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English version

Digital Product Passport - Application Programming Interfaces (APIs) for the product passport lifecycle management and searchability

Passeports numériques de produit - interfaces de programmation d'applications (API) pour la gestion du cycle de vie et la recherchabilité du passeport d'un produit

Digitaler Produktpass - Anwendungsprogrammierschnittstellen (APIs) für die Lebenszyklusverwaltung, Auffindbarkeit und Durchsuchbarkeit des Produktpasses

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/CLC/JTC 24.

Contents

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European foreword

This document (prEN 18222:2025) has been prepared by Technical Committee CEN/CLC/JTC 24 "Digital Product Passport – Framework and System", the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document has been prepared under a standardization request addressed to CEN by the European Commission. The Standing Committee of the EFTA States subsequently approves these requests for its Member States.

For the relationship with EU Legislation, see informative Annex ZA, which is an integral part of this document.

Introduction

The European Sustainability Product Regulation (ESPR) is an initiative by the European Commission aimed at promoting sustainable products by setting comprehensive requirements for product design, production, and lifecycle management. Central to this initiative is the Digital Product Passport (DPP), which tracks and provides essential information about a product's sustainability attributes. Beside of that also other data can be stored in a DPP depending on future delegated acts and the needs of economic operators.

This document introduces the spécifications for the API of the DPP, as mandated by the ESPR. The API is designed to enhance the searchability of DPPs and to support interactions throughout the lifecycle of a product's DPP. Furthermore, it also provides an API to register a DPP at the DPP registry.

The API methods are presented on a technology-neutral level, detailing the expected inputs and outputs for each method. A detailed technological implementation using a REST-HTTP API is described in the Clause 9, providing guidelines for developers to implement the functionality effectively within their spécific environments.

The spécification document of Module 4 “System Interoperability” describes the logical content of the payload that is used by the API. Module 5 “Data Exchange Protocols” définés the basic principles of the exchange protocol and the allowed serialization formats of the payload data. Security requirements need to be followed based on the spécification document of Module 7.

1 Scope

This document aims to standardize the spécifications for the API of the Digital Product Passport (DPP) as mandated by the ESPR of the European Commission. The purpose of this API is to facilitate the searchability of DPPs, as well as to provide the necessary means for interactions throughout the lifecycle of a product's DPP.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and définitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at http://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
API
application programming interface
set of methods provided by an application component for use by other application components

3.1.1
REST API
representational state transfer application programming interface
service that allows for interaction with resources via a stateless, client-server architecture, typically using standard HTTP calls like GET, POST, PUT, and DELETE to perform methods by an application component on these resources

3.2
digital product passport
DPP
digital record of product characteristics throughout its life cycle

Note 1 to entry: Example characteristics include environmental sustainability, environmental impact, and recyclability

3.3
method
particular way used to perform a spécific action on a resource

EXAMPLE Read a DPP.

3.4
parameter
data provided by a client, that is needed to perform a method

EXAMPLE DPP ID for read DPP.

3.5
result
return value after the execution of a method

EXAMPLE The DPP.

4 Specification of the Life Cycle API (Main Methods)

4.1 General

In this clause only the API methods as can be made available by the custodian of a DPP (either economic operator or service provider) is contained. This methods are spécifiéd in abstract manner, the precise implementation is provided in Clause 8, which also contains information how the input and output parameters are provided.

The following methods shall be made available by the custodian of DPPs and by archiving services:

— ReadDPPById

— ReadDPPByProductId

— ReadDPPIdsByProductIds

The following methods should be made available by a service provider of DPPs and by archiving services:

— CreateDPP

— DeleteDPPById

— ReadDPPVersionByProductIdAndDate

The following methods shall be made available by the custodian of DPPs if authorized third parties shall have the access rights to update parts of the DPP:

— UpdateDPP

In case of archiving services no update of DPPs is requested any longer.

In principal, the DPP API will offer these set of methods, that is requested with some parameters, performing a behaviour (e.g. execution an action), and responding with a result. These expectations are formally described for each method in the following subclauses.

