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Learning Teaching Training Activity (LTTA) Introduction to the TRUSTID Project

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TRUSTID: “Intelligent and Continuous Online Student Identity Management for Improving Security and Trust in European Higher Education Institutions”



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TRUSTID Overview

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- Part of the actions of Erasmus+ 2020 and in particular the Call “*Strategic Partnerships in **Response to the COVID-19 Situation**: Partnerships for Digital Education Readiness in the field of Higher Education (KA226)*”
- *Duration*: June 2021 - May 2023 (**24 Months**)
- Currently pursuing **Month 23** of the project

Project Partners

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- Department of Electrical and Computer Engineering, University of Patras, Patras, Greece (*Project Coordinator*)



- Department of Computer Science, University of Cyprus, Nicosia, Cyprus (*Project Partner*)



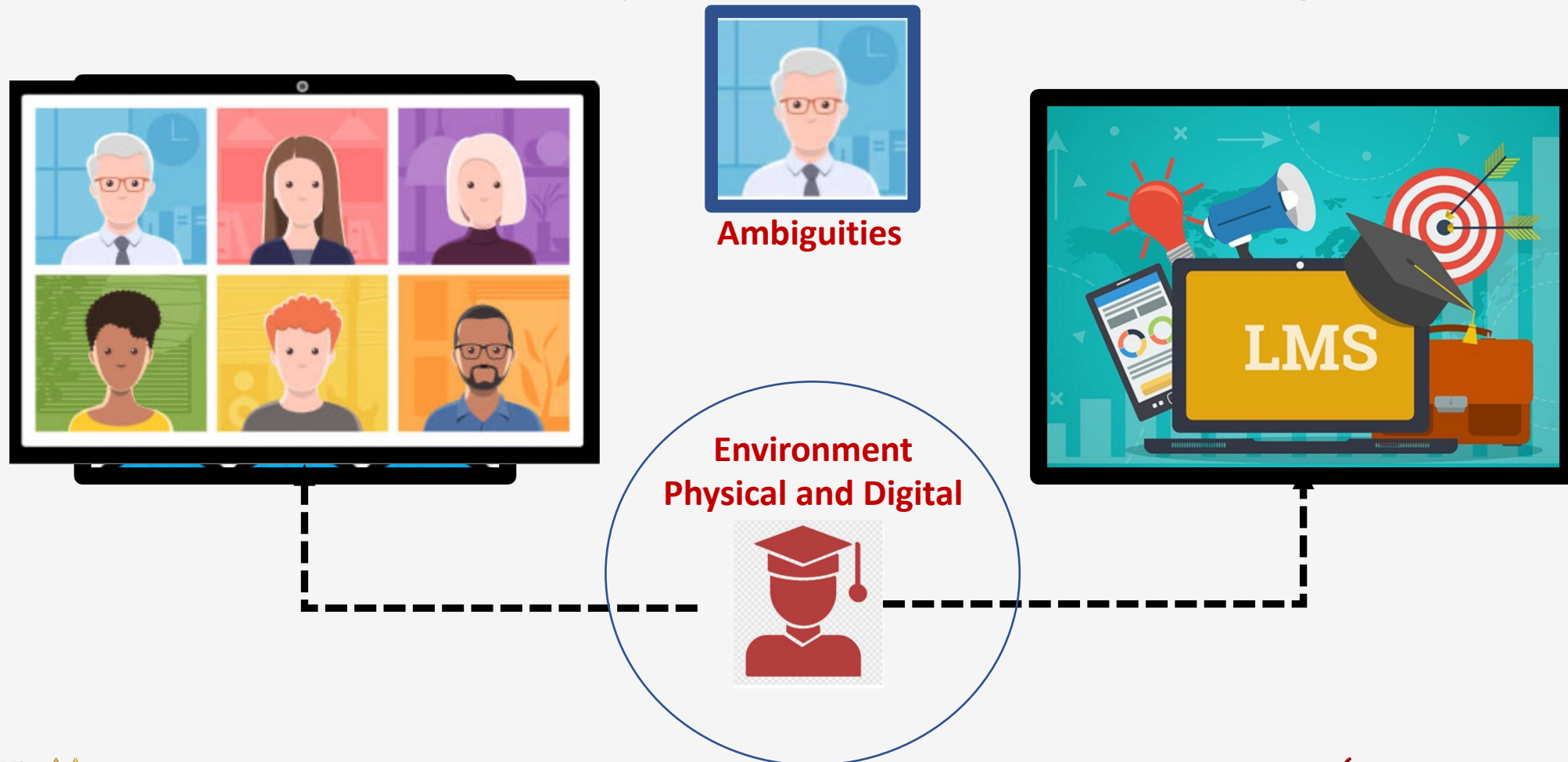
- Institute of Systems and Robotics, University of Coimbra, Coimbra, Portugal (*Project Partner*)



