

Femtocell Based Applications and Services

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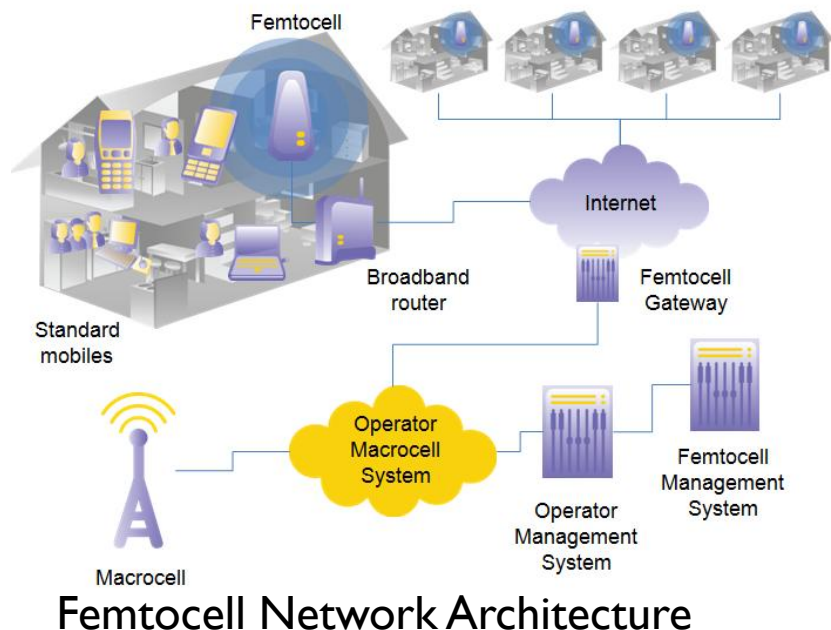
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What are femtocells?

- 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

End-to-end system providers



Network Elements



Other enablers



Products



Components and Software



Why Femtocells?

“The O2 network has seen an 18-fold increase in data carried over the network in the last year and traffic continues to double every three months.” Matthew Key, O2, November 2009

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.

- Vitorio 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

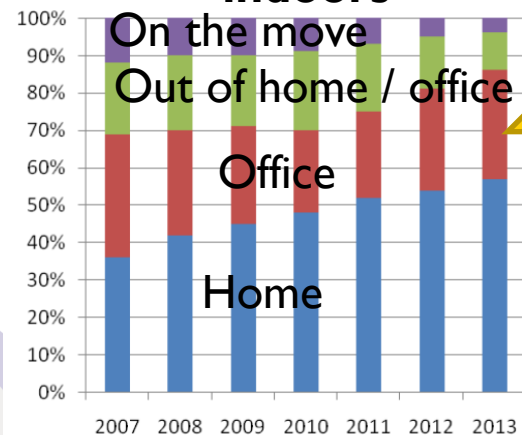
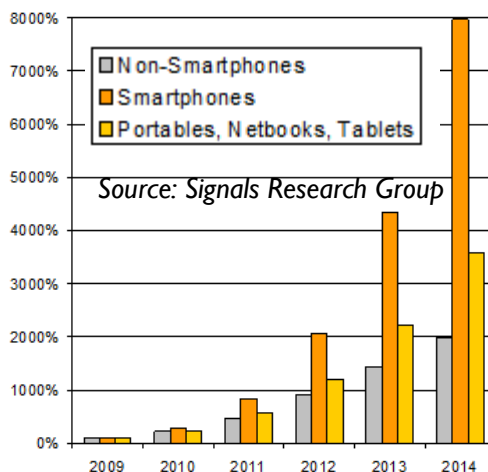
“ three per cent of the ...smartphone users generate 40 per cent of wireless data traffic”

