

InSecTT: Intelligent Secure Trustable Things



Final report on standardization, education, training and stakeholder engagement

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1 EXECUTIVE SUMMARY

This deliverable provides an overview of standardisation, education and training as well as stakeholder engagement related actions taken by Partners in third year of the InSecTT Project. The report is divided into three main sections: **standardisation actions, education and training actions, stakeholder engagement actions.**

Keywords: standardisation, education, training, stakeholder engagement

2 OBJECTIVES

2.1 Task objectives

The main objectives of this initiative, in line with the principles of project management professionalism, are as follows:

- **Influence Standardisation and Certification:** A key objective is to have a significant influence on the standardisation and certification processes. This includes actively helping to shape industry standards and ensuring that the resulting certifications reflect the highest levels of quality and compliance.
- **Partner engagement and collaboration:** A key objective is to proactively engage partners within the ecosystem and foster collaborative relationships with specific institutions. By encouraging synergistic collaboration, the initiative aims to mutually enhance capabilities and drive collective progress.
- **Building strategic relationships:** A fundamental aspect is the establishment and maintenance of robust relationships with relevant business units and industry associations. These strategic relationships serve as conduits for sharing insights, best practices and innovative solutions, ultimately contributing to the overall growth of the industry.
- **Developing stakeholder networks:** A key objective is to maintain and expand a dynamic network of stakeholders. By engaging a wide range of individuals and organisations, the initiative seeks to create a diverse ecosystem that facilitates the exchange of ideas, expertise and resources.
- **Delivering education and training content:** A critical undertaking is the creation and dissemination of comprehensive education and training content. This content is designed to equip industry professionals with the knowledge and skills needed to effectively navigate the complexities of the field.

2.2 Deliverable objectives

The objectives of this deliverable are as follows:

- **Comprehensive Summary of Activities and Achievements:** The primary objective of this deliverable is to meticulously summarise and report on key activities and achievements in three distinct categories:
 - **Standardisation:** Summarise and present key standardisation activities, highlighting contributions to the creation and maintenance of industry standards.
 - **Education and training activities:** Provide a concise overview of education and training activities, highlighting efforts to equip stakeholders with essential knowledge and skills.
 - **Stakeholder engagement activities:** Articulate stakeholder engagement strategies, capturing initiatives aimed at fostering meaningful interactions and collaboration.
- **Detailed Partner Engagement in Task 6.2:** A key objective is to provide a detailed insight into partner engagement in Task 6.2. This will involve presenting a detailed account of partner engagement, which will comprehensively describe their contributions, responsibilities and collaborative efforts.

3 DESCRIPTION OF WORK

3.1 Standardisation activities

AVL

AVL takes part in ISO's standardization group ISO/TC 22/SC 32/WG 11 "Cybersecurity" that is responsible for developing standards for automotive cybersecurity and is most known for ISO 21434. Currently, this group is maintaining two standards projects:

- ISO/SAE AWI PAS 8475 "Road vehicles — Cybersecurity Assurance Levels (CAL) and Targeted Attack Feasibility (TAF)" that copes with the formal requirements of which type and effort of cybersecurity testing is necessary, feasible and sensible for which part of a vehicular system and
- ISO/SAE PWI 8477 "Road vehicles — Cybersecurity verification and validation" that copes with methods for cybersecurity V&V in the automotive domain.

Analogously, in InSecTT, AVL works on novel methodologies for automotive cybersecurity V&V

Total number of actions taken in Y3: 7

GUT

During Y3 of the project, gathered test data with respect to single-anchor GPS-less localization system based on reconfigurable antennas were processed, analysed and presented to AIRBUS representatives. The approach, in which GPS-less localization is used, has a application potential in the upcoming WAIC (Wireless Avionics Intra-Communications) standard [WAIC] operating in the 4200-4400 MHz frequency band (see also ITU Preliminary Document 5B/167-E, Characteristics of WAIC systems and bandwidth requirements to support their safe operation) as well as ISO/IEC TR 22560:2017(en) Information technology — Sensor networks — Use cases of aeronautics industry: Active Air-flow Control [TR 22560:2017]. AIRBUS representatives are interested in the following aspects that may be a part of the above standards:

- Use of reconfigurable antennas together with GPS-less localization algorithms to find the unknown position of RF jamming source during a hypothetic cyberattack on PHY layer (the aim is to find and neutralize the source of interfering RF jamming signal);
- Use of reconfigurable antennas together with dedicated jamming mitigation algorithms to maintain communication during RF jamming attack (by using one of available 4096 radiation patterns of ESPAR antenna) by increasing SNIR (Signal to Noise and Interference Ration) when the right radiation pattern is used.

Based on the promising results presented by GUT representatives, AIRBUS representatives expressed interest in aerospace standards enriched by using reconfigurable antennas and corresponding algorithms to increase the reliability of wireless systems used on-board as well as safety.

Total number of actions taken in Y3: 4

LCM

LCM did not contribute to existing or new standards during year three of this project. However, LCM continued using the existing openAPI specification in version 3.0 (<https://www.openapis.org/>) for specifying the API which is used to control the testbed.

Total number of actions taken in Y3: 0

VIF

VIF did not contribute to existing or new standards during year three of this project. However, VIF released the vehicleCAPTAIN toolbox (https://github.com/virtual-vehicle/vehicle_captain) as free and open-source software (FOSS). The toolbox can be used by early stage research and development to get into V2X development.

Total number of actions taken in Y3: 1

JSI

JSI did not contribute to existing or new standards in any of the 3 years of the project duration. In its technical contribution, JSI used the the FastAPI protocol based on open standards and HL7/FHIR for Healthcare related data, <http://hl7.org/fhir/>.

Total number of actions taken in Y1-Y3: 0

KTH

KTH was in the OASIS OSLC (<https://open-services.net/>) organization and more specifically on the draft OSLC Linking Profiles Version 1.0, dealing with conformance to ensure practical tool interoperability.

