ICN Baseline Scenarios
draft-pentikousis-icn-scenarios-00

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Draft Goals

- Establish a common understanding about potential experimental setups

- Provide equal ground for comparison, an agreed framework

- Scenarios should be general enough and "technology agnostic"
  - Scenario detail may vary

- Aim to get feedback from implementers, both on the scenario definition and level of detail

- All approaches need not implement all scenarios
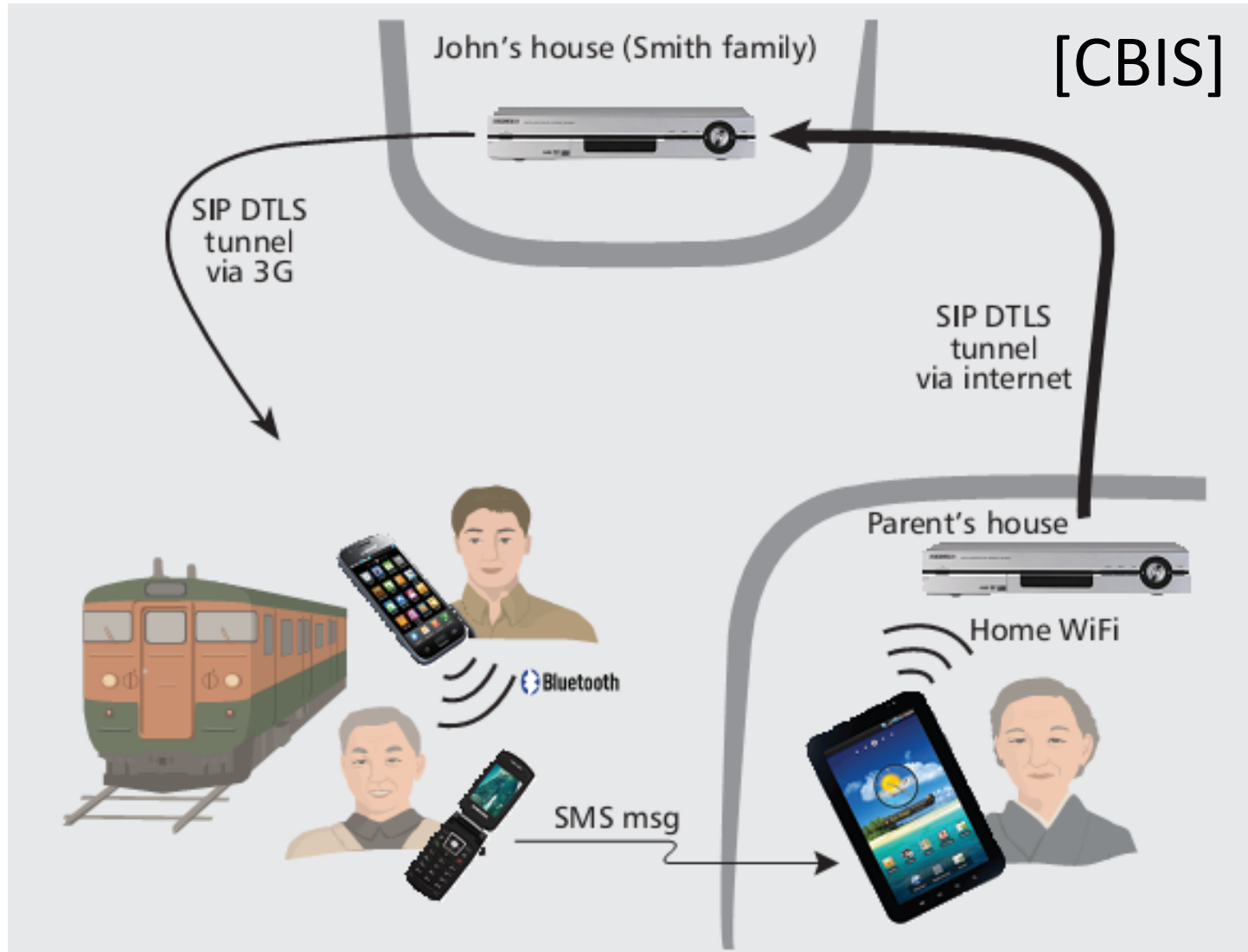 - but all scenarios should end up illustrated in a real demo

Draft Overview

- Address real-world use cases
  - Social Networking
  - Real-time A/V Communications
  - Mobile Networking
  - Infrastructure Sharing
  - Content Dissemination
  - Energy Efficiency
  - Delay and Disruption Tolerance
- Things that you can do with the host-centric approach today and things you cannot do (well)
  - ICN should *make easy things easy and difficult things possible*

