

Looking Beyond the Internet

GEC 24, Tempe, March 8, 2016

Chip Elliott, BBN
celliot@bbn.com

What is it?

- Now is the time to make concrete plans for exploring emerging planetary-scale cloud / wireless / network systems

beyond the Internet.

- ✓ Stand up a **Steering Group** to help organize and engage the relevant communities, and to document both the emerging research challenges and their requirements for infrastructure.
- ✓ Organize a set of **targeted workshops** in this area, which will engage and gather inputs from the relevant research communities, summarizing the discussions and recommendations of each workshop in a public document.
- ☐ Draw up a **planning document** for the CISE research community that incorporates observations and recommendations from both the Steering Group itself and the workshops it has run.

Who is it?

- Suman Banerjee*, U. Wisconsin
 - Terry Benzel, ISI
 - Jim Bottum, Clemson University
 - Prasad Calyam*, U. Missouri
 - Jeff Chase, Duke University
 - Tracy Futhey, Duke University
 - Kate Keahey, U. Chicago / ANL
- Dipankar Raychaudhuri*, Rutgers
 - Glenn Ricart*, US Ignite
 - Rob Ricci*, U. of Utah
 - Peter Steenkiste, CMU
- **Organizers**
 - Chip Elliott, BBN
 - Dave Farber, CMU
 - Larry Landweber, U. Wisconsin

* Workshop co-chair

Key highlights

Applications and Services in the Year 2021

- The coming **data deluge** will change everything.
- The **privacy and security** implications of this new world will be profound, but we really don't understand them at all.
- We foresee **tremendous innovation at the “edge,”** and campuses and communities are perfect places for edge experimentation.
- We can gain huge benefits from **“living lab” research throughout campuses, cities, and communities.**

Key highlights

Software Defined Infrastructure / Software Defined Exchanges

- We are at the dawn of a new era: **Software Defined Infrastructure (SDI)**.
- **Today's Internet is already beginning to undergo a deep transition.**
- The transition of today's R&E cyber-infrastructure to SDI has **already begun.**
- Looking forward, we envision a world in which **all aspects of the planet's cyber-infrastructure form an interconnected, multi-tenant (sliced), and deeply programmable planetary-scale ensemble.**
- Many **fundamental research challenges** arise with this vision

Key highlights

Future Wireless Cities

- Recent emphasis on **experimental wireless research** has led to critical breakthroughs.
- Tomorrow's wireless edge is something completely new: **“cloud systems with radios.”**
- Research in the next-generation “wireless edge” currently shows significant potential for breakthroughs of **high economic importance.**
- The **“stars are aligned”** for city-scale wireless research.

Almost done!

- Workshop reports should be public within days
- Draft Steering Group report is now circulating within group
- With detailed, specific findings and recommendations on next steps
- Steering group will discuss & refine it on Monday
- Steering Group report should be public within 2-3 weeks

Interested?

- Now is the time to make concrete plans for exploring emerging planetary-scale cloud / wireless / network systems beyond the Internet.
- **Let's do it!**