

LMN Director's Forum Wireless Update

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- LMN WLAN committee update
- Campus WiFi
 - BT Openzone LMN trials
 - Guest Wireless at London Business School
 - Second Generation Campus WiFi

LMN WLAN Exploitation Group

- Subcommittee of the Business Development Group.
- The remit of the group is look at ways of exploiting wireless networking for the benefit of the LMN community.
- Members are
 - Tomo, London Business School (Chair)
 - Stuart Johnston, University of Westminster
 - Malcolm Ragget, SOAS
 - Maria Ilia, LMN
 - Peter White, LMN

LMN WLAN Group Objectives

1. Provide students with discounted service whilst at work
2. Enable students and staff to utilise cheap rate broadband while working from home
3. Reduce access point investment inside the institutions
4. Provide a means to deploy WLAN guest services to LMN institutions
5. To maintain a watching brief on WLAN technologies for the deployment of wider-area Wireless for London

BT Openzone discussions

- BT Openzone & TheCloud have offered
 - Campus based hotspot services, either on their own access points or on as an overlay service on an existing infrastructure
 - Either using their ADSL or LMN backhaul
- Pursuing partnership with BT Openzone
 - This is due to other potential opportunities that could be presented for working with BT could provide for the benefit of our membership

BT Openzone trials

- Some pilot deployments of BT Openzone trials are being initiated with some member sites
- Proposed initial trials:
 - Networking Halls of Residence (Roehampton)
 - Guest Services / Conferences (SOAS)
 - Café Hotspots on campus (Westminster)
- Scopes for the above have been requested

Use of LMN to backhaul hotspot traffic

- Concerns have been raised regarding the use of LMN/JANET to backhaul hotspot traffic
- London Business School have obtained confirmation our hotspot traffic can be backhauled over JANET as it is not *promoted or made available to the public*.
- AUP states: “[JANET connectivity] may be used for any legal activity that is in furtherance of the aims and policies of the User Organisation.”
- Whether LMN backhaul can be used depends on the implementation of a hotspot at your site

Guest Wireless Services at London Business School

- Many casual and transient visitors to campus for meetings, symposiums, conferences, lectures and guests in our onsite hotel.
- Corporate Education clients have unique challenges
 - Business Executives, find WEP keys difficult
 - Their laptops are often locked down
 - Our default deny firewall blocks VPNs on odd ports
 - Sometimes not provisioned in our LDAP directory
- Business users understand what a hotspot gives them

Example criteria for guest wireless

- Technical criteria
 - Service provided on existing WiFi infrastructure
 - Backhaul their service using a VPN over our JANET connection instead of unreliable ADSL
 - Minimum equipment to be hosted onsite
 - Remote support of their equipment
 - Monitoring of the availability of our service
 - Low impact to our existing network, and little or no dependency on our infrastructure

Example criteria for guest wireless

- Customer facing Criteria
 - Roaming agreements and connectivity to business roaming services such as GRIC, iPass
 - Support for a wide range of client equipment, including Mac and PDA devices
 - Free access to certain “walled garden” sites from the landing page (our www and portal)
 - 24hr helpdesk for customer support
 - Customised onsite publicity, brochures etc.
 - Not to be listed in hotspot directories

