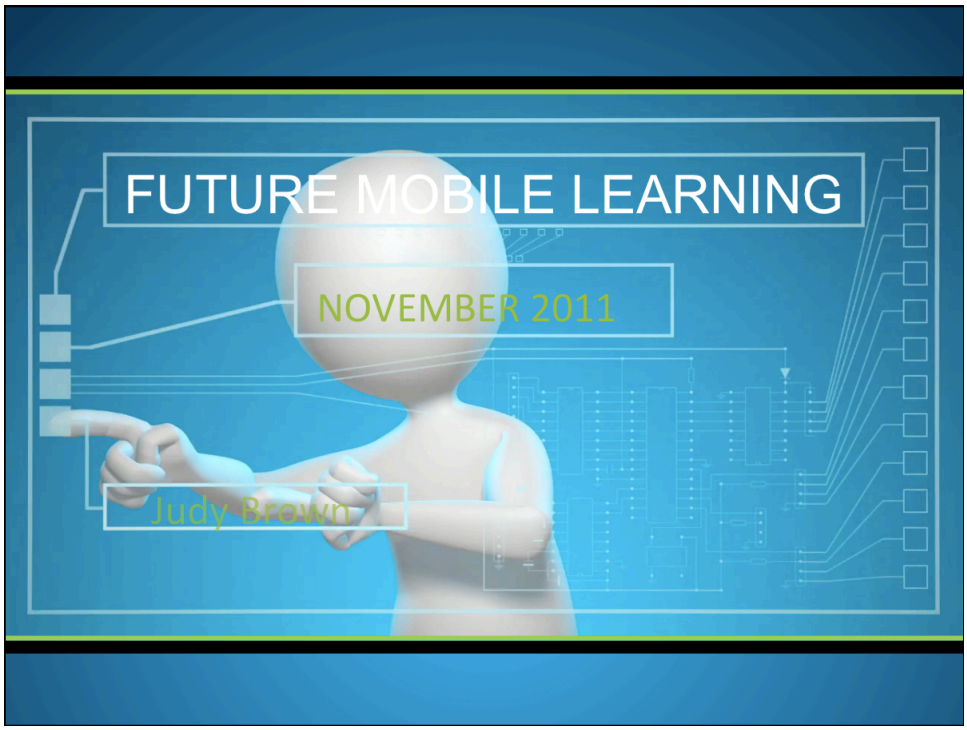
FUTURE MOBILE LEARNING

NOVEMBER 2011

Judy Brown



Today's Agenda

- **Here Today** — Augmented Reality, BYOD, eBooks, Cloud computing, Location, Tablets
- **Future for Learning** — Microlearning, Spaced learning, Personalized
- **Future** — Devices, Capabilities, Other
- **Discussion** — Questions

Future

The future is already here – it's just not evenly distributed.

—William Gibson

Augmented Reality

- Overlaying of digital data in the real world
- Image recognition

AR Coming

Window to the World

AR Coming

Video removed from this slide, but viewable at:
Window to the World (CIID/Toyota) –
http://vimeo.com/25547151

Bring Your Own Device (BYOD)

- Students bring their own Wi-Fi enabled devices
- Benefits
  - Access
  - Enhance learning experience
  - Learners familiar
  - Engagement
  - Low cost
- Issues
  - Bandwidth (Wi-Fi access)
  - Cross platform issues
  - Equity

Cloud Computing

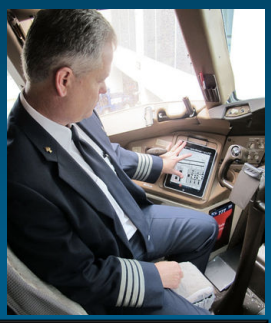
- Ubiquitous, convenient, on-demand network access
  - Processing
  - Search
  - Storage and retrieval
  - Sharing
- Benefits
  - Accessed from anywhere, anytime and on any device
- Issues
  - Security
  - Connectivity

