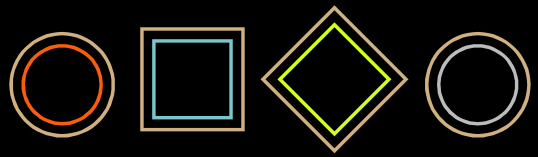
CAMUNDA CON 2023

Sustainability, the circular economy and digitalization

How to realize a use case for a digital product passport with Camunda

Prof. Dr. Christine Brautsch

Tina Wiegand



Agenda

- **THE EUROPEAN GREEN DEAL - The agenda for a climate neutral continent and its impact on businesses**
- **THE DIGITAL PRODUCT PASSPORT – A key element to evaluate transparency and sustainability in an End-to-End view**
- **THE TEXTILE INDUSTRY – One of the most polluting sectors and how its processes need to be adapted to the requirements of the digital product passport**
- **THE SOLUTION “PROCESS AS A SERVICE“ & “DPP-HUB“ – Realizing a use case for a Digital Product Passport**

CCON 2023

Europe is striving to be the first climate-neutral continent

THE EUROPEAN GREEN DEAL

CCON 2023

2015

Paris Agreement
Limitation of global warming to 1.5°C
Reduction of greenhouse gas emissions to at least 55% by 2030

2019

Presentation of the European Green Deal

2023

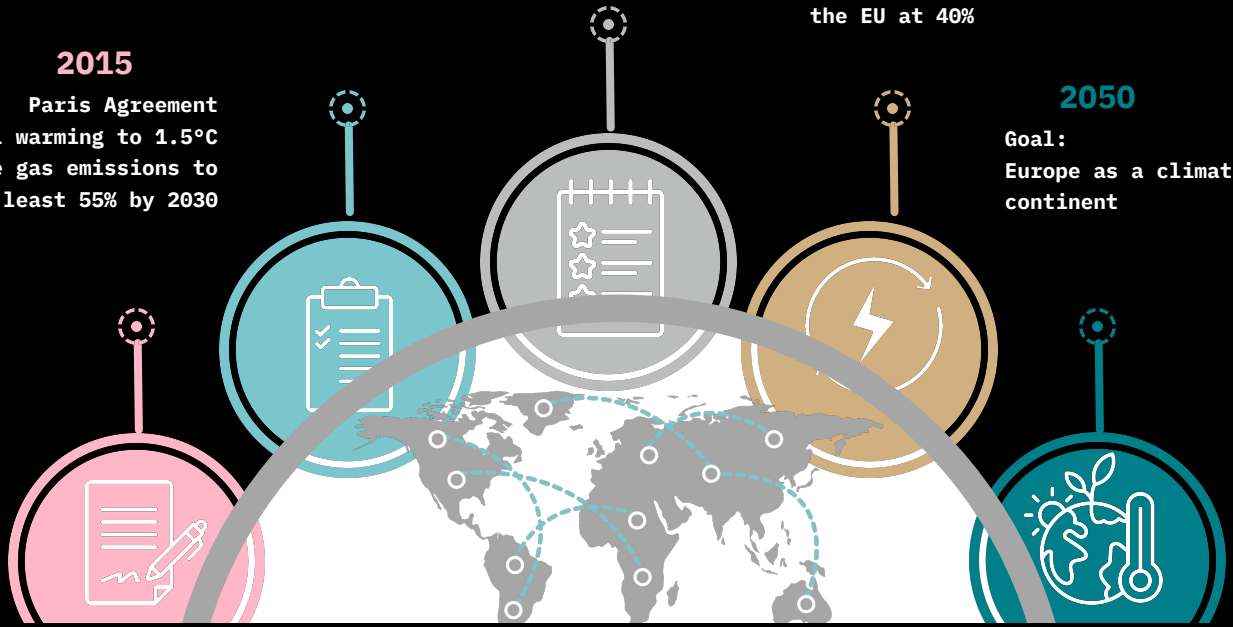
"fit for 55": Adoption of important legal acts to implement the EGD

