Enhancing Transparency and Traceability of Sustainable Value Chains

Blockchain Pilot on Cotton Value Chains

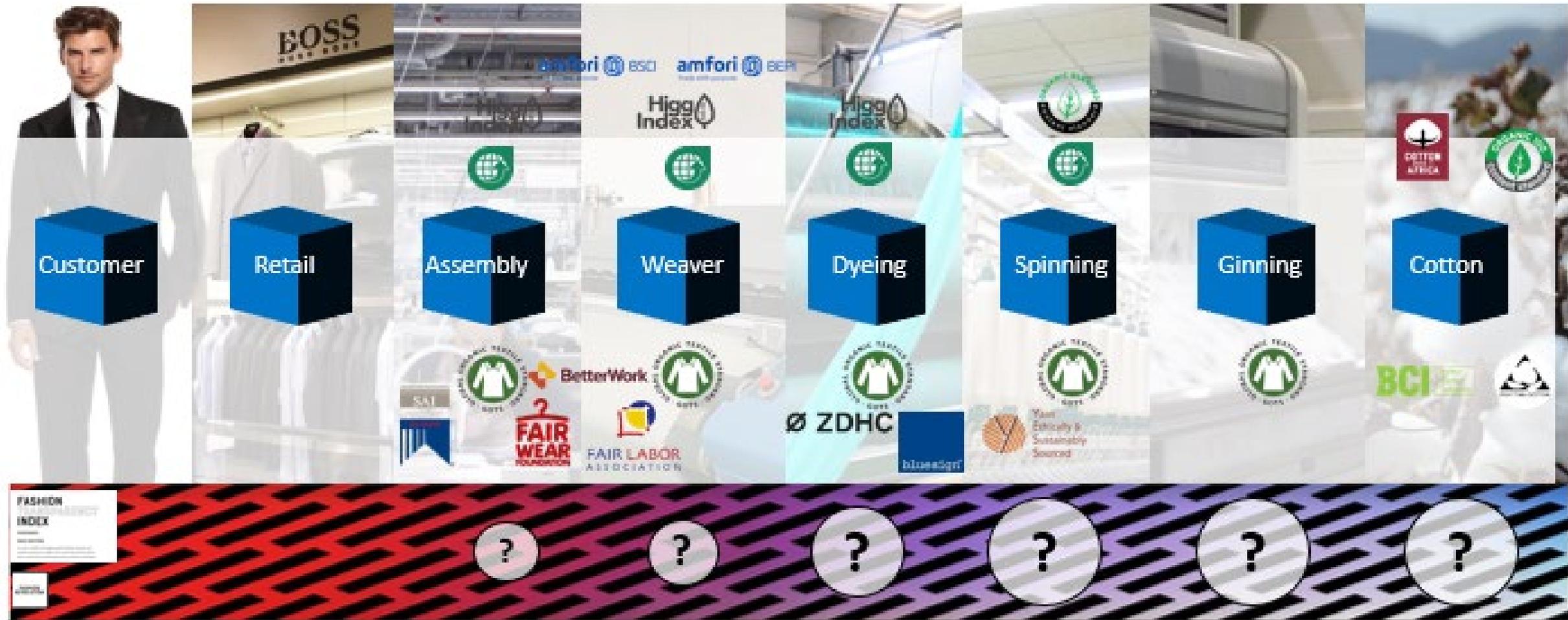**Heinz Zeller, Head of Sustainability & Logistics**
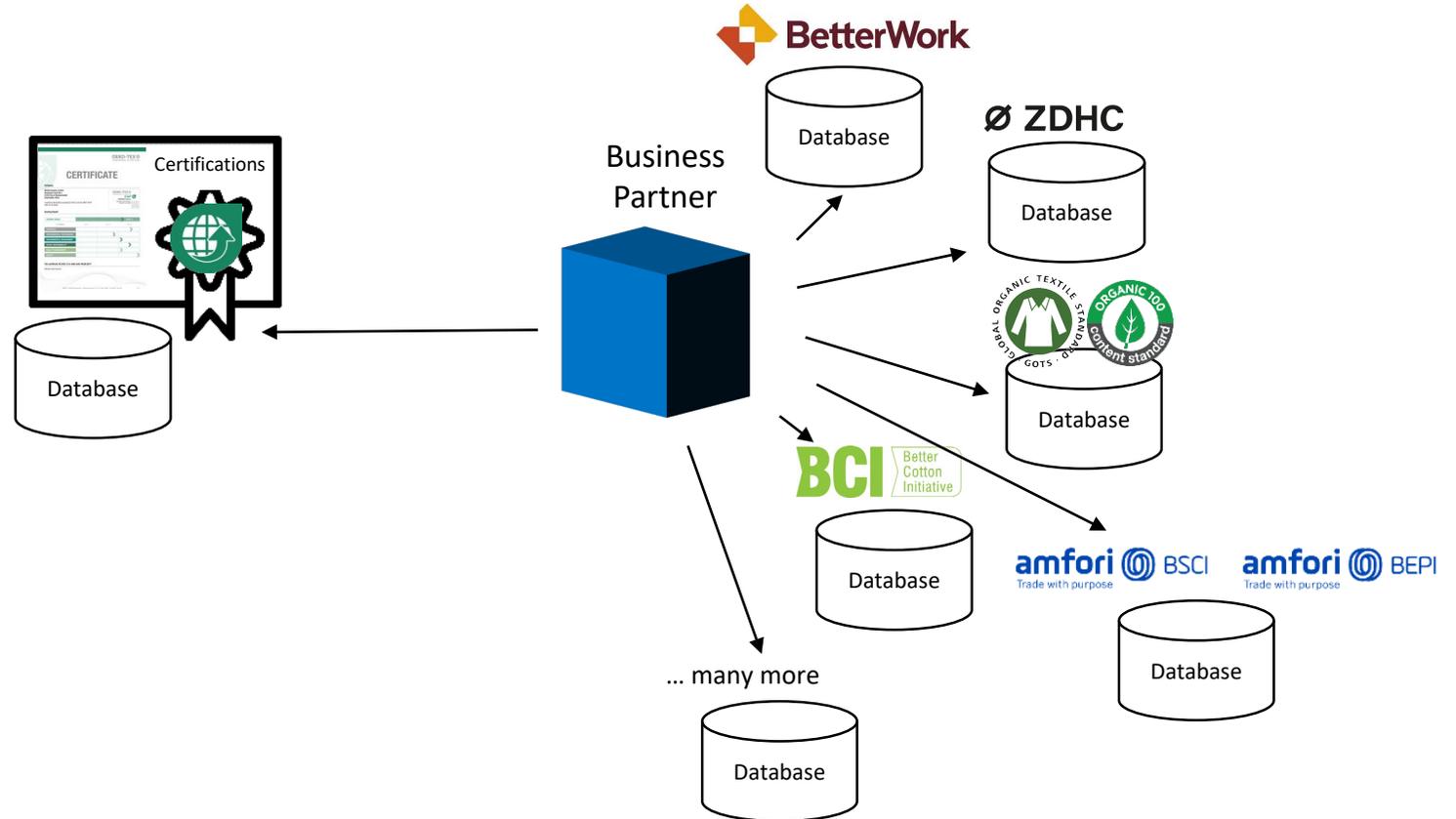HUGO BOSS Ticino
31 I 10 I 2019, London

