



Roll out systemic change to evolve the furniture industry towards CE through the implementation of innovative circular business models, material & design strategies, and the Digital Product Passport

Opportunities for DPPs under the Ecodesign for Sustainable Products Regulation (ESPR)

Potential benefits for Circular Economy Business Models

First findings and results from the R-evolve HORIZON project

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INNOVATIONS- UND
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FÜR NACHHALTIGE ENTWICKLUNG

Webinar: Insights into Digital Product Passports & EU Research
21 October 2025

sofia

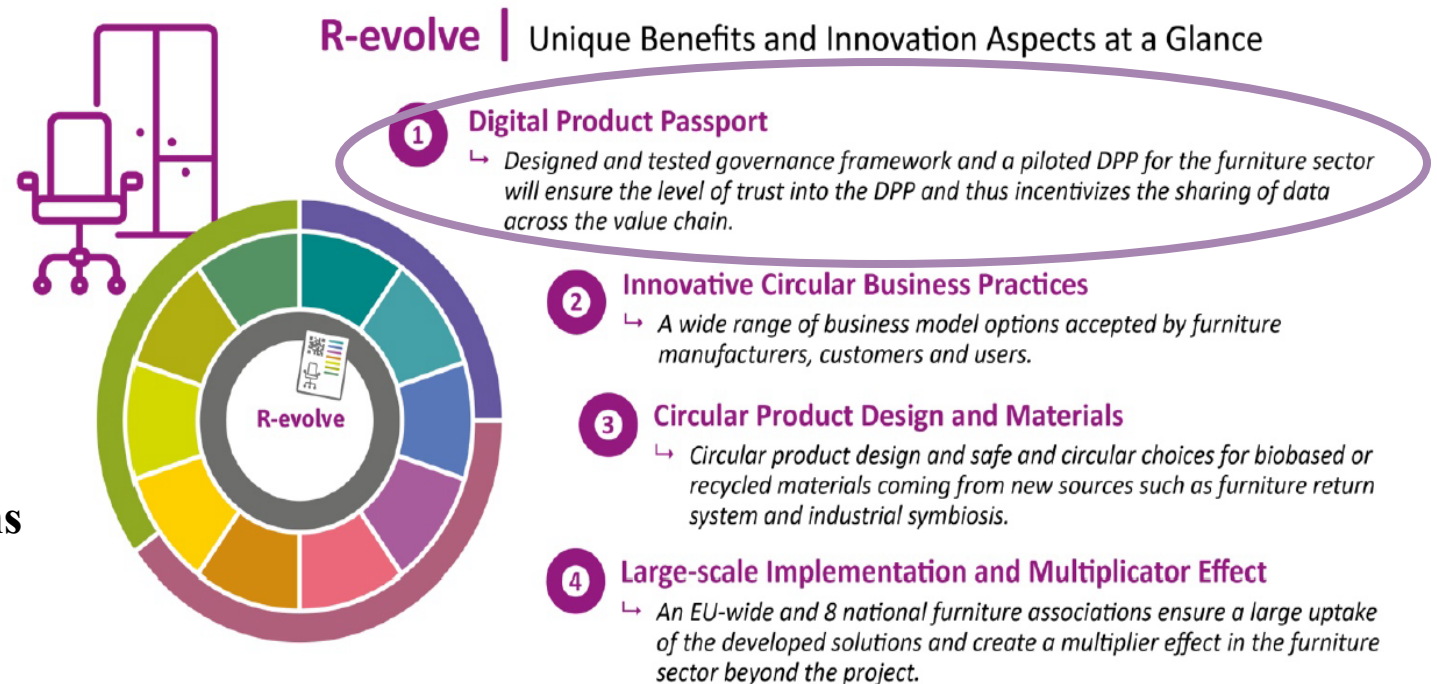
Overview: DPP data set and its context

Core question: How can the opportunities for Circular Economy Business Models (CEBM) offered by the DPP be leveraged?