2030

Goal:
Percentage of renewable energies in the EU at 40%

2050

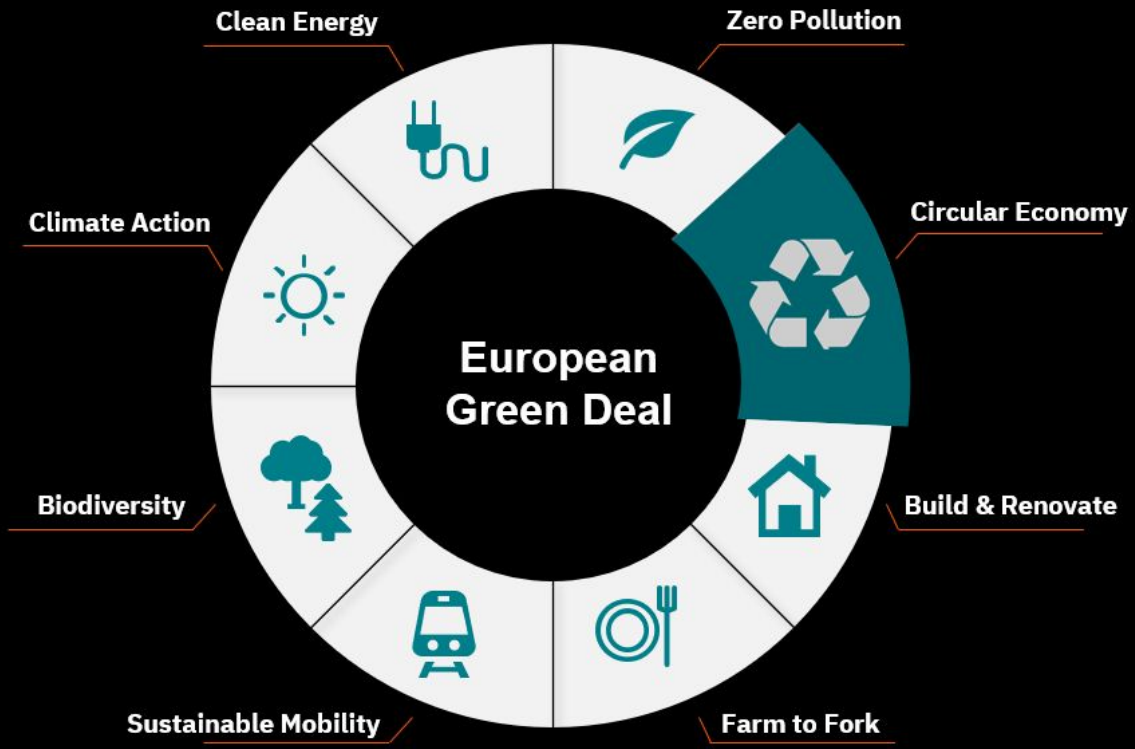
Goal:
Europe as a climate-neutral continent



The EU is strongly driving the transition to a circular economy

CCON 2023

THE EUROPEAN GREEN DEAL



Products in the EU will need to include a DDP

THE DIGITAL PRODUCT PASSPORT

CCON 2023

> “Digital Product Passports” will be developed, that will provide information on a product’s origin, durability, composition, reuse, repair and dismantling possibilities, and end-of-life handling.

European Commission [1]

The DPP creates transparency and enables material loops

THE DIGITAL PRODUCT PASSPORT

-------> Data & information flows

Source: based on BMUV [2]

DPP supports circular economy strategies

- Repair, reuse and refurbishment of products
- Remanufacturing, recycling and recovery of materials
- Appropriate, safe and environmentally friendly disposal
- Reduction of environmental impacts

A DPP contains relevant information along the product life cycle

CCON 2023

THE DIGITAL PRODUCT PASSPORT

- SUPPLIERS DATA
- MATERIALS & COMPONENTS DATA
- CHEMICAL INGREDIENTS DATA
- MANU-FACTURIN G PROCESS
- TRANSPORT CF
- CARBON FOOTPRINT DATA
- REPAIRABILITY & SPARE PARTS
- DISPOSAL (RECYCLING)

based on BMUV [2]

Automation, Orchestration and Standardization

A large number of industries will be affected by the DPP

THE DIGITAL PRODUCT PASSPORT

CCON 2023

> "... a data set that contains information about a product along its entire life cycle in one central place."

