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v.0.3	2020/08/11	LAUREA	Description of leading tasks added
v.0.4	2020/08/26	STWS/KEMEA	Description of leading tasks added, and chapter 3 feedback added.
v.0.5	2020/09/02	EXUS/INW/ICCS	Description of leading tasks added
v.0.6	2020/09/29	LAUREA/KEMEA	Description of legal tasks added
v.0.7	2020/10/27	STWS/KEMEA	Updated dissemination & communication plan added. Updated risk management plan and information about the gender balance added. Pre-final version of the deliverable ready to be submitted.
v.0.8	2020/11/23	ALL	Information about the effort spent received from all partners.
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Executive Summary

The Deliverable D1.3 “Project Intermediate Report” is the second progress report of ANDROMEDA project which belongs to WP1 activities and covers the reporting obligations for the period M7-M12 (March – August 2020). Overall, during this second period of the project the activities have been focused on the finalization of the design of ANDROMEDA components, the C2, DF and DST adaptations/developments towards the availability of the 1st release of the ANDROMEDA system and the beginning of the project’s validation period which among others includes the integration and verification test plan and the definition of the approach for the validation in the operational trials. Moreover, having completed the project its first half, ANDROMEDA has been reviewed by EC receiving recommendations that will be addressed by the Consortium during the second half of the project.

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1. Introduction

1.1 Purpose of the document

The purpose of D1.3 Project Intermediate Report is to present the main outputs of the work performed during the second period of reporting activities (M7-M12). Similarly to D1.2, it summarises the progress towards the objectives, provides information for the status of the Work Packages (WP), Tasks, Deliverables and Milestones, identifies and highlights the most significant results, and presents the progress with respect the Person-Months (PM) spent per WP and per Partner.

1.2 Reference documents

[1] ANDROMEDA Grant Agreement No 833881 – Annex 1 Description of the action

[2] ANDROMEDA D1.1 Project Management, Quality and Risk Plan

1.3 Definitions

List of Definitions	
CISE	CISE is the Common Information Sharing Environment for the Maritime Domain. It will integrate existing surveillance systems and networks and give to all the relevant authorities (EU and national authorities responsible for different aspects of surveillance) concerned access to the information they need for their missions at sea. The CISE will make different systems interoperable so that data and other information can be exchanged easily through the use of modern technologies.

1.4 Structure of the document

The document is structured as follows:

Chapter 1 – Introduction, purpose of the document, reference documents, definitions, structure and list of acronyms.

Chapter 2 – Project's objectives and work progress: A summary of the project objectives during the second period and the progress achieved including a comparison between the activities planned in DoA. Detailed work progress achievement during the second period is presented and the consolidated results for each Work Package. This section is ordered according to the Work Packages as defined in the DoA.

Chapter 3 – Project management and coordination: A summary of the progress at managerial level for each Task under WP1, including the status of the deliverables due between M7 and M12 of the project, the milestones that have been achieved, the reference to the problems encountered and the corrective actions undertaken, the status of each KPI defined in the DoA, the summary of the meetings and teleconferences arranged, the risks that have been identified and the measures to mitigate them and last the resources that have been spent per partner and per WP.

Chapter 4 – Conclusions: A summary with the conclusions of the Deliverables and reference to the next reporting obligations according to the DoA.

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1.5 List of Acronyms

List of Acronyms	
AB	Advisory Board
AI	Artificial Intelligence
AIS	Automatic Identification System
CDM	Common Information Sharing Environment Service and Data Model
CISE	Common Information Sharing Environment
CSG	CISE Stakeholder Group
C2	Command and Control
DF	Data Fusion
DFS	Data Fusion Services
DoA	Description of Action
DPM	Data Management Plan
DPO	Data Protection Officer
DST	Decision Support Tools
EB	Executive Board
EMSA	European Maritime Safety Agency
ETSI	European Telecommunications Standards Institute
E/O	Electro Optical
JRC	Joint Research Centre
IM	Innovation Meeting
IPR	Intellectual Property Right
ISG	Industry Specification Group
KoM	Kick off Meeting
KPI	Key Performance Indicator
MST	Management Support Team
OSINT	Open-Source Intelligence
P2PKOS	Project to Policy Kick Off Seminar
PM	Person Month
POPD	Protection of Personal Data
RASCI	Responsible, Accountable, Support, Consulted, and Informed
RV	Review
R&D	Research & Development
SIA	Societal Impact Assessment
TM	Technical Meeting
UC	User Community
WP	Work Package

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2. Project's objectives and work progress

2.1 Project's objectives for the period

The main objectives of the project covered during the second six months of the project (M7-M12) are the following:

- Continue the project management according to the structure and principles defined in the Grant and Consortium Agreements for the whole duration of the project.
- Oversee the progress of work packages, monitor deliverables, resolve any risks and unforeseen issues, and organize periodical meetings with the WPs leaders.
- Take into consideration the recommendations received during the mid-term review concerning future work (including update of risk management plan and due to the COVID-19 pandemic situation, extension of the ANDROMEDA User Community with additional land border authorities, strong liaising with EMSA, FRONTEX, JRC, DG-HOME etc.)
- Finalize, supported by JRC, the delivery of the extensions and adaptations of the CISE Data Model (e-CISE) for specific entities and for supporting Land Border operations.
- Finalize the software design of the e-CISE compliant ANDROMEDA C2s and the Data Fusion, Analytics and Decision Support tools and the supporting legacy system Gateways and CISE Adaptors based on requirements and scenarios defined.
- Continue the project development activities according to the overall architecture & design documents
- Schedule the timely deployment of ANDROMEDA releases and training of the end-users according to the validation plan (1st release has been deployed in July 2020).
- Start the system integration and testing activities by defining the test architecture, the integration platforms and the system configurations for each trial.
- Start the definition of the methodology to be applied for the operational trials.
- Continue the dissemination and communication activities for increasing the visibility of the project objectives and its relevant findings and achievements.
- Manage legal, ethical and societal issues.

2.2 Achievements during the period

This section reports, for each work package active in the reference period (M7-M12; except for project management which will be addressed in chapter 3), the following information:

- the status of the work package at task level
- the achieved results
- the current status
- any deviations from DoA

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2.3 Work Package 2: Operational Analysis, User Requirements and Technical Specifications

Task 2.1: User Community Interactions

Task Progress: T2.1 started in M1 (September 2019) and lasts until the end of the project. T2.1 will form the ANDROMEDA community of practitioners focused on the goal of "innovation", delivering the benefits of the Information Sharing Environment through the enhanced CISE model for Land and Maritime Border Surveillance and Monitoring.

During the second period of the project, the User Community building strategy was concluded and the User Community enlargement process started taking into account the recommendations from REA after the mid-term review for engaging more land border authorities and end-users from outside the Mediterranean basin. The process to accommodate this comment is ongoing and the achieved results so far are summarized below:

During the first enlargement campaign 47 Letter of Supports were sent to potential external partners from similar projects as ARESIBO, ARCSAR, CAMLEOT, COMPASS 2020, FOLDOUT, EUCISE2020, EWISA, MARISA, MEDEA, OCEAN2020 etc. To this end, the updated list of the User Community is composed of 19 partners from 13 countries:

External End-Users:

1. BBP – Bulgarian Border Police (BG) – *Land*
2. BGRNI – Bulgarian Navy (BG)
3. BDI – Bulgarian Defence Institute (BG) – *Land*
4. MBP – Montenegro Border Police (MD) – *Land*
5. Polish Naval Academy of the Heroes of Westerplatte in Gdynia (PL)
6. Home Office: Border Force Maritime Command (UK)
7. GUCI – Guardia Civil (ES) (participation to the Questionnaire) – *Land*
8. FBG – Finnish Border Guard (FI) (participation to the Questionnaire) – *Land*
9. MNE – Montenegro Navy (MD) (participation to the Questionnaire)
10. SMA – Slovenian Maritime Administration (SI) (participation to the Questionnaire)

External Academic and Research & Technology Organizations

11. Nord University Business School (NO)
12. Aleksandër Moisiu University of Durrës / Faculty of Professional Studies (AL)
13. University of the Aegean / Department of Shipping, Trade and Transport (GR)
14. European University Cyprus / CERIDES (CY)
15. University of Montenegro / Faculty of Maritime Studies in Kotor (MD)
16. University of Montenegro / Faculty of Electrical Engineering (MD)

External Industrial partners

17. Naval Group (FR)
18. MarineTraffic Operations S.A. (GR)
19. Székely Family and Company Ltd. (HU)

EU Bodies and Agencies

20. European Maritime Safety Agency (EMSA)
21. Joint Research Centre (JRC)

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22. European Border and Coast Guard Agency (FRONTEX)
23. DG for Migration and Home Affairs (DG-HOME)

EU funded related Projects

24. MARISA "Maritime Integrated Surveillance Awareness"
25. RANGER "Radars for long distance maritime surveillance and Sar operations"
26. MEDEA "Mediterranean practitioners' network capacity building for effective response to emerging security challenges"
27. SMILE "Smart mobility at the European land borders"
28. D4FLY "Detecting document fraud and identity on the fly"

Current status: The Task 2.1 is in progress. Deliverable D2.1 "User Community Initial Report" has been finalized and submitted to the EC by the beginning of September 2020.

Deviations: No deviations from the DoA.

Achieved results: While the Land Border authorities were a minority in the User Community, T2.1 organized a new campaign focused on engaging authorities which are operating in Land domain. At this time that D2.1 is submitted, the process is ongoing, and the results will be presented in D2.5 "User Community Final Report".

The Forum was established for ANDROMEDA User Community to stimulate information sharing and discussions about the project results. The Forum is open for all external partners upon registration. The structure of the Forum is designed to guide the discussions according the main areas of interests of the project: Operational, Technical, Educational, Ethical, Open and Innovation sub-forums.

During the 3rd Project Meeting, a User Community session has been organized. The session focused to external and potential external partners, including presentations of ANDROMEDA towards the innovative and technical solutions achieved so far in the project along with the presentation of the ANDROMEDA Trials. The Session concluded with an open discussion where the external partners had the opportunity to interact and inform about their interest to support and follow the ANDROMEDA project. For the statics, 77 participants from 26 organisations attended this User Community Session.

Task 2.2: User Requirements and Technical Specifications

Current status: Completed from the previous reporting period.

Task 2.3: Legal and Ethical Context Analysis

Current status: Completed from the previous reporting period.

Task 2.4: Operational Scenarios & Trials Definition

Current status: Completed from the previous reporting period.

2.4 Work Package 3: Overall Design, Architecture & Interoperability Framework

Task 3.1: Enhanced CISE (e-CISE) Data Model for Border Monitoring & Control

Task Progress: T3.1 started in M3 (November 2019) and finished in M7 (March 2020). Following the previous reporting period, T3.1 worked on the finalization of the enhanced CISE Data & Service Model (v1.5.3) to support both Maritime & Land Border Monitoring & Control. To accomplish this, modifications in

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the CISE Data Model as well as definition of new Core Entities have been done. The deliverable D3.1 "e-CISE Data Model description" has been finalized and successfully reviewed by JRC who participate in the Advisory Board of the project. Finally, a technical adoption guide of e-CISE Data Model has been compiled, demonstrating e-CISE Data Model new & enhanced entities with rich examples and descriptions. The technical adoption guideline is included in D3.1.

Achieved results: D3.1 "e-CISE Data Model description" has been submitted. 10 new e-CISE Core entities have been created. (Sensor, Mission, Task, Operation, Report, Rule, Simulation, Subject, RequestForInformation and CollectionPlan) with respect to the general guidelines of the CISE Data Model. 17 CISE Core entities of the CISE Data Model are maintained and enhanced by defining new attributes but without changing their general definition and associations.

Current status: Completed

Deviations: No Deviations from the DoA.

Task 3.2: Physical and Logical System Architecture

Current status: Completed from the previous reporting period.

Task 3.3: Land Borders C2 Design

Task Progress: T3.3 started in M4 (December 2019) and ended in M7 (March 2020). In accordance with the DoA, the goal of this task was to establish an overall design of the C2's adapted for Land Border Surveillance and Coordination. In this task, the building blocks for the Land Border C2 Systems required to accomplish the user requirements, technical specifications and use cases defined in WP2, were specified, designed and updated. The use cases were refined based on requirement analysis with the goal of driving the flow of information between functional blocks and model their behavior.

Achieved results: The D3.3 "Land Border C2 System Design" is finalized and structured in the following way: it starts by listing the technical specifications and grouping them into classes of functionality. Then it follows on determining a design for a Land Border C2 system. The design states the extracted use cases according to the previously identified groups of functionalities and proposes an architecture to achieve them. Then it specifies the functional areas and the corresponding building blocks for the system. In section 4, each of the existing C2 are presented by their architecture, components, user interface principles and requirement compliance. In the last section of the document a gap analysis is performed on what and how it will be each C2 strategy to comply with the proposed C2 Land Border design. The final version of D3.3 has been submitted.

Current status: Completed.

Deviations: No deviations from the DoA.

Task 3.4: Maritime Borders C2 Design

Task Progress: T3.4 started in M4 (December 2019) and ended in M7 (March 2020).

Achieved results: The structure for designing a solid Maritime Borders C2 has been fully defined. Technical specifications based on user requirements have been extracted. Also, architecture and functional blocks have been specified. Finally, connectivity issues, interfacing with existing legacy systems/sensors and impact of e-CISE in the design have been addressed. Contributions from respective technical partners mainly focusing on existing C2s and how can be upgraded to meet the technical specifications of ANDROMEDA, have been received and have been consolidated in D3.4 "Maritime Border C2 System Design".

Current status: Completed. D3.4 "Maritime Border C2 System Design" has been submitted.

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Deviations: No deviations from the DoA.

Task 3.5: Data Fusion, Situation Awareness and Decision Support Services Design

Task Progress: Completed

Achieved results: Architecture for ANDROMEDA's Data Fusion and Decision Support services completed. Dedicated bilateral meetings between task leader (EXUS), work package leader and all participating partners have been made in order to identify the gaps and overlaps between existing services that will participate to operational trials. Therefore, towards this direction a map with the respective services and their capabilities identified and these gaps and overlaps are successfully resolved, reaching to mutual agreement between involved partners. Furthermore, the whole work of this task and the final design of each DF and DS component has been described in detail in D3.5.

Current status: Completed. Deliverable D3.5 submitted (M8).

Deviations: No deviations from the DoA.

2.5 Work Package 4: ANDROMEDA System Developments

Task 4.1: Development of Land C2 Systems Adaptations

Task Progress: T4.1 lasts from M5 (January 2020) to M15 (November 2020). The task is underway carrying out the necessary adaptations of the Land C2s.

Achieved results: The 1st release of the Land C2 adaptations to the respective C2s has taken place. Currently the technical partners are organizing and carrying out their development activities for the 2nd release. D4.1 "Interoperable C2 for Land Border Operations" is expected to be finalized in M15 (November 2020).

Current status: In progress.

Deviations: No deviations from the DoA.

Task 4.2: Development of Maritime C2 Systems Adaptations

Task Progress: T4.2 lasts from M5 (January 2020) to M15 (November 2020). During the first phase of this task each one of the C2 system providers analyzed the user requirements and checked which requirements are fulfilled by their C2 system. After this analysis, a set of tasks to accomplish the objective was prepared and sent to the WP4 Leader in order to check closely the advance of the developments. The tasks created were planning according four different releases, and the first release has been accomplished without any deviation.

Achieved results: Planning to accomplish the development on time has been shared with WP4 Leader, and the analysis of C2 and user requirements has been performed. First release has been achieved. Capabilities for the next releases are currently under development. D4.2 "Interoperable C2 for Maritime Border Operations" is expected to be finalized in M15 (November 2020).

Current status: In progress.

Deviations: No deviations are foreseen.

Task 4.3: Development of enhanced CISE Adaptors

Task Progress: Task 4.3 "Development of enhanced CISE Adaptors started on Month 5 (January 2020) and is expected to end in M12 (August 2020). It involves the participation of all C2 providing partners and the global Data Fusion Services providing partners. The task focuses on the development of the various enhanced

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CISE adaptors, but also, it involves the implementation of a lightweight e-CISE network and a e-CISE to CISE adaptor. The lightweight CISE Hub is implemented by Inovaworks, while the e-CISE<->CISE adaptor is provided by Engineering. Each C2 provider will implement their e-CISE adaptor to their system.

Achieved results: C2 Adaptor's design, Global Data Fusion Adaptor's design and ANDROMEDA Hub's design.

Current status: In Progress

Deviations: 2-week deviation from original plan**:**

Task 4.4: Development of Data Fusion, Situation Awareness and Decision Support Services

Task Progress: In progress.

Achieved results: Development of the first release for Data Fusion Gateway and data management services is concluded. These services were implemented following the Microservices architectural approach as it was described in D3.5 "Data Fusion, Situation Awareness and Decision Support Services Design". This architectural approach allows to create a modular execution environment, where new services could be added or unused services could be removed based on the requirements of each use case. Furthermore, all data fusion services, decision support services and the data fusion gateway components have been packaged and delivered using Docker containers (OS - level virtualization), a standard unit of software that packages up code and all its dependencies so the application runs quickly and reliably from one computing environment to another, in order to overcome any configuration and deployment complexities due to the different environments between the three trials. These Docker container images are lightweight, standalone, executable packages of software that includes everything needed to run an application: code, runtime, system tools, system libraries and settings. These components have been deployed and tested on ANDOMEDA's integration platform offered by GMV. In addition, several instantiations of these components have been made by other partners in order to proceed with integration tests and validate the proper flow of information within the ANDROMEDA system. More information about testing and integration is depicted on WP5.

Current status: Currently working on the development of a threat assessment Data Fusion service (JDL level 3) that will be used in the Greece – Bulgarian operational trial. This component is expected to be ready for testing during the second release phase of the ANDROMEDA at the end of M12.

Deviations: No deviations expected.

2.6 Work Package 5: System Integration and Testing

Task 5.1: Test Architecture, Sensor and Data Integration

Task Progress: This task started in M7 (March 2020) and finished in M9 (May 2020). The main objective of this task was to define a test architecture that will facilitate the integration activities of the ANDROMEDA system developments. It further analyzes the interfaces between components, the information management and test cases to be followed for successful integration of all ANDOMEDA components. This task completed by submission of Deliverable D5.1 "Test Architecture and Data Integration".

