



Quality Plan

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Executive Summary

BIG's Quality plan goal is to set up an effective management and coordination of the project. This deliverable outlines the quality standards and procedures for the project activities, that subsequently will guarantee the efficiency of the execution and management of the project. This tool will be a great asset for the ERA Chair and its team, as well as for IST, LARSYS and INESC-ID staff involved in guaranteeing the quality of the project execution. This document was produced in line with the terms and conditions established in the Grant Agreement (GA).

1. Introduction

BIG's goal is to expand the research and innovation potential of Instituto Superior Técnico – Lisbon that will foster a digital ecosystem, taking advantage of Blockchain technologies and design Innovation. The aim of hiring an ERA Chair, is to develop a critical mass of interdisciplinary research in deploying and testing blockchain technologies in strategic application domains aligned with the smart specialisation strategy of Portugal and Lisbon. The ERA Chair will definitely be a crucial aid to use our potential to the fullest in our interdisciplinary research with the leading engineering school of Portugal. As well as strengthen innovation and knowledge transfer activities in close collaboration with the local and global industrial partners, and be part of the smart specialisation in the Lisbon Region by stimulating the upcoming ecosystem of digital startups and their economic impact.

The ERA Chair holder will have full autonomy in setting the strategic lines and implementing the BIG work plan, as well as total independence and intellectual freedom to pursue his/her own lines of research and innovation within the field defined by the project. The ERA Chair holder, will also be the ultimate responsible for the selection of the members of the ERA Chair Research and Support Teams, leading the recruitment process and chairing the selection panels. Also, the Era Chair holder will have full autonomy to devise structural and institutional changes required to increase the capacity and scientific competitiveness of LARSyS and INESC-ID, working in close coordination with the Board of Directors to discuss, plan and implement such changes.

BIG is particularly well suited to expand the increasing potential of Lisbon as a European high-tech hub for the data economy. BIG will be a campus-wide initiative in blockchain and distributed ledger technologies and design innovation to better integrate Técnico – Lisbon with the European Research Area (ERA) and, in particular, promote structural changes in the school and improving the participation of its associated ICT research labs LARSyS and INESC-ID in the Horizon 2020 and ESIF programs.

BIG will pursue the following strategic objectives:

1. **Upgrade the existing research and technological development capabilities** by expanding the human potential and fostering a critical mass of researchers with interdisciplinary expertise in blockchain and related technologies (distributed computing,

security and applied cryptography, AI, machine learning, big data, and cloud computing) and design thinking.

2. **Improve the innovation potential and impact** of Lisbon and Portugal as a key platform in the Euro- Atlantic region of the EU through design-driven innovation for the data economy.
3. **Raise international awareness** about the research institutes (LARSyS and INESC-ID) and connect Técnico – Lisbon and its industry affiliates to the global knowledge networks: work with mentoring institutes based at prestigious universities in Europe.

2. Management Structure

The Management Structure has been established to determine a clear distribution of roles during the project's lifetime. The different units are coordinated by different faculty and clear procedures were set to enable a smooth and efficient execution of the project.

IST (Instituto Superior Técnico – Lisbon) will be responsible for all financial aspects of the project, submission of reports and more formal communication with the European Commission. The work will be carried out by LARSYS and INESCID, which are two Associate Laboratory hosted mainly at Técnico – Lisbon. The ERA Chair will be located at Técnico – Lisbon facilities of the Alameda Campus in Lisbon of the University of Lisbon. LARSYS and INESC-ID will be responsible for establishing the project's strategic guidelines, for developing and implementing the framework, for monitoring the technical quality of the work produced, and for ensuring that all actions are in line with the proposal presented to the European Commission. It is also responsible for monitoring the degree of physical and administrative compliance in line with the guidelines established by the Commission and specific work-program rules. By the project kick-off, the Directors Board of LARSYS and INESCID will designate the members of the Research Management Unit (RMU), who will be the main responsible team for the adequate development of the project. The project will also involve interactions with other national and international institutions, including other research institutes in the EU and the US, large private Portuguese business corporations, SMEs, startups, and bodies of the local, regional and national public administration. None of these organisations will receive funding from BIG, though the project may cover the travel expenses of invited researchers and technical staff to visit LARSYS and INESCID facilities to attend meetings and workshops, participate in training sessions, facilitate knowledge transfer, and other initiatives that are described in WPs3 to 5. Interactions with these institutions will be made by the RMU and the ERA Chair Board, according to the implementation plan.