4.2 Method ReadDPPById

This method returns the DPP through a known DPP idéntifiér. See Table 1.

Table 1 — ReadDPPById

Method Name	**ReadDPPById**			
Explanation	Returns the DPP with the spécifiéd DPP ID			
semanticId	https://jtc24/dpp/API/ReadDPPById/1/0			
Name	**Description**	**Mand.**	**Type**	**Card.**
Input Parameter				
dppIdéntifiér	The DPP's unique ID	yes	Idéntifiér	1
Output Parameter				
statusCode	Status code	yes	StatusCode	1
payload	Requested DPP	yes	DPP	1

4.3 Method ReadDPPByProductId

This method returns the current active DPP (latest version) through a known product idéntifiér. See Table 2.

Commented [PL1]: the list of methods doesn't map the list of methods described in the following chapter. Align and add the missing ones

Add
- **PostNewDPPToRegistry**
- **ReadDataElement**
- **UpdateDataElement**

And, only in case they are kept in the document
ReadDataElementCollection
UpdateDataElementCollection

Table 2 — ReadDPPByProductId

Method Name	ReadDPPByProductId			
Explanation	Returns the current active DPP with the spécifiéd Product ID			
semanticId	https://jtc24/dpp/API/ReadDPPByProductId/1/0			
Name	**Description**	**Mand.**	**Type**	**Card.**
Input Parameter				
productIdéntifiér	Product ID	yes	Idéntifiér	1
Output Parameter				
statusCode	Status code	yes	StatusCode	1
payload	Requested DPP	yes	DPP	1

4.4 Method ReadDPPVersionByProductIdAndDate

This method returns a DPP based on its product idéntifiér and given date. The method is optional for the economic operator. See Table 3.

Table 3 — ReadDPPVersionByProductIdAndDate

Method Name	ReadDPPVersionByProductIdAndDate			
Explanation	Returns a DPP version based on its product idéntifiér and given date			
semanticId	https://jtc24/dpp/API/ReadDPPVersionByProductIdAndDate/1/0			
Name	**Description**	**Mand.**	**Type**	**Card.**
Input Parameter				
productIdéntifiér	Product ID	yes	Idéntifiér	1
date	Date value for which the DPP is requested	yes	Timestamp (UTC-based)	1
Output Parameter				
statusCode	Status code	yes	StatusCode	1
payload	Requested DPP	yes	DPP	1

4.5 Method ReadDPPIdsByProductIds

This method returns a list of DPP idéntifiérs that matches a set of product idéntifiérs.

The input parameters "limit" and "cursor" can be set by the client to control pagination. The value of the cursor shall not be empty. See Table 4.

Table 4 — ReadDPPIdsByProductIds

Method Name	ReadDPPIdsByProductIds			
Explanation	Returns a list of DPP idéntifiérs based on discovery information (key-value-pairs of product idéntifiying information)			
semanticId	https://jtc24/dpp/API/ReadDPPIdsByProductIds/1/0			
Name	**Description**	**Mand.**	**Type**	**Card.**
Input Parameter				
productId	Product IDs	yes	Idéntifiér	1
limit	The maximum size of the result set	no	nonNegativeInteger	1
cursor	The position from which to resume a result listing	no	string	1

Method Name	ReadDPPIdsByProductIds			
Output Parameter				
statusCode	Status code	yes	StatusCode	1
payload	DPP Idéntifiérs of all DPPs matching the discovery information, i.e. AND-match of the spécifiéd product labels	yes	Idéntifiér	1..*

4.6 Method CreateDPP

Method to create a new DPP. Access rules control whether the creation is allowed or not. It returns the ID of the DPP. See Table 5.

Table 5 — CreateDPP

Method Name	CreateDPP			
Explanation	Creates DPP			
semanticId	https://jtc24/dpp/API/CreateDPP/1/0			
Name	**Description**	**Mand.**	**Type**	**Card.**
Input Parameter				
dpp	DPP	yes	DPP	1
Output Parameter				
statusCode	Status code	yes	StatusCode	1
dpp ID	DPP ID	yes	Idéntifiér	1

4.7 Method UpdateDPPById

Updates the content of the DPP. The submitted DPP only contains data that needs to be updated or is extended with new data. It can contain a single data element or can be a set of different element information that needs to be updated. See Table 6.

