Future trends in mobile demand – broadening the user experience

How the integration of multiple different technologies will change the mobile phone into a “remote control on life”

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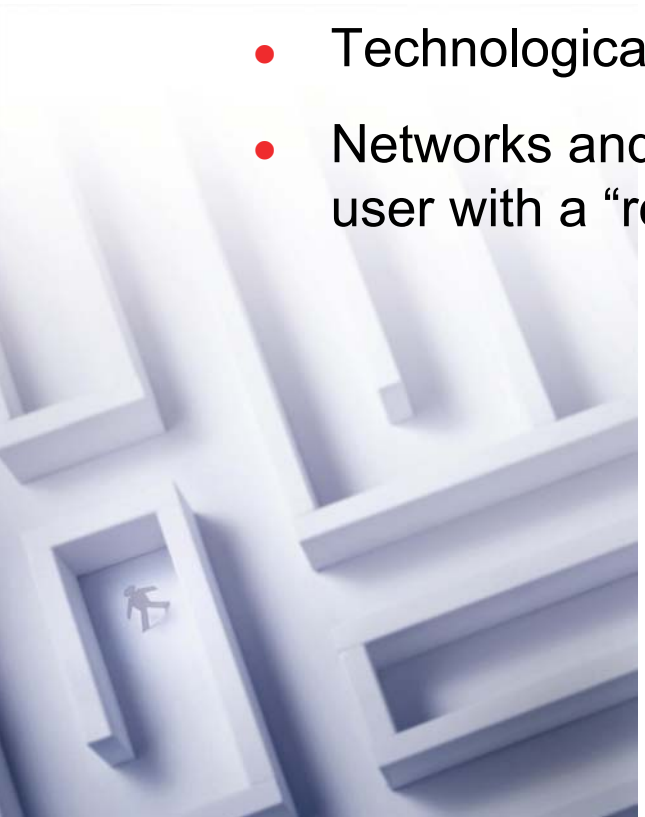
The user experience will evolve as more networks are integrated into a seamless offering

- With the exception of SMS, increasing non-voice traffic on 2G has proved difficult, it is too early to say whether 3G will be different
- Visions of what the mobile might do suggest much can be achieved by interfacing with multiple networks
- Technological issues also make multiple networks likely
- Networks and devices will gradually evolve towards providing the user with a “remote control on life”



Operators are growing non-voice revenue but focussed on what can be delivered across cellular networks alone

- Most cellular operators have targets to increase the amount of non-voice traffic in order to grow their ARPUs
  - Typically non-voice revenue is around 13% of total revenue, most operators aim to grow this to over 20% by ~2007
- Services have become increasingly sophisticated over time as WAP and GPRS has matured into MMS and packaged offerings like Vodafone Live
- 3 is working hard to persuade consumers of the benefits of video clips such as sports highlights

