DE4A Policy for the use of identifiers

Version 1.0

Status: in use

Revision History

Version	Date	Description of changes	Author
0.9	2021-05-07	Initial version based on PEPPOL Policy for the use of identifiers 4.1.0	Philip Helger
1.0	2021-06-23	Initial version 1.0	Philip Helger

Statement of originality

This deliverable contains original unpublished work except where clearly indicated otherwise. Acknowledgement of previously published material and of the work of others has been made through appropriate citation, quotation or both.

Contributors

Organisations

BRZ (Bundesrechenzentrum)[1], Austria, www.brz.gv.at

Persons

Philip Helger

---

[1] English: Austrian Federal Computing Centre

Table of contents

1   Introduction

This document is heavily based on the Peppol Policy for the use of identifiers 4.1.0 [PEPPOL]. The goal is to harmonize the usage of identifiers throughout different networks so that affected entities can re-use their identifiers in all networks in similar fashions.

1.1   Audience

This document describes a DE4A policy and guidelines for use of identifiers within the DE4A network. The intended audience for this document are organizations wishing to be DE4A enabled for exchanging electronic documents, and/or their ICT-suppliers. More specifically it is addressed towards the following roles:

▶   ICT Architects

▶   ICT Developers

▶   Business Experts

1.2   References

[DE4A]	http://www.de4a.eu/
[PEPPOL]	https://github.com/OpenPEPPOL/edec-specifications/raw/master/work-in-progress/PEPPOL-EDN-Policy-for-use-of-identifiers-4.1.0-2020-03-11.pdf
[DE4A_CodeList]	https://github.com/de4a-wp5/de4a-codelists
[ISO 15459]	http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=51284 http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=43349
[ISO 9735 Service Code List (0007)]	http://www.unece.org/trade/untdid/download/r1241.txt
[ISO 6523]	http://www.iso.org/iso/catalogue_detail?csnumber=25773
[OASIS ebCore]	http://docs.oasis-open.org/ebcore/PartyIdType/v1.0/CD03/PartyIdType-1.0.html
[RFC3986]	https://datatracker.ietf.org/doc/html/rfc3986
[RFC8141]	https://datatracker.ietf.org/doc/html/rfc8141

2 Introduction to identifiers

14

15 Identifiers are information elements that establish the identity of objects, such as organizations,
16 products, places, etc. The DE4A project uses many identifiers in both its transport infrastructure and
17 within the documents exchanged across that infrastructure. Two of the significant identifiers are
18 those for Parties/Participants (organizations, persons, etc.) and Services (business profiles, document
19 types, etc). These are the "who" and the "what" of DE4A business document exchanges.

20 This document outlines the policy for using the correct identifiers specifically for these two areas but
21 it also introduces principles for any identifiers used in the DE4A environment. Implementers failing to
22 adhere to these policies seriously jeopardize the interoperability of the information being exchanged.
23 This policy should form a requirement of any DE4A participation agreements.

2.1 Scope

24

2.1.1 The policy of a federated scheme for identifying Parties[2]

25

26 Parties in the DE4A Network play the role of Participants. There are sender and receiver Participants
27 in any exchange, but the Service Metadata Publisher (SMP) only publishes services defined for the
28 receiver Participant. The technical name for this identifier in the DE4A Network is the Participant
29 Identifier.

30 Within each business document there are also Parties taking on business roles such as the data
31 subject, data owner etc. Clearly there may be relationships between these Parties and the Participant
32 Identifier. Sometimes the Data Subject Party is the receiver Participant for business document.
33 Another example is that a business document may contain an identifier for EndpointID that equates
34 to the receiver Participant in the SMP. But neither of these are reliable rules. Business standards
35 (such as EN 16931) and agreements (such as BII profiles) do not (deliberately) include any "envelope"
36 information linking the document content to the transport infrastructure. The relationship between
37 identifiers within Documents and identifiers used in the transport infrastructure is not defined in the
38 specifications.