BMUV [3]

Industries affected:

Textile

Construction

Vehicles & Batteries

Electronics & ICT

Plastics

Packaging

Food & nutrients

Hof University

European Parliament 2023 [3,4,5]

The textile industry currently follows a linear Take–Make–Waste-Model

CCON 2023

THE TEXTILE INDUSTRY

TAKE

Source: American Institutes for Research [6]

MAKE

Source: CNN [7]

WASTE

Source: Tagesschau.de [8]

- High consumption of natural resources
- Social and environmental impact
- Enormous waste production & low recycling rate

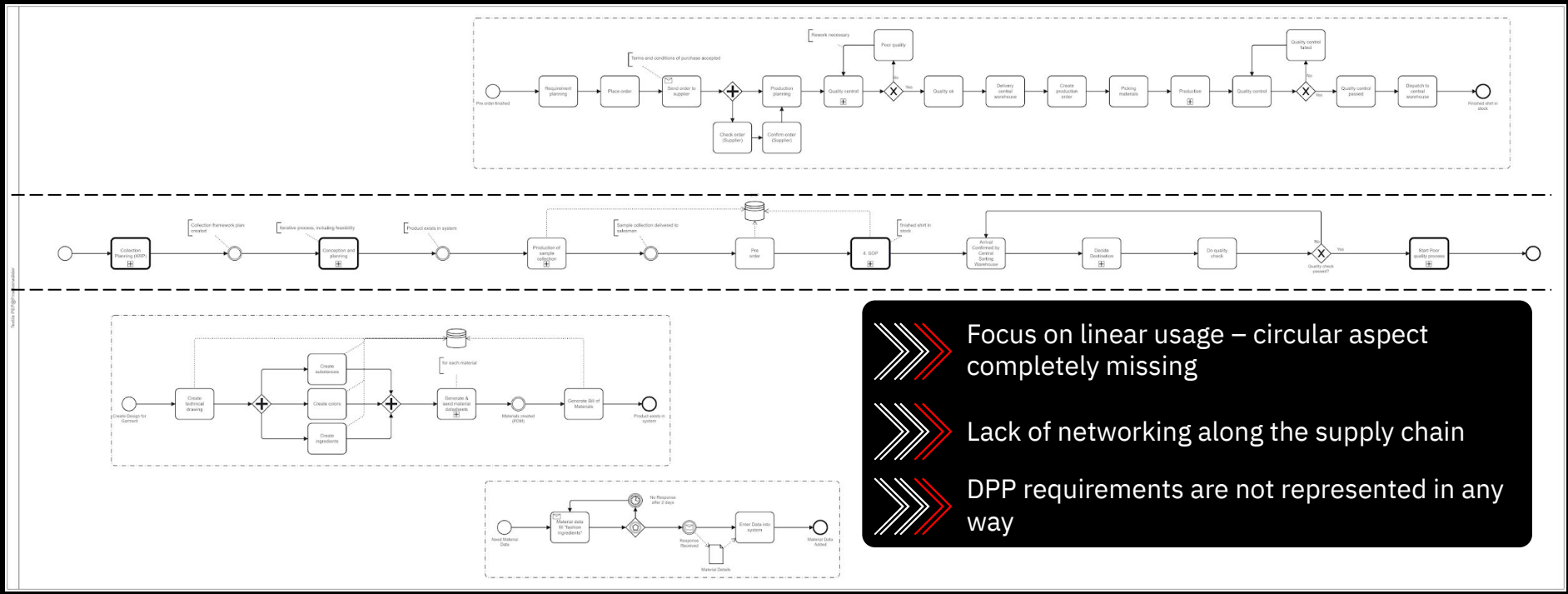
Need for circularity

CCON 2023

Our biggest challenge: understanding the process

Camunda served as a tool for process visualization and analysis

THE TEXTILE INDUSTRY



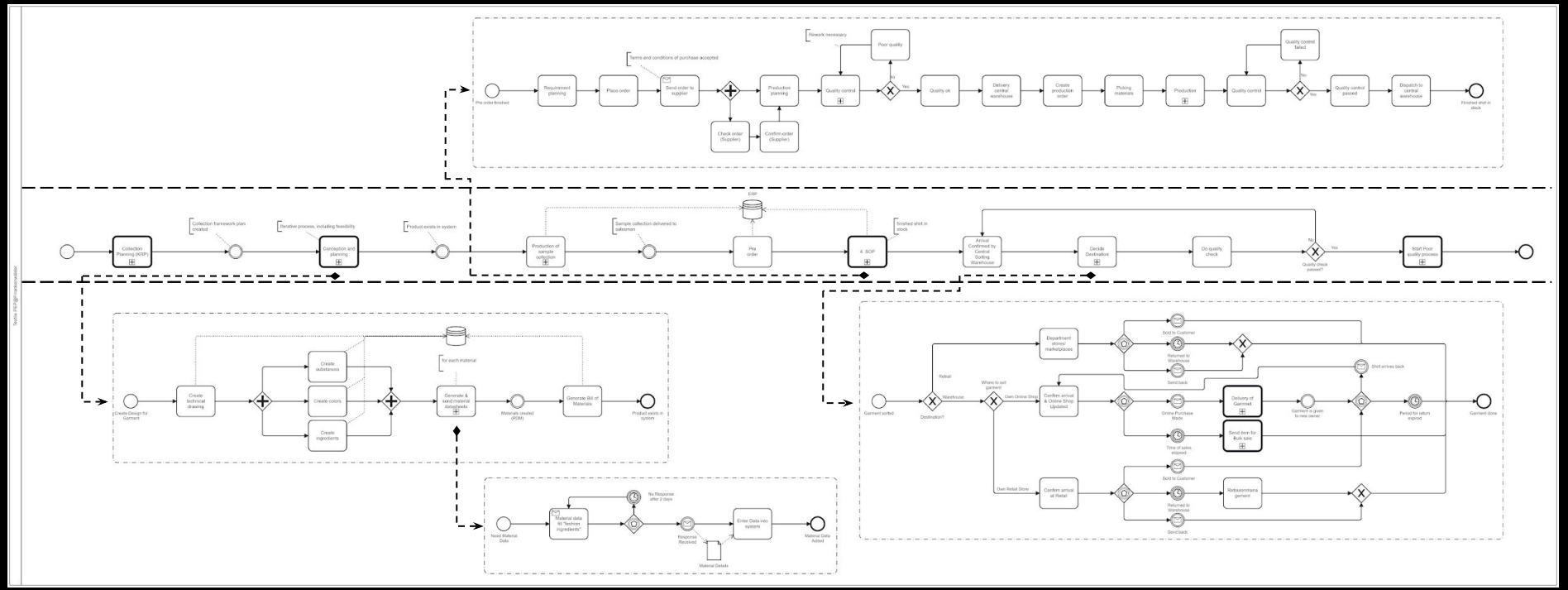
- Focus on linear usage – circular aspect completely missing
- Lack of networking along the supply chain
- DPP requirements are not represented in any way

