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 **BASF**  
We create chemistry

# A battery passport based on concrete data standards

Catena-X and the Path.Era collaborative platform

# Executive summary

Lithium batteries used to power electric vehicles (EVs) in the European Union (EU) are being made subject to strict rules on recycling and will require a digital passport from 2027. That Battery Passport will have to contain a range of information including: a unique battery ID, its material composition, manufacturing details, performance and safety data, carbon footprint and end-of-life recycling instructions.

The reason the battery passport was created in the first place was to secure a data flow to enable full-scale recycling of the various materials used in its construction. It helps provide a response to the EU's Battery Regulation Amendment which provides a comprehensive set of rules that are designed to protect the environment by reducing the amount of hazardous materials found in batteries and increasing the recycling rate of those batteries.

The Path.Era initiative is based on the digital automotive ecosystem 'Catena-X' which is designed to streamline the battery supply chain and overcome fragmented organisational networks resulting from competitive market conditions. It aims to bridge incompatible networks and provide a more transparent battery supply chain, as well as promoting understanding between partners, while meeting required regulatory standards and ultimately securing the recycling of battery materials.

As part of the Path.Era initiative, BASF commits to supporting a transparent battery supply chain that fosters a circular economy.



"We cannot forever dig out super-expensive and non-sustainable materials from the ground. Once they are out of the ground they must be recycled."

**Henning Schwabe,**  
Global Project Lead, Supplier  
Enablement in Digital Ecosystems at BASF



# Advancing the Battery Passport Initiative

Beginning in 2027, every EV lithium-ion battery newly put onto the EU market will require a digital passport. This initiative supports the EU's Battery Regulation Amendment, aimed at reducing hazardous materials in batteries and improving recycling rates, thereby aligning with Europe's commitment to climate neutrality by 2050. As the automotive industry faces

increasing scrutiny over its environmental impact, the adoption of such initiatives is crucial for driving sustainable practices and ensuring compliance with evolving regulations. This initiative emphasises the global priority of battery recycling among governments, vehicle manufacturers, and suppliers throughout the value chain.

The battery passport will encompass essential information such as a unique battery ID, material composition, and recycling instructions, all accessible via a QR code. Its primary objective is to foster a circular economy by providing critical data for car buyers, recycling companies, and regulatory authorities.

## Increasing regulations make digital product passport solutions mandatory for supply chains worldwide

Digital product passport regulations on the horizon

### European Green Deal

EU countries are committed to achieving climate neutrality by 2050

Companies must comply in order to serve the European market



August 2025

#### Carbon footprint declaration

EV battery carbon footprint must be **validated by an independent 3<sup>rd</sup> party** and made accessible online, e.g., via battery passport

February 2027

#### Full battery passport

Unique EV battery passport **required for all electric vehicles**, light means of transport, and industrial batteries (>2 kWh) sold in the EU

After 2027

#### Further DPPs based on EU regulations

Regulations like ESPR, EU CSDDD, the EU Critical Raw Materials Act, EU Taxonomy Regulation, and the EU CSRD create **environment for more DPPs**

**Battery passport solutions** key element for meeting **initial regulations in 2025** and ensuring future compliance with upcoming regulatory requirements

# Catena-X and Path.Era: Certified Solutions

Catena-X, the digital automotive ecosystem, enhances data sharing across the automotive value chain, enabling collaboration among manufacturers and suppliers. By creating a digital twin of the vehicle component ecosystem, Catena-X provides vital insights necessary for sustainable manufacturing practices, particularly regarding battery recyclability.

