

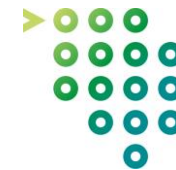


Battery Passport

Workshop



➤ Introduction



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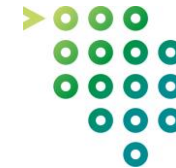


Giuseppe Benenati
Spherity



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BCC/ARN

Agenda



1

Battery Passport

What it is, and why it matters

2

The DATAPIPE trial

Over the past two years we tracked a battery through every step of the chain, testing whether the required information could be made available

3

Pilot with the garages

Putting the passport to work in daily garage practice

4

DPP Centre of Expertise

Coordinating adoption and scale-up of digital product passports

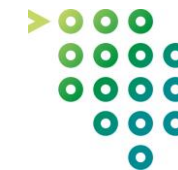
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DPP service provider

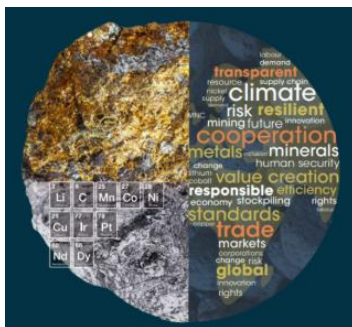
A short presentation on how they can help

➤ Digital Battery Passport

Why?

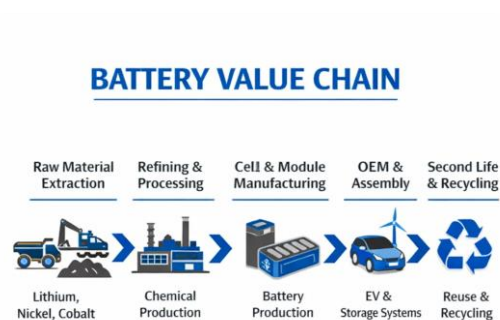


Batteries are a strategic resource



- Containing valuable and critical raw materials

Need for transparency



- Battery moves through a long value chain
- Information does not necessarily travels with the battery

Making decisions on basis of information



- To be able to make decisions (extending lifetime, recovery materials, performance, etc)

Enters into force
18th February for:

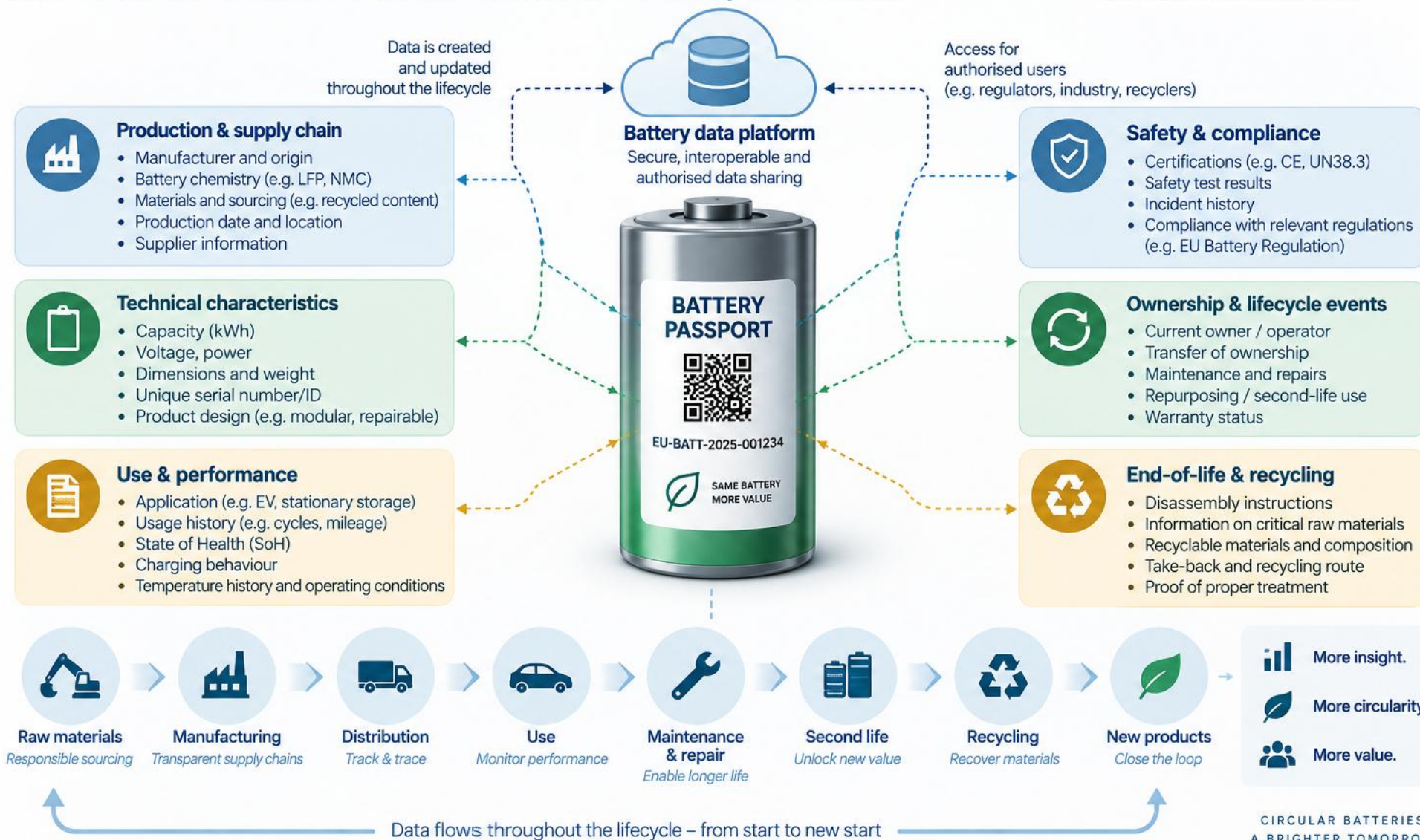
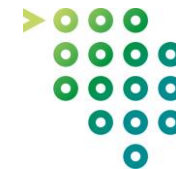
- LMT, EV and Industrial batteries
- >2kWh



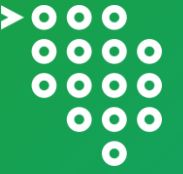
A battery, a digital identity

Trusted data for a more circular and sustainable battery value chain

From raw materials to a second life
– data creates transparency,
value and a circular future.



CIRCULAR BATTERIES
A BRIGHTER TOMORROW



Datapipe - Battery trial



2022-2024

DATAPIPE

Funding

Funded by the EU's Technical Support Instruments (TSI) by DG REFORM

Beneficiaries

- The Ministry of Infrastructure and Water Management of the Netherlands
- The Customs Administration of the Netherlands

Project partners

- TU Delft, TNO

Duration

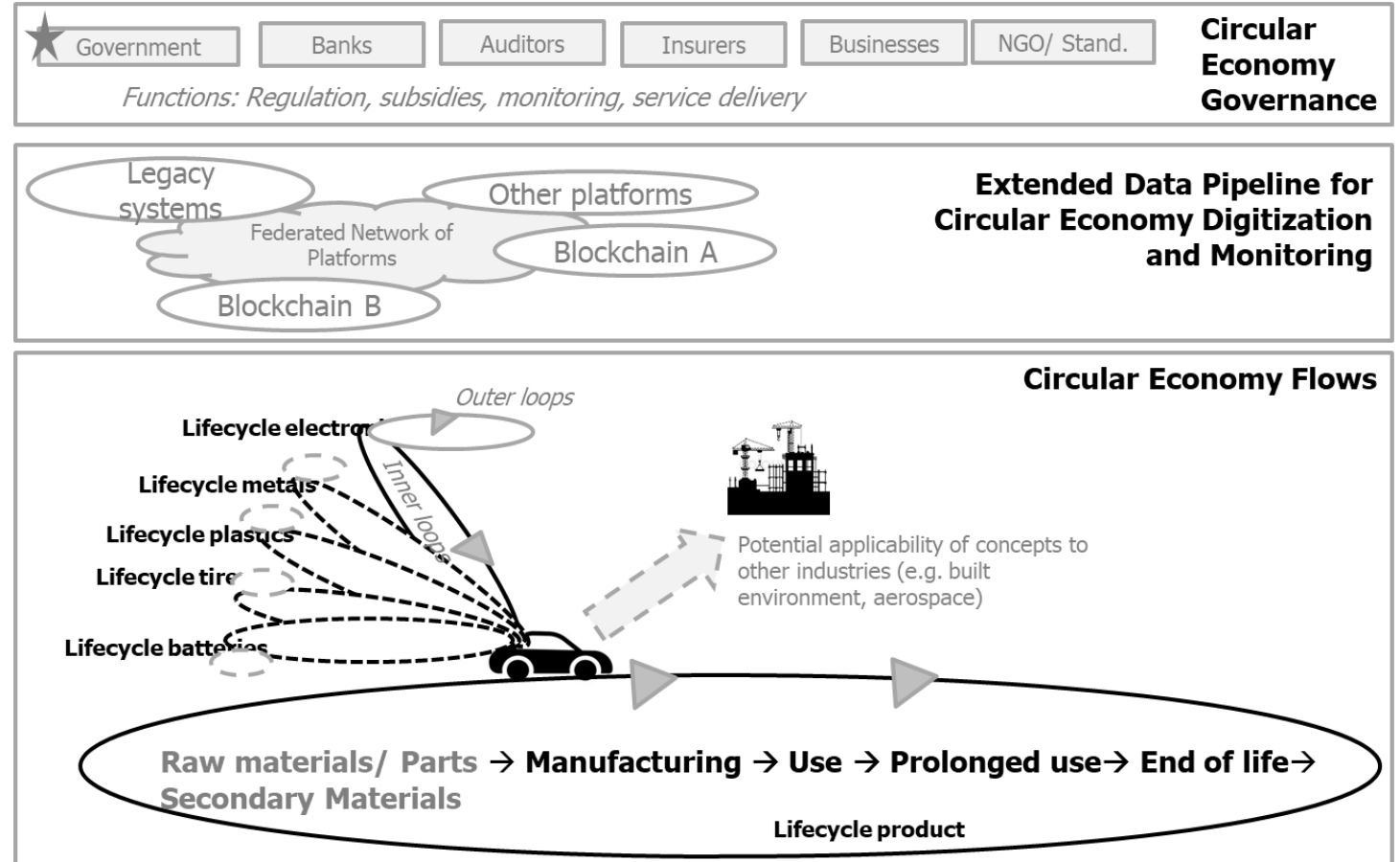
- September 2022- December 2024

<https://www.tudelft.nl/datapipe>

'This project (Datapipe) has received funding from the European Union's Technical Support Instrument (TSI) programme under grant agreement No 101094495'



