



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

*Grant Agreement Number:833881*

## **D.1.6 Legal, Societal, Ethical Final Report**

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## Executive Summary

The purpose of this deliverable D1.6 Legal, Societal, Ethical Final Report is to summarise the ethical work done during the project. It presents the various ethical challenges that we have tackled, starting from research integrity to the legal and other commitments the partners of the project had, i.e. obligations to follow the H2020 ethical guidelines and others too, for example, on respecting people's privacy (GDPR), on possible misuse, dual use, and so on. Together with the challenges, also, the ethical work, i.e. the tangible work that has been done during the project is presented in this deliverable. Hence, the different guiding documents, for example, on human participation are presented together with descriptions how they were used in ANDROMEDA. Also the ethics checks are presented, not forgetting some specific issues that somewhat surprised everyone and that had ethical aspects too, i.e. COVID-19.

All in all, from ethical point-of-view ANDROMEDA was not specifically demanding, since, for example, none of the activities included any intrusive research, participation of vulnerable groups, or such. Nevertheless, ethics was taken seriously and neither research integrity, nor fulfilling the commitments did not pose an issue during the project. The challenges of ANDROMEDA solutions are in the future, i.e. in the exploitation of them. The ultimate threshold is related to fundamental principles on ethical use of surveillance technology. For this, ANDROMEDA has well prepared the basis, for example, with the *ANDROMEDA Code of Conduct* that disclose ethical principles on the use of ANDROMEDA and with the ethical requirements presented, for example, in the final chapter of this deliverable.

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# 1. Introduction

## 1.1 Purpose of the document

The present document has been generated in the framework of the Program H2020 Project “An Enhanced Common Information Sharing Environment for Border Command, Control and Coordination Systems” (ANDROMEDA hereinafter), on call SU-BES03-2018-2019-2020 “Demonstration of applied solutions to enhance border and external security”, according to the terms of the Proposal on ANDROMEDA, agreed and adapted in the Grant Agreement (Grant Agreement Number: 833881).

The purpose of D1.6 Legal, Societal, Ethical Final Report is to describe, analyse and assess the ethical and societal aspects of the ANDROMEDA project as part of the project management WP1 and the task T1.4 Legal, Policy, Social and Ethical Management. It illustrates how ethical challenges were tackled during the ANDROMEDA project, for example, how research integrity was secured.

## 1.2 Reference documents

[1] The ANDROMEDA Grant Agreement

[2] European Commission 2019. *How to complete your ethics self-assessment*. Version 6.1. Available online at: [https://ec.europa.eu/research/participants/data/ref/h2020/grants\\_manual/hi/ethics/h2020\\_hi\\_ethics-self-assess\\_en.pdf](https://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/ethics/h2020_hi_ethics-self-assess_en.pdf) [Accessed 28.5.2020].

## 1.3 Definitions

List of Definitions	
<b>Maritime surveillance</b>	It means the set of activities aimed to understand, prevent wherever applicable and manage in a comprehensive way all the events and actions relative to the maritime domain which could impact the areas of maritime safety and security, law enforcement, defence, border control, protection of the maritime environment, fisheries control, trade and economic interest of the EU. Since the aim of ANDROMEDA is to improve maritime security communities’ information exchange, situational awareness, decision making and reaction capabilities with a data fusion toolkit based on various heterogeneous and homogeneous data and information, the focus is correspondingly on that information sharing, collaboration and decision making aided by ANDROMEDA data fusion services. Ethical, legal and societal considerations of the ANDROMEDA solution therefore encompass the ANDROMEDA technology, how the technology will be used in various maritime surveillance activities, as well as the ANDROMEDA governance/business/procurement models either as part of the European Maritime Surveillance ecosystem or independently.
<b>Personal data</b>	It means any information relating to an identified or identifiable natural person (‘data subject’). Information such as name, identification numbers, social security numbers, addresses and such are easy to recognize as personal data (direct identifiers). Important is also the information that relates indirectly to a single person. This kind of information can be location data, IP addresses or online user credentials. Also, the information that describes physical, genetic, psychological, cultural or social attributes that can be linked to single individual is considered personal data. Information can also fall under the category of personal data if it can be easily linked to a single identifiable person or through easily accessible registers.
<b>Code as Law</b>	It is the deliberate employment of technology to regulate human behaviour. Used as a term to refer to the idea that technology is an instrument that is or can be used to achieve regulation. Synonyms: Code as Code; Techno-Regulation.

List of Definitions	
<b>Privacy by Design (PbD)</b>	It is the principle or concept according to which privacy should be promoted as a default setting of every new ICT system and should be built into systems from the design stage. Although often used roughly as a synonym of Privacy Enhancing Technologies (PET), ‘Privacy by Design’ can better be regarded as the <i>idea behind</i> PETs
<b>BIG DATA</b>	Big Data changes the way data analysis is performed and thought. It includes processes of analysis, capture, research, sharing, storage, visualization and safety of information. Associated with the OSINT, Big Data is being able to map standards of behaviour and tendencies.

## 1.4 Structure of the document

In the first chapter an introduction to the subject will be provided.

In the following chapters, first an overview of the so-called governance model will be presented together with the tasks related to ethics.

Afterwards, the governance model for ethical and societal issues will be elaborated on three aspects: a) research integrity, b) ethical requirements conversion into ANDROMEDA features, and c) ethics in trials.

