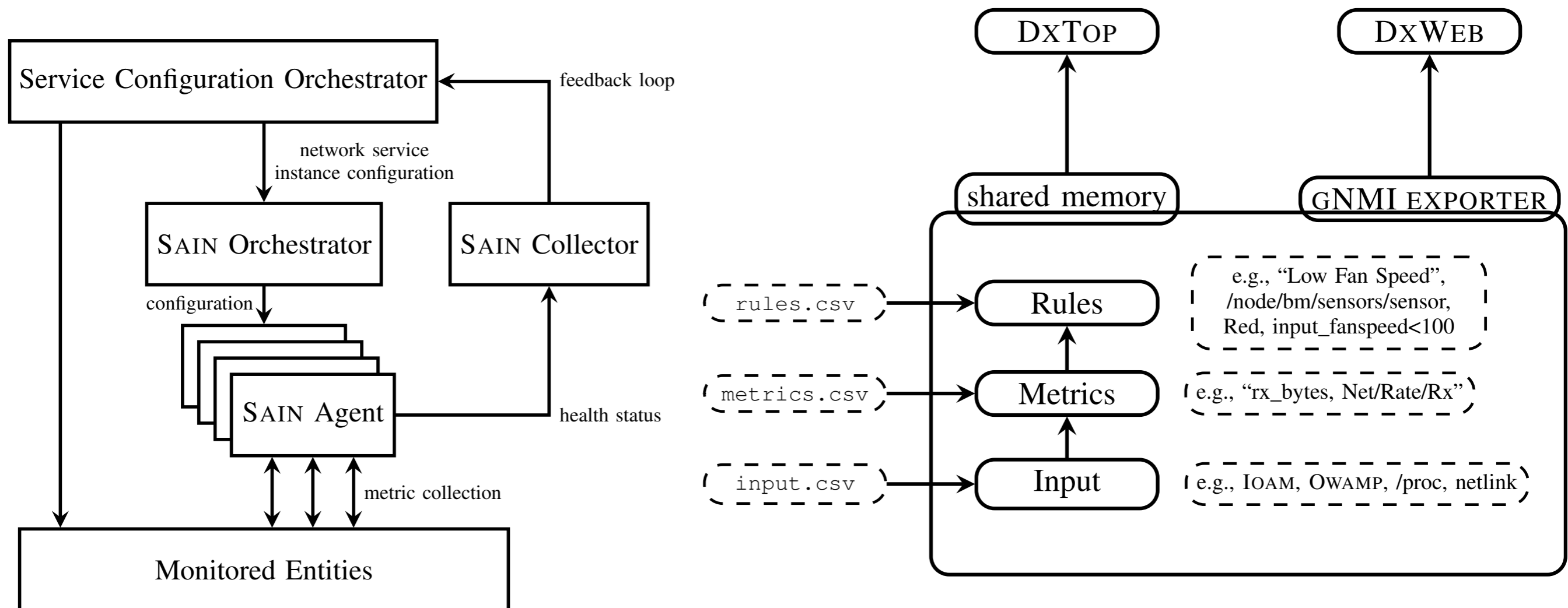# Motivations (2)

- Monitoring microservices is hard

- Ideally, we should be able to automatically respond to incidents
  - whatever the "microservices nightmare"

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Diagnostic Agent

- SAIN VS. DXAGENT

Diagnostic Agent (2)