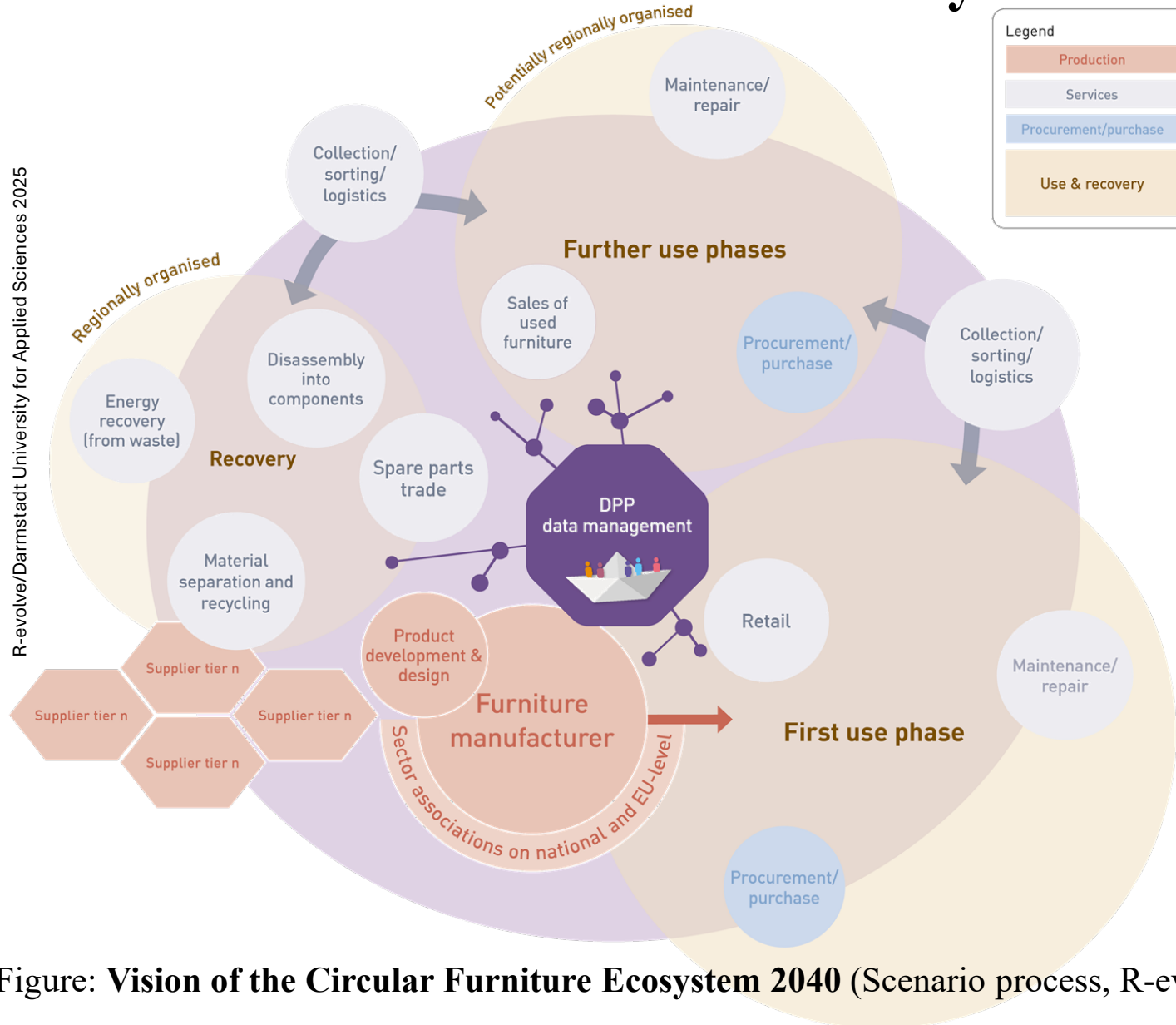
- **The DPP as the ‘key enabler’ of CEBM and R-Strategies set out in Art. 5(1) ESPR**
- **Trust is a key prerequisite:** is the DPP data set really ‘accurate, complete and up to date’?
- **Framework conditions:** Additional elements beyond the Delegated Act?
- **Incentivising data quality:** How to overcome impediments (data providers)?
- **Simulation Game: Welcome to the furniture sector of 2032**
Put circular economy business models and DPP data management to the test
- Insights from the Simulation Game and outlook

The R-evolve project aims to provide systematic and comprehensive support to accelerate the transition of the EU furniture industry towards Circular Economy (CE)-oriented Product-System Innovations.