39 So, whilst there is a relationship between these various Parties, this policy does not describe how this
40 should be done. This policy relates to the common use of different identification schemes to identify
41 the appropriate Party within the context required. In other words, identifiers may have different
42 values but the method by which they are defined should be consistent.

43 Many schemes already exist for identifying Parties. DE4A has no intention of developing yet another.
44 Our strategy is to recognize a range of different identification schemes and provide a code list of
45 those recognized schemes based on international standards.

2.1.2 The policy for identifying Documents and Services used in the DE4A Network

46

47 The DE4A Network requires a Participant sending a document to identify both the receiving
48 Participant and the service that will receive the document. The sender (or their Access Point
49 provider) achieves this by searching the Service Metadata Locator (SML) filled Domain Name System
50 (DNS) to find the relevant Service Metadata Publisher (SMP) that can identify the endpoint URL[3]
51 within the recipient's Access Point (AP). This endpoint URL is the service address where the
52 document is received. Therefore, it is important to define precisely what documents and services can
53 be handled by the receiving Participant.

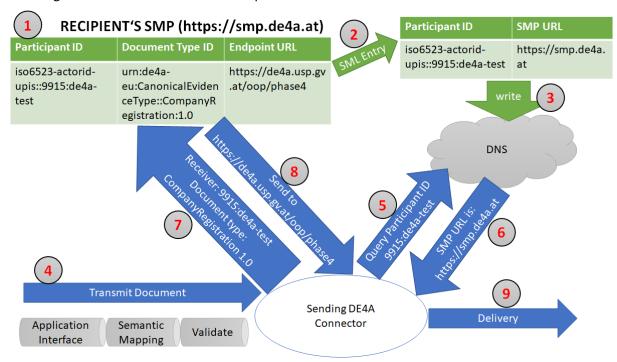[2] By federation we mean that each agency maintains their own identification schemes. Our policy recognizes
and identifies these schemes and does not attempt to replicate them.

[3] Note: the endpoint URL is not the same as the Endpoint ID in the business document.

54   The diagram below shows the relationship of these information elements.

2.1.3 Semantic scope

57   This document covers the following areas:

▶ Participant identification
- ▶▶ To identify Parties that are actors in DE4A
▶ Document type identification
- ▶▶ To identify Document types and Message types that are exchanged in the DE4A network
▶ Process identification
- ▶▶ To identify orchestrations of message exchanges in the DE4A network
▶ Transport profile identification
- ▶▶ To identify the technical encoding of exchanged messages in the DE4A network

67   Each of them is described below in greater detail.

2.2 Common Policies

POLICY 1   Usage of ISO15459

Participant Identifiers should adhere to the following constraints:
- MUST be at least 1 character long (excluding the identifier scheme)
- MUST NOT be more than 50 characters long (excluding the identifier scheme)
- MUST only contain letters (a-z), numeric digits (0-9), the minus sign (-), the period character (.), the underscore character (_) or the tilde character (~) from the invariant character set of ISO-8859-1[4]

Document Type Identifiers should adhere to the following constraints:
- MUST be at least 1 character long (excluding the identifier scheme)
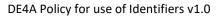- MUST NOT be more than 500 characters long (excluding the identifier scheme)

---

[4] Based on the unreserved characters of [RFC3986]

79	▪ MUST only contain characters from the invariant character set of ISO-8859-1
80	
81	Process Identifiers should adhere to the following constraints:
82	▪ MUST be at least 1 character long (excluding the identifier scheme)
83	▪ MUST NOT be more than 200 characters long (excluding the identifier scheme)
84	▪ MUST only contain characters from the invariant character set of ISO-8859-1
85	
86	Transport Profile Identifiers should adhere to the following constraints:
87	▪ MUST be at least 1 character long (excluding the identifier scheme)
88	▪ MUST NOT be more than 50 characters long (excluding the identifier scheme)
89	▪ MUST only contain letters, numeric digits, the minus sign ('-') or the underscore sign ('_') from the
90	invariant character set of ISO-8859-1

91   Applies to: all above mentioned types of identifiers in all DE4A components

92   **POLICY 2   Identifier Value casing**

93	All Participant Identifier values have to be treated case insensitive even if the underlying scheme
94	requires a case sensitive value.
95	All Document Type Identifier values have to be treated case sensitive.
96	All Process Identifier values have to be treated case sensitive.
97	All Transport Profile Identifiers have to be treated case sensitive.