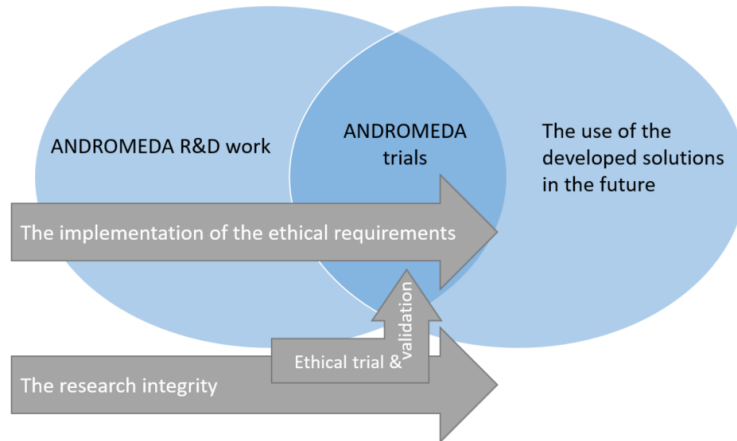
## 1.5 List of Acronyms

List of Acronyms	
<b>CISE</b>	Common Information Sharing Environment
<b>DPD</b>	Data Protection Directive
<b>DPIA</b>	Data Protection Impact Assessment
<b>DPO</b>	Data Protection Officer
<b>EC</b>	European Commission
<b>EM</b>	Ethics Manager
<b>EU</b>	European Union
<b>GA</b>	Grant Agreement
<b>GDPR</b>	General Data Protection Regulation
<b>IPR</b>	Intellectual Property Right
<b>PbB</b>	Privacy by Design
<b>PIA</b>	Privacy Impact Assessment
<b>WBS</b>	Work Breakdown Structure
<b>WP</b>	Work Package
<b>WPL</b>	Work Package Leader



## 2. The Overview of Ethics and Ethics Work in ANDROMEDA

The overview of the ethics work was presented in detail in the ANDROMEDA deliverable *D1.5 Legal, Societal, Ethical Initial Report*, therefore no extended reference will be made herein. In short, *Figure 1: Dimensions of Ethics* (similar to the one presented in D1.5) illustrates the different dimensions of ethics.



*Figure 1: Dimensions of Ethics*

In this deliverable, the guidance and steering on legal, ethical and societal issues given during the ANDROMEDA project will be discussed and presented, concentrating mostly on the research integrity, i.e. how the project followed ethical standards and guidelines. The ethics of the trials as well as the ethics validation will be covered in the deliverable *D6.2 Operational Trials Results Report and Lessons Learnt of the WP6 Pilot Demonstration, Validation & Evaluation*. In the forthcoming D6.2, the Privacy Impact Assessment will also be presented.

### 3. Research Integrity and Commitments to the European Commission

By signing the Grant Agreement (Article 34), the partners committed to comply with ethical principles such as the research integrity, as well as with the law – international, EU and national.

The main principles of research integrity are:

- reliability in ensuring the quality of research reflected in the design, the methodology, the analysis and the use of resources;
- honesty in developing, undertaking, reviewing, reporting and communicating research in a transparent, fair and unbiased way;
- respect for colleagues, research participants, society, ecosystems, cultural heritage and the environment;
- accountability for the research from idea to publication, for its management and organisation, for training, supervision and mentoring, and for its wider impacts

These were partly ascertained with common processes of reviewing the deliverables and with other measures of quality control.

Below in the seven subchapters are thus explained the most important ethical obligations, and it is explained how ANDROMEDA took these into consideration and into action.

#### 3.1 Human participation

ANDROMEDA research involved indeed interaction with human participants. For example, the trials were validated with the assistance of end-users community consisting of individuals. In addition, surveys and questionnaires were circulated among human participants and workshops have been organised with participants from or out of the consortium. These participants are also considered as Data Subjects in accordance with art.4 (1) GDPR and the appropriate procedures have been followed as explained in the relevant section 3.2 below.

Thus, detailed information about the informed consent procedures was created and submitted as a deliverable to guide the consortium. The deliverable *D8.1 H - Requirement No. 1* included templates of the informed consent forms and information sheets. D8.1 highlighted the voluntary character of human participation in the project's research activities and the importance of providing thorough information to the participants about the research through a detailed Information Sheet, provided guidance on how to acquire informed consent, and included templates of consent forms that were modified into specific and tailored consent forms depending on the nature and specific characteristics of each research activity (for example, each of the trials, the different questionnaires, the fill-in forms of each validation etc.) The fundamental principles to be applied, is firstly to provide adequate information on human participation, and secondly to obtain a valid, free consent on research participation.

Further, the privacy of the respondents were respected inasmuch as it was possible: for example, if the respondents wanted to remain anonymous, they could do so. In case they did want to disclose their identity during the research activity, the processing took place in accordance with the GDPR requirements, however anonymous information was included in the deliverables and other research material.

COVID-19 had some implications to the human participation too. First and most pivotal ethical question was to ensure the health and safety of all (research staff and other participants). Thus, many originally face-to-face

meetings were organised online. In these cases, the informed consent was asked via online forms, and in case of e.g. recording the event, it was asked before the person made the decision to join the meeting.

As ANDROMEDA research activities, involve human participation, the Consortium was called to collect copies of opinions and/or approvals by ethics committees and/or competent authorities for the research with humans from the partners. This was submitted as a deliverable *D8.3 H - Requirement No. 3*. However, as it is already pointed out in D8.3, none of the ANDROMEDA partners are obliged by law to establish an ethics committee and they are not subject to a competent authority, thus, they have confirmed via Ethical Statements that the research activities they carry out will fully comply with ethical principles, international, European and national legislation, as well as with Codes of Conduct for research. Following the General Project Review and a respective request of the reviewers, it has been also confirmed by the partners in the countries of the ANDROMEDA trials that they are not obligated under national law to be granted authorisation by the national supervisory authority prior to the research activities. Updated version of D8.3 has been submitted including this information.

Also important to human participation was the policy on incidental findings. The policy was presented (and submitted to the Commission) in the context of D8.2 H - Requirement No. 2. The most likely event/occasion for an incidental finding were identified to be the pilot demonstrations (WP6), and the anticipated incidental findings would be either information that reveals criminal or illegal activity and/or information that could identify a natural person (personal data). No incidental findings have occurred during the project, for the time being.

