

Notes on a meeting of EFNDT Working Group 10 – NDE 4.0

Date: 15 January 2021
Time: 9:00 – 12:00 CET

Location: Google Meet

Present:

Johannes Vrana – DGZPF (chair) - Germany

Bento Alves – RELACRE – Portugal

Nick Brierley – BINDT – UK

Serge Dos Santos – COFREND - France

Luigi Ferrigno – AIPnD - Italy

Raphael Martinez-Oña – AEND - Spain

Antonello Tamburrino – AIPnD – Italy

Christophe Rebout – COFREND – France

Bernd Valeske – DGZFP - Germany

Ilkka Virkkunen – fiNDT - Finland

Martin Wall – BINDT - UK

Casper Wassink – KINT - Netherlands

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Meeting slides:



20210115 EFNDT
WG10 NDE 4.0 Meet

Agenda:

1. Determination of the keeper of minutes
 2. Adoption of the agenda
 3. Establishing WG10 & EFNDT BoD Introduction Presentation an NDE 4.0
 4. Setting the necessary structure in accordance with EFNDT regulations for WGs, including
 - a. Election of convenor and deputy
 - b. Member structure
 5. Analysis and evaluation of WG potential and differentiation to ICNDT SIG NDE 4.0, NDE 4.0 committees in the national societies, and the TIC digitalization group
 - a. Tasks of WG10 – in contrast to national and ICNDT groups
 - b. Objectives of the WG10
 - c. Interested parties
 - d. Planning of invited presentations
 6. Planning future activities
 7. Establishing links to non-european experts and societies
 8. Scheduling of next meeting
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1. Determination of keeper of minutes

Casper Wassink volunteers to keep minutes.

2. Adoption of the agenda

The agenda is adopted unchanged.

3. Establishing WG10 & EFNDT BoD Introduction Presentation an NDE 4.0

Johannes Vrana presents several slides that we previously used with the EFNDT board of directors. Subsequently a short discussion was held on how the group understands NDE 4.0. It was discussed that NDE 4.0 implicitly assumes that the new technologies covered by it add value, exceeding the value created by the individual engineering technologies. Furthermore, it is established that NDE 4.0 is not just AI for NDT, but that many more technologies are also implied.

4. Setting the necessary structure in accordance with EFNDT regulations for WGs

- a. Johannes Vrana was confirmed as the convenor of the working group. Luigi Ferrigno was proposed as the deputy convenor. He was be contacted to confirm his acceptance and accepted.
- b. It is agreed that members of the working group will represent their respective national societies. Additionally, some other interest groups may be invited to join. Each society and interest group is allowed two participants in the working group.

It is agreed that general meetings will be held approximately every 4 months, with task groups meeting more often. General meetings will be held aligned with the meetings of the EFNDT BOD to allow reporting to them. In order to facilitate a quick start to the activities general meetings will be held more frequently at first.

5. Analysis and evaluation of WG potential and differentiation to ICNDT SIG NDE 4.0, NDE 4.0 committees in the national societies, and the TIC digitalization group

The known activities in other bodies concerned with NDE 4.0 and digitalization were reviewed. A discussion was then held on what a typical European scope for the EFNDT WG would be. The items mention were capture in a powerpoint slide by Johannes Vrana, which is included below.

6. Planning future activities

As a first task, the working group will create links to other relevant organizations. The organization mentioned are capture in the PowerPoint slide below.

Action assigned with respect to this agenda item are captured at the end of these minutes.

Current Status of the Planning for WG10 Activities

Topics to be addressed (survey for prisonization)

- Lobbying (European Commission – AI: Johannes – Contact Fermin and TIC)
- Joint research proposals (Where do we start – what do we want to do? – What calls are out? – experimenting & Trial/Error)
- Definition of common terminology (Translation by national societies) – check with wider application (CEN, ...)
- Define values (ethics, accreditation, certification, validation, qualification ...) / European concerns regarding NDE 4.0
- Certification and Training (including Digitalization of Certification)

Talk to other groups / Invited lectures & presentation:

- European Commission (Importance to set European values for the future of the most valuable tool for QA)
- Medical (IEEE EMBS - <https://www.embs.org/> – AI: Serge)
- Metrology (DMSC - <https://qifstandards.org/about-dmsc/> AI: Nick, Luigi)
- TIC (AI: Johannes)
- Computer Science (AI: Antonello, Nick)
- Industry 4.0 (AI: Johannes)
- Energy Community (HOIS – AI: Martin)
- Aerospace (Fermin, Martin, Robert)
- Additive Manufacturing (WG6)
- NDT Engineer (Project European Welding Group & EFNDT - AI: Bento)
- Ethics (WG9 – Michele Carboni)

7. Establishing links to non-European experts and societies

This agenda items was considered to be covered by discussion in the previous agenda items