- Ralph de la Vega, AT&T CEO , December 2009

Explosion of internet connected devices

Exponential growth of mobile data traffic

Traffic increasingly indoors



>80% indoors

Source: Informa

Evolution of the Femtocell Value Proposition



Great home coverage

Femtozone call tariffs for all

Fast data, high call quality

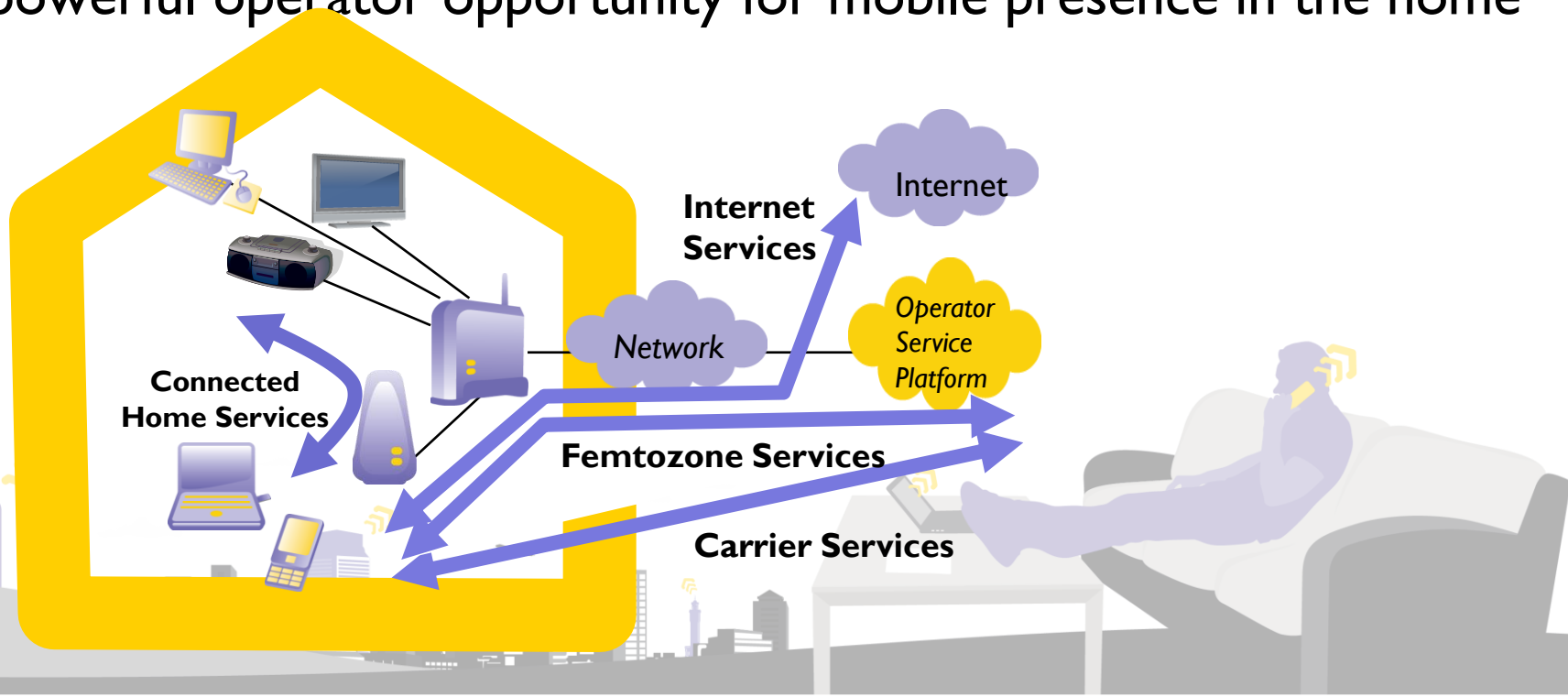
Unlimited data services

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

