Metrology for Digital Transformation

SIM-MWG-14

BIPM - FORUM-MD ad hoc Task Group on Harmonizing DCC and DRMC

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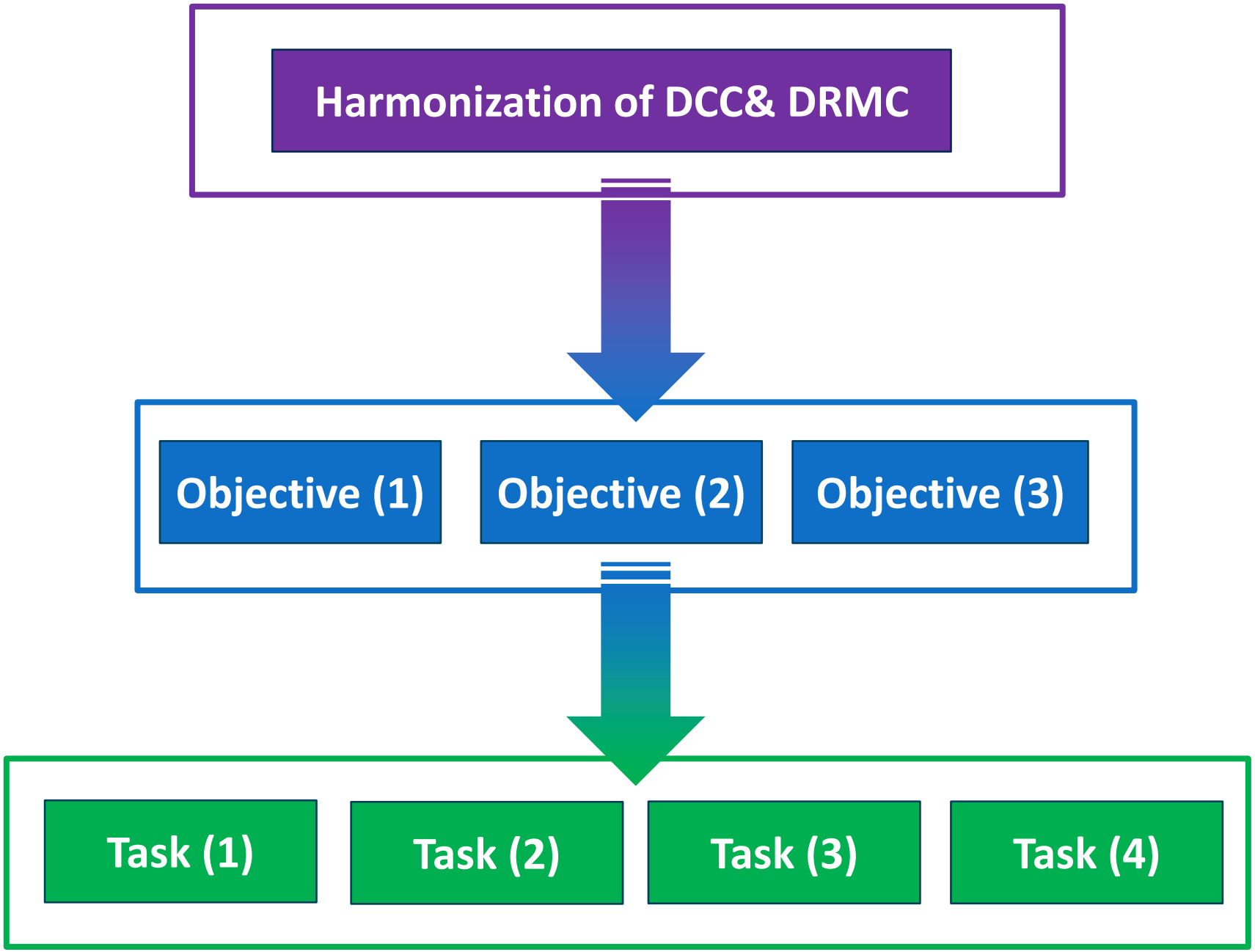

