

Digital Product Passport 4.0



DPP4.0 as a Digital Enabler for Circular Economy

AIOTI Signature Event 2023

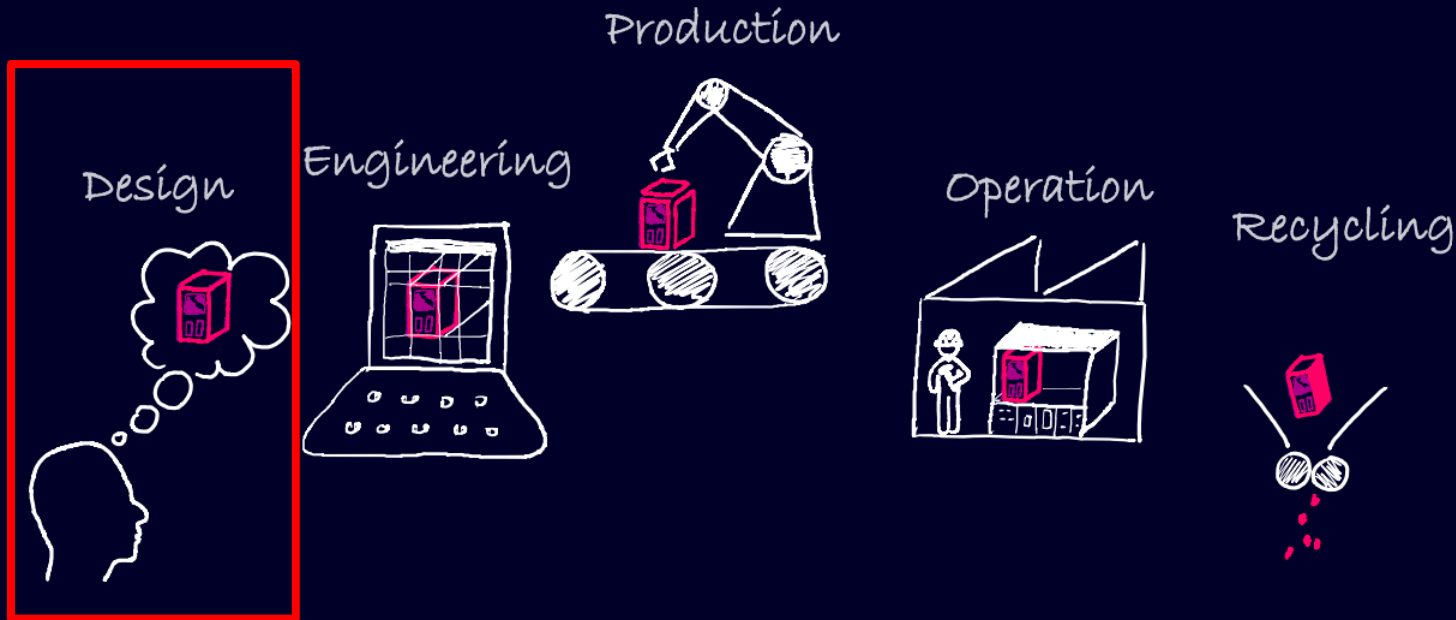
Brussels, 10th October 2023

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

zvei
electrifying
ideas

Eco-Design must start in the Design phase – 80% of the requirements have to be implemented here!

