SPARTA

D2.2

First internal ELSA audit and supervision report

Project number	830892
Project acronym	SPARTA
Project title	Strategic programs for advanced research and technology in Europe
Start date of the project	1st February, 2019
Duration	36 months
Programme	H2020-SU-ICT-2018-2020

Deliverable type	Report
Deliverable reference number	SU-ICT-03-830892 / D2.2 / V1.0
Work package contributing to the deliverable	WP2
Due date	January 2020 – M12
Actual submission date	3rd February, 2020

Responsible organisation	INOV
Editor	Gonçalo Cadete
Dissemination level	PU
Revision	V1.0

Abstract	Reports on the methodology, work, and results from the ELSA audit and supervision done throughout the first year of the project.
Keywords	ELSA, audit, supervision, ethical aspects, legal aspects, societal aspects

Editor

Gonçalo Cadete (INOV)

Contributors (ordered according to beneficiary numbers)

Michael Friedewald (FHG)

Elisabete Carreira, Nelson Escravana (INOV)

Reviewers (ordered according to beneficiary numbers)

Thanasis Sfetsos (NCSR)

Uwe Roth (LIST)

Disclaimer

The information in this document is provided "as is", and no guarantee or warranty is given that the information is fit for any particular purpose. The content of this document reflects only the author`s view – the European Commission is not responsible for any use that may be made of the information it contains. The users use the information at their sole risk and liability.

Executive Summary

This deliverable reports on the methodology and outcomes of the audit and supervision activities related to ethical, legal, and societal aspects (ELSA), completed during the first year of the SPARTA project.

In Chapter 2, the purpose and scope of the ELSA activities are presented, providing the context for the audit and supervision methodology that was setup for the first year of SPARTA, described in Chapter 3 and Chapter 4. In Chapter 5, the audit and supervision functions of the SPARTA organization are presented, including functional requirements, organizational structures, and ethical considerations of the audit function itself.

All required audit and supervision mechanisms were planned, implemented, and run without significant constraints, during the first year of SPARTA.

The first ELSA audit, performed in December 2019 and presented in Chapter 6, had high participation and satisfaction rates.

No serious issues were identified during the ELSA audit. However, several opportunities for improvement of ELSA were identified, and reported in Chapter 6. To address these opportunities, a set of 12 (twelve) recommendations are provided in Chapter 7, along with recommendations regarding the audit and supervision roadmap, in support of ELSA excellence.

The main opportunities for improvement, to be addressed during the second year of SPARTA are:

- Create and improve policies, standards, procedures, and guidelines;
- Increase awareness of work package WP14 deliverables;
- Increase awareness of privacy requirements, as well as related implementations;
- Motivate, empower, and engage work package leaders in promoting responsible research and innovation.

The 12 (twelve) recommendations, proposed in Chapter 7, cover the topics:

- Ethics (requirements);
- Fundamental rights (policies and solidarity);
- Privacy (policies and requirements);
- Common communication platforms;
- Gender and diversity (policies);
- Responsible research and innovation (policies, incentives, and roles).

An ELSA Dashboard is made available in this report (Figure 6), to provide a high-level view of SPARTA's ELSA posture.

Overall, this report concludes that the current SPARTA posture regarding ELSA is positive, and that SPARTA is committed to fostering responsible research and innovation.

Table of Contents

List of Figures

List of Tables

Chapter 1 Introduction

As stated in the description of work of the SPARTA project [1] [2], ethical, legal, and societal aspects are fundamental to the success of the European Cybersecurity Competence Network (CCN):

> *"Cybersecurity research and innovations will have sustainable success only if ethical and societal impacts – both short-term and long-term opportunities, constrains, and threats – are assessed and prioritised alongside technical and commercial impacts. Compatibility of innovations with the legal framework is obviously of fundamental importance."* [1]

In SPARTA, a whole work package "WP2 – Responsible innovation: ethical, legal and societal aspects" was dedicated to address Ethical, Legal and Societal Aspects (ELSA), relevant in the context of SPARTA's large-scale cybersecurity research and innovation network.

The ELSA audit and supervision activities reported in this document are thus part of a broader effort to promote responsible cybersecurity research and innovation in SPARTA, by identification of ethical, legal and societal aspects (Task 2.1) that are relevant for the European CCN, investigation of key challenges and solutions (Task 2.2), formulation of general guidelines (Task 2.3), and implementation of concrete solutions for the SPARTA programs (Task 2.4).

Assurance and promotion of ethical, legal, and societal aspects are considered important contributions to the governance of the SPARTA pilot, as well as to the governance of the future European CCN. Thus, throughout the SPARTA project, continual improvement and alignment of the governance, assessment, and ELSA frameworks should be fostered, to leverage capabilities and to gradually improve overall governance and management maturity.

Also, strong commitment of SPARTA stakeholders to comply with high ethical standards was reinforced in the scope of work package WP14. This work package produced three deliverables in early stages of SPARTA, to address ethical and legal requirements related to dual use [4], use of humans in research [5], and data protection [6].

Therefore, three work packages – out of a total of fourteen work packages – were setup specifically to foster high standards and state-of-the-art solutions for governance and assessment (WP1) and ELSA (WP2, WP14). Furthermore, a task in another work package (Task 12.4) aims at closing the gender and diversity gap in cybersecurity.

The purpose of this deliverable is to report on the methodology and outcomes of the audit and supervision activities related to ELSA, carried out during the first year of the project. The purpose and scope of the ELSA activities are presented in Chapter 2, the audit and supervision methodologies are described in Chapter 3 and Chapter 4, respectively, and the audit and supervision functions are described in Chapter 5.

In December 2019, the first ELSA audit engagement was performed. The audit results are presented and discussed in this report (Chapter 6), as well as recommendations for the second year of the SPARTA project (Chapter 7). These recommendations aim at improving ELSA awareness, building ELSA capabilities, as well as improving the audit process itself, thus ensuring high and continually evolving ELSA standards.

