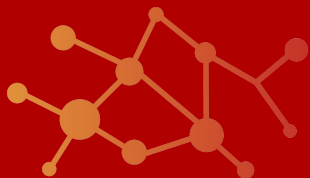


DPP Pioneers: Batteries sector



4TheRecord

A DPP Consulting Agency

Institute of Communication & Computer Systems (ICCS)

Digital Product Passport Workshop #1

14. November 2024

Dr. Susanne Guth-Orlowski



4TheRecord



About 4TheRecord - Consulting Agency for Digital Product Passports

Services:

DPP Business Strategy - DPP Regulatory Expertise - (Decentralised)DPP Implementation Concepts

Customers:



Standardisation

- Stand.ICT Landscape Report for Digital Product Passports
- CEN/CENELEC Standardisation Request Ad-hoc Group
- CEN/CENELEC Standardisation of a DPP System (JTC24)

10-steps to introduce and maintain a DPP for a given product segment

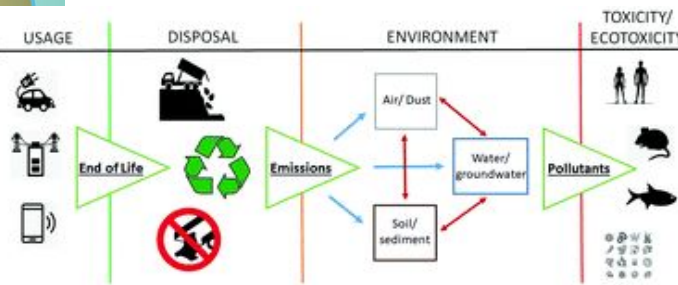
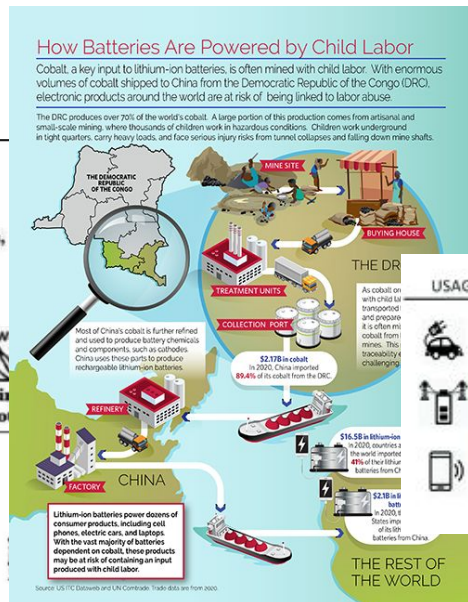
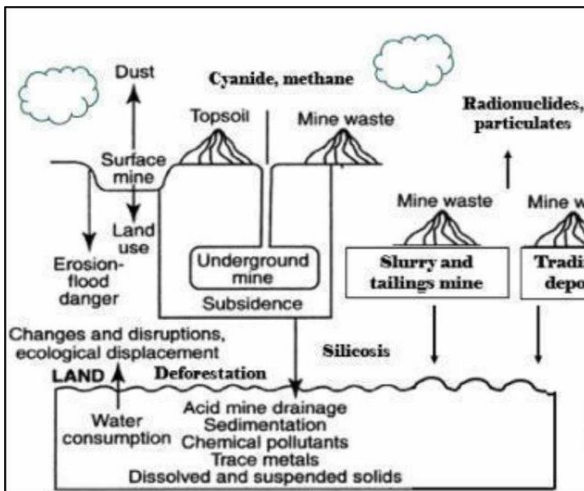
1. **Impact Analysis:** Identify or reconfirm product-specific environmental and social negative impact.
2. **Mitigation Plan:** Identify and describe in detail the countermeasures, procedures, and processes to reduce the negative impact and prioritise them.
3. **Regulation Phase - Data & Audit needs:** Identify the data that is required to implement and measure the above-mentioned impact as well as countermeasures, procedures, and processes in a preliminary study that manifests in the product segment specific delegated act (e.g. for textiles).
4. **Value Chain Analysis:** Analyse and understand the product-specific value chain with all actors.
5. **Data sources:** Identify which actor can provide which (parts of the) data which has been defined in step 4.
6. **Existing IT infrastructure:** Identify the already existing infrastructure and preferred IT technology stacks, identification schemes, vocabularies, etc.
7. **Business needs:** Understand what needs the supply chain actors have. E.g Business Confidentiality.
8. **Explore existing Ecosystem:** Identify and engage existing industry consortia that are capable of discussing the DPP requirements, share best practices, and further develop technical standards.
9. **Establish missing ecosystem, identify stakeholders:** Form new alliances, make the industry fit for the DPP.
10. **Standardise, Build and maintain the DPP:** Define the final digital product passport content, the sources and recommendations for delegated acts. Kick off the required Standardisation activities and build DPP in iterations.

