

제3회 디지털 ESG 컨퍼런스

# EU 에코디자인 규정과 디지털제품여권(DPP)

2024. 10. 24

이주혁 전무(위존)

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# 1.1 EU 에코디자인 규정(ESRP)

기존의 에코디자인 지침(2009/125/EC)을 강화한 에코디자인 규정(ESPR)이 최근(24.07.18) 발효됨.

## <Ecodesign for Sustainable Products Regulation>



Official Journal  
of the European Union

EN  
L series

ESRP는 프레임워크 법안  
(framework legislation)

구체적인 척도(measures)  
설정하는 것이 아니라,  
향후에 채택할 수 있게 함

Framework legislation

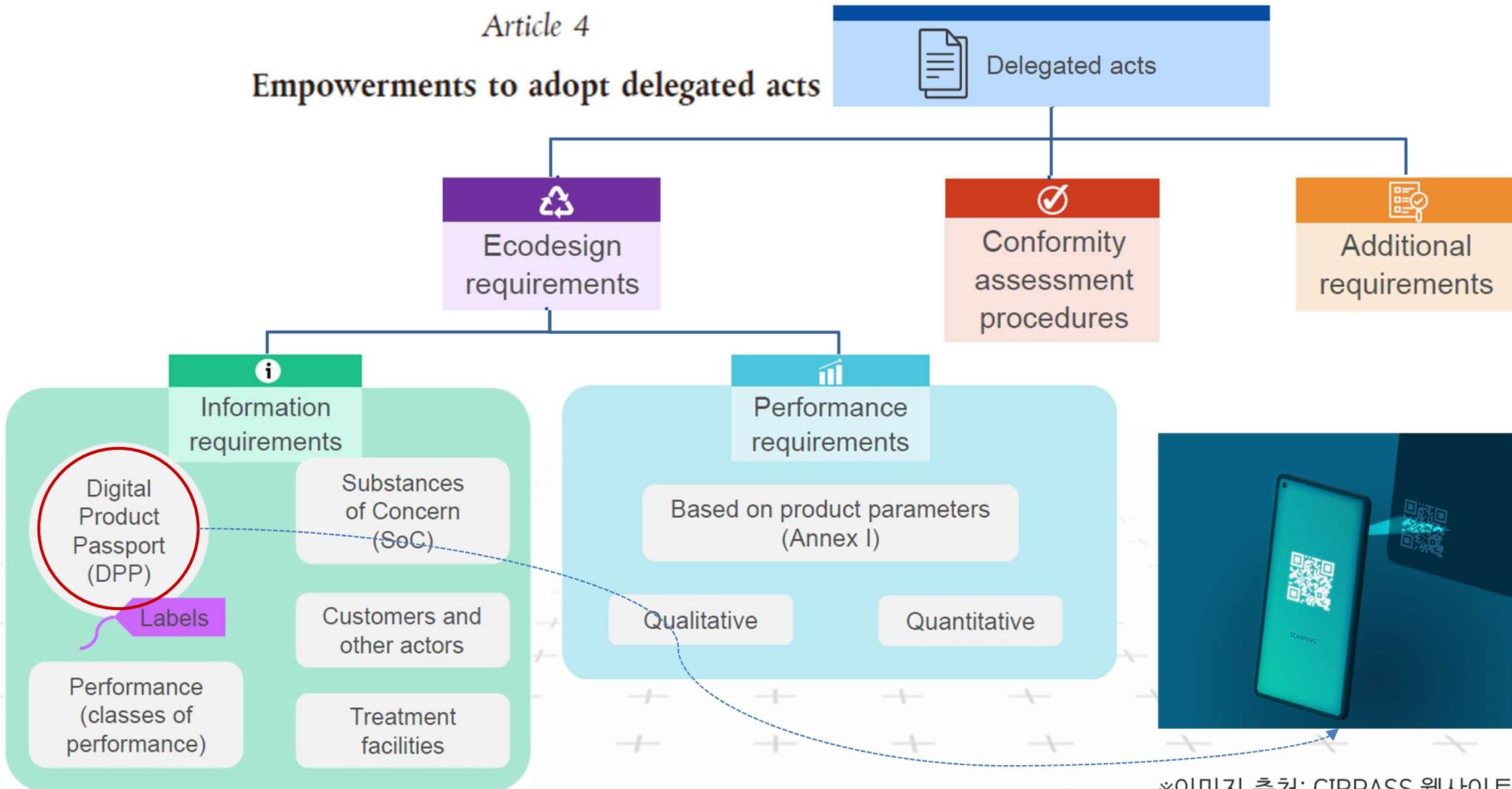
Product-specific measures  
based on detailed impact  
assessment

Regularly updated  
**multiannual working  
plans** setting out priorities

※출처: Regulation (EU) 2024/1718 및 European Commission, ESPR Webinar (2024-05-22)

