Expanding and Accelerating the Adoption and Use of Broadband Throughout the Economy

A Report of the US Broadband Coalition Adoption and Use Working Group

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www.baller.com/national_broadband.html

Working Group Co-Chairs

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Adoption and Use Panel – Sector by Sector Review of Policy Options

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Expanding and Accelerating Broadband Throughout the Economy

Digital Inclusion	*Greg Goldman, Digital Impact Group*
Universal Access	*Karen Peltz Strauss, Rehabilitation Engineering Research Center on Telecommunications Access*
Economic Development	*Jim Baller, Baller Herbst Law Group*
Education	*Steve Gorski, National EBS Association*
Energy and Sustainability	*Jayant Deshpande, Bell Labs, Alcatel-Lucent*
Healthcare	*David Aylward, COMCARE/mHealth Alliance*
Public Safety	*Patrick Halley, National Emergency Number Association*
Democracy and Civic Engagement	*Karen Archer Perry, Knight Center of Digital Excellence*
Advocacy and Engagement	*Harry Roesch, Rural Telecommunications Congress*

Reaching Universal Adoption & Use: Closing the Digital Divide

Greg Goldman, CEO
Digital Impact Group

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Opportunities

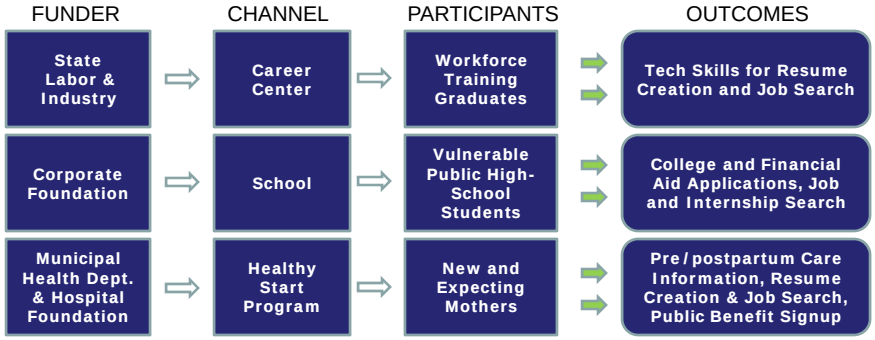
1. For EVERYONE - Metcalfe's Law: The value of a telecommunications innovation is proportional to the square of the number of connected users – i.e. as users increase, the value for all users increases exponentially.
2. For GOVERNMENT: relieves need to operate traditional government and e-government simultaneously.
3. For BUSINESS: greater efficiency and expanded economic opportunity through increased participation in e-commerce.
4. For EDUCATION: facilitates two-way communication between home and school, distance learning, and access to educational resources online.
5. For FAMILIES: full access improves educational, employment, health and other life outcomes for the entire household.

Policy Options

1. SUPPORT comprehensive programs that subsidize computers and broadband access to the home; integrate with established service channels; are “high-touch”; provide formal and peer support; and integrate broadband and technology training with other motivations.
2. TARGET outreach and training to each underserved market segment.
3. INTEGRATE broadband and technology adoption with other strong motivators, such as education, employment, health and more to ensure relevance.
4. COMMISSION other government agencies to allocate funding for broadband adoption services as part of their key programs.
5. CREATE (for example) a Pilot Program to provide subsidized broadband, computers, training, applications and support to K-12 students eligible for the National School Lunch Program.

Example Programs

Digital Impact Group’s programs are designed around those policy options – broadband adoption services are COMPREHENSIVE, TARGETED, and INTEGRATED with various programmatic and funding channels.



Findings

A cross-channel evaluation of DIG's service model, conducted by the OMG Center for Collaborative Learning*, revealed that programs are meeting participants' needs because they are relevant to their lives and motivations.