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UN / CEFACT

The blockchain ecosystem: enabler for transparent and efficient business practice

The Textile Value Chain

Customer · Retail · Assembly · Weaver · Dyeing · Spinning · Ginning · Cotton

The ecosystem

Compliance and business information is stored in proprietary systems

Certifications

CERTIFICATE

Database

BetterWork

Database

Business Partner

Ø ZDHC

Database

Database

BCI Better Cotton Initiative

Database

amfori BSCI   amfori BEPI

Database

... many more

Database

Information is available but not visible to all supply chain partners and stakeholders -> missing transparency

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The ecosystem: 1. Distributed Ledger Technology (DLT)
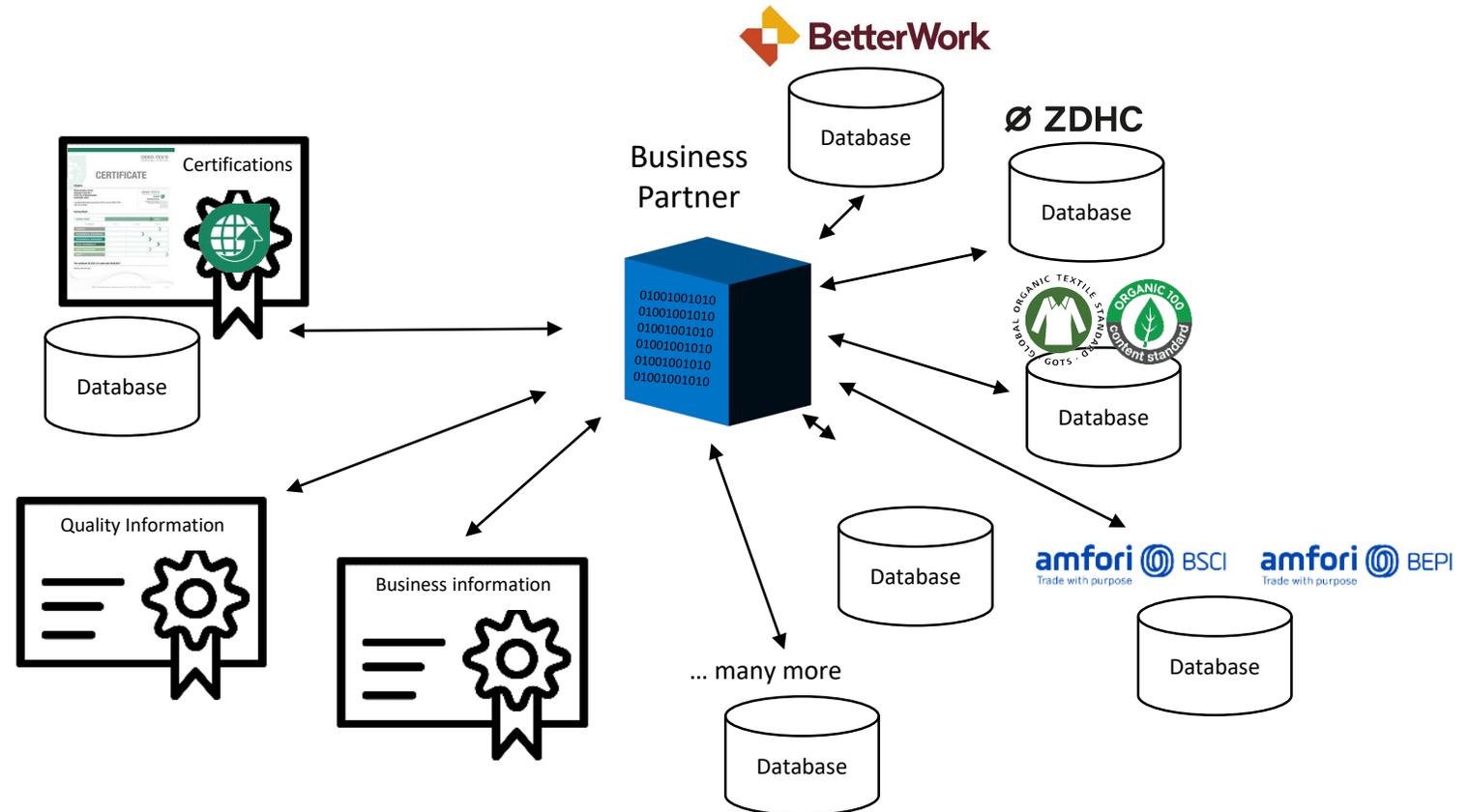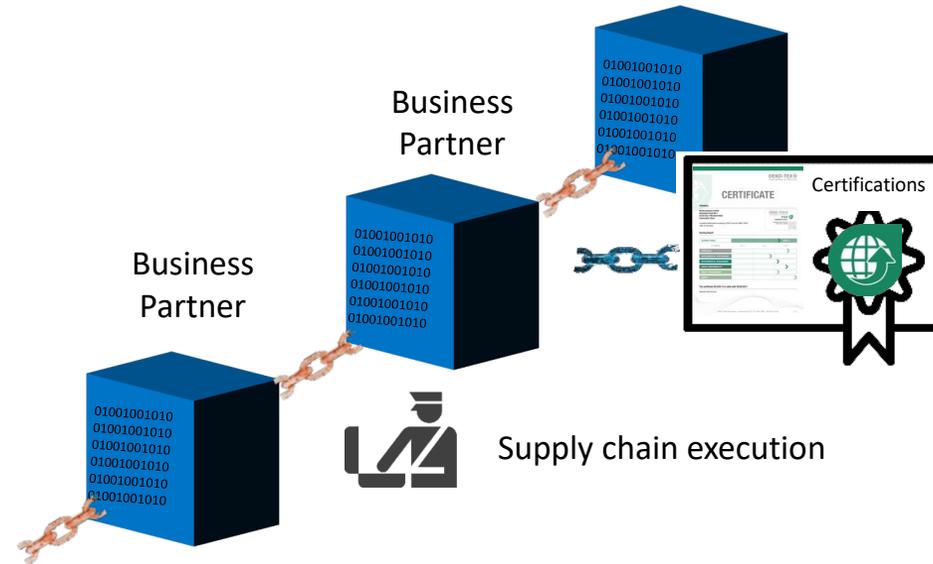

