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

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D.1.2 Project Initial Report

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v.0.3	2020/03/06	MMAIP/KEMEA	Updated version and enhanced description of the progress per Task, update the Risks table, update the list of dissemination and communication activities, inclusion of the feedback from the Advisory Board members
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v.0.9	2020/04/03	SAB	Review by the SAB
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Executive Summary

The ANDROMEDA project aims to unlock the full potential of CISE, by validating in a long period of time CISE-compatible command, control and coordination systems from several Coast and Border Agencies. At the same time, it is envisaged to further enhance, validate and demonstrate CISE by extending its scope for land borders and adapting relevant C2 solutions and associated services. This will be accomplished by extending the CISE data model based on the use cases and requirements and adapting state-of-the-art command & control systems for full compliancy with the enhanced model and CISE message exchange patterns. The project architecture will follow a hybrid scheme in order to allow the usage of the End-User CISE Nodes/Gateways and at the same time to allow the testing and validation of the extended data model. The project will leverage on the developments, results and experience of the consortium from current and previous research projects (PERSEUS, CloseEye, MARISA, RANGER), from Public Procurement projects of CISE Nodes and Adaptors implemented at national level and on the CISE infrastructure of the End Users.

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1. Introduction

1.1 Purpose of the document

The purpose of D1.2 Project Initial Report is to present the main outputs of the work performed during the first period of reporting activities (M1-M6). 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 above-mentioned period and the progress achieved including a comparison between the activities planned in DoA. Detailed work progress achievement during the period is presented in 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 in the first six months 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 Deliverable and reference to the next reporting obligations according to the DoA.

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

2. Project's objectives and work progress

2.1 Project's objectives for the period

The main objectives of the project covered during the first six months of the project (M1-M6) are the following:

- Create the effective management structure on the basis of the principles included in the Grant and Consortium Agreements, for the whole duration of the project (committees, quality plans, procedures, risk register, project management tools, etc.)
- Oversee the progress of work packages, monitor deliverables, resolve any risks and unforeseen issues and organize periodical meetings with the WPs leaders.
- Start the organization of the ANDROMEDA user community.
- In-depth definition of the users' and stakeholders' requirement settings for C2 capabilities for Land and Maritime Border Surveillance and Coordination, data fusion, analytics, SA and interoperability services according to the targeted use cases including operational scenarios.
- Work to deliver extensions and adaptations of the CISE Data Model (e-CISE) for specific entities and for supporting Land Border operations.
- Work to deliver high level architecture and 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.
- Analyse partners C2's human machine interfaces (HMI) together with the end-users in the consortium and design an enhanced Situational Awareness for exchanging information across borders and sectors.
- Start the project development activities according to the overall architecture and design documents.
- Start 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 (M1-M6; 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

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 till 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. The work has been divided in three phases:

During the first phase (M1-M5), LAUREA, in collaboration with T2.2, formulated the initial set of the User Community composed of the participating end-users of the project and the external end-users who have been

involved in the definition of the user requirements and have expressed their initial interest to link with the project activities. During this phase, each participant in T2.1 has created a list of external end-users outside the Consortium from past or on-going initiatives in the domain (e.g. EUCISE2020, EWISA, MARISA, RANGER, CLOSEYE, PERSEUS, CoopP etc.) and invited them to be part of the User Community and participate in the process of the user requirements definition. To this end, the current list of the User Community is composed of 16 end-users from 9 countries:

ANDROMEDA End-Users:

1. MMAIP – Ministry of Maritime Affairs and Insular Policy (EL)
   - DIDINAL – Drug & Contraband Directorate / Drug Enforcement Department
   - DAPTHAS – Security and Sea borders protection Directorate
   - IMSB – Integrated Maritime Surveillance Bureau
2. HELPOL – Hellenic Police (EL)
3. ITN – Italian Navy (IT)
4. PTN – Portuguese Navy (PT)
5. MOPS-INP – Israel National Police (IL)
6. EAMA – Bulgarian Maritime Administration (BG)
7. HMOD – Hellenic Ministry of Defense (EL)
8. MSD – Maritime Safety Department of Montenegro (MD)

External End-Users:

9. GUCI – Guardia Civil (ES)
10. FBG – Finnish Border Guard (FI) - TBC
11. MNE – Montenegro Navy (MD)
12. MBP – Montenegro Border Police (MD)
13. BGRNI – Bulgarian Navy (BG)
14. BDI – Bulgarian Defence Institute (BG)
15. BBP – Bulgarian Border Police (BG)
16. SMA – Slovenian Maritime Administration (SI)

During the second phase (M6-M7), the T2.1 strategy for extending the User Community of the project to additional organisations, both users and providers of data and services, not directly involved in the project, will be created and agreed with the partners involved in T2.1. The project will continue to be represented to additional beneficiaries from relevant projects and initiatives examining the possibility to be part of the User Community and participate in project initiatives like the Workshops and the Demonstrations. The draft T2.1 strategy has been presented by LAUREA during the 2nd Project Meeting in Lisbon on February 2020.

During the third phase (M8-M12), the D2.1 will be finalised according the mutual agreed responsibilities of T2.1 partners.

Achieved results: Draft D2.1 "User Community Initial Report" (M12) including the initial formulation of the User Community and the creation of a list of projects relevant to ANDROMEDA. The table currently includes 18 projects funded by EU and at the time of preparing the D2.1, the following draft User Communities have been defined according to the GA:

- ANDROMEDA End-Users Community
- External End-Users Community
- EU Organisations Community
- Industrial Community
- Academic & Research & Technology Organisations (RTO) Community

Current status: In progress. The Task 2.1 work started in M1 and will last till M18. LAUREA is the leader of this Task which progresses according to the schedule. The preparation of the D2.1 is in progress and the plan is to be submitted for review in June 2020. The review will take place in July 2020 and LAUREA will finalise the deliverable and submit to EC by the end of August 2020 (M12).

Deviations: No deviations from the DoA.

Task 2.2: User Requirements and Technical Specifications

Task Progress: Task 2.2 started in M1 (September 2019) and finished in M4 (December 2019). As an outcome, it produced the deliverable D2.2 which was submitted in early January 2020 (end of December 2019 was the official end of T2.2 as referred in the DoA). According to the DoA, the objective of this Task is to build on results of previous R&D and cooperative projects and using the input of the User Community, initially composed in T2.1, to define the user requirements by the involved maritime and land border surveillance authorities regarding the ANDROMEDA system/services and map them into technical specifications. This goal was achieved adopting a variety of data collection methods such as: (i) Questionnaire completion, (ii) exploitation of previous relevant R&D and cooperative projects results, (iii) face-to-face interviews during the end-user meeting held in Rome on November 2019, (iv) teleconferences at WP2 level, and (v) a Workshop on maritime surveillance jointly organized with H2020 RANGER and MEDEA projects in the Mediterranean and Security Event (MSE) in October 2019. Concerning the Questionnaire, not only ANDROMEDA end-user authorities participated in the completion process, but also the external end-users of the User Community, initially defined in T2.1, have been invited to contribute filling-in the Questionnaire in order to increase the amount of received feedback and generate a set of requirements which cover needs from as many end-users as possible during that period (especially from additional land border authorities). The same approach has been followed in the Workshop where additional maritime and land border authorities from various countries participated in (e.g. Spain, Romania, Albania). It deserves to mention that ANDROMEDA established linkages with a series of relevant funded projects from which a set of project's user requirements (43%) have been extracted and reused building on their outcomes. Such projects are EUCISE2020, MARISA, EWISA, RANGER, FOLDOUT, National procurement projects etc. The rest (57%) are user requirements of the project itself. Last, T2.2 elaborated the interaction between the existing/legacy systems in each of the end-users' Maritime and Land Operation Centers with the ANDROMEDA Solution.

Achieved results: D2.2 "User Requirements & Technical Specifications" (M4) and D2.3 "Interaction with Legacy Systems" (M4) have been submitted.

Current status: Completed.

Deviations: No deviations from the DoA.

Task 2.3: Legal and Ethical Context Analysis

Task Progress: T2.3 started in M1 (September 2019) and finished in M4 (December 2019). LAUREA has produced with the help of the whole consortium a clear ethical and legal framework under which the ANDROMEDA solutions and the project itself operates.

Achieved results: The main results are materialized in the D2.4 "Legal, Ethical and Societal Aspects". The deliverable outlines the legal, ethical and societal aspects related to the research and project work of ANDROMEDA, but more so, to the solutions, and to the future use of solutions (incl. practices and new governance and business models) developed and researched during the project. The document sets the specific ethical requirements that must be taken into account when designing and realising the ANDROMEDA solutions, as well as when using those solutions.

The deliverable justified the necessity of legalities and ethics in research projects, then introducing the norms in the ANDROMEDA domain, i.e. maritime and border security, followed by concerns of privacy, data protections and OSINT and AI, before introducing the ethical challenges in maritime and land border security. This was followed by the results of the Societal Impact Assessment (SIA) carried out in the beginning of the project. Then the focus was turned to the ethical requirements. There are 21 general ethical requirements, 13 requirements specifically for the technology, five for user processes and training material, and eight for adaptation and business/governance models. The last part of the document was the initial Code of Conduct of ANDROMEDA, i.e. nine ethical and moral principles according which ANDROMEDA, both the project and the results, is done.

Current status: Completed. The related deliverable, D2.4 "Legal, Ethical and Societal Aspects" was submitted on M4. However, the work shall continue when needed, since for example the list of ethical requirements might evolve during the projects as more detailed information, for example, on the data sources, sensors and legacy systems is collected and analysed. Further, there might be changes or adjusts in the presented requirements, too.

Deviations: No deviations from the DoA.

Task 2.4: Operational Scenarios & Trials Definition

Task Progress: T2.4 started in M1 (September 2019) and finished in M5 (January 2020). T2.4 has worked on the definition of the land use cases, the maritime use cases and the operational scenarios under which the trials will be executed. For the land borders have been analyzed four (4) use cases completely new. For the maritime borders the use cases have been reused from the Coop and MARISA projects. The operational scenarios have been formulated and adapted as well according to the land context. A collaborative session has been arranged during the End-User meeting in Rome and the operational scenarios have been consolidated while the collection of sensors involved in the trials has been also completed. For each use case has been arranged a mapping with the user requirements so that there will be a complete overview of mapped use cases with user requirements that will reflect certain operational scenarios that will be executed in each single trial. This process will make easier the trial validation process.