Total number of actions taken in Y3: 1

PRE

Philips Research is involved in the following standardisation activities:

- Substantially completed co-development of the **IEEE 11073 Abstract Information Content Model (ACOM)** standard [IEEE 11073-10206] – to specify a new stand-alone simplified information model for personal health devices independent of the transport technology. The standard successfully passed its sixth (and final) IEEE SA Ballot round in June 2022.
- Continued leading the Generic Health Sensor (GHS) service and profile specifications within **Bluetooth SIG** – to transport health data according to ACOM standard via Bluetooth Low Energy. In March 2022, the GHS Draft0.5 was approved (basic service & profile architecture). As of June 2022, the GHS Draft0.7 is very close to approval.
- Contributed in **3GPP** to SA WG2 on the release 18 studies on Ranging based services and sidelink positioning, and enhanced Location Services phase 3, both aiming at enhancing the accuracy of positioning including for partial coverage and out-of-coverage scenarios, and also addressing Low Power High Accuracy Positioning (LPHAP). PRE also worked on Proximity based Services Phase 2 enabling services over sidelink communication and relays, Personal IoT Networks enabling differentiated QoS for IoT networks, and Enhanced support of Non-Public Networks phase 2 enabling private cellular communication (e.g., for hospitals). In SA WG3 PRE worked on security and privacy aspects of Ranging based services and sidelink positioning, Proximity based Services Phase 2, and Personal IoT Networks. In RAN WG2 PRE worked on release 18 study on Expanded and improved NR-positioning, which amongst others includes the topic of sidelink positioning and LPHAP, but then from the Radio Access Network (RAN) perspective. Furthermore, we worked on a release 18 study in RAN WG1/2 for smart repeaters, aiming to improve coverage for example in hard-to-reach places in building such as hospitals. For release 19, we also contributed in SA WG1 to the study of Integrated Sensing and Communication, which can enable accurate positioning not only of mobile devices, but also directly of other types of objects, such as humans that may not be carrying any device. Furthermore, PRE contributed to the release 19 study on Ambient IoT in SA WG1 and a related study in RAN, which address very low power IoT devices that use energy harvesting and/or backscattering communication.

Total number of actions taken in Y3: 3

CEA

CEA is not directly involved in standardisation activities. However, CEA follows the standardization actions related to the security of Machine Learning as listed in the last report for ENISA (“Cybersecurity of AI and Standardisation”) and has close relation and discussion about these topics with the French National Security Agency (ANSSI) for future certification actions.

Total number of actions taken in Y3: 0

NXP-AT

NXP-AT did not have eligible effort planned and executed in T6.2, but still contributed to standardisation activities that have relevance in context of the InSecTT scope. NXP-AT is contributing to the IEEE 802.15.4z/ab, FiRa, CCC standardization. Activities are ongoing with a regular pace, partially even on a weekly basis depending on the consortium meetings and technical alignments.

Total number of actions taken in Y3: 1

ISEP

ISEP has been present in the meetings of the ISO/JTC1/SC45 WG1 IoT use cases. ISEP is the liaison partner between the InSecTT project and WG5. The expected result of this liaison is the creation of use case documents describing the application of IoT to industrial domains and the use of AI.

Total number of actions taken in Y3: 2

CISC

During third year of the project, CISC has performed standardisation related activities listed below:

- GS1 Gen2V3 WG: Contribution to Gen2V3 protocol development, alignments with major RAIN chip manufacturers (Impinj, EMmicroelectronics, NXP). December 2022 kick-off development of a reader emulator and sniffer.
- ETSI: Technical contributor to standardization EN 308-208. Providing proposals for updates of standards specifications
- Working Group ISO/TC 31/WG 10 active members (Joe, my nomination is in process currently)
- CISC is driver in standardization in ISO/IEC, CENELEC, ETSI and GS1 EPCglobal and convener of ISO/IEC JTC 1 SC31 WG4 "RF Communications" that covers RFID, RTLS, Security and related conformance and performance test methods.

Total number of actions taken in Y3: 3

VTT

VTT was not directly involved in standardisation activities. However, VTT is following the standardization related to ISO/IEC 24028 Overview of trustworthiness in AI (stage 60)

Total number of actions taken in Y1-Y3: 0

SAL

SAL did not have planned efforts on standardization activities, nevertheless SAL has contributions on standardization activities that have relevance to the InsecTT project. SAL actively participates in IEEE P1451.5p, IEEE P1451.0, IEEE P2805.2, IEEE P2805.1 and IEEE P2805.3

Total number of actions taken in Y3: 1

EPS-MU

EPS-MU has contributed to the TG BD, by collaborating with DLR, on IEEE802.11bd simulation and hardware implementation.

The IEEE 802.11 Working Group (WG) is now specifying an IEEE Next Generation V2X (NGV) amendment the P802.11bd project. As described below, the IEEE NGV amendment is intended to provide a seamless evolution path from DSRC in the 5.9 GHz DSRC band.

Total number of actions taken in Y3: 1

MarUn

Marmara University is involved in the implementation of V2X applications compliant to the ETSI, IEEE, and SAE standards. More specifically MarUn has followed the standards given below throughout the project and application development:

- Specifications of Decentralized Environmental Notification Basic Service (ETSI EN 302 637-3 V1.3.1)
- Specification of Cooperative Awareness Basic Service (ETSI EN 302 637-2 V1.4.1)
- IEEE Guide for Wireless Access in Vehicular Environments (WAVE) Architecture (IEEE 1609.0-2019)
- Position and Time management (PoTi, ETSI EN 302 890-2 V2.1.1)
- Intelligent Transport Systems (ITS) Communications Architecture (ETSI EN 302 665 V1.1.1)
- ITS-G5 Access layer specification for Intelligent Transport Systems operating in the 5 GHz frequency band (ETSI EN 302 663 V1.3.1)
- GeoNetworking; Part 3: Network Architecture (ETSI EN 302 636-3 V1.2.1)
- Analysis of the Collective Perception Service (CPS) Release 2 (ETSI TR 103 562 V2.1.1)

Additionally, Marmara University has participated in various work groups and contributed to automotive systems virtual testing and cybersecurity under IAMTS and published a whitepaper about cybersecurity.

Total number of actions taken in Y3: 10

UCC

UCC did not have planned efforts on standardization activities, and was not involved in standardisation. However, UCC reviewed our existing work in the smart ports use case with respect to the IEC 62443 standard.

Total number of actions taken in Y3: 0

TUD

TUD contributed to IEEE P1918.1 standard as a mentor for the standard effort. TUD also participated in AIOTI – Alliance for IoT and Edge Computing Innovation - workgroups, which is a PAN European effort.

TUD also a voting member in IEEE MobiNET standardization governing body which oversees multiple IEEE standard activities including smart cities, drones, and communication.

TUD also contributed as a reviewer for European commission project - StandICT

Total number of actions taken in Y3: 3

3.2 Education and training activities

ADP

Although no formal education and training activities during year three of this project has been carried out, ADP continued the internal communication activity, involving its own Security, Engineering and IT Departments, in order to increase the awareness of the practical application of the research project.

Total number of actions taken in Y3: 0

CEA

CEA's research laboratory involved in InSecTT is a joint research team with an Engineer school (IMT, Mines Saint-Etienne) at the Center of Microelectronic Provence Georges Charpak, (MSE-ISMIN, France, Gardanne). Thanks to this joint research team, CEA led teaching activities on the topics of Machine Learning / Deep Learning with courses dedicated to Trustable and Secure AI in which the objective and outcome from InSecTT are presented and discussed as a state-of-the-art European research program. In Year 3, the initial program has been enriched with a new set of theoretical and practical courses on the impact of AI on IoT and additional contents related to embedded machine learning models in typical IoT hardware platforms with STMicroelectronics products. Results from the different use cases from InSecTT will be used as references from a wide variety of domains. More particularly, the actions performed in UC.5.14 with the STM32MP1 platform with the dual architecture Cortex-A and Cortex-M4 combining different integrity-based solutions are presented for practical session on deep neural network deployment on Cortex-M platforms.

