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Intelligent transport systems — Graphic data dictionary

Part 2: Examples

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National foreword

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Part 2: Examples

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by Technical Committee ISO/TC 204, *Intelligent transport systems*.

A list of all parts in the ISO 14823 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

This document presents examples of ASN.1 coding of a Graphic Data Dictionary (GDD) that has been developed with the intent of creating a common basis for transmitting encoded information for existing road traffic signs and pictograms. The coding system has been developed to be language independent, such that data that can be interpreted, irrespective of language or regional differences. It supports Intelligent Transport System (ITS) applications such as in-vehicle signage or in-vehicle information.

This document supports

— the efficient IT-centric encoding for ITS messaging to represent specific road traffic signs and pictograms, and

— the consistent decoding of encoded road traffic signs and pictogram data for display in ITS.

This document can support the translation of signs and pictograms with a similar purpose from the representation used in one country to the representation used in another country.

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Intelligent transport systems — Graphic data dictionary —

Part 2: Examples

1 Scope

This document reports examples of ASN.1 codes based on ISO 14823-1[1)], which specifies a graphic data dictionary (GDD) including the ASN.1 coding rule for GDD.

NOTE Some of the ASN.1 codes described in this document are re-formatted based on ISO 14813-6.

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 definitions apply.

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

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

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

3.1
attribute
code attached to the *pictogram* (3.4) in order to clarify the meaning of the pictogram

3.2
country code
internationally recognised codes stipulated by ISO 3166-1 when referring to countries and subdivisions of countries

3.3
graphic data dictionary
GDD
catalogue of codes for *pictograms* (3.4) organised systematically

3.4
pictogram
sign or icon rendered on a display of an IT system such as a computer or VMS to inform travellers of information such as traffic regulations or public facilities

3.5
pictogram category code
codes assigned to the more detailed category of a *pictogram* (3.4) type under the service category

3.6
qualifier
parameter for an *attribute* (3.1) used to express the meaning of *pictogram* (3.4) quantitatively

1) To be published.

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4 Abbreviated terms

ASN.1 Abstract Syntax Notation One

ITS Intelligent Transport Systems

IT Information Technology

UML Unified Modelling Language

U.N. United Nations

VMS Variable Message Sign

5 Use case

A typical use case of GDD is in-vehicle signage service, which is detailed in ISO/TS 17425.

6 Examples of ASN.1 description

6.1 ASN.1 schema

The ASN.1 description of GDD consists of pictogramCode and attributes. Attributes are optionally utilised when a pictogram has quantitative factors such as time, length or angle. The ASN.1 schema of GDD is as follows.

```
GDD {iso (1) standard (0) gdd(14823) version1 (0)}
DEFINITIONS AUTOMATIC TAGS::=
BEGIN

GddStructure::= SEQUENCE{
pictogramCode        Pictogram,
  attributes           GddAttributes OPTIONAL
}
Pictogram::=SEQUENCE {
  countryCode     Pictogram-countryCode OPTIONAL,
  serviceCategoryCode     Pictogram-serviceCategory,
  pictogramCategoryCode   Pictogram-category
}

Pictogram-countryCode::=OCTET STRING (SIZE (2))

Pictogram-serviceCategory::=CHOICE {
  trafficSignPictogram     Pictogram-trafficSign,
  publicFacilitiesPictogram  Pictogram-publicFacilitySign,
  ambientOrRoadConditionPictogram  Pictogram-conditionsSign
}
Pictogram-category::= SEQUENCE {
  nature        Pictogram-nature,
  serialNumber        Pictogram-serialNumber
}

Pictogram-trafficSign::=ENUMERATED{
  dangerWarning (11),
  regulatory (12),
  informative (13),
  ...
}
Pictogram-publicFacilitySign ::= ENUMERATED {
  publicFacilities (21),
  ...
}
Pictogram-conditionsSign::=ENUMERATED{
  ambientCondition(31),
```


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```
  roadCondition (32),
  ...
}
Pictogram-nature::=INTEGER (1..9)
Pictogram-serialNumber::=INTEGER (0..99)

GddAttributes::= SEQUENCE (SIZE(1..8),...) OF CHOICE{
dtm InternationalSign-applicablePeriod,
edt InternationalSign-exemptedApplicablePeriod,
dfl InternationalSign-directionalFlowOfLane,
ved InternationalSign-applicableVehicleDimensions,
spe InternationalSign-speedLimits,
roi InternationalSign-rateOfIncline,
dbv InternationalSign-distanceBetweenVehicles,
ddd InternationalSign-distinationInformation,
set InternationalSign-section,
nol InternationalSign-numberOfLane
}

InternationalSign-applicablePeriod::= SEQUENCE {
year SEQUENCE {
yearRangeStartYear Year,
yearRangeEndYear Year
} OPTIONAL,
month-day SEQUENCE {
dateRangeStartMonthDate MonthDay,
dateRangeEndMonthDate MonthDay
} OPTIONAL,
repeatingPeriodDayTypes RPDT OPTIONAL,
hourMinutes SEQUENCE {
timeRangeStartTime HoursMinutes,
timeRangeEndTime HoursMinutes
} OPTIONAL,
dateRangeOfWeek DayOfWeek OPTIONAL,
durationHourminute HoursMinutes OPTIONAL
}

MonthDay::= SEQUENCE {
month MonthDay-month,
day MonthDay-day
}
HoursMinutes::= SEQUENCE {
hours HoursMinutes-hours,
mins HoursMinutes-mins
}
Year::=INTEGER(2000..2127,...)
MonthDay-month::=INTEGER (1..12)
MonthDay-day::=INTEGER (1..31)
HoursMinutes-hours::=INTEGER (0..23)
HoursMinutes-mins::=INTEGER (0..59)
RPDT::= BIT STRING {national-holiday (0), even-days(1), odd-days(2), market-day(3) } (SIZE
(4))
DayOfWeek::= BIT STRING {unused(0), monday(1), tuesday(2), wednesday(3), thursday(4),
friday(5), saturday(6), sunday(7)} (SIZE (8))

InternationalSign-exemptedApplicablePeriod::= InternationalSign-applicablePeriod

InternationalSign-section::= SEQUENCE{
startingPointLength   Distance OPTIONAL,
continuityLength      Distance OPTIONAL
}

InternationalSign-numberOfLane::= INTEGER(0..99)

InternationalSign-directionalFlowOfLane::= INTEGER {
   sDL   (1),
   sLT   (2),
   sRT   (3),
   lTO   (4),
   rTO   (5),
   cLL   (6),
```

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