



Next Generation Textile Industry = Sustainability + Digitalization + Individual Business Models

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Urgency

We must act now to mitigate the impact of rising energy prices, diversify our gas supply for next winter, and accelerate the transition to clean energy. The sooner we move to renewables and hydrogen, combined with more energy efficiency, the sooner we will be truly independent and in control of our energy system

*Commission President Ursula von der Leyen on REPowerEU: Joint European action for more affordable, secure and sustainable energy - 8. March 2022
(https://ec.europa.eu/commission/presscorner/detail/en/ip_22_1511) -*



Sustainable
materials and
processes



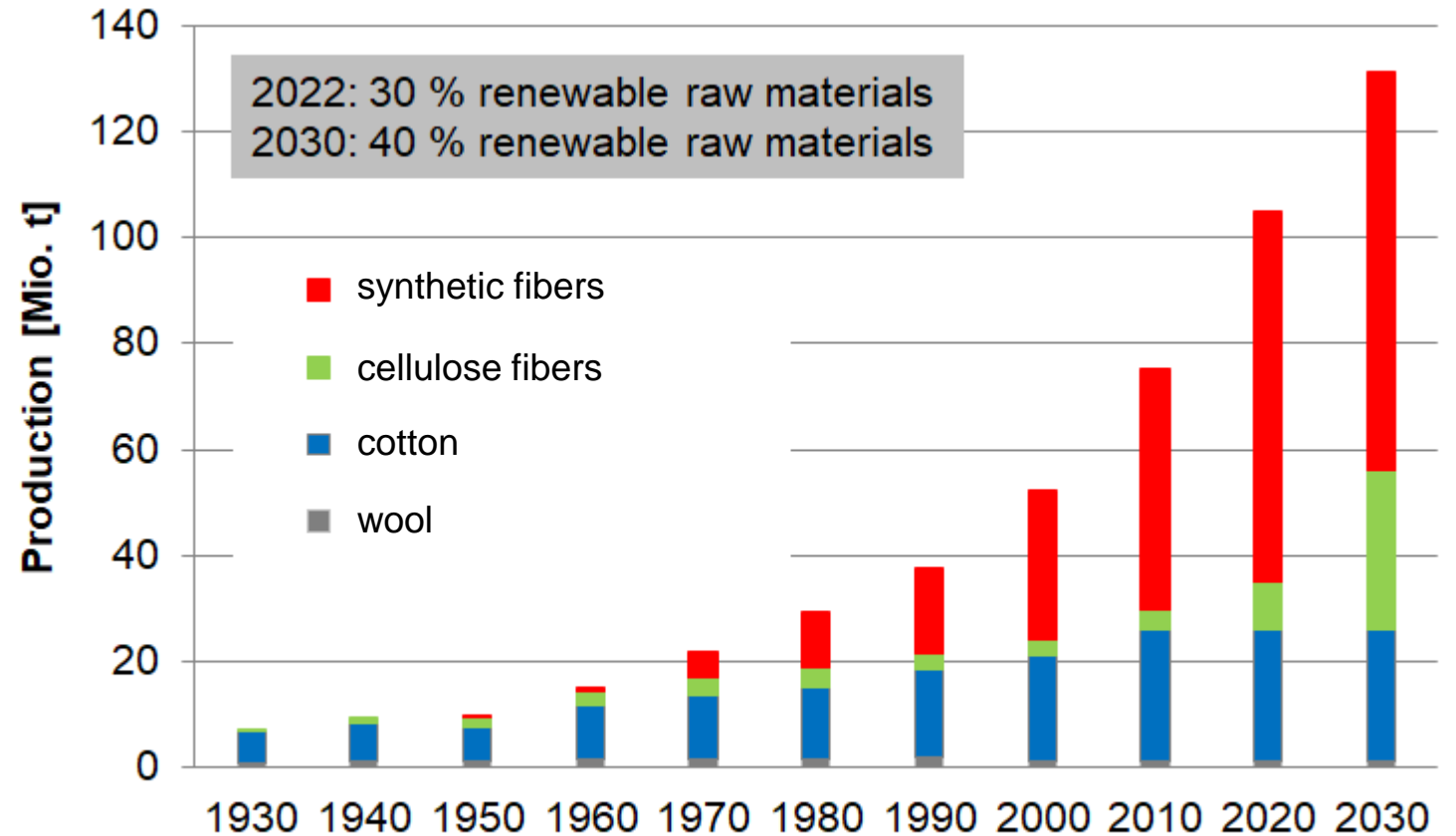
Digital,
connected and
flexible production



Individual
business models
and strategies

Accelerating the transformation to sustainability in the textile industry

- 63% of the world fiber market was produced from fossil raw materials (2018)
- Environmental impact of cotton cultivation is enormous
- Ever increasing demand for cellulosic fibers
- Great demand for bio-based polymers
→ drop-in solutions



