SYSTEMIQ

Battery Pass

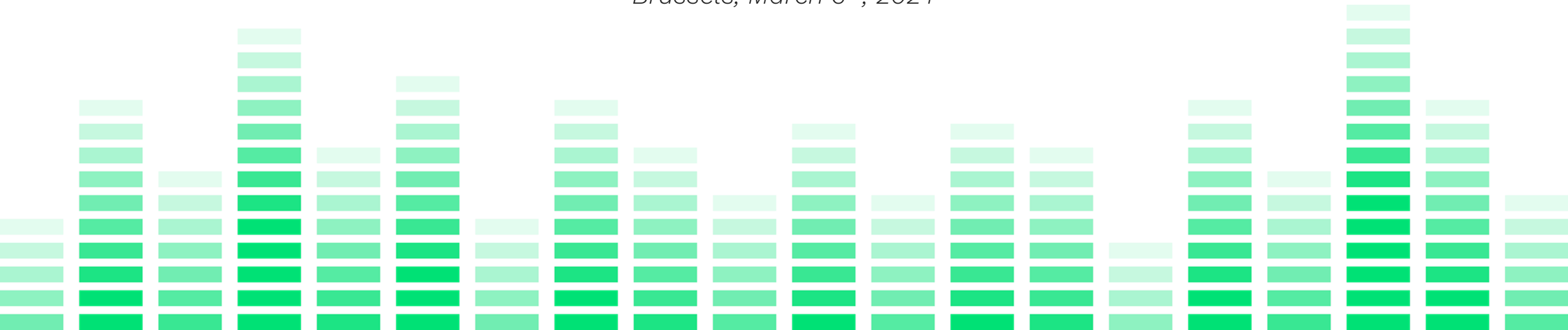
thebatterypass.eu

Gefördert durch:
Bundesministerium für Wirtschaft und Klimaschutz
aufgrund eines Beschlusses des Deutschen Bundestages

Battery Pass

Estimating possible benefits of battery passports

Brussels, March 5th, 2024



The Battery Pass is a consortium of 11 partners from industry, science, technology and beyond, co-funded by BMWK aiming to advance the EU battery passport

CONSORTIUM LEAD

SYSTEMIQ

CONSORTIUM PARTNERS

acatech · Audi · BASF We create chemistry · BMW GROUP · Circulor · FIWARE FOUNDATION · Fraunhofer IPK · TWAICE · umicore · VDE RENEWABLES

*under subcontract

Kick-off event of the Battery Pass Consortium in Berlin in April 2022

Key facts on the Battery Pass Consortium

- Evolved from the Circular Economy Initiative Germany (CEID)
- Led by system change company Systemiq
- 11 consortium partners from industry, science, technology and beyond
- Co-funded by the German Federal Ministry for Economic Affairs and Climate Action (BMWK) with EUR 8.2 mn
- Aiming to provide guidance on the battery passport mandated by the EU Battery Regulation
- Scope of project work covers:
  - guidance on content requirements / data
  - guidance on battery passport system
  - development of a demonstrator
  - value assessment (qualitative & quantitative)
- 3-year timeframe (April 2022 to April 2025)

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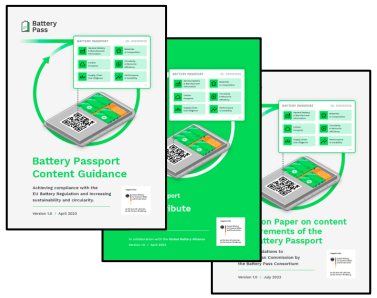
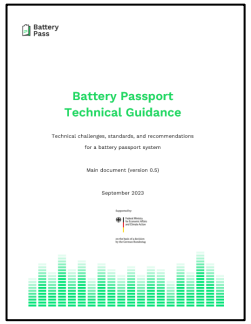
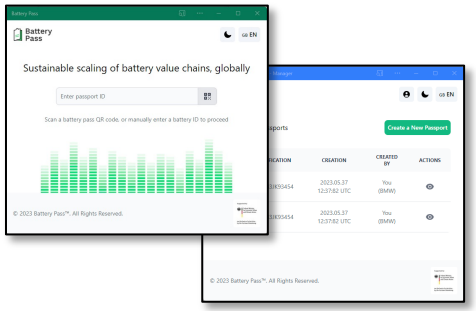
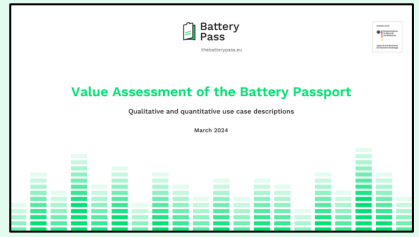
After defining the content and developing a software demonstrator of the battery passport, the consortium is now focusing on assessing the benefits

