

DPP4ALL

Digital Product Passport for All

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Agenda

- 1. Legal Status Quo & DPP Stakeholders**
- 2. Company Perspective**
- 3. Consumer Perspective**
- 4. Recommendations** (for companies)

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<https://www.bmk.gv.at/en/topics/innovation/publications/A-Digital-Product-Passport.html>

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Definition

Digital Product Passport:

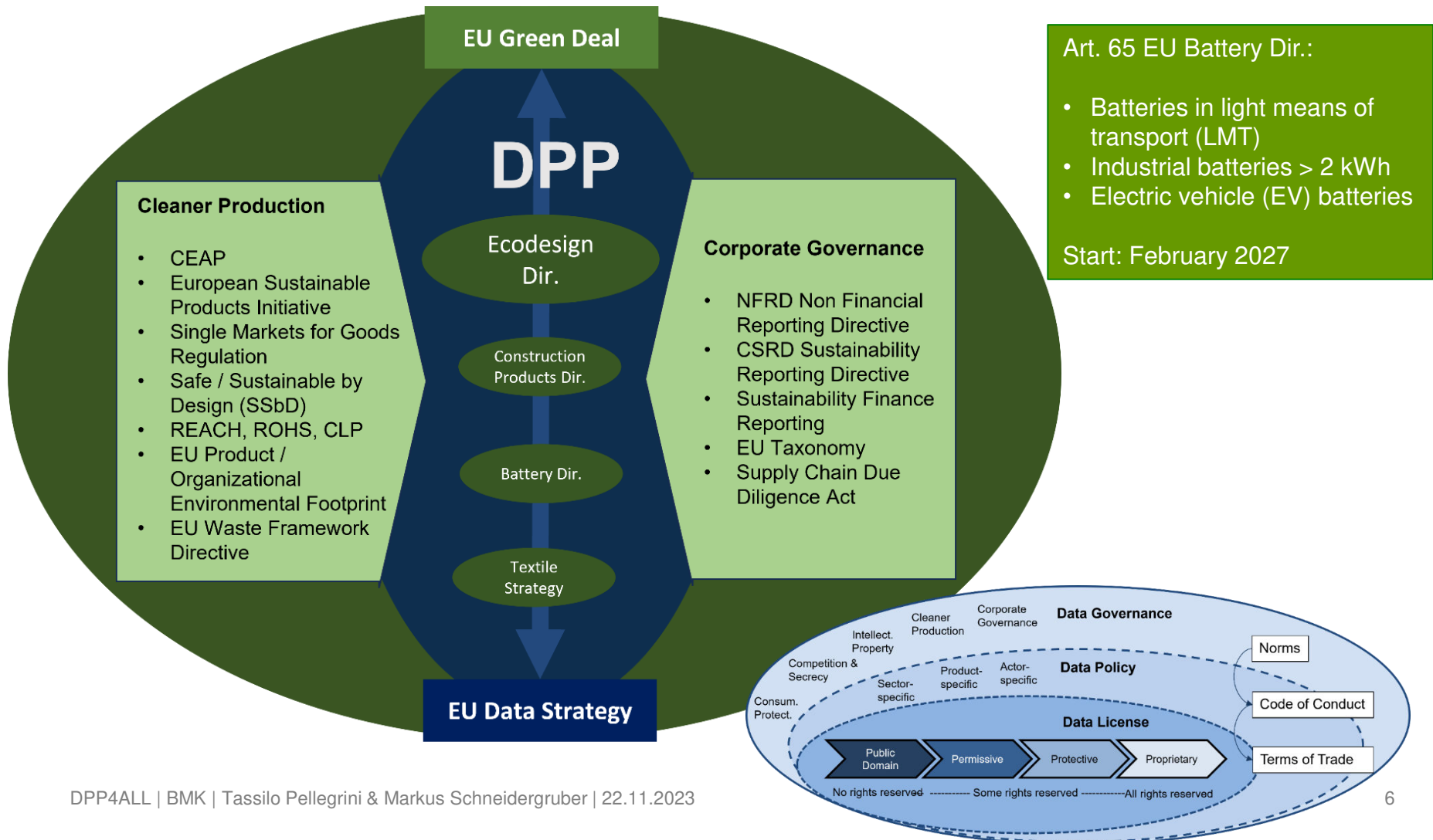
... “a data set that summarizes the components, materials and chemical substances or also information on repairability, spare parts or proper disposal for a product. The data originates from all phases of the product life cycle and can be used for various purposes in all these phases (design, manufacture, use, disposal) [translated from German by DeepL]” (BMUV, 2023).

