DPP Product Identifier & Requirements

Considerations in regard to potential identifiers and relevant standards for encoding

Addendum to consideration of „DPP code methods *EDCi 2023-03-28"

https://www.e-d-c.info/projekte/dpp-productpass.html

and document

DPP-Identifiers_Comparison-r.240128.pdf

Reference document:

Council of the European Union, Brussels, 19 December 2023, (OR. en), 16723/23

No. Cion doc.: 7854/23 + ADD1

Subject: Regulation establishing a framework for setting ecodesign requirements for sustainable products and repealing Directive 2009/125/EC - Analysis of the final compromise text for an agreement <u>with</u>

16723/23 *ANNEX 2022/0095 (COD) Proposal for a*
REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
establishing a framework for setting ecodesign requirements for sustainable products,
amending Regulation (EU) 2023/1542 and repealing Directive 2009/125/EC
<u>and</u> ***16723/23*** *ANNEX Chapter I onwords (page 73)*

Summary

The above referenced document contains definitions for the DPP that are relevant for the design of DPP Identifiers, in particular 16732/23 ANNEX from Chapter I onwards.

The definitions include the application of ISO/IEC 15459 both for the DPP Data as for the DPP Identifier.

According to the referenced document it can be concluded that for the construction of the DPP Identifier the most relevant standard is:

- ISO/IEC 15459-4 Unique Identification – Items

In addition WEB Links are to be provided with the DPP Identifier linking to the DPP Data. There are available solutions interfacing to existing systems (ERP, EDI communication) considering the requirement for end-to-end traceability of the products with DPP and there are also new developments of standards fulfiling DPP requirements.

ISO application standards supply additional guidance how to apply Barcode and/or RFID to products (see explanations in table 1).

Note: The summary is based on the excerpts of the reference document
Council of the European Union, Brussels, 19 December 2023, (OR. en), 16723/23 highlighted in table 1 and 2.

How to use ISO/IEC 15459-4 Unique Identification – Items for DPP Identifier design

Application of ISO/IEC 15459-4 Unique Identification – Items for DPP Identifiers is widely practised for supply chain management and tracking & tracing and meets today's and future applications.
There are different solutions for structuring DPP Identifiers with ISO/IEC 15459-4 IDs and WEB Links.
Two principles of constructing DPP Identifiers are constructs like
(a) „UID first" and (b) „URL first".

*a) **ISO/IEC 15459-4 „UID first"** is widely used in the supply chain for automatic identification and EDI communication (e.g. UN EDIFACT) and is ERP compatible by corresponding to data fields for products in ERPs and documentation files. WEB link can be add, e.g. by:

→ DIN 16589 Pointer to Process
   (ISO/IEC 15459-4 UID + ISO/IEC 15418 P2P DI „34L" or GS1 AI „8200")

b) **„URL first" and ISO/IEC 15459-4 UID attached** is increasingly supported by new developments:

→ ISO/IEC DIS 18975 Encoding & resolving identifiers over HTTP
   with IEC 61406-2 identification link,
   GS1 Digital Link
   AutoID URL 1.2

c) **Other constructs of DPP Identifiers** might be add according to experts input.

*European Regulations with „UID first" principle, e.g.:
★ Regulation (EU) 2017/745 of the European Parliament and of the Council of 5 April 2017 on medical devices,
★ Regulation (EU) 2017/746 of the European Parliament and of the Council of 5 April 2017 on in vitro diagnostic medical devices
★ Commission Implementing Regulation (EU) 2018/574 of 15 December 2017 on technical standards for the establishment and operation of a traceability system for tobacco products
★ DIRECTIVE 2014/90/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 23 July 2014 on marine equipment
★ Directive 2011/62/EU of 8 June 2011 regards the prevention of the entry into the legal supply chain of falsified medicinal products

Note: QR Codes with embedded URL for general informations in the public are examples how a code could link to specific WEB pages, but don't necessarily include data elements for enabling tracking and tracing products.

ANNEX Table1 excerpts of doc. EC, 19 Dec. 2023, (OR. en), 16723/23 as base for the SUMMARY

Table 1) Three specific excerpts of articles listed in table 2

16732 ANNEX | Chapter III Digital product passport	Comments
Article 8, 3. The requirements referred to in paragraph 2 shall: *(c) improve traceability of products along the value chain;*	Traceability requires interfacing to ERPs, networks, „improving" means also improving of existing traceability systems with existing product identifiers, like ISO/IEC 15459-4 compliant codes (UID first).