	Content Guidance	Technical Guidance	Demonstrator	Value Assessment
Objective	Provide guidance on content reporting requirements mandated by EU battery passport	Provide overview to economic operators on technical standards	Provide platform integrating results on battery passport data, verify technological feasibility	Provide analytical study motivating stakeholders to leverage full battery passport potential
Scope	• Data attribute longlist • CO_2 specific documents • EC position paper	• Technical Standard Stack • Mapping of existing standards	• Software prototype • Real-world data • LEGO demonstrator	• Benefit modelling for individual use cases • Overall benefit analysis
Publi-cation	 *Originally published in Apr 2023, update in Dec 2023*	 *Published in March 2024*	 *Draft released in March 2024*	 ***Focus of today***

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The value assessment sheds light on the benefits of the battery pass regarding economic, environmental and social impact

Scope & Methodology

Requirements		Value			Impact dimensions		
Mandatory requirements[1]	+ Voluntary additions	Benefits	vs.	Challenges and drawbacks	Economic (e.g., cost efficiency)	+ Environmental (e.g., GHG emissions)	+ Social (e.g., health and safety)

Battery Pass consortium partner perspective

15 Consortium group meetings

6 Sub-working groups

External battery industry perspective

>30 Expert interviews

2 Public consultations

- Led by Systemiq in **collaborative effort with Battery Pass consortium and validated by external stakeholders**
- Scope includes **mandatory requirements and voluntary additions** with benefits & drawbacks in three impact dimensions (economic, environmental and social)
- Selected **deep dives focus on EV batteries, separate analysis highlights differences for industrial batteries**

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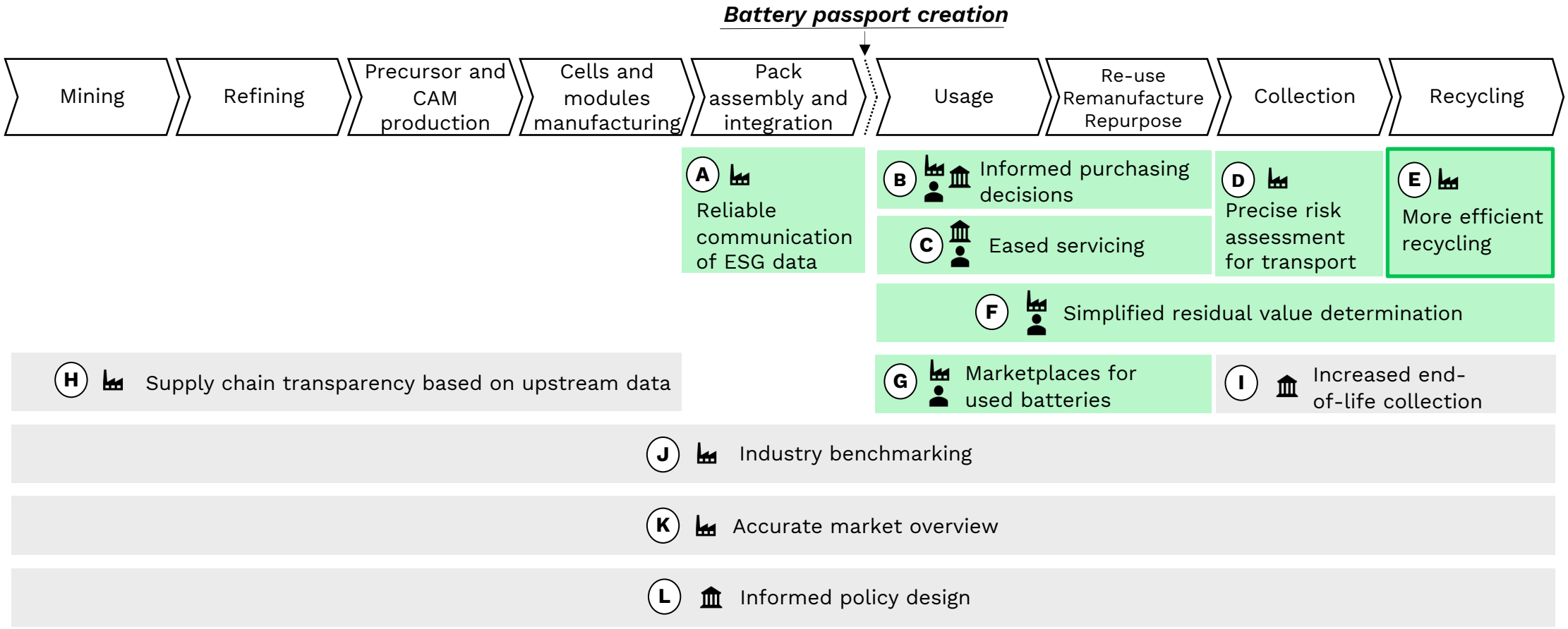
1) As per the EU Battery Regulation