Hotspot operator selection

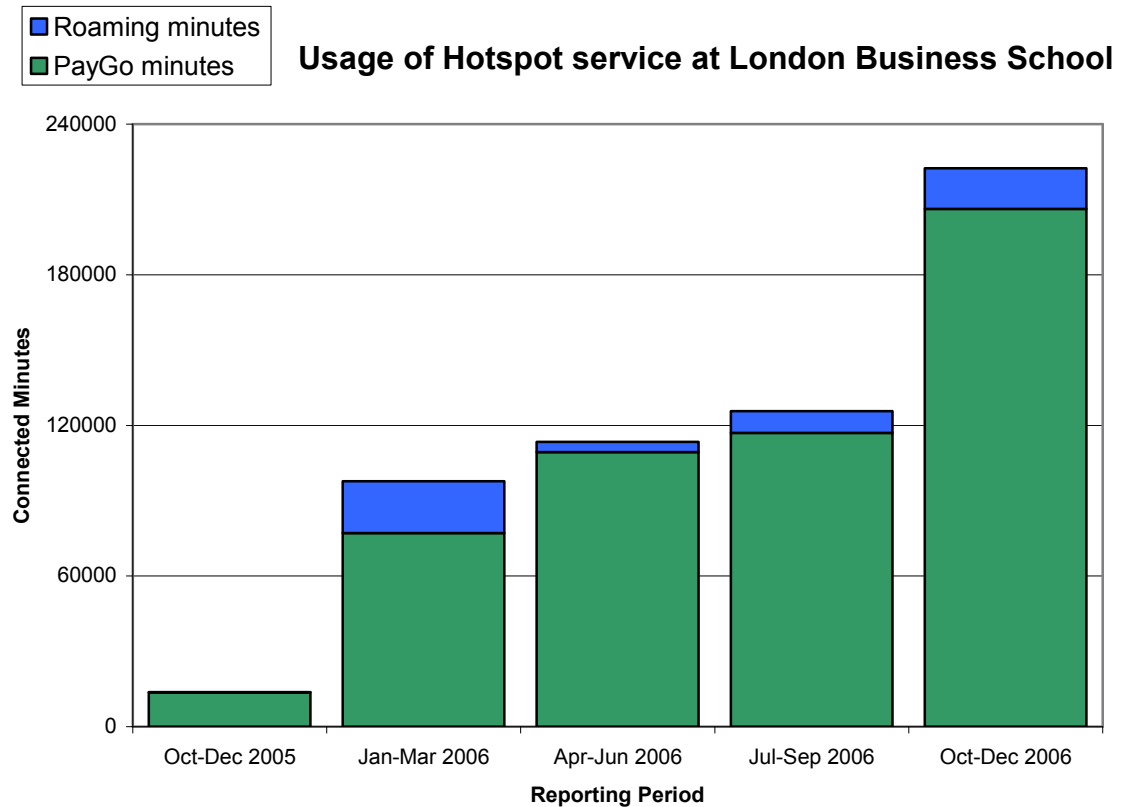
- We evaluated 3 operators



- The main differences surrounded
 - The availability and extent of roaming agreements
 - Provision of the walled garden
 - Their monitoring capabilities of our infrastructure
 - The commercial agreement offered
- We selected The Cloud as our partner

Use of guest wireless at London Business School

- The demand has outstripped our expectations
- Business people feel comfortable with using a public hotspot, understand the service, creates a level of “trust”, and are used to paying



Customised Login Page

Welcome to The Cloud Networks

Connecting @ London Business School, Regent's Park
Select language:

Get online with The Cloud

Login

Click below if you already have login credentials.

Buy Internet time

Need internet access? Select from a range of pay as you go packages using your credit or debit card.

Need help getting online?

London experience. World impact.

Use your existing accounts

The Cloud supports WiFi services and accounts from the following providers.

If you are an existing customer or would like to find out more please click on the links to the service providers below.

Help · Privacy · TermsPowered by The Cloud Networks

Customised Marketing and Self-Help

London Business School

Get online here!
It's easy.



O₂ Wireless service verified with  skype  The Cloud

Get online here

connecting you to

O₂  BT Openzone Wireless broadband   Airtel  Wi-Fi Connection

And many more... Powered by

WiFi ZONE London Business School The Cloud Your Mill route to the Internet

Please take one

London Business School

Get online here!
It's easy.



