ecowise

White Paper
July 2025

About the Digital Product Passport Strategy of the Chinese Textile Industry

Released by CNTAC + CTIC + ANCC on June 26th 2025

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About us

EcoWise, https://www.eco-wise.co.uk, is a digital software solutions provider for sustainability based in London, England and in Ankara, Türkiye.

- We are active in the emerging DPP IT sector as DPP solution provider.
- We work closely with European partners in the EU funded **Cirpass-2** project implementing a flagship DPP pilot.
- We also actively follow the latest European Union & global DPP developments.

EcoWise has received funding from the European Union
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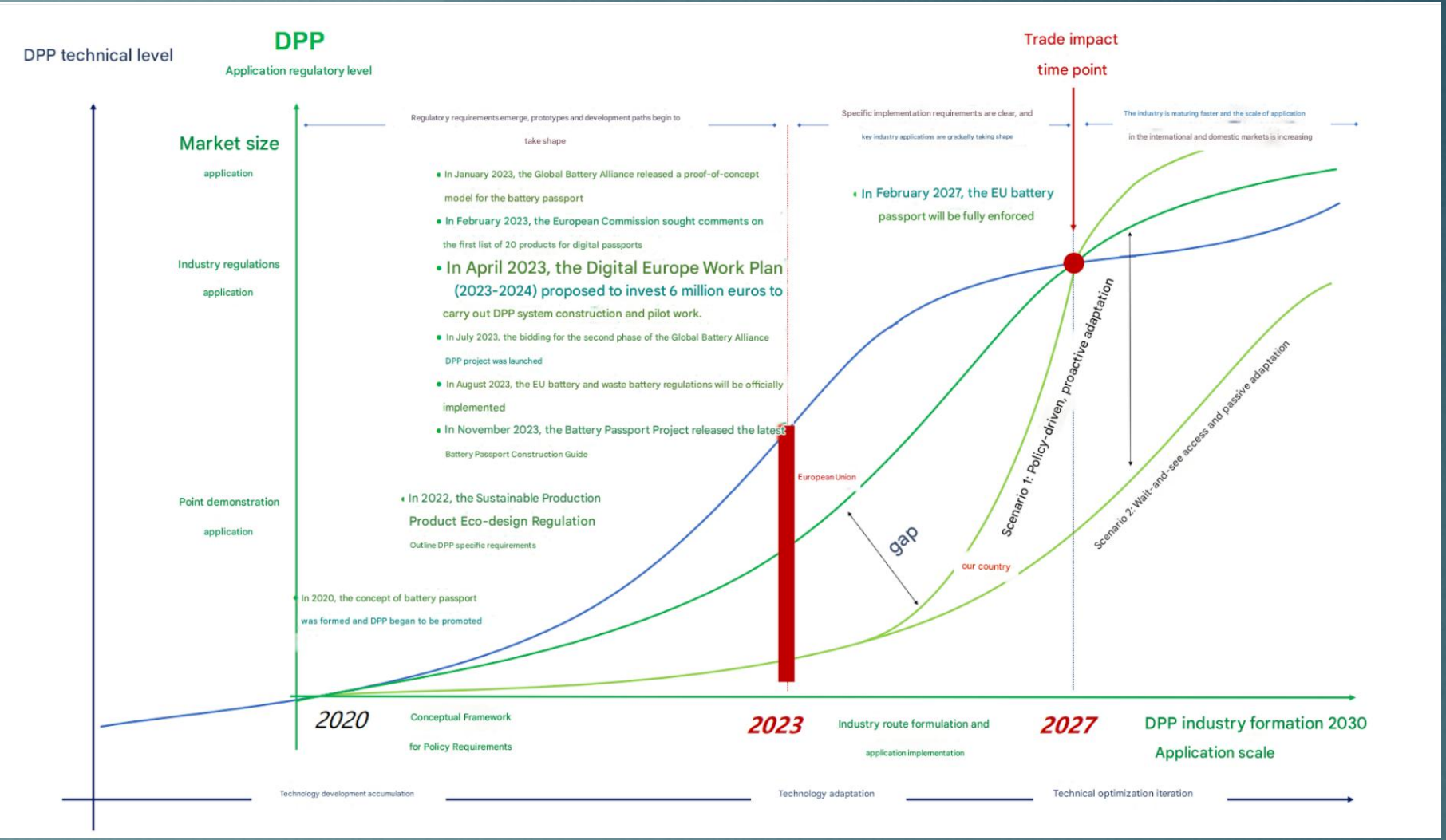
China Textile Sector Digital Transformation

- ‘China's textile and clothing consumption market is undergoing a structural upgrade, with consumers shifting from price orientation to functionality, personalisation and sustainability.’

