Den nye digitale verdikjede basert på ISO 22057/PDT/PTS

Martin Erlandsson
IVL Svenska Miljöinstitutet

SMART BUILT ENVIRONMENT

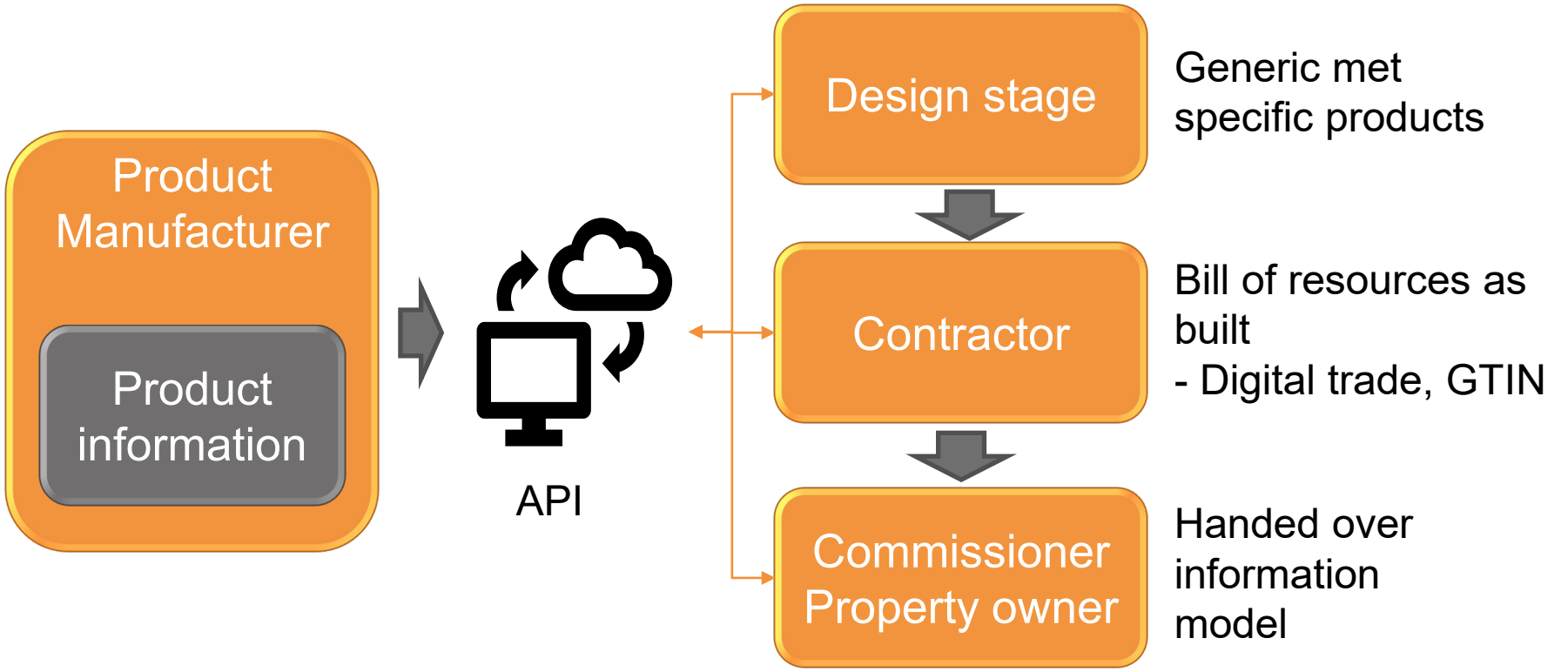
Product information goes digital and live

Proof of Concept (PoC) - To create, publish and use digital product datasheets

Two types of product data templates will be implemented and tested by using different webservices (API to API:

1) CE Marking and its declaration of performance DoP,

2) Environmental product declaration, i.e. an EPD according to the standard ISO 22057



Main sources/tools:

GS1: GTIN, GMN

CoBuilder: goBIM, Define

IVL: Resource hub, IVL EPD generator

SMART BUILT ENVIRONMENT

Product data template in a nut shell

- A Product Data Template define the '**properties**' for any type of product in a way that can be traced to a credible source.
- Such credible sources are product **standards** declaring the performance characteristics of products and the methods they should be tested against.
- Some fields within a PDT are common to all PDTs, e.g. manufacturer, and manufacturer Website. There are different PDTs for different **product categories** or **horizontal** PDTs like the ISO 22057 for EPD/LCA that is valid for all products.
- Product Data Templates allow the **manufacturers** to populate them with the most up-to-date and accurate information about their products.
- Once complete, this populated template is called a **Product Data Sheet** (PDS). A PDS may be found several PDT

SMART BUILT ENVIRONMENT

The draft Construction product regulation (CPR): EPD, Smart CE Marking, Declaration of Performance

The product data templates (PDT) approach match the draft CPR digitalisation

Europeiska kommissionen

CEN CENELEC

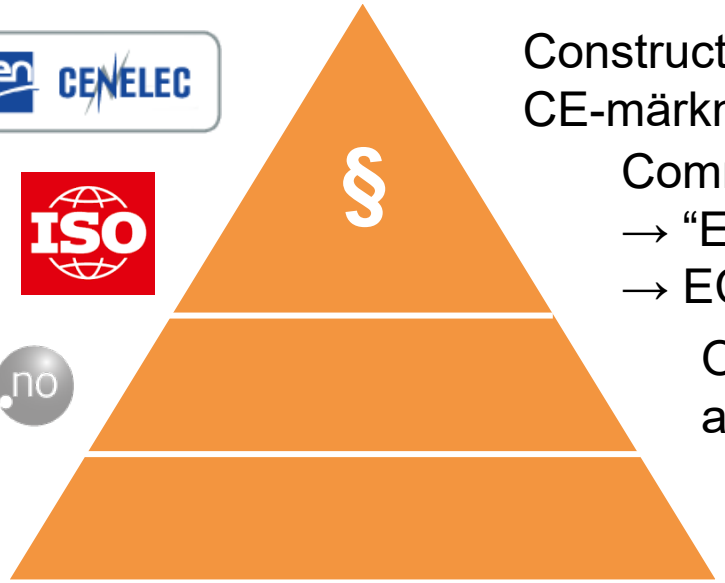
buildingSMART International

ISO

sis Svenska Institutet för Standarder

standard no

SMART BUILT ENVIRONMENT



Construction Product Directive (annex ZA)
CE-märkning/DoP, hEN, EN15804:2012+A2:2019