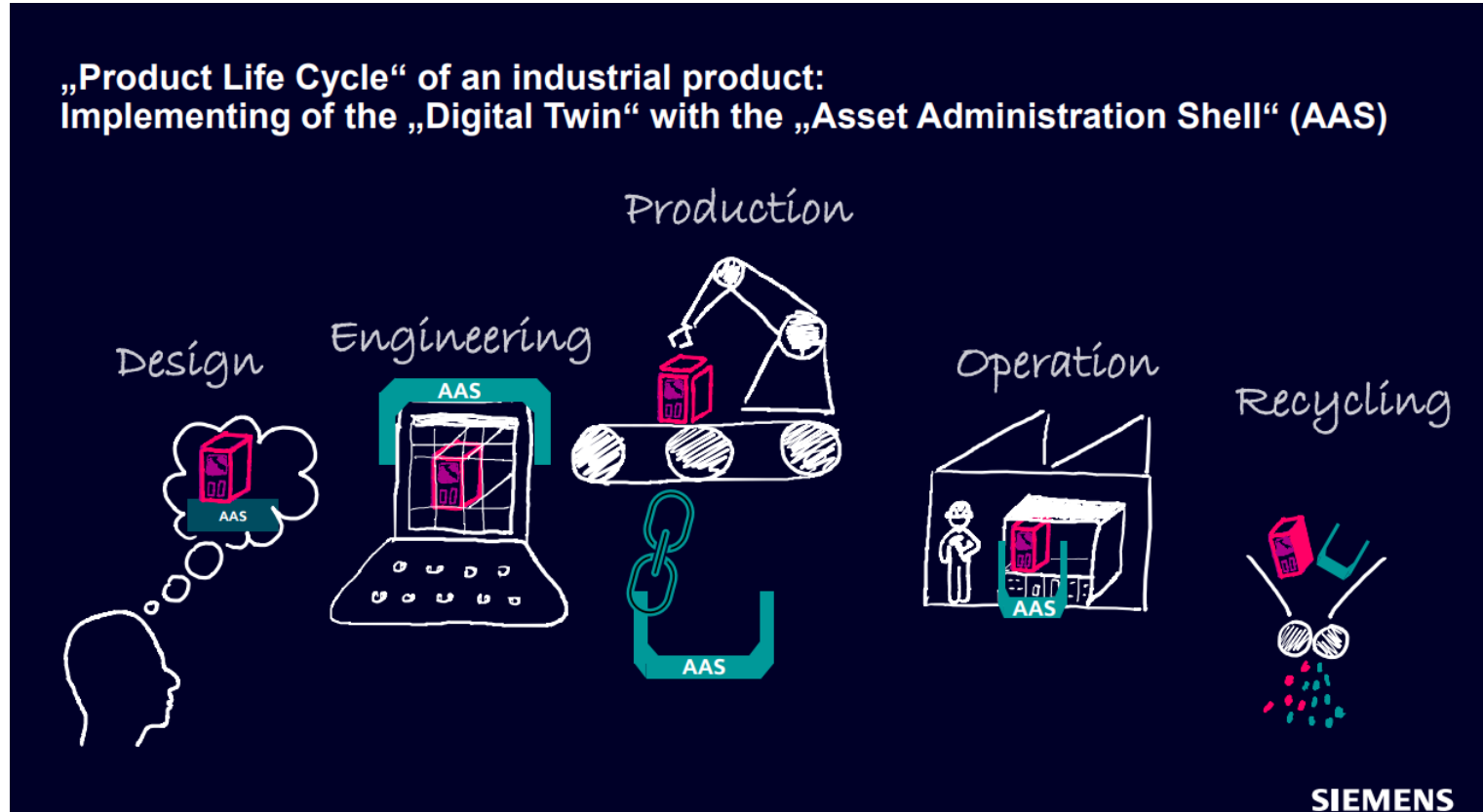
„Product Life Cycle“ of an industrial product