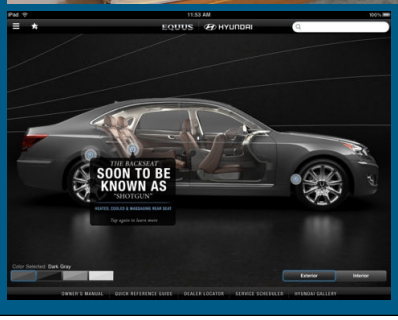
eBooks

- Stats
  - Amazon selling 105 ebooks to 100 print books
  - Textbook rentals
  - Library checkouts
  - South Korea replacing all paper by 2015 (tablets)
- Benefits
  - Interactivity
  - Weight
  - Access
  - Cost
  - Long tail
- Issues
  - Availability
  - Formats

Tablets

In Use





Location

- GPS
- LocataLites

Precise positioning: A network of these transmitters, each the size of a hardback book, can enable nearby devices to locate themselves to within a few centimeters.
Credit: Locata

Atlantis STS-135

- SpaceLab for iOS app by Odyssey Space Research
- NASA Astronauts use:
  - Accelerometer
  - Three-axis gyroscopes
  - Cameras
- For:
  - Photos of the earth
  - Calibrating measurements
  - Estimating latitude and longitude
  - Monitoring the effects of radiation on the device

