Fashion Footwear production is currently mainly handcrafted. Some manufacturing processes (for footwear and its components) are assisted by specialized machinery (last manufacture, cementing, and cutting) and there exist highly automated lines in mass production of technical shoes (i.e. safety footwear). But most production is still handmade, being especially true in the case of high added value shoes production, where Europe maintains its leadership.

The introduction of intelligent robotics will contribute to overcome the complexity in the automation of the processes of this industry that accounts for some of the shortest production runs to be found (eight pairs of shoes is the average order size). The main difficulties to achieve this goal are:

- The high number of products ***variants.***
- ***Complex manufacturing*** process.
- ***Complex assembly*** process.
- ***Extensive*** *labour* demand on some processes.

To achieve this objective, a consortium composed by 4 **Industrial companies,** **4 Research centres** and 2 **Shoe manufacturers** will research and develop **:**

- New **manipulation strategies and devices for non-rigid parts** that allowed grasping, handling and packaging of shoes without damaging them.

- **Sensor based robot programming and controlling tools** that will exploit the information coming from CAD systems and all sensors available, in particular visual sensors as the base for visual servoing and force control for real time trajectory adjustment., making possible easy to program and flexible robotic applications.

- **Re-design of some shoe production processes** to allow robot assisted manufacturing and assembly, in particular roughing, gluing, milling, inking, polishing, last removal, visual inspection and packaging.

The consortium has identified **a set of operations** in the shoe manufacturing process as the more suitable for short-medium term robotics introduction. They will be packed into
three prototypes
that will be scheduled through the 30 months duration of the project in such a way that, from early phases, the Footwear Industry may get aware of the potential applications and benefits of robotics in their sector.

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