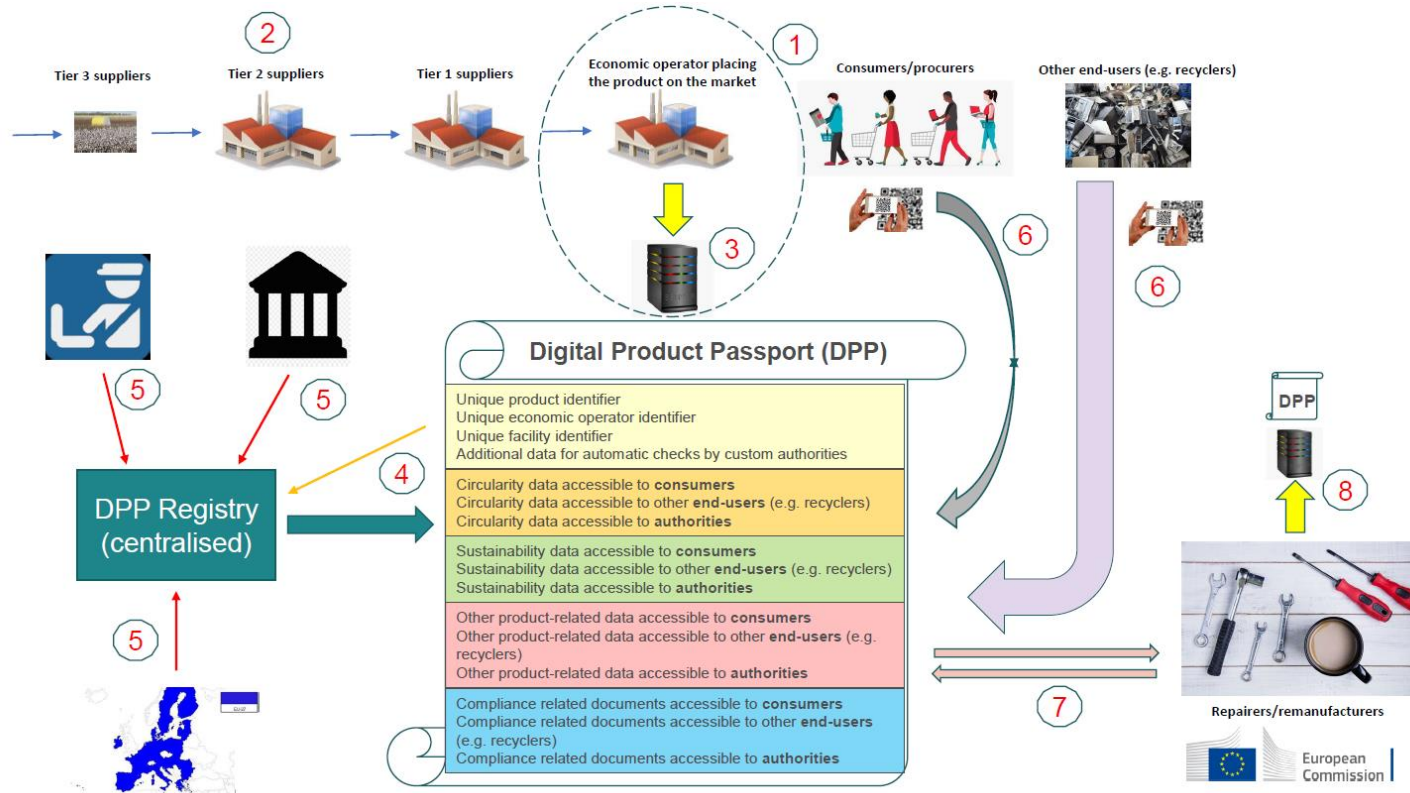
SIEMENS

DPP4.0-concept is based on AAS and enables Eco-Design-Approach with Digital Twin along the product lifecycle

„Product Life Cycle“ of an industrial product:
Implementing of the „Digital Twin“ with the „Asset Administration Shell“ (AAS)



Eco Design-Regulation ESPR and DPP



**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

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

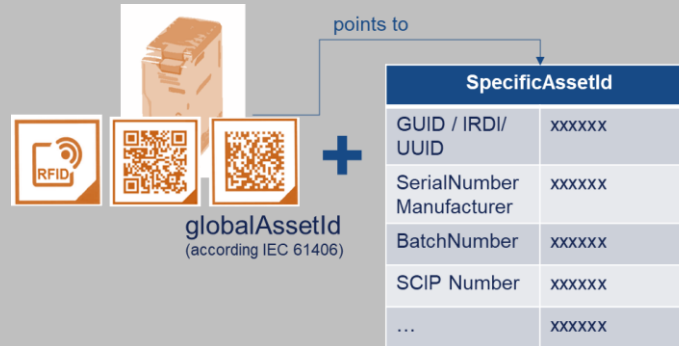
DPP4.0

**Digital
Product
Passport 4.0**



DNP4.0

Digital Nameplate 4.0
(according IEC61406-1)