Achieved results: Deliverable D5.1 Test Architecture and Data Integration has been submitted. The generic principles of the test architecture based on technical specifications of the tools and components that will be used, have been documented. This was achieved by defining the components of the ANDROMEDA framework and all the interfaces that need to be tested, as well as the data types, actors and expected results that will be used during the testing and integration phase of ANDROMEDA. A comprehensive list of tests has been defined, in the form of either unit tests or end to end tests that describe all the communications between

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those components in the context of the ANDROMEDA Project. The tests have clear objectives and test criteria, are simple to execute, are repeatable and their test environment is efficient so as to facilitate a seamless integration process towards the actual trial implementations.

Current status: Completed

Deviations: It was agreed by the consortium partners to submit D5.1 in M9 instead of M8, as per GA, without affecting other tasks and project activities

Task 5.2: Definition and Implementation of Integration Platforms

Task Progress: T5.2 started in M7 (March 2020) and ended in M9 (May 2020). In this task, the integration platform was defined and implemented for the project able to test the enhanced CISE Data Model, the C2s and the associated Data Fusion and Analytics services in different configurations and interfaces to local legacy systems. For doing so, the technical partners provided hardware requirements for each of the pieces of software in order to have the overall resources needed for the platform. A methodology for the integration process was established and all the pieces of software followed this approach.

Achieved results: Deliverable D5.2 "Definition of Integration Platforms" was submitted. An integration platform was created in GMV premises following a set of steps for a seamless integration:

- Creation of a local Docker Hub allowing the technical partners to upload their containers.
- Creation of an example with all the configuration parameters that would be essential for the communication between components.
- Creation of a configuration file for each piece of software.
- Creation of VPN connections to the available data sources

Current status: Completed.

Deviations: No deviations.

Task 5.3: Definition of System Configurations for Each Trial

Task Progress: Task 5.3 started on Month 7 (March 2020) and ended on M11 (July 2020). It involved the participation of all component providing partners (C2, DFS and Global DFS) to provide their system inputs to enable an integrated test bed where validation can take place. Also, enabling swift integrated environment instantiation on different sites (per trial).

Achieved results: the specification of the system configurations needed to perform the Integration Test in accordance to the needs of the multiple trials. In this document, such configurations were specified and detailed, with the specific parameters provided for each component and subcomponent in such a way that they can support specific Integration Platform configurations, and, in the future, provide a solid base for a set of Work Package 6 trial configurations

Current status: Completed

Deviations: 2-week deviation from originally planned

Task 5.4: Factory Integration and Testing of Trial Configurations

Task Progress: The Task lasts from M10 (June 2020) till M15 (November 2020) and its objective is to perform the factory integration and implement and apply the different configurations for each campaign. The task is therefore currently underway.

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Achieved results: Submission of D5.4 "Integration and Validation Test Plan". The next deliverable for this task is due in M15 (November 2020) and is the D5.5 "Integration and Validation Test Report".

Current status: The complete integration and verification tests have been identified and the plan that will be followed to incrementally and iteratively test the various capabilities of the components of the system has been designed. The 1st set of tests have been executed to coincide with the 1st Release of the system as defined in WP4. The subsequent sets of tests will build up on the tests sets until the end of the task is reached as each test has been executed at least once.

Deviations: No deviations are foreseen.

2.7 Work Package 6: Pilot Demonstrations, Validation & Evaluation

Task 6.1: Operational Trials Context

Task Progress: T6.1 has started on M6 (February 2020) and its expected duration is until M15 (November 2021). The main objective of this Task is to define the approach and plans for the execution of the operational trials considering the preparatory work performed in WP2. During the period from M7 to M12 T6.1 was reporting its progress and activities in the WP6 biweekly Coordination teleconference. The activities undertaken with T6.1 for this period were regarding the drafting of D6.1 "Validation in operational trial approach and plan", the work allocation at partners. Within this task the validation framework of the trials was set, including the trials time-plans, the definition of operational steps and well as the definition of the evaluation metrics.

Achieved results: The validation methodology was defined in detail, the geographical and environmental details of the trials were reported, the scenarios were broken down into fine operational steps, metrics (KPAs, KPIs and MOEs) were extracted from the technical requirements and mapped to certain operational. All this information was included into the D6.1 document.

Current status: In progress

Deviations: No deviations

Task 6.2: Iberian Maritime Border Trial

Task Progress: The Task lasts from M11 (July 2020) till M17 (January 2021). It involves the participation of the Portuguese Navy and the Italian Navy as end-users. Initial and preparatory activities envisaged the organization, logistics and setting-up, most of them related to the scenarios preparation, Hardware and Software installation and human resources assignment, namely, for the testing and operation of the ANDROMEDA system. Most of the execution of the Iberian Trial deals with Naval Co-operation and Guidance for Shipping (NCAGS), in the maritime border area.

The involved ANDROMEDA components are

- C2s: GeoC2 (PTN) and Smart (ITN).
- Data Fusion Services - ESSG, EWE, GeoC2 RTA, GeoC2 VRE, Triton
- Global Data Fusion Services

Operation scenarios have been refined into operational steps and are being continuously decomposed into validation scripts that prove the fulfillment of functional specification defined in WP 2&3. Trial's test bed is being set up and moving on into a cross-site integrated environment. Trial's period is set to start on M13 (September 2020).

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Achieved results: Integration with end-user Legacy systems and installation of the Andromeda system in trial's test bed. Training and Validation for 1st Release under preparation, being envisaged to start at the beginning of September 2020.

Current status: Currently finalizing the complete installation of the existing ANDROMEDA tools and setting up the procedures for the operation. Planning to enter the full execution of the Trial during September.

Deviations: No future deviations are foreseen

Task 6.3: Greece-Bulgaria Land Border – Maritime Trial

Task Progress: The Task lasts from M11 (July 2020) till M17 (January 2021) and includes activities for the detailed organization, logistics, setting-up and execution of the Greece – Bulgaria Trial. The Trial deals with illegal immigration, search & rescue and smuggling both in maritime and land border areas. The task is underway currently with all sites deployment of the Andromeda System (Hellenic Police, Hellenic Coast Guard, Hellenic Navy, EAMA).

Achieved results: Hellenic Police - The deployment of radar, AIS and PTZ Camera on a fixed tower overlooking the Delta Evros. The deployment of radar and thermal camera on the river patrol boat. All these sensors have been integrated into the Andromeda system. In addition, the integration of surveillance cameras at Nea Vyssa Border Control Center into ANDROMEDA. Finally, the complete deployment of the ANDROMEDA system at the Hellenic Police with clients located in Athens (Police Headquarters), Alexandroupoulis (Police Directorate) and Nea Vyssa (Police Directorate). Performed the 1st validation and training of the 1st Release of the system.

Hellenic Coast Guard – Integration with their AIS network and deployment of the ANDROMEDA system at HCG headquarters in Piraeus. Performed the 1st validation and training of the 1st Release of the system.

Hellenic Navy – Integration with their AIS network and deployment of the ANDROMEDA system at the Hellenic Navy General Staff. Training and Validation for 1st Release was postponed due to tensions in the region. Tentative rescheduled beginning of September 2020.

EAMA – The system was deployed with the collaboration between INW and STEMO. The system is available. Training and Validation of 1st Release to executed in August 2020.

Current status: Currently wrapping up training and validation of 1st Release. Planning for 2nd Release to be executed end of September, beginning of October 2020.

Deviations: No deviations are foreseen.

Task 6.4: Ionian-Adriatic Maritime Border Trial

Task Progress: The Task lasts from M11 (July 2020) till M17 (January 2021) and includes activities for the organization, setting-up and execution of the Adriatic – Ionian Trial. The Trial deals with illegal immigration, search & rescue and smuggling in maritime areas. The task is underway currently with all sites.

Achieved results: Italian Navy – The environment for deploy needed servers has been completed.

Current status: Training and validation of 1st Release is ongoing. Planning for 2nd Release to be executed end of September, beginning of October 2020. Integration tests between all platform will be scheduled from the second week of October 2020.

Deviations: No deviations are foreseen

Task 6.5: Trials Validation and Evaluation

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Task Progress: The Task started in M11 (July 2020) and will last till M17 (January 2021). The aim of this Task is to validate the results of each trial against the objectives, verify the KPIs and provide feedback and recommendations.

Achieved results: The Task started on time and a specific methodology has been defined to draft the D6.2 "Operational Trials Results Report and Lessons learnt" (e.g. analysis of the monthly validation feedback forms collected by the end-users during the Trials validation period, analysis of the surveys and the feedback forms that will be completed after the execution of the Trials in their full extent etc.)

Current status: In progress.

Deviations: No deviations are foreseen.

2.8 Work Package 7: Impact Creation, Exploitation and Standardization Activities

Task 7.1: Dissemination and Communication

Task Progress: T7.1 started in M1 (September 2019) and lasts till the end of the project. The main progress of this Task is described below:

- Deliverable D7.1 "Communication and Dissemination Strategy and Plan" has been completed and submitted on time
- the ANDROMEDA social media pages (Twitter and LinkedIn pages) have been developed and are active
- the ANDROMEDA web site has been published and several updates and upgrades have been completed
- All communication material has been developed and updated were needed. Moreover, Milestone MS2 has been met accordingly.

Achieved results: In the previous period, the following results have been achieved:

- SMART Communication Objectives have been defined.
- Stakeholder analysis & mapping has been completed and illustrated using the Interest vs Influence grid. Also, the needs of each stakeholder in terms of geographical dimension have been visually presented.
- Key messages have been drafted for each identified target group. The brand identity has been designed, presented and agreed with the Consortium during the Kick-off meeting. Guidelines about the use of ANDROMEDA Branding Elements have been prepared.
- A list of Communication Routes has been selected. Reasoning for their selection has been provided together with the validation measures for Results' acceptance.
- A list of Dissemination Routes has been selected. Reasoning for their selection has been provided together with the validation measures for Results' acceptance.
- Networking Groups have been identified along with the methods used for networking.
- Additional resources for the implementation of the communication plan have been determined and include scientific communities and Industry Groups.
- The Internal Process for Dissemination and Communication has been agreed and is being followed by the consortium. It is in line with the relevant rules of the Grant Agreement and the Consortium Agreement, the Security Advisory Board Role and budget constraints.
- The Innovation Management Roadmap has been prepared for the main ANDROMEDA Results, thus clarifying the exact purpose for the selection of each dissemination and communication activity.

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- Communication material has been prepared and includes:
  - The project Roll up banner
  - The project leaflet
  - The project presentation
  - Press Releases
  - The project Fiche for the 'project to policy kick off seminar' that was held on January 2020.
- A Table listing all completed and planned Dissemination and Communication Activities has been prepared and uploaded in the SharePoint. The layout follows the one of the participants' portal, and includes listings for activities types, audiences, etc.

Further to the results achieved in the previous period, the following results have been achieved:

- Several updates and upgrades have been completed for the project website
- The activity of the Andromeda social media account is continuing and both accounts have received attention and have increased their audience size.
- Additional communication material has been prepared for the 1st online project workshop
- More communication actions have been completed by the consortium (see Table 1 in the Annex A).
- The consortium members have updated their plans for dissemination and communication activities following the cancellation of many events due to the covid-19 outbreak.

Current status:

- D7.2 "Initial Dissemination Material", due in M12 (August 2020) has been prepared and reviewed and was submitted on time.
- D7.3 "Final Dissemination Material" is due in M15 (November 2020).
- D7.4 "ANDROMEDA Initial Web Presence", due in M12 (August 2020) has been prepared and reviewed and was submitted on time.
- D7.5 "Andromeda Final Web Presence" is due in M18 (February 2020)

Following the relevant request by the project officer, the consortium has prepared a **second update of the Dissemination and Communication plan, and this is presented in this deliverable as an Annex A**. Dedicated teleconferences took place for the ANDROMEDA scientific publications and the plan for the dissemination activities has been enriched. More teleconferences will take place to organize the participation of all partners in the Andromeda social media activity.

Table 1: Status of the Dissemination and Communication targets

	Metrics	Target	Current Status (M12)
Dissemination	Publications in scientific Journals	3	4 in preparation
	Presentation in scientific conferences/ conference proceedings	n n<6	4 presentations in Conferences completed, 2 Articles in Peer Reviewed Conference Proceedings completed 3 articles for conference proceedings planned
Communication	Number of views of website	5,000	16,289 visits from 17/12/2019 until 27/10/2020 Website made accessible to the public on 17/12
	Published articles in papers, magazines, newspapers	3	Press Release published in 2 websites, 5 articles published in company websites,

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	Metrics	Target	Current Status (M12)
			2 non-scientific articles planned, 1 interview in online national media completed (BG), 4 interviews in national radio and 5 in national TV (ME)
	Information material, Creation of leaflets, brochures, posters	3	1 flyer and 2 roll up banners created and used, 1 more leaflet completed for the 1st online workshop
	Newsletter	6	Frist and Second Newsletter completed and released.
	Video material introducing ANDROMEDA's findings & results	1	Video material not yet prepared
	Number of video views	1,000	Video material not yet prepared
	Number of professionals to whom the project leaflet will be distributed	500	200
	Presentation in trade fairs, exhibitions	6-n	1 participation in Trade Fair planned, 1 participation in exhibitions planned if the events will take place and travel restrictions are stopped.
	Project website leaflet and/or poster downloads	200	2019 downloads statistics: Presentation:6 Banner:2 Leaflet:63 2020 downloads statistics: Newletters:383 Presentation:219 Banner:132 Leaflet:210 1st online Workshop Agenda:154 **Total Downloads: 1169** From 17/12/2019 until 27/10/2020
	Twitter account followers	200	210
	LinkedIn Group members	200	250 followers, 239 connections
	Social media posts	150	59

Deviations: No deviations are reported.

Task 7.2: Workshops Coordination

Task Progress: T7.2 started in M1 (September 2019) and spans until the end of the project. The objective of this task within the reporting period (M7-M12) is to organize the first out of two workshops, to present and promote the ANDROMEDA results, through presentations and/or live system demonstrations to the consortium partners, end-users, practitioners and other relevant stakeholders.

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The ANDROMEDA team has made the agreed activities towards organizing the 1st Workshop during September 2020. As per DoA, the first workshop is to be organized in Spain (by GMV) and the second in Greece (by EXUS). After the pandemic (COVID-19) outbreak and following the precaution measurements and restrictions announced by authorities for tackling the widespread of the virus, the consortium decided to alter the initial plans from realizing it physically in Spain to organizing the event virtually.

Achieved results: Within the reporting period, the actions and main achievements that have been made towards organizing the 1st workshop are summarized as follows:

- A coordination team for the organization of the 1st workshop has been appointed.
- Potential dates for organizing the event physically had been identified *(Option A: Tue. 15 Sept., Wed. 16 Sept. and Thu. 17 Sept., Option B: Tue. 22 Sept., Wed. 23 Sept. and Thu. 24 Sept. - most preferable one., Option C: Tue 29 Sept., Wed. 30 Sept. and Thu. 1 Oct.)*
- It has been decided to be co-hosted with ANDROMEDA project plenary meeting.
- Suitable venue has been selected at GMV premises - *(Location: Tres Cantos, 20 km from Madrid; Venue: GMV premises – auditorium; Capacity: 100 people)*
- Decision made by the consortium to turn the 1st Workshop from a physical event into a virtual one for ensuring all participants' safety and health due to COVID-19 outbreak and in the context of following all related containment and precaution measures.
- Agreed the date for the organization of the online event *(28th – 29th of September 2020*).
- Decided the web tool for hosting the online event and created the online registration form.
- Finalized the draft agenda and sent invitations (in close collaboration with the workshop host GMV, the Coordinator MMAIP, the Project Manager KEMEA, the Communication and Dissemination Manager SATWAYS, the User Community Manager LAUREA and the Task Leader ICCS).
- Created the list for inviting potential participants and circulated *(it also includes User Community Members).*
- Started to invite potential participants and communicate the event within the consortium's network and contacts.

All the aforementioned main achievements and activities of T7.2 have been discussed, agreed *(including the modifications to the initial plan due to the unpredictable impact of COVID-19)* and monitored in the respective WP7 teleconferences and plenary meetings. The outcomes of this Task will be reported in D7.6 "Initial Workshops Organization and Results". The second workshop results will be reported in D7.7 "Final Workshops Organization and Results" (M18).

Current status: In progress. Finalization of the Workshop Agenda, speaker invitations and further communication/promotion of the event to public.

Deviations: Due to COVID-19 outbreak the 1st Workshop will be organized virtually and not physically as it was foreseen in the DoA. The deliverable D7.6 will be submitted in October 2020 after the realization of the 1st Workshop.

Task 7.3: IPR Review and Patenting Process

Task Progress: T7.3 started on M8 (April 2020) and lasts till the end of the project. Within the reporting period (M7-M12), the IPR and patenting process has been defined starting from reviewing the Background IPRs of partners, keep record of the IPRs created during ANDROMEDA (Foreground and Sideground) and register IPRs where possible. Periodic surveys have been initiated to identify the Results that they have created, if they have used background (their own background or another partner's background to which they had been given access) or preexisting works of third parties, if the Result is joint ownership etc.

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In more detail a document "IPR tables" has been circulated to be filled in by the partners which scope is to:

1. Identify what has been created within Andromeda Project (definitions of the concepts are provided at the end of the document).
2. Specify the type of the Results (software, database, etc), as well as the corresponding type of IP Protection (Patent Law, Copyright Law, Trademarks, etc).
3. Define who is/are the owner(s) of each Result: if it is joint ownership or not, if the creation includes preexisting works and, if so, to whom this preexisting work belongs to.
4. Specify when and under which circumstances the Partners have access to certain Results incorporating a preexisting work.
5. Keep record of IPRs generated within Andromeda and identify cases for which clearances are needed.

By providing this information it will be identified, which IPRs have commercial potential. In addition, this method will permit us to identify if there is patentable material and-if yes-who is/are the inventor(s) and owner(s) of the patent and proceed with the filing of the patent.

Since there is no deliverable for this task, the outcomes of this Task will be reported in D7.8 "Exploitation Plan" by M12 (August 2020) and D7.9 "Exploitation and Large Uptake Assessment" by M18 (February 2021).