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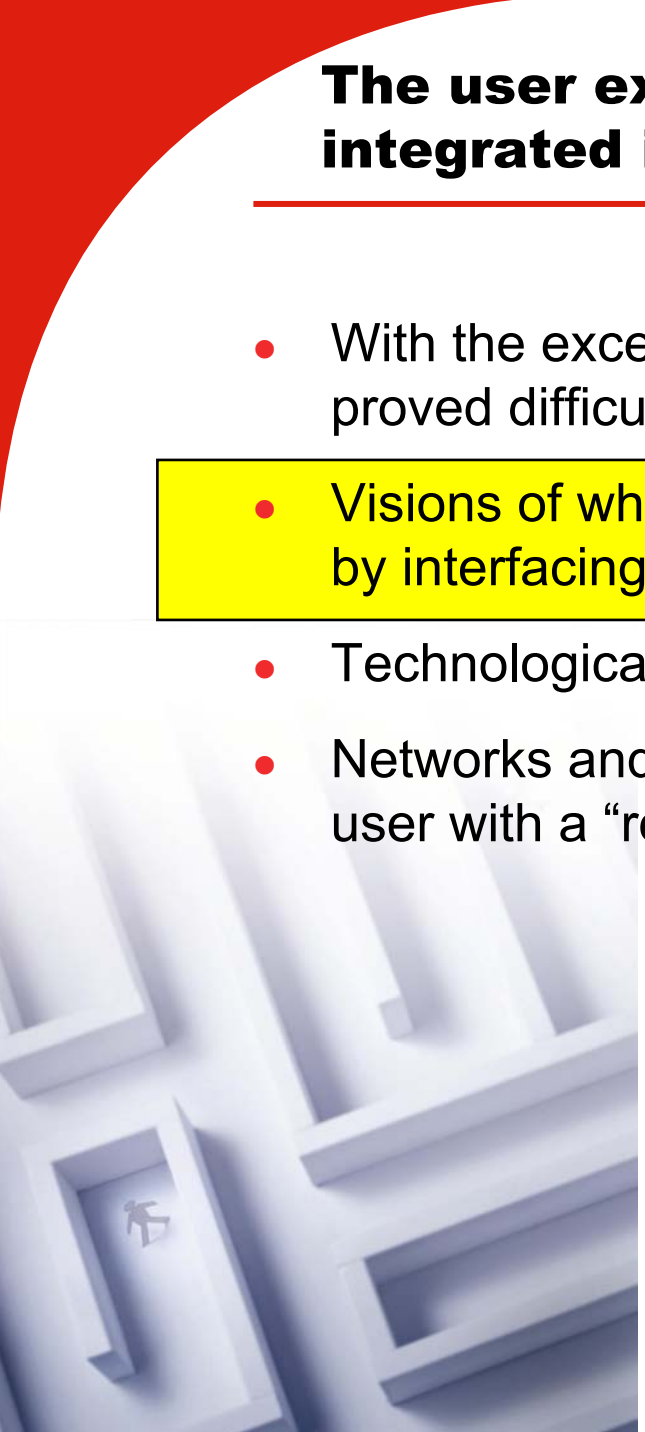
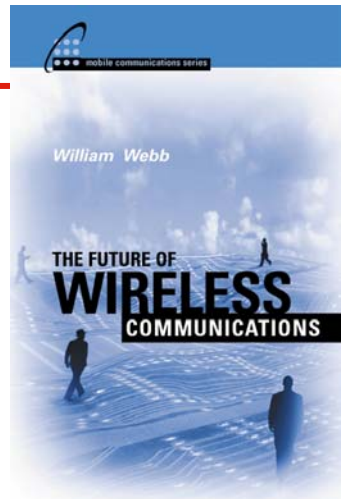


Visions of the wireless utopia generally exhibit similar characteristics

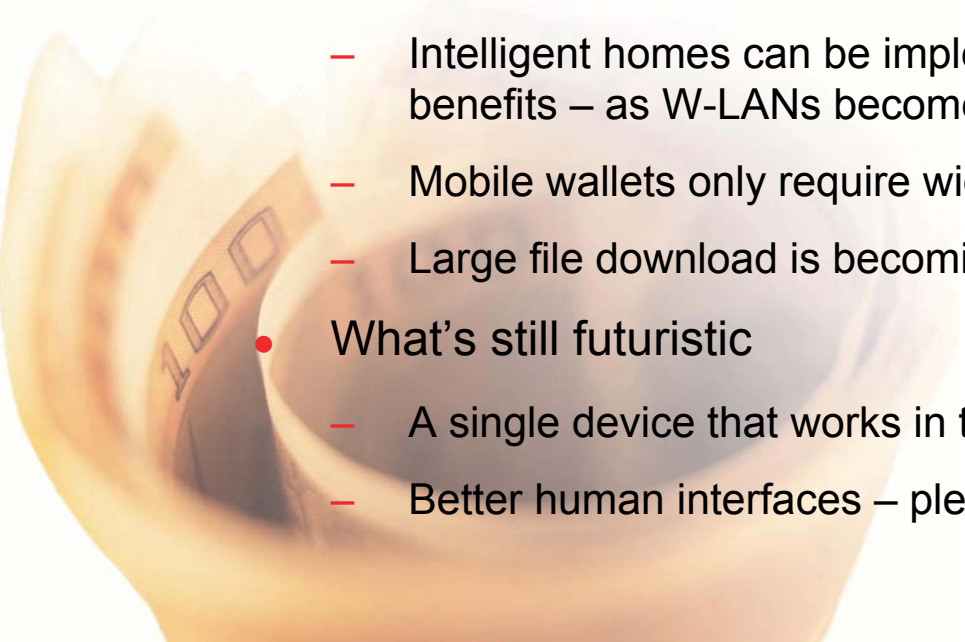


- A single device that works in the office, home and wider area
- Lots of video calling
- Intelligent homes:- security systems, heating, maintenance
- Individualised services:- news broadcasts, sports, entertainment
- Enhanced navigation:- in car, at the airport, at the hotel
- Much better human interfaces:- speech recognition, big screens on small devices
- Mobile wallets
- Large file download whenever and wherever

I've landed at the airport. My communicator works out that I'm going to be early for my meeting if I take a taxi straight away. It tells me about the coffee shops within easy walking distance and provides a simple map. It even orders and pays for the coffee as I get close.

