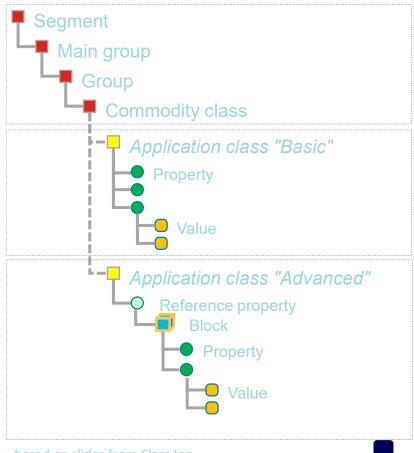# ≡ CLASS

A BRIEF INTRODUCTION

ECLASS AS RDF FOR W3C WOT TD
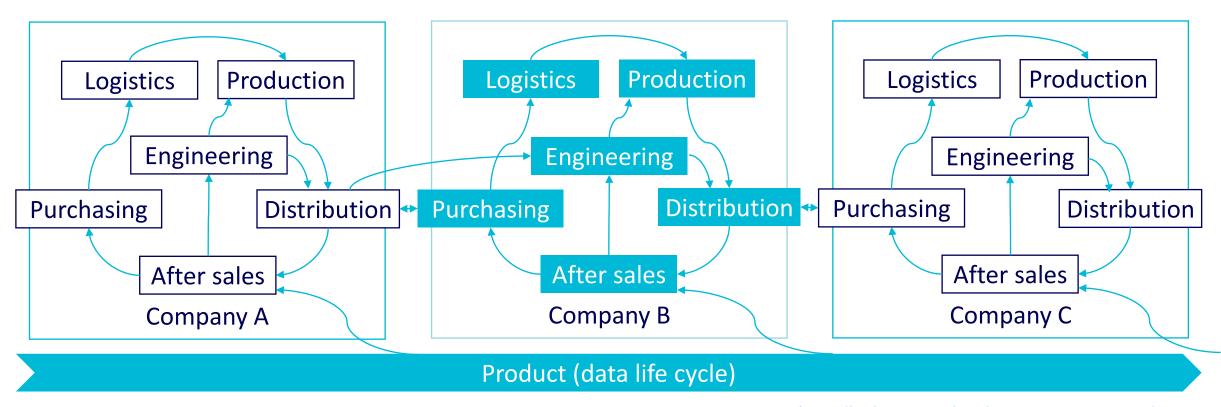
BASIS OF ECLASS

E CLASS

- ECLASS is a hierarchical standard for master data to classify and describe products and services
  - Classification tree over four levels
  - Properties at 4th level added
  - Values added to properties
  - Keywords at all levels

→Semantic interoperability

→Not an exchange format
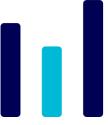

based on slides from Class.Ing.

DATA SUPPLY CHAIN

E CLASS

Company A

Company B

Company C

Product (data life cycle)

*not all relations end exchange processes are shown

FACTS & FIGURES

E CLASS

~ 4000 users

>19.000 properties

no expense with the translation and mapping of master data standardization

~ 150 active members

16 different languages

>45.000

4

transparent and open development In XX releases

global network of IT Service Providers

>80 cooperations with global leaders in CAx or with international standardization / system providers
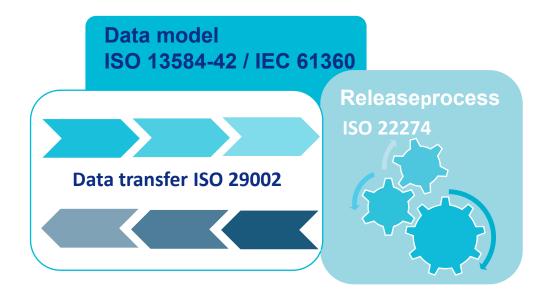
since 2000