The benefits were assessed based on 12 use cases along the battery value chain

Battery passport user: Business Authority Private consumer | Direct use case | Potential use case | Deep dive for today



Note: Use cases are allocated along the value chain step(s) in which the battery passport is used

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Deep Dive: The estimated increase in 2nd life batteries could fulfil ~6-20% of demand for stationary battery energy

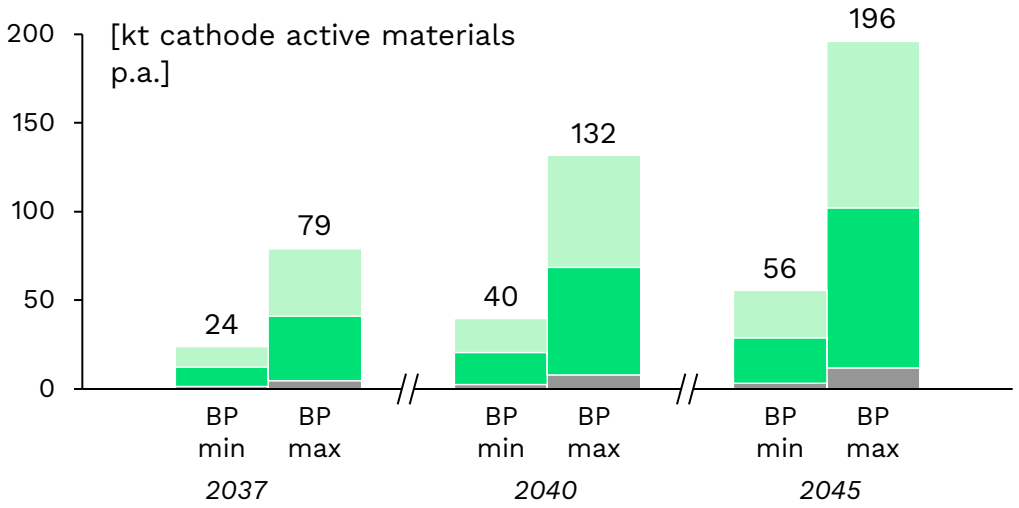
Macro perspective: Primary raw materials avoided and CO_2 reduction through primary materials avoided on the European market

Graphite Iron Lithium

Primary raw material avoided

Due to decrease of technical testing costs, **a proportional increase in batteries going into 2nd life leads to ~ 60-200 kt of primary cathode active materials to be avoided** annually by 2045

Preliminary



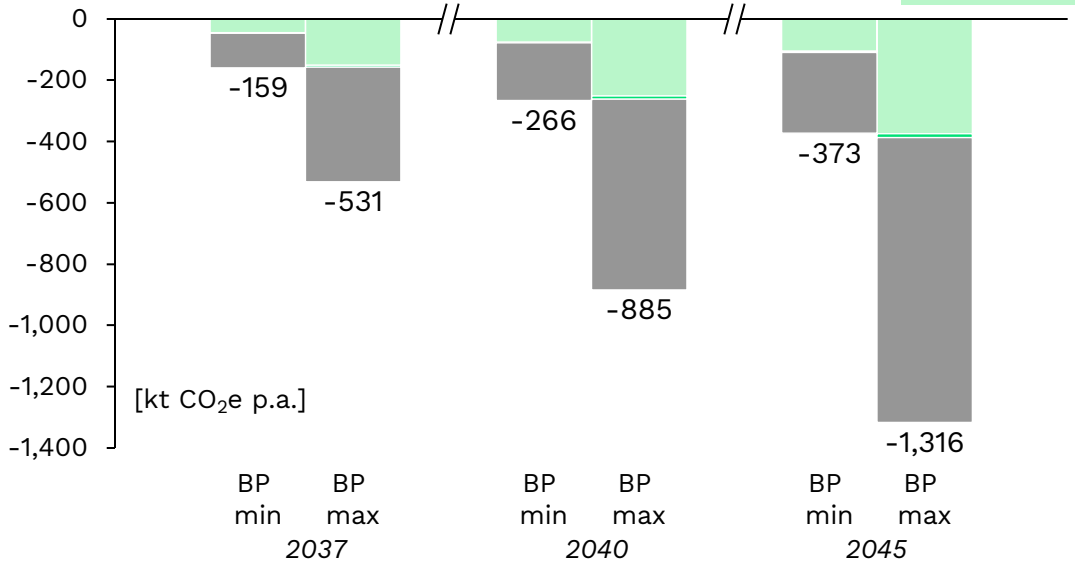
Source: Systemiq analysis (2024), active material intensity based on IEA (2023a) and Leader et al. (2019) see technical annex on slides 133-135 for main assumptions and their sources

This could fulfil 6-20% of demand in Europe

CO_2 reduction through primary materials avoided

Based on the primary raw materials avoided, **between ~ 370 and 1,300 kt of CO_2 eq. could be reduced** annually by 2045.