To reduce complexity, the process was clustered into 4 phases

THE TEXTILE INDUSTRY

CCON 2023

Concept to product | Plan to produce | Order to cash | Use to dispose

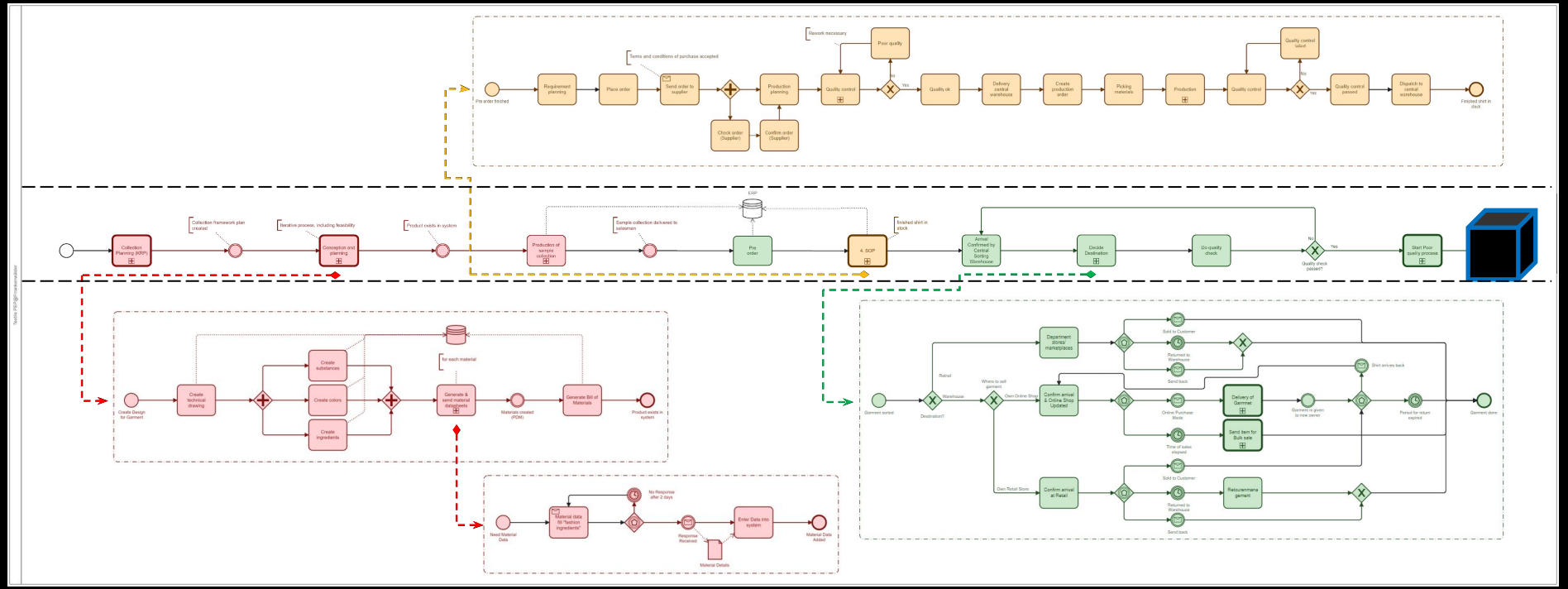


To reduce complexity, the process was clustered into 4 phases

THE TEXTILE INDUSTRY

CCON 2023

Concept to product | Plan to produce | Order to cash | Use to dispose

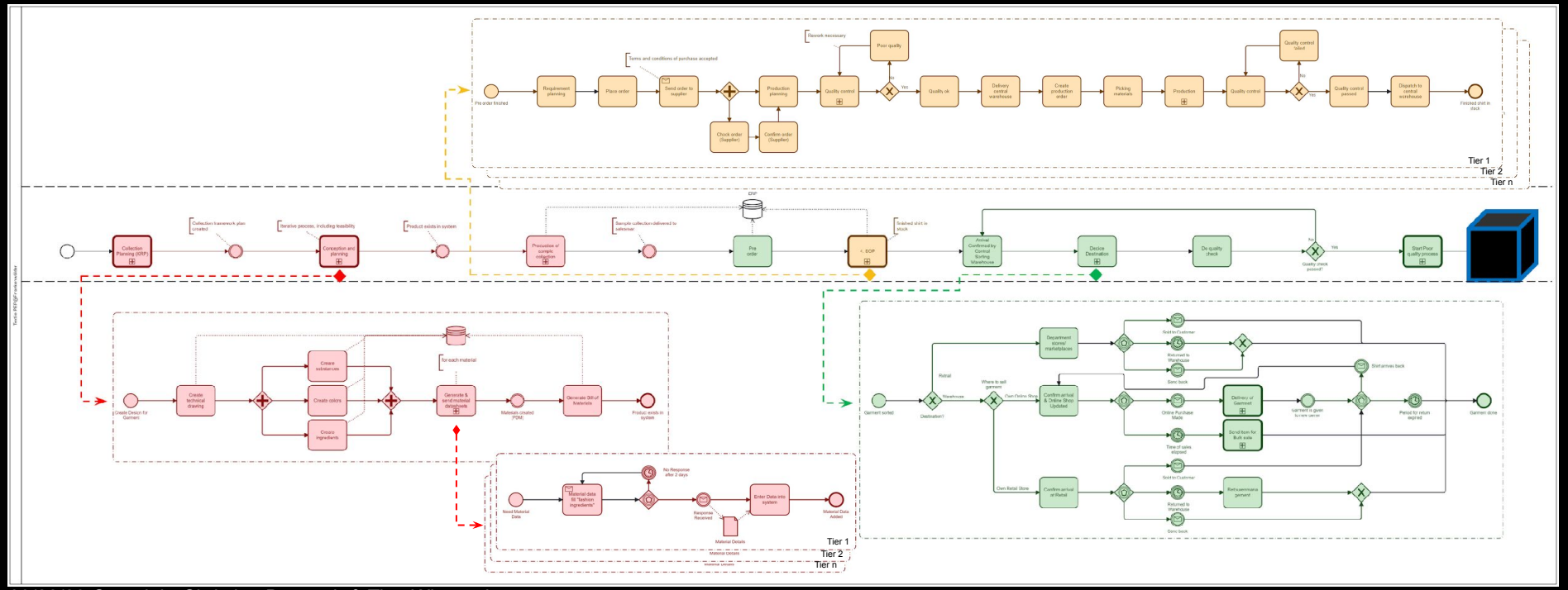


The DPP requirements were mapped to the process activities

CCON 2023

THE TEXTILE INDUSTRY

S	MC	CI	MP	T	D	RS	CF
