



GENERAL PROJECT REVIEW CONSOLIDATED REPORT (HE)

COVER PAGE

PROJECT	
Project number:	101072637
Project acronym:	QSI
Project name:	Quantum-Safe-Internet
Call:	HORIZON-MSCA-2021-DN-01
Topic:	HORIZON-MSCA-2021-DN-01-01
Type of action:	HORIZON-TMA-MSCA-DN
Service:	REA/A/01
Project starting date:	1/10/2022
Project duration:	48 months

PROJECT REVIEW	
Period covered:	from 1/10/2022 to 30/9/2024
Reporting period number:	1st
Date of the latest version of DoA against which the assessment is performed:	22/6/2022
Date of meeting with consortium (if applicable):	Not applicable
Name of project officer:	Maja KAMCEVA
Name(s) of monitors:	Not applicable

1. OVERALL ASSESSMENT

1. Overall assessment
<p><input type="radio"/> The project has fully achieved its objectives and milestones for the period.</p> <p><input checked="" type="radio"/> The project has achieved most of its objectives and milestones for the period, with relatively minor deviations.</p> <p><input type="radio"/> The project has achieved some of its objectives and milestones. However, corrective action will be required.</p> <p><input type="radio"/> The project has failed to achieve critical objectives and/or milestones and/or is severely delayed.</p>
2. General comments (executive summary)
<p>The overall assessment on the activities performed by the consortium of the QSI project is positive. The consortium agreement has been signed. The entire consortium has been working hard towards the achievement of the proposed objectives. The project management is very good, appropriate and committed. All DCs projects (minus one, that at University of Geneva which had difficulties with one of PhD enrolment - as reported in comments to Milestone 30 – see 11 PR – List of Milestones) have been already started reporting achievements that were published (one article submitted, several conference contribution) making an impact in the field of Internet security. Kick-off meeting and two schools have been held, the webpage is up and running, and it is continuously updated. A noticeable deviation is the delay in recruitment and enrolment of one DC due to difficulties at University of Geneva. It is expected that consortium will increase a number of published articles and conference contributions (especially oral presentations), and report their future achievements (Deliverables and Milestones) without delays.</p>
3. Recommendations
<p>The QSI project runs satisfactorily. Most Milestones (except one) and all Deliverables have been assessed positively. However, it is expected that consortium will increase its published articles and conference contributions in future as well as to timely deliver the remaining Deliverables and Milestones.</p>
4. EIC follow up actions (for EIC actions)
<p>Not applicable.</p>
5. Does the project meet the necessary conditions for receiving additional grants under the EIC? (for EIC actions)
<p><input type="radio"/> Yes</p> <p><input type="radio"/> No</p> <p><input checked="" type="radio"/> Not applicable</p>

2. OBJECTIVES AND WORK PLAN

1. Is the progress reported in line with objectives and work plan as specified in the DoA? If there are significant deviations, please comment.
<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Partially <input type="radio"/> Not applicable
<p>Despite one deviation (lack of recruitment for one PhD position - as of January 2024, one PhD candidate from the University of Geneva is pending to join the project; the position was still available as the person who had filled the position in December 2023 did not fulfil the expectations), the progress as described in the report with respect to all reported Milestones is in line with objectives and work plan as specified in the grant agreement. The overall assessment on the realization of the QSI project by the consortium is very positive. All members of the consortium have been working towards the achievement of the proposed objectives. The project management is very good, appropriate and committed to the planned activities. At this point of the assessment, it is expected that the consortium will realize the project objectives and all DCs will complete their individual projects leading towards their PhD theses. It is also expected that scientific output (articles in scientific journals) will confirm very good realization of the project as planned via Milestones and Deliverables. Finally, timely reporting of Deliverables needs to be improved.</p>
2. Are the objectives of the project still scientifically, technologically and economically relevant?
<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Partially <input type="radio"/> Not applicable
<p>The objectives of the QSI project are still scientifically, technologically and economically relevant. To support the assessment it is worthwhile to mention several PhD projects of great scientific, technological as well as economic importance that will certainly bring important results: improvement of the security proofs of quantum key distribution and developing an autonomous twin-field quantum key distribution prototype, development of algorithms by means of quantum communications protocols, upgrading existing security proofs, advancement of quantum repeater protocols compatible with packet-switched networking, and security and development of quantum cryptographic schemes implemented over quantum networks with multiple users.</p>
3. Critical risks
<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Partially <input type="radio"/> Not applicable
<p>The critical risks as determined for each research project to be realized by PhD candidate are still relevant. The report deals with the problem of risks that are encountered in a very well manner. The possible risks are currently mitigated or mitigation procedures are proposed and/or planned to be executed. Sometimes, the mitigation-plan avenue can bring even more important results or can lead to development of stronger tools that were not anticipated at the beginning of the project. Sometimes, to resolve the problem associated with a risk requires a coordination with different stakeholders.</p>
4. Does the project respect the ‘do no significant harm’ principle?
<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Partially <input type="radio"/> Not applicable
<p>Yes, the QSI project respect the ‘do no significant harm’ principle in all the above-mentioned categories.</p>
5. Is the gender dimension appropriately taken into account?

