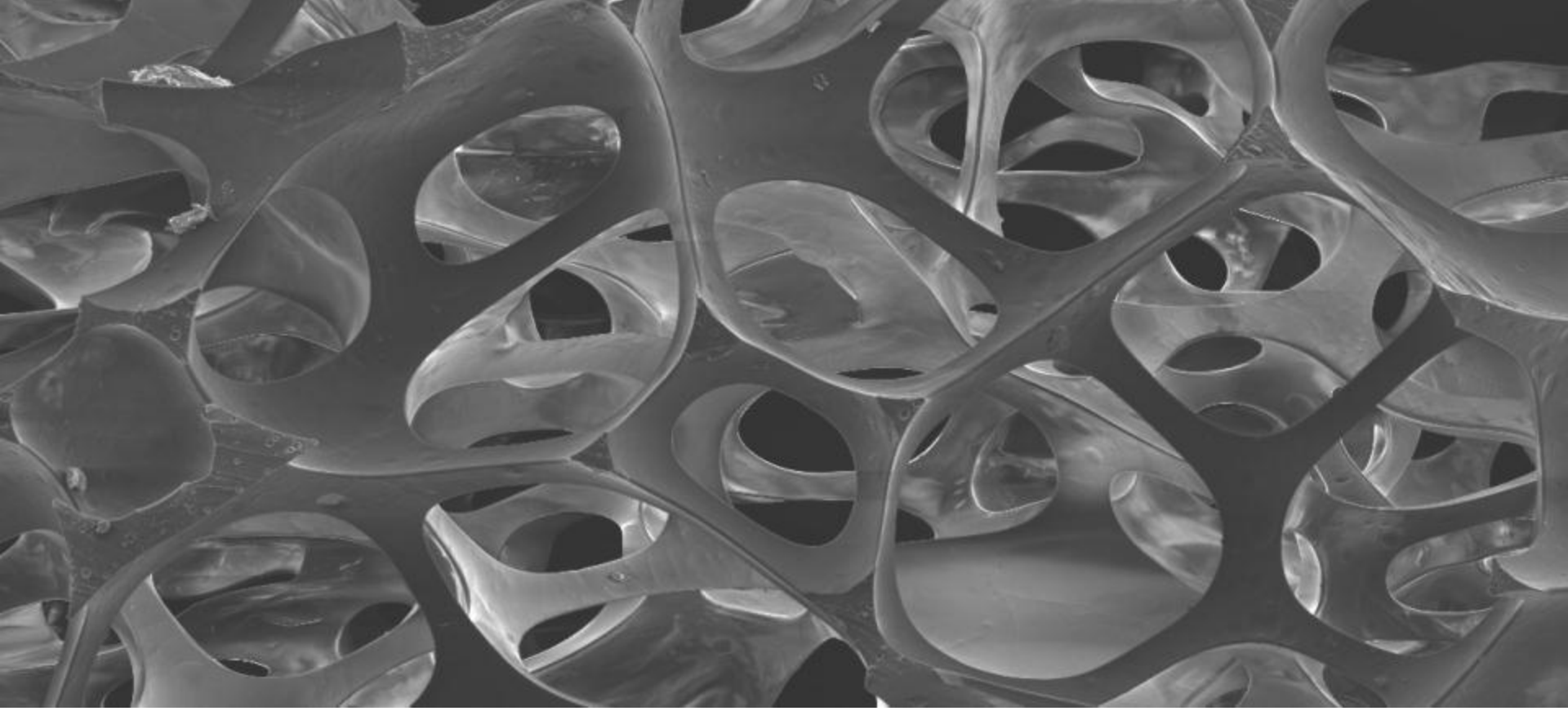


Smart textiles
A new tool for healthcare

Mark Croes

Mobile Health Congress – 30/11/2016

Centexbel

Technical and Scientific Textile Centre

independent and objective advice, research and testing

the expertise of 150 highly educated collaborators

transsectorial and international networking

focus on sustainable development

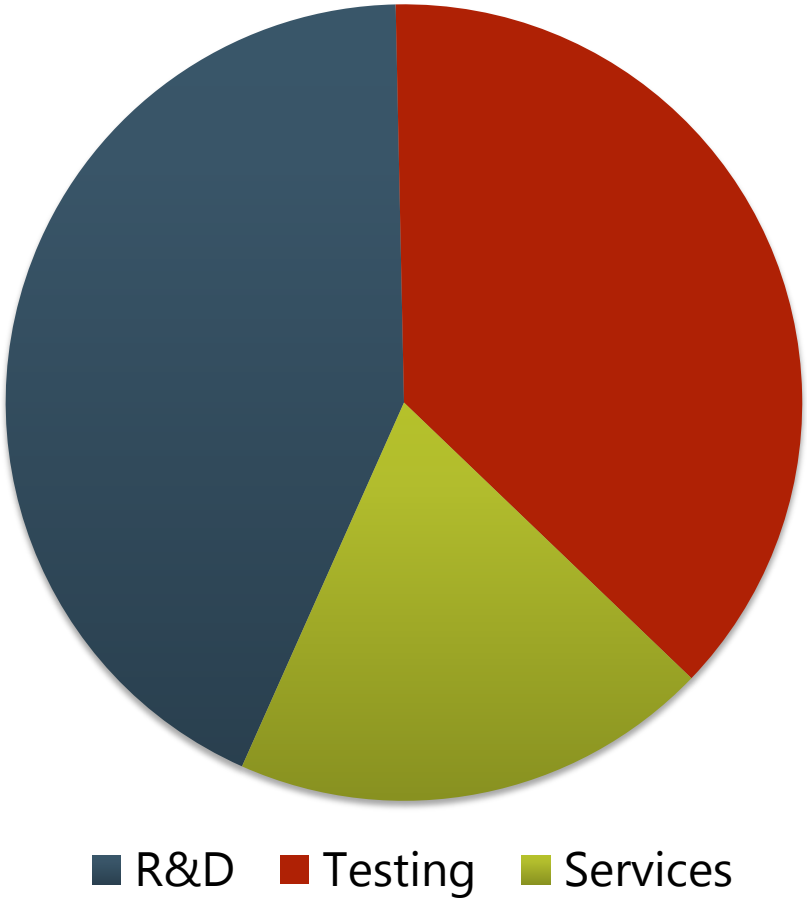
practice-oriented support

partnership

an open approach

Istanbul

Products & Activities

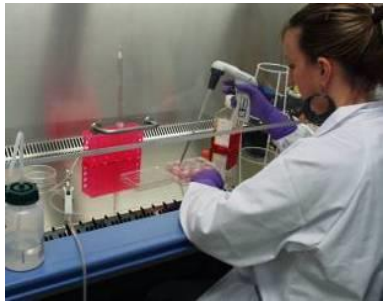


Centexbel - testing

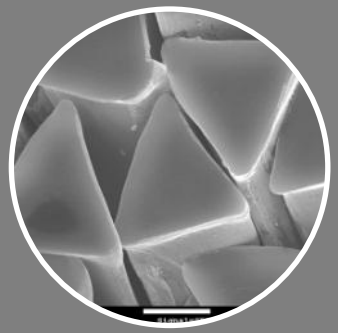
056-TEST
056-PROD

Accredited Laboratories

fire	physical	chemical	microbiological
FR - properties	abrasion	permeation	barrier properties
flame propagation	color fastness	heavy metals	cleanroom
fumes	anti-static	emission	anti-microbial
smoke density …	Waterproof …	fibre identification …	cytotoxicity …

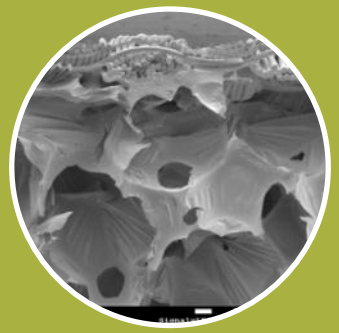


Research - Technology Fields



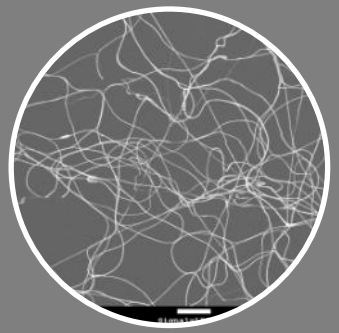
Functional thermoplastic textiles

- Meltprocessing of polymers in textiles and composites



Textile functionalisation and surface modification

- Coating, finishing and surface modification for new and superior functional performances