8. Scheduling the next meeting

The next meeting was scheduled for 19 March 2021 at 9:00

Annex 1: action items

Nr.	Action	Assigned too	Due date
1.	Contact Peter Trampus regarding making a presentation on the RIMA project	Casper Wassink	Next meeting
2.	Contact CEN/TC138 regarding their activities on NDT 4.0	Johannes Vrana	
3.	Create a link to metrology organizations, in particular DMSC and EMBC	Serge Dos Santos, Nick Brierley and Luigi Ferrigno	
4.	Create a link to the TIC council	Johannes Vrana	
5.	Create a link to organizations of computer scientists regarding industry 4.0	Antonello Tamburrino and Nick Brierley	
6.	Create a link to organizations regarding Industry 4.0	Johannes Vrana	
7.	Create a link to aerospace industry 4.0 groups	Martin Wall and Fermin Gomez	
8.	Create a link to HOIS	Martin Wall	
9.	Create a link to the EFNDT WG on additive manufacturing (WG 6)	Not assigned	
10.	Create a link to the EFNDT/EFWF working group on NDT engineer	Bento Alves	
11.	Create a link to the EFNDT working group on ethics in NDT (WG 9)	Michele Carboni	



Founding of the EFNDT WG10 for NDE 4.0

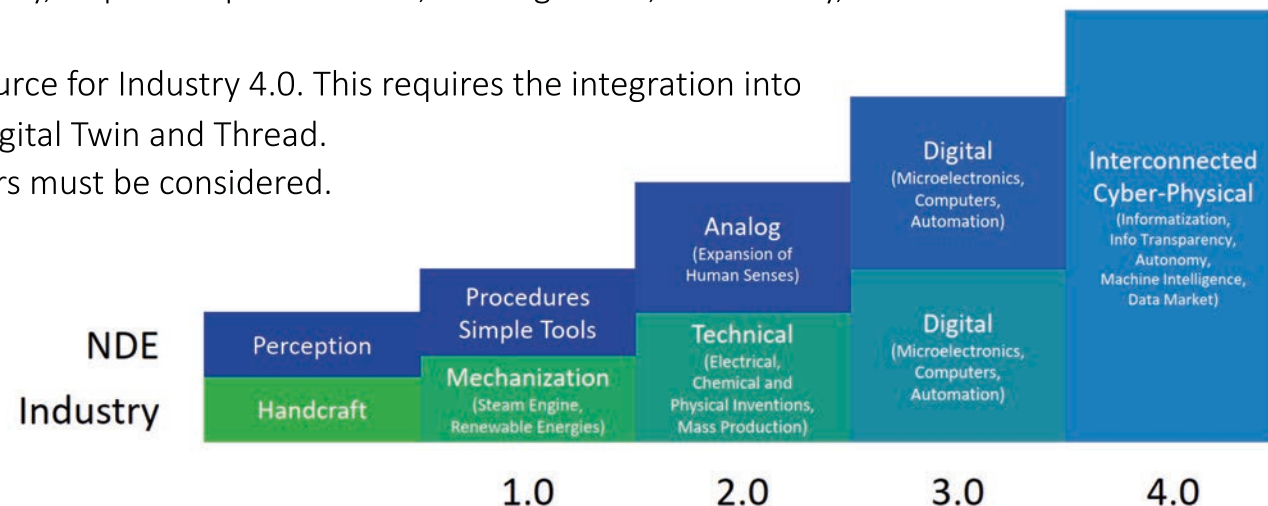
Johannes Vrana

Summary NDE 4.0

Summary NDE 4.0

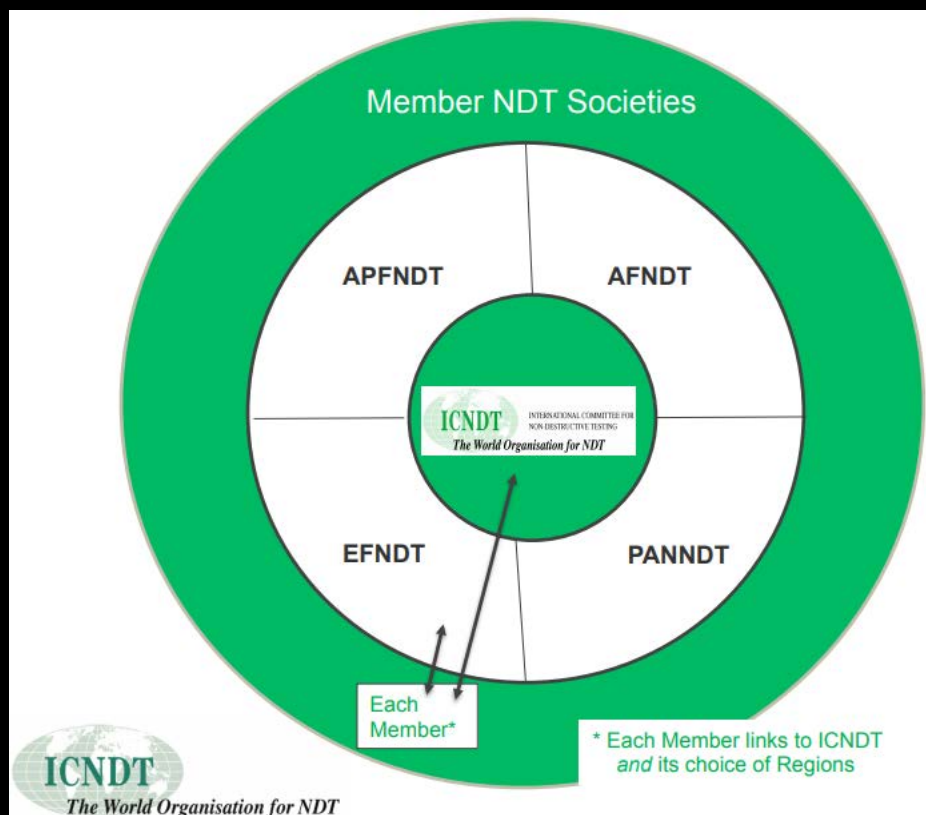
Industry 4.0 is the ongoing fourth industrial revolution and lives on data for its feedback loops and one of its biggest and most valuable data sources is NDE. Industry 4.0 leads to an improved production, maintenance, and design by analysing the data provided by the industrial internet of things using digital twins. Measures like artificial intelligence, big data processing, quantum computers or augmented reality allow to evaluate and visualise the data. Blockchains allow ensuring modification-proof storage and traceability and 5G the wireless connections needed by Industry 4.0. This will lead to big changes in NDE.