In the last chapter, the main conclusions of this report are presented. Alignment with the governance and assessment frameworks and continual improvement of the audit methodology are recommended, to enable and provide assurance for responsible research and innovation, throughout the SPARTA project.

Chapter 2 Audit and Supervision Purpose and Scope

In this chapter, the purpose and scope of the audit and supervision mechanisms and activities are presented and discussed, by describing its objectives, stakeholders, mission, engagement type, and constrains.

2.1 Objectives

As per SPARTA's description of work [1] [2], ethical, legal, and societal aspects are paramount to the success of the pilot, as well as to the future European Cybersecurity Competence Network (CCN):

> *"Cybersecurity research and innovations will have sustainable success only if ethical and societal impacts – both short-term and long-term opportunities, constrains, and threats – are assessed and prioritised alongside technical and commercial impacts. Compatibility of innovations with the legal framework is obviously of fundamental importance."* [1]

SPARTA's audit and supervision mechanisms and activities, as reported in this document, are framed within work package "WP2 – Responsible innovation: ethical, legal and societal aspects". Specifically, Task 2.5 of this work package mandates:

> *"This task will focus on giving additional guarantees that all ethical, legal and societal aspects (ELSA) are not only taken into consideration by all partners (including the project and Program leadership) but will be kept to the highest standard throughout the duration of the project. To achieve this goal, an internal continuous auditing and supervision mechanism will be put into place, that will enable to detect situations that may configure potential deviations from the recommended path, enabling to steer involved partners to take mandatory corrective actions, with the support of the project management structure and the project officer, if need be. This task will provide all along the project a help desk regarding the privacy's questions raised by the partners in their tasks. This help desk will lead to an internal FAQ document that will be written to resume these questions and answers."* [1]

The main goal of Task 2.5, supported by internal continuous auditing and supervision mechanisms, is thus to ensure high ELSA standards throughout the duration of the project.

SPARTA's description of work [1] mandates three audit and supervision reports (the first of which is this report):

- D2.2 First internal ELSA audit and supervision report (this report);
- D2.4 Second internal ELSA audit and supervision report (due in January 2021);
- D2.7 Final internal ELSA audit and supervision report (due in January 2022).

The ELSA audit and supervision mechanisms of SPARTA are, therefore:

- Three yearly ELSA audit initiatives, that provide formal audit engagements, to be reported in deliverables D2.2, D2.4, and D2.7; the first ELSA audit engagement is reported in this document;
- An internal Privacy Help Desk, to respond to privacy questions raised by the partners in their tasks, along with an internal FAQ document that will resume these questions and answers.

The audit and supervision functions are described in detail in Chapter 5.

According to the description of work of Task 2.1, ELSA provide inputs to improve the governance of the pilots, which entails that the governance, assessment, and ELSA frameworks and practices should be aligned.

The audit and supervision mechanisms were also designed and implemented to ensure awareness and compliance of SPARTA ethical requirements, as defined by the deliverables of work package "WP14 - Ethics requirements":

- D14.1 DU - Requirement No. 1 [4];
- D14.2 H - Requirement No. 2 [5];
- D14.3 POPD - Requirement No.3 [6].

Furthermore:

- Task 12.4 aims at closing the gender and diversity gap in cybersecurity;
- Fundamental rights and responsible cybersecurity research and innovation should be promoted, as per the description of work of WP2.

Therefore, the ELSA mechanisms and activities should provide coverage for the following dimensions:

- Fundamental rights;
- Privacy;
- Ethics requirements;
- Gender and diversity;
- Responsible research and innovation.

2.2   Stakeholders

The main stakeholders of the audit and supervision mechanisms and activities are the SPARTA participants, the SPARTA beneficiary organizations, and the European Commission services:

- SPARTA participants and beneficiary organizations will benefit from a continually improving working environment that respects, protects, and fosters their fundamental rights, as well as other ethical, legal, and societal concerns related to the work products and outcomes of SPARTA's cybersecurity research. For the first ELSA audit, all work package leaders were invited to participate in the audit questionnaire, to promote ELSA leadership and championship.
- The European Commission services aim at ensuring responsible research and innovation, thought excellence in ethical, legal, and societal aspects.

The fact that all WP2 deliverables are classified as "Public" demonstrates that there is public interest regarding ELSA transparency, as well as a clear drive for ensuring and demonstrating legal compliance and responsible research and innovation, in the European Union.

2.3   Mission and engagement type

The mission of the internal ELSA audit and supervision activities, mechanisms, and functions is to enhance and protect ELSA by providing objective assurance, advice, and insight.

Regarding the ELSA audit engagements, continual improvement and synergies with other activities should be sought, namely related to the aspects:

- Awareness of ELSA: deliverables D2.1, D2.3, D2.5, and D2.6 will provide relevant instruments for clarifying ELSA concepts and for promoting ELSA education and awareness;

- Motivation of SPARTA participants, especially those directly engaged in the ELSA audit initiatives; care should be taken to ensure a lightweight and well understood process by SPARTA partners;
- Empowerment of SPARTA participants, especially those directly engaged in the ELSA audit initiatives. Also, the members of SPARTA governing bodies and the work packages leaders should feel motivated and empowered to foster high ELSA standards, as ELSA leaders and ELSA champions.

The ELSA engagements should also align with the requirements of a lightweight (i.e. efficient and simple) and well understood process, as required for SPARTA's governance and assessment frameworks.

These considerations point to implementing increasing and proportionate levels of engagement burden and complexity. Care should be taken to educate, motivate, and empower the stakeholders progressively and sustainably, especially of those that will be burdened with responding to the formal audit processes.

2.4 Constrains

No significant constraints regarding the audit and supervision mechanisms were identified, during the first year of the SPARTA project.

However, continual improvement of the audit and supervision mechanisms and processes should be sought, as recommended in Chapter 7 and Chapter 8.