Health, safety and security

- Textile products for health, safety and security purposes

Centexbel – certification and services

certification

PPE

Toys

Carpet

Coaches

floor- and wall coverings

textiles and
harmful substances

sustainable production processes

recycling

services

consultancy

training

standardisation and legislation

patent support

publications – website –
brochures – social media - …

Smart Textiles – Care of tomorrow

- Diagnosis
- Revalidation
- Treatment
- Comfort
- Prevention

underarm
Press to Start
TEMP°TRAQ™

- Sleep quality
- Heart rate
- Breathing
- Snoring

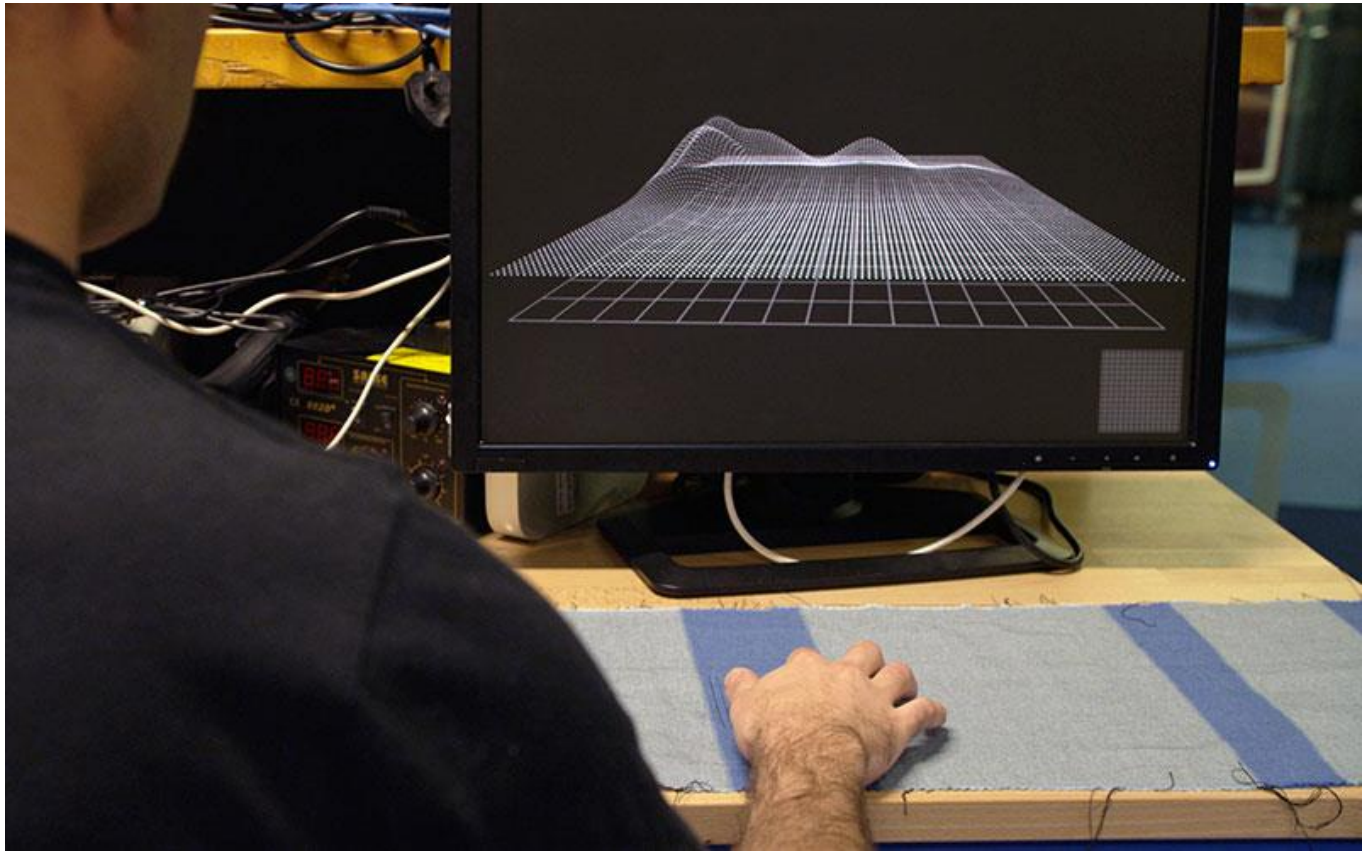
beddit

SENSOTISS®

- Occupation
- Fall risk

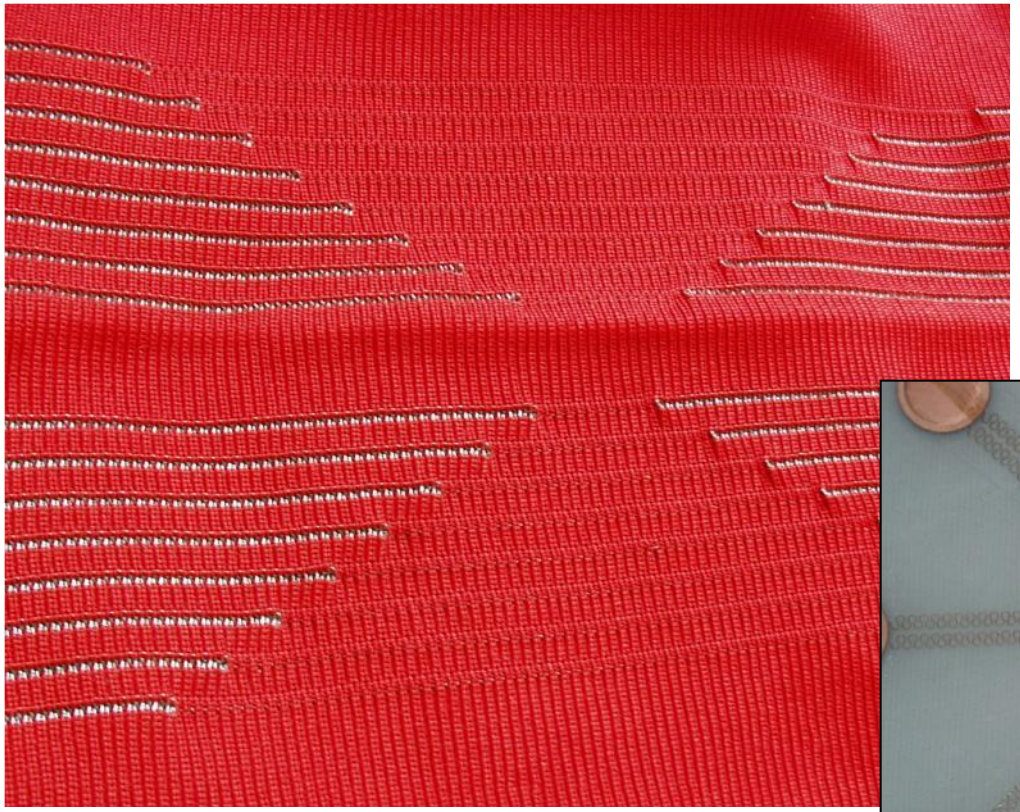
BlueTouch Pain Relief

Smart clothes can be more inconspicuous than watches and can record more data, and manufacturers do not have to convince people to wear clothes as they do watches -- they are already doing it.