10-steps in the Battery Case

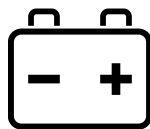


1. Impact Analysis - Example Issues: Land use (Cobalt / Lithium mining), Child Labor (in mining), Disposal of battery material.

DPP data is not random

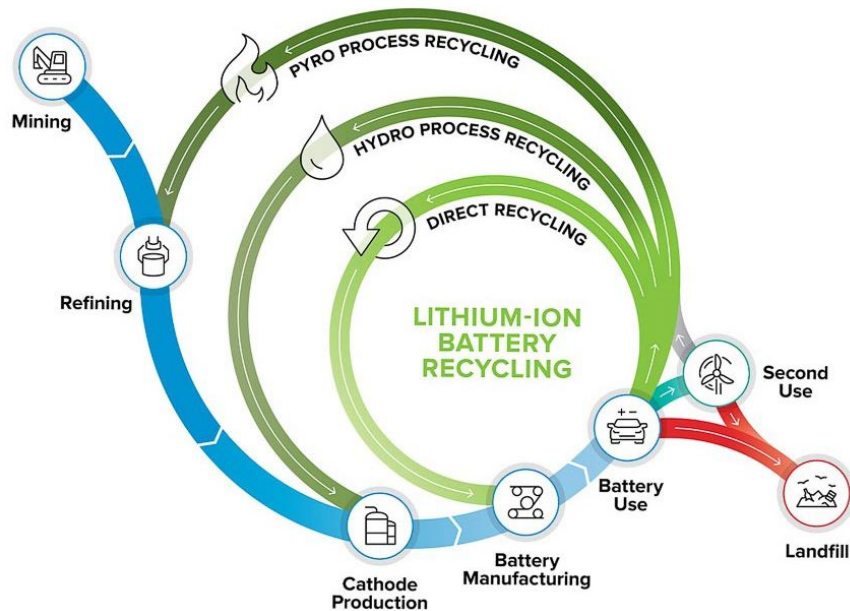


10-steps in the Battery Case



2. Mitigation Plans:

- Reduce raw material mining.
- Incentivise alternative chemistry,
- Supplier (Mine Site) Certifications,
- Enable & incentivise R-Strategies
 - reuse,
 - repair,
 - repurpose,
 - recycle,
 - etc.



10-steps in the Battery Case

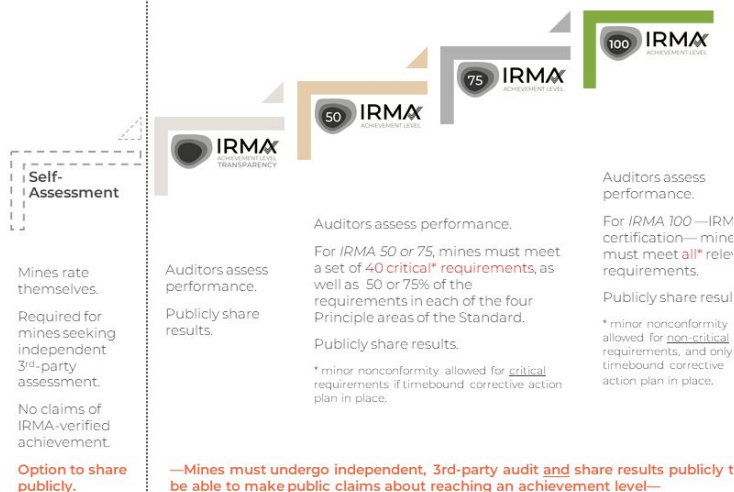


3. Regulation Phase: (Battery Regulation was created and defines requirements)

Define data, audit / data assurance needs - Examples: Due Diligence Certification (e.g. IRMA, CERA, TSM, etc.),