- Cognitive UX GmbH, Heidelberg, Germany (*Project Partner*)

Covid-19 outbreak: Problem and Challenges in HEI's

- **Before** the Covid-19 outbreak many HEI's followed a **blended learning** educational model



- Challenges

- **Continuously and seamlessly identify students while preserving their privacy and** without interrupting or interfering with the current learning activities of each HEI
- **Provide insights to instructors** in order to take informed decisions for their classes and attendees
- **Provide alternative integration capabilities and modes** of TRUSTID in order to better adapt to specific requirements of each HEI

Design, develop and evaluate a **multi-tier continuous student identification framework**, bootstrapped to HEIs' needs, that will consist of state-of-the-art **intelligent image, voice and interaction data** processing **while preserving their privacy**

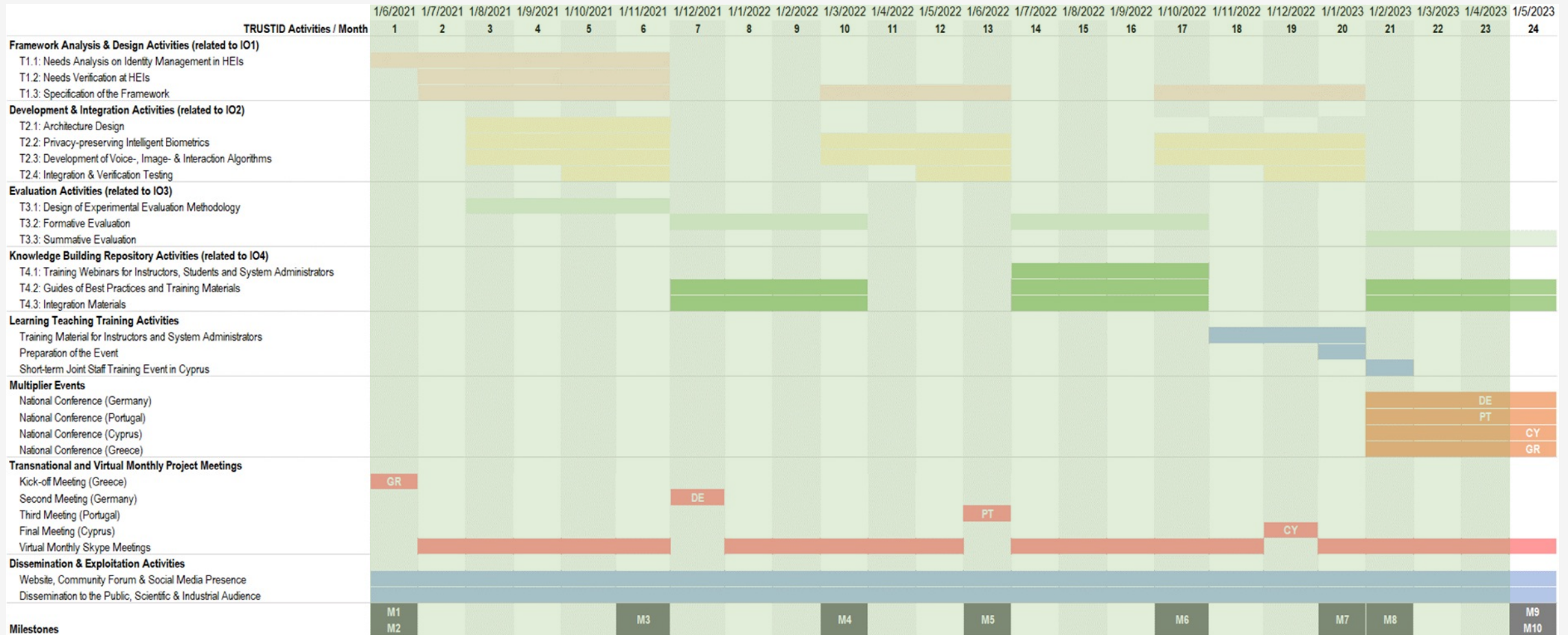
Core Objectives

- **Literature review** on current practices and procedures related to student identity management of EU HEIs and **triangulate findings** with stakeholders' studies at the participating HEIs
- **Design and develop an integrated framework** for student identity management
- Validate the solution through a **User-Centered Design (UCD) methodology**; two formative studies are planned, during the software development process; and one summative study is planned, after the final release of the software
- Create a **repository** that will support **knowledge building**
- **Dissemination and exploitation** activities – *research papers, workshops, seminars, LTTAs, etc.*

