



Gig.U

The University Community Next Generation Innovation Project

UPGRADING AMERICA: THE ONE-YEAR ANNIVERSARY OF GIG.U July 27, 2012

Today marks the one-year anniversary of the launch of Gig.U: the University Community Next Generation Innovation Project. We want to take this occasion to reflect on what we have done over the last year and set a path for our work ahead.

Background. One year ago, 37 research university communities, in all areas of the United States, came together for the mission of accelerating the deployment of next generation networks and services. A project of the Aspen Institute's Communication and Society Program, Gig.U has its roots in the National Broadband Plan. The Plan recommended that in order for the United States to retain technological leadership, our country should create a critical mass of communities with world-leading—not just world class—broadband networks.

From that conversation between the Plan staff and multiple stakeholders, Google took on the task of deploying a world-leading network, a process that started with 1,100 communities vying for the opportunity. The overwhelming grassroots response demonstrated that, throughout the United States, communities large and small understand that economic leadership tomorrow will ride on leadership of broadband infrastructure today.

The responses to Google's effort also raised the question of whether the energy behind the responses could be harnessed to further accelerate the deployment of world-leading networks by focusing on those communities with the most favorable market conditions—due to density, demand and pre-existing infrastructure—and the communities with the

Some Responses to Gig.U Launch.

"Gig.U meets Need for Speed. Gr8 job creator..."

*John Doerr, Partner at Kleiner Perkins
Caufield & Byers via Twitter*

"Gig.U facilitates start-ups of many varieties, not only software related, but also growth areas like biotech. That translates to more jobs. It might also facilitate online job training in new job areas where there are plenty of jobs, and few people with the right training."

Craig Newmark, Founder of Craigslist

"Broadband services are the engines of American innovation, and the Gig.U project will help ensure that our next generation of inventors and innovators can access this vital technology. American universities are attracting the best and the brightest from around the world, and with widespread broadband deployment we can keep American innovation strong. We applaud this initiative for its focus on private sector investment, not government funding, in this most important American infrastructure."
Jason Oxman, Senior Vice President, Industry Affairs, Consumer Electronics Association

For more responses, see:

www.gig-u.org/aboutus/our-supporters



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greatest likelihood to develop and use big bandwidth applications. University communities excelled in both filters. And so, the university communities organized to test the waters to see if, by not waiting for Google or other ISPs to act, but by organizing the demand side, we could create a critical mass of test-beds.

The RFI. The first step in this process was for Gig.U to issue a Request for Information (RFI), in which we asked what could be done to create test-beds for next generation connectivity in our communities. The RFI generated over 50 responses from every part of the broadband ecosystem, chock full of new ideas for how to catalyze an upgrade. They ranged from national telephone providers and multi-system operators, to network equipment manufacturers and vendors, research and education networks to application and end-user device manufacturers. Several communities were also the focus of responses provided by regional or local carriers, new entrants or non-traditional providers.

Membership. Gig.U launched with 37 members. Our goal was not to have a large number but rather to focus on a manageable number of communities that shared the vision and commitment. Further, we did not know when we started, that there would be a need or a desire for a Phase II. Nonetheless, over 80% of our initial members decided the project warranted an additional Phase. While a few of our initial members chose not to continue with Phase II, we are delighted that we have been joined by several new members, including Washington State University, the University of Connecticut and the University of Southern California.

Gig.U also launched a national conversation about the need for an American strategic bandwidth advantage that would invent the industries and the jobs of the future. For example, New York Times columnist Tom Friedman, [writing about](#) the questions Presidential candidates should be forced to address, noted that the jobs of the future will come from certain kinds of ecosystems and that “(t)he best of these ecosystems will be cities and towns that combine a university, an educated populace, a dynamic business community and the fastest broadband connections on earth. These will be the job factories of the future.... Therefore, the critical questions for America today have to be how we deploy more ultra-high-speed networks and applications in university towns to invent more high-value-added services and manufactured goods and how we educate more workers to do these jobs — the only way we can maintain a middle class.”

Results. Since Gig.U received and analyzed the RFI results, the project members and partners—both nonprofits and private enterprises—have been working hard to improve the environment for new investment to build next generation networks



The results are stunning. Armed with nothing but the power of the idea and collective energy and insight, these communities, universities and enterprises have cleared and planted the field for a new American upgrade.