Objectives

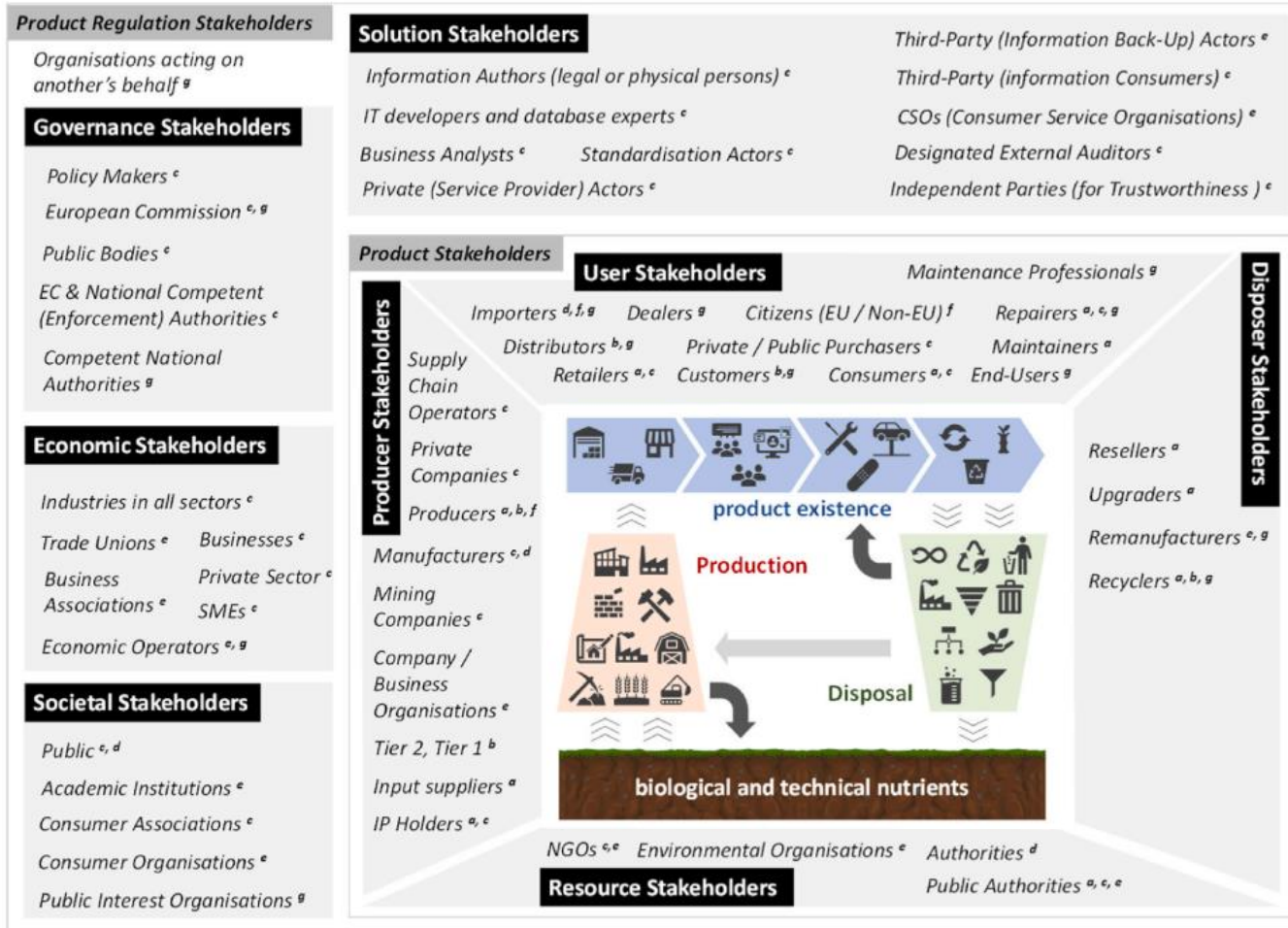
According to the European Health and Digital Executive Agency (HaDEA, 2023) the main objectives of a DPP are:

- To enable **sharing of key product related information** that is essential for products' sustainability and circularity, including those specified in Annex III of ESPR proposal, across all the relevant economic actors.
- To accelerate the **transition to circular economy**, boosting material and energy efficiency, extending products lifetimes, and optimizing products design, manufacturing, use and end of life handling.
- To provide **new business opportunities** to economic actors through circular value retention and optimization (for example product-as-a-service activities, improved repair, servicing, remanufacturing, and recycling) based on improved access to data;
- To **help consumers** in making sustainable choices; and
- To allow authorities to **verify compliance** with legal obligations.

Legal Status Quo



DPP Stakeholders

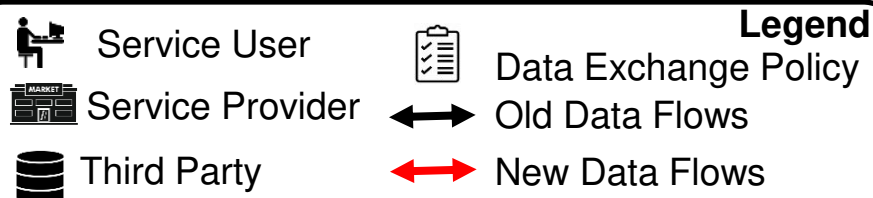
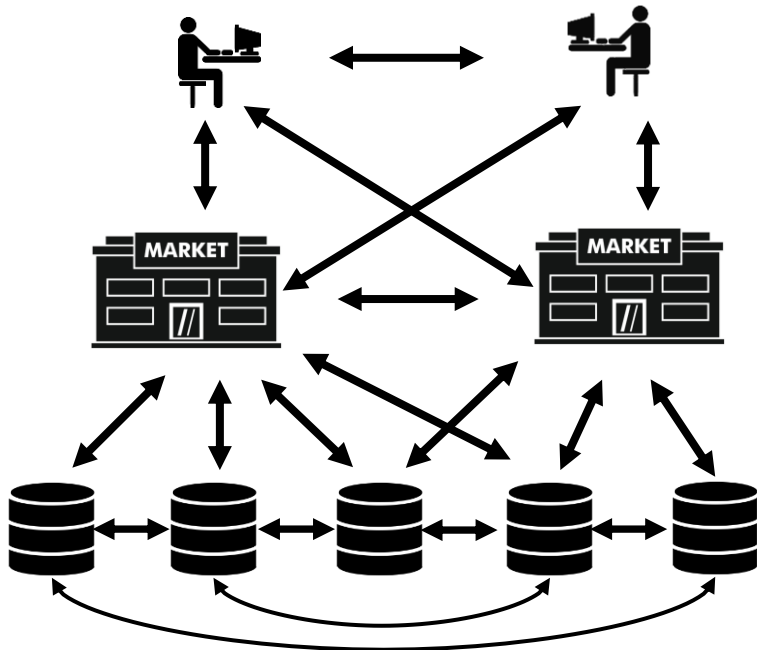


(a) Annex 18, Table 99 (b) Annex 18, Figure 1 (c) Annex 18, 'Potential stakeholders' benefits, pg 592-596 (d) Annex 18, 'Roles', Table 101 (e) Annex 18, pg 617-621 (f) Feedback Organisations (to Impact Assessment, Open Public Consultation) (g) COM(2022)142 Ch.III