* Funded by the William Penn Foundation

Activity	Out of those who cited this as a reason for participation…	
	…% who reported learning how to…	…% who reported ongoing use for this purpose
Research educational opportunities	82.4%	68.1%
Find and apply for jobs or internships	86.3%	68.1%
Help my children or family members with homework	83.3%	68.8%
Manage my business finances and track customers and inventory	81.4%	50.0%
Manage my personal finances	75.6%	52.5%
Find medical help or information	81.0%	62.8%
Search for child care services online	81.0%	57.5%
Sign up for public benefits	91.7%	44.1%

Reaching Universal Adoption and Use: Ensuring Access by People with Disabilities

Karen Peltz Strauss
Legal Consultant
Rehabilitation Engineering Research Center on Telecommunications Access

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Opportunity: Broadband Benefits for People with Disabilities

- Integration for Essential Life Services: employment, education, civic affairs, health care, recreation, etc.
- Faster Speeds – greater productivity
- 24/7 Availability – greater independence
- Bandwidth for Accessibility Tools – closed captioning, video description
- Level Playing Field
- Accessible Communications Services

Policy Options

- Conduct research to better identify the problem
  - Identify rate of adoption by people with disabilities
  - Identify existing and potential barriers to adoption
- Develop federal policies to ensure full and equal access to broadband equipment and services
  - Universal design as a first approach: Support building access directly into the design of products and services to avoid expensive and ineffective retrofitting later on
  - Compatibility with specialized equipment as a second resort
- Expand use of Universal Service Lifeline and Link-Up Funds to allow option for broadband use
- Foster and fund collaborative efforts with disability groups on outreach, education, training, and broadband learning

Case Example

Video Communications

- Peer-to-Peer and video relay services
- Ability to communicate in native, primary sign language
- Ability to communicate in real time for conference calling and IVR communications
- Ability to insert emotional context for a natural conversation that is more effective

National Public Inclusive Infrastructure

Technical and Physical Accessibility Barriers

- Adapted hardware and software needed to access broadband services are costly
- Locations for public Internet access may be limited or inaccessible
- Websites may not be accessible or usable

Build in Basic Access

- Ensure that consumers of all socioeconomic levels are able to have accessibility features at all times, in all places
- Basic structure, tools and resources could be publicly funded
- Ecosystem of commercial accessibility applications that can be made available on demand via the Internet

Economic Development

Jim Baller
The Baller Herbst Law Group

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Opportunities for Economic Development

- Broadband is itself a big, growing, multi-faceted business
  - E.g., carriers, systems designers, construction firms, etc.
- Like electricity, broadband is an engine of commerce of all kinds
  - Expands number, kinds of customers; facilitates global reach
  - Enables entities of all kinds to enhance productivity, compete more successfully in emerging knowledge-based global economy
  - Fundamentally change ways of doing business (e.g., global chains of production)
- Broadband is an engine of innovation , facilitating both improvements to existing products and services and creation of entirely new ones

Top Policy Options

- **Access** – invest in e-centers, broadband business incubators
- **Job Training** -- support online and in-person skills development
- **Federal Support of State & Local Spending** – focus on technology
- **Leverage Federal Spending Power** – emphasize broadband goals
- **Tax Policy**: encourage exports, regional economic development
- **Trade Policy**: reduce barriers to global markets for U.S. ICT products
- **Benchmarking Approach to Economic Development**: focus on local strengths, develop better intelligence, micro-data
- **National Broadband Planning:** from niches to broad markets

Case Study: Bristol, Virginia

- Town of 18,000 on SW Virginia-Tennessee border
- Major industries dying in 2000 (tobacco, coal, agriculture, textiles)
- Decided to build fiber-to-home system to revive local and regional economy
- Progress delayed by three years of battles with established carriers
- Prevailed and became first entity in US to offer “triple play”
- Today, take rate about 65%
- Two major employers : 750-1500 new jobs @ 2X local wage rates
- New revenues circulate 4-8 times around local economy
  - new local wealth, increasing tax revenues
  - new business for both BVU and established carriers
- Numerous awards, including 2009 top 7 intelligent cities worldwide

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Education & Distance Learning

Steve Gorski

Secretary

NEBSA
National EBS Association

President/CEO

The source for Learning

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Opportunities for Education

- Advantages of Web 2.0 Functionality
- Technology Centric Students
- Social Networks Eliminate Isolation
- Equipment/Devices More Affordable
- Emphasis on Broadband
- Deployment of Fiber and 4G Wireless
- Stimulus Funding