Total number of actions taken in Y3: 2

GUT

In Y3, GUT updated InSecTT results in one of the GUT PhD courses entitled: "Technological advances in electronics". The course is offered to PhD candidates realizing industry-oriented PhDs and in practice, the PhD students are senior engineers in Polish companies responsible for technological developments of products and services offered by those companies. InSecTT outcomes in the field of GPS-base localization systems using reconfigurable antennas and new SiL/HiL testing methods of a wireless system using PhyWise Tool were incorporated into a course's module "Wireless Embedded Systems – Chosen Technologies and Applications" by prof. Łukasz Kulas. This course is offered by GUT to industrial PhD candidates on yearly basis.

At the same time, GUT has continued the initiative of active participation in group student projects (started in Y2). The most promising InSecTT outcomes were used to build projects offered to students, during which students make the complete innovative systems. To this end the following student projects were created:

- Inspection robot using VR and blockchain technology (5 students are involved in this project)
- Local positioning LoRa system for smart building and industry 4.0 applications (4 students are involved in this project)

The group student project: "Blockchain-based IoT technology" (3 students were realizing this project and it was offered to students in Y2), which is tightly connected with InSecTT created a world first IoT device with blockchain payment incorporated within, received the first prize in Gdansk Tech contest for the best group project. The project was presented by students to more than 150 students in a seminar on 2023-02-23. This event was mentioned in the local media.

Moreover, one of the master projects (inspired by InSecTT outcomes) offered to master students entitled: "Reconfigurable antenna for direction-of-arrival estimation in IoT systems operating in LoRa

standard” the project was offered in Y1) won the diploma of the year prize (only 10 students a year receive his prize).

Total number of actions taken in Y3: 5

CINI

The UNIROMA3 Biomedica4n6 group has shown the demonstrator developed for the multi-biometric system deployed for the control of structured flows of UC5.16 on several occasions, both during academic courses (such as the one dedicated to “Biometric Systems” at Roma Tre University) as well as during events organized to present the carried-out activities to the general public.

Total number of actions taken in Y3: 7

The UNIMORE group has disseminated and trained on the topic of visual anomaly detection of UC5.15 scholars from both industry and academics background in different dissemination and education events. Among this it is worth mentioning the “School in AI: Deep Learning, Vision and Language for Industry - second edition” a training initiative organized in Modena 5-9 Sept 2022. Additionally, we will organize in September 19-22 the “ELLIS Summer School on Large-Scale AI for Research and Industry” in which in the lab sessions a competition on the project data is planned. The school will reach the top 100 scholars in AI of the ELLIS network (ellis.eu). We also participated at the European conference on computer vision Tel-Aviv with a contribution focused on the project (Sept 2022).

Total number of actions taken in Y3: 7

The UNICAL group has organized multiple dissemination and training initiatives focused on reliable and affordable communication in the marine environment. The outcomes of UC5.4 have been shared with students enrolled in the Ph.D. course TEACH at the University of Calabria, as well as during the Master's degree program in Mechatronic Engineering. Additionally, several technologies developed as part of the InsecTT project will be enhanced and showcased within the framework of the Tech4you project, funded under the Next Generation EU program, where UNICAL serves as the coordinator.

Total number of actions taken in Y3: 4

CINI-UNIPR has disseminated information, gathered by working on Internet of Things (IoT) systems with embedded intelligence in UC5.15 and UC5.16, in various education and training activities. At academic level, concepts from InSecTT have been presented in the IoT course in the MSc course in Communication Engineering of the University of Parma in the academic years 2021-2022 and 2022-2023. The InSecTT project has also been presented in several meetings, between 2021 and 2023, of the Scientific Council of INSIDE Industry Association (Gianluigi Ferrari is a member), with publication of some of the obtained results in the INSIDE Magazine #3 (<https://intranet.inside-association.eu/publication/download/inside-magazine-3.pdf>) in November 2022.

Total number of actions taken in Y3: 7

LCM

During the year 3 reporting period LCM conducted two times the seminar “Seminar Industrial IoT, Wireless Communication, and Energy Harvesting” for interested company partners and customers of LCM. Besides that, the course “Short-range Wireless Communication” has been held at the University of Applied Sciences Upper Austria.

Total number of actions taken in Y3: 3

JKU

JKU, as a university, utilizes the UWB-enabled wireless sensor nodes that were developed during the project to demonstrate indoor localization and the associated challenges to students in lab

courses. The outcomes of InSecTT, including UWB nodes, anomaly detection algorithms, and communication protocols, were integrated into a newly introduced lecture called "Wireless Sensor Networks." This lecture for the first time in the summer term of 2023 was offered to both BSc and MSc students pursuing degrees in "Electronics and Information Technology" and "Mechatronics."

Total number of actions taken in Y3: 3

MDH

The demonstrator that was developed in collaboration with ABB is installed at MDH and will be used for research and education purposes in the future. It was already used in the Distributed Software Development (DSD) course as a base for the project of developing the user interface for the simulator, as well as for several master and bachelor theses. During the year 3 master thesis and 2 Bachelor thesis projects at MDU were connected to InSecTT project. Also, MDH researchers supervised a PhD project which is nearing completion.

Total number of actions taken in Y3: 10

KTH

The Master level course on smart cyber-physical systems was further adapted to incorporate research findings including from the InSecTT project (<https://www.kth.se/student/kurser/kurs/MF2140?l=en>). The course has also been opened-up and will during 2023 be given for Master students as well as practicing engineers (as part of continued education). The course was highlighted in IEEE Computer with an invited paper: "Adding Cyberphysical Systems to the Engineering Education "Pi" (<https://ieeexplore.ieee.org/abstract/document/10042101>). In addition, 4 MSc thesis were carried out at KTH with connection to the InSecTT project.

Total number of actions taken in Y3: 6

JSI

The InSecTT project and work done by JSI was presented to master and doctoral students at Jozef Stefan International Postgraduate School within the lectures provided by two department members. During the project duration, three department seminars presenting the project achievements were carried out, one in Year 3.

Total number of actions taken in Y1-Y3: 5

PRE

PRE has given use-case presentations within the company (including a business department) and an internal workshop on how to build a JSON webserver (using node.js).

Total number of actions taken in Y3: 5

RTE

RTE has conducted presentations within the company for educational and training purposes. Presentation has also been done at KTH for the same reasons.