Access rules control whether the patch is allowed or not.

If the update of some parts fails the complete update process will fail and there should be no changes adopted in the DPP.

All changes to the digital product passport shall be archived in accordance with Module 6.

[1] RFC7386 and [2] RFC5261 can be considered for implementation.

Table 6 — UpdateDPPById

Method Name	UpdateDPPById			
Explanation	Partial update of a DPP with a spécifiéd DPP ID conformant to RFC 7396			
semanticId	https://jtc24/dpp/API/UpdateDPPById/1/0			
Name	**Description**	**Mand.**	**Type**	**Card.**
Input Parameter				
DPP ID	DPP ID (this should be part of the HTTP path)	yes	Idéntifiér	1

Method Name	UpdateDPPById			
partialDPP	Partial DPP (only contains parts or commands that needs to be updated)	yes	DPP	1
Output Parameter				
statusCode	Status code (should réfléct the information when the update fails)	yes	StatusCode	1
payload	Updated DPP	yes	DPP	1

4.8 Method DeleteDPPById

Method that removes a DPP of a spécific DPP ID. This gets relevant for the end of live of a DPP. Access rules control whether deletion of DPPs is allowed or not. See Table 7.

Table 7 — DeleteDPPById

Method Name	**DeleteDPPById**			
Explanation	Deletes DPP with the spécifiéd DPP ID			
semanticId	https://jtc24/dpp/API/DeleteDPPById/1/0			
Name	**Description**	**Mand.**	**Type**	**Card.**
Input Parameter				
dppId	DPP idéntifiér	yes	Idéntifiér	1
Output Parameter				
statusCode	Status code	yes	StatusCode	1

5 Specification of the Registry API for Register

5.1 General

This clause covers access to external methods of the EC Registry that should be used to register a new DPP at the registry of the EC.

5.2 Method PostNewDPPToRegistry

This method enables the registration of a new DPP at the EC registry. This method is served by the EC registry server. It returns an unique registry idéntifiér at the requesting client economic operator. See Table 8.

Table 8 — PostNewDPPToRegistry

Method Name	**PostNewDPPToRegistry**			
Explanation	Register a new DPP at the registry by providing product, backup, and operator idéntifiérs.			
semanticId	https://jtc24/dpp/API/PostNewDPPToRegistry/1/0			
Name	**Description**	**Mand.**	**Type**	**Card.**
Input Parameter				
payload	Contains information about the operator, backup operator, and the product to be registered.	yes	Subset of the DPP (only the DPP header)	1

Method Name	PostNewDPPToRegistry			
Output Parameter				
statusCode	Status code	yes	StatusCode	1
régistryIdéntifiér	RegisterId	yes	Idéntifiér	1

6 Specification of the Fine Granular API Operations of the Life Cycle API

6.1 General

The operations in this clause may be made available by custodians of DPPs or archiving services.

6.2 Method ReadDataElementCollection

Commented [PL2]: The Data Element Collection is an unnecessary level of granularity, requiring a specific identification.
Then merge **ReadDataElementCollection** and **ReadDataElement** into one single method

This method will return a spécific DataElementCollection that is used within a spécific DPP.

See Table 9.

Table 9 — ReadDataElementCollection

Method Name	ReadDataElementCollection			
Explanation	Returns the Data Element Collection			
semanticId	https://jtc24/dpp/API/ReadDataElementCollection/1/0			
Name	**Description**	**Mand.**	**Type**	**Card.**
Input Parameter				
dppId	DPP idéntifiér	yes	Idéntifiér	1
elementId	Collection idéntifiér within the DPP	yes	Idéntifiér	1
Output Parameter				
statusCode	Status code	yes	StatusCode	1
payload	Requested Data Element Collection	yes	DataElementCollection	1

6.3 Method ReadDataElement

This method allows to return a spécific data element by its unique idéntifiér path of a spécific DPP.