Not an Achievement Level

IRMA Achievement Levels



TOWARDS SUSTAINABLE MINING

OVERVIEW ESG STANDARDS

Environmental, Social and Governance in Gold Mining



Responsible Gold Mining Principles (RGM [®])									
Frameworks integrated into the RGM [®] as requirements		Frameworks integrated into the RGM [®] as authoritative guidance		Other Reputable Mining Industry Frameworks		International Reporting Frameworks		Ranking Agency Indices	
Topic Area	International Framework or Standard	Topic Area	International Framework or Standard	Framework	Issuing Organization	Framework	Issuing Organization	Indices	Owner
Revenue Transparency	Extractive Industry Transparency Initiative (EITI)	Responsible Sourcing	Responsible Gold Guidance	ICMM Mining Principles	International Council on Mining and Metals	GRI Standard	Global Reporting Initiative	Responsible Mining Index	Responsible Mining Initiative
Human Rights	UN Guiding Principles on Business and Human Rights (UNGPR)	Health and Safety Management	ISO 45001	IFC Performance Standards	International Finance Corporation (part of the World Bank)	SASB Standard	Sustainability Accounting Standards Board	Dow Jones Sustainability Index (DJSI)	S&P Global (acquired the ESG Ratings + DJSI from RobecoSAM in 2018)
Security and Human Rights	Voluntary Principles on Security and Human Rights (VPH)	Labor Rights	ILO Fundamental Conventions	Towards Sustainable Mining (TSM)	Mining Association of Canada (MAC)	UN Sustainable Development Goals (SDGs)	United Nations	MSCI ESG Ratings	MSCI
Conflict Management	Conflict-free Gold Standard (CFGS)	Environmental Management	ISO 14001	IRMA Standard	Initiative for Responsible Mining Assurance	DNK	Deutscher Nachhaltigkeitskodex	Sustainalytics	Morningstar (announced in April 2020)
Cyanide Management	International Cyanide Management Code (ICMC)	Mercury Management	Minamata Convention	RJC Code of Practice (Standard Jewellery)	Responsible Jewellery Council			FTSE4Good Index Series	FTSE Russell
		Climate Change	Task Force on Climate-related Financial Disclosures (TCFD)	Risk Readiness Assessment (RRA)	Responsible Minerals Initiative (RMI)			Refinitiv ESG	Blackstone Group (60%), Thomson Reuters (40%)

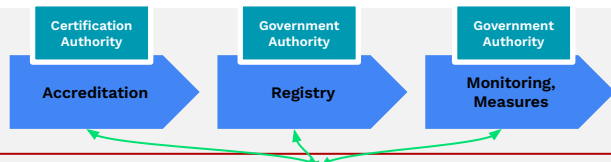
10-steps in the Battery Case - Supply Chain Transparency

4. (Future) Value Chain Analysis: Miner, Refiner, Active Material, Cell, Module, Pack, OEM, Usage, R-Economy, Disposal.

