Attack-resilient media using phone-to-phone networking

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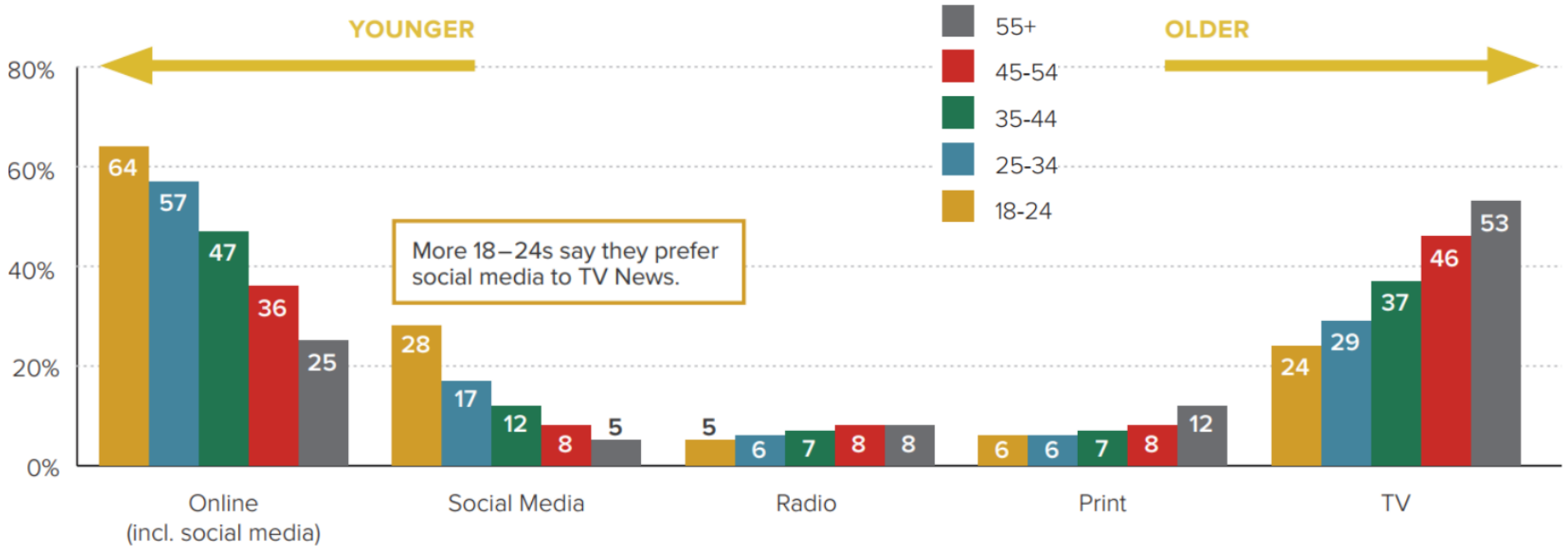
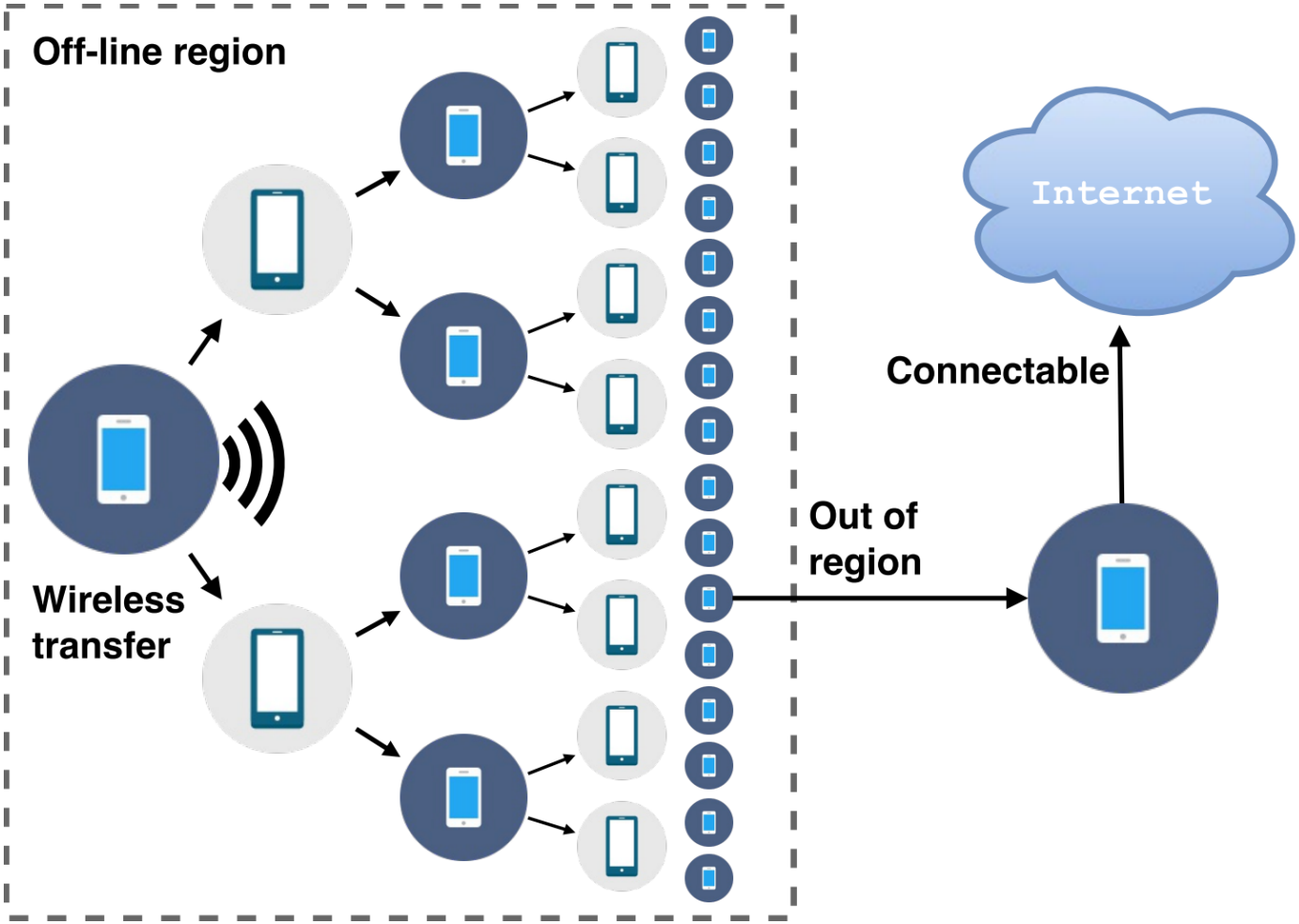
TU Delft