- ‘The Ministry of Industry and Information Technology's "**Implementation Plan for Quality Upgrading of the Textile Industry (2023-2025)**" clearly states that by 2025, intelligent manufacturing will be accelerated, **and 70% of textile enterprises above a certain scale will basically achieve digitalisation and networking; the green, low-carbon and circular development system will be improved**. ’

- ‘Under the background of relevant policies in China, the textile industry will accelerate the transformation to intelligent manufacturing, which will help cope with changes in consumer demand and cost pressures, reshape production processes through green and intelligent technologies, and promote the high-end, intelligent, green and integrated development of the industry.’

China's DPP technology strategy by CAICT seeks to catch up by 2027 with the European Union on DPP capabilities



Translated slide presented by CAICT

The **China Academy of Information and Communications Technology** governed by the Ministry of Industry and Information Technology (MIIT), as part of the China DPP Development Roadmap presentation from April 2024.

CAICT is overseeing the overall Chinese DPP ecosystem strategy, within which Textiles forms one industry sector ecosystem.

China Textile Sector DPP development institutions

The digital passport for textile products has not yet become a mandatory requirement of laws and regulations in China, but is an innovative practice promoted by the industry

Main institutions leading the Chinese textile DPP ecosystem development:

- **China National Textile & Apparel Council** (CNTAC), the national Chinese Federation of all Textile Industries. Previously named the Ministry of Textile Industry China.

- **China Textile Information Centre** (CTIC), national research institution within the Chinese textile industry managed by CNTAC. Serves as a key intermediary organization for introducing IT technology to the textile sector, conducting research on technological progress, textile consumption, investment strategies and industry trends.

- **Article Numbering Centre of China** (ANCC), organisation responsible for managing commodity barcode, article numbering and product identity work in China. ANCC is representing also GS1 in China, and is supervised by the General Administration of Quality Supervision (AQSIQ).

China Textile Sector released the 2025 textile DPP strategy on June 27 (Press Release)

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China Textile Sector Views on DPP Significance

1. Enabling the construction of a green, low-carbon, circular economy system

The digital passport of textile products provides data support for the efficient sorting and high-value utilization of waste textiles by accurately marking product ingredient information... builds a trust foundation for new circular economy models such as second-hand transactions and clothing rentals.

2. Strengthen the ability of China's textile industry to deal with green trade barriers

Faced with the accelerated promotion of the digital passport regulatory system for textile products in important export markets such as the European Union, my country's textile industry needs to respond to international green trade barriers with forward-looking technology layout.

3. Drive the upgrade of the ESG governance system of textile enterprises

The digital passport of textile products has become a core tool for enterprises to achieve data governance throughout the entire life cycle, by integrating key ESG indicators such as carbon footprint, water consumption, and labour rights through digital means.

4. Cultivate a new ecosystem of sustainable consumption patterns

This technological breakthrough not only provides consumers with a transparent and verifiable basis for green consumption decisions,but also forces companies to optimise production processes and improve product environmental attributes by protecting consumers' right to know.

China Textile Sector Views on DPP Application value

1. Raw material traceability & sustainability certification

The information association of continuous authentication is realised based on blockchain technology to realize the tamper-proof storage of data, ensuring the transparency and traceability of the entire chain from farm to garment.

2. Product authenticity identification and anti-counterfeiting traceability

The digital passport for textile products is based on the unique identifier and encrypted evidence storage technology generated by blockchain, building a complete anti-counterfeiting chain from raw materials to finished products.

3. Personalised consumer services and interactions

With the rich data of textile product digital passports, brands can provide consumers with customized services, such as exclusive care guides, repair suggestions, and other services.

4. Collaboratively promote the development of the circular economy

Economic operators and circular economy operators share material composition and recycling data through digital passports, and blockchain technology ensures the authenticity of recycling records.

China Textile Sector 5 main DPP development Activities

1. **Digital product Passports Tracking effort by CTIC initiated in 2022 from policy, technical development and industry adaptation.**

2. **Chinese Textile Digital Product Passport working group setup for textile companies in April 2024.**

3. **Research and development of textile DPP system on-going based on privacy computing, blockchain and other digital technologies.**

4. **Three Chinese textile DPP standards were initiated in August 2024.**

5. **Application under development for an industry-level textile trusted data space, enhancing possibilities for green trade.**