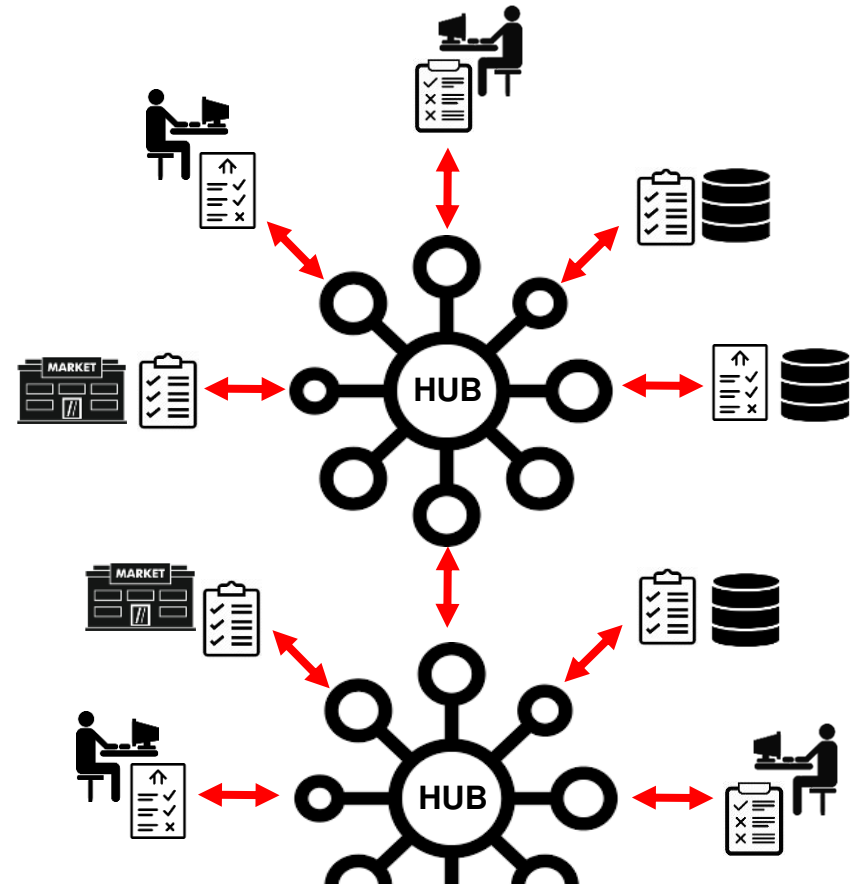
Source: King, M.R.N., Timms, P.D., Mountney, S., 2023. A proposed universal definition of a Digital Product Passport Ecosystem (DPPE): Worldviews, discrete capabilities, stakeholder requirements and concerns. Journal of Cleaner Production 384, 135538. <https://doi.org/10.1016/j.jclepro.2022.135538>

DPP Architecture

Current situation



DPP4All



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Company Perspective

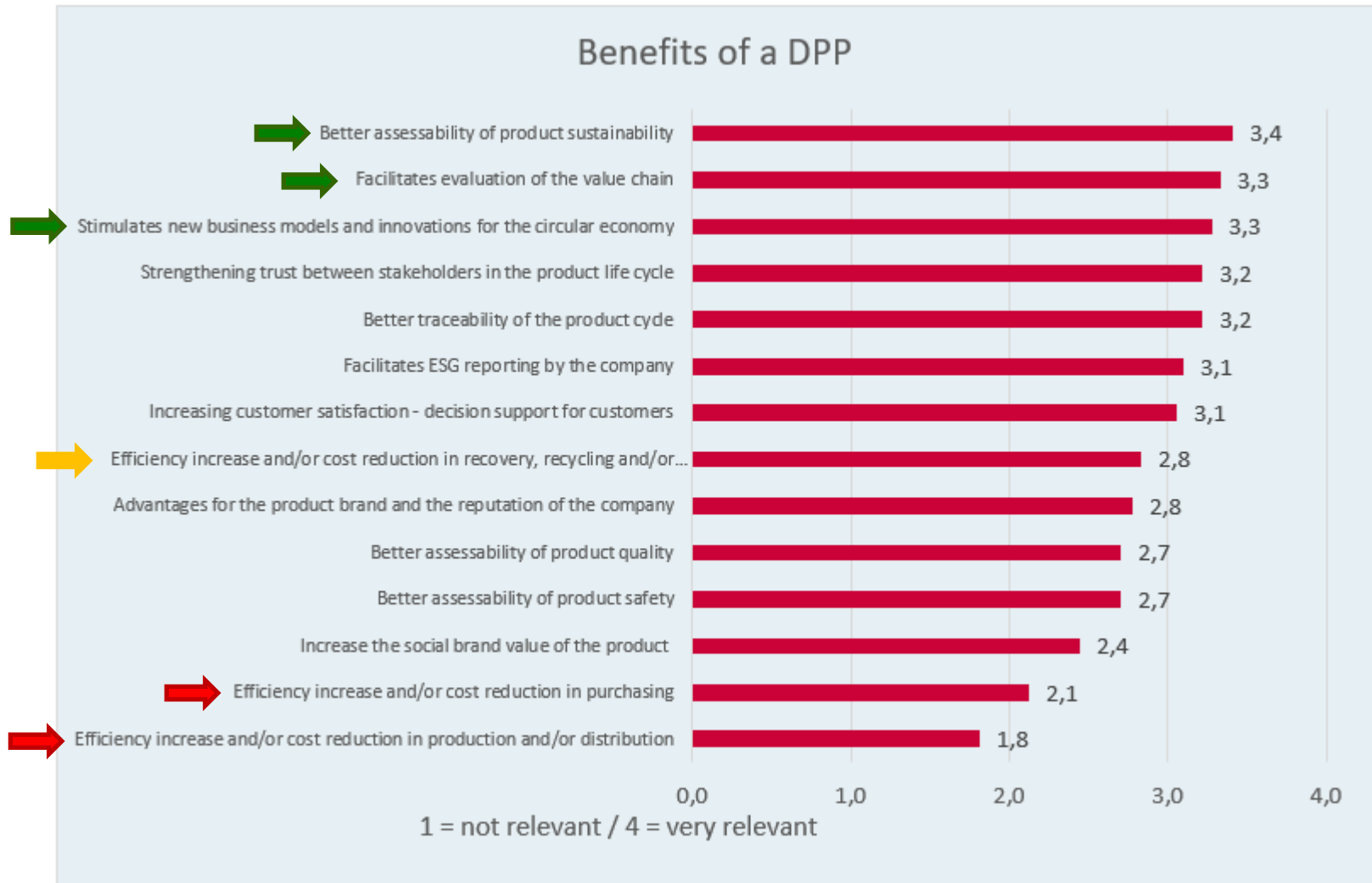
- Field phase: 11.05.-17.08.2023
- 17 Companies
 - 10 large
 - 1 mid-sized
 - 6 small
- 22 Experts
 - 7 CEO
 - 15 domain experts
 - 9 ESG
 - 6 Marketing / Prod. Dev.
- 19 Interviews
 - Building & Construction (n=7)
 - Allora Immobilien
 - Baunit
 - Holcim
 - Madaster
 - Pulswerk
 - Rhomberg
 - Rubner Holzbau
 - Battery LC Management (n=6)
 - BMW
 - Gebauer & Griller
 - MA48
 - Schneider Electric
 - Twingz
 - Platform Industry 4.0 Austria
 - EoL / Waste Management (n=6)
 - bauXund
 - DigiCycle
 - MA48
 - Müller Gutenbrunn
 - ÖBB Rail Cargo
 - Texaid