Context

- Everyone has a smartphone and uses it for everything



Viral spreading



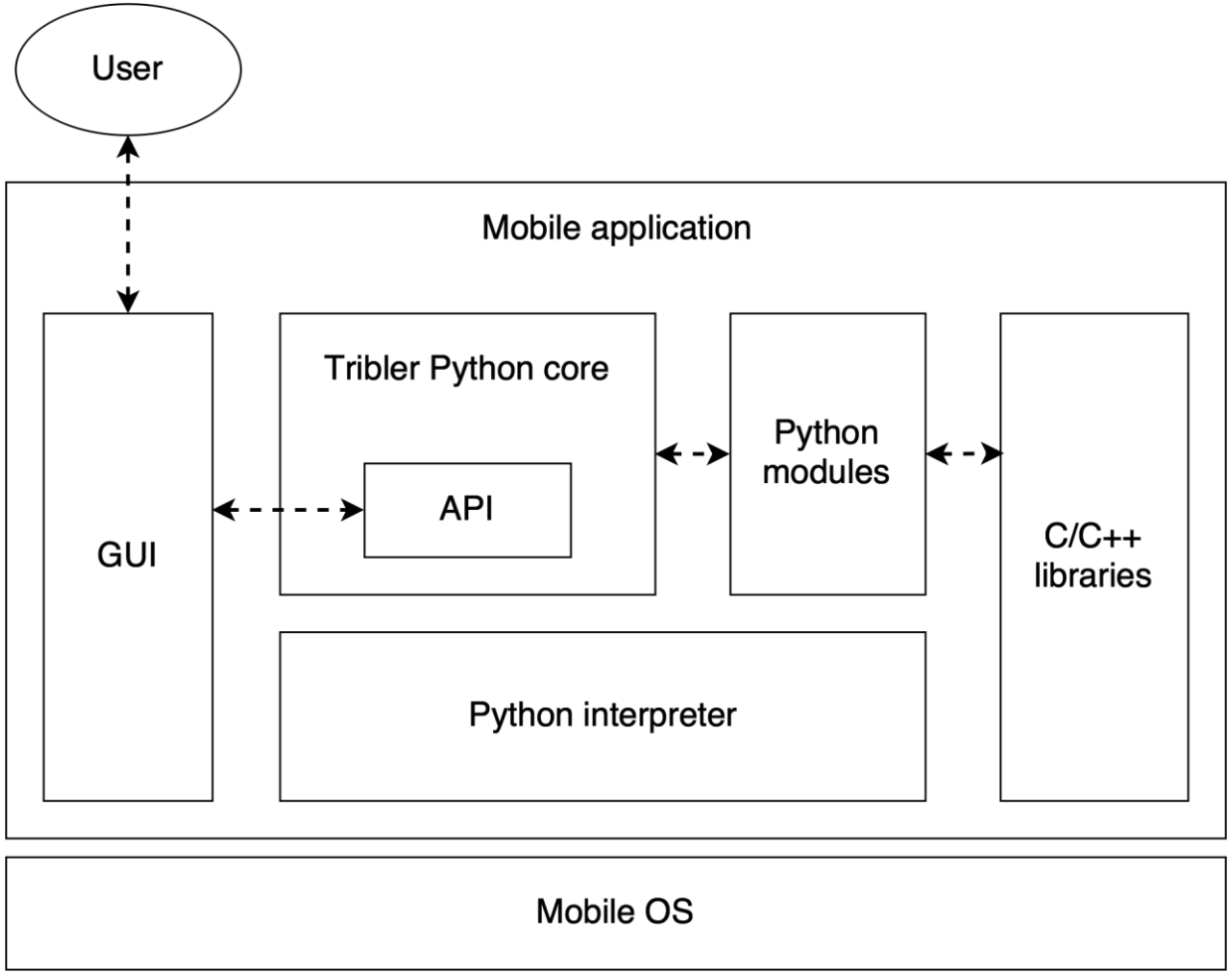
Adversary model

- Kill-switches
  - Egypt, Syria, Turkey
- Natural disasters
- Not solved yet

Tribler

- Information sharing platform
- Attack-resilience
  - Fully decentralized
  - Self-organizing
- Anonymity: onion routing
- Trust: blockchain
- TU Delft research project

System architecture design



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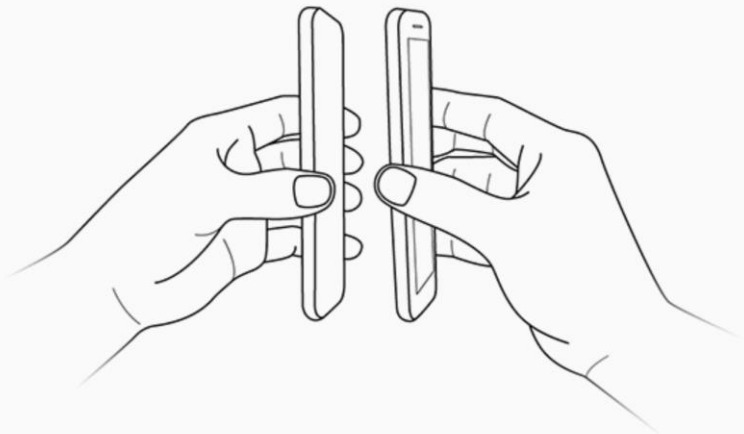
Send to nearby phone