98   Applies to: all identifiers in all DE4A components

99   Note: all identifier scheme values are case sensitive (see POLICY 5, POLICY 10 and POLICY 14)

100   **Examples:**

101   Participant Identifier value "0088:abc" is equal to "0088:ABc"

102   Participant Identifier value "0088:abc" is NOT equal to "0010:abc"

103

104   Document Type Identifier value

105
```
CompanyRegistration
```

106   is NOT equal to

107
```
COMPANYREGISTRATION
```

108

109   Process Identifier value

110
```
request
```

111   is NOT equal to

112
```
REQUEST
```

3 Policy for DE4A Participant Identification

113 DE4A does not implement its own scheme for identifying Parties. Instead, it supports a federated
114 system for uniquely identifying parties following the ISO 15459 format scheme[5] for unique
115 identifiers. This requires defining a controlled set of "Issuing Agency Codes"[6] for identification
116 schemes (also known as "party identifier types"[7] or "Identification code qualifier"[8] or "International
117 Code Designators"[9] or "Party ID Type"[10]) required by DE4A implementations.

119 Each DE4A Party identifier to be used in the federated system is a combination of the Issuing Agency
120 Code and the value given by the Issuing Agency.

121 ▶ Within the content of business documents, each DE4A Participant will be responsible for
122 using the appropriate DE4A Party Identifier.

123 This section defines the policies for the formatting and the population of values for Party Identifiers
124 used by DE4A.

3.1 Format

POLICY 3 Use of ISO15459 structure

127 Participant Identifier values used in DE4A are comprised of:
128 - An Identifier Scheme
129 - The value provided by this Identifier Scheme

130 Applies to: all Participant identifiers in all DE4A components.

131 When representing Participant identifiers in URLs, the Participant identifier itself will be prefixed with
132 the scheme identifier (see POLICY 5) following two colons:

133 `<scheme identifier>::<value>`

134 This string must be percent encoded if used in a URL.

135 **Example:**

136 Identifier Scheme: EAN International

137 Identifier Scheme according to [DE4A_CodeList]: `0088`

138 Value provided by the Identifier Scheme: `1234567890128`

139 Representation in a URL: `iso6523-actorid-upis::0088:1234567890128`

POLICY 4 Coding of Identifier Schemes

141 All Identifier Schemes for Participant Identifiers are to be taken from the normative version of
142 [DE4A_CodeList].
143 This list is currently maintained by DE4A.

144 Applies to: all Participant identifiers in all DE4A components

---

[5] ISO 15459-4 Individual items, see [ISO 15459]
[6] ISO 15459 terminology, see [ISO 15459]
[7] CEN/BII terminology
[8] ISO 9735 Service Code List (0007) terminology
[9] ISO 6523 terminology
[10] OASIS ebCore terminology

145 Entries marked as "deprecated" MUST NIT be used for newly issued documents, as the respective
146 Participant Identifier Scheme is no longer active/valid. Deprecated scheme IDs may however not be
147 reused for different Participant Identifier Schemes as existing exchanged documents may refer to
148 them.

3.2 Identifier Scheme values

150 The values for the initial DE4A identifier Scheme Code list were taken from the Peppol Identifier
151 Scheme code list[11] but may be extended to cover use by all DE4A participants and includes other
152 known Identifier Schemes.

