Digitalization and AI at ITA Augsburg

Institut für Textiltechnik Augsburg gGmbH

Our expertise

- Digitalization: Successful implementation of projects
- Artificial intelligence (AI): Increasing efficiency through intelligent algorithms
- Process optimization: Improving production processes
- Data analysis: gaining valuable insights from extensive amounts of data
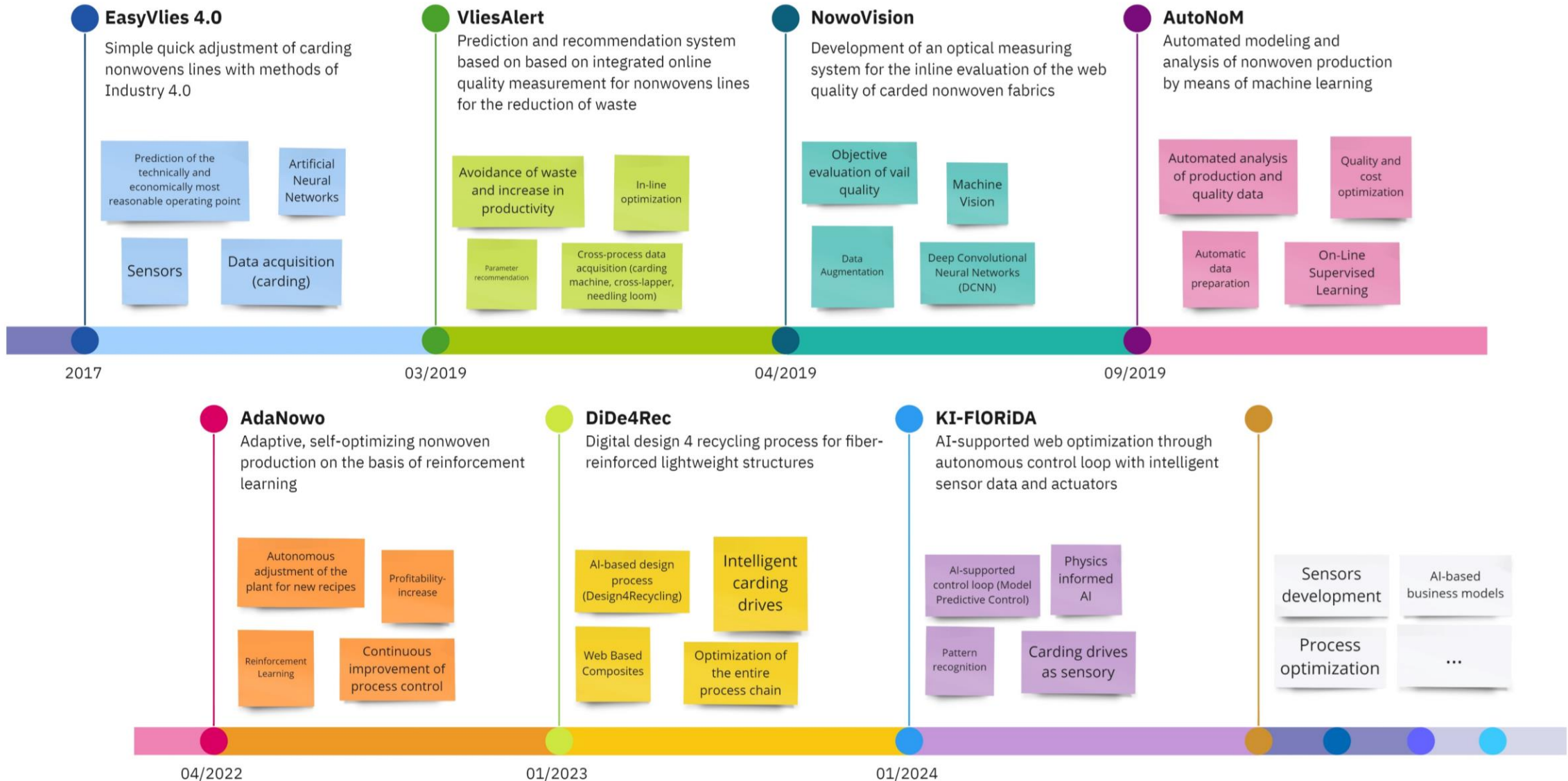
Our unique nonwovens plant