These efforts are as diverse as our members:

- *An ISP in Orono and Old Town*—communities surrounding the University of Maine—[is building mixed-use gigabit networks](#) in a staged build out.
- *An electric utility in Gainesville* is [building an Innovation Square](#) surrounding the University of Florida with a gigabit service offering embedded in the development.
- *The City of Seattle, working with the University of Washington*, will be [offering to lease its extensive dark fiber network](#) to a provider that will offer the best package for providing gigabit services to innovation hubs in the city.
- *Case Western Reserve University*, building on the success of the Case Connection Zone, is using gigabit connectivity to test how big bandwidth [can be used to improve community wellness](#).
- *Real estate owners and other public and private entities in the communities surrounding Michigan State University*, are

AIR.U. Consistent with the mission to accelerate the deployment of next generation networks and services, Gig.U joined with other higher education associations, public interest groups and high-tech companies to deploy networks on “white spaces” spectrum to upgrade the broadband available to underserved campuses and their surrounding communities.

That AIR.U was born out of the Gig.U RFI effort, only further validates the need to upgrade the bandwidth available to communities surrounding our research universities and our colleges throughout the country, and the wisdom of working together to address that need. We think AIR.U will provide new options for Gig.U members for whom the economics of a wireline upgrade may not work. Moreover, it improves the value of the world leading networks we hope will be deployed in many of our communities, as the value of greater bandwidth will increase as others are also upgraded. Gig.U and AIR.U together can help create an economic tide to raise all boats.

The founding Higher Ed organizations together represent over 500 colleges and universities nationwide, and include the United Negro College Fund, the New England Board of Higher Education, the Corporation for Education Network Initiatives in California and the National Institute for Technology in Liberal Education in addition to Gig.U.

Founding partners also include Microsoft, Google, the Open Technology Institute at the New America Foundation, a think tank based in Washington D.C., the Appalachian Regional Commission and Declaration Networks Group, LLC.



[bringing gigabit networks to apartments](#) and taking a multitude of steps to improve the environment for the deployment of a regional gigabit network.

- And, in what will be the first multi-community deployment of gigabit networks and the biggest investment in last mile wireline connectivity by a start-up in a decade, *a private company—Gigabit Squared—committed up to \$200 million to build out gigabit networks* in a half-dozen Gig.U communities.
- In addition, the RFI process led to the creation of a companion effort, [AIR.U](#), (Advanced Internet Regions) which aims to use the latest spectrum technology to upgrade connectivity for rural educational communities. Microsoft, Google and higher-education groups, including Gig.U, representing over 500 colleges and universities have joined in this effort. (See box above.)

These activities are creating laboratories of bandwidth innovation. And more are on the way as other communities and universities are work with private enterprise on potential projects, which we look forward to announcing over the months ahead.

The Task Ahead. The deployment plans to date more than exceeded our expectations for what we hope to achieve during Phase I. Still, as Gig.U analyzed the results of the RFI, we realized that there was an opportunity to do more, and so an overwhelming percentage of our members voted to continue with a Phase II.

The principal mission of Phase II is to create tools that will improve the likelihood that any Gig.U community can receive a broadband upgrade. This mission is born of an analysis of the RFI responses. One clear conclusion from responses to the RFI was that current market forces were not likely to produce an upgrade in many, if any, of our communities or any communities in the United States. Indeed, for the first time since the beginning of the commercial Internet, no national wire line broadband provider has plans to build a faster network than the currently best available network.

But looking at the responses revealed that Gig.U communities did not have to accept that the current market is the final word.

In understanding how communities could act to improve the likelihood of an upgrade, two ideas are noteworthy. First, the total benefits of a new or upgraded network are the sum of the benefits to the private investor, the third party content and apps creators, the local community, the region and the country.



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Second, the only benefits that matter to the investment decision, are those that matter to the investor. And as to those, it is a simple case of costs versus benefits. Or, broken down, the relationship between the new or incremental capital expenditures and operating expenditures versus the risk adjusted revenues, plus the system benefits and the threat of competitive losses.

In most communities today, the costs to investors are greater than the expected benefits, and therefore few upgrades or new networks are in the offing. To reverse the relationship between costs and benefits, communities need to create an environment that lowers capex, opex and risk, and increases revenues, system benefits and competitive threat.

This led Gig.U to consider how to help a community change the math. What could Gig.U do to help our members organize to reduce costs and increase revenue potential in their communities?

The answer is to collectively develop tools we believe will help all Gig.U communities increase the probability of a broadband upgrade.

These tools include:

- An interactive guide to help communities understand which of their current assets and resources could be used to lower a provider's capital expenditures, operating expenses and the risks of investing in a new network or upgrade.
- An online community engagement tool, to help communities identify and understand the need for big bandwidth in their communities and aggregate demand, thus improving revenues and system benefits; and
- A Generic Request for Proposals by which any community can test the market for providers willing to offer next generation networks now.