Pathways to implement an EU Textile Strategy



Image: Vladislav Babilenko at unsplash.com

Accelerating the transformation to sustainability in the textile industry

Endemic

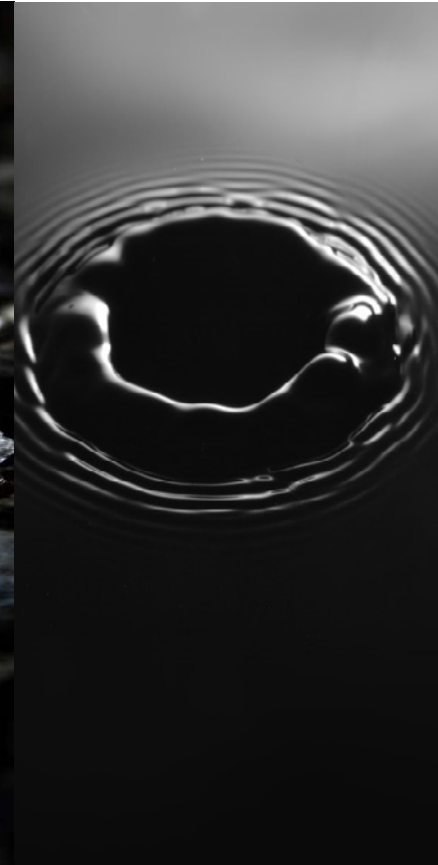
Colonial

Wood

Coal

Petro

Bioeconomy



<1800

1800

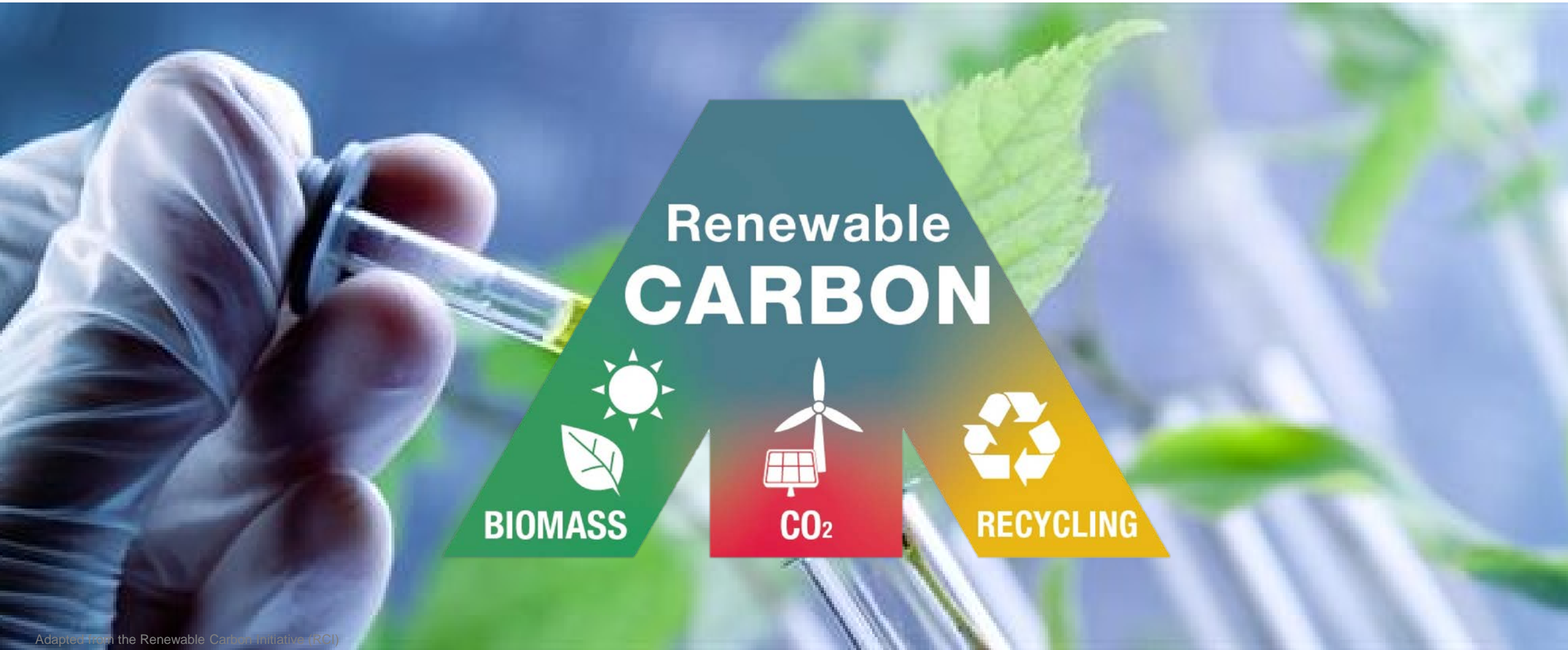
1897

1935

1950

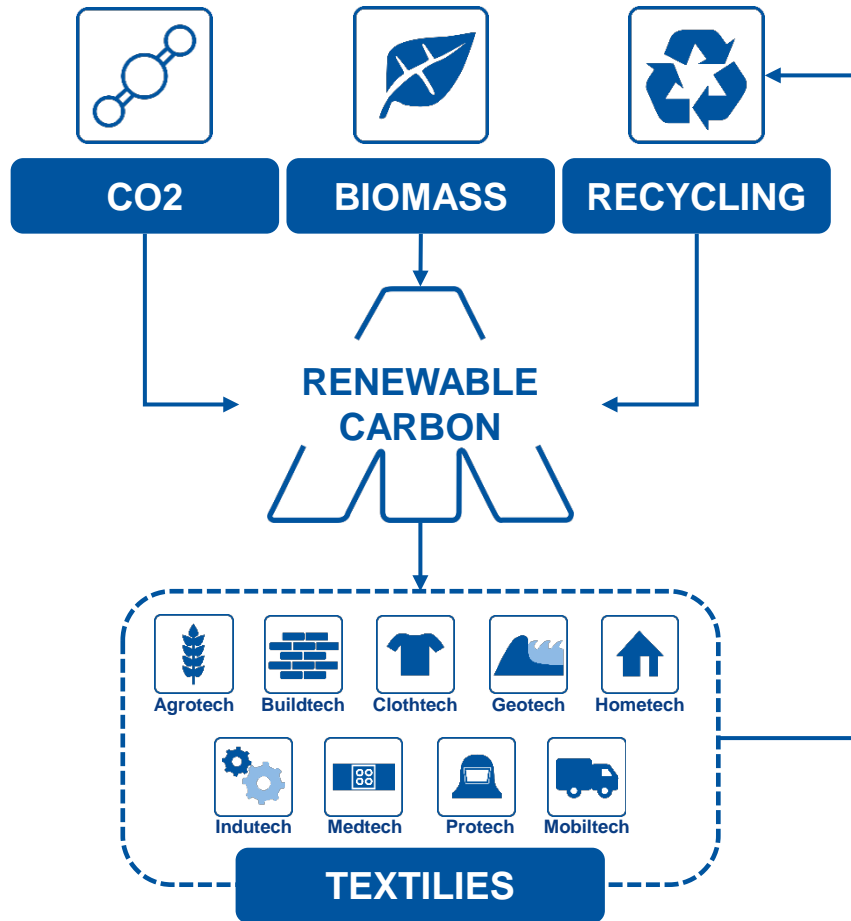
>2020?

Accelerating the transformation to sustainability in the textile industry

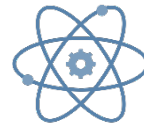


Adapted from the Renewable Carbon Initiative (RCI)

We believe in a textile industry based on renewable resources



Our work along the entire textile value chain



Material, process and product development



Business development



Education



Digitalisation of products and processes



Environmental assessments (e.g. LCA)

