Exploring possible Digital Product Passport (DPP) use cases in electronics and textile value chains

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+ImpaKT - Who are we?

- Strategy and policy advice for the transition to Circular Economy (CE)
- Innovation and New Business Models for Circular Economy
- Circular Building and Construction
- CE Data and Product Passport

+ImpaKT LUXEMBOURG

[Images and logos]
Exploring DPP use cases - Objectives

Key questions

WHY ?
Which DATA ? For which PURPOSE & BENEFITS ?

Approach

Use Cases are identified to understand what benefits and opportunities can be provided by improved access to sustainability and circularity related product data.

3 prioritized sectors
Battery
Electronics
Textile
Exploring DPP use cases - Methodology

- Focus on existing circular economy activities
- Interviewed +40 stakeholders
DPP use case example – Smartphone refurbishment

1. Current situation and data gaps

2. Potential improvements made possible by a DPP

3. Benefits and barriers

Inputs

(1) Incoming pre-assessment
(2) Validate smartphone grading
(3) Prepare for reuse
(4) Perform final quality control
(5) Re-package and label the product

Smartphone Refurbishment Process

Used smartphones

Un-packing and cleaning

Visual and functional grading

Repair and replace failed or degraded component(s)

Reset and wipe data, install latest updated software

Re-pack and label the product

Output

Refurbished smartphones

Current data gaps

(4) Perform final quality control

(5) Re-package and label the product

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Current data gaps
# DPP use case example – Smartphone refurbishment

## 1. Current situation and data gaps

## 2. Potential improvements made possible by a DPP

<table>
<thead>
<tr>
<th>DPP data attributes</th>
<th>Level of granularity</th>
<th>Potential Improvements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information on the state of health and the repair history</td>
<td></td>
<td>- Improve the accuracy of the assessment of grading criteria, remaining useful lifetime, safety and failure risks.</td>
</tr>
</tbody>
</table>

## 3. Benefits and barriers

<table>
<thead>
<tr>
<th>Information on refurbishment operations</th>
<th></th>
<th></th>
</tr>
</thead>
</table>
DPP use case example – Smartphone refurbishment

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**1. Current situation and data gaps**

**2. Potential improvements made possible by a DPP**

**3. Benefits and barriers**

<table>
<thead>
<tr>
<th>BENEFITS</th>
<th>BARRIERS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Qualitative benefits</strong></td>
<td></td>
</tr>
<tr>
<td>• Enhanced customer service and increased trust by providing higher transparency (e.g. records of product repair such as battery replacement)</td>
<td></td>
</tr>
<tr>
<td>• Reduced risks of failure</td>
<td></td>
</tr>
<tr>
<td><strong>Economic benefits</strong></td>
<td></td>
</tr>
<tr>
<td>• Time saving for the quality control of refurbishment process</td>
<td></td>
</tr>
<tr>
<td>• Improved repair process</td>
<td></td>
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</tbody>
</table>
Main findings

<table>
<thead>
<tr>
<th>Sector</th>
<th>DPP use cases analyzed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronics</td>
<td>1 Increase volume of refurbished smartphones by improving the quality and transparency of the refurbishment process</td>
</tr>
<tr>
<td></td>
<td>2 Increase recovery rate of critical raw materials of small electronics equipment</td>
</tr>
<tr>
<td>Textile</td>
<td>3 Improve the efficiency of textile product sorting to favor reuse and increase sales of second-hand textile over recycling</td>
</tr>
<tr>
<td></td>
<td>4 Increase the value created in reselling second-hand garments on online platforms</td>
</tr>
</tbody>
</table>

High potential of the DPP

- reduce information asymmetry and foster trust in second-hand markets and life-extension applications
- increase the recovery rate of valuable materials and products at end of their life (or use)
Recommendations for fully exploiting the opportunities enabled by a DPP

**R1** Extensible and flexible DPP system capable of supporting beyond-mandatory data

**R2** Ensure harmonized data and assessment methods between product categories to facilitate data collection from the value chain

**R3** Allow other stakeholders to input at serial number level (e.g. repairers and refurbishers) within a model-level DPP

**R4** Prioritize remote-readable data carriers

**R5** Develop digitalization support tools to accompany DPP implementation

**R6** Develop incentive mechanisms to ensure quality data sharing
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Report to be published in March 2024
-> https://cirpassproject.eu/project-results/

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Consumer App Demo: exploring consumer behaviour with the DPP