Chapter 3 Audit Methodology

In this chapter, the ELSA audit methodology that was implemented during the first year of the SPARTA project is described, as well as how it addresses the scope and objectives presented in Chapter 2.

Considerations on how the audit framework and methodology should evolve throughout the duration of the project are also presented.

3.1 Alignment with the governance and assessment frameworks

Ethical, legal, and societal aspects are important components of governance. This entails the following implications regarding the relation between governance, assessment, and ELSA in SPARTA:

- Alignment should be sought between the governance, assessment, and ELSA frameworks;
- Alignment should be sought between best practice regarding governance, assessment, and ELSA;
- Continual improvement of the ELSA framework, practices, and mechanisms should consider the outcomes of all WP1 tasks regarding adaptation, synchronization, progress measurement, and improvement:
  - Task 1.1 Drive, continuous improvement, and networking for the governance;
  - Task 1.2 Adaptation, synchronization, progress measurement, and improvement for governance of R&D&I activities;
  - Task 1.3 Adaptation, synchronization, progress measurement, and improvement for governance of community and exploitation activities;
  - Task 1.4 Governance assessment and recommendations.

The ELSA framework, methodologies, practices, and mechanisms are therefore expected to mature over the 3-year period of the SPARTA project, closely following maturity gains regarding governance and assessment:

- During the first year (M1-M12):
  - Initial Operation Capability (IOC) for ELSA was achieved, as well as the initial ELSA consensus regarding the overall approach, scope, and objectives, aligned with the SPARTA objectives as stated in the description of work of SPARTA [1];
  - The first ELSA audit was performed; and audit results and recommendations were reported;
  - The Privacy Help Desk supervision mechanism was promoted, in the context of the first ELSA audit;
- During the second year (M13-M24):
  - The ELSA framework, methodologies, practices, and mechanisms should improve, based on formal feedback from the first year (audit engagements and project deliverables), as well as on continual feedback received during the second year, from the supervision mechanisms and other sources;
  - Alignment with the governance and assessment frameworks and methodologies should be sought;
  - The second ELSA audit will be performed; and audit results and recommendations will be reported;
- During the final year (M25-M36):
  - Preparations should be made for setting up the ELSA framework, as well as the governance and assessment frameworks, aiming at the future European CCN. All SPARTA frameworks should be aligned;

- o The ELSA framework, methodologies, practices, and mechanisms should improve, based on formal feedback from the second year (audit engagements and project deliverables), as well as on continual feedback received during the third year, from the supervision mechanisms and other sources;
- o Alignment with the governance and assessment frameworks and methodologies should be sought;
- o The final ELSA audit will be performed; and audit results and recommendations will be reported.

Throughout the duration of the project, the ELSA framework, methodologies, practices, and mechanisms should implement a lightweight (i.e. simple and efficient) process well understood by the partners, ensuring high awareness, motivation, and engagement of SPARTA participants.

3.2 Control frequency

The ELSA audit engagements will be performed on a yearly basis:

- The first ELSA audit engagements were performed in December 2019, i.e. as late as was possible in the first year of the project, pondering the review deadlines for the project deliverables, as well as seasonal constraints;
- The following ELSA audit engagements may be scheduled in a different timeframe, depending on future opportunities for ELSA capability and maturity improvement, as well as feedback received from SPARTA governing bodies.

Along with these scheduled yearly audit engagements, a continuous audit and supervision mechanism was also set up, in the form of a Privacy Help Desk, as described in Chapter 4.

3.3 Follow-up

The procedures and mechanisms that were set up to follow-up on any ELSA issues, as well as on opportunities for improvements, are the following:

- Communicate and escalate ELSA issues to the Ethics Committee, as well as to other SPARTA governing bodies as appropriate;
- Coordinate and escalate ELSA implementation issues with project management (WP13);
- The Privacy Help Desk, as described in Chapter 4.

3.4 Control objectives

The audit control objectives provide coverage for the dimensions presented in Chapter 2, namely:

- Fundamental rights, in the scope of the European Union [7];
- Privacy, as per GDPR [8] and related privacy laws and regulations;
- Ethics requirements, as per WP14 deliverables [4] [5] [6];
- Gender and diversity, as per SPARTA's description of work, especially WP12 goals;
- Responsible research and innovation, the overall goal of WP2.

For all previously described dimensions, a specific control was included to assess whether existing policies, standards, procedures, and guidelines, were necessary and sufficient for ensuring high ELSA standards.

To ensure a lightweight (i.e. simple and efficient) and well understood audit process, the following methodology was used for creating the list of control objectives for the first ELSA audit:

1) Top-down generation of control objectives, extracted from SPARTA's description of work and recommended by the Ethics Committee, considering the goals and requirements:

a) Foster ELSA awareness;
b) Address ELSA in the SPARTA working environment;
c) Motivate SPARTA participants to participate in the ELSA audit engagements;
d) Build Initial Operating Capability (IOC) for ELSA;
e) Avoid conceptual complexity and ambiguity;
f) Provide enough coverage for ethical issues;
g) Provide enough coverage for legal issues;
h) Provide enough coverage for societal issues;
i) Enable effective mapping, from identified gaps to actionable recommendations.

2) Ranking of control objectives, by the Ethics Committee, according to their relevance.
3) Selection of a limited subset of higher-ranked control objectives, for the first ELSA audit engagement.
4) For all ELSA dimensions in scope, include a specific control to assess whether existing policies, standards, procedures, and guidelines, are necessary and sufficient for ensuring high ELSA standards.

Twenty-five (25) control objectives were thus generated and selected, for use in the first ELSA audit engagement. The list of controls is presented in Table 1.