# 1.2 ESRP 제4조. 위임법안(Delegated Acts)

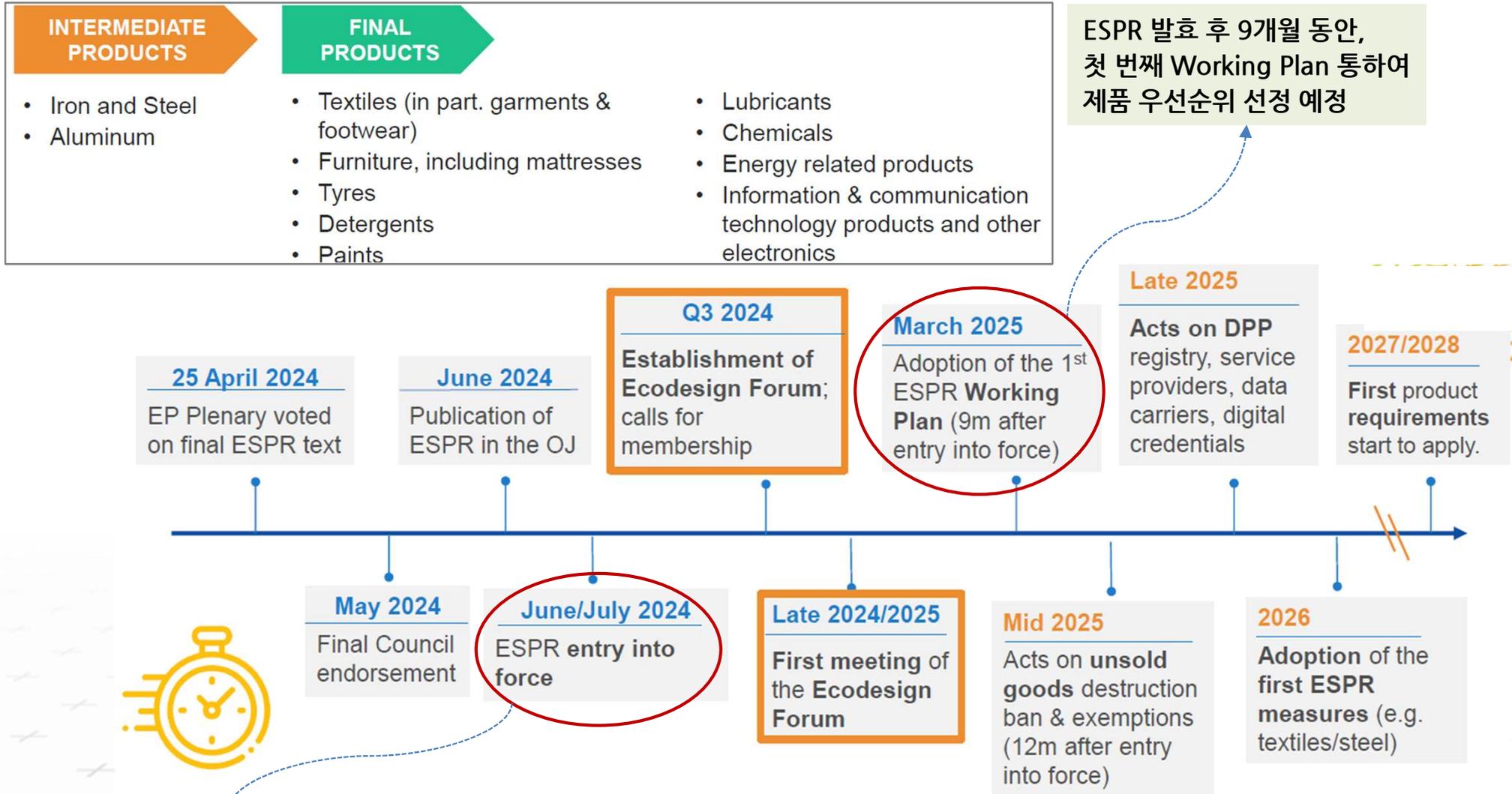
ESPR 제4조에서는 에코디자인 요구사항, 적합성 평가 절차 및 기타 요구사항에 대한 위임법안(Delegated Acts)을 채택



※출처: European Commission, ESPR Webinar (2024-05-22)

※이미지 출처: CIRPASS 웹사이트,  
<https://cirpassproject.eu/dpp-in-a-nutshell/>

# 1.3 ESPR - Timeline and Milestone



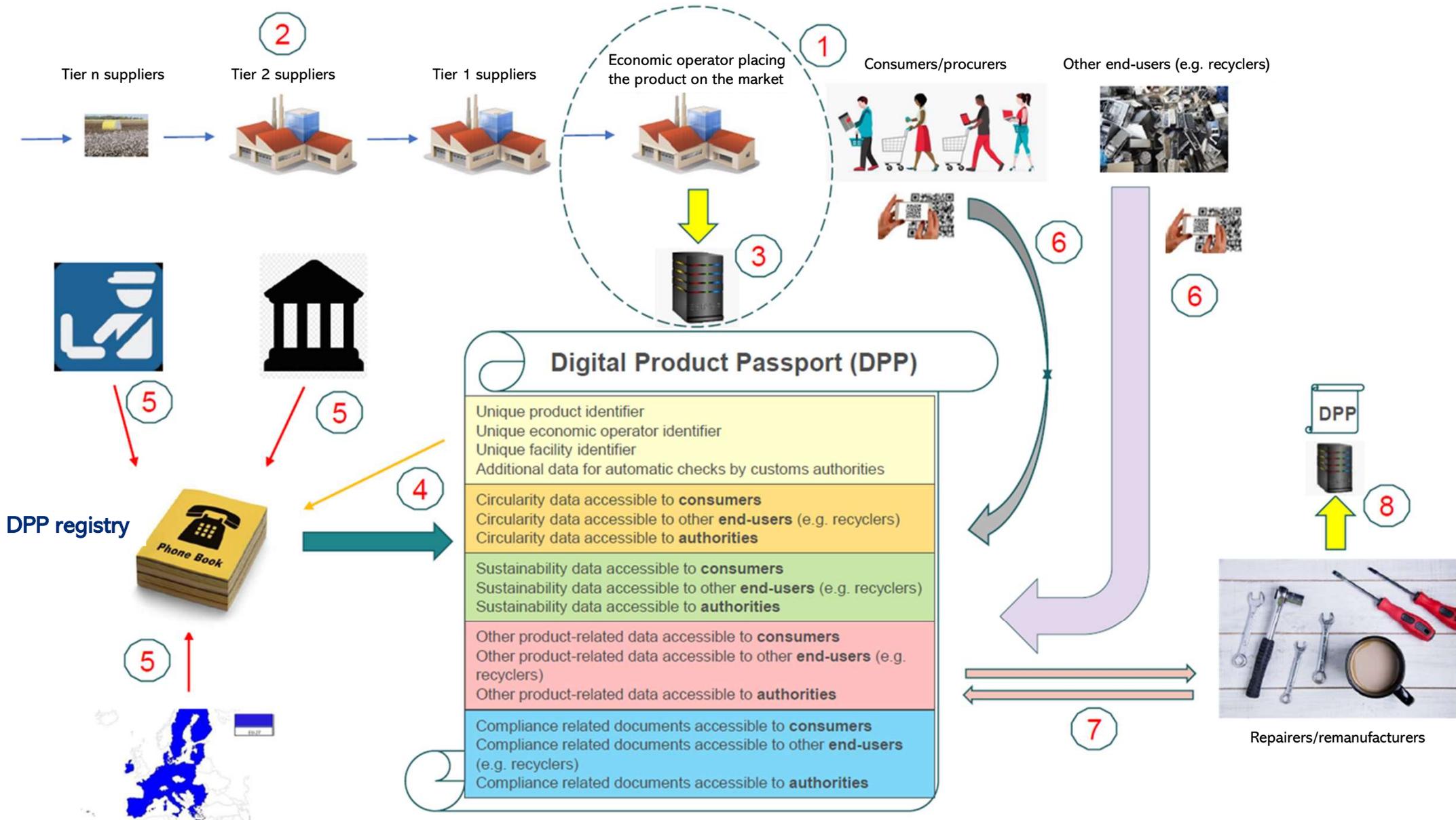
Article 79

## Repeal and transitional provisions

- [전환기] ESPR 발효('24.07.18)와 동시에 기존의 지침(2009/125/EC)은 폐지. 단, 예외적으로
- 19개의 에너지 관련 제품 그룹은, 2026년 말까지 일부 조항에 대하여 기존 지침 적용이 가능
  - 기존의 에너지 관련 제품 규정은, 2030년까지는 기존 지침에 의거 수정 가능(단, 합목적성이 유지되어야 함)