1. Distributed Ledger

- Business partners manage all their information for all stakeholders as single point of access
- Avoidance of duplication for multiple certification and auditing

The ecosystem: 2. Smart Contracts

Smart contracts allow the automation of repetitive tasks (e.g. order monitoring, delivery slips, bills of lading and customs clearance) secured by a distributed ledger

Business Partner

Business Partner

Certifications

Supply chain execution

2. Smart Contracts

1. Distributed Ledger

- Process automation and data exchange including third party service providers
- Enabling supply chain transparency as an integrated part of B2B transactions

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The ecosystem: 3. Tokens

Tokens bring together procurement, compliance and financial transactions by using so-called cryptographic tokens unfolding the real potential of a blockchain ecosystem

Business Partner

Business Partner

Certifications

CERTIFICATE

Financial services
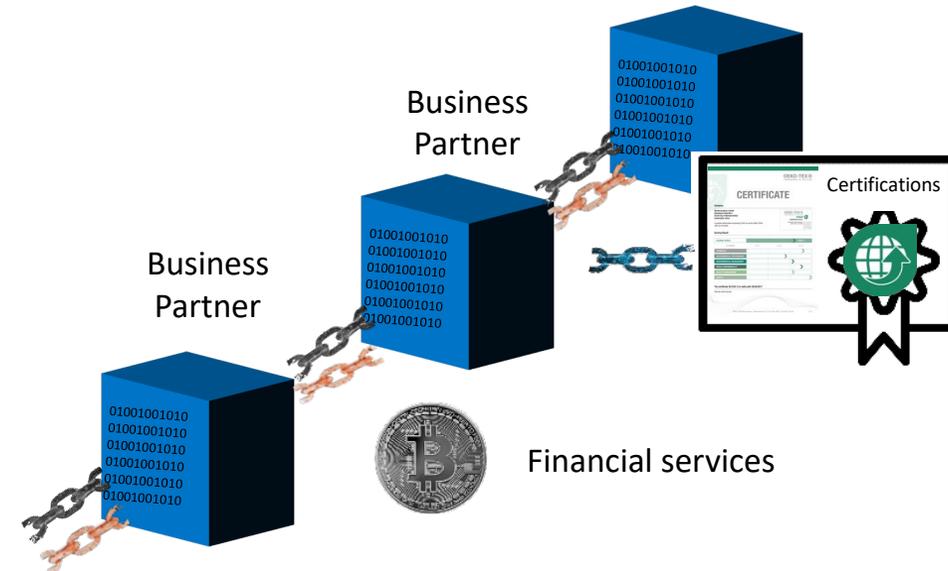
| 3. Token Economy |
| 2. Smart Contracts |
| 1. Distributed Ledger |

- Minimise third party financial services like letter of credits
- Incentivisation for responsible business

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The ecosystem for the consumer engagement

