Femtocell Based Applications and Services

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What are femtocells?

- Low-power access points...
  ...using mature mobile technology
  ...in licensed spectrum
  ...generating coverage and capacity
  ...over internet-grade backhaul
  ...at low prices
  ...with full operator management
  ...self-organising, self-managing

Applications include:
- Residential
- Enterprise
- Hot spot
- Metro

Standards for:
- UMTS (Release 8)
- LTE (Release 9)
- CDMA
- WiMAX
Agenda

• About the Femto Forum
• Femtocell Market Status
• Femtocell Services
• Applications
• Services Special Interest Group (SSIG) Roadmap
• Conclusions
The Femto Forum

- Promoting & enabling femtocells
- Not-for-profit, founded in 2007
- Independent, Inclusive, International

Aims

- Ecosystem Development
- Market Education
- Driving open standards

Carriers

- 58 operators covering over 1.5 billion mobile subscribers – 33% of global total

Vendors

- 77 providers of femtocell technology covering all aspects of the ecosystem

Components and Software

- End to end system providers
- Network Elements
- Products

Other enablers
Why Femtocells?

Vodafone expects network traffic to double year-on-year. 7% of cell sites hitting congestion – defined as up to 90% utilisation - in the busiest hour.
- Vittorio Colao, Vodafone CEO, February 2010

“Wireless data traffic on the AT&T network has grown more than 5,000 percent over the past three years...We see this usage trend continuing in the years to come.”
- John Donovan, AT&T CTO, 14 Feb 2010

“three per cent of the ...smartphone users generate 40 per cent of wireless data traffic”
- Ralph de la Vega, AT&T CEO, December 2009

Explosion of internet connected devices

Exponential growth of mobile data traffic

Traffic increasingly indoors

On the move
Out of home / office
Office
Home

>80% indoors

Source: Signals Research Group

Source: Informa
Evolution of the Femtocell Value Proposition

- Great home coverage
- Femtozone call tariffs for all
- Fast data, high call quality
- Unlimited data services
- Compelling new femtozone services
Enabling Next-Generation Services

- Femtocell acts as a portal to in-home services and automation
- High-bandwidth connected-home services
- Femtocells deliver *presence, context & location*
- A powerful operator opportunity for mobile presence in the home
Most Appealing Femtocell Feature (Q3/10)

Q4085. "Of the following features, which are the most appealing?"

(Among all Broadband HHs with Mobile Phone, Interested in at least two features)

- Home Reminders
- Cellphone Remote Control
- Photo Sync
- Virtual Home Number
- Family Locator
- Contact / Calendar Sync
- Music Sync
- Family Alerts

% Finding Feature Most Appealing

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<th>Germany</th>
<th>Spain</th>
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What are femtocell services?

Secure home access

Virtual home phone

Virtual fridge notes

Picture synchronisation & remote control

Simple, useful & fun
Femto Services Examples

Connected Home
• Remote control of home appliances
• Home Security
• Multi-media
• Video Door Bell
• Peer to Peer
• Gaming

Femto Aware Applications (Presence)
• Camera phone to digital picture frame / home media server
• Fridge Notes
• Child monitor
• Boyfriend (party) monitor

Many, many, many more ….
Femto Services – Home Security

- Femto detects presence of unknown mobile.
- Turns on high def. security camera.
- Alerts owner via SMS
- {Sends alert to Police}
- Delivers video to Internet
- Creates log of mobile
Video Doorbell

- Waiting all day for a Service call
- Worker arrives when you are away
- Use femto based video server to see worker and authorize access from mobile device
Connected Home Media

- Femto detects arrival of user
- Automatically downloads multimedia content from mobile to Home Server and from HS to Mobile.
- Music
- Pictures / Videos
- RSS / Podcasts
- DVR Programs
- Digital Life…etc
‘Greater’ Femtocells

- Not only for the home!
- Femtocell economies of scale can deliver cost-effective deployments in offices and in high-traffic or low coverage locations
- Femtos in the enterprise and metrozone
- Scope for cost-effective access to rural and developing markets via appropriate backhaul solutions
Personal Shopper

- Opt in Service
- Creates a unique, high end experience
- Friendly – Sales professional knows you, your likes, styles, sizes
- “Will you have the usual?”
- Brings back a welcome feeling
- Coupons, promotions, etc.
- Loyalty programs
Where will Femtocell Applications Reside?

1. On the mobile handset
2. On the Femto Access Point (FAP)
3. HomeLAN
4. In the Network
   - Femto Gateway
   - Application Server
   - Cloud
   - Internet

The Femto Forum is working to define the API’s to support these cases.
Femto Forum Services SIG Deliverables

**Femto Services v1.0**
- Femto Services Requirements
- Femto API Operational Specification v1.0
- Femto API Implementation Specification v1.0
- Femto Services Technical White Paper
- Femto Services Business White Paper
FemtoZone Services RI API Implementation Specification

Programmatic Specification covering two main areas:

1. Newly Defined API realizing “FemtoAwareness”:
   - Notify application when user enters / exits / moves within a FemtoZone
   - Uses ParlayX authentication and authorization model
   - Implemented on ParlayX gateway

2. API includes existing definitions for:
   - SMS
   - MMS
   - Location
   - Payment
Rich applications behind simple API’s

1. User walks into FemtoZone
   - FemtoZone Awareness notification “Enter FemtoZone” dispatched to application
2. Application sends SMS with link to web portal (session id “correlator” given in url)
3. User clicks on SMS link to open browser to:
   - Opt-into the program (1st interaction)
   - Make online purchases – order coffee, buy movie tickets
   - Get information about products – retail stores
   - View media (e.g. sports casts) – coffee shops
     - User data free in FemtoZone…
Application Developers FAQ

http://www.femtoforum.org/femto/applications.php

Application developers who are interested in learning more about this exciting area can register their interest at: applications@femtoforum.org.
Applications Showcase

http://www.femtoforum.org/appCode234/applications%200809.html

Rich applications with femtocell technology.

Services Video:

http://www.femtoforum.org/new_services/
Conclusions:

- Femtocells have a key role in wireless services:
  - Speeds up launch of new services
  - Delivers significant performance improvements
    - Reliable & Consistent coverage versus macro
  - Enables new services (Home Zone, Cloud, LBS, Mobile Advertising)
- Opens new markets for mobile operators: Enterprise PBX
- A key launch pad for new services, building demand beyond the home and supports a business case for wider roll-out
- Enabling factors defined via industry standards and the Femto Forum

Femtocells used in harmony with macrocell networks represent the best that mobile networks can be!
Thank you!

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