The DATAPIPE Concept



2024-2025

Battery Passport Trial



Expanding the
ecosystem



EU Battery Passport Trial: Combination of Cell Passport and DATAPIPE

Common Research Project for
Battery Passport Maturity

Life cycle within a battery passport ecosystem
=> Interaction between Industry and Authorities

Step 1. Build up and ship to the EU



Production in South Korea

- Equipping car with EV battery with cell passport

Step 2. Import (and Register) in EU

2025

Entry, Import and Registration

- Arrives in Rotterdam the Netherlands (virtual process in NL)
- Import via Germany
- Registration Germany (virtual registration in the Netherlands)

Optional Step 3. Life in EU

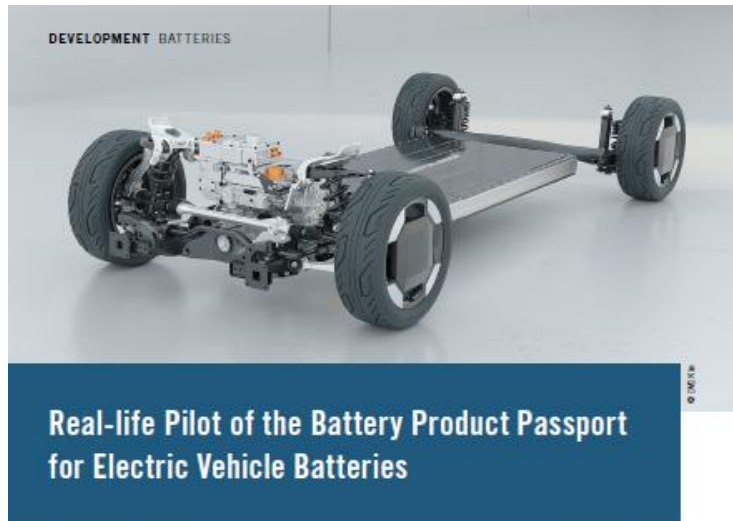
Use and end-of-life

- Use
- Virtual scrapping in the Netherlands

Step 4. End-of-Life



Piloting 2025: Results Available



As part of the EU's Green Deal, a digital battery product passport is to be introduced, including the availability of dynamic live data during use. In a pilot project conducted by TU Delft and the Hyundai Motor Europe Technical Center, with the participation of Dutch authorities (Customs and RDW), as well as TNO, ARN, Dukosi, Mobis, and Kia Europe, and in cooperation with the EU-funded DataPIPE project, experience with the cell battery passport was gained through collaboration between industry, research, and authorities.

The battery regulation introduced in the EU will require economic operators placing batteries on the EU market to provide a digital battery passport [1]. This inevitably affects the automotive sector and EU and foreign companies placing Battery Electric Vehicles (BEVs) on the EU market. A challenge for businesses is that the battery passport information covers a broad range of data points including static data about the battery, its producer, material composition, recycled content, but also dynamic data such as state-of-charge. For authorities, and other parties such as extended producer responsible organizations, they need to be able to access and make use of this

information for compliance monitoring, as well as to increase circularity. While other battery passport projects were mainly looking at understanding the data attributes for the battery passport required by the battery regulation, or solving the required IT challenges, this project is working on a real-life use case, including both businesses and authorities, with a real vehicle where a cell battery passport was implemented after car production in Korea and the car was imported to Europe. The pilot focused on gaining lessons learned, taking both technical and organizational aspects into account. It is therefore not more and less than a trial of a real-world

lived battery passport in a multi stakeholder business-government context.

PILOT SET-UP

The collaboration was set-up for joint learning based on real-life piloting. The pilot was coordinated by Delft University of Technology (TU Delft) and Hyundai Motor Europe Technical Center. This pilot was performed in collaboration with the DataPIPE EU-funded project [2], where Dutch Customs represented the Border Authorities. On the authorities side, also the vehicle authority (RDW) for the registration and type approval was involved. In addition, the extended producer or-

www.springerprofessional.com/electromotive

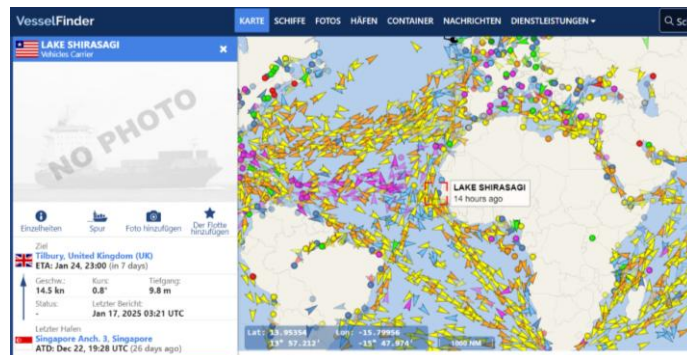
Acknowledgement

This research was partially funded by the DATAPIPE project, which has received funding from the European Union's Technical Support Instrument (TSI) programme under grant agreement No 101094495. Ideas and opinions expressed by the authors do not necessarily represent those of all partners. The authors would like to thank all the participants and contributors to the DATAPIPE project.

Special thanks to the participants from TU Delft, TNO, Dutch customs, ARN, Hyundai Motor Europe Technical Center, Hyundai Mobis, Dukosi, Kia, as well as all the people and participants that supported the pilot in different stages of the process for their support, inputs and feedback.

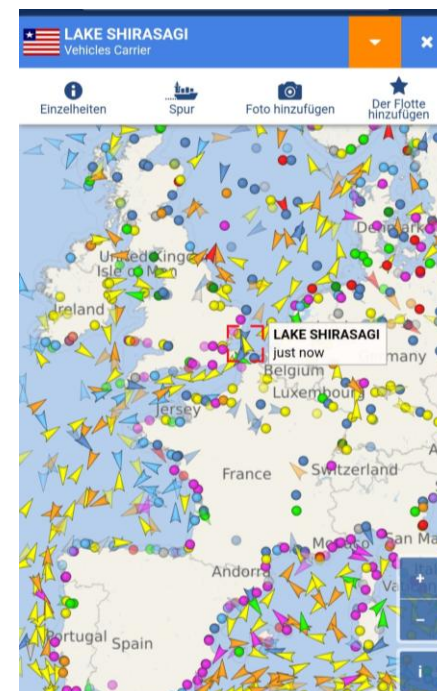
Revidat, S., Rukanova, B., Chirvasuta, T. (2025). Real-life Pilot of the Battery Product Passport for Electric Vehicle Batteries, ATZ electronics worldwide, December, 2025. Available Open Access via TU Delft repository: https://repository.tudelft.nl/file/File_7bae1536-da06-4ee7-9cfc-d781a00934b7?preview=1

The Journey

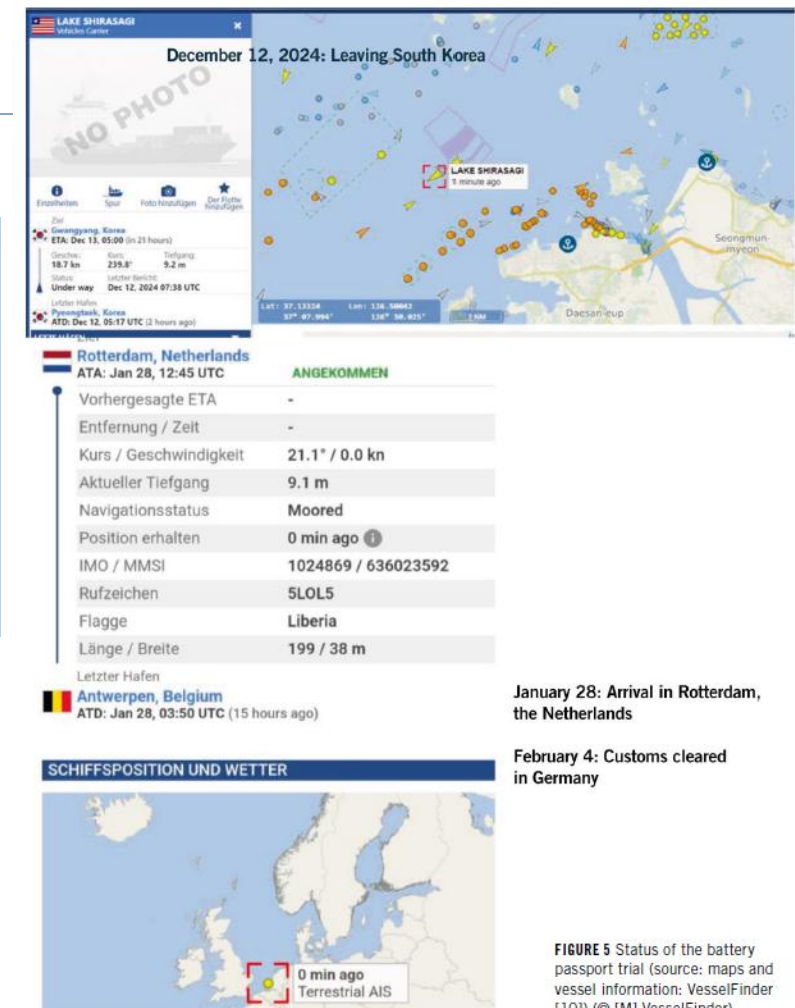
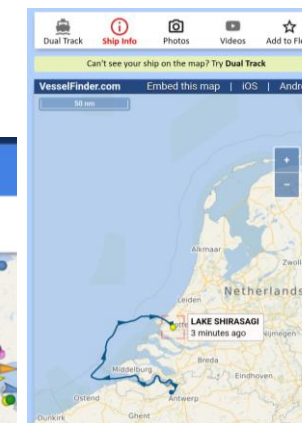


December 22, 2024 From Singapore to UK

January 24, UK



January 28, Belgium



January 28: Arrival in Rotterdam, the Netherlands

February 4: Customs cleared in Germany

FIGURE 5 Status of the battery passport trial (source: maps and vessel information: VesselFinder [10]) (© [M] VesselFinder)