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Top Policy Options

- E-Rate
  - Revise Processing, Implementation and Funding
- Technology Standards (DOE and ISTE)
  - Include in All Policy & Professional Development
- Technical Standards
  - Fiber to Buildings & 4G for Wireless
  - Target of 1 Gbps per 1,000 Students/Staff
- Educational Institutions
  - Promote Innovative Learning Communities
  - Upgrade Technology Priority & Equipment Maintenance
- Research
  - Document and Showcase Best Practices

Lemon Grove School District, CA

- District Commitment
  - Goal 1: Every child reaches his or her optimum achievement level
  - Goal 2: Every child incorporates technology in problem solving, communicating and extending his or her learning
- Professional Development
  - 20% per year, 100-120 hrs, differentiated instruction, collaboration culture
- Curriculum
  - Student initiated, task oriented, on-going project-based research
  - Connect their work with real world – "They are creating knowledge"
- Technology – High Capacity WAN
  - Fiber to 6 sites (2GB), Wireless to 6 sites (200 MB), Laser Network (1 GB)
- Linked with Parents and Community

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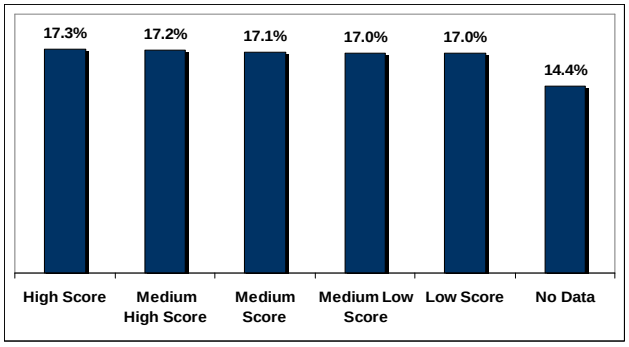
NEBSA
National EBS Association

the source for Learning

K-12 Technology Sophistication Index*

TSI is determined by incorporating many technology variables: e.g. the presence of high-end computers, Internet connection type, technology-to-student ratio, financial data and more. It is vital to move schools into the High and Medium High Categories.



*Excerpted from the MDR Education Universe 2009 – 2010 Catalog, P. 14

Energy and Environmental Sustainability

Jayant Deshpande
Bell Labs

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Alcatel·Lucent

Opportunity

- Telework
  - Home-based businesses and tele-commuting
  - Carbon emission reduction and reduced traffic congestion
- Smart Grid
  - Power grid modernization, distributed alternate energy resources incorporation, and consumer participation
  - Address energy independence and global warming issues
  - Two way communication for smart grid and other power utility applications
- Smart Building
  - Building automation for comfort and security of residents
  - Connecting home area network of home consumption elements, energy resources, electric vehicle, smart meter, *etc* to the smart grid
- Dematerialization, Reuse, and Sustainable Culture
  - E-commerce reducing pressure on environment and energy efficiency
  - Reuse and recycle through on-line sales and auctions

Policy Options

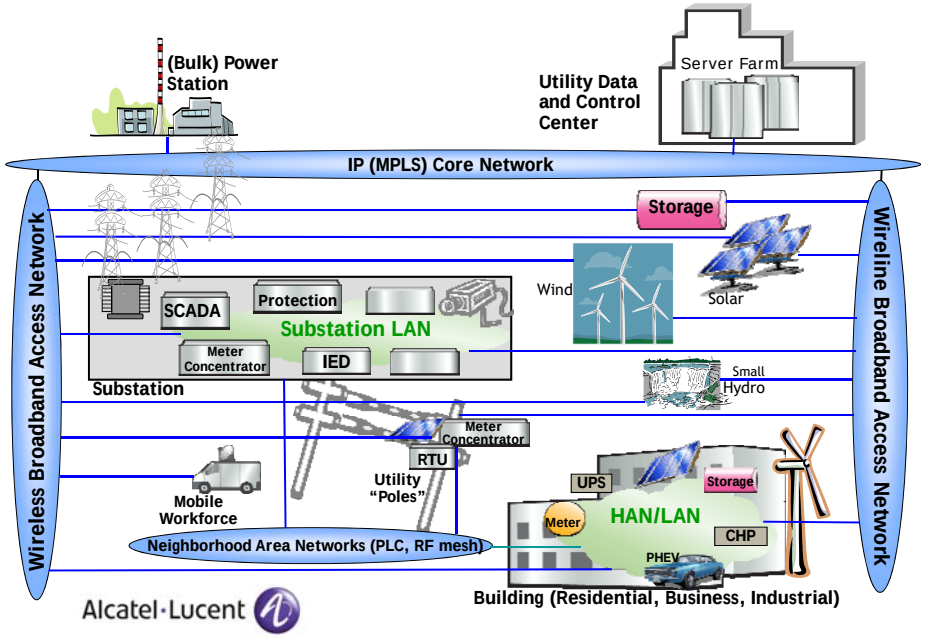
- Access to spectrum for broadband wireless communication to support smart grid
  - Sharing of a federal band with utilities (*eg,* 1800-1830 MHz)
  - Provide priority access to utilities and other critical infrastructure industries similar to the 700 MHz D-band
  - Leveraging commercial broadband networks for smart grid applications
- Recommendations and assistance on ways to maximize telework
  - Telework best practices
  - Regulations to ensure information security and protection
- Promote use of web-based applications and devices
  - Energy conservation and transportation efficiency such as smart grids, smart roads and automation processes

