DPP4ALL

Digitaler Produktpass für Alle

Programm / Ausschreibung	Digitale Technologien, Digitale Technologien, Datenservice Ökosystem: Schwerpunkt Ausschreibungen 2022	**Status**	abgeschlossen
Projektstart	28.02.2023	**Projektende**	27.08.2023
Zeitraum	2023 - 2023	**Projektlaufzeit**	7 Monate
Keywords	Daten-Ökosystem, Kreislaufwirtschaft, Produktinformationen, Lieferketten, Transparenz, Konsumentensouveränität		

Projektbeschreibung

Mit dem Sondierungsprojekte DPP4All werden die Anforderungen an einen multistakeholderfähigen Digitalen Produktpasses aus technischer, rechtlicher und organisationaler Perspektive erhoben und auf ihre Machbarkeit untersucht. Die Erhebung dient der Vorbereitung einer nachfolgenden Förderausschreibung für ein Leitprojekt zur Realisierung eines Digitalen Produktpasses.

Die Nachhaltigkeitswende benötigt eine belastbare Datenbasis. Diese ist nicht nur Entscheidungsgrundlage für evidenzbasierte Maßnahmen sondern auch Voraussetzung für digitale Anwendungen und Werkzeuge, die den Wandel zu einem nachhaltigen, auf dem Prinzip der Zirkularität aufbauend Wirtschafts- und Gesellschaftssystem unterstützt. Eine wichtige Maßnahme auf diesem Weg ist der sogenannte Digitale Produktpass, der u.a. in Kombination mit ergänzenden Maßnahmen wie etwa der in Zukunft verpflichtenden Nachhaltigkeitsberichterstattung oder Gütesiegeln für Nachhaltigkeit Hersteller von Produkten und Dienstleistungen dazu befähigen soll ihren Stakeholdern (Zulieferern, Abnehmern, Konsumenten, Investoren, Behörden etc.) die nötigen Informationen bereitzustellen, um den ökologischen Fußabdruck eines Produktes besser nachvollziehen und beurteilen zu können. Der Stakeholder-Ansatz impliziert, dass Anwendungen und Werkzeuge zu Erstellung, Verarbeitung und Bezug belastbarer Produkt- und Nachhaltigkeitsdaten unterschiedlichen Anforderungen genügen muss, sowohl was die technische Aufbereitung, die rechtliche und organisationale Einbettung als auch die Visualisierung und Nutzbarkeit durch Akteure mit unterschiedlichem Fachwissen anbelangt.

Abstract

The DPP4All exploratory project will survey the requirements for a multistakeholder-capable digital product passport from a technical, legal and organizational perspective and investigate its feasibility. The survey serves to prepare a subsequent call for funding for a lead project for the realization of a Digital Product Passport.

The sustainability turnaround requires a reliable base of data. This is not only the basis for decision-making for evidence-based measures, but also a prerequisite for digital applications and tools that support the transformation to a sustainable

economic and social system based on the principle of circularity.

An important measure on this path is the so-called Digital Product Passport, which, in combination with supplementary measures such as (soon mandatory) sustainability reporting or seals of approval for sustainability, is intended to enable manufacturers of products and services to provide their stakeholders (suppliers, customers, consumers, investors, authorities, etc.) with the information they need to better understand and assess the ecological footprint of a product. The stakeholder approach implies that applications and tools for creating, processing and obtaining robust product and sustainability data must meet different requirements, both in terms of technical preparation, legal and organizational embedding, and visualization and usability by stakeholders with different levels of expertise.

Endberichtkurzfassung

Executive Summary

This report investigates the technical, legal, and organizational requirements for realizing a Digital Product Passport (DPP) capable of accommodating various products, industry sectors, and stakeholders. Its purpose is to derive insights and research questions to advance the subject matter und provide the Austrian Federal Ministry for Climate Protection, Environment, Energy, Mobility, Innovation and Technology (BMK) with empirically based recommendations for the development of a publicly funded project call.

Investigating Digital product Passports requires a holistic understanding of the landscape that considers the diverse needs and rationales of different sectors and stakeholders. This also includes the notion that there won't be one universal version of a DPP encompassing all existing products and services, in the manner of one-size-fits-all. Rather, the infrastructure, applications, and services for the creation, processing, and presentation of trustworthy product and sustainability data must be tailored to meet different requirements, in terms of technical preparation, legal and organizational embedding, and the benefits that stakeholders with diverse expertise and life contexts derive from a DPP.

A multi-method design with the aim of ascertaining the technological, organizational, and legal conditions for the development and implementation of a digital product passport was developed under special consideration of sector-specific and consumer-specific approaches and expectations towards a DPP. The authors derived the following recommendations:

General recommendations:

Recommendation 1: Policy makers need to speed up in clarifying methodological recommendations on capturing and documenting product related information in accordance with the specificities of the products concerned under close alliance with the sectoral stakeholders.

Recommendation 2: Policy makers need to clarify how a DPP infrastructure shall be institutionalized including the division of responsibilities and accountabilities among the affected sectoral stakeholders with a special focus on the persistent, long-term availability of product data and under special consideration of nuanced disclosure and access control.

Recommendation 3: Policy makers should offer easily accessible, comprehensive, and free awareness building and training measures for companies that lack the necessary capacities to implement and maintain a DPP.

Recommendation 4: Training material needs to refer to and acknowledge already existing sector-specific disclosure

regulations on product information and their relevance for serving a DPP. Herein it is of vital importance to not overburden companies with additional disclosure requirements that are out of their control or that could hamper their legitimate interest in IPR protection or secrecy.