O₂    The Cloud

Issues arising from Hotspot provisioning

- Implented in Summer 2005 and our older APs were unable to broadcast two SSIDs on separate ESSIDs
- “WiFi Zone – The Cloud” became our broadcast SSID (no encryption)
- Our internal student service “snap” had to become a hidden (non-broadcast) SSID
- User education of which SSID to use

So what is 2nd Generation Wireless?

- Blanket wireless coverage across the enterprise
- Availability of Wireless is expected in Enterprise Networks, including guest access
- Wireless is now an alternative to the wired network
- Challenge of the management of the RF space
- Detect, Locate and Remediate(?) rogue APs
- Ability to load balance clients between APs
- Support and guarantee the delivery of Real Time protocols across a WLAN – roaming times

2nd Generation Wireless (continued)

- Be able to take any device onto your network and provide access
 - Is NAC the answer? Can you patch a PDA?
 - NAC clients for PDAs and VoWLAN devices?
- More SSIDs for more differentiated services and traffic separacy between clients
- Capability to use APIs to leverage user information.
- Location services will be significant in the future, for all manner of IT and non-IT (Security, Health and Safety) requirements.

Wireless Replacement Requirements

- Centralised Management. Thin APs using POE
- “Bluesocket” functionality replacement
- Monitoring, Alerting, Self-Healing capabilities
- Broadcast multiple SSIDs and frequencies
802.11a/b/g
- Rapid roaming between APs (sub 15ms)
- Roadmap for remote support
- Capacity to expand coverage to entire campus

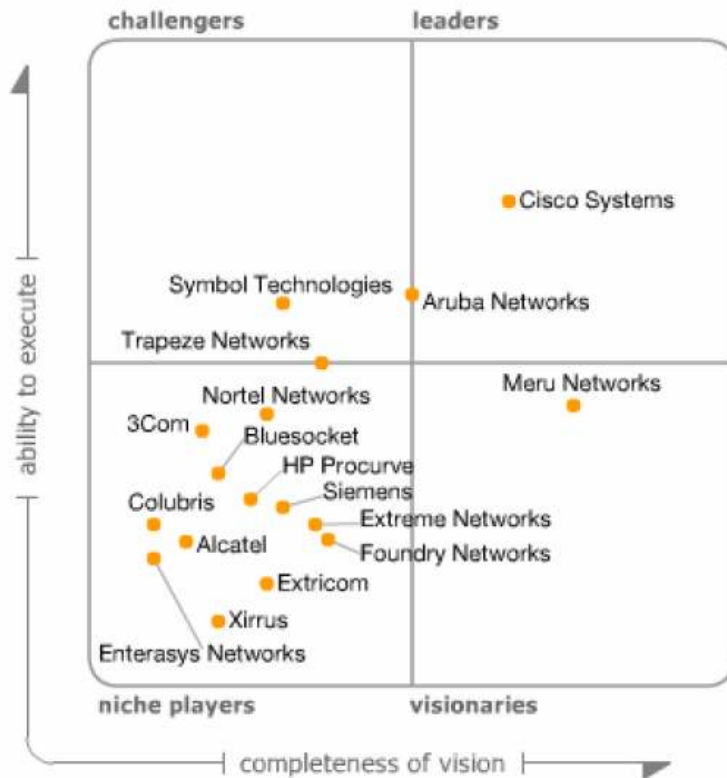
RFP process

- We evaluated the market and solutions based upon:



- HP Procurve offering was immature at the time
- Meru Networks hardly any EU presence at the time
- Trapeze were a close contender, but no DHCP server and expense to scale the solution were negatives
- We selected an Aruba networks solution as the best fit to our overall requirements and budget constraints

Gartner Magic Quadrant



Courtesy: Meru Networks

As of September 2006

Gartner's summary (Sep 2006):

- Wired networking vendors such as Cisco Systems and HP Procurve have a vision of offering integrated wired and wireless LAN switches.
- Startups such as Aruba and Meru are primarily focusing on the enterprises that view wireless as an overlay of wired.