Common agreements:
→ "EPD in BIM" ISO 22057
→ EC digital product passport

Other industry and sector agreements such as eBVD

B2B agreed information

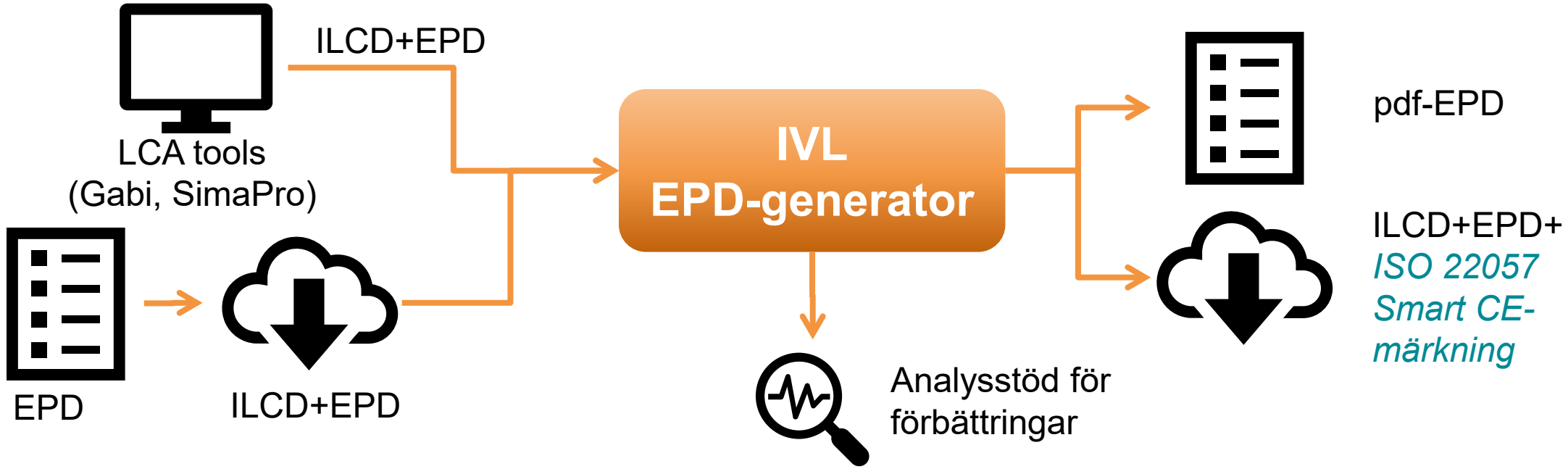
SMART BUILT ENVIRONMENT

Ref to draft CPR: https://www.ebc-construction.eu/2022/03/31/construction-products-regulation-european-commission-publishes-its-cpr-revision-proposal/

Basic work flow:
The Swedish layout in order to support the mandatory building climate declaration that include verification as built

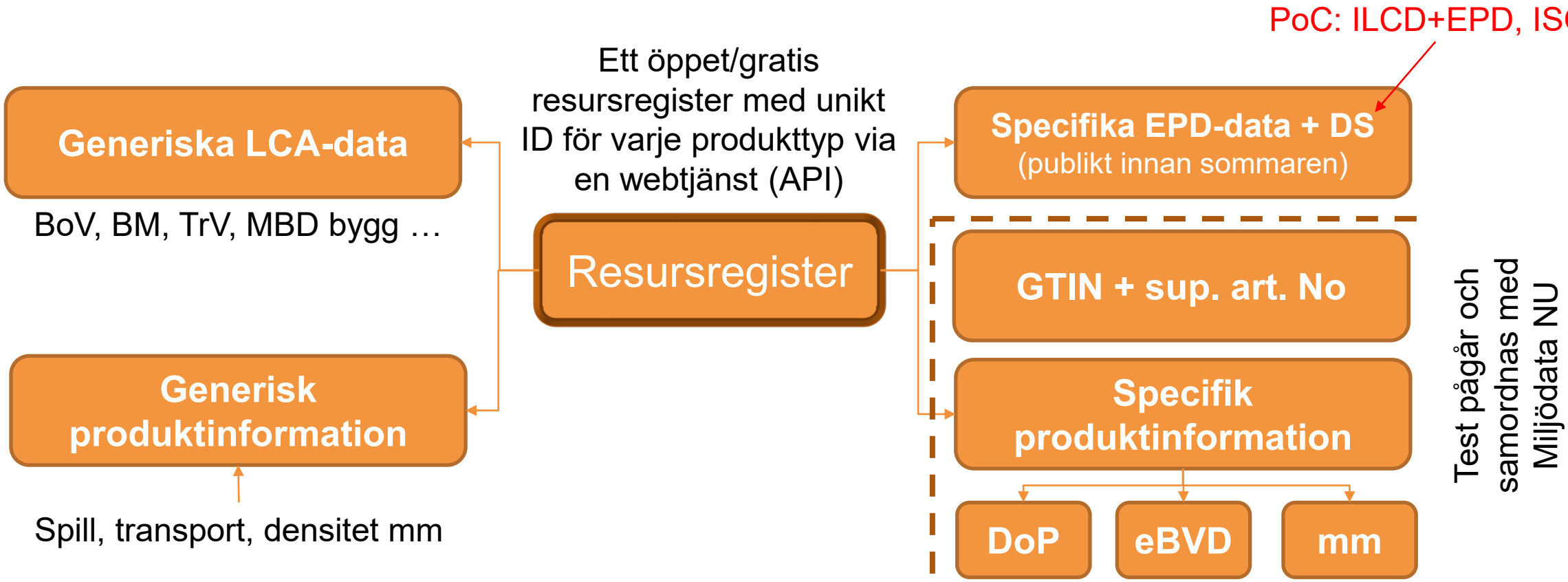
The new EPD standard EN15804:2012-A2:2019 require ILCD nomenclature and format