See Table 10.

Table 10 — ReadDataElement

Method Name	ReadDataElement			
Explanation	Returns a spécific data element by providing the absolute path of the data element			
semanticId	https://jtc24/dpp/API/ReadDataElement/1/0			
Name	**Description**	**Mand.**	**Type**	**Card.**
Input Parameter				
dppId	DPP idéntifiér	yes	Idéntifiér	1
Element path	ElementId path to the spécific data element.	yes	String	1
Output Parameter				
statusCode	Status code	yes	StatusCode	1
payload	Requested Property	yes	Property	1

6.4 Method UpdateDataElementCollection

Updates the content of the DataElementCollection of a spécific DPP. The submitted DataElementCollection only contains data that needs to be updated and is extended with new data. It can contain a single data element or can be a set of different element information that needs to be updated. See Table 11.

Hint: If the update of some parts fails the complete update process will fail and there should be no changes adopted in the DPP.

Access rules control whether the patch is allowed or not.

Table 11 — UpdateDataElementCollection

Method Name	**UpdateDataElementCollection**			
Explanation	Updates a DataElementCollection			
semanticId	https://jtc24/dpp/API/UpdateDataElementCollection/0			
Name	**Description**	**Mand.**	**Type**	**Card.**
Input Parameter				
dppId	DPP idéntifiér	yes	Idéntifiér	1
elementId	Collection idéntifiér within the DPP	yes	Idéntifiér	1
dataElementCollection	Partial dataElementCollection (only contains parts that needs to be updated)	yes	Partial DataElementCollection	1
Output Parameter				
statusCode	Status code	yes	StatusCode	1
payload	Updated Data Element Collection	no	DataElementCollection	1

6.5 Method UpdateDataElement

This method updates a spécific data element of a DPP. The method also allows to enhance or remove data element information. See Table 12.

Table 12 — UpdateDataElement

Method Name	**UpdateDataElement**			
Explanation	Update of a data element within a spécific DPP.			
semanticId	https://jtc24/dpp/API/UpdateDataElement/1/0			
Name	**Description**	**Mand.**	**Type**	**Card.**
Input Parameter				
dppId	DPP idéntifiér of the DPP where the spécific data element needs to be updated	yes	Idéntifiér	1
Element path	ElementId path to the spécific data element.	yes	String	1
payload	Content of data that needs to be updated	yes	Any	1
Output Parameter				
statusCode	Status code	yes	StatusCode	1

Commented [PL3]: The Data Element Collection is an unnecessary level of granularity, requiring a specific identification.
Then merge **UpdateDataElementCollection** and **UpdateDataElement** into one single method

Commented [PL4]: The input parameter *dataElementCollection* has a confusing name. It is much clearer in the output parameters. However, it would still be good to unify these.

Proposed change (if the method is kept)
The input parameter should be called *payload* and have the description *Content of data that needs to be updated.*
The same goes for the output parameter, which sould be called *payload* and have the description *Content of data that has been updated.*

Method Name	UpdateDataElement			
payload	Changed data element	yes	Any	1

7 Status Code, Error Handling & Result Messages

In case of a failed Method execution, a result object shall be returned containing more information about the reasons why the Method failed to execute.

See Table 13 to Table 16.

Table 13 — General result object

Class Name	*Result*		
Explanation	The result object		
Inherits from	—		
semanticId	https://jtc24/dpp/API/DataTypes/Result		
Attribute	**Explanation**	**Type**	**Card.**
message	Additional message containing information for the requester	Message	0..*

Table 14 définés the structure of the message in the general result object.

Table 14 — Message structure

Class Name	*Message*		
Explanation	A message containing more information for the requester about a certain happening in the backend		
Inherits from	—		
semanticId	https://jtc24/dpp/API/DataTypes/Message		
Attribute	**Explanation**	**Type**	**Card.**
messageType	The message type	MessageTypeEnum	1
text	The message text	string	1
code	Technology-dependent status or error code	CodeType	0..1
correlationId	Idéntifiér to relate several result messages throughout several systems	ShortIdType	0..1
timestamp	Timestamp of the message	dateTime	0..1

Table 15 définés the value range for the message type in a message.