Data Governance and Impact Evaluation

Ensure save and sovereign data processes

Optimize impact of battery passport for circularity

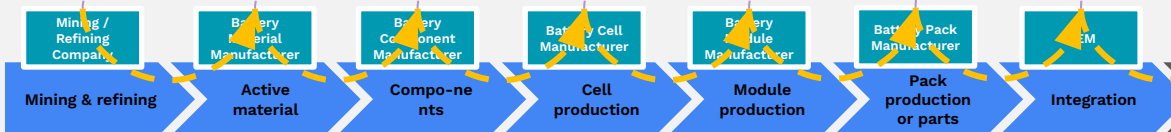


Data Reporting

for the development of a battery passport

Data Exchange

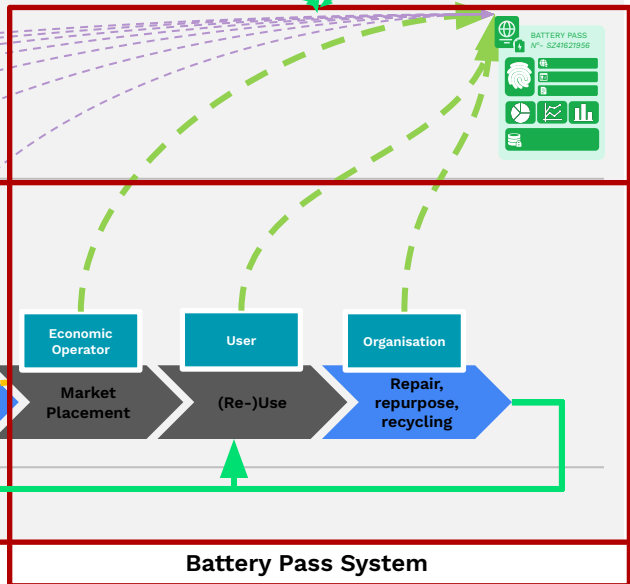
between participants of the battery value chain



Data Collection

within organizational boundaries

Track & Trace System

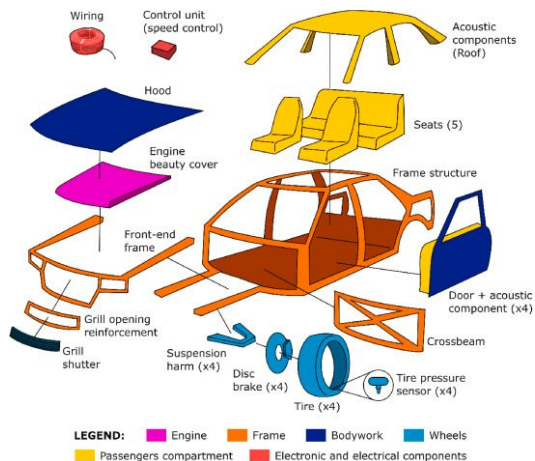


What we can learn from the Battery Passport - DPP Content

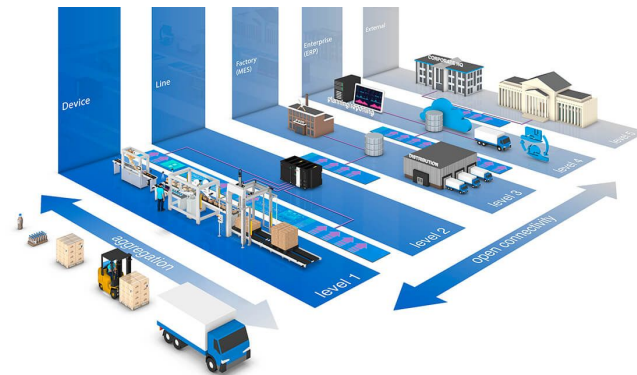
10-steps in the Battery Case

5. Data sources: Track & Trace Companies, Auditors, Manufacturers

Automotive central Pre-Products Database



Life-Cycle Assessment Database GaBi



What we can learn from the Battery Passport - DPP Content

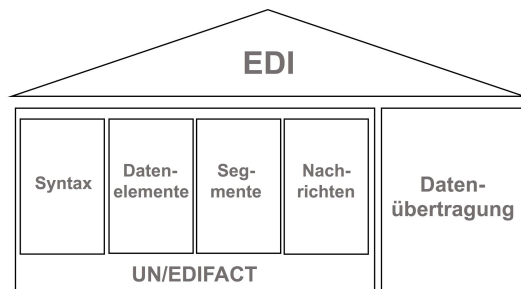
10-steps in the Battery Case

6. Existing (IT) standards & infrastructure: Exchange Protocols, Decentralised Tech, Vocabularies and already required product data (e.g. the safety data sheet).