In order to guarantee an easy and efficient communication between the different bodies involved, although Técnico – Lisbon is the sole formal participant institution of BIG, a major effort will be made to maintain open channels of regular communications with research and industry partners, through: i) The creation of a website for the diffusion of the information generated in the project and to facilitate

the transfer of knowledge and know-how. This website will have a private section or Intranet, where a contents manager will be used to store all project documentation: documents, work plans, agendas and minutes of meetings, etc. This project website will be integrated into the existing Técnico main website.

ii) E-mail and video conferences between partners/participants will be done using state of the art multimedia collaborative environments. The tools mentioned, will allow an easier interaction among everyone, contribute to problem solving and to overcome any other challenges that might come up during the project lifetime.

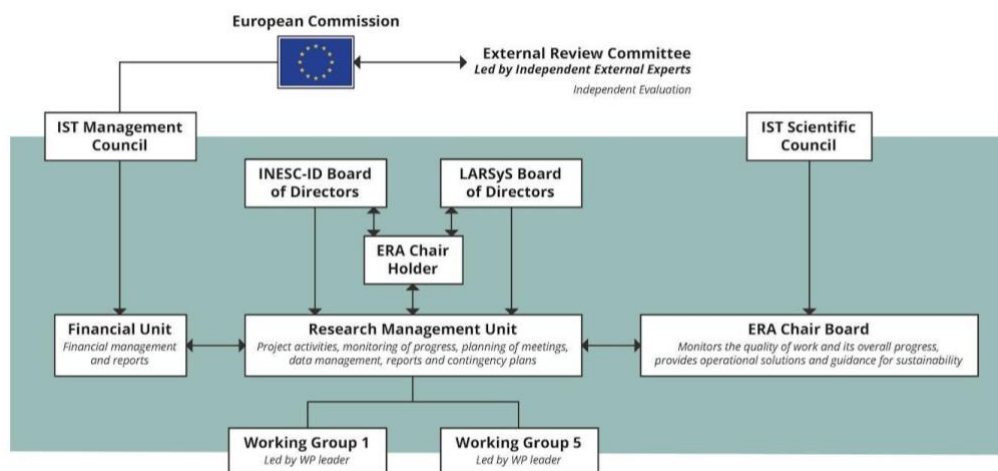


Figure 1- BIG's Management Structure

As depicted in Figure 1, the following units will integrate the management and organisation structure of the project:

LARSyS Board of Directors

- José Santos Victor – Coordinator of LARSyS (President of ISR)
- Paulo Ferrão – President of IN+
- Nuno Jardim Nunes – President of ITI
- Tiago Domingos – President of MARETEC

INESC-ID Board of Directors

- Inês Lynce – President of INESC-ID
- João Paulo Carvalho – Researcher
- Susana Vinga – Researcher
- Nuno Roma – Researcher
- Miguel Pupo Correia – Researcher

ERA Chair Holder

The ERA Chair holder will have full autonomy in setting the strategic lines and implementing the BIG work plan, as well as total independence and intellectual freedom to pursue his/her own lines of research and innovation within the field defined by the project. The ERA Chair holder will also be the ultimate responsible for the selection of the members of the ERA Chair Research and Support Teams, leading the recruitment process and chairing the selection panels. Once he/she successfully lands new research grants the ERA Chair holder will become the Principal Investigator at Técnico – Lisbon. This will guarantee that the ERA Chair holder will have a key role at defining the strategic lines and the institutional changes required to enhance the excellence of research on blockchain technologies and design innovation at Técnico - Lisbon. Once he/she decides to join the research unit, the ERA Chair holder will be a member of the Scientific Board of both INESC-ID and LARSyS, which will provide another efficient channel of communication with the governance structures of the research centre. The ERA Chair holder will have the opportunity to remain at Técnico - Lisbon beyond the end of the project, through opening a permanent position at the full professor level in his/her area at Técnico - Lisbon.

- Head the Research Management Unit (RMU);
- Participated in the ERAChair Board;
- Set Strategic Lines and is responsible for the implementation of the work plan;
- Selection of the ERA Chair Research and Support teams;
- Devise structural and institutional changes required to increase the capacity and scientific competitiveness of LARSyS and INESC-ID in blockchain technologies and design innovation.

