

# Efficient Data Management

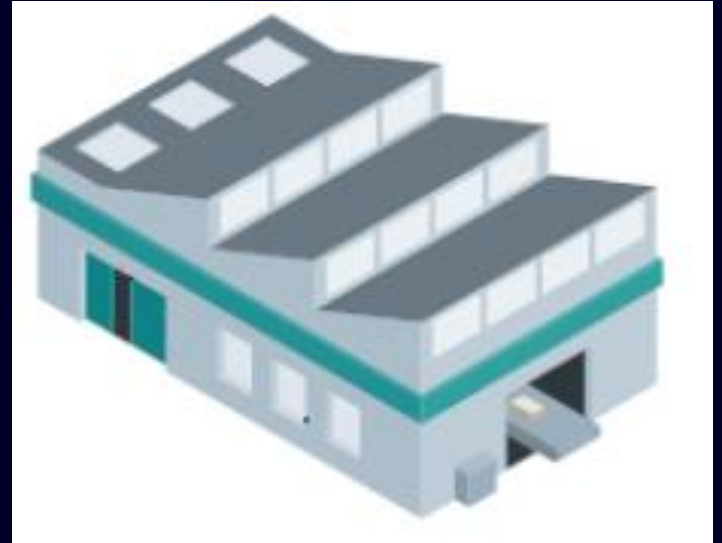
for QI with Asset Administration Shell



## Production Processes in a digital Industry / Industry 4.0

Today's industry is processes oriented

- structured in workflows with dedicated quality gates
- distributed over a variety of functions and stakeholders
- conforming to international quality standard ISO 9001 ff.
  - + cover the (stakeholder) interfaces in the workflow
  - + document conformity of part / module / product to specification



... and has to be transformed into a digital aera.

# The concept of a digital industry 4.0 – the forth revolution is about DATA

## DATA has to be:

- Linked to product
- Organized for a product
- Reported to product owner
- Transferred seamlessly
- Securely Interpretable
- Aggregated for Products and Corporate Level

## Solution:

- Digital Nameplate
- Asset Administration Shell
- Digital Product Passport
- Digital Battery Passport
- Data Spaces
- Semantics & Ontology
- Digital Product passport
- Asset Administration Shell