<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Partially <input type="radio"/> Not applicable
<p>As stated in the QSI project and its evaluation report, gender and other diversity aspects were satisfactorily included in the training programme in each of the individual research projects. The gender dimension is continuously taken into account in a proper manner during realization of the project.</p>
6. Does the project respect the commitments concerning open science as described in the DoA? Is it undertaking additional open science practices?
<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Partially <input type="radio"/> Not applicable
<p>The QSI project respects and supports the development of appropriate open science practises among DCs by offering training opportunities and assisting the DCs with their use. These open science practises will result in increased future research collaboration. The project is managed in line with the FAIR principles. It concerns data collection which is for research purposes in the domain of quantum and classical cryptography. All data belong to the beneficiary partners. Partners and partner organisations are using standard software packages to collect, store, and share data. All research data from the project are provided in open access format and are uploaded to open access repositories, following the EC guidelines. All data and research outputs are described using standard descriptive metadata. The project is distributing its data in open access formats, and by adopting licenses that allow full data reuse. Each partner who generates or reuses research data is responsible for their quality, organization, management, publication, preservation and secure storage during realization of the project. Each partner follows its institute data protection and information security policy. All partners comply with the EU regulations on ethical aspects of data management.</p>
7. Is the project adequately integrating social sciences or/and humanities? (for SSH topics)
<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Partially <input checked="" type="radio"/> Not applicable
8. Have the ethics/security deliverables due for the current period been adequately addressed and approved?
<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Partially <input checked="" type="radio"/> Not applicable
9. Did the fellows/staff members demonstrate sufficient knowledge of the research project?
<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Partially <input type="radio"/> Not applicable
<p>All staff members and all DCs that are involved in the realization of QSI the project are: 1) highly qualified researchers with noticeable scientific track record (staff members), 2) scientists with rich international cooperation (staff members), 3) scientists with considerable experience in supervising of young DCs in their pursues towards PhD theses (staff members), and 4) young researchers with great scientific achievements that led them to be enrolled and participate in the QSI project (DCs).</p>

10. Were the fellows aware of their rights and obligations as a Marie Skłodowska Curie fellow?
<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Partially <input type="radio"/> Not applicable
<p>I believe that the DCs are aware of their rights and obligations as Marie Skłodowska-Curie fellows. Expressing their interest to be enrolled into the project as the DCs and accepting the conditions to be PhD candidate within the QSI project they had to accept the MSCA rules. And the rules include rights and obligations while being a MSCA fellow. Also, according to the PO, the rights and obligation were discussed and mentioned again during the midterm check meeting held online on 15 December 2023.</p>
11. Did any issues requiring REA follow-up arise during the meeting?
<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> Partially <input type="radio"/> Not applicable
<p>No issues have arisen during this mid-term evaluation that would require REA follow-up. Some minor recommendations and action points for the consortium to follow up were sent to the coordinator after the midterm check meeting.</p>
12. Has the project effectively addressed the relevant standardisation aspects in R&I activities?
<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Partially <input checked="" type="radio"/> Not applicable
13. Did the EIC beneficiaries prioritise IP protection over dissemination when applicable, particularly with regards to results with market potential?
<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Partially <input checked="" type="radio"/> Not applicable
14. Have the comments and recommendations from previous project reviews been taken into account?
<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Partially <input checked="" type="radio"/> Not applicable
<p>This is first review of the QSI project.</p>

