

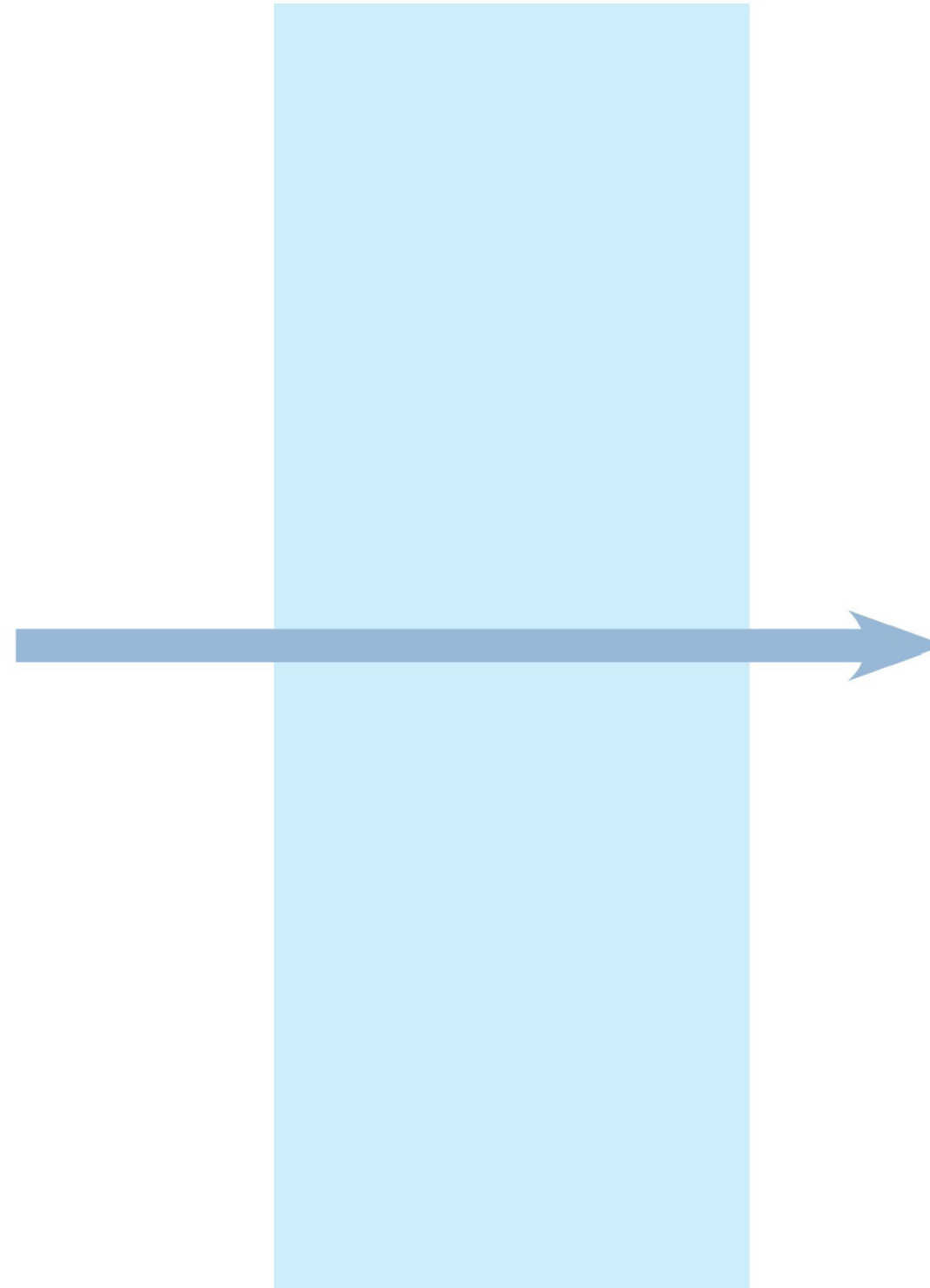


MA THESIS: DECENTRALIZED KNITWEAR MANUFACTURING

## STATE OF THE INDUSTRY

- The fashion industry is often criticized for its lack of environmental and social responsibility.
- To meet consumer demand for more styles and keep up with trends, brands push producers to increase output rapidly.
- Products are manufactured faster, with less detailed techniques, and from cheaper materials, consuming large amounts of water, land, and fossil fuels.
- To cut costs, many companies outsource production to developing countries, resulting in poor working conditions, human rights violations, and the rise of counterfeit goods.
- Increasing consumer awareness of these issues is bringing greater scrutiny to brand's ethical practices and the environmental impact of their products.