※출처: European Commission, ESPR Webinar (2024-05-22)

# 2.1 DPP - 탈중앙화 시스템(Decentralized System)



※출처: M.Galatola, *et al.*, "The draft standardization request on Digital Product Passport system," EC Webinar (2023-06-12)

## 2.2 DPP 핵심 디자인의 특징



### 모든 제품군과 법안에 대하여 수평적으로 개발될 예정

- ❖ The DPP registry
- ❖ A searchable Web Portal
- ❖ All standards and protocols related to IT architecture
  1. Unique identifier
  2. Data carriers and links btw physical product and digital representation
  3. Access rights management, information security, and business confidentiality
  4. Interoperability (technical, semantic, organization)
  5. Data processing, data exchange protocols, and data formats
  6. Data storage, archiving, and data persistence
  7. Data authentication, reliability, integrity
  8. APIs for the DPP lifecycle management and searchability

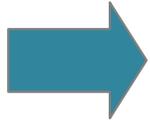
### 제품군별로 위임법안에서 개발될 예정

- ❖ DPP에 포함되는 정보는 제품군별로 위임법안에서 정의될 예정
- ❖ 아래 분야에 해당하는 정보/데이터 포함
  - Technical performance
  - Environmental sustainability performance
  - Circularity aspects (durability, reparability, etc.)
  - Legal compliance
  - Product-related information (e.g., manuals. Other labels)

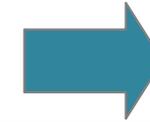
※출처: European Commission, ESPR Webinar (2024-05-22)

# 3.1 CIRPASS - DPP Initiative

EU 집행위원회(EC)의 지원을 받아 설립된 CIRPASS에서는 3개 품목에 대하여 ESPR에 근거한 DPP를 위한 표준화를 준비



*※약18개월 진행('24.03월 종료 후 CIRPASS-2 시작)*  
*3개 품목: 배터리, 섬유, 전자제품*



목적: DPP 정보 시스템의 개념 명확화

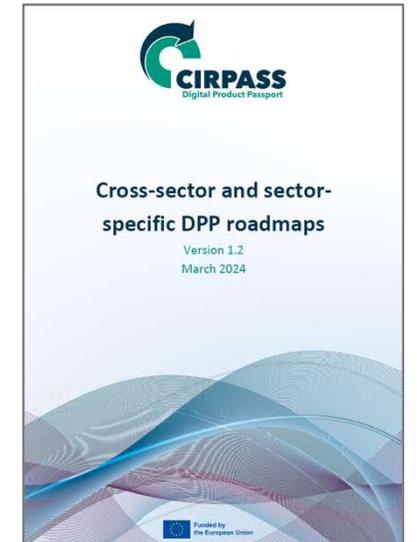
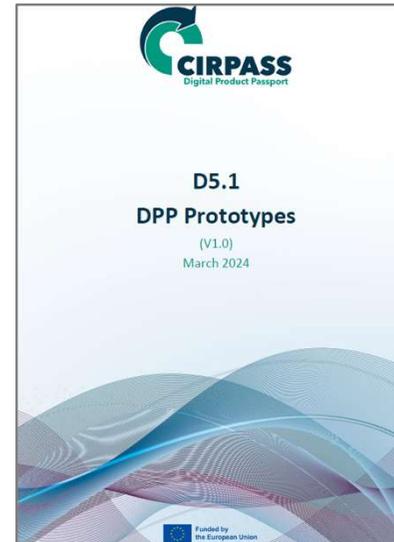
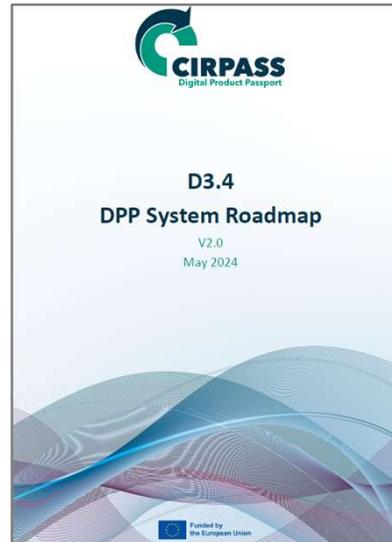
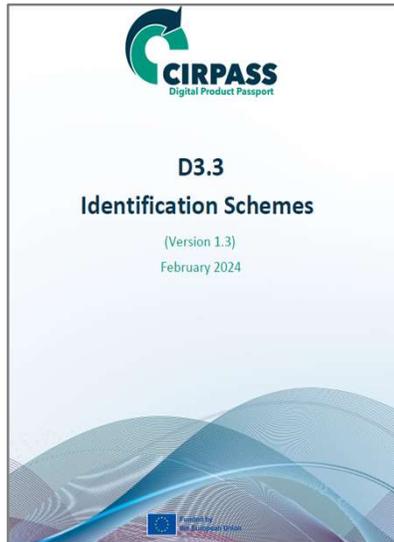
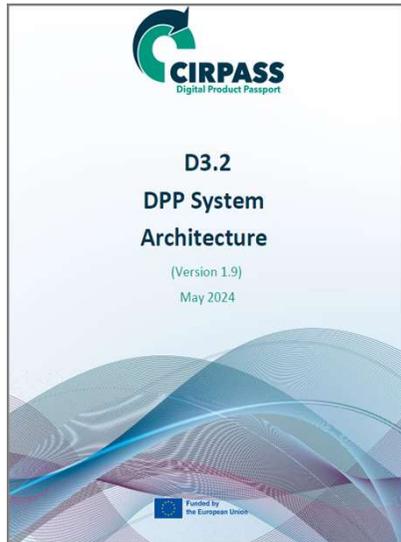
- ❖ DPP information requirements
- ❖ System architecture
- ❖ Supporting standards



