

**Broadband Venture Seminar**

Presented for 





April 6, 2001

 Broadband Venture Seminar 

**Speakers & Topic Highlights...**

- ◆ **The Future of Broadband Communications - YAS Vision**  
Rouzbeh Yassini  
Founder & CEO  
YAS Broadband Ventures, LLC
- ◆ **The Broadband Economy . . . 15 Year Vision**  
Jim Albrycht  
Vice President, Chief Marketing Officer  
YAS Broadband Ventures, LLC
- ◆ **Broadband Architecture, Technology, Deployment**  
Dennis Picker  
Executive Consultant, Chief Technology Officer  
YAS Broadband Ventures, LLC
- ◆ **The Role of Education, Government & Industry in Broadband**  
Dr. Siamak Yassini  
Vice President, Chief Business Strategist  
YAS Broadband Ventures, LLC



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**The Future of Broadband Communications - YAS Vision**

Rouzbeh Yassini  
Founder & CEO  
YAS Broadband Ventures, LLC



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**Global Economy**








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**World Wide Connection**



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### World Wide Connection

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### Consumer Demand

- ◆ **Work @ Home**
  - ◆ Video Conferencing
  - ◆ Intranet Access
  - ◆ Network Management
  - ◆ Shared Whiteboarding
  - ◆ Research
- ◆ **Global Commerce**
  - ◆ Home-Based Shopping
  - ◆ Real Estate, Insurance
  - ◆ DMV, Local Town
  - ◆ R2B, B2C
- ◆ **Publishing Business**
  - ◆ Book On-Demand
  - ◆ Printing Shop
  - ◆ Media Center

- ◆ **Home User**
  - ◆ E-Mail, Chat
  - ◆ Web Surfing
  - ◆ Music Delivery
  - ◆ Game Playing
  - ◆ Telephony
- ◆ **Educational Support**
  - ◆ Learn @ Home
  - ◆ School Administration
  - ◆ Distance Learning
- ◆ **Medical**
  - ◆ Patient Monitoring
  - ◆ Medical Images
  - ◆ Remote Diagnostics
  - ◆ Telemedicine

**Broadband**

Phone line, Cable TV Power Lines, Satellite, Fixed Wireless

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### Consumer Appliances

|                           |                             |
|---------------------------|-----------------------------|
| <br>Internet Refrigerator | <br>Home Management         |
| <br>Internet Car          | <br>Internet Smell Detector |

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### Broadband Facts

- ◆ Number of people connected to NET (100 M +)
- ◆ Broadband market place currently estimated at \$3 Trillion +
- ◆ Forbes 500 currently spending hundreds of billions of dollars annually
- ◆ 4 million Broadband modems operational at end of 2000...
- ◆ By year 2005 projected 50+ million homes connected
- ◆ US is primary driver of global Broadband technologies
- ◆ Doorway to new industry & economy

**Broadband**

**That is the Way**

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### Broadband Food Chain

- ◆ **Connection** = fat pipe "superhighway"
- ◆ **Content** = value to customer
- ◆ **Security** = privacy & confidentiality
- ◆ **Manageability** = quality & service
- ◆ **Environment** = saves the Mother Earth

**TIME: the most precious commodity**

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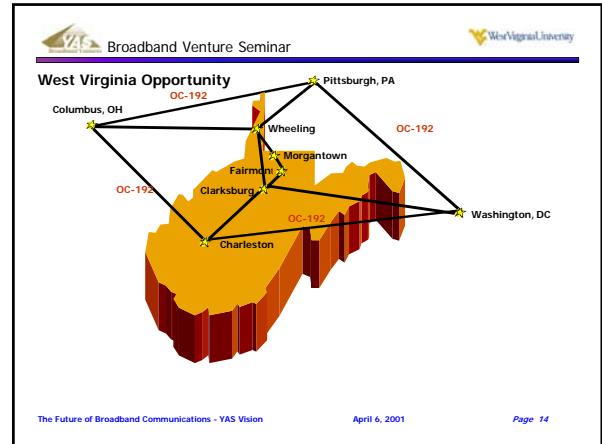
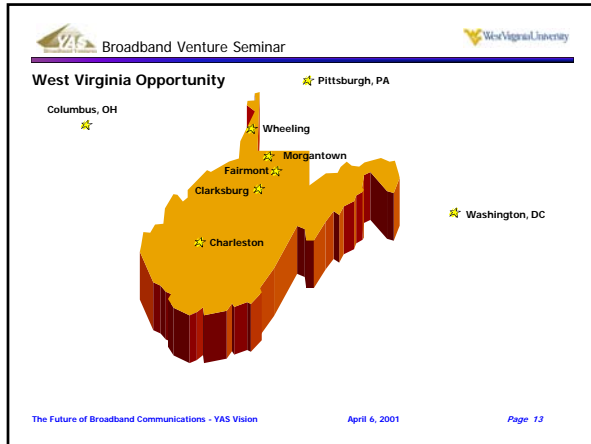
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### West Virginia Economy Facts