Our working principles

User acceptance through participation

Implement a sustainable mind-set

Connecting actors and stakeholders

Create qualification systems

Adapted from the Renewable Carbon Initiative (RCI)

Accelerating the transformation to sustainability in the textile industry



Current Research





National funding for biobased and circular economy

BIOTEXFUTURE

BIOTEXFUTURE

Focus: Textile Supply Chain
Polymer/Raw Material to Textile
TRL:1-8

- Self governing innovation space
- 9 active projects
- 80+ Members



BioSC



Focus: Plant-/Biobased
Chemicals/Polymers
From plant to polymer
TRL:1-8

Bio4MatPro



Schwerpunkt: Biobased and recyclable
products
Waste materials as a resource
TRL:1-8

INGRAIN



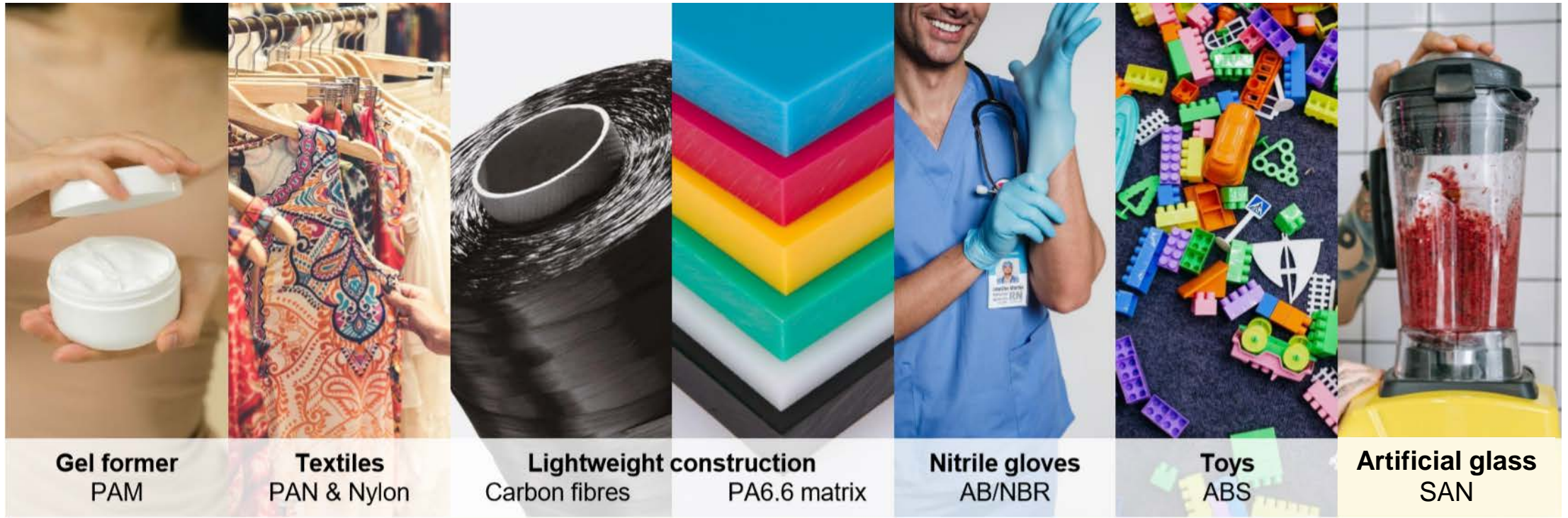
Focus: Agriculture/Food/Textiles
Bio-based circular economy
TRL:1-8



