New Funding Trends for Bringing Mobile Broadband Inside

Eric Toenjes
Graybar

Justin Green
Corning

Richard Paul-Hus
Whoop Wireless

Tracy Ford
HetNet Forum/PCIA

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Mobile Broadband Trends

• **50B ‘things’** will be connected to the Internet by 2020 – the equivalent of 6 devices for every human.
• AT&T reported **1M connected cars** Q2 2015.
• **87% of Doctors** use a smartphone or tablet in the workplace.
• **84% of smartphone shoppers** use their phones while in a physical store.
• **91% of global executives claim to access news** and business content via their smartphone or tablet.

Sources: Cisco, AT&T, The June 2012 Manhattan Research/Physician Channel Adoption Study, Google Shopper Marketing Agency Council and M/A/R/C Research, CNBC Mobile Elite
What is the HetNet?

- Heterogeneous Networks, or HetNets, provide increased network coverage, capacity and quality through the use of a variety of infrastructure and technology, enabling seamless voice and data communications.
- This Toolbox approach uses licensed and unlicensed spectrum at many frequencies to densify the network.
- Macrocellular towers, Distributed Antenna Systems, Metrocells, Microcells, Picocells, Femtocells among tools that can be used to bring network closer to the end user.
Why You Need to Think About DAS in Today’s Working Environments

Eric Toenjes, Graybar Business Development Manager - Mobility
Graybar assembles a team of partners and applies our logistics platform to meet the customer’s needs and requirements.
Typical Challenges

**User Expectations**
Use wireless devices for business productivity & applications
Customer Experience (internal & external)
Recruiting & Retention

**Coverage**
70% of cell calls originate or terminate indoors
Low E Glass

**BYOD**
Requires Multi-Carrier

**Capacity**
Data volume will grow 16x (again) by 2020
Strain on both WiFi and Cellular Capacity

**Public Safety Requirements – NFPA & IFC**
Required in many municipalities to get occupancy permit

**Cost of Solutions**
DAS has been a one-trick pony
Public Safety Business Drivers

- NFPA & ICC Codes
  - National Codes

- 70% of 911 calls on cellular
  - 64% of 911 calls are indoor on cell phones

- Indoor cell calls do not show location to PSAP
  - DAS with BTS shows building or sector area
  - New FCC rules for indoor location – X, Y & Z coordinates – Bluetooth beacons & WiFi

- Emergency Mass Notification – Text messages
  - Communicate with occupants in an emergency over cell

- First Responders use cellular phone & data

- Legal Liability – Risk Management
  - Cost of a DAS is far less than the cost of a lawsuit
Funding Models

In a carrier-owned DAS, the wireless service provider pays for the equipment and installation costs, as well as maintenance and upgrades associated with the network. In this scenario, the individual operator may charge other wireless service providers a recurring fee if they want to attach to the DAS.

Building owners and managers also may pay for a DAS. In this scenario, it is important to work with a competent systems integrator to oversee the project and get wireless service providers to attach to the network. In this situation, the building owner likely will be responsible for continued maintenance and upgrades.

A neutral-host third party provider bears the upfront costs of the DAS as well as any maintenance and upgrade costs. In this scenario, the DAS company aims to get more than one wireless service provider on the network and split the costs among the service providers that attach to the DAS.

A Hybrid model would mix and match various components from the 3 previous models.
Considerations for Funding

• Size of Building – The Middleprise
• Budget, Afford
• Other Work to be Performed – Convergence
• Ownership and Maintenance
• Toolbox Approach
• Hippocratic Network Oath – Do No Harm to Carrier Network
A Shifting Funding Model

Justin Green, CIBET
Corning Optical Communications
A Universal Need

Aubrey Huffman (and Lucy)

“Good cellphone reception was a must-have for Audrey Huffman when she was looking for a home for herself and Lucy in New York”

Jay Z and Beyoncé

“One anecdote circulating among high-end real estate brokers has Jay Z, the hip-hop artist and entrepreneur, walking away several years ago from a long-term lease on a luxury apartment in a Midtown East high-rise after just a few nights because his cellphone service was nothing to rap about…”

“Cellphones are just fundamental to how everyone lives,”

“‘You need to do this in order to be competitive.’”

“Without it, developers say, they risk losing residents. “It could kill a deal,”

“It’s a significant investment, but connectivity and cellphone coverage are important to our residents,”

“A strong cell reception is a prerequisite,”...
List of New York City Firsts – Now Ubiquitous

Street Grid – 1811
Modern Safety Elevator – 1852
Toilet Paper – 1857
Health Dept. - 1866
Electric Company -1878
Motion Picture Theatre - 1896
Air Conditioning -1902
Cell phone call - 1973
Corning Optical Communications

In-building Wireless Connectivity Solutions

► Fiber since 1970, DAS history from 1998
► Flexible architectures, diverse needs
  ► Fiber to the edge, converged
  ► Wired and wireless, RF and IP
  ► Wire it once philosophy
► Over 6,000 deployments worldwide
► ABI rated top DAS vendor (2015)
A Connected Globe

Living Without Service

84% of smartphone users can’t imagine going more than one day without service.
Source: Pew Research Center

Checking a Smartphone

The average smartphone user checks their phone 150× a day, 10× an hour, and every 6 minutes. Source: Time Magazine Mobility Hot

Access to Advanced Communications Services

90% of building owners and managers say that access to advanced communications services is the most important selling point behind only price, parking, and location.
Source: Businesswire
Capacity is the biggest challenge to the wireless industry, thus the future of in-building wireless infrastructure is dynamic
  
  Upgrades are Imminent (600 MHz, AWS-3, WCS, 5G)
  Wi-Fi cellular data offload
  VoWi-Fi
  Small Cells

Cellular systems are an expensive one-trick pony which needs frequent upgrades

Funding models are shifting towards enterprise

A converged infrastructure reduces these arguments by becoming an integral, flexible part of the building

Broadens the discussion beyond just cellular
A Fiber-Based Solution

Simplifies Design
Lossless connection guarantees maximum power at all antennas

Simplifies Installation
Fiber and composite cables are smaller, lighter, more flexible
Pre-connectorized fiber option speeds up installation
Reduces spaces requirements

Simplifies upgrades
Adding frequencies
Expanding capacity

Adds flexibility and capability
Capacity steering
Service delivery
Location accuracy
Venue Owner as Converged Infrastructure Owner

- 106,000 seat stadium
- WiFi, DAS, Point of Sale (POS), Security, HD Video, VoIP and all LAN based traffic
- Quad band MIMO for 4 carriers
- Future proof with over 3K spare fibers distributed to 540 locations around stadium
- 5.7 Terabit Home Games
Questions?

Contact information

GreenJ@corning.com

Eric.Toenjes@graybar.com

Tracy.Ford@pcia.com

rp@whoopwireless.com