

## Connect Home, Broadband and the Big Bang

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It is a pleasure to be here, as this summit is a critical step in one of the most important missions of the 21<sup>st</sup> Century; the mission to make sure that we eliminate insufficient bandwidth and lack of digital readiness as a constraint on economic growth or social progress.

As the President correctly noted this past January, “broadband is no longer a luxury, it is a necessity.” Affordable, abundant bandwidth is critical for our country, our communities, and for all individuals.

Let’s look at that mission in the context of history.

Let’s start with the Big Bang. 13.7 billion years ago.

When I said history, I wasn’t kidding.

After the Big Bang, we get Stars and then Planets. 4 billion years in, molecules combine into single cell life forms.

800 million years ago, multi-cellular organisms form. They evolve into some pretty big bruisers, like dinosaurs.

65 million years ago, they get wiped out when that comet hits the Yucatan.

The good news? Their extinction opens up opportunities for mammals.

The bad news? Still no broadband.

Then, 200,000 years ago a new species emerges.

It wasn't the strongest, the biggest, or the fastest. It's not clear-based on the evidence of reality TV--that it was the smartest.

But it develops a skill no other species has: the ability to exchange knowledge with others over generations, who then build on that knowledge.

A turtle today knows what a turtle knew 200,000 years ago.

Humans know something more than we did then. What we learn in a lifetime is shared, and not lost, when an individual dies.

This quality, which the field of Big History refers to as collective learning, leads to our species gaining dominion.

At first collective learning is all done orally, but about 5,000 years ago we develop written language skills, expanding the reach of the collective learning.

We develop some agricultural skills but for most life and wealth does not change dramatically.

Then, around 400 years ago, something blows up that paradigm: the Industrial Revolution.

Historians cite multiple causes but all have a common theme—the collective learning of our species radically accelerated as we developed the culture, legal structure and technology for exchanging information.

In the last century, there is a third acceleration of collective learning as we add new ways to share; voice over telephones, video over broadcast, cable and satellite, and near the end of the last century, data over IP.

In the last decade, as Moore's Law compounds the power of computing, storage and transmission of bits, we enter a new era; the era of Big Data.

Previously, the fundamental task of the economy has been the manipulation and distribution of physical material.

Now, increasingly, value creation is driven by knowledge exchange.

Broadband is creating its own big bang in causes ripples of change everywhere. As the New York Times recently reported, “The story is the same in one field after another, in science politics, crime prevention, public health, sports and industries as varied as energy and advertising. All are being transformed by data-driven discovery and decision-making.”

So just as it has in the past, the way we do collective learning defines our era and our opportunities. While knowledge work takes many different forms, in the 21<sup>st</sup> Century, it inevitably shares a common platform: the broadband ecosystem, that combination of networks, devices, applications, and, above all, people who know how to use it.

Broadband has become the commons of collaboration. It is the platform on which economic growth and social progress depend. It is the platform for the information age economy, a revolution just as profound as the industrial revolution or the invention of writing.

We see this with what we carry in our pocket, a computer with powers greater than the rooms of computers that took us to the moon.

We see it in the data:

- A recent study demonstrates how 14 communities with abundant bandwidth produce an excess of economic production—over a billion dollars in additional wealth creation--in comparison to similar communities without such bandwidth.
- Another study shows that fiber connectivity has become one of the top selling points for economic development projects.
- A set of studies demonstrating that a home with a fiber connection is worth \$5,000 more than a similar house without it.

So in the same way that at different times our country recognized the need for universal education, universal access to electricity, clean water,

railroads and then roads reaching everywhere, today, we need those broadband networks everywhere and everyone needs to be on.

Congress first recognized the importance of this commons of collaboration in a nascent form in 1996 by requiring the FCC to make sure critical institutions—schools, libraries and health care facilities, regardless of location or community income level—get connected to the Internet.

It recognized it again in 2009 when in an act unprecedented for Congress, it asked the FCC to write a National Broadband Plan. A year later the Plan emerged with four key strategies:

- Drive fiber deeper;
- Use spectrum more efficiently;
- Get everyone on; and
- Use the platform to improve the delivery of public goods and services like education, job training and public safety.

Within those strategies, the Plan made about 200 recommendations. It was like a puzzle, with those recommendations puzzle pieces that hopefully fit together to create a beautiful whole.

The Plan was a good start but two things in public policy are always true.

First, aspiration and strategy are important but execution and delivery are more critical.

Second, policy progress is never an individual event; it is a team sport and relay race.

And so in the last several years, there has been a flurry of activity devoted to making sure our kids and our communities can thrive in the emerging economy.

For example, we've had the ConnectedEd program, a long-overdue upgrade of that 1996 e-rate program. As a result, more than \$10 billion has been committed to a five-year program to transform American education, including funding for school and library connectivity with \$2

billion specifically for Wi-Fi, \$1.5 billion in additional annual funding, and more than \$2 billion in private-sector commitments. These commitments will dramatically expand high-speed Internet connectivity for America's schools and libraries — connecting 20 million more students to next-generation broadband.

We freed up more than 250 MHz of spectrum for next generation uses, raising over \$40 billion in the process, which economists suggest is worth 10 times more in terms of the consumer surplus created from mobile broadband use.

I could go on and it won't surprise you that I am a big fan of what this Administration has done to seize the opportunity that the broadband economy creates.

But here is what may surprise you coming from someone who helped author the *National* Broadband Plan. While I believe in a strong federal role in removing constraints to progress, cities play just as critical, if not a more critical role.

They have more levers to drive fiber deployments. It has been cities that have lead to the Game of Gigs—competition to build networks 100 times faster than what we use today--that we now see beginning between such companies as Google, AT&T, CenturyLink and Comcast.

It is cities that have, and are best positioned to run, the digital readiness programs that are the predicate to getting everyone one.

It is cities that are experimenting with new ways to use the broadband platform to improve education, transportation, energy use, and public safety and to create the Civic Internet of Things.

But it is not just the city government. It is that combination of many forces, public, private, non-profit and others, that have accomplished these things and that we need to engage on this mission.

That's why ConnectHome is so important.

ConnectHome is the full manifestation of that team effort to eliminate lack of bandwidth or digital readiness as a constraint to economic growth or social progress.

It improves networks that enable new uses that drive adoption that in turn improve the economics of the networks that creates a virtuous cycle for our economy and society.

It helps make sure there is no Homework gap, that digital progress does not lead to a digital divide, that the collective learning we need all to have access to is available to all.

It is all the puzzle pieces coming together to make that more beautiful whole.

In the last four years I've attended many meetings full of speculation on what will happen when we eliminate bandwidth as a constraint to innovation, economic growth and social progress. I've heard many discussions of profound benefits that could follow in medicine and media, commerce and culture, education and engineering and many other sectors.

But none expressed the opportunity better than a student at the University of Maine who, after expressing why he was excited about for many specific reasons for a potential next generation network, said, "that which is most exciting is what we don't yet know."

All of here know we owe the next generation the opportunity to thrive in this historic transformation to collective learning in big data broadband-based economy.

We all know that ConnectHome, and all of you here, will play a big role in creating that opportunity.

But what is most exciting is what we don't yet know.

Many thanks.