User Requirements: Multi-stakeholder Perspective Example

Battery passport data attribute (extract from Battery Pass Data Attributes Longlist [3])					User needs analysis
No	BEV	Attribute category	Attribute sub-category	Attribute	Relevance for border authority, vehicle authority, and/or producer responsible organization
7	x	General battery and manufacturer information	General characteristics	Battery category	Relevant for all three stakeholders
8	x	General battery and manufacturer information	General characteristics	Battery weight	Relevant for all three stakeholders
10	x	Compliance, labels and certifications	Conformity	EU declaration of conformity	Relevant for all three stakeholders
17	x	Battery materials and composition	Materials	Battery chemistry	Relevant for two out of the three stakeholders
27	x	Carbon footprint	Carbon footprint	Battery carbon footprint	Relevant for two out of the three stakeholders

TABLE 1 User requirements based on [3] (x: mandatory according to battery regulations, as specified in the longlist)
 (© TU Delft | Hyundai) [3] BatteryPass Data Attributes Long List V1.1, <https://thebatterypass.eu/>

Data Sharing Infrastructure Overview

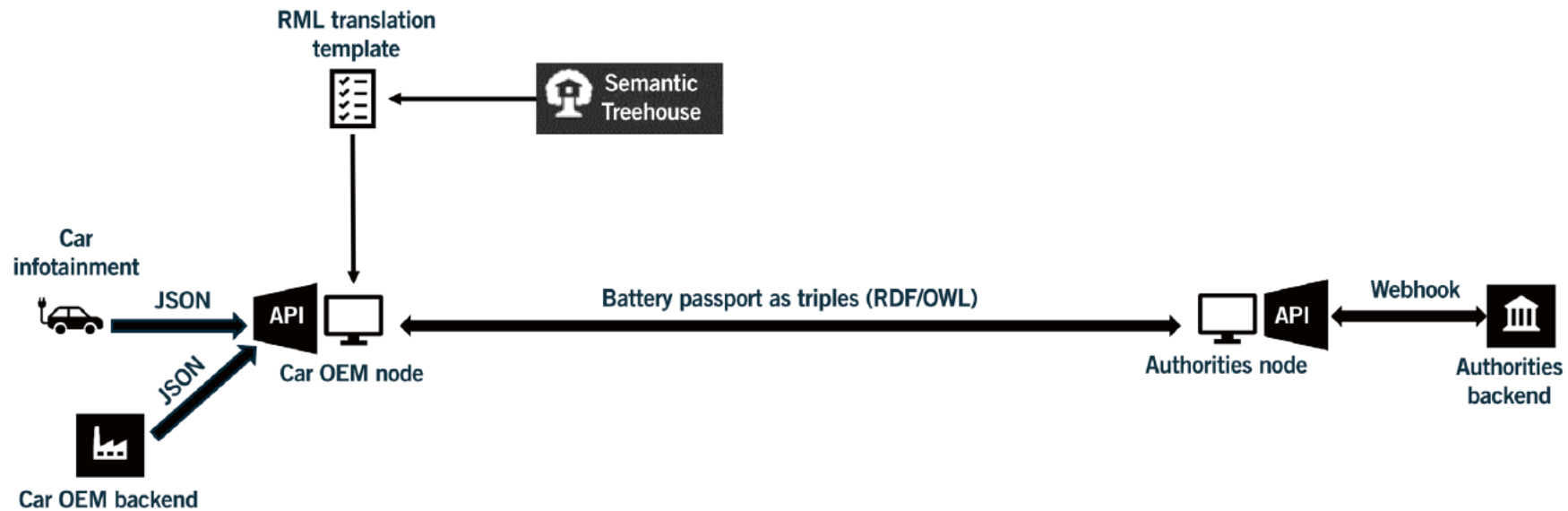


FIGURE 4 Data sharing infrastructure overview (© TU Delft | Hyundai | TNO)

Nodes and semantic alignment done by TNO

2025-2026

PILOTING 2026

Life cycle within a battery passport ecosystem
=> Interaction between Industry and Authorities

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Production in South Korea

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Step 2. Import (and Register) in EU

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Optional Step 3. Life in EU

2026

Use and end-of-life

- Use
- Virtual scrapping in the Netherlands

Step 4. End-of-Life

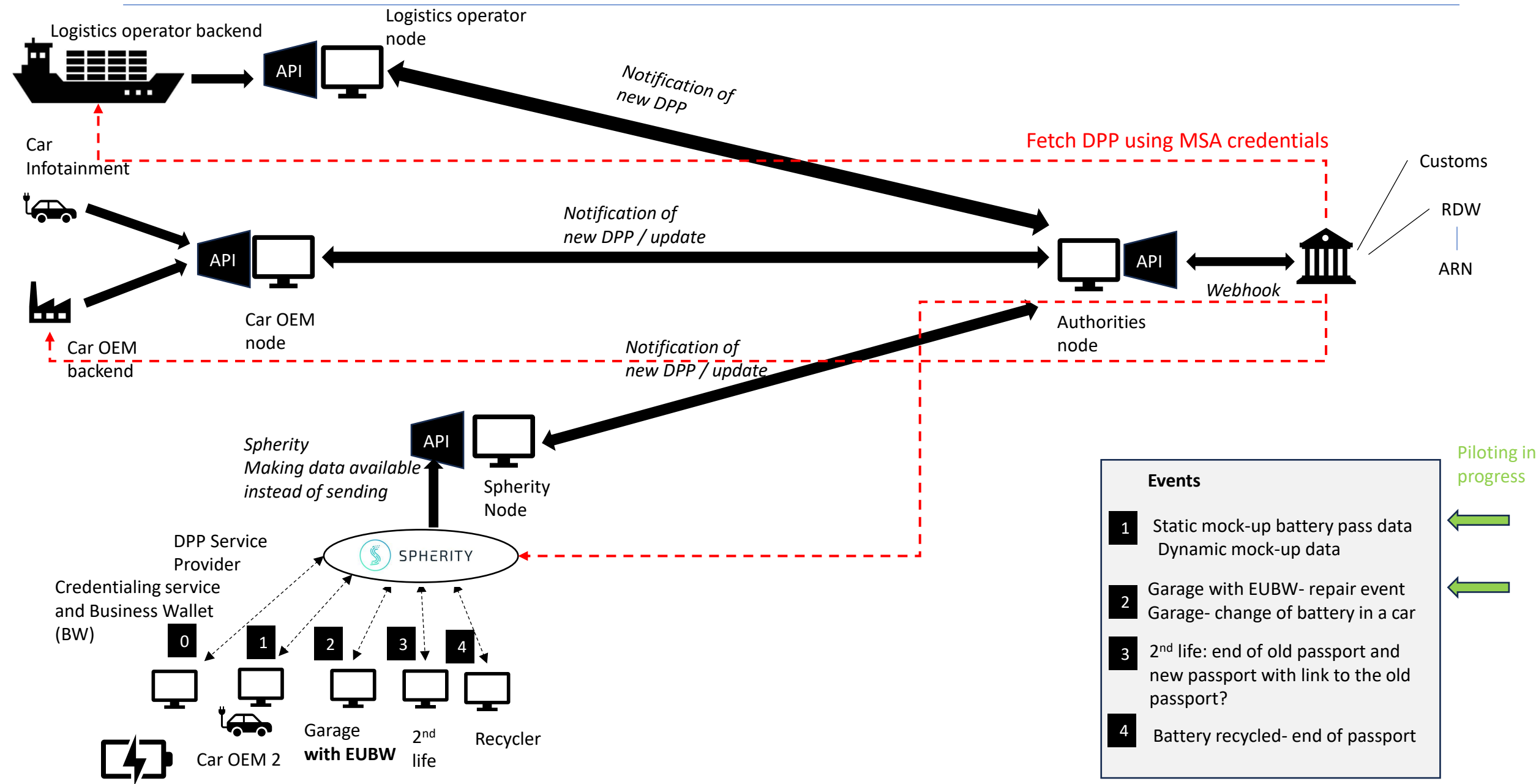


New actor



2026

Scenarios and Technical Piloting





SERMI pilot

From certification requirements to
trusted digital access

September 2026

[Get Started](#)



About Spherity



Company at a glance



Founded in 2017



Dortmund, Germany (HQ)
New York, USA



32 Employees

Our technology

VERA — Digital Product Passports

CARO — DSCSA / Authorized Trading Partner
verification

EIDA / EBW — European Business Wallet

Trusted AI — trustworthy AI for regulated data

Industries

- Automotive & Batteries
- Textiles & Fashion
- Energy
- Pharmaceuticals & Life Sciences
- Aerospace
- Supply Chain & Manufacturing

Gartner®

Emerging Market Quadrant
2026 Pioneer

Our partners



Bundesanzeiger
Verlag



Catena-X

sopra  steria

Deloitte.