Achieved results: The main result of the task is that of defining the scenarios to be performed during the execution of the trials and the definition of the trail in turn. All this is concretized with the drafting of the deliverable D2.6 "Operational Scenarios and Trials". Thus, five (5) maritime use cases and five (5) land use cases have been defined as described in the DoA. For each of them, subject to the involvement of technological partners and mainly end-users. The use case tables have been populated indicating objectives, input and output data, covered requirements and user communities involved. The trials have been defined and Stories have been drafted for each of them which will be performed during the execution phase. The final version of D2.6 has been submitted.

Current status: Completed.

Deviation: The deliverable in question the D2.6 has a dissemination level of EU-RESTRICTED. This has created some difficulties in the process of sharing contributions and transmitting the final version to peer reviewers. Because of this, the deliverable was submitted delayed compared to the initial planning (beginning of M6 instead of M4).

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). T3.1 has worked on the enhancement of the latest version of CISE Data & Service Model (v1.5.3) to support both Maritime & Land Border Monitoring & Control. To accomplish this, modifications in the CISE Data Model as well as definition of new Core Entities had to be done. The initial plan of the task had been presented during the End-User Meeting in Rome, announcing the major changes the e-CISE Data Model will bring. After reviewing the deliverables of T2.2 – User Requirements and Technical Specifications and T2.4 – Operational Scenarios and Trials Definition, the activities of T3.1 have been started. Enhanced and Newly added e-CISE core entities have been compiled and continuously reviewed and updated by all Technical Partners. The deliverable D3.1 has also been created and shared, containing the final Table of Contents and the description of all changes made on the CISE Data and Service Model. Each e-CISE Data & Service Model change is described in detail in the D3.1 deliverable.

Achieved results: 10 new e-CISE Core entities have been created. (Sensor, Campaign, Mission, Task, MissionReport, Media, Rule, Prediction, Target and Product) 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. The e-CISE Service Model supports all Message Exchange Patterns of CISE Service Model and is enhanced with new Service Types to support new e-CISE core entities as well as new Communities and Functions related to the Land Border Monitoring & Control. D3.1 "e-CISE Data Model description" has been created and significant progress has been already made. A remote Workshop has been organized among T3.1 participants and specifically with the end-users at the end of February 2020 in order to discuss the progress of e-CISE and fine-tune the alterations of the Core entities. As a final step, D3.1 will be reviewed by JRC, as the main developer of the CISE Model, and further input will be incorporated before submitting the deliverable to EC.

Current status: In progress. Various iterations of the e-CISE Data & Service Model schemas (currently at v.1.1.0) have been released and sent to all technical partners. Work in progress for finalizing the e-CISE Service Model. D3.1 and technical adoption guide are in progress. D3.1 is scheduled to be submitted in M7 (March 2020).

Deviations: As the e-CISE Data Model schemas are under review by all Technical Partners, if any changes need to be made in the schemas, the D3.1 must also be updated accordingly. This could potentially delay the delivery of D3.1 in case delayed feedback is received from technical partners.

Task 3.2: Physical and Logical System Architecture

Task Progress: T3.2 lasts from M3 (November 2019) to M5 (January 2020). At the time of delivering this report, T3.2 is completed. The main system components (internal and external, including legacy systems) have been identified, their behavior have been outlined and a service orchestration concept has been defined. The agreements reached regarding the System Design have been collected and have been formalized through the Architecture Framework NAFv3. The aim of the task is intended to serve as guideline for the development of the deliverables of Maritime C2, Land Border C2 and Data Fusion, Situational Awareness and Decision Support Tool System Designs.

Achieved results: The D3.2 "Architecture Design" is finalized and structured with the following chapters: (i) Chapter 1 – 3, that provide a general overview of the ANDROMEDA project, (ii) Chapter 4, that describes the basic methodology followed to elaborate on the Architecture Design. It is worth mentioning that this methodology must also be followed at producing the remaining deliverables of Work Package 3, devoted to the System Design, (iii) Chapter 5, that provides the set of architectural views. These views and diagrams are presented, according to the employed methodology, in sections related to the different levels of NAF views: Strategic, Operational, System, Service and Technical, (iv) Chapter 6, that specifies the conclusions reached from the process of definition of the architecture. The final version of D3.2 has been submitted.

Current status: Completed.

Deviations: There has been a slight delay regarding the submission of the final document due to the need of additional reviewing.

Task 3.3: Land Borders C2 Design

Task Progress: T3.3 started in M4 (December 2019) and is expected to end in M7 (March 2020). In accordance with the DoA, the goal of this task is 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, are being specified, designed and updated. The use cases are being refined based on requirement analysis with the goal of driving the flow of information between functional blocks and model their behavior.

Achieved results: The task is ongoing. All expected contributions from collaborating partners have been received. The first version of D3.3 "Land Border C2 System Design" has been produced and released for review. The final version of D3.3 is expected to be delivered in M7 (March 2020).

Current status: In progress.

Deviations: No deviations from the DoA.

Task 3.4: Maritime Borders C2 Design

Task Progress: T3.4 started in M4 (December 2019) and is expected to end in M7 (March 2020). This task is in progress and coordinated through participation in periodic teleconferences.

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". D3.4 is expected to be submitted in M7 (March 2020).

Current status: In progress.

Deviations: No deviations from the DoA.

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

Task Progress: T3.5 started in M3 (November 2019) and is expected to end in M7 (March 2020). In the early beginning of this task a datasheet was created by EXUS and shared among the involved technical partners in order to gather the needed information about the existing Data Fusion and Decision Support Services including communication protocols, interfaces etc. This information was considered for the overall design of the Data Fusion and Decision Support Services. A first draft of the related document was created, and a detailed design of the Data Fusion infrastructure was defined. Further to this action, this design has been discussed and then incorporated to the overall architecture design of ANDROMEDA. In parallel, EXUS had several bilateral communications with the relevant partners in order to agree the common data models, protocols and interfaces used by the Data Fusion and Decision Support Services. Furthermore, the extended CISE data model was examined in order to be consolidated into the Data Fusion messaging infrastructure.

Achieved results: Draft version of D3.5 "Data Fusion, Situational Awareness and Decision Support Services Design" has been available and circulated among partners for receiving contributions. The final version of D3.5 is expected to be submitted on M7 (March 2020).

Current status: In progress.

Deviations: It is not expected any major deviation from the DoA and the whole design of these Data Fusion and Decision Support Services is going to be described in detail in the D3.5 which will be submitted on M7.

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 has commenced and under the umbrella of the general WP4 Teleconference, the developments that need to take place have been discussed.

Achieved results: The necessary developments to take place have been identified by the technical partners (GMV, INOVA, STWS, ENG). This relates to their respective C2s (Socrates, GeoC2, ENGAGE BME, SMART). Currently the technical partners are organizing their development activities to follow their contributions to T3.3 and keeping abreast with the evolution of T3.1 on a daily basis. D4.1 "Interoperable C2 for Land Border Operations" is expected to be finalized in M15 (November 2020).

Current status: In progress.

Deviations: At the moment, there is dependency on the outcome of the work being carried out in T3.1 and T3.3 and thus progress is slow. It is expected that the draft versions of the respective deliverables by the end of February will move the developments into higher gear.

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 has 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 has been prepared and sent to the WP4 Leader in order to check closely the advance of the developments.

The developments of the Maritime edition of the C2s (Socrates, ENGAGE BME, GeoC2) will be based on common generic capabilities and the design described in WP3. In this task the various gateways to Maritime Border legacy systems (Radar, AIS, E/O) will also be developed ("Collect" capability). Some details about the different information sources are still under discussion and have to be clarified with end users.

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. C2 Maritime Systems 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: T4.3 lasts from M5 (January 2020) to M12 (August 2020). It will involve the participation of all C2 providing partners, the DFS / DST providing partners and the end-users involved in trials. The task focuses on the development of the various enhanced 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 to be implemented by INW, while the e-CISE to CISE Adaptor will be provided by ENG. Each service and C2 provider will implement their e-CISE Adaptor to their system.

Achieved results: Work currently in progress. D4.3 "Nodes and Services for e-CISE Information Exchanges" is expected to be finalized in M12 (August 2020).

Current status: In progress.

Deviations: No deviations are foreseen.

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

Task Progress: T4.4 lasts from M5 (January 2020) till M15 (November 2020). For this task, an initial list of the development activities for Data Fusion Services and Decision Support Tools was formulated according to the design description that has been carried on T3.5. In the context of this task, several technological solutions have been identified and the available options have been enumerated. At this stage, we have developed prototypes for candidate microservices that will be used by the Data Fusion infrastructure. Given the up to now progress it is not expected any major deviation from the DoA.

Achieved results: Work currently in progress. D4.4 "Data Fusion, Situational Awareness and Decision Support Services" is expected to be finalized in M15 (November 2020).

Current status: In progress.

Deviations: No deviations are foreseen.

2.6   Work Package 5: System Integration and Testing

Task 5.1: Test Architecture, Sensor and Data Integration

Task Progress: T5.1 has not started yet, as it starts in M7 (March 2020) and ends in M9 (May 2020). The main objective of this task is to define a test architecture that will facilitate the integration activities of the ANDROMEDA system developments. It will analyze the interfaces between components, the information management and test cases to be followed for successful integration of all ANDROMEDA components.

Achieved results: The planned activities for the next period are: (i) Kick-off the T5.1 activities, (ii) Collect the architecture, design and technical specifications of all components, (iii) Analyze the initial system developments, (iv) Draft the templates for ANDROMEDA test architecture, the procedures for interface and integration testing. The expected result is to submit the planned deliverable D5.1 "Test Architecture and Data integration" by M8 (April 2020).

Current status: Not started yet.

Deviations: No deviations are foreseen.

Task 5.2: Definition and Implementation of Integration Platforms

Task Progress: T5.2 has not started yet, as it starts in M7 (March 2020) and ends in M9 (May 2020). In this task, the integration platform will be defined and implemented for the project able to test the enhanced CISE Model, the C2s and the associated Data Fusion and Analytics services in different configurations and

interfaces to local legacy systems. For doing so, in the coming months each one of the technical partners will be requested to provide hardware requirements for each of the pieces of software in order to have the overall resources needed for the platform.

