

# Welcome to the OntoTrans Open Workshop

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Gerhard Goldbeck, GCL, UK



# Objectives of 1st Open Workshop

**inform**

**collaborate**

**engage**



**discuss**

**disseminate**

**increase impact**

**build a community**

# European Materials Modelling Council

EMMC related project

<https://emmc.eu/>



**OntoTrans**

Ontology driven Open Translation Environment



# Main project features

## OntoTrans

**Ontology driven Open Translation Environment**

## HORIZON 2020 CALL

- Call identifier: H2020-NMBP-TO-IND-2019
- Topic: Adopting materials modelling to challenges in manufacturing processes (DT-NMBP-10-2019)

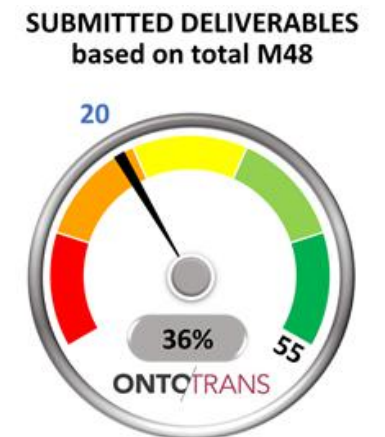
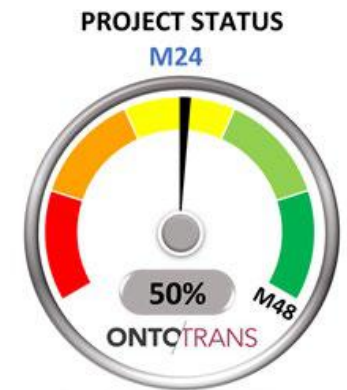
## KEY FEATURES

- Project duration: 48 months
- Estimated Cost: € 5,5 Mil.

## TYPE OF ACTION

Research and Innovation Action

**GRANT AGREEMENT Nr. 862136**



# OntoTrans Advisory Board



Marya Castro,  
Springer (DE)



Yann LeFranc, e-  
Science Data  
Factory (FR)



Nina Jeliaskova,  
Ideaconsult Ltd (BG)



Ulrike Sattler,  
University of  
Manchester (UK)



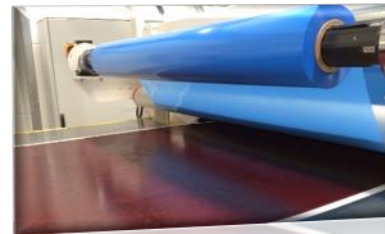
Denka Hristova-  
Bogaerds, Dutch  
Polymer Institute  
(NL)



Marco Sebastiani,  
Università Roma  
Tre (IT)

# Main OntoTrans Outcome

## an ontology-based Open Translation Environment



Composites  
Evolution



ArcelorMittal

**OTE** will support industry in **solving** their **innovation challenges** more efficiently

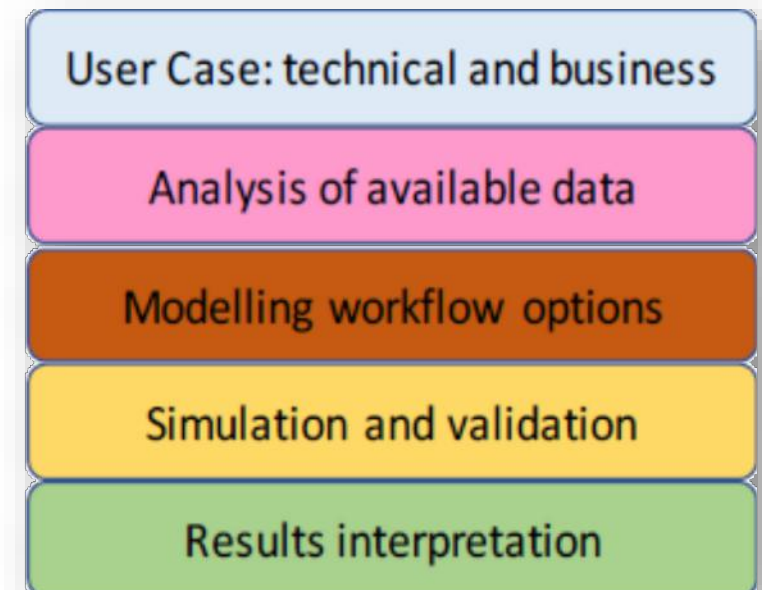
**HOW ?**

- by **providing access** to relevant information and efficient use of materials modelling.