### 3.2 Protection of personal data

This section deals with the protection of personal data, as during the ANDROMEDA project, a number of workshops (most of them online due to COVID-19) were held to facilitate interactions between members of the consortium and external participants. Following the data minimisation principle, the consortium did not collect any further personal data from the external participants, apart from their contact details and email addresses. The former action (register names and email addresses) was performed as part of the project's dissemination actions (WP7). When photos were taken, e.g. in the consortium meetings, or video was recorded, the external participants as well as members of the consortium were asked for their consent after having been adequately informed of the processing of their personal data, via the respective information sheets..

Deliverable *D8.5 POPD - Requirement No. 5* was created to illustrate the procedures to be followed by the ANDROMEDA Consortium regarding processing of personal data of the research participants/data subjects. The D8.5 also provided the respective templates of Information sheet and Consent form.

The voluntary character of the research in conjunction with the consent of the participants is the cornerstone for research ethics. The participants have the right to withdraw their consent at any time without consequences. They are also able to exercise their data protection related rights by contacting the DPO and/or the data controller. To this end, each partner of ANDROMEDA that was involved in collecting and/or processing of personal data nominated a Data Protection Officer (DPO), and made available the DPO's contact details to all data subjects involved in the research. *For those partners that are not required to appoint a DPO under the GDPR a detailed data protection policy for the project was submitted as a deliverable, i.e. D8.8 POPD - Requirement No. 8.*

To ensure protection of personal data, the consortium members needed to disclose their technical and organisational measures that were implemented to safeguard the rights and freedoms of the data subjects/research participants. This information was submitted as a deliverable *D8.9 POPD - Requirement No. 9.*

Critical was to understand that the participants and the researchers involved are not only experts of various fields, but also human beings whose rights need to be respected. The personal data that was protected during ANDROMEDA consisted of material generated on the course of work e.g. in the form of photos and various lists. Whenever needed or asked by the partners, consultation and guidance has been provided by the Ethics Manager on the data processing activities. The task was not particularly harsh, since the legislation that obliges personnel in ANDROMEDA to secure personal data is the same that everyone is already following in their organisations. Thus, processing, storing, sharing, archiving of personal data and claiming consent as the lawful basis following the necessary informed consent procedures etc. were done as expected.

Yet again, a thing that ANDROMEDA needed to consider was the further processing of previously collected personal data. This ethical and legal requirement was fulfilled as all partners confirmed that no further processing of previously collected personal data will take place. Thus, there was no need to indicate a lawful basis nor was there a need for specific appropriate technical and organisational measures to safeguard the rights of the data subjects from this point of view. This outcome was presented in the deliverable *D8.7 POPD - Requirement No. 7*.

Much the same was the case of the anonymisation/pseudonymisation techniques, since only three partners of the Consortium utilised anonymisation and/or pseudonymisation techniques during the performance of the tasks of WP4 ANDROMEDA System Developments. In the other ANDROMEDA tasks anonymisation and pseudonymisation were inapplicable, since the datasets do not require the use of such techniques or the research activities do not need any datasets. The following techniques were implemented: attribute suppression, record suppression, information masking, use of simulated fictional data, anonymization techniques for photos/videos (pixel-level anonymisation techniques). With respect to personal information rendered anonymous, GDPR is not applicable. However, regular testing is highly important in order for the effectiveness of the anonymisation method to be verified. This was part of the validation process. With respect to pseudonymised data, the ANDROMEDA Consortium is aware that pseudonymous data fall under the scope of the GDPR and commits to the protection of the rights of the data subjects in compliance with the GDPR provisions. All the above were documented in the deliverable *D8.6 POPD - Requirement No. 6*.

### 3.3 Third countries

Since there are two partners – Israel National Police and the Maritime Safety Department of Montenegro (practitioner for Adriatic trial) – from non-EU countries involved in the ANDROMEDA project, the question of non-EU countries or, alternatively, third countries was raised. The initial assumptions were that it was not likely that during trials and workshops technologies will be imported from non-EU countries to the EU. However, it was possible that personal data (only contact information of participants) will be imported from non-EU countries to the EU as well as export of personal data (only contact information) from the EU to non-EU countries.

Further, authorities from the above-mentioned countries took part in end user activities and workshops, and the trials included technological solution installation in premises (Montenegro) with non-classified data exchanges.

Therefore, such transfers needed to be in accordance with Chapter V of the General Data Protection Regulation 2016/679, and hence that information was submitted as deliverable *D8.10 POPD - Requirement No. 10*. Further, in the above mentioned deliverable, it was confirmed that the personal data transferred from a non-EU country to the EU (or another third state), complied with the laws of the country in which the data was collected. In short: It has been confirmed by KEMEA as the partner responsible for the management of the ANDROMEDA project and as the leader of T2.2 on User Requirements that the transfer of data of the researchers for coordination and management purposes or as part of T2.2 respectively will be made in compliance with Chapter V of the General Data Protection Regulation. With respect to the Israeli partner, an

Adequacy Decision has been issued by the European Commission, therefore, any transfer will be made in accordance with Article 45 GDPR. With respect to the partner from Montenegro, any transfer of personal data of the research participants will be made in accordance with Article 49 par.1 (a), based on the consent given by the research participants/data subjects prior to the start of the research activities, and any transfer of personal data of the researchers for project management and coordination purposes will be made in accordance with Article 49 par.1 (b)GDPR. On the other hand, during the lifetime of the ANDROMEDA Project personal data might be transferred from third countries to Europe, in particular from the partners located in Israel (MOPS-INP) and Montenegro (MSD). Confirmations have been provided by these partners that the transfers will be made in accordance with their national laws on data protection.