CIRPASS 프로젝트의 성과

1. Open and flexible architecture
2. Semantic interoperability
3. Inclusive approach to product identification

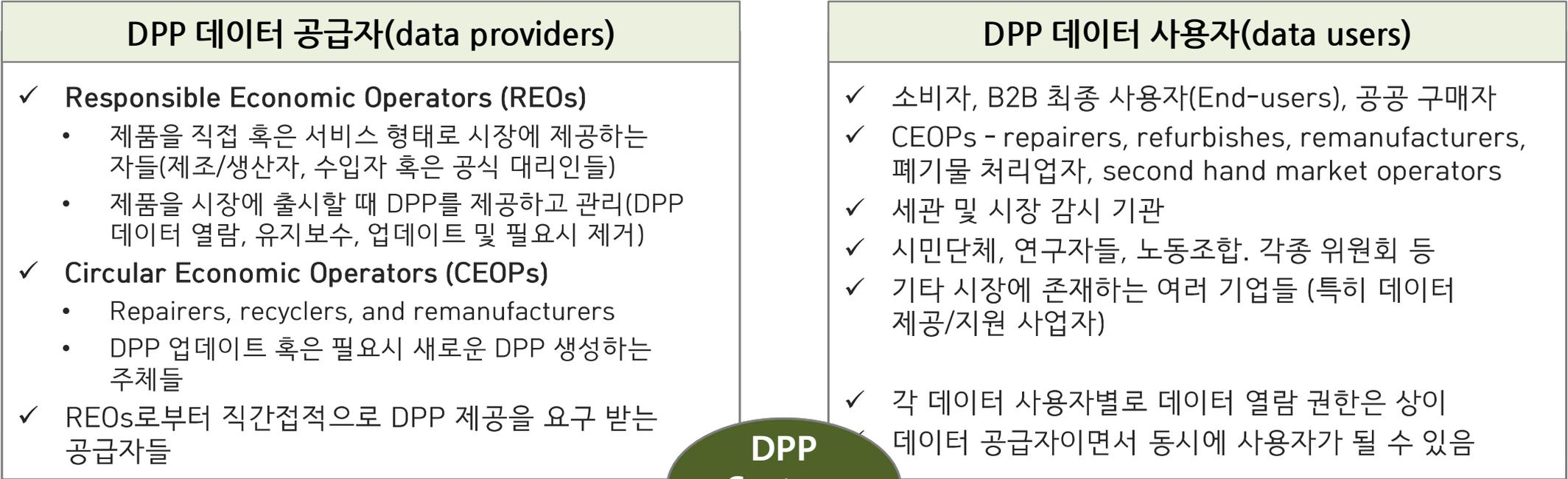
## <CIRPASS Project Results (예시)>



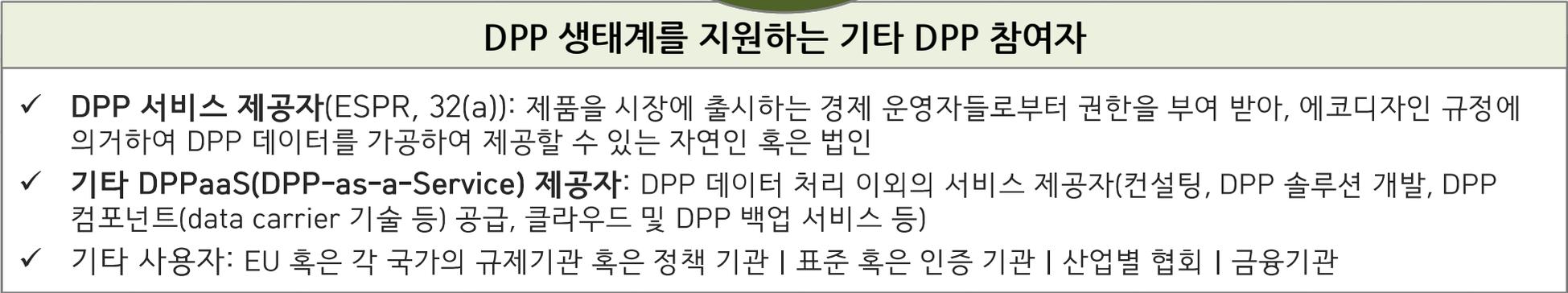
※출처: CIRPASS 및 CIRPASS-2 웹사이트. <https://cirpassproject.eu/> 및 <https://cirpass2.eu/>