153 It is significant that this list will need ongoing extension under governance procedures currently
154 being developed (see section on Governance). To ensure sustainability and proper governance it is
155 proposed to include only Issuing Agency Codes (IACs) in the following order of priority:

156   1. International recognized standard schemes, then

157   2. International de-facto accepted schemes, then

158   3. Nationally defined schemes

159 The actual values for numeric International Code Designators were based on the following allocation
160 criteria:

161   1. ISO 6523 International Code Designator (if known), or

162   2. ISO 9735 Identification code qualifier (if known), or

163   3. An incremental number starting from 9900 (issued by DE4A), According to the ISO 6523
164   structure

165 Even though these numeric values are based on ISO code sets, they form a separate DE4A code list
166 because they contain additional values. Therefore, the Issuing Agency for all numeric codes is DE4A
167 and not ISO 6523.

168 The normative version of the code list is available at [DE4A_CodeList].

169 Note: rows marked as deprecated should not be used for newly issued documents, as the respective
170 identifier issuing agency is no longer active/valid. Deprecated Issuing Agency Codes may however not
171 be reused for different agencies as existing exchanged documents may refer to them.

POLICY 5   Participant Identifier Meta Scheme

173 The DE4A Participant Identifier Meta Scheme is:
174 `iso6523-actorid-upis`

175 Applies to: all Participant Identifiers in all DE4A components

176 Note: this Meta Scheme is always case sensitive – only the Participant Identifier value is case
177 insensitive (see POLICY 2).

178 Note: The Participant Identifier Meta Scheme MAY be omitted in documents because it is constant.

---

[11] Version 7.5 of the Peppol eDelivery Code Lists were used for the initial version of the DE4A Code Lists. See
https://docs.peppol.eu/edelivery/codelists/ for the Peppol eDelivery Code Lists.

POLICY 6 Numeric Codes for Identifier Schemes

The numeric ISO 6523 code set as used in DE4A include additional code values not part of the official ISO 6523 code set and so cannot be referred to as the official ISO 6523 code set[12]. The codes starting with "99" are extending this code set and are called "extended values". For convenience the term "ISO 6523" is used for all codes and indicates the origin of many code values used.

Applies to: all participant identifiers in all DE4A components

A normative list of all DE4A Participant Identifier Schemes and metadata can be found at [DE4A_CodeList].

POLICY 7 Participant Identifiers for DNS

Participant identifiers – consisting of scheme and value – are encoded as follows into a DNS name:
`<hash-of-value>.<scheme>.<SML-zone-name>`

Applies to: the resolution of DE4A Participant Identifiers for SMP clients

Note: in comparison to Peppol, DE4A uses the OASIS SMP specification v1.

Explanation:

<hash-of-value>	Is the Base32 encoding (without padding) of the SHA256 hash value, of the lowercased identifier value (e.g. 0088:abc). The **UTF-8** charset needs to be used for extracting bytes out of strings for SHA256 hash value creation. Lowercasing must be performed according to the **en_US** locale rules (no special character handling). Note: it is important, that the SHA256 hash value is generated **after** the identifier value has been lowercased because according to POLICY 2 participant identifiers have to be treated case insensitive.
<scheme>	Is the identifier scheme value ("iso6523-actorid-upis" in DE4A) and is added "as is" into the DNS name[13]. A scheme identifier may only contain the following characters: only contain the following characters: [a-z], [0-9], [-]. A scheme identifier SHOULD be as short as possible, and MUST NOT exceed 25 characters.
<SML-zone-name>	Is the DNS domain name of the SML zone (e.g. "de4a.acc.edelivery.tech.ec.europa.eu." – mind the trailing dot).

Example:

The Participant Identifier `0088:123abc` with the Meta Scheme `iso6523-actorid-upis` in the SML DNS zone `de4a.acc.edelivery.tech.ec.europa.eu.` is encoded into the following identifier:

```
Y7DZFXAF3D4CJZ4KCGRXTEC6TWVCGA4KY7ZWA5BOIF6MSWD4TDRQ.iso6523-actorid-
upis.de4a.acc.edelivery.tech.ec.europa.eu.
```

---

[12] ISO 6523 is currently under revision after a 25 year working period; the new version will meet requirements imposed by technological development.

[13] Case changes may be done but are not required, as the underlying DNS system is case insensitive.

199 The result must be the same if the identifier `0088:123ABC` is used, as identifier values are treated
200 case insensitive.