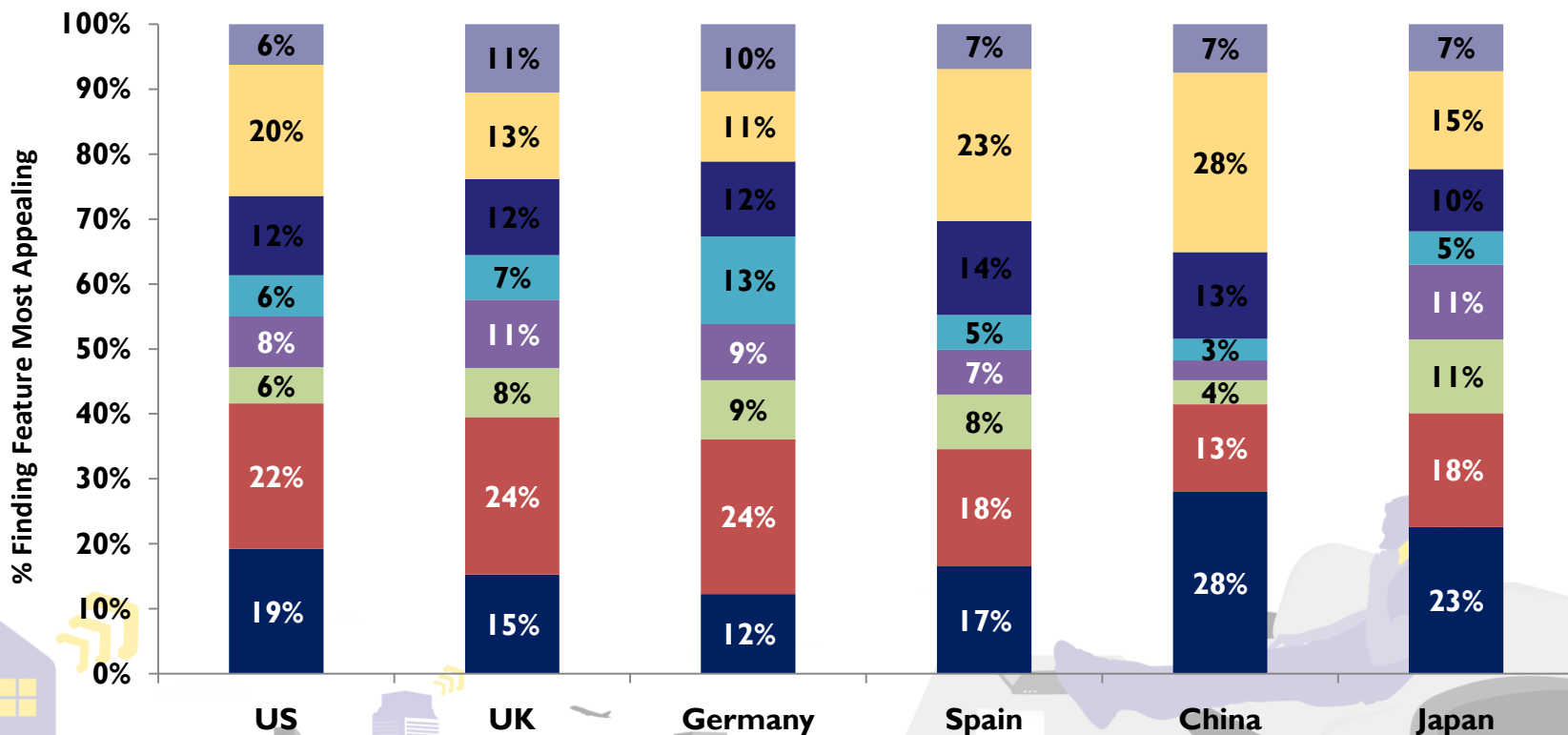


Most Appealing Femtocell Feature (Q3/10)

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

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

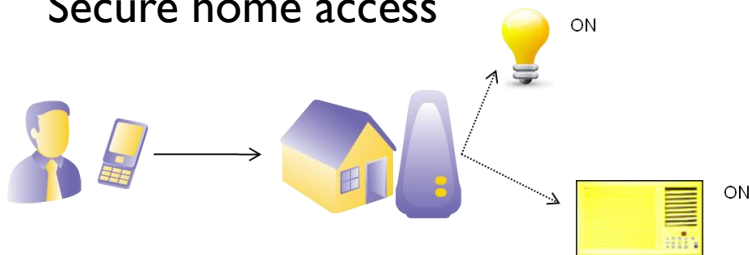
- Home Reminders
- Cellphone Remote Control
- Photo Sync
- Virtual Home Number
- Family Locator
- Contact / Calendar Sync
- Music Sync
- Family Alerts



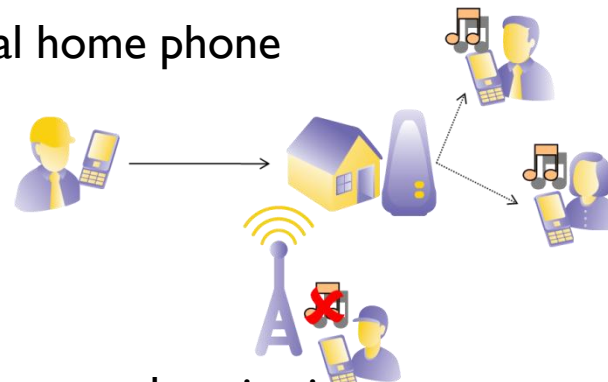
What are femtocell services?