Financial Unit (FU)

One of the Directors of LARSyS or INESC-ID will be appointed to oversee the development of the project, and will be responsible for coordinating the Financial Unit (FU). This unit will carry out all financial management of the project, while being the formal link between the project participants and the European Commission. The FU will include members of the administrative staff of LARSyS and INESC-ID, who will be responsible for:

- All financial management issues related to the Project;
- The regular evaluation of the actions defined and the correct financial execution of the project;
- Communication and mediation with the European Commission.
- Provision of resources (financial, personnel and related tasks);
- Elaboration of yearly financial reports;
- Submission and validation of project reports;
- Efficient communication with the European Commission, mediating the link with the RMU.

Research Management Unit (RMU)

The Research Management Unit (RMU) will be formed by Directors of LARSyS and INESC-ID, the ERA Chair holder and other management personnel from Técnico - Lisbon, including personnel of the ERA Chair Support Team. The RMU will focus on the definition of the strategic lines of the project in close collaboration and coordination with the ERA Chair holder.

- Coordination with the person responsible for each WP and verification of the strategic and operational aspects to be implemented as part of each WP;
- Preparation and permanent follow-up of the working plans to be implemented;
- Organisation and monitoring of the project;
- Establishment of the management structure;
- Organisation of the recruitment process of the ERA Chair holder and his/her team, including the organisation of the Search Committee and the Selection Panel;
- Elaboration of a detailed Strategic Plan;
- coordination of trans-national cooperation (with the Partnering Organisations) and task distribution, envisaged management, support and coordination procedures at regional level (distribution of tasks and actions, allocation of resources, communication and diffusion plan and risk and contingency plan);
- Elaboration of the Data Management Plan;
- Detailed definition of the communication and dissemination plan; (vii) Definition of the follow up and evaluation system method;
- Follow-up of project implementation and progress;
- Ex-ante, on-going and ex-post evaluation (project results and progress evaluation will include a set of relevant indicators which will be measured from a baseline date to the end of the project in key phases or periods);
- Elaboration of yearly reports (progress and evaluation reports);
- Elaboration of the final report.

ERA Chair Board

The ERA Chair Board will be composed by seven elements, including the ERA Chair holder, one element from the Board of Directors of LARSyS and one member from the Board of Directors of INESC-ID, one element from the Research Management Unit, one element invited from a top-level EU research institution, one element appointed by the Scientific Council of Técnico - Lisbon and one element invited to represent the industry affiliates. The ERA Chair Board supervises the strategy of the project, monitors the quality of the work and its overall progress, contributing to develop and organise technical aspects, solve operational problems, etc.

- Set the Strategic course of the project;
- Identification of criticalities and proposition of possible contingency actions to meet the project goals;
- Coordination of all actions proposed and the project position toward the European Commission;
- Follow-up with the implementation of the actions envisaged in the project work plan;
- Discussion and approval of the methodology and tools for the project implementation;
- Advice on the research strategy and sustainability of BIG beyond the end of the project.

Working Groups

Each WP will be developed by a working group, including members of the ERA Chair and members of the LARSyS and INESC-ID staff allocated to the project. Leadership of WP1 and WP2 will be designated by the ERA Chair Board at the kick-off meeting. For the other working groups, leadership and membership will be established after hiring the ERA Chair holder, to benefit from his/her input in the organisation of task development. The leader of each working group will interact directly with the Research Management Unit (RMU) and the ERA Chair Board to report on the development of tasks, to participate in decisions regarding the course of action, to request resources, and on other related tasks.

- Development of the activities of each work package;
- Support and action plan for each phase of the project;
- Report on the work progress, deliverables, achievements, and deviations from schedule, problems, and results, following the reporting methodology adopted in the project.

3. Quality Management

3.1 Deliverables

BIG's deliverables will allow the project PIs and the European Commission to monitor the project's progress. The deliverables should meet a set of quality criteria, as described below:

- **Reliability:** The information provided must be reliable and the working groups should be able to reinforce the information reported. When possible, the reports should be supported by references.
- **Precision:** The information should be precise and should take into account the target audience.
- **Relevance:** The information reported on should meet the purpose of the grant agreement, according to the project goals.