Future for Learning

Ubiquitous

- Always connected
- Cloud-based
- Device-independent

Content

- Microlearning
- Spaced
- Peer-generated
- Live conferencing

Personal

- Individualized
- "Understands" needs and existing knowledge

Microlearning

- Bitesize
- Ubiquitous
- Portable
- Informal
- Situational
- Personalized

- Courselets
- Reference materials
- Reinforcement
- Performance support

Tomi Ahonen on the Future

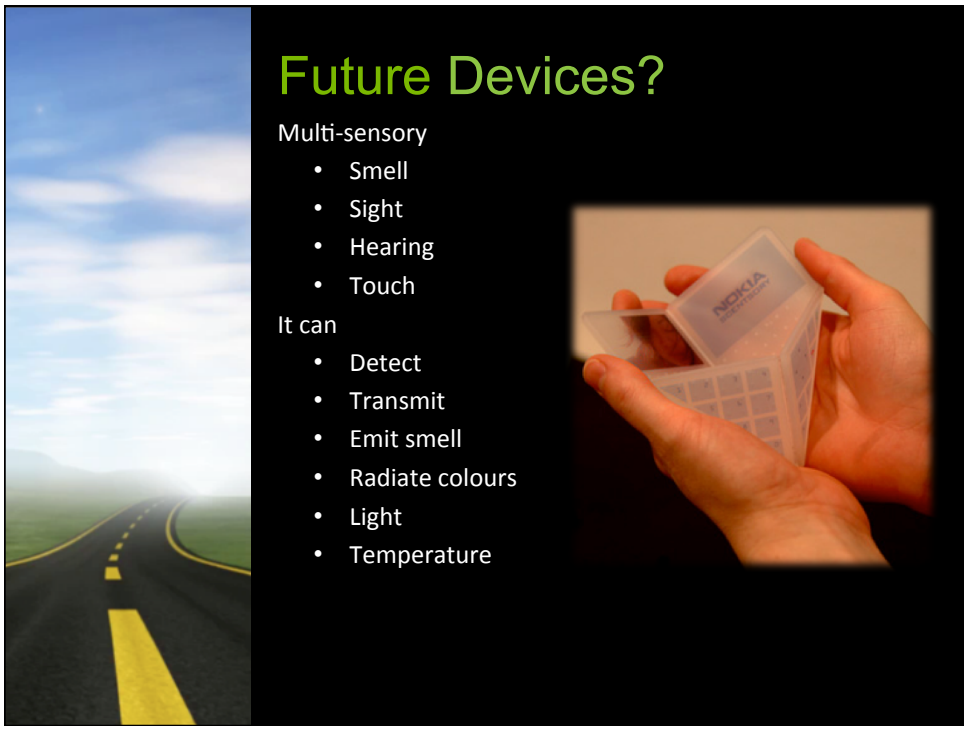
Tomi Ahonen on the Future

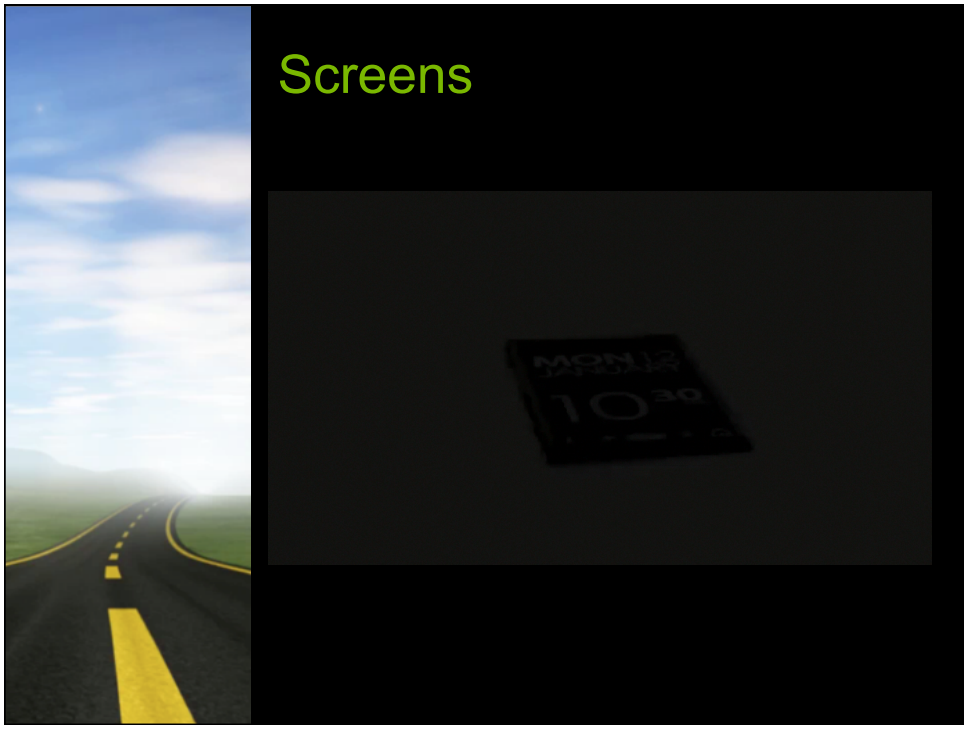
Video removed from this slide, but viewable at:
Mobile is the 7th Mass Media –
http://www.youtube.com/watch?v=NmEyfugMajU