Total number of actions taken in Y3: 4

RISE

Although RISE is not directly involved in T6.2, in the reporting period, RISE has done guest lectures: "Assurance of Machine Learning in Autonomous Automotive Systems" (21/11/2022; at Malardalen

University) and “ML Systems: Powerful Engines to Drive Maritime Industry—From design principles to ML operation” (11/10/2022; at Gdansk University of Technology).

Total number of actions taken in Y3: 2

WESTERMO

Westermo has conducted presentations within the company for educational and training purposes, as well as conducted a Master thesis on resource constrained AI for network anomaly detection. Furthermore, results have been presented within the ITS ESS-H research school at MDH (now MDU). Finally, we published the Westermo network traffic dataset (<https://github.com/westermo/network-traffic-dataset>) thereby giving a realistic data set for education and research on federated AI.

Total number of actions taken in Y3: 4

NXP

NXP-NL has organised webinars on the topic of AI and the eIQ toolkit. The eIQ toolkit is the core element where the InSecTT research contributions have been moved into as plug-ins. The webinar info can be found on: <https://www.nxp.com/design/training/ai-and-machine-learning-training-academy:TS-MACHINE-LEARNING-AND-AI>

Total number of actions taken in Y3: 1

KAI

KAI has prepared publicly available documentation for its network quality measurement solution and related topics to KAI's web pages. This includes also much generic guidance on network quality and performance measurements.

Total number of actions taken in Y3: 1

ISS RFID

ISS RFID has conducted presentations within the company for educational and training purposes of developed solutions within InSecTT project.

Total number of actions taken in Y3: 1

TIETO SE

TIETO SE has conducted presentations within the company for educational and training purposes. A total of 14 software developers were trained on ML for distracted driver monitoring (UC5.12) and network anomaly detection (UC5.13). Additionally, 2 bachelor thesis were conducted on the two latter topics during the year.

Total number of actions taken in Y3: **16**

ISEP

ISEP will participate as presenter in the summer school of the CPS&IoT'2022 Summer School in Montenegro in June 2023.

Total number of actions taken in Y3: **1**

U TWENTE

U TWENTE introduced the topics of embedded AI and indoor localization to course projects and graduation projects. Examples include two new courses: Embedded AI (Master course) and Intelligence Embedded Computing (Bachelor course). There were also 5 bachelor theses: (i) *Enhancing IMU-based smartphone context detection using Transformer*; (ii) *Characterizing types of convolutions in CNN for step detection using IMU data*, (iii) *Dynamic AP Control - Adaptive resources allocations based on user's feedback*, (iv) *Dynamic AP Control - Adaptive network slicing using machine learning*, (v) *Dynamic AP Control - Extracting Wi-Fi parameters and analysing their impact on performance*.

In addition, a Master thesis was recently defended, *Detection of Japanese Knotweed Beside the Road using Deep Learning*.

Total number of actions taken in Y3: **5**

VEMCO

In Year 3 VEMCO has co-organized “PyData Trójmiasto” public event edition in Gdańsk, Poland. During the event we educated attendees about participation in InSecTT project and invited Philipp from JKU to present their outcomes related to Artificial Intelligence works done within InSecTT.

As part of new ongoing products campaign VEMCO, which started in September 2022, has prepared multiple informative posts on their social media, from which 2 were strictly related to VEMCO's works done in InSecTT.

Total number of actions taken in Y3: **6**

VTT

Two master thesis were completed during the Y3 for the University of Oulu.

Total number of actions taken in Y3: **2**

SAL

Although no formal education and training activities during Y3 have been carried out, SAL continued the internal communication activity within the department of Intelligent Wireless Systems and published open datasets about BLE interference and channel sniffing.

Total number of actions taken in Y3: **2**

EPS-MU

In relation to formal education and training activities during Y1-Y3, EPS-MU has completed the following activities:

- One PhD Thesis has been completed during Y1 by Erislandy Mozo Bigñotte.
- Internal communication activity within the Signal Theory and Communications research group has continued.
- Presentation of developed solutions within InSecTT project has been conducted to the first year Master students of the [Robotics and Control Systems Master Programme](#) , mature Autonomous Systems, the frame of the IoT lecture

Total number of actions taken in Y3: 3

MarUn

Studies carried out in InSecTT project inspired the courses given at Marmara University Engineering Faculty Computer Engineering Department. In the "CSE4075 Wireless and Mobile Networks" course, which is one of the undergraduate courses, our studies in InSecTT project presented enlightening information about the current situation and developments in Wireless Networks and V2X communication. Additionally, our studies in this project have contributed to the "CSE7018 Performance Evaluation of Computer Networks" and "CSE8016 Vehicular Networks" courses, which are among the postgraduate courses, especially in the field of wireless communication, especially V2X transmission. The courses are given every year and updated accordingly. In addition to those, Yavuz Selim Bostanci delivered hands-on training on IoT Systems and Applications for high school students at Istanbul Fuat Sezgin Bilim ve Sanat Merkezi. (Jan 27, 2021)

Total number of actions taken in Y3: 4

UCC

UCC delivered undergraduate and taught postgraduate modules on Artificial Intelligence and the Internet of Things, and uses examples from InSecTT domains. UCC supervised Honours dissertations and MSc dissertations in AI and IoT, on topics derived from InSecTT examples, including two projects on dynamic reconfiguration of physical access security topology, and one on AI-based optimisation of multi-robot search. UCC continues to supervise PhD students in AI and IoT, with application domains inspired by InSecTT application problems, including two PhD theses on (i) AI-based video-feed verification and anomaly detection and (ii) device-free human activity recognition for driver/operator monitoring for safe driving/operation of equipment, that are specific contributions to InSecTT.

Total number of actions taken in Y3: 5

TUD

TUD has supervised five Master thesis, one PhD, and two Postdocs with the research targeting InSecTT.

Two patents were filed as the research outcome of projects that are delivered to InSecTT

TUD has taught two courses – Advanced Internet of Things, and Adhocs Network – in Y3, training students with both theoretical and practical approaches.

TUD has delivered educational seminars and talks in the context of Extreme Internet of Things in several occasions.

Dr. Prasad was the TPC co- chair of EWSN 2023

Dr. Prasad was a session chair and also a speaker at Dagstuhl seminar where the projects from InSecTT (that are undertaken by TUD) were presented.

Total number of actions taken in Y3: 12

UPM

The Center for Industrial Electronica at UPM (UPM-CEI) has celebrated its XV Annual Meeting on Jun 2023. This event is oriented to students and to the industry and is a way to show the work performed by UPM-CEI researchers in the last year. In this context, researchers involved in InSecTT have presented the work performed in the last year of the project, in two different sessions.

The first session is focused in briefly present novel works in different disciplines using posters. The posters presented in this event were the next:

- Impact of Post-Quantum Security in the Communications of IoT Edge Deployments.

