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# Smart Clothing Research at Tampere University of Technology

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# Outline

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- ❑ Smart Clothing
- ❑ Design Challenges
- ❑ Technologies Enabling Smart Clothing project (TESC)
- ❑ Summary



# Smart Clothing

- ❑ Based on ordinary clothing
- ❑ Includes intelligent structures
  - Electrical components
  - Non-electrical components
  - Intelligent textile materials
- ❑ Functions of clothing
  - Cover & protect
  - Communication medium
- ❑ The goal of smart clothing is to
  - Improve the functionality of ordinary clothing
  - Augment clothing's own functions
- ❑ Applications
  - Safety & entertainment





# Design Challenges

## ❑ Consumers want

- Invisible & cheap products
- Necessary/useful products
- Usable and nice to wear products

## ❑ Interdisciplinary

- Clothing design : appearance, functionality
- Electrical & software design
- Usability testing
- Industrial design
- and many more areas



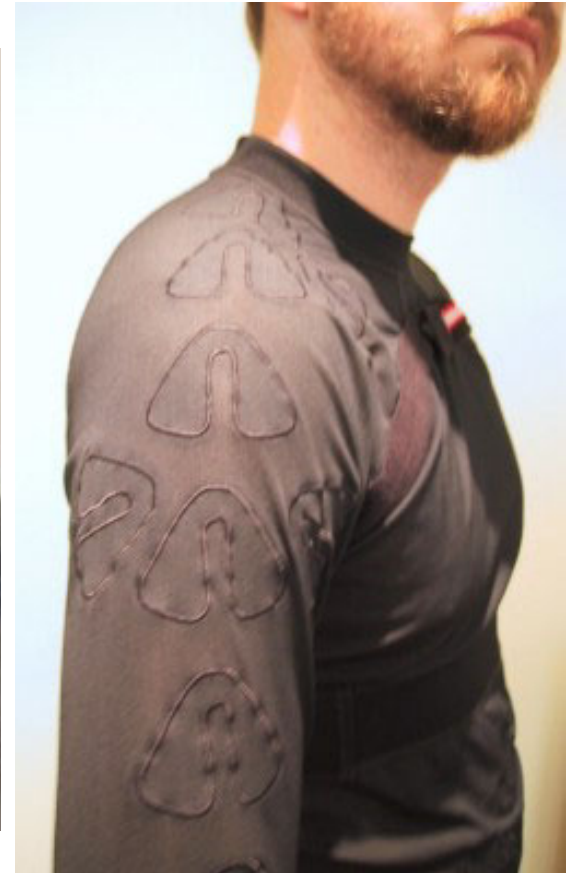
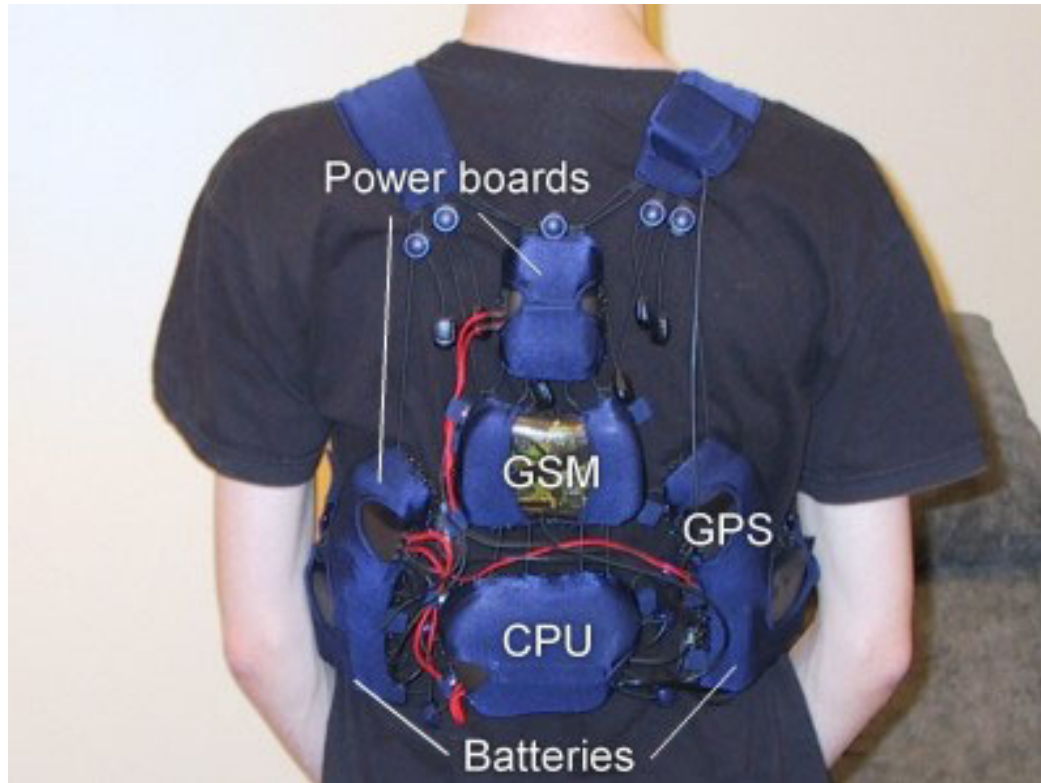


# Design Challenges (cont.)





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# Design Challenges (cont.)