- **Funding**
Funded by the HORIZON program of the European Union
- **Duration**
2024-2028
- **Consortium**
23 Partners from 7 EU countries
- **DPP Framework and pilot applications**
Darmstadt University (itp:ne/sofia)
Wuppertal Institute
Integrated World + pilot companies



Vision 2040: The DPP as the 'key enabler' of CEBM and R-Strategies



Which business models can profit from the DPP data set?

Vice versa: Which business models can not profit from the DPP data set?

....

Conclusion: All CEBM rely – in one way or another – on trustworthy DPP data set.

However, there are quite a few issues that need to be clarified before the DPP data ecosystem is fully operational.

Figure: Vision of the Circular Furniture Ecosystem 2040 (Scenario process, R-evolve Deliverable 1.1)

Hurdles for the implementation of the DPP [in the furniture sector]

Stakeholder uncertainty	Absence of clear operational and legal requirements	Persistent disconnect between the existence of interoperable data infrastructures and their effective use in decision-making	Fragmentation of sector
Unclear principles for data stewardship and incentive alignment to ensure interoperability and sustained engagement	Reluctance to share data beyond statutory requirements	Limited transparency in upstream supply chains	Technical aspects: Data standardisation, interoperability, and scalability

- **Trust as key prerequisite:** DPP data set “accurate, complete and up to date”?
- Information requirements, data access levels etc. to be specified in the delegated act.
- It is highly likely that the delegated act will only address a fraction of the obstacles.

Sources: Berger et al. (2023); Gieß & Möller (2025); Langley et al. (2023); D’Adamo et al. (2025); Jensen et al. (2023); Walden et al. (2021)

Digital Product Passport – Design



(the “**HOW**”. To be developed horizontally for all product groups and legislations)

- The **DPP registry** (Article 13 ESPR)
- The **DPP web portal** (Article 14 ESPR)



- **All standards and protocols related to IT architecture:**

1. Unique identifiers
2. Data carriers and links between physical product and digital representation
3. Access rights management, information security, and business confidentiality
4. Interoperability (technical, semantic, organisation)
5. Data processing , data exchange protocols, and data formats
6. Data storage, archiving, and data persistence
7. Data authentication, reliability, integrity
8. APIs for the DPP lifecycle management and searchability

Digital Product Passport



(the “**WHAT**”. To be developed through product-group specific dedicated legislation)



User needs for CEBM

Information to be included in the DPP will be **product-group specific** and identified in delegated act process.

It may include information/data on one or more of the following areas:

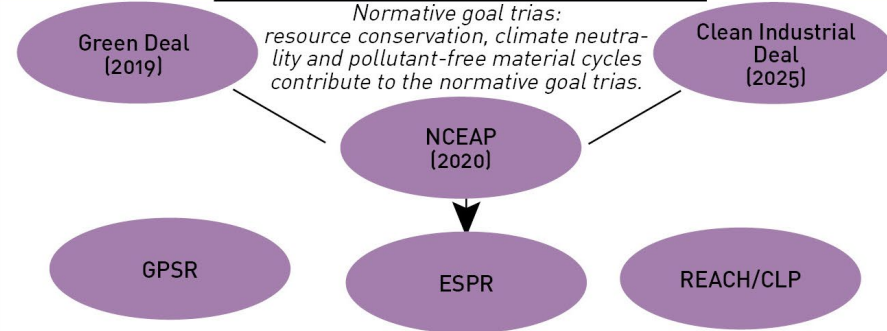
- Technical performance
- Environmental sustainability performance
- Circularity aspects (durability, reparability, etc)
- Legal compliance
- Product-related information (e.g., manuals, other labels)