# 3.2 DPP 시스템 참여자(System Actors)

DPP를 생성-사용하는 이해관계자들(참여자들, DPP system actors)은 데이터 공급자와 사용자 그리고 기타 참여자로 구분 가능

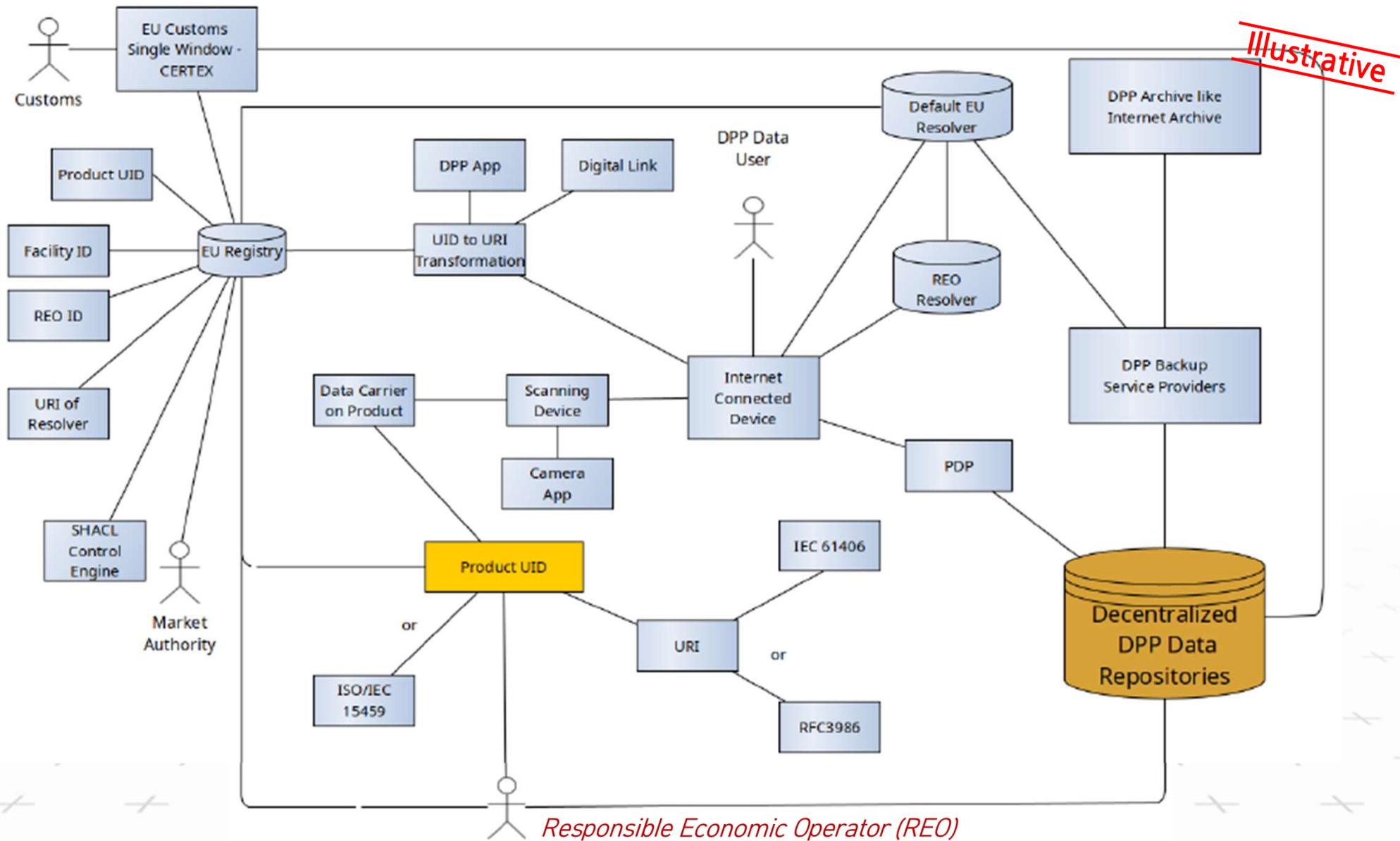


**DPP System Actors**



※출처: CIRPASS, "Cross-sector and sector-specific DPP roadmaps," Version 1.2 (March 2024)

# 3.3 DPP 시스템 아키텍처(예시)



※출처: CIRPASS, "Cross-sector and sector-specific DPP roadmaps," Version 1.2 (March 2024)

# 4.1 Battery Regulation 및 Battery Passport

BP에 대한 일정, 범위, 책임 및 접근 그룹 등의 명세는 EU Batter Regulation(23년 8월 시행)의 Article 77에 명시되어 있음.

## <EU Battery Regulation>

28.7.2023

EN

Official Journal of the European Union

L 191/1

## <Battery Passport 명세>



### Timeline

The battery passport will be required from 18 February 2027



### Scope

- Batteries in light means of transport (LMT)
- Industrial batteries with a capacity greater than 2 kWh
- Electric vehicle (EV) batteries



### Responsibility

The responsibility lies with the economic operator (or an authorized representative) placing the battery on the market



### Access groups

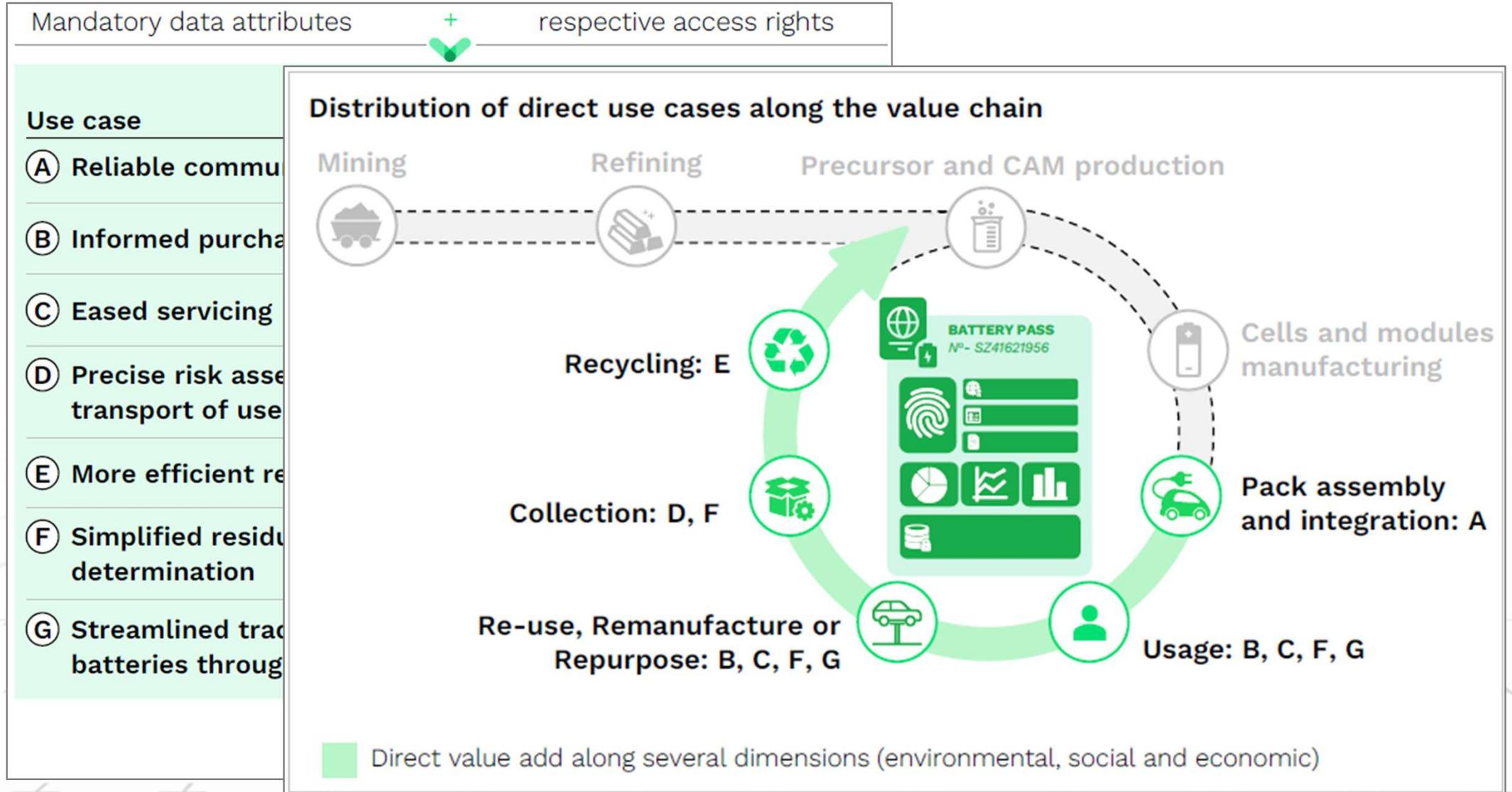
- 1) The “general public”
- 2) “Notified bodies, market surveillance authorities and the Commission”
- 3) “Any natural or legal person with a legitimate interest in accessing and processing that information”