China Textile Sector Example of life cycle DPP datapoints

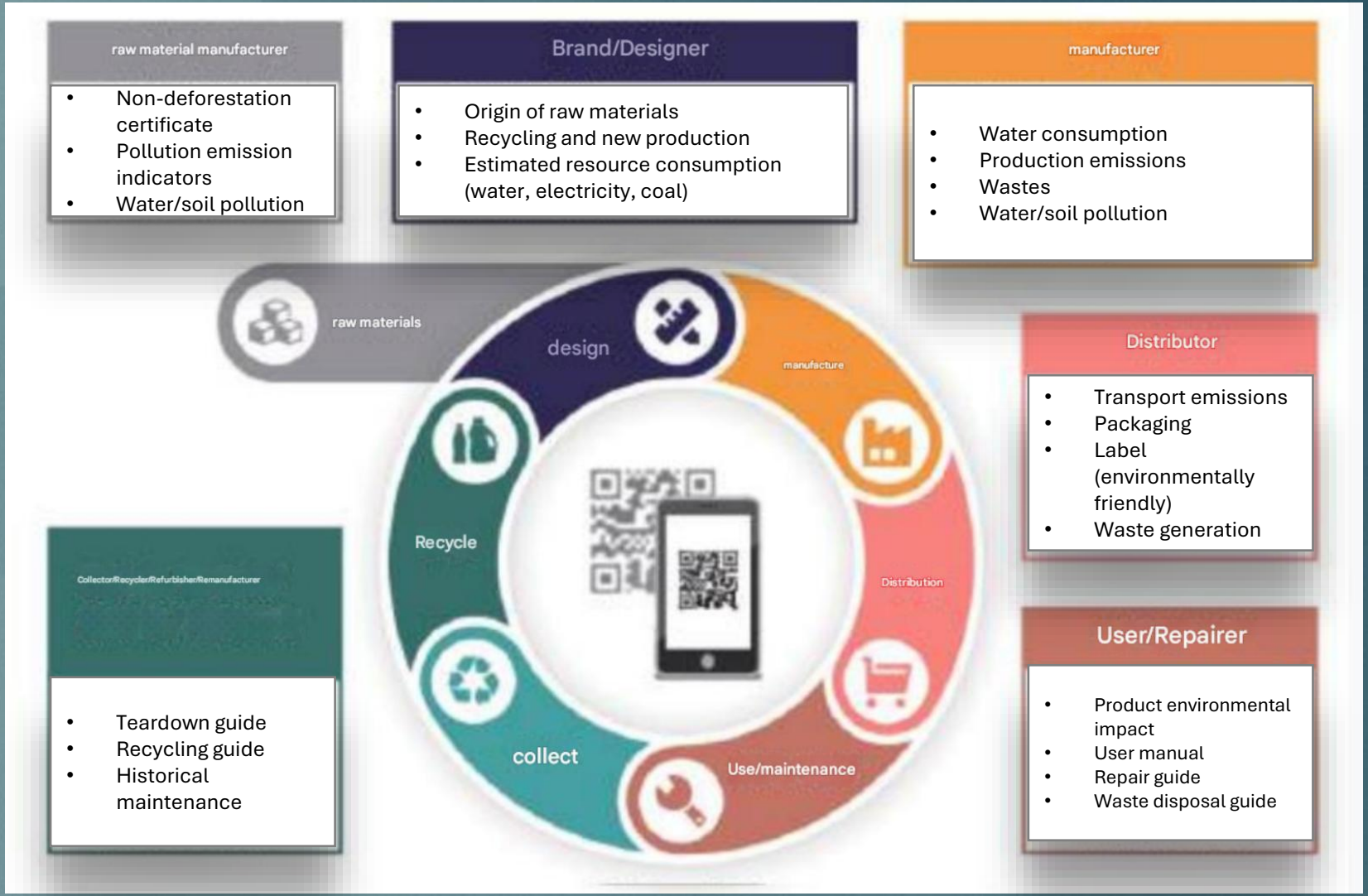


Fig 5. Schematic diagram of a digital product passport dataset

China Textile Sector DPP Data Providers

Table 1. Examples of data providers for textile product digital passports

Role	Typical roles in the textile industry	Responsibility for relevant data
Economic operators	• Garment manufacturers • Traders	• Create a unique product identifier (such as GTIN or DID) and bind it to the textile label (QR-code/RFID); • Provide mandatory information (incl. material composition, carbon footprint, production process).
Circular economy operators	• Textile sorters • Recyclers • Maintenance service providers	• Update recycling data (e.g. recycled material percentage) • Supplementary disassembly guidelines (e.g. blended fabric separation techniques) • Based on EU ESPR regulatory requirements, create a new DPP ffor textile products (such as recycled fibre secondary processed products)
Supply chain collaboration	• Raw material providers, • Yarn manufacturers • Fabric weavers • Printing and dyeing factories • Logistics companies	• Provide raw material traceability information (such as organic cotton certification) • Submit carbon footprint of transportation (such as sea/air transport emissions • Washing and care instructions
Certification bodies	• Third party certification providers	• Provide certification
Consumer	• Consumers	• Usage information and maintenance records