Internet of Things Technology for Train Positioning and Integrity in the Railway Industry Domain.

Additionally, there are technical sessions in the same format as in conferences. In this case, an extended version of the poster “Internet of Things Technology for Train Positioning and Integrity in the Railway Industry Domain” was presented.

A technical seminar entitled “post-quantum security in IoT devices”, 3 h long, was imparted as a short course in this annual meeting, where students and industry staff were listening the technical background of the work performed in InSecTT related to post-quantum security in IoT.

Two PhD thesis are running connected with InSecTT in the areas of post-quantum cryptography for IoT and in Deep learning for LiDAR point cloud processing. The first one is finishing on December 2023.

Total number of actions taken in Y3: 5

3.3 Stakeholders' engagement activities

ADP

In the reporting period ADP had discussed internally, with key internal stakeholders, the main application of the project related with aviation security

Total number of actions taken in Y3: 3

AVL

Multiple internal events presenting results from InSecTT in the area of cybersecurity testing to AVL stakeholders

Total number of actions taken in Y3: 5

CINI:

CINI UNIMORE has presented the project activities to the stakeholders and academic at the AI unplugged event organized in Modena which reached more than 200 people from academia and industry. Additionally, the activities will be presented at the Ital-IA conference which is the National CINI conference on the AI topic inside the workshop AI 4 industry in which major national companies are participating (Pisa May 29-31). Project results in term of explainability has been presented to Confindustria Emilia and Associazione FiordiRisorse in two invited talks by Prof. Calderara (May 2023)

Total number of actions taken in Y3: 5

The primary findings of UNICAL within the InSecTT project were shared through three dedicated meetings with relevant stakeholders. These meetings took place with the Marine Protected Area "Capo Rizzuto," the Italian Institute for Environmental Protection and Research (Marine Technology

Unit), and the SpaceX company, which expressed interest in the developed solution to enhance wireless communication in the maritime environment.

Total number of actions taken in Y3: 4

CINI-UNIPR has presented some of its findings in InSecTT project at the following events:

- online webinar at webinar B2Better on IoT solutions and AI (<https://www.industrychemistry.com/webinar-b2better-su-iot-e-ai-lautomazione-in-laboratori-e-industrie/?az=polisystem-informatica-srl>), in October 2022;
- Smart City seminar, organized by the city of Parma, in December 2022.

Along the years, CINI-UNIPR has also leveraged the results obtained in InSecTT to build new partnership with industrial partners in the submission of national and international projects (namely one accepted KDT project in 2022 and one submitted KDT project in 2023).

Total number of actions taken in Y3: 4

FSC

Mika Lehtinen representing F-Secure has attended the Broadband Forum 18-20 October 2021 in Amsterdam addressing the topic “CPE as a Platform for Connected Home Security”, where F-Secure presented how the real-time detection and response technology that we are developing in the InSecTT project is being used and deployed now and in the future onto the Customer Premise Equipment (CPE), the home router to implement connected home security. The presentation was followed by a panel discussion with seven panelists, F-Secure included, with a focused audience of approximately 80 people from the broadband industry. This presentation and panel discussion was part of the larger Broadband World Forum 2021 event. In addition, the event and the partnerships served as a form of exploitation by engaging with the potential customers during the event.

Mika Lehtinen joined Broadband Forum’s BASE at BREKO Fiberdays on the 13th of June 2022, in Wiesbaden Germany, with presentation “Future Proofing Connected Home Security via Research and Industry Collaboration”. The event offered an opportunity to meet both customers and suppliers and promote our solutions. The aim of the presentation was to raise awareness, promote cooperation, and distribute information.

Mika Lehtinen joined also F-Secure’s annual partner and customer event SPECIES by showcasing the external research collaboration activities and InSecTT project with presentation topic “ML based network traffic anomaly detection for consumer IoT”. Event was held in Amsterdam, the Netherlands on the 22nd of May 2023. The aim of the presentation was to foster engagement with F-Secure's stakeholders in the existing partner ecosystem and customers.

Links to the events:

<https://www.broadband-forum.org/meetings-and-events/vbase-at-broadband-world-forum>

<https://www.broadband-forum.org/meetings-and-events/broadband-world-forum-2021>

<https://www.broadband-forum.org/meetings-and-events/base-at-breko-fiber-days>

[SPECIES23 | F-Secure](#)

Total number of actions taken in Y3: 3

GUT

Gdansk University of Technology is one of the key technical research organizations in Poland and is widely connected to local, national and European stakeholders networks and end-users. Therefore, as InSecTT project advanced in Y3, GUT has increased its stakeholders engagement activities. The following groups of activities were initiated or completed:

2023-06-08 The possibilities that InSecTT project opens were presented during a debate „Polish road to robotization with respect to European Digital Innovation Hubs“ during a conference „Robotization challenges“ in Gdansk. The presentation audience was more than 100 participants from over 40 Polish entities.

Participation in a conference „9th Digital Money and Blockchain Forum“ (21-22.06.2022,online) with a presentation „Cryptocurrencies in practical IoT applications“

2022-06-22 Group student project results (“Blockchain-based IoT technology” – 3 students are realizing this project that is tightly connected with InSecTT and is focused on development of the world first IoT device with blockchain payment incorporated within) were presented by students during 9th Digital Money and Blockchain Forum“

2022-07-28 Space Industry Day organized by Polish Space Agency and Pomeranian Local Authorities. During the meeting, GUT representative has presented key InSecTT innovations developed for maritime domain (GPS-less positioning of port assets, AIoT for boats and ships), that can be used by startup companies from maritime and space sectors to Polish SMEs.

2022-08-03 Meeting with Gdansk Port representatives to discuss possible expansion of GPS-less positioning of port assets system developed by GUT so it can also address sustainability goals and can be a part of wider port infrastructure. As a result, in Y3, the installation was expanded and the IoT sensors installed on assets monitor battery levels and machines working schedule, so the port can optimize overall energy consumption.

2022-08-12 Meeting with Gdansk Port representatives to discuss possible expansion of GPS-less positioning of port assets system developed by GUT so it can also address sustainability goals and can be a part of wider port infrastructure. As a result, in Y3, the installation was expanded and the IoT sensors installed on assets monitor battery levels and machines working schedule, so the port can optimize overall energy consumption.

2022-09-21 Presentation of IoT-based boat retrofitting opportunities during international workshop: “Hybrid-powered low-emission autonomous/semi-autonomous vessels for servicing off-shore wind farms”. Reconfigurable payload developed during InSecTT project gained interest from Lotos Petrobaltic – owner of offshore installations interested in development its own fleet of service autonomous boats.