Acrylonitrile is a versatile base chemical for...



BIOMASS



Green2Black provides proof of concept for further product developments

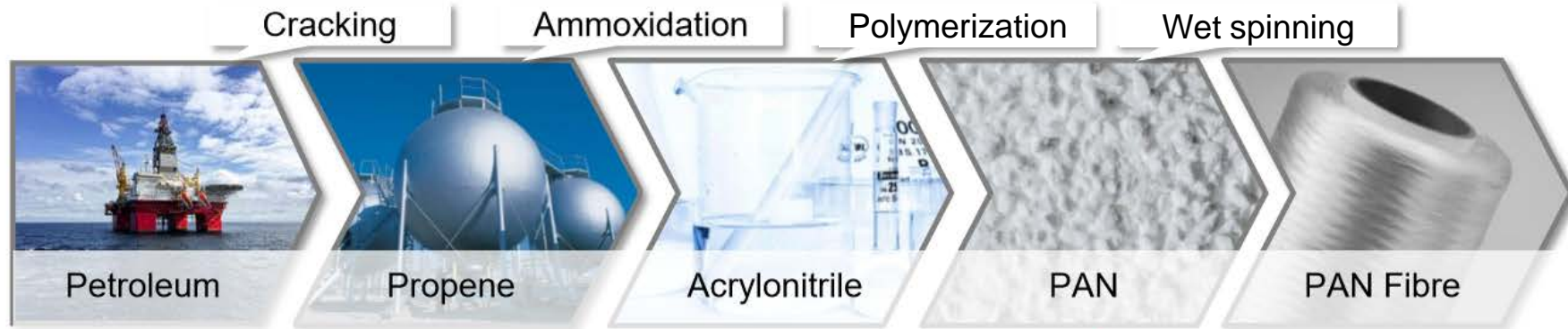


Example: Green2Black



BIOMASS

State-of-the-art



Green2Black



Green acrylonitrile is a "smart drop-in" solution for bio-based materials



Example: RD&I in Carbon Capture and Use (CO2Tex)



CO2

- Process development: fibers from CO₂
- Product development: socks made from these fibers
- Nominated for the "German Future Prize"

Development of the entire textile process chain from CO₂ extraction to the product