### **3.4 Environmental protection and safety**

ANDROMEDA took environmental protection and appropriate health and safety procedures seriously, especially with the emerging COVID-19 pandemic. Thus, not only the relevant local and national guidelines and legislation were clarified to the consortium but a specific chapter on mitigation of the risks related to the COVID-19 pandemic was added. The details were provided in the deliverable *D8.11 EPQ - Requirement No. 11* to ensure that the necessary health and safety procedures were enforced.

Much to the fact that most research activities in ANDROMEDA were carried out remotely, the risks related to the ANDROMEDA tools and technologies did not harm in any way the staff involved. Also, the low number of participants (the minimum number needed for the operation of the tools and technologies) and the expertise of the qualified operators ensured the safety of the activities. To the knowledge of the author of this deliverable, there were no cases on COVID-19 deriving from ANDROMEDA activities or any other safety incidents.

### **3.5 Dual use**

It was acknowledged that some of the technologies and equipment developed in the ANDROMEDA project could have dual-use application in the sense of Regulation 428/2009. Thus, a deliverable was made to clarify the status: *D8.12 DU - Requirement No. 12*. The outcome was that ANDROMEDA does not involve dual-use items, goods and/or services in the sense of Regulation 428/2009. Nevertheless, the process for acquiring the export permission was presented too, since when writing the D8.12 there was still some time and work left in the project, and things might have changed, especially when the feedback of the pilots is put to action. Therefore, as required, export licenses and relevant authorisations compliant with Reg. 428/2009 would have needed to be obtained prior to using/transferring the technology.

### **3.6 Misuse**

The question of misuse was also addressed in ANDROMEDA together with a risk assessment and details on measures to prevent misuse of research findings. This was presented in *D8.13 M - Requirement No. 13*. The outcome was that the ANDROMEDA research as such does not pose a significant risk in what comes to misuse, since the research did not contribute to the research that could result in the development of chemical, biological, radiological or nuclear (CBRN) weapons and the means for their delivery, nor did it do research on minority or vulnerable group, or conducted research involving the development of social, behavioural or genetic profiling technologies that could be misapplied for stigmatisation, discrimination, harassment or intimidation. The only critical areas were a potential use of the research results in crime and terrorism, and with research on surveillance technology with relation to human rights and civil liberties. So far, these risks have not been materialised, perhaps thanks to the implementation of mitigation methods: the critical deliverables are classified as EU RESTRICTED and the data, information and knowledge have been handled according to relevant rules and regulations.

## **3.7 Ethics Checks**

### **3.7.1 Internal**

Given the complexity of ethics issues, it was clear from the beginning of the project that an ethics check procedure needs to be established. This includes ethical self-assessments of each WP, as well ethical compliance checks of each deliverable. The process of these internal checks was well presented in the *D1.5 Legal, Societal and Ethical Initial Report* (especially Chapter 3). This process is ongoing, since the project has one month to go when finalising this deliverable. Nevertheless, the process has been followed by the partners and so far no severe ethical worryment has been raised; minor have, such as uneasiness on potential military and/or dual use of ANDROMEDA solutions. However, the concern was not genuine since the dual use was not such in sense of Regulation 428/2009.

### **3.7.2 External**

Beside internal ethics checks done by the consortium, the ethics experts appointed from REA performed an ethics check of the project in September 2020. According to the experts, ANDROMEDA fulfilled all the requirements but one: they expressed a recommendation to update and ameliorate, and resubmit D8.6 regarding the anonymization/pseudonymisation functionalities of the C2s and subsystems. This was naturally done, and the D8.6 was resubmitted.

The ethics experts also pointed out also the fact that despite the absence of an ethical committee, this does not exempt the partners to seek authorization for the trials from the competent national data protection authority/privacy commission. Thus, the consortium wrote a formal letter to the ethics check evaluators explaining how their comments have been addressed. D8.3 has been re-submitted including the requested information.

## 4. The Trials

As stated in the D1.5 The ANDROMEDA trials (three altogether) are very important from an ethics point-of-view. First, the research integrity must be secured, second the ethical features should be validated, and third, the solution itself has to fulfil the required ethical requirements.

The research integrity has been dealt in the seven subchapters above (3.1-3.7). What comes to the analysis and validation of ethical features and ensuring ethical use of ANDROMEDA solution during the trials, the process is ongoing at the time of writing this deliverable. These issues, e.g. the privacy impact assessment will be covered in the *D6.2 Operational Trials Results Report and Lessons Learnt* to be submitted at the last month of the project.

## 5. Other issues

The questions raised in the *D1.5 Legal, Societal and Ethical Initial Report* on converting ethical requirements into ethical features of the ANDROMEDA solution, and how to implement ethical requirements into features are well presented in the *D2.4: Legal, Ethical and Societal Aspects*, as well explained indeed in the D1.5., However, it needs to be mentioned that a template for ethical compliance check for deliverables (the EU-RESTRICTED deliverables as well as the WP8 deliverables on ethics are excluded<sup>1</sup>) was done and shared with the consortium. The task leaders and/or the principal authors of the deliverables were expected to conduct an ethical compliance check on their deliverables using this template, and the Ethical Manager was giving assistance if needed.

The raised issues were scarce; however, some issues were raised. Since ANDROMEDA solutions have the potential of changing daily work routines, the end-user involvement was a necessity from ethical point-of-view (and obviously for other reasons too). This strong end-user involvement became very clear, for example, the Integration Platform requires connection to data and components provided by the end-users. Also, principles such as lawfulness, fairness and transparency, purpose limitation, data minimisation, accuracy, storage limitation, integrity and confidentiality as well as data controller's accountability were, according to the evaluations, embedded when designing the solutions.

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<sup>1</sup>See, the Andromeda Grant Agreement, part B, p. 156.