12:53

pioneer

Pioneer.One.SEASON1.720p.x264-VODO
7.9 GB

Pioneer.One.S01E03.Xvid-VODO
402.5 MB

Pioneer.One.S01E04.720p.x264-VODO
1.2 GB

Pioneer.One.S01E03.Theora.HDTV.XviD-helder1965.avi
171.1 MB

Pioneer.One.S01E01.REDUX.Xvid-VODO
377.1 MB

Pioneer.One.S01E01.REFIX.720p.x264-VODO
1.3 GB

Pioneer.One.S01E05.720p.x264-VODO
1.7 GB

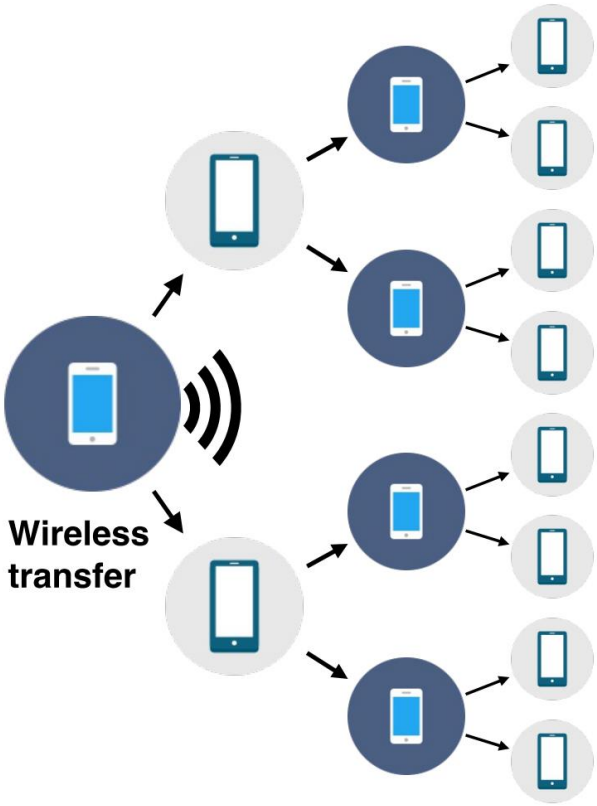
Pioneer.2013.1080p.BluRay.DTS.x264-

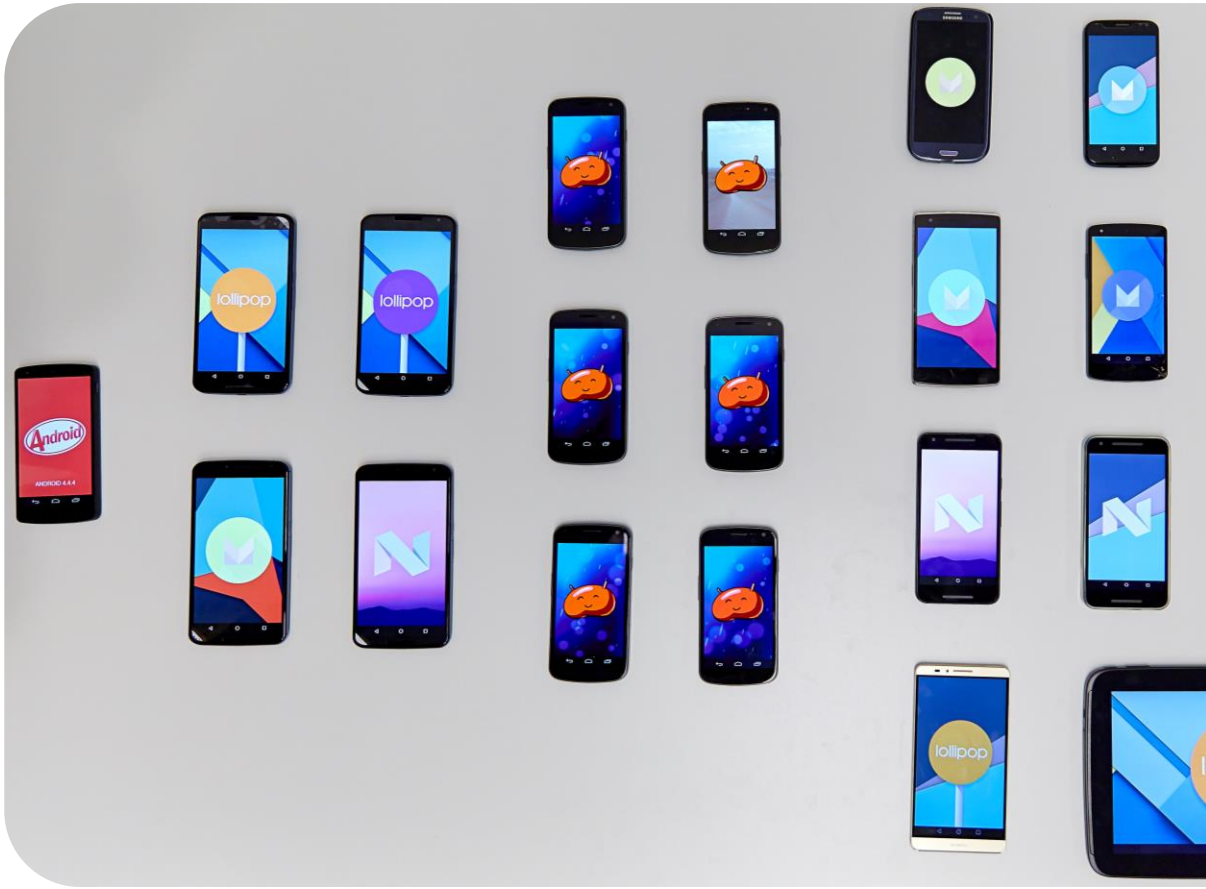
Experiments

1. Content discovery: quick? Scalable?
2. Multichain: scalable?
3. Startup time: quick? Consistent?
4. API responsiveness: quick? Consistent?
5. CPU utilization: multi-core processing?