Our customers

LB 

 **BASF**
We create chemistry

 **NOVARTIS**

 **T Systems**


Die Beste unter der Sonne


SOLARIS

 **MERCK**

 **MAN**

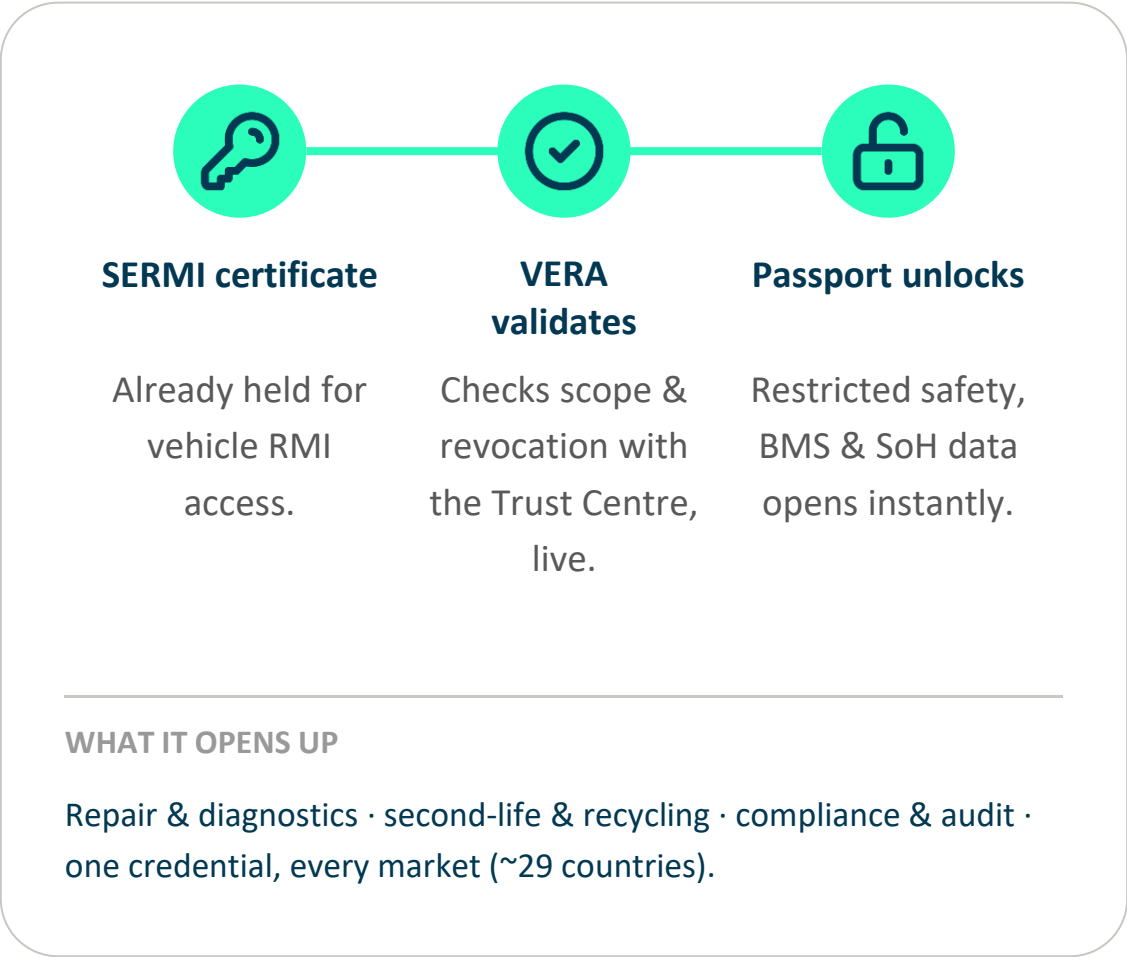


One Credential opens the Passport

VERA now accepts the **SERMI certificate** an independent operator already holds for vehicle repair and maintenance information. Digidentity, the scheme’s Trust Centre, checks the certificate; VERA opens the battery’s restricted passport data once it is valid.



European accreditation and certification scheme that standardizes and regulates independent workshops' access to sensitive, anti-theft, and security-related vehicle data. **Available in 29 countries**



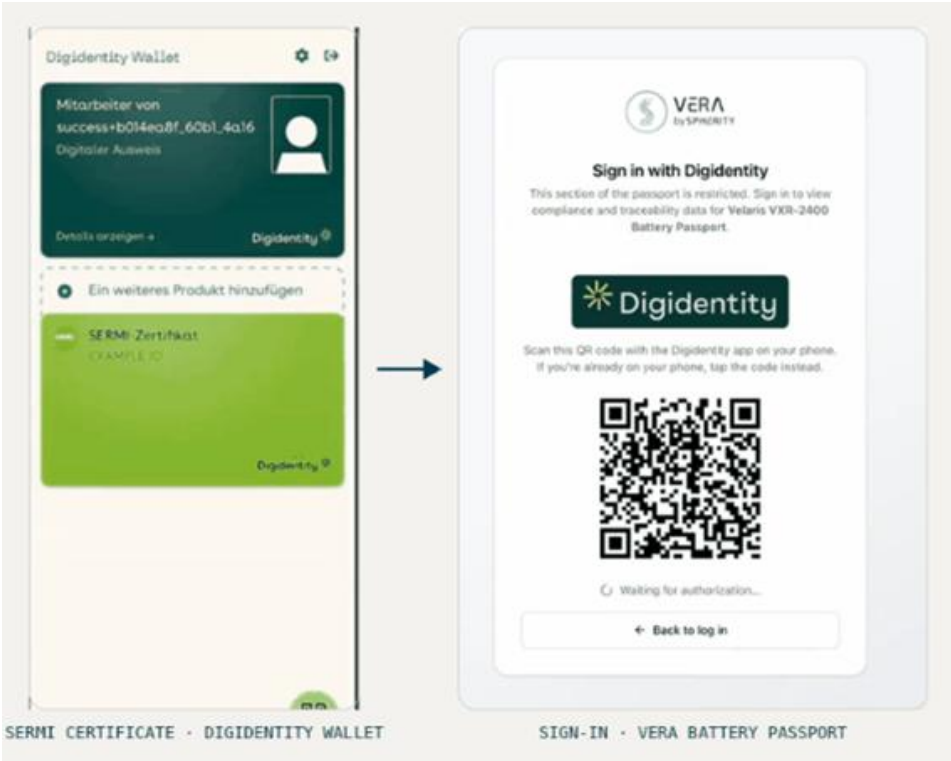


One repair, One Verified record

1

Sign in

The repair shop employee signs in with the SERMI certificate they already hold.



2

Repair and sign-off

The technician replaces the part and records a return-to-service decision.

3

Written to the passport

The certificate attaches to the Battery Passport's compliance record.

REPAIR CERTIFICATE FIELD	RECORDED VALUE
Certificate ID	DBR-REP-2026-00142
Repair type	CombinedRepair
Component replaced	BMS communication module
Safety check	Pass
Return-to-service	Approved
Safety standard	IEC 62660-3

Battery - VERA's Digital Product Passports



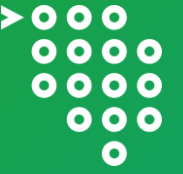
Reflection RDW and ARN - what we learned and what we hope to explore further

- Reflection RDW:
 - RDW has no formal role in battery regulation
 - We gained insight into the impact of battery regulation on car manufacturers and the vehicle chain
 - We gained insight into data structures for battery passports
 - Important for RDW to gain access to the data:
 - necessary to fulfill our legal task or be more effective in performing this task
 - necessary to provide data to our external stakeholders (if not able directly via battery passport)
 - Data landscape is changing and government organizations need to adapt accordingly
 - Open questions:
 - Which data from the battery passport do we need for our task?
 - How do we get access to this data?



Reflection RDW and ARN- what we learned and what we hope to explore further

- Reflection ARN
 - ARN has a formal role in the Battery Regulation as a PRO
 - A PRO has no formal role in the Battery Passport
 - But a PRO does need information of the Battery Passport to fulfill its tasks together with the value chain
 - Gained insight in the data structure of the Battery Passport
 - Stakeholderinvolvement is crucial to keep dynamic data up-to-date
- Involvement of governmental organisations necessary
- Overall, the project has given us good insight into the challenges — and shown that a lot is possible. But there is still a lot of work to do