Simple, useful & fun

Secure home access



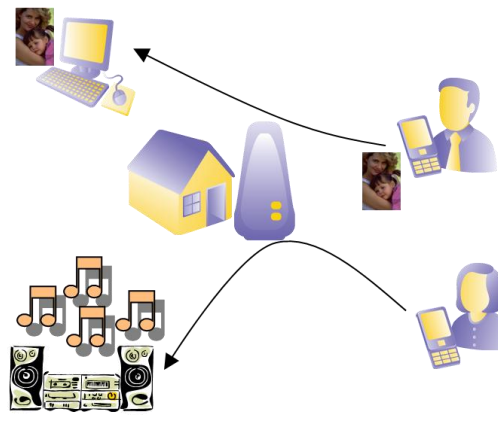
Virtual home phone



Virtual fridge notes



Picture synchronisation & remote control



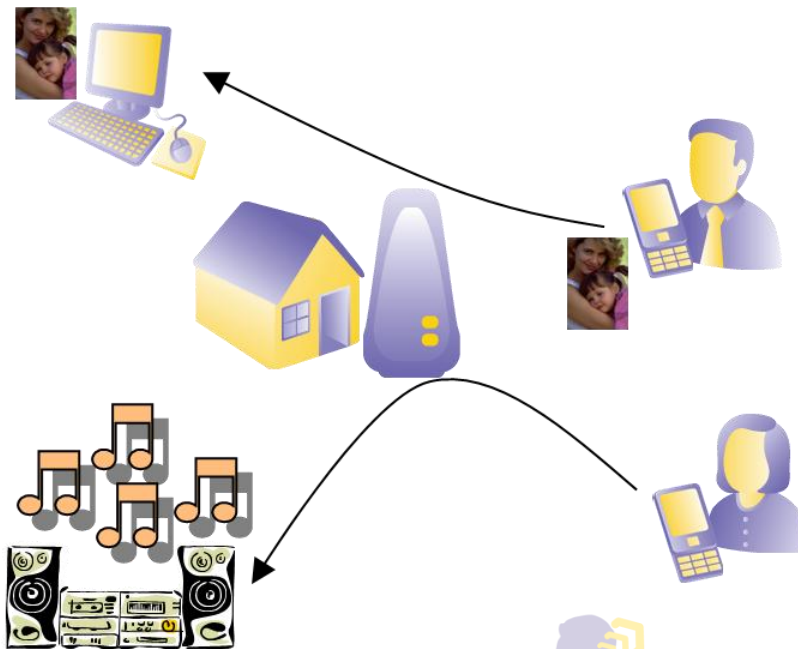
Femto Services Examples

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



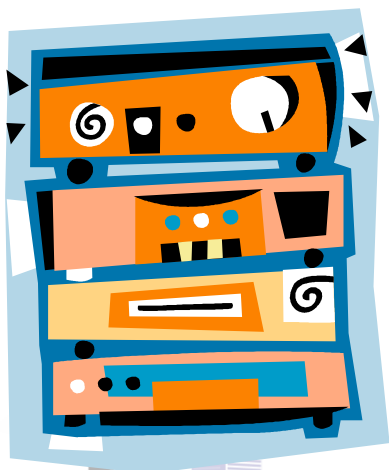
Video Doorbell



- 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