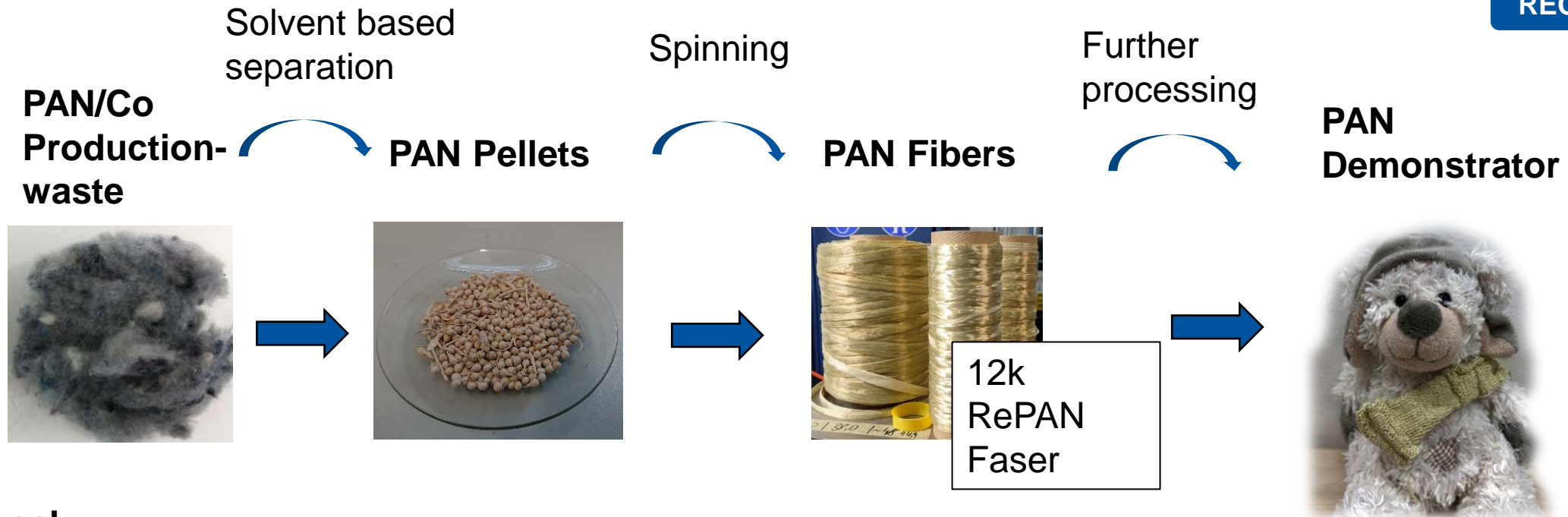




Example: Recycling – Industrial RePAN - Recycling of PAN/Co Production waste

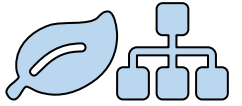


RECYCLING



Approach:

- Solvent based separation of PAN and cellulose
- Spinning the recycled PAN
- Processing to finished products



Example: Recycling-Atelier in Augsburg



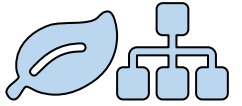
RECYCLING



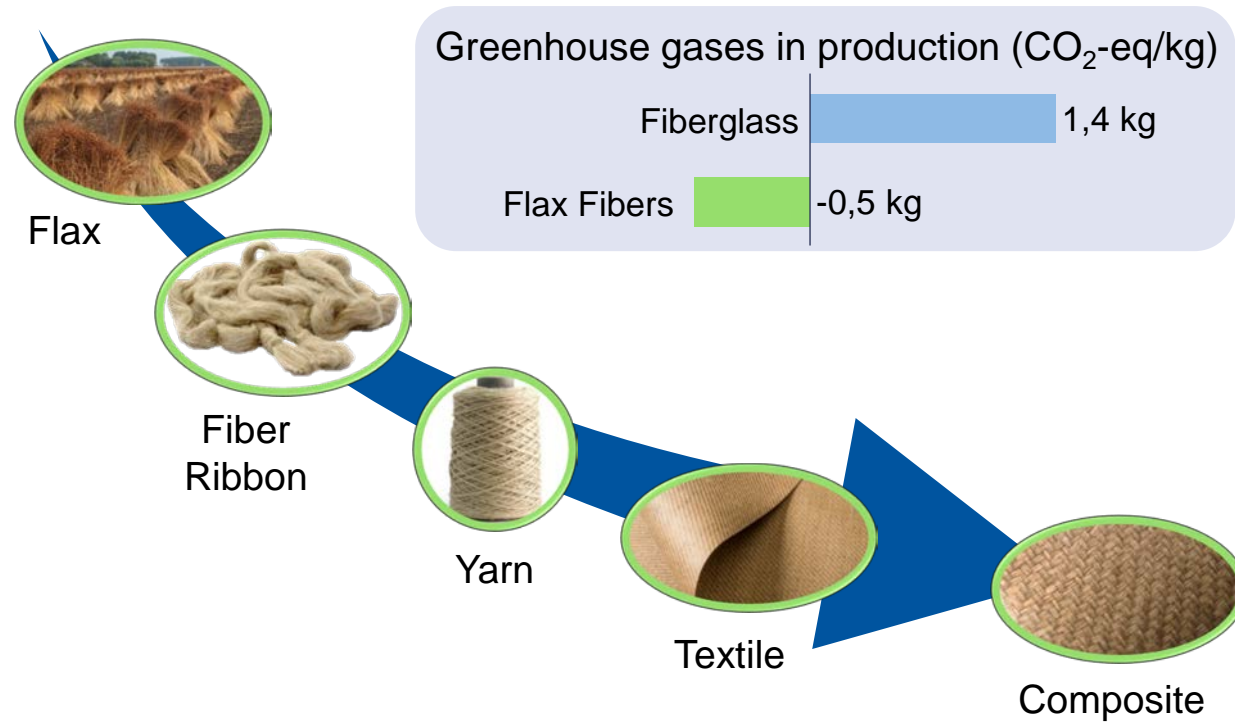
Opened
20th June 2022

Come visit us!

- New recycling processes
- Closed process chains
- Digitalization of the recycling process



Substitution of glass fibers with natural fibers





Example: Digitization - CISUFLO³⁾

- Expand and ensure range of **sustainable flooring products**
- Meet quality and performance standards
- ITA as Task Leader - "Systemic Transition Support Tool".
- Electronic passport + "ePRODIS" database

3) <https://www.cisuflo.eu/pilots/>

Dieses Projekt wurde mit Mitteln aus dem Forschungs- und Innovationsprogramm Horizont 2020 der Europäischen Union unter der Finanzhilfvereinbarung Nr. 101003893 gefördert.



