DPP4.0 as a Digital Enabler for Circular Economy

AIOTI Signature Event 2023
Brussels, 10th October 2023

Dieter Wegener  |  VP Siemens AG & ZVEI-Speaker „Industrie 4.0“
Eco-Design must start in the Design phase – 80% of the requirements have to be implemented here!
DPP4.0-concept is based on AAS and enables Eco-Design-Approach with Digital Twin along the product lifecycle.
Eco Design-Regulation ESPR and DPP

Digital Product Passport (DPP)
- Unique product identifier
- Unique economic operator identifier
- Unique facility identifier
- Additional data for automatic checks by custom authorities
- Circularity data accessible to consumers
- Circularity data accessible to other end-users (e.g., recyclers)
- Circularity data accessible to authorities
- Sustainability data accessible to consumers
- Sustainability data accessible to other end-users (e.g., recyclers)
- Sustainability data accessible to authorities
- Other product-related data accessible to consumers
- Other product-related data accessible to other end-users (e.g., recyclers)
- Other product-related data accessible to authorities
- Compliance related documents accessible to consumers
- Compliance related documents accessible to other end-users (e.g., recyclers)
- Compliance related documents accessible to authorities

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

DPP4.0
Digital Product Passport 4.0

DNP4.0
Digital Nameplate 4.0 (according IEC61406-1)

AAS
Asset Administration Shell (according IEC63278)

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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
Live Demo: Example Siemens

Online Digital Nameplate

Online Declaration of Conformity

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Example SIEMENS – first serial product (Oct. 2022)
Green Digital Twin™ and Digital Twin of Cost will drive sustainable sourcing and implementation decisions.
GDT: Calculation structure and framework

Data processing resulting into calculation structure (BOM + BOP)

Project specific to be considered and defined

- Product Environmental Footprint and other Category Rules
- Emission allocation and burden distribution
- Cut-off criteria
- Documentation and communication (e.g. following ISO 14067)

GDT = Green Digital Twin

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Green Digital Twin™ with further opportunity to calculate Product Environmental Footprints beyond CO2e

... | Further parts + process steps

1 | Detector housing

2 | Labyrinth

3 | Carrier

4 | PCB programmed

5 | Cover

Fire Detector
Green Digital Twin Web Application:
to be used for LCA / EPD calculations and for environmental footprint simulation/optimization

What GDT provides

Environmental Product Declaration (EPD)

Simulation and optimization supporting robust ecodesign
Thank you!
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)