- Industrial scale: scaling options to meet your needs
- State-of-the-art sensor technology: Precise measurements and tests
- Innovation platform: develop and test new technologies
- Customized solutions: Adaptable to your specific needs
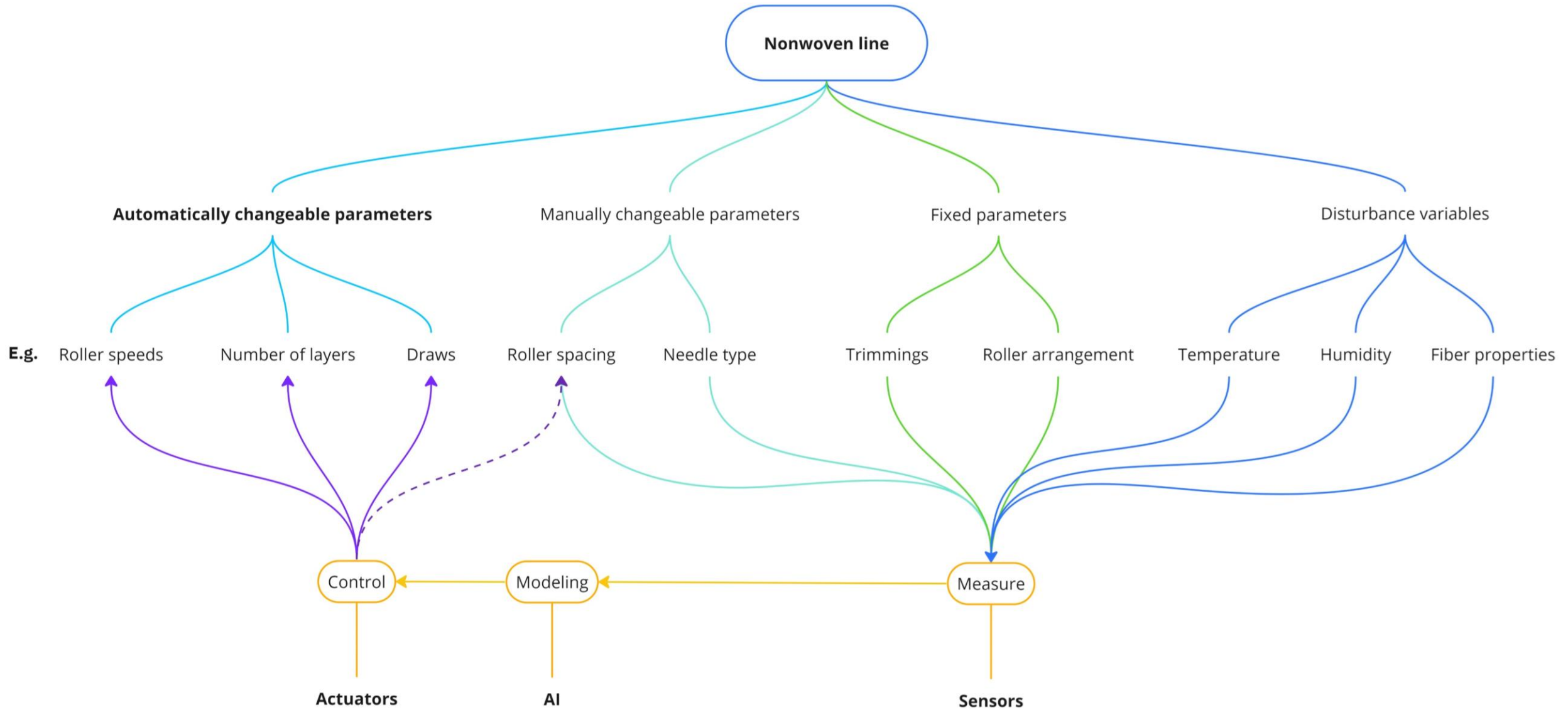
Collaboration and added value

- Partnerships: Joint projects with companies and research institutions
- Synergies: Linking textile technology and digitalization
- Competitive advantages: More efficient processes and improved product quality
- Future prospects: Potential for innovations and technology development

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Digitalization and AI in nonwoven cards

EasyVlies 4.0
Simple quick adjustment of carding nonwovens lines with methods of Industry 4.0

- Prediction of the technically and economically most reasonable operating point
- Artificial Neural Networks
- Sensors
- Data acquisition (carding)

VliesAlert
Prediction and recommendation system based on based on integrated online quality measurement for nonwovens lines for the reduction of waste

- Avoidance of waste and increase in productivity
- In-line optimization
- Parameter recommendation
- Cross-process data acquisition (carding machine, cross-lapper, needling loom)

NowoVision
Development of an optical measuring system for the inline evaluation of the web quality of carded nonwoven fabrics

- Objective evaluation of vail quality
- Machine Vision
- Data Augmentation
- Deep Convolutional Neural Networks (DCNN)

AutoNoM
Automated modeling and analysis of nonwoven production by means of machine learning

- Automated analysis of production and quality data
- Quality and cost optimization
- Automatic data preparation
- On-Line Supervised Learning

2017   03/2019   04/2019   09/2019

AdaNowo
Adaptive, self-optimizing nonwoven production on the basis of reinforcement learning

- Autonomous adjustment of the plant for new recipes
- Profitability-increase
- Reinforcement Learning
- Continuous improvement of process control

DiDe4Rec
Digital design 4 recycling process for fiber-reinforced lightweight structures

- AI-based design process (Design4Recycling)
- Intelligent carding drives
- Web Based Composites
- Optimization of the entire process chain

KI-FlORiDA
AI-supported web optimization through autonomous control loop with intelligent sensor data and actuators

- AI-supported control loop (Model Predictive Control)
- Physics informed AI
- Pattern recognition
- Carding drives as sensory

- Sensors development
- AI-based business models
- Process optimization
- ...

04/2022   01/2023   01/2024

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Further possibilities for digitalization and AI

Nonwoven fabric quality and production parameters	Measure	Intervention options	Digitization approach
Vail quality	Human (subjective) Camera	Roller speeds, Roller spacings	AI-based voil evaluation, Carding control
Area weight (Weight uniformity)	Radiometric detection	Licker in / feeder, Chute feed	Sensor technology for feed (measurement across width), Monitoring of fiber transport units, Control and automation
Thickness (Thickness uniformity)	Laser detection	Drafting system, Needleloom	Automation and control
Fiber distribution (Mixture)	Radiometric detection, Optical detection, Thermography	Chute feed, Opening systems, Roller speeds, Roller spacings	Mixture sensoric, Automation and Control
Energy consuption	Current measurement	Complete plant	Recipe optimization, Smart consumption management
Material consumption	Radiometric detection, Optical detection	Licker in / feeder, Improvement of uniformity	Automation and control, Recipe optimization

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