

# Today's Topics

1. My wife and 11 grandchildren
2. Our dogs
3. Hot tubs
4. Helicopters
5. Rving
6. The Internet of Things

# IoT : Why Should We Care ?



IoT is NOT just an infrastructure issue.  
The success of IoT is based in what you DO  
with the infrastructure.

*Michael Abbiatti, WICHE*  
*Jeffrey Gavlinski, Mountain Connect*  
*Mark Johnson, MCNC*  
*Robbie Melton, TBR*

The future is here,  
it's just not evenly distributed  
- William Gibson



# Disclaimer

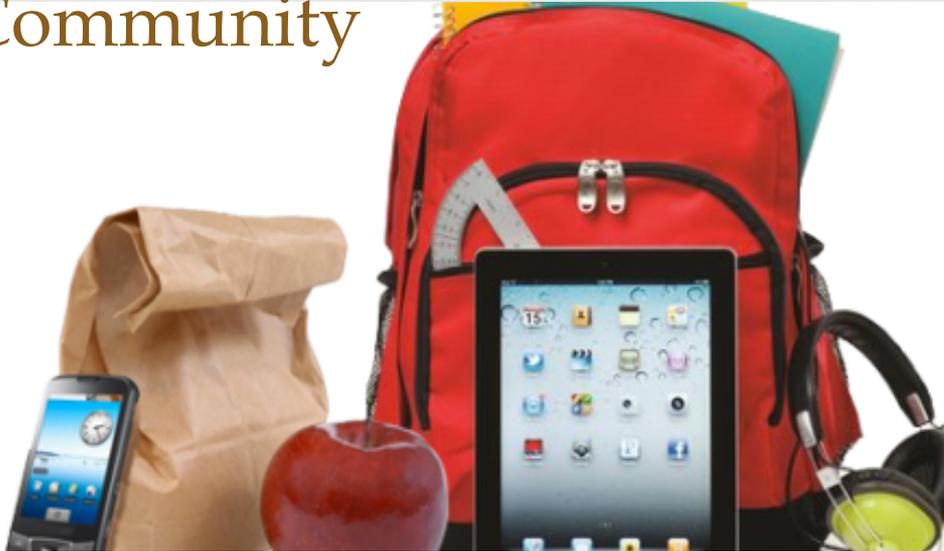


This presentation is NOT one of those apocalyptic warnings that IoT is going to immediately take over the world and render humans irrelevant.

This presentation is designed to support the position that:

1. IoT is here now, should be considered a strategic asset;
2. IoT is much more than the typical infrastructure marketing campaign, and that the true value of IoT will be inevitable changes in the way we live our lives;
3. IoT is not receiving the attention the phenomenon deserves in the US Education community.

# Transformation of Education, Workforce, and Community



## Mobile Health Apps & Gadgets

for Better (and Longer) Living



**RFID Wristband**  
With supporting software, this wristband, that uses RFID technology, can work as a paperless ticket, cashless wallet and a contactless way of updating Facebook.  
*Try this:* [www.idcband.co.uk](http://www.idcband.co.uk)

**Flexible Display Map**  
Most of the tech giants are on the verge of launching some form of flexible display. How about using one for a festival schedule that you could also use to watch video clips of the acts you missed.  
*Try this:* <http://engt.co/1aaTsW>

Figure out exactly how drunk you are with this self-diagnosing, sensory glove from Med Sensation. Sadly, it won't cure that hangover though.  
*Try this:* <http://medsensation.com>

# IoT: An Inter-Mountain Perspective



# Obligatory Definition and Formula



IoT= desire for IMMEDIATE gratification(transactional immediacy) + mobile devices + high speed Internet connectivity + contextual computing( H.A.L. 9000)

The CORE VALUE of IoT is increasing situational awareness.

# Framing the Discussion



## The BYOD on Steroids Conundrum

What do we do with an increasing number of IP-enabled citizens who show up in IP-enabled vehicles ( or via high speed networks), wearing IP-enabled garments, bearing multiple IP-enabled devices, with the expectation that our communities have the resources required to meet their expectations.

