

DPP4.0 – Big Picture

IDTA AAS Tech Days Frankfurt, 15th September 2023

Dieter Wegener | VP Siemens AG & ZVEI-Speaker "Industrie 4.0"







Eco Design-Regulation ESPR and DPP



ZVEI-Concept DPP4.0 and Live Demo



ZVEI-Show Case "CO2@Control Cabinet"



DPP-Standardization at CEN / CENELEC



DPP4.0 in ESPR – Major Roadblocks

EU Digital Product Passport (DPP)

zvei electrifying ideas

30th March 2022:

EC publishes proposal for a **Ecodesign for Sustainable Product Regulation (ESPR) COM(2022) 142 final**

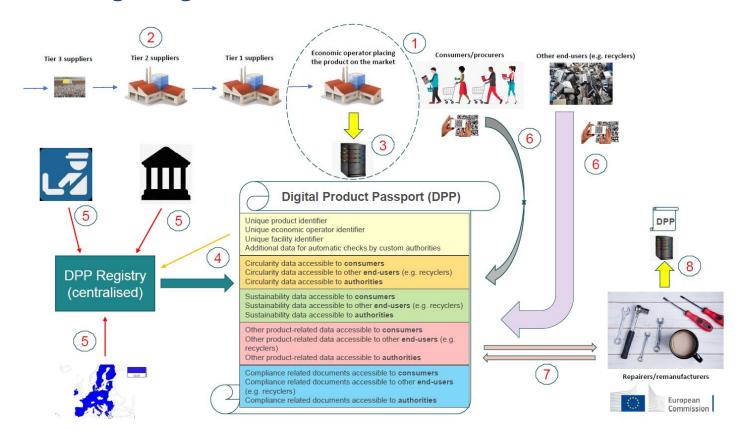


Requirements for DPP
Standardization Request on DPP announced



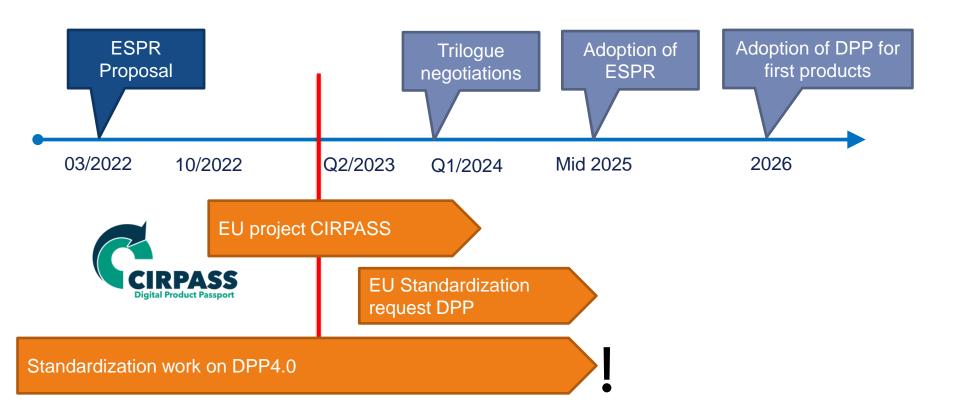
Eco Design-Regulation ESPR and DPP





Timeline DPP Regulation and Standardization









Eco Design-Regulation ESPR and DPP



ZVEI-Concept DPP4.0 and Live Demo



ZVEI-Show Case "CO2@Control Cabinet"



DPP-Standardization at CEN / CENELEC



DPP4.0 in ESPR – Major Roadblocks

ZVEI-Concept "DPP4.0"