- ◆ Private investment in WV is the lowest in 50 states
- ◆ Old economy based
- ◆ Job growth has been slow & continued to be low
- ◆ Personal income expanding but falling behind
- ◆ Population is slipping away
- ◆ Gross State Product (GSP) ranked last in the nation in nominal GSP per capita in 1998
- ◆ West Virginia is bottom 5 among all other states from business start-ups

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### West Virginia & Broadband?

**Why is Needed**

- ◆ Fortune 500 Growing Pain
- ◆ Environmental Reality
- ◆ Industrial Age Broken Elements

**What is Required**

15 Year Vision to Enable West Virginia to Lead the Information Technology Roadmap

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### Broadband Vision for West Virginia

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### YAS Initiatives

- ◆ Empower WVU & WV with Broadband Vision & Leadership
- ◆ Enable the local investors to see the vision & its value
- ◆ Create 3, 5, 10, & 15 years road map with & for the community
- ◆ Engage corporate America, US ventures & local talent
- ◆ Launch a program to position WV Broadband capabilities to Fortune 500
- ◆ Conduct YAS Broadband Seminars "inform the local community"
- ◆ Create the venture based incubators
- ◆ Provide leadership, manage & add energy to put WV on the world map

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### 15 Year Vision

- ◆ Make WV as Switzerland of information highway
  - ◆ - Data Mine
  - ◆ - Security
  - ◆ - Power Resources
  - ◆ - Network Operation Center
- ◆ Enable private market to take advantage of WV
  - ◆ State assets (best kept secret)
  - ◆ Low cost of labor
  - ◆ Technology leadership
  - ◆ New economy opportunity
- ◆ WVU to be the state-of-the-art organization in Broadband communication
- ◆ Create venture based start-up to bring in private investors

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**3 Year Plan**

- ◆ Key Objectives:
  - ◆ Create start-up companies within technology incubator
  - ◆ Position WVU as a Voice & Video Data Center for US
  - ◆ Internet-II connection to greater Morgantown, WV network
  - ◆ Make Morgantown & WV key location for global Data Mine
  - ◆ Engage Fortune 500 deeply to the process
  - ◆ Communication Academy for Broadband
  - ◆ Broadband laboratory for Corporate America " 50K sq ft. facility"
- ◆ Educational Initiatives:
  - ◆ International telecommunication symposium
  - ◆ Global international student exchange
  - ◆ R&D in field of next generation Broadband technology

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**Broadband, That is the way**

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**"Voice, Data, & Video"**

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**Summary**

- ◆ Broadband is the jewel of the "Information Age"
- ◆ Global Economy is riding on Broadband
- ◆ Important source of new revenues
- ◆ West Virginia will be an important part of the Information Age
- ◆ West Virginia will be the Switzerland of the Information Age
- ◆ West Virginia will lead the state economy to the next chapter

**Broadband**  
**That is the Way**

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**Information Age Empowered By West Virginia**

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**The Broadband Economy...**

**15 Year Vision**

**Jim Albrycht**  
Vice President, Chief Marketing Officer,  
YAS Broadband Ventures, LLC

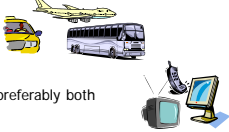

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**Global Broadband View**

To be a world class economy, a global leader, a nation who is supported by local communities, must be either in the . . .