The platform will support and validate different system configurations for each trial as described in T5.3. For the 3 trials, additional local platforms will be used in each country to validate the interfaces with legacy systems or local assets.

Achieved results: Nothing specific to report right now. The expected result is to submit the planned deliverable D5.2 "Definition of Integration Platforms" by M8 (April 2020).

Current status: Not started yet.

Deviations: No deviations are foreseen.

Task 5.3: Definition of System Configurations for Each Trial

Task Progress: T5.3 has not started yet, as it starts in M7 (March 2020) and ends in M11 (July 2020). It aims to establish a per trial configuration of systems and components to support the proposed operational scenarios for each trial established in WP2. Its outcomes are configuration sets per trial, definition of data sets needed and test scripts that will enable the validation of ANDROMEDA in WP6.

Achieved results: Nothing specific to report right now. The expected result is to submit the planned deliverable D5.3 "Definition of Trial Configurations" by M11 (July 2020).

Current status: Not started yet.

Deviations: No deviations are foreseen.

Task 5.4: Factory Integration and Testing of Trial Configurations

Task Progress: T5.4 has not started yet. The Task will last 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.

Achieved results: Nothing specific to report right now. The expected result is to submit the planned deliverable D5.4 "Integration and Validation Test Plan" by M10 (June 2020) and D5.5 "Integration and Validation Test Report" by M15 (November 2020).

Current status: Not started yet.

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 M17 (January 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. The Task, along with the activities of WP6, have been initiated in the 2nd Project Meeting and followed up with a coordination teleconference arranged among the involved Task Leaders on 21st February 2020. During this period, the draft table of contents of D6.1 "Validation in operational trial approach and plan" have been discussed and the breakdown of the Tasks to subtasks with specific deadlines has been agreed in order to fine-grain the various activities that need to be done ahead.

Achieved results: The planning of the 1st site survey in the areas where the trials will be executed in order to discuss the operational scenarios with the end-users, the hardware and network availability from the end-users, the exact location of the sites where the trials will run and generally interact with the end-users at the borders for the preparation of the validation plan and the necessary logistics.

Current status: In progress.

Deviations: No deviations are foreseen.

Task 6.2: Iberian Maritime Border Trial

Task Progress: T6.2 has not started yet. The Task will last from M11 (July 2020) till M17 (January 2021) and includes activities for the detailed organization, logistics, setting-up and execution of the Iberian Trial. The Trial deals with Maritime Traffic Control and Illegal activities (smuggling and drugs).

Achieved results: Nothing specific to report right now.

Current status: Not started yet.

Deviations: No deviations are foreseen.

Task 6.3: Greece-Bulgaria Land Border – Maritime Trial

Task Progress: T6.3 has not started yet. The Task will last 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.

Achieved results: Nothing specific to report right now.

Current status: Not started yet.

Deviations: No deviations are foreseen.

Task 6.4: Ionian-Adriatic Maritime Border Trial

Task Progress: T6.4 has not started yet. The Task will last from M13 (September 2020) till M17 (January 2021) and includes activities for the detailed organization, logistics, setting-up and execution of the Ionian – Adriatic Trial. The Trial deals with the demonstration of the advanced C2 system interoperability through the e-CISE and Situational Awareness through the advanced DF, Analytics and Decision Support Services and the elaboration of a common operational picture for all the involved actors.

Achieved results: Nothing specific to report right now.

Current status: Not started yet.

Deviations: No deviations are foreseen.

Task 6.5: Trials Validation and Evaluation

Task Progress: T6.5 hasn't started yet. The Task will last from M11 (July 2020) till M17 (January 2021) and will validate the results of each trial against the objectives, verify the KPIs and provide feedback and recommendations.

Achieved results: Nothing specific to report right now.

Current status: Not started yet.

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 has been made towards: (i) Deliverable D7.1 "Communication and Dissemination Strategy and Plan" has been completed and submitted on time, (ii) the ANDROMEDA social media pages (Twitter and LinkedIn pages) have been developed and are active, (iii) the ANDROMEDA web page has been published, (iv) All communication material has been developed. Moreover, Milestone MS2 has been met accordingly.

Achieved results:

- 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.
- 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.

Current status: In progress. The Consortium is now focusing on D7.2 "Initial Dissemination Material" and D7.4 "ANDROMEDA Initial Web Presence", due in M12 (August 2020). D7.3 "Final Dissemination Material" is due in M15 (November 2020).

The current status with respect to the Dissemination and Communication Targets is presented below.

Table 1: Status of the Dissemination and Communication targets

	Metrics	Target	Current Status (M6)
Dissemination	Publications in scientific Journals	3	Not yet prepared
	Presentation in scientific conferences/conference proceedings	n n<6	3 presentations in Conferences completed, 4 planned
Communication	Number of views of website	5,000	1,054. Website made accessible to the public on 17/12
	Published articles in papers, magazines, newspapers	3	Press Release published in 2 websites, article published in one website, 2 non-scientific articles planned in magazines, 2 interviews in national media completed.
	Information material, Creation of leaflets, brochures, posters	3	1 flyer and 2 roll up banners created and used, 1 more leaflet planned
	Newsletter	6	Approximately 1 every 3 months planned. First newsletter has been 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, 2 participations in exhibitions planned
	Project website leaflet and/or poster downloads	200	52 leaflet downloads. Website has been developed and has been made accessible to the public on 17/12/2019
	Twitter account followers	200	128
	LinkedIn Group members	200	128 followers, 121 connections
	Social media posts	150	20

Details regarding the dissemination and communication activities performed during the reporting period are provided in Table 2.

Deviations: No deviations have been recorded.

Table 2: List of Dissemination and Communication activities performed during the reporting period

Type	Total Num.	Title	Date and Place	Partner Responsible
Organisation of a Conference	**1**			
	1	Mediterranean Security Event 2019 Supported by DG-HOME, EARTO, ENLETS and SECURITY COU (https://mse2019.kemea-research.gr)	Date: 29-31 October 2019 Location: Crete, Greece	**KEMEA**
Organisation of a Workshop	**1**			
	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 (https://mse2019.kemea-research.gr/wp-content/uploads/2019/10/MSE2019-Event-Program.pdf, p. 12 out of 20)	Date: 30 October 2029 Location: Crete, Greece (14:00 – 17:00)	**KEMEA, EXUS**
Press release - Article	**4**			
	1	A new research initiative for the control and safety of European borders (EN, EL versions) (http://www.kemea.gr/en/news/latest-news/767-ANDROMEDA-a-new-research-initiative-for-the-control-and-safety-of-european-borders)	Date: 07 October 2019 Location: KEMEA's website (News)	**STWS-MMAIP-KEMEA**
	1	Μία νέα ερευνητική πρωτοβουλία για την εποπτεία και την ασφάλεια των ευρωπαϊκών συνόρων (EL version) (http://hcg.gr/node/21348)	Date: 03 October 2019 Location: MMAIP' website	**STWS-MMAIP-KEMEA**
	1	Con ANDROMEDA la sicurezza dei confini è nella condivisione delle informazioni (IT version) (https://inside.eng.it/group/eng/articolo/-/blogs/il-progetto-ANDROMEDA-e-il-modello-di-condivisione-di-informazioni-per-la-gestione-e-il-coordinamento-delle-azioni-per-la-messa-in-sicurezza-dei-confi?_33)	Date: 07 October 2019 Location: ENG's website	**ENG**
	1	ANDROMEDA Newsletter #1 (https://www.ANDROMEDA-project.eu/downloads/newsletters/Andromeda%20newsletter%20September-December%202019.pdf)	Date: February 2020 Location: ANDROMEDA website	**STWS**

Non-scientific and non-peer-reviewed publication (popularised publication)	1			
	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 in particular.	Date: End of December 2019	**MOPS-INP**
Flyer	**3**			
	1	ANDROMEDA flyer	Date: 29-31 October 2019 Location: Crete, Greece,	**STWS/ ICCS**
	1	ANDROMEDA roll up banner for general use	Date: 19-20 November 2019 Location: Crete, Greece	**STWS**
	1	ANDROMEDA roll up banner for MSE 2019	Date: 29-31 October, 2019 Location: Crete, Greece	**STWS**
Training	**1**			
	1	Training in JOINT RESCUE COORDINATION CENTER (J.R.C.C.) (http://www.mod.gov.cy/mod/CJRCC.nsf/index_en/index_en?OpenDocument)	Date: 27-29 November 2019 Location: Larnaka, Cyprus	**MSD**
Social Media	**2**			
	1	Twitter Account: @ANDROMEDA_H2020	Date: October 2019	**STWS**
	1	LinkedIn Account: https://www.linkedin.com/in/ANDROMEDA-horizon2020-project	Date: October 2019	**STWS**
Website	**1**			
	1	ANDROMEDA Project website (https://www.ANDROMEDA-project.eu)	Date: November 2019	**STWS**
Communication Campaign (e.g. Radio, TV)	**2**			
	1	Participation of consultants on the project ANDROMEDA in the national radio "Broadcasting for mariners", emitted on local radio station. In the interview has	Date: 29 January 2020	**MSD**

		been presented the structure and importance of ANDROMEDA project for Montenegro.		
	1	Participation of Project Manager for MSD ANDROMEDA Team, on national TV and presentation of project activities and goals.	Date: 07 February 2020	**MSD**
Participation to a Conference	**3**			
	1	Mediterranean Security Event 2019 Supported by DG-HOME, EARTO, ENLETS and SECURITY COU (https://mse2019.kemea-research.gr)	Date: 29-31 October 2019 Location: Crete, Greece	**STWS, KEMEA, ICCS, EXUS**
	1	Conference Information Technology (IT 2020) in Žabljak – Montenegro supported by IEEE and some papers will be in IEEEXplore (http://www.it.ac.me)	Date: 18-22 February 2020 Location: Žabljak, Montenegro	**MSD**
	1	1st Maritime Situational Awareness Workshop, MSAW 2019, Villa Marigola, Lerici (La Spezia), Italy	Date: 8-10 October Location: Lerici, Italy	**LAUREA**
Participation to 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 (https://mse2019.kemea-research.gr/wp-content/uploads/2019/10/MSE2019-Event-Program.pdf, p. 12 out of 20)	Date: 29-31 October 2019 Location: Crete, Greece	**KEMEA, SATWAYS, EXUS, ICCS**
	1	H2020 First Secure Societies "project to policy kick off seminar" (P2PKOS)	Date: 31 January 2020 Location: Brussels, Belgium	**MMAIP, KEMEA**
Participation to an Event other than a Conference or aWorkshop	**6**			
	1	Round Table on Maritime Transport Connectivity, South Adriatic Connectivity Governance	Date: 30 October 2019 Location: Tirana, Albania	**MSD**
	1	INP internal forums for operational and technological representatives	Occasionally performed, no specific dates	**MOPS-INP**

	1	INP external forums with Industrial and Academic representatives	Occasionally performed, no specific dates	**MOPS-INP**
	1	Maritime Safety Department participation on National Joint-Interministerial Exercise and meeting (http://www.msp.gov.me/vijesti/211113/Interresorna-vjezba-Jadran-2019-uspjesno-realizovana.html)	Date: 04 October 2019 Location: Bar, Montenegro	**MSD**
	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**
	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**
Participation in activities organized jointly with other H2020 projects	**1**			
	1	2nd Greek pilot and final workshop of RANGER (https://ranger-project.eu/wp-content/uploads/2020/01/11th_newsletter_lowres_v1.pdf)	Crete, Greece, November 19-20 2019	**MMAIP/ KEMEA/ EXUS**

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 is to organize 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. The first workshop is to be organized in Spain (by GMV) and the second in Greece (by EXUS). There is no planned deliverable within this reporting period.