MORE FACTS

- ISO/IEC based data model

Data model
ISO 13584-42 / IEC 61360

Releaseprocess
ISO 22274

Data transfer ISO 29002

- Constant updates & permanent improvements

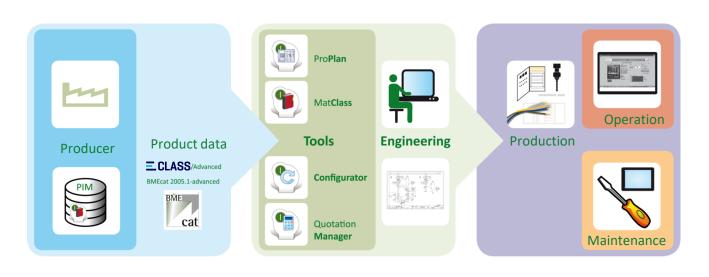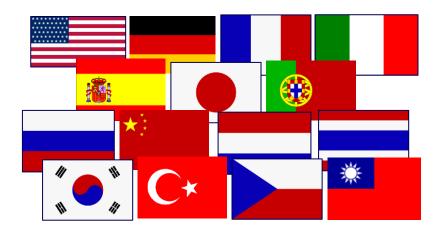| 08-2020	**09-2021**	09-2022
ECLASS Minor-Release 11.1	**ECLASS Major-Release 12.0**	ECLASS Minor-Release 12.1

MORE FACTS

ECLASS

- Consistent use

- International & multilingual
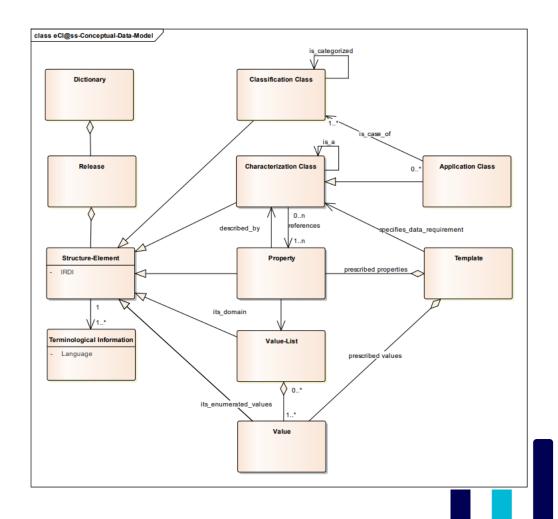
- Cross-sector

- Compatible to other standards

CONCEPTUAL DATA MODEL

- https://www.eclass.eu/static/documents/wiki/Technical_Specifications/ECLASS_Technical-Specification_11_Conceptual-Data-Model_v_1.0.pdf
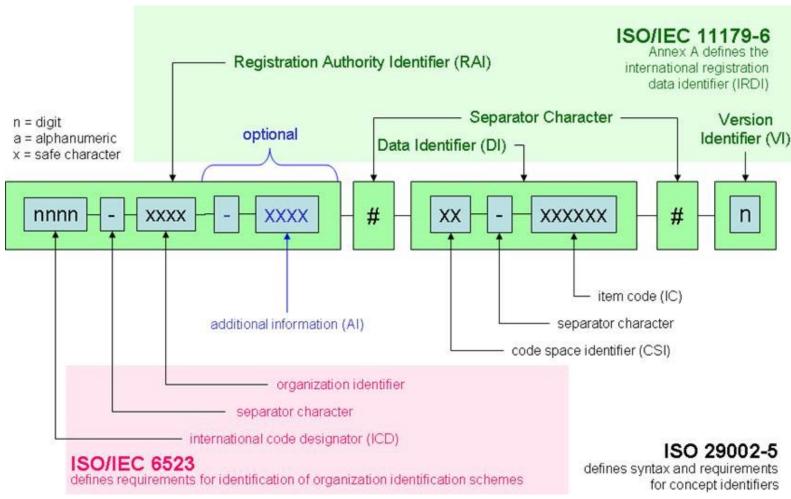
ECLASS – STRUCTURAL ELEMENTS

= CLASS

Structural element	Abbreviation	Definition
Classification Class	CC	A product group identified by a preferred name and an eight-digit coded name that represents the four-level classification structure
Application Class	AC	Class that comprises all characteristics described by properties
Keyword	KW	An alternative name of a class
Property	PR	A characteristic of a class
Synonym	SY	An alternative name of a property
Unit	UN	Standardized unit of measure
Value List	VL	A restrictive list of valid specifications of a property
Value	VA	A specification of a characteristic
Aspekt	AS	Sub-class of an application class that comprises all properties describing a certain aspect of a product, not the product itself, e.g. packing information
Block	BL	Sub-class of an application class that comprises all properties describing a certain part of a product
Reference Property	RP	Property that references a block

