PASTA is a 4 years project, coordinated by imec, and will build on the results of the very successful STELLA project (FP6) and the extensive textile know-how in the consortium. Industrial as well as academic players will bring their expertise to the project.

The project started at the end of 2010 and the final outcome is expected in 2014.

PROJECT OBJECTIVES

The PASTA project will combine research on electronic packaging and interconnection technology with textile research to realize an innovative approach of smart textile. By introducing new concepts for electronic packaging and module interconnect, a seamless, more comfortable and more robust integration of electronics in textile will be possible. The main technological developments will concentrate on a new concept for bare die integration into a yarn (by means of micromachining), a new interconnect technology based on mechanical crimping, and the development of a stretchable interposer serving as a stress relief interface between the rigid component and the elastic fabric. The technologies will also be assessed in a functional evaluation and reliability testing program. The proposed solutions for integration of electronics in textile will cover a whole range of components, from ultra-small LEDs to complex multichip modules. Moreover, a system design task will tackle the power distribution and system partitioning aspects to provide a complete solution for integration of a distributed sensor/actuator system in fabric.
The following applications areas will be addressed by the project.

Two **home-textile safety** applications will be addressed. One will incorporate LEDs showing the "EXIT" way 24 hours a day, and a second that integrates a 24 hours lightened arrow that could transform into a "Wrong Way" sign in case of emergency to help the evacuation of buildings. Both will replace the state-of-the-art solutions by fully textile-based lighting solutions.

PASTA will also explore a **bed linen** application with incorporation of moisture sensors and others, a sensor grid to detect changes of the body position, and preventing bed sores through an alarm function. This in order to monitor humidity and signal excessive humidity due to bed-wetting. The focus is on easy and comfortable appearance and usage.

A **fabric** will be developed which allows **non-destructive in-situ monitoring of accumulated stress** in surfaces to predict the residual life-time and to indicate damage of industrial components. This demonstrator will have sensors integrated in the composite in order to inspect areas of high load. This will replace the state-of-the-art inspection systems where inspection is only possible by damaging the composite. Furthermore, these inspection systems are not precise and cost intensive.