## 6. Conclusions

The initial report, D1.5, with the WP8 deliverables, and with the D2.4 presented the tangible part of ethics work that materialised also as features in the ANDROMEDA solution and related research findings.

This particular deliverable D1.6 summarised the work done concentrating especially on the research integrity and fulfilling the commitments to the Commission. As conclusion, the research integrity, nor fulfilling the commitments did not pose an issue during the project. Others, remains to be seen, since they are not visible and/or tangible perhaps until a fully functional commercial version on the market.

Here below is presented the original list of Ethical Requirements from the D1.5 (Annex A) added with a column including comments and remarks on how ANDROMEDA has addressed them. Some of the comments and remarks simply state that the activity is post project. This means that ANDROMEDA has not necessary done anything tangible on the requirement. Also, there are many markings that the developers have been made aware of the requirement, but since the information on any tangible action is behind restricted material, these cannot be disclosed. Nevertheless, many other have been addressed; all stressing the fact that ethics is multifarious and many-sided topic – a topic in which the question is, at the end of the day, often more important than the answer.

<b>GENERAL REQUIREMENTS FOR ANDROMEDA DEVELOPMENT AND ETHICAL AWARENESS<sup>2</sup></b>	<b>TYPE</b>	<b>COMMENTS AND REMARKS</b>
EG1: Take ethics and societal challenges seriously; concerning both technology, user processes, and business/governance model, including information management.	<i>Essential Awareness</i>	Ethics has been promoted throuout the project in several presentations etc.
EG2: Be aware of the requirements defined in the data protection reform – the General Data Protection Regulation (GDPR) and the Law Enforcement Directive (LED). This includes both general issues, new rights of persons, responsibilities for controllers and processors, as well as transfers of data to third countries.	<i>Essential Awareness</i>	Addressed in WP8 deliverables
EG3: The GDPR requires effective and clear governance model. This should be created for both the development phase and the final ANDROMEDA solution, and be integrated into the ANDROMEDA business/adoption model(s). A Data Protection Officer shall be nominated.	<i>Essential Activity and Governance / Business Model Feature</i>	Addressed in WP8 deliverables
EG4: Define the flows of personal in the ANDROMEDA solution both for the pilot versions and for the final version. Logical routes are the key – the physical infrastructure is important only from the information security point of view. The view should contain a description of how the data is processed along the way, who uses it, and why. After that a risk analysis and a DPIA are to be conducted to determine	<i>Essential Activity and Adoption / governance Business Model Feature</i>	To be included in the D6.2

<sup>2</sup> The requirements are based on the work done in MARISA-project, however, they are modified to serve better the ANDROMEDA context. In addition, this table includes some requirements that were not present in MARISA

which level of liability is acceptable for data protection infringements (e.g. for processing sensitive data)		
EG5: Consider that the GDPR applies already during the pilot. Communicate openly about data protection issues, challenges and needs already during the pilot. One alternative is to use fake data. If using real-life data is necessary, the reasons for this must be elaborated. Any personal data should be anonymised or irreversibly pseudonymised as soon as it is recognised as personal data. If this cannot be done (e.g. with photographs and indirectly identifying personal characteristics), the data should be stored only for as long as strictly necessary for testing the prototype. Avoid the processing such photos and videos due to the sensitive nature of such data.	<i>Essential Awareness and Activity</i>	Addressed in WP8 deliverables
EG6: Create a data/ information management plan where the following are discussed: 1) Social media strategies, policies and accounts 2) Relationship with the existing public security services 3) Internal collaboration and information sharing 4) The anchoring of data processing in legislation. This concerns both pilot versions and the final version of ANDROMEDA and its future use	<i>Essential Activity and Essential Adoption / Governance Model Feature</i>	Addressed in WP8 deliverables and in WP7 deliverables
EG7: Follow up on the legal framework for information sharing, management and data protection, as well as local restrictions related to the use of drones already during the ANDROMEDA project and after it.	<i>Essential Activity and Governance Model Feature</i>	Addressed in WP8 deliverables and in WP2
EG8: Adopt common data management processes, taxonomies, and ontologies to enable efficient sharing of knowledge. This includes the implementation of European best practices for data management across all law enforcement and security services. >(availability, confidentiality and integrity)	<i>Essential Activity</i>	Point taken by developers and end-users
EG9: Be aware of national differences in copyright exemptions and the application of implicit licenses. Activities can best take place in countries with a copyright and database-right regime that is favourable for the project. Conduct a risk analysis to determine the acceptable level of liability for IPR infringements considering uncertainties about e.g. implicit licenses and the applicable law with respect to statutory exceptions. Integrate the perceived data protection risks into project risk management procedures. (for the pilots and afterwards)	<i>Important Activity and Essential in Exploitation.</i>	WP7 is covering this in the exploitation deliverable.
EG10: Harmonization of the legislation in data sharing and collaboration is needed. Lobby/influence also political organizations on data protection issues and other legislation that is essential for ANDROMEDA as well as on data availability across countries.	<i>Important Activity</i>	Addressed in the user community work, however, little tangible work done in e.g. policy level.