Table 15 — *MessageTypeEnum*

Enumeration	*MessageTypeEnum*
Explanation	The message type
semanticId	https://jtc24/dpp/API/DataTypes /MessageTypeEnum
Literal	**Explanation**
Info	Used to inform the user about a certain fact

Warning	Used for warnings; warnings may lead to errors in the subsequent execution
Error	Used for handling errors
Exception	Used in case of an internal and/or unhandled exception

Table 16 définés the allowed values for the status code in a message.

Table 16 — Status code of response messages

Generic Status Code	Meaning	Has Result Object
Success	Success	No
SuccessCreated	Successful creation of a new resource	No
SuccessAccepted	The reception of the request was successful	No
SuccessNoContent	Success with explicitly no content in the payload	No
ClientErrorBadRequest	Bad or malformed request	Yes
ClientNotAuthorized	Wrong or missing authorization credentials	Yes
ClientForbidden	Authorization has been refused	Yes
ClientMethodNotAllowed	Method request is not allowed	Yes
ClientErrorResourceNotFound	Resource not found	Yes
CliéntRésourcéConflict	Conflict-créating resource (resource already exists)	Yes
ServerInternalError	Unexpected error	Yes
ServerErrorBadGateway	Bad gateway	Yes

8 Mappings

8.1 General

This clause spécifiéd the mapping of the logical model as définéd in Clause 4, Clause 5 and Clause 6 to HTTPS/REST.

Table 17, Table 18 and Table 19 show the corresponding logical method names corresponding to Clause 4, Clause 5 and Clause 6, the associated HTTP methods, the REST-Resource Path, if the input parameter are provided in-path of the resource path or as payload body, as well the expected result.

8.2 HTTPS/REST for Life Cycle API

See Table 17 provides the core HTTPS methods of the DPP life cycle API.

Table 17 — Life Cycle API

Method Name	HTTP Method	REST-Path	In-path /Query Parameter	Request Body	Result (except status code and pagination)
ReadDPPById	GET	dpps/{dppId}	DPP ID	--	DPP
ReadDPPByProductId	GET	dppsByProductId/{productId}	Product ID	--	DPP (latest DPP version)

Method Name	HTTP Method	REST-Path	In-path /Query Parameter	Request Body	Result (except status code and pagination)
ReadDPPVersionByProductIdAndDate	GET	dppsByProductIdAndDate/{productId}?date={timestamp}	Product ID (as in-path) and Timestamp (as query)	--	DPP (based on the given date)
ReadDPPIdsByProductIds	POST	dppsByProductIds	--	Set of Product IDs	Set of DPP IDs
CreateDPP	POST	dpps	--	DPP	DPP
UpdateDPP	PATCH	dpps/{dppId}	DPP ID	Partial DPP	DPP (updated)
DeleteDPPById	DELETE	dpps/{dppId}	DPP ID	--	--

8.3 HTTPS/REST for Register API for Register

Table 18 provides the HTTPS method for the REgister API that needs to be called to register a DPP.

Table 18 — Register API for Register

Method Name	HTTP Method	REST-Path	In-path Parameter	Request Body	Result (except status code and pagination)
PostNewDPPToRegistry	POST	registerDPP	-	Object that contains Product ID, Backup ID, and Operator ID	Registry ID

8.4 HTTPS/REST for Fine Granular Life Cycle API

Table 19 — Fine Granular Life Cycle API

Method Name	HTTP Method	REST-Path	In-path Parameter	Request Body	Result (except status code and pagination)
ReadDataElementCollection	GET	/dpps/{dppId}/collections/{elementId}	DPP ID (dppId) and ID of the data element collection (collectionId)		DataElementCollection
ReadElement	GET	/dpps/{dppId}/elements/{elementPath}	DPP ID (dppId) and unique path to the element (collectionId)		DataElement
UpdateDataElementCollection	PATCH	/dpps/{dppId}/collections/{elementId}	DPP ID (dppId) and ID of the data element collection (collectionId)	Partial DataElementCollection that contains the data	Complete DataElementCollection (updated)
UpdateElement	PATCH	/dpps/{dppId}/elements/{elementPath}	DPP ID (dppId) and unique path to the element (elementPath)	Data element that needs to be updated	DataElement (updated)