Decentral data spaces infrastructure



Data Exchange Protocols



Safety Data Sheet Vocabulary

```
<?xml version="1.0" encoding="UTF-8"?>
<!-- *****
eSDScom XML schema definition version 5
Main schema - root element is DatasheetFeed
***** -->

Source: https://github.com/esdscom/sdscom-xml
License: https://creativecommons.org/licenses/by-nd/4.0/legalcode
***** -->

<xs:schema targetNamespace="http://www.esdscom.eu/eSDScom" xmlns="http://www.w3.org/2001/XMLSchema"
  xmlns:eSDScom="http://www.esdscom.eu/eSDScom" xmlns:xs="http://www.w3.org/2001/XMLSchema" version="5.5">
  <xs:include schemaLocation="SDScomXMLCT.xsd"/>
  <xs:include schemaLocation="SDScomXMLDT_GHS.xsd"/>
  <!-- Section 1 ***** -->
  <xs:complexType name="IdentificationSubstPrep">
    <xs:annotation>
      <xs:documentation>SDS section 1</xs:documentation>
    </xs:annotation>
    <xs:sequence>
      <xs:annotation>
        <xs:documentation>Although not different in structure, a lot of this information
is market specific and thus specified for each region separately.</xs:documentation>
      </xs:annotation>
      <xs:element minOccurs="0" name="SpecificationNo" type="eSDScom:string128">
        <xs:annotation>
          <xs:appinfo>SDScomChem</xs:appinfo>
          <xs:documentation>Sender-defined identification of a specification the
chemical is in accordance with, e.g. a formulation number. This is not meant for compliance statements like
international or vendor-internal standards!</xs:documentation>
        </xs:annotation>
      </xs:element>
      <xs:element maxOccurs="unbounded" name="TradeProductIdentity">
        <xs:annotation>
          <xs:appinfo>SDScomBau</xs:appinfo>
          <xs:appinfo>SDScomChem</xs:appinfo>
          <xs:documentation>At least one instance (with empty UserId) for the
identification as delivered by the supplier. Use more instances for various package sizes, various products in a
group SDS, or (with filled UserId) for reference to relabelled products of the SDS recipient. Also for group
safety data sheets, each instance of TradeProductIdentity covers one substance or product. When importing, make
sure that SDScom documents are not automatically replaced if the product identity is the same! GTINs are not
necessarily unique (they should, but aren't in practice!), and product identities may refer to kits with multiple
products and SDSs. Unique IDs that allow automatic overriding of data require a bilateral agreement between
customer and supplier and should be placed in ProductNo.</xs:documentation>
        </xs:annotation>
      </xs:complexType>
```

10-steps in the Battery Case

7. Business needs - Example: Business Confidentiality: Cell Manufacturer do not reveal their supply chain to car manufacturers.



Solutions:

- Technical: Access Control measures to be installed.
- Trusted Third Parties: Track & Trace vendors aggregate and hide information.

10-steps in the Battery Case

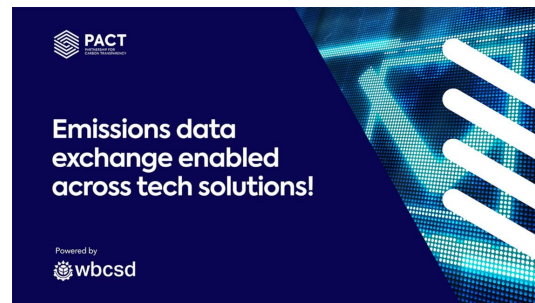
8. Explore existing Ecosystem:



RECHARGE

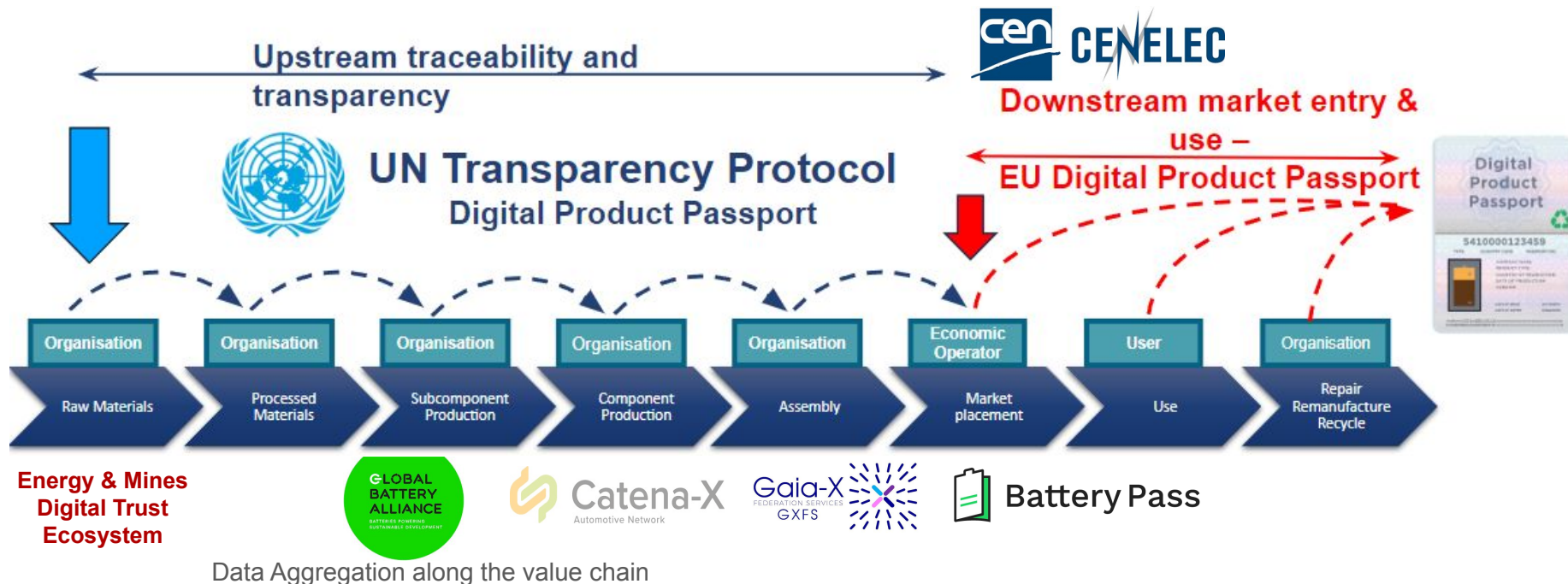
10-steps in the Battery Case

9a. Form new Industry Alliances, establish missing ecosystem, identify stakeholders: Research Projects, Forums, Industry Initiatives, Consumer Representations, to interpret the legal text, further develop and maintain the product specific DPP specifications, establish enforce industry governance frameworks.



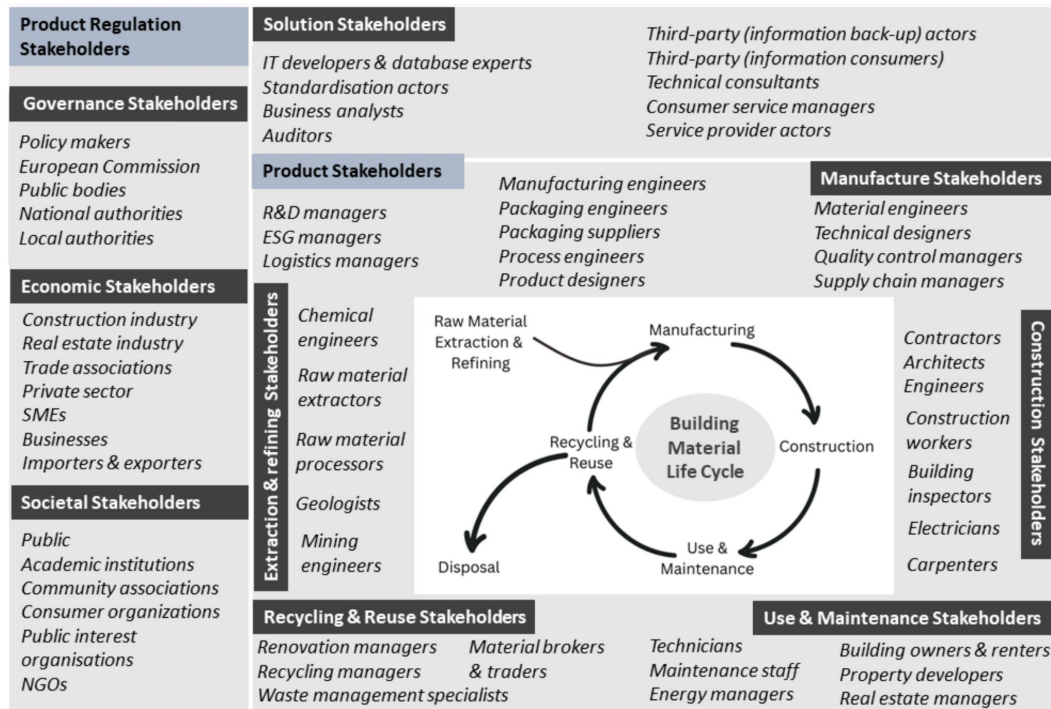
Overview of initiatives in the are of DPPs (example Batteries)