Digital Product Passport 4.0

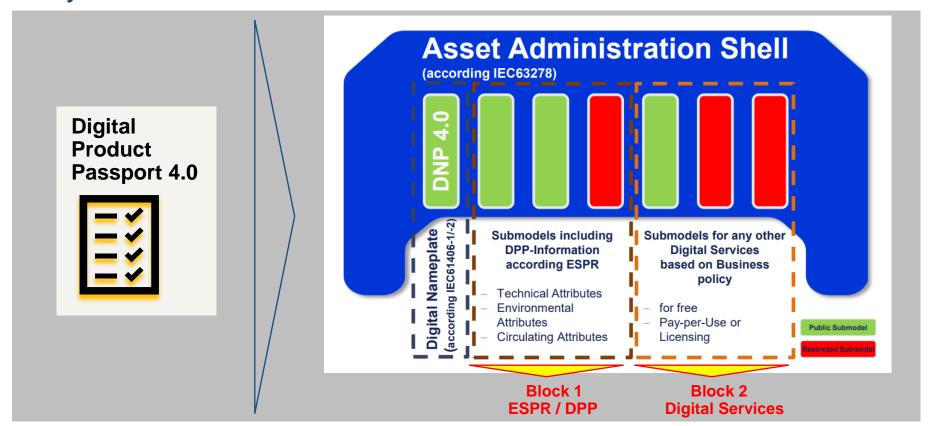


DPP4.0 will be enabling any Producer / Manufacturer worldwide

- (1) to fulfill ESPR/DPP-requirements
- (2) to deliver Digital Services
- to any Stakeholder in the Market

DPP4.0 will be enabling any Producer / Manufacturer worldwide (1) to fulfill ESPR/DPP-requirements and (2) to deliver Digital Services to any Stakeholder in the Market

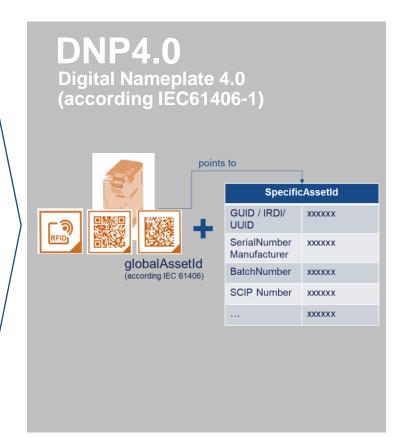


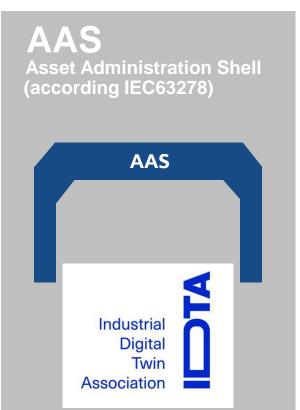


ZVEI-Concept "DPP4.0" based on two new IEC-standards









Live Demo: Example Siemens











EO and OK Declaration; Ann. . . . EMC, LVD, ATEX/UKEX, RoHS

Article-ID: 60001470, Date: 13.05.2022





Example SIEMENS – first serial product (Oct. 2022)













Eco Design-Regulation ESPR and DPP



ZVEI-Concept DPP4.0 and Live Demo



ZVEI-Show Case "CO2@Control Cabinet"