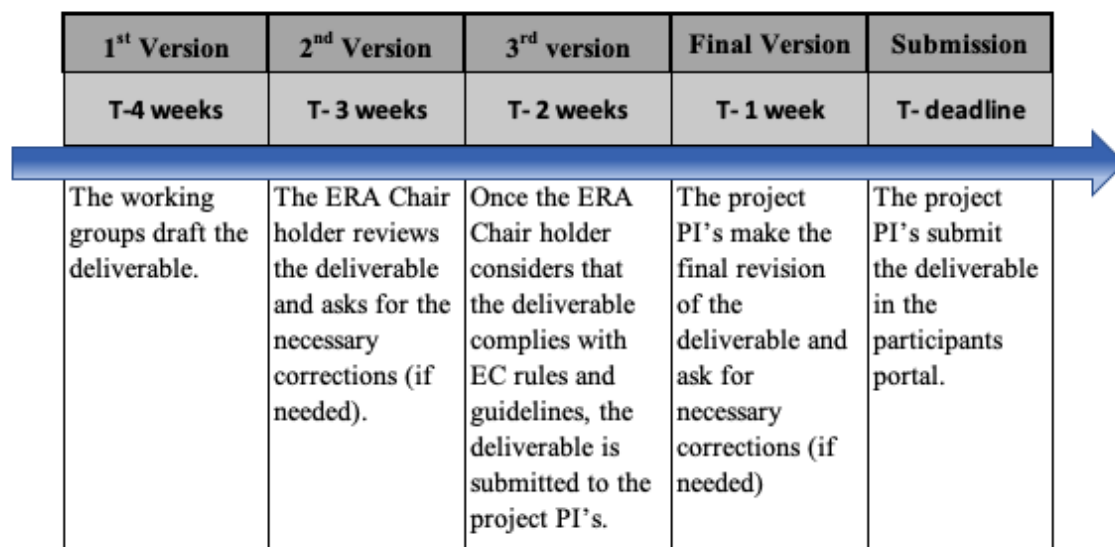


Figure 2 - Timeframe for deliverables

The time frame shown in Figure 2, should be applied for the review process and submission of deliverables.

3.2 Milestones

To ensure the proper execution of BIG, a number of milestones were determined to assess the evolution of the Project. The project PIs and the ERA Chair holder will ensure that project milestones are met, and they will take corrective actions if and whenever appropriate.

Milestone	Milestone name	Work Package	Delivery Date	Means of verification
1	Kick-off Meeting	WP1	30-9-2020	Organisation of kick off meeting and resp. minutes
2	Intermediate Audit Report	WP1	28-02-2023	Quality Assurance Milestones
3	Full recruitment of research team	WP2	31-08-2022	Recruitment of the ERA Chair holder and teams
4	Building capacity to compete for H2020 funding	WP3	31-08-2022	Training of personnel to gain expertise in H2020
5	Exchange and secondments of students and WP3 researchers	WP3	31-08-2023	Availability of Deliverables
6	In house BIGLab Ready	WP4	31-05-2022	Availability of Deliverables
7	BIG Test Bed Available	WP4	31-08-2022	Availability of Deliverables
8	BIG Living Lab Available	WP4	30-11-2022	Availability of Deliverables
9	Establishment of Industry Affiliation Program	WP4	31-12-2021	Availability of Deliverables
10	The final version of the Knowledge Transfer plan	WP4	31-08-2021	Availability of Deliverables
11	The final version of the Communication and Diss. plan	WP5	28-02-2023	Availability of Deliverables
12	Project Website and Documentation	WP5	28-02-2021	New BIG Website
13	Knowledge Management System implemented	WP5	31-08-2021	Availability of Deliverables
14	Project newsletter ongoing	WP5	31-08-2025	Availability of Deliverables

15	Independent Evaluation Report	WP6	31-08-2025	Availability of Deliverables
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3.3 Risk Management

BIG presents some generic risks inherent to support actions from ERA Chairs, and some specific risks related to the peripheral location of Portugal within the European context.

The first potential source of risks is in project management. As explained previously the structure of management tasks and organisation of the project have been carefully considered thereby mitigating management risks. The experience of the project team, existing links of trust and cooperation among the project PIs and the Working Groups, and the activation of special management procedures as soon as problems first appear will reduce this class of risks. The project PIs and the ERA Chair holder will ensure that project milestones are met, and they will take corrective actions if and whenever appropriate. One of the roles of the ERA Chair Board is to advise on the management and leadership aspects of the project, particularly in promoting best practices for risk mitigation. Furthermore, the experience of the Board will help anticipate potential problems and address unforeseen challenges.