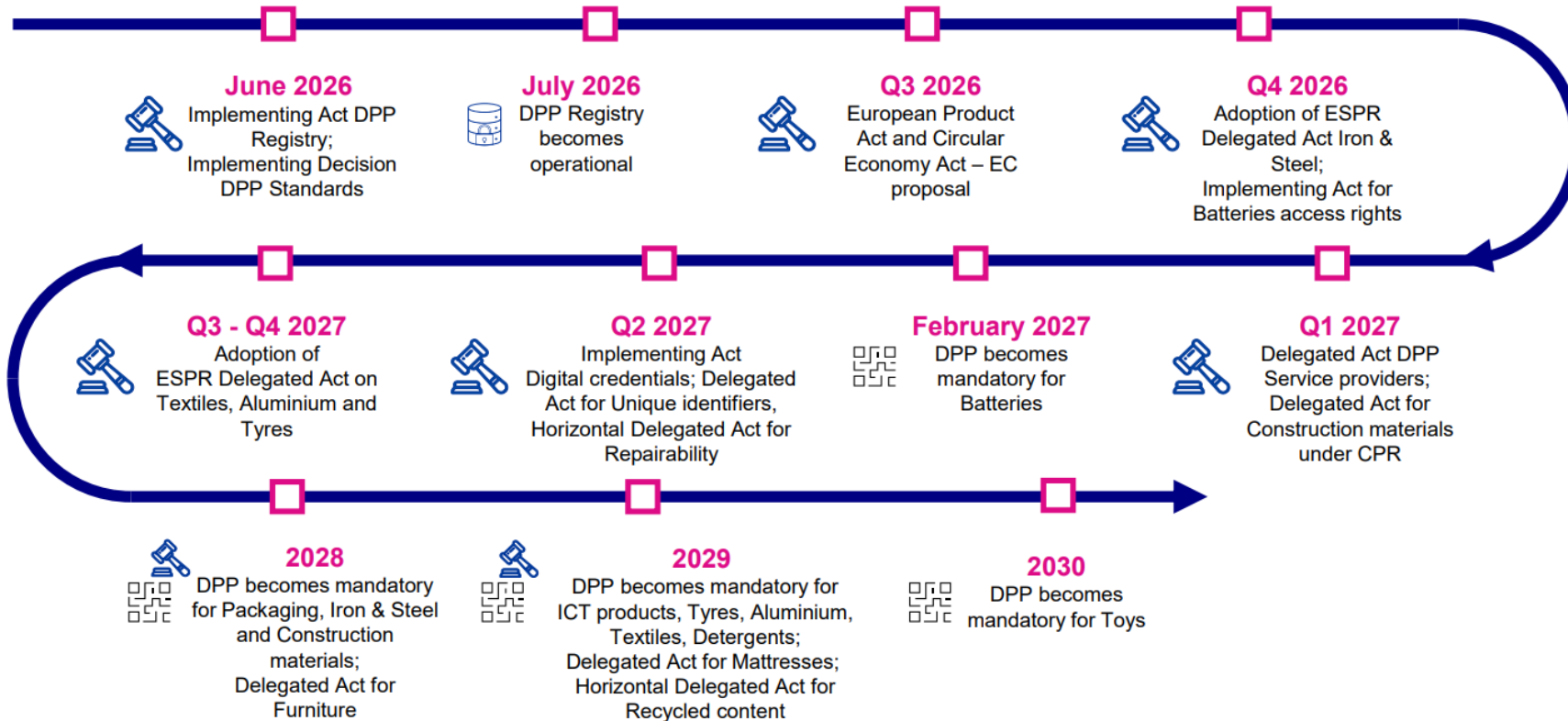
CoE-DPP



This is all happening soon



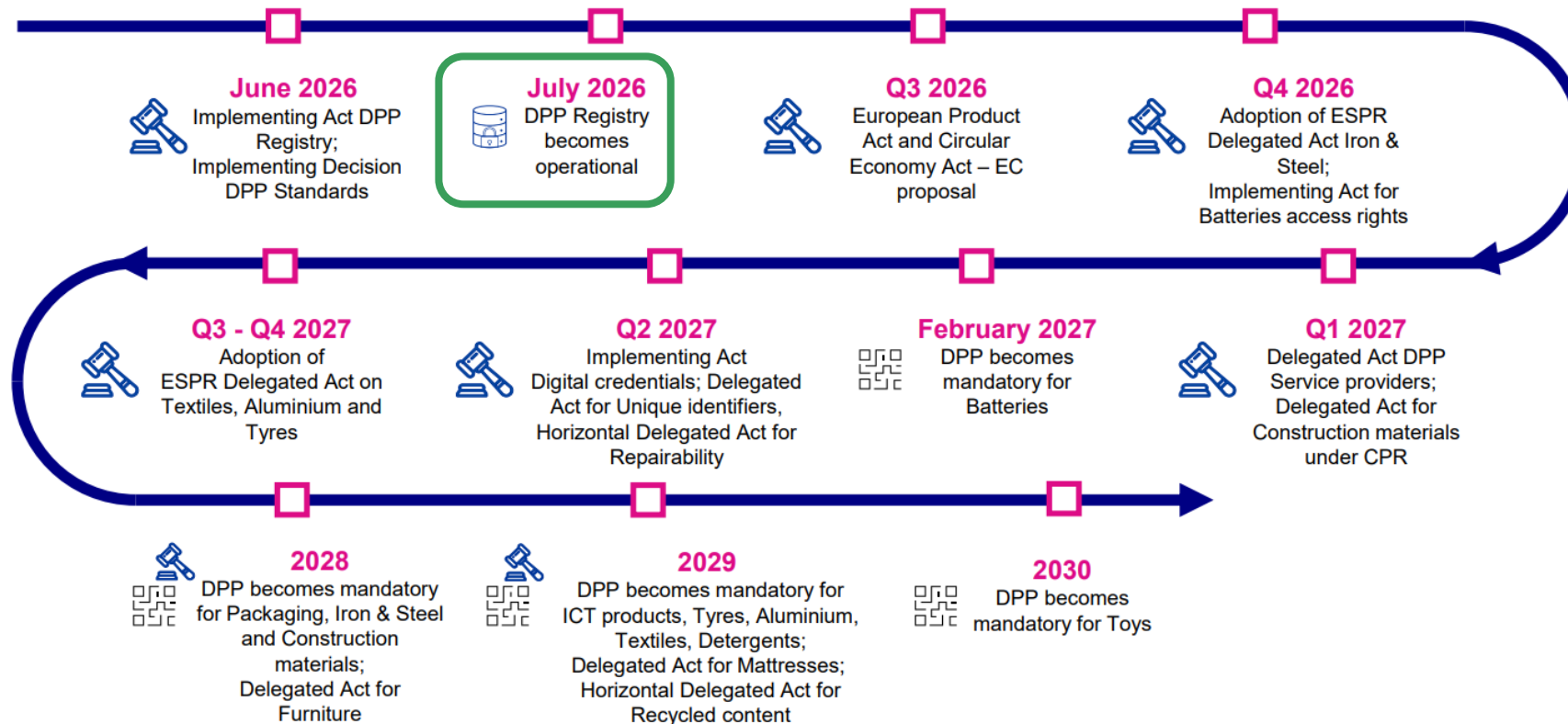
Timeline



This is all happening soon



Timeline



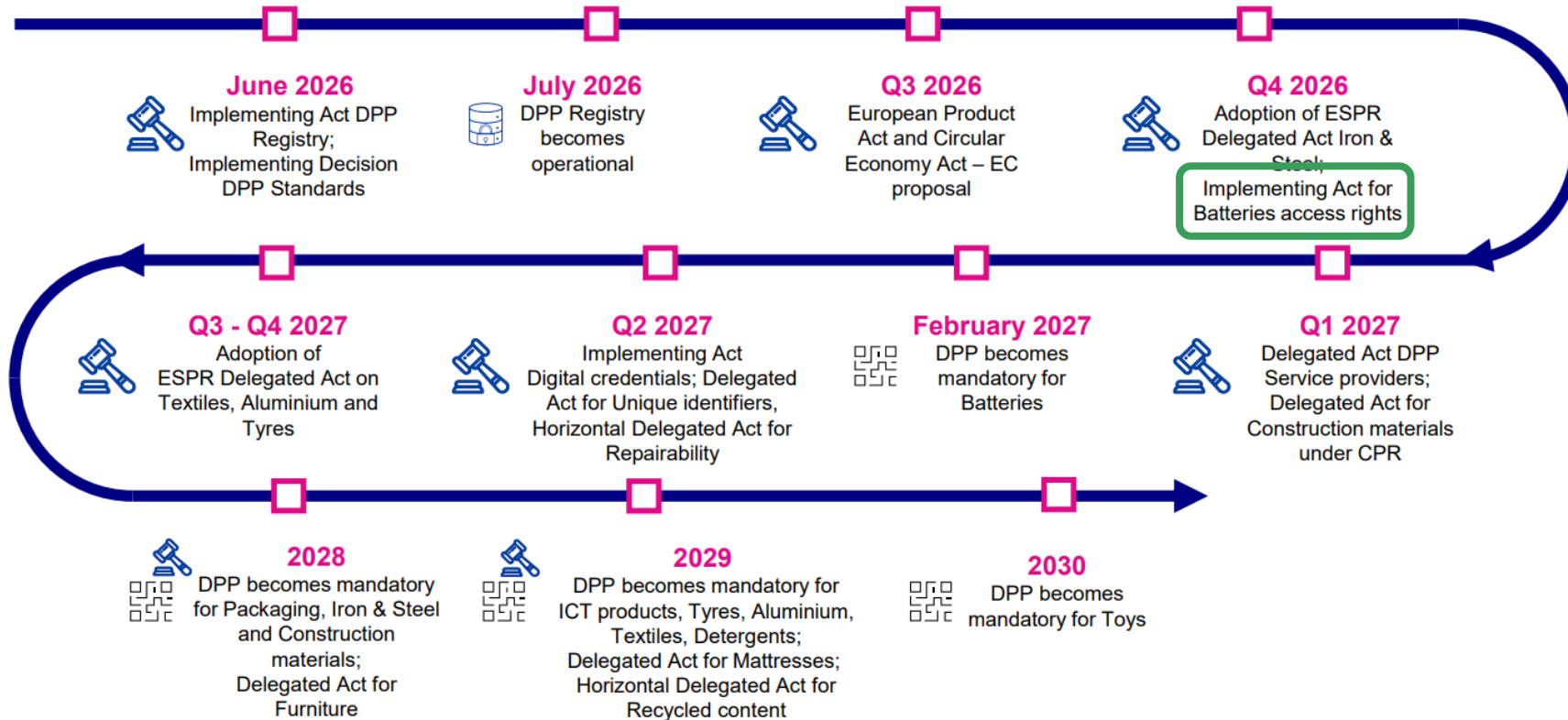
The registry is where we store which DPP can be found where.

The actual product data does *not* go in the registry

This is all happening soon



Timeline

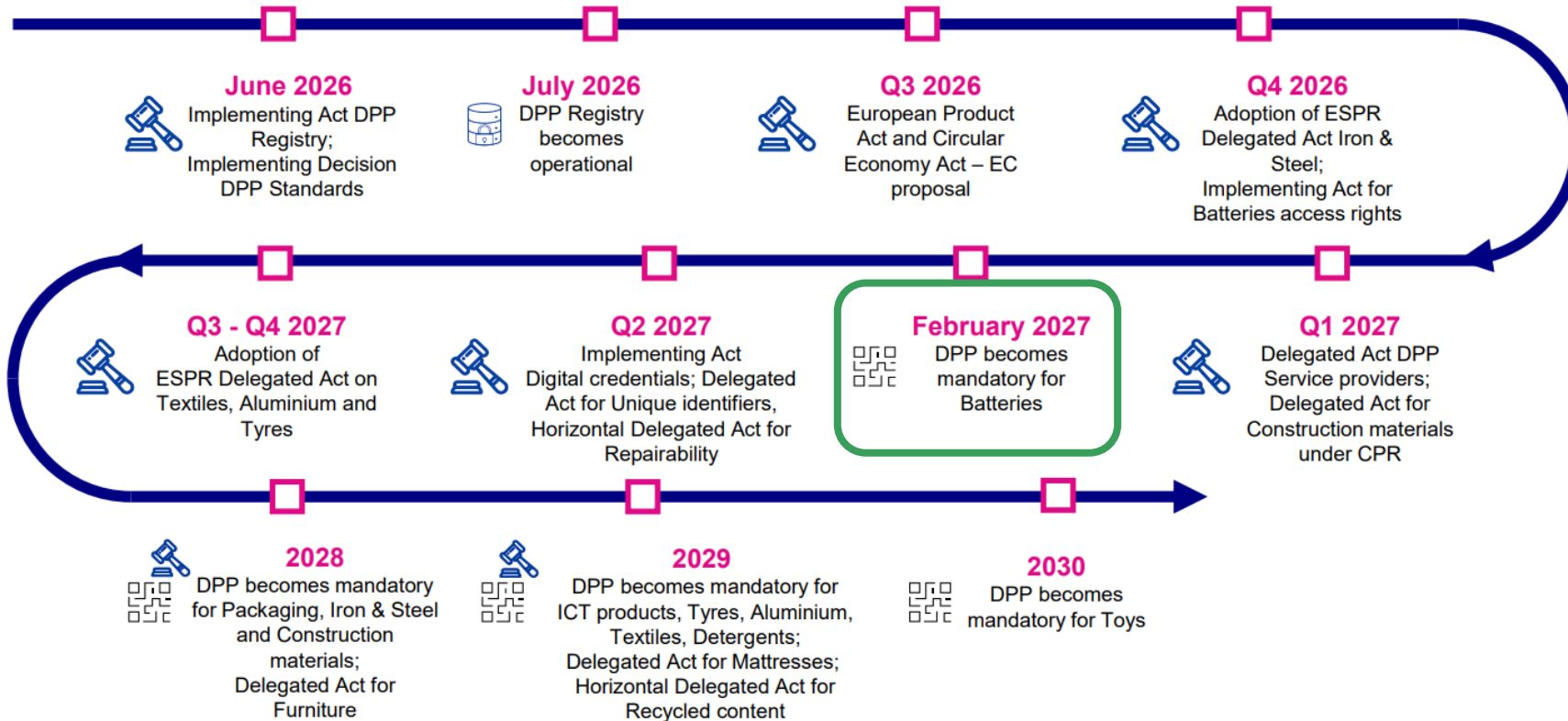


More battery regulation is on the way, who should have access to what data?