DPP-Standardization at CEN / CENELEC

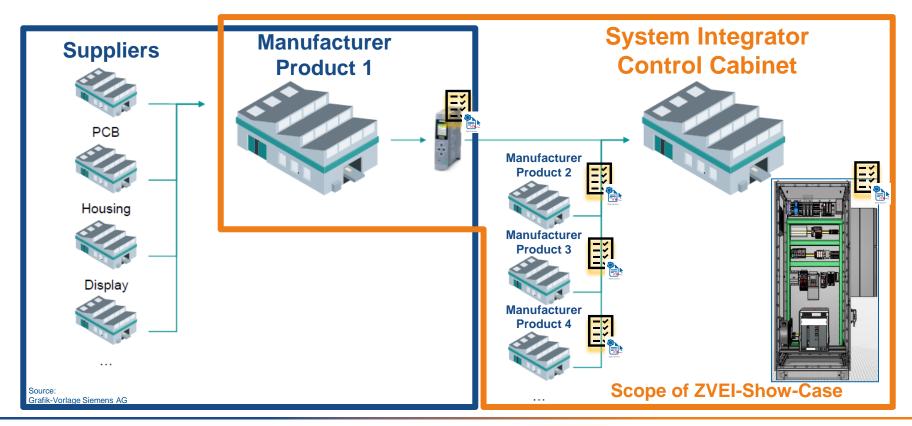


DPP4.0 in ESPR – Major Roadblocks

ZVEI-Show-Case "CO2@Control Cabinet" based on DPP4.0

zvei electrifying ideas

Scope of the Show-Case: From Manufacturer to System Integrator

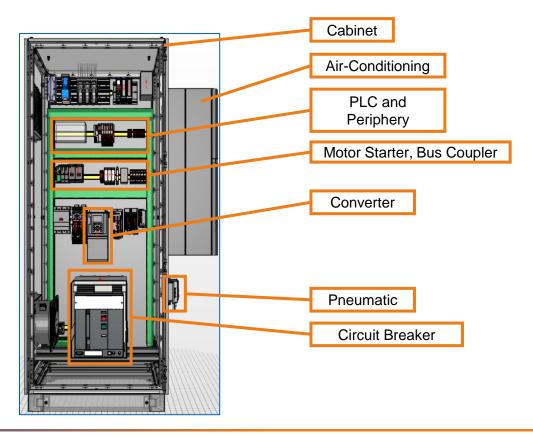


ZVEI-Show-Case "CO2@Control Cabinet" based on DPP4.0



Demonstrator: Control Cabinet





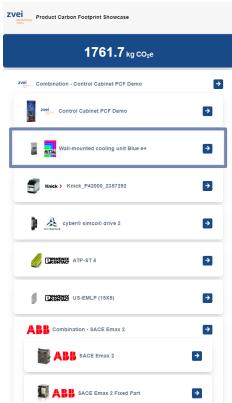
ZVEI-Show-Case "CO2@Control Cabinet" based on DPP4.0



Demonstration Hannover Fair (May 2022) and SPS Fair (November 2022)







Demonstration on Digital-Summit 2022





ZVEI e. V. Verband der Elektro- und Digitalindustrie



ZVEI-PRESSEINFORMATION

Nr. 92/2022

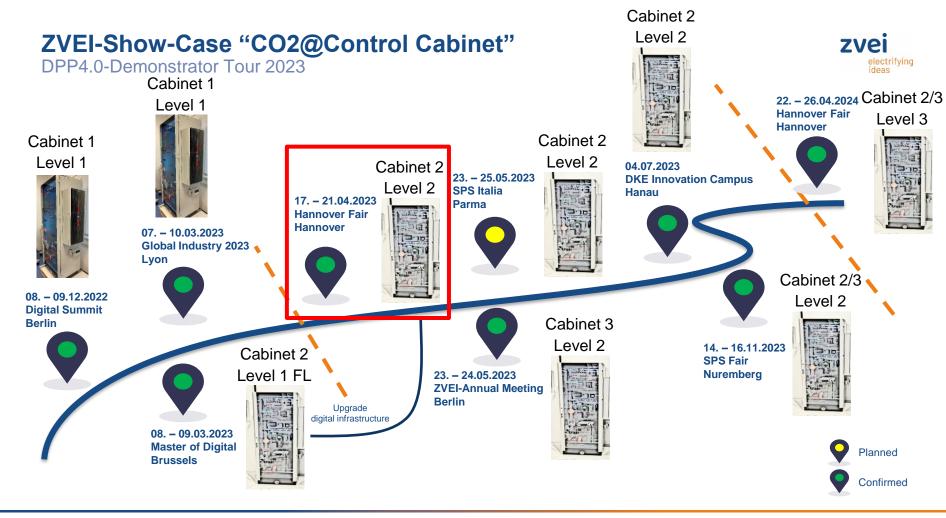
Digital-Gipfel: ZVEI stellt Bundeskanzler Scholz PCF@Control Cabinet vor

- Industrie 4.0-Anwendung erfasst Product Carbon Footprint
- Transparenz f
 ür Nachhaltigkeit und Resilienz in der Lieferkette

Frankfurt, 9.12.2022 – Mit dem ZVEI-Show-Case PCF@Control Cabinet zeigt der Verband der Elektro- und Digitalindustrie auf dem Digital-Gipfel von BMWK und BMDV, wie Innovationen einen substanziellen Beitrag leisten auf dem Weg zu einer klimaneutralen Industriegesellschaft. Gunther Koschnick, ZVEI-Bereichsleiter Industrie:

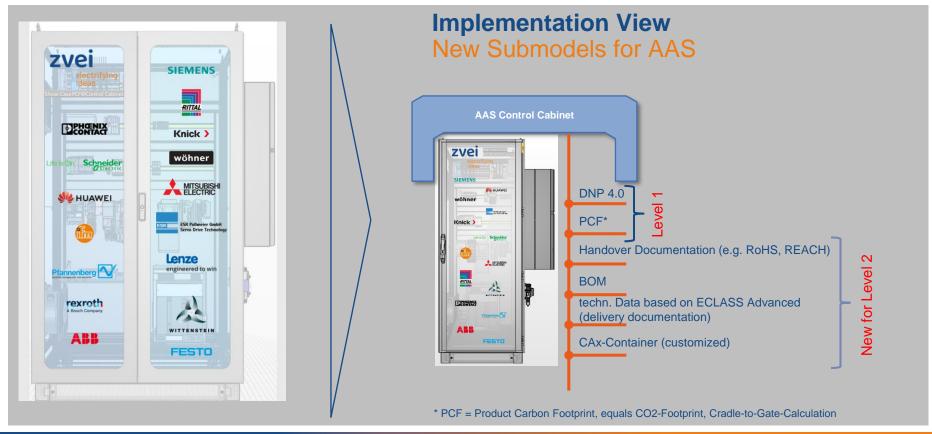
"Der Show-Case verdeutlicht eindrucksvoll, wie mit Hilfe von Digitalisierung und Vernetzung Daten erhoben und Transparenz über die gesamte Lieferkette geschaffen werden können. Der Product Carbon Footprint (CO2-Fußabdruck) des gezeigten Schaltschranks kann durch Einbezug der zur Verfügung gestellten PCF-Informationen aller verbauten einzelnen Komponenten im Schaltschrank automatisiert berechnet werden. Möglich wird dies durch den Digitalen Produktpass (DPP4.0) basierend auf der sogenannten Asset Administration Shell (AAS) und dem Digitalen Typenschild, über den Daten firmenübergreifend ausgetauscht werden. Durch diese Industrie 4.0-Anwendungen können wir exemplarisch veranschaulichen, wie viel CO2 für die Herstellung eines komplexen, aus vielen Zulieferkomponenten bestehenden Produkts angefallen ist."

Beim ZVEI-Show-Case engagieren sich 14 Unternehmen interdisziplinär und zeigen unternehmensübergreifend, wie regulatorische, rechtliche, wirtschaftliche und technische Anforderungen erfüllt werden können: Siemens, Huawei, Wöhner, Knick Elektronische Messgeräte, Schneider Electric, ifm, Mitsubishi Electric, Rittal, Wittenstein, Phoenix Contact, Pfannenberg, ABB, Festo, ESR Pollmeier.



Digital Twin Level 2 (Hannover Fair 2023)





Digital Twin Level 2 (Hannover Fair 2023)

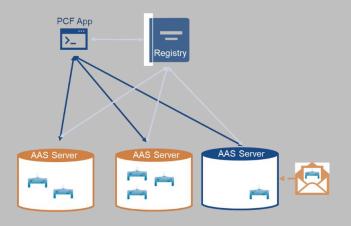




Implementation View

Data sovereignty

- Central registry into which identifying information is transferred
- Distributed data storage for product and sustainability data



Digital Twin Level 2 (Hannover Fair 2023)

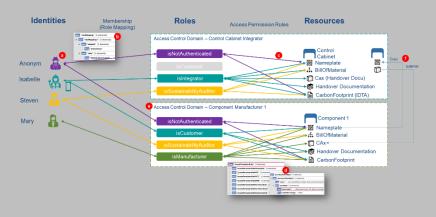




Implementation View

Access rights

- Roles and permissions are maintained by the vendor
- Selective access rights with reusable rule sets
- Public access to publicly available information required by the DPP







Eco Design-Regulation ESPR and DPP



ZVEI-Concept DPP4.0 and Live Demo



ZVEI-Show Case "CO2@Control Cabinet"