Recommendation 5: Policy makers should also be very clear about licenses and usage rights recommended for the provision of data, ideally by applying a uniform license model that does not hamper its reuse especially for business purposes. Herein, permissive licenses could be more attractive licensing models compared to copy-left licenses that come with specific restrictions when combined with other licenses.

Recommendation 6: To ensure interoperability at the system and data level and to avoid vendor lock-ins it is vital to stick to open standards in the syntactical and semantic description of product-related data in machine-readable form for their exchange and reuse across various systems and applications. Openness needs to be ensured at the level of interfaces (APIs), data models (ontologies and schemas for metadata), as well as the terminologies (controlled vocabularies for product descriptions) and uniform identifiers (universal and persistent resource IDs) to enable automated and context-sensitive data exchange.

Recommendation 7: Open standards do not necessarily interfere with the legitimate interest in protecting and controlling the access to data, although technical solutions to implement both aspects into one environment are still challenging, given that the necessary IT infrastructure is mostly privately controlled. Emerging technological concepts such as distributed ledgers and dataspaces offer viable solutions but are either in an early stage of development (such as dataspaces) and/or require adjustments at the level of corporate IT governance (i.e., when it comes to distributed ledgers), especially when security issues are concerned.

Recommendation 8: The heterogeneity of stakeholders involved in a DPP requires nuanced approaches to documenting and displaying product-related information, especially when this information is meant to provide a basis for informed decisions. Measures need to be taken that investigate appropriate visualization techniques for various levels of interest in and intellectual capabilities to understand and process product information in accordance with the stakeholders' informational needs. This is especially relevant for consumers.

Recommendation 9: DPPs shall be designed to enable better market insights and generate operational efficiency in production workflows across the product's life cycle, especially during the end-of-live phase. This includes a better conceptualization and understanding of circularity for specific product types and a transfer of knowledge between the supply chain actors about desired performance indicators, ideally streamlined with policy objectives on cleaner production.

Recommendation 10: Projects developing and testing technical solutions for persistent data provision and storage for product information should provide sand boxes and experimental environments that allow system stakeholders to gain experience and knowledge about the efforts for and impacts on their established data management practices and workflows under special consideration of issues associated with security, trust and secrecy.

Sector-specific Recommendations

In addition to the general observations described above that following sector-specific challenges should be addressed:

Building and Construction

Evaluate and ensure maximum reusability of existing product information contained in product sheets and other documentations provided by manufacturers of building and construction materials.

Screen existing product registries and repositories for syntactic and semantic interoperability and identify weak spots in the machine-readable representation of this data at the ontological and terminological level.

Investigate the appropriate level of disclosure and machine-readable representation of compositional information of building and construction materials, offering solutions for the nuanced role-based accessibility of this information across the product life cycle.

Investigate techniques to persistently attach appropriate identifiers to building and construction materials or – where not possible – to document this information over long time periods (up to decades) so that this information is preserved for future generations.

Develop measures to mitigate an imminent skill shortage for domain experts familiar with the digital documentation of product information on building and construction materials.

Develop measures to increase the level of digitization and datafication in the building and construction sector to mitigate an imminent skill shortage for IT professionals in this area.

Pay attention to cost burdens stemming from implementation and maintenance efforts of a DPP under special consideration of SMEs.

Investigate compliance issues for manufacturers and construction companies with respect to warranty obligations and privacy preservation arising from the long-term availability of building and construction information.

Battery Life Cycle Management

Evaluate and ensure maximum reusability of existing product information contained in product sheets and other documentations provided by battery manufacturers and service providers specialized in state-of-health solutions.

Screen existing product registries and repositories for syntactic and semantic interoperability and identify weak spots in the machine-readable representation of this data at the ontological and terminological level.

Investigate the appropriate level of disclosure and machine-readable representation of compositional information of batteries, offering solutions for the nuanced role-based accessibility of this information across the product life cycle.

Investigate techniques to persistently attach appropriate identifiers to batteries or – where not possible – to document this information along the product lifecycle under special consideration of change of ownership.

Investigate how to better document and streamline the flow of materials, components and products across a battery's life cycle to ensure maximum extension of lifetime through repairability, reuse and recycling.

Investigate interactions between IPR protection, usage rights, and disclosure of technical specifications along an extended battery lifecycle.

Investigate warranty issues and responsibilities for second-life applications of used batteries under special consideration of product-safety.

End-of-Life / Waste Management

Investigate the necessary granularity and machine-readable description of information on materials and substances for the purpose of workflow efficiency in sorting, recycling, and disposal.

Investigate techniques to efficiently extract and collect product information from dumped products at the item or batch level.

Develop measures to mitigate an imminent skill shortage for domain experts familiar with the digital documentation of product information for the end-of-life phase and purpose of disposal.

Develop measures to increase the level of digitization and datafication in the waste management sector to mitigate an imminent skill shortage for IT professionals in this area.

Pay attention to cost burdens stemming from implementation and maintenance efforts of a DPP in the waste management sector under special consideration of SMEs.

Investigate the legal liabilities of the waste management sector as an enabler for the reuse and second life of waste and warranty issues deriving from this.

Consumers

Investigate appropriate levels of information richness and complexity-reducing visualizations provided to consumers in a cascaded manner so that different degrees of knowledge about and interest in product information can be served.

Develop techniques and solutions that preserve the privacy of users, especially when they are willing to share product usage data or interact with DPPs in general.

Envision and design user-friendly services for consumers with varying degrees of intellectual, cognitive, or physical capabilities to draw additional benefits from DPPs beyond the mere provision of factual information.

Consider attitudinal and lifestyle related factors in the user-friendly provision and compilation of product information.

Investigate usage policies and licenses that allow consumers to actively participate in a DPP ecosystem.

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