

# The Future of Footwear: From Mass Customization to Factory on Demand

## ABSTRACT

This presentation describes a project named “**From Mass Customization to Factory on Demand**”. It introduced a streamlined vision for the future of the footwear industry, based on an innovative approach to the industrial processes related to mass customization in the fashion & footwear industry, called “Virtual Retail” (*first introduced in 2014 by the Italian startup ELSE Corp, [www.else-corp.com/virtual-retail](http://www.else-corp.com/virtual-retail)*). By incorporating Virtual Retail into Industry 4.0, it seamlessly integrated industrial 3D CAD into the on-demand, hybrid production of mass customized footwear products, including those made-to-measure.

A pivotal case of open innovation, it was a joint project between the startup ELSE Corp; Atom Lab, a business unit of ATOM Group – Vigevano; and Shoemaster UK. A proof-of-concept integration project was realised and a live demo presented to qualified professionals at SIMAC Tanning Tech 2017, the leading international event for machinery and technologies for the footwear, leather goods and tanning industries. An overview is available here: <http://www.else-corp.com/simac-2017>

The nine-step **Factory on Demand** combined 3D CAD design, Cloud based 3D Product Customization and the robotized, just in time, on-demand and hybrid manufacturing of footwear through a semi-automated and fully traceable production life-cycle, starting on the Cloud and managed by a flexible industrial workflow.

The presentation primarily focusses on the first step in the cycle: ELSE Corp’s **Virtual 3D Commerce platform**. Through a **3D Product Configurator**, based on industrial 3D CAD product data and shoe last meta-data, the visitors could customize and order an individualized pair of shoes.

After this, custom orders or **Customized Hybrid Manufacturing Orders**, generated-in-real-time and structured in a way to be fully compatible with any

manufacturing OS or ERP system for both, traditional and digital manufacturing, were sent automatically via ELSE Corp's cloud based manufacturing 4.0 middleware (**ELSE-ware**) to the next step in the cycle where the just-in-time, hybrid production of the shoes began.

ELSE Corp is also working on a Machine Learning based, patent pending method of advanced foot scan and shoe last comparison. Through this, the customer's "best fit" could be determined by comparing their 3d feet scans and e-last models of the various shoes available. It would start from the 3D scanning of their feet via a retail 3D foot scanner connected to the aforementioned managing cloud platform. Thus, factoring in not only the customer's footwear style preferences, but also the shape and measurements of their feet – giving customer's the chance to order the best product.

The global market for Footwear is projected to reach US\$371.8 billion by 2020 – this is a sizable industry for which the development of sustainable solutions is paramount. Through the described project we were able to ascertain the benefits to all stakeholders involved, and confirm the viability of this project in bringing a sustainable solution that provides shared value across the board.