2022-11-17 Participation in Maritime Day organized by STARTER Incubator developing startups in Gdansk (Poland) area. During the meeting, GUT representative presented reconfigurable payload developed during InSecTT project as well as AIoT for boats and ships retrofitting that can be used by startup companies from maritime and ICT sectors.

2023-02-10 Signature of Letter of Intent with Polish River Cluster. This Lol officially starts collaboration, during which discussions will start how to use reconfigurable payload and AIoT for boats and ships retrofitting developed during InSecTT project can be used in river-base transportation. The use of InSecTT project developments have a chance to increase river transportation safety as well as optimize time required for boat operations.

2023-01-12 Presentation of InSecTT project developments during big networking event opening Horizon Europe activities in Poland. During the meeting, GUT representative presented live demonstration of reconfigurable payload developed during InSecTT project as well as AIoT for boats and ships retrofitting to more than 100 participating entities. InSecTT project was chosen by Polish National Authorities as one of ten H2020 projects having the biggest influence on Polish innovation scene and economy.

2023-03-07 InSecTT project results were presented in prof. Kulas keynote speech “Map of cyber risks in maritime domain in the context of wireless systems cyberattacks threats” in the context of

maritime domain safety and security. The keynote speech was opening 5th Maritime Industry Safety Forum (Gdansk, Poland). It was shown, how InSecTT systems can be used to provide more security and safety in future more digitized and interconnected port and vessel/boat systems. The presentation audience was 280 participants, including board members and directors from key maritime and offshore companies, from 120 Polish entities. After the meeting, one of the biggest players in offshore industry proposed a meeting, during which reconfigurable payload developed during InSecTT project got a lot of interest as a possible add-on to offshore installations to provide increased safety and security.

2023-04-20 Participation in Interizon Innovation Night – a meeting with Polish companies gathered around INTERIZON cluster. During the meeting ESPAR reconfigurable antenna (an InSecTT component prepared for InSecTT Open Innovation Framework) has been presented to the companies from Interizon cluster. In consequence, the cluster manager asked Gdansk Tech to participate in the next Interizon Innovation Night devoted to autonomous vessels (scheduled on 2023-06-06) and proposed to organize a separate Interizon Innovation Night event dedicated to InSecTT project only. This event will promote solutions prepared by Polish partners for the InSecTT Open Innovation Framework.

Total number of actions taken in Y3: 11

LCM

LCM is preparing to disseminate scientific results to other universities and companies at about the topic “A Distributed Testbed for Wireless Embedded Devices” at the “IEEE International Mediterranean Conference on Communications and Networking (MeditCom 2023)”. Furthermore, JKU, together with partners AVL, LCM and SAL, applied for national (Austrian) funding of an open-source implementation of the EPhESOS protocol for wireless sensor networks which was developed in the predecessor project DEWI and also used in InSecTT. This should make the protocol available and usable to the public as well as to companies. In the course of the preparation of the proposal we approached a company as a potential user for the open-source implementation.

Total number of actions taken in Y3: 2

JKU

During the third year of the project, JKU, as a university, demonstrated some of its developments from InSecTT to various universities and companies at the MESS networking event. Additionally, JKU, along with AVL, LCM, and SAL as partners, sought national funding in Austria for an open-source implementation of the EPhESOS protocol for wireless sensor networks. This protocol had been initially developed in the DEWI project and further enhanced in InSecTT. The objective was to make the protocol accessible and practical for both the general public and companies. As part of the proposal preparation, we approached a company as a potential user for the open-source implementation.

Total number of actions taken in Y3: 3

LDO

LDO presented the evolution of the GANIMEDE platform, significantly driven by the efforts conducted within and synergically with the InSecTT Project, to several stakeholders and potential customers. In particular, during the project duration several efforts have been conducted to make GANIMEDE stand-alone solution and not just a module included into SC2, the global monitoring platform in the catalogue of LDO CYS. We can group stakeholders into three distinct segments: blue light and institutions, critical infrastructures monitoring, large enterprises for industry 4.0 applications of video monitoring (e.g. counting solutions for monitoring evacuation procedures during emergencies). Some of these activities helped us to identify directions to enhance the capabilities of the AI

algorithms developed within the InSecTT Project, as well as new UC for the underlying TBB developed.

Regarding activities conducted within the use case devoted to Public Transportation, we mainly engaged our internal stakeholder, and in particular the product management and the engineering for the transportation solutions. The results obtained during the project contributed towards the evolution of the on-board unit towards IoT and AI.

LDO disseminated its participation and a general description of its activities within the project through its website and its social media channels. More actions are planned towards the end of the project.

<https://cybersecurity.leonardo.com/it/news-and-stories-detail/-/detail/insectt-merger-of-iot-and-artificial-intelligence>

https://twitter.com/Leonardo_IT/status/1557993253764583424

https://me.linkedin.com/posts/leonardo-security-%26-information-systems_insectt-the-secure-merger-of-iot-and-artificial-activity-6963759778808410112-2teN

Moreover, LDO SDI presented the underwater barriers for maritime infrastructures monitoring and protection to some potential public customers. The ongoing discussions should be finalized with some offers. The same technologies have been included in some new R&D project proposals, to extend the system capabilities and integrate the barriers in more complex systems of systems.

Total number of actions taken in Y3: 17

VIF

VIF released the vehicleCAPTAIN toolbox (https://github.com/virtual-vehicle/vehicle_captain) as free and open-source software (FOSS). The toolbox can be used by early stage research and development to get into V2X development. The toolbox is already used by a handful of project partners.

Total number of actions taken in Y3: 1

MDH

MDH published a realistic dataset to support ML research in manufacturing systems, that can be very valuable for industry and research community. Additionally, MDH proposed two ML frameworks that can be applied in different areas: 1) Federated Learning Classification Framework Based on Random Forest, and 2) Framework for Feature Encoding and Data Privacy based on Autoencoders and Optimization Algorithms.

Total number of actions taken in Y3: 3

KTH

KTH organized several workshops for interactions with Swedish industrial stakeholders during the year, of which 5 related directly to InSecTT. The topics included results dissemination, research workshops (including on architectural frameworks), and discussions regarding the open research edge computing testbeds being launched at KTH. The participants were from several industrial domains including automotive, defence, telecom, MedTech and manufacturing.

Total number of actions taken in Y3: 5

JSI

JSI has contacted the Slovenian Administration for Civil Protection and Disaster Relief to check its interest in our solution for indoor navigation and localization. Several directions for potential future development were discussed at that occasion. We also contacted a health specialist at Ljubljana

University Medical Centre and present him our cloud solution for anomaly detection in ECG signals for potential collaboration in exploitation and further development.

Total number of actions taken in Y3: 3

PRE

PRE has aligned both use-case activities with internal business on a regular basis in order to clarify system requirements for deployment in a hospital environment and enable integration with existing healthcare solutions.