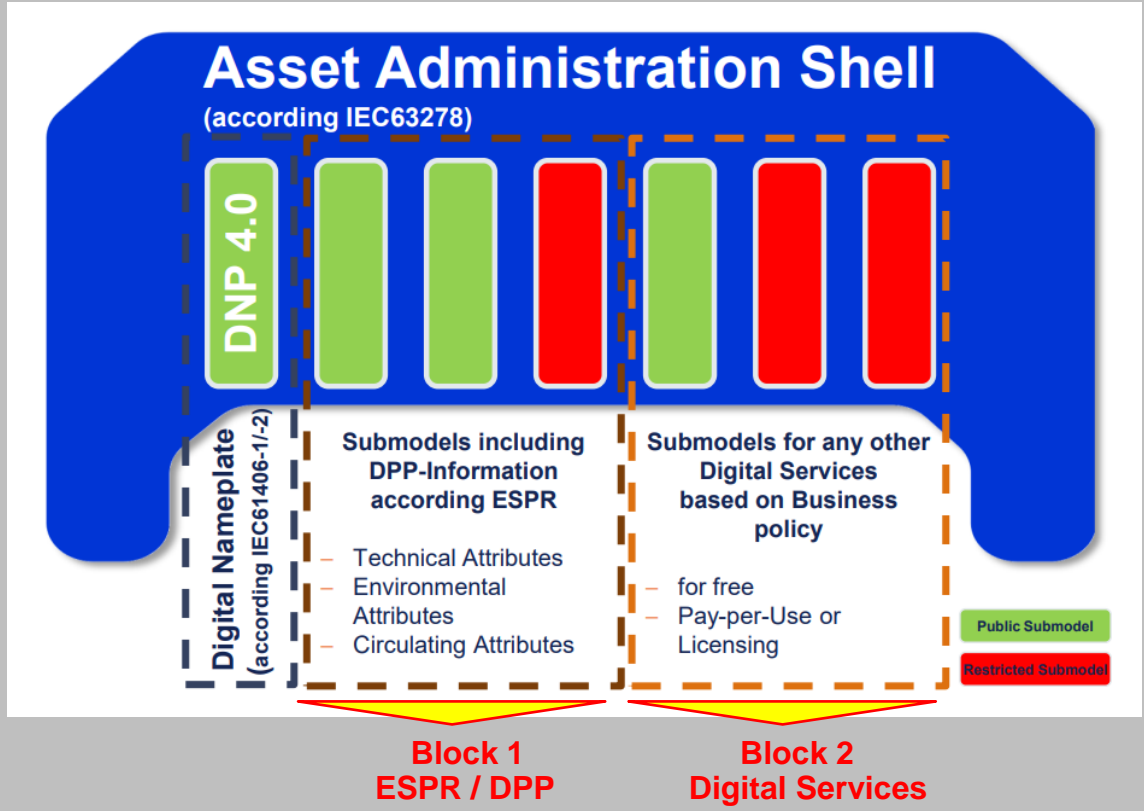


AAS

Asset Administration Shell
(according IEC63278)



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

Product



ID-Link

i.siemens.com >

Package



Online Digital Nameplate



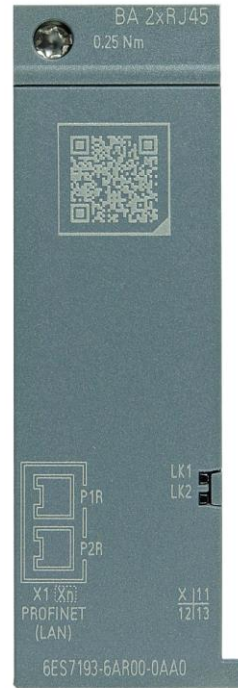
Online Declaration of Conformity



PDF of original Dec. of Conf.