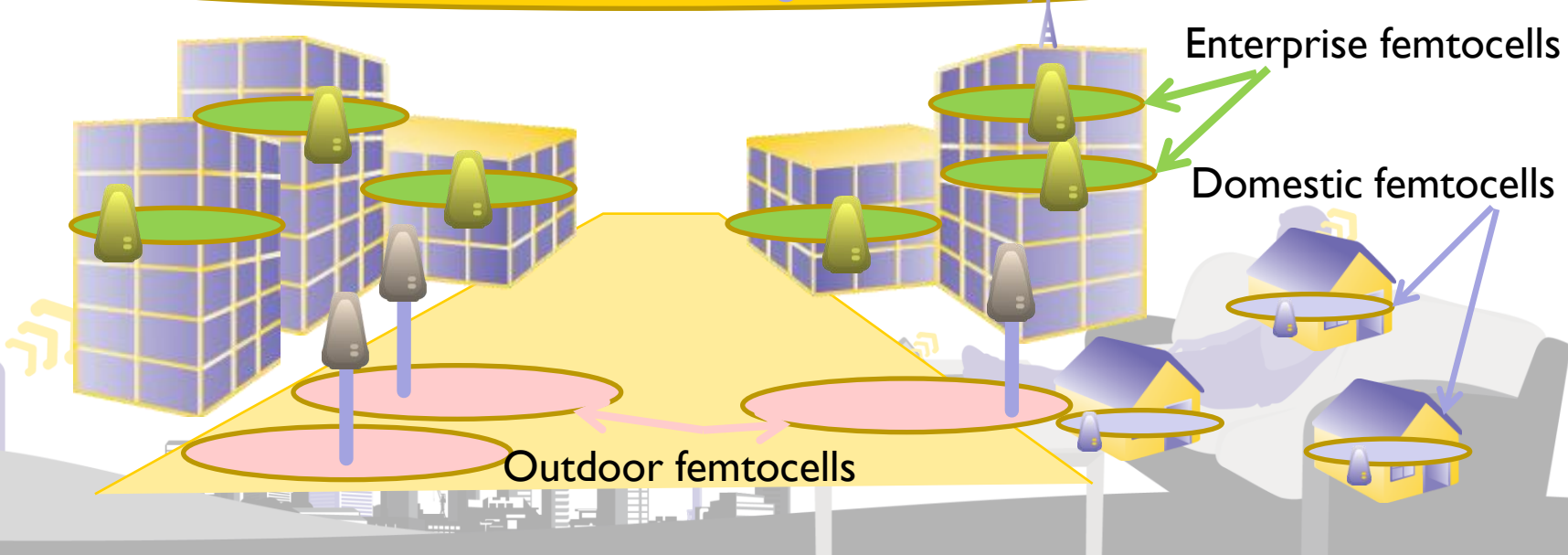
- Femto detects arrival of user
- Automatically downloads multimedia content from mobile to Home Server and from HS to Mobile.
- Music
- Pictures / Videos
- RSS / Podcasts
- DVR Programs
- Digital Life...etc



'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

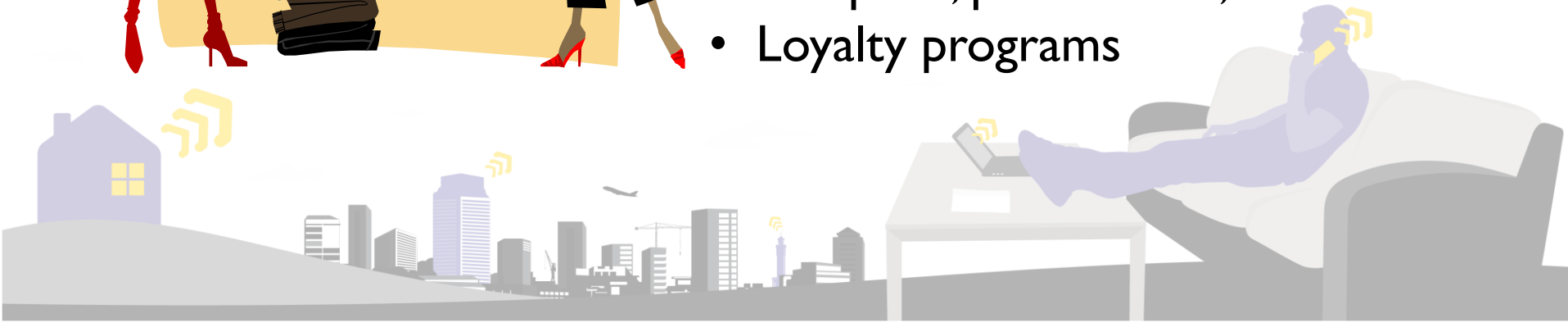
Macrocells – wide area coverage and mobility