- DxTop

```
CPU | Memory | Processes | Networking | Virtual Machines | VPP | Health

                    vm-count: 0 kb-count:0
                      symptoms-count: 2


                       127.0.0.2 health:100
owamp_accessible       yes                             0
to_pkts_lost           0                               0
to_pkts_dup            0                               0
to_ow_del_min          0.042                           -0.04
to_ow_del_med          0.1                             -0.1
to_ow_del_max          0.327                           0.18
to_ow_jitter           0.3                             0.3
to_reordering          0.0                             0.0
from_pkts_lost         0                               0
from_pkts_dup          0                               0
from_ow_del_min        0.0348                          -0.07
from_ow_del_med        0.2                             0.0
from_ow_del_max        0.327                           0.18
from_ow_jitter         0.0                             0.0
from_reordering        0.0                             0.0
```
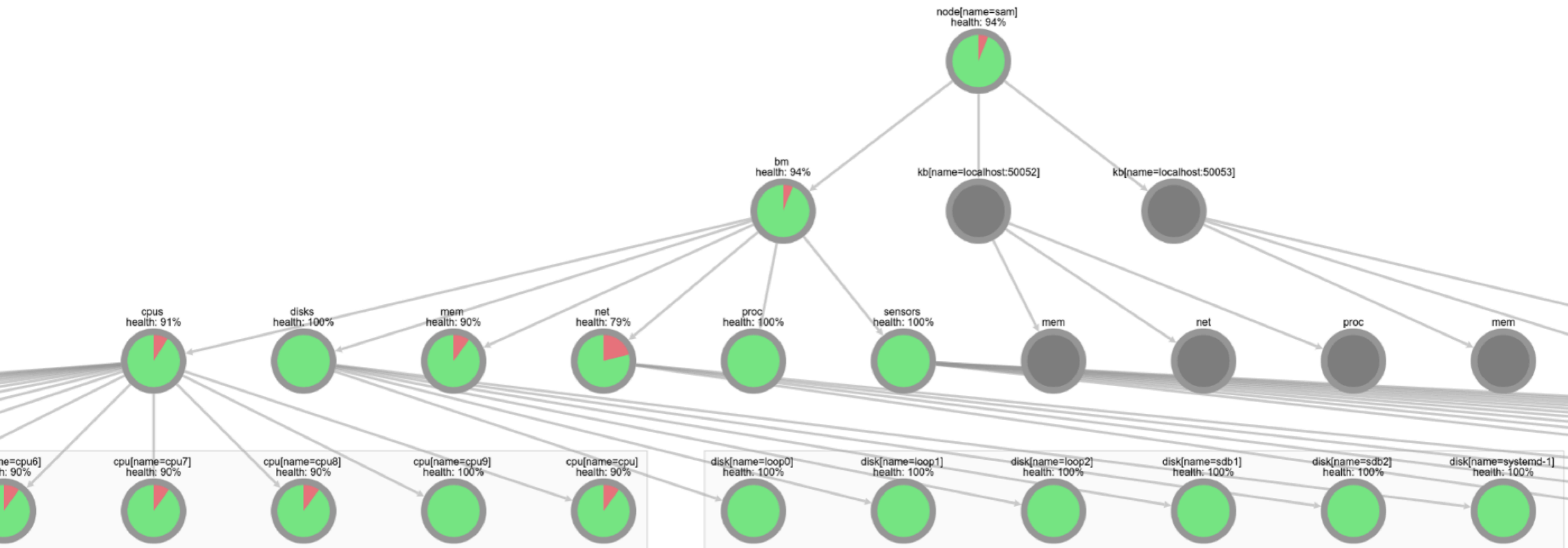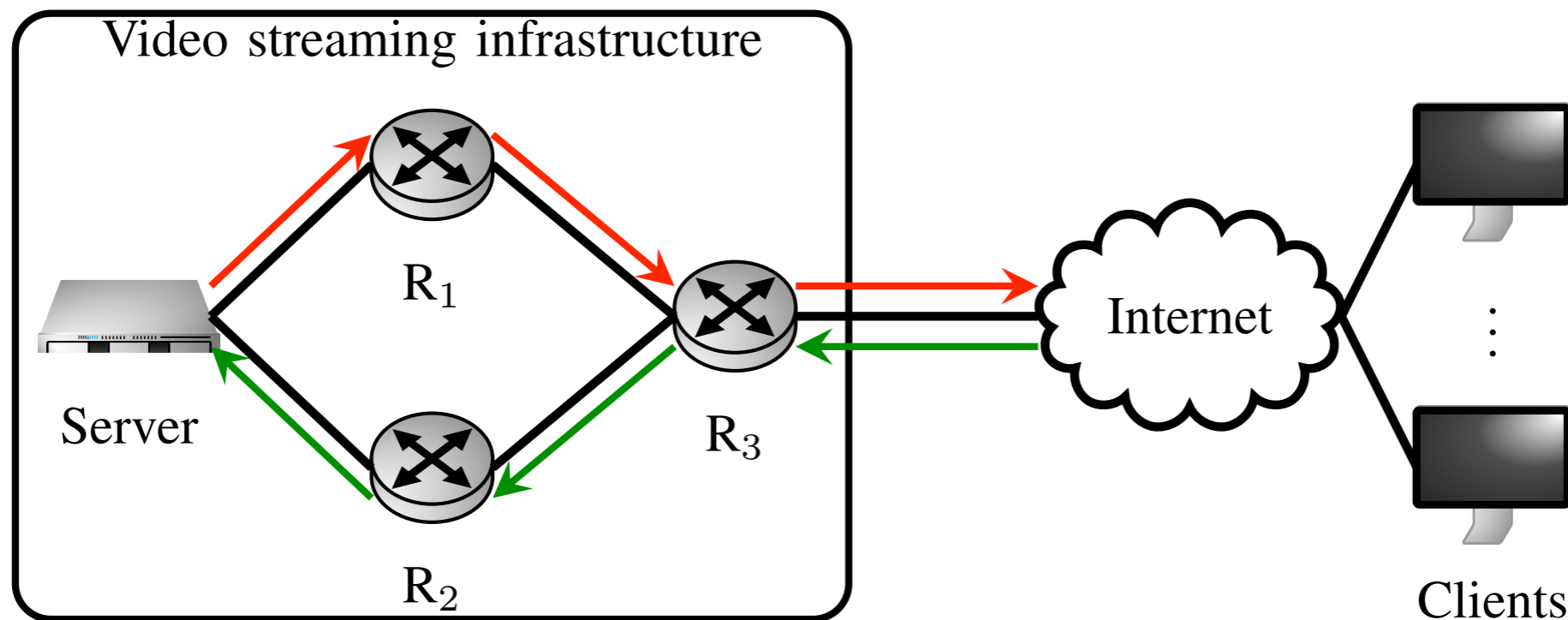
Diagnostic Agent (3)