Supplier data (S)	Materials & Components data (MC)	Chemical Ingredients data (CI)	Manufacturing Process CF (MP)	Transport CF (T)	Disposal (D) (Recycling)	Repairability & Spare parts (RS)	Carbon footprint data (CF)

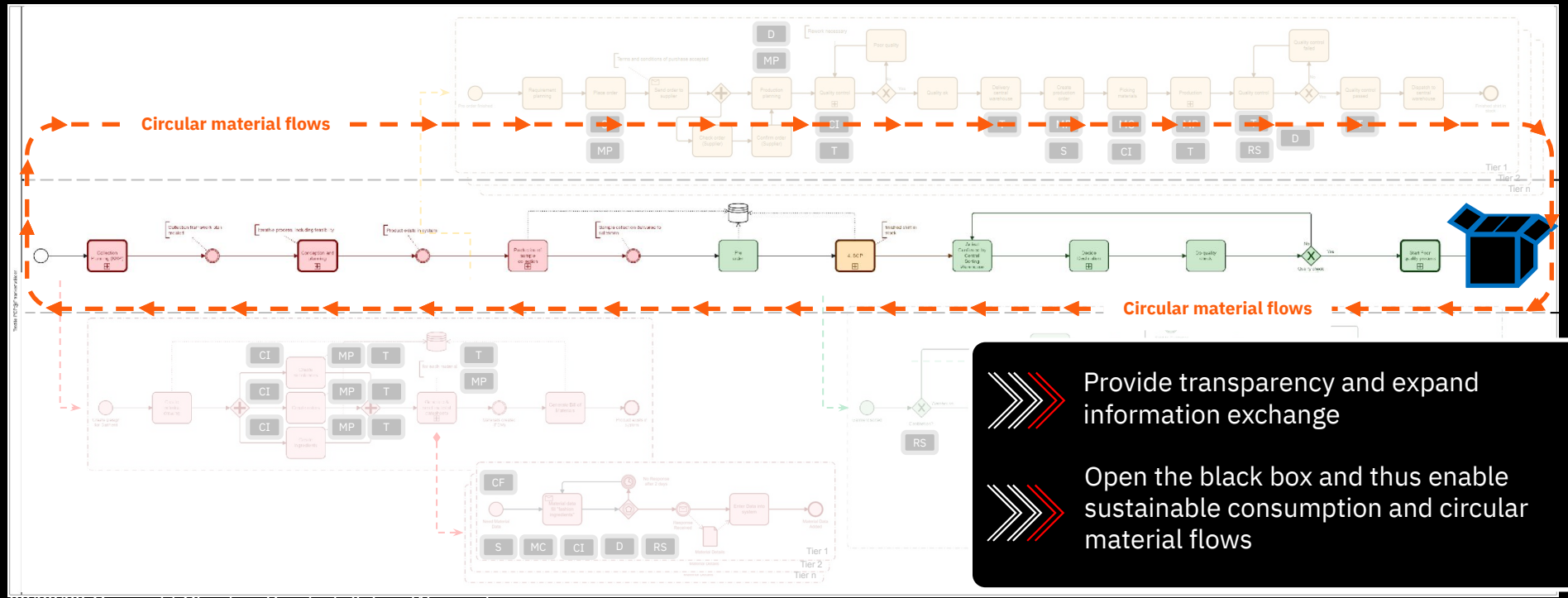


Supply chain integration and data exchange enable circularity

THE TEXTILE INDUSTRY

CCON 2023

S	MC	CI	MP	T	D	RS	CF
Supplier data (S)	Materials & Components data (MC)	Chemical Ingredients data (CI)	Manufacturing Process CF (MP)	Transport CF (T)	Disposal (D) (Recycling)	Repairability & Spare parts (RS)	Carbon footprint data (CF)