The image shows two smartphone screens side-by-side. The left screen is labeled 'Input' and contains a form with the following sections: 'Type of User' with checkboxes for Research/Development department, SME, Large company, NB, RTO, Public authority, and Other (please specify); 'Types of disciplines' with checkboxes for Personal Protective Equipment, ICT, Medical Devices, Food and Hygiene, and Other (please specify); and 'Phase of innovation process' with a progress bar showing steps I, II, III, IV, V, VI. A 'Send request' button is at the bottom. The right screen is labeled 'Output' and shows a 'Map of Competence' with a map of Europe and several colored dots (red, blue, green, yellow) indicating locations. Below the map is a legend titled 'Dear app, please show me' with checkboxes and colored dots for: NBs (red), RTOs (yellow), Experts (blue), and Associations (green). A 'Send request' button is at the bottom.

Cooperation



New forms of cooperation between companies

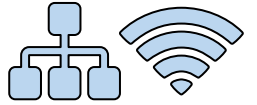
Value chains become networks

- Cooperation in open eco-systems and in-person conferences
- Digital platforms for the interconnection of companies and networks
- Cooperation of young companies/startups with established companies and corporations
- Matchmaking events: getting to know each other personally and gaining trust



Qualification



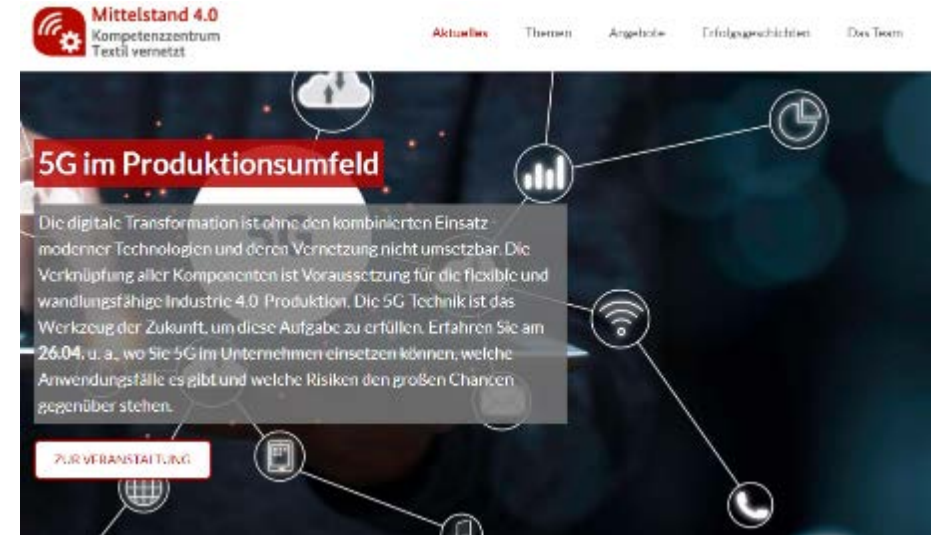


Information and qualification

Low-threshold offers

Publicly (co-)funded competence centers

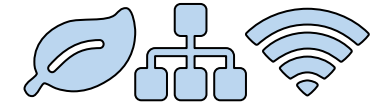
- e.g. **Competence Center Textile connects**
- Learning factory and training center
 - e.g. the **DCC Digital Capability Center Aachen**
(Member of the International Association of Learning Factories)



