



Institut für
Textiltechnik und
Lehrstuhl für
Textilmaschinenbau



Project title: VerTex 4.0 – Development of a technology transfer concept for networking textile process chains

Partner: Institut für Textiltechnik der RWTH Aachen University (ITA)
Lehrstuhl für Informationsmanagement im Maschinenbau (IMA)
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Mission Statement

The textile process chain beyond company borders in Germany is characterised by a high degree of fragmentation. Machines from different manufacturers are used in different production processes. Fragmentation ensures a low or even no digital flow of information across company boundaries for the products and their production. In the German textile and clothing technology sector, approx. 1,200 predominantly medium-sized companies are active in various product segments. 60 % of the product costs are caused by internal resources (material, energy, manpower). German companies lose several million euros annually due to rejects, complaints, waste of energy and inefficient use of labour. By passing on process- and product-specific information across process and company boundaries, an improved use of resources is possible. This can save around €17 million per year in yarn and fabric production in Germany every year.

Approach

The networking of process chains is a fundamental aspect for increasing production efficiency. In addition, industry 4.0 applications are aimed at increasing quality in the sense of zero-defect production. The increasing availability of low-priced hardware and software favours the implementation of networked production chains. The exchange of information between textile process steps reduces the likelihood of errors in downstream processes, thus minimizing troubleshooting costs in downstream process steps. The aim of the project is to increase production efficiency in textile manufacturing on the basis of demand-oriented networking of the information flow between textile sub-processes. In this context, demand-oriented means the correctness and relevance (quality) of the information that can be extracted from the existing data volumes using intelligent methods and that can be used for optimisation, e.g. with regard to energy costs. These methods are combined in the form of a technology transfer concept. The concept serves as a basis for the use of the developed technologies and methods in further

textile process chains as well as for the transfer to other industries. The current deficit and the solution sketch are shown in Figure 1.

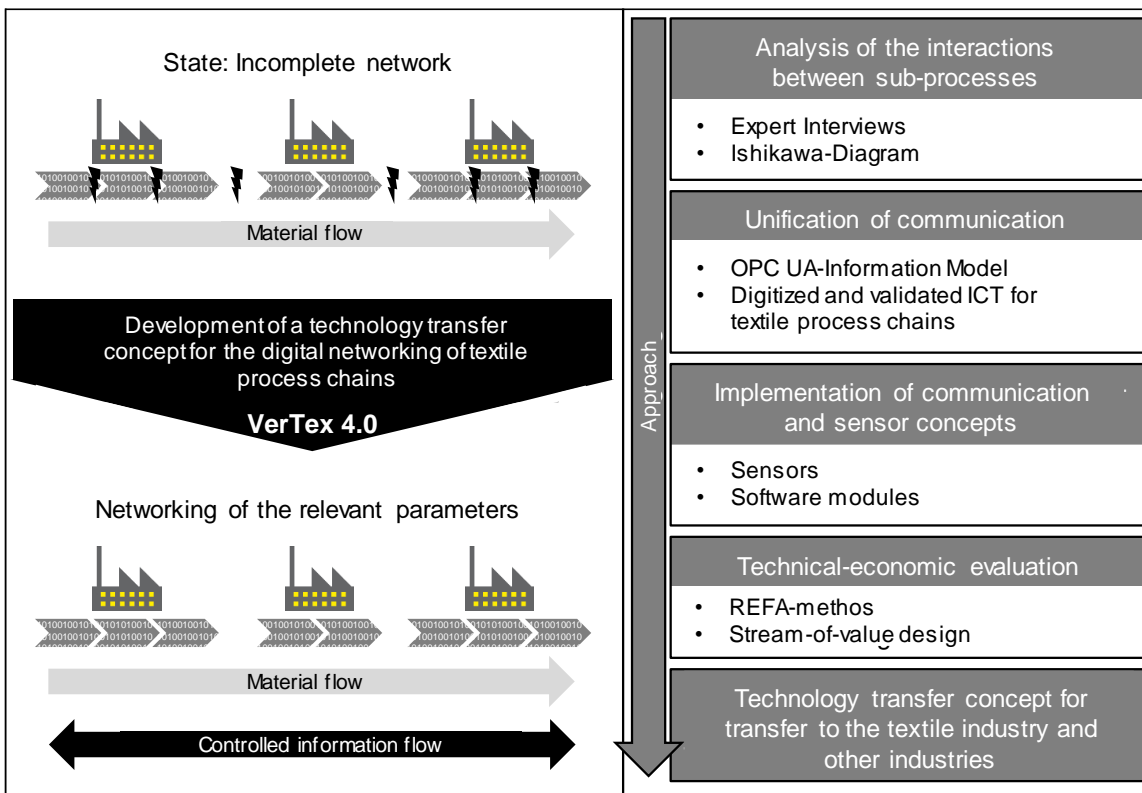


Figure 1: Deficit and approach of VerTex 4.0

Results:

As a use case, process data from machines and external sensors from various process steps for the production of a textile, elastic arm band were recorded using the existing data infrastructure across two distributed ITA sites. The data was collected in a cross-site web service and made available for visualization and analysis. Practical implementation of various test scenarios showed that data collection is basically possible, but that the expertise required to record the correct data points and interpret them varies greatly from technology to technology and product to product. However, the level of abstraction of the created web service for data visualization and analysis as well as the methodical procedure for recording the actual situation and formulating the target state enable an efficient application in industry and the assistance of suitable (textile/data protection) technology experts.

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