

Stanford University

POMI  
2020

## POMI2020 Overview and Update

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### The Vision We all Share

Borrow the display, keyboard, memory, etc

**Great opportunities**

- Revolution in Mobile Computing will change our field.
- Opportunity to bring change before ossification.

Today

Vision

- Problem with the network.
- 3G: Cellular networks ⇌ IP
- IP: Bad for mobility, security, management
- Need a network that continually evolves

**Where we will end up otherwise**

**Barriers**

1. Big-brother portals will own our data
2. We will be locked-in to applications
3. Wireless capacity will stay closed
4. Network will stay ossified

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### What we found ourselves talking a lot about...

Openness

Choice & Competition

Innovation

Choice of

- Data-location
- Wireless network
- Spectrum

Lack of innovation

- Network

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### Beyond Barriers ...

**Handhelds:**

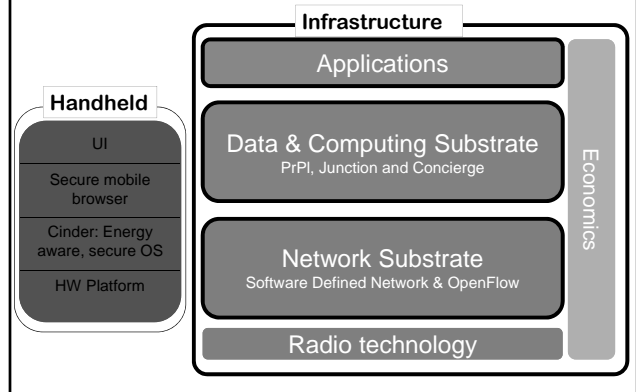
1. Give users more control of energy usage
2. Improve the security of the OS and applications
3. Make it easier to develop applications for new populations

**Infrastructure:**

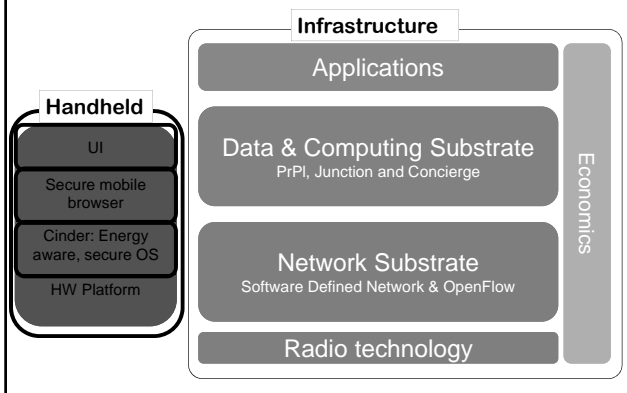
1. Improve our connectivity to the cloud
2. Improve the privacy of our data in the cloud
3. Allow us to offload computation to the cloud

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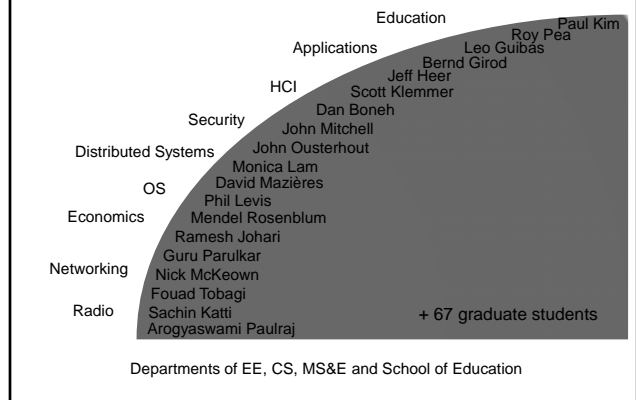
### POMI Research Agenda



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### POMI Team



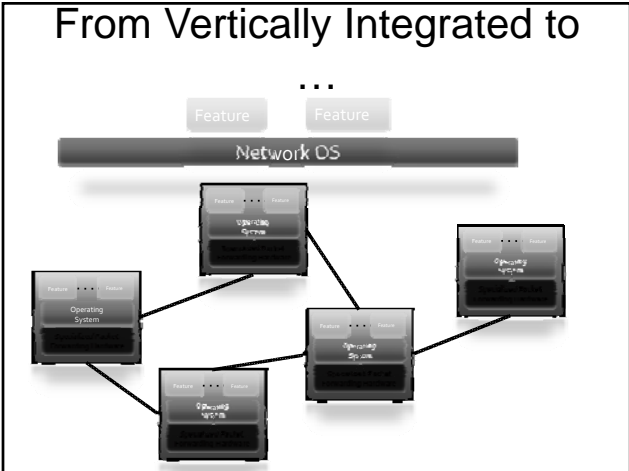
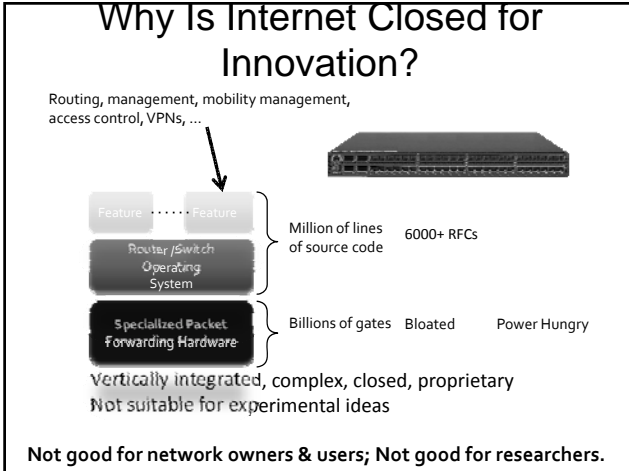
Network Substrate:  
OpenFlow/Software Defined  
Networking