This is all happening soon



Timeline

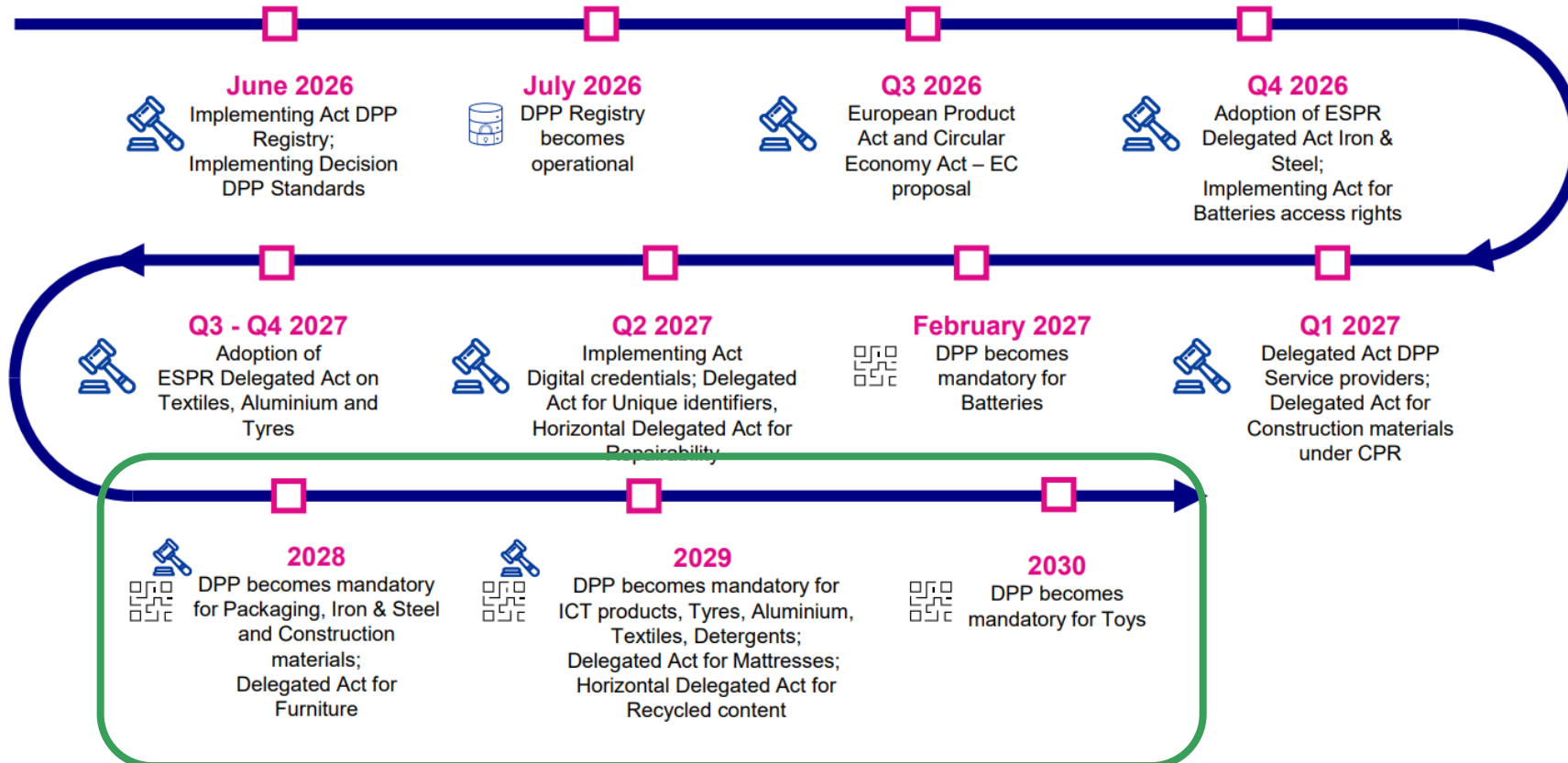


February 18th
2027 is when
battery
passports
become
mandatory

This is all happening soon

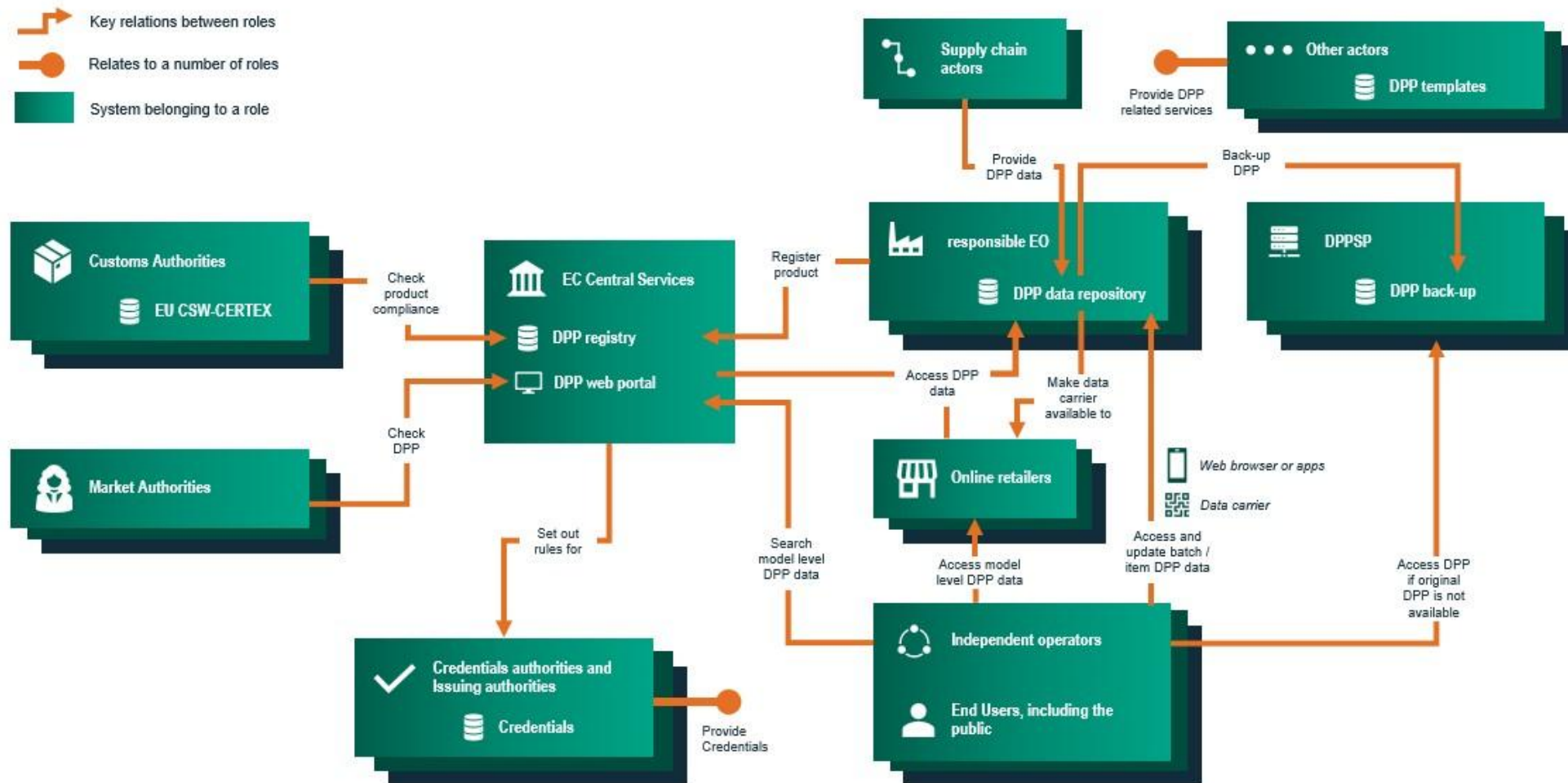


Timeline

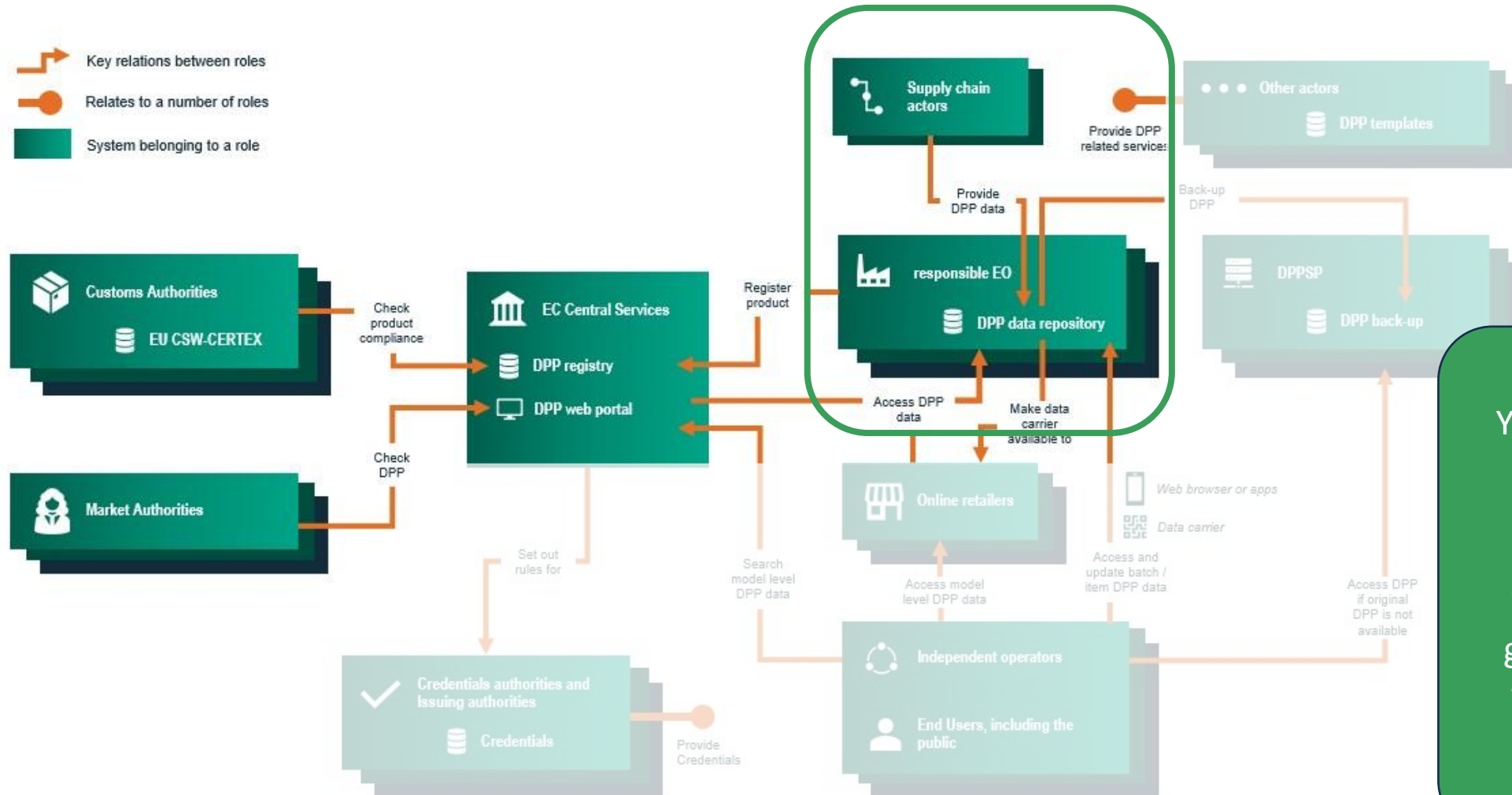


More product categories, more value streams covered, moving to DPPs being the default for a product.