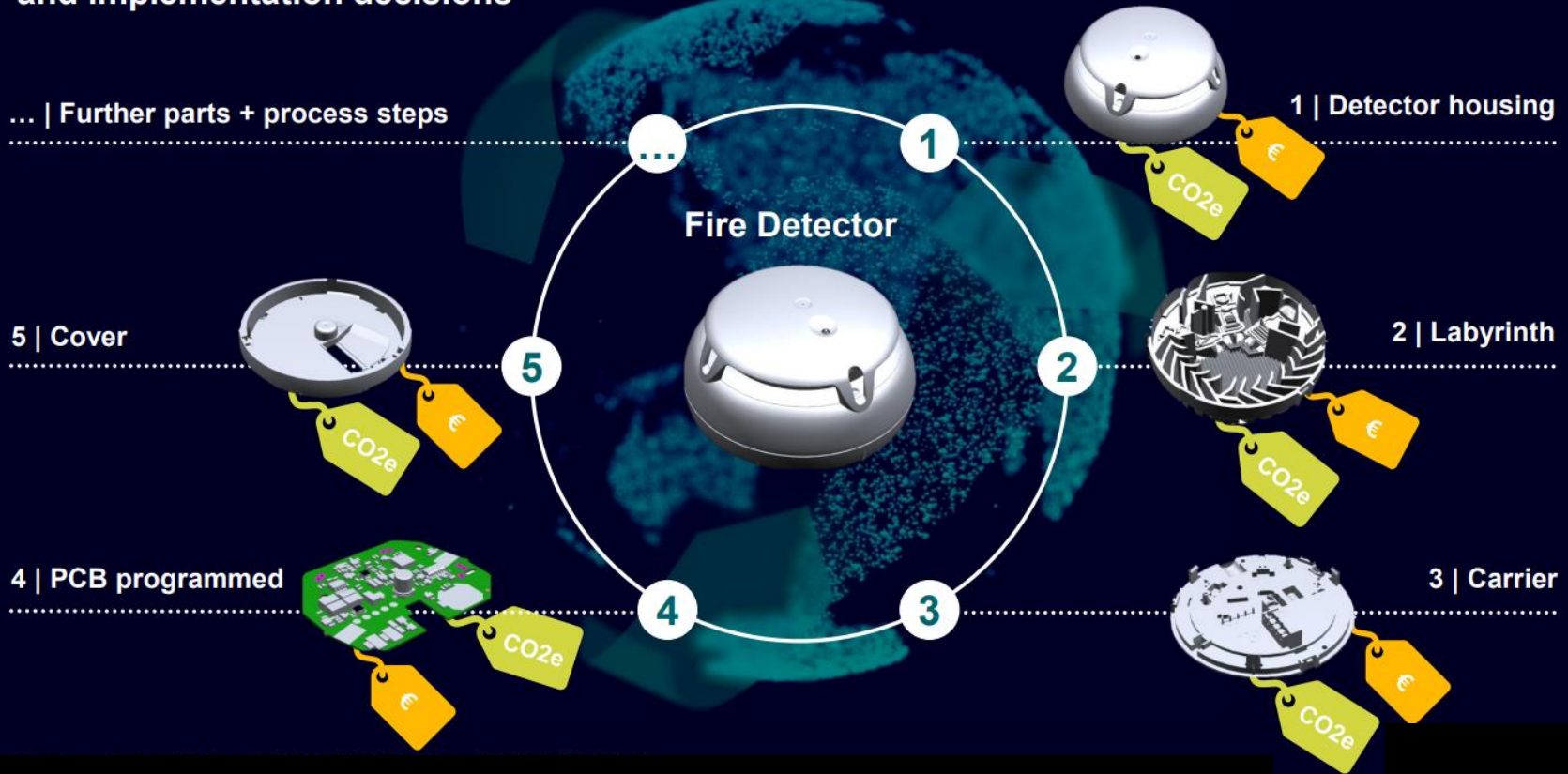


Example SIEMENS – first serial product (Oct. 2022)