*Article 9 (c) the data carrier and the unique identifiers **shall comply with one or more of the standards referred to in point (I) in Annex III or equivalent international or European standards** until referenced harmonised standards are listed in the OJEU;*	IDENTIFIER STRUCTURE STANDARDS:
	ISO/IEC 15459-4 Unique Identification - Items
	ISO/IEC 15459-6 Unique Identification f-Groupings
	ISO/IEC (DIS)18975 Encoding & resolving identifiers over HTTP with
	      IEC 61406-1, -2 identification link,
	      GS1 Digital Link
	      AutoID URL 1.2
	BARCODE & RFID APPLICATION STANDARDS for products and packages:
	ISO 28219 Labelling & direct part marking with linear bar code and two-dimensional symbols
	ISO 22742 Linear bar code and symbols for product packaging
	ISO/IEC 17360 Supply chain applications of RFID Product tagging, product packaging

Article 10 (a) product passports shall be fully interoperable with other product passports required by delegated acts adopted pursuant to Article 4 in relation to the technical, semantic and organisational aspects of end-to-end communication and data transfer;	Interoperability, e.g. with Medical (UDI), Pharma, Tobacco, logistics, etc., is meaning automatic identification and differenciation of the code contents. Solutions include: Using ISO/IEC 15418 Identifiers (ASC DIs+GS1 AIs) and relevant syntax, usable by all operators in the end-to-end traceability chain. Most current traceability codes use the ISO/IEC 15459-x methods „UID first" compatible to most ERPs. New developments may use WEB compatible method „URL first". Examples see table 2, or „DPP comparison r.240128".

ANNEX Table 2 excerpts of the document
„Council of the European Union, Brussels, 19 December 2023, (OR. en), 16723/23"
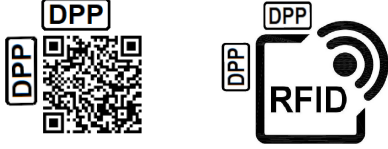**with general references to DPP and as base for table 1 and summary.**

Table 2) Exerpts of 16732 ANNEX, chapters I to IV and Annexes

Quote ▼	Relevance to DPP Identifier
16732 ANNEX	
Chapter I General provisions (page 73)	
(29) 'product passport' means a set of data specific to a product that includes the information specified in the applicable delegated act adopted pursuant to Article 4 and that is accessible via electronic means through a data carrier in accordance with Chapter III;	X
(30) 'data carrier' means a linear bar code symbol, a two-dimensional symbol or other automatic identification data capture medium that can be read by a device;	X
(31) 'unique product identifier' means a unique string of characters for the identification of products that also enables a web link to the product passport;	X
(32) 'unique operator identifier' means a unique string of characters for the identification of actors involved in the value chain of products;	DPP Data
(33) 'unique facility identifier' means a unique string of characters for the identification of locations or buildings involved in the value chain of a product or used by actors involved in the value chain of a product;	DPP Data
(46) 'economic operator' means the manufacturer, the authorised representative, the importer, the distributor, the dealer and the fulfilment service provider;	
(page 101) When a product passport is available, the required information shall be provided therein and shall, when necessary as a complement, be provided in one or more of the following manners: (a) on the product itself; (b) on the product's packaging; (c) ▉ (d) on a label referred to in Article 14; (e) in a user manual or other documentation accompanying the product; (f) on a free access website or application.	X

Quote ▼	**Relevance to DPP Identifier**
Chapter III Digital product passport *(page 104)*	
Article 8, Product passport *2. The requirements related to the product passport laid down in the delegated acts adopted pursuant to Article 4 shall, as appropriate for the product groups covered, specify the following:* *(a) the information to be included in the product passport pursuant to Annex III;* ***(b) one or more data carriers to be used;*** *(c) the layout in which the data carrier is to be presented and its positioning;* *(d) whether the product passport is to correspond to the model, batch, or item level, and* *the definition of the appropriate levels;*	X
Article 8, 3. The requirements referred to in paragraph 2 shall: *(c) improve traceability of products along the value chain;*	X Traceability requires interfacing to ERPs, „improving" means also improving of existing traceability systems with existing product identifiers, like ISO/IEC 15459-4 compliant codes
Article 9 General requirements for the product passport *A product passport shall meet the following conditions:*	
(a) it shall be connected through a data carrier to a ***persistent*** *unique product identifier;*	X
(b) the data carrier shall be physically present on the product, its packaging or on documentation accompanying the product	X