Deep dives follow

※출처: Batter Pass, “Battery Passport Content Guidance,” Version 1.1 (December 2023)

## 4.2 Batter Passport의 직접적 유스 케이스

BP의 7가지 직접적 유스 케이스는, 필수 데이터 속성과 접근 권한에 의해 가능해지며 다운스트림 가치 사슬에 가치를 더해줌



※출처: Batter Pass, "The Value of the EU Battery Passport," Version 0.9 (April 2024)

# 4.3 Battery Passport 예시

The Battery Pass Consortium의 파트너사들이 제공한 샘플 데이터를 기반으로 하는 Battery Passport의 형태 예시



Passport ID  
**did:web:acme.battery.pass:0226151e-949c-d067-8ef3-162431e28976**

Model Number  
**M-41698615**

Category  
**EV**

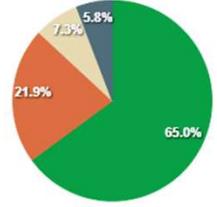
Status  
**Original**

Manufactured by  
**Exide Batteries A**

**SUMMARY REPORT**

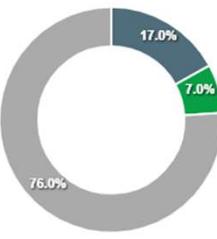
Original power

Carbon footprint



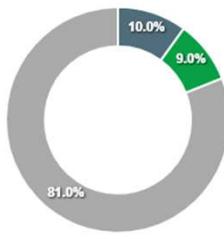
Recycled content share

**NICKEL**



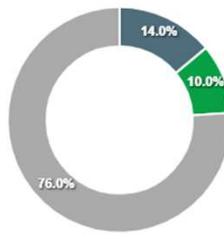
Pre consumer share: 17% | Post consumer share: 7% | Primary material: 76%

**COBALI**



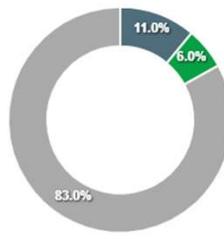
Pre consumer share: 10% | Post consumer share: 9% | Primary material: 81%

**LITHIUM**



Pre consumer share: 14% | Post consumer share: 10% | Primary material: 76%

**LEAD**



Pre consumer share: 11% | Post consumer share: 6% | Primary material: 83%



Passport ID  
**did:web:acme.battery.pass:0226151e-949c-d067-8ef3-162431e28976**

Model Number  
**M-41698615**

Serial Number  
**992356610548948**



Image is not the actual battery, and is for illustrative purposes only

Economic operator



← Back to summary

General
Material composition
Performance
Compliance
Supply chain
Circularity
Carbon Footprint

**General**  
Generic information about the battery

Name <b>EV-BAT095</b>	Manufactured date <b>2023-09-05</b>	Facility ID <b>Berlin</b>
Category <b>EV</b>	Status <b>Original</b>	Weight <b>499.00kg</b>
Manufactured by <b>Exide Batteries Auditor</b>		

Illustrative

※출처: The Battery Consortium 웹사이트, <https://thebatterypass.eu/>

# 5.1 Trace4Value - 섬유 DPP

마리에코, 카팔, 스웨덴표준협회 등이 참여한 Trace4Value 프로젝트를 통하여, 섬유 DPP 데이터 표준 양식을 도출(2024)

## ● 섬유 산업

- > 2000-2015 동안 섬유 생산이 2배로 증가
- > 2030년까지 추가로 63% 증가 예상
- > EU에서는 매년 일인 당 11 kg의 의류가 버려짐
- > EU에서는 매초 한 트럭분의 섬유가 매립 혹은 소각됨

## ● Trace4Value - 섬유 디지털제품여권(DPP)

- > 2022.03.30 EU집행위가 에코디자인 규정(ESPR) 제안
- > 2030년까지 EU 관내 판매되는 섬유에 대하여 DPP가 의무화 됨
- > 섬유 DPP 프로젝트('22.Q2-'24.Q3) 통하여 데이터 프로토콜 제시



Kappahl

trustrace

elis

SIS Swedish Institute for Standards

2B POLICY

TEXROAD

marimekko

A! Aalto University

TRIMCO GROUP

GS1 Sweden

RI

Circularista

※출처: Trace4Value, "Digital Product Passport in Textile Data Protocol" (2024)