# Translation Steps

**OTE** supports the development of dedicated **Apps** delivering a smart guidance for materials producers and product manufacturers (including Translators) through the whole steps of the **translation process**, by:

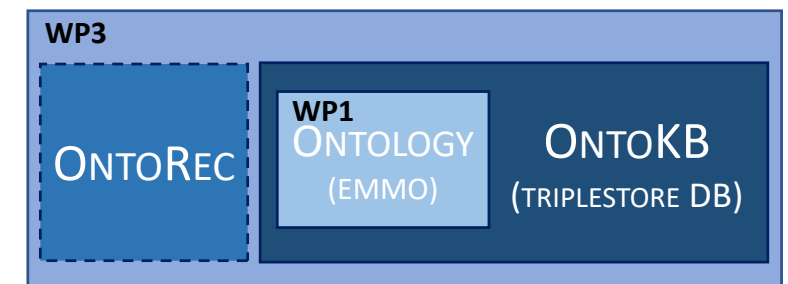
1. **representing** innovation challenges in a **standard ontological form** as **technical and business User Cases**
2. **connecting user cases** with **existing appropriate information sources** i.e. available data and materials modelling solutions
3. **recommending** consistent **materials modelling workflow** options
4. **supporting simulation** and **validation** activities
5. providing **semantic results interpretation** to facilitate sharing and re-use of user cases and results



# Objective 1: OntoTrans Core Components

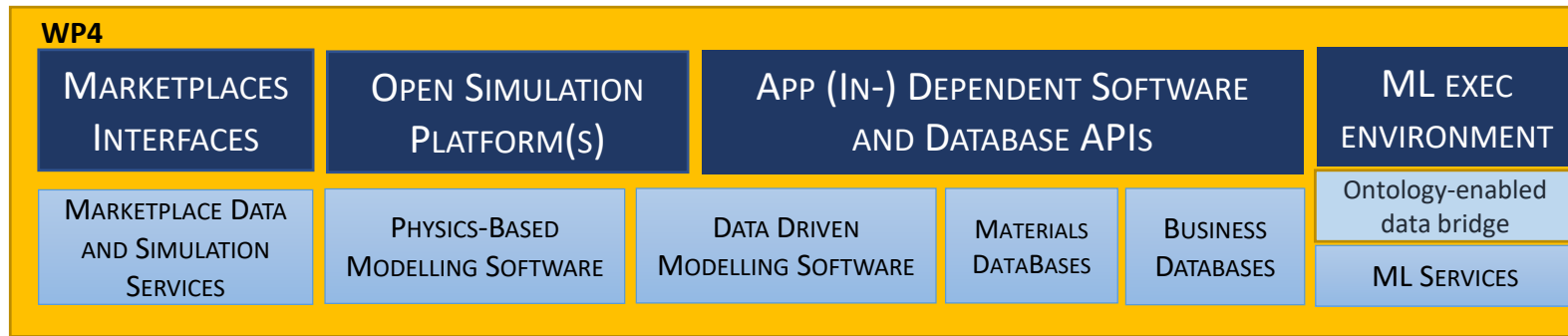
aims to deliver a semantic **translation scheme** that provides guidance from the user case to a suitable materials modelling workflow through **dedicated formal ontologies**. Includes:

- a. **semantic representation:** by the **Elementary Multiperspective Material Ontology (EMMO)**
- b. an ontology-based **Recommendation System (OntoRec)**
- c. a **knowledge database (OntoKB)**





# Objective 2: OntoTrans Key Components



## Application Programming Interfaces (APIs)

for information exchange between OTE and

- Databases
- Open Simulation Platforms
- Materials Modelling Marketplace Projects
- Data Analytics tools

## Exploratory Search System (ESS)

## End User Applications (APPS)



# Objective 3: Demonstration

## OTE testing at TRL 6:

testing of the OTE APPS within industrial environments in

**four application cases** in **different sectors**

involving end-user internal and external translators and covering all types of physics-based models as well as data-based models

to **demonstrate the expected impact**

(e.g. barriers removal, increased development speed, and reduction of development costs)

Translate the results to information that is understandable, reliable and usable by the client