DPP-Standardization at CEN / CENELEC

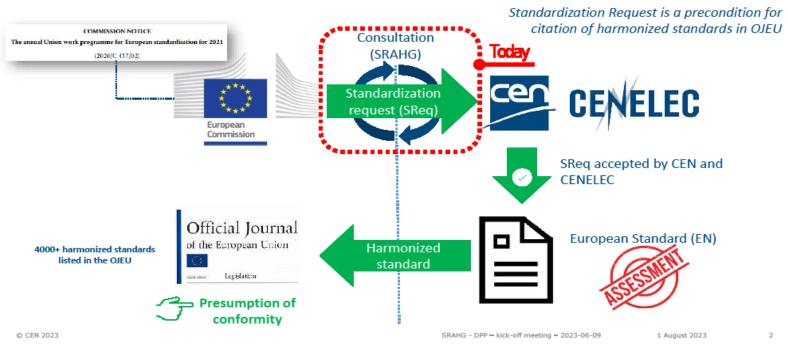


DPP4.0 in ESPR – Major Roadblocks



EU product harmonization - Workflow





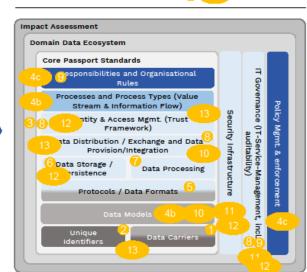


META Structure as agreed within CEN CENELEC **SRAHG Group**



ESPR Requirements

- Data carriers (1) and unique identifiers (2)
- Access rights management (3)
- Interoperability (technical, semantic, organisation) (4a,b,c), including data exchange protocols and formats (5)
- Data storage (6)
- Data processing (introduction, modification, update) (7)
- Data authentication (8), reliability (9), and integrity (10)
- Data security (11) and privacy (12)
- Links between physical product and digital representation, look-up mechanism (13)



SRAHG - DPP - kick-off meeting - 2023-06-09

1 August 2023

© CEN 2023





A tough Time Line Standardization Request – DPP: milestones

T + 2 months





Notification of SReq to ESO's

© CEN 2023

T + 1 month

Formal Acceptance / Rejection

Draft Work
e / Programme

Titles of Standards Technical Committees Timetable for execution 2024-12-31

First Annual Report

[Art. 3.2]
No other periodic
Report
[Art. 3.2]

Final Report

2025-12-31

Expiration of Decision

[Art. 4.2]

2026-06-30

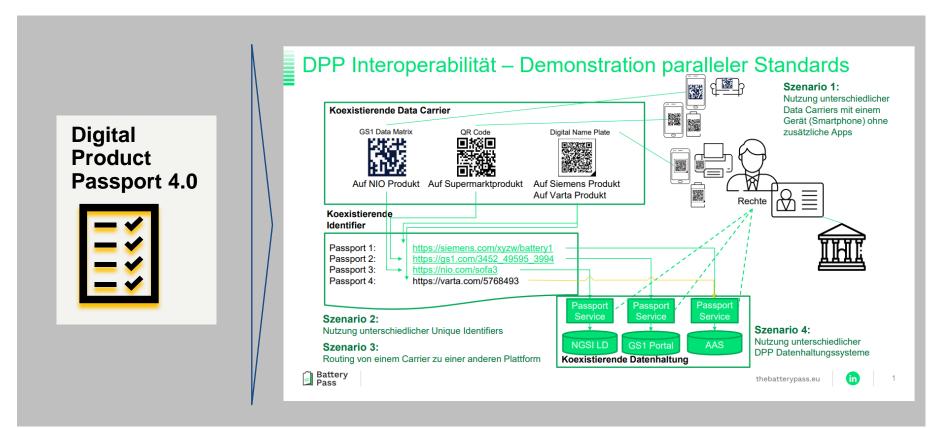
SRAHG - DPP - kick-off meeting - 2023-06-09

1 August 2023

9

Next step will be a demonstration of DPP4.0's interoperability with co-existing Data Carriers / Identifiers and Data Systems









Eco Design-Regulation ESPR and DPP



ZVEI-Concept DPP4.0 and Live Demo



ZVEI-Show Case "CO2@Control Cabinet"



DPP-Standardization at CEN / CENELEC



DPP4.0 in ESPR – Major Roadblocks

Five key principles DPP in ESPR:



- 1. Ensure technology neutrality and interoperability via NLF approach (general requirements in legal text, specification via standardization)
 - Deletion of specific standards and technological restrictions in the legal text and Annex (Art. 9, 1. (a) + (c); Art. 11, 1. & Annex III)





Key principle 1: Ensure technology neutrality and interoperability via NLF approach ESPR Article 9, 1. (a)

EC Proposal	Council - General Approach	European Parliament - Compromise Amendments
Article 9	Article 9	Article 9
General requirements for the	General requirements for the	General requirements for the
product passport	product passport	product passport
A product passport shall meet the following conditions:	A product passport shall meet the following conditions:	A product passport shall meet the following conditions:
(a) it shall be connected through a data carrier to a unique product identifier;	(a) it shall be connected through a data carrier to a unique product identifier;	(a) it shall be connected through a data carrier to a unique product identifier which shall identify the product, independently of any product passport's identifier and of any internet domain name;

ZVEI recommendations	
Article 9	
General requirements for the	
product passport	
. A product passport shall meet the following conditions:	
(a) it shall be connected through a data carrier to a unique roduct identifier;"	
ustification:	
The ESPR should be technology neutral and avoid vendo	r
ock-ins.	
Therefore, we reject the EP proposal on 1. (a) as	
) this excludes innovative technical solutions as the	
dentification link (IEC 61406) which is widely used in the B	
ector for the Digital Namplate or DPP (in combination with asset Administration Shell)	i tne
) this implies that users need a special app (which may no	at ha
ree of charge) to access the DPP information. The link to	
nternet domain enables to use the camera of every smart	ai i
hone and therefore is very user friendly.	
It also contradicts Art. 2 (31) 'unique product identifier' me	eans
unique string of characters for the identification of produc	

lenable a web link without an internet domain makes no sense.



Key principle 1: Ensure technology neutrality and interoperability via NLF approach Article 9, 1. (c)

EC Proposal	Council - General Approach	European Parliament - Compromise Amendments
Article 9	Article 9	Article 9
General requirements for the	General requirements for the	General requirements for the
product passport	product passport	product passport
	(c) the data carrier and the unique product identifier shall comply with standard ('ISO/IEC') 15459:2015 standards referred to in point (I) in Annex III;	(c) the data carrier and the unique product identifier shall comply with standard ('ISO/IEC') 15459:2015;

ZVEI recommendations
Article 9
General requirements for the
product passport
product passport

"(c) the data carrier and the unique product identifier shall comply with standard ('ISO/IEC') 15459:2015 standards listed in the OJEU."

Justification:

The ESPR should be technology neutral and avoid vendor lockins. A citation of one certain standard excludes other technical solutions, e.g. the identification link (IEC 61406) which is widely used in the B2B sector. The reference must not be made to standards referred to in Annex III (see Council proposal), but to standards cited in the OJEU.

Key principle 1: Ensure technology neutrality and interoperability via NLF approach Article 11, 1.



EC Proposal	Council - General Approach	European Parliament - Compromise Amendments	
Article 11	Article 11	Article 11	
Unique operator identifier and unique facility identifier	Unique operator identifier and unique facility identifier	Unique operator identifier and unique facility identifier	
. The unique operator identifiers	The unique operator identifiers	The unique operator identifiers	
		referred to in Annex III, points (g) and	
h), and the unique facility identifiers		(h), and the unique facility identifiers	
	referred to in Annex III, point (i), shall		
comply with the ISO/IEC standard		comply with the ISO/IEC standard	
5459:2015.	15459:2015. standards referred to	15459:2015.	
	<u>in in Annex III point (I).</u>		

ZVEI recommendations Article 11 Unique operator identifier and unique facility identifier

"1. The unique operator identifiers re-ferred to in Annex III, points (g) and (h), and the unique facility identifiers referred to in Annex III, point (i), shall comply with the standard (+ISO/IEC2) 15459:2015-standards listed in the OJEU."