Challenges and opportunities: three levels of DPP implementation

Macro Level

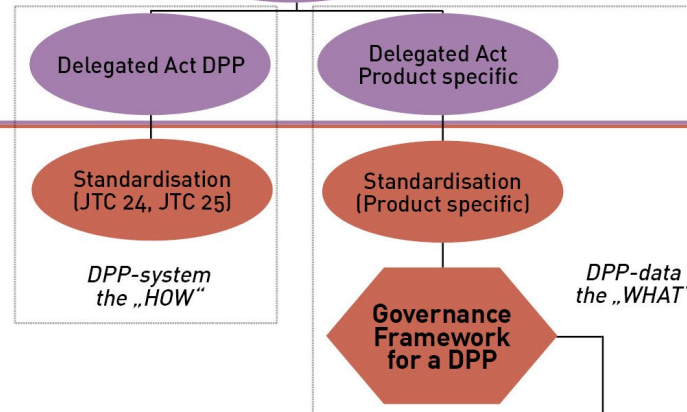
Settled, current and future policy framework affecting the DPP regulations to contribute to the normative goal trias.

Legal Framework defines minimum regulatory DPP requirements on data content, data flows, technical application and governance from the EU regulations.



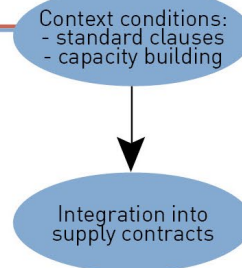
Meso Level

Governance mechanisms close gaps, create incentives, and ensure trust.



Micro Level

Integration of the requirements in business processes and contracts.



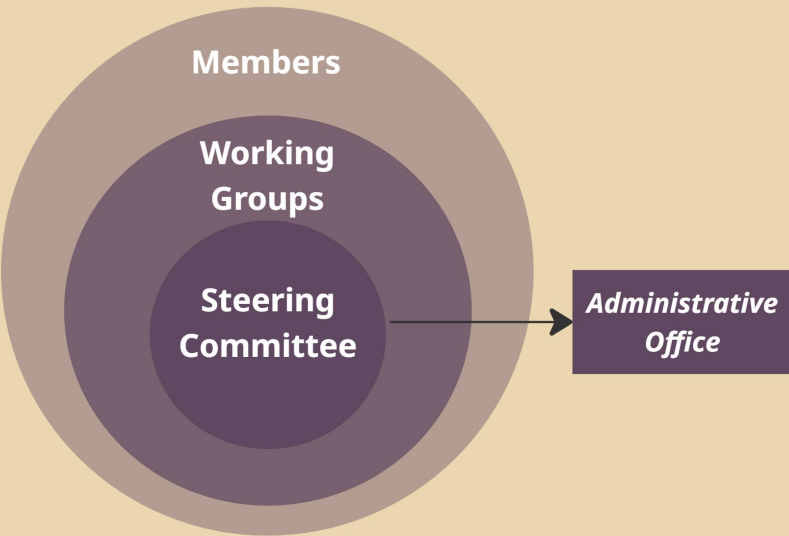
Draft Governance Framework

Regulatory Framework for a DPP (in the Furniture Sector)

Delegated acts (horizontal: DPP | sectoral: furniture)

Governance Framework

Organisational structure



Procedural instructions

Data completeness assurance measures	Data accuracy assurance measures	Performance Data and considerations regarding the SSbD-principles
Bill of Material (BoM)	Data up to date assurance measures	Confidential business information and other duly justified exemption
Data quality and security audit	Certified service providers	IT-Interface to market surveillance
Point of Contact	Overarching usability features	

Context constellation

Standard clauses for "terms of delivery"

Standard clauses for "terms of service"

Capacity building and support

Simulation Game: Welcome to the furniture sector of 2032

Put circular economy business models and DPP data management to the test



- Test the future DPP regulatory framework in a realistic, yet time-compressed and risk-free environment **in a future perspective (2032)**
- Setting: Public tender for circular economy-oriented procurement of furniture
- Two competing furniture OEMs, their supplier chain actors and several furniture service providers
- 25 Participants (14 from furniture companies and associations, 8 from research organisations, 2 from DPP service provider) take on different roles in the furniture system

