

Supporting Information for Open 3P version 2.0 change request

During the development of version 1.0 of the standard stakeholders were commenting that Open 3P had to be expanded out to incorporate other materials and would not be adopted without these changes.

It was hoped that the changes made to Open 3P would be minor which would mean there could be an update to version 1.1 under semantic version. However, the changes made to incorporate other materials meant that breaking changes were required, and the next release will be a major change to version 2.0.

The full Open 3P version 2.0 standard can be reviewed here: <https://standard.open3p.org/1.1-alpha/> please note that the file name is legacy 1.1 alpha. When adopted it will assume the version 2.0 nomenclature.

Major Changes

Renamed schemas

Within version 1.0 of Open 3P the schemas were:

- **Materials Catalogue**
- **Materials**
- **Component Catalogue**
- **Complete Packaging**
- **Multipack**
- **Load Catalogue**
- **Load**

These have been changed as it was determined that these names pointed to the software that project partners Dsposal were developing as part of the PPP Phase 2 project. Open data standards are solution agnostic and should not be matching names to possible technologies. The renamed schemas are:

- **Base Materials**
- **Materials**
- **Components**
- **Complete Packaging**
- **Multipack**
- **Load Catalogue**
- **Load**

Overly flat structure

While talking to packaging and software experts it became apparent that one of the biggest problems with version 1.0 was that the structure was too flat. For instance, when adding multiple materials to create a component the standard required that the relationships connecting the materials to the component should be input at the same level. This created scenarios where complex components would have a list of different materials, but those materials could not easily have different properties within that component.

By introducing relationship lists this would be remedied. It is important to note that the relationship list is to clarify relationships within and through the standard and are not an exercise in normalisation. Normalisation is a database engineering task and should not be prescribed by a solution agnostic data standard.

Relationship Lists

The main breaking change made to the standard was by the introduction of relationship lists. Relationship lists are standard defined lists used in data standards to specify the relationships between different data elements, like the current controlled lists. However, unlike controlled lists, which are predefined within the data standard, relationship lists are populated by the user to provide context and clarity to the data being recorded.

For example, in the packaging industry, a relationship list is used to specify the relationship between a component and its associated material or between a complete package and its components. Relationship lists are flexible and can be customized to fit the needs of different users and applications, making them a powerful tool for managing complex data sets.

There are nine relationship lists within the standard. They allow collecting and normalising information about the seven schemas in a way that is extensible.

These nine are:

1. **Material Constituents**
The material constituents relationship list identifies the base material and other materials that are combined to create materials. This is only used in materials.
2. **Component Constituents**
The component constituents relationship list identifies the materials that are combined to create components. This is only used in **components**.
3. **Complete Packaging Constituents**
The complete packaging constituents relationship list identifies the components and other complete packaging that are combined to create complete packages. This is only used in complete packaging.
4. **Multipack Constituents**
The multipack constituents relationship list identifies the complete packaging items that are combined to create multipacks. This is only used in **multipack**.
5. **Certification Claims**

The certification claims relationship list identifies the certificates that can be assigned to various tables. This is used in the following schemas:

- **Base Materials**
- **Materials**
- **Components**
- **Complete Packaging**

6. **Recyclability Claims**

The recyclability claims relationship list identifies the materials that are combined to create components. This is used in the following schemas:

- **Components**
- **Complete Packaging**

7. **Component End of Life Routes**

The component end of life routes relationship list identifies the purpose and intended destination and process of this component once it has completed its role as packaging. This is only used in **components**.

8. **Complete Packaging End of Life Routes**

The complete packaging end of life routes relationship list identifies the purpose and intended destination and process of this complete packaging once it has completed its role as packaging. This is only used in **complete packaging**.

9. **Recycled Content Claims**

The recycled content claims relationship list identifies the materials that are combined to create components. This is only used in **components**.

Limited end of life scope

It was noted on a variety of occasions that Open 3P only addresses DRS and recycling as mentioned end of life options. Whereas other options are available and are preferred for some materials.

End of Life Route

The **end of life route** controlled list identifies the routes that packaging can go down once it has fulfilled its purpose. This end of life route is then held within relationship lists to identify order of preference and related **end of life disruptors**.

Recycling Disruptors Renamed

Recycling disruptors has been renamed to **end of life disruptors** in keeping with the end-of-life scope.

Including End-of-Life Route (EOLR) can be both risky and necessary. Care must be taken when dealing with EOLR as it can be exploited for false or unsubstantiated claims. It is important to understand and acknowledge the potential avenues of communication surrounding EOLR to effectively address and investigate any possible environmental issues. Despite the possibility of nefarious use, incorporating EOLR into discussions can shed light on genuine concerns and ensure proper actions are taken.

Minor Changes

Material Weight

The term **materialWeight** was used to indicate the percentage of each base material used to create a material. This nomenclature created confusion so the term was changed to **materialPercentage**.

Restricted Interoperability

In version 1.0 five of the seven schemas contained the **tags** field, a dictionary of identifiers that might be used to identify the complete packaging in other systems. For example, a barcode or *Global Trade Item Number (GTIN)* would be a tag. During user research it was deemed that all seven schemas should have a version of this field. However, the term **tags** was not widely understood. Through discussions and understanding of how organisations will use this field, the term **external identifiers** was selected as it accurately describes the use cases identified and allows for wider use.

Who we spoke to

Between late November and January we held a series of online workshops to research each new material type, using the EPR categories. These workshops were open to anyone interested in the packaging value chain and were publicised via project partners social media feeds and newsletters, and invitations were sent to all previous workshop sign ups from Phase 1 as well as organisations who had submitted letters of support for Phase 2.

Following these workshops, desk research was carried out to supplement technical packaging knowledge and revisions made to the standard accordingly.

We then organised a series of expert reviews, again using the EPR material categories as a structure. These expert reviews were on an invitation basis as we did not want to go through the reviews with large groups of people and we wanted to ensure that the standard was being reviewed by individuals with deep knowledge of their material and packaging.

We mostly used project partners networks to identify and invite experts, but where there were gaps we reached out to trade bodies or other contacts to help fill these.

For each material we have listed the organisations who took part in the expert review process:

Plastics

Adrian Whyte
Berry Global
British Plastics Federation

Fibre-based Composites

ACE
Colpac
Proampac
Sonoco
Tetra Pak

Wood

TimCon
Wood Panel Industries Federation
Wood Recyclers Association

Aluminium

Alupro
British Metal Packaging Manufacturers

Steel

British Metal Packaging Manufacturers
Tata Steel

Paper and Cardboard

Confederation of Paper Industries
Smurfit Kappa

Glass

Ardagh Group
British Glass

Other

Futumura
Vegware

We acknowledge that 'Other' is an extremely broad category. We chose to concentrate on compostable packaging at this stage and have made efforts to speak with other novel packaging materials to ensure Version 2.0 meets their needs.