Transparent, secured product story available with all necessary key elements

Business Partner

Certifications

Retail / Brand

Consumer

Token based loyalty program
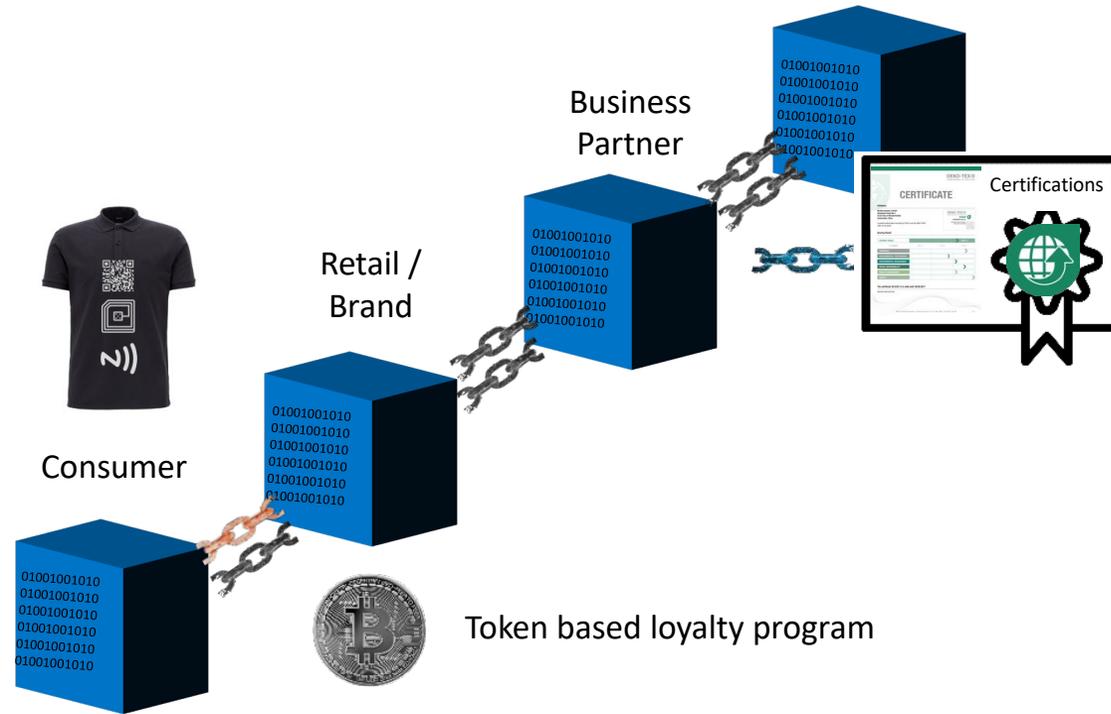
3. Token Economy

2. Smart Contracts

1. Distributed Ledger

▪ New digital engagement with consumer possible on product but also on brand level

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The ecosystem for the circular economy

Products information is made available securely, connected to an international article coding system (e.g. EAN) and garments equipped with a machine readable tag (RFID, bar code,..) enabling machine separation for an efficient recycling

3. Token Economy

2. Smart Contracts

1. Distributed Ledger

Business Partner

Retail / Brand

Consumer

Financial services

Certifications

CERTIFICATE

RFID
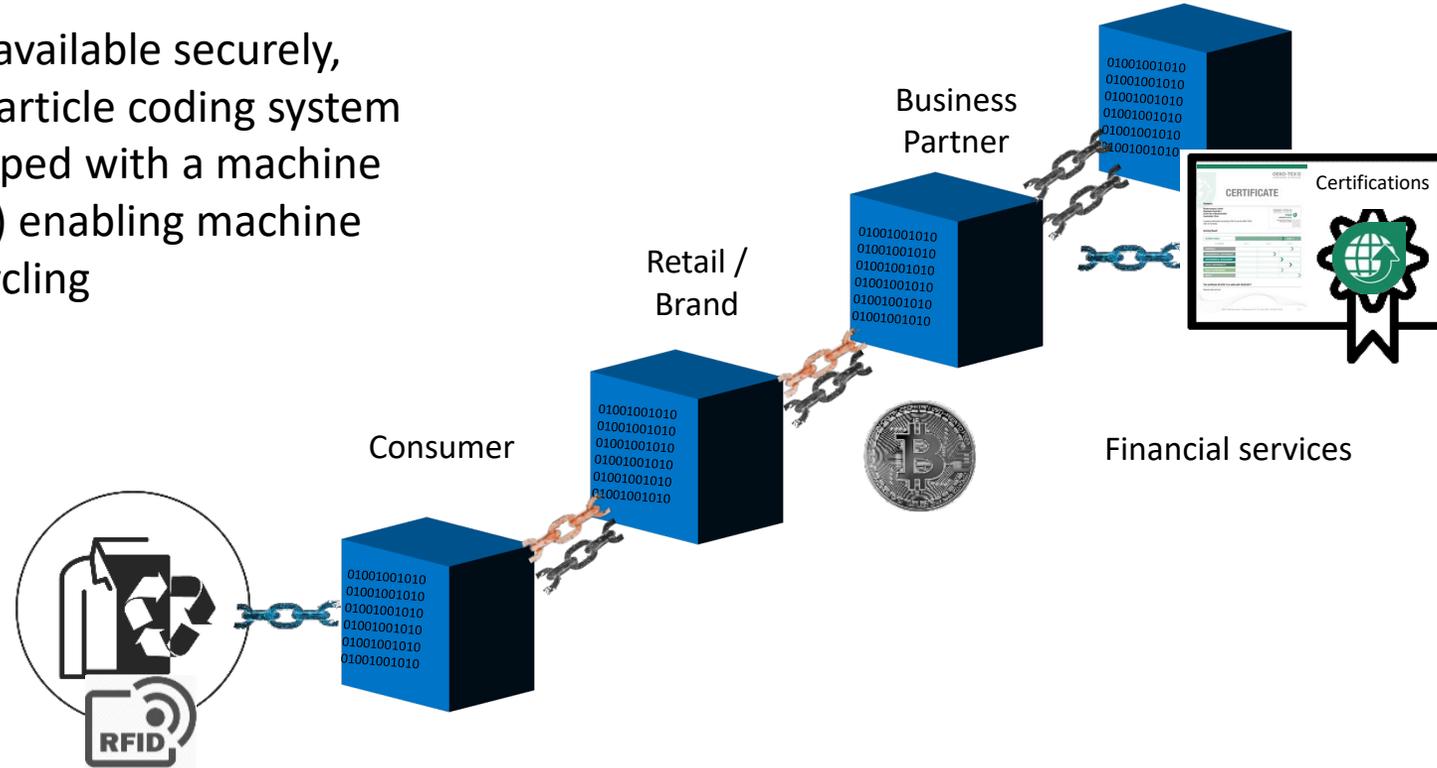
- Enabler of the circular economy at any life cycle stage making product information availabl
- Garments need to be equipped with machine identification for achieving economy of scale