## Basis:

- IEC 61406-1
- IEC 63278-1
- CEN/CLC JTC 24
- DIN/DKE 99100
- ISO/IEC AWI 20151
- EU ESPR
- EU CSRD



# The concept of a digital industry 4.0 – the forth revolution is about DATA

## Solution:

Digital Nameplate

Asset Administration Shell

AAS submodel

Digital Product Passport

Digital Battery Passport

Dataspaces

Semantics & Ontology

## Benefit:

Unique ID with link to all customer information to product

Framework for standardized information representation

Envelop for specific type of data in AAS

Transfers selected AAS information to system owner

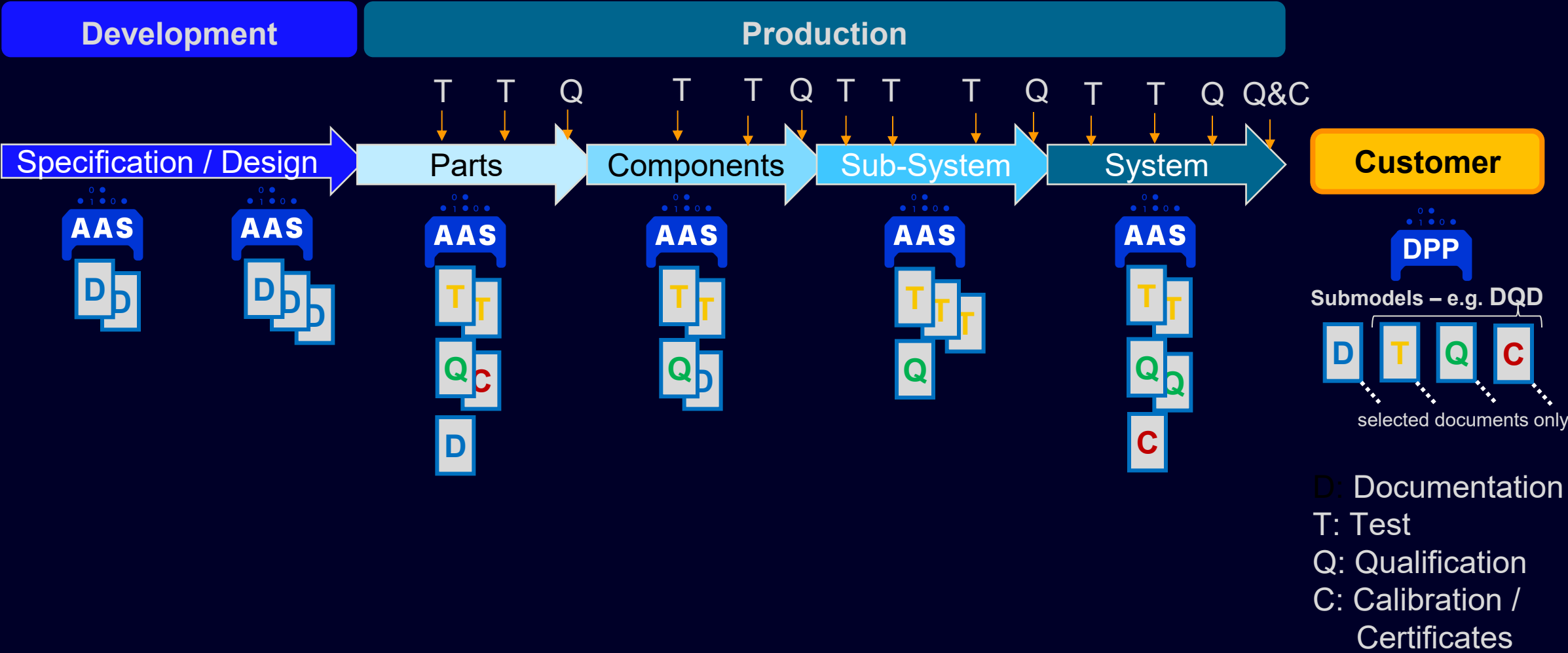
First enforcement of DPP for traction batteries

One connection to controlled data, DPP, AAS exchange

the BASIS for efficient Digitalization & Interoperability

# Product Lifecycle from Cradle to Gate for Digital Quality Documents

## AAS - DPP - DQD



# Digital Calibration Certificate and Quality Documents



SIEMENS

Certificate / Zertifikat / Certificat  
according to / nach / selon EN 10204, Type 3.1

Inspection certificate / Abnahmeprüfzeugnis / Certificat de réception

Topic / Thema / Thème :  
Quality inspection certificate (Factory calibration) of product SITRANS P (Pressure transmitter) /  
Qualitätsprüfzertifikat (Werkkalibrierung) von SITRANS P Geräte (Druckmessensformner) /  
Certificat d'inspection qualité (calibrage usine) d'appareil SITRANS P (Transmetteur de pression)

Object / Betreff / Objet :

Customer order / Kundenauftrag / Commande client :  
Customer / Kunde / Client :  
Internal order / Internetauftrag / Commande interne :  
Product number / Produktnummer / Produit numéro :  
Additional options / Optionen / Options :  
Product designation / Produktbezeichnung / Désignation du produit :  
Serial number / Seriennummer / Numéro de série :