(c) the data carrier and the unique identifiers ***shall comply with one or more of the standards referred to in point (I) in Annex III or equivalent international or European standards*** *until referenced harmonised standards are listed in the OJEU;*	IDENTIFIER STRUCTURE STANDARDS:
	 ISO/IEC 15459-4 Unique Identification - Items
	 ISO/IEC 15459-6 - Groupings
	 ISO/IEC (DIS)18975 Encoding & resolving identifiers over HTTP with
	     IEC 61406-1, -2 identification link,
	     GS1 Digital Link,
	     AutoID URL 1.2
	 BARCODE & RFID APPLICATION STANDARDS for products and packages:
	 ISO 28219 Labelling & direct part marking with linear bar code & 2-d symbols
	 ISO 22742 Linear bar code and symbols for product packaging
	 ISO/IEC 17360 Supply chain applications of RFID, Product tagging, product packaging

(d) all information included in the product passport shall be	X

Quote ▼	Relevance to DPP Identifier
based on open ▌ standards, developed with an interoperable format and shall be, as appropriate, machinereadable, structured, searchable, and transferable through an **open interoperable data exchange network without vender lock-in,** in accordance with the essential requirements set out in Article 10;	
(e) **the information included in the product passport shall refer to the product model, batch, or item** *as specified in the delegated act adopted pursuant to Article 4;*	X
The Commission is empowered to adopt delegated acts in accordance with Article 66 to amend ▌ point (c) and (l) of Annex III in light of technical and scientific progress by replacing the standards or adding other European or international standards with which the data carriers, the unique operator identifiers and the unique facility identifiers, are to comply with for the purposes of meeting the conditions set out in this Article.	
3. The economic operator placing the product on the market shall provide dealers and online marketplaces with **a digital copy of the data carrier or the unique product identifier,** *as relevant, to allow them to make it accessible to customers where they cannot physically access the product. The economic operator shall provide that digital copy or a webpage link*	X
Article 10 **Technical design and operation of the product passport**	
(a) product passports shall be fully interoperable with other product passports required by delegated acts adopted pursuant to Article 4 in relation to the technical, semantic and organisational aspects of end-to-end communication and data transfer;	Interoperability, e.g. with Medical (UDI), Pharma, Tobacco, logistics, etc., is meaning automatic identification and differenciation of the code contents. Solutions include: Using ISO/IEC 15418 Identifiers (ASC DIs+GS1 AIs) and relevant syntax, usable by all operators in the end-to-end traceability chain. Most current traceability codes use the ISO/IEC 15459-x methods „UID first" compatible to most ERPs and EDI. New developments may use WEB compatible methods like „URL first". **Examples of „UID first":** System Identifier+AI/DI, IAC+CIN, REF, AI/DI, SN a) GS1 GTIN <FNC1><01><01234567><123456><21><123XYZ> (01)01234567123456(21)123XYZ b) UID with ASC DIs (KB&WEB compatible char. set)

Quote ▼	**Relevance to DPP Identifier**
<.><25P><IACFIRM><M123Y><S><123XYZ> (25P)QCCOMPM123^S123XYZ **Example of „URL first"** HTTPS://SRV.DE/ ART? . 25P=LEIBMPRODX12& . 14D=20241231& . 1T=PXBL& . S=2BB3 *(other examples on request)*	
*Article 11 **Unique operator identifier and unique facility identifier***	→ For DPP Data
1. The unique operator identifiers referred to in Annex III, points (g) and (h), and the unique facility identifiers referred to in Annex III, point (i), shall comply with the standards referred to in point (c) and (l) in Annex III or equivalent European or international standards until referenced harmonised standards are listed in the OJEU;	→ For DPP data also company IDs like Tax.No.
4a. The Commission is empowered to adopt delegated acts in accordance with Article 66 to supplement this Regulation by establishing rules and procedures related to unique identifiers and data carriers' lifecycle management.	
(a) Establish rules for organisations wishing to become a DPP unique identifier and data carriers issuing agency.	→ e.g. ISO/IEC 15459-2 for rules
(b) Establish rules for economic operators wishing to mint their own unique identifiers and data carriers without relying on DPP unique identifier and data carriers issuing agency.	
(page 104) When adopting those rules, the Commission shall: *a) seek to ensure the interoperability between different approaches.* *b) take into account relevant existing technical solutions and standards. ensure that the rules and procedures established remain, to the largest extent possible, technologically neutral.*	
*Article 12 **Product passport registry***	
By [2 years from entering into force of this Regulation], the Commission shall set up and manage a digital registry ("the registry") storing in a secure manner at least the unique product identifier, the unique operator identifier, the unique facility identifiers. In case of products intended to be placed under the customs procedure 'release for free circulation', the registry shall also store the product commodity code. The registry shall also store the batteries' unique identifiers referred to in Article 77(3) of Regulation (EU) 2023/1542.	
Chapter IV Labels	