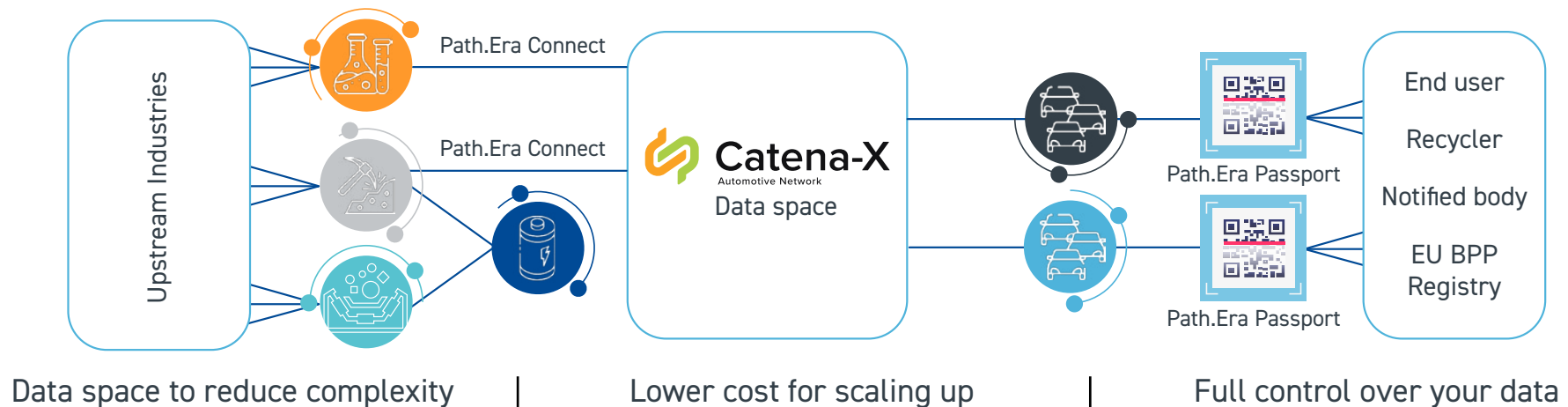
Within this ecosystem, Path.Era emerges as a collaborative initiative involving leading car manufacturers and suppliers with direct experience in the battery supply chain. This partnership has developed a Software as a Service (SaaS) platform for creating, managing, and publishing battery passports, promoting transparency and direct communication among stakeholders. EV and battery manufacturers can

utilise the Path.Era platform for recycling data management, ensuring engineering transparency through recognised data standards. BASF contributes by integrating chemical industry standards and providing a secure data gateway for the battery passport. Path.Era is certified within the Catena-X dataspace, facilitating cross-border data exchange and is available on the Cofinity-X marketplace.

**Path.Era Members:**

Path.Era was founded by a group of global market leaders who represent the entire battery value chain. Driven by a spirit of collaboration and a vision of creating innovative solutions for a sustainable future, they wanted to establish the first, trusted cross-industry battery passport and ecosystem. For detailed insights into the Path.Era Partners: [Click here](#)