7MF0340-1GL12-08F2-Z  
C11+C12+C15+C13-C20+C30+E20  
SITRANS P P320 GAUGE DIFF. PRESSURE  
N1N82110131255

Technical data / Technische Daten / Données techniques :  
Certificate option code / Bestellte Zertifikatsoption / Option  
certificat commandée : C11  
Nominal measuring range / Nennmessbereich / Etendue de mesure : 2.5 ... 250 mbar  
Max. permissible pressure / Max. Betriebsdruck / Pression admissible max. : PN 190  
Output / Ausgang / Sortie : HART 4 ... 20 mA  
Selected measuring range / Eingestellter Messbereich / Etendue de mesure  
paramétrée (Y01)(Y02) :  
Displayed unit / Anzeigeeinheit / Unité (Y21)(Y22)(Y23) : bar  
Measuring point number TAG N° / Messstellenbeschreibung / Description du  
point de mesure (Y15) :  
Measuring point test / Messstellenanricht / Information du point de  
mesure (Y16) :  
HART Address / HART Adresse / Adresse HART (Y17) :  
PROFIBUS Address / PROFIBUS Adresse / Adresse PROFIBUS (Y25) :  
Damping setting / Dämpfungseinstellung / Valeur d'atténuation (Y32) : 2 s  
Fieldbus compatibility / Feldbus Kompatibilität / Compatibilité bus de  
com (Y36) :  
Saturation limits / Sättigungsgrenzen / Limite de saturation (Y30) :  
Fail current / Fehlstrom / Courant de défaut (Y31) :  
Standards / Normen / Normes : EN 10204-3.1 + IEC 62828-2

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	0.0056
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1 <?xml version="1.0" encoding="UTF-8"?>
2 <doc:DigitalCalibrationCertificate xmlns:doc="https://ptb.de/doc" xmlns:xsi="
3 https://ptb.de/xsi" xmlns:xsd="http://www.w3.org/2000/09/XMLSchema" xmlns:ref="
4 https://www.w3.org/2001/XMLSchema-instance" xmlns:reftypes="https://www.w3.org/2001/XMLSchema-instance"
5 https://ptb.de/doc https://ptb.de/doc/v3.3.0/doc.xsd">
6 <!--
7 DCC - Digital Calibration Certificate
8 Copyright (c) 2019 - 2022 Physikalisch-Technische Bundesanstalt
9
10 This XML dataset is free software: you can redistribute it and/or modify
11 it under the terms of the GNU Lesser General Public License as published by
12 the Free Software Foundation, version 3 of the License.
13
14 This XML is distributed in the hope that it will be useful,
15 but WITHOUT ANY WARRANTY; without even the implied warranty of
16 MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the
17 GNU Lesser General Public License for more details.
18
19 The development of minimum requirements for a digital calibration
20 certificate (DCC) is partially funded and
21 supported by the joint research project EMPIR-17IND02 (title: SmartDoc).
22 This project (17IND02) has received funding from the EMPIR programme
23 co-financed by the participating States
24 and from the European Union's Horizon 2020 research and innovation programme.
25 The further development of the digital calibration certificate (DCC) is
26 partly supported by the Lighthouse
27 project GEMIMET-II (GEMIMET-01 M200018) funded by the German Federal
28 Ministry for Economic Affairs and
29 Energy (BMWi) and the project "International Standard Accident Number"
30 (ISAN) funded by the Volkswagen Foundation (Volkswagenstiftung).
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32 Documentation: https://ptb.de/doc
33 This is a template for temperature.
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# Asset Administration Shell – Submodell Digital Quality Document with DCC