Achieved results: A preliminary report on the importance of IP has been drafted (within T7.8) including the first results from the survey; the report is expected to be refined once all partners answer the survey. The IPR tables have been prepared and circulated. Partner's completed IPR tables are being collected. The activity is closely related with T7.4. The input required for the exploitable assets (requested by GMV for Task 7.4), will be used as starting point. Further information with regards to IPR will be collected in the periodic surveys.

Current status: Collecting answers by partners and preparing final document.

Deviations: No deviations have been identified.

Task 7.4: Exploitation Plan and Market Large Uptake Assessment

Task Progress: T7.4 lasts from M1 (September 2019) till the end of the project. Information about Key exploitable results (KER) has been collected, and the exploitation plan is under preparation.

Table 2: List of Key Exploitable Results

KER tittle	Expected TRL (at project's end)	Time to exploit[1]	KER Details
ANDROMEDA e-CISE to CISE Adaptor	7	1-	ANDROMEDA e-CISE to CISE Adaptor is the component in charge of the adaptation of ANDROMEDA Data Model to CISE Data Model (and viceversa) for supported entities.

[1]Time to exploit: immediate: 0, Less than 1 year: 1-, 1 to 3 years: 3-, More than 3 years: Mark 3+, Cannot be specified: ?

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KER tittle	Expected TRL (at project's end)	Time to exploit[1]	KER Details
Decision Support Tools	7	1-	The DST (Decision Support Tool) consists of: - WITOIL (Where is The Oil): is a service to deliver and disseminate the prediction of the transport and transformation of actual or hypothetical oil spills in the Mediterranean Sea; - VISIR®: is a service providing optimized nautical routes in the Mediterranean Sea; - OCEAN-SAR: is a service provided to support maritime authorities and operational centers during search-and-rescue operations.
Meteo-Oceanographic Forecasting Services	7	1-	Production and operational delivery of Meteo-Oceanographic forecasting products
GeoC2 Command and Control Solution for eCISE	7	1-	Enhanced product Information Exchange capabilities and mission execution capabilities in a CISE-based ecossystem
Socrates C2	7	1-	Command and Control solution for local, regional or national command centers, totally compliant with CISE and eCISE standard. Covers the main capabilities in this kind of tools, monitoring, tasking, planning, exploitation etc.
Socrates Data Fusion	7	1-	Component is in charge of getting information from different track sources and fusing them, providing an improved track. It is applicable in the maritime and land domain.
INUS Platform: Intelligent UxV Surveillance platform for object detection, identification and tracking via UAV and terrestrial image processing.	7	3-	The INUS Platform comprises of: - An aerial unmanned platform (UAV) - An aerial unmanned platform (UAV) - A terrestrial surveillance system - The UAV pilot's workstation - The Intelligence Officer's workstation - object detection and tracking SW module - e-CISE interface of INUS - Object Detection and tracking (e.g. land vehicles, persons) using Machine Learning and image processing techniques from (i) UAV and (ii) terrestrial surveillance assets - Near real-time streaming of raw videos - Near real-time streaming of detected/tracked objects - Creation of object detection/tracking events (including localization of events and other attributes) - Provision of e-CISE interface for data sharing with C2s in ANDROMEDA

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KER tittle	Expected TRL (at project's end)	Time to exploit[1]	KER Details
Data Fusion Engine (Data Fusion Gateway & Data Fusion service)	7	1-	The ANDROMEDA Data Fusion Engine is a platform which performs Data Fusion operations on data, originating from different sources and combines them to produce accurate and meaningful high-level information.
TRITON	6	1-	The TRITON Service is an abnormal vessel behaviour service which uses a geospatial complex event processing to identify and analyze motion patterns in land and maritime domains
ENGAGE BME	6	3-	The ENGAGE BME platform is fully-fledged Command and Control solution catering for first responders in the field and personnel in a local or regional or national command centers.
ESSG – Enterprise Service Security Grid – Framework	8	0	ESSG allows you to identify divergent behaviors by subsequently adding additional rules to improve the solution's ability to correctly identify cases or detect new types of behavior. The ESSG Framework functionalities are: - Classification of targets based on their behavior. - Behavior analysis, comparison with learned models, identification of common and divergent behaviors. - Automatic generation of alerts associated with targets that present underlying threats or offenses.

Achieved results: Description of the approach to prepare the deliverables requested in this task during the Innovation Session of the 3rd Project Meeting. The outcomes of this Task will be reported in D7.8 "Exploitation Plan" by M12 (August 2020) and D7.9 "Exploitation and Large Uptake Assessment" by M18 (February 2021).

Current status: In progress.

Deviations: No deviations detected so far.

Task 7.5: Standardization

Task Progress: T7.5 started in M1 (September 2019) and spans until the end of the project. The objective of this task is to identify opportunities for ANDROMEDA solutions and services for pre-standardization, mainly targeting the e-CISE Data Model for land and maritime surveillance border control, for data fusion and analytics services and C2. There is no planned deliverable within this reporting period. Deliverable D7.10 "Standardization Report" is planned for M18. Within the reporting period (M7-M12), (i) the pre-standardization framework of ANDROMEDA has been defined, (ii) the pre-standardization channels have been defined and activated, (iii) interoperability standards used by ANDROMEDA partners have been collected via the standardization template circulated to all partners.

Achieved results:

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- Standardization template: Interoperability standards for C2 tools, data fusion components and situational awareness have been collected. This list is currently analyzed in terms of State-of-the-Art and best practices to identify possible needs and gaps in standardization.
- Three pre-standardization channels of ANDROMEDA e-CISE Data and Service Model are identified and have been activated.
    - The ETSI ISG Group for the European Common Information Sharing Environment Service and Data Model (CDM) (via its member STWS and INW): Satways is participating in ETSI ISG group meetings (remotely due to COVID-19). Introduction of ANDROMEDA is targeted when the discussion about the enhancements of EUCISE2020 will start.
    - The EMSA CISE Stakeholder Group (CSG) (via ANDROMEDA end-users participating in CSG): EMSA suggested the addition of a dedicating session during the last CSG meeting where representatives from other projects will be invited to join. The session was planned for the 4th CSG meeting, but due to COVID it will most probably shifted to the next EMSA CSG remote meeting (tentatively to be held in October 2020).
    - The JRC (via MMAIP, KEMEA): JRC Unit E.5 on Transport and Border Security accepted our invitation to join the ANDROMEDA Advisory Board. Mr. David Berger has been appointed and is the formal JRC reviewer of D3.1 “e-CISE Data Model description”. He is also registered in the ANDROMEDA forum.

Current status: The pre-standardization framework of ANDROMEDA is in progress. The analysis of the feedback provided via the standardization template is in progress. All three pre-standardization channels channels (ETSI ISG, JRC and EMSA CSG) are active with specific plans and actions for the next period.

Deviations: No deviations detected so far.

2.9 Work Package 8: Ethics requirements

Task Progress: This WP contains 13 different deliverables that cover Ethics requirements set out by the European Commission. The purpose of this WP is to constantly monitor the ANDROMEDA activities from an ethical viewpoint and to ensure consistency and compliance of the project with the relevant applicable legislation and the ethical principles. During this period (M7-M12) the final deliverables of this WP have been submitted. Consequently, all 13 ethics requirements have been delivered. All ANDROMEDA partners have contributed to their preparation and finalization.

Achieved results: During this period, the following deliverables have been submitted:

- D8.11 EPQ-Requirement No.11 on the appropriate health and safety procedures conforming to relevant local/national guidelines/legislation that are followed for staff involved in this project, submitted in M9.
- D8.12 DU-Requirement No.12 on the potential dual-use application of some of the technologies and equipment developed in the project in the sense of Regulation 428/2009, submitted in M12.
- D8.13 M-Requirement No.13 on a risk assessment and measures to prevent potential misuse of research findings, submitted in M9.

Current status: Following the remarks of the reviewers during the ANDROMEDA Mid-term Review Meeting, additional information has been requested with respect to the input (Ethical Statements) already sent by the ANDROMEDA partners in the context of D8.3 H-Requirement No.3 (Copies of opinions/approvals by the Ethics Committees or competent authorities). The additional information, in particular, the national legislation according to which the partners are not obliged to establish an Ethics Committee and are not subject to a competent authority is collected and will be communicated to the reviewers for the validity of the Ethical Statements to be verified.

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Furthermore, following the remarks of the reviewers during the ANDROMEDA Review Meeting, revision of D8.6 POPD-Requirement No.6 (Anonymisation/pseudonymisation techniques) has been requested. The deliverable is being revised following the reviewers' instructions.

Deviations: No deviations have been detected.

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3. Project management and coordination

3.1 Management tasks and achievements

Task 1.1: Administrative & Financial Planning and Coordination

Task Progress: T1.1 span throughout the whole duration of the project. The project coordination and administration are carried out by MMAIP ensuring the smooth running and operation of the project. During the second reporting period, the following activities have been made:

- Activation in full functionality the Project Management Structure.
- Organization of the 3rd Project meeting remotely due to the situation with the COVID-19 outbreak.
- Communications among the consortium members and between the consortium and the EC.
- Maintenance of communication with external organizations and advisors.
- Continuous cooperation with the Technical Manager for ensuring the smooth development of the project from the technical pint of view.
- Preparation of the Project Intermediate Report.
- Submission of project deliverables to the EC.

Achieved results: D1.3 "Project Intermediate Report" has been submitted

Current status: In progress.

Deviations: No deviation from the DoA.

Task 1.2: Project Management, Quality Control and Risk Management

Task Progress: T1.2 span throughout the whole duration of the project and is related to the day-to-day planning supporting the Project Coordinator during the project implementation. Due to the COVID-19 crises, an update of the Risk Management Plan was important to be done finding adequate mitigation measures (especially for the possible threats related to the execution of the trials). All the recommendations received from the experts after the mid-term review meeting will be addressed and the actions done for implementing them will be reported in D1.4 "Project Final Report". Regarding the gender balance, about 35% of the project workforce are female which is a good average. More detailed data will be reported in D1.4. Last, the project has requested an amendment of the GA in order to change the dissemination level of the following deliverables from "Public" to "Confidential, only for members of the consortium (including the Commission Services)":

- D4.3 "Nodes and Services for e-CISE Information Exchanges" – INW (M12). Since D4.3 uses information provided in D3.2 and exposes the implementation of the architecture, this information should be set to Confidential consortium partners only.
- D7.8 "Exploitation Plan" – GMV (M12). The deliverable includes individual exploitation plans and a market study that should be more appropriate to be set at Confidential consortium partners only level.

Achieved results: D.1.3 "Project Intermediate Report" has been submitted

Current status: In progress.

Deviations: No deviation from the DoA.

Task 1.3: Innovation Management

Task Progress: T1.3 span throughout the whole duration of the project. This task will focus on the innovation management of ANDROMEDA, reflecting the strategy to deliver technology aligned to market

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needs, European strategies and directives and operational contexts. From the innovation point of view some of the technical work packages have been closely followed. WP2 regarding user requirements analysis has been the starting point to innovation analysis. It is important to see if these requirements are already covered by solutions already deployed in user facilities or available in the market. Another important work package that has been checked on this period is WP4 related to development.

Achieved results: During the second innovation meeting the current gap was analyzed by means of a round table with end-users moderated by the innovation manager where they answered to questions related to their legacy system, main capabilities and main gaps, and advantages provided by ANDROMEDA. It was also introduced the approach to develop the business model following the canvas method.

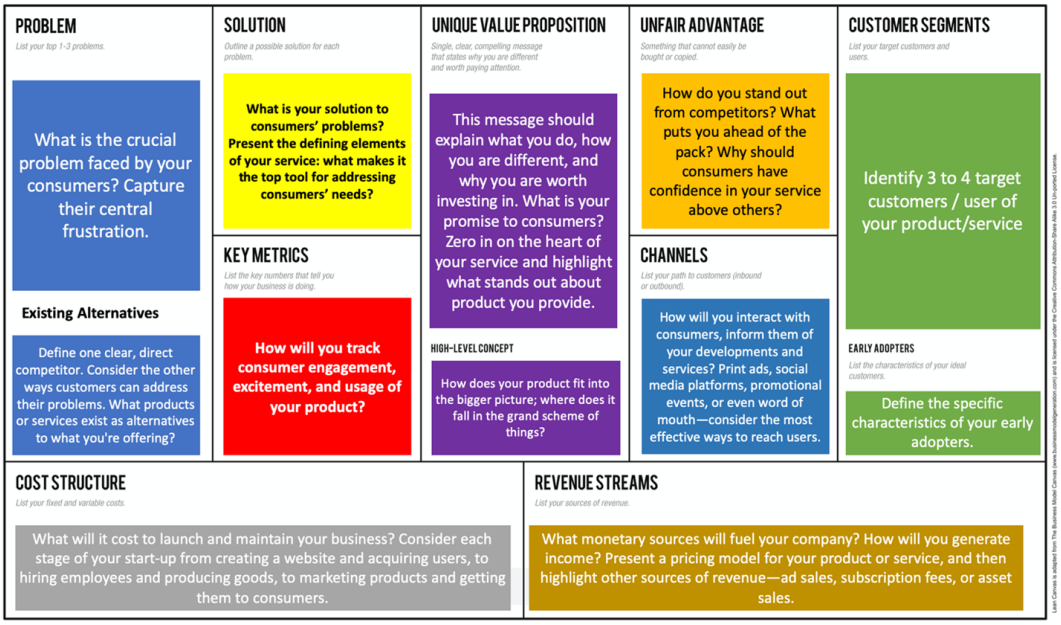

Figure 1: Canvas methodology

Current status: In progress. Information about exploitable assets has been collected, TRL analysis has been performed and some guidelines have been exchanged with technical partners.

Deviations: No deviations detected so far.

Task 1.4: Legal, Policy, Social and Ethical Management

Task Progress: T1.4 span throughout the whole duration of the project. This task has concentrated in stressing the importance of ethics both in research but more so in ensuring the ethicalness and societal acceptance of the end results. Guidance on ethical issues has been provided to the Consortium both in the form of D2.4 "Legal, Ethical and Societal Aspects" prepared under WP2, but also face-to-face during ANDROMEDA meetings when presenting the related WP and tasks. Also, guidance on ethical questions about surveys have been given (to WP6).

Achieved results: The results are related to compiling a knowledge base in order to provide analysis and assessment of legal, ethical and societal aspects of the project, i.e. delivering the D1.5 "Legal, Societal, Ethical Initial Report" on M9 (May 2020).

Current status: This task's current and next steps are related with completing the D1.6 "Legal, Societal, Ethical Final Report", which is due on M18.

Deviations: No deviation from the DoA.

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3.2 Deliverables

This section presents a summary of the status of the Deliverables due between M7-M12. There were 20 Deliverables in the second period. 18 Deliverables have been submitted and 2 are pending due to the request for an amendment which is in progress for changing the dissemination level of the following deliverables from PU to CO (following a consultation with the SAB): D4.3 "Nodes and Services for e-CISE Information Exchanges" and D7.8 "Exploitation Plan". The justification of this request is provided in Section 3.1 and the in the amendment information on the portal.

The deliverables which have been submitted delayed have not affected the implementation of the project since well drafted versions (almost final) were prepared on time and were available to all partners. Some delays were mainly due to the need of improving further the quality of the deliverables following the peer-review process.

The complete list of Deliverables submitted during the second period is given in Table 3.

Table 3: List of Deliverables submitted until M12 (August 2020)

WP	Task	Deliverable Number	Deliverable Name	Lead	Type	Dissem. Level	Due Date	Calendar Due Date	Delivered (Yes/No)	Actual/ Forecast Submission Date	Comments
WP3	T3.1	D3.1	e-CISE Data Model description	STWS	R	PU	M7	31/03/2020	Yes	21/04/2020	Delayed (to incorporate feedback from JRC)
WP3	T3.3	D3.3	Land Border C2 System Design	INW	R	EU-RE	M7	31/03/2020	Yes	06/04/2020	On time
WP3	T3.4	D3.4	Maritime Border C2 System Design	STWS	R	EU-RE	M7	31/03/2020	Yes	13/03/2020	On time
WP3	T3.5	D3.5	Data Fusion, Situational Awareness and Decision Support Services Design	EXUS	R	EU-RE	M7	31/03/2020	Yes	15/05/2020	Delayed (to improve some sections following the feedback from the peer-reviewers)
WP5	T5.1	D5.1	Test Architecture and Data Integration	ICCS	R	CO	M8	30/04/2020	Yes	30/05/2020	Delayed (Minor delay following

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											the timeline of T5.1 which was due by the end of May 2020)
WP5	T5.2	D5.2	Definition of Integration Platforms	GMV	R	CO	M8	30/04/2020	Yes	29/05/2020	Delayed (Minor delay following the timeline of T5.2 which was due by the end of May 2020)
WP1	T1.4	D1.5	Legal, Societal, Ethical Initial Report	LAUREA	R	PU	M9	31/05/2020	Yes	02/06/2020	On time
WP8	n/a	D8.11	EPQ – Requirement No. 11	MMAIP/KEMEA	Ethics	CO	M9	31/05/2020	Yes	01/06/2020	On time
WP8	n/a	D8.13	M – Requirement No. 13	MMAIP/LAUREA	Ethics	CO	M9	31/05/2020	Yes	01/06/2020	On time
WP5	T5.4	D5.4	Integration and Validation Test Plan	STWS	R	CO	M10	30/06/2020	Yes	02/09/2020	Delayed (The deliverable was ready according to the plan but has been submitted in September 2020 following the closure of the mid-term review session on the portal)
WP5	T5.3	D5.3	Definition of Trial Configurations	INW	O	CO	M11	31/07/2020	Yes	02/09/2020	Delayed (The deliverable was ready according to the plan but has been submitted in September 2020 following the closure of the mid-term review

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											session on the portal)
WP6	T6.1	D6.1	Validation in operational trial approach and plan	ENG	R	EU-RE	M11	31/07/2020	Yes	21/09/2020	Delayed (Due to the classified peer-review process which was not possible to be conducted in August 2020)
WP6	T1.2	D1.3	Project Intermediate Report	MMAIP	R	PU	M12	31/08/2020	Yes	26/11/2020	Delayed (Due to the necessary time needed by some partners to accurately calculate their spent effort for this second period)
WP2	T2.1	D2.1	User Community Initial Report	LAUREA	R	PU	M12	31/08/2020	Yes	04/09/2020	On time
WP4	T4.3	D4.3	Nodes and Services for e-CISE Information Exchanges	INW	R	PU	M12	31/08/2020	No	Following the completion of the amendment	D4.3 is reviewed and ready to be submitted. Request to change the dissemination level from PU to CO
WP7	T7.1	D7.2	Initial Dissemination Material	ICCS	R	PU	M12	31/08/2020	Yes	02/09/2020	On time
WP7	T7.1	D7.4	Andromeda Initial Web Presence	STWS	R	PU	M12	31/08/2020	Yes	02/09/2020	On time
WP7	T7.2	D7.6	Initial Workshops Organization and Results	ICCS	R	PU	M12	31/08/2020	No	Expected to be submitted end of	The 1st Workshop has been successfully organized

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										October 2020	remotely end of September 2020
WP7	T7.3 T7.4	D7.8	Exploitation Plan	GMV	R	PU	M12	31/08/2020	No	Following the completion of the amendment	D7.8 is reviewed and ready to be submitted. Request to change the dissemination level from PU to CO
WP8	n/a	D8.12	DU - Requirement No. 12	MMAIP/L AUREA	R	CO	M12	31/08/2020	Yes	02/09/2020	On time

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3.3 Milestones

All the project Milestones, due at the second half of the project, were reached on time and verified by the submission of the relevant deliverables, as presented in Table 4.