Commented [PL5]: The listed methods should be reduced to just two.
- ReadDataElement
- UpdateDataElement

When the methods are merged, and taking into account, that a collection is just a specific type of data element, the REST paths should be adapted accordingly.

The paths should be:
For ReadDataElement: */dpps/{dppId}/element/{elementId}*
For UpdateDataElement: */dpps/{dppId}/element/{elementId}*

Annex ZA
(informative)

Relationship between this European Standard and the ecodesign requirements of Commission Regulation (EU) No 2024/1781 aimed to be covered

This European Standard has been prepared under a Commission's standardization request C(2024) 5423 final of 31.07.2024 to provide one voluntary means of conforming to the ecodesign requirements of Commission Regulation (EU) No 2024/1781 of 28.06.2024 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for digital product passports in support of Union policy on ecodesign requirements for sustainable products and on batteries and waste batteries

Once this standard is cited in the Official Journal of the European Union under that , compliance with the normative clauses of this standard given in confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding requirements of that , and associated EFTA regulations.

part 8: European standard(s) on Application Programming Interfaces (APIs) for the product passport lifecycle management and searchability

Table ZA.1 — Correspondence between this European Standard Commission Regulation (EU) No 2024/1781 of 28.06.2024 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements digital product passports in support of Union policy on ecodesign requirements for sustainable products and on batteries and waste batteries and Commission's standardisation request C(2024) 5423 final of 31.07.2024

[Essential]/ [interoperability]/[...] Requirements of [Directive]/[Regulation]/ [Decision] [...]	Clause(s)/sub-clause(s) of this EN	Remarks/Notes
7.7.e	Clause 4.4, 8.2	définéd API can be used as application and delivers human readable content
10.1.d	clause 4.2, 4.3, 4.4, 4.5	provides DPP Content in open standards, interoperable and machine readable
10.1.f	clause 4.2, 4.3, 4.4, 4.5	Adressing on model, batch and item level covered, also in case of granularity change
10.3.a	clause 4.5	provides DPP-ID's for further requests based on Product ID
10.3.b	clause 4.2, 4.3, 4.4, 4.5	content provided by content type json, xml and html - can be integrated with retailer systems
10.4	clause 4 (all sub-clauses)	functionality covers requirements for back-up operation
11.a	clause 4.2, 4.3, 4.4, 4.5	provides interoperable access to dpp
11.b	clause 4.2, 4.3, 4.4, 4.5	access on public data without restrictions
11.e	clause 4.2, 4.3, 4.4, 4.5	functionality covers requirements for back-up operation
13.1, 13.2, 13.4, 13.5	Clause 5.2	covers functionality to register new DPP on EC-Registry
15.1	clause 4.2, 4.3, 4.4, 4.5	registration idéntifiér is part of restricted data, only provided as response if authorized authority

[Essential]/ [interoperability]/[...] Requirements of [Directive]/[Regulation]/ [Decision] [...]	Clause(s)/sub-clause(s) of this EN	Remarks/Notes
15.4	clause 4.2, 4.3, 4.4, 4.5	EO responds dataset according authorisation

WARNING Presumption of conformity stays valid only as long as a reference to this European Standard is maintained in the list published in the Official Journal of the European Union. Users of this standard should consult frequently the latest list published in the Official Journal of the European Union.

WARNING Other Union legislation may be applicable to the falling within the scope of this standard.

Bibliography

[1] RFC 7386 https://w w.rfc-editor.org/rfc/rfc7386.html

[2] RFC5261 https://da tatracker.ietf.org/doc/html/rfc5261