Social Networking

- "Natural fit" for showcasing the superiority of ICN over traditional client-server TCP/IP-based systems
  - Pull-based server-less content-retrieval [CCR]
  - Push-based Twitter-like service [ICN-SN]
  - Photo-sharing [CBIS]
  - Could relate to IETF PPSP WG demos as well
- Consider: network efficiency, multicast support, and caching performance

Social Networking (example)

[CBIS]

John's house (Smith family)

SIP DTLS tunnel via 3G

SIP DTLS tunnel via internet

Parent's house

Bluetooth

Home WiFi

SMS msg

# Real-time A/V Communications

- Area is well studied in packet- and circuit-switched networks

- ICN work has barely scratched the surface

- VoICN, anyone?
  - [VoCCN] illustrated feasibility over a particular ICN "flavor"
  - Need to go much further than that

- Consider: complexity, scalability, reliability, mobility, well-established QoS/QoE methodology

(Multiaccess) Mobile Networking

- Mobile network scenarios have not been presented *in detail* in the literature
- But there are a lot of ideas
  - Capitalize on the wireless broadcast nature
  - Take advantage of (implicitly available) in-network storage and caching
    - "Train scenario" [N-Scen]
    - "Drive-through Internet" [DTI]
  - Get out of the tunnel (mentality)
    - No need to maintain e2e connectivity [PSIMob, EEMN]

Mobile Networking (example)

[N-Scen]
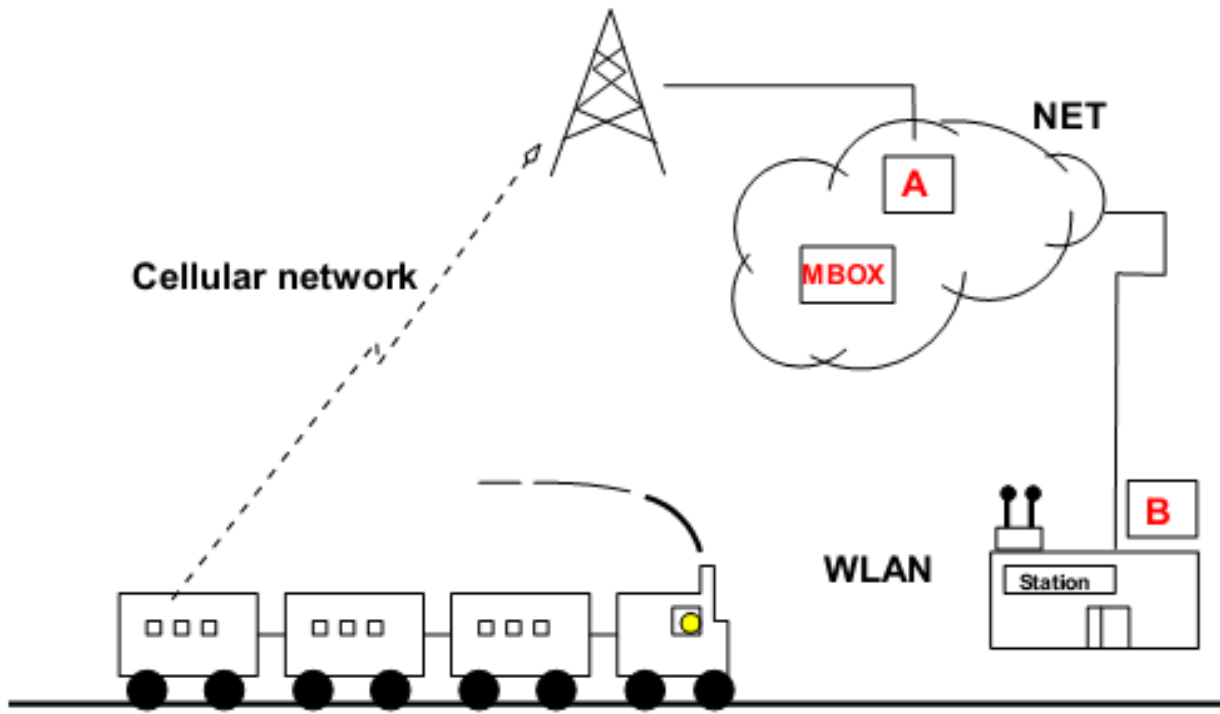
# Delay Tolerant Mobile Networking