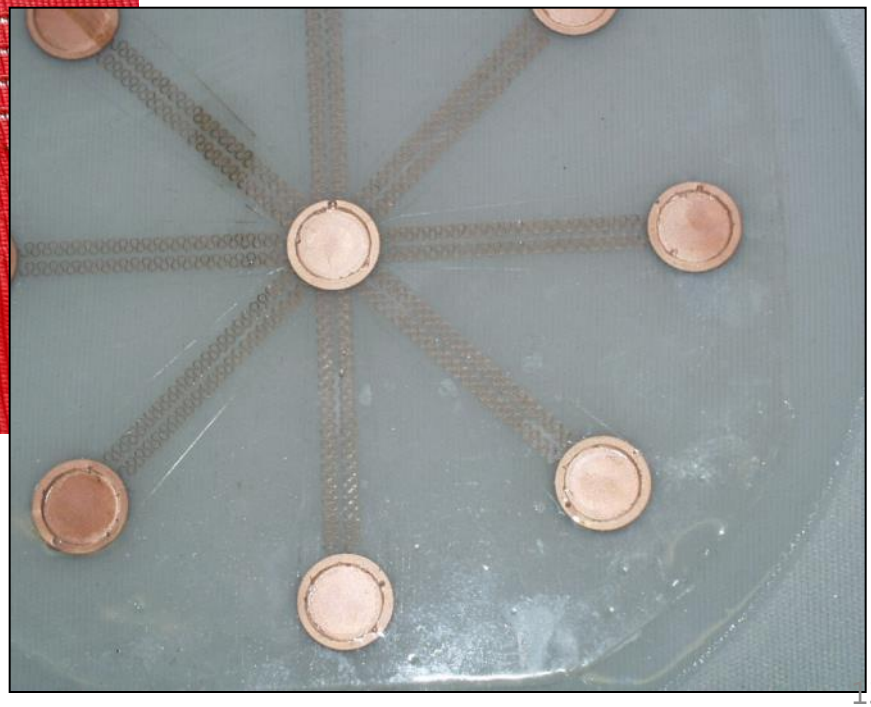
PROJECT JACQUARD Google

Embedding conductors



Conductive yarns

Stretchable patches



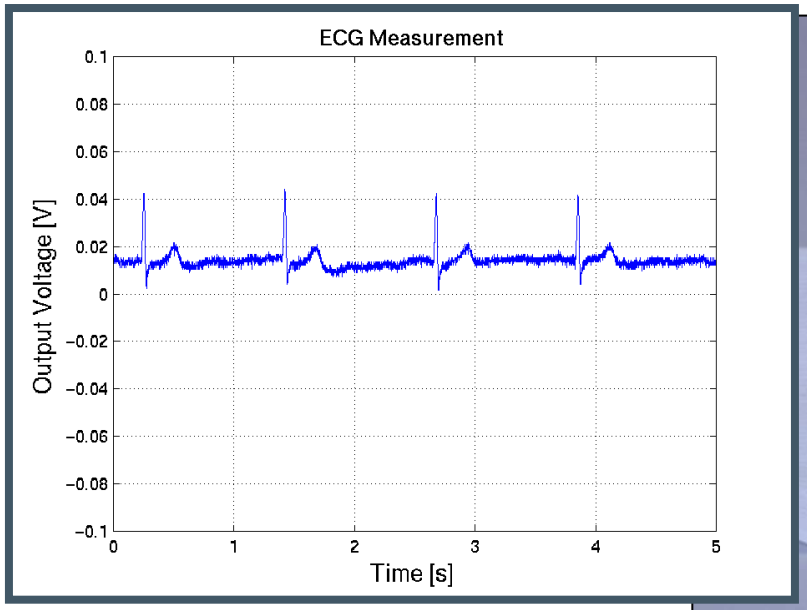
Textile embedded sensors

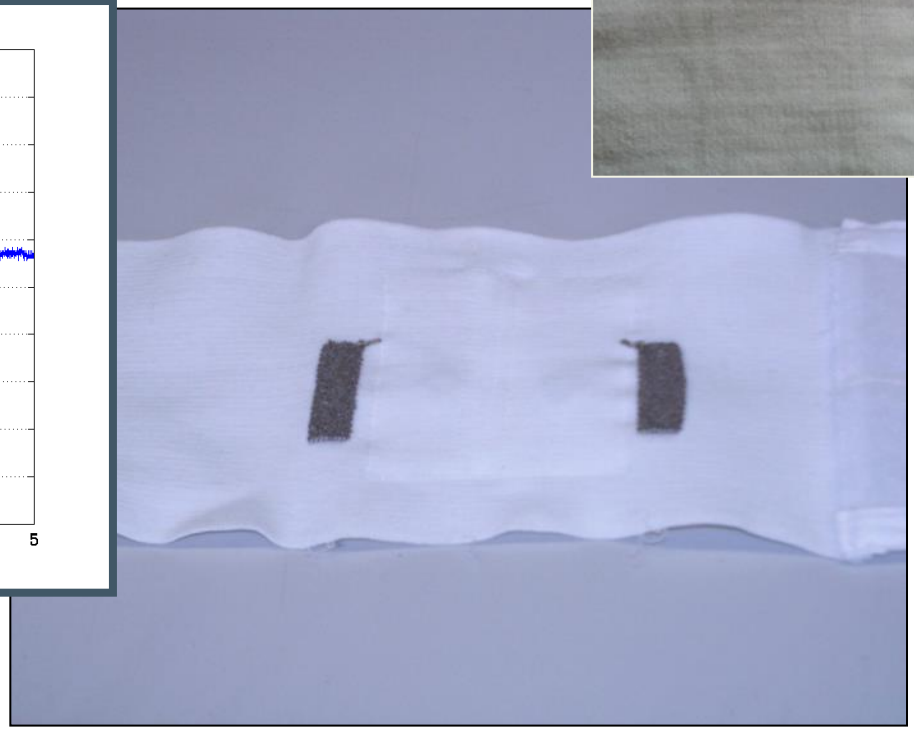
Realizing pressure sensors using textile process e.g.: Keyboard