- ◆ Personal Transportation Business 
- OR
- ◆ Personal Communications Business.. preferably both 

**Broadband**


. . .is about connecting people..  
Faster & Better ..

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**What is Broadband?**

- ◆ Broadband communications changes everything for the better across the community
  - ◆ Consumer & Producer
  - ◆ Network Operators
  - ◆ Services Providers
- ◆ And saves the environment at the same time 

**All Boats Rise with the Tide . . .**

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**Land of Opportunities**

- ◆ The Broadband communications infrastructure is built by enterprises . . . But is usually driven by the consumer & business . . . who have demanding needs
- ◆ Need leadership to make sure infrastructure building & user demand both develop in balance 

**Broadband**

**Anything, Anywhere, Anytime**

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**Economy Builder**

- ◆ Coordinated Program
  - ◆ Build Infrastructure
  - ◆ Build Up Demand for Broadband
  - ◆ Build Up Broadband Business
- ◆ Today, there are 3 (Phone, TV, Internet) separate global networks available mostly everywhere . . .
  - ◆ When they are integrated into each other, forming a Broadband experience & infrastructure, they become part of local economy builder
  - ◆ Forming a Broadband experience & infrastructure... they become the local economy builder



**Broadband**

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**Power of Broadband**

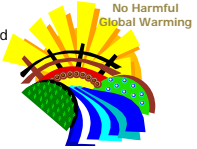
- ◆ The economic power of Broadband is it's ability for the information consumer . . . to also become an information producer
  - ◆ Whereby everyone's finished product becomes the next person's raw materials 
  - ◆ Enabling a self-producing, ever-growing global knowledge factory 

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**Quality of Life**

- ◆ Broadband communications introduces "global presence" to new local economies, enabling a better quality of life for each & every one of us
- ◆ Broadband communications is environmentally sound 
- ◆ Broadband improves per capita income

**Broadband**

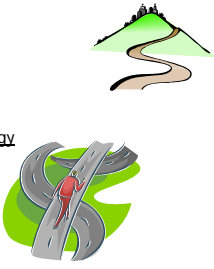
**preserves life's most valued asset . . . TIME** 

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**Information Age "Broadband Way"**

- ◆ Like the interstate highways . . . Broadband construction
  - ◆ Can begin any place at anytime
  - ◆ Can all connect together over time
- ◆ As long as there is an **Overall Strategy & Leadership** in place, using agreed open standards

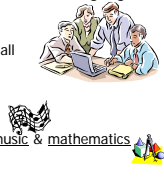


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**Broadband Communicator**

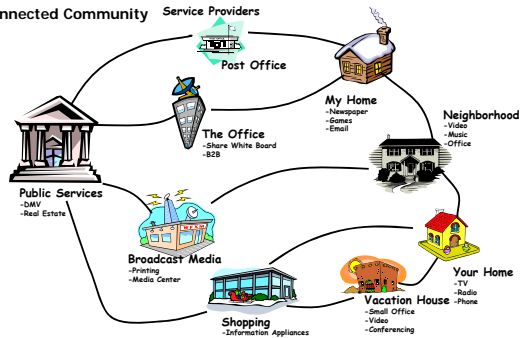
- ◆ The Broadband Internet is an imaging centric common language communications tool that . . .
  - ◆ Facilitates multicultural understanding among all people.. with common interests everywhere
  - ◆ Creates a global marketplace
  - ◆ Is augmented by the universal languages of **music & mathematics** as well as **speech & text**
  - ◆ Forms the complete global Broadband communications experience for
    - ◆ business & entertainment story telling
    - ◆ real time interactions & transactions



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**Connected Community**




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**Consumer Appliances**

- ◆ Expressing personal preferences . . . with friends . . . requires the Broadband experience to meet impulsive moods
- ◆ The Broadband Internet is enabling a new round of . . . consumer electronic home appliances for
  - ◆ Entertainment
  - ◆ Communications
  - ◆ Conveniences
- ◆ Work Appliances
  - ◆ Tele-presence appliance with video conferencing and shared whiteboard