Intellectual Outputs

- **Intellectual Output 1: Analysis & validation** of the TRUSTID framework for HEIs' continuous student identity management (*Conceptual*)
- **Intellectual Output 2: Implementation** of an open-source software toolkit (*Operational*)
- **Intellectual Output 3: Evaluation** and validation reports in the context of three case-studies at different HEIs (*Lessons Learned and Guidelines*)
- **Intellectual Output 4: Knowledge building online community and repository** (*Sustainability*)

Gantt Chart



Key Achievements and Milestones reached

Intellectual Output 1 – Tasks and Achievements

IO1 - Needs Analysis and Design of the Theoretical Framework for Continuous Student Identity Management

Output: Publications, Other, Dataset

- Task 1.1: Needs Analysis on Identity Management in HEIs
- Task 1.2: Needs Verification at HEIs
- Task 1.3: Specification of the Framework

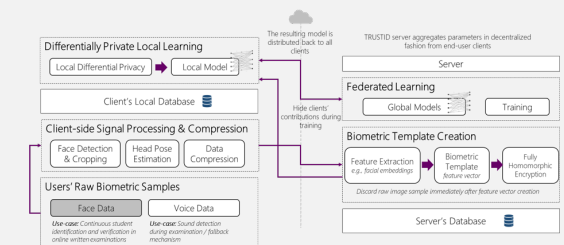
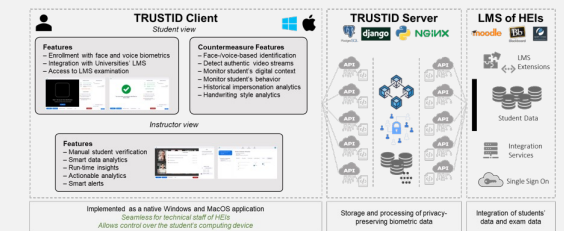
Achievements and Outputs

Specifications of the TRUSTID framework

- Refined the framework
- Specifications for the face, voice and interaction identification mechanism
- Specifications for LMS integrations of TRUSTID at UPAT, UCY, UC sites

Privacy-preserving architecture for continuous student identity management

- Designed the privacy-preserving architecture
- Defined the privacy-preserving smartphone wallet
- Defined the flow between client and server applications of TRUSTID towards achieving privacy-preservation of users' biometric data



Intellectual Output 2 - Tasks and Achievements

IO2 - Design and Implementation of Open-source Privacy-preserving Toolkit and Application Programming Interfaces

Output: Software, Services, Publications

- Task 2.1: Architecture Design
- Task 2.2: Privacy-preserving Biometrics
- Task 2.3: Development of Voice-, Image- and Interaction-based Algorithms
- Task 2.4: Integration and Verification Testing

Achievements and Outputs

Major improvement of the face-based **identification** mechanism enrollment and continuous identification

Development of the **voice-based and interaction-based identification** mechanisms

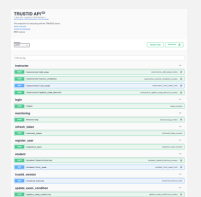
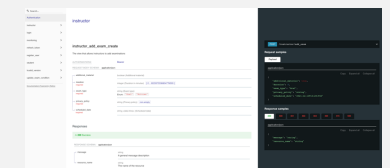
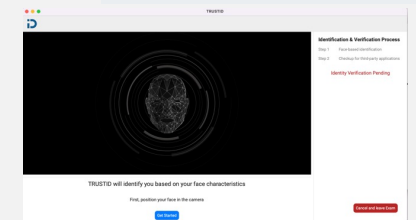
Implemented a new **architecture for privacy-preservation**

Prototype designs and implementations

Development and integration of new features in the **native Windows and MacOS applications**

Mechanisms for **LMS integration**

Application Programming Interface, end-points for service integration



Intellectual Output 3 - Tasks and Achievements

IO3 - **Evaluation Reports** regarding Efficiency, Effectiveness and User Acceptance of TRUSTID in Three Case Studies at Higher Education Institutions across Europe

Output: Dataset, Publications

- Task 3.1: Design of Experimental Evaluation Methodology
- Task 3.2: Formative Evaluation Report
- Task 3.3: Summative Evaluation Report

Achievements and Outputs

Successfully completed the PoC2 study with 133 participants, which participated in the user evaluation study in which they interacted with various mechanisms of TRUSTID.