PRE has also cooperated with a major Dutch telecom provider (KPN) to evaluate their locations tags within use-case 5.6. The geoJSON server setup by PRE for this use case has been extended to support the senML (RFC 8428) format and the provided message token authentication.

PRE cannot disclose further information on customer and stakeholder engagements.

Total number of actions taken in Y3: 2

RTE

RTE has attended and presented at various research focused workshops within academia and industry.

Total number of actions taken in Y3: 2

WESTERMO

Westermo has organized (i) weekly meetings with the partners in our use case, (ii) meetings every third week with internal Westermo stakeholders, (iii) monthly meetings F-Secure in InSecTT on AI in a container in a router for network anomaly detection, as well as (iv) presented results from InSecTT to all Westermo R&D employees in one of the offices, and (v) externally in the ITS ESS-H research school at MDH (now MDU).

Total number of actions taken in Y3: 5

KAI

Kaitotek has participated multiple industry tradeshows and research project results and demonstration seminars. The purpose has been to promote KAI's solution with the new features studied and developed in the project and the results obtained directly to target customers. Also, new research cooperation has been looked for.

Total number of actions taken in Y3: 6

ISS RFID

ISS RFID has participated in multiple industry tradeshows and conducted presentations for potential end-users and stakeholders during Y3. We cannot disclose detailed information on customers; however, we can share their area of business. Below, the list of meetings and participations.

End-users and stakeholders:

- 09.2022 - participation in Interizon Day
- 01.2023 - meeting with client from retail sector
- 01.2023 - meeting with client from manufacturing sector (machines)
- 01.2023 - meeting with client from IT solutions sector
- 02.2023 - meeting with client from manufacturing sector (furniture)
- 02.2023 - meeting with client from manufacturing sector (aluminium profiles)

- 02.2023 - meeting with RF hardware manufacturer & distributor
- 03.2023 - meeting with client from manufacturing sector (roof rails)
- 03.2023 - meeting with client from manufacturing sector (home appliances)
- 03.2023 - meeting with RF hardware manufacturer & distributor
- 04.2023 - meeting with client from manufacturing sector (counterweights)
- 04.2023 - meeting with client from manufacturing sector (aluminium parts)
- 04.2023 - participation in Interizon Innovation Night
- 05.2023 - meeting with client from manufacturing sector (sweets)
- 05.2023 - meeting with client from recycling sector (regranulates manufacturing)

Industry tradeshows:

- 04.2023 - packaging & logistics expo in Warsaw
- 04.2023 - intralogistics expo in Stuttgart
- 05.2023 - logistics expo in Poznan

During the meetings ISS presented planned project results, milestones achieved and possibility of adaptation of developed security seals and inventory management system in other business areas and other domain applications. Some of these activities helped us to identify directions to enhance the capabilities of planned results.

Total number of actions taken in Y3: 18

MTU

MTU added further measurements to its cellular channel parameter and throughput measurements that were made available on Github (<https://github.com/MTU-Insectt/Measurements5G>). Further, MTU presented aspects of its InSecTT activities in a “Dependable Networks” workshop organised by the SFI CONNECT centre, in order to foster collaboration with CONNECT researchers.

Total number of actions taken in Y3: 2

CEA

CEA is a member of the French IRT (Technological Research Institute) Nanoelec¹ that aims at supporting the technological transfer actions between academic partners and industrial partners for many IoT domains. In that context, the results from InSecTT have been presented to the IRT partners more essentially the HistoTrust platform developed in UC5.14 and evaluation protocols of the robustness of embedded AI from WP2 activities. Discussions have been engaged for future joint research actions including demonstrations and developments on others application domains such as home healthcare.

ETH

ETH presented the strip-based solution for people flow monitoring, which represents the evolution of the passenger counter system currently available in the company portfolio, to a selected group of historical customers for a preliminary evaluation of the new prototypes. The selected customers have the largest installed set of passenger counters, and they matured the solid and concrete experience required to provide valuable evaluation of the prototypes and understand the real potentialities of the

¹ <https://irtnanoelec.fr/en/>

new flow monitoring solution. Regarding the environmental stations, ETH is currently discussing with the Italian public authority in charge of environmental monitoring (ARPA) possible indoor scenarios where to test the new compact solution developed in the InSecTT project.

Total number of actions taken in Y3: 2

TIETO SE

TIETO SE has organised regular meetings with TIETO's stakeholders and industry leaders on INSECTT and the associated deliveries. Work presentation and discussion on INSECTT with TIETO's customers in different industries (automotive, insurance).

Total number of actions taken in Y3: 5

ISEP

ISEP has been present in the meetings of the ISO/JTC1/SC45 WG1 IoT use cases. ISEP is the liaison partner between the InSecTT project and WG5. ISEP presented the project and some of the use cases to the WG5, raising interest of other standardisation groups and industrial partners.

Total number of actions taken in Y3: 1

U TWENTE

U TWENTE presented scientific results to other universities and companies at about the topic "Learning the world from its words: Anchor-agnostic Transformers for Fingerprint-based Indoor Localization" at the "I IEEE International Conference on Pervasive Computing and Communications (PerCom 2023). At the same conference UTWENTE presented also the paper " Autonomous Network Slicing and Resource Management for Diverse QoS requirements in IoT Networks."

Additionally, another conference paper "QoS Aware Slice Resource Management using Deep Reinforcement Learning in IoT Networks " has been presented at DCOSS-IoT 2023.

Furthermore, U TWENTE submitted a paper entitled: "Transferring Knowledge, Enhancing Accuracy: Multi-Surrogate-Teacher Assistance in Fingerprint-Based Indoor Localization" to Thirty-seventh Conference on Neural Information Processing Systems (NeurIPS 2023). In total, U TWENTE has 7 papers published during the last 3 years.

Total number of actions taken in Y3: 7

VEMCO

VEMCO has conducted "SECORUN" campaign – new products campaign to engage several industries stakeholders to present about new products line including Physical Security Information Management platform developed by VEMCO within InSecTT Project.

VEMCO has conducted closed meetings with representatives from different industrial sectors: energy, mining, automotive, pharmaceutical, delivery / logistics, transport, toys, biotech, and grocery retail.

Total number of actions taken in Y3: 13

VTT

VTT has organised a public seminar in October 2022, Espoo, Finland for communicating and educating industry and research community with InSecTT results. More than 70 persons participated physically to the event.

InSecTT results have been applied in 2 projects funded by NATO and Business Finland and research personnel were communicated with results.

Total number of actions taken in Y3: 3

SAL

In Y3 SAL along with AVL, LCM, and JKU as partners, has sought national funding in Austria for an open-source implementation of the EPhESOS protocol for wireless sensor networks. This protocol had been initially developed in the DEWI project and further enhanced in InSecTT. The objective was to make the protocol accessible and practical for both the general public and companies. As part of the proposal preparation, we approached a company as a potential user for the open-source implementation.