The technology to do most of these exists today – it's an issue of cost, standards and acceptance

- What can already be done
  - Video calling using 3G technology
  - Individualised services such as news broadcasts, sports and entertainment from eg Vodafone Live or 3
  - Navigation, but with poor accuracy until GPS in the handset becomes increasingly widespread
- What's on the way, or nearly here
  - Intelligent homes can be implemented but are generally too costly to justify the benefits – as W-LANs become more widespread this might change
  - Mobile wallets only require widespread standards for m-payment
  - Large file download is becoming more practical as W-LAN hotspots proliferate
- What's still futuristic
  - A single device that works in the office, home and wider area
  - Better human interfaces – plenty of work in R&D but no major breakthroughs yet



New services are likely to evolve from increased acceptance of existing services

- It takes years for people to embrace new technologies or services and work them into their lives
  - Many would now not leave home without their mobile
  - SMS is increasingly becoming a part of everyday communications
- MMS is now evolving the SMS experience to include pictures and eventually video clips
  - This is turn will likely evolve into video calls as people get used to watching things on their mobile
- Services like navigation build upon the increasing tendency of people to use the Internet to plan their journey
- Services with less to build upon like m-payment will take longer to become accepted as people get used to changing the way they do things
- This is a continuous process rather than a sudden change

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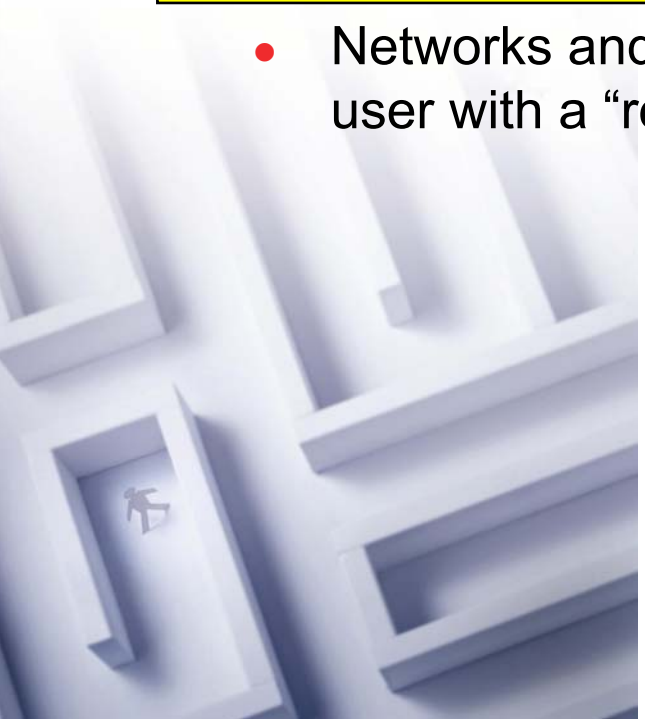
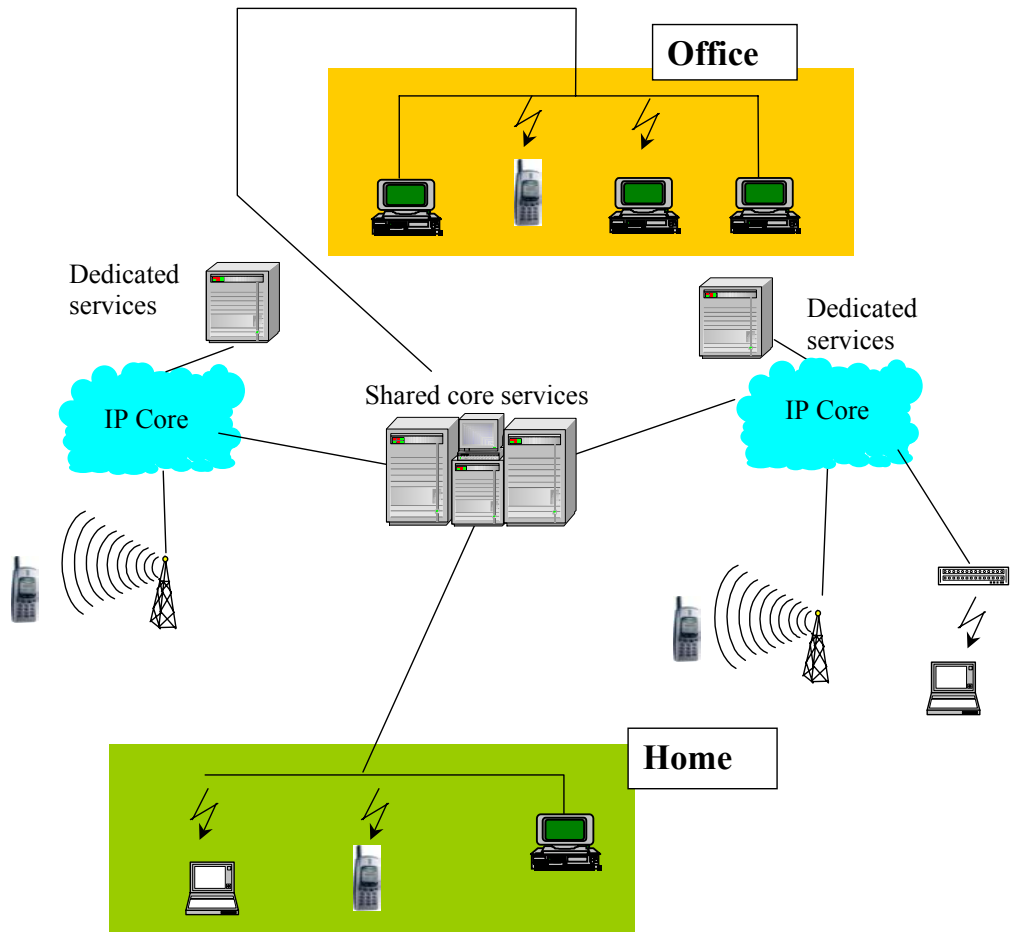