China Textile Sector DPP usage scenarios

Table 2. Examples of users of DPP data for textile products

Data general user		
User Type	**Data requirements and permissions**	**Typical scenarios**
Consumer	• View basic product information • View environmental information • View traceability information	• Consumers scan the code to obtain product information, washing instructions and environmental protection information of clothing products • Security labels and authenticity verification information
Circular economy operators	• Textile sorters • Recyclers • Maintenance service providers	• Sorters optimise the sorting process based on fabric composition • Repairers repair luxury clothing according to product repair guidelines
Data Privileged User		
Market regulators	• According to EU regulatory requirements, the DPP of textile products can be accessed through data carriers and other forms, and the DPP of textile products can be checked based on privileged access to query and build statistics about products.	
Customs	• The customs Single Window Certificate Exchange System (EU CSW-CERTEX) is connected with the textile product DPP system to realise the fully automated inspection of DPP information of goods, verifying the authenticity of information and improving customs clearance efficiency	

China Textile Sector DPP Simplified architecture

Two options for Identity management: 1) ISO/IEC 15459 global coding identification standard (GS1 GTIN & Digital Link) and 2) W3C Decentralized identification (DID)

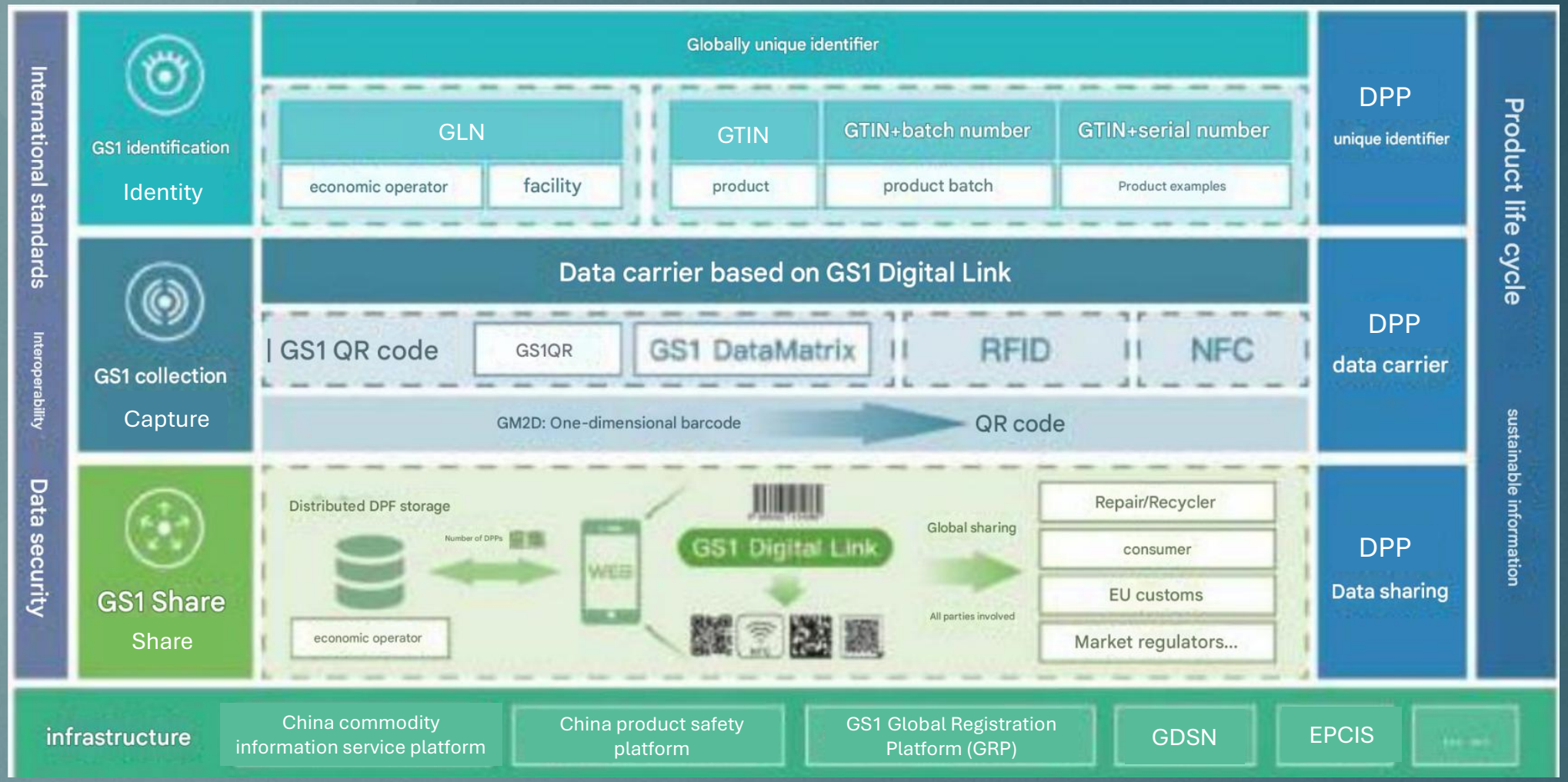


Fig 5. Schematic diagram of the product digital passport system architecture based on the GS1 DL standard

China Textile Sector DPP IT Architecture Blocks

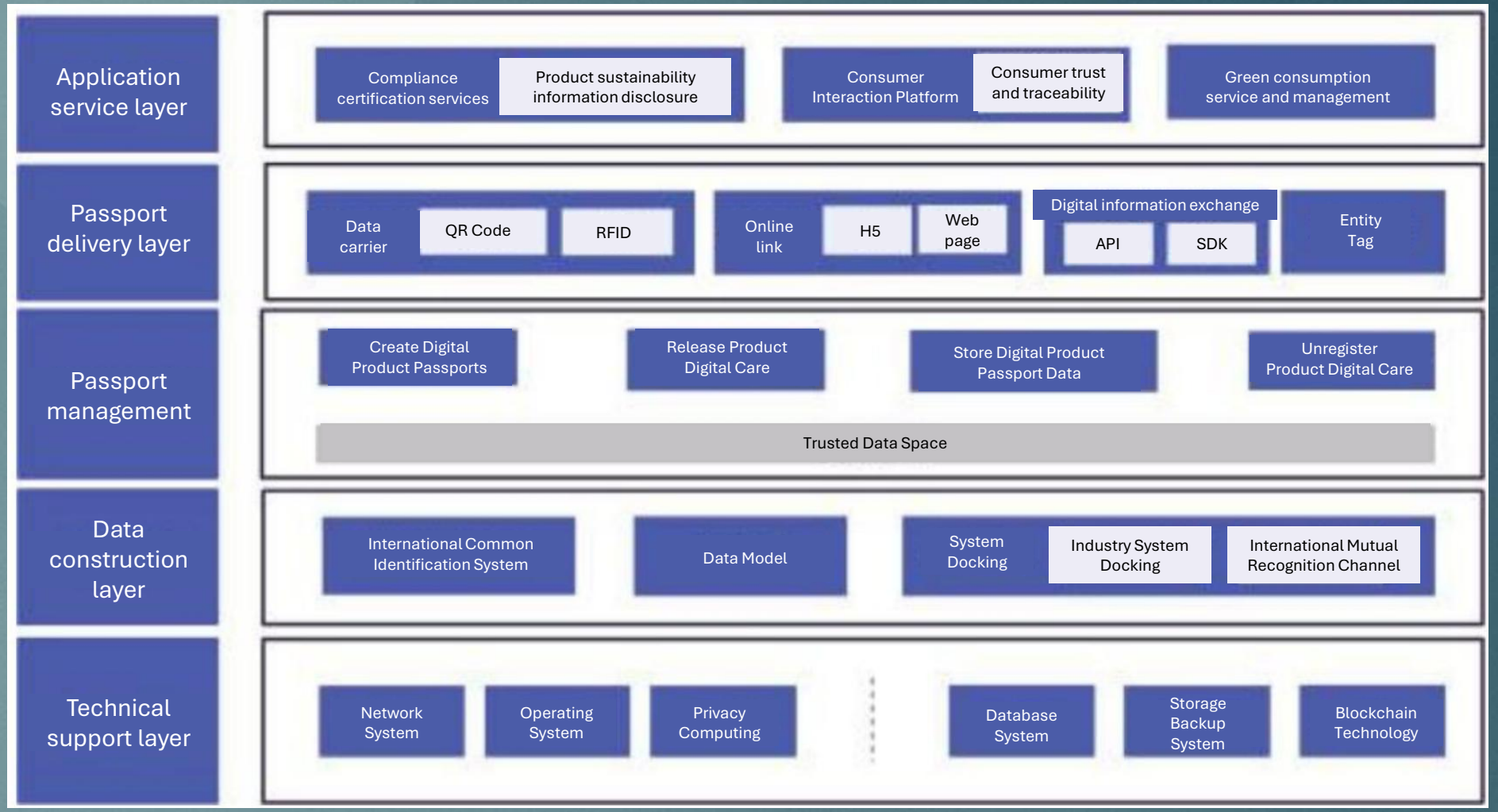


Fig 28. Schematic diagram of the overall technical architecture of the digital product passports in China's textile industry

