



# Context sensitive wearable systems

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ubiquitous, ad hoc system integrated in the users outfit

- ,invisible‘, intelligent, always active, personal assistant

A perfect example of a wearable device

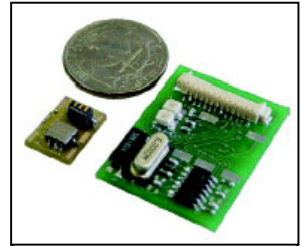


- permanently useful
- augments user's perception
- context sensitive
  - adjusts amplification to the situation
- virtually unnoticeable

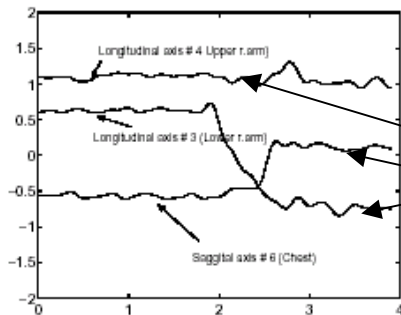
# Four Layers of Wearable Devices



## 1. permanently embedded micro sensors and transponders for artifact/location specific context



- **autonomous, miniaturized sensor unit design**
  - ultra low power features extraction implementation
  - energy scavenging as power source
  - ultra wide band communication interface
- **recognition experiments with a system prototype**

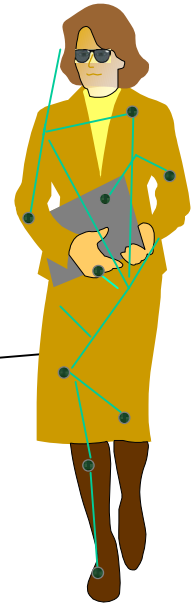
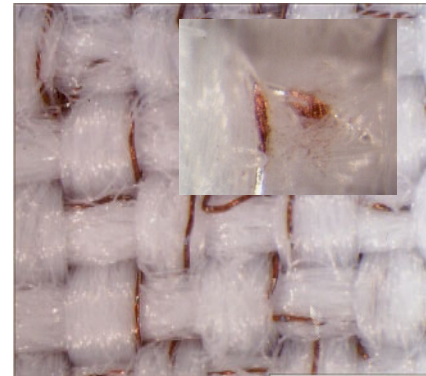
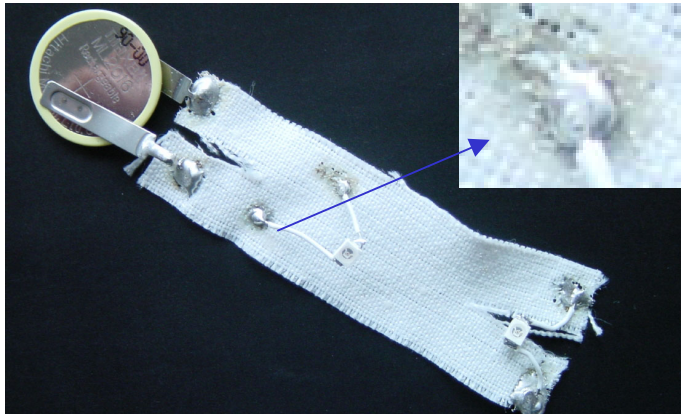


# Four Layers of Wearable Devices



## 2. embedded communication and power generation

- electronics on textiles (Dr. Tünde Kirstein)

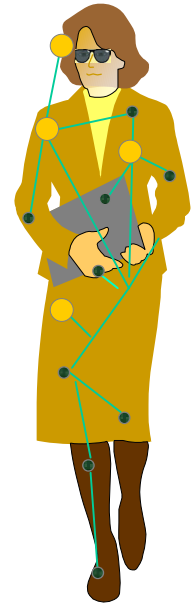
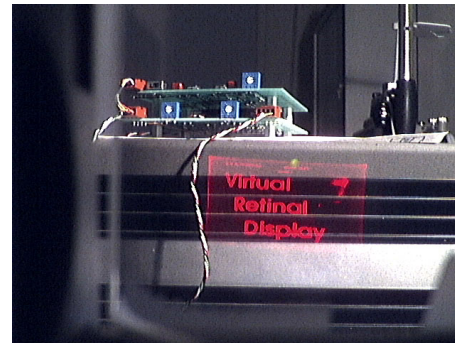
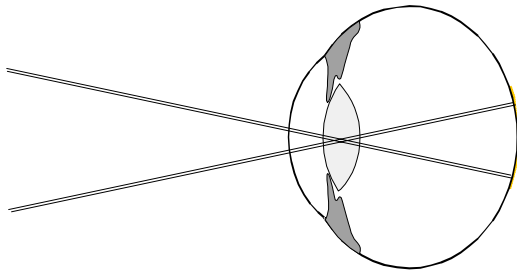