The general ILCD format is adopted to EPD and its modular structure with the format ILCD+EPD

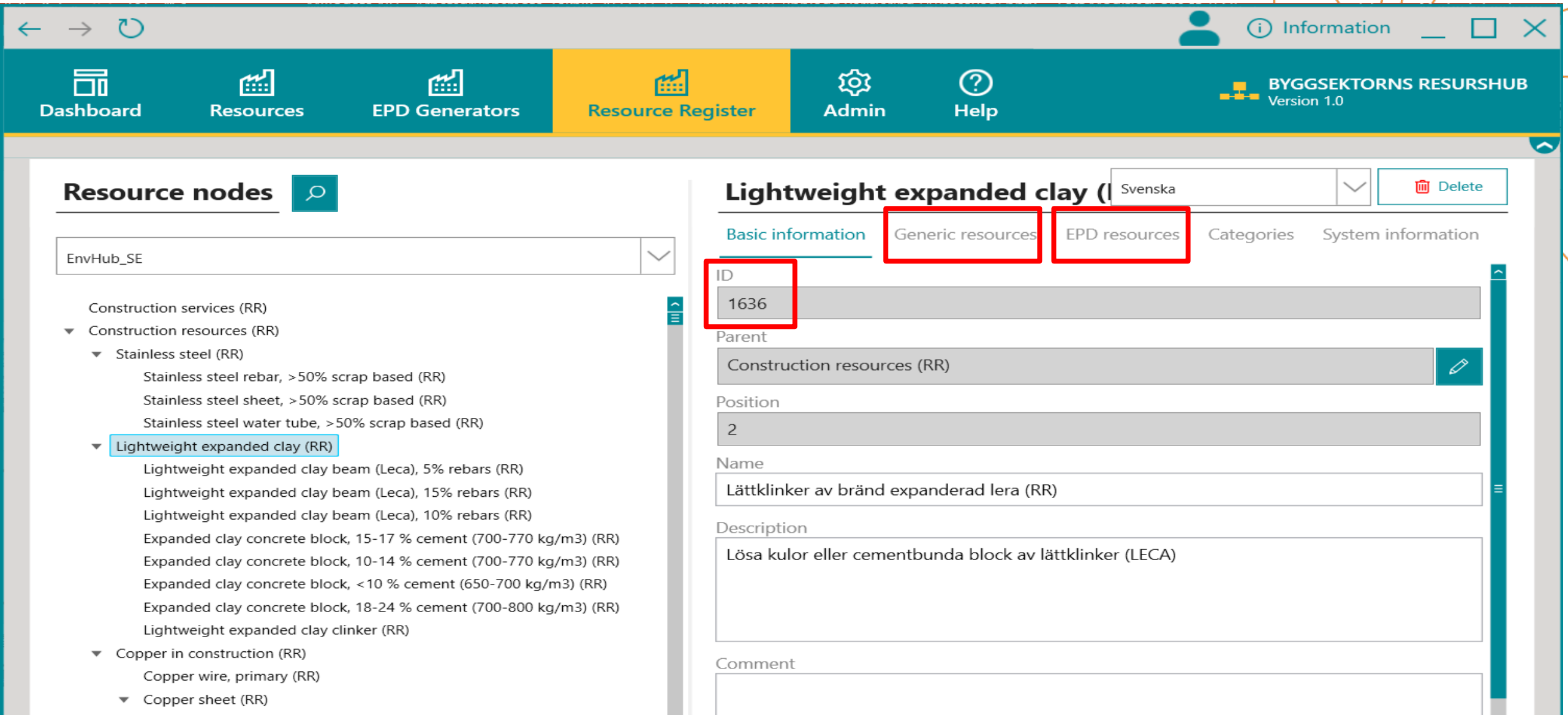


Byggsektorns Resurshubb/ Construction sector resource hub

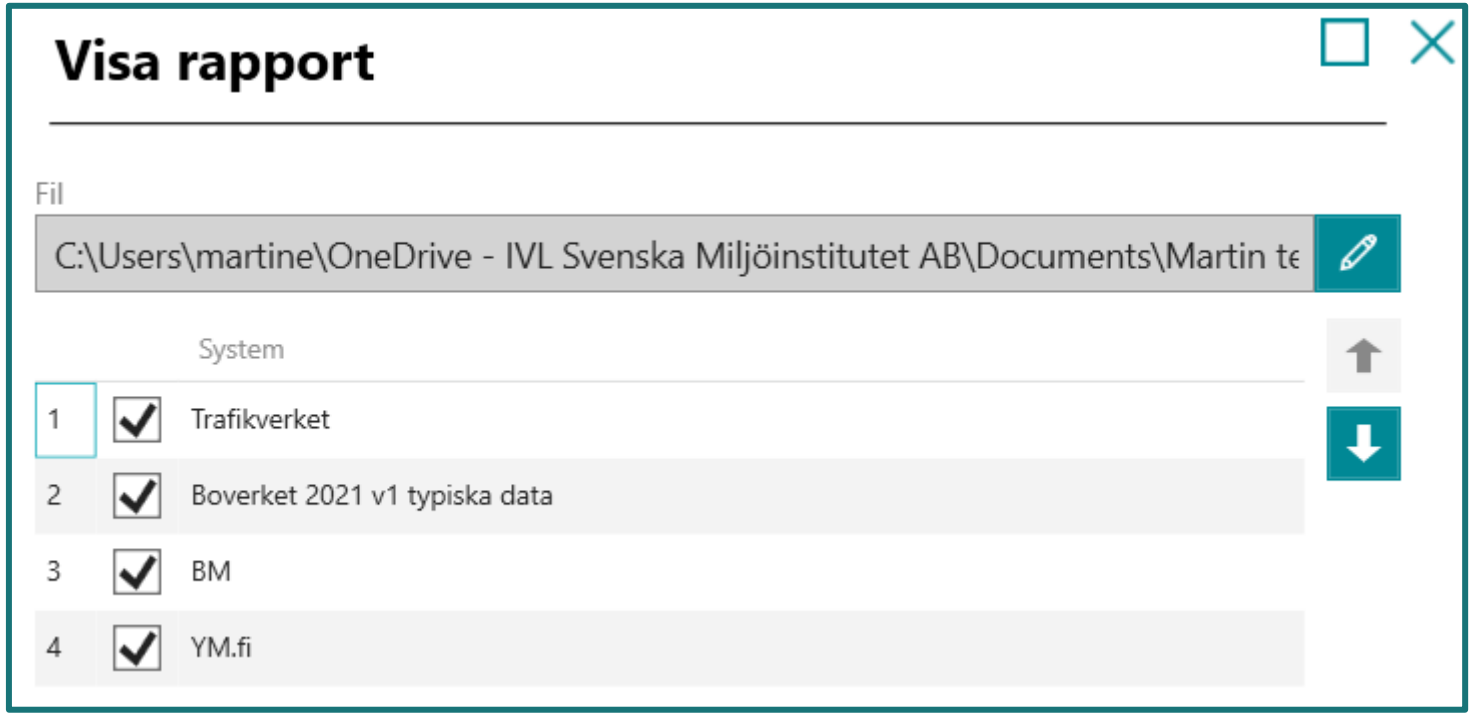
If we have a common resource register for everything purchased for a building during its life cycle, we can more easily share this product information with each other (released in the spring of 2022)



Generic LCA data and specific EPDs are mapped to the resource registry



LCA tools that use the Resource hub can use several data bases

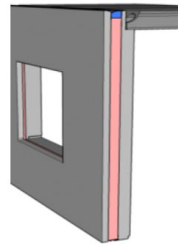


SMART BUILT ENVIRONMENT

Rekommenderad struktur på EPDer

- Tag fram en EPD per produkttyp/-familj som certifieras hos en programoperatör
- Tag fram unika EPDer
  = dvs mor/dotter-EPD, konfigurerade EPD, objekts-EPD.
  - Dessa registreras behöver inte hos en programoperatör utan skickas direkt till kund
  - Dotter-EPD godkänns som en vanlig EPD av Boverket, Trafikverket mm