[DTI]
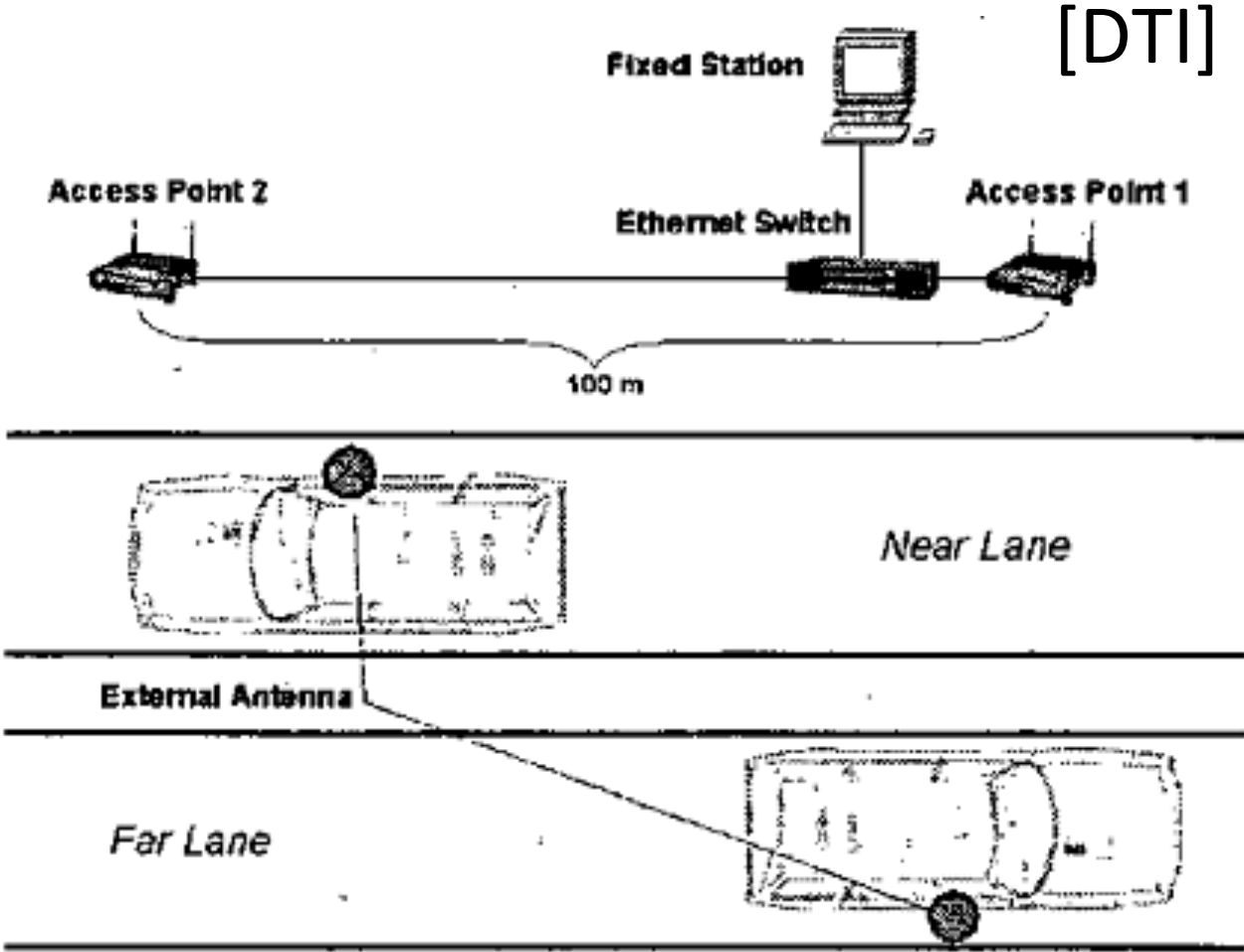
Infrastructure Sharing

- Beyond ICN as an overlay
- What is "infrastructure" in an information-centric network?
- How do we use optimally all resources that end-hosts bring into the network?
- How does an ICN operator plan its network?
  - Storage-bandwidth tradeoffs [SHARE, CL4M]
  - What about "multi- tenancy", virtualization?
- Consider operational and economical aspects