Achieved results: There have been two meetings for coordinating activities of T7.2; one physical meting during the KoM in Athens (17-18 September 2019) and one WP7 Coordination teleconference (03 February 2020). Within the reporting period the activities linked to the workshop organization have been defined and discussed within the consortium taking into account the stakeholder analysis performed in T7.1. The process to be followed has been agreed and can be split into the following main steps:

- Create the coordination team that will work on its organization and nominate the main contact points
- Agree on the potential dates for organizing the event
- Search for suitable venue and make the final venue arrangements
- Create the list with participants to be invited
- Finalize draft agenda and invitations

The outcomes of this Task will be reported in D7.6 "Initial Workshops Organization and Results" and D7.7 "Final Workshops Organization and Results".

Current status: In progress. The first steps towards the realization of the workshops are in progress and a detailed action plan with responsibilities and deadlines has been prepared and is being monitored.

Deviations: No deviations from the DoA.

Task 7.3: IPR Review and Patenting Process

Task Progress: T7.3 has not started yet. The objectives of this specific task which starts in M8 (April 2020) and are related to the management of the IPRs and their potential exploitation. In this context, the planned tasks are to review the Background IPRs of partners, keep record of the IPRs created during ANDROMEDA (Foreground and Sideground) and register IPRs where possible. In order to achieve the above, partners will be asked to fill in periodic surveys (for example every one or two months) to identify the Results that they have created, if they have used preexisting works, if the Result is joint ownership etc.

Achieved results: Nothing specific to report right now. 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: Not started yet.

Deviations: No deviations are foreseen.

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. This task covers the whole duration of the project, but it is totally linked to other tasks like the definition of the user requirements and the software design. This task is also linked to Innovation Management. So due to these factors, the degree of advance in this task is not reflected in any exploitation plan yet.

During the Innovation Meeting held in the 2nd Project Meeting, the approach to innovation has been described and how it is going to be the strategy to write the Exploitation Plan. An excel template has been prepared for

the collection of information related to ANDROMEDA individual assets. In this template, partners developing assets/components that can be exploited commercially are asked to fill specific information that will held to draft the Exploitation Plan. Developing an Exploitation Plan is to bring the project outcomes to the market and to generate a return on the investment made by the EC that would be reflected in the growth of the European industry. That is why from the very beginning of the project the design and the development of the system has to be oriented to create products easily commercialized.

Achieved results: Description of the approach to prepare the deliverables requested in this task during the Innovation 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. The first planned deliverable D7.6 "Initial Workshop organization" is for M12 (August 2020).

Achieved results: Three meetings have been organized in order to coordinate the activities with all partners and the main stakeholders; Physical meeting during the KoM in Athens (17-18 September 2019), one dedicated T7.5 teleconference (4 December 2019), and one WP7 Coordination teleconference (3 February 2020).

During the early stages of the project the standardization framework of ANDROMEDA has been set. This framework is based on the following steps:

- Establish a standardization template for C2 tools, data fusion components and situational awareness components where all partners are asked to fill in the standards already in use. This list will be analyzed including current best practices, pre-standardization opportunities and identified gaps in maritime and land border surveillance systems and information sharing.
- Identify and activate the appropriate pre-standardization channels of ANDROMEDA e-CISE Data and Service Model. Three channels have been identified and activated via the partners' networks:
    - The ETSI ISG Group for the European Common Information Sharing Environment Service and Data Model (CDM) (via its member STWS and INW): ISG-CDM enhances and supports CISE by providing a universal data and service model that will serve as reference for all information exchange between European public authorities.
    - The JRC (via MMAIP, KEMEA): An invitation for JRC to participate in the Advisory Board of the project has been formally sent to the Deputy Director-General of JRC and specifically the Transport and Border Security Unit (JRC.E.5) which is the center of expertise with CISE. The aim is to validate the work for the extension of the CISE Data Model with JRC before submitting the corresponding deliverable to EC (D3.1) and for the project to be fully aligned with the current state of play of CISE.
    - The EMSA CISE Stakeholder Group (CSG) (via ANDROMEDA end-users participating in CSG): A communication with EMSA has been initiated and the feedback received is that it would be of great value for the CSG to hear more about ANDROMEDA activities and achievements of other ongoing projects related to CISE, and that it would be beneficial for all to explore common issues and possible synergies. EMSA suggested the addition of a

dedicating session during the last CSG meeting where representatives from other projects will be invited to join. Such session will be probably held in the 4th CSG meeting, tentatively to take place on 9 June 2020 (date TBC) in Lisbon.

Current status: In progress. The first steps of pre-standardization framework are in progress. The collection and feedback for the standardization template is in progress. Specific targets, an action plan with responsibilities and deadlines has been agreed and is being monitored. All three channels (ETSI ISG, JRC and EMSA CSG) have been contacted in order to plan the next actions.

Deviations: No deviations detected so far.

2.9 Work Package 8: Ethics requirements

Task Progress: Under this WP there are several specific tasks to complete in order to ensure that all necessary ethical requirements are taken into account. The tasks materialize as 13 different deliverables. During this period most have been accomplished, whilst other are to be done later.

Achieved results: The following Ethics Requirements have been accomplished and the related deliverables have been submitted:

- D8.8 (POPD) on the appointment of DPOs, and availability of the relevant contact details for all data subjects and/or detailed data protection policies (M4)
- D8.9 (POPD) a description of technical and organizational measures to safeguard the rights and freedoms of data subjects/research participants (M4)
- D8.1 (H) on consent forms and related procedures for the participation of humans in research (M6)
- D8.2 (H) on incidental findings policy (M6)
- D8.3 (H) opinions and approvals by ethics committees (M6)
- D8.4 (POPD) on profiling of data subjects (M6)
- D8.5 (POPD) on consent forms and related procedures for data processing (M6)
- D8.6 (POPD) on anonymisation and/or pseudonymisation techniques (M6)
- D8.7 (POPD) on further processing of personal data (M6)
- D8.10 (POPD) on transferring personal data between an EU-country and non-EU country (M6)

The work on the other requirements continues.

Current status: In progress. The work toward fulfilling all the requirements continues.

Deviations: No deviation from the DoA.

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 has been carried out by MMAIP ensuring the smooth running and operation of the project in terms of financial management and contacts with the European Commission and the Project Officer. During the reporting period, the following activities have been made:

- The original copies of the Consortium Agreement has been distributed to all partners.
- Transfer of the pre-financing payments to all partners.
- Establishment of the Project Management Structure comprising of: General Assembly, Management Support Team, Executive Board, Work Package Leaders, Task Leaders, Advisory Board, User Community, Security Advisory Board and Ethics Manager.
- Organization of the Kick-off meeting in Athens, the 1st End-users and Technical meeting in Rome and the 2nd Project Meeting in Lisbon.
- Communications between the consortium members and between the consortium and the EC.
- Establishment and 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 Initial Report.
- Submission of project deliverables to the EC.

Achieved results: D.1.2 "Project Initial 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 Coordination during the project implementation. The organizational and practical procedures to be followed for quality assurance in carrying out the project activities and milestones were defined and detailed in the Project, Quality and Risk Management Plan. Specifically, a Quality Dashboard has been created for the real time and online monitoring of the project progress, consisting of a series of Worksheets depicting the actual status of various aspects of project work in comparison to planned and/or contractually agreed progress. (Responsibility Assignment Matrix, Actions Register and Risks Register). Some specific achievements are the following:

- The organizational structure has been set up.
- A responsibility assignment matrix, including a RASCI Model and details about the leading roles per WP/Task and Deliverable, has been done.
- Project mailing lists have been set up.
- Preparation of project templates and definition of the interim management report procedure.
- The collaborative platform SharePoint has been installed and all partners have been invited to connect.

- An Actions and Risks Register has been created and both are constantly updated after a meeting or teleconference and monitored by the MST.
- The deliverables review process and schedule has been drafted in order to followed by each deliverable leader and involved contributor.
- The Filkrypto PGBI version 2.0.4 application and the Crypto Key have been delivered by post to the Security Managers of each entity.
- An initial schedule of the project meetings has been prepared.
- Ad ad-hoc meeting with the PO has been arranged on 9th December in Brussels.

Achieved results: D.1.1 "Project Management, Quality and Risk Plan", including a Data Management Plan (DMP), 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 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 WP3, regarding the Architecture design. It is important to cover in the design the gap detected when user requirements have been analyzed.

In the coming months the Innovation Manager will follow the advance of the next technical work packages related to development.

Achieved results: An Innovation Meeting was held in Lisbon, where the approach to innovation was described by the Innovation Manager.

Current status: Some excel sheets have been prepared and shared among the partners to request some information about market analysis and technological gap.

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 (e.g. Kick-off meeting and the 1st End-User and Technical Meeting) when presenting the related WP and tasks.