Textile embedded sensors

- Detection of vital signs

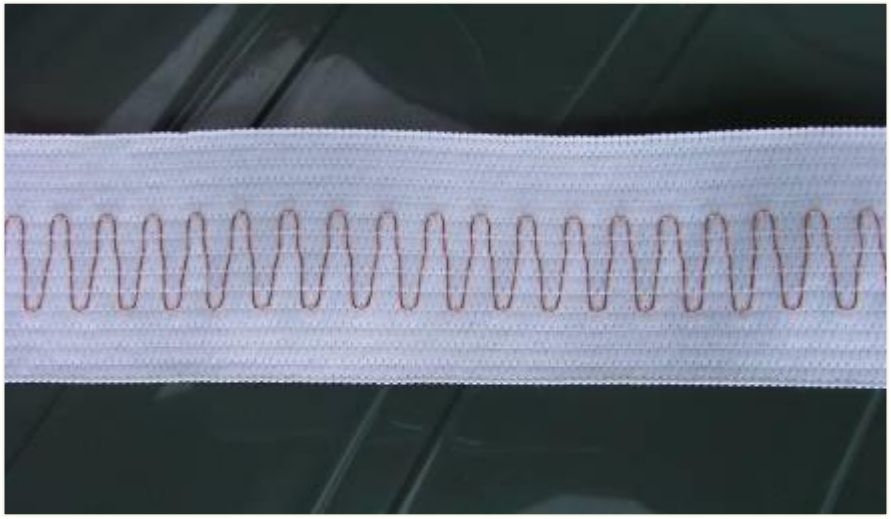
  e.g.:Heartbeat rate



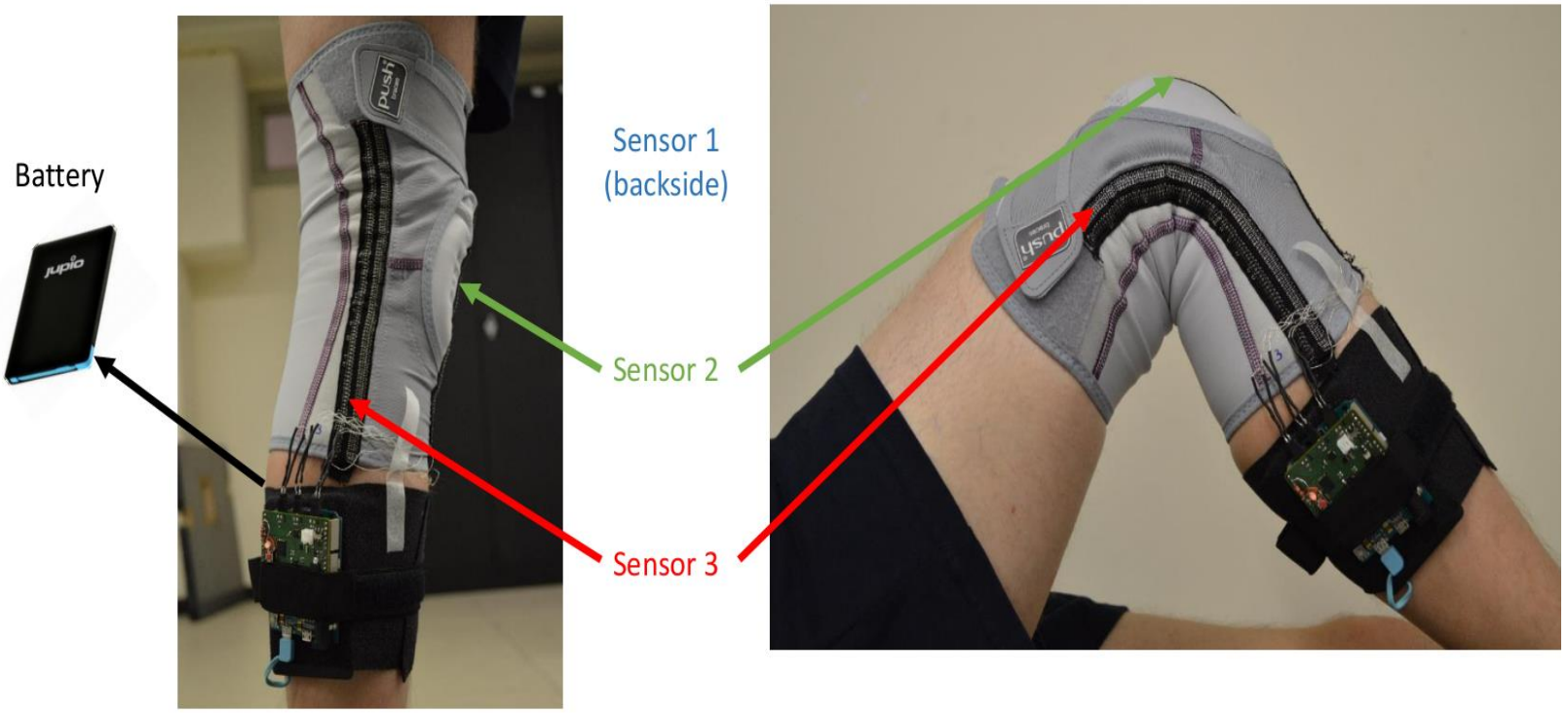


Textile embedded sensors

- Movement sensors