(>As part of the User Community work in WP2 there is already an intention to promote EU-level collaboration in EU-legislation for legal frameworks of data exchange.)		
EG11: Specify different actors' responsibilities and the moral division of labour to avoid free riding. This can include e.g. a bigger role for Frontex in situations where responsibilities and/or the scales of input are not in balance. (>duty to render assistance issues)	<i>DesirableActivity</i>	Stressed in the ethics deliverables, however, little done in policy level.
EG12: Include SAR people in the user community: their needs are as important for ANDROMEDA as everyone else's.	<i>Essential Activity</i>	They are included in the user community
EG13: Recognize third countries in the sea as both end-users of ANDROMEDA, and as partners in solving shared problems with the help of new technology.	<i>Important Activity and Essential Exploitation</i>	Somewhat given and/or taken into account in the design (ability to share information is core of CISE).
EG14: Make a clear division between the roles and responsibilities of the platform and software developers, content providers, end users and decision makers, as well as even ordinary people whose data may be used in the processes. (during the project and after)	<i>Important Activity and essential Business Model Feature</i>	Post project activity
EG15: Prioritise the development of software to avoid and solve data-related challenges (including data protection issues). Be mindful of the difference between software and hardware.	<i>Important Activity</i>	This requirement was introduced to the developers.
EG16: Practice transparency about ANDROMEDA on its publicly accessible website, including information about the need, purpose, proportionality, and subsidiarity of the project, and about the actions to apply privacy/security by design.	<i>EssentialActivity</i>	WP7 has promoted this through webpage and other media.
EG17: Utilizing open standards and open source software as far as suitable is encouraged, as obtaining patents or patent licences may hinder an efficient development. (National license that can be deployed locally by the national authorities? The use of permissive SW licenses?)	<i>Important Feature</i>	Point taken by the developers/technical partners
EG18: Update current societal/surveillance impact assessment (SIA) to secure that ANDROMEDA is compliant with ethics and legislation.	<i>Essential Activity and Governance/Business model Feature</i>	Addressed in D6.2
EG19: Develop end-user specific Codes of Conducts where the ethical principles for the use of ANDROMEDA are defined (includes the pilots).	<i>Essential Activity and</i>	A general CoC in drafted.

	<i>Business/Adoption Model Feature</i>	
EG20: Perform an explicit legal Duty of Care before utilizing any Big Data or Artificial Intelligence (AI) (pilot version + future versions of ANDROMEDA). This requirement is overlapping with requirements found in the GDPR concerning personal data but concerns also other data. (Ensure that the data is up to date & legitimately obtained, that the algorithms meet the scientific criteria & are transparent). This can be partly linked to the duties of the Data Protection Officer. Provide also an oversight for transparency and juridical review concerning big data.	<b><i>Desirable Activity and Essential Business Model Feature</i></b>	Big Data was not used. Other points with GDPR compliance.
EG21: The opportunity to practice and test large scale system, in a multi-agency and international setting, is a unique chance to assess and understand how the technology affects and drives the operators and decision-makers' behaviours.	<b><i>Essential Activity during the trials and after</i></b>	Core of ANDROMEDA
<b>SPECIFIC REQUIREMENTS FOR ANDROMEDA TECHNOLOGY DEVELOPMENT &amp; ITS USER MANUALS</b>		
ET1: Apply Privacy/Security by Design (PbD) by restricting the end users' access to personal data as much as possible without compromising the intended purpose of enhancing public security. Put extra effort in the development and deployment of privacy enhancing technologies (>data minimization, storage limitation, anonymization/ pseudonymisation, access control services, information security). When applicable, deploy even additional technical solutions to cope with the data protection legislation and other requirements. e.g. the right of the data subjects in case such information will be stored on ANDROMEDA platform.	<b><i>Essential Technical feature</i></b>	This requirement was followed by the developers.
ET2: Provide transparency and proper functionalities to help estimate the quality, reliability and validity of various data to be used. Code this information for the end-user to help her in the decision making.	<b><i>Essential Technical feature</i></b>	This requirement was introduced to the developers.
ET3: Transparency is mandatory for both the ANDROMEDA system and the processing of data, as it serves the interests of accountability. > GDPR & LED	<b><i>Essential Technical Feature</i></b>	This requirement was introduced to the developers.
ET4: Automated decision making on the actions to be performed is not allowed. The existing ban on automated decision-making should be strictly enforced, and government agencies should be more alert with semi-automated also.	<b><i>Essential Technical Feature</i></b>	This requirement was introduced to the developers.

<p>ET5: Different frameworks for ethics (including data protection) are to be deployed depending on the activities at hand (e.g. terrorism detection and border control, fisheries control, oil spills, SAR etc.).</p>	<p><i>Essential Technical Feature</i></p>	<p>This requirement was introduced to the developers.</p>
<p>ET6: Modularity of the ANDROMEDA solution, as well as the possibility to customization and parallelization, are essential because of the differing operational needs in the user communities and because of the variations in legislation in different countries.</p>	<p><i>Important Technical Feature</i></p>	<p>Core characteristic of ANDROMEDA</p>
<p>ET7: To avoid both false positive and false negative results, the triangulation of data, and the transparency of data fusion and the data used in it are essential. In addition, the use of dark web is important.</p>	<p><i>Essential Technical Feature</i></p>	<p>This requirement was introduced to the developers. Post project activity.</p>
<p>ET8: Logs are to be used as part of the system (required in both GDPR and LED). The purpose is to avoid human information leakage and other human misuse of the system. In addition, any information put into the system and shared through it should be traceable, so that sources and their reliability can be verified when necessary.</p>	<p><i>Essential Technical Feature</i></p>	<p>This requirement was introduced to the developers.</p>
<p>ET9: Specific security standards are to be followed up to the EU restricted level.</p>	<p><i>Essential Technical Feature</i></p>	<p>This requirement was introduced to the developers.</p>
<p>ET10: A vast array of analytic techniques to identify and resolve biases, (e.g. assumption surfacing, red teaming, post-mortem analysis, etc) is encouraged.</p>	<p><i>Interesting Technical Feature</i></p>	<p>This requirement was introduced to the developers.</p>
<p>ET11: The quality of data is to be investigated both automatically and manually when first transferring it as well as in each use case.</p>	<p><i>Essential Technical and User Processs Feature</i></p>	<p>This requirement was introduced to the developers.</p>
<p>ET12: Trustworthy Artificial Intelligence requires that algorithms are secure, reliable as well as robust enough to deal with errors or inconsistencies. The design of the solutions addresses the four pillar of resilience:</p> <ul style="list-style-type: none"> <li>• Learning from past events</li> <li>• Respond to regular and irregular events</li> <li>• Monitor the developments and assess the risks</li> <li>• Anticipate the future states (risk and opportunities)</li> </ul> <p>The conceptual model fo the system must, therefore, depict these core capabilities, recalling that the system comprises the technological components and human operators.</p>	<p><i>Essential Technical Feature</i></p>	<p>This requirement was introduced to the developers.</p>