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The ecosystem build on security and credibility
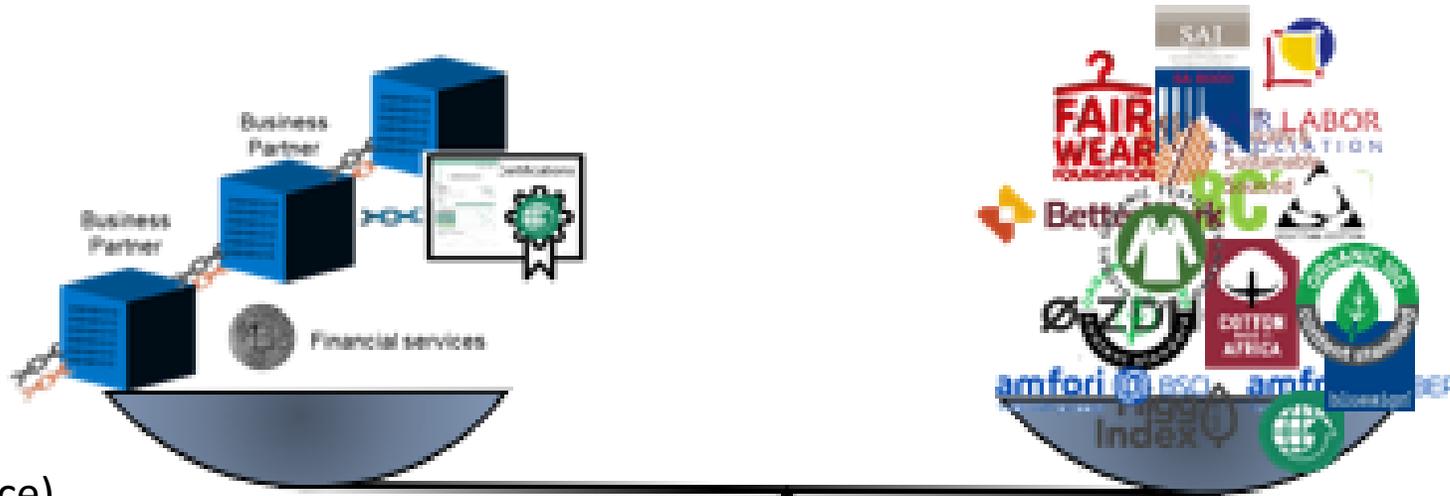
Blockchain (opensource)

- 3. Token Economy
- 2. Smart Contracts
- 1. Distributed Ledger

Consortium (UNECE / OECD)

- Define rules for: incentivisation , resp. business, access, …
- Steer the future development based on an open-source approach
- Connect to international and national organisation

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The pilot: UNIDO Egyptian cotton project

Implementing agency	United Nations Industrial Development Organization (UNIDO)
Donor:	Italian Agency for Development Cooperation
Total budget:	Euro 1,500,000
Duration:	24 months
End date:	30 June 2020 (Scale Up until 2022 is confirmed)
Government counterparts:	Ministry of Trade and Industry (MTI), Ministry of Agriculture and Land Reclamation (MALR)
Other stakeholders:	Cotton Research Institute (CRI) Cotton Egypt Association (CEA) Textiles, Apparel and home-textiles export councils National Council for women (NCW) Better Cotton Initiative (BCI) 17 manufacturers, brands and retailers (local and international) along the Egyptian cotton value chain

Sustainable Egyptian Cotton
- Organic cultivation
- Better Cotton Pilot and scale up BCI
- Premium quality
- GMO Free
- Biocontrolled

Sustainable Industrial Processes, Traceability and Transparency
- Promoting social compliance
- Enhancing cleaner production, chemical and wastewater managment

Circular Economy
- Recycling practices
- Waste reduction
- Circular design

Innovation and Green Technologies
- Promoting value addition
- Enhancing technology transfer
- Investing in green technologies

Strategic Cooperation
- Business alliances along the value chain
- International stakeholders support

Skills for Sustainability
- Develop skills of youth for a sustainable cotton value chain

https://open.unido.org/projects/EG/projects/160068

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The pilot: UNIDO Egyptian cotton project

- Part of an existing development project managed by UNIDO

- In loco structure is given by the UNIDO project structure and its involved partners

- Covers all the major steps from cotton field to final product

- Includes important initiatives like GOTS, BCI, zdhc, oekostep and others

- It's a proof of concept (POC) with limited complexity

- Scale up through the UNIDO project is feasible

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Pilot #1

Implementing a **blockchain technology** for traceability and due diligence in the **cotton value chain** in support of a circular economy

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Actual Piloting Partners

Expected Accomplishments

EA1

Increased connectivity and cost-efficiency

○ Strengthened capacity to source more sustainably

EA2

Risk-informed decisions

Set of internationally agreed compliance and sustainability standards.

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Indicators of Achievement I

IA1.1

- At least **1 brand and 4 manufacturers/cotton traders/farmers** participate and test the blockchain-based system developed by the end of **2020**;

IA1.2

- At least **30 stakeholders** are trained in the use of the blockchain system developed by the project by the end of **2020**.

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Indicators of Achievement II

IA2.1

- A **Proof of Concept (PoC)** for a transparency and traceability blockchain-based system for sustainable cotton value chains, by the end of **2020**;

IA 2.2

- At **least two project documents for undertaking additional PoCs** in other supply chains are developed by the end of **2020**;

IA2.3

- **One technical solution** to address the issue of accessing data on sustainability performance is identified as part of the PoC by the end of **2020**

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Activities I

Refer to the project document for detailed activities

A1.1 Definition of the value chain and data model

A1.2 Definition of the technology model and the traceability systems for the physical assets

A1.3 Analysis of the legal aspects of the blockchain pilot implementation (e.g. GDPR)

A1.4 Design of the IT data model

A1.5 Parallel testing of blockchain modules developed and pilot feedback

A1.6 Summarization of pilot project results in a project pilot report/case study

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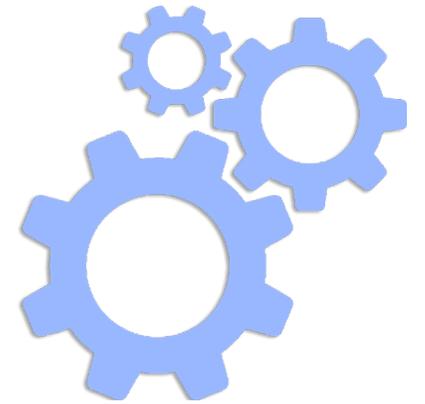
Activities II