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**Resources**

- ◆ The local knowledge & power base to build & operate the initial network comes from the experience of building
  - ◆ Government
  - ◆ Corporate
  - ◆ Community networks
  - ◆ Universities
  - ◆ Enterprise networks
- ◆ The knowledge base to build & operate the Broadband network comes from
  - ◆ Cable companies
  - ◆ Telephone companies
  - ◆ Power companies
  - in conjunction with Fortune 500 companies




All in turn, get connected to the global Broadband. . . at a major city interconnecting point

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**Technology Available**

- ◆ As the abundance of today's scarce Broadband resources continue to increase . . .
  - ◆ They will continue to create greater opportunity
    - ◆ for West Virginia



**This transition process is the fuel to power the growth of our new economy by your leadership**

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15 Year Vision

"Broadband is enabling communities anytime, anywhere to enjoy the fruits of a global economy empowered by Broadband infrastructure across their communities"

**"West Virginia, Broadband is your opportunity"**  
Bring West Virginia to World — World to West Virginia

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# BROADBAND

*Architecture*

*Technology*

*Deployment*

Dennis Picker  
VP, Chief Technology Officer  
YAS Broadband Ventures, LLC

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### Agenda

- Broadband & WV
- Broadband Architecture
- Broadband Food Chain
- Broadband Technologies & Equipment
- Deployment
- Summary

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### What Can Broadband Bring to West Virginia?

- Huge information transport capacity per capita allows:
  - Remote people & sites become the same as local  
*- Basis for new business*
  - Customized Information on Demand  
*- Basis for enhanced training*
  - Personalized Entertainment on Demand  
*- Improved quality of life*

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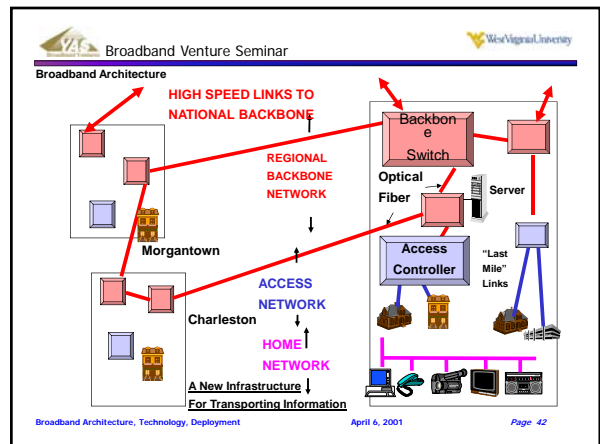
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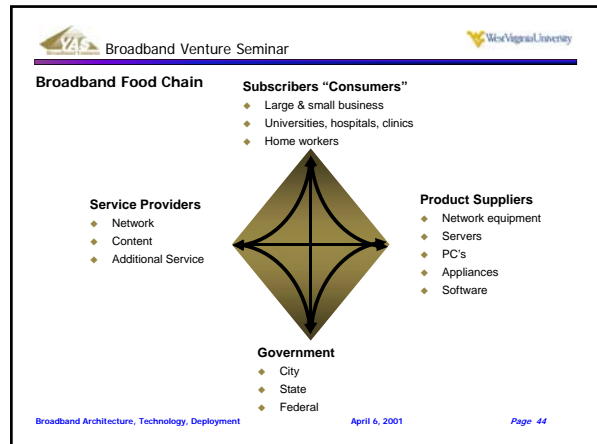
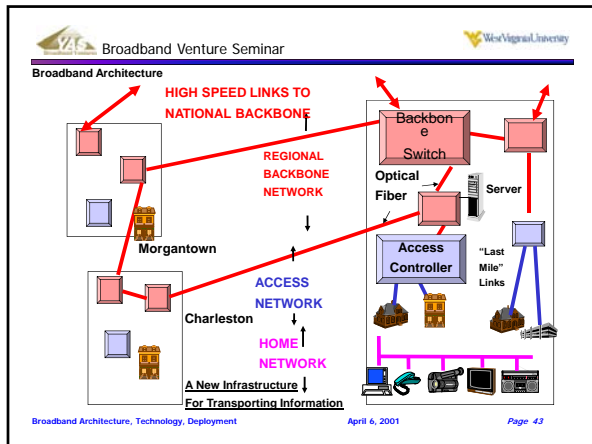
### Why Do We Need Broadband?