  - e.g.: respiration detector

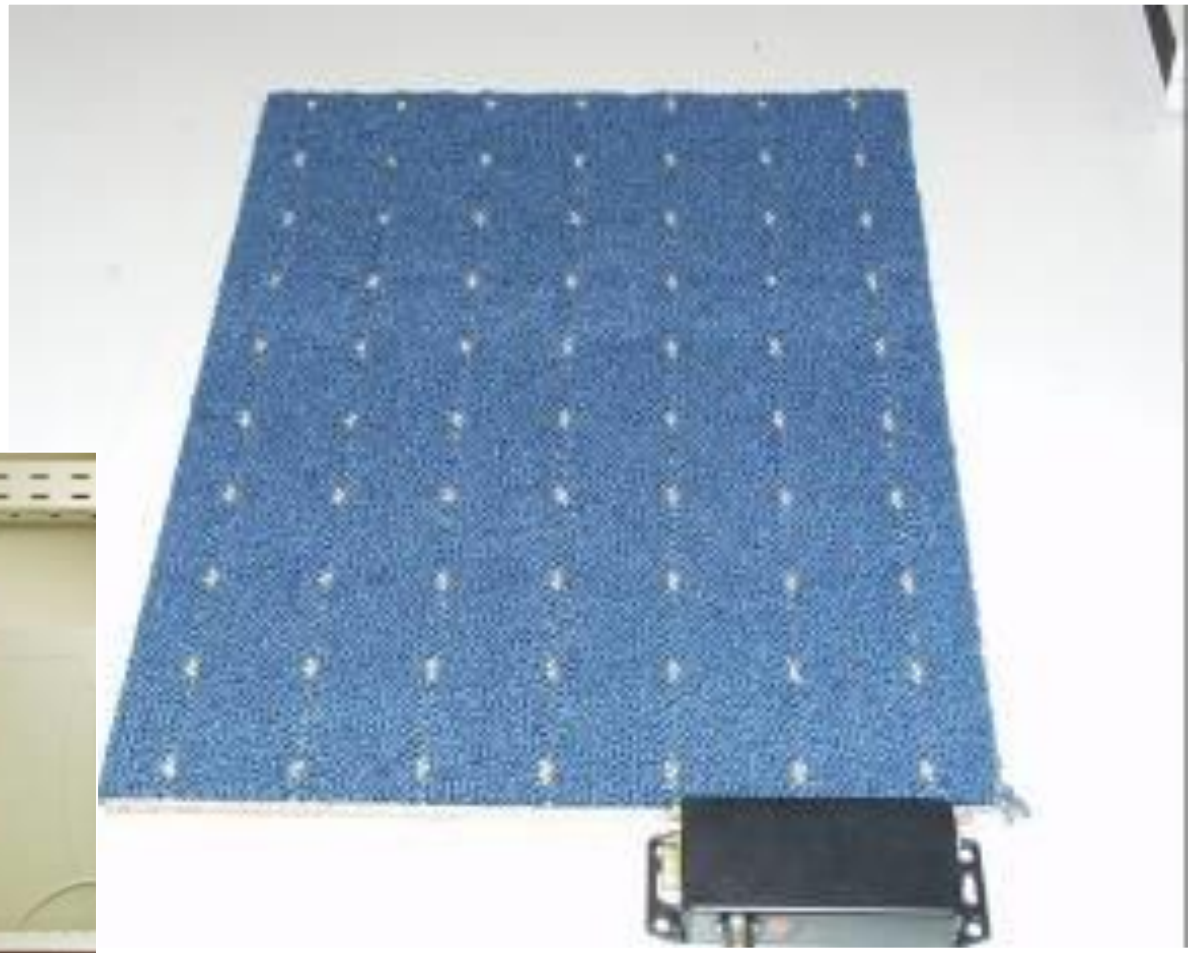


Smart brace

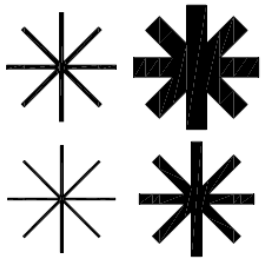


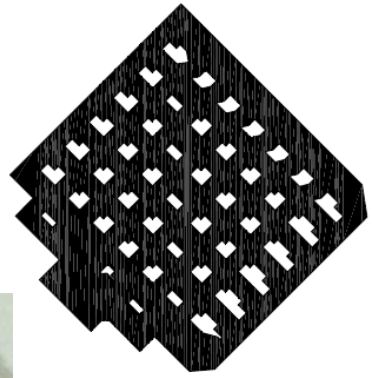
Monitoring harness with embedded optical sensors