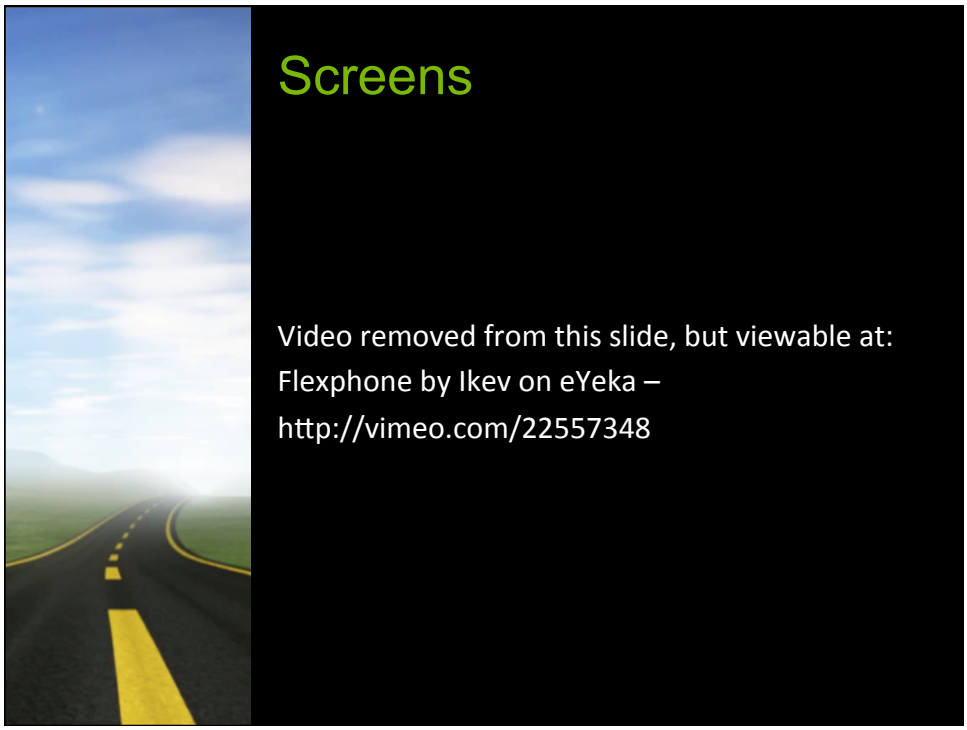
FUTURE
Next Exit

Consumer Predictions
Thin as a credit card
Transparent tools
Eco-friendly
Fully customizable

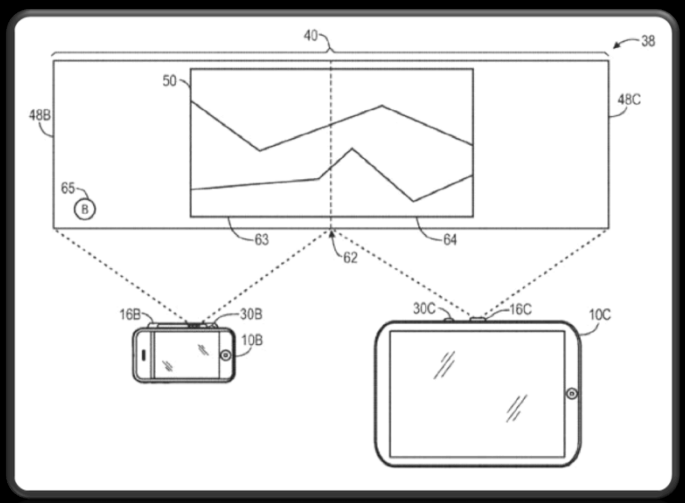
Devices


Future Devices?
Multi-sensory
• Smell
• Sight
• Hearing
• Touch
It can
• Detect
• Transmit
• Emit smell
• Radiate colours
• Light
• Temperature
NOKIA


Screens


Screens
Video removed from this slide, but viewable at:
Flexphone by Ikev on eYeka –
http://vimeo.com/22557348