Table 4: Status of project's milestones

MS No.	MS Name	WP No.	Lead	Due Date	Achieved (Yes/No)	Actual/ Forecast Achievement Date	Comments
MS1	Project Start	ALL	MMAIP	1	Yes	17-18/09/2020	The kick-off meeting took place in Athens as 17-18.09.2019. Project Bodies were established and Project Management Plan (including meeting plan) was provided. Collaboration has started.
MS2	Initial Definition of User community needs, operational trial scenarios and strategy	WP2 WP3 WP5 WP6 WP7	MARINA MILITARE	5	Yes	07/02/2020	The User Community was established and asked with prepare questionnaires. User needs were established to be followed up upon in the subsequent tasks. The results were provided in the deliverables D2.2 an D2.6. Management strategy and plans were provided (D1.1), as well as a communication and dissemination strategy (D7.1). The deliverables D2.2 and D2.6 which belong to this milestone and for which the reviewers had minor reservations have been eventually approved.
MS3	ANDROMEDA Initial Design	WP3 WP5	GMV	7	Yes	21/04/2020	The e-CISE data model is described in D3.1. The architecture design including architecture for tests was provided in D3.2. C2 stations design is provided in D3.3 (land) and D3.4 (maritime). Data Fusion and other services design is defined in D3.5. Plans for operational scenarios are provided in D2.6. It can be said that ANDROMEDA

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MS No.	MS Name	WP No.	Lead	Due Date	Achieved (Yes/No)	Actual/ Forecast Achievement Date	Comments
							environment is initially designed. Additionally, the web site is populated with dissemination material and the ethical deliverables of WP8 were submitted. The deliverable D3.2 which belongs to this milestone and for which the reviewers had minor reservations has been eventually approved.
MS4	Integration Completed for 1st and 2nd Trial	WP3 WP5	INW	11	Yes	02/09/2020	The Test Architecture and Data Integration is provided in D5.1, the Integration Platforms are defined in D5.2, the Trial configurations are defined in D5.3 and the Integration and Validation Test Plan is described in D5.4.
MS5	Mid-Term Review	WP4 WP5 WP6	MMAIP	10	Yes	16/06/2020	The mid-term review meeting has been organized with the Consortium on 16 June 2020.
MS6	Integration Completed for 3rd Trial	WP5	INW	13	N/A	N/A	N/A
MS7	System Developments Completed	WP4	STWS	15	N/A	N/A	N/A
MS8	Project Completion	ALL	MMAIP	18	N/A	N/A	N/A

3.4 Encountered Problems and Corrective Actions

This section lists the most important problems encountered, and the corrective actions undertaken during this second period of the project.

- Regarding the **WP1**, the main problem encountered is of course related to COVID-19 outbreak and the potential second wave that is expected in Autumn-Winter 2020. At management level, the Consortium continues the implementation of the project without major deviations from the DoA and most of the activities are undertaken remotely from partners (development, testing, meetings etc.). As recommended during the mid-term review meeting, the Consortium has updated the Risk Management Plan including mitigation measures especially for the execution of the international trials in case they are affected from COVID-19. Next to the usual challenges related to multi-system integration and the influence of the pandemic, the Consortium had to face also a tense political situation in the East Mediterranean basin.
- With regards to **WP2**, the main problem encountered during M7-M12 was related to the unexpected COVID-19 advent. However, although subject to the overall national safety and mitigation actions

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related to COVID-19, precise planning, a continuous review of the activities, together with the organization of regular VTC/Telco cycles by Task Leaders, jointly with other WPs, allowed the achievement of the established results aligned with the project timeline. A second issue was related to the surveillance sectors: a certain imbalance has been noted between Maritime and Land sector. In fact, there has been a good commitment and effective coordination for the Maritime related aspects, despite the fact that the Maritime-Land combination is a shared responsibility for the project. Actions were therefore taken to reinforce and enhance the contribution of the Land Border authorities.

- As far as it concerns **WP3**, no activities have been performed during this period.
- Referring to **WP4** and the overall System Development, there were no encountered problems as features etc defined for 1st Release were met. T3.1's impact has been minimal w.r.t. to the possible impact identified in the previous report.
- **WP5 -** It started slightly delayed mainly due to the overlap with WP3's ending. Work Package 5 was schedule to start in M7 driven by the first 2 Tasks (Test Architecture, Integration Platform). The kick-off was pushed to start in M8 whilst keeping the compromise to the remaining tasks of the WP, which haven't been affected.
- As for **WP6** there were a few initial delays regarding the planned preparatory visits of the technical partners to the test sites due COVID-19 travel restricting measures. In order to make up for the time of restrictions, all involved partners were performing other trial related activities such as the procurement of the necessary equipment and other preliminary works. Following the withdrawal of the restrictions, immediate actions were taken in order the necessary field visits to be performed without affecting the rest of WP6 schedule.
- Regarding **WP7**, the main problems encountered was the situation caused due to COVID-19 and the travel restriction that affected the dissemination and communication activities as well as the organization of the first ANDROMEDA workshop. The mitigation actions that were taken are (i) to update the communication and dissemination plan in order to cope with the situation of cancelled physical conferences and communication events (ii) to change the ANDROMEDA workshop from a physical event initially planned to be hosted in Spain, to a virtual 2 days on-line virtual workshop.
- **WP8 -** due to COVID-19 the face-to-face interaction has naturally been missing, and hence the opportunities to discuss various ethical and legal issues have been fewer than perhaps expected. The corrective actions have been for example informal telcos between LAUREA and KEMEA, as well as one-to-one guidance related, for example, with the surveys of WP6.

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3.5 Key Performance Indicators

Table 5 depicts the current values of the project's key performance indicators as monitored during this second period of the project.

Table 5: Status of project's key performance indicators

KPI ID	Name	Description	Target Value	Current Value	Responsible Partner	Comments
O1. Demonstrate Innovative solutions validated and qualified in the real, operational environment of civilian missions, defined in detail according to specifications set by the practitioners (authorities in charge of border surveillance and coast guard functions) and tailored to effectively meet their requirements within civilian missions						
KPI1.1	Innovative Land and Maritime C2s	Number of Innovative and CISE Interoperable Land and Maritime Command and Control Systems	3 (three)	4	STWS, ENG, GMV, INW	SMART C2 of ENG has been added in the System Architecture.
KPI1.2	Data Fusion, Analytics and Decision Support Services	Number of Innovative and Technology Mature Data Fusion, Analytics and Decision Support Services	At least 9 (nine)	9	CDN, STWS, INW, GMV, FCMCC, ICCS	As scheduled in DoA.
KPI1.3	Collaborative Trials	Number of trials expected to be executed in different scenarios among different land of maritime border agencies	3 (three)	3	KEMEA/WP6 partners	As scheduled in DoA.
O2. Extend the Common Information Sharing Environment concept for Land Border Operations						
KPI2.1	Additional CISE CORE Entities	Define additional CISE model entities to support Land Border Surveillance Operations	At least 6 (six)	10	STWS/Technical partners	10 New e-CISE Core Entities are created, each of them in its dedicated namespace with numerous subclasses and enumerations. 1. Sensor 2. Mission 3. Task 4. Operation 5. Report 6. Rule 7. Simulation 8. Subject 9. RequestForInformation 10. CollectionPlan

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KPI ID	Name	Description	Target Value	Current Value	Responsible Partner	Comments
O3. Strengthen the cross sector and cross border collaboration between authorities operating in the Land and Maritime environments (Coast Guards, Police Border Guards, Navies, Customs) in order to utilise resources towards the same goal, leading to cost efficient usage of existing resources						
KPI3.1	Cross-Sector and Cross Border Agencies Collaborating	Number of cross-sector and cross border agencies operating in the land and maritime surveillance trials (e.g. Border Guards, Coast Guards, Navies etc.)	At least 2 (two) per trial	2 or more than 2 per trial	KEMEA/WP6 partners	1. Iberian Maritime Border Trial: ITN and PTN. 2. Greece-Bulgaria Land Border – Maritime Trial: MMAIP, HMOD, HPL, EAMA 3. Ionian-Adriatic Maritime Border Trial: ITN, MMAIP, HMOD, MSD
KPI3.2	Number of users	Number of users (Civil and Military agencies) exploiting ANDROMEDA C2s and Services	At least 7 (seven)	7	KEMEA/WP6 partners	7 end-users from the Consortium: MMAIP, ITN, PTN, HMOD, HPL, EAMA, MSD
KPI3.3	Collaborative Assets	Number of interfaced assets from several Member States Land & Maritime border surveillance, security and search-and-rescue organizations	At least 7 (seven)	15	STWS/Technical partners	The assets have been identified from the D2.3 and D2.6. The current value will be updated when the trials logistics and planning are defined in WP6.
KPI3.4	Workshops	Organization of end user workshops to demonstrate the project achievements	2 (two)	-	ICCS	The 1st Workshop is expected in M13 (September 2020).
O4. Demonstrate and validate advanced, CISE compliant Command & Control Systems and kick-start the future demand for CISE information services						
KPI4.1	CISE CORE Entities supported	Number of CISE CORE Entities in Compliance	At least 15 Core Entities (fifteen)	18	STWS/Technical partners	Maintained as is or with modifications in attributes-subclasses level. • Agent • Anomaly • Cargo • Document • Event • Incident • Location • Metadata • Movement • Object • OperationalAsset • Organization

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KPI ID	Name	Description	Target Value	Current Value	Responsible Partner	Comments
						• Period • Person • Risk • UniqueIdentifier • Vessel • MeteoOceanographicCondition
KPI4.2	CISE Message Patterns	Supported Message patterns according to the CISE Service Model	All message patterns	All	STWS/Technical partners	All CISE Message Patterns according to the CISE Service Model are maintained.
O5. Support the practitioners along the complete lifecycle of border situations, from the observation of elements in the environment up to detection of anomalies and aids to planning by creating and validating improved Situational Awareness						
KPI5.1	Targeted LSA	Capability of generating a complete Land Situation Awareness mixing several source feeds (offline and real-time data)	At least 2: Smuggling/Illegal Border Crossing	4	STWS/Technical partners	The following are regarded at the moment offline and real-time source feeds: • Video Feed • Detected objects • Location and Nature of Infrastructural Data (e.g. Land borders, border posts, border-crossings) • Earthquake feeds
KPI5.2	Targeted MSA	Capability of generating a complete Maritime Situation Awareness mixing several source feeds (offline and real-time data)	At least 3: Smuggling/Illegal Border Crossing/Drugs	3	STWS/Technical partners	The following are regarded at the moment offline and real-time source feeds: • Video • Radar • AIS
KPI5.3	Level 1 data fusion services	Number of JDL Level-1 DF services related to the "Observation of elements in the environment"	At least 2 (two)	3	Technical partners	GMV (Socrates DF Services) ICCS (U2AM) EXUS (EXUS Analytics Framework)
KPI5.4	Level 2 data fusion services	Number of JDL Level-2 DF services related to the "Comprehension of the current situation"	At least 3 (three)	3	Technical partners	STWS (TRITON) INW (GeoC2 Real Time analytics) CDN (ESSG Real Time Maritime Analytics)

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KPI ID	Name	Description	Target Value	Current Value	Responsible Partner	Comments
KPI5.5	Level 3 data fusion Services	Number of JDL Level-3 DF services related to the "Projection of Future States"	At least 2 (two)	3	Technical partners	FMCC (VISIR, OCEAN-SAR, WITOIL) EXUS (GeoC2 Predictive Analytics)
O6. Complement with actions undertaken in the Preparatory Action on Defence Research under topic PADR-US-01-2017: Technological demonstrator for enhanced situational awareness in a naval environment						
KPI6.1	Enhanced CISE Data Model	Contribute the enhance CISE Data Model to the OCEAN2020 project	1 (one)	-	STWS (Responsible for T3.1) GMV (partner in OCEAN2020)	Contact needs to be made with OCEAN2020 Consortium once the results of T3.1 have been submitted.
KPI6.2	Invitation to ANDROMEDA Workshops	Invite the OCEAN2020 consortium to ANDROMEDA workshops	2 (two)	-	ICCS	To be done according to the timeline of T7.2.
O7. Enforce compliance with European societal values, fundamental rights and applicable legislation, including in the area of free movement of persons, privacy and protection of personal data						
KPI7.1	SIA on ANDROMEDA solution	Deliver Societal Impact Assessment (SIA) on ANDROMEDA solution's compliance with European societal values, fundamental rights and applicable legislation	1 (one)	1	LAUREA	The initial SIA was conducted during the Kick-off Meeting, and the results are presented in the D2.4, paragraph 7. (met from the first reporting period)

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3.6 Project Meetings and Teleconferences

Table 6 presents the project meetings that have been organized at Consortium level during the second period of the project. It includes the description of each meeting, the WPs that are involved, the organizer, the type, the date and the location.

Table 6: Project Meetings organized between M7 (March 2020) and M12 (August 2020)

No	Meeting	WP(s) involved	Organizer	Type	Date	Location
1.	3rd Project Meeting (including plenary, technical and innovation meetings)	ALL	LAUREA	EB4, TM3, IM2	13-14/05/2020	Remotely

Apart from the project meetings, a number of teleconferences have been arranged to discuss constantly tasks and issues arisen at WP level. Table 7 lists the main teleconferences organized during this second period.

Table 7: Main teleconferences organized until between M7 (March 2020) and M12 (August 2020)

No	Teleconference	WP(s) involved	Organizer	Date
1.	T2.1 VTC#1	WP2	LAUREA	04/03/2020
2.	WP6 Coordination Telco #2	WP6	KEMEA	06/03/2020
3.	WP4 Teleconference #2	WP4	STWS	12/03/2020
4.	WP5 Kick Off Teleconference	WP5	INW	13/03/2020
5.	WP6 Coordination Telco #3	WP6	KEMEA	20/03/2020
6.	WP5 Follow-up telco #1	WP5	INW	26/03/2020
7.	T2.1 VTC#2	WP2	LAU	01/04/2020
8.	WP6 Coordination Telco #4	WP6	KEMEA	03/04/2020
9.	WP7 VTC#2	WP7	ICCS	07/04/2020
10.	WP5 Follow-up telco #2	WP5	INW	15/04/2020
11.	WP6 Coordination Telco #5	WP6	KEMEA	22/04/2020
12.	WP4 Teleconference #3	WP4	STWS	27/04/2020
13.	T2.1 VTC#3	WP2	LAU	29/04/2020
14.	WP5 Follow-up telco #3	WP5	INW	30/04/2020
15.	WP6 Coordination Telco #6	WP6	KEMEA	07/05/2020
16.	User Community Session #1	WP2	KEMEA/LAUREA	14/05/2020
17.	WP5 Follow-up telco #4	WP5	INW	20/05/2020
18.	WP6 Coordination Telco #7	WP6	KEMEA	21/05/2020
19.	T2.1 VTC#4	WP2	LAU	27/05/2020
20.	WP4 Teleconference #4	WP4	STWS	29/05/2020
21.	WP5 Follow-up telco #5	WP5	INW	04/06/2020
22.	WP6 Coordination Telco #8	WP6	KEMEA	04/06/2020
23.	WP6 Coordination Telco #9	WP6	KEMEA	18/06/2020
24.	WP5 Follow-up telco #6	WP5	INW	23/06/2020
25.	WP4 Teleconference #5	WP4	STWS	30/06/2020
26.	WP6 Coordination Telco #10	WP6	KEMEA	02/07/2020

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No	Teleconference	WP(s) involved	Organizer	Date
27.	Field Visit follow-up telco	WP6	KEMEA	03/07/2020
28.	WP5 Follow-up telco #7	WP5	INW	09/07/2020
29.	WP6 Coordination Telco #11	WP6	KEMEA	16/07/2020
30.	WP7 Coordination Telco	WP7	ICCS	16/07/2020
31.	WP5 Follow-up telco #8	WP5	INW	28/07/2020
32.	T7.1 Telco on Journal Publications	WP7	STWS	30/07/2020
33.	WP6 Coordination Telco #12	WP6	KEMEA	30/07/2020
34.	WP4 Teleconference #6	WP4	STWS	31/08/2020

3.7 Project Planning

The ANDROMEDA project schedule according to the Deliverable D1.1 "Project Management, Quality and Risk Plan" is reported in the below figure. So far, no deviations or updates in the schedule are needed.