Refer to the project document for detailed activities

A2.1 Identification and mapping of key stakeholders and possible beneficiaries

A2.2 Selection of brands, manufacturers, cotton traders and farms to participate in the pilot project

A2.3 Development training materials targeting potential end-users

A2.4 Training of at least 30 experts on a blockchain system for traceability and due diligence through a workshop (2-day workshop) and online tutorials/webinars;

A2.4 Organization of a concluding conference

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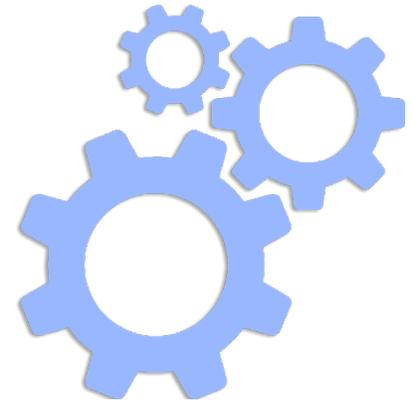
Pilot project governance structure

UNECE Secretariat

Coordinates the project pilot implementation, review progress and ensures consistency with overall UNECE project scope and activities

Pilot Project Team

Includes consultants that provide technical input and expertise for pilot implementation

Pilot Project Partners

Provide in kind input for pilot project implementation (Hugo Boss, Weba, Filmar, Albini Group, OEKO-TEX, GOTS, ZDHC)

Blockchain Technology Solution Provider

TORs and Call for proposal to be launched

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The blockchain pilot for traceability and sustainability in cotton value chains

Implementing timeframe
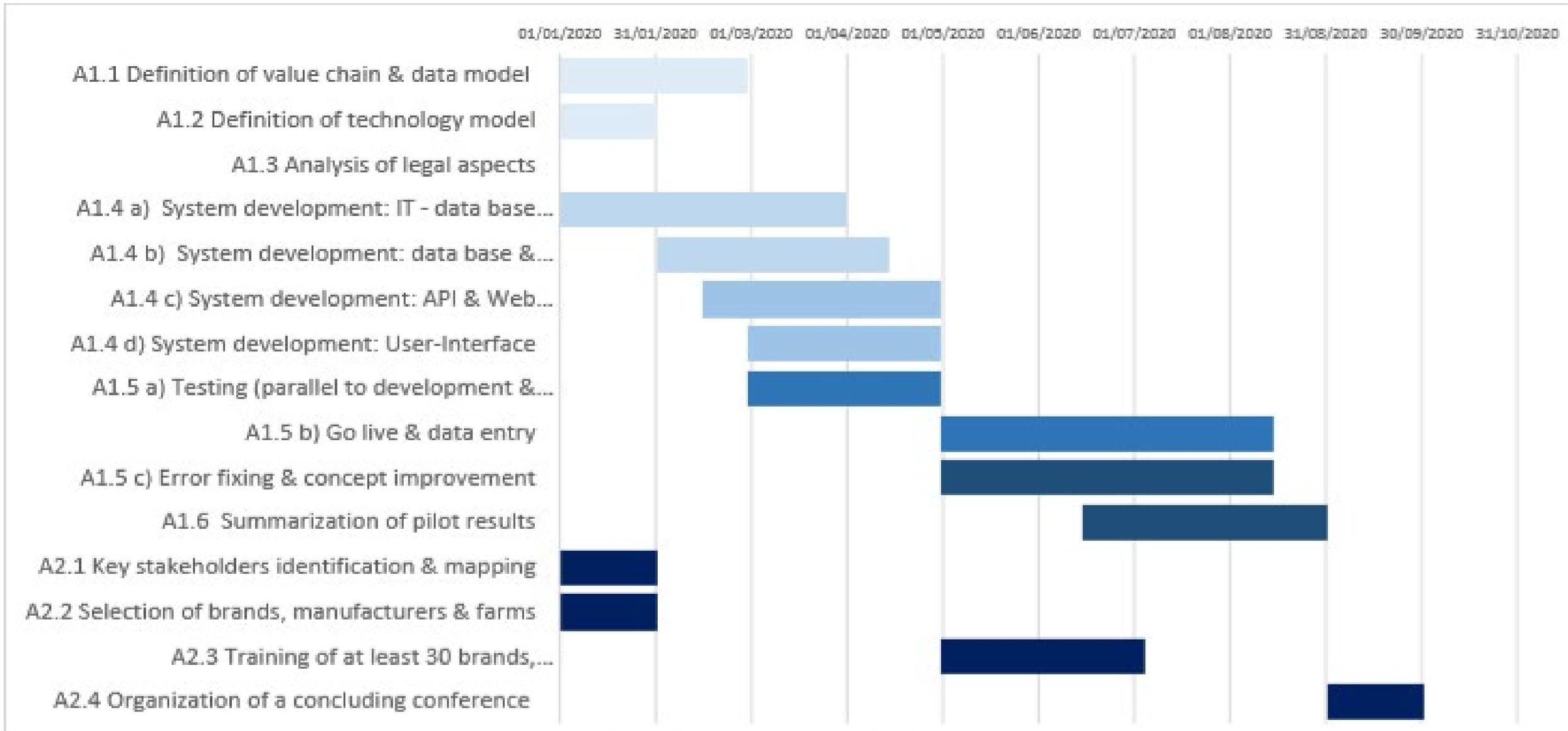
Key events to present pilot progress 2019-2020

UN/CEFACT Forum, 30-31 October 2019, London

OECD Due Diligence Forum, 11-13 February 2020, Paris

UN/CEFACT Forum, 27-1st June 2020, Geneva

UN HLPF, July 2020, New-York

OECD Blockchain Policy Forum, September 2020, Paris

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A Cotton Supply Chain model and players (Egyptian cotton example)