China Textile DPP standards to be ready by end 2025

CNTAC has launched a call for three Chinese Textile DPP standards in August 2024 and initiated the standards drafting in December 2024 for completion by end 2025

"Textile Product Digital Passport Part 1: General Principles" (Plan No.: 202406-CNTAC01)
"Textile Product Digital Passport Part 2: Definition of Terms" (Plan No.: 202406-CNTAC02)
"Textile Product Digital Passport Part 3: Labeling Technical Specifications" (Plan No.: 202406-CNTAC03)

Digital Passport for Textile Products Part 1: General Principles

Standard expected effects:

- Specification Development: Establish a unified compilation, implementation and management framework for the digital passport of textile products.
- Information standardization: Ensure the standardization and transparency of information records throughout the life cycle of textiles.
- Improve system interoperability: Promote the interoperability and mutual recognition of digital passport data between different platforms.
- Sustainable development: Promote the textile industry to develop in a more environmentally friendly and sustainable direction.
- International integration: Ensure that the standards are compatible with relevant international specifications and promote mutual recognition of international standards.

Standard expected goals:

- Clarify information requirements: Specify the type of information that must be included in the digital passport, such as the source of raw materials, production process, environmental indicators, quality certification, etc.
- Specify data management requirements: describe the processes and requirements for data collection, processing, storage, and updating.
- Strengthen information security: Develop data protection measures to ensure the security of personal information and business secrets.
- Provide implementation guidelines: Provide operational guidelines to manufacturers, brands and third-party auditing agencies.

Digital Passport for Textile Products Part 2: Definition of Terms

Standard expected effects:

- Unified industry language: Provide official definitions for all key terms involved in the digital passport of textile products, eliminating communication barriers within and outside the industry.
- Promote international communication: Ensure the internationalization and universality of terminology to facilitate cross-border cooperation and trade.
- Improve communication efficiency: Improve effective communication and understanding within and across industries through precise terminology explanations.
- Support regulatory compliance: Provide clear terminology to comply with international standards and laws and regulations.

Standard expected goals:

- Comprehensive coverage: Exhaustive listing of all key terms related to the digital passport for textile products.
- Clearly defined: The definition of each term should be clear and unambiguous, easy to understand and apply.
- International integration: refer to and integrate standard terminology of the International Organization for Standardization (ISO) and other authoritative organizations.
- Terminology classification: Classify terms by subject or function to make them easier to find and understand.

Digital Passport for Textile Products Part 3: Labelling Technical Specifications

Standard expected effects:

- Technical standardization: Develop technical specifications for the generation, reading and management of digital passport labels for textile products.
- Data traceability: Ensure the traceability of the product throughout its life cycle.
- Compatible with multiple technologies: Supports multiple label technologies, such as QR code, RFID, etc.
- Stable label quality: Labels must adapt to various usage environments and maintain data stability.
- User-friendly: Improve the convenience and experience of consumers in obtaining product information.

Standard expected goals:

- Define relevant terms and definitions.
- Unified label format: standardize the label presentation format.
- Clarify the type of identification carrier: make requirements on the form and rules of identification carrier.
- Specify the validity period of labels: regulate the usage period of labels and the validity period of data.
- Clearly disclose information: Require labels to disclose specific content.

China Textile Sector Trusted DPP DataSpace Initiative

- The Chinese Textile Sector is working on the development of a Chinese Textile DPP DataSpace, similar to the Battery DPP Trusted DataSpace.
- A Trusted DataSpace is a "*an infrastructure based on consensus rules that connects multiple parties and enables shared data resources* “
- A Trusted DataSpace is a key IT mechanism **to promote mutual trust and collaboration in the global supply chain ecosystem** for import and export to enable Green Trade.
- **EU and Chinese DataSpaces** can be connected for Trusted data exchanges.
- *‘In the application of digital passports for textile products, cross-chain technology based on blockchain or other data space technologies based on internationally developed standards can be used to achieve mutual recognition of standards between different countries or regions, thereby promoting the global supply chain ‘*

Chinese battery sector Trusted DPP DataSpace

http://www.batteryid.com.cn/

China Textile Sector DPP DataSpace timeline

- In April 2025 the National Data Administration of China has put out a call for applications for 2 year Trusted DataSpace pilot projects at enterprise/industry/city level.