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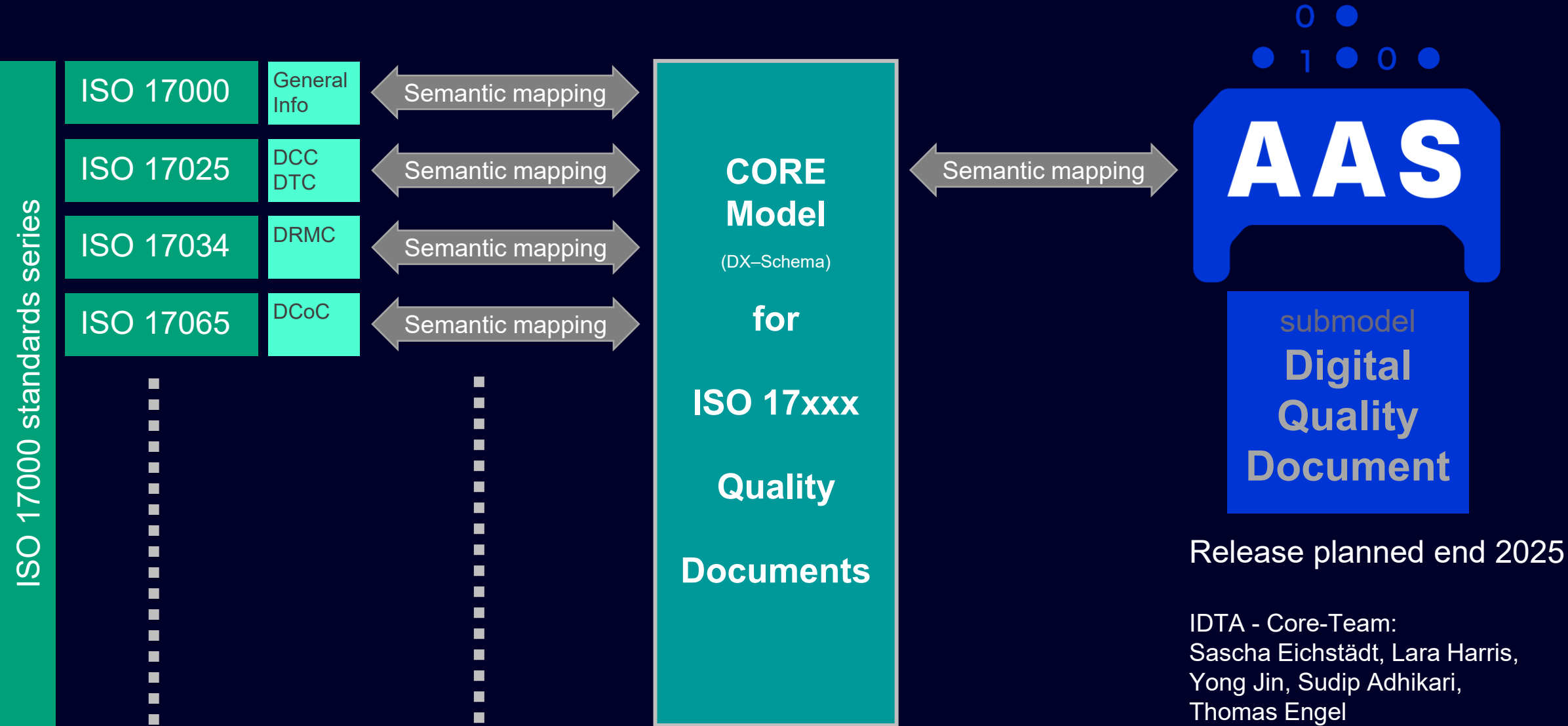
## Data utilisation/validation