Company Perspective

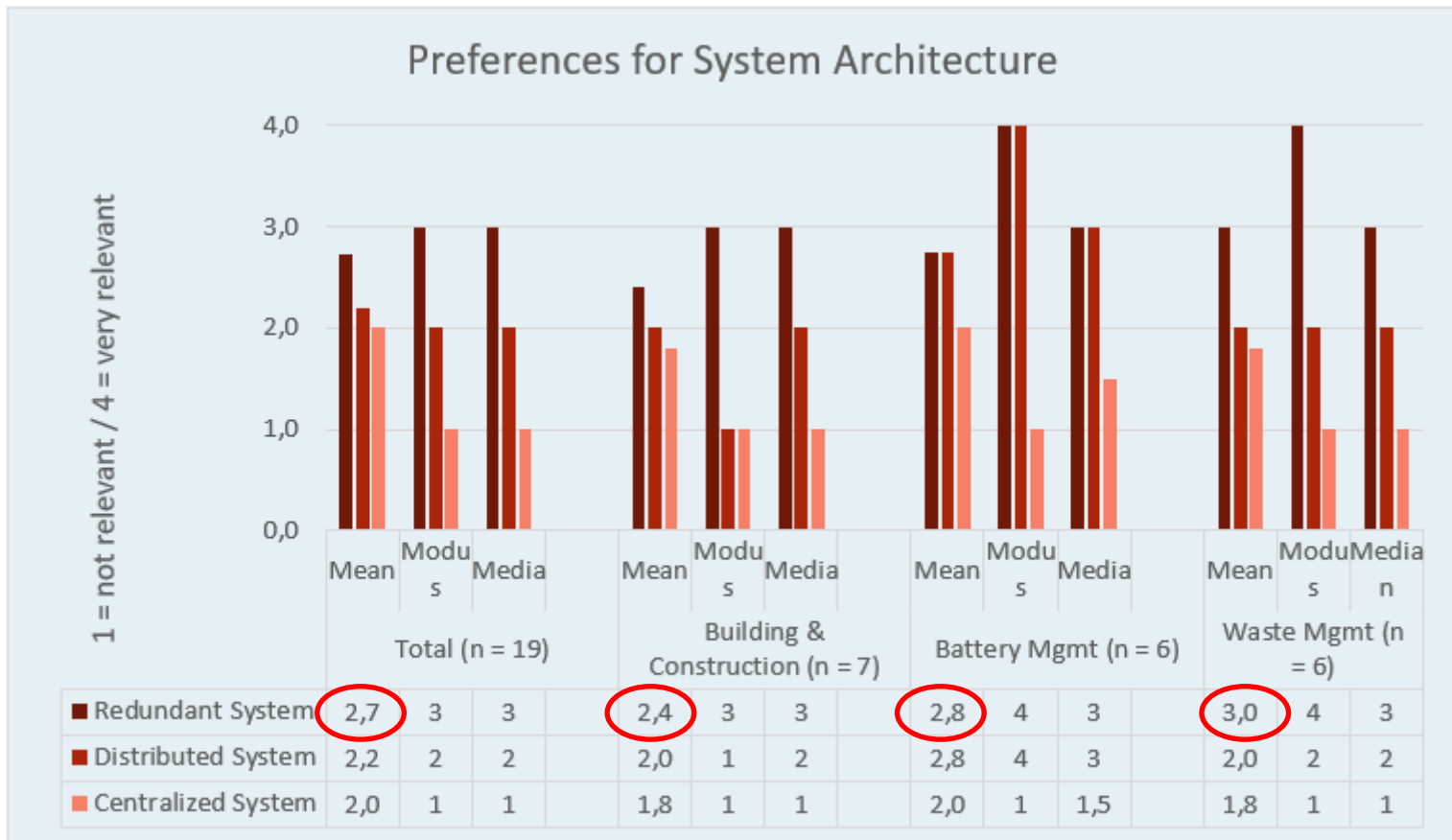
Relevance of DPP Information



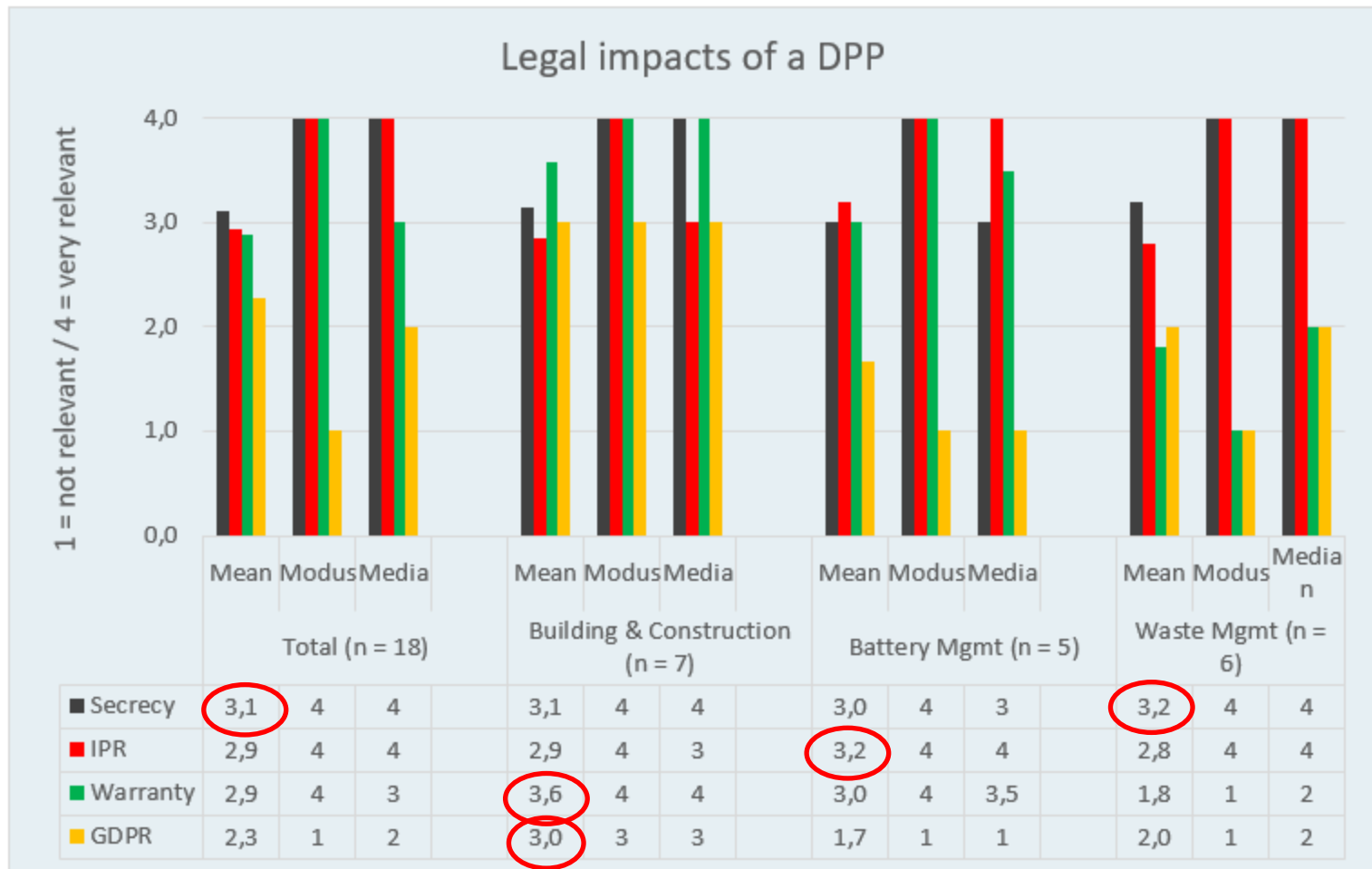
Company Perspective



Company Perspective

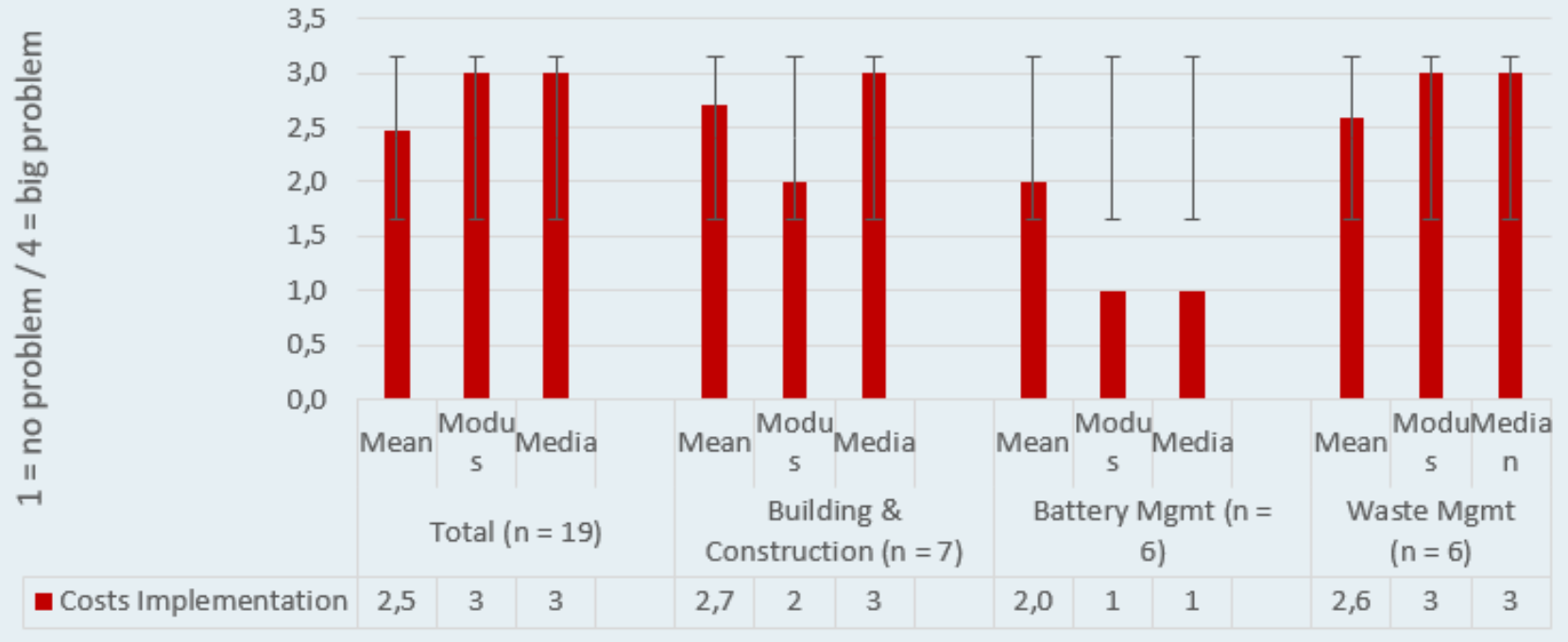


Company Perspective

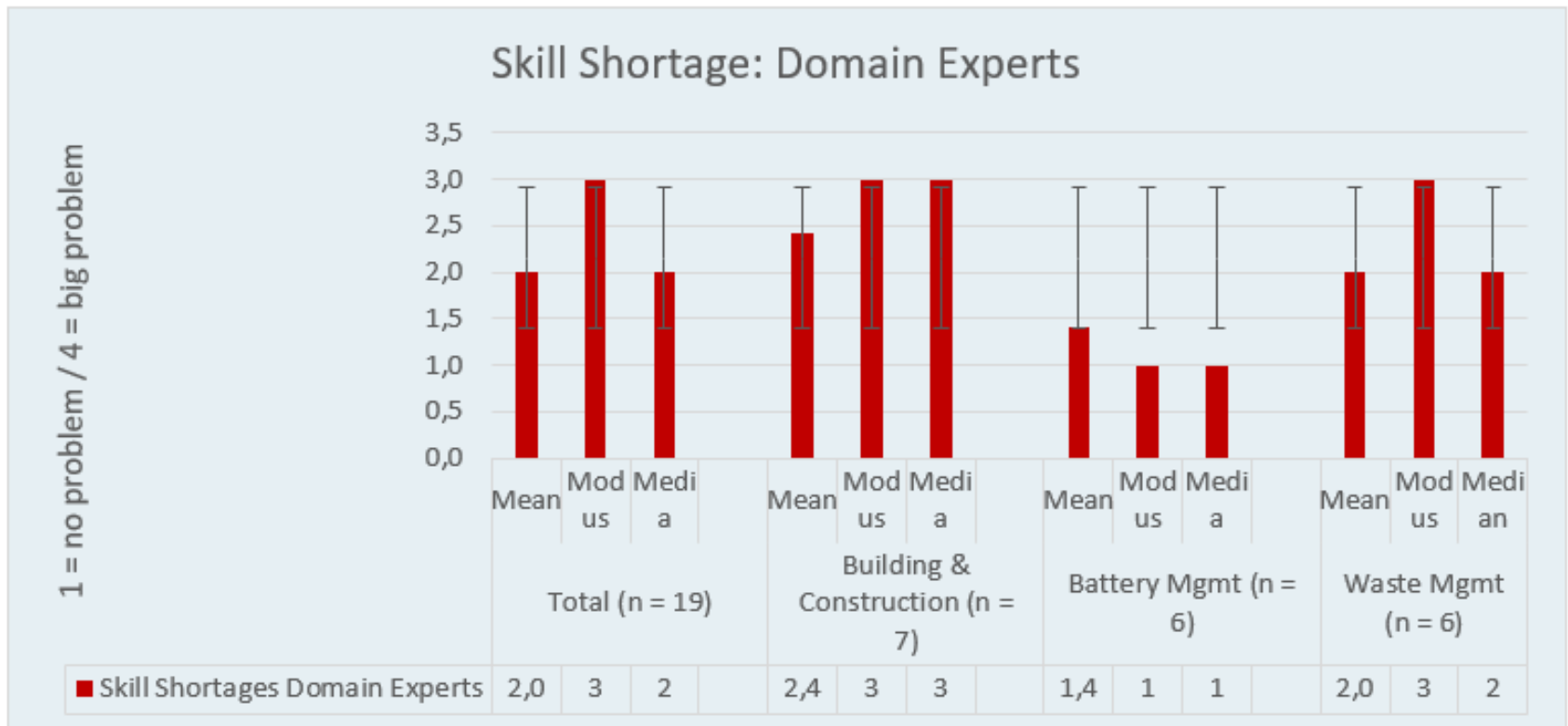


Company Perspective

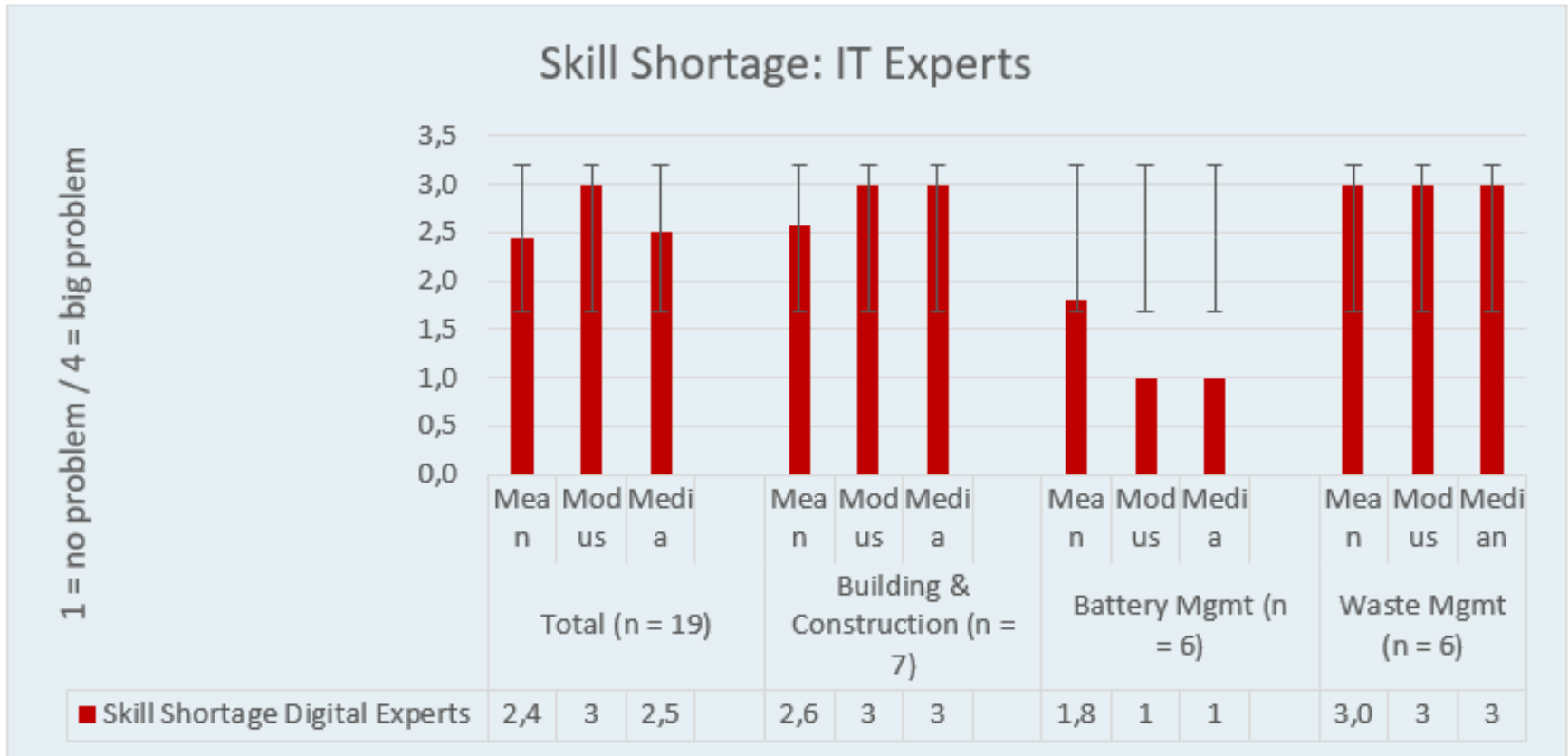
Implementation Costs



Company Perspective



Company Perspective



Excessive documentation obligations and compliance efforts:

- Lack of harmonization between existing legal initiatives and documentation obligations.
- Additional obligations, leading to redundancies instead of replacing current documentation requirements.
- Efforts and costs associated with the long-term storage and maintenance of DPP-related data.

Interoperability:

- Harmonization of documentation standards and compatibility of data.
- Dealing with multilingualism and terminological heterogeneity in cross-border data sharing scenarios.
- Ensuring cross-system compatibility of digital twins for specific products when working with distributed data.

Organizational complexity and lack of incentives:

- Heterogeneity and lack of sufficiently qualified technical experts required to run and maintain a DPP.
- Managing complexity resulting from the division of labor, particularly when involving external actors.
- Assigning responsibilities and establishing accountability for a DPP within the organization.