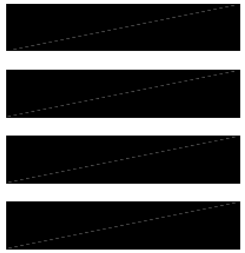
Carpet with embedded sensors

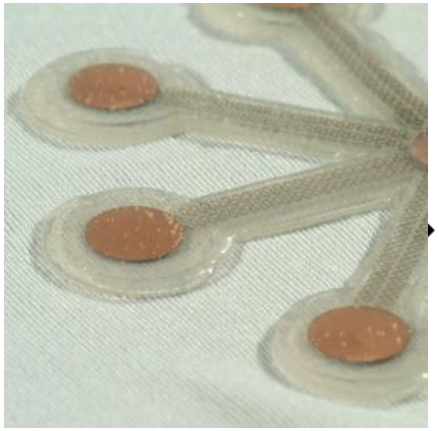


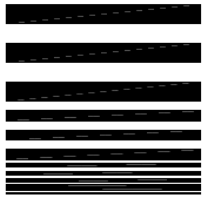
Encapsulation by screenprinting

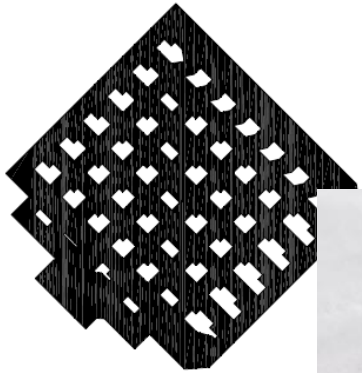


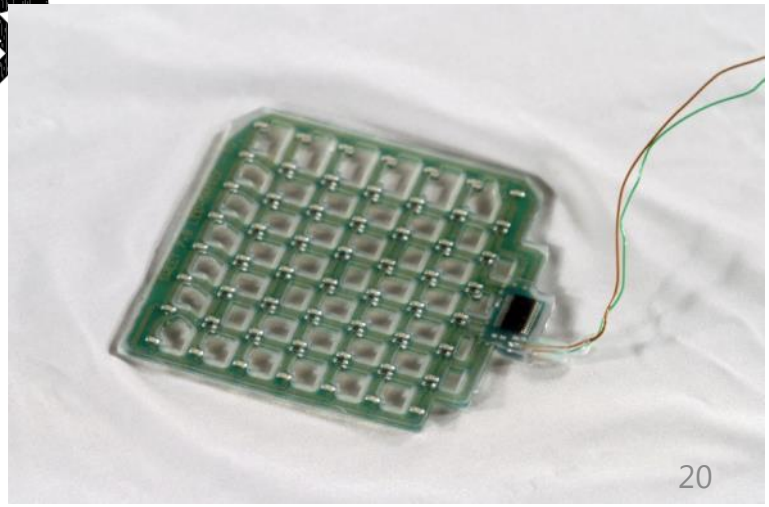




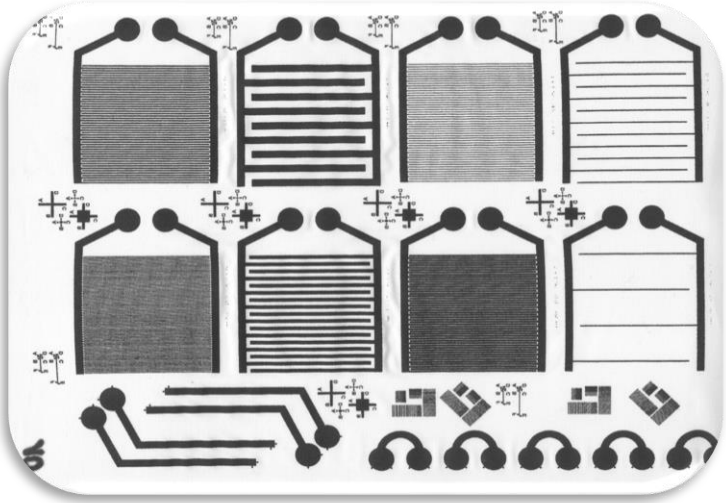


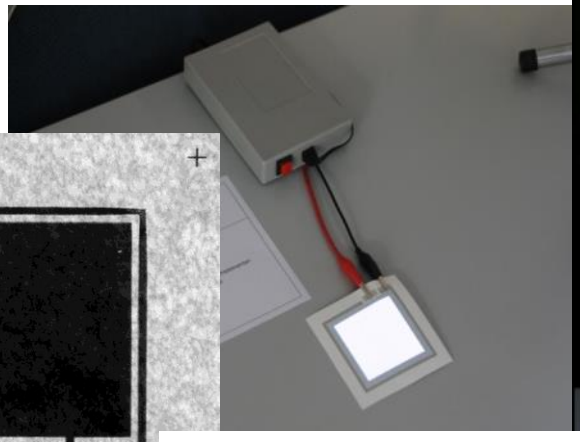


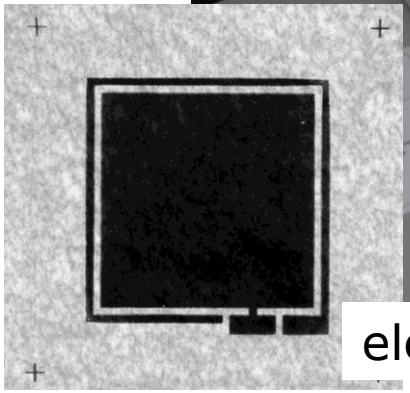


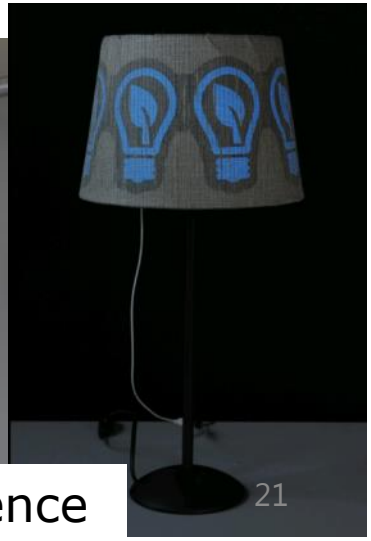


Conductive tracks by screenprinting









electroluminiscence

Embedded lighting elements

- Fiber optics
- Led's

Smart textiles: towards full integration

Preserving textile characteristics

Ensure maximal comfort

Requirements for electronic components and circuits

- **Thickness**
- **Light weight**
- **flexibility**

Additional properties

- **Drape**
- **Elasticity**
- **Breathability**
- **Washability**

SMARTpro: from lab-demo to industrial manufacturing

Through cross-sectoral cooperation

textiles

electronics

ICT

for several application areas

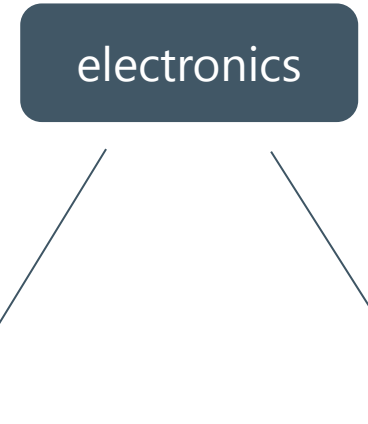
- intervention
- sport and leisure
- technical
- (home) care

By the industry