**Path.Era: Decentralised and built on common standards from Catena-X**

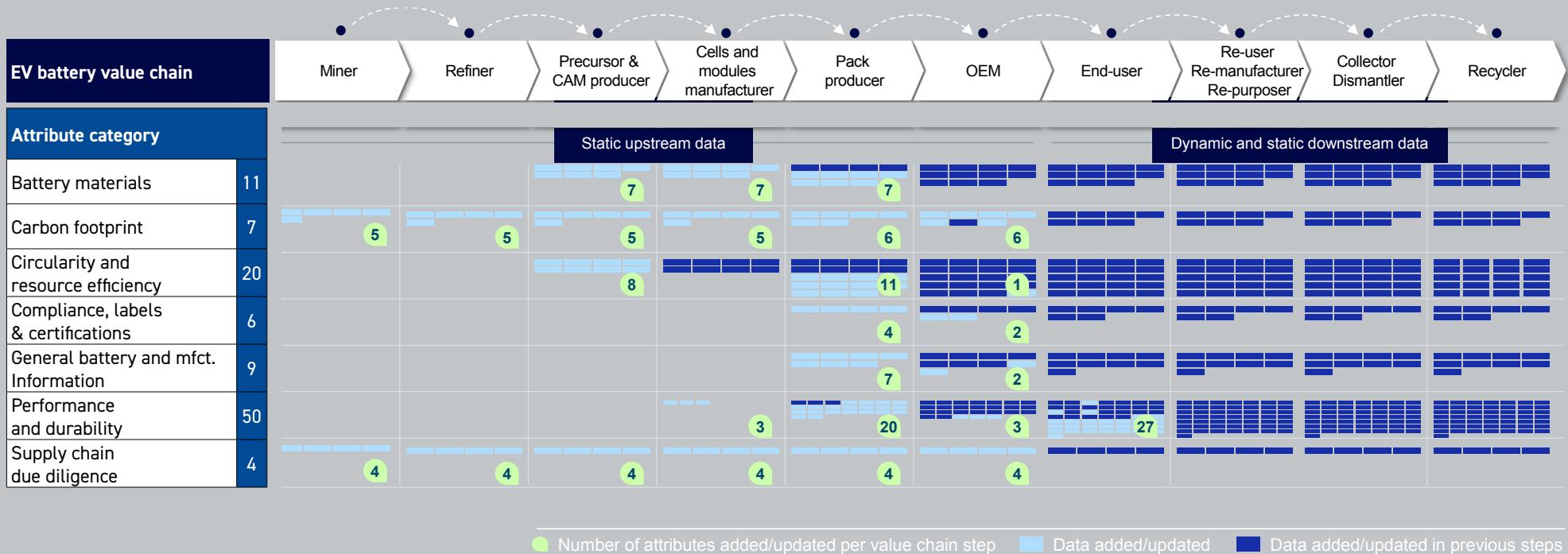


# Global Collaboration for a Streamlined Supply Chain

The battery passport will collect essential data about a battery's lifecycle, including manufacturing processes, materials used, recyclability, and carbon footprint. This initiative aims to facilitate information sharing across the value chain, promote sustainability, and overcome fragmentation in the battery supply chain.

As a leading global chemicals company, BASF strives to integrate market competition with transparency and sustainability throughout the supply chain. These efforts exemplify how cross-border collaboration is essential to overcoming challenges and advancing the global automotive sustainability agenda.

Founded in 2021, the Catena-X association now includes over 200 companies and aims to enhance supply chain transparency through standards and open-source software. It is developing global standards for cross-border data exchange, crucial for simplifying the battery supply chain.



## DASS-X

BASF subsidiary DASS-X has launched ConXify, a secure supplier gateway for the battery passport that wraps all the technology used in the Catena-X connection into a single easy-to-use package. It is a platform for secure, compliant data exchange in the battery supply chain, based on open-source code and open-standard descriptions. Beyond battery passport, the software supports a wide range of applications for Catena-X use cases.

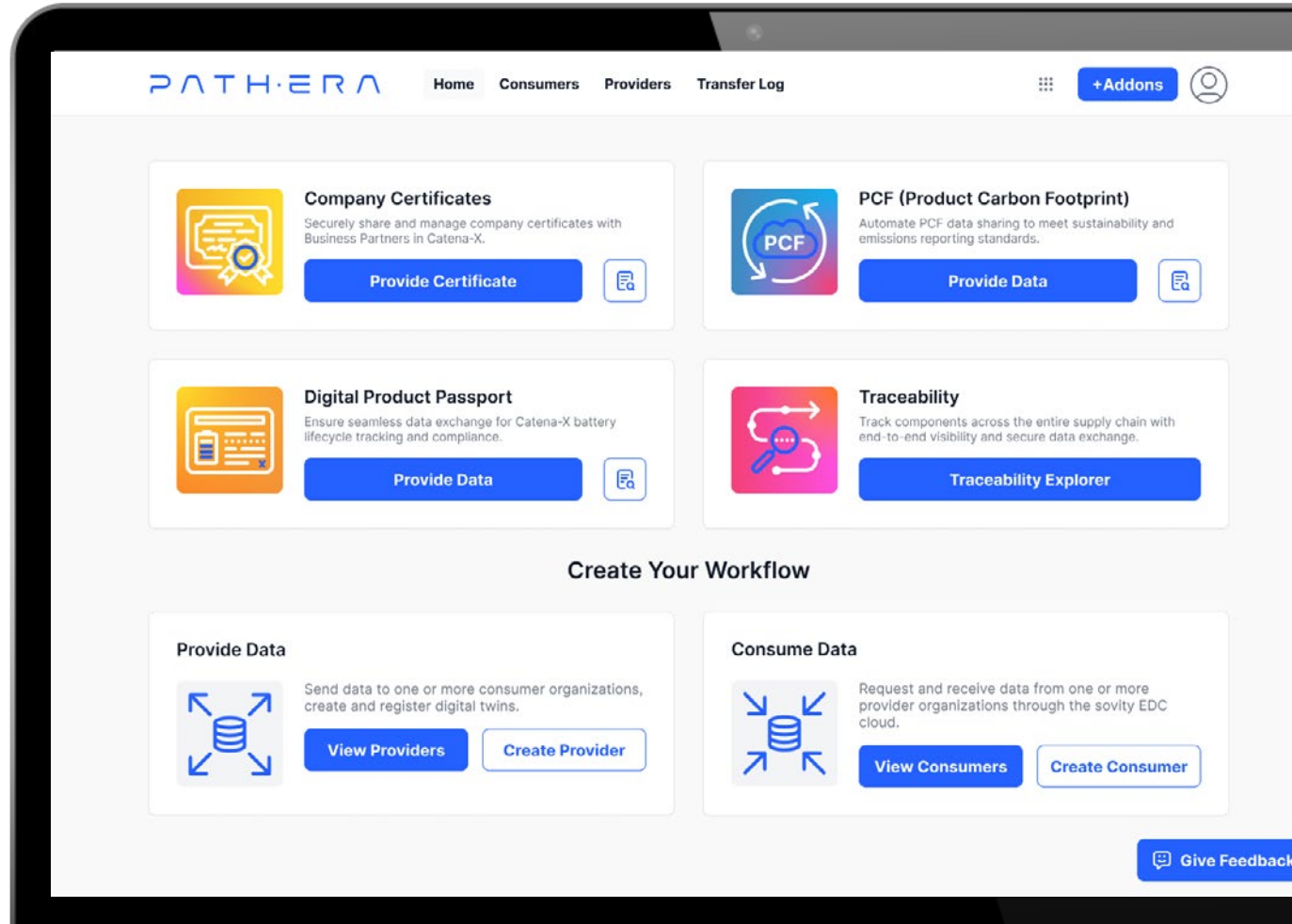
[Find out more here](#)