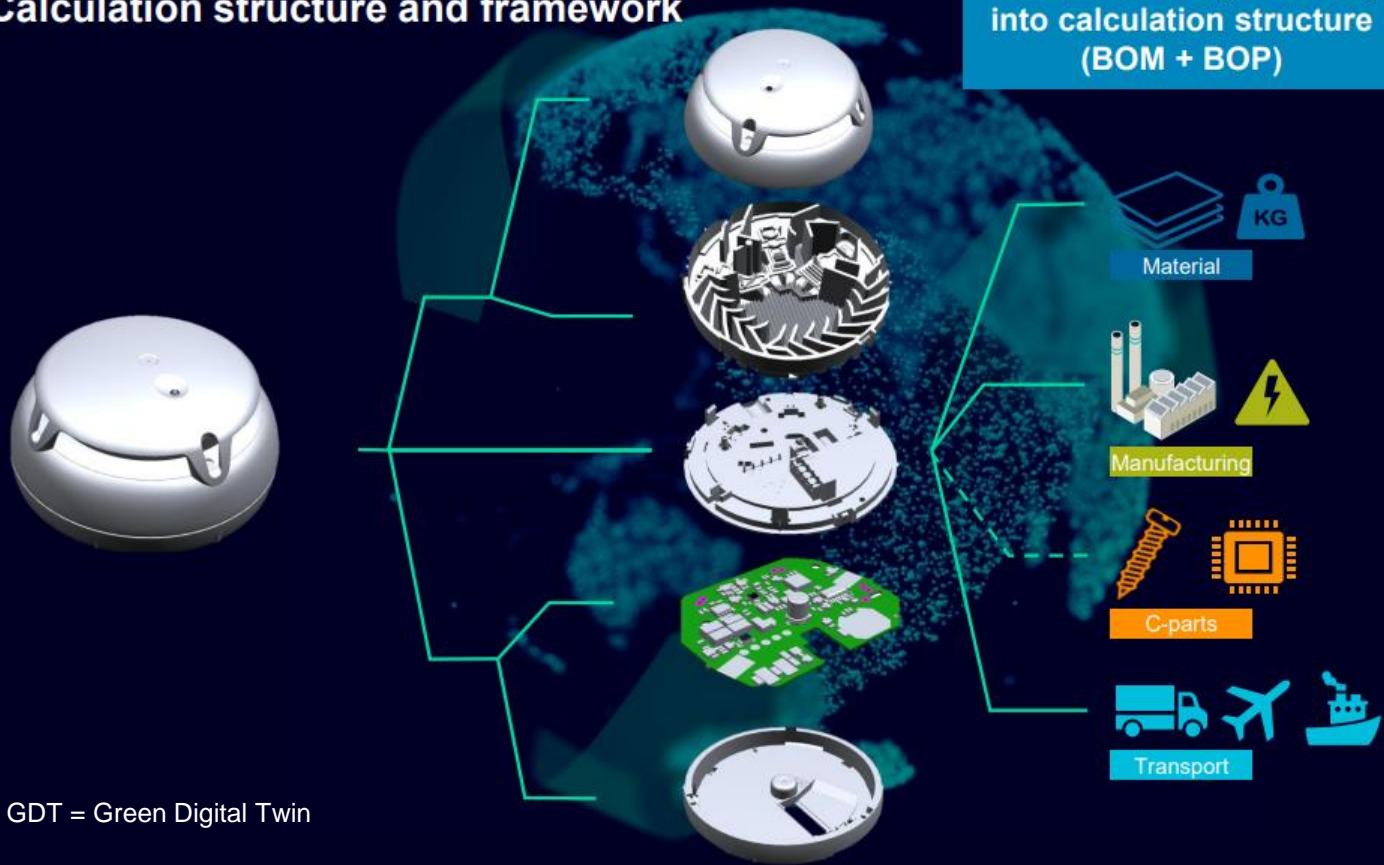


Green Digital Twin™ and Digital Twin of Cost will drive sustainable sourcing and implementation decisions