ABS Laundry Business Solutions
Balta Industries
BekaertDeslee
Helioscreen
Niko Projects
Sioen Apparel
Yazzoom
2enjoy
Aerosleep
Bekaert-Bekintex
Elasta
Gociety
Henkel Electronic Materials
Page Electronica
Televic Group
Wollux
ActWithCare
Connect Group
Esri
Gysemans Clothing Group
Quad Industries
TIO3 – TIC
ALLTHINGSTALK
Custom8
Europlasma
Haelvoet
Maastricht Instruments
Sioen Industries
VTEC
NRB

Supported by AGENTSCHAP INNOVEREN & ONDERNEMEN

SMARTpro: challenges, options, possibilities



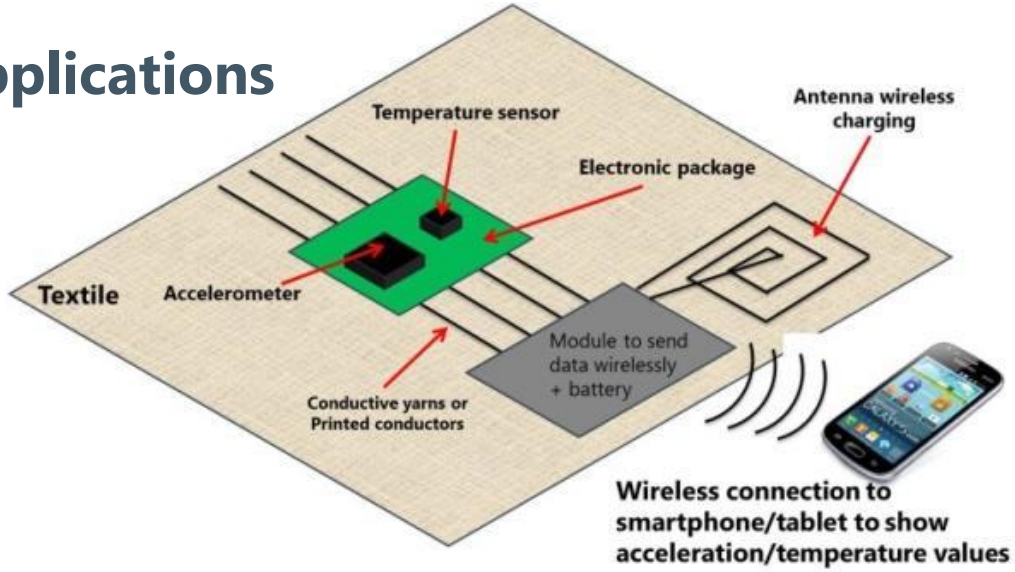
Dataprocessing
- Collecting, modelling and processing of sensor data
- Knowledge from data
- User friendly consultation

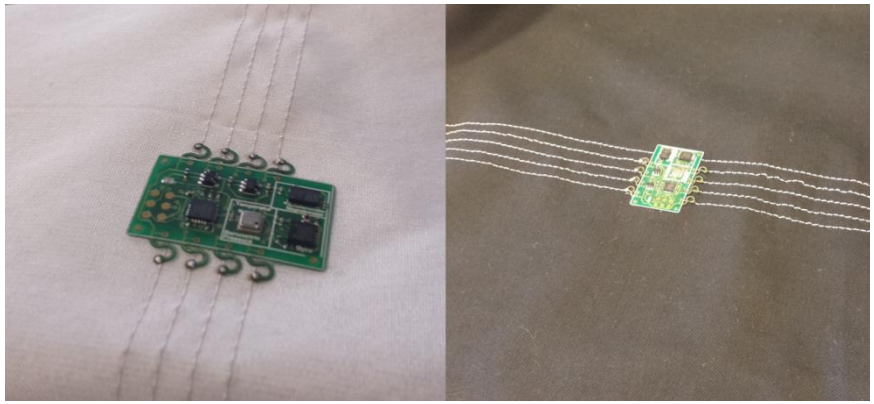
Electronics design and integration in textile
- Available electronic components
- Industrial production processes
- Reliability: electronic, mechanical, ...
- Comfort: elasticity, flexibility
- User friendly

Objectives end users
- **Sport, care, intervention**: localisation, physiological parameters, temperature, activity monitoring
- **Technical:** pressure, temperatur, mechanical parameters
- Meet specifications
- Certification