Quote ▼	Relevance to DPP Identifier
*Article 14 **Labels***	
1. the delegated acts adopted pursuant to Article 4 shall specify:	
(a) the content of the label; *(b) the layout of the label ensuring visibility and legibility;* *(c) the manner in which the label shall be displayed to customers including in case of distance selling, taking into account the requirements set out in Article 26 and the implications for the relevant economic operators;* *(d) where appropriate, electronic means for generating labels.*	To b) → an emblem BC and RFID could be helpful to optical visibility of a DPP code, e.g.
Chapter VII Obligations of economic operators	
Article 21 *Obligations of manufacturers*	
16723/23 MdM, UB/sk 136 *ANNEX COMPET.1 LIMITE EN* *6. Manufacturers shall for products covered by a delegated act adopted pursuant to Article* *4, indicate their name, registered trade name or registered trade mark, postal address and ▌ electronic means of communication, where they can be contacted:* *(a) on the public part of the product passport, when applicable, and* *(b) on the product or, where this is not possible, on its packaging, or in a document accompanying the product.*	
Article 31a Requirements on supply chain actors	
(a) provide, upon request and free of charge, manufacturers, notified bodies and competent national authorities with available relevant information related to their supplies or services;	
Annex III ▌ Product Passport (referred to in Articles 8, 9,10 and 11)	
The requirements related to the product passport laid down in the delegated acts adopted pursuant to Article 4 shall specify what information shall or may be included in the product passport from among the following elements:	
(b) the unique product identifier at the level indicated in the applicable delegated act adopted pursuant to Article 4;	for DPP data
(c) the Global Trade Identification Number as provided for in standard ISO/IEC 15459-6 or equivalent of products or their parts; (IN DP FILE)	for DPP data: GTIN, ISO/IEC 15459.6 Grouping (GS1 AIs **01** or **402**, ASC DIs **25P**, **25T**, **25K** or **26K**
(d) relevant commodity codes, such as a TARIC code	for DPP data

Quote ▼	Relevance to DPP Identifier
(customs tariff no.) as defined in Council Regulation (EEC) No 2658/871	
(l) The data carrier, the unique product identifier referred to in point (b), the unique operators identifiers referred to in points (g) and (h), and the unique facility identifiers referred to in point (i) shall, where relevant for the concerned products, **comply with International Organization for Standardisation/International Electrotechnical Commission standard** *('ISO/IEC')* **15459-1**:2014; *International Organization for Standardisation/International Electrotechnical Commission standard ('I***SO/IEC')** **15459-2**:2015; *International Organization for Standardisation/International Electrotechnical Commission standard ('***ISO/IEC')** **15459-3**:2014; *International Organization for Standardisation/International Electrotechnical Commission standard ('***ISO/IEC')** **15459-4**:2014;*International Organization for Standardisation/International Electrotechnical Commission standard ('***ISO/IEC')** **15459-5**:2014; *International Organization for Standardisation/International Electrotechnical Commission standard ('***ISO/IEC')** **15459-6**:2014.	X ISO/IEC 15459-1 Transport Units ISO/IEC 15459-2 Registration procedure ISO/IEC 15459-3 Common rules ISO/IEC 15459-4 Individual items ISO/IEC 15459-5 RTIs ISO/IEC 15459-6 Groupings
(kb) the reference of the certified independent third-party product passport service provider hosting the back-up copy of the product passport.	