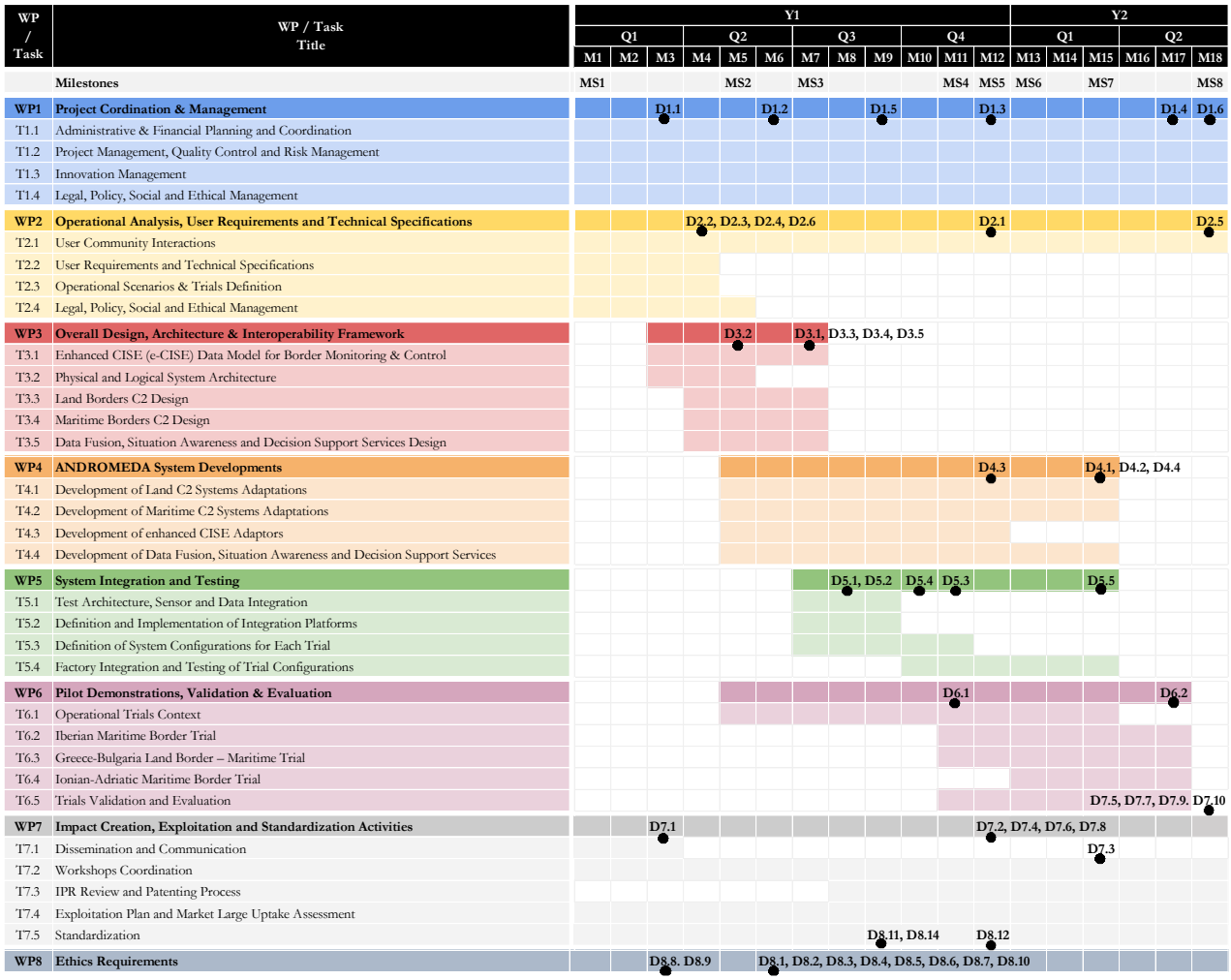

Figure 2: Gantt Chart

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3.8 Risk Management

According the Quality Assurance, a Risk Register is maintained and reported below for the risks identified at the proposal stage, but also for the unforeseen risks arisen during the second period of the project. Following the recommendations received in the mid-term review, Table 8 has been updated with risks and mitigation actions that are related to COVID-19 outbreak and the political situation in the East Mediterranean basin (see Risks R22-R27).

Table 8: Risks identified at proposal stage and mitigation actions

Risk number	Risk opening date	Risk creator	WP(s) involved	Risk type	Risk description	Risk status	Probability of occurrence	Expected impact	Possible solution/way to prevent
R1	Proposal stage	Consortium	WP1	Management	Insufficient resources and personnel committed to the project: Partner being in difficulties (company reorganization) or partner withdrawal	Identified	L	H	Raise the issue urgently with higher level management in partner organisation, ask EB to proposed solutions, in case of withdrawal replace partner
R2	Proposal stage	Consortium	WP1	Management	Partners cost expenses under/over budget.	Identified	L	M	Control mechanisms at each partner and internal periodic reports to control spending and activities
R3	Proposal stage	Consortium	WP2	Technical	Identifying legal and institutional constraints that will influence the design and operational use of ANDROMEDA solution.	Identified	L	H	One of the tasks within WP2 (T2.3) is devoted to identifying these possible constraints and provide the legal guideline in order to ensure the project complies with the current normative.
R4	Proposal stage	Consortium	WP2, WP3	Technical	If the requirements are not precise, there is risk that the implementation of the components does not meet the users' needs.	Identified	M	M	This risk is mitigated by the Model Based Systems Engineering approach adopted for design and the Agile development. At the same time the practitioners are involved as full partners and have close cooperation with the technical partners
R5	Proposal stage	Consortium	WP3	Technical	Interaction with legacy operational border surveillance systems could pose the following risks: • security restrictions can	Identified	H	M	Early engagement of End users (full partners) responsible of the current border surveillance operational systems to assess the security restrictions. In addition, the three trials will span

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Risk number	Risk opening date	Risk creator	WP(s) involved	Risk type	Risk description	Risk status	Probability of occurrence	Expected impact	Possible solution/way to prevent
					prevent a seamless integration with the network envisaged • daily operations (planned or unplanned) of existing civil and military systems could delay the trials envisaged				over several months each thus enabling several alternative times slots for legacy systems availability
R6	Proposal stage	Consortium	WP3, WP4, WP5	Technical	Technical risk in the design phase of ANDROMEDA solution that shall be only detected at verification/validation time.	Identified	M	M	ANDROMEDA consists of High TRL components and during the development phase the Model Based Systems Engineering approach will help to identify any design inefficiencies early. In addition, the three trials span over several months and allow feedback to the development and integration tasks.
R7	Proposal stage	Consortium	WP5	Technical	Delay in testing and validation of the software	Identified	L	H	ANDROMEDA relies on software components that are already existing and largely tested, integrated with new software development. Then, the complexity of the software to be developed is reduced. Delays will affect individual components and not the system as a whole.
R8	Proposal stage	Consortium	WP6	Technical	The major risk at the integration phase is clearly that a number of components do not match the agreed specification, functionalities or simply interfaces.	Identified	M	L	The software engineering methods adopted allows to keep the complexity of the development at reasonable level. In addition, the possibility to test in advance the ANDROMEDA solution in synthetic environment reduces the risk to have troubles during the physical trials.
R9	Proposal stage	Consortium	WP5	Technical	Components not stabilised or not mature for integration	Identified	M	M	WP5 will deliver tested and qualified components prior to delivery to WP6

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Risk number	Risk opening date	Risk creator	WP(s) involved	Risk type	Risk description	Risk status	Probability of occurrence	Expected impact	Possible solution/way to prevent
R10	Proposal stage	Consortium	WP2, WP6	Technical	Unavailability of sensible data to sustain the trials impact	Identified	M	M	The End-users will jointly define the trials in WP2 with technical partners, which reduces any mismatch between trial objectives and end-users data availability.
R11	Proposal stage	Consortium	WP2, WP6	Technical	Demonstrated solution not fully in line with end user constraints	Identified	L	H	ANDROMEDA involves practitioners in all project phases and ensures proper consultation. In addition, the trials execution span over several months enabling to analyse failures and provide feedback to WP5 and WP6.
R12	Proposal stage	Consortium	WP7	Technical	Difficulty in finding stakeholders willing to express their interests or interested in the final solution	Identified	M	M	A comprehensive market uptake assessment will be carried out in WP7; two workshops will be conducted during the project lifecycle. ANDROMEDA end users have already expressed during the proposal phase their need for CISE Interoperable C2s and associated Data Fusion and Analytics services.

Table 9: Unforeseen risks and mitigation actions

Risk number	Risk opening date	Risk creator	WP(s) involved	Risk type	Risk description	Risk status	Probability of occurrence	Expected impact	Possible solution/way to prevent
R13	06/10/2019	MMAIP KEMEA	WP1	Financial	Due to the fact that MMAIP does not officially hold a special account for the deposit of the contribution by the R&D activities of the EC-funded projects, it is examined the possibility of using both the Public Investments Program (ΠΔΕ) and the General Accounting Office (ΓΛΚ)	Approved	H	H	In order to tackle this risk a Technical Factsheet had to be prepared by MMAIP and then assessed/approved by the Directorate General for Financial Services of the Ministry of Maritime Affairs and Insular Policy. Several meetings have been arranged between the Hellenic Ministry of Finance and MMAIP in order to find the optimum and quickest solution for transferring the pre-financing payments to partners. The transfer has

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Risk number	Risk opening date	Risk creator	WP(s) involved	Risk type	Risk description	Risk status	Probability of occurrence	Expected impact	Possible solution/way to prevent
					for transferring the pre-financing payments to the partners.				been done by the end of December 2019 to all partners.
R14	05/11/2019	MMAIP KEMEA	WP1	Management	Delays in the distribution of the Filkrypto encryption application (including software, serial numbers and crypto key) to all partners following according to the procedures for handing EUCI information.	Approved	M	L	For the first period of the project and until having the Filkrypto encryption application installed by all partners and as an alternative, partners could choose to exchange classified deliverables in hard copy or on external media/USB and placing the deliverable sealed in a double opaque envelope.
R15	05/11/2019	ICCS	WP7	Dissemination	Inconsistency that occurs in the DoA about the lead beneficiaries who will host the two project workshops and their timing during the project. Specific inconsistency between Table 10 (tentative list of project meetings) and T7.2 description.	Approved	M	M	According to the responsibilities of partners in T7.2, the first workshop will be organized by GMV and the second by EXUS. To this end, the first workshop will be organized in September 2020 remotely due to the COVID-19 outbreak and in parallel with the project meeting. The second workshop will be organized at the end of the project as scheduled. This will affect the deliverable D7.6 “Initial Workshops Organization and Results” which is proposed to be submitted to EC instead of M12 (August 2020) in M14 (October 2020) in order to report all the results from the execution of the first workshop.
R16	05/11/2019	KEMEA	WP2	User Community	Difficulty to reach the interested stakeholders and invite them to participate in the User Community of the project.	Approved	M	M	The user community will be set-up involving user partners as well as external end users invited to join the initiative. Links of consortium partners of the ANDROMEDA to past and on-going initiatives in the domain (EUCISE2020, EWISA, MARISA, RANGER, CLOSEYE, PERSEUS, CoopP etc.) will speed up the process.

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Risk number	Risk opening date	Risk creator	WP(s) involved	Risk type	Risk description	Risk status	Probability of occurrence	Expected impact	Possible solution/way to prevent
									The first set of the User Community is formulated and efforts to be extended are continuously made.
D17	05/11/2019	STWS KEMEA	WP3	Technical	Development of the e-CISE Data Model without the validity of JRC.	Approved	M	H	The CISE Data Model is an essential enabler of interoperability and operational cooperation. It has been achieved to formalize a collaboration with JRC and specifically with the JRC.E.5 Unit in order to participate in the project's Advisory Board and review the deliverable D3.1 "e-CISE Data Model description" before its submission to EC. JRC as the center of expertise for the CISE Data Model will provide valuable feedback in order to validate project's work on the subject.
R18	17/01/2020	STWS	WP4	Technical	Delays in the ANDROMEDA system developments since the overall design, architecture and interoperability framework is in progress and will be finalized in M7 (March 2020)	Approved	M	L	Ensure that complete draft version of WP3 deliverables are available early enough and consensus among technical partners regarding the system architecture is met during the 1st Technical Meeting held in Rome in early November 2019.
R19	11/02/2020	STWS	WP5	Technical	Delays in the integration of the ANDROMEDA system developments due to potential delays in the purchase of the necessary equipment from the end-users through procurement processes.	Approved	M	L	Collect technical specifications of the necessary hardware per ANDROMEDA component on time and share the specifications with the end-users before starting WP5 activities.
R20	11/02/2020	MMAIP, KEMEA	WP1	Management	Inability to physically meet at Consortium level due to the outbreak of Coronavirus COVID-19 worldwide.	Approved	H	L	Organize often teleconferences at WP level in order to monitor the progress of work and schedule a remote technical, innovation and user community meetings if necessary.

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Risk number	Risk opening date	Risk creator	WP(s) involved	Risk type	Risk description	Risk status	Probability of occurrence	Expected impact	Possible solution/way to prevent
R21	21/02/2020	KEMEA	WP6	Pilots	Inability to schedule our first pilot visit to the Greek-Bulgarian borders due to the tense situation in the Greek borders following the announcement of Turkey that opens its borders for refugees who want to cross into Greece and Europe.	Approved	H	M	The mitigation action was to organize dedicated teleconferences with the Greek End-Users at Ministerial level in order to schedule ahead the purchase of the necessary equipment for the Trial#2 and discuss on time technical details for the interconnection with their Legacy Systems. Moreover, through the organization of bi-weekly teleconferences, WP6 started early enough the activities for preparing the Validation approach and plan.
R22	23/09/2020	MMAIP, KEMEA	WP1, WP6	Management, Pilots	COVID-19 outbreak continues during autumn/winter 2020 when the monthly validation activities take place and the trials in their full-extend are going to be executed. Inability for the Consortium to travel and meet physically.	Approved	H	H	Follow the new Horizon 2020 FAQs in relation to the COVID-19 outbreak and apply teleworking conditions organizing frequently teleconferences at WP6 level to monitor the progress of the trials' preparations. The partners in the Consortium are currently working under the COVID-19 crisis in various projects and follow all the instructions arisen by World Health Organization (WHO) and European Commission. In case the Consortium is not able to travel to the borders for executing the monthly validation activities and the trials, the mitigation action could be to extend the duration of the trials or execute some of them with the presence of the local border guard personnel only. An alternative could be to run some of the pilots or all the pilots remotely. In any case, considering the nature of the Border Guard Authorities, the services provided by these entities are currently running smoothly.

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Risk number	Risk opening date	Risk creator	WP(s) involved	Risk type	Risk description	Risk status	Probability of occurrence	Expected impact	Possible solution/way to prevent
R23	23/09/2020	MMAIP, KEMEA	WP1	Management	Personnel from partners is diagnosed with COVID-19 symptoms. Disorganization and difficulties to complete the allocated work on time.	Approved	H	M	All partners follow the instructions of their National Health Organization regarding the measures to be taken in order their personnel to be protected from the COVID-19 crisis. Moreover, teleworking conditions and social distancing for the personnel who necessarily work at the offices are applied. The project is followed by more than one person per partner to ensure its smooth transition in case of confirmed COVID-19 cases.
R24	23/09/2020	MMAIP, KEMEA	WP1, WP6	Pilots	Tense political situation in EU external borders. Inability to schedule timely visits to the pilot areas due to the current political situation in the East Mediterranean.	Approved	H	H	The participation of the Border Guard Authorities guarantees that the pilot areas can be seamlessly accessed by their local personnel. Dedicated teleconferences with the end-users are scheduled in order to discuss on time technical details for the interconnection of their Legacy Systems with ANDROMEDA. In case the political situation goes even worse and the local border guards by command are alerted to protect the borders due to the external threat, then the mitigation action could be to extend the duration of the trials and execute them either physically or remotely ensuring that the necessary health and safety procedures are applied safeguarding workers' safety.
R25	23/09/2020	KEMEA	WP7	Dissemination	COVID-19 is resulting in cancelled or postponed live conferences & workshops, which limits impact	Approved	H	M	The partners could switch to online gatherings. Alternative options to spread the project's results that do not require in-person meetings can regularly be discussed by WP7 partners.

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Risk number	Risk opening date	Risk creator	WP(s) involved	Risk type	Risk description	Risk status	Probability of occurrence	Expected impact	Possible solution/way to prevent
R26	30/05/2020	ICCS	WP7	Dissemination	Risk in planning the 1st ANDROMEDA Workshop physically for September 2020 due to COVID-19: - Travel restrictions or any other kind of restriction which might be imposed by the national authorities due to COVID-19 outbreak. - Social distancing precautions might also affect the participation (low attendance). - Situation around COVID-19 is still unpredictable according to the World Health Organization	Approved	H	H	Organize the 1st Workshop in the form of a remote on-line event.
R27	30/05/2020	ICCS	WP7	Dissemination	Risk of not being able to meet the communication activity KPIs due to cancellation or re-scheduling of events due to COVID-19	Approved	L	M	Planning of dissemination and communication activities have been updated (see Annex A). A list of conferences have been selected for the partners and most of the ones initially selected will take place before the end of the ANDROMEDA project. Moreover, the number of scientific publications or social media divulgation can be increased so that the wanted impact is reached.

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3.9 Use of Resources

3.9.1 Summary of the project effort in person months

Table 10: Planned person-months per partner and per WP

Planned PMs	WP1	WP2	WP3	WP4	WP5	WP6	WP7	WP8	Total PMs
1 - MMAIP	22	13	5	2	4	17	5		**68**
2 - GMV	4	2	17	24	8	8	7		**70**
3 - SATWAYS	5	4	24	32	10	19	11		**105**
4 - ICCS	1	2	7	6	8	4	11		**39**
5 - EXUS	1	2	11	15	8	11	4		**52**
6 - INOVAWORKS C&C	2	3	17	23	15	13	3		**76**
7 - FONDAZIONE CMCC	1	1	7	12	5	7	2		**35**
8 - LAUREA	10	14	0	0	0	3	2		**29**
9 - CODIN	1	3	10	10	10	9	3		**46**
10 - STEMO	1	2	1	8	6	5	2		**25**
11 - KEMEA	2	13	2	0	4	12	7		**40**
12 - ENGINEERING	1	8	12	16	6	8	3		**54**
13 - HELLENIC POLICE	1	8	1	0	1	10	1		**22**
14 - MARINA MILITARE	0	5	1	0	0	1	0		**7**
15 - Defesa	1	8	6	8	1	8	2		**34**
16 - MOPS-INP	1	2	1	0	0	2	2		**8**
17 - EAMA	3	10	6	0	1	10	2		**32**
18 - HMOD	3	13	9	0	1	15	2		**43**
19 - MSD	4	13	8	0	1	13	2		**41**
Total PMs	**64**	**126**	**145**	**156**	**89**	**175**	**71**		**826**

3.9.2 Spent effort

The draft effort spent as calculated by partners for the period M7-M12 is approximately 335 person months. Exact figures will be provided along with the official financial statements at the end of the project. By adding the effort spent during the period M1-M6, the project has consumed around the 70% of its efforts which is according to the plan without deviating from the DoA.