Audit Coverage		Controls
Topic	Sub-topic	Statement
Fundamental rights	Solidarity and Subsidiarity	The SPARTA project provides a working environment that fosters solidarity between SPARTA participants coming from different Member States.
Fundamental rights	Solidarity and Subsidiarity	The SPARTA project provides a working environment that fosters solidarity between SPARTA beneficiary organizations.
Fundamental rights	Solidarity and Subsidiarity	The SPARTA beneficiary organizations share equally, or at least reciprocally, in the benefits, burdens, and risks of collaboration in the project.
Fundamental rights	Solidarity and Subsidiarity	The SPARTA project provides a working environment that fosters team orientation, mutual respect, and openness for different views and approaches.
Fundamental rights	Freedom and Privacy	The SPARTA project provides a working environment that fosters compliance with privacy-related laws and regulations, as well as foster privacy-related ethical standards.
Fundamental rights	Freedom and Privacy	The SPARTA project provides a working environment that does not unduly restrict the professional autonomy of SPARTA participants.
Fundamental rights	Policies, Standards, Procedures, and Guidelines	The SPARTA project provides the necessary and sufficient policies, standards, procedures, and guidelines, related to fundamental human rights issues.
Privacy - PII	GDPR requirements	In the scope of the WP that I lead, GDPR legal requirements are well understood by the WP participants.
Privacy - PII	GDPR requirements	In the scope of the WP that I lead, technical and organizational measures to ensure data protection were designed and are being implemented for all processing activities.
Privacy - PII	Awareness and engagement	In the scope of the WP that I lead, generic privacy requirements and concerns were formally presented and discussed in a formal venue or procedure (telco, meeting, conference, workshop, or other effective communication means).
Privacy - PII	Legal capabilities and competency	I understand the legal concepts of "personal data", "consent", "data breach", "profiling", and I am able to apply these concepts in the scope of the WP that I lead.

Audit Coverage		Controls
Topic	**Sub-topic**	**Statement**
Privacy - PII	Legal capabilities and competency	I understand the legal concepts of "pseudonymisation", "encryption", and I am able to apply these concepts in the scope of the WP that I lead.
Privacy - PII	Legal capabilities and competency	I understand the legal concept of "high risk data processing operations" and I am able to apply this concept to assess risk to rights and freedoms of the natural person, in the scope of the WP that I lead.
Privacy - PII	Policies, Standards, Procedures, and Guidelines	The SPARTA project provides the necessary and sufficient policies, standards, procedures, and guidelines, related to privacy issues.
Ethics requirements	"Dual-use" ethics category	In the scope of the WP that I lead, the issues of SPARTA dual-use items (i.e. for both civil and military purposes) were formally presented and discussed, namely according to the requirements of deliverable D14.1.
Ethics requirements	"Humans" ethics category	In the scope of the WP that I lead, the issues of human participation in SPARTA research activities (identification, recruitment, and consent) were formally presented and discussed, namely according to the requirements of deliverable D14.2.
Ethics requirements	Policies, Standards, Procedures, and Guidelines	The SPARTA project provides the necessary and sufficient policies, standards, procedures, and guidelines, related to ethical issues.
Gender and diversity	Intercultural enablers	In the scope of the WP that I lead, I have not encountered significant difficulties and roadblocks related to intercultural communication, understanding, and appreciation.
Gender and diversity	Negative discrimination	In the scope of the WP that I lead, I have not encountered significant difficulties and roadblocks related to women's attraction, participation, or retention in the workplace.
Gender and diversity	Negative discrimination	In the scope of the WP that I lead, I have not encountered significant gender stereotypes and unconscious bias, that may impact negatively organizational performance.
Gender and diversity	Policies, Standards, Procedures, and Guidelines	The SPARTA project provides the necessary and sufficient policies, standards, procedures, and guidelines, related to gender and diversity issues.
Responsible research and innovation	Goal achievement	Overall, the SPARTA project fosters responsible research and innovation.
Responsible research and innovation	Roles and empowerment	In the scope of the WP tasks that I lead, I am responsible for fostering responsible research and innovation.
Responsible research and innovation	Roles and empowerment	In the scope of the WP tasks that I lead, I feel motivated and empowered to foster responsible research and innovation.
Responsible research and innovation	Policies, Standards, Procedures, and Guidelines	The SPARTA project provides the necessary and sufficient policies, standards, procedures, and guidelines, related to responsible research and innovation.

Table 1: ELSA control objectives, for the first ELSA audit engagement

Furthermore, additional control objectives were proposed and ranked, for controlling continual improvement of the ELSA mechanisms. One control was selected for the first ELSA audit

engagement, to assess the overall usefulness of the first ELSA audit for promoting responsible research and innovation, as presented in Table 2:

Audit Coverage		Controls
Topic	**Sub-topic**	**Statement**
Continual improvement	ELSA audit	Useful for promoting responsible research and innovation.

Table 2: Control objective for the ELSA audit: usefulness for promoting responsible research and innovation

3.5   Rating the control objectives

For rating the control objectives (Table 1), the following rating scale was used:

- Fully Agree/Achieved (FA): a very positive rating, defined by the interval [85%-100%];
- Largely Agree/Achieved (LA): a positive rating, defined by the interval [50%-85%[;
- Partially Agree/Achieved (PA): a negative rating, defined by the interval [15%-50%[;
- Not Agree/Achieved (NA): a very negative rating, defined by the interval [0%-15%[.

This scale was adapted from the ISO/IEC 33020:2015 international standard. The ratings are thus a judgement of the degree of agreement with the statements in Table 1 (i.e. degree of achievement of the control objectives).

Chapter 4   Supervision Methodology

The main mechanisms for ELSA supervision, implemented during the first year of SPARTA, are:

- The Privacy Help Desk;
- The Privacy FAQ Document.

4.1   Privacy Help Desk and FAQ

The Privacy Help Desk and the FAQ Document were design and implemented according to the requirements:

- Simple;
- Easy to use, accessible;
- Reliable, available;
- Low communication and adoption barriers:
  - o interfaces are familiar for all SPARTA participants;
  - o no costly training required for SPARTA participants.