“If all goes well, we can enhance value chain coordination and significantly reduce manufacturing costs for all involved parties.”

**Dr. Andreas Wollny,**  
Global Digital Expert, Data Systems  
and Project Lead for Catena-X at BASF

While addressing the initial requirements of the EU, global collaboration remains essential for advancing both the Catena-X and Path.Era initiatives, particularly with regions like China. In April 2025, the German Automotive Manufacturers Association and Catena-X signed a memorandum of understanding with the China Association of Automobile Manufacturers (CAAM) to promote digitalisation and sustainability, including battery passports in the automotive value chain beyond Europe.



# Navigating Complex Regulatory Frameworks

The EU's regulatory framework encompasses customs, market surveillance, and the European Registry:

- **Customs:** Digital checks for battery compliance at borders
- **Market Surveillance:** Importers must register products digitally
- **European Registry:** Consumers can access battery data via a QR code.

Emerging battery regulations have complicated the integration of sustainability reporting for batteries with other EV components. This challenge of integration introduces complexity at every stage, from material sourcing to recycling—an issue that Catena-X and Path.Era aim to address.



**Henning Schwabe,**  
Global Project Lead, Supplier  
Enablement in Digital Ecosystems at BASF

“To achieve our goals, we must embed the battery passport within the broader vehicle ecosystem.”