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4. Conclusions

During the **second period of the project (M7-M12)**, the designs of the various ANDROMEDA components, including the e-CISE Data Model, have been finalized, the system developments are in progress and some of the system integration activities completed. The first release of the ANDROMEDA system has been provided by the technical partners and the Iberian Trial and the Greek-Bulgarian Trial have been set-up by the trial leaders. The first release has been combined with a monthly validation feedback from the participating end-users who evaluated the system at this stage and provided their comments for the second release which is estimated to be available by the end of September, beginning of October 2020.

During the **third and last period of the project (M13-M18)**, the ANDROMEDA will launch the second and third release of the system while the fourth will be the final version for the execution of the trials in December 2020. The User Community (including land border authorities and EU Agencies) will be invited to attend either physically or remotely project's trials, workshops and demonstrations. The legal and ethics requirements will continue to be monitored and fulfilled.

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5. Annex A: Quality Review Report

The ANDROMEDA Consortium uses the Quality Review Report process for its internal quality assurance for deliverables to assure consistency and high standard for documented project results.

The Quality Review Report is used individually by selected peer reviewers. The allocated time for the review is 7 calendar days. The author of the document has the final responsibility to reply on the comments and suggestions of the peer reviewers and decide what changes are needed to the document and what actions are to be undertaken.

5.1 Reviewers

Project Coordinator	Ms. Athena Foka (MMAIP)
Management Support Team Member	Mr. Alkis Astyakopoulos (KEMEA)
Internal Peer Reviewer(s)	Dr. Antonis Kostaridis (SATWAYS), Dr. Pantelis Michalis (KEMEA)

5.2 Overall Peer Review Result

The Deliverable is:

☐ Fully accepted
☒ Accepted with minor corrections, as suggested by the reviewers
☐ Rejected unless major corrections are applied, as suggested by the reviewers

5.3 Consolidated Comments of Quality Reviewers

General Comments	
Deliverable contents thoroughness	Reviewers comment: The deliverable is complete, some comments provided regarding the updated Risk Management Plan. Author's reply: -
Innovation level	Reviewers comment: - Author's reply: -
Correspondence to project and programme objectives	Reviewers comment: The deliverable is in line with the project and programme objectives. Author's reply: -
Specific Comments	
Relevance with the objectives of the deliverable	☒ Yes ☐ No ☐ Partially ☐ Not applicable Reviewers comment: Author's reply:
Completeness of the document according to the its objectives	☒ Yes ☐ No ☐ Partially ☐ Not applicable

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	Reviewers comment: Author's reply:
Methodological framework soundness	☒ Yes ☐ No ☐ Partially ☐ Not applicable Reviewers comment: Author's reply:
Quality of the results achieved	☒ Yes ☐ No ☐ Partially ☐ Not applicable Reviewers comment: Author's reply:
Structure of the deliverable with clear objectives, methodology, implementation, results and conclusions	☒ Yes ☐ No ☐ Partially ☐ Not applicable Reviewers comment: Author's reply:
Clarity and quality of presentation, language and format	☒ Yes ☐ No ☐ Partially ☐ Not applicable Reviewers comment: Author's reply:

Detailed Comments (please add rows as appropriate)		
No.	**Reference**	**Remark**
1		
2		
3		
4		
5		

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An Enhanced Common Information Sharing Environment for Border Command, Control and Coordination Systems

Grant Agreement Number: 833881

Annex B

T7.1 Update of the ANDROMEDA project Dissemination & Communication Plan due to the COVID-19 situation

Document Identifier:	This Document is provided as supplementary to D7.1 due to the COVID-19 situation
Author(s) and Organisation:	Dr. Souzanna Sofou (STWS)
Work Package:	WP7 Impact Creation, Exploitation and Standardization Activities
Task:	Task 7.1 Dissemination and Communication
Dissemination Level:	PU: Public

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 833881.

Version History

Version	Date	Edited by	Description
v.0.1	2020/10/06	STWS	1st draft
v.0.2	2020/10/23	STWS	2nd draft ready to be added in D1.3

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Executive Summary

Due to the covid-19 outbreak, attendance to several events has be restricted, and therefore special effort is devoted to counterbalance the impact that would be expected from such activities. The present document presents in detail the dissemination and communication activities implemented until now and their recorded impact in terms of audience type and size. Furthermore, the document presents an updated detailed plan of dissemination activities, that is scientific articles under preparation for peer reviewed conference proceedings and journals. An updated plan for communication activities is also presented, with an emphasis on online events and the utilization of the project social media accounts.

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1. Introduction

Following the recommendation of the Andromeda project officer, the consortium has prepared a plan to meet the communication challenges faced due to the covid-19 pandemic. In more detail, since attendance to events will be restricted, special effort will be devoted to counterbalance the impact that would be expected from such activities. This will be realised with increased dissemination activity (publications in scientific journals and conference proceedings) as well as with increased communication activity (social media presence). The latter will include workshops, interviews with the end users and short presentations of the advanced solutions that will be delivered by Andromeda. The pilot tests will also be utilised for communication purposes, and for the project video that will be prepared.

1.1 Purpose of the document

The document aims in presenting the updated Dissemination and Communication Plan of the Andromeda project. It includes the dissemination and communicated activities already implemented, and the impact that has been generated. The Document also includes the consortium plans for the remaining period with reference to the dissemination actions in refereed conference proceedings and academic journals, as well as the communication actions with emphases to activities without physical presence due to the covid-19 restrictions.

1.2 Reference documents

[1] Public Deliverable D7.1: Communication and Dissemination Strategy and Plan, Horizon 2020 Project No 833881, 'An EnhaNceD Common InfoRmatiOn Sharing EnvironMent for BordEr CommanD, Control and CoordinAtion Systems (Andromeda)'.

1.3 Definitions

List of Definitions	
CISE	CISE is the Common Information Sharing Environment for the Maritime Domain. It will integrate existing surveillance systems and networks and provide all the relevant authorities (EU and national authorities responsible for different aspects of surveillance) with concerned access to the information they need for their missions at sea. The CISE will make different systems interoperable so that data and other information can be exchanged easily through the use of modern technologies.
EUROSUR	The European Border Surveillance system (EUROSUR) is a multipurpose system for cooperation between the EU Member States and FRONTEX in order to improve situational awareness and increase reaction capability at external borders. The aim is to prevent cross-border crime and irregular migration and contribute to protecting migrants' lives.

1.4 Structure of the document

The Document lists 1) the Dissemination and Communication activities already implemented and their recorded Impact with respect to audience size and type 2) The consortium plans for future Dissemination and Communication Activities 3) The Scientific Articles under preparation for publication in peer reviewed journals or conference proceedings 4) The plans for utilizing the social media to communicate the project results

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1.5 List of Acronyms

List of Acronyms	
G.A.	Grant Agreement
E.C.	European Commission

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2. Dissemination and Communication Activities Implemented until M13

2.1 Dissemination and Communication Activities

The Dissemination and Communication Activities implemented until M13 are presented in Table 1. The layout follows the one of the participants' portal. Special attention is given to the impact recorded for *each* activity, in terms of audience size and type.

Overall, the consortium has:

- Organised **1** Conference and **2** workshops
- Published **10** Press Releases/Articles
- Prepared **2** Non-scientific and non-peer-reviewed publication (popularized publication)
- Designed **4** flyers
- Participated to **2** Trainings
- Designed and maintains **2** social media accounts and **1** website
- Implemented **8** Communication activities in TV and radio
- Participated to **4** Conferences and **3** workshops
- Participated to **8** Events other than a Conference or a Workshop
- Participated to **1** activity organized jointly with other H2020 projects

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Table 1: List of Dissemination and Communication activities performed until M13

Type	Total Num.	Title	Date and Place	Partner Responsible	Audience size/type
Organisation of a Conference	**1**				
	1	Mediterranean Security Event 2019 Supported by DG-HOME, EARTO, ENLETS and SECURITY COU ()	Date: 29-31 October 2019 Location: Crete, Greece	**KEMEA**	**Security Sector/ 200**
Organisation of a Workshop	**2**				
	1	Joint Workshop on maritime border security, co-organized among H2020 RANGER, MEDEA and ANDROMEDA projects in the context of the Mediterranean Security Event 2019 (p. 12 out of 20)	Date: 30 October 2019 Location: Crete, Greece (14:00 – 17:00)	**KEMEA, EXUS**	**projects RANGER, MEDEA, ANDROMEDA and MSE participants/ 50**
	1	1st online workshop Andromeda	Date: 28-29 September 2020 Location: online	**GMV supported by KEMEA, STWS, ICCS**	**JRC, EMSA, Frontex, stakeholders projects/ 107**
Press release - Article	**10**				
	1	A new research initiative for the control and safety of European borders (EN, EL versions)	Date: 07 October 2019 Location: KEMEA's website (News)	**STWS-MMAIP-KEMEA**	**website visitors, researchers/571**
	1	Μία νέα ερευνητική πρωτοβουλία για την εποπτεία και την ασφάλεια των ευρωπαϊκών συνόρων (EL version)	Date: 03 October 2019 Location: MMAIP' website	**STWS-MMAIP-KEMEA**	**website visitors, researchersmedia**
	1	Con ANDROMEDA la sicurezza dei confini è nella condivisione delle informazioni (IT version)	Date: 07 October 2019 Location: ENG's website	**ENG**	**website visitors, researchers/ 125**
	1	GMV helps to extent the capabilities of the Common Information Sharing Environment (CISE)	Date: December 2019 GMV News magazine page 42	**GMV**	**website visitors, susbcribers customers/ 5000**

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	1	ANDROMEDA Newsletter #1	Date: February 2020 Location: ANDROMEDA website	**STWS**	**website visitors, general public/**
	1	ANDROMEDA Newsletter #2	Date: June 2020 Location: ANDROMEDA website	**STWS**	**website visitors, general public downloads for the 2 newsletters: 383**
	1	Big Data and AI for the protection of territories and seas: the Andromeda case. How can data analysis and the use of Artificial Intelligence contribute to the defense of borders?	Date: July 2020 Location: online version, ingenium-magazine	**ENG**	**Ingenium magazine readers/ 2144**
	1	FRONTEX Executive Director and Greek Minister of Citizen Protection inspect ANDROMEDA's C3 System at Evros	Date: July 2020 Location: KEMEA website	**KEMEA**	**General public/115**
	1	Delivery and installation of equipment to the Police Directorate (DA) of Alexandroupolis, in the framework of the implementation of the European program "ANDROMEDA"	Date: July 2020 Location: KEMEA website	**KEMEA**	**General public/526**
	1	Press Article under the title "By information sharing to the enhancement of border and external security" - MSD realization of ANDROMEDA project in Montenegro	Date: published on 22nd September 2020 Location: Daily Newspaper Montenegro, pp 18-19	**MSD**	**General public/2000**
Non-scientific and non-peer-reviewed publication (popularised publication)	**2**				
	1	Interview in "METZUDA" magazine. In this article, The Head of INP R&D unit mentions the common work with the EU (and the H2020) in general and the ANDROMEDA project.	Date: End of December 2019 Location: "METZUDA" magazine	**MOPS-INP**	**security leaders of Israeli agencies and public organizations/>200**
	1	"SMEs drive Innovation and Real Time Analytics - A revolution in Cyber and Homeland Security. "	Date: Location: Notiziario della Marina magazines	**CODIN**	

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Flyer	4				
	1	ANDROMEDA leaflet	Date: 29-31 October 2019 Location: Crete, Greece,	**STWS/ ICCS**	**MSE 2019 attendees, researchers, policy makers (>200) (downloads from the website: 273)**
	1	ANDROMEDA roll up banner for general use	Date: 19-20 November 2019 Location: Crete, Greece	**STWS**	**2nd Greek pilot and RANGER workshop, researchers end users (50) (downloads: 134)**
	1	ANDROMEDA roll up banner for MSE 2019	Date: 29-31 October, 2019 Location: Crete, Greece	**STWS**	**MSE 2019 attendees, researchers policy makers (>200)**
	1	Andromeda 1st workshop flyer	Date: July 2020 Location: online	**STWS**	**Attendees: 107 Linked In Views: 347 downloads from the website: 154)**
Training	**2**				
	1	Training in JOINT RESCUE COORDINATION CENTER (J.R.C.C.)	Date: 27-29 November 2019 Location: Larnaka, Cyprus	**MSD**	**Participants from various EU maritime authorities (20)**
	1	Training seminar on Smart Port Technologies organised by APEC Antwerp with the presentation of ANDROMEDA Project under the title "Introduction of COMPASS2020 and ANDROMEDA – Horizon 2020 projects"	Date: 27 August 2020 Location: Online course	**MSD**	**Port managers, researchers IT ind. representatives, logistics companies, port safety community maritime authorities (35)**

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Social Media	**2**				
	1	Twitter Account: @ANDROMEDA_H2020	Date: October 2019	**STWS**	**researchersacademics, policy makers, general public, Companies (210 followers)**
	1	LinkedIn Account: https://www.linkedin.com/in/ANDROMEDA-horizon2020-project	Date: October 2019	**STWS**	**researchers academics, policy makers, general public, Companies (250 followers, 239 connections)**
Website	**1**				
	1	ANDROMEDA Project website	Date: November 2019	**STWS**	**Researchers, stakeholders, general public, companies 16,289 visits from 17/12/2019 until 27/10/2020**
Communication Campaign (e.g. Radio, TV)	8				
	1	Participation of consultants on the project ANDROMEDA in the national radio "Broadcasting for mariners", emitted on local radio station. In the interview the structure and importance of ANDROMEDA project for Montenegro has been presented.	Date: 29 January 2020	**MSD**	**Wide radio public/ (80)**
	1	Participation of Project Manager for MSD ANDROMEDA Team, on national TV and presentation of project activities and goals.	Date: 07 February 2020	**MSD**	**Wide TV audience / (200)**
	1	Interview in national Bulgarian media	Date: 19 May 2020	**EAMA**	**national stakeholders / (>140)**

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	1	Presentation of the ANDROMEDA and other H2020 project implemented in MSD on Montenegrin National Radio and Television Programme (Public service - Morning broadcast) - TV reportage	Date: 2 July 2020	**MSD**	**Wide TV audience (100)**
	1	Presentation of the ANDROMEDA and other projects in MSD on Montenegrin National Radio and Television focusing on maritime safety	Date: 12 July 2020	**MSD**	**Wide TV audience (100)**
	1	Brief presentation of ANDROMEDA and COMPASS2020 projects on TV Vijesti interview, pointing out SAR components of the projects	Date: 12 July 2020	**MSD**	**Wide TV audience (100)**
	1	Interview at local TV Budva with presentation of ANDROMEDA as innovative project relized in MSD	Date: 15 July 2020	**MSD**	**Wide TV audience (80)**
	1	Participation on local Radio Bar (BarInfo) broadcasting interview with presentation of main features of ANDROMEDA project	Date: 17 July 2020	**MSD**	**Wide TV audience (50)**
Participation to a Conference	**4**				
	1	Mediterranean Security Event 2019 Supported by DG-HOME, EARTO, ENLETS and SECURITY COU	Date: 29-31 October 2019 Location: Crete, Greece	**KEMEA, STWS, ICCS,EXUS**	**researchers academics, policy makers (>200)**
	1	Conference Information Technology (IT 2020) in Žabljak – Montenegro supported by IEEE and some papers will be in IEEEXplore	Date: 18-22 February 2020 Location: Žabljak, Montenegro	**MSD**	**Academia and industry representatives (>40)**
	1	1st Maritime Situational Awareness Workshop, MSAW 2019, Villa Marigola, Lerici (La Spezia), Italy	Date: 8-10 October 2019 Location: Lerici, Italy	**LAUREA**	**researchers and academics, policy makers (25)**
	1	SEEDA CECNSM 2020: 5th South-East Europe Design Automation, Computer Engineering, Computer Networks and Social Media Conference	Date: September 25-27, 2020 Location:	**ICCS**	**Engineering Industry and Academia**
Participation to a Workshop	**3**				

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	1	Joint Workshop on maritime border security, co-organized among H2020 RANGER, MEDEA and ANDROMEDA projects in the context of the Mediterranean Security Event 2019 (p. 12 out of 20)	Date: 29-31 October 2019 Location: Crete, Greece	**KEMEA, SATWAYS EXUS, ICCS**	**participants from the projects RANGER, MEDEA, ANDROMEDA and MSE participants (>50)**
	1	H2020 First Secure Societies "project to policy kick off seminar" (P2PKOS)	Date: 31 January 2020 Location: Brussels, Belgium	**MMAIP, KEMEA**	**REA B4 unit, DG CNECT, DG HOME, EC-funded projects of Secure Societies (2018) (30)**
	1	Intellectual property and innovative solutions in maritime sector through the cooperation between SME, academic and public institutions	Date: 29 July 2020 Location:	**MSD**	**SME managers, academics, university professors, ship agents (12)**
Participation to an Event other than a Conference or a Workshop	**8**				
	1	Round Table on Maritime Transport Connectivity, South Adriatic Connectivity Governance	Date: 30 October 2019 Location: Tirana, Albania	**MSD**	**Representatives of Ministries Transport, maritime authorities, experts in transport / maritime connectivity, academic - maritime faculties (12)**
	1	INP internal forums for operational and technological representatives	Occasionally performed, no specific dates	**MOPS-INP**	**operational technological representatives (50-100)**
	1	INP external forums with Industrial and Academic representatives	Occasionally performed, no specific dates	**MOPS-INP**	**Industrial and Academic representatives (30-40)**
	1	SAGOV project – Interreg IPA CBC Albania, Italy and Montenegro, conference on VTMIS	Date: June 2020 Location: online	**MSD, KEMEA**	**SAGOV project partners (20)**

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	1	Maritime Safety Department participation on National Joint-Interministerial Exercise and meeting	Date: 04 October 2019 Location: Bar, Montenegro	**MSD**	**Internal activity (100-120)**
	1	'Maritime Surveillance: Engaging Manned and Unmanned Assets – #COMPASS2020 Project', Durban University of Technology – Lectures and project presentations as keynote speaker at the dissemination event of COMPASS project.	Date: 29 January 2020 Location: Durban University of Technology, South Africa	**MSD**	**academics,COMPASS event participants (70)**
	1	European Organization for Security (EOS) directors meeting	Date: February 2020 Location: Brussels	**LAUREA**	**EOS Directors (30)**
	1	ECGFF – EMSA Workshop "Information sharing and data security in the maritime safety and security domains", EMSA premises – Lisbon, Portugal	Date: 11-12 February 2020 Location: Lisbon, Portugal	**MMAIP**	**EMSA, EFCA, ECGF, Member States (30)**
Participation in activities organized jointly with other H2020 projects	**1**				
	1	2nd Greek pilot and final workshop of RANGER	Crete, Greece, November 19-20 2019	**MMAIP/ KEMEA/ EXUS**	**academics, researchersend-users. H2020 projects: RANGER, MEDEA, REBORDER, Infore, Camelot (50)**

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2.2 Articles published in peer reviewed conference proceedings until M13

Table 2: Papers published in Refereed Conference Proceedings by the Andromeda partners until M13

Title	Authors	Proceedings	Relevant Links
Preliminary design of a multipurpose UAV situational awareness platform based on novel computer vision and machine learning techniques	Evangelos Maltezos, Lazaros Karagiannidis, Thanasis Douklias, Aristeidis Dadoukis, Angelos Amditis, Evangelos Sdongos (ICCS)	Proceedings of 2020 5th South-East Europe Design Automation, Computer Engineering, Computer Networks and Social Media Conference (SEEDA-CECNSM)	Proceedings Available in IEEE Explore
The Andromeda Galaxy: Legal and Ethical Aspects of Technology-Aided Maritime Border Surveillance Operations	Dimitra Papadaki, Marina Markellou (KEMEA)	Proceedings of the Mediterranean Security Event 2019	Link Proceedings not available yet online

2.2.1 Abstract of the paper prepared by ICCS

‘There has been an increased trend in the use of Unmanned Aerial Vehicles (UAVs) providing essential assistance and enhanced situational awareness in various application domains. Considering the sensing and intelligent processing capabilities of UAV platforms, operational managers are able to make smart decisions by having a more complete picture in real-time about the state of the managed event. In this paper, a preliminary design of a multipurpose UAV based situational awareness platform is proposed by exploiting advanced on-board processing capabilities and efficient computer vision, image processing and machine learning techniques. The proposed design consists of aerial and terrestrial surveillance assets able to provide rapid and reliable real-time event information of areas of interests in emergency operations. Experimental results are provided using RGB and thermal video datasets and applying novel object detection and tracking algorithms. The results show the utility and the potentials of the proposed design, while future directions for extension and optimization of the multipurpose UAV based situational awareness system are presented.’