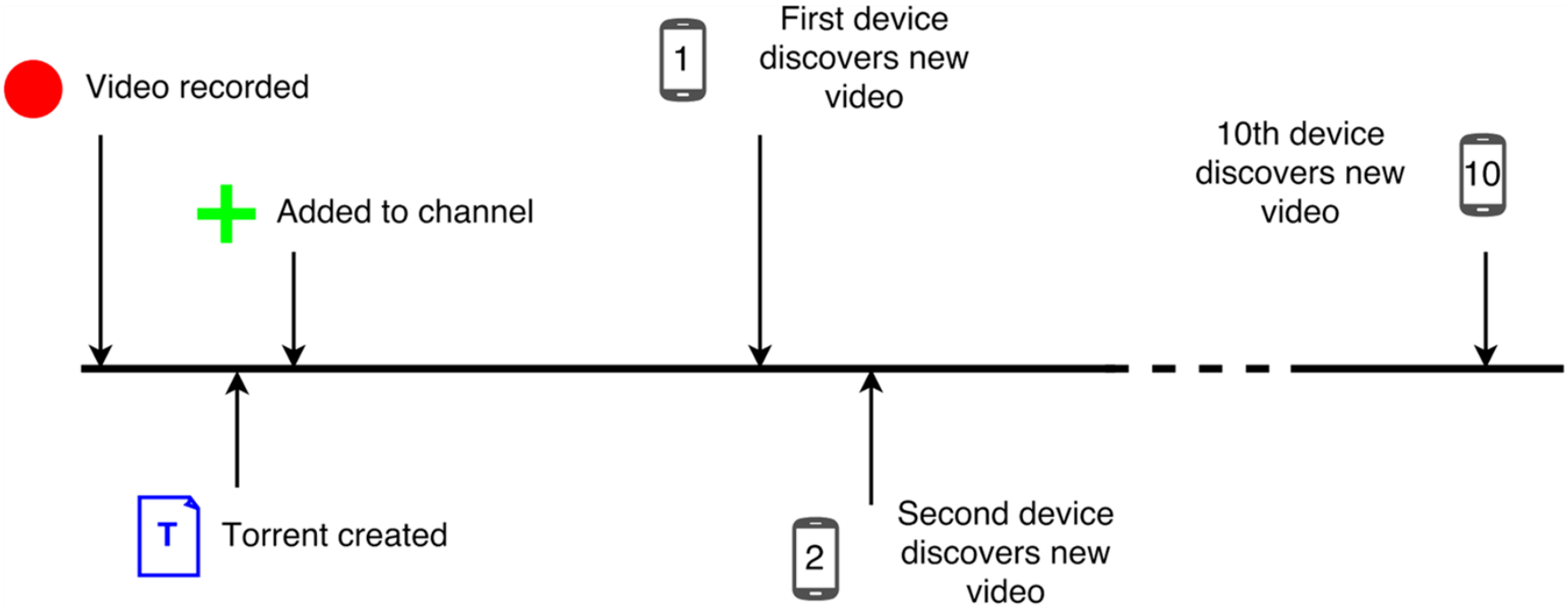
And more

1. Content discovery – Setup

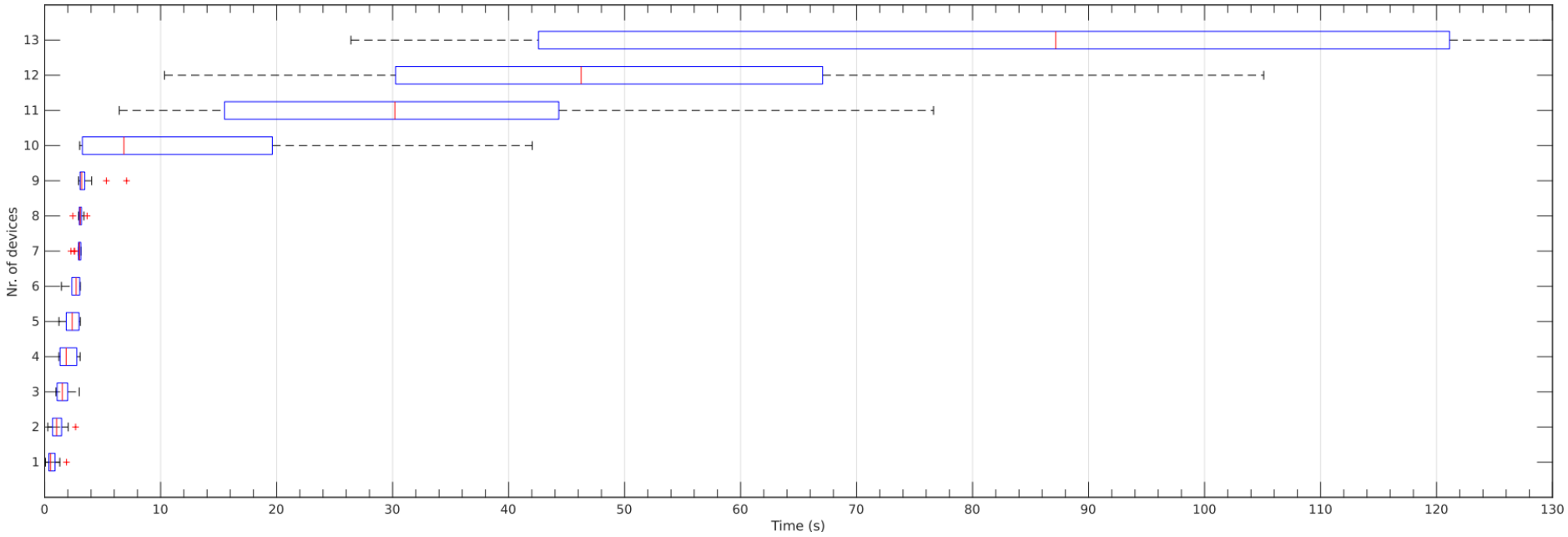




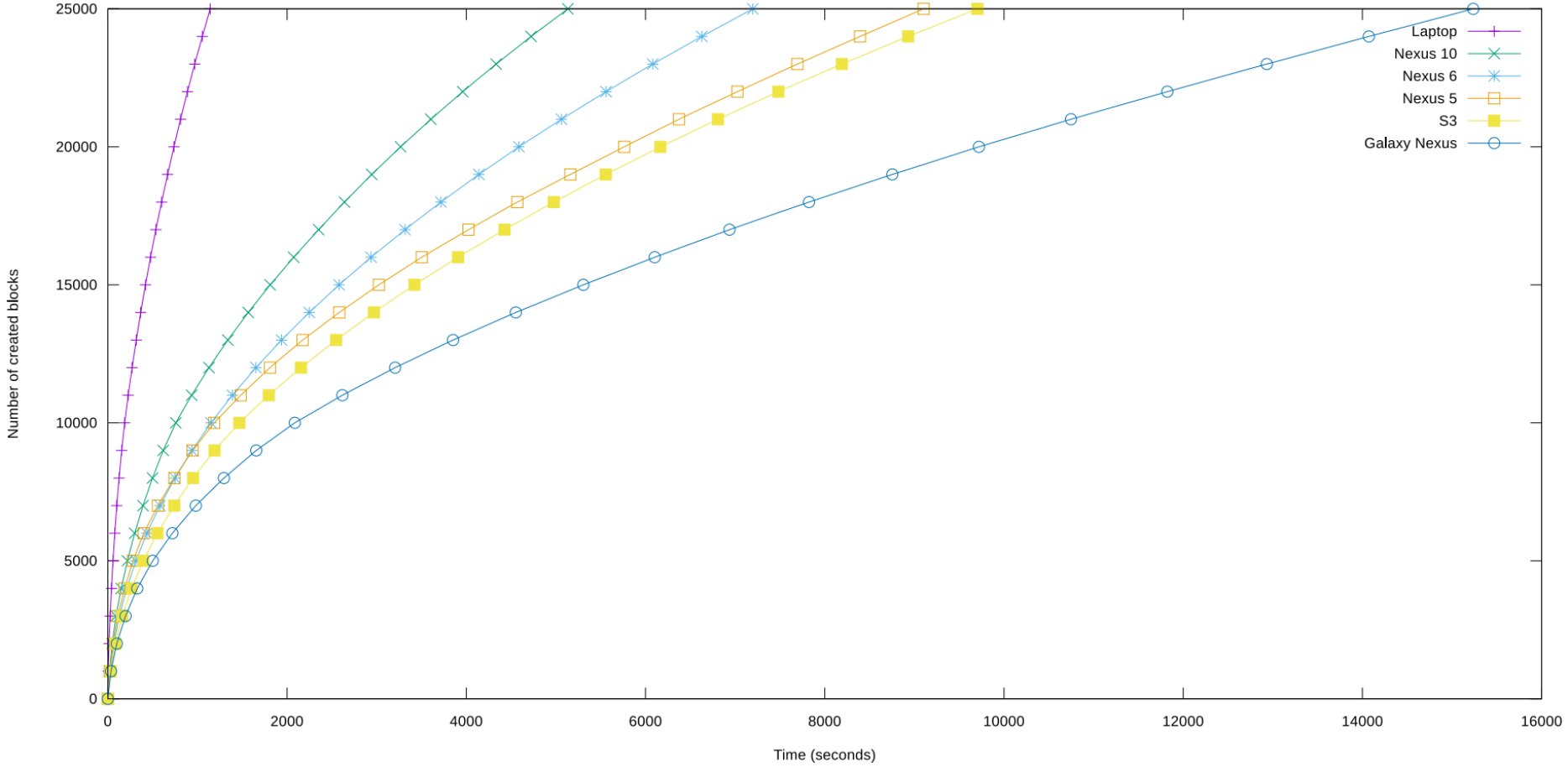
1. Content discovery – Sequence



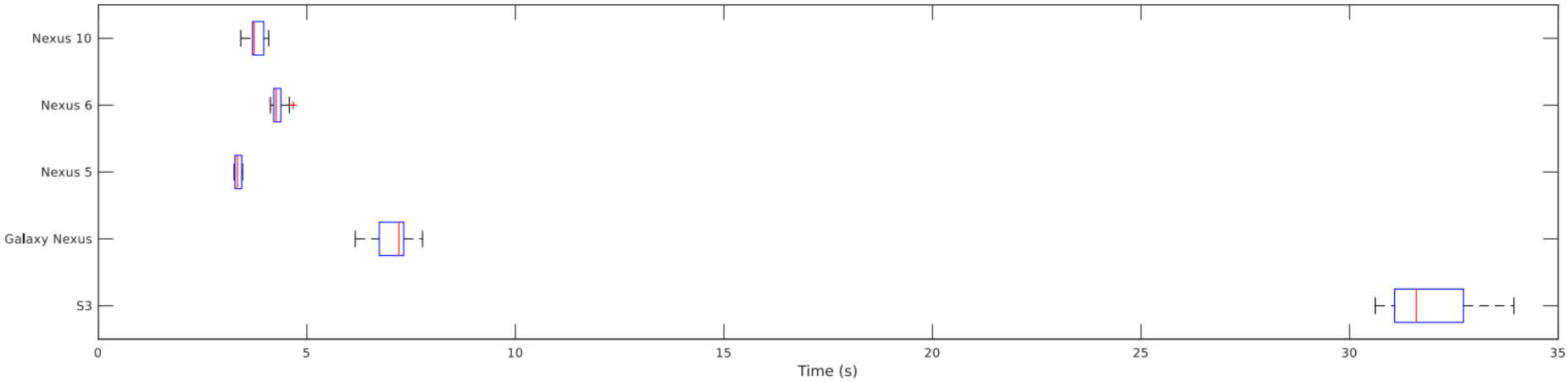
1. Content discovery – Results