# 5.2 Trace4Value - 섬유 DPP 프로젝트

섬유 DPP 프로젝트에서는 데이터 우선순위 지정, 데이터 수집 및 정보 공유 준비 및 DPP 공유를 위한 데이터 표준 양식을 도출

## <프로젝트에서 한 일>



Provided each product with a unique ID

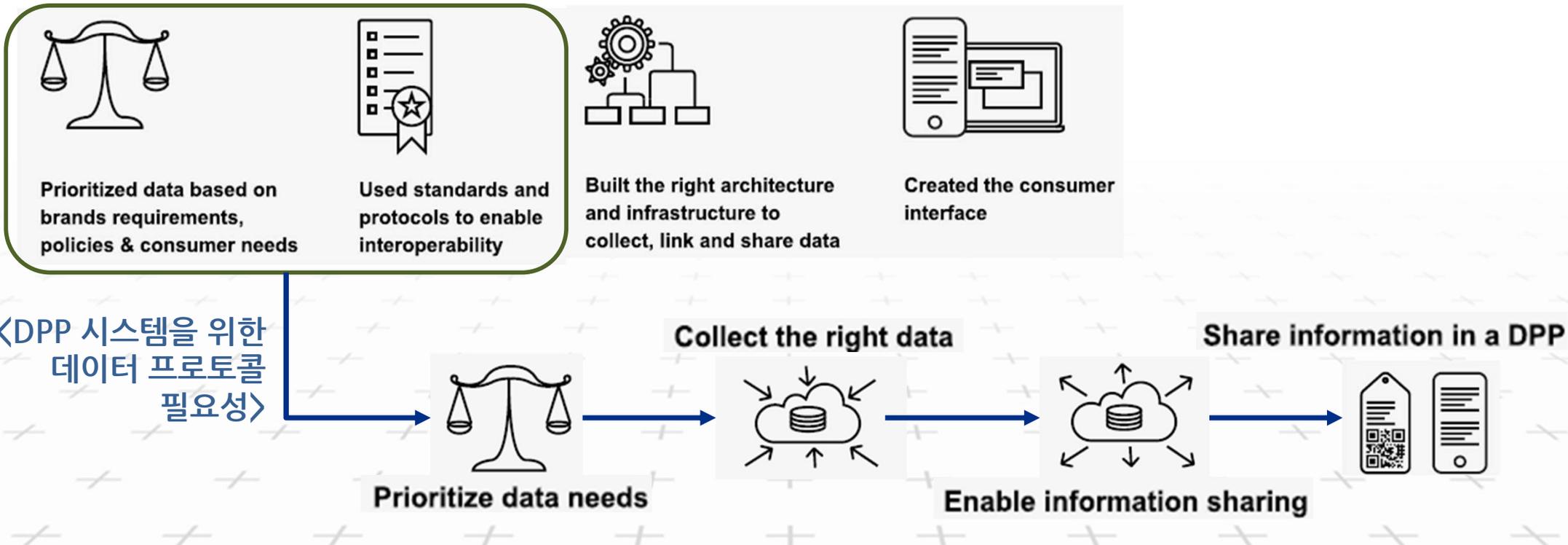


Attached a QR code for each product, linking the unique ID and product data



The information can be accessed by brands, consumers and authorities by scanning the QR code

## <프로젝트 수행 절차>



※출처: Trace4Value, "Digital Product Passport in Textile Data Protocol" (2024)

# 5.3 섬유 DPP (예시)

**Kappahl**

**TRACE 4 VALUE** Trace4Value is an industry collaboration pilot project for testing a Digital Product Passport in textiles.



### Trousers

Trousers by Minories made in organic cotton. Kids with pockets at the sides and an adjustable elastic waistband. Adjustable recessed elastic and fake pockets. Drawstring at the knees allows the trousers to be folded up. Turn the trousers inside out before washing so that the trousers can be washed at 40°C.

See high resolution image

Care	Supply Chain	Compliance
<p>Wash 40°</p> <p>Do not bleach</p> <p>Do not tumble dry</p> <p>Iron at maximum 150 Celsius</p> <p>Do not dry clean</p> <p>Turn inside out before washing</p> <p>Do not iron on trimmings</p>	<p><b>Confection</b></p> <p>Country: India</p> <p><b>Dyeing and printing</b></p> <p>Country: India</p> <p><b>Weaving and knitting</b></p> <p>Country: India</p>	<p>No harmful substances in accordance with AFIRM, REACH</p> <p>Garment is certified by GOTS</p> <p>Certification Number: GOTS-C-0039068</p>

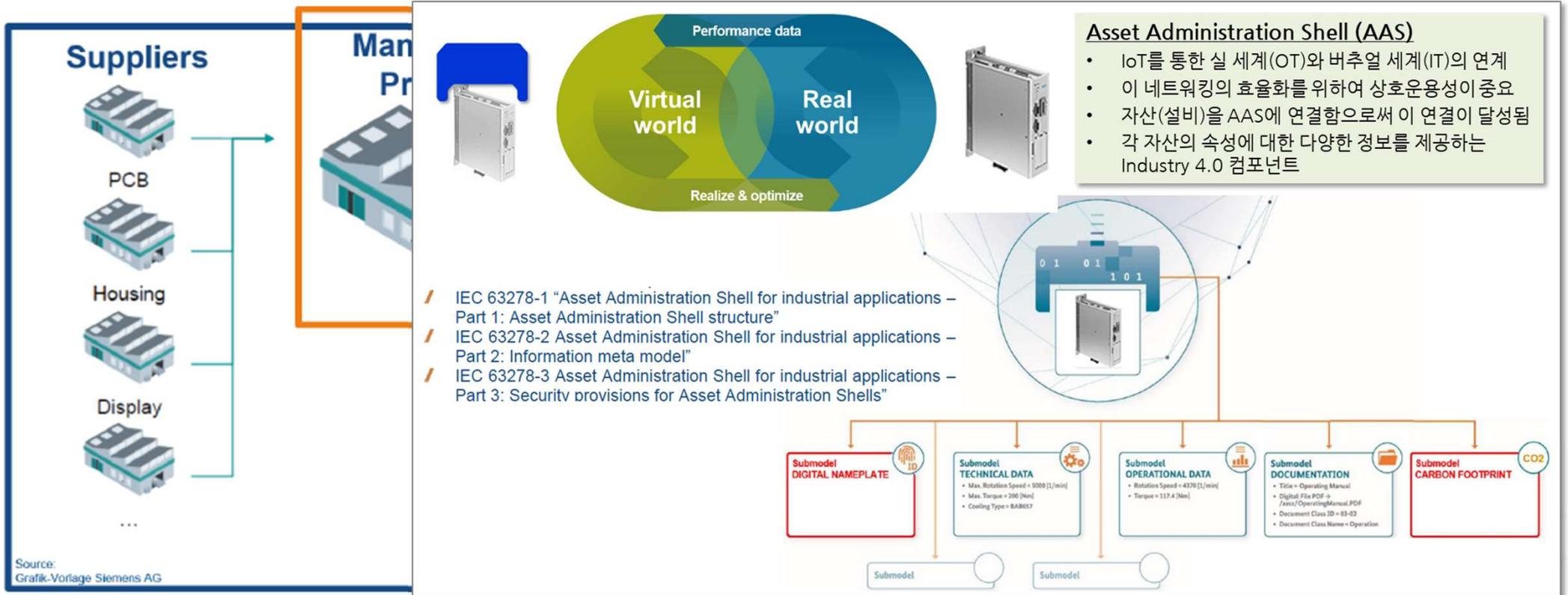
Product Information	Materials
<p>Product Name: Trousers</p> <p>Sub Brand: MINORIES</p> <p>Article Number: 313767</p> <p>Purchase Order: 59918-20230704</p> <p>GTIN: 07391998008875</p> <p>Product ID: 01-07391998008875-21-9</p> <p>Category: Clothing</p> <p>Size: 92 EU</p> <p>Color: Brown</p> <p>Year: 2024</p> <p>Season: Spring/Summer</p> <p>Water Properties: No Water properties</p>	<p>Component: Garment</p> <p>Material Composition: 98% Cotton, 2% Elastane</p> <p>Recycled: Not Recycled</p> <p>Material Trade Marks: Organic cotton GOTS (98% Organic Cotton, 2% Elastane)</p>
Care	Compliance
<p>Wash 40°</p> <p>Do not bleach</p> <p>Do not tumble dry</p> <p>Iron at maximum 150 Celsius</p> <p>Do not dry clean</p> <p>Turn inside out before washing</p> <p>Do not iron on trimmings</p>	<p><b>Certifications</b></p> <p>Garment is certified by Organic cotton- GOTS</p> <p>Certification Number: GOTS-C-0039068</p> <p><b>Presence of Harmful Substances</b></p> <p>No harmful substances in accordance with AFIRM, REACH</p> <p><b>Release of Microplastics</b></p> <p>The product does not shed microplastics in the environment during washing</p> <p><b>Traceability Provider</b></p> <p>TrusTrace</p>
Supply Chain	Circularity & Sustainability
<p>Supplier Name: IR Exports Private Limited</p> <p>Supplier Location: Plot No-154 L ,M &amp; N, Phase-2, Sector-7, Imt Manesar, 122050 Gurugram India</p> <p><b>Confection</b></p> <p>Country: India</p> <p><b>Dyeing And Printing</b></p> <p>Country: India</p> <p><b>Weaving And Knitting</b></p> <p>Country: India</p>	<p><b>Take Back Instructions</b></p> <p>When your garments no longer work for you or your children, feel free to donate them via our Textile Collection. Together with Myrorna/Fretex International, we give more garments a longer life.</p> <p>Let the children's outgrown clothes be inherited or take them to one of our Kappahl stores for a second chance through our own second hand.</p> <p><b>Repair Instructions</b></p> <p>By caring for your clothes and using them as much as possible, you also reduce their impact on our planet. Update and repair your garments:</p> <p><a href="https://www.kappahl.com/sv-SE/dam/klader/accessoarer/kladvard/">https://www.kappahl.com/sv-SE/dam/klader/accessoarer/kladvard/</a></p> <p><b>Circular, Sustainable, Social Brand Statement</b></p> <p>Our sustainability strategy aims to make Kappahl transition to a sustainable business model. We want to inspire you to build a long-lasting wardrobe versatile to the different occasions in your life. Fashion designed to be loved and worn for a long time. And as always, we strive to make it with as little impact on our planet as possible. We aim to use improved processes that save water, energy, and chemicals. We also choose materials made from less bad stuff compared to conventional materials, such as recycled polyester or certified cotton.</p> <p><a href="https://www.kappahl.com/en-US/about-kappahl/sustainability/our-strategy/">https://www.kappahl.com/en-US/about-kappahl/sustainability/our-strategy/</a></p>