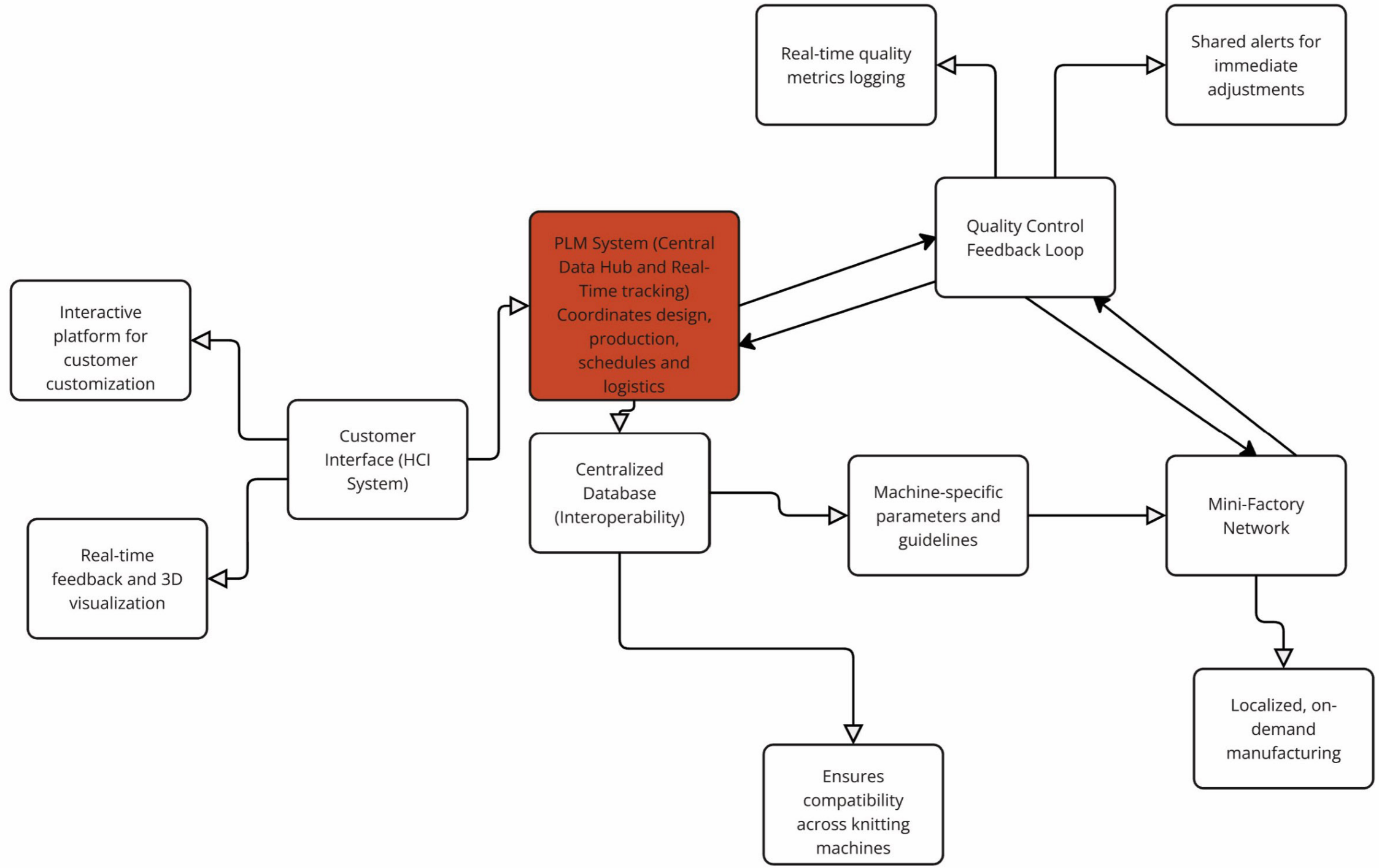
(Pervais, 2020)




## POSSIBILITIES OF DECENTRALIZED MANUFACTURING

- Decentralized manufacturing minimizes environmental impact by reducing long-distance shipping and resource-intensive processes.
- Enables on-demand manufacturing, aligning production with actual consumer demand, and reducing waste and overproduction.
- Empowers smaller, regional manufacturers to compete with large centralized production facilities, democratizing manufacturing capabilities.
- Allows brands to test designs and adapt production based on consumer feedback, resulting in more targeted and relevant products.
- Distributes production capabilities, creating more resilient supply chains, less vulnerable to global disruptions.
- Supports local economies by fostering job creation and innovation in regions closer to consumer markets.

