

## WGI SMART TEXTILES FOR HEALTHCARE AND MEDICINE

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### 1. OBJECTIVES OF THE MEETING

Aims of the working session:

- Knowing the participants and their competences better for further project ideas and collaboration opportunities.
- Brainstorming to identify new project ideas.
- Establishing a roadmap for longterm actions of the Working Group.

### 2. PROJECT IDEAS

#### Monitoring and sensing

- Textile electrodes “textrodes”
- Sensor textile
- Smart textiles for sleep apnea
- VOC sensing in breath (optical)
- Sensors for detection of body parameters in body fluids (like sweat)
- Chemo sensors or thermosensors in textiles (thermoregulation)
- Antimicrobial fibers with integrated indicator to proof antimicrobial activity efficiency
- Exploring multifunctional smart textiles that can be adjusted according to individual needs
- Thermochromic/ piezo chromic textile for detecting high temperature or falling of baby
- Textile for (bio) analytical chemistry

#### Treatment

- Fibers with sensing and drug releasing properties
- Self powering smart textile
- Intelligent drug delivery
- Transdermal therapy and drug delivery
- Smart coating with stimuli responsive hydrogels for controlled release of drug
- Textile coated for essential oils or vicks vapo for flue
- Textile with sensor for allergies
- Travelling cloth (temperature adapt)
- Photodynamic therapy
- Textile as carrier for immobilization

- Incorporation of stimuli responsive hydrogels in electrospinning to control release of essential oils
- Textile headcover for anti-pellicular or antifalling hair
- Electrospun scaffolds for soft tissue engineering
- Scaffolds with imposed angiogenesis
- Light responsive treatment delivery for nanofiber meshes

### **Monitoring and sensing & Treatment**

- Energy harvesting
- Smart wound dressing
- Stimuli responsive textiles
- Functionalized polymeric composite nanofibers
- Conductive polymer nanofibers

### **Wellbeing & protection**

- Importing properties to textiles
- Special textiles for keep elderly people warm, with less energy
- Antimicrobial masks
- Antimicrobial textiles

**Platform for connecting designers, artists & students to smart textiles & manufacturers**

## 3. ROADMAP

- **Long term roadmap: 3 project ideas decided by WGI participants**
  - **WGI - IDEA N°1 - Smart textiles for monitoring and sensing**
  - **WGI - IDEA N°2 - Smart textiles for disease treatment**
  - **WGI - IDEA N°3 - Well-being (no need for medical authorizations)**
- **Short term roadmap**

### WGI - IDEA N°1

#### WHY?

- TEXTILES for monitoring & sensing
  - There are 2 challenges for the future of S.T. in this field
    - Decreasing the hospitalization time
    - Increase the possibility of growing old at home
  - The monitoring & sensing applications may help us to realize these challenges.
  - Also, in this working group we have different competences to work on textile sensors & data treatment
  - A project for this application may reply a real need but also valorize the existing competences in this network

#### WHAT? Description of the action(s)

- Identify the competences and the use areas
- Experimenting with various sensor outside medical context (doe to regulation)
- Identify the needs and the end products
- Which textile sensors, which diseases
- Identifying the medical authorizations, clinical trials, certification
- Proposal writing and raising funds
- Looking for funders

#### WITH? Partners, equipment, fundings,...

- Prototyping & equipment- research laboratories & universities for textile processes and functionalities (nanotech, surface treatm etc.)
- Fundings - interested companies, EU,
- Partners - medical partners to define the need & electronic partners to complete the system

### WGI - IDEA N°2

#### WHY?

- Smart textiles for disease treatment

- A lot of the interested partner have experience in obtainment of textile-based drug delivery systems, observing the drug delivery,
- Networking with an expert to come ... innovative ideas for market
- Identifying application and targeting new areas

#### **WHAT? Description of the action(s)**

- Idealizing users or market needs
- Identifying processes materials etc
- Identifying technological advances related to finishing treatments
- Identifying the medical authorizations, clinical trials, certification
- Creating the platform grouping competences and expertise
- Proposal writing and raising funds
- Looking for funders

#### **WITH? Partners, equipment, fundings,...**

- International partners
- Research laboratories

### WGI - IDEA N°3

#### **WHY?**

- Smart textiles for **well-being & prevention**
- The st for wellbeing are easier to put in the market
- No need the authorizations of medical field
- A lot of the interested partner have experience in antibacterial coating and uv protection
- Identifying application and targeting new areas

#### **WHAT? Description of the action(s)**

- Idealizing users or market needs
- Identifying processes materials etc
- Identifying steps trough, the market
- Proposal writing and raising funds
- Looking for funders

#### **WITH? Partners, equipment, fundings,...**

- Interested companies
- Prototype and equipment from universities or research labs