Per produktfamilj
CO_2e/kg



Given produkt/artikel

CO_2e/kg
H300
CO_2e/m^2 YV
5

SMART BUILT ENVIRONMENT

PDT/PDS in the value chain

- Construction product manufacturer

EPD is developed for standard/catalogue products

The EPD is typically developed based on a EPD tool for a product family or type, including a specific article ID/GTIN and a PDS based on several PDT. The EPD is published as a pdf original by a program operator and digitally based on ILCD+EPD and then transformed to ISO 22057 (=PDT/PDS)

Customised/configurated products

The PDT may need to handle variable properties that can be ordered and therefore has to be incorporated in the PDS (if not a standard product)

An BIM tool or order system demands an ‘daughter EPD’ automatically from an EPD generator

The EPD is calculated and typically based on an Mother EPD for the product family or type. An supplier specific article/GTIN is generated in parallel. This kind of ‘project EPD’ are not registered by a program operators but refers to its ‘mother EPD’ and EPD tool + database it is found on

SMART BUILT ENVIRONMENT

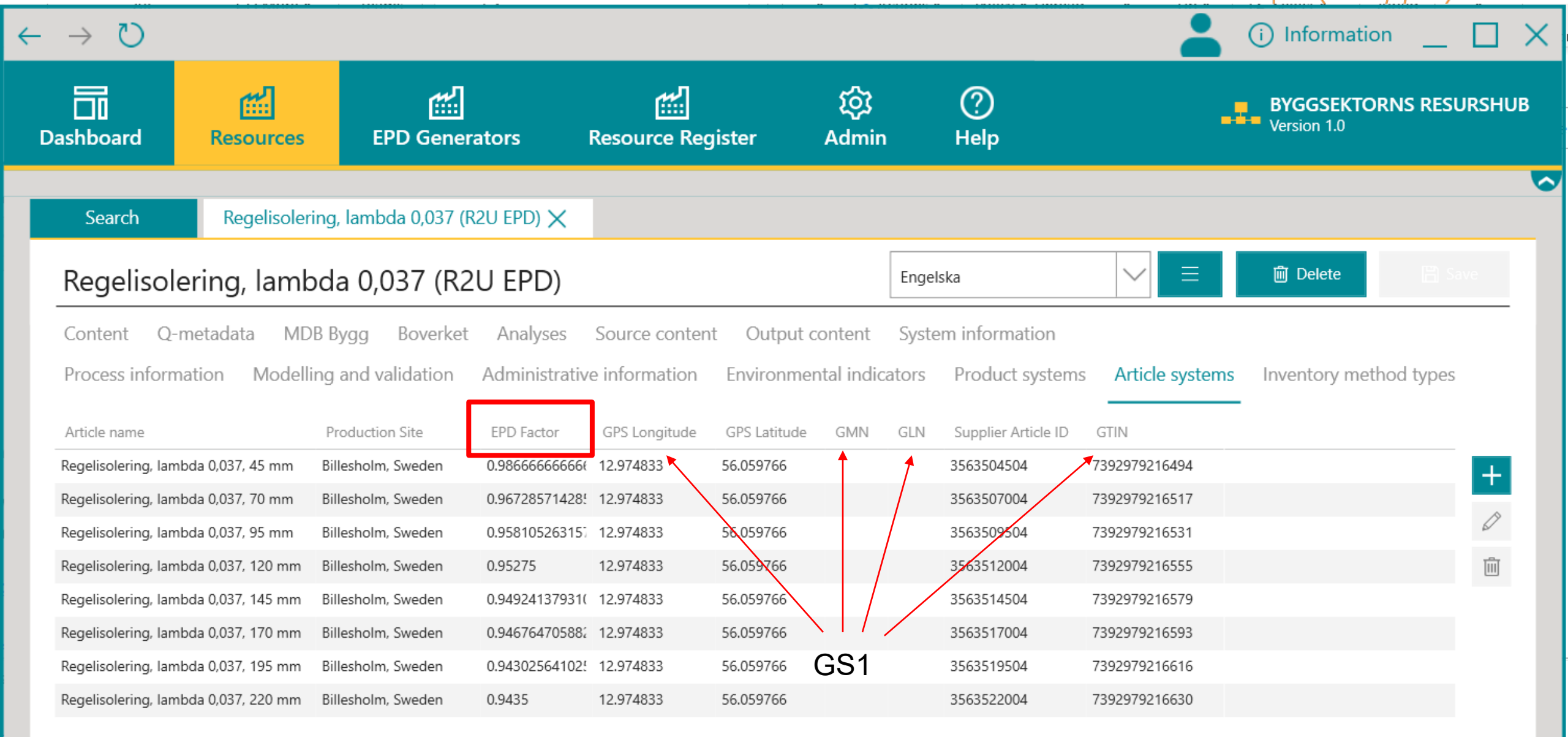
PDT/PDS in the value chain

- Construction product manufacturer – challenges
  - It is in practice mandatory to develop the EPD based on the ILCD+EPD format, why there always will be an **transformation to ISO 22057**. Some features in the ISO 22057 is missing or only exists in this standard. Both formats need to be complemented by additional properties to meet market needs, but no system to establish such addition exists
  - It is likely that national bodies like PDT Norway **introduce national GUID** that creates a new mapping need via a global data dictionary.

➡ The same **regional system** and body can potentially handle 1) nationally added properties before the standard is revised and become a global property and 2) mapping from global to national properties GUID.

SMART BUILT ENVIRONMENT

Ready to Use EPD (R2U EPD) and article number



The solution for the law requirements:
The Resource hub node function + BEAst