Achieved results: The results are at this stage mainly related to compiling a knowledge base in order to provide analysis and assessment of legal, ethical and societal aspects of the project.

Current status: The D1.5 "Legal, Societal, Ethical Initial Report" is under preparation, and the due date is on M9 (May 2020).

Deviations: No deviation from the DoA.

3.2 Deliverables

This section presents a summary of the status of the Deliverables for the first six (6) months. There were 18 Deliverables in the first period and all of them have been submitted to the EC.

D2.6 "Operational Scenarios and Trials" has been submitted delayed due to the type of this Deliverable which is EU-RE and various contributions needed to be collected by the end-users in a restricted way. However, this delay does not affect other activities of the project and D2.6 is in line with the duration of the associated T2.4 which according to the DoA was due by M5 (January 2020).

D8.3 "H - Requirement No. 3", D8.6 "POPD - Requirement No. 6", D8.7 "POPD - Requirement No. 7" and D8.10 "POPD - Requirement No. 10" have been submitted delayed due to the need of collecting feedback from all partners during a tense period with the Coronavirus outbreak.

Finally, the current deliverable D1.2 "Project Initial Report" has also been submitted delayed due to the necessary time needed by some partners to accurately calculate their spent effort for this first period. None of the above delays affect project execution.

The complete list of Deliverables is given in Table 3.

Table 3: List of Deliverables submitted until M6 (February 2020)

WP	Task	Deliverable Number	Deliverable Name	Lead	Type	Dissem. Level	Due Date	Calendar Due Date	Delivered (Yes/No)	Actual/ Forecast Submission Date	Comments
WP1	T1.2	D1.1	Project Management, Quality and Risk Plan	KEMEA	R	PU	M3	30/11/2019	Yes	26/11/2019	On time
WP7	T7.1	D7.1	Communication and Dissemination Strategy and Plan	STWS	R	PU	M3	30/11/2019	Yes	02/12/2019	On time
WP2	T2.2	D2.2	User Requirements & Technical Specifications	KEMEA	R	EU-RE	M4	31/12/2019	Yes	08/01/2020	On time
WP2	T2.2	D2.3	Interaction with Legacy Systems	MARINA MILITARE	R	CO	M4	31/12/2019	Yes	02/01/2020	On time
WP2	T2.3	D2.4	Legal, Ethical and Societal Aspects	LAUREA	R	PU	M4	31/12/2019	Yes	30/12/2019	On time
WP2	T2.4	D2.6	Operational Scenarios and Trials	ENG	R	EU-RE	M4	31/12/2029	Yes	07/02/2020	Delayed
WP8	n/a	D8.8	POPD - Requirement No. 8	MMAIP/	R	CO	M4	31/12/2019	Yes	30/12/2019	On time

				KEMEA							
WP8	n/a	D8.9	POPD - Requirement No. 9	MMAIP/ LAUREA	R	CO	M4	31/12/2029	Yes	02/01/2020	On time
WP3	All	D3.2	Architecture Design	GMV	R	CO	M5	31/01/2020	Yes	07/02/2020	On time
WP1	T1.2	D1.2	Project Initial Report	MMAIP/ KEMEA	R	PU	M6	29/02/2020	Yes	04/04/2020	Delayed
WP8	n/a	D8.1	H - Requirement No. 1	MMAIP/ KEMEA	R	CO	M6	29/02/2020	Yes	28/02/2020	On time
WP8	n/a	D8.2	H - Requirement No. 2	MMAIP/ KEMEA	R	CO	M6	29/02/2020	Yes	28/02/2020	On time
WP8	n/a	D8.3	H - Requirement No. 3	MMAIP/ KEMEA	R	CO	M6	29/02/2020	Yes	26/03/2020	Delayed
WP8	n/a	D8.4	POPD - Requirement No. 4	MMAIP/ LAUREA	R	CO	M6	29/02/2020	Yes	05/03/2020	On time
WP8	n/a	D8.5	POPD - Requirement No. 5	MMAIP/ LAUREA	R	CO	M6	29/02/2020	Yes	06/03/2020	On time
WP8	n/a	D8.6	POPD - Requirement No. 6	MMAIP/ LAUREA	R	CO	M6	29/02/2020	Yes	23/03/2020	Delayed
WP8	n/a	D8.7	POPD - Requirement No. 7	MMAIP/ LAUREA	R	CO	M6	29/02/2020	Yes	23/03/2020	Delayed
WP8	n/a	D8.10	POPD - Requirement No. 10	MMAIP/ LAUREA	R	CO	M6	29/02/2020	Yes	23/03/2020	Delayed

3.3 Milestones

All the project Milestones, due at the first 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	Host the kick-off meeting in Athens and start the collaboration among the partners.
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 has been initially established. User needs and trial scenarios have been prepared (D2.2 and D2.6 submitted). The project management, quality and risk plan are defined (D1.1 submitted). The Architecture design is defined (D3.2 submitted). The communication and dissemination strategy plan are provided (D7.1 submitted), The website is established and populated with dissemination material.
MS3	ANDROMEDA Initial Design	WP3 WP5	GMV	7	N/A	N/A	N/A
MS4	Integration Completed for 1st and 2nd Trial	WP4 WP5 WP6	INW	11	N/A	N/A	N/A
MS5	Mid-Term Review	WP1	MMAIP	10	N/A	N/A	N/A
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 first period of the project.

- Regarding the **WP1**, the transfer of the pre-financing payment to partners has been delayed due to the complexity of executing this task through the Hellenic Ministry of Finance which entailed the adoption of new administrative processes between the two Ministries for handing and sharing funds for research received by the European Commission. Moreover, the purchase of an encryption tool (Filkrypto) for all partners and the hardcopy delivery of the licenses to the appointed Security Managers per partner created some delays in the submission of the first deliverables with an EU-RE dissemination level. Now the process is fully set-up. Last, due to the Coronavirus disease (COVID-19) outbreak, the 3rd Project Meeting that is about to be hosted by LAUREA partner in Helsinki, Finland in middle of May 2020, needs to be reassessed during the coming weeks and take decisions for its potential cancelation or postponement in accordance with the advices of the National Ministries of Health. Possible alternatives (e.g. change of place or execution of the Meeting remotely) will be discussed with the members of the MST and take proper decisions for the safety of the Consortium.

- With regards to **WP2**, the main problem encountered was related to the limited available time the project had to finalize a series of important preparatory deliverables for the design of the ANDROMEDA system. The duration of the project does not give the luxury to rest assured, so WP2 started immediately its activities from the KOM and clarified to all parties the methodology to be used for the timely achievement of its objectives. The organization of an End-Users meeting, the participation to Workshops with End-Users and the constant communication over teleconferences at WP2 level helped all to stay tuned and aligned with the project timeline.

- As far as it concerns **WP3**, follow-up teleconferences were held every two weeks in order to monitor the progress of the different tasks and every task partner to be adequately involved. The minutes after each teleconference were distributed aiming to report the different comments made during them and if needed a set of actions were defined. The result was an improved design of the Architecture complied with all scope's needs. It has to be highlighted that some partners have specific data flows that were explained and analyzed during the teleconferences in order to align all the components of the Architecture. Terminology issues (on terms such as Reconnaissance, Surveillance etc.) impacting the Overall Architecture, the design of the Data Model and the operability of the system was discussed and finally agreed between the technical partners and end-users during the Technical Meeting held in Lisbon, in February 2020. Additionally, guidelines were distributed to have a similar look throughout the relevant documents.

- Referring to **WP4** and the overall System Development, it is mentioned that its progress has been slow due to the finalization of T3.1 and the adjustments to overall design in T3.2 to consider the connectivity between each C2. The mitigation process regarding this problem has been achieved by ensuring that the output of T3.1 is continuous thereby shaping the development activities on a daily basis.

- As for **WP6**, the preparation of the context of the operational trials has started on time. However, due to the tension in the Greek borders following the announcement of Turkey that opens its borders for refugees who want to cross into Greece and Europe, the field visit that was scheduled in the Greek – Bulgarian borders for the Trial#2 in early March 2020 has been postponed till the situation is getting better. Moreover, the resources of the Greek End-Users are prioritized to address this threat. 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.

- Regarding **WP7** and **WP8**, it has to be overall conclusively noted that there have not been defined critical issues regarding so far and its process is seamless.

3.5   Key Performance Indicators

Table 5 depicts the current values of the project's key performance indicators as monitored during this first 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. Campaign 3. Mission 4. Task 5. Mission Report 6. Media 7. Rule 8. Prediction 9. Target 10. Product

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

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)

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.

3.6 Project Meetings and Teleconferences

Table 6 presents the project meetings that have been organized at Consortium level during the first 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.

A brief description of the different types of meetings are mentioned below:

- **EB: Executive Board meetings** where plenary sessions are hold for monitoring the progress of the project per WP in order to assess the achievement of the related milestones. The participation of the WP Leaders is mandatory. Physical EB meetings are organized every six (6) months and remote ones every three (3) months. The EB meeting are coordinated by the Project Coordinator (MMAIP) supported by the Project Manager (KEMEA).
- **TM: Technical meetings** held among the technical partners to monitor and review the technical development and integration activities within the project. The TM are arranged every three (3) months and are organized by the Technical Manager (STWS).
- **UC: User Community meetings** held between the User Community, inviting also external users and experts if appropriate, to gather user needs and recommendations for the operational trials. Three UC meetings are foreseen to take place during the lifecycle of the project.
- **AB: Advisory Board meetings** held between the project partners and the project advisors who provide their advice on strategic directions of the project and an external view in order to secure its success. Three AB meetings will be organized during the project and are coordinated by the Project Coordinator (MMAIP) supported by the Project Manager (KEMEA).
- **IM: Innovation meetings** held among partners led by the Innovation Manager (GMV), aiming at coordinating activities connected to technology alignment to user needs, technology transfer, management of innovation, including IPR, detection of market opportunities and channels etc. Two IM are planned to take place.
- **RV: Review meetings** organized with the European Commission.

Table 6: Project Meetings organized until M6 (February 2020)

No	Meeting	WP(s) involved	Organizer	Type	Date	Location
1.	Kick-off Meeting	ALL	MMAIP/ KEMEA	EB1	17-18/09/2019	Athens, Greece
2.	1st End-Users and Technical Meeting	ALL	ITN/ENG	TM1, UC1	5-6/11/2019	Rome, Italy
3.	2nd Project Meeting (including plenary, technical, innovation and advisory meetings)	ALL	PTN	EB3, TM2, AB1, IM1	11-12/02/2020	Almada, Portugal

Apart from the physical 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 first period.