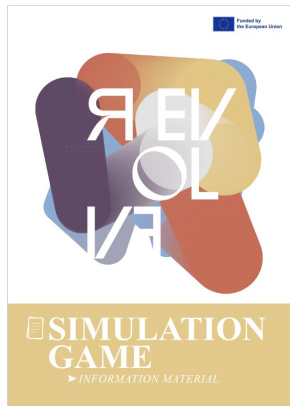


Basic Assumption: A process to discuss the content of a 'Governance Framework for Data Sharing on Furniture Products' was initiated in 2026 by industry and trade associations in the furniture sector and representatives of the repair, reuse and recycling sector. These discussions led to a consensus being reached in 2027. To support the DPP related data management in the furniture sector, the **Governance Framework supplements the specifications that were expected to be set out in the delegated acts.**

The Governance Framework was published at 1 January 2028, giving stakeholders in the sector time to prepare for the furniture-related delegated act under the ESPR which entered into force in September 2029.

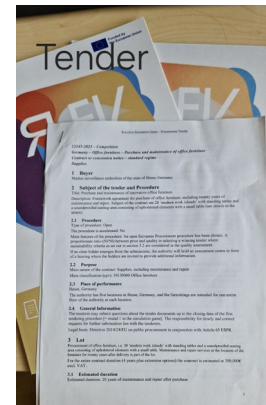
Simulation Game to put the Governance Framework (GF) to test

Game material to describe the setting and give instructions for the game



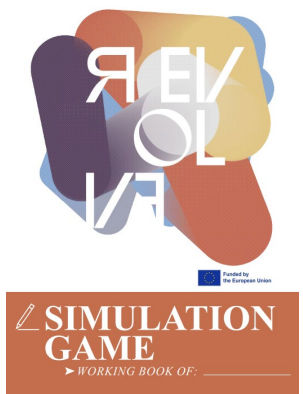
Information Folder

- Fictitious delegated act for furniture,
- Initial version of the GF,
- Public role descriptions for all roles
- Illustration of the GF's localisation at the meso level,
- Excerpts from the ESPR, REACH and the General Product Safety Regulation (GPSR)



Public Tender Document

- Specifying the requirements of the tender (inspired by three real-world tenders—two from the Netherlands and one from Germany)



Working Book

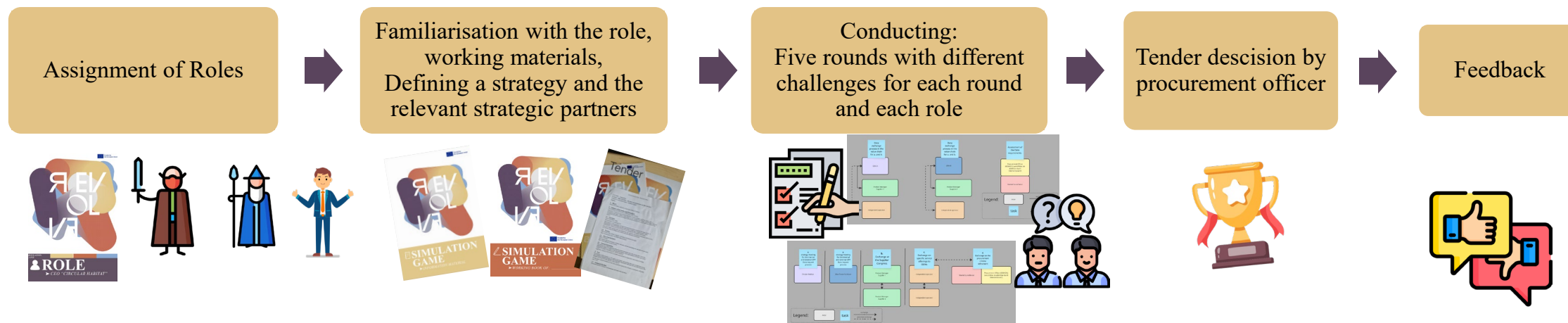
- Describing the different rounds of the game and the tasks for every round
- Including guiding questions for every round which allowed participants to reflect on their business model and strategy, their cooperation and relationships and the GF