Technological issues make a mix of different networks and technologies certain

- Macrocellular technology is close to the realistic limits of capacity
- However, user demand will continue to grow
- The demand can only be met using small cells
- Current small cell technology provides sufficient capacity for the next 20 years
- The key issue is how to integrate these technologies together
- BT's recent announcements of hotspots, MVNO with T-Mobile and BlueTooth home system is a move in this direction



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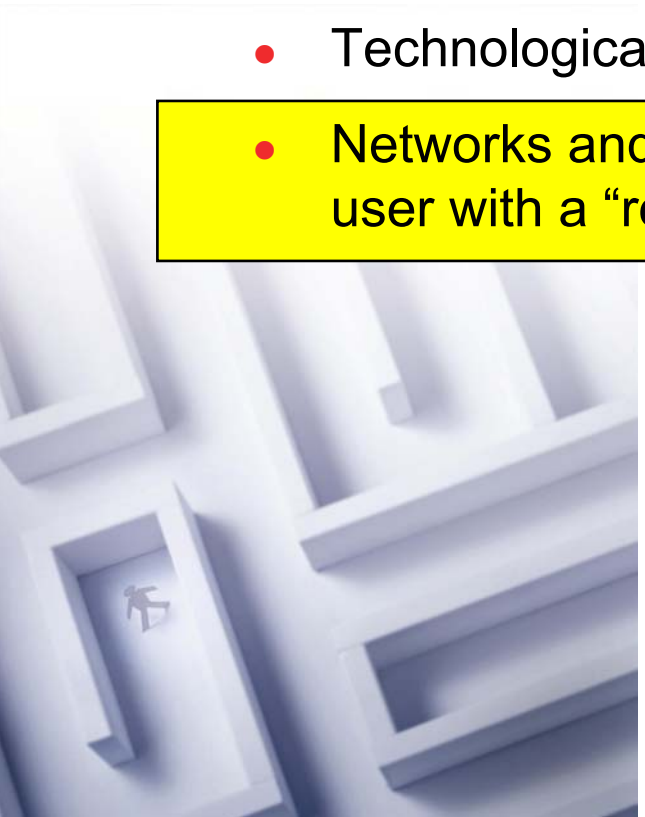
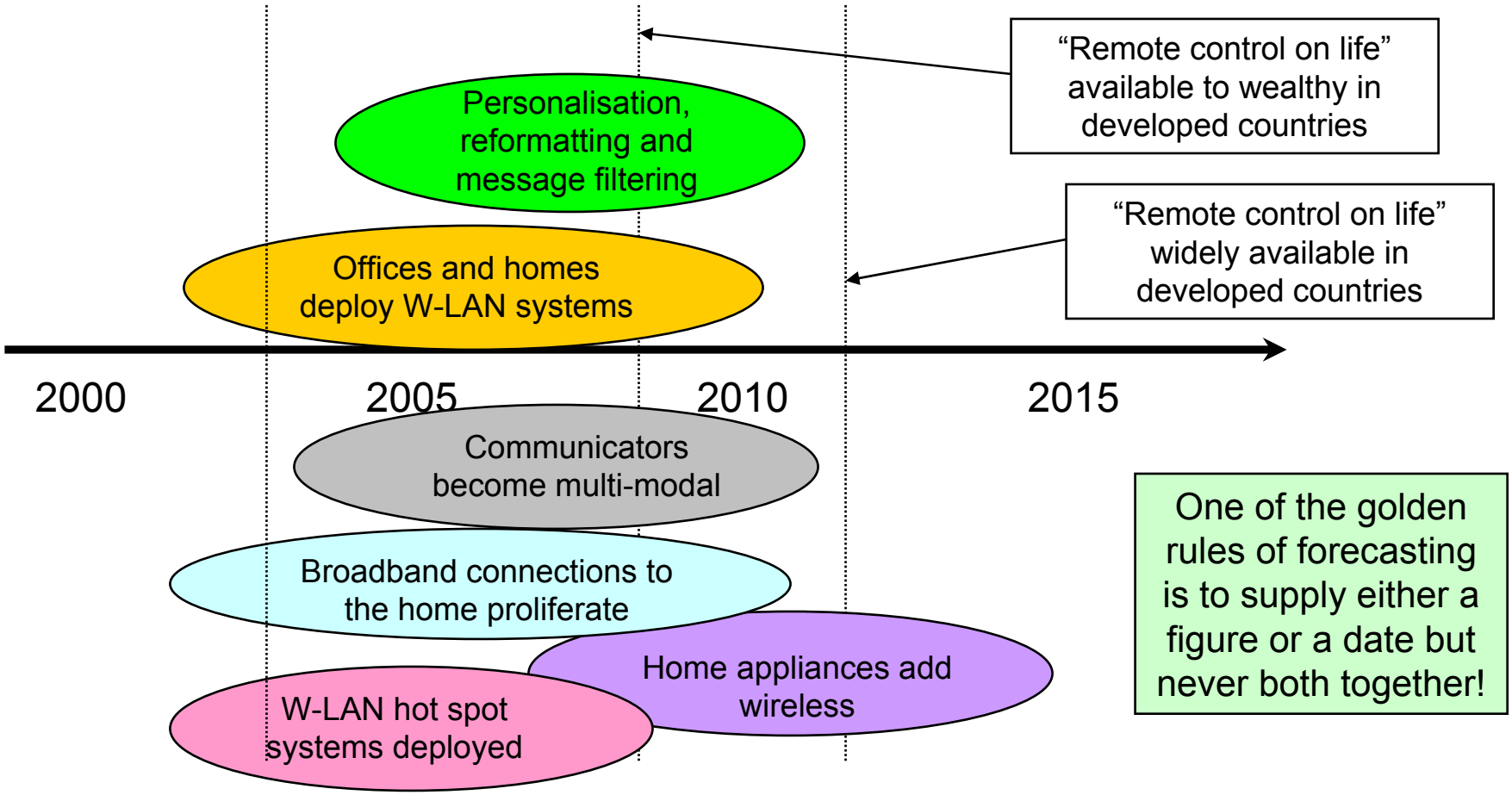


Services will gradually evolve, becoming fully available between 2008 and 2012



The future is bright, the future is . . . wireless

- Multiple wireless networks, *using today's technology*, will interwork through multi-mode devices and intelligent core networks to deliver many new services
- This will gradually enhance the user experience over the next 10 years turning the phone into a "remote control on life"
  - 3G and broadband to the home is just the start of a process to add functionality
  - The key development will be the integration of multiple networks in the home, office and wider area
- Users will perceive a benefit in these services likely resulting in increased ARPU, but some may go to network integrators as well as cellular operators

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- In part based on the book “The Future of Wireless Communications”, Artech House, May 2001