Table 7: Main teleconferences organized until M6 (February 2020)

No	Teleconference	WP(s) involved	Organizer	Date
1.	WP2 VTC#1	WP2	ITN	30/09/2019
2.	T7.1 VTC#1	WP7	STWS	20/10/2019

No	Teleconference	WP(s) involved	Organizer	Date
3.	WP2 VTC#2	WP2	ITN	31/10/2019
4.	T7.1 VTC#2	WP7	STWS	05/11/2019
5.	WP3 VTC#1	WP3	GMV	14/11/2019
6.	T7.1 VTC#3	WP7	ICCS	21/11/2019
7.	WP3 VTC#2	WP3	GMV	27/11/2019
8.	WP7 VTC#1	WP7	ICCS	04/12/2019
9.	EB2T	ALL	KEMEA	09/12/2019
10.	WP3 VTC#3	WP3	GMV	13/12/2019
11.	WP4 VTC#1	WP4	STWS	17/01/2020
12.	WP3 VTC#4	WP3	GMV	20/01/2020
13.	WP7 VTC#2	WP7	ICCS	03/02/2020
14.	WP3 VTC#5	WP3	GMV	05/02/2020
15.	WP6 VTC#1	WP6	KEMEA	21/02/2020
16.	WP3 VTC#6	WP3	GMV	24/02/2020
17.	WP3 e-CISE Data Model Workshop	WP3	STWS	28/02/2020

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.
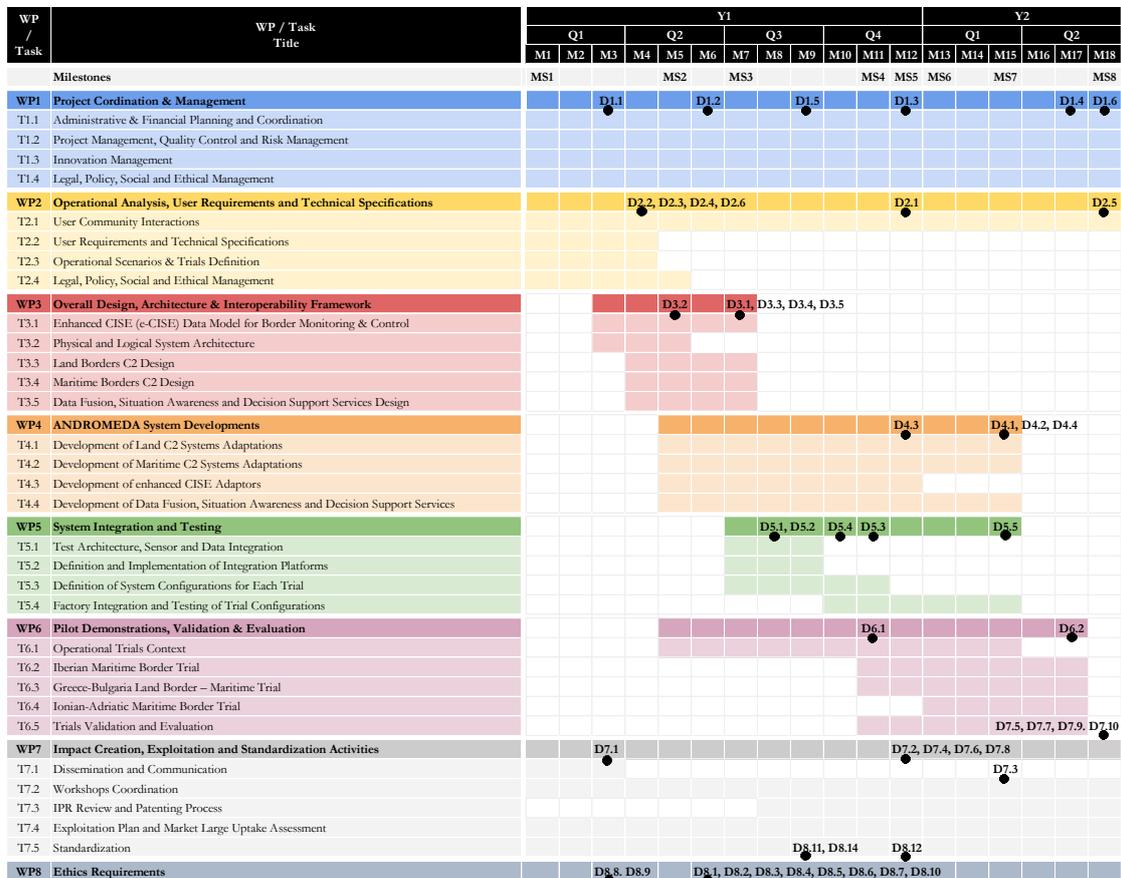

Figure 1: Gantt Chart

3.8   Advisory Board Feedback

ANDROMEDA project consists of an Advisory Board (AB), which is composed of selected European and International organisations not directly involved in the project. Its main role is to support and advise the partners with experience and know-how throughout the project duration, provide an external view and advise on strategic directions of the project in terms of detailed technical goals and impact, standardization, ethical and societal issues as well.

To achieve high quality results within the ANDROMEDA project, a strong cooperation with the AB members will actively be pursued and facilitated by frequent interaction. The current composition of the Advisory Board includes[1]:

- Mr. Bernard Garnier, Blue Solutions Consulting (FR)
- Mr. Pertti Woitsch, Geowise (FI)
- Dr. Panagiotis Kikiras, EDA R&T Coordinator, HoU Innovative Research (EL)
- Ms. Velina Tomova Dobreva, Chief Directorate Border Police, Sofia (BG)

The Advisory Board meetings are held at six monthly basis and ANDROMEDA partners present their R&D plans and achieved results to the project advisors who in their turn provide their feedback and advice based on presentations and associated material provided by the Consortium.

The first Advisory Board meeting took place during the 2nd Project Meeting that has been held in Almada, Portugal on 11-13 February 2020 in order to evaluate the progress of the project during its first six months. Ms. Velina Dobreva attended the meeting physically, while Mr. Bernard Garnier provided his feedback remotely after the meeting.

An Advisory Feedback Form has been created and used to collect feedback from the members of the Advisory Board in a comprehensive and coherent way. Below the written feedback received and the actions from the Consortium to accommodate the comments.

1. **Please rate the 2nd Project Meeting, held in Almada, Portugal 11-12 February 2020 using a rating between 1 to 5 (1-lowest, 5-highest).**

Mr. Bernard Garnier:

- Agenda

☐ 1   ☐ 2   ☐ 3   ☐ 4   ☒ 5

- Presentation

☐ 1   ☐ 2   ☐ 3   ☐ 4   ☒ 5

- Discussions

☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5

Ms. Velina Tomora Debrova:

- Agenda

☐ 1   ☐ 2   ☐ 3   ☐ 4   ☒ 5

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[1] Mr. Ioannis Karageorgopoulos, Vice Admiral (Ret.) Hellenic Coast Guard (EL) is not included in the Advisory Board of the ANDROMEDA project anymore since from November 2019 he acts as Director of KEMEA.

- Presentation

☐ 1   ☐ 2   ☐ 3   ☐ 4   ☒ 5

- Discussions

☐ 1   ☐ 2   ☐ 3   ☐ 4   ☒ 5

Consortium feedback:

No comments.

2. **What is your overall impression about ANDROMEDA project? Is moving into the right directions in terms of its overall objectives?**

Ms. Velina Tomora Debrova:

The Consortium is very well structured with a lot of experienced companies and 8 end-users which will give a good start and advantages for the overall results and outcomes of the project. The idea behind is good and it will give the decision makers a bigger "screen" and early awareness for further measures and reaction.

So far, the project is moving into the right direction as they still must focus more on the land borders use cases and different scenarios applicable for lands as well as keeping all the legal and ethical issues.

Mr. Bernard Garnier:

The whole project team seems adequately mobilized, even if most of the meeting material seems provided by the industrial contributors, with the underlying concern of a difficulty for the operational partners to secure enough workforce for developing specific project material (e.g. describing precisely the current modes of operations for the various demonstration scenarios).

As for every similar project, the first period must provide a "reality check" for the initial proposal; however the current review (as minuted) seems to have missed a chance to readjust the proposal's workplan in the light of the first exchanges between industrial and operational partners.

This brings to raise in particular the difference between a very open information exchange environment (CISE) and the notion of "Command and Control System" (C2) underlying the original workplan (in particular tasks 3.3, 3.4, 4.1, 4.2), as discussed hereafter.

The valorization of ANDROMEDA foreground will largely depend from the project full alignment with the current state of play of CISE (Transition project led by EMSA with the expert support of JRC to consolidate the outcome of the EU-CISE2020 Pre-Operational Validation). Deviations or regressions from the CISE framework would likely mislead ANDROMEDA toward a dead branch of the Evolution Tree! ANDROMEDA shall communicate through EMSA with the CISE Stakeholders Group and be open to a regular technical auditing by the JRC to sit clearly at the forefront of the CISE mainstream of development.

Consortium Comments:

The comment regarding the communication through EMSA with the CISE Stakeholders Group (CSG) is well considered. The consortium is already in contact with both EMSA and JRC in order to put this in place and, as ANDROMEDA, have presence in the 4th CSG Meeting upon the inclusion of projects' presentations in the agenda by the organizers. However, considering the transition phase of CISE is in progress, ANDROMEDA has milestones to achieve ahead and be prepared for a seamless and straightforward adoption of the e-CISE Data Model in case this is decided by EMSA and the participating Member States. The feedback received by JRC is that ANDROMEDA can suggest an extension of both CISE Data Model and Service Model aiming at either integrating ANDROMEDA's evolution to the current Model or having a branch of the current Model

specific for Land Border Surveillance. The CISE governance foresees a Technical Group (the Configuration Board) which can assess the request for evolution of the Models and the software (CISE Node). The extension proposed could also be assessed by this Group.

3. How important is the proposed Enhanced CISE (e-CISE) Data Model for Border Monitoring & Control in Maritime and Land Operations?