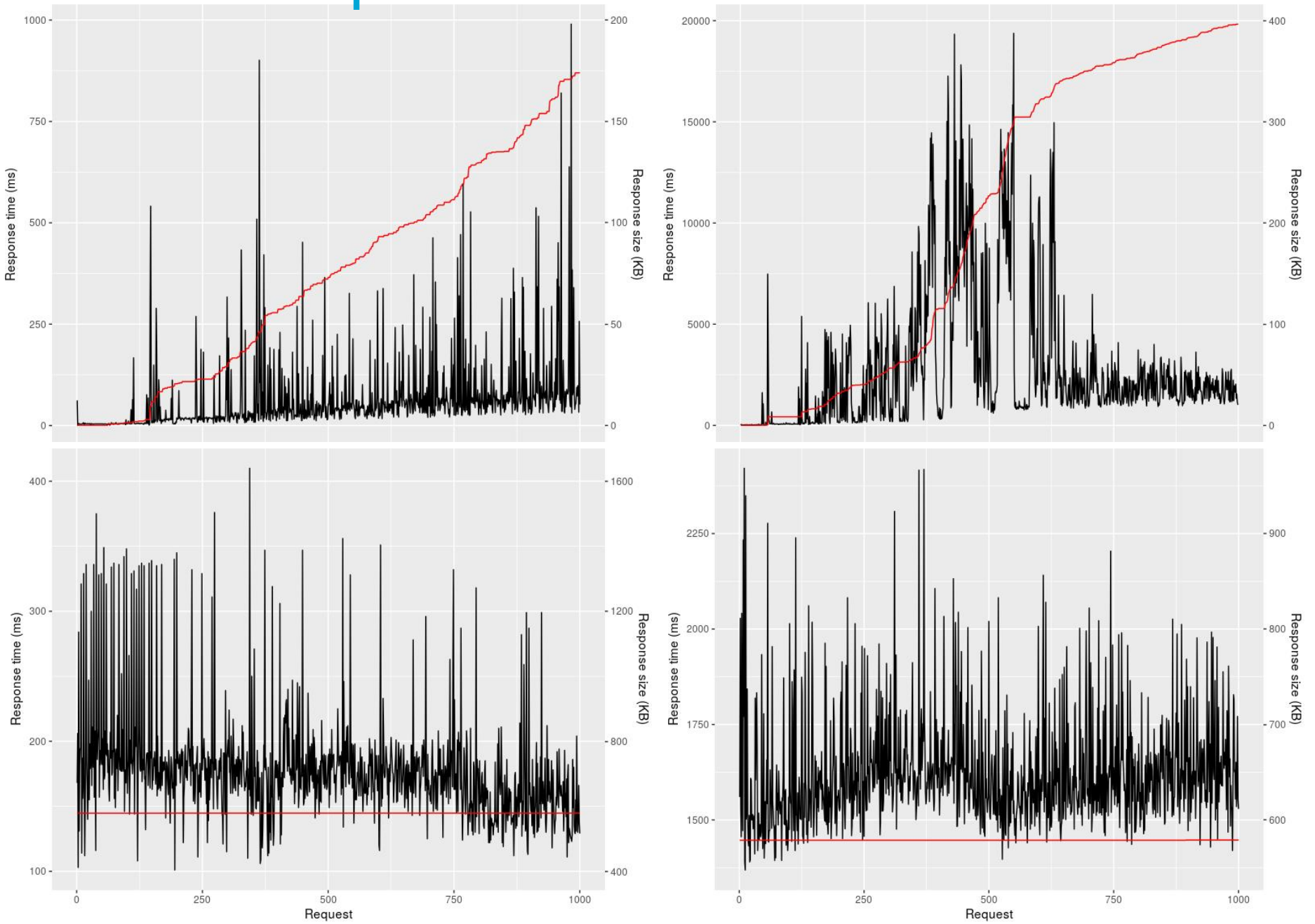
2. Multichain



3. Startup time

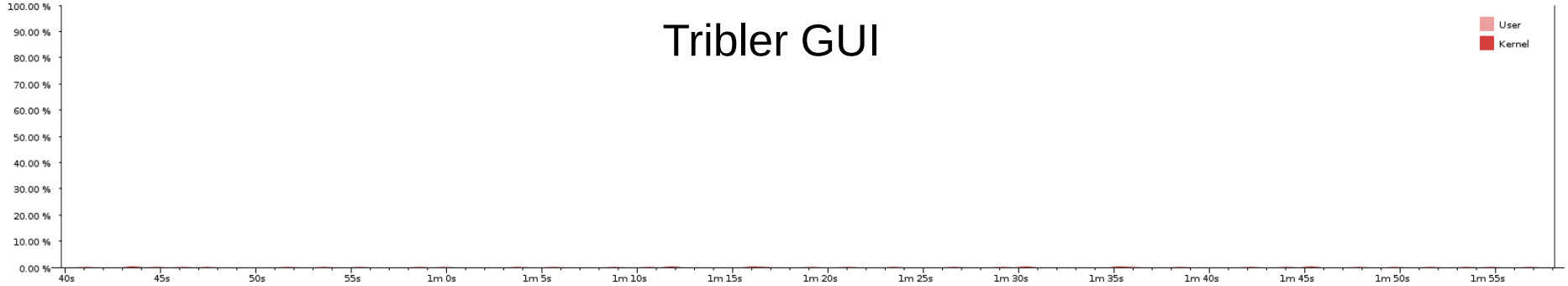


4. API responsiveness

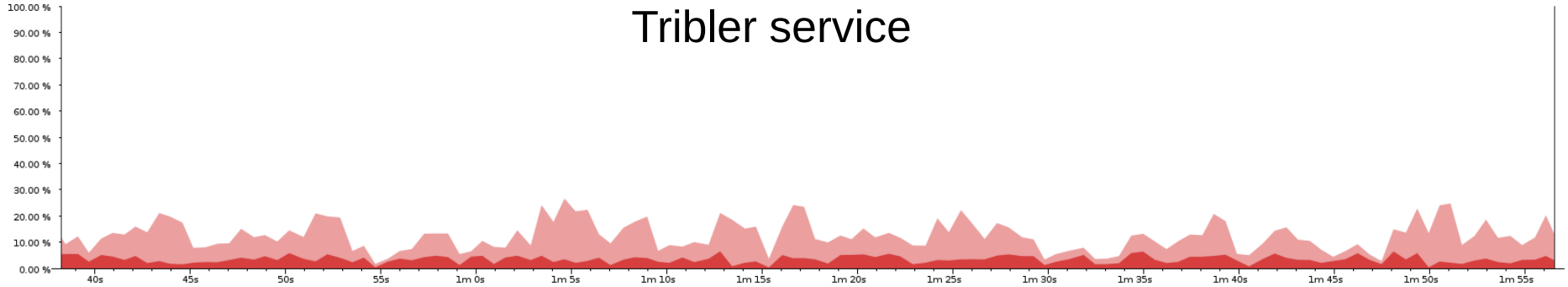


5. CPU utilization

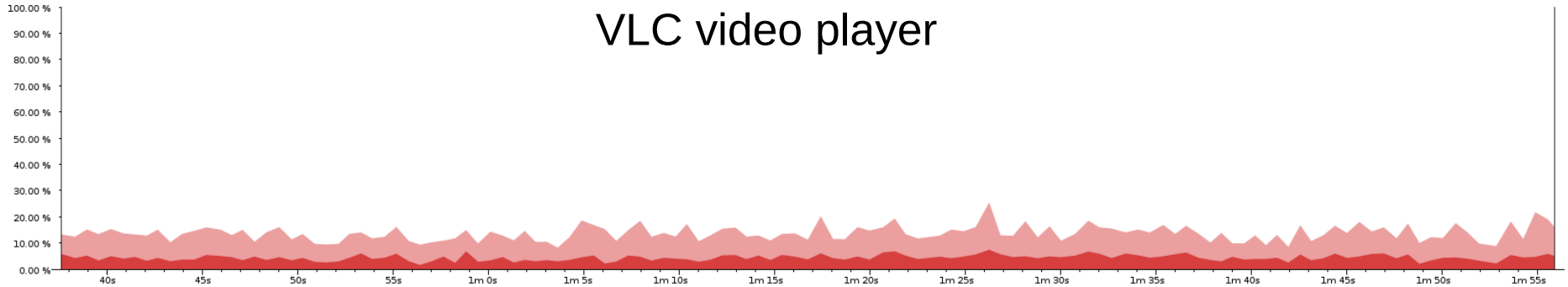
Tribler GUI



Tribler service



VLC video player



Conclusions and future work (1)

- Implementation
  - Self-compilation and morphing stealth capabilities
  - Multi-core optimization
  - Streaming API
  - Towards other platforms
  - Bootstrap peers with NFC + Bluetooth
  - Automated ad hoc Wi-Fi

Conclusions and future work (2)

- Tribler research with mobile devices
  - Large-scale experiment with various degrees of powerful censors
  - How viral spreading of eyewitness content behaves in the real world
  - Effects of local crowds on anonymity with onion routing
  - Credit mining using shared private keychain

Questions?