EURAMET EMPIR

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# DCC2GO

## Supporting the implementation of Digital Calibration Certificates in the European metrology community

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# Small Collaborative Project

DCC 2 GO

DFM
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EESTI METROLOOGIA KESKASUTUS
METROSERT


IMBIH

VTT

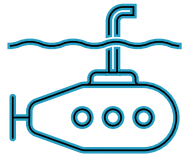
PTB
Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin

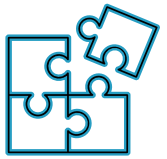
DANISH TECHNOLOGICAL INSTITUTE

# Capacity Building

**DCCs are insufficiently known and understood at the TC level**

- Need for
  - Very practical examples for DCCs and their use
  - Understanding of what DCC really means
  - Understanding of what changes with DCC compared to analogue CC
  - Bridge gap of technical understanding within EURAMET and within the NMIs (e.g., DCC is typically considered in IT department rather than in the cal lab)
- Suggestions
  - Questionnaire on maturity of digital transformation and needs in EURAMET
  - Concrete example supported by a guideline project by a TC (guideline as annex to existing one)
  - Circulate more information at plenary meetings, e.g. TC plenary
  - Invite TCs to seminars organised by individual NMIs
  - Develop arguments / business cases
- Open questions
  - Open (software) toolbox that can be used by NMIs and smaller calibration labs?
  - How to involve TC-QM and quality management at the NMIs in particular?
  - Relation of DCC and FAIR data in industry and science? What is required from a DCC to provide information according to the FAIR+X principles





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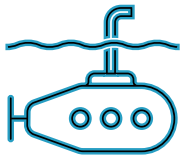

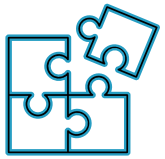

# Work Packages

### *WP1: Creation of a general knowledge base for DCCs*

The aim of WP1 is to produce structured and **easy-to-understand information material** that can provide a clear understanding of DCCs, their benefits and necessary requirements. The general knowledge base for DCCs will be used to produce a **DCC training compendium**, that can be used by stakeholders with **no prior knowledge** of DCCs to gain basic knowledge on DCCs. The DCC training compendium should be suitable for a wide range of stakeholders with particular focus on the SEND community.

### *WP2: Development of practical guidance for metrology institutes to start working with DCCs*

The aim of WP2 is to produce **practical guidance** for metrology institutes to **be able to start** working with DCCs. The practical guidance will be used to produce a DCC starter kit for DCC implementation, containing **step-by-step** guidance for the creation, practical implementation and secure delivery of **temperature and pressure DCC**. The DCC starter kit will be focussed on the SEND community and will consider the large number of calibration certificate types issued and their wide range of applications. The applicability of the DCC starter kit will be ensured by validation by the project partners in the domain of temperature followed by an adaption to the domain of pressure calibration.

# Training compendium (WP1)

**Task 1.1: Collation of basic knowledge on DCCs relevant for NMIs and DIs (PTB)**

The aim of this task is to collate together information on the basic properties and advantages of DCCs from the perspective of the NMIs and DIs. The information should be suitable for use by NMIs/DIs that have little or no prior knowledge of DCCs. Relevant standards/regulations will be included, as well as technical specifications for metrology practitioners, technical support (e.g. IT information) and overview documents for senior management.

**Task 1.2: Collation of basic knowledge on DCCs relevant for NMI and DI stakeholders (VTT)**

The aim of this task is to collate together information on the basic properties and advantages of DCCs from the perspective of NMI and DI stakeholders, e.g. in industry and other stakeholder organisations in the metrology community e.g. CIPM, OIML. The information should be suitable for use by stakeholders that have little or no prior knowledge of DCCs and will include how DCCs will impact collaborations between stakeholders and NMIs and DIs.

**Task 1.3: Creation of a structured and easy-to-understand overview on DCCs (PTB)**

The aim of this task is to produce a structured and easy-to-understand overview of the types and different functionalities of DCCs. The overview will categorise DCCs currently in use or in development in terms of different types of functionalities, application areas, as well as their benefits and requirements. This should then enable providers and users of calibrations to decide which types of DCCs are the most feasible and appropriate for specific use-cases.

# Starter-Kit (WP2)

**Task 2.1: Collation of information on DCC types, their handling and available IT tools (DFM, DTI)**

This task aims to collate together knowledge on working with different DCC types in use or in development, including explanatory comments, hands-on examples and (where available) IT tools for the creation and use of DCCs. Based on the information collated, guidelines on the creation and implementation steps for DCCs will be produced.

**Task 2.2: Collation of cryptographic tool information for DCC protection and validation (Metrosert)**

The aim of this task is to collate together knowledge on how cryptographic tools and in particular digital signatures can be used with DCCs in order to protect and validate the content from manipulation. The work will include different levels of security, the validation of digital signatures and relevant regulations and will contribute to the practical guide in A2.1.3.

**Task 2.3: Application and validation of the DCC starter kit (IMBiH)**

The aim of this task is to produce, apply, and validate a DCC starter kit. The work will include the implementation of DCCs for temperature according to the practical guide produced in Task 2.1. The application of the DCCs in the field of pressure will also be demonstrated and based on this, guidelines on how to adapt DCCs for use in other metrological domains will be produced.

- ✓ Project ends in October 2023
- ✓ A very early stage of the created material can be found on Github:

https://github.com/DCC2GO-Project

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