DIGITAL SUPPLY CHAIN MODEL



PLATFORM: OTHER CUSTOMIZATION FEATURES



**Styles**

Colors	Grey
Yarn	Merino Wool
Sleeve length	Long Sleeve
Neckline	High Turtleneck
Pockets	No Pocket

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**Yarn**



Merino Wool




Lightweight Cotton




Cashmere


**Sleeve length**



Long Sleeve




Short Sleeve




Sleeveless


**Neckline**



High Turtleneck




V-Neck

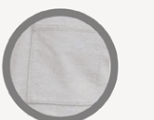


Crew Neck

**Pockets**



No Pocket

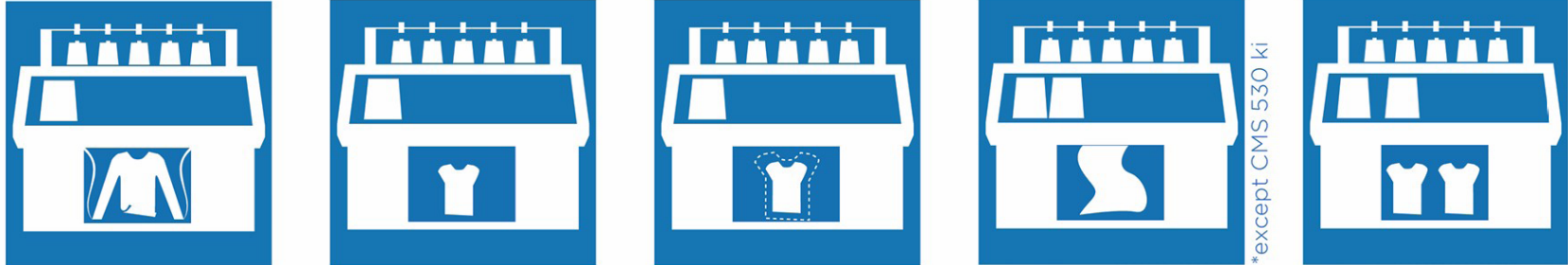


Single Chest Pocket

E-commerce Integration and User Experience: the platform integrates customization seamlessly with an e-commerce system, making it easy for users to design and purchase their garments in one streamlined process. The live 3D render updates dynamically as customization options are selected, allowing users to preview their choices in real time and make informed decisions.

# STOLL KNITTING PROCESS

What can be knit on a knit and wear machine?

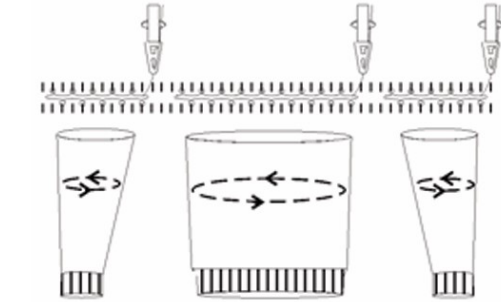


- 1. knit and wear
- 2. fully fashion
- 3. oversized fully fashioned garments
- 4. extra-wide fabrics\*  
\*except CMS 530 ki
- 5. double fully fashion or double knit and wear garments without sleeves or baby articles

Fig 9. Knit and Wear (Stoll, 2021)



Fig 10. CMS 530 ki knit and wear (Stoll, 2021)