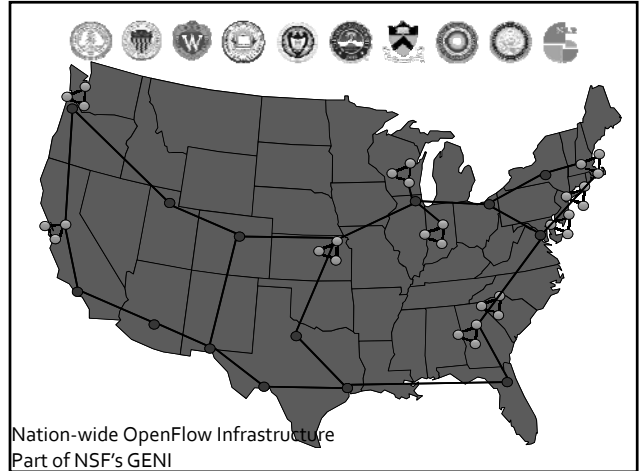
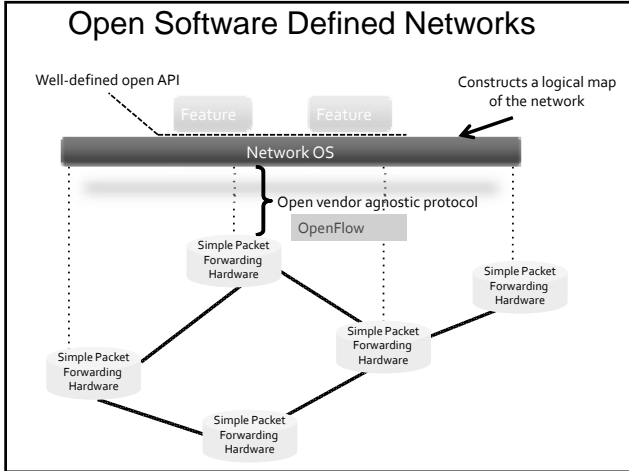
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Internet has been wildly  
successful

Internet has many problems:  
Well known for many years

Root cause: Internet has been  
closed for innovations





- ### Example Research Enabled
- Data center: energy conservation, routing, and management
  - Seamless use of diverse wireless networks
  - Network based load balancing
  - Packet/circuit convergence, traffic engineering
  - Simpler control plane for converged packet/circuit MPLS networks
  - Slicing and scalable remote control/management of home networks
  - Distributed snap shot of VMs (by DOCOMO researchers)
  - Inter-domain routing with pathlets (by UIUC)
  - Redundant traffic elimination [for CDNs] (by Univ of Wisconsin)
  - And many more ...

### Early Ecosystem

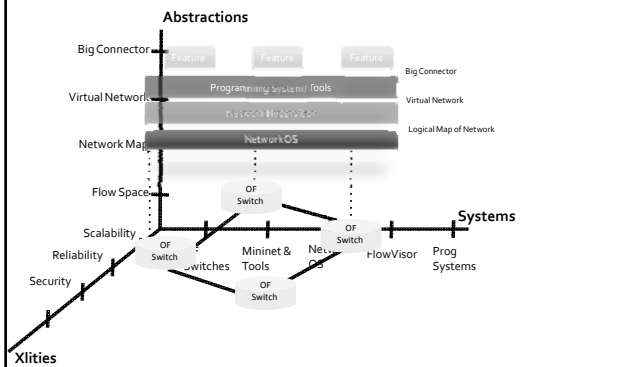
Interest from providers/data center operators

Deployments in R&E Networks

Vendors

Commitment varies

## Scope of Activities



9:00am - 9:45am Keynote Speaker: [Scaling Across Mobile Devices - David Fetterman, Facebook](#)

9:45am - 10:30am  
[Virtualized Wireless Infrastructure - Sachin Katti, Stanford](#)

10:30am - 11:00am **Break**

11:00am - 11:45am  
[How People Trust and Evaluate One Another in Social Media - Jure Leskovec, Stanford](#)

11:45am - 12:15pm  
[Sharing Information in Rural Communities Through Voice Interaction - Neil Patel, Stanford](#)

12:15pm - 1:15pm **Lunch**

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1:15pm - 1:45pm

[Achieving Single Channel Wireless Full-Duplex - Mayank Jain, Stanford](#)

1:45pm - 3:15pm The MobiSocial Computing Laboratory, [Monica Lam, Stanford](#)

[Peer-to-Peer Social Computing with NFC - Ben Dodson, Stanford](#)  
[Social Topologies Derived from Email and Photo Tags - T. J. Purtell, Stanford](#)  
[Mr. Privacy: An Open Social Networking Platform Based on Email - Michael Fischer, Stanford](#)

3:15pm - 3:45pm **Break**

3:45pm - 4:15pm [Enhancing the Mobile Experience Through Interlinked Image Collections - Leo Guibas, Stanford](#)

4:15pm - 4:45pm [Load Balancing and Traffic Engineering: Constructive Interference - Ramesh Johari, Stanford](#)

4:45pm - 5:00pm **Wrap-up**

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