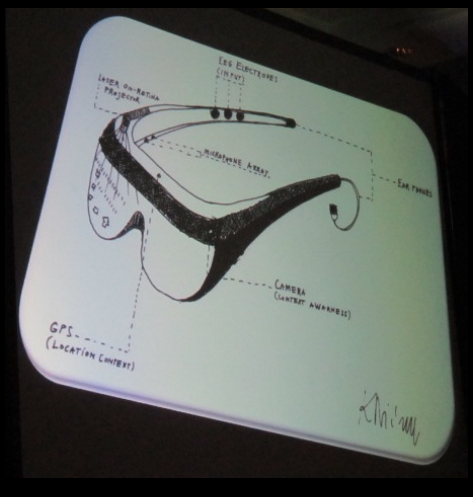
Apple pictures iOS on your wall

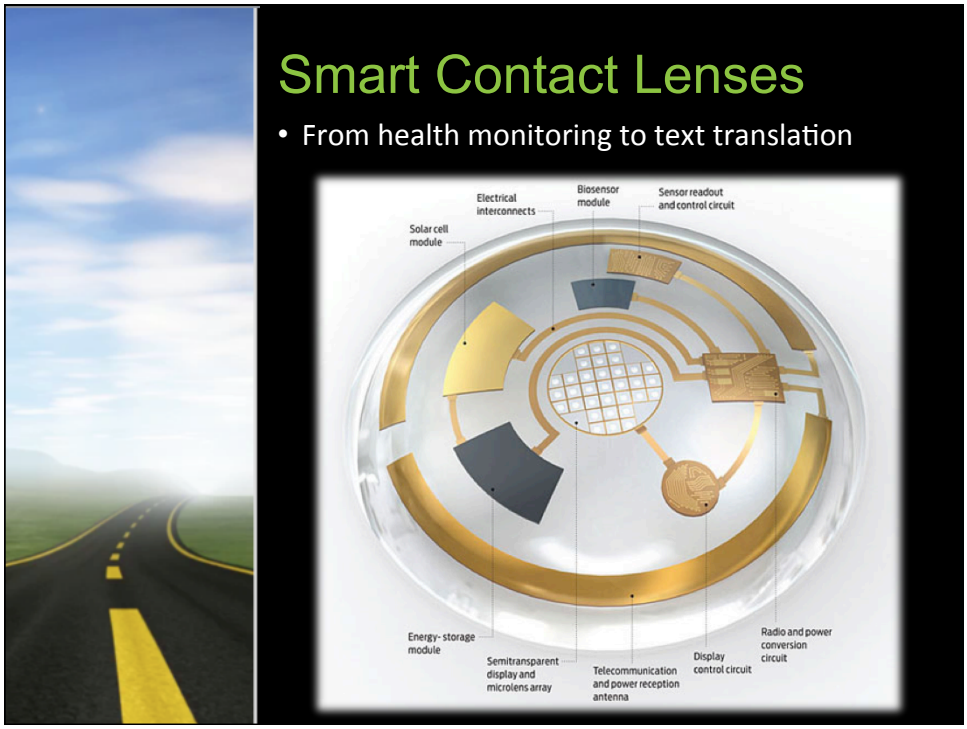


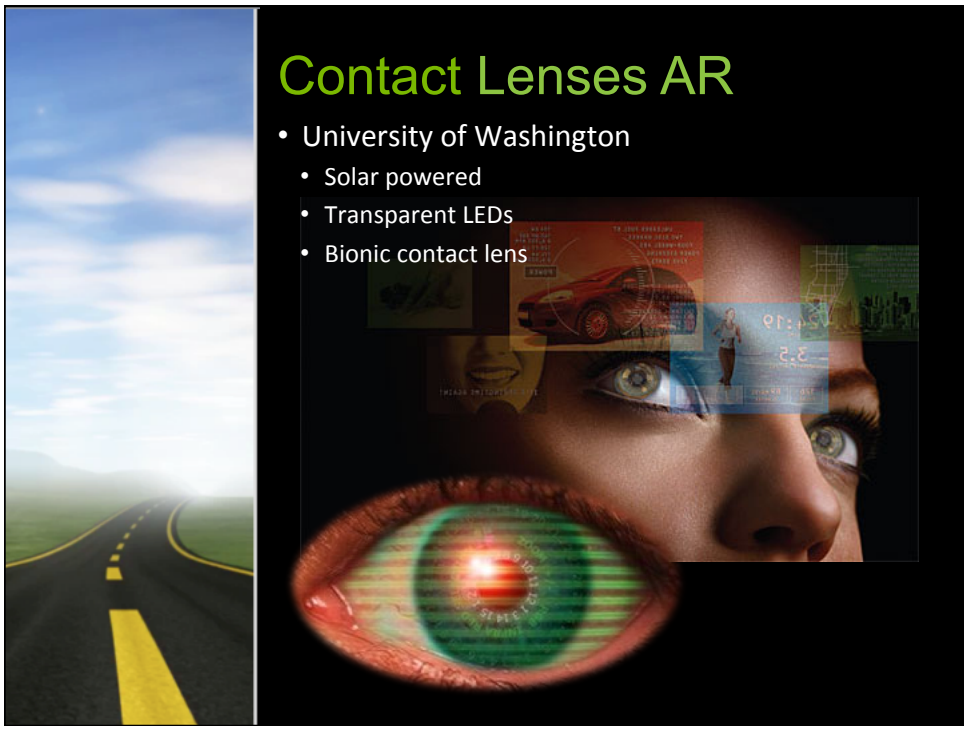
Internet Eyeglasses

Szymon Slupik at eComm 2011

- Laser based displays – MEMS
- Brain waves sensing




Smart Contact Lenses
• From health monitoring to text translation
Electrical interconnects
Biosensor module
Sensor readout and control circuit
Solar cell module
Energy- storage module
Semitransparent display and microlens array
Telecommunication and power reception antenna
Display control circuit
Radio and power conversion circuit