CRI (seed)
XYZ (land)

TEOCS (organic process)

GOTS ()
Step-OEKO ()
ZDHC (chemicals)

| Seed | Cultivation | Harvest | Ginning | Transport | Spinning | Dyeing | Knitting | Assembly | Transport | Distribution | Transport | Sales | Consume |

T4 Origin   T3   Supplier   T2   T1 Producer   Brand

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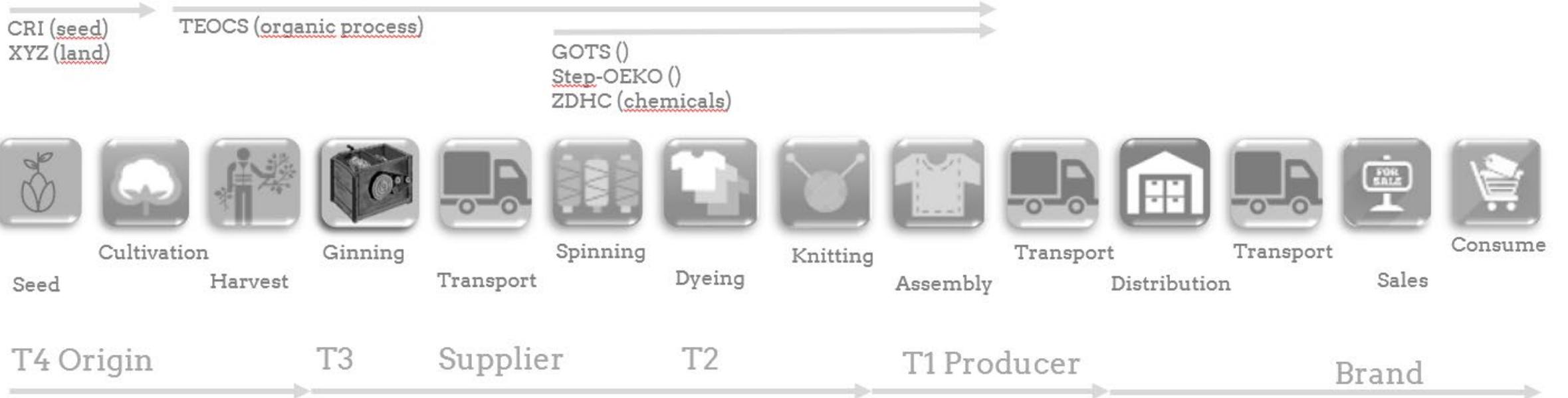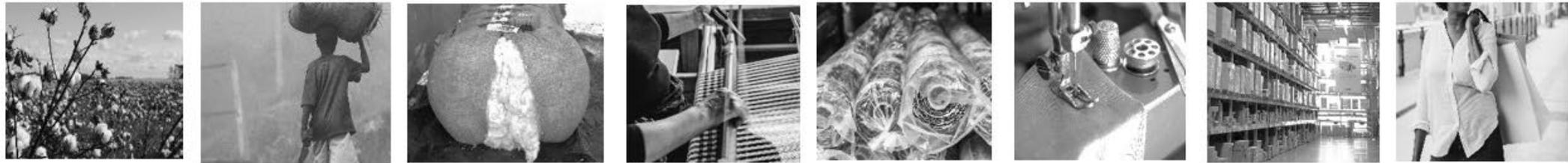
Certifications in a Cotton Supply Chain (WEBA "Tier1" example)

EGIPYTIAN COTTON EXAMPLE

	1	2	←Tier 4	3	4	5	6	←Tier 2/3	7	8	9	←Tier 1

Document Type

1	2	3	4	5	6	7	8	9
Process: 1. Conventional 2. Organic 3, OGM free	Process: 1. Organic Cultivation	Process: 1. Quality of Fibers (CATGO)	Process: 1. Quality of Yarn (XYZ)	Process: 1. Quality of Fabric (XYZ)	Process: 1. Quality of Fabric (XYZ)	Process: 1. Quality of Fabric (XYZ)	Process: 1. Quality of Fabric (XYZ)	Process: 1. Quality of Finished Good
			Process: 2. Organic Textile (TEOCS)	Process: 2. Organic Textile (TEOCS)	Process: 2. Organic Textile (TEOCS)	Process: 2. Organic Textile (TEOCS)	Process: 2. Organic Textile (TEOCS)	
			Process: 3. Organic Textile (GOTS)	Process: 3. Organic Textile (GOTS)	Process: 3. Organic Textile (GOTS)	Process: 3. Organic Textile (GOTS)	Process: 3. Organic Textile (GOTS)	
				Process: 4. Chemicals (ZDHC)				
Additional Documents (e.g. COO)	→		Process: 5. Sustainability (STeP)	Process: 5. Sustainability (STeP)	Process: 5. Sustainability (STeP)	Process: 5. Sustainability (STeP)	Process: 5. Sustainability (STeP)	

Steps

SEED (conventional, organic, OGM)	FARMING (cultivation, cotton field, harvest)	GINNING (raw fibers and seeds)	SPINNING (yarn, thread)	DYEING (wash, pigments, colors)	WEAVING (yarn, fabric)	FINISHING (treatments)	PRINTING (color, pattern, textile)	PRODUTCION (cutting, assembling finishing)