Content Distribution

- Content dissemination has attracted more attention than other aspects of ICN
  - This is sometimes due to a "misunderstanding"
- Decentralized content dissemination supported by all approaches
  - Plenty of scenarios, often overlapping with those previously presented
- Expect active RG contributions, this category can expand and break-up into sub-categories
- Consider: stored and streaming A/V distribution, file distribution, mirroring and bulk transfers, SVN/Git-type of services, as well as traffic aggregation
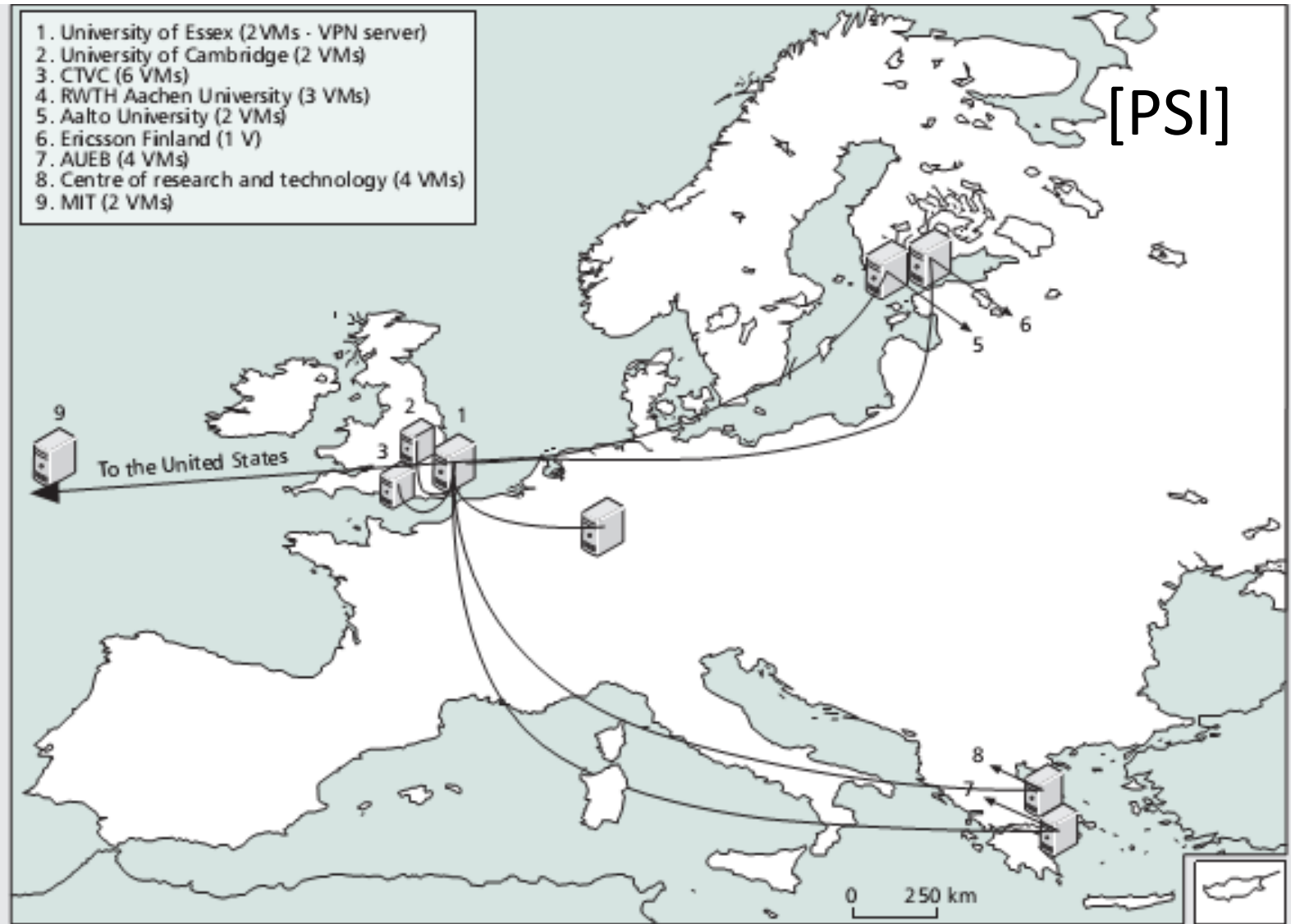
Content Distribution (example)