- Dial up modem: 56,000 bits/second
- Broadband connection: 1 to 10 Million bits/second

|                       |                          |
|-----------------------|--------------------------|
| Audio:                | 100,000 bps              |
| Video conferencing:   | 500,000 to 5,000,000 bps |
| Movies:               | 3,000,000 bps            |
| Remote is like local: | 10,000,000 bps           |

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- Backbone Technologies
- Backbone Transmission
    - Current: Microwave, Fiber 10 Mbps to 1,000 Mbps
    - Emerging: Advanced fiber (Dense Wave Division Multiplexing Architecture - DWDM) 1,000,000 Mbps
  - Backbone Switching
    - Current: Electronic switches, routers & muxes
    - Emerging: Optical switches
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- Access Technologies
- Current Access Transmission:
    - Hybrid fiber coax (cable TV companies)
    - Copper (local telephone companies)
  - Emerging Access Transmission:
    - Satellite (satellite TV companies)
    - Power line
  - Further Out:
    - Terrestrial wireless (new carriers)
    - All Fiber to home (future investment)
- All will benefit from standardization & intense ongoing development while consumers experience lower costs & higher performance
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- Consumer Appliances
- Current Broadband Appliances
    - Cable modems for personal computer
    - Digital set top boxes with TVs & PCs
    - DSL modems with PCs
  - Emerging New Home Appliances
    - Broadband gateways
    - Telephony adapters
    - Internet appliances
  - Emerging New Office Appliances
    - Advanced Conferencing Products
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- Small Office and Home Networking Technologies
- Using phone wiring
  - Wireless
  - Power line
  - Cable TV line
- Are all emerging & changing rapidly, more & more "consumer" products are including home networking
- Broadband**
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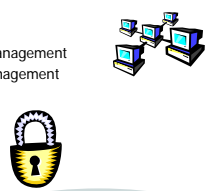


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**Network Infrastructure**

- ◆ Network Operations Tools
  - ◆ Software for network management
  - ◆ Software for service management
- ◆ Network Security Tools



Security & network operation are key to large scale deployment & both are in their infancy stage

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**Technology Summary**

- ◆ All the technologies & products exist today for large scale deployment
- ◆ Prices are dropping
- ◆ Network performance is increasing
- ◆ Lots of effort is going into mastering home networking, it is happening

We will soon see a tidal wave of new services & applications that will be created to exploit the Broadband networks



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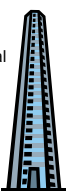
**Steps to Building Broadband**

**Infrastructure:**

- ◆ Enhance national backbone
- ◆ Construct an optical regional backbone
- ◆ Upgrade the access network
- ◆ Install access network central office equipment
- ◆ Install customer equipment

**Service activation:**

- ◆ Install internet services
- ◆ Install customer service systems
- ◆ Install network operations center
- ◆ Train installation/service workforce
- ◆ Deploy value added services
- ◆ Market the service




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**Deployment Challenges**

- ◆ Leadership, vision & desire to win
- ◆ Trained workforce
- ◆ Availability of private investment
- ◆ Creating new network services



A Role for a West Virginia Initiative!


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**A West Virginia Deployment Roadmap**

- ◆ Integrate & create the WV regional Broadband network
- ◆ Create Office of Broadband Development
  - ◆ Coordinate investment & carrier activity
  - ◆ Stimulate formation of Broadband-related businesses
  - ◆ Stimulate Broadband research & workforce training
  - ◆ Market WV as a global Broadband center
- ◆ Attract Fortune 500 corporations as customers
- ◆ Train West Virginians to fill network operations jobs
- ◆ Develop new private Broadband businesses in West Virginia
  - ◆ Broadband network operation center
  - ◆ Genomics processing
  - ◆ Software based business
  - ◆ Disaster recovery
  - ◆ Data warehouse