The Privacy Help Desk implementation consists of:

- A ticketing system, for keeping track of requests and handling ticket state changes;
- An email address to serve as front-end interface:
  - o using an internal SPARTA mailing list, created specifically for this purpose;
  - o implemented in collaboration with project management (WP13);
  - o included in the official project contacts list, available to all SPARTA participants.

The FAQ Document is located on a dedicated folder of SPARTA's official SVN solution, thus providing easy access, availability, reliability, and version control.

Therefore, the Privacy Help Desk and the FAQ Document both use functionalities and interfaces that are familiar to SPARTA participants, ensuring low communication and adoption barriers.

4.2   Follow-up

The procedures and mechanisms that were set up to follow-up on ELSA issues, as well as on opportunities for improvements, are the same as those identified in Chapter 3 for auditing:

- Communicate and escalate ELSA issues to the Ethics Committee, as well as to other SPARTA governing bodies as appropriate;
- Coordinate and escalate ELSA implementation issues within the project management (WP13);
- Setting up the Privacy Help Desk procedures, supported by a ticketing system.

Chapter 5   Audit and Supervision Functions

This chapter describes the audit and supervision implementation details, regarding organizational structures and professional ethics, in support of the ELSA audit and supervision functions within SPARTA.

5.1   Requirements for the audit and supervision functions

As per the description of work of SPARTA, the audit and supervision functions are defined in Task 2.5 of work package "WP2 – Responsible innovation: ethical, legal and societal aspects".

The partner INOV is responsible for the auditing implementation within SPARTA, as well as responsible for addressing gender and diversity aspects. Fourteen other beneficiary organizations also collaborate in work package WP2.

5.2   Ethics Committee and Ethics Officer

An internal Ethics Committee was setup for SPARTA, as one of the governance instruments of the project.

The Ethics Committee is chaired by an Ethics Officer who is also the leader of work package WP2.

In order to guarantee the independence of the Ethics Committee, the beneficiary organization that co-ordinates the project is not represented in this body.

According to SPARTA's description of work [1], the Ethics Committee "*sets up and maintains appropriate procedures, criteria, templates, information sheets, potential opinions and approvals from relevant entities, explanations, and relevant compliance documentation as well as descriptions of technical and organizational risk-mitigation strategies and measures (including security ones) implemented to comply to the ethics requirements*".

5.3   Professional ethics

The editor of this report conducted the first ELSA audit engagement.

He declares to have followed the principles of integrity, objectivity, and competence, in the course of the audit assessment and reporting activities:

- Integrity:
    - The audit assessment and reporting activities where not hindered by third parties as far as honesty, diligence, and responsibility are concerned.
    - This report was subject to review, as stated on Page I. The review process did not hinder neither the audit process, nor the current report, as far as its objectives, scope, conclusions, and recommendations are concerned.
- Objectivity:
    - The auditor does not participate in activities that conflict with the interests of SPARTA.
- Competency:
    - The auditor is a certified information systems auditor in good standing, currently holding the CISA, CISM, and CRISC certifications from ISACA.

Chapter 6   Audit Results

In this chapter, the results of the first ELSA audit are presented and briefly commented, with the following reporting goals:

- Identify quick-wins, i.e. opportunities for improvement with low implementation costs, candidates for implementation in the near future;
- Identify issues that should be reported urgently to the Ethics Committee;
- Provide a basis for recommendations for the second year of SPARTA (February 2020-January 2021);
- Provide a dashboard view, i.e. a summary high-level presentation of the ELSA posture in SPARTA.

6.1   Participation in the ELSA audit

For the first ELSA audit, all work package leaders were invited to participate. Although not mandatory, work package leaders could invite other participants collaborating in the same work package, as well as record the audit session for sharing with other participants later.

The first ELSA audit achieved 100% participation of all 14 (fourteen) work package leaders. This figure is noteworthy, given the mission and role of work package leaders in ELSA:

- Leadership in SPARTA also entails ELSA leadership, as ELSA is an intrinsic and important part of SPARTA's governance;
- Work package leaders belong to the first line of defence for ELSA;
- Work package leaders are important ELSA leaders and ELSA champions;
- Work package leaders should be engaged in promoting ELSA awareness;
- Work package leaders should be engaged in building ELSA capabilities;
- Work package leaders should be engaged in ensuring high standards for ELSA.

Besides participating in the ELSA audit, work package leaders also contributed with 9 (nine) suggestions for improving ELSA and the ELSA audit process, that were formally registered for continual improvement purposes.

6.2   Usefulness of the ELSA audit

Regarding usefulness of the first ELSA audit, for promoting responsible research and innovation:

- 10 (71%) participants responded "fully agree" and 4 (29%) participants responded "largely agree";
- No negative ratings were given, i.e. "partially agree" or "not agree".

These results are presented in Figure 1.

Figure 1: Usefulness of the first ELSA audit, for promoting responsible research and innovation.

The fact that 100% participation was achieved for the first ELSA audit, as well as a high degree of satisfaction with the ELSA audit process itself, are important considerations for designing and implementing future ELSA audit initiatives:

- Understand the success factors and ensure their positive impact in the future, namely by discussing, validating, and challenging the assumptions and requirements:
  - o Lightweight process, simple and efficient, well understood by the participants;
  - o Engage more participants, other than the work package leaders.
- Understand why 29% of work package leaders have rated "largely agree", regarding usefulness of the first ELSA audit.

6.3 Urgent issues

No serious issues were identified, requiring the urgent attention of the Ethics Committee.