Ms. Velina Tomora Debrova:

Like every new technology and solution, I am quite sure that also ANDROMEDA model will be of an added value for the existing systems or a stone base for further developments. For this of course a very good description and innovative, helpful way of work is needed, and I am sure we will see it in the project at the end.

Mr. Bernard Garnier:

This is a key contribution of ANDROMEDA to the whole progress of CISE. The current approach appears as consistent with the CISE data model maturation.

Because the data model is an essential enabler of interoperability and operational cooperation, it seems of upmost importance to validate each step of the e-CISE work with the JRC, which is the center of expertise for the just starting CISE transition phase.

The current D3.1 document should be submitted and discussed with the JRC prior any further development work of this additional data model subset.

Consortium Comments:

The ANDROMEDA Consortium also believes that the contribution from JRC would be of great value and actions to include JRC in the Advisory Board are in progress to be formalized in order, among other activities, to review the deliverable D3.1 prior its submission to the EC.

4. Is there any information, not currently included in the e-CISE data model, which you think that would be useful to be added?

Ms. Velina Tomora Debrova:

Maybe I miss a bit more information about the land borders cases and their legal and operational framework connected with/through ANDROMEDA perspective and a bit more to be shown from the innovative part. What will be the innovation in the project, not only to copy or follow already existing systems and e-CISE data models.

Mr. Bernard Garnier:

The detailed storyboard of the demonstrations should include the precise identification of all data sets to be possibly exchanged to provide a verification of the completeness of the data model (CISE current data model + e-CISE complement). The pre-requisite is a very detailed concept of operations for each case/theatre/threat to be developed by the involved operational partners.

Consortium Comments:

We agree on both comments and this is exactly the way ANDROMEDA plans to move forward.

5. Do you think that ANDROMEDA Land and Maritime Borders C2s (Command and Control Systems) and their offered services cover End-Users needs and to what extend? Are there any suggestions regarding their offered functionalities/capabilities and easiness of operation?

Ms. Velina Tomora Debrova:

Currently is a bit early (although the time life of the project is not so long) to talk about covered needs but think this is the right way. And again, more can be shown from land borders C2. I cannot go in very details about the real technical capabilities but as an overall I could say the system must be interoperable with the existing ones and to be as easy to use as possible but at the same time to be with a high level of security.

Mr. Bernard Garnier:

This is for me a key issue to further clarify: the CISE concept is to create an "exchange environment" between existing C2s, not to create any new one! The C2 functionalities are provided by the so-called "Legacy Systems" hereafter LS (even if some are bran new…).

Because the test phases may occur ahead of the possible connection to LS, the CISE Node C type include the **"client server"** display functions including some data fusion functions in order to access directly from the CISE node the exchanged test data. In the long term, all LS will be interconnected to the various national nodes and only nodes type A and B should be maintained when CISE will become fully operational.

ANDROMEDA should remain in this logic, keeping the implementation of C2 functionalities in the national Legacy Systems interconnected through the standard CISE nodes, and using a node type C should no operational C2 access through the current CISE nodes be possibly provided by the operational partners involved in the 3 test cases. The same for using additional sensors and detectors, they have to be operated in the form of a LS connected to a standard CISE node.

The reuse of C2 functionalities provided by the industrial partners (SOCRATES, SMART etc.) shall remain similarly implemented as additional LS.

The current schemes of ANDROMEDA (e.g. slide 20 of the T3.2 powerpoint) is currently confusing as it creates an apparent extra layer of complexity and an alteration of the whole CISE architectural framework and deviate from the standard topology of CISE nodes.

The best way to present ANDROMEDA would be to describe it as a "specific instantiation" of CISE to network Border Control communities, creating a CISE subnetwork with augmented data model and service libraries managed by this sub-community – still embedded into the whole CISE networking capability for benefitting of the whole CISE Data access. The project should conform strictly to the architectural topology elaborated by the EU-CISE2020 project and the already implemented CISE national nodes, simply developing additional "adaptors". The industrial partners could be authorized by the EC to implement for the duration of the project a "mini-CISE" network from the current CISE building blocks – possibly connecting as well the CISE node of the JRC. Ideally, these instantiations would remain totally aligned with the developments undertaken by EMSA in the "CISE Transition project".

An important benefit of this view of ANDROMEDA as a border community instantiation within CISE is to avoid creating and managing more national nodes, which induce significant costs (24/7 availability, access rights and security management etc.)

Consortium Comments:

The Consortium side regarding the "client server" commented that for sure the purpose of CISE and EUCISE2020 project was to create an exchange environment. Legacy systems were connected using specific

adaptors, and as is said above, they also had the chance to use the light client. EMSA decided to remove advance services, so neither Data fusion service nor the light client are available.

Additionally, as for the way ANDROMEDA is being presented, Consortium agrees with the comment stating that approach of using the same CISE Networking capability would be efficient, but they cannot be made experimental changes in a preoperational Network, and that is why the CISE Nodes are not going to be accessible. Additionally, the Transition phase (IPRs transfer from EUCISE2020 to EMSA is pending) is overlapped with the development phase of the ANDROMEDA project, so it would add an enormous delay to the project, and this would work only in the case that EMSA would allow us have access to the nodes. This option was taken into account and there has been a choice between 3 architectural options, but at the end these other options were discarded, and were switched to the current architecture, which is a Hybrid CISE Network. The approach followed is similar because this ANDROMEDA HUB that can be observed in the Architecture is equivalent to the Network component used in CISE. So once Transition Phase is over and if EMSA decides to adopt this new e-CISE Model and update, the inclusion would be straightforward.

6. **Regarding the Data Fusion and Analytics services and Decision Support tools, are there any services not covered by ANDROMEDA and would be useful to be considered?**

Ms. Velina Tomora Debrova:

The ones that you may gathered form the land borders, I think still some tools from there can be taken and used/fused in the ANDROMEDA services.

Mr. Bernard Garnier:

I rally the need to clarify the specific contribution of ANDROMEDA as complementing but not duplicating the work already undertaken in this domain by MARISA and the global strategy of CISE "Advanced User Services".

Consortium Comments:

ANDROMEDA Consortium supports that there is lot of work to be done. The Data Fusion Tools referred above are only concerning the Maritime Domain. The components are being further enhanced regarding Land Border Control. This means improving the Data Fusion Level 1 component to consider Land Vehicles and Data Fusion Level 2 components that will include new types of analysis concerning abnormal behavior on land. On the other hand, MARISA doesn't incorporate any outcome from the DF&DST capabilities to any C2. The integration is operational, not at system level. ANDROMEDA not only integrates these C2 capabilities at system level, but also exploits all the potential of the enhancement of the CISE model. As far as it concerns the Advanced Services from CISE, they are no longer part of it currently, and EMSA will not keep them in this Transition Phase.

7. **What are your recommendations for the execution of the trials and the involvement of stakeholders?**

Ms. Velina Tomora Debrova:

The trials are the most important parts from the whole project duration, then you can see if expectations and results are matching or not. That's the reason why all the partners in the consortium must be strongly involved in this and must have a clear view and evaluation scheme for the tests. The preparation has to begin in early stage with all the testing plans and other required documentation according to all European and national legislation concerning maritime and land borders. There must be responsible partners with dedicated tasks and deadlines, if necessary. The testing sites must be defined as well as all the necessary equipment/vessels/staff involved.

Mr. Bernard Garnier:

The operational partners shall plan using their existing CISE national node and focus on connecting the relevant LS to implement and operate the trials, including the deployment and operation of the additional sensors wherever needed.

The industrial partners shall contribute to the development and implementation of the corresponding adaptors, the extra data models and the new advanced services. These services might be provided through a temporary node established in the relevant industrial partner's premises.

It is very essential to implement and maintain in the actual operational centers the trial set-up for the complete planned duration (Aug 2020-Feb. 2021) in order to encourage using the demonstration equipment and network on the daily operation of the End-Users and not just for the only purpose of scenario-based demonstrations.

Consortium Comments:

We agree with both comments.

8. **How ANDROMEDA could strategically enhance its impact in Border Security, CISE-EMSA, EUROSUR and exploit its results?**

Ms. Velina Tomora Debrova:

The final product itself will show all the searching results.

Mr. Bernard Garnier:

ANDROMEDA shall use the very same versions of the CISE building blocks than the CISE Transition Project led by EMSA and provide a regular visibility to the CISE High Level Stakeholder Group organized by EMSA of the e-CISE additional features ANDROMEDA will develop.

The articulation with EUROSUR must be clarified ASAP with FRONTEX and DG Home: it can be either achieved by the development of the CISE interface to EUROSUR (personally I am not aware of the current progress of this action) or by implementing at national level the ANDROMEDA "products" connectivity with the EUROSUR "products" (alerts and pre-border intelligence exchanges in particular) **within the national LS** connected by the corresponding national node on one hand and connected to EUROSUR in the other hand.

The seamless access to EUROSUR products is essential for the User Community of ANDROMEDA.

The interfacing with the various "Schengen Systems" (JORA, VIS, SIS…) should also be discussed if it is not already managed by the CISE Transition Project.

Consortium Comments:

The comments are valid. Regarding compatibility with CISE we have already clarified in a previous comment that according to our perspective on the added values of the project it to provide an evolution of the existing data model and expansion towards the Land Border domain. On top of this the plan is to demonstrate and validate the developments (that will comply 100% with the full extended Service and Data Models) in a long period of time something that previous projects did not accomplish due to time constraints and different scope. Regarding EUROSUR and its related systems, ANDROMEDA's vision is to provide the network of interconnecting them under a Common Information Sharing Environment for Border Control and not to surpass them.

9. **Please advise on how ANDROMEDA shall take care ethical and security issues during the project?**

Ms. Velina Tomora Debrova:

Follow the partner from the Consortium responsible for that as well as all Guidelines on the matter provided by REA, EC, Security Advisory Board Members.

Mr. Bernard Garnier:

The key issue for the Border Surveillance User Community is the handling of personal data in strict accordance with the legislation. It is a permanent constraint for operational people, so they are well trained to it, but it has to be reflected in the specifications of any information system development aiming at information fusion.