... | Further parts + process steps



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

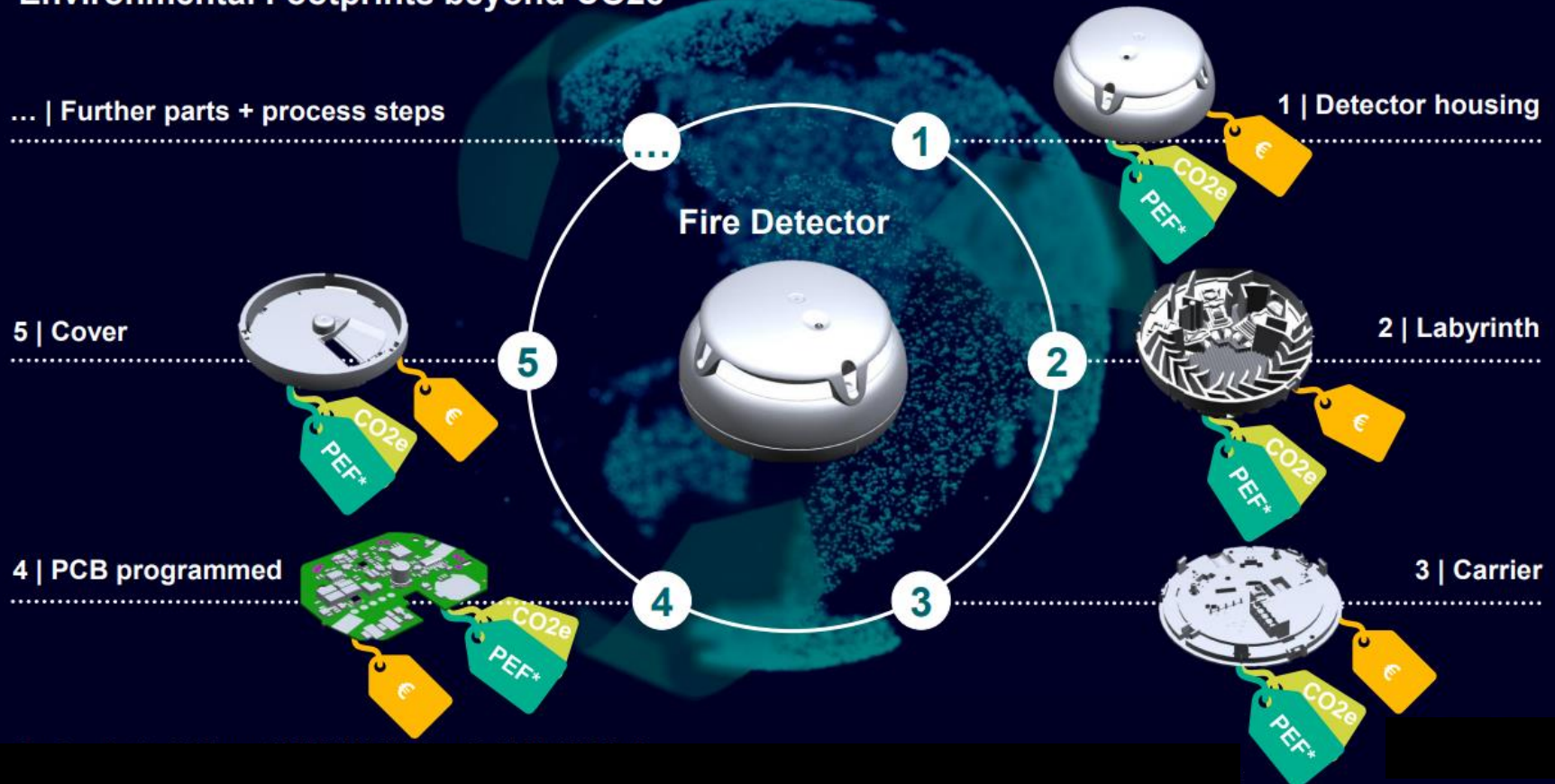
Cut-off criteria

Documentation and communication (e.g. following ISO 14067)

GDT = Green Digital Twin

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

... | Further parts + process steps



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)

Environmental Product Declaration (EPD)
SIMATIC S7-400 CPU 410

General information
Type II according to ISO 14021 including the cycle impact assessment (GCI)

Life cycle stages and reference scenarios
Manufacturing, Operation, End of Life

Global warming potential
Bar chart showing CO2e emissions for Manufacturing, Operation, and End of Life.

End-of-life scenario
Details on recycling and disposal options.

Simulation and optimization
supporting robust ecodesign

Composition (% of total product weight)

16.23%	Casting	16.51%	Steel	16.84%	Non-ferrous Metal	2.26%	Other materials
8.74%	Other materials	7.81%	Other materials	17.13%	Other materials	8.22%	Other materials

Commodity Details (01 EN15884-A2 Climate Change - total [kg CO2e eq])
Total: 9,346

Commodity Details (01 EN15884-A2 Climate Change - total [kg CO2e eq])
Total: 8,935

Thank you!

Contact Information

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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)

