



1st Concertation meeting on smart fabrics & wearable flexible systems & applications

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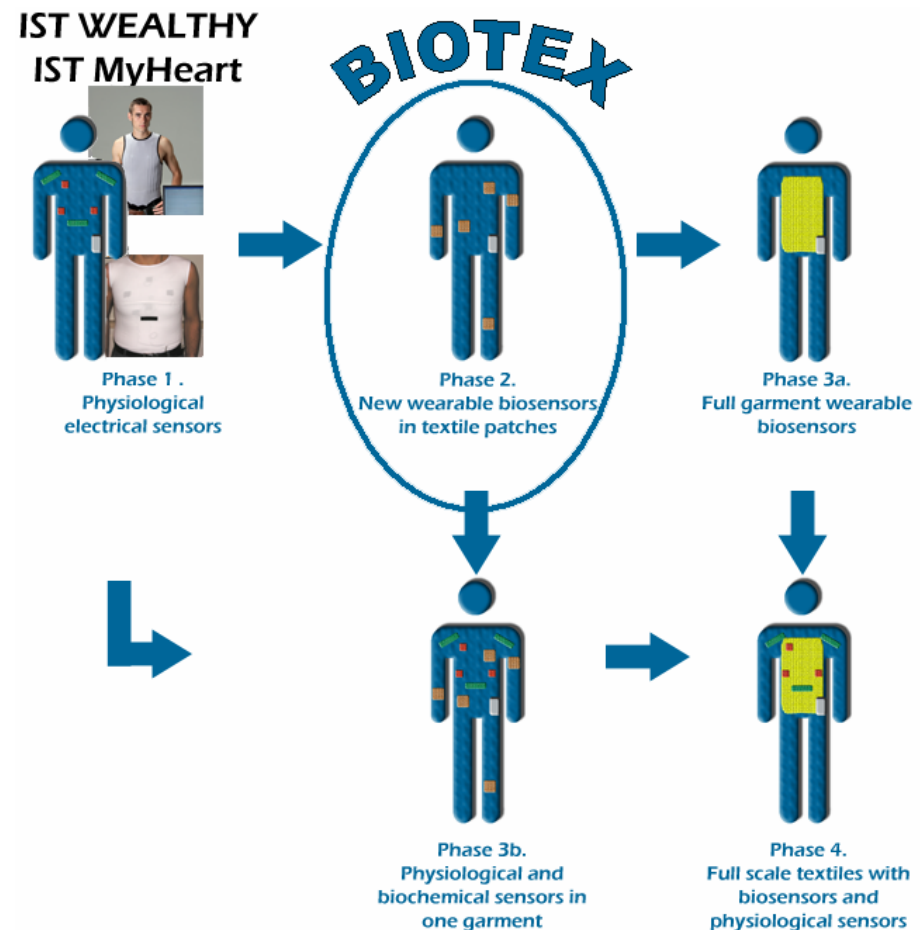
Feb 1, 2006

Key figures and consortium

- STREP, joint call IST-NMP
- Duration: 30 months
- Starting date: Sept. 2005
- Budget: 3.1 M€ (1.9 M€ financed by EC)
- Consortium:
 - 8 partners from 4 countries
 - 2 research institutes in the field of micro and nanotechnology: CSEM and CEA-LETI
 - 2 SME active in clothing R&D and production: Smartex and Sofileta
 - 2 universities leader in wearable bioengineering: Università di Pisa and Dublin City University
 - 2 companies expert in engineering and manufacturing of textiles for demanding markets: Penelope and Thuasne

BIOTEX as part of a instrumented textile roadmap

- Current developments are mainly focused on physiological measurements with first applications targeting sport monitoring and prevention of cardiovascular risk
- Biochemical measurements of on-body fluids are needed to tackle very important health and safety issues



General objectives of BIOTEX project

- Development of **biochemical-sensing techniques** for health monitoring, **compatible with integration into textile**
- **Monitoring of body fluids via sensors distributed on a textile substrate** and performing biochemical measurements
- Development of **sweat collection and handling**
- Development of **sensing patches**, adapted to **sweat** and **blood**, where the textile itself is the sensor
- Realization **a multiple sensor**
- **Electrical and optical connection** to a signal processor
- **Test on people**

Selected applications

- Metabolic disorders in diabetes
 - Clinical application specialist in Pisa
- Obese children/sportsmen
 - Clinical application specialist in Dublin
- Sore monitoring
 - Clinical application specialists in Montpellier and Lyon
- Backup: Transplant rejection
 - Clinical application specialist in Pisa

Key sensing technologies and systems

- **Optical** monitoring methods
 - Embedded Plastic Optical Fiber (POF)
 - Optoelectronics for pH measurement in sweat
 - Optical immunosensor
 - pH electrical sensor
- **Electrical** monitoring methods
 - Sweat rate by impedance
 - Sweat conductivity by conductivity
- **Electrochemical** monitoring methods
 - Specific ion monitoring in sweat

Key sensing technologies and systems

- Sweat **collection** for textile patch implementation
- **Multi-sensor** integration
- **Wearable electronics** interfacing optical, electrochemical and electrical sensors

Challenges

- Sensing of ultra-low concentrations with a wearable system
- Collecting sweat
- Calibration of the sensors
- Sensor applicability for the selected applications