Auditing Body

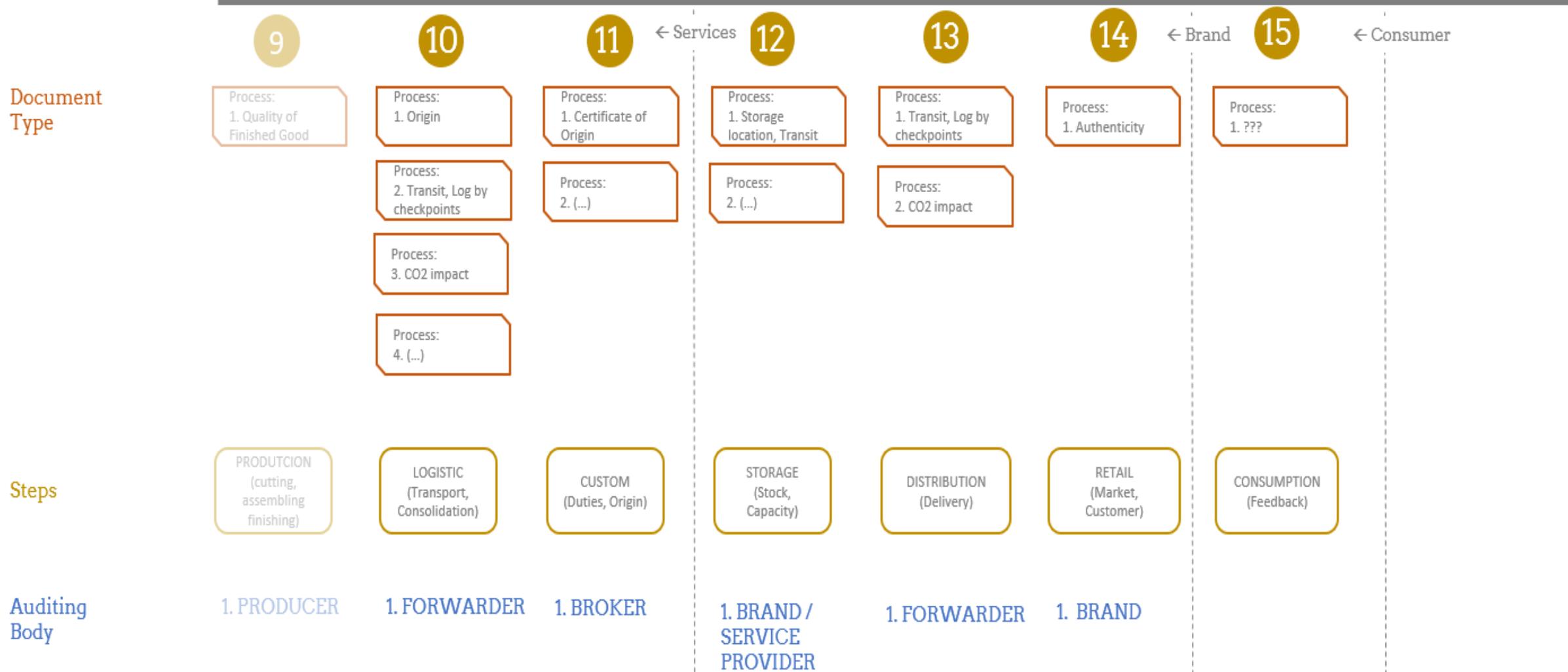| 1. CRI	1. CERES 2. TE OCS	1. CATGO	1. XYZ 2. TEOCS 3. GOTS	1. XYZ 2. TEOCS 3. GOTS 4. ZDHC	1. XYZ 2. TEOCS 3. GOTS 5. STeP	1. TEXTIL... 2. TEOCS 3. GOTS 5. STeP	1. XYZ 2. TEOCS 3. GOTS 5. STeP	1. PRODUCER

Legenda
CRI – Cotton Research Institute
CERES – NGO for Sustainable Future
TE OCS – Textile Exchange Organic Cotton Standard – in/out Mass Balance
CATGO – Egyptian Certifier for Quality
XYZ – Spinning
GOTS – Global Organic Textile Standards – in/out Mass Balance + Process Steps

ZDHC – Zero Discharge
XYZ - Dyeing
STeP (OEKO) – Process Steps Certification
XYZ - Weaving
TEXTILEVERDELUNG - Finishing
XYZ - Printing
FG PRODUCER – Cutting, Assembling, Finishing

Scope
1. from Seed to End Consumer
2. Certification Level:
   1. Company – in scope
   2. Process – in scope
   3. Material (RM, SFG, FG) – out of scope

Certifications in a Cotton Value Chain (general)

	9	10	11	← Services	12	13	14	← Brand	15	← Consumer
Document Type	Process: 1. Quality of Finished Good	Process: 1. Origin	Process: 1. Certificate of Origin		Process: 1. Storage location, Transit	Process: 1. Transit, Log by checkpoints	Process: 1. Authenticity		Process: 1. ???	
		Process: 2. Transit, Log by checkpoints	Process: 2. (...)		Process: 2. (...)	Process: 2. CO2 impact				
		Process: 3. CO2 impact								
		Process: 4. (...)								
Steps	PRODUTCION (cutting, assembling finishing)	LOGISTIC (Transport, Consolidation)	CUSTOM (Duties, Origin)		STORAGE (Stock, Capacity)	DISTRIBUTION (Delivery)	RETAIL (Market, Customer)		CONSUMPTION (Feedback)	
Auditing Body	1. PRODUCER	1. FORWARDER	1. BROKER		1. BRAND / SERVICE PROVIDER	1. FORWARDER	1. BRAND			

Legenda
XYZ –

Scope
1. from Seed to End Consumer
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    1. Company – in scope
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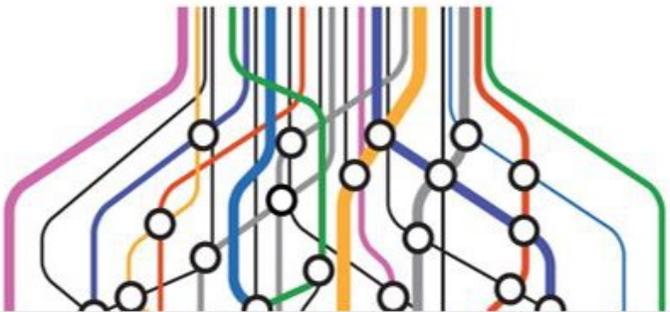
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Thank you for your attention