Delivering WiFi Quality of Experience

Carrier WiFi Asia 2015

Todd Mersch, Co-Founder & EVP Sales & Marketing
About Us

Incubated for Over a Year
• Person years of R&D investment and know how
• Expert engineering team and existing infrastructure

Industry Veterans with Proven Track Record
• Executive team brings over 60 years of combined telecommunications expertise recognized experts and thought leaders

Vision
• Enable broad and large scale deployment of HetNets for wireless service providers by delivering intelligent management, optimization and monetization solutions
Recent News

• **Company Launch**
  • Public launch of XCellAir
  • Live demo of multi-vendor and multi-technology solution

• **XCellAir Ecosystem**
  • Key technology providers collaborating with XCellAir
  • Accelerated adoption and simplified system deployment

• **LTE-Unlicensed Analyst Report**
  • Available from RCR Wireless and SenzaFili
  • Conversation with Narayan Menon, CTO & EVP Engineering

Market Developments

• WiFi “First” services
  • Voice, text, and data

• Infrastructure as a service
  • Managed Services

• Increasing networking sharing
  • MVNOs, Wholesale, Roaming
Key Challenges

**OPEX GROWTH**
- Manual intervention
- Siloed & fragmented solutions
- Static deployment models

**INTERFERENCE**
- Lack of multi-vendor coordination
- Managed & unmanaged access points
- Densification complexity

**SCALABILITY**
- Insufficient legacy equipment models
- Multiple dimensions – location, loading, service type, reliability

**REVENUE**
- Unclear business models and revenue
- Lack of consolidated framework for service enablement
The Existing Paradigm

Adapted enterprise systems
- Scale and operational misalignment

Customized vertical integrated
- Single vendor, use case, & location

Infrastructure driven solutions
- Expensive and rigid

Cellular Rigor WiFi Flexibility
Multi-Vendor Multi-Use Case Automation

Network opportunities evolve
- Residential, Enterprise, Public

Choice is critical
- No one size fits all solution
- Silo’s are expensive & rigid

Enabling multi-vendor
- Standard interfaces
- Pre-integration
WiFi Optimization

• Environment Mapping & Monitoring
  • Three dimensional perspective
  • UE critical parameters

• Optimized Radio Configuration
  • Tuning of radio parameters
  • Event and time triggered

• Automated Fault Recovery
  • Coverage area extension
  • Device & network level healing

• Cloud-based Access Control
  • User Identify based
  • Network condition based (i.e. CAC)
Elastic Scalability

- Capacity on demand
  - Ad-hoc
  - Geographic flexibility

- QoE for all markets
  - Large consumer deployments
  - Focused enterprise, venue or community

- Business model alignment
  - Scale with the network
Expanded Paths to Revenue

- **Radio Network as a Service**
  - Agile SLA definition & adjustment
  - Differentiated QoS based on business and network conditions
  - Dynamic on-demand capacity sharing

- **Content Enriched Analytics**
  - Rich big data capture including location, time, service type, device, user demographics, user behaviors, network access type preference, etc.
  - Identification of network and revenue optimization opportunities
LTE-U Potential and Challenges

Promise of LTE-U

Quality of Experience
Unlicensed Spectrum

Opportunities & Challenges

Capacity
Interference

Complexity
Wi-Fi
Load Balancing
Application Steering & QoS
Other LTE-U

XCellAir Tackles the Challenges & Exploits the Opportunity of LTE-U
LTE-U Interference Challenge

- Blend Wi-Fi and LTE SON techniques
  - Coordination between LTE & Wi-Fi
- Radio mapping critical
  - Automated discovery & localization
  - Capture and collation of transmission characteristics
- Continuous optimization
  - Choose optimal unlicensed carrier to deliver increased capacity with
  - Limit “stomping” on other users
Optimal Use of LTE-U Capacity

- **Load balancing**
  - Across LTE / LTE-A, LTE-U, and Wi-Fi
  - Dynamically divert to best carrier based on service type, loading, coverage, signal strength, etc

- **Traffic steering**
  - Policy based distribution of traffic across access types
  - Based on various parameters including loading, application type, time of day, location, etc

- **Capacity Wholesaling**
  - Leverage additional LTE-U capacity to enhance MVNO / wholesaling business
Summary

QoE requires a new paradigm
- Holistic management and optimization
- Flexibility and scalability

QoE unlocks revenue potential
- Reduced focus on basic operations
- Capacity as a commodity

LTE-U an opportunity
- Expanded use of unlicensed spectrum
- Intelligent use of network assets