Harmonization of DCC& DRMC
Objective (1)
Objective (2)
Objective (3)
Task (1)
Task (2)
Task (3)
Task (4)

The aim

Developing Common Understanding

The objective is to increase the awareness and understanding among calibration laboratories and stakeholders about the potential and benefits of digital calibration certificates (DCC) and digital reference material certificates (DRMC). This involves organizing seminars and workshops that focus on the use cases of DCCs/DRMCs, aimed at broadening acceptance and readiness for DCC/DRMC.

- Organize Seminars and Workshop
- Highlight Benefits of DCC/DRMC
- Promote Best Practices

Source: OpenAI. (2024). ChatGPT (4o)

Objective (1)

Identifying Stakeholder Needs

The aim is to identify and consolidate the specific needs, expectations, and requirements of various stakeholders in the digital calibration certificate process. This will be achieved through gathering information from surveys, interviews, and interactive workshops to gather insights and feedback.

- Conduct Surveys
- Perform Interviews
- Feedback Loop

Source: OpenAI. (2024). ChatGPT (4o)

Objective (2)

Harmonizations of DCC/DRMC

The goal is to develop a harmonized approach to DCCs and DRMCs that meets the international metrological requirements and standards. By understanding and integrating the user stories and identified needs, this objective seeks to outline the areas where standardization is crucial, ensuring consistent and reliable use of DCCs/DRMCs across different sectors and regions.

- Understand User Stories and Needs
- Identify Key Areas for Standardization
- Develop Standardization Guidelines

Source: https://www.freepik.com/

Objective (3)

Gathering User Stories

The task involves collecting and documenting user stories and case studies that demonstrate the practical applications and benefits of digital calibration certificates. These stories will serve as a foundation to support the development of a value proposition, guidelines document, successful implementations, and identifying common challenges.

Source: OpenAI. (2024). ChatGPT (4o)

Task (1)

Developing Value Propositions

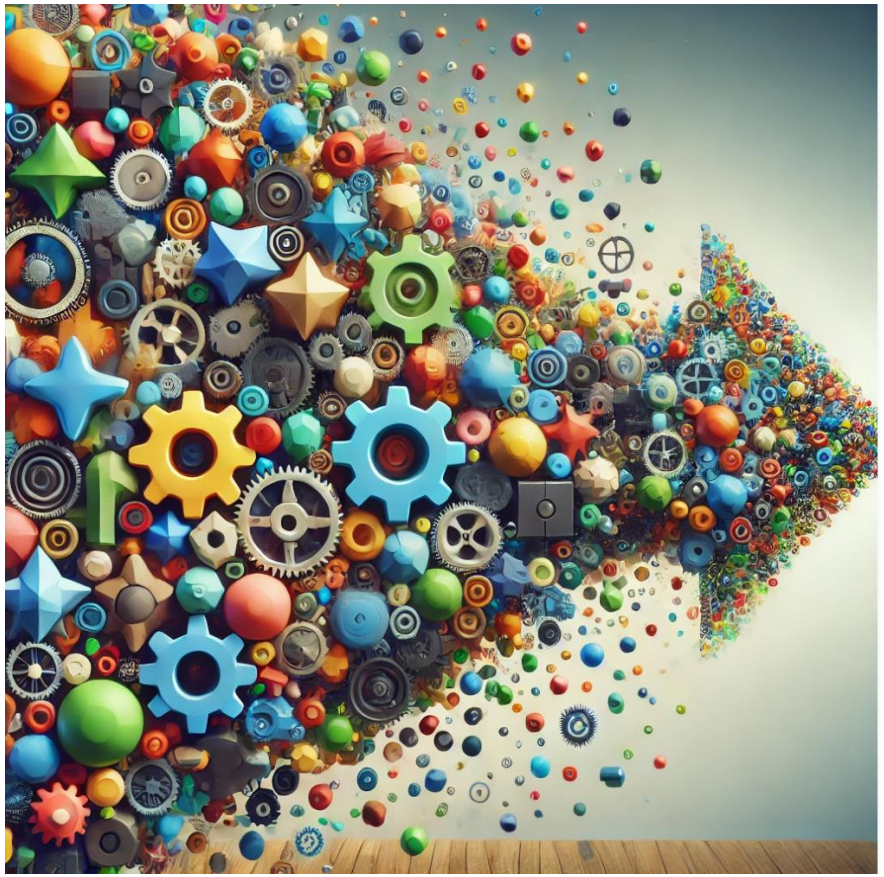
This task is focused on analysing the gathered user stories to extract key benefits and applications of DCCs/DRMCs, which will be used to create compelling value propositions. These propositions are intended to clarify the advantages of DCC/DRMC adoption to stakeholders, facilitating wider acceptance and implementation.