Planned and organized the **final summative evaluation study**

Running the final summative formative user study to test the final proof of concept and evaluate its usability and accuracy of implemented identification mechanisms (face, voice, interaction).

Intellectual Output 4 - Tasks and Achievements

IO3 - **Knowledge Repository** containing Training Webinars, Guides of Best Practices, Integration Guidelines, Training Materials and Forum Discussions on how to Adopt and Deploy Continuous Student Identity Management Solutions in HEIs

Output: Internet, Broadcast, Event, Publications, Video

- Task 4.1: Training Webinars
- Task 4.2: Best Practice Guides
- Task 4.3: System Integration Guidelines (through an Application Programming Interface)

Achievements and Outputs

Deployment of Final Knowledge Repository

<https://trustid-project.eu/kr.php>

Deployment of Final TRUSTID Community Forum

<https://trustid-project.eu/community.php>

TRUSTID GitHub Open-source Code Repository

Available at: <https://github.com/cognitiveux/trustid>

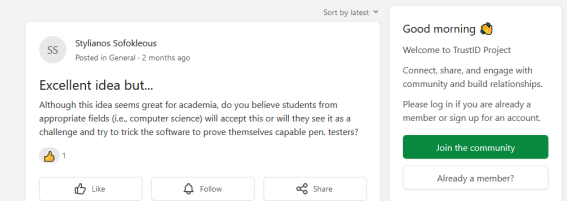
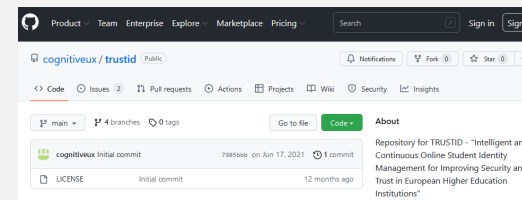
Knowledge Repository

Educational, Training and Course Material

- Ethical Guidelines and Data Privacy
- TRUSTID Solution Design
- User Needs & User Feedback
- Threat Models and Countermeasures
- Image-based Recognition
- INFOGRAPHIC - Covid19 Impact on Higher Education
- INFOGRAPHIC - Interviews with Stakeholders and Identified Threat Scenarios

Open-source TRUSTID System Code :: hosted on Github

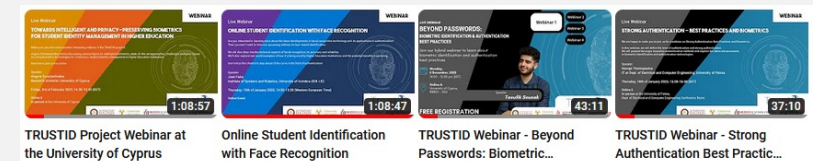
- Main Github branch
- TRUSTID Windows Application
- TRUSTID MacOS Application
- Face-based User Identification Algorithms



Webinar

TRUSTID Webinar Events

- UPAT Event
- CUX Event
- ISR-UC Event
- UCY Event



Project Milestones (M)

- M1 - Guidelines for collaboration (related to all IOs) – MONTH 1
- M2 - Analysis template and guidelines (IO1) – MONTH 1
- M3 - First version of framework (IO1); low-fidelity solution (IO2); experimental plan and design ready (IO3) – MONTH 6
- M4 - First formative evaluation (IO3); first knowledge repository completed (IO4) – MONTH 10
- M5 - Second version of the theoretical framework (IO1); high-fidelity tools and solution ready (IO2) – MONTH 13
- M6 - Second formative evaluation (IO3); second knowledge repository (IO4); training webinars (IO4) – MONTH 17
- M7 - Final version of framework (IO1); final tools and solution (IO2); learning, teaching, training activities (LTTA) planned (IO4) – MONTH 20

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TrustID 

Thank you!

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