Project Title:	DigiTextil - Digital, cross-company networking and use of Big Data for error tracing along the textile process chain using the example of nonwovens production from staple fibers
Partner:	Institute for Industrial Management (FIR) of RWTH Aachen e.V.
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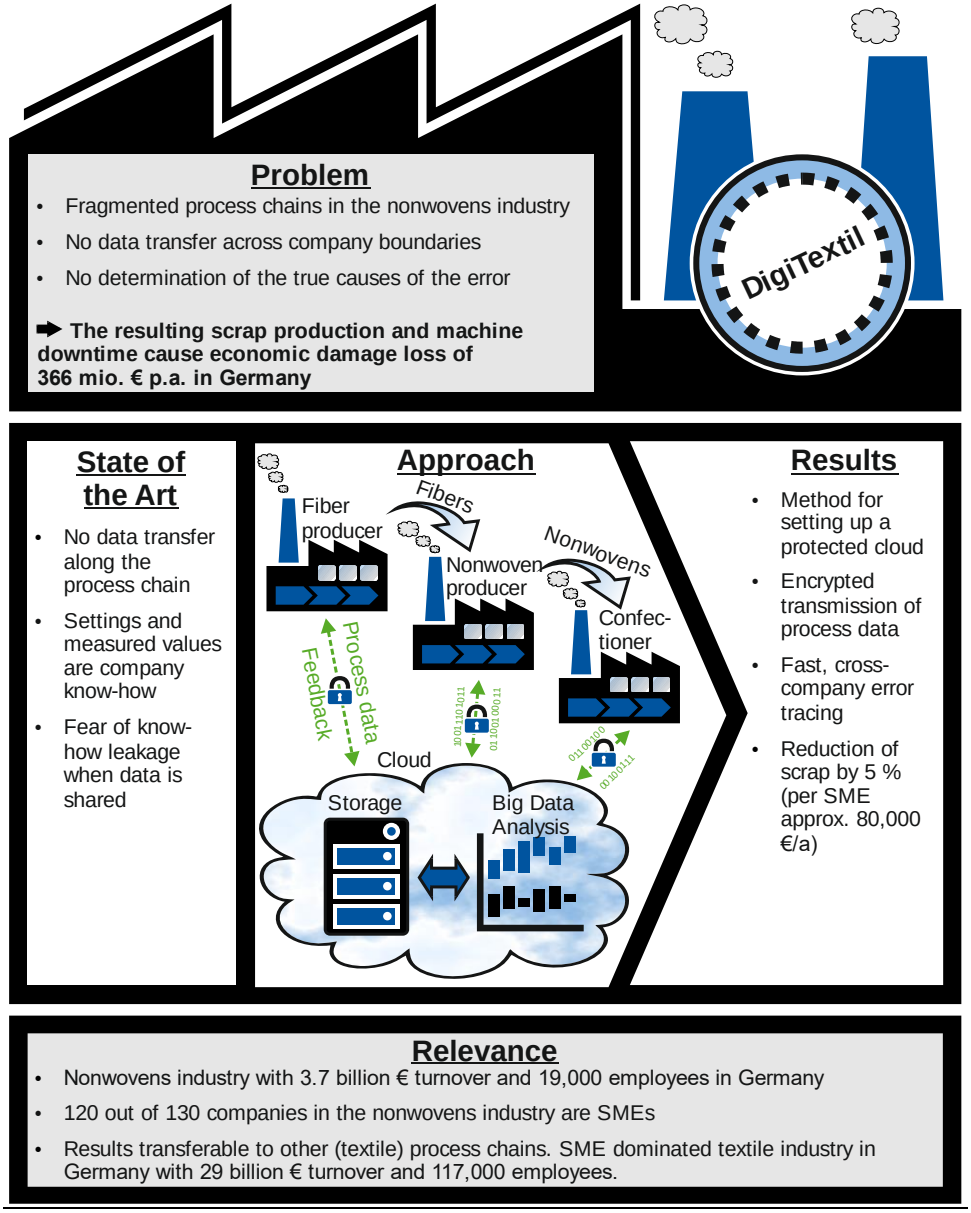
Mission Statement

The production of textiles takes place in highly fragmented process chains. Companies produce intermediate products that are further processed by other companies. There is no complete, inter-company flow of information on the products and process parameters used. Due to downtimes and rejects - also caused by defective intermediate products - the German nonwovens production, which is dominated by SMEs, suffers an economic loss of about 366 million € per year. A data analysis platform covering the entire process chain was investigated as a solution. The platform's task is to collect data along the life cycle of intermediate and end products and to ensure traceability along the process chain. The collected data is used to predictively avoid rejects and optimise processes with the help of data mining methods. To increase the willingness to exchange data, a special focus is placed on the secure exchange of data and the generation of benefits for all network participants.

Approach and results

In the ITA pilot plant, an infrastructure for inter-process chain networking was set up on a laboratory-scale process chain. The resulting network makes it possible to collect data from the spinning of the yarn to texturing and on to web formation and bonding. AES was selected as the encryption method for secure data transmission. In addition to the process data, quality data of the intermediate products were also measured in order to generate models for predicting the final product quality from the collected data. With the help of the models, the influences of important process parameters can be simulated in advance in order to be able to intervene in the process at an early stage to avoid rejects. The functionality of the methodology was validated in a blind test at the ITA laboratory plant. It was found that the amount of data available is an important factor for the accuracy of product quality prediction. It is expected that the quality of the models created will scale positively with the higher amount of data available in an industrial context (compared to laboratory scale). The applicability of the methodology was demonstrated.
The research objective was achieved.



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