Personal Shopper

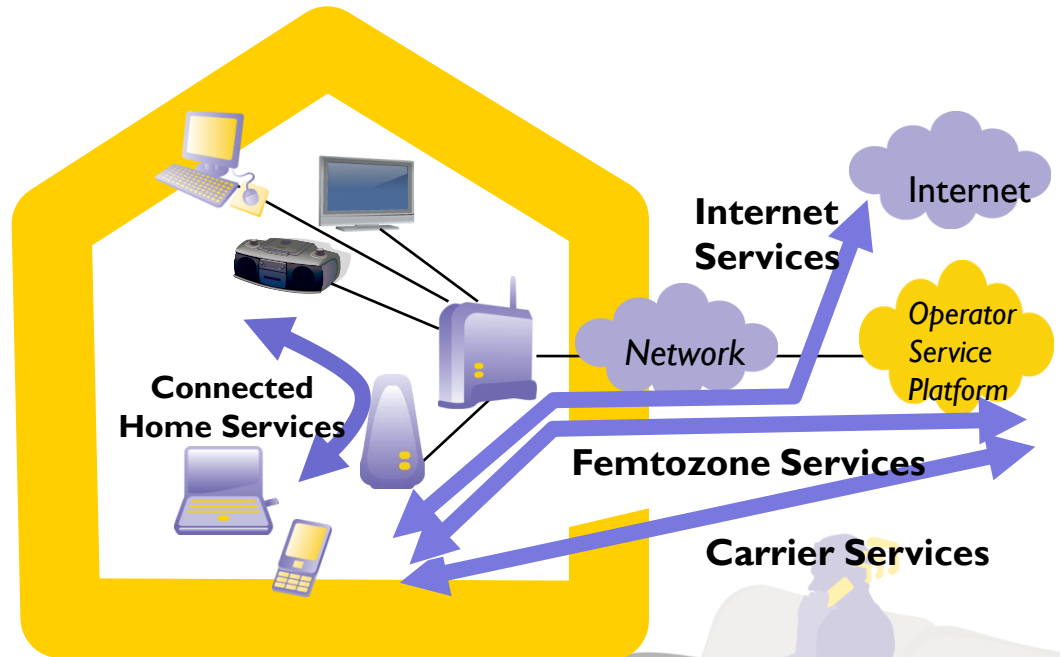


- Opt in Service
- Creates a unique, high end experience
- Friendly – Sales professional knows you, your likes, styles, sizes
- “Will you have the usual?”
- Brings back a welcome feeling
- Coupons, promotions, etc.
- Loyalty programs



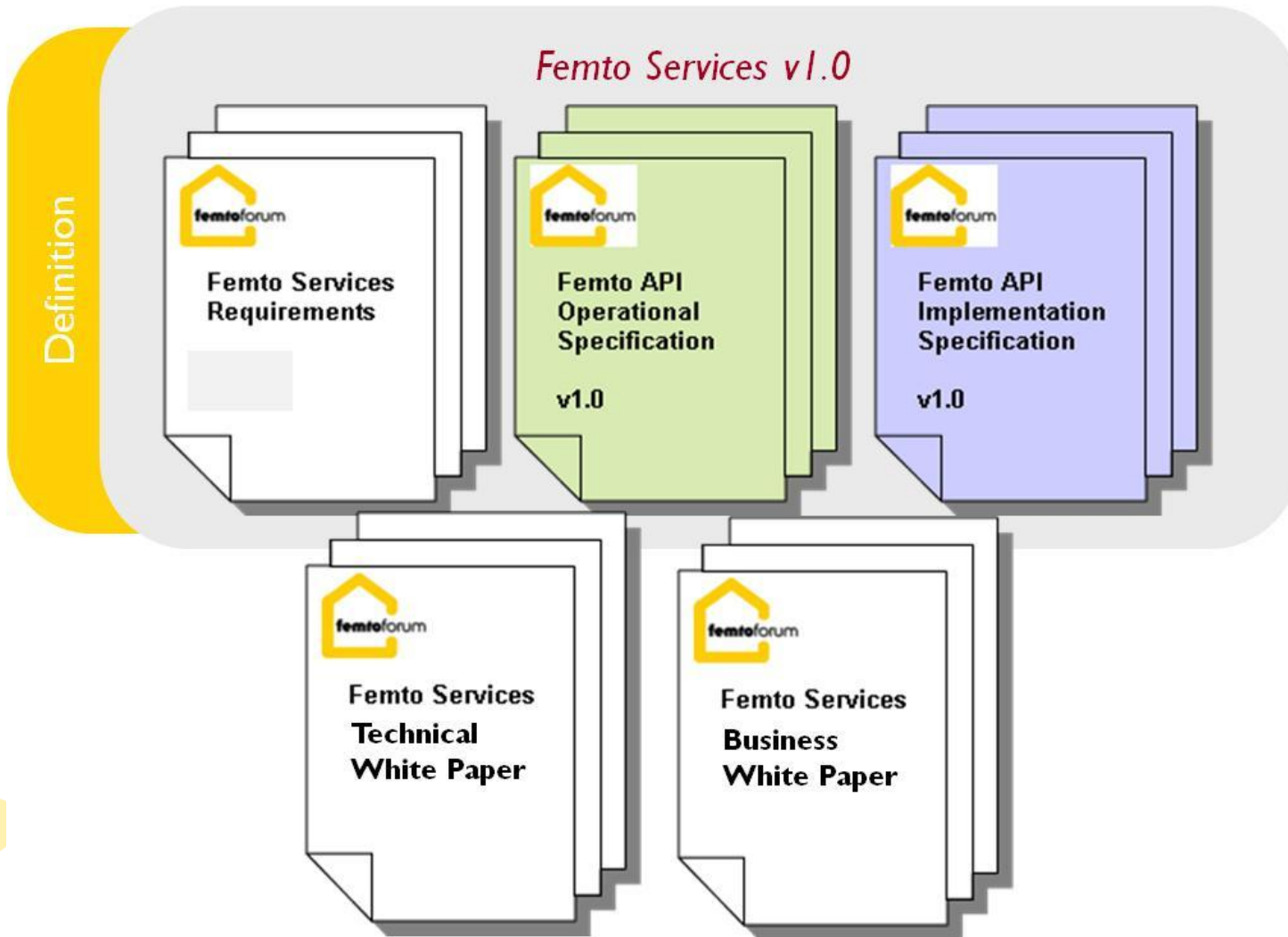
Where will Femtocell Applications Reside?