Keywords:

UAV, situational awareness, computer vision, machine learning, object detection, object tracking

2.2.2 Abstract of the paper prepared by KEMEA

‘The European Union Maritime Security Strategy Action Plan, addresses challenges against EU’s maritime security, ranging from ensuring overall security and peace, to external border control and to the protection of common natural resources and the environment. One of the core EUMSS principles, is the respect for the rule of law, as reflected under ‘the United Nations Convention on the Law of the Sea and human rights.’.

Within this framework, this Chapter will provide a brief overview of the EU’s maritime security policy landscape, focusing on maritime border surveillance. It will further identify the main legal and ethical challenges for technology-aided maritime surveillance activities for border control. An ethical assessment of the technologies and tools, including drones, satellites, and sensors, that are usually employed to enhance maritime situational awareness, and their integration, will be conducted.

The milestone judgments issued by the Court of Justice of the European Union and the European Court of Human Rights will be reviewed, so that a possible equilibrium between maritime surveillance measures,

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security and traditional guarantees of the rule of law and respect for the fundamental rights of privacy, personal data protection and the right to asylum is accomplished.'

Keywords:

EU maritime border surveillance, techno-securitization, FRONTEX Regulation, right to privacy, right to personal data protection, prohibition of non-refoulement

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2.3 Overall Impact until M13 from Dissemination and Communication Activities

Besides the type and size of the audience for each Dissemination and Communication Activity, that has been presented in Table 1, the Consortium is also recording the overall impact from communication activities on an organizational level utilizing participants' contacts. The collective results are presented in the Table below, while the information has been logged in the participants' portal as well.

The reported numbers do not include the impact of the published papers to the scientific community, as it is rather soon and the number of cross references will be a better impact validation measure.

Table 3:Audience Size and Type from Dissemination and Communication Activities until M13

Audience Size	Audience Size
Scientific Community (Higher Education, Research)	1,077
Industry	3,218
Civil Society	2,050
General Public	16,025
Policy Makers	580
Media	4,500
Customers	1,310
Other	1,750

Additionally, one of the Task main objectives is to create and maintain a large and specialised network of stakeholders, experts in border security, land and maritime surveillance. To this end, the following developments point towards this direction and support the positive impact of the communication activities that the consortium has conducted.

- Satways and Inovaworks participate at the Industry specification Group (ISG), European Common Information Sharing Environment Service and Data Model **(CDM) of ETSI**. This Industry Specification Group will define technical standards to allow data exchange among different maritime legacy systems in a cooperative network.
- Mr. David Berger form the **JRC Unit E.5 on Transport and Border Security** has accepted our invitation to participate in the Advisory Board of Andromeda, along with Ms. Velina Dobreva, (Chief Directorate of Bulgarian Border Police), Mr. Pertti Woitsch (Woitsch Consulting) and Mr. Bernard Garnier (Blue Solutions Consulting)
- The Andromeda project is now listed at the **EMSA website** as a CISE-relevant project and at the website of Frontex
- Several Organisations have agreed to be part of the **Andromeda User community**: JRC, Bulgarian Border Police, Bulgarian Navy, Bulgarian Defence Institute, Montenegro Border Police, Polish Naval Academy of the Heroes of Westerplatte in Gdynia, UK Home Office: Border Force Maritime Command, Naval Group, Székely Family and Company Ltd, Nord University Business School, Aleksandër Moisiu, University of Durrës / Faculty of Professional Studies, University of the Aegean / Department of Shipping, Trade and Transport, European University Cyprus / CERIDES, University of Montenegro / Faculty of Electrical Engineering, Guardia Civil, and others.
- EU Projects have also joined our community: MARISA, RANGER, MEDEA, SMILE, D4FLY
- The members of our online Andromeda Forum are increasing and interesting discussions have began

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3. Plan for Dissemination Activities for the remaining period

3.1 Scientific Articles under preparation for Peer Reviewed Journals and Conference Proceedings

3.1.1 Paper prepared by MSD, Kings' College London, GMV, Laurea, University of Montenegro

The paper is titled 'Analysing the Prospect of CISE Implementation and Feasibility in Montenegro'. Following the Dissemination and Communication Rules, the complete paper has been sent to the consortium for approval and will be submitted by the end of October 2020. The abstract is presented below.

'This paper outlines an extensive analysis of the case of Montenegro's maritime surveillance system becoming integrated within the European Common Information Sharing Environment (CISE). Threats to secure maritime borders across Europe are ever-present and regularly demand coordinated efforts between the member states to tackle and prevent them, e.g. illegal immigration across the Mediterranean. Administration for Maritime Safety and Port Management (AMSPM) in Montenegro is a member of the ANDROMEDA EU project that seeks to facilitate deployments and demonstrations of CISE trials across the European regions toward their endorsement readiness. AMSPM is now at the forefront of assessing and deploying the CISE components in Montenegro. It thus appropriately evaluates the operational aspects, observes the CISE implementations in some European states, formulates the impact for other national stakeholders as well as the very prospect of the resulting augmented maritime surveillance in the country. This substantiates the content of this paper as the feasibility of the CISE deployment supported by a snapshot of the cost-benefit analysis. We aspire to offer perspectives and insights that could be a universally useful experience to different CISE implementation initiatives especially for countries or regions of similar smaller sizes and coastal area.'

Keywords:

maritime surveillance, CISE, cost-benefit analysis

3.1.2 Paper under preparation by ICCS

The journal paper prepared by ICCS is based on their relative conference paper already published titled: 'Preliminary design of a multipurpose UAV situational awareness platform based on novel computer vision and machine learning techniques'. The abstract of the conference paper is presented in paragraph 2.2.1. The choice of journals for submission has been finalized and includes 10 journals with a high Impact factor. The plan is for the paper to be submitted by December 2020.

3.1.3 Paper under preparation by Laurea

The Title currently under discussion for this conference paper is 'Case ANDROMEDA: The End-User Networks impact to Situational Awareness'.

The content of the paper is outlined below:

EU funded projects provide wide range of new, innovative and potential products for authorities. The projects' consortiums are formed on a "voluntary" basis and in many cases the consortiums are EU wide from North to South pending on projects ambition, potential partners motivation, resources and interests. The approach for our publication is to discuss about which kind of end-user's network could be the most efficient for a product like ANDROMEDA.

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3.1.4 Papers under preparation by CODIN

CODIN is currently preparing two scientific papers that are planned to be submitted to journals by the end of the year. Both are direct results of the research work CODIN has conducted in the Andromeda project (WP4). The titles of these papers are:

a. Classification of Vessel Trajectories with LSTM using Kinematic Features
b. Identification of Vessel Cooperation activities using Geometric Algorithm

It should be mentioned that CODIN has also published an article in an Italian Magazine named 'SMEs drive Innovation and Real Time Analytics- A revolution in Cyber and Homeland Security'.

3.1.5 Paper under preparation by STWS

STWS will be publishing a paper titled 'An Enhance Common Information Sharing Environment Data Model For Land And Maritime Border Surveillance'. The paper is expected to be submitted on February 2021.

3.1.6 Other Papers under discussion by the consortium

Two other papers that are under discussion by the consortium are also focusing on the technical implementation.

The first idea is to write a paper on the 'Andromeda Data Fusion Services', towards the end of the project to include feedback from the trials. The second idea is from MSD and includes the 'Technical Challenges in implementing CISE'. This would be drafted as a conference paper due to time limitations. The final decision will be taken on mid-November.

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4. Plan for Communication Activities for the remaining period- Utilization of the Andromeda Social Media Accounts

4.1 Use of the Andromeda Social Media Accounts for communicating the results of the Andromeda workshop

The first target regarding the utilization of the project social media accounts is for the workshop and project results to be communicated to a wider audience.

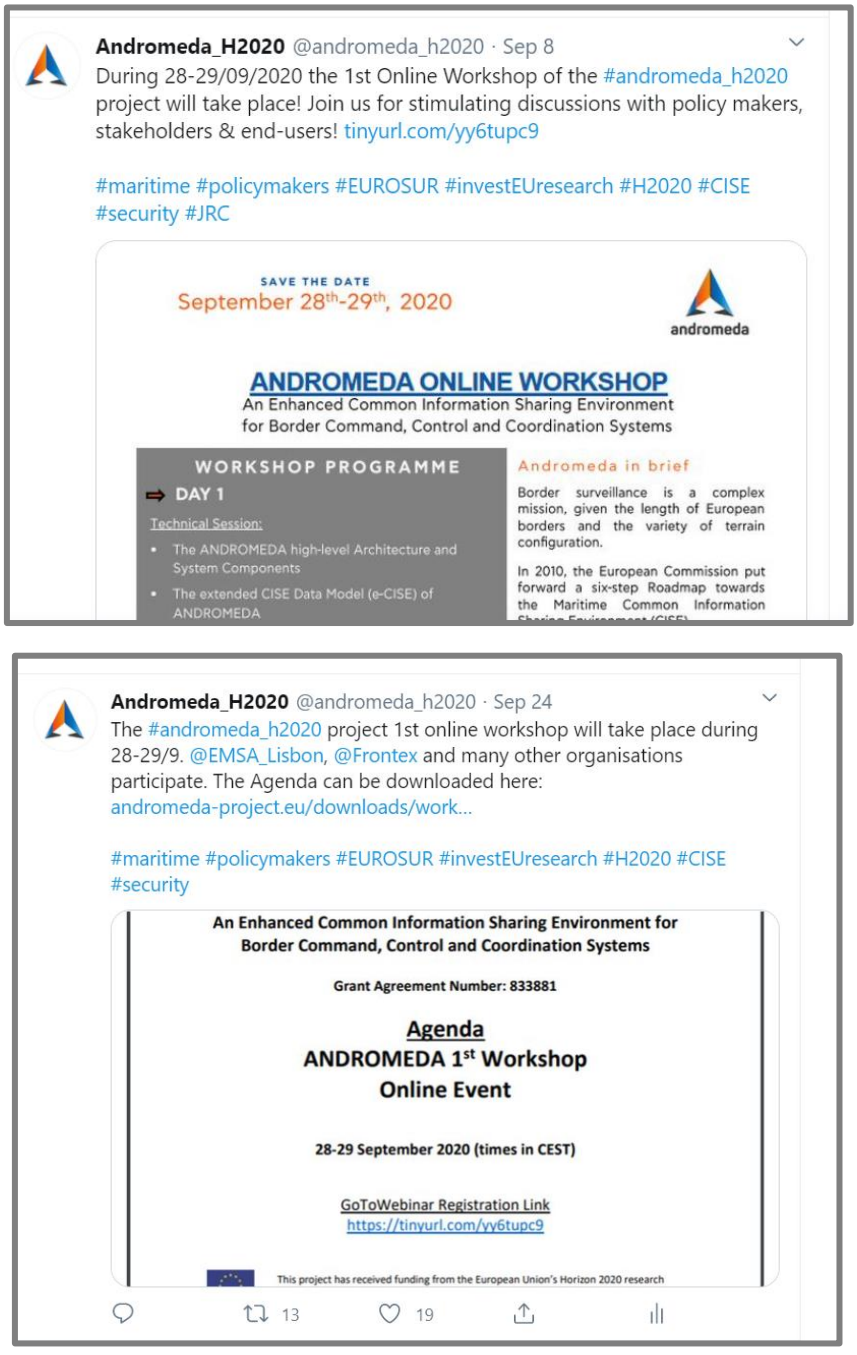

Figure 1: Two of the pre-event posts announcing the 1st Online Andromeda Workshop

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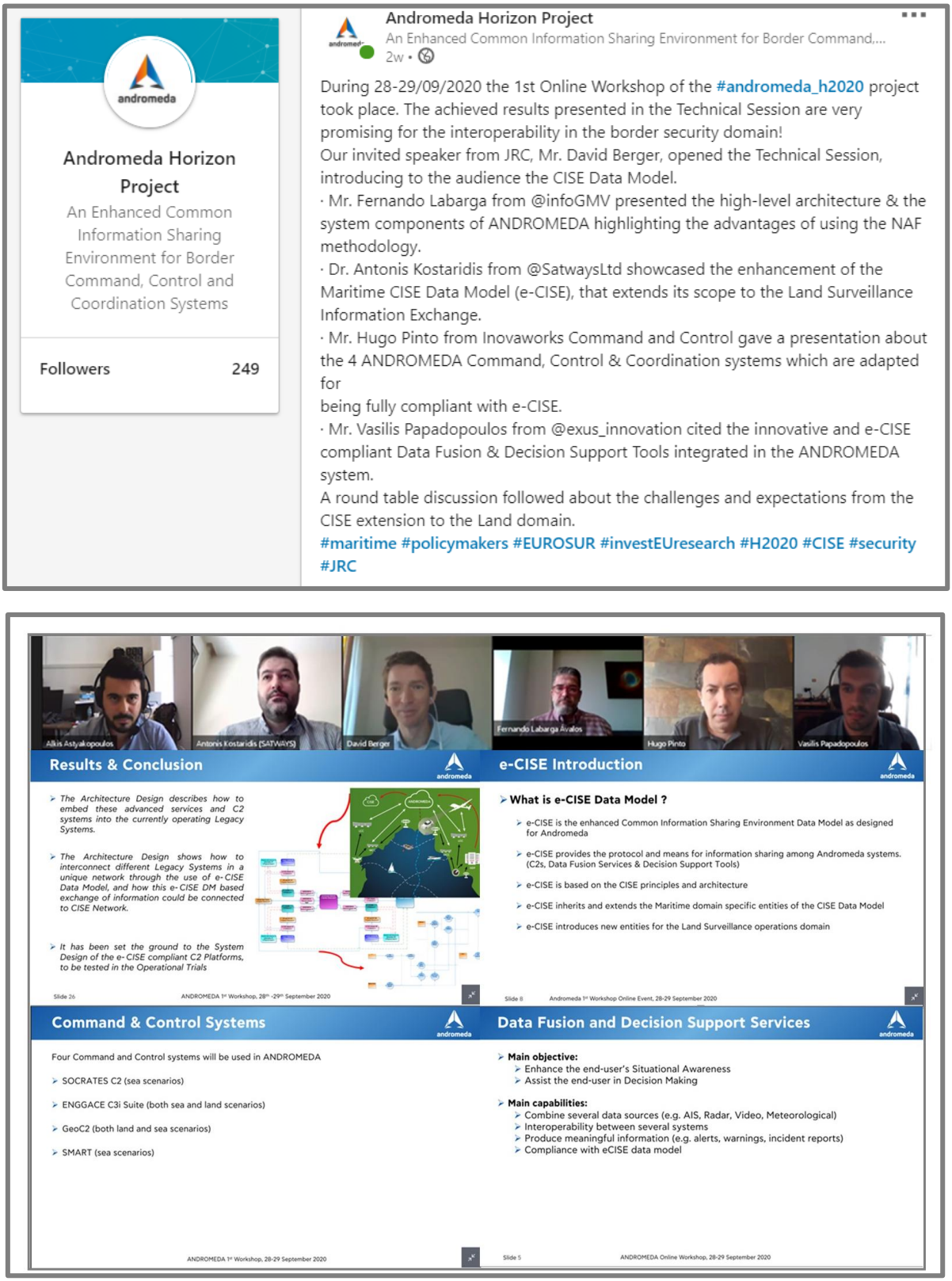

Figure 2: Post Event Communication Activities utilizing the Andromeda Social Media Accounts to communicate the results of the Workshop and the Project: 1st day presentations