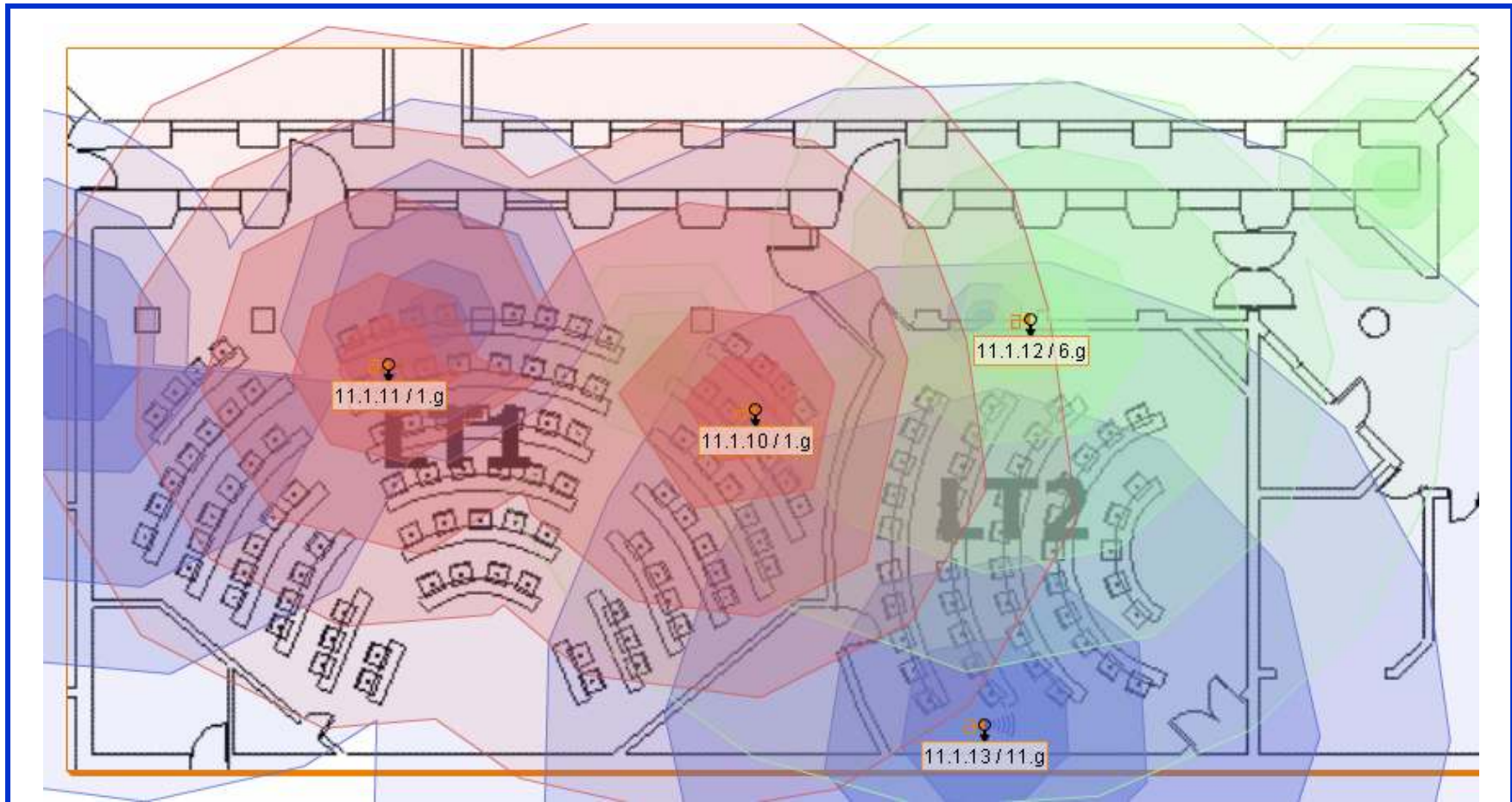
Experience of new Wireless network

- Number of wireless support calls down in general
- Being able to broadcast our “snap” SSID means that support calls regarding the hidden SSID have disappeared
- Issues with RF management also have disappeared overnight.
- Any issues reported with connectivity are usually addressed by updating Wireless NIC drivers on customer device
- No need to go round with handheld check network