9b. Establish Ecosystem along the supply chain



General Stakeholder Management

9c. Involve all Stakeholders



Source: [DPP4ALL](#), Austrian Research Project in the construction industry.

10-steps in the Battery Case

10. Standardise, build, and maintain the DPP (in iterations): Data Attributes, DIN/ISO Specification, DPP standardisation (CEN/CENELEC JCT24), develop Due Diligence Standards, develop GHG standards, Governance, etc.

Supporting European Experts Presence in
StandICT.eu About + Or

A Landscape of Star

StandICT.eu Submitted by on 21 March 2023

Report of TWG
Digital Product
Passport:
Landscape of
Digital
Product
Passport
Standards



European Standardization Organizations

JTC24 – Digital Product Passport – Framework and System

CEN CENELEC JTC24

Convenor: Thomas Knothe,

Secretary CEN CENELEC: Carolina Müller, Secretary DIN: Katharina Sehnert



Product
Environmental
Footprint

What we can learn from the Battery Passport - DPP Content

10-steps in the Battery Case

10. Standardise - DPP Data Attribute Specification: List of Raw Material Suppliers, Dismantling Information, State-of-Health, etc.



The Data Attribute Longlist is the current guideline for the mandatory attributes of a battery passport. It was developed by the Battery Pass project in cooperation with:

- The Global Battery Alliance
- Catena-X Project
- The Battery Pass Consortium
- Public Consultation
- Many additional battery experts from the industry.

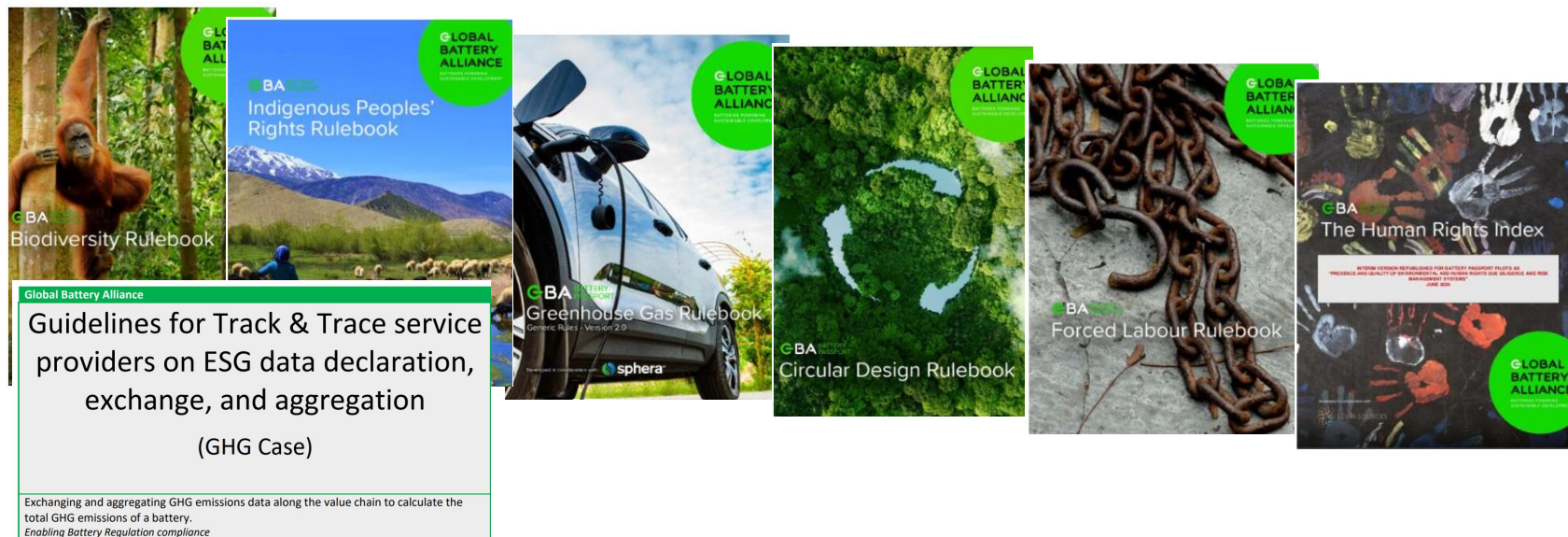
Battery Pass Content Guidance goes ISO! (DIN EN SPEC 99100)