SMART-pro: global approach for individual users

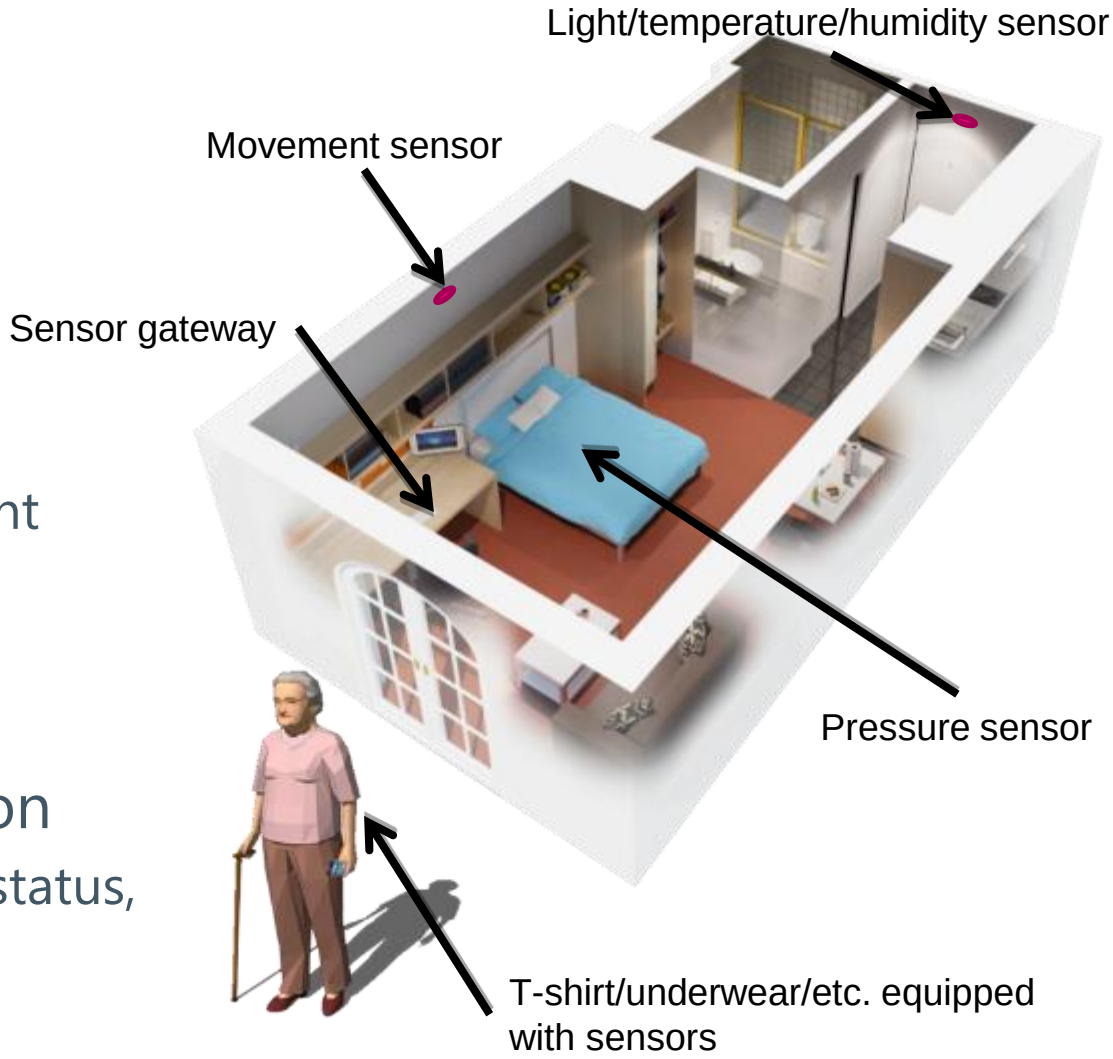
- **One design – multiple applications**
- **Combine companies and competences**
  - End-users
  - Textile manufacturers
  - Assembly
  - Material suppliers
- **Integration**
  - Conductive yarns or printing inks
  - Circuits and connectors
  - Encapsulation



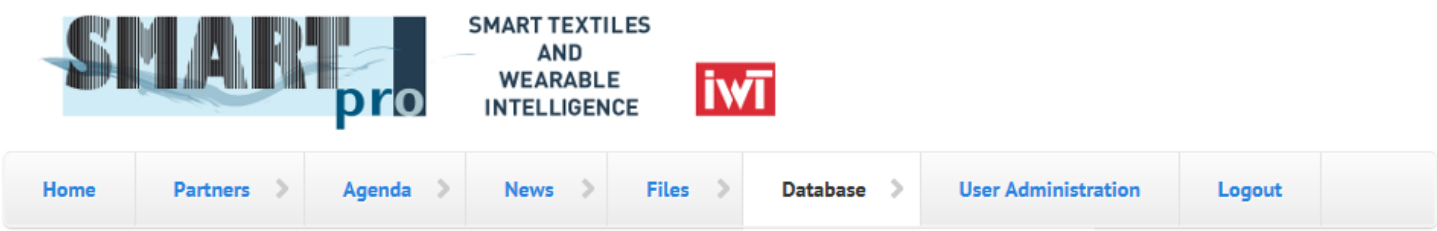


SMARTpro case - continuous and unobtrusive monitoring of elderly

- Wandering
  - recognise where the patient is located and whether he or she is supposed to be there
- Fall detection
  - recognise a fall incident
- Activity monitoring
  - recognizing normal movement patterns
- Physiological condition
  - Monitoring of health status, trends and evolution

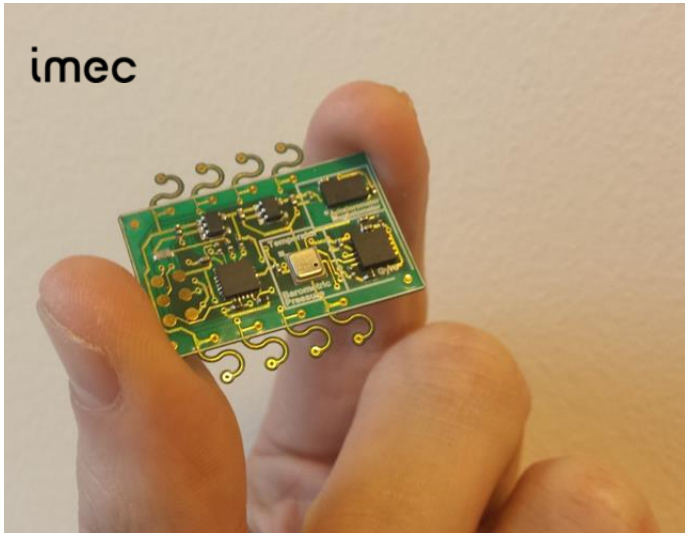


SMARTpro Database



What can you do?

- Miniaturised/wearable smart circuits
- Smart power supply
- Data collection and storage
- Security and communication
- Data analysis
- Customer interface
- After sales service
- …



Thank you for your attention

www.centexbel.be

www.smart-pro.eu

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