[CURLING]
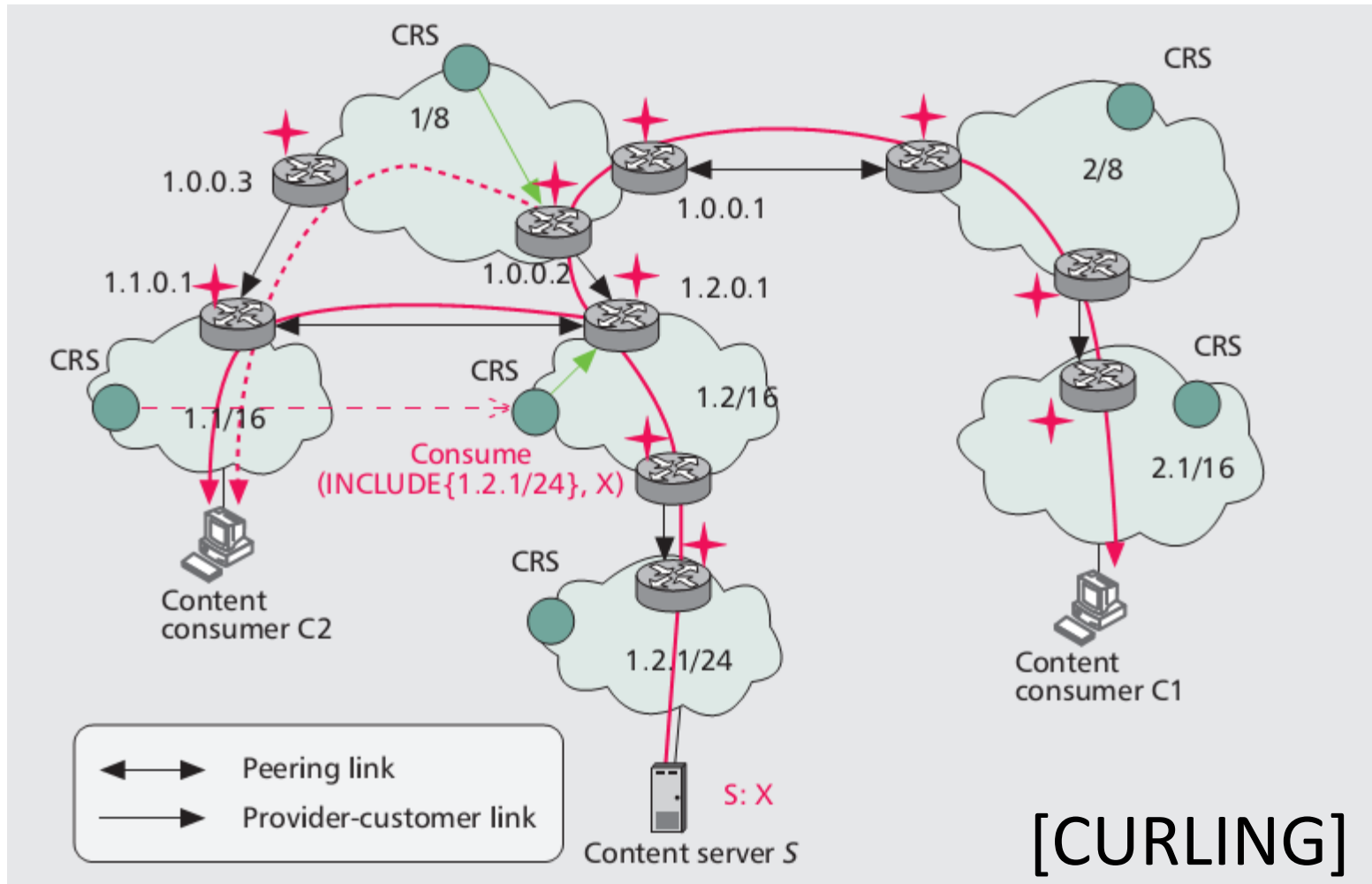
EE and DTN

- Build energy efficiency into ICN from the beginning
  - No need for separate scenarios at this stage

- ICN delay and disruption tolerance should be evaluated as well
  - Examine to which extent different ICN technologies can support "classic" DTN scenarios

What about "Scenario Topology"?

1. University of Essex (2 VMs - VPN server)
2. University of Cambridge (2 VMs)
3. CTVC (6 VMs)
4. RWTH Aachen University (3 VMs)
5. Aalto University (2 VMs)
6. Ericsson Finland (1 V)
7. AUEB (4 VMs)
8. Centre of research and technology (4 VMs)
9. MIT (2 VMs)

[PSI]

To the United States

0   250 km

For the Record

- All references are given in the draft, including
  - [CBIS], Fig. 2
  - [N-Scen], Fig. 3
  - [DTI], Fig. 3
  - [CURLING], Fig. 5
  - [PSI], Fig. 4