1. “Industry 4.0 for NDE” allows the use of Industry 4.0 emerging technologies to enhance NDE technologies and NDE data processing. Moreover it provides, with a statistical analysis of NDE data, insight into reliability, inspection performance, training status, consistency, and value of the inspections.
2. “NDE for Industry 4.0” paves the way for NDE as the ideal data source for Industry 4.0. This requires the integration into the IIoT, implementation of data transparency, and looking into Digital Twin and Thread.
3. Like with every revolution, the effects for humans and their careers must be considered.



Proposed General Tasks for EFNDT WG10 and Interaction with ICNDT SIG NDE 4.0

ICNDT at the heart of the Regions and the Members



ICNDT SIG NDE 4.0

- Preparation of NDE 4.0 Strategic Plan, incorporating NDE 4.0 Regional Plans
- Selection of the World Conference NDE 4.0 special session organiser
- Selection of the International NDE 4.0 Conference organiser
- Production of ICNDT NDE 4.0 publications, recommendations, documents and reports, including the ICNDT NDE 4.0 Guides
- Organisation of NDE 4.0 specialist international working groups, international forums and user groups
- Coordination of ICNDT NDE 4.0 Workshops to be held at World and Regional Conferences
- ICNDT NDE 4.0 publications, website and social media

EFNDT WG10 on NDE 4.0

- Preparation of NDE 4.0 EFNDT Strategic Plan
- Selection of the EFNDT Conference NDE 4.0 special session organiser
- (Selection of Organiser of EFNDT NDE 4.0 Conferences)
- Assisting new or fledgling NDE 4.0 Committees in the National Societies in EFNDT
- Providing guidance on NDE 4.0 EFNDT matters to ICNDT
- Provide NDE 4.0 EFNDT focus and link to Regional organisations interested in NDT
- Organisation of NDE 4.0 EFNDT input to specialist international working groups, forums and user groups
- NDE 4.0 EFNDT groups and forums where appropriate
- NDE 4.0 EFNDT websites and social media
- Production of NDE 4.0 EFNDT publications, recommendations, documents and reports, including NDE 4.0 EFNDT Guides

Objectives & Tasks

Objectives

- Establishing NDE 4.0 in Europe
- Ensure European values for NDE 4.0
- Ensuring a responsible approach to NDE 4.0, in particular regarding the reliability of the emerging technologies

Tasks

- Providing a communication platform between the interested European societies/stakeholders
- Development of an EFNDT Roadmap considering the ICNDT Roadmap for NDE 4.0
- Setting frameworks for common definitions
- Change existing standardization to enable NDE 4.0
- Create standardization for NDE 4.0
- Creation of memorandums of understanding, white & position papers, documents and reports
- Creation of a European approach for Training & Certification in times of NDE 4.0
- **Formation of consortia for joint research proposals (for example Horizon Europe)**
- Dedicated workshops on selected subjects

Proposed Agenda

Proposed Agenda for First Meeting of WG10

- Determination of the keeper of minutes
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Proposals

Proposal for EFNDT WG10 Member Structure

- Every member of the EFNDT WG10 shall be an ambassador for NDE 4.0 for their (National) Society/Stakeholder Group
- EFNDT WG10 Members:
 - Members should represent their societies
 - Members can be NDE 4.0 experts or have a strong interest
 - Responsibility of members: be an ambassador and not represent a company or research institute
 - One member per society plus backup

Proposal for EFNDT WG10 Activities

- Subgroups for specific topics (with additional participants), like
 - **Joint research proposals**
 - Roadmap development
 - Definition of common terminology
 - Certification and Training
- Invited lectures / presentations