Source: OpenAI. (2024). ChatGPT (4o)

Task (2)

Harmonization DCC/DRMC

This task aims to propose specific areas and methods to harmonize practices related to DCC/DRMC. This effort will be based on insights from developed value propositions and user stories, aiming to create a comprehensive framework for implementation.



Source: OpenAI. (2024). ChatGPT (4o)

Task (3)

Preparation of Guidance documents

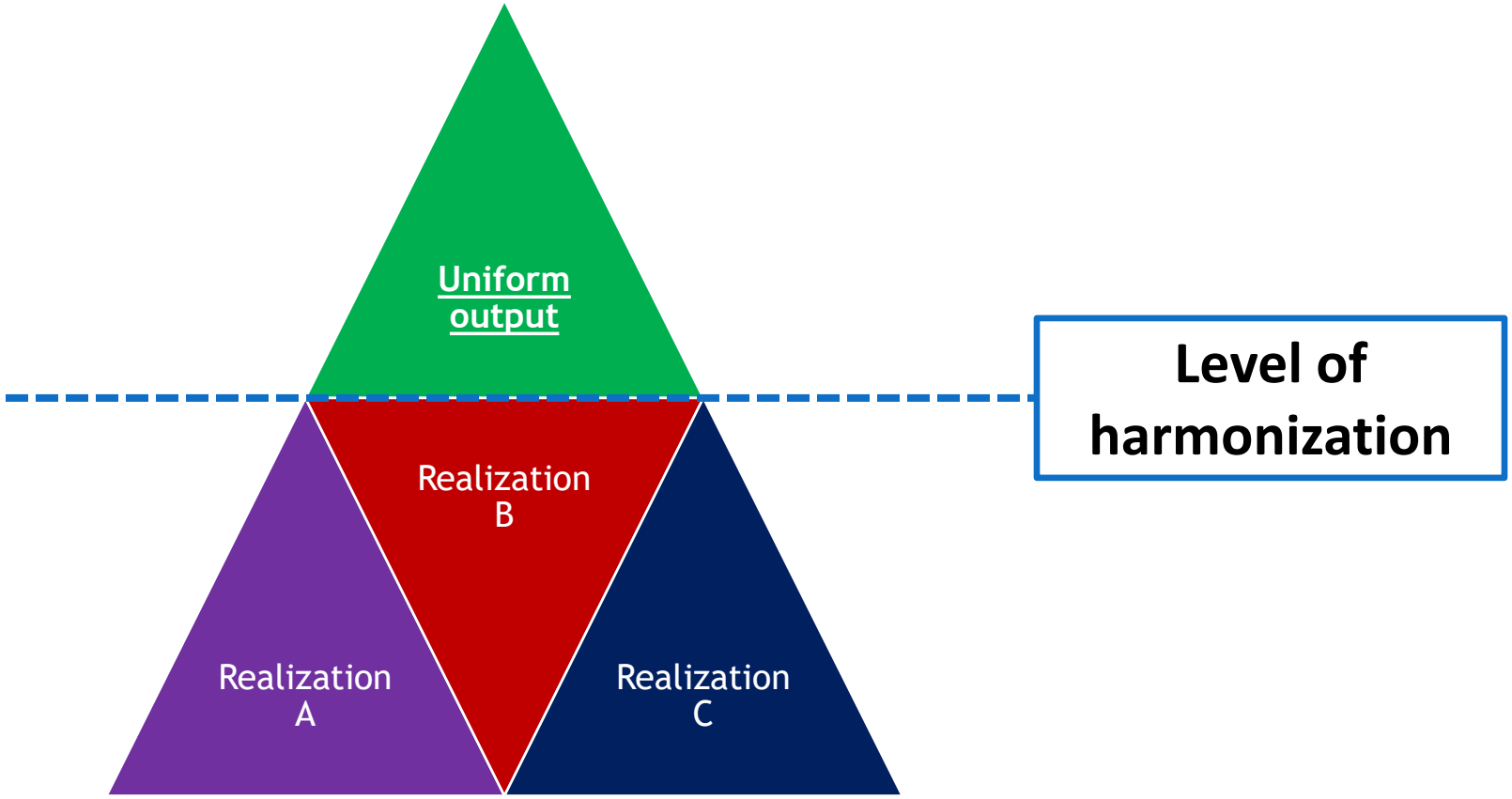
After establishing a harmonized framework, the next step is to develop detailed guidelines and best practices for the design, implementation, and use of digital calibration certificates. This includes creating documentation that provides instructions to ensure effective and consistent application of DCCs across various areas and settings.