Smart Grid Application Requirements

(Qualitative)

Application	Scope HS (Hub-spoke) or P2P (Peer to Peer)	Data Rate / Data Volume (at endpoint)	(One way) Latency Allowance	Reliability	Security
Smart Metering	HS	Low/V. Low	High	Medium	High
Inter-site Rapid Response (*eg* teleprotection)	P2P	High/Low	V. Low	V. High	V. High
SCADA	P2P, HS	Medium/Low	Low	High	High
Operations data	HS	Medium/Low	Low	High	High
Distribution Automation	HS, P2P	Low/Low	Low	High	High
Distributed Energy Management and Control (inc. ADR, Storage, PEV, PHEV)	HS, P2P	Medium/Low	Low	High	High
Video Surveillance	HS	High/Medium	Medium	High	High
Mobile Workforce (Push to X)	HS	Low/Low	Low	High	High
Enterprise data	HS	Medium/Low	Medium	Medium	Medium
Enterprise Voice	P2P	Low/V. Low	Low	High	Medium
Micro Grid Management (between EMSs)	HS, P2P	High/Low	Low	High	High

Communication Network for Smart Grid



Healthcare

David Aylward

Executive Director
mHealth Alliance

President
COMCARE

mHealth Alliance

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Opportunities for Healthcare: More wellness

- Informed care; reduced errors
- Personalized wellness and care
- Particular value in chronic conditions and emergencies
- Extending care to the farthest reach of wireless
- Enormous real time research base
- Protocols based on real science
- Rapid knowledge diffusion
- Keep people out of hospitals; drive down costs in them
- Disease surveillance and rapid reaction

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Primary Challenges

- 1/6 of the economy vastly underusing broadband
- Why? Interoperability, NOT access to broadband
- Sea of unconnected data islands
- Who cares if we all have EHRs if they don't connect?
- No overall view, responsibility; benefits attenuated
- Culture, economics, reimbursement combine to defend status quo
- CMS, insurers in dark ages

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Policy Options

- Focus on the middle of the healthcare enterprise, not the borders; focus on the collaboration needs
- Solve the application layer barriers to connecting patients and their data with medical knowledge
- Build the "commons": shared core services and standards
  - Federated access control; directory; ID mgmt
  - Interop standards in a year
- Reimburse wellness
- Reimburse efficient mhealth and ehealth services
- Open the garden hose; demand will drive capacity

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Policy Options

- Open architecture, standards based system described in public safety section applies here as well: 2 birds/1 IT geek
- Fix HIPAA: it wasn't meant to prevent sharing of data for care or research
- Fund cost and benefit studies as if it were a single enterprise to show aggregate savings
- Fund Next Gen emergency response access (9-1-1, EMS and ED) to allergies, meds, chronic conditions, doctor from VA, DOD, Medicare, Medicaid (HITSP IS 04)

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The Broadband Difference in Public Safety