**Illustrative**

※출처: Kappahl Group 웹사이트, <https://www.kappahl.com/en-us>

# 6.1 전자제품 DPP - ZVEI의 가능성 제시

ZVEI\*는 DPP4.0\* 및 AAS\* 연계한 ZVEI-Show-Case PCF@Control Cabinet demonstration을 통하여, 전자제품의 DPP 가능성 제시



다양한 부품을 임의로 모아서 제조한 전자기기(컨트롤 캐비닛)의 탄소발자국(PCF)을 계산하는 프로그램을 시연

※ 용어(약어) 설명

- ZVEI (German Electrical and Electronic Manufacturers' Association): 독일 전기전자산업협회
- DPP4.0: Digital Product Passport for Industry 4.0
- ZVEI-Show-Case PCF@Control Cabinet demonstration: 탄소발자국 컨트롤 캐비닛 시연
- AAS: Asset Administration Shell
- PCF: Product Carbon Footprint(제품 탄소발자국)

※출처: ZVEI Whitepaper 2023, "Implementing Level 2 of the ZVEI-Show-Case PCF@Control Cabinet"

# 6.2 Control Cabinet - PCF Viewer 및 Calculator

PCF Calculation
CO<sub>2</sub>e
CO<sub>2</sub>e
Product Carbon Footprint
CO<sub>2</sub>e

Supplier „Screw“

Material extraction  
Transport  
Energy  
Manufacturing  
End-of-Life

CO<sub>2</sub>

Supplier „Components“ (93)

Different PCF Quantification methodologies used by companies

CO<sub>2</sub>

14 Suppliers with „Products“

Transport to

Manufacturing „Control Cabinet“

Cabinet Manufacture  
Approx. ~100 kg

**2106.4 kg CO<sub>2</sub>e as-is**

Submodels:

- Combination - Control Cabinet PCF Demo (2106.4)
- Control Cabinet PCF Demo (117.2)
- Wall-mounted cooling unit Blue e+ S (119.2)
- Baying enclosure system VX25 (435.92)
- Directional Spool Valve (4.4)
- Motion Terminal VTEM (52.83)

Illustrative

Scanner App

※출처: ZVEI Whitepaper 2023, "Implementing Level 2 of the ZVEI-Show-Case PCF@Control Cabinet"

# 7. 이해당사자별 DPP 대응 방안

정부 및 유관기관, 업종별 연합회, 개별 기업들 모두 DPP에 대한 대비가 필요하며. 특히 개별 기업은 내실 강화가 중요함.



**글로벌 흐름을 잘 읽고 충분한 지원은 하되, 간섭은 최소화 하자!**

- 글로벌 동향(흐름)을 잘 파악하고, 품목별 표준화 등 국제 협력에 적극 참여
- 민간에서 소화하기 힘든 표준화나 플랫폼 구축 등 인프라에 충분한 예산 지원
- 자체 대응이 어려운 중소중견기업의 DPP 대응을 위한 컨설팅 및 지원 사업 제공



**업종별 협업을 강화하고 글로벌 이니셔티브에 적극 참여하자!**

- 업종별 연합회를 통한 표준화 및 시범사업(파일럿 DPP 작업)을 통한 Use Case 발굴
- 글로벌 이니셔티브(프로젝트, Working Group 등)와 협업 및 적극 참여하여 의견 개선
- 공급망 내 이해관계자(DPP 데이터 공급자, 사용자 등) 파악 및 DPP 생태계 점차 구성



**차근차근 준비는 하되, 무시하거나 두려워하지는 말자!**

- 업종, 제품 및 공급망에 대한 분석을 통하여 규제 적용 여부의 정확한 진단
- DPP 주요 마일스톤 및 세부 규제요건 등 글로벌 동향에 대한 지속 모니터링
- 제품의 전주기평가/관리(LCA/LCM) 및 데이터 기반의 ESG 경영 등 내실 강화가 중요

감사합니다.

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