Det är leverantören som anger och underhåller GTIN, GMN, GLN, SPN, tillv.-ort, EPD factor etc till hubben och till följesedeln ex. genom att PIM system. Hubben svar ”historien” vid revideringar av EPDer

Dispatch advice

Resource hub node

Multiple API to API

Global system: GS1

BEAst
4.0 Supply Dispatch Advice

+

EPD
Source ID/EPD ID

PIM · n

GTIN · n

kg, art, GTIN/art-ID, BoV ID, EPD ID


```
},
"ProductSystemId": 3,
"ProductSystemResourceId": "19dbb69e-3fc9-4197-a5eb-0a02db57c657",
"Location": "SE",
"ValidStartYear": 2020,
"ValidEndYear": 2025,
"Copyright": true,
"TimeStamp": "2021-09-15T11:03:22Z",
"DataEntryBy": null,
"RegistrationAuthority": null,
"Name": "Regelisolering, lambda 0,037",
"RegistrationNumber": "NEPD-2074-936-EN",
"UseAdviceForDataSet": "",
"TechnologicalApplicability": "This EPD describes the potential environmental
```


One common API question

xls import and manual app interface input is also available

- **pdf-EPD saknar UUID**
- **Vissa digitaliserade EPD saknar miljöprestanda för alla ingående och därmed UUID**
- **I Hubben lägger till dessa I vår domän**
- **Hubben hanterar även dotter- EPD**
- **Hubben har inte någon officiell status**
- **Hubben ger koppling mellan GMN och GTIN/SPN**
- **Globala lösningar**

PDT/PDS in the value chain

- As built and hand over – challenges
  - It is **not realistic to store an number of article number like GTIN in a EPD** valid in 5 years, since they likely will be outdated faster and is not published directly by the company. The introduction of a suppliers grouping of GTIN to a global model number (**GMN**) for a product family would solve this. Then via GS1 global service ‘data verified by GS1’ can all GTIN related to the GMN be found
  - A suggested solution is that the program operator like EPD Norway publish typically “mother EPD” and **project EPD/daughter EPD are published from manufactures product information databases (API to API)** and can then include up to date article information. This is in line with the draft CPR where it is the manufacturer that has to publish essential characteristics. The digital PDS should in future become the original

SMART BUILT ENVIRONMENT