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



FemtoZone Services RI API Implementation Specification

Programmatic Specification covering two main areas:

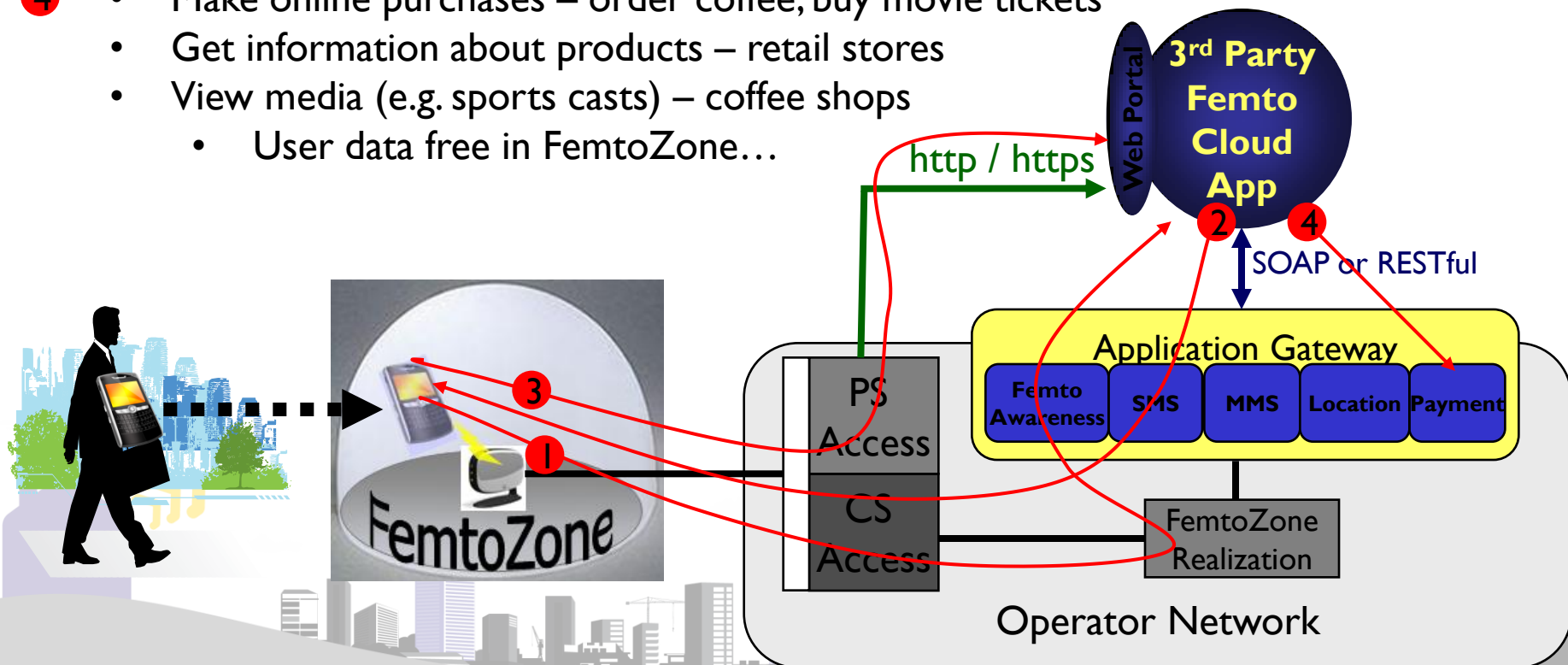
1. Newly Defined API realizing “FemtoAwareness”:
 - Notify application when user enters / exits / moves within a FemtoZone
 - Uses ParlayX authentication and authorization model
 - Implemented on ParlayX gateway