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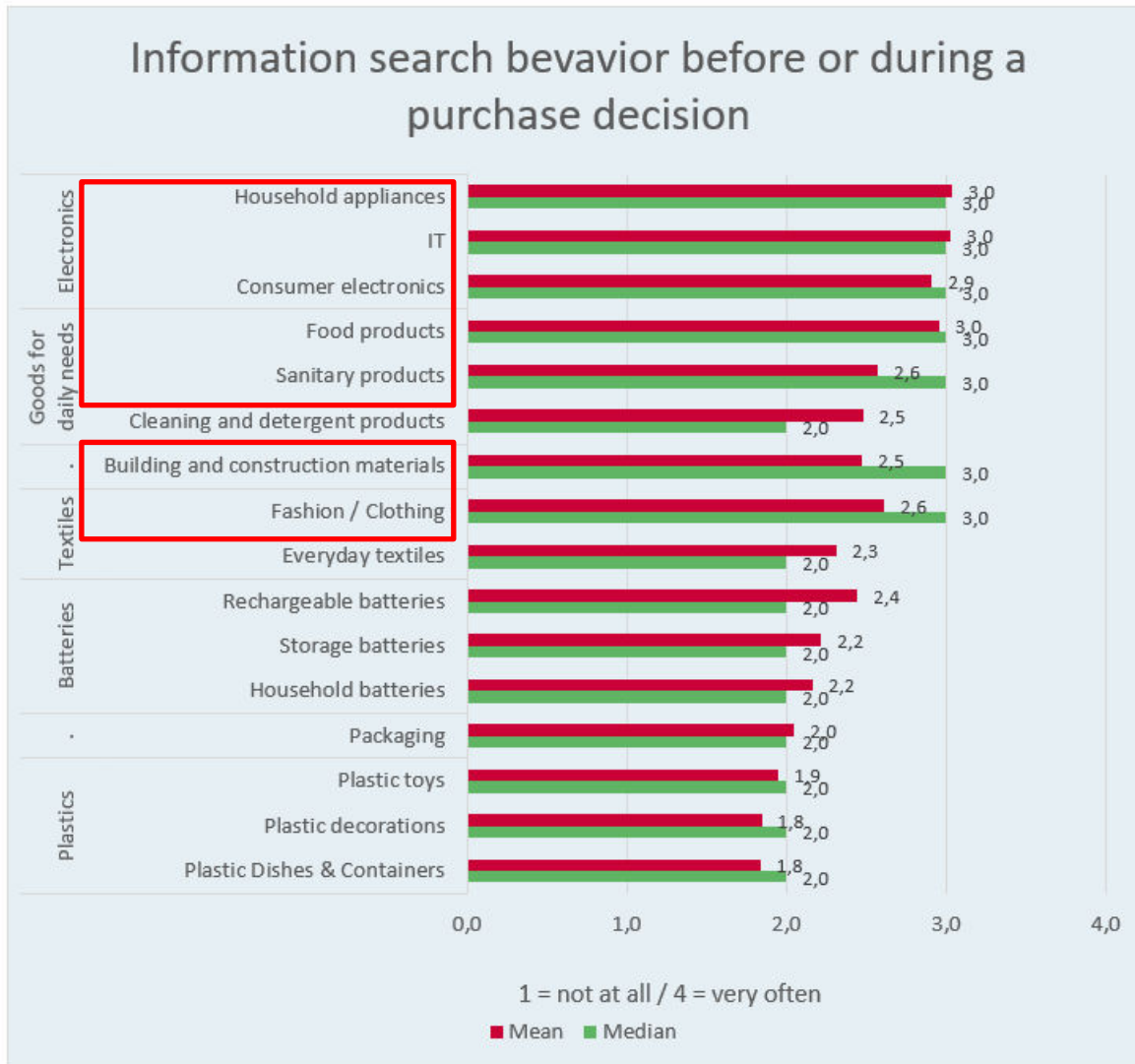
Consumer Perspective

- Online Survey (n=2000)
- Age group: 15 - 75
- Field phase: May 30 to June 14, 2023

- Dependent variables:
 1. consumer's information gathering behavior related to CEAP priorities ($\alpha = 0,89$)
 2. consumer's perceived relevance of DPP information ($\alpha = 0,88$)
 3. the willingness to share usage data as a contribution to a DPP

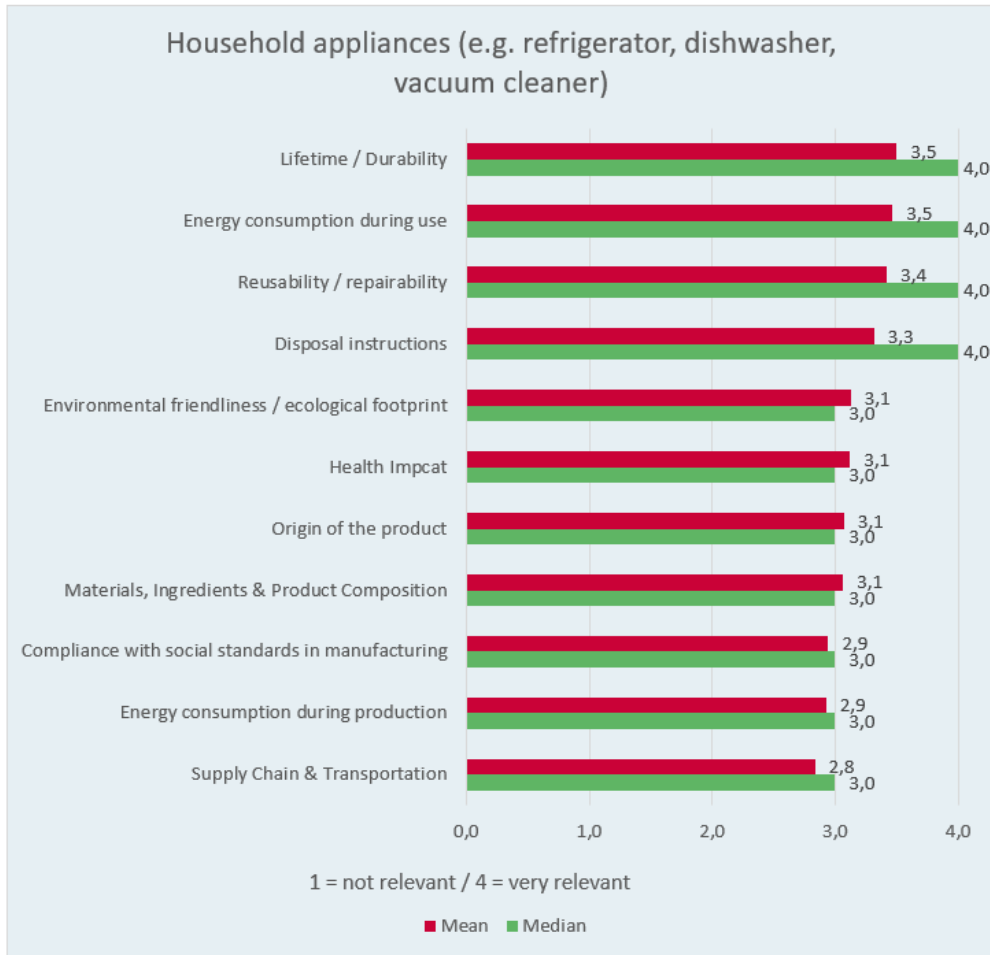
- Independent variables:
 1. socio-demographic characteristics (i.e., gender, age, income, level of education)
 2. technological affinity ($\alpha = 0,746$)
 3. lifestyle typologies ($\alpha = 0,59$)
 4. attitudes towards climate change ($\alpha = 0,661$)
 5. attitudes towards sustainable purchase behaviour ($\alpha = 0,741$)