Patrick Halley
National Emergency Number Association

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Opportunities for Safety

- Faster, more informed response; reduced errors
- Safer responders
- Value in daily and mass casualty emergencies
- Extending response knowledge to the farthest reach of wireless
- Real time view of all relevant information: at 9-1-1 and HQ
- Full access to safety services by persons with disabilities
- Link emergency and healthcare worlds
- Fast upgrade for thousands of small, rural agencies

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Challenges

- Large section of US economy vastly under using broadband
- Miniscule sharing and access to external data
- Extraordinary gains in care, safety and efficiency possible
- Critical to informed emergency response
- Connectivity/access is not the problem
- After “hump”, money is not top problem; large savings
- Demand is the problem: anchor institutions (safety + HC)
- Application layer: software, interoperability, standards
- More than 100,000 independent organizations
- Federal programs funding silos makes no sense in broadband world

Policy Option Solutions

- Common to healthcare
- Unleash demand; lots of money will flow; capacity will grow
- Focus public safety broadband policy on demand, not pipes; on enabling interoperability, not end points
- Need to focus on the overall enterprises; fill the gaps
- Need overall leadership: federal, states, local
- Think network-centric and cloud
- Focus on the middle, on the shared needs
- What are the key demand creating investments w/leverage?

Key Policy Options: Investments

- Cross domain standards: develop fast; then require use
- Shared, standardized utilities: “yellow pages”, rights and identity management
- Hosted services: the cloud
- Encourage aggregated requirements and procurement
- Educate the public and emergency services community on the services they should demand
- End to end economic analysis: make the case

Examples

- Deaf/ hard of hearing people texting 9-1-1; direct video connection to 9-1-1
- OnStar crash
  - Location, severity, meds (blood thinner) data
  - Predictive algorithms
- Hazmat incident
- Public warning

The Broadband Difference in Democracy and Civic Engagement

Karen Archer Perry
Director, Connected Communities Team
Knight Center of Digital Excellence

KnightCenter OF DIGITAL EXCELLENCE

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Opportunity

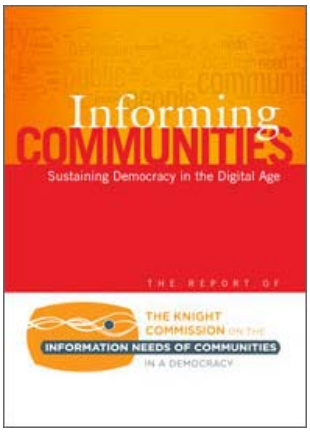
- DEMOCRACY
  - Informed public
  - Active engagement
  - Service

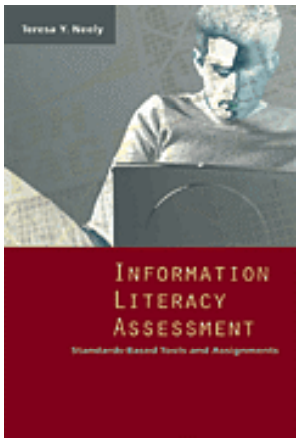
- The new “town square” for democracy is definitely digital

Policy Options

- Maintain a free and open flow of information
  - Strengthen credible information intermediaries – schools, libraries, higher ed
  - Increase support for public service media
- Increase transparency and accessibility of Government
  - Integrate new media into government services
  - Use web 2.0 to open info access & promote engagement
- Promote a universal access
  - Digital inclusion> Information access > Community empowerment
- Instill information literacy skill at all levels
  - An informed public needs information & the ability to discern what is credible and well sourced

Examples





http://www.knightcomm.org/, http://www.ala.org/ala/mgrps/divs/acrl/issues/infolit/
http://www.ala.org/ala/mgrps/divs/aasl/aaslissues/aaslinfolit/informationliteracy1.cfm

Engagement and Advocacy in Rural Communities

Harry Roesch
Founding Member and Director, RTC

Rural Telecommunications Congress
Making Technology Work for Communities
Rural TeleCon

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Adoption Examples in Health and Education

- NY – Click Care Health Project
- PA/OH – Diabetes Patient Management Programs
- AL – Pickens County Multi Sector uses

Government and Private Sector Uses

- E-commerce in all sectors - public sector: economic development, tourism promotion, information services, on-line services, etc.
- Private sector: video conferencing, access to bidding information and responding electronically, "just in time" manufacturing, and "inventory control", all types of internal human resource information across company network

Questions??

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