Justification:

- The ESPR should be technology neutral and avoid vendor lockns. A citation of one certain standard excludes other technical solutions, e.g. the identification link (IEC 61406) which is widely used in the B2B sector.
- The reference of standards should follow the New Legislative Framework approach (General requirements listed in the regulation, technical specification via harmonised European standards). Therefore a reference must not be made to standards referred to in Annex III (see Council proposal), but to standards cited in the OJEU.



Key principle 1: Ensure technology neutrality and interoperability via NLF approach Annex III (c)

EC Proposal	Council - General Approach	European Parliament - Compromise Amendments
ANNEX III	ANNEX III	ANNEX III
Digital Product Passport	Digital Product Passport	Digital Product Passport
(referred to in Article 8)	(referred to in Article <u>Articles</u> 8, 9,10 and 11)	(referred to in Article 8)
(c) the Global Trade Identification Number as provided for in standard ISO/IEC 15459-6or equivalent of products or their parts;	(c) the Global Trade Identification Number as provided for in standard ISO/IEC 15459-6 or equivalent of products or their parts;	(c) the Global Trade Identification Number as provided for in standard ISO/IEC 15459-6or equivalent of products or their parts;

	ZVEI recommendations	
ANNEX III		
Digital Pro	oduct Passport	
(referred t	o in Article 8)	
provided for	<u>available</u> the Global Trade Identification Number as or in standard ISO/IEC 15459-6or equivalent of r their parts; <u>standards listed in the OJEU</u> "	
	on:	



Key principle 1: Ensure technology neutrality and interoperability via NLF approach Annex III (I)

EC Proposal	Council - General Approach	European Parliament - Compromise Amendments
ANNEX III	ANNEX III	ANNEX III
Digital Product Passport	Digital Product Passport	Digital Product Passport
referred to in Article 8)	(referred to in Article Articles 8, 9,10 and 11)	(referred to in Article 8)
	(I) The data carrier, the unique product	
	identifier referred to in point (b), the unique	
	operators identifiers referred to in points (g)	
	and (h), and the unique facility identifiers	
	referred to in point (i) shall, where relevant for	:
	the concerned products, comply with	
	International Organization for	
	Standardisation/International Electrotechnica	1
	Commission standard ('ISO/IEC') 15459-	
	1:2014; International Organization for	
	Standardisation/International Electrotechnica	1
	Commission standard ('ISO/IEC') 15459-	1
	2:2015; International Organization for	
	Standardisation/International Electrotechnica	ı
	Commission standard ('ISO/IEC') 15459-	1
	3:2014; International Organization for	
	Standardisation/International Electrotechnica	1
	Commission standard ('ISO/IEC') 15459-	`
	4:2014;International Organization for	
	Standardisation/International Electrotechnica	1
	Commission standard ('ISO/IEC') 15459-	•
	5:2014; International Organization for	
	Standardisation/International Electrotechnica	1
	Commission standard ('ISO/IEC') 15459-	1
	6:2014.	

ZVEI recommendations	
ANNEX III Digital Product Passport (referred to in Article 8)	
"(I) The data carrier, the unique product identifier referred to in point (b), the	
unique operators identifiers referred to in points (g) and (h), and the unique facility	
identifiers referred to in point (i) shall, where relevant for the concerned products,	
comply with International Organization for Standardisation/International	
Electrotechnical Commission standard ('ISO/IEC') 15459-1:2014; International	
Organization for Standardisation/International Electrotechnical Commission	
standard ('ISO/IEC') 15459-2:2015; International Organization for	
Standardisation/International Electrotechnical Commission standard ('ISO/IEC') 15459-3:2014: International Organization for Standardisation/International	
Electrotechnical Commission standard ('ISO/IEC') 15459-4:2014:International	
Organization for Standardisation/International Electrotechnical Commission	
standard ('ISO/IEC') 15459-5:2014; International Organization for	
Standardisation/International Electrotechnical Commission standard ('ISO/IEC')	
15459-6:2014."	
Justification:	
- The ESPR should be technology neutral and avoid vendor lock-	
ins. A citation of certain standards exclude other technical	
solutions for a DPP, i.e. the identification link (IEC 61406) in	
combination with the Asset Administraion Shell (IEC 63278),	
which is used already today in the Industry 4.0 context.	
- The reference of standards should follow the New Legislative	

Framework approach (General requirements listed in the regulation, technical specification via harmonised European standards). This should be subject to the standardisation request.

