

# SUMMARY

## **Wearable Textile System** Design layered intelligent materials



Developed by:



Co-funded by the  
Erasmus+ Programme  
of the European Union



## Introduction

**Smart textiles** are defined as textiles (in the shape of shirts, socks, shorts, belts, etc.) that can sense and react to environmental conditions or stimuli, from mechanical, thermal, magnetic, chemical, electrical, or other sources to provide functions such as health monitoring and activity tracking.

# Introduction

They are:

**Passive Smart textile** are materials to which a specific function is added by means of material, composition, construction, and/or finishing (e.g., by applying additives or coatings)

**Active smart textiles**, are those capable of sensing, reacting, and adapting to the environment or stimuli and integrate actuators and sensors

## AIM

The OER aims at clarifying and answering questions and *challenges posed by the use of smart textile in the field of wearable technologies.*

The OER aims at investigating the following questions:

- How can we design smart “wearable” textiles with no traditional materials but manufactured and shaped within a platform that embraces the electronics features?
- How can a designer shape smart textile into a clothing/wearable by considering both aesthetics and functionality?
- Do we need new approaches?



# Smart textiles: An overview



**Picture explanation:**  
smart textile to  
harvest energy

# Smart textiles: An overview



**Picture explanation:**  
piezo sensor to  
detect human  
parameters



# Fields of Application



**Picture explanation:**  
Sensorized glove developed by venere Ferraro at MIT.  
Sensorized products to learn how to ride.

## ACTIVITY

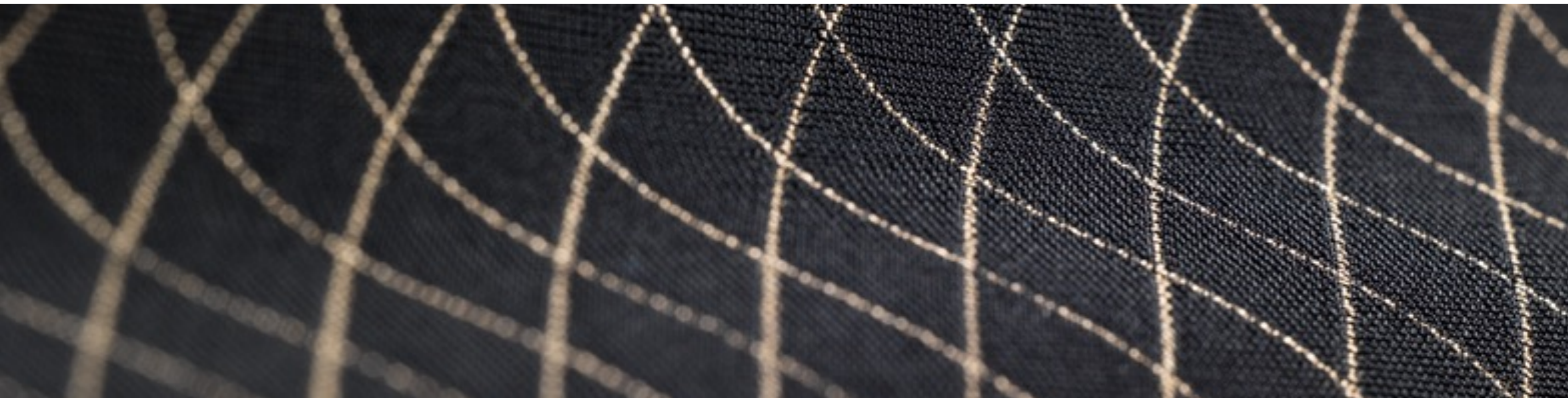
1. ***Make smart textile research:*** build a shared knowledge repository of existing smart textiles but also proof of concept to identify the most relevant features potentialities for your project.
  
2. ***Chose the what and the where:***
  - What: Prevention, Self-motivated, Keeping Fit for Autonomy, Keeping Fit for Thriving, Competition, Self-improvement, Social, Physical Progress
  - Where: Motorcycle, Cycling, Running, Hockey, Dancing, Skiing



## ACTIVITY

3. ***Set the counter brief.*** Example:  
Design a smart shirt device able to detect the heart rate and sensing the Co2 in the air. The system informs the user about the high heart rate using light; it lights up when there is pollution in the air.
  
4. ***Design around the body.*** Use the longer lines and Wearability parameters to design the item. The Institute for Complex Engineered Systems (ICES) developed a study about this topic, “Design for Wearability”, by outlining a design guideline for wearable products

*This was a summary of an open educational resource. Please visit <http://destexproject.eu/> to see the full amount of intellectual outputs of the project.*



**Disclaimer:**

The European Commission support for the production of this report does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

**Acknowledgement:**

DESTEX project (INDUSTRIAL AND CREATIVE DESIGN IN ADVANCED TEXTILE MANUFACTURING; project reference number 2019-1-SE01-KA203-060379) is co-funded by the Erasmus+ programme of the European Union.