Business models



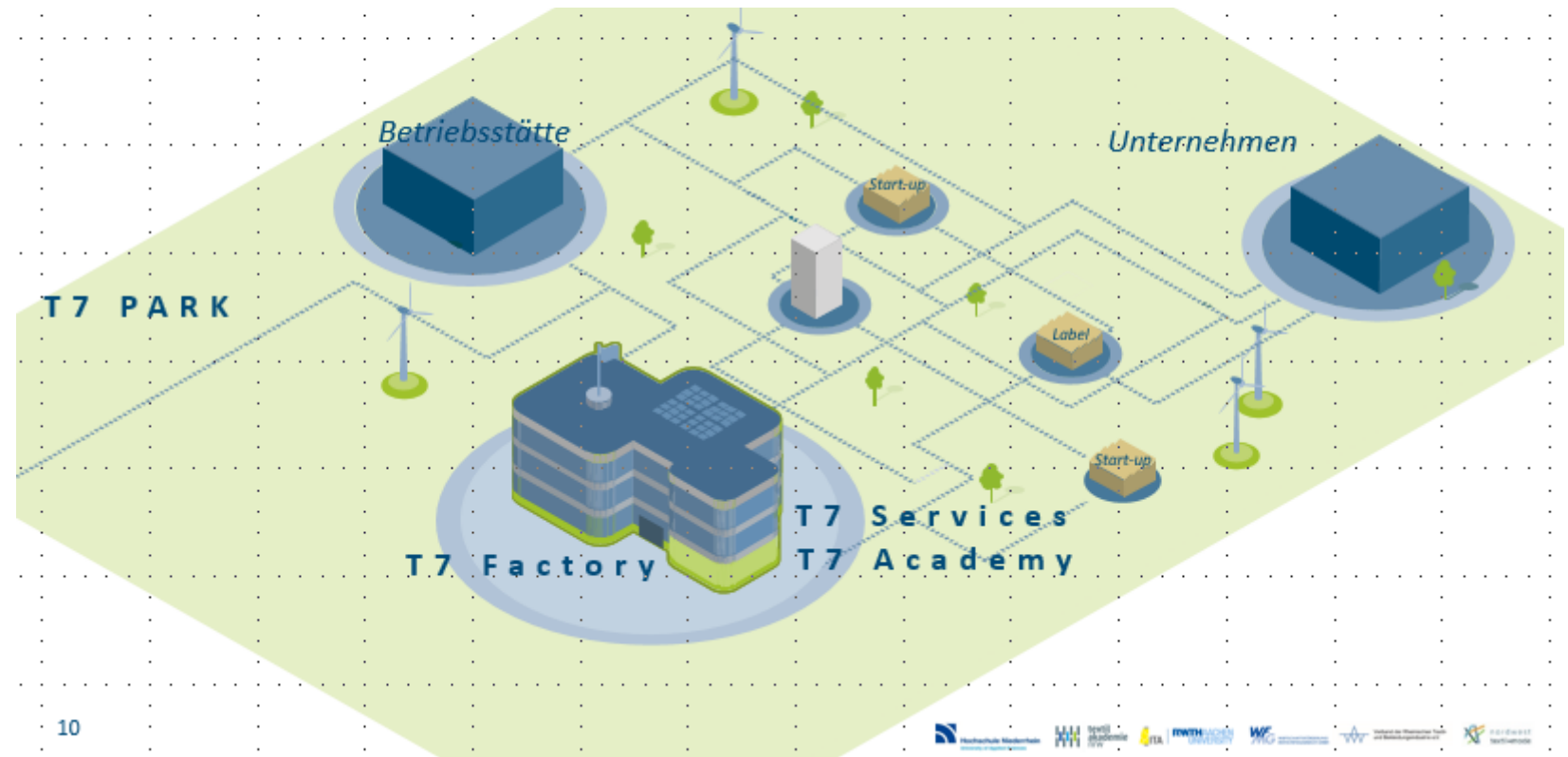
New business models - new operator models - new structures



- Innovative business parks
- Subtitle
- Micro-factories
- Manufacturing on demand
- Pay per use
- Solution provider
- Rent instead of buy
- Custom
- Cloud services
- Crowd funding

T7 Park

Establishment of an emission-free, digitalized innovation and industrial park (approx. 20 ha) in Mönchengladbach - **for companies in the textile and clothing industry**