6.4 Opportunities for improvement

In this section the main opportunities for improvement are presented and analysed.
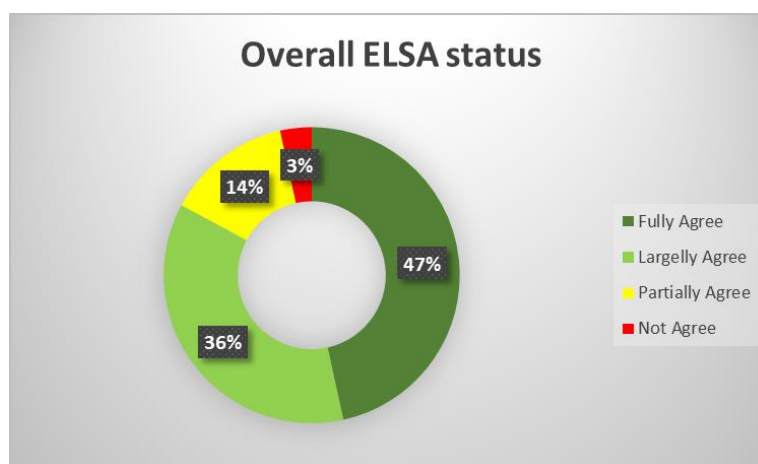
6.4.1 Overall ELSA status

Figure 2: Overall ELSA status.

The 25 controls of Table 1 have been rated by the 14 work package leaders, thus resulting in 350 ratings. The overall ELSA status, represented in Figure 2, can be drilled down as:

- 290 positive ratings (83%):
    - o 163 "fully agree" ratings (47%);
    - o 127 "largely agree" ratings (36%);
- 60 negative ratings (17%):
    - o 48 "partially agree" ratings (14%);
    - o 12 "not agree" ratings (3%).

Therefore, there is a significant opportunity for improvement, related to minimization of negative ratings, from the current 17% value to lower values.

Also, there is an opportunity for improvement, related to upgrading the 36% of "largely agree" ratings to "fully agree" ratings.

6.4.2   Overall satisfaction of work package leaders regarding ELSA
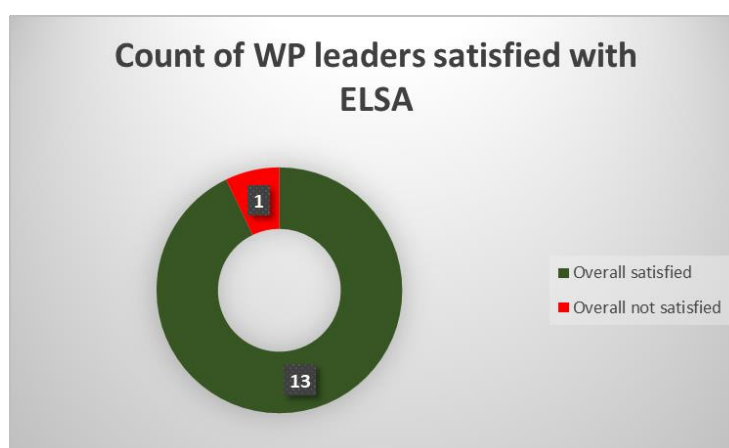
Figure 3: Number of WP leaders satisfied with ELSA status.

The count of work package leaders that are satisfied, overall, represented in Figure 3, is defined as the number of work package leaders with 50% or more positive ratings (i.e. "fully agree" and "largely agree").

The least satisfied work package leader provided the following ratings:

- 8 positive ratings (32%):
    - o 2 "fully agree" ratings;
    - o 6 "largely agree" ratings;
- 17 negative ratings (68%):
    - o 7 "partially agree" ratings;
    - o 10 "not agree" ratings.

Thus, there is a significant opportunity for improvement, related to addressing gaps identified by the least satisfied work package leader.

6.4.3 Controls with very low ratings (overall negative)

Figure 4: Percentage of controls with overall negative ratings.

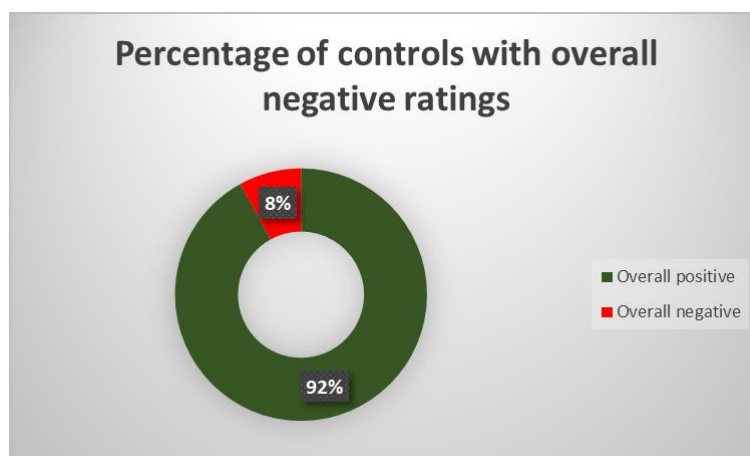The percentage of controls with overall negative ratings, represented in Figure 4, is defined as the percentage of statements with a majority of negative ratings, i.e. statements without 50% or more positive ratings (i.e. "fully agree" and "largely agree").

23 controls (92%) have overall positive ratings and 2 controls (8%) have overall negative ratings; these two lower rated statements are presented in Table 3.

Audit Coverage		Controls
Topic	Sub-topic	Statement
Ethics requirements	"Dual-use" ethics category	In the scope of the WP that I lead, the issues of SPARTA dual-use items (i.e. for both civil and military purposes) were formally presented and discussed, namely according to the requirements of deliverable D14.1.
Ethics requirements	"Humans" ethics category	In the scope of the WP that I lead, the issues of human participation in SPARTA research activities (identification, recruitment, and consent) were formally presented and discussed, namely according to the requirements of deliverable D14.2.

Table 3: Very low rated: statements without 50% or more positive ratings (i.e. "fully agree" and "largely agree").

Both statements received 57% negative ratings (i.e. "partially agree" and "not agree").

Both statements are related to awareness of work package WP14 deliverables. Therefore, there is a significant opportunity for improvement, due to lack of awareness of deliverables D14.1 [4] and D14.2 [5].