# Important Distinctions



1. Technology-assisted systems were designed to meet standard outcomes.(automation)
2. Technology-mediated systems were designed to meet standard outcomes with more processing power.( slightly distributed responsibilities)
3. Technology-enhanced truly adaptive systems(IoT) are designed to match student needs with digital content by leveraging processor speeds, advanced network speeds, citizen-specific data analytics, (disaggregation and re-aggregation at the same time)

# Why Should we Care ?



Citizen support requirements: housing construction, transportation, healthcare, entertainment, etc., will evolve more rapidly.

Service requirements change with the season more dramatically. Staffing transition.

Basic services investment requirements must keep pace as academic application requirements evolve.

# Communications Modes



Man to man

Man to computer to man

Man to computer to computer

Computer to computer

Sensor to computer

Sensor to sensor(to devices Devices to(devices(wearable ,implanted,  
carried, imbedded, ubiquitous)

# Most Commonly Mentioned Benefits



1. operational efficiency
2. asset management
3. improved customer experience

# Most Common Concerns



Security

Integration with legacy infrastructure

Lack of standards( technical, policy)

Cost

# Boston Marathon 2014: 35,671 instrumented runners



passive - no power required

**RFID:** now can store some info as well as report a serial number  
data rate 40-640kbps

# What's Hot?



1. Competency-based programs
2. Open Resources
3. Adaptive Learning
4. Accessibility
5. Data Analytics
6. Security versus Privacy
7. Technology-mediated testing(primitive)
8. Social media in the “classroom”
9. Remote instrumentation
10. Life-long learning and personal mobility( Digital Nomad)

# 2105 K-12 IT Priorities

Personalized Learning

Digital Content and Curriculum

Professional Development

Online Testing

Mobility; and Common Core/State Standards

Networking Infrastructure Upgrade

Cybersecurity and Data Security Tools

Student Data Privacy

Data Management/Analytics

Cybersecurity Policy

# 2015 Higher Ed IT Priorities

- Hiring and Retaining Qualified Staff
- Optimizing the Use of Technology
- Developing IT Funding Models
- Improving Student Outcomes
- Demonstrating the Business Value of IT
- Increasing the Capacity for Managing Change
- Providing User Support
- Developing Security Policies for Mobile and Cloud
- Developing an Enterprise IT Architecture
- Balancing Agility, Openness and Security

# Interesting Facts



1. Technology-enhanced systems are now a core imperative for all Education communities.
2. Technology-enhanced systems are time-limited.
3. Technology-enhanced systems require collaboration and resource sharing.
4. Technology-enhanced systems spawn unanticipated innovation and creativity.
5. Technology-enhanced systems complicate the lives of administrators.

# Interesting Facts Impacted by IoT



1. US citizens spend roughly 5.5% of their discretionary budget on technology. Citizens only save 4% per year. (AICPA 2013) – IoT will increase the percentage spent on technology.
2. Average spending per FTE on technology \$925. (Educause Core Data Service Executive Summary Report 2013) – IoT will force this figure to increase.
3. Funding for technology in K-20 education is stable, not showing significant growth. IoT will influence the political process.
4. All major business sectors except Education have a visible IoT strategy in place or under development.