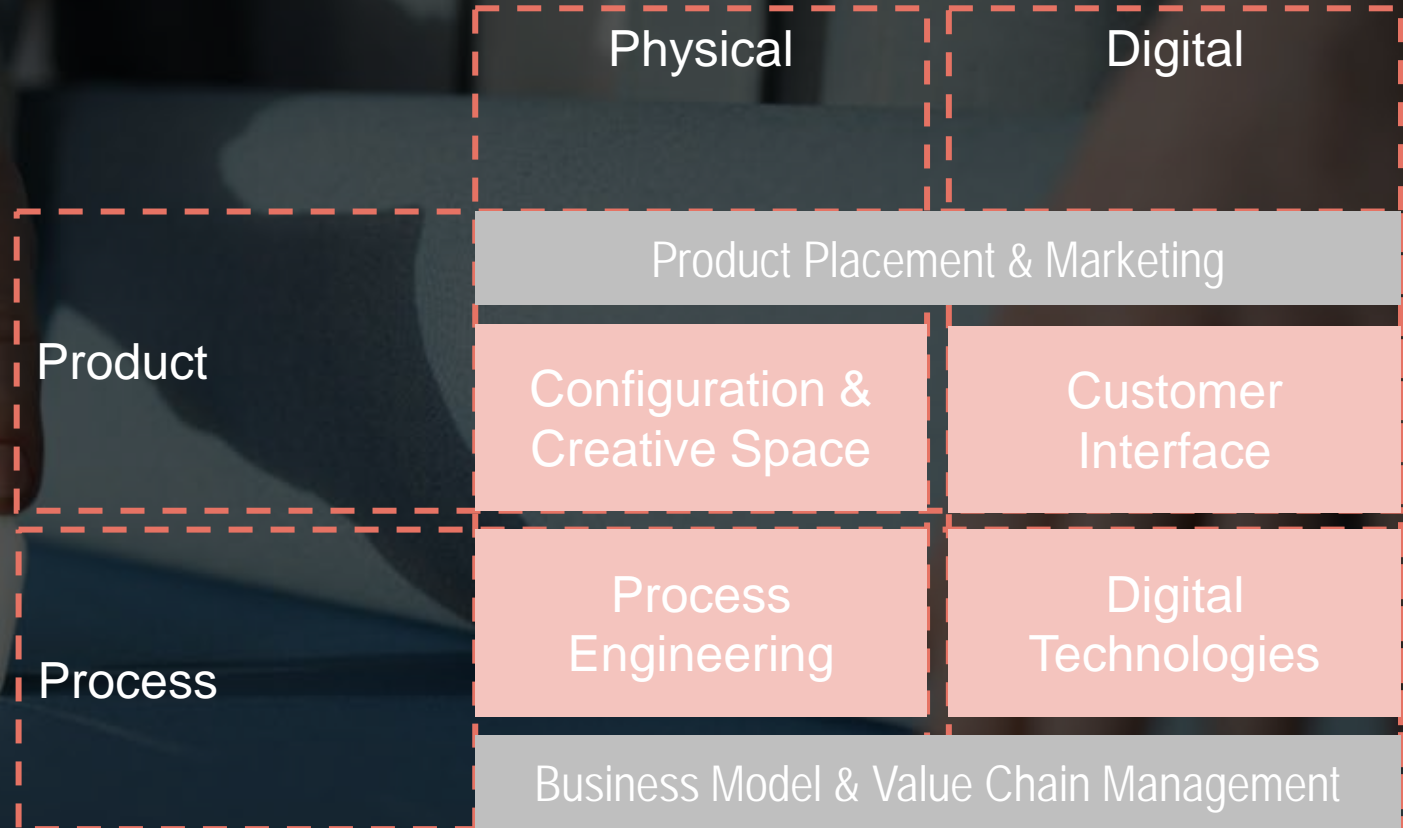
Modularization

Agile manufacturing

Microfactories allow the **production** of clothing **following an order.**



Necessary elements of a Microfactory production.





Machine design
for efficient made-to-
order fabrication

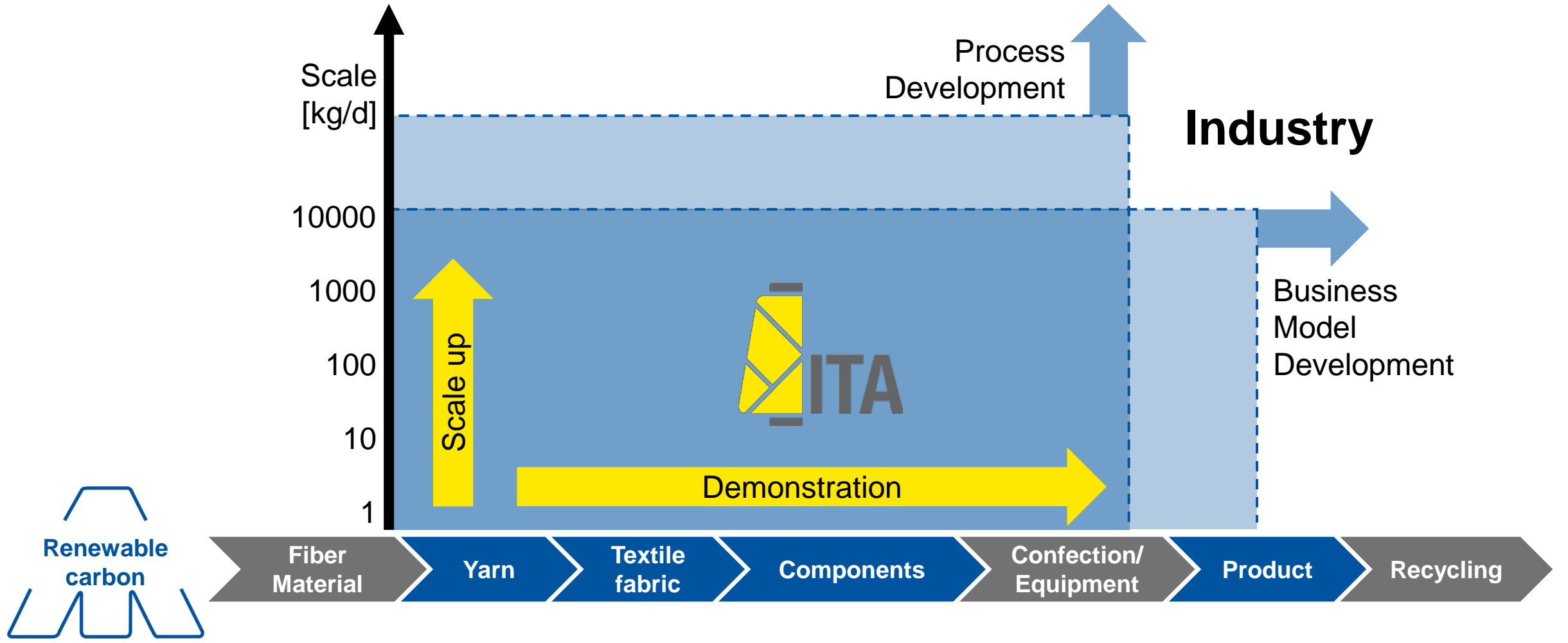


**Demonstration
factory** of agile
garment production



Digital platform to
connect existing and
future partners

Textile Structures – Our Value Proposition



Contact



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