- Minimalistic
- Basic
- SW-Adjustment
- Conformity Proof
- Audit/Full Check

## Data utilisation/value

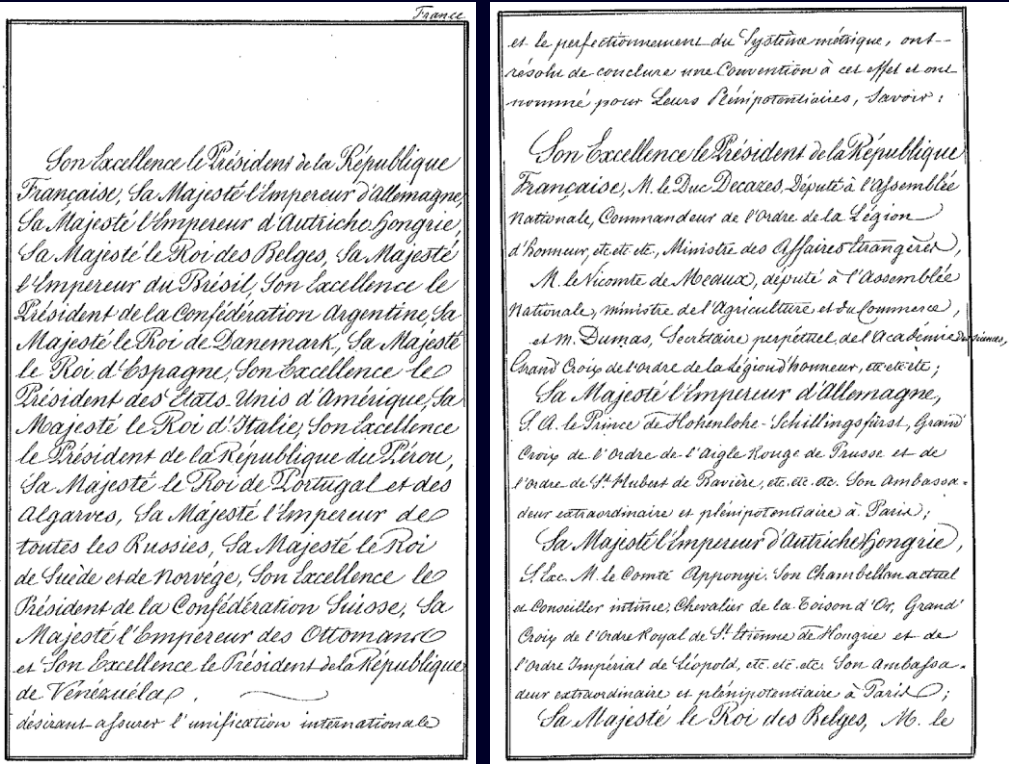
- Minimalistic
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- + Conformity Proof
- + Audit/Full Check

„One“ digital language – the basis for a common semantics

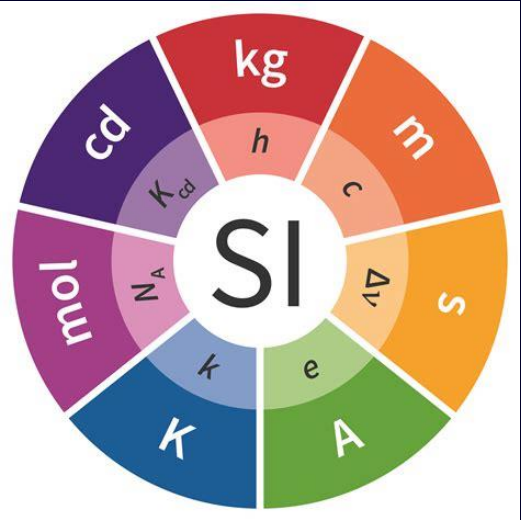




# The international (digital) Units of Measurement



Source: MINISTÈRE DES AFFAIRES ÉTRANGÈRES; DIRECTION DES ARCHIVES; le 6 décembre 2012



Source: BIPM, SI brochure



Source: BIPM

Coming early 2026:  
**IEC 62720–CDD – Units of Measurement:** All 2180 units traced to **BIPM SI reference point**  
International standard – royalty free – copyright protected

Core team: Gernot Rossi, Daniel Hutzschenreuter, Maximilian Gruber, Klaus Dickmann, Thomas Engel

# Digital Twin proposed by **INDUSTRIE4.0**

10



**REALITY LAB**

**HRS**



**Sensors**



**Data Management System**



**DIGITAL TWIN**



**AAS**

**ASSET ADMINISTRATION SHELL**



**Digital Certificates**

**CLASS**

**Digital Registration Certificate**

**Asset**

**Cross-stakeholder development/optimisation over the life cycle**

**QUALITY**

**STAKEHOLDERS**

Manufacturer Developer  
Operator Calibration Lab



**OUR ROLE**

- *Creating an industry-ready infrastructure using our reality Lab.*
- *Use of proposed Industry 4.0 tools and standards,*
- *Testing and, if necessary, suggestions for improvement.*
- *Focus on QI, e.g. as a user: use of a DCC.*





"In the digital era, the value of data is not just in its existence, but in its quality, consistency, reliability, and trustworthiness throughout the digital processing chain."

# Contact

Published by Siemens AG

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