**1** Separate Tubular Sections:

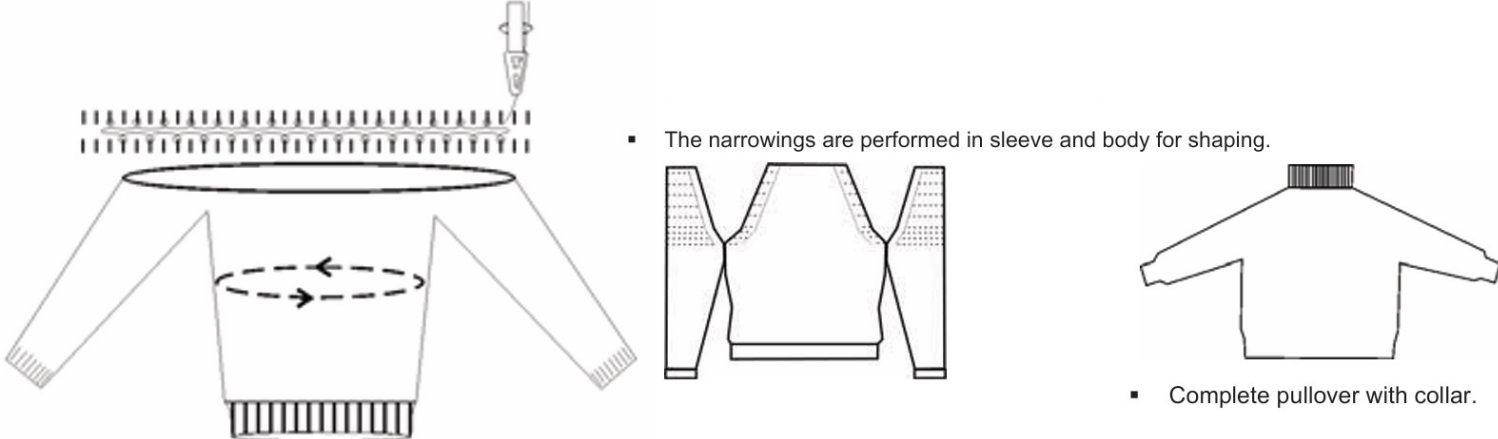
- The machine starts by knitting each section (e.g., left sleeve, body, right sleeve) as separate tubes.
- Each section uses a dedicated yarn carrier, feeding yarn directly to the specific area.

**Yarn Carrier Specifications:**

CMS - Type	Yarn carrier specifications with knit and wear		
	Left sleeve	Body	Right sleeve
<b>CMS xxx</b>	4	5	6
<b>CMS 822</b>	3	4	5

**Shape part colors with knit and wear:**

Left sleeve	Body	Right sleeve
Shape part color #2	Shape part color #1	Shape part color #3