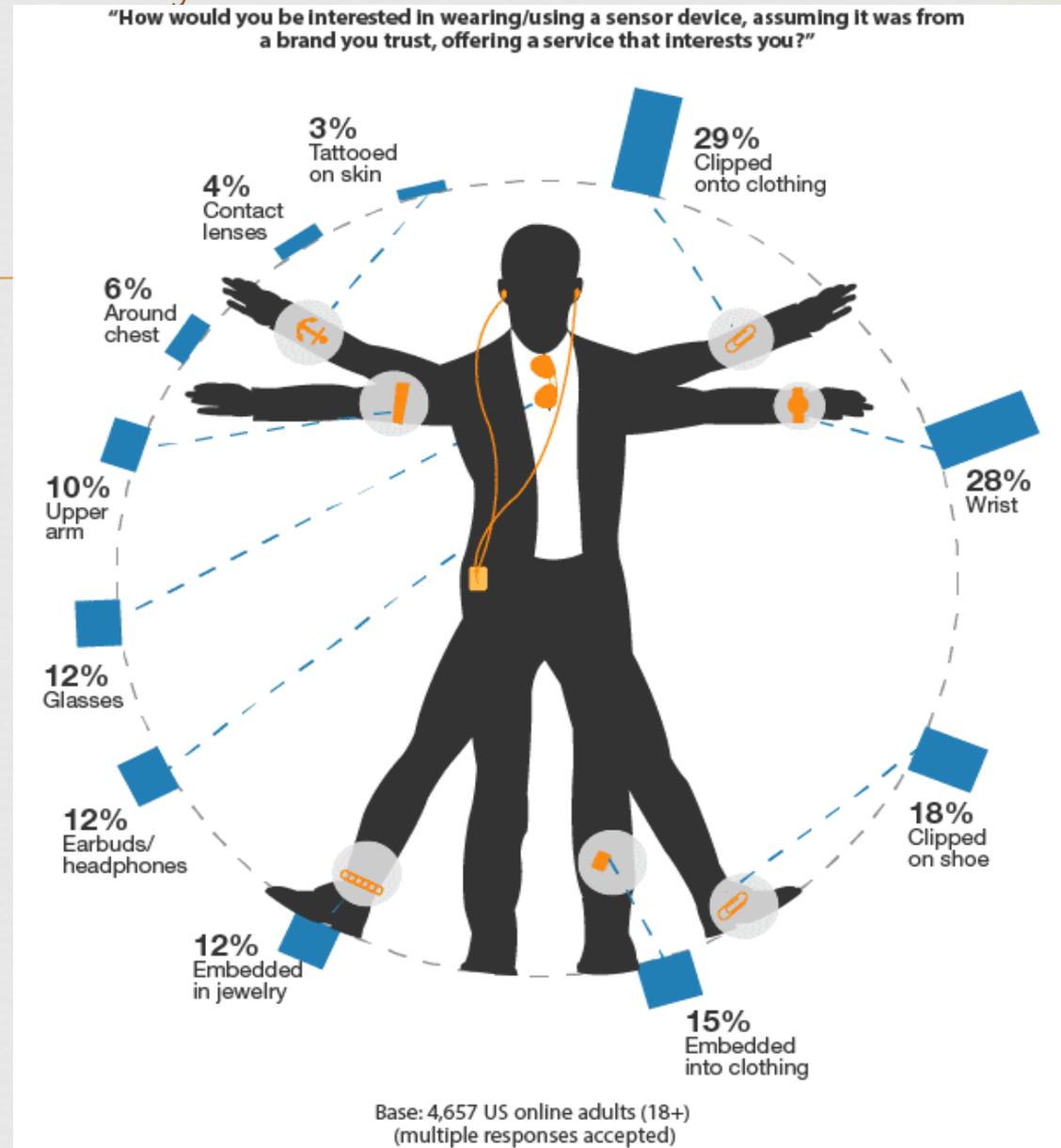
# Challenges being Highlighted by IoT



1. Inadequate funding – improving, but not rapidly enough
2. Staffing Issues – too few, hard to replace
3. Digital transition is a complex, multi-layered process.
4. Pressure to offer more technology-enhanced credentials is building daily.
5. Most all major business sectors in the developed countries have an IoT strategy – except US Higher Education.

# IoT: Gigabit Connectivity is more than Infrastructure

Non-infrastructure issues and successes as well as lessons learned in Higher Education and rural communities.



Source: North American Technographics® Consumer Technology Survey, 2013

# Bottom Line



If the community continues to view IoT as an infrastructure issue, then we stand the possibility of becoming irrelevant in the big picture. Accessible, sustainable, and affordable gigabit broadband is a major challenge across the community ecosystem; legislators, funding agencies and foundations are well aware of the critical need to reduce costs and increase efficiency.

IoT will put significant pressure on the decision-makers to react to the building awareness and demands from IP-enabled voters. The demand is to be sure communication is as “seamless” and efficient as technology will allow.

Therefore, IoT should be engaged now as much more than a trendy infrastructure phenomenon. Local/Global competitiveness is at stake.

# Primitive Examples of IoT in Action



NETFLIX recommendation engine

GPS location-based services

TWITTER valuations push content to you and your followers

FACEBOOK data collection/broadcast

TRANSPORTATION,HEALTHCARE INDUSTRY investment,  
etc.



# IoT is Much more than Infrastructure



QUESTIONS ?