6.4.4 Controls with low ratings (one or more "not agree" ratings)

The statements that received at least one "not agree" rating are presented in Table 4.

Audit Coverage		Controls
Topic	**Sub-topic**	**Statement**
Fundamental rights	Policies, Standards, Procedures, and Guidelines	The SPARTA project provides the necessary and sufficient policies, standards, procedures, and guidelines, related to fundamental human rights issues.
Privacy - PII	GDPR requirements	In the scope of the WP that I lead, GDPR legal requirements are well understood by the WP participants.
Privacy - PII	GDPR requirements	In the scope of the WP that I lead, technical and organizational measures to ensure data protection were designed and are being implemented for all processing activities.
Privacy - PII	Awareness and engagement	In the scope of the WP that I lead, generic privacy requirements and concerns were formally presented and discussed in a formal venue or procedure (telco, meeting, conference, workshop, or other effective communication means).
Privacy - PII	Policies, Standards, Procedures, and Guidelines	The SPARTA project provides the necessary and sufficient policies, standards, procedures, and guidelines, related to privacy issues.
Ethics requirements	"Dual-use" ethics category	In the scope of the WP that I lead, the issues of SPARTA dual-use items (i.e. for both civil and military purposes) were formally presented and discussed, namely according to the requirements of deliverable D14.1.
Ethics requirements	"Humans" ethics category	In the scope of the WP that I lead, the issues of human participation in SPARTA research activities (identification, recruitment, and consent) were formally presented and discussed, namely according to the requirements of deliverable D14.2.
Gender and diversity	Policies, Standards, Procedures, and Guidelines	The SPARTA project provides the necessary and sufficient policies, standards, procedures, and guidelines, related to gender and diversity issues.
Responsible research and innovation	Roles and empowerment	In the scope of the WP tasks that I lead, I am responsible for fostering responsible research and innovation.
Responsible research and innovation	Roles and empowerment	In the scope of the WP tasks that I lead, I feel motivated and empowered to foster responsible research and innovation.

Table 4: Statements with at least one "not agree" rating.

As discussed in the previous section, the statements related to the "ethics requirements" topic received 57% negative ratings. Both statements received two "not agree" ratings.

All other statements in Table 4 received just one "not agree" rating. Three of these statements refer to the sub-topic "Policies, Standards, Procedures, and Guidelines". This sub-topic is thus a significant opportunity for improvement.

Other significant opportunities for improvement are:

- Increase awareness of privacy requirements, as well as related implementations in SPARTA;
- Motivate, empower, and engage work package leaders in promoting RRI.

6.4.5 Achievement of responsible research and innovation

One work package leader rated the statement related to RRI goal achievement (see Table 5) negatively, as "partially agree".

All other 13 (thirteen) work package leaders rated the same statement positively, 4 (four) as "fully agree" and 9 (nine) as "largely agree".

Audit Coverage		Controls
Topic	**Sub-topic**	**Statement**
Responsible research and innovation	Goal achievement	Overall, the SPARTA project fosters responsible research and innovation.

Table 5: Control for RRI goal achievement

These results are represented in Figure 5.

Figure 5: Goal achievement for RRI.

Based on these results, we may conclude that there is a significant opportunity to promote RRI in the SPARTA Project, especially by upgrading the negative rating "partially agree" to a positive rating (i.e. "largely agree" or "fully agree").

6.4.6 Main opportunities for improvement

To summarize, the main opportunities for improvement, to be addressed during the second year of SPARTA are:

- Lack of policies, standards, procedures, and guidelines, on all ELSA topics;
- Gaps identified by the least satisfied work package leader;
- Lack of awareness of work package WP14 deliverables;
- Increase awareness of privacy requirements, as well as related implementations in SPARTA;
- Motivate, empower, and engage work package leaders in promoting RRI.

6.5   ELSA Dashboard for 2019

A high-level view of SPARTA's ELSA posture is provided by the ELSA dashboard in Figure 6.

Figure 6: The SPARTA ELSA Dashboard.

Chapter 7   Recommendations

In this chapter, recommendations are provided to address the current ELSA opportunities for improvement, namely those identified during the first ELSA audit or communicated through the Privacy Help Desk.

7.1   ELSA recommendations

The main recommendations for ELSA improvement, to be addressed by the Ethics Committee, other SPARTA governing bodies, and work package leaders, are presented in Table 6.

ID	Title	Description and implementation notes	Urgency
1	WP14 ethics requirements	Promote awareness of WP14 ethics requirements, namely deliverables D14.1 [4] and D14.2 [5].	Quick win
2	Fundamental rights – policies	Define, approve, and communicate policies, standards, procedures, and guidelines.	Year 2
3	Privacy –policies	Define, approve, and communicate policies, standards, procedures, and guidelines.	Year 2
4	Privacy –requirements	Increase awareness of privacy-related legal requirements, as well as related implementations in SPARTA. Increase understanding of GDPR concepts, as well as related technical and organizational measures implemented in SPARTA.	Year 2
5	Solidarity –incentives	Promote solidarity between participants, as well as between beneficiary organizations.	Year 2
6	Solidarity –abuses	Prevent and mitigate "free-riding" occurrences.	Year 2
7	Solidarity –big vs. small	Prevent and mitigate "big-partner" ignoring "small-partner" occurrences.	Year 2
8	Common audio and video conferencing platforms	Promote common audio and video conferencing platforms, ensuring high audio and video quality standards, to facilitate cooperation, collaboration, and communication between participants.	Year 2
9	Gender and diversity – policies	Define, approve, and communicate policies, standards, procedures, and guidelines. Prevent and mitigate gender-related and diversity-related negative discrimination occurrences.	Year 2
10	RRI –incentives	Motivate, empower, and engage WP leaders in promoting RRI.	Year 2

ID	Title	Description and implementation notes	Urgency
11	RRI –roles	Ponder the definition and establishment of "ELSA Leader" and "ELSA Champion" roles, in the context of the SPARTA governance framework.	Year 2
12	RRI –policies	Define, approve, and communicate policies, standards, procedures, and guidelines.	Year 2

Table 6: Recommendations for ELSA improvement.