- Provide transparency and expand information exchange
- Open the black box and thus enable sustainable consumption and circular material flows

Our vision of a standardized and orchestrated DPP

THE SOLUTION

http://dpp-hub.com/

Hilmer und Brautsch

Digital Product Passport

CAMUNDA

Article

DPP-ID:	2023-49BYHOF-00007
Manufacturer:	Bavarian Fashion
Nr.	NOS-712404000-705-36
Description:	T-shirt
Color:	Dark Grey
Size:	M

Material

Composition:	Cotton (95%) Elasthan (5%)
Material origin:	Cotton: 50% recycled / 50% virgin Elasthan: 100% virgin

Footprint

CO2:	6,45kg
Water:	4.000L

Sustainability Score:

FAIRTRADE TEXTILE PRODUCTION™

GLOBAL ORGANIC TEXTILE STANDARD · GOTS ·

GREEN BUTTON GOOD FOR PEOPLE. GOOD FOR NATURE.

CERTIFIED cradle to cradle GOLD

Certified by DPP-HuB

- **Materials & Composition**
- **Supply Chain & Chain of Custody**
- **Repair, Reuse & Recycling Instructions**
- Carbon Footprint & Product lables
- Product Use & Care
- General Product & Manufacturer Information

▼ Materials & Composition

▼ Materials

Cotton (95%): Recyclable

Elasthan (5%): **NOT** Recyclable

Labels: Recyclable

▼ Data result from

MATERIALS & COMPONENTS DATA

CHEMICAL INGREDIENTS DATA

SUPPLIERS DATA

► Supply Chain & Chain of Custody

► Materials & Composition

▼ Supply Chain & Chain of Custody

▼ Production Chain (CO2 in kg)

Cotton (1,3 kg)

Elastan (0,3 kg)

Labels (0,05 kg)

Spinning (1,5 kg)

Weaving & Dying (2,5 kg)

Sewing (0,3 kg)

Transportation (0,5 kg)

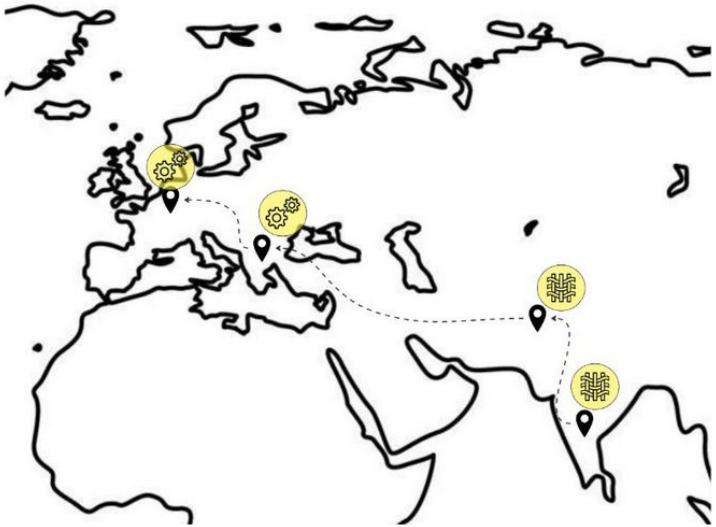
▼ Data result from

MATERIALS & COMPONENTS DATA | SUPPLIERS DATA | TRANSPORT CF | MANU-FACTURING PROCESS

► Materials & Composition

▼ Supply Chain & Chain of Custody

- ► Production Chain (CO2 in kg)
- ► Data result from
- ▼ Trace your item



▶ **Materials & Composition**

▶ **Supply Chain & Chain of Custody**

▼ **Repair, Reuse & Recycling Instructions**

Your shirt can be recycled up to 95%
Please drop it off at a collection station or send it back to us.
You can find collection stations near you here
You can create a return label here