Find all Data Categories in the Battery Pass Showcase!

10-steps in the Battery Case

10. Standardise: GBA rulebooks and Guidelines: Score, exchange, and aggregate ESG performance.

Global Battery Alliance (GBA) Guidelines, that show how trusted data can be exchanged between supply chain actors to produce a verifiable ESG indicator data of a battery and how different performances are scored.

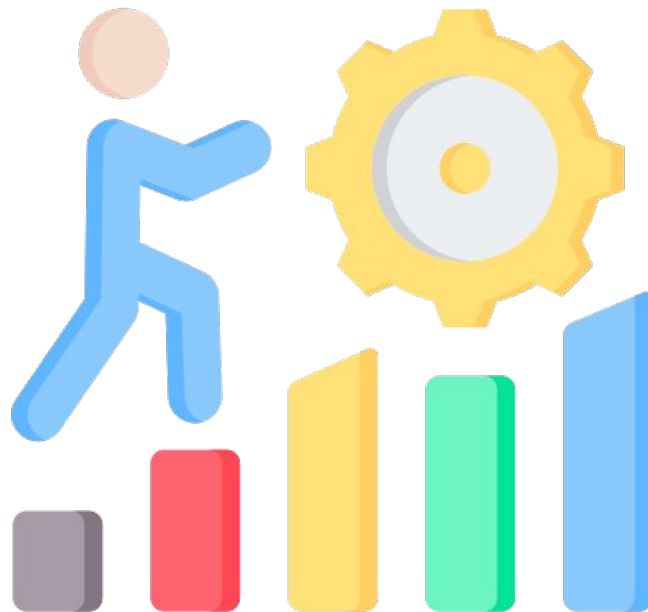


<https://www.globalbattery.org/media/publications/the-tt-guidelines-on-ghg-data-exchange-v1-0.pdf>

Key Challenges in the Battery Industry

Main challenges for the Battery Industry:

1. **(Global) Supply Chain is unknown.** Only Tier 1 Suppliers are known.
2. **DPP Data is not available.**
 - SAP project to get data from systems
 - CO₂ footprint per product is not known.
3. **No Standards available:** Data & tech standards and governance needs to be developed.
4. **Industry Consortia are not available:** Industry needs to build platform for alignment & standard setting.
5. **Costs / Business Acceptance:** Reporting burden is already high needs cheap digitisation that is based on standards, also beyond the DPP issuance, ie. upstream data exchange.
6. **Business Confidentiality:** Asian battery pack suppliers do not make their supply chain transparent.
7. **Competing Standards:** Too many initiatives defining overlapping standards, example CO₂ footprint calculation



Get in touch!



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