7.2   Audit and supervision roadmap

The following recommendations and goals are proposed for the second year of SPARTA, regarding the audit and supervision mechanisms:

- Promote the Privacy Help Desk, among all SPARTA participants;
- Promote the Privacy FAQ Document, among all SPARTA participants;
- Ensure a high participation rate for the second ELSA audit initiative;
- Ensure a high satisfaction rate for the second ELSA audit initiative.

Chapter 8   Conclusion

In this deliverable, we have reported on the ELSA audit and supervision activities, done throughout the first year of the SPARTA project.

All audit and supervision mechanisms were planned, implemented, and run without significant constraints, during the first year of SPARTA. For the second year of SPARTA, the Privacy Help Desk and the Privacy FAQ Document should be promoted among all SPARTA participants.

The first ELSA audit, conducted in December 2019, had high participation and satisfaction rates. Its main goals were to ensure ELSA awareness, build initial operating capability for ELSA, and ensure high ELSA standards throughout the SPARTA Project.

The Ethics Committee provided prompt and effective support for the first ELSA audit. The first ELSA audit did not identify serious issues that require urgent convening of the Ethics Committee.

Several opportunities for improvement of ELSA were identified in Chapter 6. To address these opportunities, a set of 12 (twelve) recommendations are provided in Chapter 7, along with recommendations regarding the audit and supervision roadmap, in support of ELSA excellence.

An ELSA dashboard is provided in Figure 6, to help communicate a high-level view of SPARTA's ELSA posture.

We may conclude that there is evidence that SPARTA fosters responsible research and innovation (RRI), although several opportunities for improvement were identified.

Overall, the current SPARTA ethical, legal, and societal aspects (ELSA) posture is positive.

List of Abbreviations

Abbreviation	Translation
AI	Artificial intelligence
CCN	Cybersecurity Competence Network
CISA	Certified Information Systems Auditor (see the Glossary)
CISM	Certified Information Security Manager (see the Glossary)
CRISC	Certified in Risk and Information Systems Control (see the Glossary)
EC	European Commission
ELSA	Internal ethical, legal and societal aspects
FAQ	Frequently asked questions
GDPR	General Data Protection Regulation
ICT	Information and Communications Technologies
PII	Personally Identifiable Information; Personal Data; Personal Information
RRI	Responsible Research and Innovation
SPARTA	Strategic Programs for Advanced Research and Technology in Europe
SVN	Subversion Document Repository
WP	Work Package

Glossary

Term	Definition	Reference
ISACA	As an independent, non-profit, global association, ISACA engages in the development, adoption and use of globally accepted, industry-leading knowledge and practices for information systems. Previously known as the Information Systems Audit and Control Association, ISACA now goes by its acronym only, to reflect the broad range of IT governance professionals it serves.	ISACA Organization website: www.isaca.org
Certified Information Systems Auditor	CISA, a branded certification from ISACA. The CISA designation is a globally recognized certification for IS audit control, assurance and security professionals. Being CISA-certified showcases audit experience, skills and knowledge, and demonstrates capability to assess vulnerabilities, report on compliance and institute controls within the enterprise.	ISACA Organization website: www.isaca.org
Certified in Risk and Information Systems Control	CRISC, a branded certification from ISACA. The CRISC certification that prepares and enables IT professionals for the unique challenges of IT and enterprise risk management and positions them to become strategic partners to the enterprise.	ISACA Organization website: www.isaca.org
Certified Information Security Manager	CISM, a branded certification from ISACA. Being CISM-certified demonstrates information security management expertise. The management focused CISM certification promotes international security practices and recognizes the individual who manages, designs, and oversees and assesses an enterprise's information security.	ISACA Organization website: www.isaca.org
SPARTA	Acronym for "Strategic Programs for Advanced Research and Technology in Europe", a European Commission Horizon 2020 programme, project number 830892, as per call H2020-SU-ICT-2018-2020, Work programme H2020 SU-ICT-03-2018: Establishing and operating a pilot for a Cybersecurity Competence Network to develop and implement a common Cybersecurity Research & Innovation Roadmap.	SPARTA Organization website: www.sparta.eu

Bibliography

[1] SPARTA DoA ANNEX 1 (part A), SPARTA Project – Strategic programs for advanced research and technology in Europe, European Commission, 2019

[2] SPARTA DoA ANNEX 1 (part B), SPARTA Project – Strategic programs for advanced research and technology in Europe, European Commission, 2019

[3] D10.2 Data Management Plan, deliverable SU-ICT-03-830892/D10.2/ V1.0, SPARTA Project – Strategic programs for advanced research and technology in Europe, European Commission, October 2019

[4] D14.1 DU - Requirement No.1, deliverable SU-ICT-03-830892 / D14.1 / V1.0, SPARTA Project – Strategic programs for advanced research and technology in Europe, European Commission, July 2019

[5] D14.2 H - Requirement No.2, deliverable SU-ICT-03-830892 / D14.2 / V1.0, SPARTA Project – Strategic programs for advanced research and technology in Europe, European Commission, March 2019

[6] D14.3 POPD - Requirement No.3, deliverable SU-ICT-03-830892 / D14.3 / V1.0, SPARTA Project – Strategic programs for advanced research and technology in Europe, European Commission, March 2019

[7] Charter of fundamental rights of the European Union (2012/C 326/02), Official Journal of the European Union, vol. C 326, pp. 391-407, Oct. 2012

[8] European Parliament and of the Council, "Regulation (EU) 2016/679 of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation)," Official Journal of the European Communities, vol. OJ L 119/1, pp. 1–88, Apr. 2016