▶ Carbon Footprint & Product lables

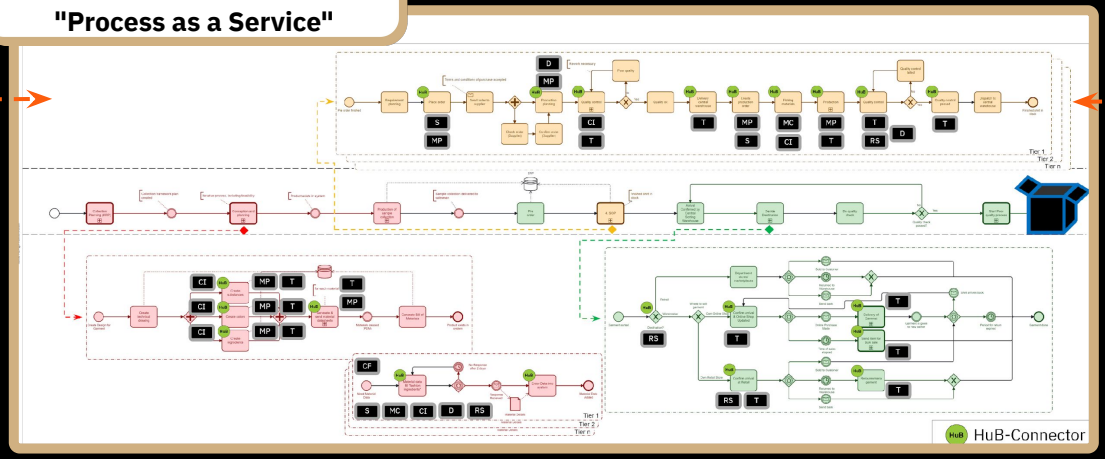
▶ Product Use & Care

Summary

CCON 2023

CAMUNDA

"Process as a Service"



Legislative & Measures

- European Green Deal
- CE + Industrial Strategy

DPP

requirement mapping

legal framework & requirements

Requirements

- Product Composition
- Environmental Impact
- Circularity Information
- Sustainability Information
- End-of-Life Information

technological mapping of the requirements

Connector

HuB

DPP - HuB

= central platform

DPP

Product specific dataset

Consumer

Retail

Public Authorities

Recycling Industry

Blockchain	Cloud	Analytics
Realtime Information	AI	Anti-counterfeiting

We need your help in three key areas

CCON 2023

- How can the “process as a service” approach be enhanced to be integrated into the Camunda Marketplace and to be used by all companies?
- How can a connector for the DPP-HuB be developed?
- Is there a company that would work with our Startup to test and develop the prototype?

Let´s get in touch to make the world a little bit better together.

CCON 2023

christine.brautsch@hub.bayern
christine.brautsch@hof-university.de

tina.wiegand@hub.bayern
tina.wiegand@hof-university.de

Sources

1) European Commission (2022). Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL establishing a framework for setting ecodesign requirements for sustainable products and repealing Directive 2009/125/EC

2) Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (2023). Was ist ein digitaler Produktpass?. available online at: https://www.bmuv.de/FA1313

3) Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (2023). Ein Pass für den gesamten Produktkreislauf. available online at: https://www.bmuv.de/WS5776

4) European Parliament, Generaldirektion Kommunikation (2023). Wie will die EU bis 2050 eine Kreislaufwirtschaft erreichen? Available online at: https://www.europarl.europa.eu/pdfs/news/expert/2021/2/story/20210128STO96607/20210128STO96607_de.pdf.

5) European Parliament, Generaldirektion Kommunikation (2023). Wie will die EU bis 2050 eine Kreislaufwirtschaft erreichen? Available online at: https://www.europarl.europa.eu/pdfs/news/expert/2021/2/story/20210128STO96607/20210128STO96607_de.pdf.

6) American Institutes for Reserach (2018). Social and Economic Impact Assessment of Cotton Farming in Madhya Pradesh. Available at: https://www.air.org/project/social-economic-and-environmental-impact-assessment-cotton-farming-madhya-pradesh-india

7) CNN (2020). Asian rivers are turning black. And our colorful closets are to blame. Available online at: https://edition.cnn.com/style/article/dyeing-pollution-fashion-intl-hnk-dst-sept/index.html

8) Tagesschau.de (2021). Atacama-Wüste in Chile Müllhalde für Fast-Fashion. Available at: https://www.tagesschau.de/ausland/amerika/muellhalde-atacama-wueste-101.html