We have begun work on these three projects and expect to deliver these to our members later this summer. While nothing guarantees that the use of these tools will result in an upgrade, we think that it will help our communities position themselves to take advantage of what we believe will be momentum for an upgrade when the Google Fiber project and the Gig.U projects start to show results. Further, we have begun the process of exploring with a variety of different groups how to work collaboratively to use the upgrades to accelerate economic growth, job creation, and new approaches to solving long-standing social problems. While each of the test bed deployments reflects local conditions, we think there much upside in learning together what works and doesn't work in the utilization of greater bandwidth.



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Complementary Efforts. We are not alone in our efforts to upgrade America.

Our members have worked at the state level, with results such as the first state big bandwidth plan, from [Hawaii](#), and the first state big bandwidth competition, from [Illinois](#).

The federal government is working toward the same goal from a different direction with [US Ignite](#), a partnership designed to drive the development of big bandwidth applications.

And this week [Google announced](#) the terms of its offer in Kansas City: providing a gigabit of bandwidth, 100 times faster than the common high speed in much of the United States, and 20 times faster than its rival, at a comparable price point. Google Fiber represents innovation not just in terms of speed and price, but also in operating and service provision that can be models for other efforts.

We are working with these efforts, and others (including AIR.U, which emanated from our RFI process) and look forward to working with others who also are interested in creating new opportunities with bigger bandwidth.

Endgame. With all these efforts, we hope that we can provide the United States a strategic bandwidth advantage. By combining that advantage with the minds that occupy and surround America's greatest asset for the 21st Century Information Economy—our world-leading research universities—America can lead the world in answering one of the great questions of our time:

What happens if we eliminate bandwidth as a constraint on innovation?

We already know some of the answers.

Doctors say eliminating bandwidth constraints would enable the use of genetic sequencing to save cancer patients facing a death sentence. Educators say immersive gaming would increase the effectiveness of education and job training, particularly for those for whom traditional methods fail. A broad spectrum of people predict the era of Big Data is revolutionizing all manner of collaboration, from the most advanced science to small business services.

For all these new techniques to reach their potential, however, they need Big Bandwidth.

But the best answer came at the event announcing the project in Maine. Many testified as to the project's value, but none more eloquently than a student who spoke who said that while having the world's fastest network in Maine would enable the business he started to



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work better and would bring “immediate benefits” to the state, the most exciting thing about having basically unlimited bandwidth “is what we don’t know yet.”

In saying the most exciting thing was what we don’t know yet, he is following in the great American tradition of those who travel with hope, energy, and urgency but no map. In that tradition, whether it be Columbus, Lewis and Clark, the astronauts or the fathers of broadband, we don’t follow a map; we make the map.

We have a long way to go, but in the last year, we have come a long way in making the map for a country, and indeed a world, unconstrained by bandwidth.

Thank you.

Blair Levin
Executive Director, Gig.U

The Team. This project reflects the work of many who have worked countless hours for little, or in some cases, no pay, out of a desire to advance the vision and mission of Gig.U. Those to whom great thanks is owed include:

- Elise Kohn, who jumped in to run the RFI process, and gave Gig.U a great foundation for its later successes;
- Ellen Satterwhite, who came in to assist Elise and now has taken over the principal role of coordinating Gig.U activities;
- Scott Berendt; who came to us from the FCC and One Economy to develop the community assessment tool;
- Andrew MacRae, who came to us from NTIA to develop the community engagement tool;
- Mark Del Bianco, a veteran telecommunications lawyer, who kindly volunteered to draft the Generic Request for Proposals;
- Our friends at the Glen Echo Group, who have done a wonderful job assisting with our meetings, honing our message and generally helping us leverage limited resources into what has become a big effort;
- Our friends and former colleagues at the FCC: Erik Garr and Paul De Sa, who have been wonderful sounding boards on technology, process, economics and all the other issues that have come up over the last year; and
- Charlie Firestone and the Aspen Institute Communications and Society Program, who have housed us and helped us in a myriad of ways that have enabled us to move rapidly from idea to organization to action.

While all the team in D.C. have made great contributions, it has become clear that ultimately, success depends on the leadership and energy of the members and the local leaders. Gig.U, at its best, can help the university communities get a great head start over other communities in catalyzing an upgrade to a world-leading network, but success ultimately depends on local action by local actors. While the successes to date, they all have in common that local ingredient, and for that, we at Gig.U offer our greatest gratitude.