ET13: From the viewpoint of good governance it is recommendable that users can store/print various situational pictures and data fusions results which have been essential from the viewpoint of their decision making	<i>Interesting Technical Feature</i>	This requirement was introduced to the developpers.
<b>SPECIFIC REQUIREMENTS FOR USER PROCESSES AND TRAINING MATERIAL</b>		
EP1: The quality of data is to be investigated both automatically and manually when first transferring it as well as in each use case.	<i>Essential User Process and Technical Feature</i>	This requirement was introduced to the developpers.
EP2: Operational decisions shall never be made by a computer, not even the most efficient one: it must always be a human who makes the final decisions. ANDROMEDA can only assist in operational decision making, by providing information to the end-user/decision makers. The end-users must be informed regarding these liability issues in the training material. As we provide new decision support systems, must also acknowledge the need to revise the role of the human operator.	<i>Essential User Process Feature</i>	This requirement was introduced to the developpers.
EP3: Adopt the check and balance approach to avoid data leakages and mis-use of it.	<i>Essential User Process Feature</i>	This requirement was introduced to the developpers.
EP4: Proper user training on ethical decision making is needed because of 1) ethics and legislation are case/country dependent even in our pilot countries (e.g. use of the drones & privacy) 2) OSINT and the dual roles of the users are ethically challenging. 3) the inherent biases in cognitive processing are relevant to recognize	<i>Essential User Process Feature</i>	Post project activity
EP5: Increasing training/course programs on data security are essentials, including the following aspects: Generalised access to private cloud computing accounts requires close monitor. The indiscriminate use of USB storage devices can be a potential source of security breaches. The mobile devices are a potential source of data theft and a mean of recording unauthorised and sensitive information.	<i>Essential User Process Feature</i>	Post project activity
<b>ADOPTION/GOVERNANCE/BUSINESS MODELS (in the future)</b>		
EB1: The continuous development of the ANDROMEDA services together with the end-users and stakeholders shall be embedded in the business model from the beginning to ensure that ANDROMEDA is up to date regarding ethical and legal requirements also in the future.	<i>Essential Governance/Business Model Feature</i>	Post project activity

<p>EB2: Ethical (economic, social, environmental) sustainability is a part of the ANDROMEDA value proposition. Therefore, the continuous monitoring of legal &amp; ethical frameworks and societal impacts as well as the use of sunset provisions is included the business/adoption model of ANDROMEDA.</p>	<p><b>Essential</b> <i>Governance/Business Model Feature</i></p>	<p>Post project activity</p>
<p>EB3: Considering Service Logic (SD) in designing alternative business models for ANDROMEDA and its various component is highly recommended, as it supports the holistic approach to ANDROMEDA where not only technology, but also services are included. Furthermore, it lowers the investment costs for users.</p>	<p><b>Important</b> <i>Business Model Feature</i></p>	<p>Post project activity</p>
<p>EB4: If ANDROMEDA technologies are used for purposes other than maritime surveillance and security, a special guidelines book including ethical restrictions of use must be provided. Furthermore, the consortium partners must, together with the EU, ensure that adequate control and licensing is in place for any system or its component developed before it can be sold or exported.</p>	<p><b>Essential</b> <i>Business Model Feature</i></p>	<p>Post project activity</p>
<p>EB5: Market research, which is an essential part of the business model, must be conducted early on to enable the successful adaptation of ANDROMEDA in each local context. This includes conducting a Societal Impact Assessment (SIA) as well as an evaluation of the legal and ethical frameworks for ANDROMEDA in each operating environment.</p>	<p><b>Essential</b> <i>Business Model Feature</i></p>	<p>Post project activity</p>
<p>EB6: Organizational activities concerning Data Protection must be applied as part of the governance model for each new implementation of ADROMEDA. Conducting a light PIA before the implementation is essential.</p>	<p><b>Essential</b> <i>Adoption Model Activity</i></p>	<p>Post project activity</p>
<p>EB7: It is essential for ethical compliance that the following activities are performed in each ANDROMEDA environment:</p> <ul style="list-style-type: none"> <li>- Defining a Social Media Strategy</li> <li>- Defining an explicit legal Duty of Care, including external reviews</li> <li>- Audits of Big Data and AI components</li> </ul>	<p><b>Essential</b> <i>Adoption/Business Model Feature</i></p>	<p>Post project activity</p>
<p>EB8: Ethics management and training concerning the use of ANDROMEDA in decision making must always be included in the business model. (training during each new implementation)</p>	<p><b>Essential</b> <i>Business Model Feature</i></p>	<p>Post project activity</p>

## 7. Annex A: The Ethics Paper Trail (update from D1.5, Annex E)

This paper trail is to be filled in and kept up to date by Ethics Manager.