Total number of actions taken in Y3: 4

EPS-MU

During Y1 EPS-MU presented in the Visiting Researcher Seminars use cases from InSecTTTT, where they participated, during the postdoc stay of Arrate Alonso Gómez at MdU. Within the same postdoctoral stay presentation was also given within the frame of the VTS Workshop on WVC.

During Y3 EPS-MU also presented the project and some of the use cases in the [Basque Country Mobility and Logistics Cluster](#), Advanced Intelligent Transport Systems WG Meeting, raising interest of other industrial partners.

Total number of actions taken in Y1-Y3: 3

MarUn

Marmara University has arranged over 40 different visits with industrial organizations at the VeNIT Lab, showcasing live demonstrations, fostering idea exchange, and strengthening communication with external stakeholders. This enabled MarUn to effectively present ongoing research projects and created collaborations in new initiatives. In addition to those:

- VeNIT Lab attended ITS Summit, hosted by AUS Turkey with a booth and Prof. Dr. Mujdat Soy Turk gave a speech as a keynote speaker, and moderated a panel on CCAM in conference sessions (having OEMs and European delegate) on March 9-10, 2022. (VeNIT Lab was deemed worthy of the Special Jury Award with its ITS solutions)
- VeNIT Lab held a workshop on Connected/Autonomous Cars with live demo of ongoing work at Marmara University on March 23, 2022,
- VeNIT Lab held a workshop related to Connected Cars, Autonomous Vehicles and Intelligent Transportation Systems on December 6, 2022.
- Prof. Dr. Mujdat Soy Turk (Marmara University) contributed to the event as a panelist at AUTODROM in Istanbul hosted by BİAS Engineering about current implementation and prospects of ADAS functions, emphasizing their significance for manufacturers in Turkey and the local market.
- Marmara University brought together European electronic components, chip, and technology developer organizations with Teknopark Istanbul organizations to create new collaborations with cooperation with Teknopark Istanbul.

Total number of actions taken in Y3: 45

UCC

UCC contributed to the VTT public seminar in October 2022, Espoo, Finland for communicating and educating industry and research community, with a keynote talk on using AI and IoT for supporting humans, based in part on InSecTT results.

UCC presented a talk on Intelligent Transportation at the industry seminar “The Science of Better” held in Cork on 10/11/22

UCC has accepted an invitation to present a seminar on the impact of AI on the Electronics industry, to the Cork Electronics Industry Association, to be held in August 2023.

Total number of actions taken in Y3: 3

TUD

TUD gave speeches on popularizing extreme and Industrial IoT in many venues in Y3. TUD also approached multiple industrial organizations for the possible collaborations for the outcomes (product related) of InSecTT project that TUD is responsible for. TUD is also extending the research outcomes of a few WPs to a higher TRL level and also in use cases that are interesting to the Industrial organizations. For instance ,the ECG module developed for WP5.5 is planned to be used in a manned mission to space; the work presented in WP3.2 is being used in realizing the true benefits of The Things Network (TTN).

Total number of actions taken in Y3: 4

UPM

UPM organized its Annual Meeting within the Center for Industrial Electronics (UPM-CEI). This event has a strong component of connection with companies, that are invited to see the last developments and projects within UPM-CEI.

In this event, the work performed in InSecTT was presented to several companies, most of them related to electronic engineering. The attendant companies were from several domains, as aerospace, automotive, manufacturing and communications, among others.

Also, the topic related to post-quantum cryptography has served to launch a project with a Spanish company related to IoT deployments and post-quantum security impact. It has served also to be part of a new consortium with 6 Spanish companies that recently has got funding for a project related to cybersecurity in IoT and the protection against attacks by using AI and post-quantum security, funded by Spanish Ministry of Science and Innovation.

Total number of actions taken in Y3: 3

4 DISSEMINATION, EXPLOITATION AND STANDARDISATION

All dissemination and exploitation related actions are described in **D6.7 Final report on Communication, Exploitation and Dissemination of Results (PCEDR)**. This document reports standardisation, education and training activities as well as stakeholder engagement related actions taken in Y3 of InSecTT project.

5 CONCLUSIONS

This document provides detailed information on action taken by relevant Partners, which present how the project results are taken up and reused in different types of external activities.

In Y3 of InSecTT project, the focus was hold on stimulating Partners towards active participation in standardisation bodies, delivering educational content as well as promoting and exploiting the project results among external stakeholders.

In the third year of the InSecTT project, the partner organisations collectively demonstrated a significant commitment to standardisation activities. The total number of actions taken by the participating organisations amounted to a remarkable 41 actions. These actions covered a wide range of areas, including automotive cybersecurity, wireless communication standards, IoT use cases and healthcare data specifications. During reporting period, various partner organizations demonstrated a strong commitment to education, training, and dissemination of their research outcomes. The total number of actions taken by different partners amounted to a significant **180+ actions**. These actions encompassed a wide array of educational and training activities, including seminars, courses, lectures, workshops, and projects aimed at sharing knowledge and raising awareness about the project's findings. The partners' dedication to educating both students and industry professionals showcases their commitment to fostering innovation and advancing the field of secure and trustworthy technologies.

In its third year, the InSecTT consortium undertook a number of high-impact activities to promote its project activities and results. Through presentations, seminars and engagements, the consortium actively shared its progress and results with stakeholders from academia and industry. Collectively, the consortium organised numerous events, workshops and meetings, totalling **200+ actions**. These efforts were aimed at broadening the reach of the project, encouraging collaborations and facilitating the integration of InSecTT's innovative solutions into different sectors.

6 REFERENCES

- [1] <https://www.iso.org/obp/ui/#iso:std:iso-iec:tr:22560:ed-1:v1:en>
- [2] F. Ademaj, M. Rzymowski, H. -P. Bernhard, K. Nyka and L. Kulas, "Relay-Aided Wireless Sensor Network Discovery Algorithm for Dense Industrial IoT Utilizing ESPAR Antennas," in *IEEE Internet of Things Journal*, vol. 8, no. 22, pp. 16653-16665, 15 Nov. 15, 20".

A. ABBREVIATIONS AND DEFINITIONS

Term	Definition
API	Applikation Programming Interface
COTS	Components of the shelf
FHIR	Fast Healthcare Interoperability Resources
GPS	Global Positioning System
MQTT	MQ Telemetry Transport
NFC	Near Field Communication
ONF	Open Network Foundation
ONOS	Open Network Operating System
PHY	Phsyical Layer
QoS	Quality of Service
RF	Radio Frequency
SDN	Software Defined Networking
SFI	Science Foundation Ireland
SNIR	Signal to Noise and Interference Ration
TBB	Technology Building Block
UWB	Ultra Wideband
WAIC	Wireless Avionics Intra-Communications