The main risk of the project is related to the innovative approach to combine blockchain and distributed ledger technologies and design innovation for social good, and the associated plan to transfer this knowledge to third parties. Medium risk is inevitable in a project of this kind, which pursues the high-stake goal of attracting a world-class researcher to a peripheral region of Europe and fostering a center of competence with international recognition. This proposal focuses on the applicability of cutting-edge technology to answer sustainable development challenges for an array of sectors of society. There are inherent technical (WP4) and logistical (WP5) challenges due to the ambitious character of the proposal. Yet, Técnico - Lisbon and the proposal partners are at the front edge on the use of digital technologies to address the challenges of the data economy. The combination of available talent in the current proposal assures the existence of a critical mass able to tackle challenging problems and offer innovative solutions. Moreover, LARSyS and INESC-ID already have an extensive record of knowledge transfer to key decision-makers both in the private (e.g., many spinoff companies) and public sectors. The proposed Industry Affiliates Program will further develop these collaborations while also guaranteeing that the appropriate channels for the applicability of this proposal are open and feasible.

The risk of potentially considering the project too ambitious is controlled by the excellence and background of the team members and the recruitment of experienced professionals. The ERA Chair holder and his/her team will fill in the identified gaps, particularly in the areas of protocol and tool development, creative media, and sustainability. Finally, the objectives will be verifiable and monitored by the ERA Chair Board. To overcome the risk of ensuring enough time to guarantee a long-term sustainable impact of the ERA Chair in Técnico - Lisbon, the project envisages several activities to

achieve sustainability, including the participation in H2020 calls, the creation of the Industry Affiliates Program, and increasing the awareness within LARSyS and INESC-ID to address themes aligned with H2020 priority challenges, and the national and regional smart specialisation strategies. The remaining activities are mitigated by the following facts:

- The partners are experienced with experimental research and are at the frontier of knowledge in the research areas where they contribute;
- Intermediate milestones and specifications have been designed to minimise the risk of delay or failure;
- The labs of LARSyS and INESC-ID are already equipped with state-of-the-art equipment for advanced computing.

The risk inherent to high impact research will be minimised gradually: first, a thorough evaluation of the current state of existing solutions, then testing and design of new approaches, and finally through real-world deployments (possibly leading to further iterations of the design solutions). The applied facet of the project will limit the risk of arriving at solutions that are not suitable in real environments, hence assuring that developed methods and techniques can be used by third parties. Additional risks are described in the following table, which includes the level of risk, the related WP, and the contingency plan foreseen in this project.

WP	Risk	Potential Effect	Risk Level	Risk Management Strategy
WP1	Bureaucratic and institutional resistance to the applicability of new practices	Low	Low	The experience with management of EU projects of the hosting institution and the associated Labs mitigates risks
WP2	Difficult in recruiting researchers / staff members to Portugal	Delay in recruitment process	Medium	The network of partners and search committee will provide support to attract candidates; project duration (5 years) prevents uncertainty about the future
WP3	Delay or a longer training for researchers required	Delay in acquiring the capacity to fully exploit lab facilities	Low	Advanced planning and conservative estimates of training needs
WP4	Unforeseen breakdowns in deploying labs, testbeds and living lab	Delay in acquiring and making labs operational and effective	Low	Experience with real-world lab deployment and commitment of industry affiliates guarantees timely application of new methods and techniques
WP5	Communication channels between third parties and projects participant are slow	The novelty associated with the project loses impact in the media and overall dissemination	Low	Técnico – Lisbon collaboration with third parties and media has already proven to work efficiently on science and technology dissemination

Figure 3 - Summary of the Risk Analysis and mitigation of the Project

A risk/ issue log template was also created (Annex 1) to be used by the project PIs to ensure that potential issues or conflicts issues are raised, investigated, and solved quickly and effectively.