**2** Joining at the Underarm:

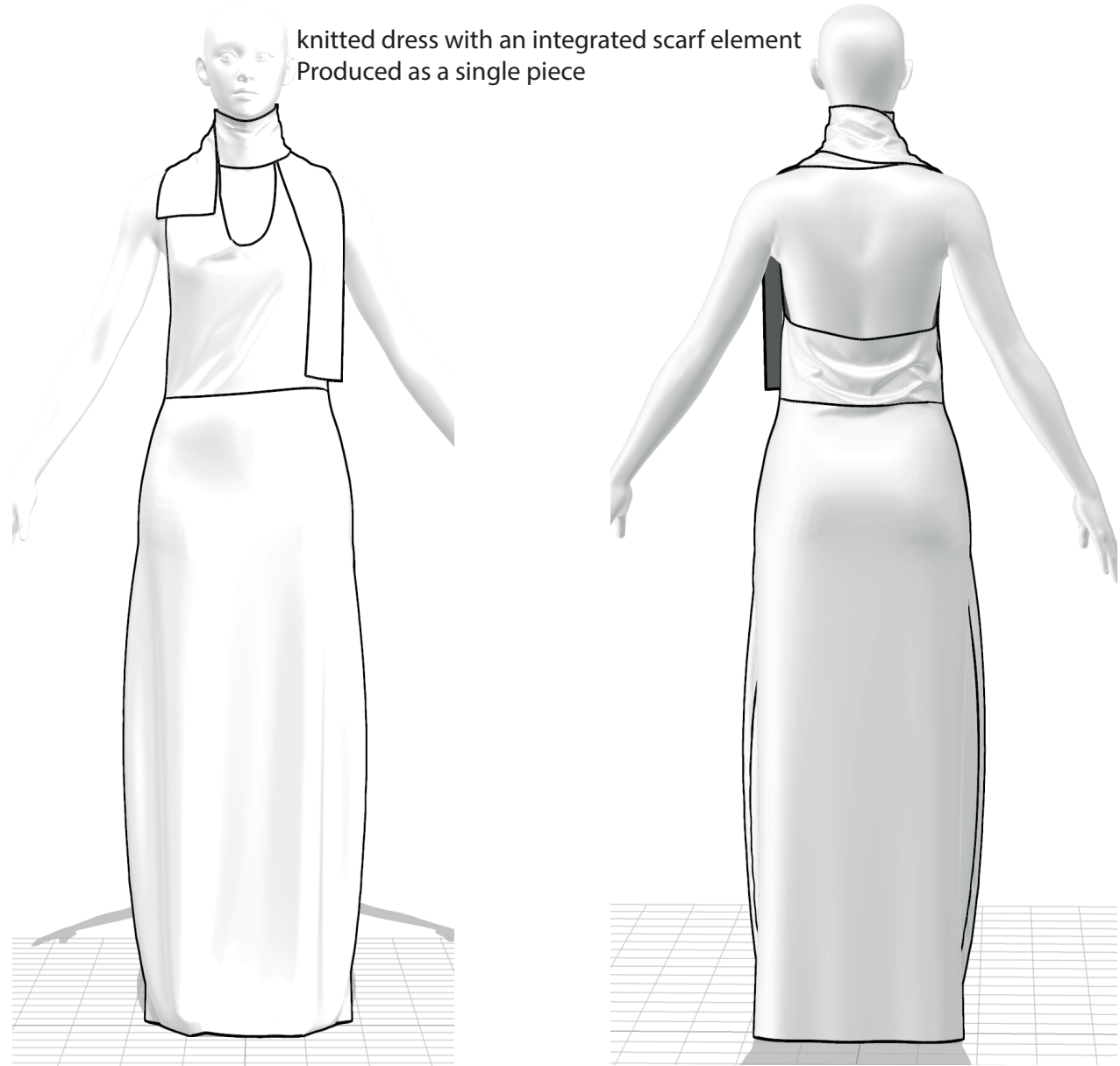
- At the joining point (usually the underarm), the machine seamlessly connects the tubes (sleeves and body) into a single piece.
- Eliminates manual joining or sewing. Shaping Through width Reduction.

**3** Shaping Through Width Reduction:

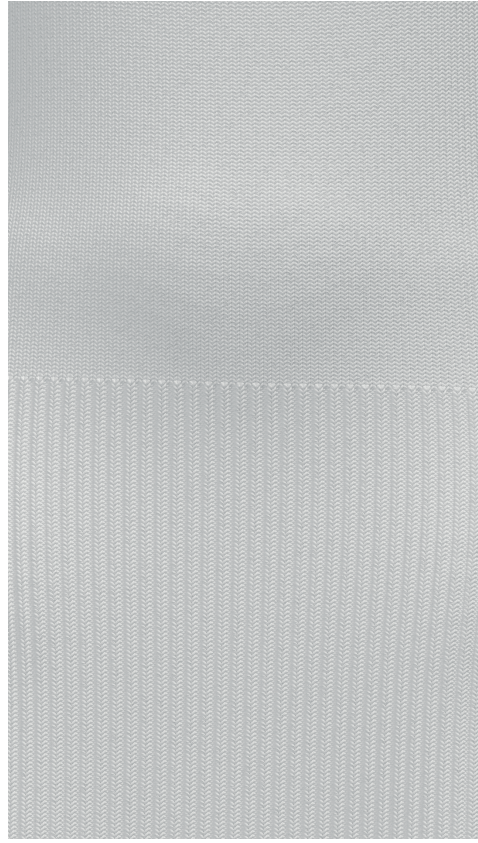
- After joining, the machine narrows specific areas (e.g., sleeves and shoulders) using stitch reduction.
- This shaping mimics traditional garment construction for a natural fit (narrowing the width allows the fabric to follow the curves of the body).