Further information: Structure_and_structural_elements
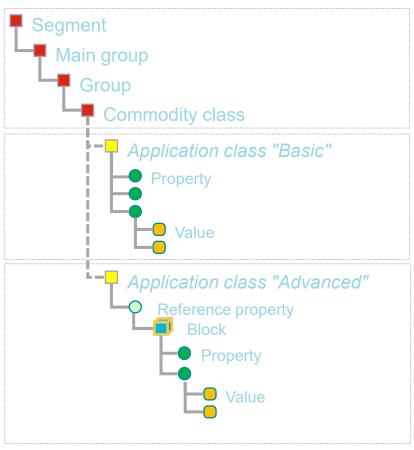
EACH STRUCTURAL ELEMENT HAS AN IRDI

ΞCLASS

0173-1#02-AAO677#002

Corresponds to "manufacturer name"

http://wiki.eclass.de/wiki/IRDI

ECLASS – BASIC VS. ADVANCED

Segment
Main group
Group
Commodity class

Application class "Basic"
Property
Value

Application class "Advanced"
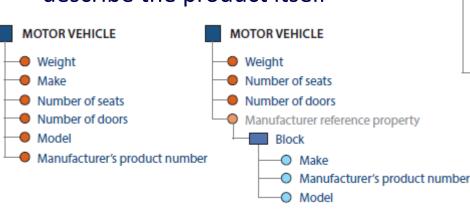Reference property
Block
Property
Value

based on slides from Class.Ing.

- "Basic" means that all characteristics are provided flat in a one-dimensional list.

- Under "Advanced", the characteristics are mapped multidimensionally
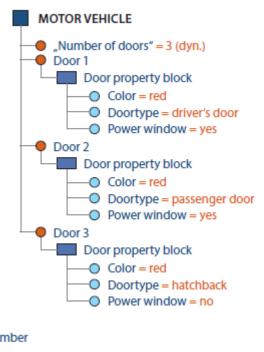 - More possibilities, but also more complexity
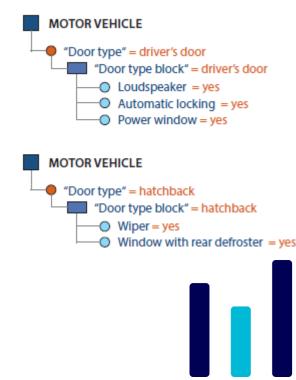
ECLASS – ADVANCED CONCEPTS

Aspect: Bundling of characteristics around the product that do not describe the product itself, such as vendor, packaging, and so on.

Block: Bundling / structuring of features that describe the product itself

Cardinality solves the problem of multiple descriptive properties on a product
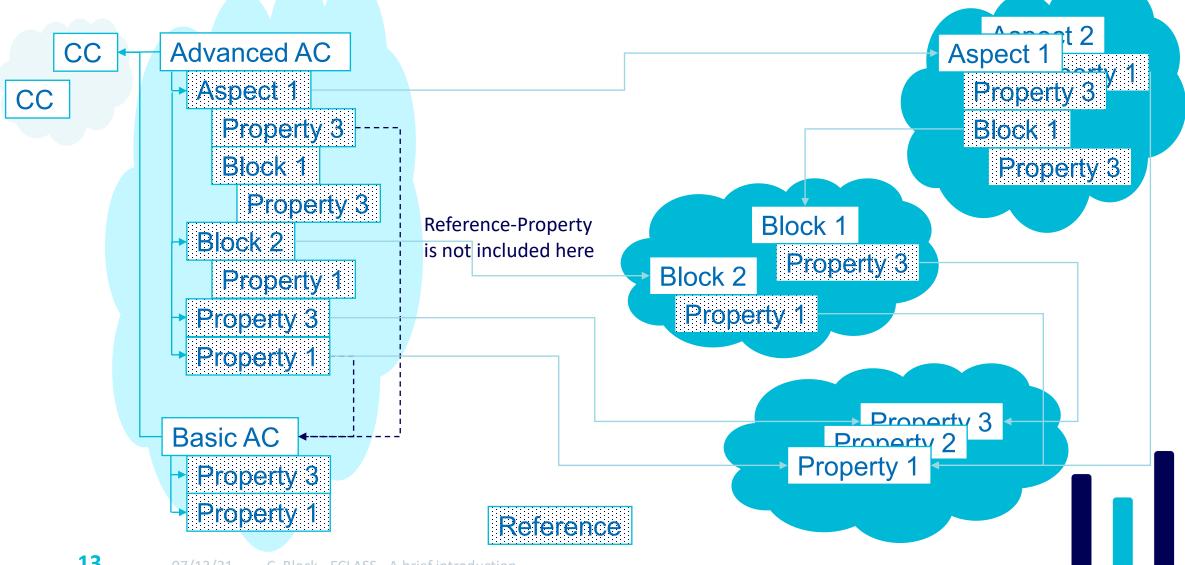
Polymorphism allows a differentiation of the description of a product