*Note: Access to ISO/IEC 15459-2 registry of Issuing Agencies
https://www.aimglobal.org/uploads/1/2/4/5/124501539/register_iac_15459-2_20230505.pdf

I.b) Requirements according to the DPP Annex II - November 2023

Part A

	Definitions to requirement of Annex II Nov. 2023	feature	Options	
(11)	'data carrier' means a linear bar code symbol, a two-dimensional symbol or other automatic identification data capture medium that can be read by a device.	Most suitable carrier are the 2-d symbols, options RFID offer automatic identification which is invisible	See ISO/IEC standards, e.g. ISO/IEC 18004 QR, ISO/IEC 16022 DataMatrix, ISO/IEC 18000-x RFID.	
(12)	'unique product identifier' means a unique string of characters for the identification of products that also enables a web link to the product passport.	Product identification (online & offline) and web link.	12.a. Unique product identifier according to ISO/IEC 15459-4, -6 applied with system identifier plus URL (ID first) or it is about a well-known URL (example: EUDAMED URL field for Medical devices) 12.b. Unique product identifier (DIN 66403, ANS MH 10.8.2) like UDIs with SI „+" (HIBC), SI „ ." IFA, etc. and „FNC1" (GS1) plus URL (ID first) or 12.c. URL followed by ID plus attributes, e.g. ISO/IEC 15459 ID (URL first) 12.d. Other identifiers ....?	ID first URL first
(13)	'unique operator identifier' means a unique string of characters for the identification of actors involved in the value chain of products.	Unique identification for persons and parties.	The mechanisms of ISO/IEC 15459-2 are also used to identify persons and parties. Common ISO/IEC 15418 identifiers are DI „25H", DI „18V" or AI „417".	ID first and URL first with attributes
(14)	'unique facility identifier' means a unique string of characters for the identification of locations or buildings involved in the value chain of a product or used by actors involved in the value chain of a product.	Unique identification for locations.	The mechanisms of ISO/IEC 15459-2 with ISO/IEC 15418 are also used to identify locations. Common 15418 identifiers for locations are DI „25L", AI „414".	Like (13)
(18)	'decentralised identifier' means a globally unique persistent identifier that does not require a centralized registration authority and is often generated and/or registered cryptographically.		Any global known identifier uses a global part like a 15459-2 CIN, IP-Address or domain name. Other classes use a stochastic approach to minimize the propability of non-uniqueness. The result is an arbitrary sequence with a certain likelyhood of uniqueness, lacking the following features: + identifyable as such + structured for multiple-use with common supply chain systems requiring a set of (Example) Manufacturer/Product/Serial number.	?

	Definitions to requirement of Annex II Nov. 2023	feature	Options	
	To part B 1.			
(1)	uniqueness of each identifier (i.e., the same identifier shall not be assigned to different products, different economic operators, or different facilities),	Unique company ID will care for differentiation	a. ISO/IEC 15459 supplies a hierarchical model under regulated responsibilities. b. Domain of URL delivers unique addresses but without reference to products	ÌD first URL first
1.1.	The standard(s) should allow both the possibility to use 'centralised' and 'decentralised' identifiers, including the definition of conformance criteria if different methods to produce an identifier are allowed.		a. Under category centralised identifiers fall a.1. ISO/IEC 15459.4, -6 identifiers, a.2. identifiers flagged by „system identifiers" a.3. URLs (domain centralised registered) b. decentralised identifiers need further definition how to identify them as such (see I.b), part B, (18)	ID first URL first
	To Part B. 1.2			
1.2 a	The data carrier should also include control data elements. These elements should enable the verification of: (a) the authenticity of the data carrier, e.g. by matching the hash of the data carrier against the one registered in the DPP registry. This is a way to combat the creation of fake data carriers.	Data carrier (Symbology + data content) should be verifiable against the DPP registry. E.g. fake data carrier with other content than the original should be identifiable using the DPP registry.	As control data elements can be used: + key identifier contents like the serial or lot number + a checksum (hash) or copy of the identifier data stored in the DPP registry	ID first, URL first option
1.2 b	The control data elements could be a link about how to identify counterfeiting and a hash of the DPP registered in the DPP registry.		In addition to 1.2a, security features with additional security properties like offline verification or 3rd party verifications may be added to the DPP identifier: a. e.g. using DI „17K" Check number add to identifiers using „DIs". b. DigSig add to the identifier as data element	ID first, URL first option
1.2 c	Finally, the data carrier may also include cross-sectoral basic data elements, i.e. data that can be consulted offline. These elements should make it possible to consult data from the data carrier even when the online information cannot be accessed. For example, when: + the subject reading the data carrier is offline; + a link present in the data carrier is broken; + a link does not lead to a valid page on a website; + the server hosting the DPP is down ...	Offline recognition of the included data elements like product reference, SN, LOT, Dates and other attributes.	Enabled by using ISO/IEC 15459 and ISO/IEC 15418 methods to flag the attributes. *Not enabled if no standardised flags are used (like the above) to identify the data elements encoded in the DPP data carrier or if the information is not encoded.*	ID first URL first

SUMMARY

The European Commission passed the requirements for a DPP standard to CEN/CENELEC in Nov. 2023. This consideration is focusing on the requirements for DPP identifiers and potential options.