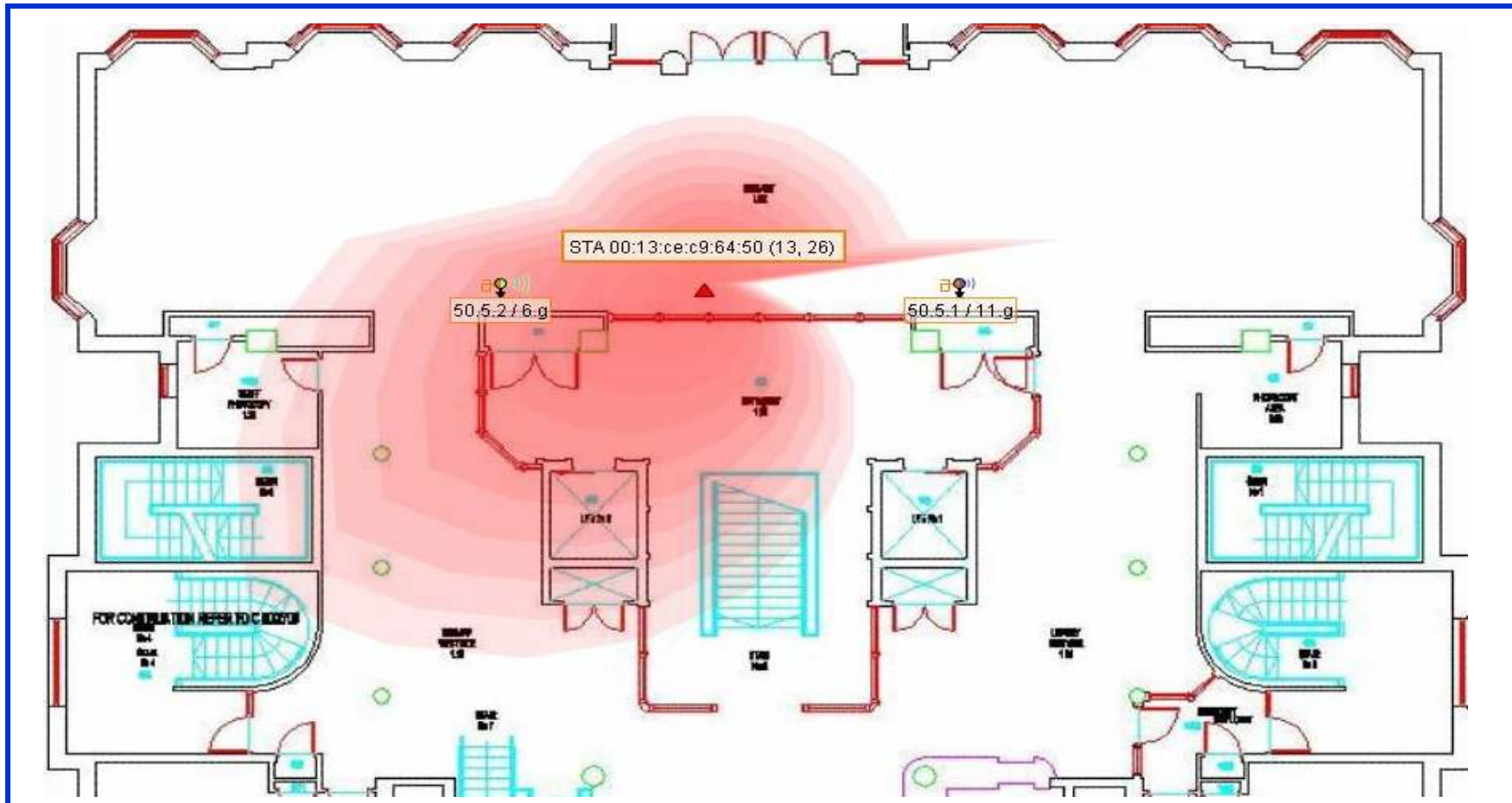
Enhanced capabilities

- Better able to support the network
 - Live coverage heat maps
 - Ability to locate and triangulate users and APs
 - Rogue access points can be configured for “known interfering” or “countermeasures”
 - Ability to packet capture from users who are reporting issues
 - Reporting on congested APs and top talking users
 - Can define max number of users associated with an AP and are looking at client loadbalancing

Coverage Heat Map



Locating a user on the network



LMN and Wider area Wireless

- There are three main areas of development worth keeping an eye on for wider area wireless
- Wifi (802.11) in mesh infrastructures in unlicensed spectrum at 2.4GHz
- WiMax (802.16) in both fixed and nomadic in both licensed and unlicensed spectrum at 5.8HGz
- iBurst (802.20) in nomadic in unlicensed spectrum

LMN and Wider Area Wireless

- LMN has a significant footprint in London
 - 150 potential backhaul locations
- LMN Members have a number of “interesting” buildings
 - Roof space to rent
- Roof space + Network access
 - = Lower cost to deploy a wireless network
- Membership have not yet been approached about this

Wider Area – with Wi-Fi

- Wifi (802.11b/g) mesh deployments are becoming common
 - Deployed using street furniture
 - A limited number of backhaul links are required (City of London has 80+ Access Points but under 10 backhaul links)
 - Often done in co-operation with Local Authorities
- LMN trying to obtain leverage through partnership with BT Openzone but not looking to get involved.

Wider Area – with WiMax

- Nomadic WiMax is still struggling with no chipsets in laptops and no licensed spectrum with in building coverage
- Fixed broadband is getting some deployment
 - PCCW who hold 3.4GHz spectrum nationally is stalled as they used non-WiMax kit (UMTS TDD) and are now having to fix this