POLICY 8   XML representation for Participant Identifiers in SMP responses

202 The "scheme" attribute must be populated with the value "iso6523-actorid-upis" (see POLICY 5) in all
203 instances of the "ParticipantIdentifier" element.

204 Applies to: XML documents used in the SMP

Example 1:

206 The following example from an SMP exchange denotes that the SMP Endpoint is identified using the
207 ISO 6523 ICD value in the DE4A set of Participant Identifier Schemes. This in turn has a numeric value
208 of `0088` meaning that the party has a GLN number with the value of `7300010000001`.

```
209    <ParticipantIdentifier scheme="iso6523-actorid-upis"
210    >0088:7300010000001</ParticipantIdentifier>
```

Example 2:

212 The following example denotes that the SMP Endpoint is identified using the ISO 6523 ICD value in
213 the DE4A set of Participant Identifier Schemes. This in turn has a numeric value of `0002` meaning
214 that the party has a French SIRENE identifier with the value of `542034942`.

```
215    <ParticipantIdentifier scheme="iso6523-actorid-upis"
216    >0002:542034942</ParticipantIdentifier>
```

POLICY 9   XML representation of Actor URNs in DE4A IEM Messages

218 The XML representation of Actor URNs MUST used the URL representation of Participant identifiers
219 as indicated by POLICY 3.
220 Extended values starting with "99" as indicated by POLICY 6 MAY be used.

221 Applies to: all business documents used in DE4A following the DE4A IEM

Example:

```
223    <de4a:AgentUrn>iso6523-actorid-upis::9999:at000000271</de4a:AgentUrn>
```

4 Policies on Identifying Document Types supported by DE4A

As outlined in POLICY 2 document type identifier values have to be treated case sensitive.

The identifier format is an aggregated format that covers the following identifier concepts:

- ▶ **Customization Identifier**
  An identification of the specification containing the total set of rules regarding semantic content, cardinalities and business rules to which the data contained in the business document conforms.

- ▶ **Version Identifier**
  This identifies the version of a document type following the versioning conventions of that specific document syntax and format.

POLICY 10   Document Type Identifier scheme

> The DE4A document type identifier scheme to be used is:
> `urn:de4a-eu:CanonicalEvidenceType`

Applies to: all Document Type Identifiers in all components

The identifier scheme is built on top of the URN scheme as described in [RFC8141].

Note: this scheme identifier is always case sensitive

POLICY 11   Document Type Identifier Value pattern

> The format of a Document Type Identifier Value is:
> `<customization id>:<version>`

Applies to: all Document Type Identifiers in all components

The Customization ID part MUST consist of the following characters only:

- ▶ a-z
- ▶ A-Z
- ▶ 0-9
- ▶ Underscore ('_')
- ▶ Minus ('-')

The version part MUST consist of the following characters only:

- ▶ a-z
- ▶ A-Z
- ▶ 0-9
- ▶ Underscore ('_')
- ▶ Minus ('-')
- ▶ Dot ('.')

When representing document type identifiers in URLs, the document identifier itself will be prefixed with the scheme identifier (see POLICY 10) following two colons:

> `<scheme identifier>::<customization id>:<version>`

This string must be percent encoded if used in a URL.

Example:

263 The following example denotes a Document Type that is a DE4A Request for company registration
264 1.0.

265
```
urn:de4a-eu:CanonicalEvidenceType::CompanyRegistration:1.0
```

Customization ID	CompanyRegistration
Version	1.0

POLICY 12   Specifying Document Type Identifiers in SMP documents

267 The value for the "scheme" attribute MUST be "urn:de4a-eu:CanonicalEvidenceType" (see POLICY
268 10) and the element value MUST be the document type identifier itself.