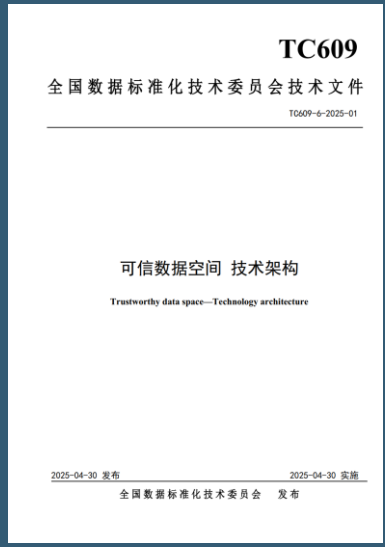
- The Chinese textile sector has the opportunity to apply for an industry level DPP Trusted DataSpace to be delivered by 2027.

Background:

- The call has gone out to all 22 Chinese regional/province administrations, the 4 independent cities (Beijing, Shanghai, Tianjin, Chongqing), 5 special autonomous zones, and the 97 central state enterprises.

- Total number of approved Trusted DataSpace projects will be limited to approx. 400 Pilot Projects based on the call review conditions.

- Application areas direction for the Trusted DataSpace call include: **supply chains, digital product passports**, **new materials, technology,** energy, logistics, and medical care, collaborative R&D, cross-domain scheduling, city data resource system, urban innovation and development.


TC609

全国数据标准化技术委员会技术文件

TC609-6-2025-01

可信数据空间 技术架构

Trustworthy data space—Technology architecture

2025-04-30 发布　　2025-04-30 实施

全国数据标准化技术委员会　发布

All Trusted DataSpaces will need to operate on the basis of the TC609-6 Trusted DataSpace Technology Architecture standard from April 2025, developed by the Chinese National Technical Committee on data standardisation.

China Textile Sector Views on DPP Challenges

1. Compliance challenges in exporting textile industry data

Data outbound management is based on the principle of data sovereignty. China and the EU have different data classification and supervision systems in terms of sensitivity standards, compliance frameworks, etc.. There are significant differences in the two sides. The two sides have not yet reached a consensus on the definition of green trade data, especially on the sensitive data related to green trade.

Due to the lack of clear legal and regulatory guidance and technical standards, enterprises find it difficult to accurately determine whether data falls within the scope of sensitive data before cross-border transmission. In this area, it is difficult to accurately implement compliance procedures such as data outbound security assessment and reporting, which may lead to risks such as data leakage and regulatory penalties.

There is no mutual recognition mechanism for data transmission of digital product passports between China and the EU and other economies. The EU GDPR, China's Data Ssecurity Law and other laws and regulations also lack a framework for mutual recognition of cross-border data compliance, which means that companies need to meet the requirements of cross-border data transmission. Meeting multiple compliance requirements can easily lead to difficulties in data flow due to conflicts in standards.

China Textile Sector Views on DPP Challenges

2. Insufficient standardisation of Digital Product Passports for textile products

Digital Product Passports need to integrate blockchain, Internet of Things (IoT) and other technologies, but there is currently a lack of unified data formats and protocols around the world resulting in difficulty in connecting different systems. For example, differences in standards between the EU and China may increase the complexity of cross-border trade.

The standardisation of data storage has not been perfected, and data silos are common among enterprises, which affects the improvement of supply chain transparency. For example, SMEs lack digital capabilities and are out of touch with digital warehousing and logistics systems, making data integration difficult.

In addition, there is currently no systematic and standardized supply chain collaborative governance mechanism, and there is a lack of unified data transmission protocols and interface standards between cross-subjects. The lack of a unified authority control system has resulted in fragmented and unstructured information transmission, which in turn affects data quality and collaborative efficiency.

China Textile Sector Views on DPP Challenges

3. The data transmission path of the textile supply chain is not clear

Chinese textile companies may cooperate with authorized representatives or importers to provide complete and accurate product data to support authorized representatives or importers in ffullfilling their duties as economic operators in the EU. In this process, companies need to transit through transnational networks, cloud service platforms or third-party service providers. Since different countries have different security and legal definitions of transit routes, once the data path passes through multiple jurisdictions, its compliance assessment will be more complicated. Current regulations have not given clear guidance on the legality of specific cross-border transmission paths, which has exacerbated the legal risks of data security compliance.

In addition, the digital product passport involves a large amount of core information on product design, processing, transportation, sales, recycling and other links. This may include commercially sensitive information. During cross-border transmission and multi-party sharing, if security measures are not in place, business secrets may be improperly obtained or leaked. Once leaked, it may not only cause the loss of corporate IP rights and weaken core competitiveness, but also disrupt the market competition order and reduce corporate brand value and profitability. Not only will a single company face losses, but it may also trigger an information security crisis for the entire industry chain, resulting in the loss of regional or industry competitive advantages.