HOW STRUCTURAL ELEMENTS RELATE

07/13/21   C. Block - ECLASS - A brief introduction
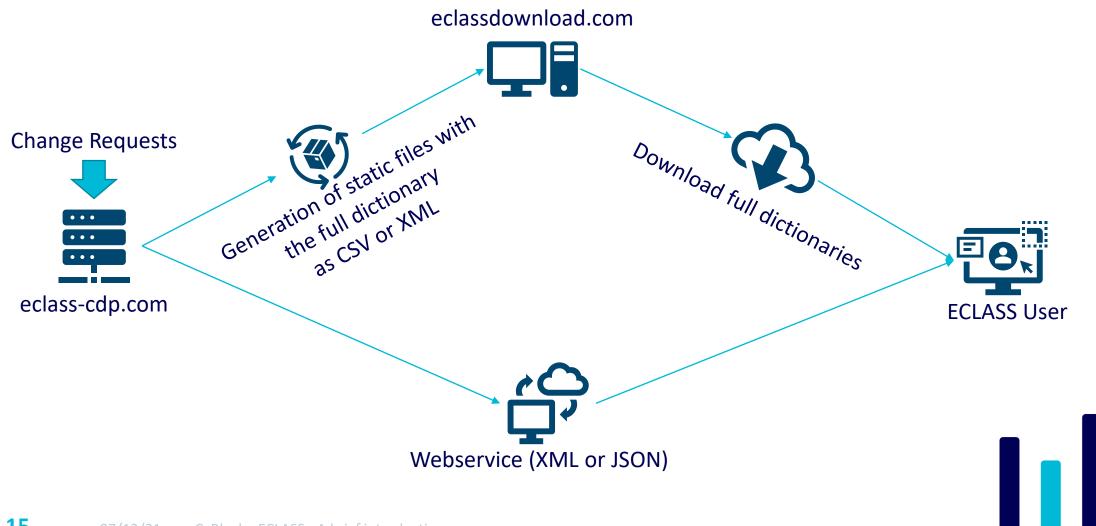
13

ECLASS USE CASES

- BMEcat

- ISO 29002-10

- AutomationML

- Asset Administration Shell

- OPC-UA

- **<u>New:</u>** W3C WoT TD → The support of semantic uniqueness

DICTIONARY EXCHANGE

ECLASS

eclassdownload.com

Change Requests

Generation of static files with the full dictionary as CSV or XML

Download full dictionaries

eclass-cdp.com

ECLASS User

Webservice (XML or JSON)

DICTIONARY EXCHANGE FORMATS

- CSV

- XML – OntoML & UnitsML
  - IEC 61360
  - XSD → ISO 13584-32 ontoML
    - http://wiki.eclass.eu/wiki/ISO_13584-32_ontoML
  - Units (UnitsML)
    - https://wiki.eclass.eu/wiki/UnitsML

- JSON – The new serialization format used in the ECLASS Webservice
  - https://app.swaggerhub.com/apis/ECLASS_Standard/ECLASS_Download_JSON

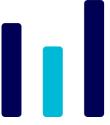- **Work in progress:** RDF

RDF GOAL AND PROCESS

ECLASS → RDF → Web of Things (WoT)
Thing Description (TD)

A specification for the transformation to RDF is currently under development

First use-case and evaluation in the TD

ECLASS AS RDF IN W3C WOT TD (DRAFT)

ECLASS

```
{

    "@context": "https://www.w3.org/2019/wot/td/v1",

    "title": "SPS analog/digital input/output module",

    "@type": [

        "Thing",

        "http://example.org/ECLASS_Model#IRDI_0173_1_01_AKE525_013" // context of SPS analog/digital input/output module

    ],

    "IRDI_0173_1_01_ADN228_006": { // "Identification Structure"

        "IRDI_0173_1_02_AAQ373_006": { // "Manufacture Structure"

            "IRDI_0173_1_02_AAO677_001": "Siemens AG", // "manufacture name"

            "IRDI_0173_1_02-AAU731_001": "Simatic S7" // "product family"

        }

    }

}
```

07/13/21   C. Block - ECLASS - A brief introduction

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ECLASS

THANK YOU VERY MUCH FOR YOUR ATTENTION.