269 Applies to: all XML documents used in the SMP

270 **Example:**

271
272
```
<DocumentIdentifier scheme="urn:de4a-eu:CanonicalEvidenceType">
CompanyRegistration:1.0</DocumentIdentifier>
```

POLICY 13   Document Type Identifier Values

274 All valid Document Type Identifier Values are defined in [DE4A_CodeList].

275 Applies to: all Document Type Identifiers in all components

276 Rows in [DE4A_CodeList] marked as "deprecated" should not be used for newly issued documents. It
277 is important to note that this is a dynamic list. Over time new services will be added. Developers
278 should take this into account when designing and implementing solutions for DE4A services.

5 Policy for DE4A Process Identifiers

279 Process Identifiers define the orchestrations in which business documents are exchanged. A Process
280 Identifier Value may also be referenced as "profile identifier".

282 As outlined in POLICY 2 DE4A process identifiers have to be treated case sensitive.

POLICY 14 Process Identifier Scheme

284 The DE4A Process Identifier Scheme is:
285 `urn:de4a-eu:MessageType`

286 Applies to: all Process Identifiers in all components

287 Note: this scheme identifier is always case sensitive

POLICY 15 Process Identifier Value

289 All valid Process Identifier Values are defined in [DE4A_CodeList].
290 Process Identifier Values MUST NOT contain whitespace characters.

291 Applies to: all Process Identifiers in all components

Example:

```
request
```

294 Rows in [DE4A_CodeList] marked as "deprecated" should not be used for newly issued documents. It
295 is important to note that this is a dynamic list. Over time new services will be added. Developers
296 should take this into account when designing and implementing solutions for DE4A services.

POLICY 16 Specifying Process Identifiers in SMP documents

298 The value for the scheme attribute MUST be "urn:de4a-eu:MessageType" (see POLICY 14) and the
299 element value MUST be the process identifier itself.

300 Applies to: XML documents used in the SMP

Example:

```
<ProcessIdentifier scheme="urn:de4a-eu:MessageType"
>request</ProcessIdentifier>
```

6 Policy on Identifying Transport Profiles in DE4A

6.1 SMP

The DE4A Transport Infrastructure supports different transport protocols. Each endpoint registered in an SMP is required to provide a transport profile identifying the used transport.

POLICY 17   Transport Profile Values

All valid Transport Profile Values are defined in [DE4A_CodeList].

Applies to: all XML documents used in the SMP

Rows in [DE4A_CodeList] marked as "deprecated" should not be used for newly issued documents. It is important to note that this is a dynamic list. Over time new services will be added. Developers should take this into account when designing and implementing solutions for DE4A services.

POLICY 18   Specifying Transport Profiles in SMP documents

The Transport Profile identifier MUST be placed in the "transportProfile" attribute of the SMP "Endpoint" element.
The value of the "transportProfile" attribute is case sensitive.

Applies to: all XML documents used in the SMP

Example:

```
<Endpoint transportProfile="bdxr-transport-ebms3-as4-v1p0">
   ...
</Endpoint>
```

7   Governance of this Policy

This policy needs maintenance to ensure it supports new versions of the standards, extensions to other identification schemes, new services etc.

This policy document together with the code lists for Identifier Schemes, Document Type Identifiers, Process Identifiers and Transport Profiles is maintained by the DE4A Common Components Task Force (CCTF).

To ensure sustainability and proper governance of Identifier Schemes it is proposed to include only Identifier Schemes in the scope of:

1. It should be verified, whether an inclusion in the official ISO 6523 code list is possible

2. International recognized standard schemes (e.g. CEN, ISO, UN/ECE)

3. International de-facto accepted schemes (e.g. OASIS)

4. Nationally defined schemes

It shall be ensured that each Identifier Scheme provider:

1. Recognizes any organisation wishing to allocate unique Party identifiers as part of DE4A. An individual organisation or company wishing to issue unique identifiers shall do so through officially recognized umbrella organisations such as their trade associations, network provider or a public or state agency;

2. Has defined rules so that a unique party identifier is only re-issued after the previously issued unique identifier has ceased to be of significant to any user. The length of such period should be dependent upon the environment in which the unique identifier will be used.

These rules mirror those of an ISO 15459 registration Authority and will support the option to transfer the responsibility that authority as part of the DE4A sustainability programme.