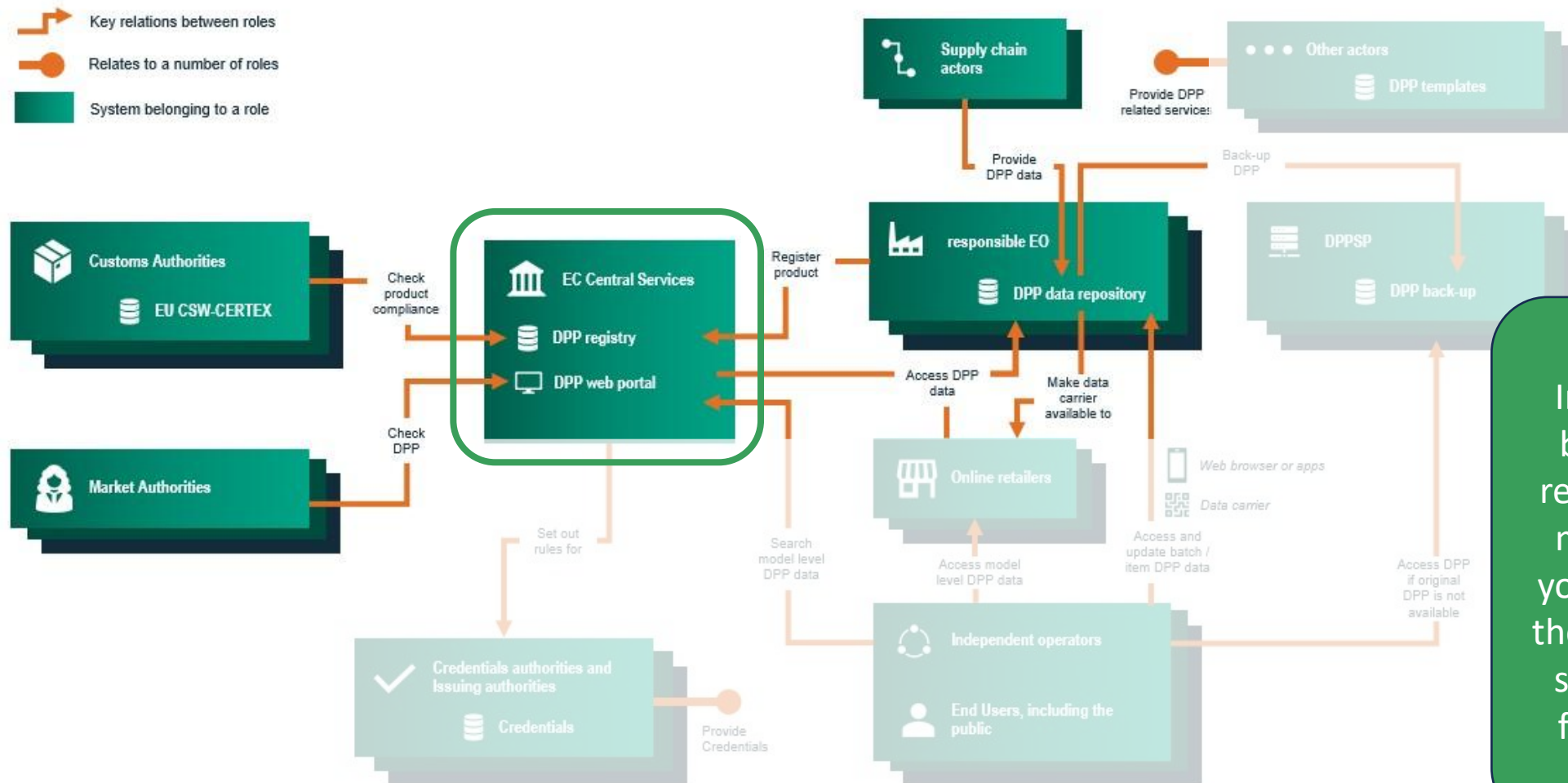
Technical components are taking shape



Technical components are taking shape

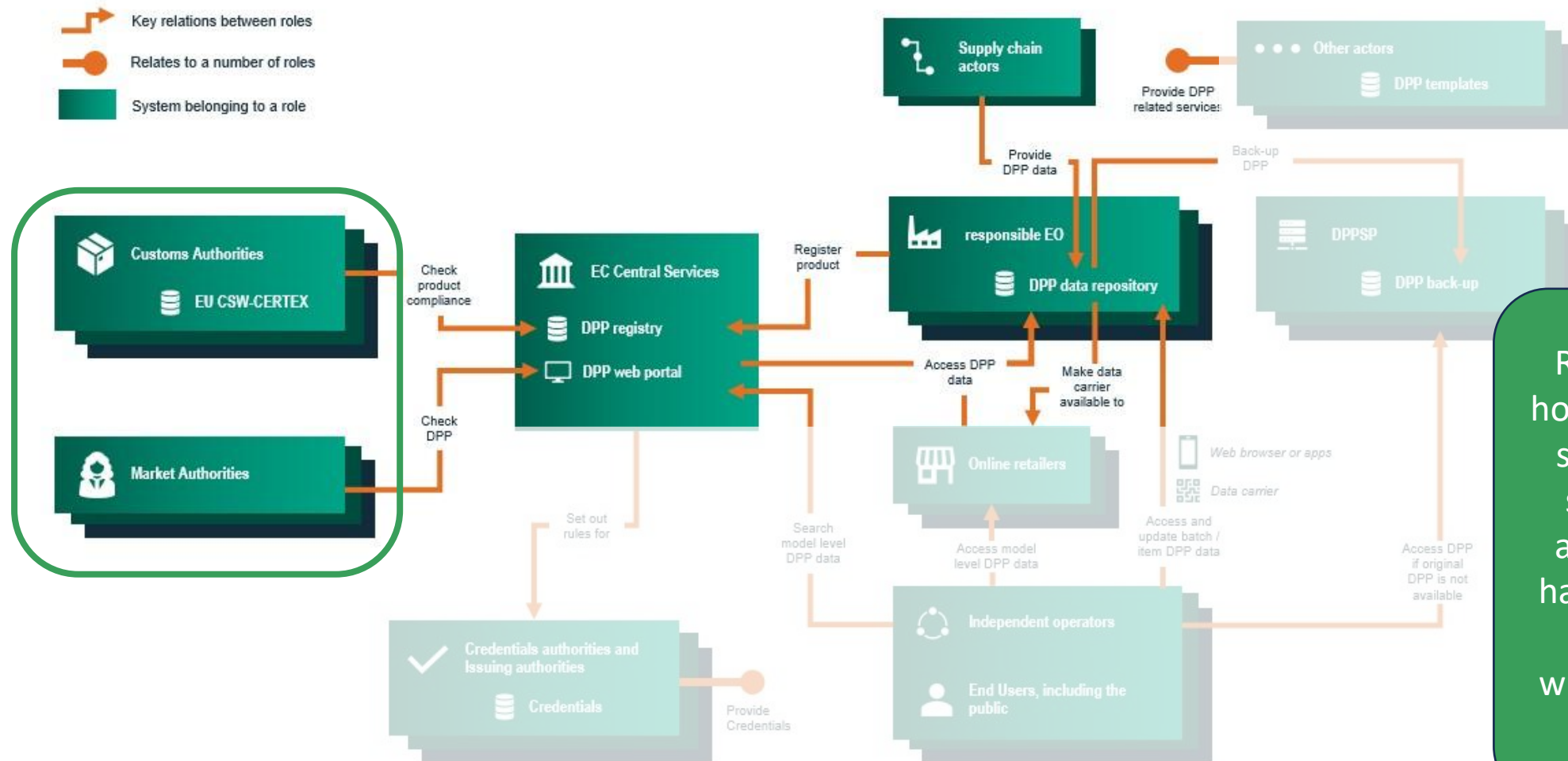


Technical components are taking shape



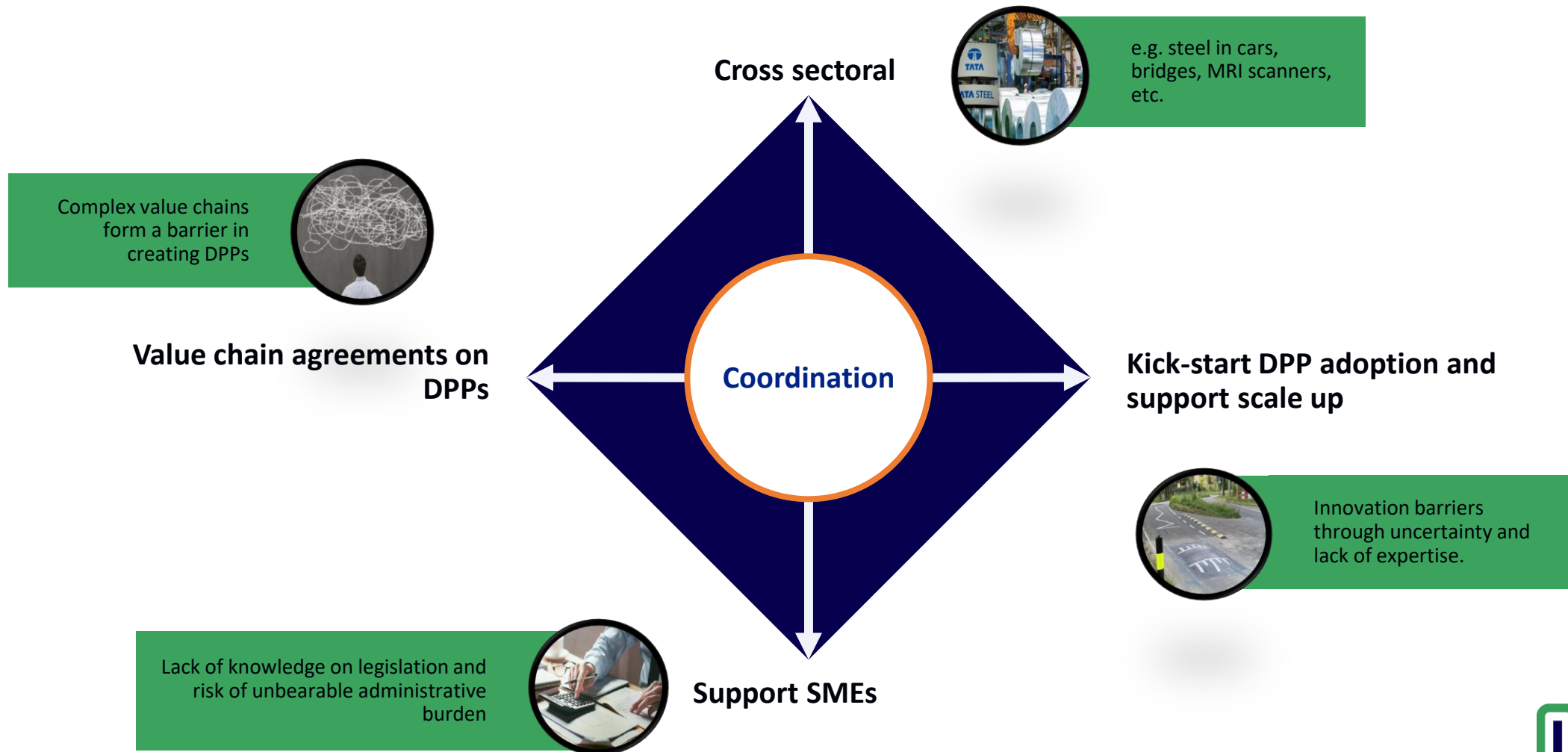
In other (non battery) DPP regulation, you must register your product in the DPP registry so others can find the data

Technical components are taking shape



Regardless of how they find it, some market surveillance authority will have to be able to check whether you're compliant

In the Netherlands, CoE-DPP works to speed up the implementation of DPPs



➤ Different service providers and platforms are available



And many others:

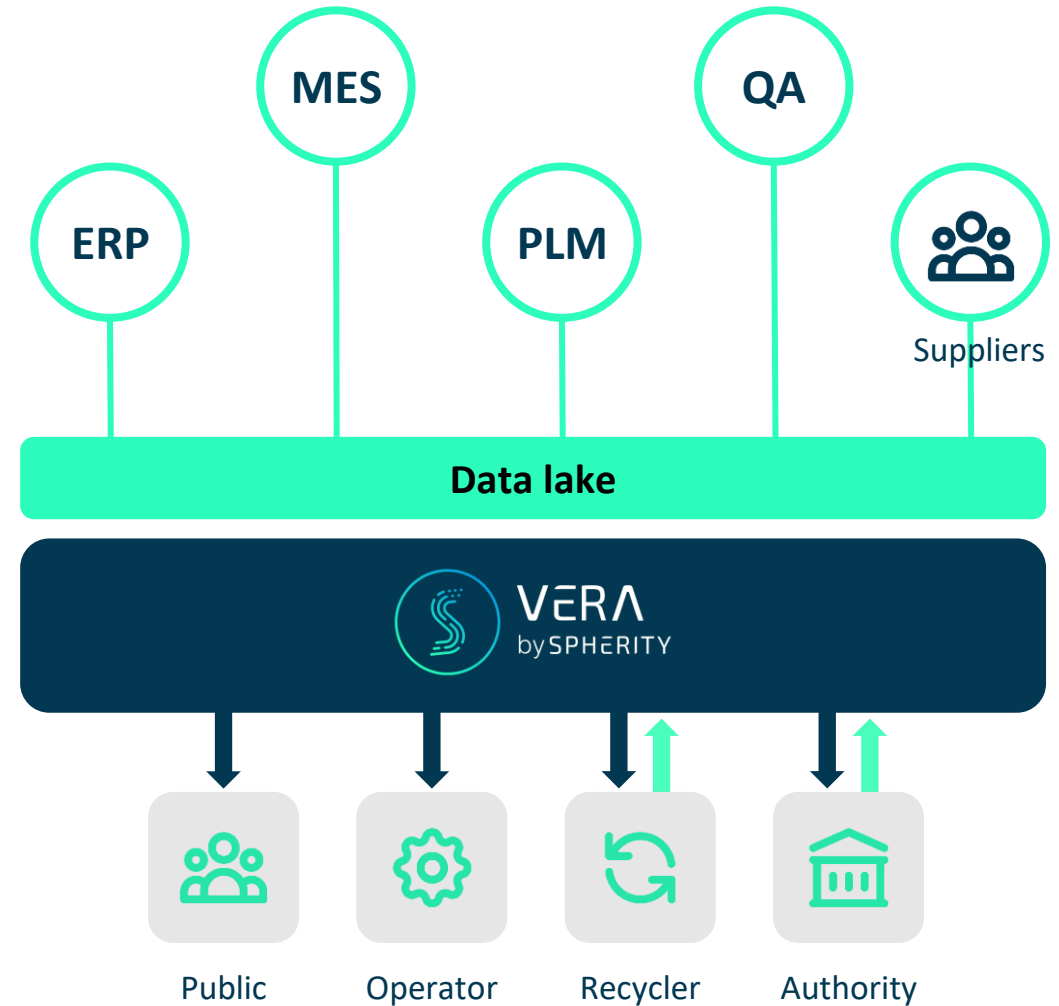


Built for Trust, Scale, and Compliance

Compliant by Design: Built on EUBR and ESPR requirements, VERA is based on open standards and interoperable formats, ensuring transparency without vendor lock-in.

Decentralized Security: We utilize a decentralized data system that ensures a high level of security, guarantees privacy, and avoids fraud.

Role-Based Access Control: Spherity's solution effortlessly manages complex access rights, seamlessly separating public information from restricted data.



Our Product I

Vera Studio - Create and Manage DPPs with Ease



Library of Templates

Benefit from existing data templates that are always updated to reflect regulatory information requirements.



Customized Data

Create and combine your own data templates to design the DPP of your choice.



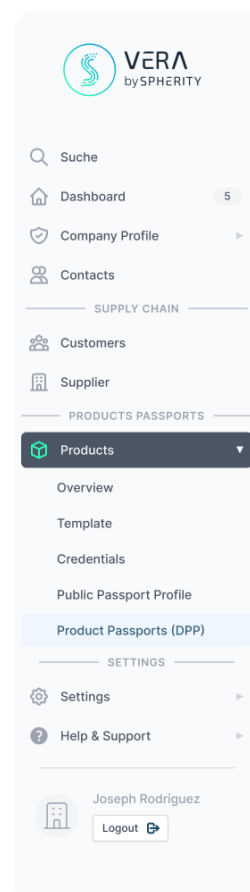
Full Lifecycle Support