- Existing identifiers (ID first) and new developments (URL first) can be implemented as interoperable variants.
  The summary concludes that the requirements for DPP identifiers get fulfilled by existing solutions, extensions and new developments, meaning that existing marking of legacy systems (like ID first) and new developments (like URL first) for new application could and should be implemented in an interoperable manner.
  Note: Where „centralised identifiers" are well defined by existing standards, there are no clear descriptions how „decentralise identifiers" would work as DPP identifiers.

- Offline recognition of the data elements in a DPP data carrier should be achieved and will be enabled by using ISO/IEC 15459 and ISO/IEC 15418 methods to flag the data elements (Identifier and attributes) either with „ID first" (legacy solutions) or with „URL first" (new solutions) options.

- Security and authentication can be achieved by different means including serialising, check numbers (hash), digital signatures.

Summary of potential DPP Identifier options according to the investigations

The table includes investigated standards fulfilling the requirements for DPP identifiers.

Category	Fulfillments	Features
ID first: ISO/IEC 15459 and its syntax IDs, UDI	ISO/IEC 15459-4, -6 and relevant syntax (DIN 16598, ISO/IEC 15434) UDI: UDI (GS1, HIBC, IFA CODING SYSTEMS)	ID first widely in use, offline functionality and ERP compatible by ISO/IEC 15418 attributes, online option with well known portals (EUDAMED, …) and or URL add on, additional security and URL as options.

URL first:
URL prior to data informations/attributes
	ISO/IEC draft 18975:
	    + AutoID URL 1.2:2023
	    + GS1 Digital Link 1.4.1:2023
	    + IEC 61406-1 (online only) -2
		New developments 2022/2023, online funtionality, offline function by ISO/IEC 15418 attributes, additional security as an option.

Decentralised identifiers	To be defined	
Others	To be defined	

*Excerpt of requirements for strategic considertations to DPP identifier design

The "Exerpts of requirements" below are layed down in the standardization Request DPP of the EC Nov. The excerpts represent key requirements for strategic approached how to design a DPP identifier showing potential options. The options occure again in chapter „Detailled investigations".

	*Exerpts of requirements layed down instandardization Request DPP	FULLFILLMENT e.g. by
1	„reducing the time and resources required to implement and maintain the	ID first standards:

	(DPP) system" supports legacy systems using „ID first" identifiers such as ISO/IEC 15459-4,-6 and „ID first" solutions of other regulations, like UDI with GS1, HIBC, IFA CODING SYSTEMS. *(Note: „ID first" identifiers serve supply chain systems globally, where scanning by a smartphone would need a DPP App.)*	ID first: ISO/IEC 15459-4, -6 and relevant syntax (DIN 16598, ISO/IEC 15434) UDI: UDI (GS1, HIBC, IFA CODING SYSTEMS) Others: …….
2	„stimulate innovation and competition of market players" supports inclusion of latest developments, such as AIDC URL 1.3, GS1 Digital Link, ISO 61406-1/2. This would also satisfy users with preference to smartphones for scanning without any additional App. *(Note: Offline data recognition would not work without a DPP App for smartphones, neither ERP data capture.)*	**URL first standards:** URL first: ISO/IEC draft 18975: + AutoID URL 1.2 + GS1 Digital Link 1.4.1 + IEC 61406-1, -2, Others: ……
3	Online DPP access should be combined with offline functionality of the DPP code for offline detection of the encoded data elements in cases of no access to the web.	I**D first, URL first** applied with attributes, e.g. product ID, serial number, …
4	Additional security	I**D first, URL first** applied with check digit, digital signature
5	‚Centralised identifiers' and 'decentralised identifiers'	Centralised identifiers: I**D first, URL first** decentralised identifier: ……………….? should be defined proofing uniqueness.

* requirements and fulfillments completed below in chapter „Detailled investigations of the EC requirements for support of the summary". Columns are marked for fulfillment by „ID first" or „URL" first or „?")