Five key principles DPP in ESPR:



- Ensure technology neutrality and interoperability via NLF approach (general requirements in legal text, specification via standardization)
 - Deletion of specific standards and technological restrictions in the legal text and Annex (Art. 9, 1. (a) + (c); Art. 11, 1. & Annex III)

Ensure alignment with NLF requirements and other Union harmonisation legislation

Definitions, Conformity Assessment Modules and criteria for harmonised standards and common specifications should be aligned with other Union harmonisation legislation and NLF requirements (Article 2(1), Art. 30(3), Art. 33, Art. 35 & Art. 37)

Avoidance of double requirements:

- Interfaces with existing databases!
- Digital first with regards to documentation (Art. 21 (6) &(7))

Protection of confidential information / trade secrets:

- Deletion of "technical documentation" (Annex III (e)) and "identification of equipment" (Annex III (i))
- Provision of data on a need-to-know basis / no overload of DPP:
 - Focus on essential data which are actually available along complex global value chains
 - Data must provide a benefit, be meaningful, purpose-oriented and verifiable (Art. 5, Art. 9 & Art. 31(2), (3))
 - Effort for data management must be manageable and affordable, especially for SMEs

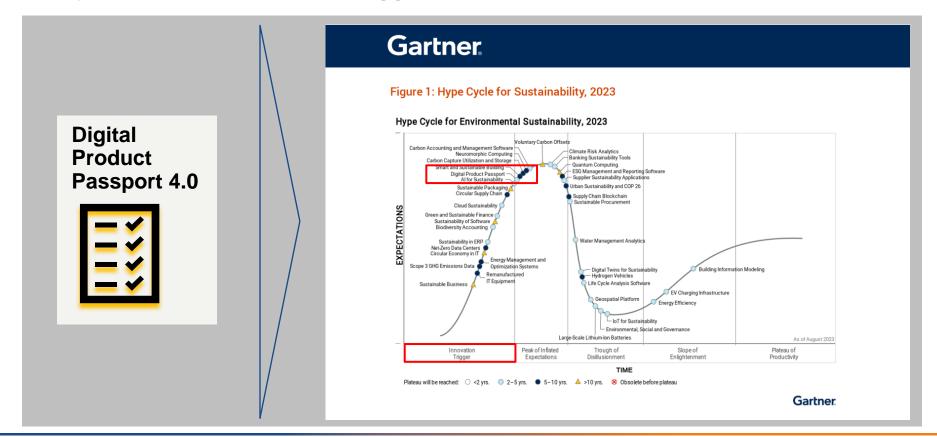
Letter of six Associations to mobilize four German Ministers to argue against Major Roadblocks on DPP4.0





DPP within newest GARTNER Hype Cycle for Sustainability 2023 analysed as an "Innovation Trigger"









Contact Information



Prof. Dr. Dieter Wegener

Head of External Cooperation, Siemens Technology Otto-Hahn-Ring 6, 81739 Munich

Mobile: +49 (173) 2512980, E-mail: dieter.wegener@siemens.com

Other external activities:

(1) since 2014	Chair of ZVEI Management Circle "Industrie 4.0", Frankfurt (ZVEI = Electro and Digital Industry Association)
(2) since 2015	Vice-President DKE, Frankfurt (DKE = German Commission for Electrical, Electronic & Information Technologies of DIN and VDE)
(3) since 2016	Chair of Advisory Board SCI4.0 (Co-Founder), Frankfurt (SCI4.0 = "Standardization Council Industrie 4.0")
(4) since 2019	Vice-Chair of DMEC (Co-Founder), Digital Europe, Brussels (DMEC = Digital Manufacturing Executive Council)
(5) since 2019	Chair of DIN Presidential Committee FOCUS.ICT for "German ICT- Standardization", DIN, Berlin
(6) since 2021	Vice-Chair of ZVEI Management Circle "Electrification & Climate", Frankfurt
(7) since 2023	Member of "German Strategy Forum for Standardization at BMWK", Berlin (BMWK = Federal Ministry for Economics and Climate Action)