- DxWeb

Agenda

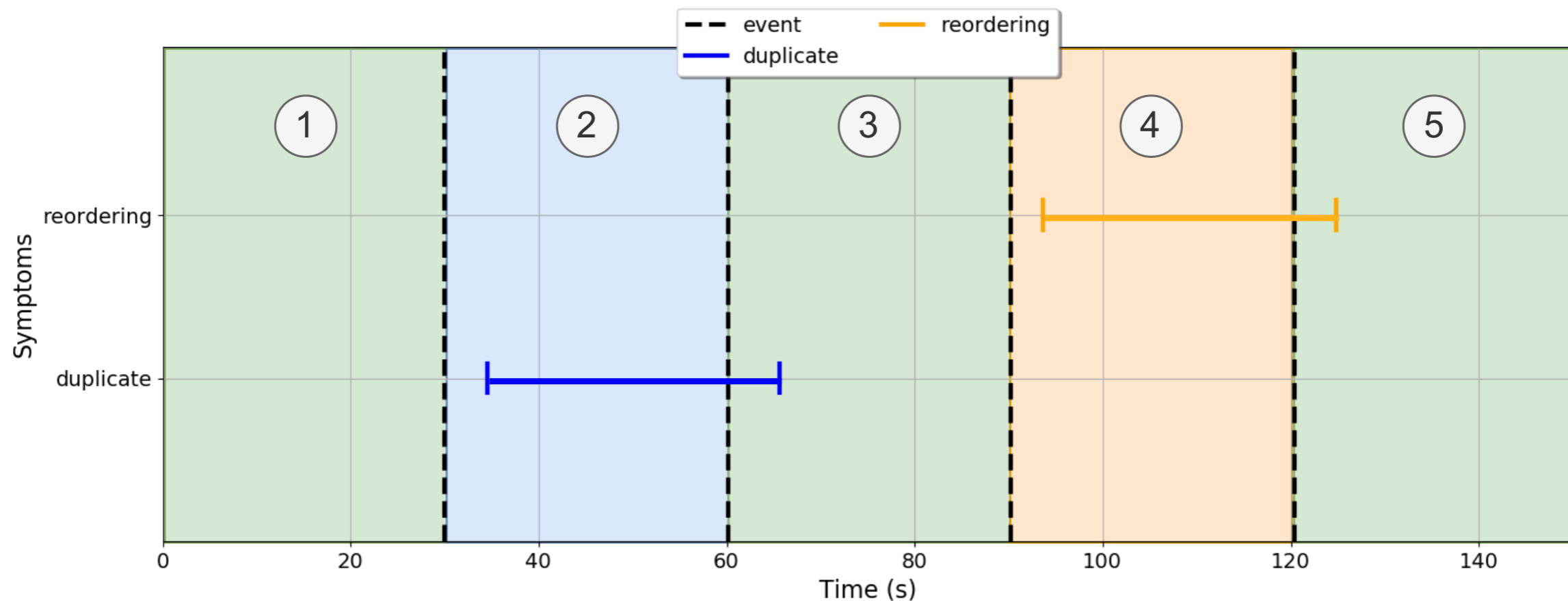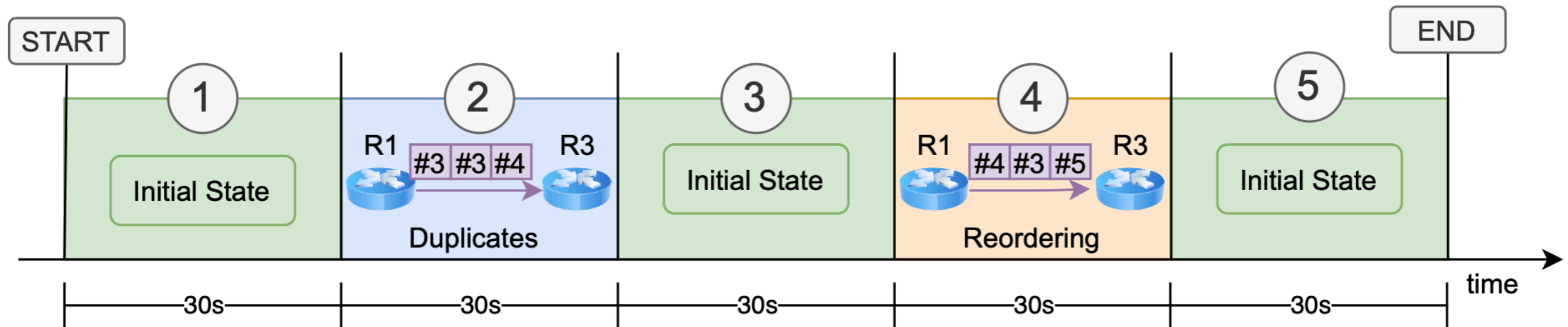- Motivations
- DxAgent
- **Evaluation**
- Conclusion