Contact Lenses AR
• University of Washington
• Solar powered
• Transparent LEDs
• Bionic contact lens

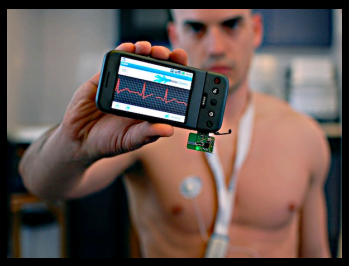
Near Field Communications (NFC)

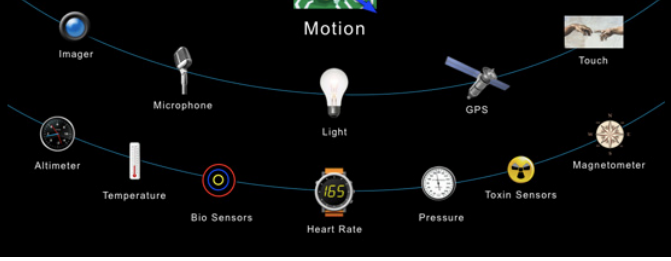
3 modes

- Reader/writer
- Peer-to-peer
- Card emulation

Sensors

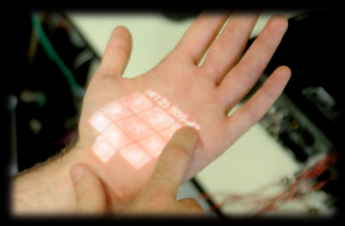
- Altimeter
- Heart monitor
- Perspiration
- Temperature
- Humidity
- Mood