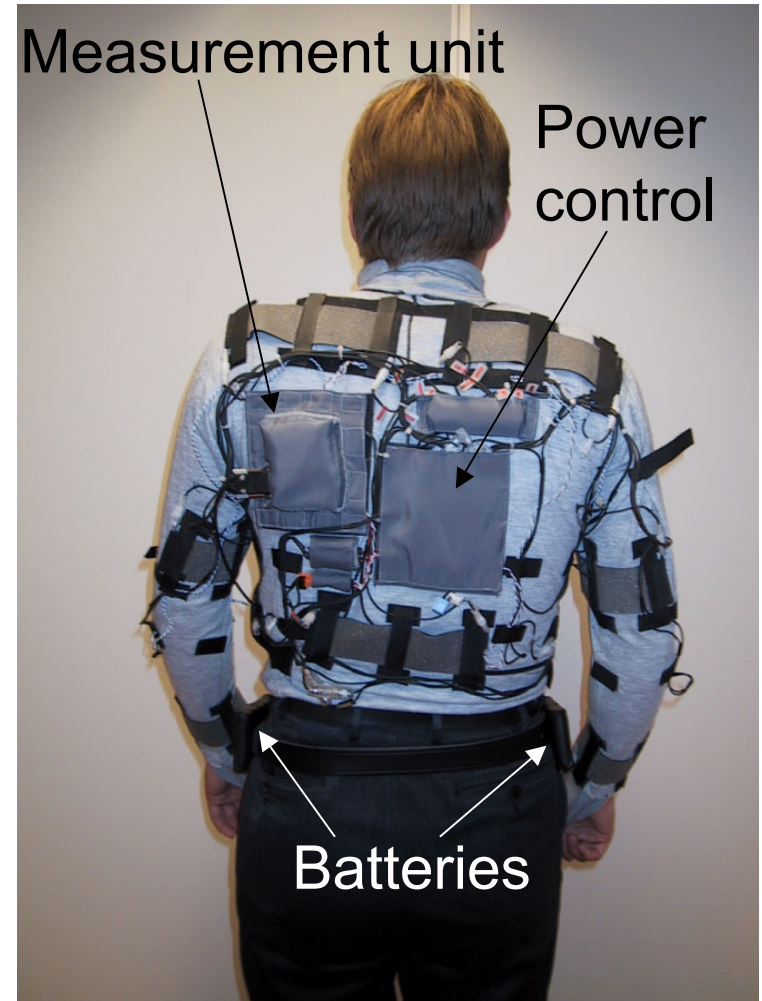
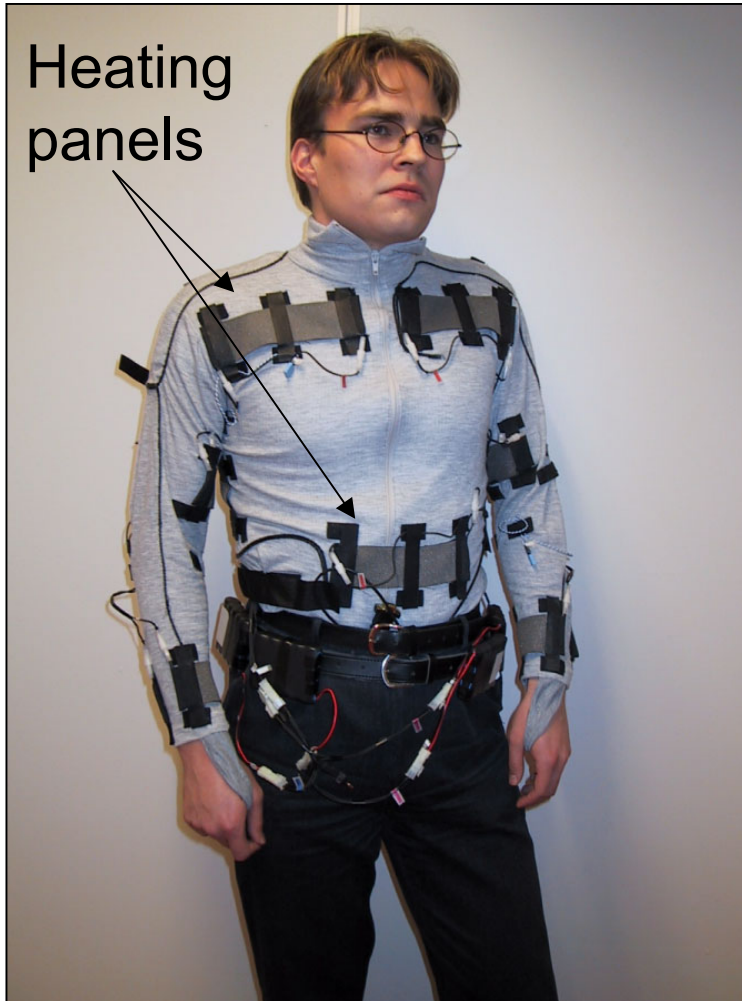
- ☐ User Interfaces
  - Mobile user
  - Environment
  - Cables
- ☐ Communication
  - Cables
  - Connectors
- ☐ Power input battery technology
  - Every module needs power
  - Batteries are heavy
- ☐ Physical structure
  - Miniaturisation
  - Clothing like properties







# TESC







# TESC (cont.)





# TESC (cont.)

- ❑ Communication technology
- ❑ Physical structure (connection methods)
- ❑ Physiological measurements





# Summary

- ❑ Interdisciplinary design process
  - Co-operation is important