#	Activity	Document	Date	Actor	Data Storage	Comments
1	Presentation on ethical issues in KoM, Athens, Greece	PP-slides	Sep 17–18, 2019	EM All	ANDROMEDA SharePoint	
2	Presentation on ethical issues at the End Users meeting + Technical meeting, Rome, Italy	PP-slides	Nov 05–06, 2019	EM, All	ANDROMEDA SharePoint	Together with KEMEA
3	Investigation of ethical, legal and societal aspects.	D2.4 Legal, Ethical and Societal Aspects	Dec 30, 2019	EM, PC, All	ECAS, ANDROMEDA SharePoint	
4	Confirmation of appointed Data Protection Officer (DPO) and the contact details of the DPO made available to all data subjects involved in the research or detailed data protection policy for the project	D8.8 POPD - Requirement No. 8	Dec 30, 2019	KEMEA, EM, LAUREA, MMAIP	ECAS, ANDROMEDA SharePoint	
5	A description of the technical and organisational measures that will be implemented to safeguard the rights and freedoms of the data subjects/research participants	D8.9 POPD - Requirement No. 9	Jan 2, 2020	EM, PC, LAUREA, KEMEA, All	ECAS, ANDROMEDA SharePoint	
6	Presentation on ethical issues at the 2nd Project Meeting (Plenary, Technical, Innovation, Advisory), Alfeite, Almada, Portugal	PP-slides	February 11–12, 2020	EM All	ANDROMEDA SharePoint	Together with KEMEA
7	The informed consent procedures for the participation of humans, together with the related templates and information sheets	D8.1 H - Requirement No. 1	Feb 28, 2020	KEMEA PC EM	ECAS, ANDROMEDA SharePoint	
8	Details on incidental findings policy	D8.2 H - Requirement No. 2	Feb 28, 2020	KEMEA, PC, EM, SAB, MMAIP	ECAS, ANDROMEDA SharePoint	
9	A report containing explanation for the beneficiary about how the	D8.4 POPD -	March 5, 2020	EM, PC, All	ECAS,	



#	Activity	Document	Date	Actor	Data Storage	Comments
	data subjects are informed in cases of profiling of the existence of the profiling, its possible consequences and how their fundamental rights will be safeguarded	Requirement No. 4			ANDROMEDA SharePoint	
10	Detailed information on the informed consent procedures with regard to data processing, together with the templates of the informed consent forms and information sheets with regard to data processing (in language and terms intelligible to the participants)	D8.5 POPD - Requirement No. 5	March 6, 2020	EM, PC, KEMEA, MMAIP	ECAS, ANDROMEDA SharePoint	
11	In case personal data are transferred from the EU to a non-EU country or international organisation, confirmation that such transfers are in accordance with Chapter V of the General Data Protection Regulation 2016/679. Also, in case personal data are transferred from a non-EU country to the EU (or another third state), confirmation that such transfers comply with the laws of the country in which the data was collected must	D8.10 POPD - Requirement No. 10	March 23, 2020	EM, PC, LAUREA, KEMEA, All	ECAS, ANDROMEDA SharePoint	
12	Description of the anonymisation/ pseudonymisation techniques that will be implemented	D8.6 POPD - Requirement No. 6	March 23, 2020	EM, PC, LAUREA, KEMEA, SAB, MST, MMAIP, All	ECAS, ANDROMEDA SharePoint	
13	In case of further processing of previously collected personal data, an explicit confirmation that the beneficiary has a lawful basis for the data processing, and that the appropriate technical and organisational	D8.7 POPD - Requirement No.7	March 23, 2020	EM, PC, LAUREA, KEMEA, SAB, MST, MMAIP, All	ECAS, ANDROMEDA SharePoint	

#	Activity	Document	Date	Actor	Data Storage	Comments
	measures to safeguard the rights of the data subjects					
14	Copies of opinions/approvals by ethics committees and/or competent authorities for the research with humans	D8.3 H - Requirement No. 3	March 26, 2020	KEMEA, PC, EM, All	ECAS, ANDROMEDA SharePoint	
15	3 <sup>rd</sup> Project Meeting (remotely)	PP-slides	May 13-14, 2020	EM, PC, LAUREA, KEMEA	ANDROMEDA SharePoint	Together with KEMEA
16	Presentations on ethics of each trials	PP-slides / Youtube video	March 17-18, 2021 May 7, 2021 June 7, 2020	LAUREA	Andromeda SharePoint	
17	Presentation at the final WS	PP-slides	June 24, 2021	LAUREA	Andromeda SharePoint	Recorded by EXUS

## 8. Annex B: 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.

### 8.1 Reviewers

Project Coordinator	Athina Foka (MMAIP)
Management Support Team Member	Alkis Astyakopoulos (KEMEA)
Internal Peer Reviewer	Vasia Zomenou, Georgia Melenikou (KEMEA)

### 8.2 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

### 8.3 Consolidated Comments of Quality Reviewers

General Comments	
<b>Deliverable contents thoroughness</b>	Reviewers' comment: It covers all the issues that have been raised in ANDROMEDA so far. Author's reply:
<b>Innovation level</b>	Reviewers' comment: Not applicable. Author's reply:
<b>Correspondence to project and programme objectives</b>	Reviewers' comment: It meets the project objectives. Author's reply:
Specific Comments	
<b>Relevance with the objectives of the deliverable</b>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Partially <input type="checkbox"/> Not applicable Reviewers' comment: It meets the deliverable's objectives, and it supplements the D1.5 Legal, Societal & Ethical Initial Report. Author's reply:
<b>Completeness of the document according to its objectives</b>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Partially <input type="checkbox"/> Not applicable Reviewers' comment: Minor additions have been proposed.

	Author's reply:	
<b>Methodological framework soundness</b>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Partially <input type="checkbox"/> Not applicable Reviewers' comment: Author's reply:	
<b>Quality of the results achieved</b>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Partially <input type="checkbox"/> Not applicable Reviewers' comment: Author's reply:	
<b>Structure of the deliverable with clear objectives, methodology, implementation, results and conclusions</b>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Partially <input type="checkbox"/> Not applicable Reviewers' comment: Author's reply:	
<b>Clarity and quality of presentation, language and format</b>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Partially <input type="checkbox"/> Not applicable Reviewers' comment: Some changes have been proposed for enhanced clarity. Author's reply:	
<b>Detailed Comments (please add rows as appropriate)</b>		
<b>No.</b>	<b>Reference</b>	<b>Remark</b>
1		
2		
3		
4		
5		