4. Communication

4.1 Internal Communication

The internal communication strategy's main goal is to ensure the cooperation of all parties involved in the BIG project. To ensure effective internal communication, the following tools are predicted to be in use:

Meetings

ERA Chair Holder and Project PIs

The ERA Chair holder and the Project PIs will meet periodically to monitor the progress of the project and decide on the best course of action for the future. These meetings should happen approximately every six months and should coincide with the achievement of major milestones.

ERA Chair Team

The ERA Chair Team should meet every week to report on the progress of the tasks assigned. For day-to-day communication, the team should use email and phone, when necessary.

Working groups

The researchers and leaders of the working groups will meet when necessary or upon request of third parties. The ERA Chair holder should develop a relationship with these researchers, which will ensure close communication and avoid last-minute workload.

ERA Chair Board and Advisory Board

The ERA Chair Board will meet once or twice per year, as necessary. The calendar of the ERA Chair Board meetings should coincide with the Advisory Board meetings of BIG preferably once per year. This will ensure additional scrutiny of the project and assist the ERA Chair holder and the board to guarantee the effective progress and execution of the Project.

Meeting Minutes

Meeting minutes should be produced in all situations mentioned above. The minutes should be written by the project manager or by the ERA Chair Holder and should be made available to all interest parties and participants. The minutes of the meetings between the ERA Chair Holder and the Project PI's or from the ERA Chair Board and Advisory Board should be made public. The meeting minutes should include the following:

- Data, time of the meeting and venue;
- Agenda;
- Participants List;

- Actions are taken or agreed to be taken;
- Voting outcomes (if any)

Mailing lists

Electronic Mail (e-mail) should be the preferred means of communication used among the Project team. For a better organisation of internal communication, the following mailing lists will be created:

- erachair-all@tecnico.ulisboa.pt
- erachair-board@tecnico.ulisboa.pt
- erachair-admin@tecnico.ulisboa.pt

Project Repository

The Project website will include an intranet platform, linked to LARSyS and INESC-ID websites, which will allow the dissemination and sharing of knowledge, materials, methods, and results among the internal partners of Técnico-Lisbon. The intranet will also be used to store all project documentation documents, work plans, agendas, and minutes of meetings.

Tools for Sharing and Collaboration

To ease the exchange of BIG related electronic documents, or to allow cooperation in the production of documents, the team will use a cloud solution based on google drive. All relevant documents can be found in a tree of shared folders for the project.

Document Guidelines

All formal documents produced in the scope of the BIG Project should follow specific standards to ensure coherence. All involved in the project should follow these rules, specifically the working groups who are responsible for producing the project deliverable to be submitted to the EC.

5.2 External Communication

A set of tools will be developed to ensure the promotion of the project and the dissemination of its results.

Project identity

The BIG project logo should be used in all forms of communication to the public and dissemination of results/events. The logo should be displayed in one of the following forms:



Figure 4 – BIG Project logos

Newsletter

As part of the dissemination and communication plan, BIG will maintain a newsletter with updates on BIG and LARSyS and INESC-ID activities, ranging from upcoming research seminars, workshop, and conferences, to EU proposals under preparation, future calls of interest, and announcements of support and donations from the corporate affiliates. A special section will include “calls for action”, in which partners advertise opportunities for collaboration among different groups and corporate partners

Website

A website will be designed, developed, and maintained throughout the project and beyond as we proceed to stage two. Every effort will be made to maintain the project website active after the completion of the project. This site will include dissemination material including information about the concepts, strategic vision, objectives, and expected outcomes of BIG. It will discuss the problems that BIG intends to solve and will also provide results, findings, and operation guidelines as they emerge. Web 2.0 features will also be provided on the web site, such as enabling end-users to send their comments to BIG participants and subscribing to RSS feeds for project updates. The website will include a private area for LARSyS and INESC- ID partners to exchange information. The website will be a valuable source of information not only for BIG but also for all issues that are of interest to the wider community.

Social Media

BIG will be present on social media to ensure that the project reaches a broad audience. The communication channels that will be used may vary throughout the lifetime of the project, since this is a highly dynamic market where trending social media sites are constantly changing.

All the content to be shared via social media should be sent to WP5 Leader.

6. Conclusion

BIG’s Quality plan is structured to guarantee the quality standards and effectiveness of the procedures of the project activities. The Era Chairs and its team, as well as the management structure, IST,

LARSYS and INESC-ID staff, will be able to rely on this deliverable to make sure that all goals that have been set on the GA will be met and delivered with high standards.