# Leveraging Data Accuracy and Security

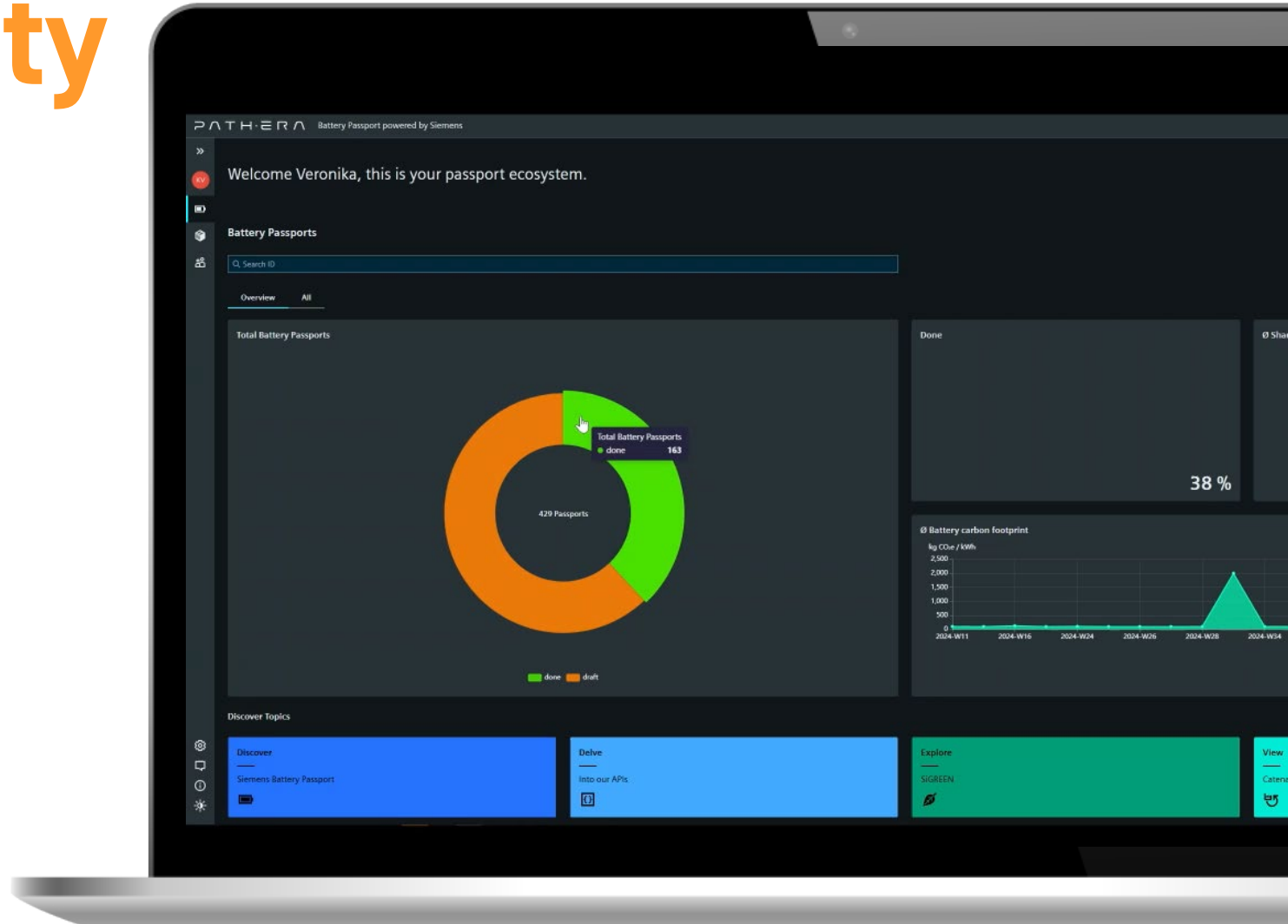
The Path.Era ecosystem has undergone rigorous testing through pilot projects, with feedback essential for refining usability and functionality. The focus remains on a realistic approach that improves outcomes for the industry and consumers. Catena-X employs semantic web technologies to ensure data integration and knowledge sharing. Every participant in Path.Era must use the same open-source template, to maintain data consistency and accuracy.



“Ensuring everyone uses the same authoritative templates guarantees self-consistency and accuracy in data transfer.”

**Henning Schwabe,**  
Global Project Lead, Supplier  
Enablement in Digital Ecosystems at BASF

[Find out more here](#)



# Mastering Europe's Battery Challenges and Beyond

The increasing adoption of digital product passports underscores the importance of transparency and accountability throughout the product lifecycle, reinforcing collaborative efforts toward a sustainable future. Through Catena-X's Path.Era initiative, BASF, as a leading supplier of chemical solutions to the automotive industry—including battery materials and recycling—commits to supporting a transparent battery supply chain that fosters a circular economy.

Despite challenges, such as setbacks among market players, Path.Era partners are setting standards for economic activity within a collaborative framework. BASF is proud to contribute to pioneering efforts in this field.



“As we advance the Path.Era ecosystem, the rise of digital product passports reflects a growing recognition of their value.”

**Dr. Andreas Wollny,**  
Global Digital Expert, Data Systems  
and Project Lead for Catena-X at BASF



### Conclusion

As part of the Path.Era initiative, BASF is working to align a critical number of people toward the positive overall goal of a more transparent battery supply chain designed to ensure the EV battery is fully recyclable. The approach taken by BASF and its partners in Path.Era is to actively bring about a cleaner battery supply chain and a better future for the automotive sector.

The progress made by the Path.Era partners as part of the wider Catena-X community has helped set a standard for how economic activity should be organised in the new data space paradigm. It has proved that under conditions of open standards and open software a more transparent battery supply chain can work.

Path.Era is an example of how industry can collaborate with adherence to antitrust safeguards in a way that was not possible five years ago; creating new types of digital industries activity. Development to make the battery supply chain more transparent, efficient and sustainable continues inside of the Catena-X project.



**A cleaner future  
for the battery  
supply chain**

[Find out more here](#)