Have We Achieved the Ultimate Wearable Computer?

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Wearable Computer Laboratory

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Overview of Wearable Computer Lab

International Collaborators

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• Prof. Ramesh Resker – MIT Media Lab
• Prof. Oliver Bimber – University of Linz
Wearable technology mainly concerns devices and apparel/textiles

- glasses,
- jewellery,
- headgear,
- belts,
- armwear,
- wristwear,
- legwear,
- footwear,
- skin patches,
- exoskeletons and e-textiles
- As the wearable electronics business powers from over $14 billion in 2014 to over $70 billion in 2024

Source: IDTechEx

Commercial view of the world

Source: IDTechEx
What makes a wearable computer?

• It is a computation device.
• Well, you wear it.
• You interact with it in a most hands free manner.
• While you are not using it, the wearable does not interfere with your activities.

• Mobile phone vs. a watch

I Am Going to Explore How Wearable Computer has Evolved
Important Research Issues for Wearable Computing Devices

- Wearable Computer Systems,
- Garment Integration,
- Displays,
- User Interaction,
- Applications,
- Augmented Reality,
- Networking, and
- Context Awareness.

Wearable Computer System Form Factors
Wearable Computer System Form Factors
Fibbit Force
Pebble Smartwatch

Exceeded Researchers Dreams
Garment Integration

UniSA E-Suit (2002)
We Are There for Researchers

Displays
HMD’s come of age

Wrist worn computers look the same today!

- WWPC ("wrist-worn PC") concept by EuroTech
Well below

User Interaction
More

UniSA Gloves
On track

• But where are we going?
• How do people want to interact with a wearable computing device?
• How do you support “hands free”? 

Augmented Reality

• All backpack systems
My personal hell

ARQuake 2002
On track

• Holds much promise

Networking
Theoretical Network Transfer Rates

Exceeded
In 2012

• I believed we were there
In 2014

• I am not sure
How are people going to use these devices?

- Medical
- Entertainment
- Personal Information Portals
  - People are not wearing HMD’s in public
  - Why not?
- Smart watches are being sold
  - How do the help?

I am forever hopeful
Questions

Interesting times

• Many companies interested
  – Intel
  – Microsoft
  – Value
  – Google
  – Samsung
  – Nokia
  – Apple
• “A knife fight in a phone booth.”
Case Studies and Applications

On track
Context Awareness

Commercial ones