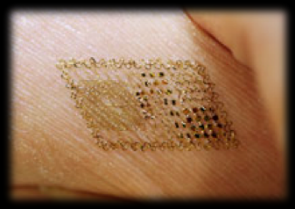


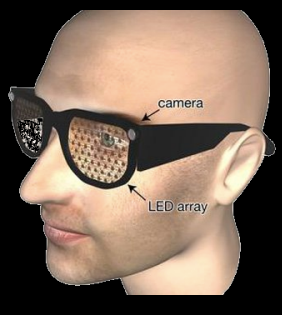


Capabilities

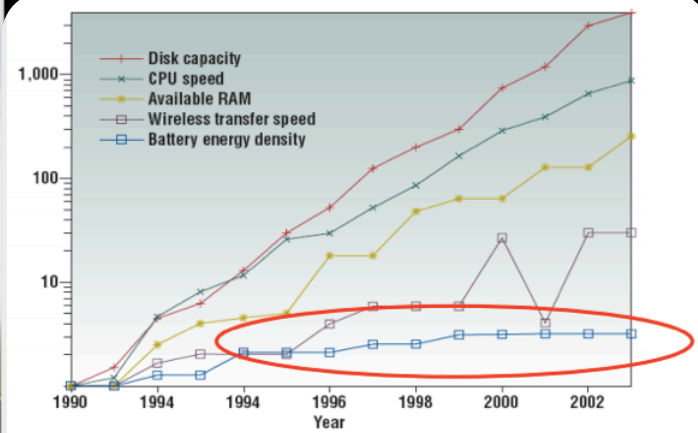
On-body and wearable computing



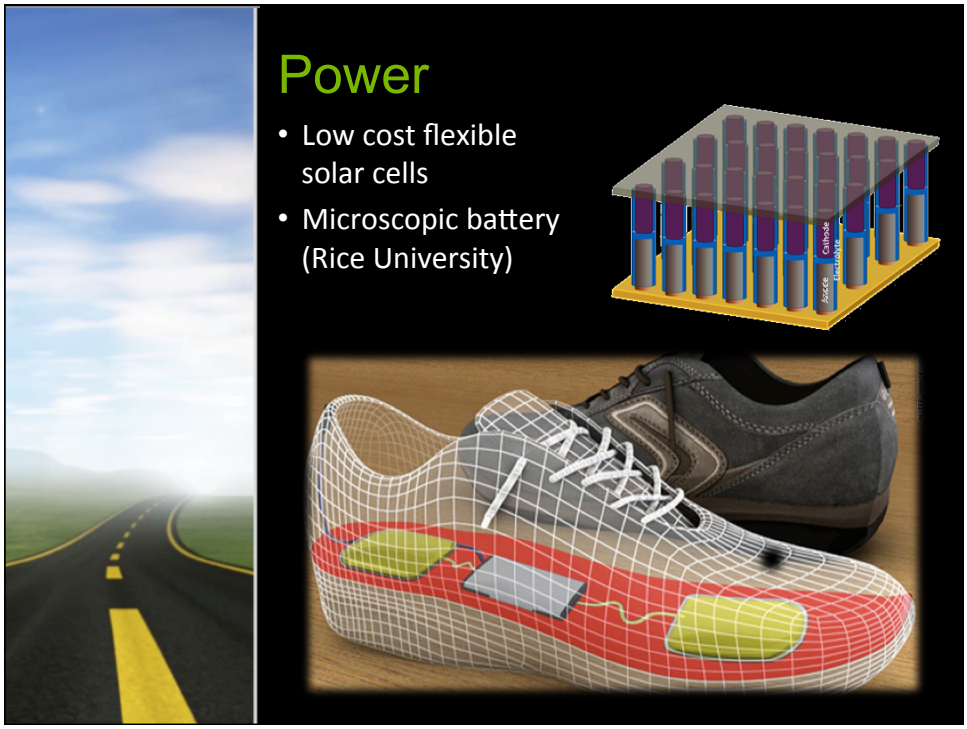




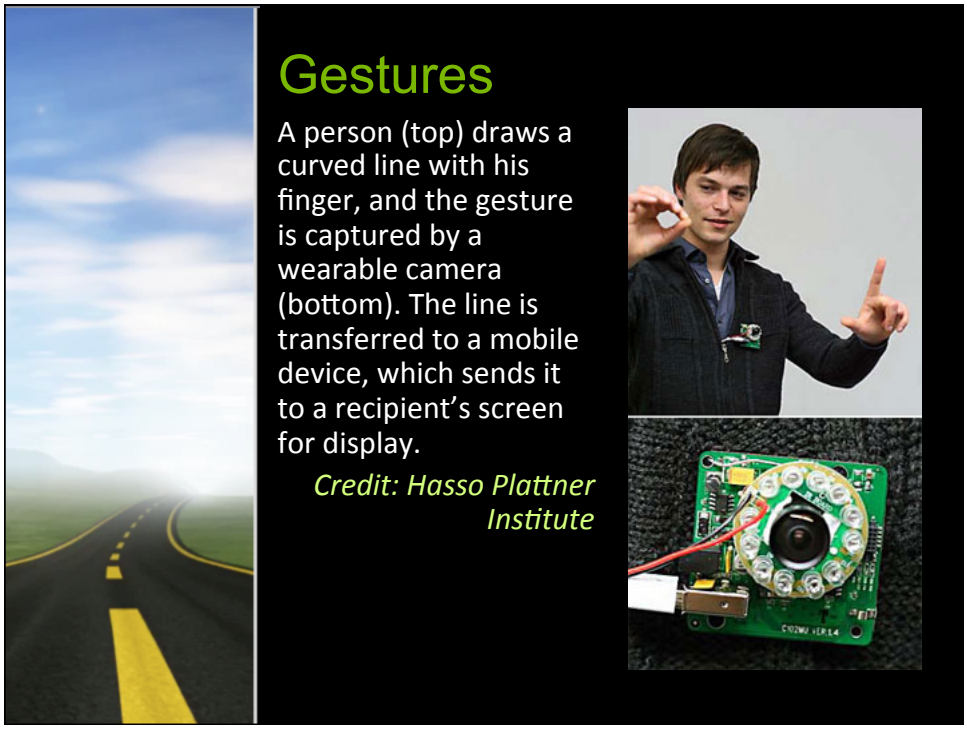
Battery Life



Mobile Computing Improvement – Paradiso, *et al.* Pervasive Computing, IEEE, 2005.