	<b>COLLECTION</b>	<b>KNITWEAR</b>	<b>MANUFACTURER</b>	
	<b>STYLE CODE</b>	<b>C22</b>	<b>STATUS</b>	<b>SMS</b>
	<b>STYLE/PATTERN</b>	<b>KNIT-DRESS</b>	<b>SAMPLE SIZE</b>	<b>S</b>
	<b>DATE</b>	<b>09/11/2024</b>	<b>BULK SIZE SCALE</b>	



- Stoll Knit and Wear
- Plain stich followed by 1x1 Rib
- Make garment in black



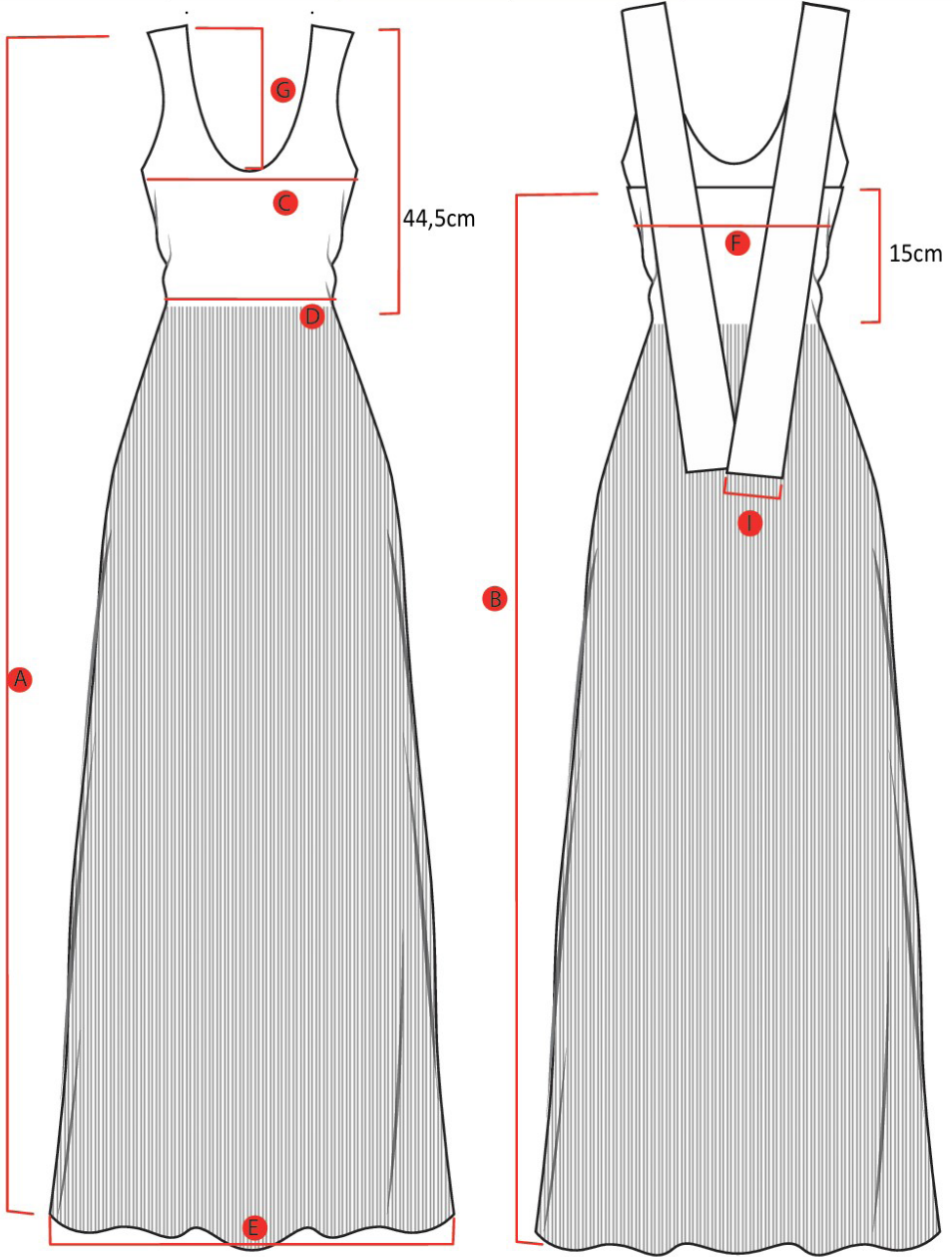
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LIST OF MEASUREMENTS (CM)		
POM		SMS (CM)
A	Front Body Length - HPS to Hem Edge	150,5
B	Back Body Length	121,5
C	Bust Width	27
D	Waist Width	27
E	Hem Width (Straight)	35
F	Across Back - (Relaxed)	24,5
G	Neck drop	16
H	scarf length	94,5
I	scarf width	12