2. API includes existing definitions for:
 - [SMS](#)
 - [MMS](#)
 - [Location](#)
 - [Payment](#)



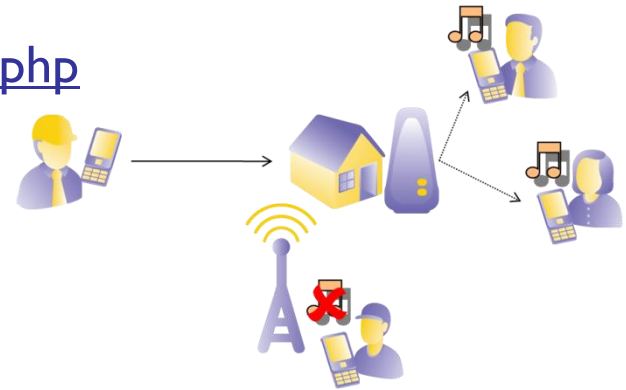
Rich applications behind simple API's

- 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)
- 4
 - 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>



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driving convergence worldwide

Services Special Interest Group

Femto-Awareness for Handset Applications



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



Applications Showcase

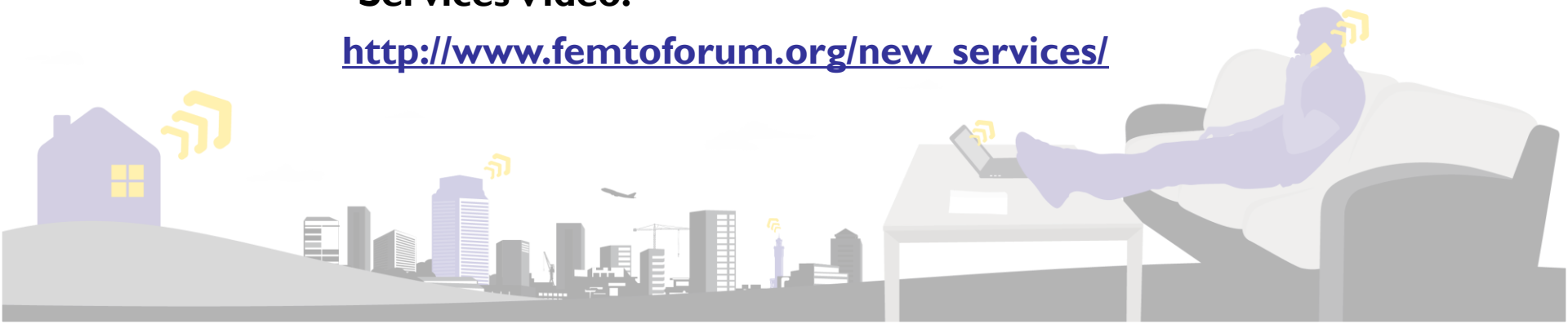
<http://www.femtoforum.org/appCode234/applications%200809.html>



The screenshot shows the top portion of a website. In the top right corner, it says "FEMTO FORUM HOME". On the left, there is the "femtoforum" logo with the tagline "driving convergence worldwide". Below this is a yellow horizontal bar, followed by a dark blue bar with the text "Applications showcase" in white. Underneath that is a white bar with the text "Rich applications with femtocell technology." in black.

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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