**Broadband**  
That is the way

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**The Role of Industry, Education, & Government in Building Broadband**

Dr. Siamak Yassini  
VP, Chief Business Strategist  
YAS Broadband Ventures, LLC

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**Broadband**

**March 23, 2001 - Reuters-Polo Alto, CA**

" In his first official visit to Silicon Valley, U.S Commerce Secretary Donald Evans cited the shortage of Broadband internet access as one of the first country's most pressing technology concerns, & said it should be considered as a serious as shortage of good highways"

" Secretary Evans put Broadband on top of technology agenda"



"To me", continued Secretary Evans "( Broadband) is a pretty fundamental part of our infrastructure"


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**Work Place**

- ◆ 1900 - Oil based industry supports millions of people to go to a place called "WORK" everyday
  - ◆ Created new jobs
  - ◆ Build cities up to 15 Million people
  - ◆ Build national economy
  - ◆ Impact
    - Caused environmental issues
    - Ending with energy crisis
    - Not scaleable
- ◆ 2000- Information based industry supports billions of people to stay in place called "HOME" to perform work
  - ◆ Improved quality of life
  - ◆ Virtual workplace " Global Footprint"
  - ◆ Ubiquitous highway for commerce
  - ◆ Impact
    - Social issues
    - Education of popular mass
    - Timing




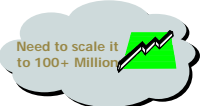
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**Broadband Deployment 1984 - 2010**

- 1984 ◆ Corporate America used the technology for factory automation (GM, Ford,etc)
- 1988 ◆ U.S. government used Broadband for facility wide network ( Rock Island Arsenal in IL)
- 1991 ◆ Universities used for campus wide network (Emory University, University of Michigan)
- 1995 ◆ Cable operator & phone companies empowered the consumers (All over US, 400 sites were tried)
- 2001 ◆ Millions are using Broadband technology worldwide
- 2010 ◆ Billions will use Broadband technology worldwide


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**West Virginia & Broadband**

- ◆ Enable the best in the class regional Broadband services
- ◆ Connect WV regional Broadband to national Broadband at Internet-II speed " highest speed"
- ◆ Encourage universities, researchers, & start-up to solve the missing link of Broadband evolution
- ◆ Working with Fortune 500's, enable new services for commerce, education, & consumers "Make Mountain Valley Broadband Mecca of the World"
- ◆ Engage state & federal government to encourage the private industry to build a National Broadband Footprint




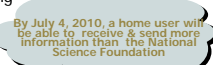
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**Role of Corporate America**

- ◆ Continue building state of the art Broadband networks
- ◆ Deliver information, news, personalized entertainment, & media rich content as easy as TV & radio
- ◆ Champion open standards, scalable network, & secure solution
- ◆ Develop affordable prices
- ◆ Create a positive cash flow business model for producer & consumer
- ◆ Transition Corporate America business to information based solutions, "Remote & Local Thinking"
- ◆ Build global operation center, & quality service support for each consumer


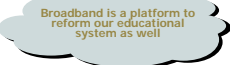
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**Educational Institute Role**

- ◆ Educate next level of Broadband engineers & scientists
- ◆ Resolve the existing technology short coming " security & ease of use"
- ◆ Invent new technology to build next generation of software based appliances
- ◆ WVU becomes an international center of excellence for Broadband
- ◆ Create Broadband certification program
- ◆ Empower our researchers & faculty to research the next generation of Broadband


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**Government Support**

- ◆ Empower private enterprise to build Broadband dream
  - ◆ Simplify the public policy to speed up the Broadband dream
  - ◆ Adjust copyright, patent, & Intellectual property right for digital age
  - ◆ Create office of "Broadband Development" to eliminate obstacles regulations





Innovation, Encouragement, Tax Relief, Creativity, Leadership, & Execution are the key to United States leadership in Broadband


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- ◆ Empowering consumers & producers
- ◆ WV passport to well deserved opportunity in new era
- ◆ Doorway to global economy for all man kind
- ◆ Our best tools & invention to protect the Mother Earth
- ◆ Creating new economy that works for our children's future



**This is the way**

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**Broadband, That is the way**

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