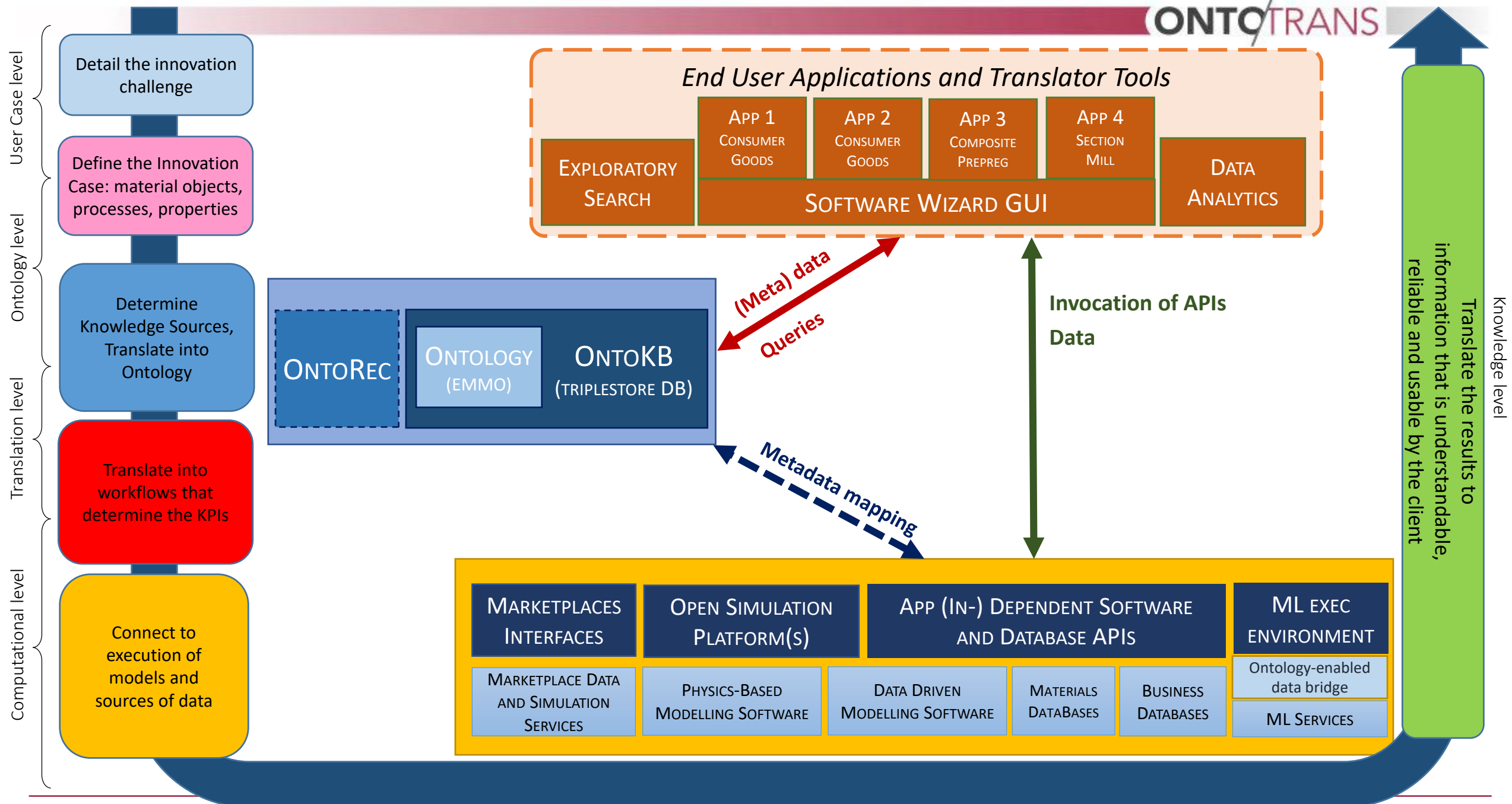
Detail the innovation challenge

Define the Innovation Case: material objects, processes, properties

Determine Knowledge Sources, Translate into Ontology

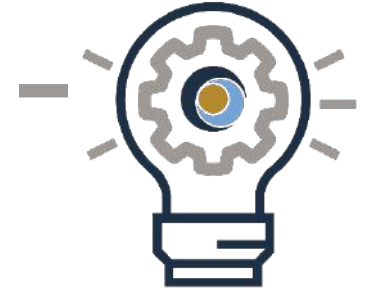
Translate into workflows that determine the KPIs

Connect to execution of models and sources of data



# Main OntoTrans Results

Open Translation Environment as an interconnected system consisting



- **Innovation Case conceptualization, translation and modelling workflows**
- **Mid-level concepts and domain ontologies** that support all aspects of materials development (properties, modelling, workflows, data etc)
- **Constructing applications ontologies** on EMMO basis
- **OntoKB**: Ontology-based management of industrial innovation cases. Connects relevant materials and processes to ‘knowledge generators’ (in particular models): **Knowledge Bases**
- **Data interfacing and pipeline technologies**
- Translator and End User **Toolset supporting knowledge exploration** (Exploratory Search System), **knowledge generation via models** (wizards) and **advanced data analytics** for materials and manufacturing
- **Translator service/know-how**
- **OTE education and training resources for translators**



# Expected Impacts

positive impacts   
creating societal value

- **Shorter product development cycle**, faster time to market
- **Faster response** to customer, market and regulatory needs
- **Improved products and more agile/targeted** manufacturing processes

By means of:

- Creating a Digital Twin of the Innovation Case
- Model and data-driven R&D and engineering workflows based on semantic knowledge representation
- Realising the end-to-end vision from product conception to customer



# Agenda

March 15, 2022

9:30 – 10:00

Come together in Airmeet Lounge

10:00 – 10:20

**Intro: setting the scene**

Nadja Adamovic, TU WIEN (AT)

Gerhard Goldbeck, GCL (UK)

10:20 – 10:50

**Translating innovation challenges: the OntoTrans approach**

Michael Noeske, Fraunhofer IFAM (DE)

10:50 – 11:20

**Ontology of innovation cases: approach and process from Innovation Case via Conceptualisation to Ontology**

Emanuele Ghedini, UNIBO (IT)

11:20 – 11:40

**Break**

11:40 – 12:10

**OntoKB: Translation Knowledge Base**

Luca Foschini, UNIBO (IT)

12:10 – 12:40

**Connecting things: OTEAPI and OTELib**

Jesper Friis and Thomas Hagelien, SINTEF (NO)

# Agenda

March 15, 2022

**12:40 – 13:10**

## **Translator tools**

Florina Piroi, TU WIEN ISE (AT)

**13:10 – 14:30**

## **Lunch Break**

**14:30 – 15:10**

## **Application cases: the view of the translator**

Vinicius Carrillo Beber, Fraunhofer IFAM (DE)

**15:10 – 15:50**

## **OntoTrans benefits for Industry**

Alexandra Simperler, GCL (UK)

Brendon Weager, COMPEVO (UK)

Lucy Bull, COMPEVO (UK)

Julian Dizy, AMIII (ES)

Oreste Todini, PGBS (BE)

**15:50 – 16:00**

## **Conclusion and Wrap Up**

Nadja Adamovic, TU WIEN ISAS (AT)

Gerhard Goldbeck, GCL (AT)

**16:00**

## **End of Day 1**



# Agenda

March 16, 2022

09:30 – 09:55

Come together in Airmeet Lounge

**09:55 – 10:00**

**COLLABORATION SESSION Introduction**

Nadja Adamovic, TU WIEN ISAS (AT)

Gerhard Goldbeck, GCL (UK)

**10:00 – 10:15**

**OntoCommons**

Hedi Karray, ENIT (FR)

**10:15 – 10:30**

**DOME 4.0**

Amit Bhawe, CMCL (UK)

**10:30 – 10:45**

**OpenModel**

Francesca L. Bleken, SINTEF (NO)

**10:45 – 11:00**

**VIPCOAT**

Natalia Konchakova, Hereon (DE)

**11:00 – 11:15**

**MUSICODE**

Elefterios Lidorikis, University of Ioannina (GR)

**11:15 – 11:30**

**Break**





# Agenda

March 16, 2022

**11:30 – 11:45**

**NanoMECommons**

Costas Charitidis, NTUA (GR)

**11:45 – 12:00**

**OYSTER**

Marco Sebastiani, Uni Roma TRE (IT)

**12:00 – 12:15**

**TEESMAT**

Cyril Marino, SERMA Group (FR)

**12:15 – 12:30**

**CHARISMA**

tba

**12:30 – 12:45**

**EASI-STRESS**

Nikolaj Zangenberg, Teknologisk (DK)

**12:45 – 13:00**

**MarketPlace**

Dirk Helm, Fraunhofer IWM (DE)

**13:00 – 13:15**

**VIMMP**

Daniele Marchisio, POLITO (IT)

**13:15 – 14:00**

**Lunch Break**

# Agenda

March 16, 2022

**14:00 – 16:00**

**DEMONSTRATION SESSION**

powered by SINTEF (NO), UNIBO (IT), TU WIEN (AT)

Natalia Konchakova, Hereon (DE)

**16:00 – 16:15**

**Conclusion and Wrap Up**

Nadja Adamovic, TU WIEN (AT)

Gerhard Goldbeck, GCL (UK)

# Open Workshop information

This workshop will be recorded.

- During the talks your micros and cameras are automatically deactivated

After the talks, the discussion part will start where you can discuss with the speakers by

- asking questions only via the Q/A function
- raising your hand if you want to ask your question with audio and video → you will be invited to stage

Please use the Session Feed for chats and the Q/A function for questions only!

- If you still have questions after the discussion time is over, there might be the possibility to talk to the speakers directly at the lounge tables after the session

# What will happen after the Workshop?

- Talks will be recorded and provided online (e.g. Website, YouTube)

## Clustering of EU Projects (Trust-IT):

- a joint flier and a joint video
- communication & dissemination training session:
  - Strategy
  - Implementation
  - Monitoring
- delivery of a Portfolio Dissemination Plan





*Thank  
you!*



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