Preliminary



Source: Systemiq analysis (2024), emission factors based on Ecoinvent (2024), cut-off cumulative LCIA v.3.91.1, see technical annex on slides 133-135 for main assumptions and their sources

Reduction by avoided primary lithium which has the highest carbon footprint of the 3 active materials in LFP batteries

1) Based on a demand forecast of 87 GWh stationary battery energy storage for Europe in 2030 (see McKinsey & Company (2023)) and assuming a tenfold demand increase until 2050

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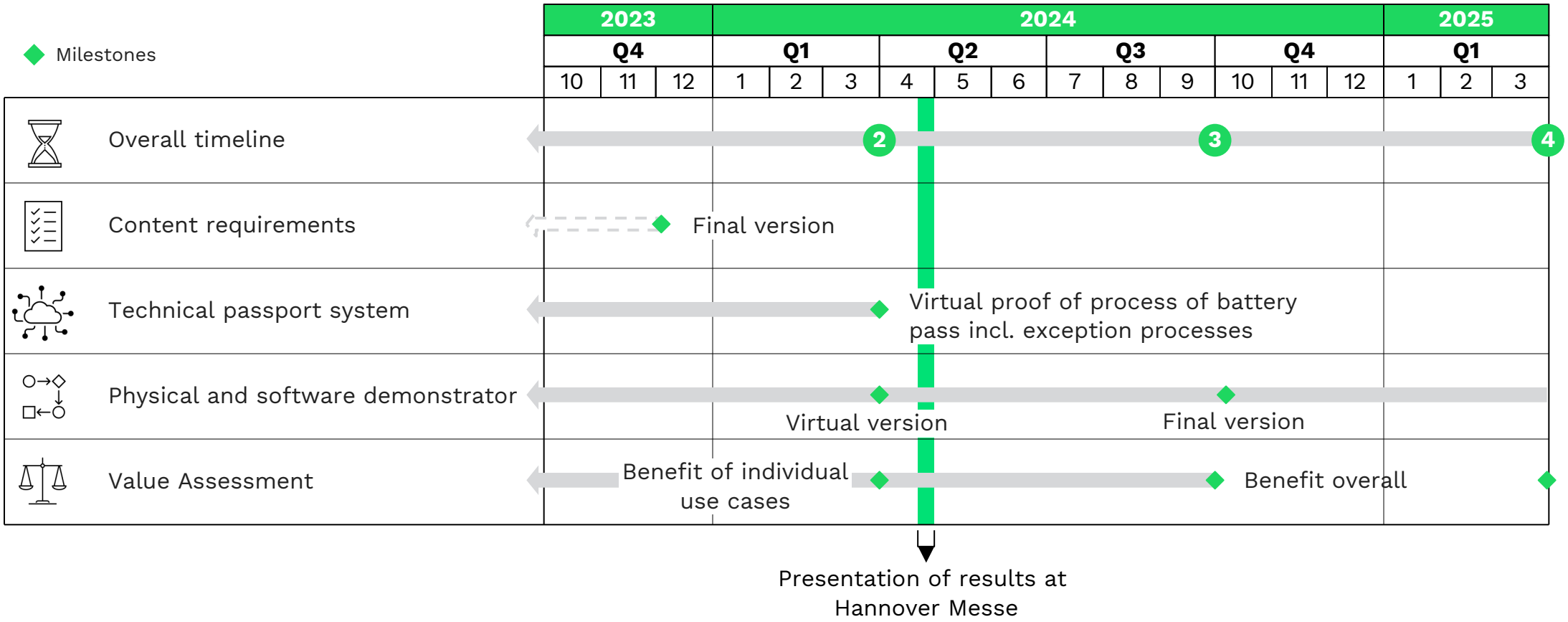
The demonstrator & value assessment will be presented at Hannover Messe in April



1 Concept model for data and auditing
2 Technical system model
3 Demonstrator in use
4 Use case model and follow-up for implementation

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Our plan for the next 18 months is to build on Battery Pass' success. Reach out if you have questions!

Complete the conclusive foundation for EU Battery Passports

Continue delivering on plan to enable consistent, efficient implementation

Build on the success of Battery Pass to enable Digital Product Passports at large

Shaping EU support systems for DPP implementation | facilitate internationalization of DPP

Advise affected companies

Helping economic operators digest the requirements and capture business value of DPP

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Thank you for your interest!

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