Role cards

- Containing public and confidential information about the participants role
- Roles representing important actors in the furniture ecosystem (e.g. supplier, furniture manufacturer company member from different units, independent operator (refurbishment and reuse provider, repair and maintenance provider), market surveillance, procurement officer of a public institution)

Simulation Game to put the Governance Framework (GF) to test – Let's play



- Participants were assigned to two companies, each collaborating with their respective suppliers and independent operators to jointly respond to the tender data-related tender requirements
- Two participants took on the role of procurement officers, responsible for evaluating the submitted proposals
- Two participants acted as market surveillance authorities, observing the process from a regulatory perspective and assessing the implications of compliance and data transparency throughout the simulation
- In addition to developing a proposal for the tender, participants were also confronted with two specific challenges designed to reflect realistic, practice-oriented scenarios.

Insights from the Simulation Game

- Working books offered important indications regarding the participants' view on certain governance rules and
- highlighted remaining open questions related to the design and implementation of the Governance Framework.
- Additional feedback after the simulation based on consultation with the company legal experts.
- Refinement of the Governance Framework reflecting the insights gained.

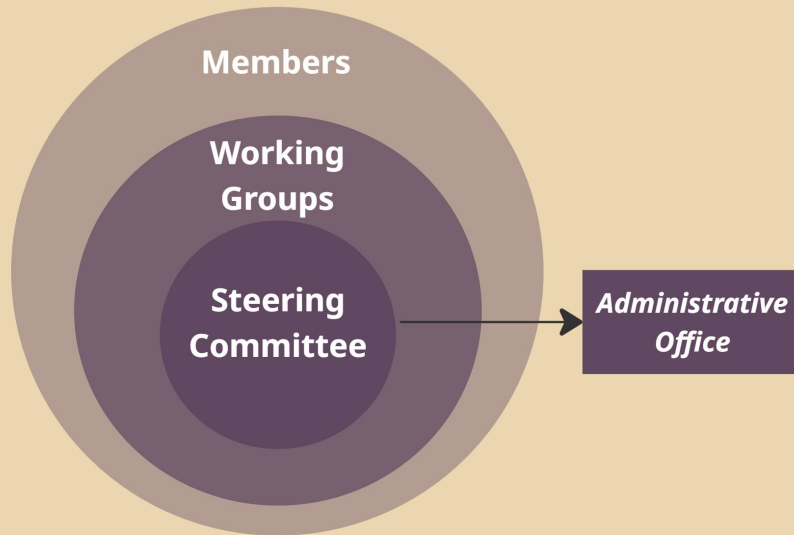
Automated IT processes was seen as an effective way to ensure data completeness and accuracy	Trust in Bill of Materials (BoM) data increased if these data were highly detailed and transparent	Potential value of third-party audits and certifications to ensure data quality	Potential of sample testing in cases where data reliability may be uncertain	Maintaining a transparent tracking history as a way to guarantee completeness and clearly allocate responsibility
Well-structured contracts with suppliers are essential to guarantee the accuracy, trustworthiness, and up-to-dateness of shared data	Necessity of effective collaboration and capacity building between actors across the value chain	Cooperation and strong relationships are not only crucial between different stakeholders but also within different units of a company	Clarity on the (shared) responsibilities: Importers, Suppliers, OEMs, independent operators	Real-time provision of data can ensure that information remains up to date
Already included in Governance Framework		Issues for the refinement of the Governance Framework		

Simulation Game: Adjustments of the Regulatory Framework for a DPP

Delegated acts (horizontal: DPP | sectoral: furniture)

Governance Framework

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Procedural instructions

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Context constellation

- Standard clauses for "terms of delivery"
- Standard clauses for "terms of service"
- Capacity building and support

Outlook

- Publication of the draft Governance Framework as a deliverable of the R-evolve project (November 2025); <https://r-evolve.eu/>
- Conclusions summarised in ‘fact sheet’ with recommendations
- Further development of the Governance Framework through
 - at least 6 DPP Pilot actions (2026)
 - interviews with experts
 - two expert workshops
 - at least 15 companies testing the DPP Governance Framework in the R-evolve large-scale implementation

Questions?

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