Consortium Comments:

The compliance with GDPR has been included in the overall design of ANDROMEDA through privacy-by-design techniques, based in the experience of the consortium in previous projects. To take into account this, it must be considered the following:

The relevant factor in ensuring privacy-by-design is the sources of data and how these data are incorporated in the system. In ANDROMEDA, the relevant sources come from the Data sensors, e.g.:

- AIS Data
- Radar Tracks
- Cameras (fixed/ground)
- UAV

It is evident that there is no possibility of disseminating personal information by radar tracks. And again, is evident that there is no personal data could be included in Satellite imagery

For the case of AIS data, that indirectly could serve to perform identification we have, by design, some restriction. The AIS data will not enter ANDROMEDA as it is. It must be translated into the e-CISE Data Model. In e-CISE data model the attributes relevant for performing data fusion are extracted from the sensor data. The AIS (and radar tracks) data are converted to the corresponding objects of the model through the adaptors. And it is clear, from D3.1, that personal data are not included amongst these data, neither directly nor indirectly.

On the other hand it can be seen that the information requirements (NOV-7) expressed in D3.2 does include only information relevant for data fusion processes and Command and Control, and not any information subject to data protection regulations. In addition, the design of the different HCI must include anonymization procedures in order to not seeing probable data subject to protection

Additionally, in this case these sensors are embodied in the operational environments of the Legacy Systems. In these environments, owned by pMS governmental entities, we can suppose that the data are used on the basis of need-to-know and need-to-share. Thus, the observance of the privacy of the data can be taken for granted, although not controlled by ANDROMEDA.

So, from a general point of view, the data coming from sensors or open sources through a service needs to be provided with an adaptor to allow the data entering ANDROMEDA. These Adaptors transform the data from any other model to the e-CISE Data Model or make it compliant with the CISE. Thus, the design of the Data Model assure the compliance with data protection regulations, given that this model must not directly depends on any implementation of a given service, even in the case of a possible hacking of the system. (The hacking of the raw data is not under the control of ANDROMEDA). In addition, the objects in Data Model does not (must not) contain any attribute where could be stored any information subject to data protection regulation, given that this information is not relevant for performing ANDROMEDA processes (see NOV-7 in D3.2).

3.9 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 first period of the project.

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 prevent a seamless	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 over several months each thus enabling

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
					integration with the network envisaged • daily operations (planned or unplanned) of existing civil and military systems could delay the trials envisaged				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

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

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 in Spain and the second by EXUS in Greece. To this end, the first workshop will be organized in September 2020 when the project meeting in Spain is planned and the second 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. The first set of the User Community is

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
									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.

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
	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.

3.10 Use of Resources

This section shows the effort of each partner, in terms of person months, both within the project as planned in the DoA and with a specific focus within this first period of the project. The analysis shows the effort spent against planned and highlights the differences.

3.10.1 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**

3.10.2 Spent effort

Table 11: Spent person-months per partner and per WP

Spent PMs	WP1	WP2	WP3	WP4	WP5	WP6	WP7	WP8	Total PMs
1 - MMAIP	7.00	9.00	3.00	0.00	0.00	0.00	1.00	0.00	**20.00**
2 - GMV	0.50	1.00	9.50	0.50	0.00	0.00	0.50	0.00	**12.00**
3 - SATWAYS	0.45	0.20	18.30	8.34	0.00	0.00	6.29	0.00	**33.58**
4 - ICCS	0.00	1.98	6.49	2.23	0.00	0.00	1.48	0.00	**12.18**
5 - EXUS	0.69	0.86	9.23	2.40	0.00	1.27	1.14	0.00	**15.59**
6 - INOVAWORKS C&C	0.80	2.70	17.00	3.00	0.00	0.00	0.00	0.00	**23.50**
7 - FONDAZIONE CMCC	0.31	1.00	6.09	2.21	0.00	0.00	1.41	0.00	**11.02**

Spent PMs	WP1	WP2	WP3	WP4	WP5	WP6	WP7	WP8	Total PMs
8 - LAUREA	1.40	8.40	0.00	0.00	0.00	0.00	0.10	0.00	**9.90**
9 - CODIN	0.38	3.00	8.00	2.00	0.00	0.10	0.45	0.00	**13.93**
10 - STEMO	0.50	2.00	1.00	2.00	0.00	0.00	0.50	0.00	**6.00**
11 - KEMEA	0.73	9.73	1.09	0.00	0.00	0.45	0.55	0.00	**12.55**
12 - ENGINEERING	0.52	4.17	8.63	1.51	0.00	0.45	1.16	0.00	**16.44**
13 - HELLENIC POLICE	0.33	3.00	0.33	0.00	0.00	3.30	0.33	0.00	**7.29**
14 - MARINA MILITARE	0.00	3.89	0.00	0.00	0.00	0.00	0.00	0.00	**3.89**
15 - Defesa	0.36	1.59	0.23	0.10	0.00	0.00	0.00	0.00	**2.28**
16 - MOPS-INP	0.80	1.60	0.60	0.00	0.00	0.00	0.40	0.00	**3.40**
17 - EAMA	1.07	3.98	0.82	0.00	0.00	0.00	0.32	0.00	**6.19**
18 - HMOD	1.33	12.00	7.20	0.00	0.00	2.00	0.89	0.00	**23.42**
19 - MSD	1.74	6.23	6.81	0.00	0.00	0.21	1.55	0.00	**16.54**
Total PMs	**18.91**	**76.33**	**104.32**	**24.29**	**0.00**	**7.78**	**18.07**	**0.00**	**249.70**

Figure 2 presents visually the effort spent per WP compared to the planned effort per WP for the whole duration of the action.

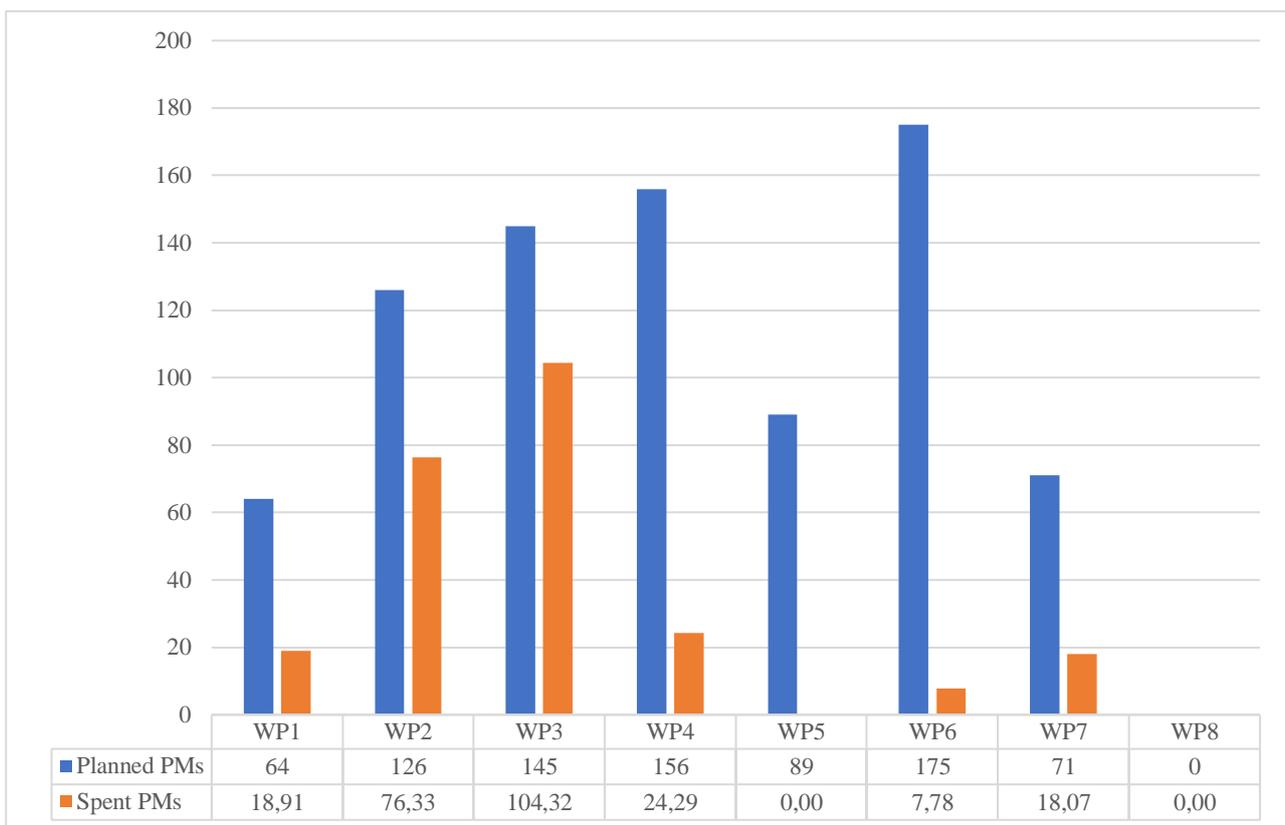|	WP1	WP2	WP3	WP4	WP5	WP6	WP7	WP8
■ Planned PMs	64	126	145	156	89	175	71	0
■ Spent PMs	18,91	76,33	104,32	24,29	0,00	7,78	18,07	0,00

Figure 2: Spent PMs vs Planned PMs per WP

4. Conclusions

The **first period of the project (M1-M6)** was focused on a series of activities that were related to the initial composition of the User Community, the definition of the user requirements, the extraction of the technical specifications and the definition of the operational scenarios & trials. In parallel, the Consortium has prepared the overall design of the ANDROMEDA system and is working in the enhancement of the CISE Data Model for border monitoring & control, the design of the Land and Maritime C2s and the design of the Data Fusion, Situation Awareness and Decision Support Services. The ANDROMEDA system developments and the definition of the context for the operational trials have started, while the plan for disseminating and communicating the project results has been set-up. Last, the ethical and legal framework under which the ANDROMEDA solutions and the project itself operates has been produced and a series of ethics requirements have been accomplished.

During the **second period of the project (M6-M12)**, the designs of the various ANDROMEDA components will be finalized, the systems developments will intensively continue, and the system integration activities will start. By the end of the second period, the first release of the ANDROMEDA system will be available by the technical partners, and the first two trials will be set-up supported by the trial leaders and the participating end-users. The project will continue to disseminate and communicate the project in various fora including the organization of the 1st Workshop. The legal and ethics requirements will continue to be monitored and fulfilled.

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 on the Consortium replies to the Advisory Board feedback. 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
	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		
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