

GOAL

The goal is to support the transformation from a station-based assembly line to a dynamic self-balancing assembly line. One of the success factors is an optimized material flow with kits of production material delivered just in time to the assembly operation consuming the material. A dynamic self-balancing assembly line will facilitate to manage a high product diversity efficiently and effectively

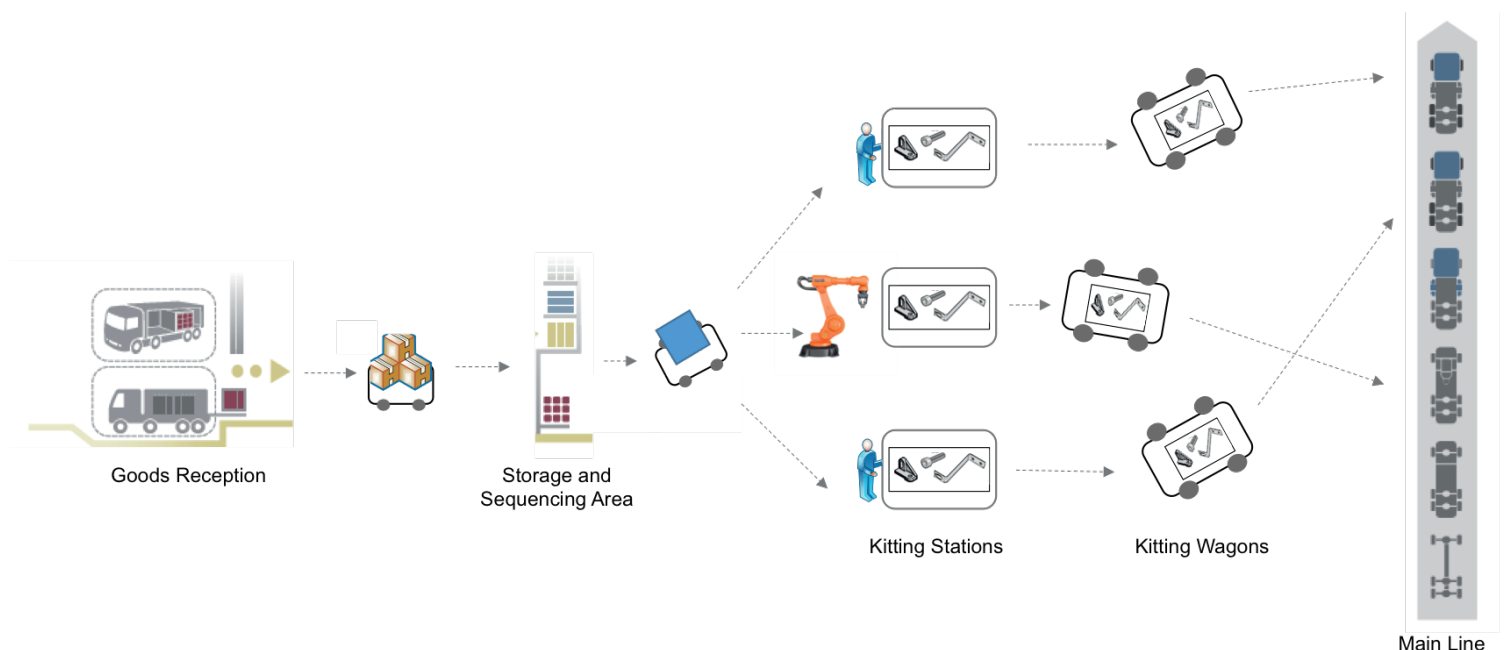
Challenge

The overall challenge addressed is how the already well-established internal logistics process for supplying and presenting kits of material, such as parts, components and tools to operators at pre-defined station main line can be adapted and developed to support the transformation to a dynamic self-balanced line. With the introduction of electrified, connected and autonomous trucks, the product diversity increase, requiring a more flexible and adaptable assembly line to optimize the assembly of each truck type and each truck.

A dynamic self-balancing line requires the kit to be delivered to a defined assembly operation, without a specific physical location on the assembly line, but varying depending what is most optimal for the specific product being assembled. Volvo

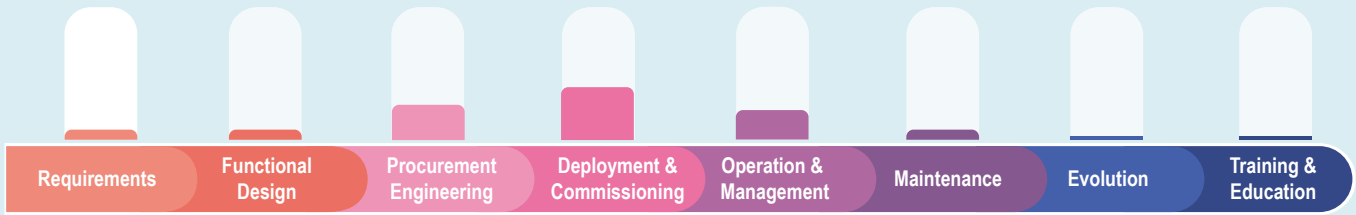
Group Trucks Operations will together with partners focus on investigate how to automate the connected engineering processes. Main focus is the virtual and smart preparation of the kitting wagon, see phase 2 in the visualization of the future scenario below. How to orchestrate the various kitting processes (phase 1) and the delivery of the kits to the assembly line (phase 3) are also of interest.

Verification and validation will be performed in an operational context at VTC's facilities targeting TRL5. The validation and verification of advancements will be made by assessing selected KPIs from current processes with those that can be associated to a pilot implementation of the application.





Engineering Phases



Results

Implementation of successful results in the area of smart and virtual production preparation in Volvo Group Trucks Operations will reach production facilities in 18 countries spread over the world. Volvo Group Trucks Operations has a complex environment with mass-customisation, low batch sizes and a wide scope of processes that is unique, which has lead a high percentage of fully or partly in-house developed tools. Due to this, the results will primarily exploit through internal technology development sharing networks, with experts, end users, suppliers and global process owners.

Volvo Group Trucks Operations is in a transformation phase, meanwhile keeping up excellence on current production, in

parallel preparing for next generation production system and connected information technology and operations technologies. The general trend of increased product customisation is seen as an opportunity to take advantage of the standardisation developing around Industry4.0.

Results from ArrowheadTools in the context to increase the capability to manage product diversity in the production systems, decrease time to market in industrialization phase in product project and to reduce engineering efforts will be exploited further by the Volvo Group Trucks Operations.



Partner Data



Volvo Trucks Corporation is one of the legal entities within the Volvo Group and the second-largest heavy-duty truck brand in the world with a production structure based on global presence. Volvo Group Trucks Operations is an organizational unit within the Volvo Group having a global industrial footprint that offers an opportunity to an international world class industrial environment, where continuous improvement and productivity improvement is driven through Volvo Production System. The organization includes approximately 34,000 employees in 36 countries.

Company contact: +46 031 666000 · www.volvotrucks.com

Contact with the project: Luleå University of Technology · info@arrowhead.eu · www.arrowhead.eu