Safe Harbour Statement

This presentation contains forward looking statements.

Such statements are based on current expectations and are subject to risks and uncertainties.

Some of this material may not represent the views of Ericsson.
Technology will have a profound effect on Education

- Network Trends
- Device Trends
- Trends in Pedagogy
- Europe & Mobile Learning
- Mobile Learning today
- The Next Phase
Network Trends

Future proof WCDMA RAN

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Continuous improvement of data capabilities,
HSPA

Downlink

2006
3.6 Mbps
15 codes

2007
14 Mbps
64QAM
2x2 MIMO

2008
21 Mbps
28 Mbps
Both

2009
42 Mbps

Uplink

2006
0.384 Mbps
HSPA on the uplink

2007
1.4 Mbps
2 ms TTI

2008
5.8 Mbps
16QAM

2009
12 Mbps
20 MHz carrier
1x2 MIMO

Evolution to even higher speeds and lower latency
What is 4G?

The International Telecommunication Union (ITU) defines "4G" as network technology with throughput of 100Mbps for wide area/mobile use and 1Gbps for hot spot coverage to be applied in new spectrum bands with 100 MHz channels.

4G is the short term for fourth-generation wireless, the stage of broadband mobile communications that will supersede the third generation (3G). While neither standards bodies nor carriers have defined or agreed upon what exactly 4G will be, it is expected that very high bit rate, low latency end-to-end IP and high-quality streaming video will be among 4G's distinguishing features.
Key network trends

- Internet goes mobile
- Convergence
  - Fixed<->Mobile<->Broadcast<->Internet
- IP based
- Rich in multimedia (IMS-IP Multimedia Subsystem)
- More fibre, less copper
- More wireless
- Higher speeds
- More devices – embedded modules
- Services becoming more personalised and user centric

Many experts believe that our main internet experience will be mobile within the next 5 years
The mobile handset evolution
Embracing and embedding feature after feature

"Always with you"

In January 2007 there were an estimated 2.7 billion mobile handsets in use around the world, of which 1 billion were sold during 2006. This is more than three times the number of PCs, and roughly double the number of fixed landlines in use. And most of these handsets have the processing power of yesteryear’s PCs.” - Berg Insight (June 2007)
Device Trends - Displays

Going forward
- Higher resolution
- TV/Video out – cable and wireless
- Built in laser projectors
Trends in Pedagogy – the evolution of the art of teaching

- Pedagogy informed by basic principles of constructivism
- Emergent theory connectivism (George Siemens)

Because emergent technology is exciting and newly available, it is easy to become absorbed by the technology itself (Simpson 2008)
Learner-centric environment

Transition from educational institution centred learning provision to learner centric learning provision
Network architecture - Enabler

Multimedia Services

Full Service Broadband

Service Layer

Standard Services and IMS

Multi Access Edge

Wireline Access

Wireless Access

Users
IP Multimedia Subsystem (IMS)

- IMS is a horizontal architecture for offering IP Multimedia Applications
- IMS is defined in 3GPP/3GPP2 standard, Embraced in TISPAN
- IMS supports different access networks, such as:
  - WCDMA, GPRS
  - CDMA2000
  - Wire-line Broadband
  - WLAN.

Instant Messaging
Push to Talk
Shared pictures
Community gaming
Shared browsing
Presence and Group Management

- IMS allows users, or user’s clients to set their availability (presence) towards other users.
  - A user might set themselves up as available for SMS or email but unavailable for Voice and Video Calls.

- Groups can be defined for a user’s contacts
  - For example a user might define a Work, Social, Student group, etc

Combining Presence with Groups allows students (or tutors) to be very specific about who may and may not contact them while learning
Mobile Positioning System (MPS)

- Determines the geographical position of a mobile phone/device and delivers the position co-ordinates to the application requesting this information.
Family Finder uses MPS

- Finding the location of Family Members and viewing their position on a map
- Web interface for Family Head Administrator
- Zone-based notifications/alerts through e-mail, SMS and MMS
- SMS messaging interface for Family Members
- Access through Web, SMS and WAP
- Extensive family privacy functionality
Zone-based notifications

- Sent when a specified Family Member either enters or leaves the selected area
- The notifications uses MPS Spatial Triggers feature or middleware’s capabilities.

Message from FamilyFinder:
Cindy has left “School”
See her location at:
www.Family.com/id1
Today’s Learning Scenario

- Students arrives on campus (Virtual or real) with own/or provided technology infrastructure (i.e. mobile multimedia device/phone/laptop)
- Student ID linked to device(s)
- Student ‘presence’ logged in campus database
- Reminders, course and college information can be pushed to student.
- Network aware of device capabilities. Enables institution to tailor access for student to include courseware, support & social services
- ID enables ad hoc groups to form – study buddies, tutorials, informal learning and University social and sporting activities.

Towards a richer learner centric experience
Learning Management System & Learning Content Management System

- **LMS**
  - Store, schedule and support training delivery

- **LCMS**
  - Resource store for course development
  - Templates for ILT, eLearning, mLearning, podcasting, class notes, etc
Device & location independent

Lecture hall displays, internet, PC, mobile device
Richer learning experience

- Faster connectivity

- Media rich content development
  - Video
  - Collaboration tools
  - Group discussion
  - User created content
mLearning in Europe Today

- Level 1 - activity in all levels of Education – UK
- Level 2 – activity mainly in the form of participation in EU funded projects
- Level 3 – first steps into the field
- Level 4 – negligible activity

www.ericsson.com/socrates2006
Next phase – Context Sensitive, Location Based Learning

- IMS provides several services that can be leveraged in mLearning applications and courses
- These services include new ways to perform activities on mobile devices (Converged User Sessions)...
- …new ways to deliver course material and monitor student participation (IP Based Content Delivery)...
- And new ways to help maintain the student’s focus during mLearning Activities (Presence and Group Management)
Context Sensitive, Location Based Scenarios

- Just in time learning for workers
- Students on the move/Language learning
Summary

Killer Application

For more information contact: [Contact Information]