# Four Layers of Wearable Devices



## 3. consumer appliances and IO devices as accessories

- IO, communication and power infrastructure shared
- intelligent display driver and frame buffer with wireless interface
  - modeling of computation communication tradeoffs
  - design and implementation of ultra low power system
- focus free virtual retinal display

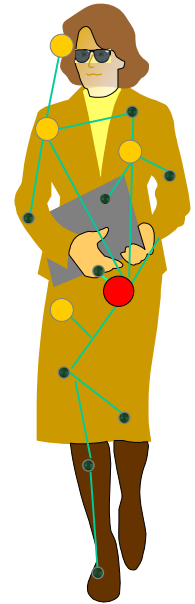
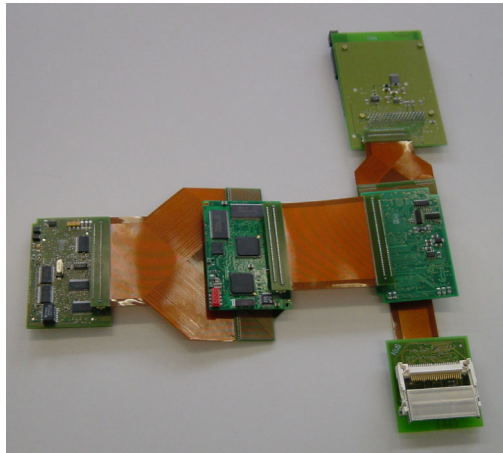


# Four Layers of Wearable Devices

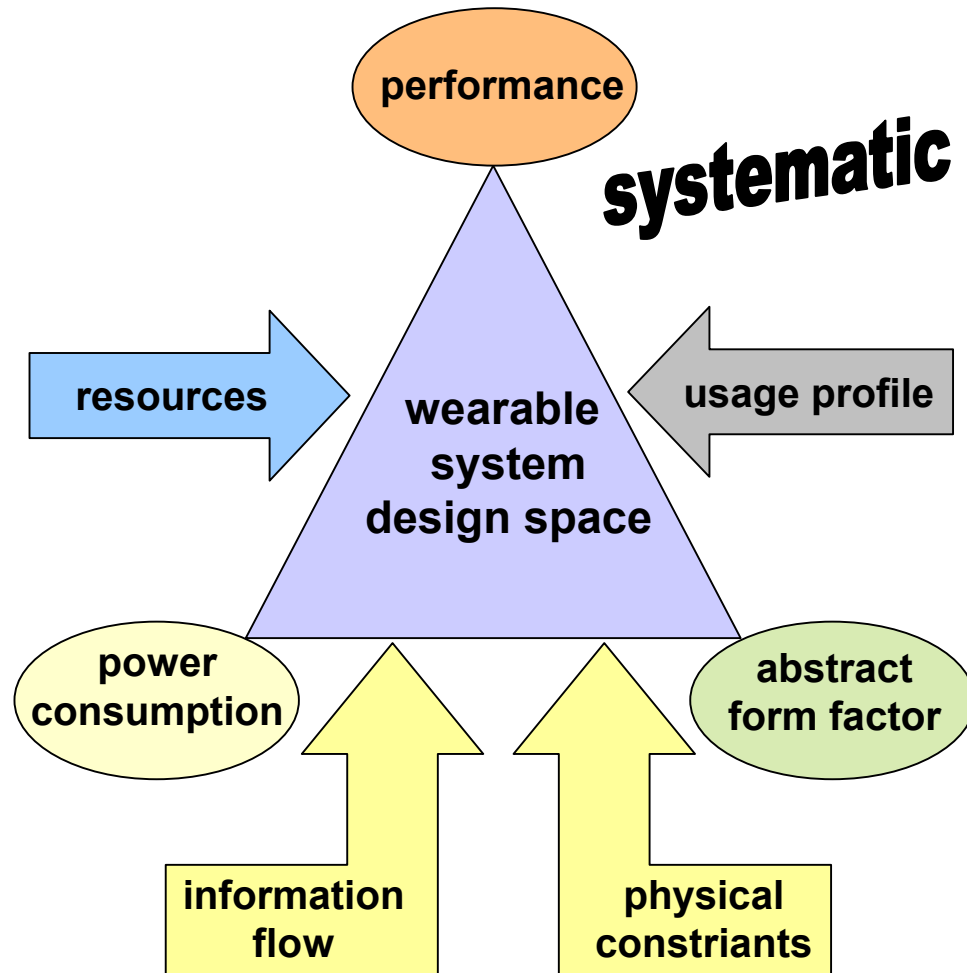


## 4. central ,computer like‘ module as accessory

- **WearARM prototype**
  - advanced power management
  - body shape driven system partitioning and packaging
  - study of applications



# Wearable Design Space



**systematic exploration !**