Source: OpenAI. (2024). ChatGPT (4o)

Task (4)

Harmonization

- Different realizations of DCC,
- Uniform output,
- Digitalization (include DCC) will constantly evolve.



What should bring „D“ for „CC“

- better access to data,
- machine readable,
- the possibility of implementation into internal systems,
- the possibility of automatization of metrological activities,
- with higher numbers of calibrations, easier and more effective management,
- "Green deal effect" – elimination of papers, reduction of the load on resources (distribution, printing, etc.),
- Life cycle monitoring of sensors/devices,
- DCC can make it easy to analyze calibration data and create digital twins that help increase efficiency and safety in the process industry,
- DCC can support digital transformation by enabling suppliers and laboratories to connect to a digital calibration system with centralized management easily,
- DCC should use a standardized approach to data entry, which facilitates the comparison and harmonization of data from different sources.
- DCC can enable preventive maintenance by alerting the need for instrument inspection instead of relying on fixed intervals, leading to a better risk-based approach to maintenance and calibration.
- DCC can increases the speed of traceability by replacing paper-based processes with easy digital search capabilities.
- DCC should be flexible so stakeholders can use their preferred calibration processes while still creating easily shareable and searchable digital certificates.
- and others..

Benefits of DCC
or
What means „D“ in CC

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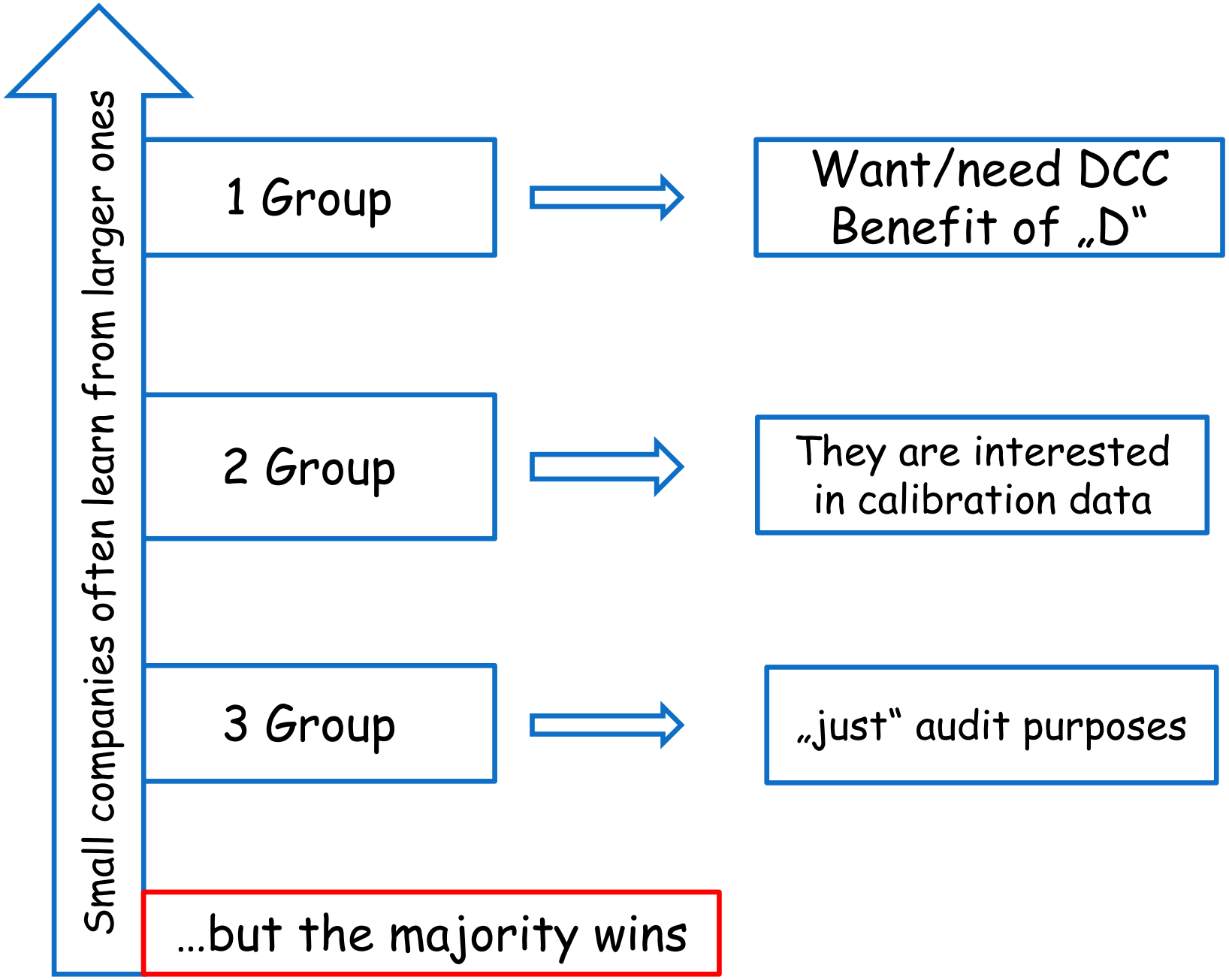
What really user wants?

Benefits of DCC or What means „D“ in CC



3 MAIN GROUPS

Crucial & Critical questions

- What is necessary for the proper use of DCC?
- *(When)* Will it be possible to use DCC globally?
- How can We trust DCC? (*paper vs. Digital form*)
- How will be achieved interoperability, sustainability and scalability?
- Etc..

What will be DCC?

- It will be only digital file such as XML, JSON, YAML...
- Whole ecosystem: processes + SW tools + digital file + …

