

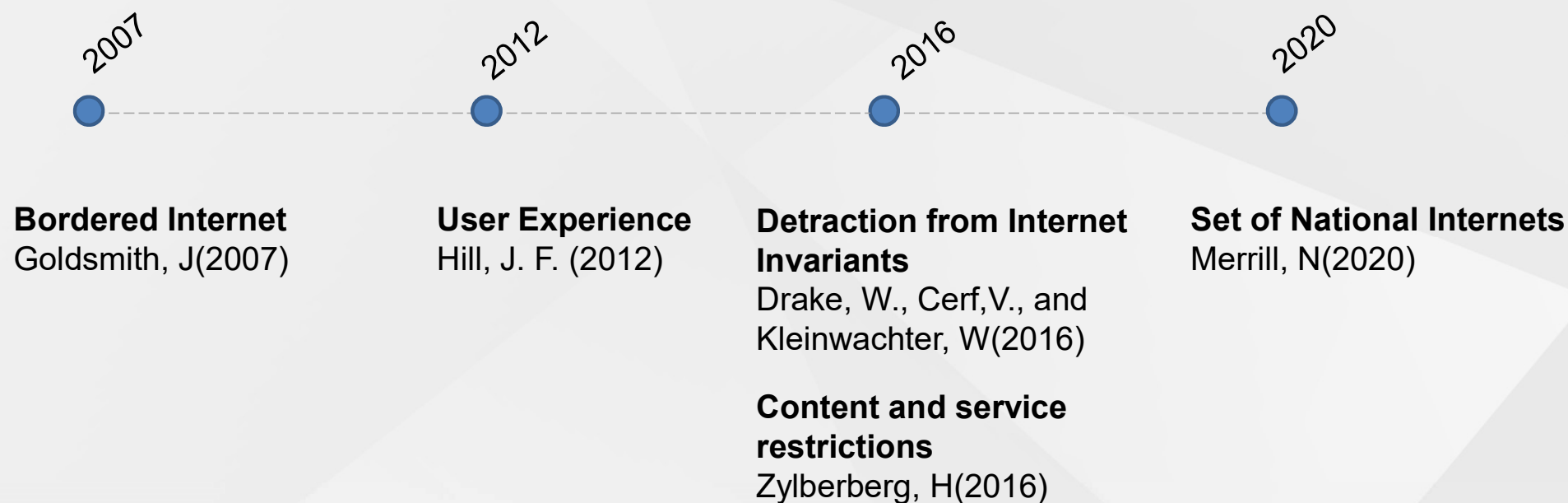
Splinternet, the inescapable future of the Internet

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Agenda

- Definition of Internet Fragmentation
- Drivers, Challenges and Motivation
- Research Goals
- Existing Research
- System Development
- Q&A

What is Internet Fragmentation?



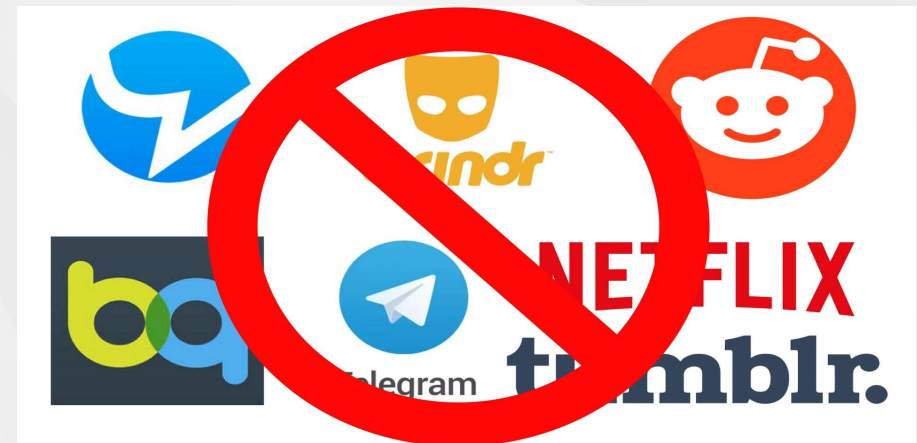
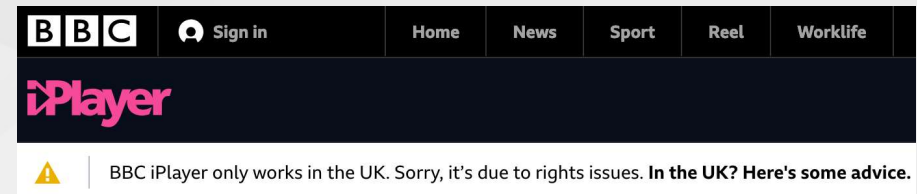
Drivers for Fragmentation

- National security
- Social and cultural preferences
- Cyber Sovereignty
- Protectionism



Problems with Fragmentation

- Human Rights issues
- Economic implications
- Inconsistencies in user experience
- Lack of transparency and accountability



Motivation

- Understanding the role of fragmentation in shaping the future of the Internet
- Finding technical solutions to mitigate harmful fragmentation
- Improve detection of Internet shutdowns



Research Questions

- Can we measure fragmentation?
- Are there obvious correlations to other activities on the Internet?
- How effective is the use of machine learning in Internet shutdown detection?
- Are there cost implications to fragmentation?

Existing Research Fragmentation

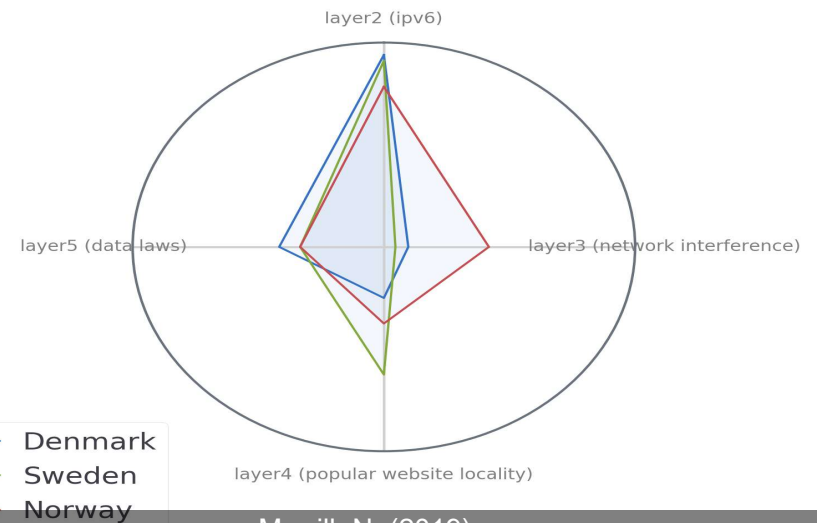
**Burners-Lee's
"Law of Physics"**

(The Current Internet?)

**Arbitrary Borders;
Blockages and Restrictions**

(Fragmentation Spectrum)

Hill, J. F. (2012)



Merrill, N. (2019)

Multi-Dimensional Measurement

- Internet censorship
 - Internet censorship(OONI, Censored Planet)
 - App store censorship
- Shutdown measurements(AccessNow, CAIDA, M-LAB, ThousandEyes, Cloudflare Radar)
- Topology Arrangement(CAIDA) – Chokepoint potential

System Development Goal

- Dashboard to visualise fragmentation events across the Internet
- Which services are unreachable in country X?
- Shutdown events in country X?
 - Cause?
 - Services impacted?
 - Population impacted?
 - Other sources confirming reasons/justification?
- App Store App availability in country X?

Conclusion

- Gaining research mindshare
- Its Complicated
- Stay tuned



Q&A

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