China Textile Sector Views on DPP Challenges

4. Small and medium sized enterprises in the textile industry face transformation barriers

The core value of the product digital passport is embedded in the construction of the traceability and verifiability mechanism of the product's entire life cycle, and the effective implementation of this mechanism is highly dependent on the information exchange and data sharing system between upstream and downstream entities in the supply chain. However, there is significant heterogeneity among the enterprises at various nodes of the current supply chain in terms of information construction foundation, digital application capabilities and governance structure, forming a "digital divide" across the supply chain network.

In particular, small and medium sized enterprises, subject to constraints such as capital investment scale, technical resource endowment and talent structure, generally lack the digital infrastructure to support product digital passports, and have substantial obstacles in accessing highly automated warehouse management systems, smart logistics networks and smart distribution platforms, which makes it difficult to effectively build a synchronization and consistency guarantee mechanism for information flow, logistics and capital flow in the supply chain. I

In addition, the enhanced transparency of the supply chain brought about by the product digital passport puts higher requirements on the internal control system of the enterprise. If there is a lack of preventive measures and audit mechanisms for labor hours and environmental violations, internal management loopholes will be directly exposed, which is easy to cause compliance risks. Therefore, the application of product digital passports will prompt enterprises to establish a sound internal control system, strengthen supervision and auditing of the production process, and ensure the compliance operation of enterprises

China Textile Sector DPP national recommendations

1. Strengthen government smart supervision and build a solid risk prevention and control barrier

- Build a comprehensive systematic solution for standard setting, security governance, compliance auditing and cross-border collaboration.
- Improve the cross-border data compliance audit system.
- Establish an independent 3rd party data compliance assessment and certification centre.
- Introduce security whitelisted and trusted mechanisms such as an enterprise directory for mutual data recognition between trusted enterprises

2. Enterprise transformation and capacity building

- Promote cross-border trade and reconstruct new global supply chain patterns.
- Deepen the empowerement of digital transformation and activate new momentum for global consumption.
- Improve recycling and circulation capacity and create a new model for global green transformation.
- Promote enterprises to build a closed-loop data chain of ‘production-consumption-regeneration’ of textiles, to reduce the industry’s reliance on primary resources.
- Promote the development of the circular economy model in the textile industry.

China Textile Sector DPP national recommendations

3. Improve platform development capabilities and facilitate the dual circulation of data elements

- Create a unified cross-border trade digital ecosystem and build a cross-border trade public service platform based on internationally accepted product digital identity.
- Plan and establish a DPP system for textile products that suits China's national conditions.
- Learn from the EU DPP approach of driving standards with regulations.
- Formulate a relevant regulatory system based on the product digital identity model
- Promote the "one certification, multi-country access" model for textile DPPs based on mutual data recognition mechanisms, to reduce repeated certification costs in cross-border trade.
- Use DPPs for relevant departments to more efficiently collect and verify data at key nodes in the entire trade chain.
- Test the creation of free green trade pilot zones to explore the potential of the China-EU mutual recognition mechanism, to solve the problem of cross-border data flow.

China Textile Sector DPP national recommendations

4. Industry collaboration and standard setting

- Enhance industry competitiveness and create global leading advantages.
- Setup industry benchmarks and solve common problems. Select enterprises that are representative in the industry for pilots in textile categories with large export volumes.
- Build upon the existing pilot application of DPPs for textile products and expand its scope, to carry out pilot work in the entire textile industry.
- Explore solutions to data sharing problems of the decentralised supply chain in China's textile industry, and provide systematic solutions for the overall digital transformation of the industry.
- Anchor the coordinates of green development and build a global textile industry standard system, through new standards and the improvement and integration of existing standards.

5. Promote industrial policy innovation and enable targeted industrial upgrading

- Utilise the full life cycle data set collected by the textile Digital Product Passport to optimise the industrial structure and improve the green and low-carbon circular development system, and increase the recycling of waste textiles.

China Textile Sector DPP national recommendations

6. Infrastructure and digital empowerment

- Build a decentralised and trusted data chain to ensure the information in the DPP cannot be tampered with.
- Create a privacy preserving collaborative computing model to achieve secure sharing of supply chain data. Including multi-party secure computing (MPC), federated learning (FL) and trusted execution environment (TEE).
- Build a rule-consensus data space to promote mutual trust and collaboration in the global supply chain ecosystem.

7. Consumer protection and consensus guidance

- Improve the information traceability of the entire chain to protect consumers right to know throughout the entire process.
- Remove hidden barriers to consumer choice and protect consumers right to choose independently.
- Improve the closed-loop system of rights protection services to protect consumers after sales rights.

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