Impact of the development of digitalization on DCC

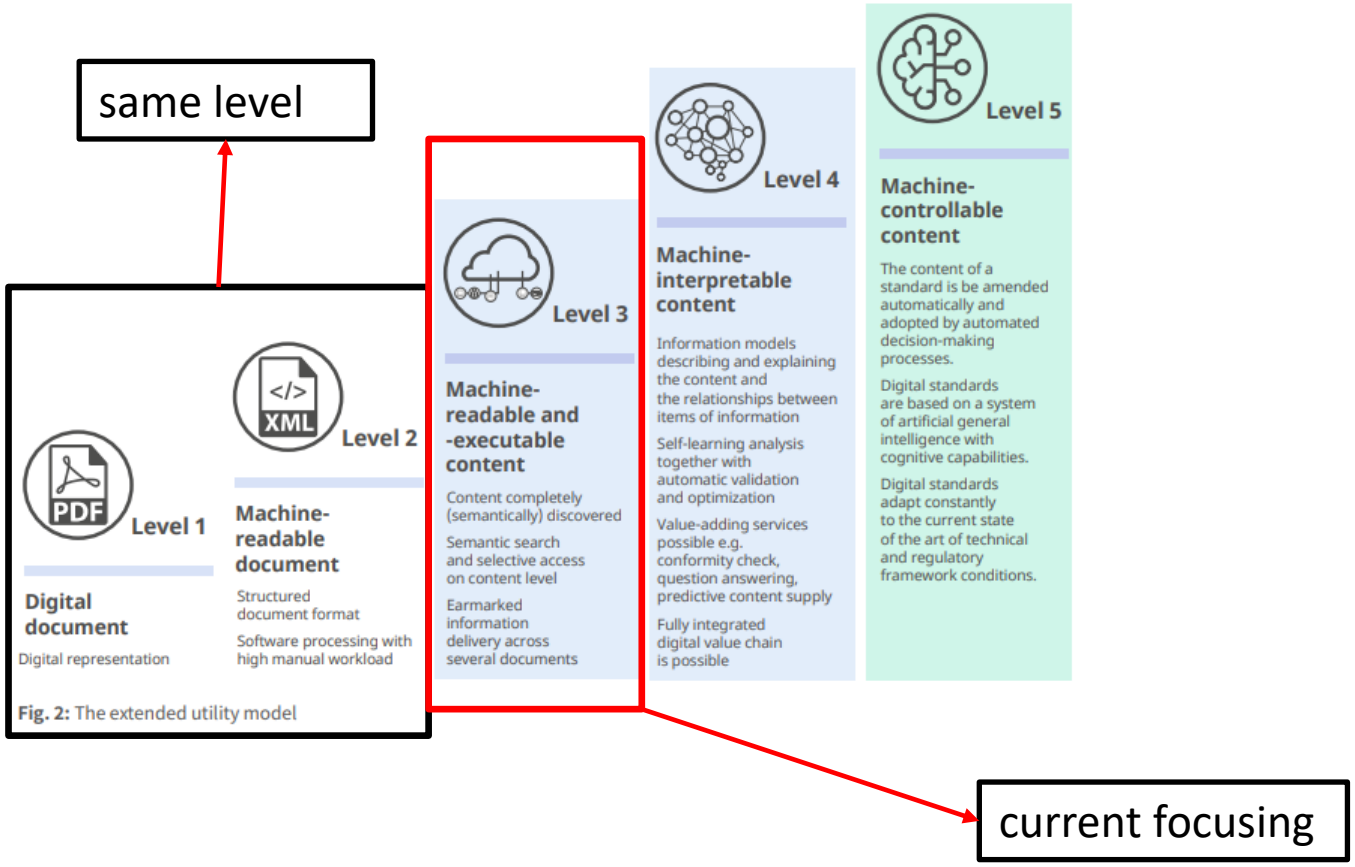


Fig. 2: The extended utility model

What is purpose of MR (machine readable) format?

- Currently PDF is MR.
- There are SW applications that can read "PDF/docx/xlsx/json..." relatively easily (e.g. GPT application).

Current status

- There are initiative projects that aim to implement DCC (e.g. EURAMET TC-IM 1448, CABUREK etc.)
- Even though the "DCC" shortcut has been on the table since at least 2017, we are still at the beginning.
- The most common reasons why DCCs are still not widely used are initial financial costs and harmonization.
- What is most needed is to hear from users of calibration certificates what they expect from DCC.

Questions and discussion

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