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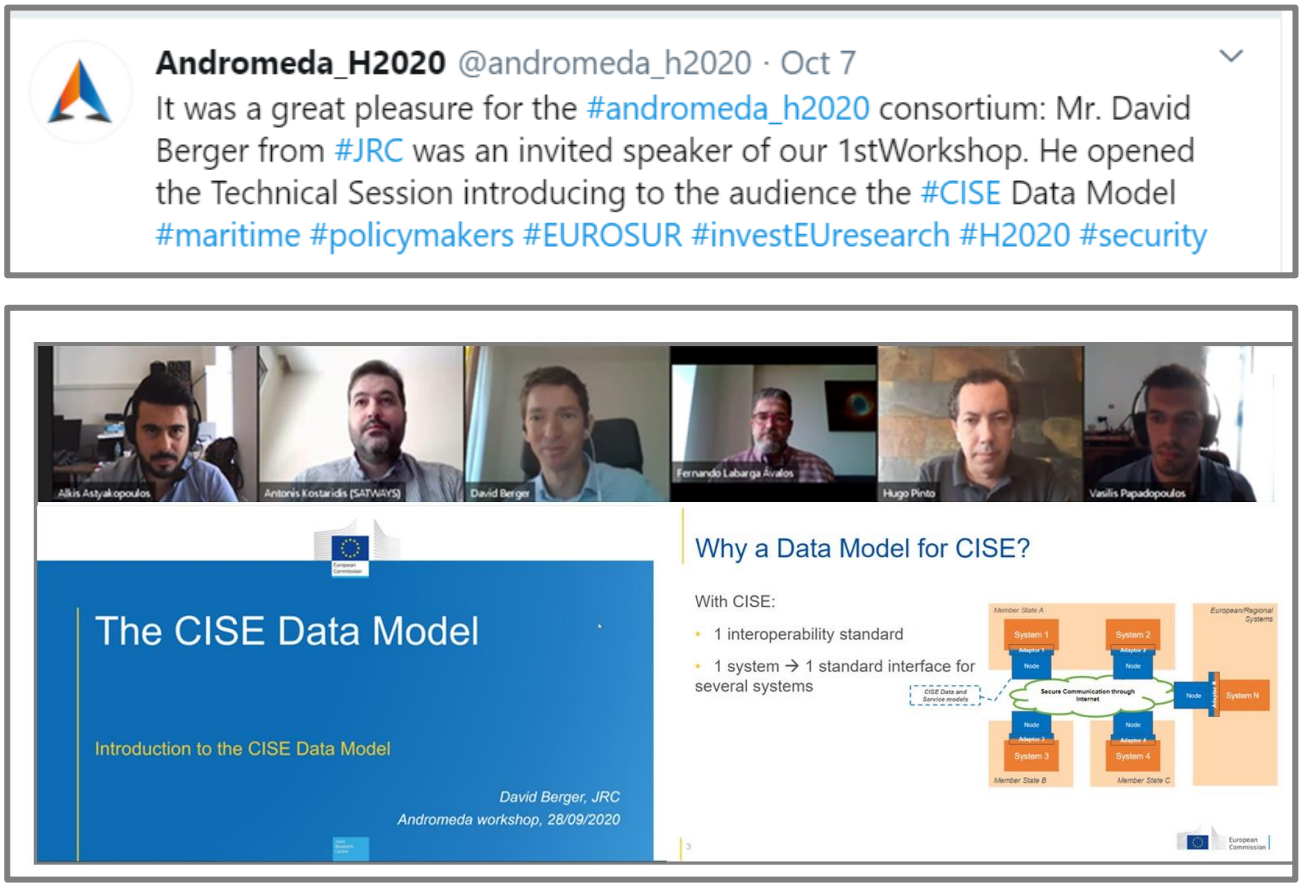

Figure 3: Post Event Communication Activities utilizing the Andromeda Social Media Accounts to communicate the results of the Workshop and the Project: JRC presentation

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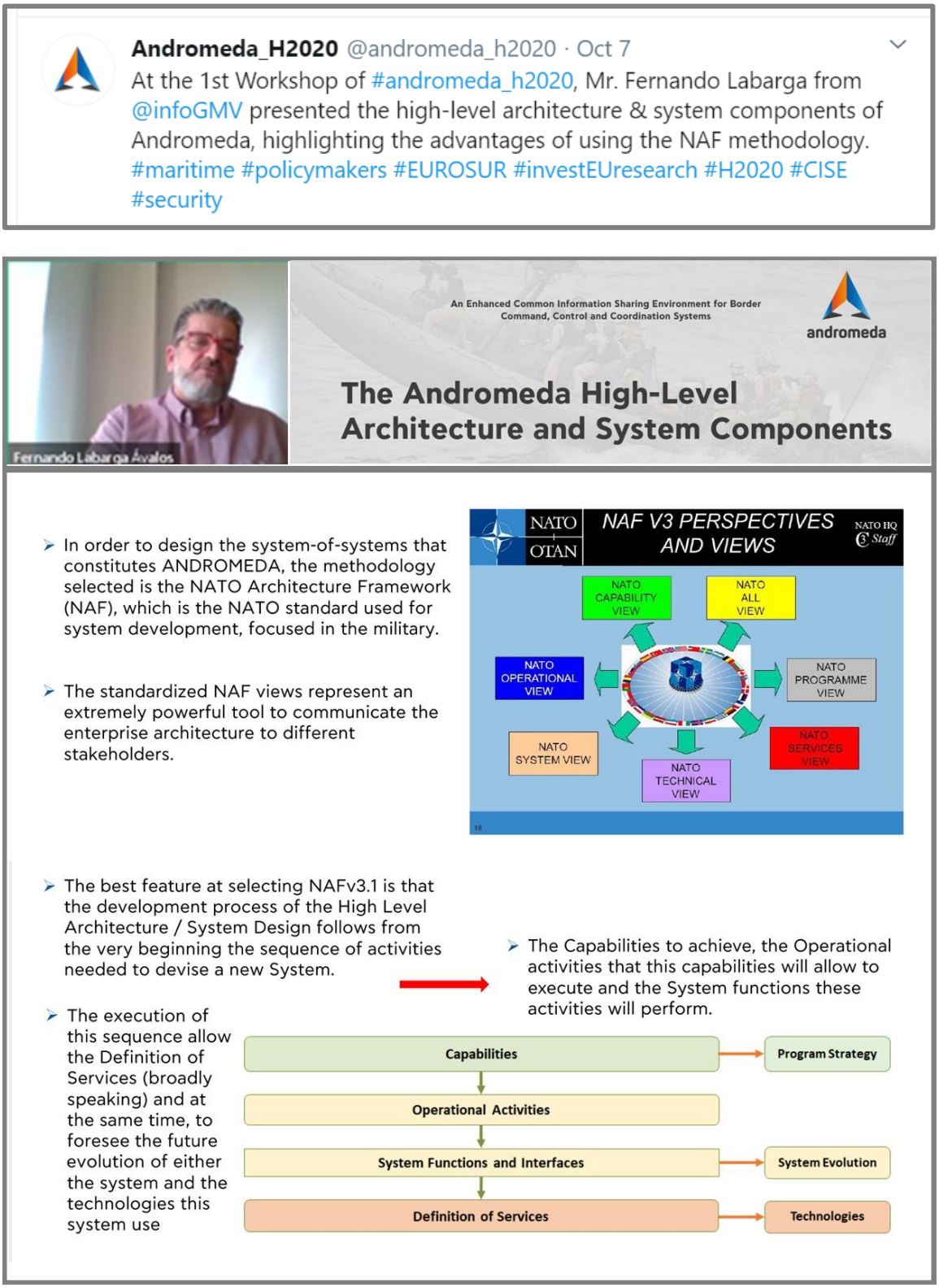

Figure 4: Post Event Communication Activities utilizing the Andromeda Social Media Accounts to communicate the results of the Workshop and the Project: GMV presentation

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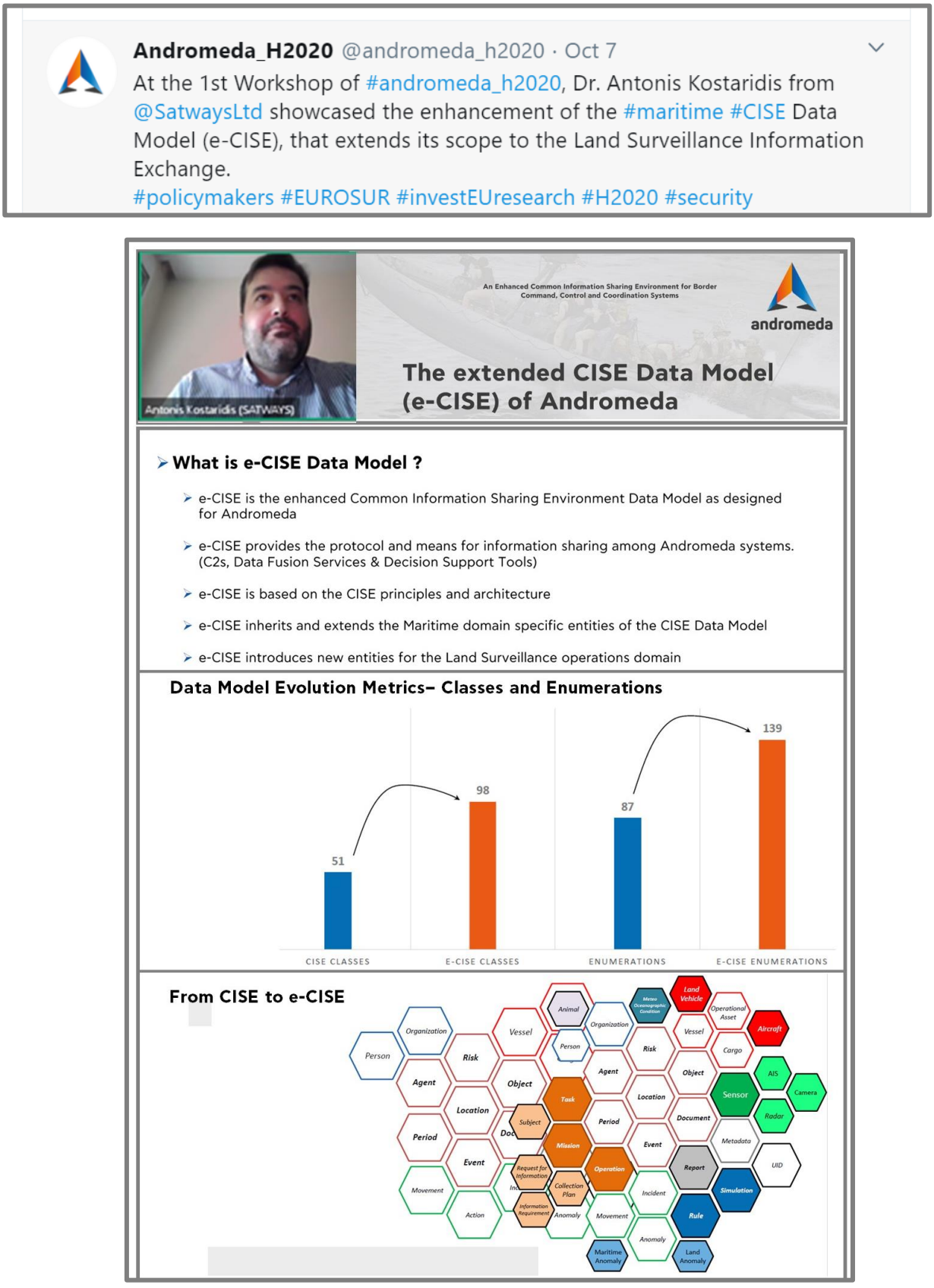

Figure 5: Post Event Communication Activities utilizing the Andromeda Social Media Accounts to communicate the results of the Workshop and the Project: STWS presentation

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4.2 Use of the Andromeda Social Media Accounts for communicating the solutions under development

After relevant posts on Installation and Integration efforts of fixed and deployable surveillance systems, as well as field visits, the remaining period will be used to promote the solutions under development. The latter will include workshops, interviews with the end users and short presentations of the advanced solutions that will be delivered by Andromeda. The pilot tests will also be utilised for communication purposes, and for the project video that will be prepared.

Furthermore, targeted posts will reveal the potential of every solution, linked with specific validation achievements. This activity has already started, and examples are presented below for the ENGAGE solution. Similar posts will be prepared for Triton, INUS Platform, Data Fusion Engine, eCISE to CISE adaptor, Socrates OC, Socrates DF, GeoC2, ESSG.

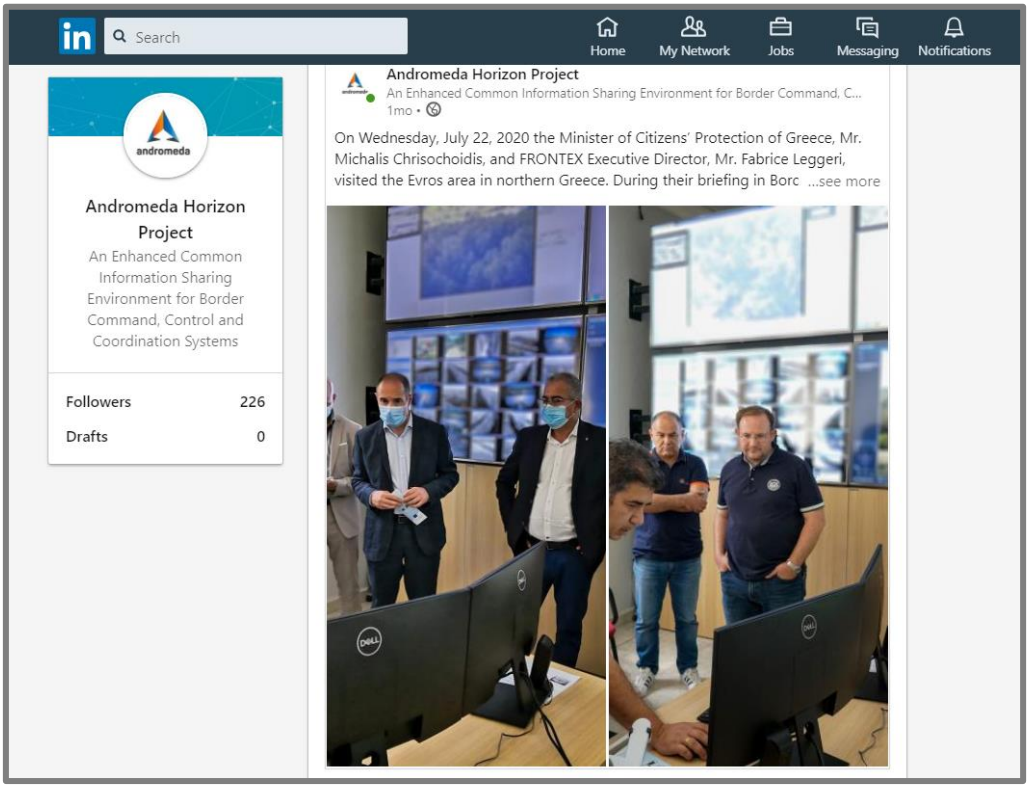

Figure 6: Post on the LinkedIn Account of Andromeda about the project presentation to the Minister of Citizen's Protection of Greece and the Frontex Executive Director

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Figure 7: Post on the Twitter Account of Andromeda regarding the successful validation by the end users of the solution provided

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4.3 Communication Activities -online and offline events

More Communication activities are planned for the remaining period. The consortium has already performed communication activities before the Covid-19 outbreak in non-EU countries (South Africa, Albania, Serbia, Montenegro, Israel) and will try to do so for the remaining period, depending of course also on the travel restrictions.

The future plan does include conferences and events that will take place in non-EU countries but there is a chance that these will take place online due to travel restrictions. In any case, audiences from non-EU countries will be participating.

Future activities include:

- **Organisation of a Workshop:** One more Workshop will be organised at the end of the project in M18 (Feb. 2021), to address end users, practitioners and stakeholders. The main goal of the Andromeda workshops is to present and disseminate up-to-date information through presentations and live system demonstrations, with as much as possible real-time data but also synthetic data.
- **Press Release /Articles**
    - An Article by MSD presenting ANDROMEDA project in the European Security & Defence magazine, (online version), expected to be published up to the end of 2020
    - 3 newsletters by STWS including highlights from the installation tests, the results of the pilots, the workshops
    - Press Releases for the project advancements will be prepared by KEMEA, MMAIP and STWS and will be published in the partners' websites and social media accounts.
    - GMV will write articles in 'GMV news'
- **Non-scientific and non-peer-reviewed publication (popularised publication)**
    - Laurea will be publishing an article at the Forerunner Magazine of the Laurea University by the end of autumn 2020
- **Flyers**
    - One more project flyer is to be prepared by Inovaworks and STWS
- **Participation to conferences**
    - MSD will participate in the '27th Telecommunications Forum TELFOR 2020' in October 2020. The audience includes Academia and industry representatives.
    - MSD will participate in the 'Conference Information Technology (IT 2021) in Žabljak – Montenegro (18-22/2/2021). It is supported by IEEE and some papers will be in IEEEXplore
- **Participation to events other than a conference or a workshop**
    - MOPS-INP will participate in INP internal forums taking place in Israel with operational and technological representatives as well as forums with Industrial and Academic representatives.
    - MSD will participate in the 17th Mediterranean Expert Working Group for maritime surveillance and AIS data collection in the Mediterranean Sea (MARES meeting)

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The plans for attending Trade Fairs and Exhibitions depend on the travel restrictions

- **Participation to Trade Fairs**
  - STWS will participate in the next INTERSCHUTZ trade fair, June 2021
  - Inovaworks will participate in the next Segurex with audiences Security forces and Border Control communities
- **Participation to Exhibitions**
  - CODIN will be participating at the next SeaFuture event

- **Video**
  - As requested from the project officer, several Communication actions will involve the WP6 trials. Stakeholders will be invited to the trials and the Andromeda partners' communication channels will be used to attract end users. The trials will be used for the production of a high-quality video which will be prepared by professionals in the field.

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5. Conclusions

The present document has presented in detail 1) the Dissemination and Communication activities already implemented and their recorded Impact with respect to audience size and type 2) The consortium plans for future Dissemination and Communication Activities 3) The Scientific Articles under preparation for publication in peer reviewed journals or conference proceedings 4) The plans for utilizing the social media to communicate the project results.

The presented plan aims in counterbalancing the impact that would be expected from attending events that were originally planned, but were either cancelled due to the pandemic outbreak, or will take place online.

Therefore, the consortium has concentrated its efforts on increased dissemination activity (publications in scientific journals and conference proceedings) and has also focused on increased online communication activity (online events and social media presence). The latter will include workshops, interviews with the end users and short presentations of the advanced solutions that will be delivered by Andromeda. The pilot tests will also be utilised for communication purposes, and for the project video that will be prepared.

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