Consumer Perspective



Observation: The majority of participants deliberately and purposefully searches for product information but with clear preferences for specific product categories.

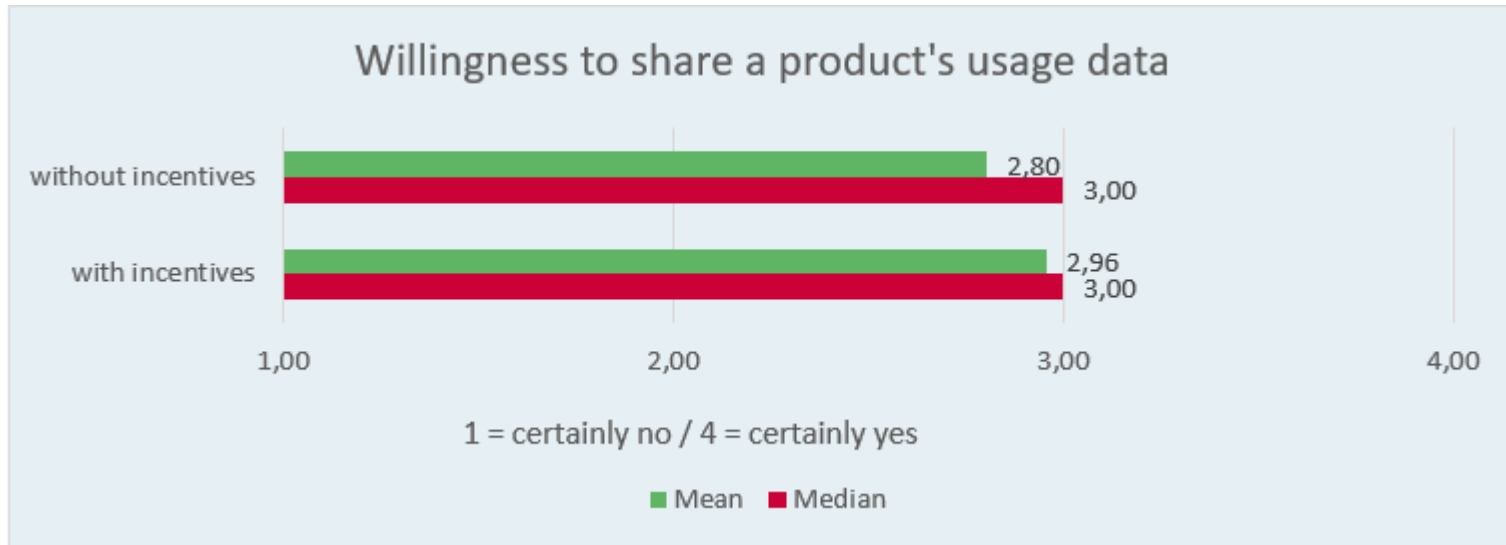
Consumer Perspective



Observation: DPP relevance depends on attitudes and lifestyles, not on demographics.

Gender	Age	Tech Aff.	Att. Sust. Purch.	Att. Clim. Change	Lifestyle	Disab.	Educ.	Income	corr. R2	n
0,083**	0,006***		-0,109**	0,131***	0,368***	0,388***	0,050**		0,114***	1228
0,114**	0,008***			0,220***	0,316***	0,343***			0,140***	1227
	0,007***			0,226***	0,369***	0,393***			0,135***	1225
0,143**	0,007***			0,341***	0,422***	0,324***			0,176***	1225
0,143**				0,501***	0,421***	0,225***			0,252***	1224
0,101**	0,004**			0,256***	0,517***	0,166**			0,114***	1223
	0,006***		0,111**	0,333***	0,461***	0,146**	-0,045**		0,167***	1223
0,119**	0,003**		0,105**	0,283***	0,559***	0,231**		0,000**	0,163***	1226
0,154**			0,117**	0,439***	0,398***				0,193***	1222
			0,140**	0,413***	0,466***	0,180**			0,190***	1225
			0,168***	0,429***	0,465***				0,210***	1226

Consumer Perspective



Willingness to share data	Gender	Age	Tech Aff.	Att. Sust. Purch.	Att. Clim. Change	Lifestyle	Disab.	Educ.	Income	corr. R2	n
without incentives		-0,003**			0,386***	0,326***	-0,189**	-0,042**		0,176***	1219
with incentives	-0,139**	-0,008***		-0,166***	0,346***	0,212***		-0,036**		0,120***	1218

71,2% are willing to share their data, given that their privacy is preserved. And for 75% monetary or other kinds of incentives are viable means to increase this willingness.

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Recommendations

- **Recommendation 1: Know your data!**
 - What ... data is needed? → Ecodesign Dir, Art. 5 - 7
 - Where ... is the data available? → internal / external
 - How ... shall the data be available? → Formats, Storage & Licensing (incl. Secrecy)

- **Recommendation 2: Check your ESG metrics & methodologies!**
 - What ESG metrics do I need to serve?
 - Can I reuse existing ESG KPIs?
 - Are my methodologies compliant with PEF/ISO14400?

Recommendations

- **Recommendation 3:** Master and profit from interoperability!
 - Close digital gaps in your information supply chain!
 - Stick to open standards in the syntactical and semantic description of product-related data.
 - Deploy these standards company-wide!

- **Recommendation 4:** Master organizational complexity!
 - Create a DPP team: product. mgmt. + ESG mgmt. + IT
 - Align with partners along the supply chain.
 - Use / experiment with DPP data for better market insights & operational efficiency.

We cordially thank you for your attention!

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