Power
• Low cost flexible solar cells
• Microscopic battery (Rice University)

Enhanced energy & power capacity
• Army Soldier Research, Development and Engineering Center (Natick, Mass.)
• "Personal energy harvesters"
• Kinetics-based solar
• Wind power
• Apple and Samsung
• Organic photovoltaic cells
• Working prototype of human heartbeat powering iPod


Gestures
A person (top) draws a curved line with his finger, and the gesture is captured by a wearable camera (bottom). The line is transferred to a mobile device, which sends it to a recipient's screen for display.
Credit: Hasso Plattner Institute

Other Changes
YouTube 3D
VS.

What will smartphones do for us in 2020?

"Coupled with the almost unlimited computing power from the cloud (e.g. data centers and server farms), available to smartphones through wireless connectivity, the capability to see, hear, feel, and even smell continuously will make our smartphones truly like a human companion."

Lin Zhong, Rice University

In Labs Today

- Cars of the future will talk to each other by 2014 (5/2011)
- Queen's University Human Media Lab, the PaperPhone (5/2011)
- University of Illinois at Urbana-Champaign working on a lithium-ion battery that can be 90 percent charged in two minutes (4/2011)
- EyePhone, developed at Dartmouth College, tracks a person's eye relative to a phone's screen, letting users activate applications by blinking. (5/2010)
- A new device from Dartmouth College lets users select and dial a contact's phone number just by thinking about it. (3/2010)

- Augmented Reality - http://www.tripwiremagazine.com/2011/07/45-brilliant-augmented-reality-iphone-apps.html and http://www.businessinsider.com/best-augmented-reality-apps-for-iphone-and-ios-2011-3?op=1
- Tablets - http://skattertech.com/2011/02/infographic-blackberry-playbook-vs-dell-streak-7-vs-apple-ipad-vs-motorola-xoom/
- Aviation stats - http://www.nytimes.com/2011/06/21/business/global/21iht-RAV-INFLIGHT21.html
- Consumers - http://en.eyeka.net/2011/04/smartphone/
- 3D - http://www.networkworld.com/news/2010/040210-sharp-develops-a-3d-screen.html
- Internet glasses - http://www.zdnet.com/blog/emergingtech/why-the-future-of-mobile-is-screenless-touchless/2608
- Paper - http://www.technologyreview.com/blog/mimssbits/27018/
- Contacts - http://spectrum.ieee.org/biomedical/bionics/augmented-reality-in-a-contact-lens/
- Smart contacts - http://www.fastcompany.com/1623012/smart-contact-lens-bluetooth-future
- Wristbands - http://www.technologyreview.com/computing/26537/page1/
- Jawbone - http://mobihealthnews.com/11870/jawbone-to-challenge-fitbit-with-up-device/
- Smartphone future - http://en.eyeka.net/2011/04/smartphone/
- On body computing - http://www.ottawacitizen.com/technology/body%2Bcomputing%2Bcoming%2Bsoon/4039395/story.html
- Glasses - http://www.popsci.com/science/article/2011-07/glasses-packed-smarphone-tech-could-help-visually-impaired-people-see-again
- Rollphone - http://www.walyou.com/blog/2010/08/12/rollphone-cell-phone-concept/
- Gestures - http://www.technologyreview.com/communications/25380/
- Cars of future - http://www.pocket-lint.com/news/40083/nxp-car-2-car-wireless-technology-demo
- EyePhone - http://www.technologyreview.com/computing/25369/
- Mind control - http://www.technologyreview.com/blog/editors/24993/
- Stick-On Tattoo - http://www.technologyreview.com/computing/38296/
- NFC - http://mashable.com/2011/08/11/near-field-communication-guide/
- 2020 - http://blog.chron.com/computingatrice/2010/05/what-will-smartphones-do-for-us-in-2020/
- Shoe power - http://www.cnn.com/2011/TECH/innovation/08/24/cellphone.walking.power/
- Mobile Sensing Group - http://sensorlab.cs.dartmouth.edu/

Questions?
Discussion

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