 - Pipex hold 3.5GHz spectrum nationally are have WiMax trials operating in several parts of UK
 - 3GHz does not have good in-building coverage

Wider Area – with WiMax

- There are other operating taking a punt on operating WiMax in unlicensed spectrum at 5.8HGz
- UrbanWimax is already operating in London
 - Could be interested in co-operating with LMN when targetting the public sector and harder to reach outerlying sites.
 - Possibility to undertake some test and development on a non-commercial basis for research with a University

Wider Area – with iBurst

- 802.20 (HC-SDMA) is still stalled in the technical committees but is a wide area nomadic standard
 - Commercial deployments include Australia, South Africa, Norway, Canada, Malaysia, and USA
- iBurst has had approval for whole-Ireland deployment using the “GSM guard band” – a strip of 20MHz of spectrum to provide a nomadic broadband service
 - iBurst is very spectrum efficient as it uses adaptive antennas to focus a beam of coverage to a user, frequencies can be reused.

In Summary

- LMN looking to partner agreement with BT Openzone
 - Please contact Maria if interested
- On your own campus carefully consider enterprise level requirements moving forward:
 - Consider a way forward for your guest services.
 - Deploying blanket coverage
 - Managing and controlling your airspace
 - Location based services
- LMN continues to keep a watching brief on Wider Area wireless

Further Reading?

- Mark O'Leary's presentation at JANET Networkshop about Location based services using Wireless

<http://www.ja.net/services/events/networkshop/Networkshop35/documents/MarkOLEary5a.pdf>

- The use of Wireless will continue to grow, especially if our friends at Imperial and MIT get Wireless Power to work to keep the users connected longer!

<http://news.bbc.co.uk/1/hi/technology/6725955.stm>



Questions ?

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