Evaluation

- Video streaming service

- Intent

  - *connection between the server and R₃*

  - *outgoing packets go through a different path than incoming packets*
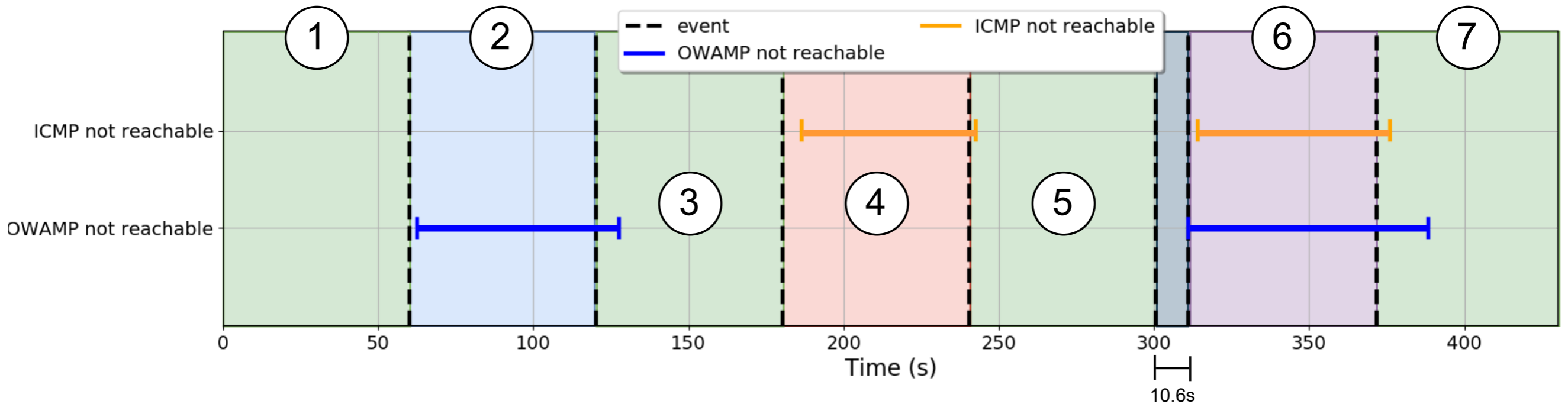
  - *one-way delay does not exceed 50ms*
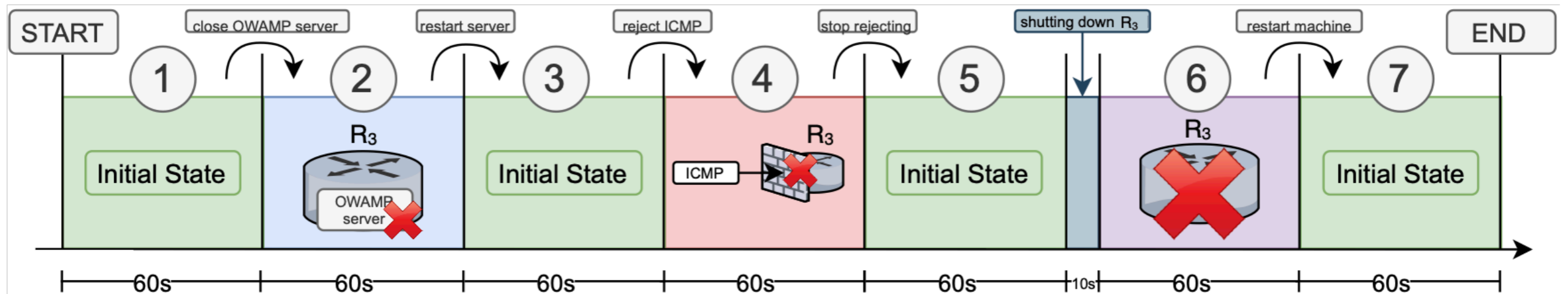

Video streaming infrastructure

Evaluation (2)

- Duplicates and reordering scenario

Evaluation (3)

- Link failure scenario

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Conclusion

- Working prototype
  - still lots of work to do
    - ✓ more automation
    - ✓ automatic respond to issues
    - ✓ integrate Cross-Layer Telemetry
      - ‣ J. Iurman, F. Brockners, B. Donnet. *Towards Cross-Layer Telemetry*. In Proc. ACM/IRTF Applied Networking Research Workshop (ANRW). July 2021.

- Additional info
  - https://github.com/Advanced-Observability
  - justin.iurman@uliege.be