Add dynamic data at any time without any additional development work and integrate third-party data.

10.000+ entities
integrated

DPP
registration
automatic

Controlled
access
Data sovereignty



Digital Product Passport (DPP): Creation

Utilise the your credentials or add data to create a digital representation for each of your products.

← Back to Overview

01 Select Type 02 Assign Data 03 Publish

Information

Lorem ipsum dolor sit amet consectetur adipiscing elit. Aliquid pariatur, ipsum similique veniam quo totam eius aperiam dolorum.

Assign Data to Component

General Information

- Supply Chain Information
- Material and Compositions
- Design of Circulation
- Performance and Durability
- Responsible End-of-Life
- Compliance Navigator
- Optimize Use

TEMPLATE NAME	DATA ENTERED	
Product Details Taycan		☒ Update Data
400 V		☒ Update Data
EAG- 3		☒ Update Data
ESG Report		☒ Update Data

Save as Draft

Publish



Create your first
DPP in a few minutes

Recognised by **Gartner**



February 2027 is around the corner

**Act Now to Lead the Digital
Battery Economy**

Get in touch



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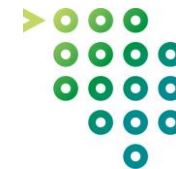
Discussion & questions



What are key challenges you face?

Which questions would you be interested to explore?

➤ Special thanks to:

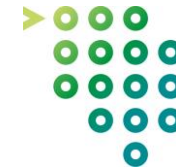


Provincie Noord-Brabant



Be part of our ecosystem!

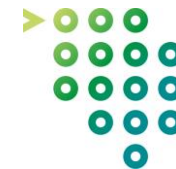
Register your organization in the BCC-NL battery ecosystem



Link to online form!



➤ National Battery Action Agenda



Download!





Thank you!