3. IMPACT

1. Is the proposed pathway to achieve the expected outcomes and impacts still credible?
<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Partially <input type="radio"/> Not applicable
<p>Certainly, the proposed pathway to achieve the expected outcomes and impacts of the QSI project is, no doubt, still credible. There is no change in expected scientific, technological and societal impacts that were specified in the proposal of the QSI project and positively evaluated. No potential negative environmental outcome or impact of the QSI project is foreseen at this stage if its realization.</p> <p>Overall, while monitoring the progress in execution of the QSI project and how the entire consortium has been working towards the achievement of the proposed objectives delivering results and achieving the milestones, my assessment leads me to the conclusion that the realization of the project can likely be considered as a potential success story. This is additionally supported by the fact that project management is very good, appropriate and committed.</p>
2. How will the project have an impact on policy making (if any)?
<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Partially <input type="radio"/> Not applicable
<p>It is expected that realization of the QSI project will fill a gap in the scientific community that concerns quantum-safe cryptography which targets technical audience in industry and policymaking. Realization of the QSI project will engage the policymakers within the fields of quantum safe internet, quantum safe cryptography, cybersecurity and hybrid technologies. Consequently, the realization of the QSI project may have an impact on policy making. It is expected that via planned industrial secondments, DCs will experience work in the private sector, and, via outreach activities, the DCs will engage also in policymaking. In some countries of the partners, the provided job opportunities require technical knowledge of quantum-safe systems for policy making.</p>
3. Please indicate the EU headline priorities to which the project has contributed or will contribute to.
<input type="checkbox"/> European Green Deal <input checked="" type="checkbox"/> Economy that works for people <input checked="" type="checkbox"/> Europe for the digital age <input type="checkbox"/> Promoting the European way of life <input checked="" type="checkbox"/> A stronger Europe in the world <input type="checkbox"/> A new push for democracy
<p>All the EU headline priorities marked above are associated with expected results and impact of the QSI project in the field of quantum-safe internet, quantum safe cryptography, cybersecurity and hybrid technologies.</p>
4. Are the measures to maximise impact still suitable? (n/a for EIC Pathfinder)
<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Partially <input type="radio"/> Not applicable
<p>Yes, all the planned measures to maximise the impact such as dissemination of the results via QSI website, QSI workshops and schools are set up in the plan for the dissemination and exploitation. Also, communication activities are included (see e.g. digital newsletter, local science events) and proportionate to the scale of the project. The activities contain concrete and well-planned actions to be implemented both, during the realization of the project and after its completion.</p>
5. Are the measures for public/stakeholder engagement properly implemented? (for EIC Pathfinder)

<input type="radio"/> Yes
<input type="radio"/> No
<input type="radio"/> Partially
<input checked="" type="radio"/> Not applicable
6. Translation into innovation (for EIC Pathfinder)
<input type="radio"/> Yes
<input type="radio"/> No
<input type="radio"/> Partially
<input checked="" type="radio"/> Not applicable
7. Empowering key actors (for EIC Pathfinder)
<input type="radio"/> Yes
<input type="radio"/> No
<input type="radio"/> Partially
<input checked="" type="radio"/> Not applicable

4. IMPLEMENTATION

1. Has the project been efficiently and effectively managed (including risk management)?
<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Partially <input type="radio"/> Not applicable
<p>The QSI project is efficiently and effectively managed through supervisory board of the QSI network which oversees the entire conduct of the project and has responsibility for decision making in all the areas related to the network-wide training and research activities, and for the communication with the EC. Another management bodies are: industrial advisory board, finance group, and four committees (research, training, recruitment and dissemination and impact). Their management responsibilities are well-planned and well executed.</p>
2. Have all the obligations described in the grant agreement (contract) been respected by the participants (including ethics and security requirements, if applicable)?
<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Partially <input type="radio"/> Not applicable
<p>Yes, all the obligations described in the grant agreement have been respected by the participants, including ethics and security requirements.</p>
3. Have all participants contributed to the project according to the work-plan described in the DoA?
<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Partially <input type="radio"/> Not applicable
<p>Based on the mid-term report, all participants are contributing to the QSI project according to the work-plan described in the grant agreement.</p>
4. Have the EIC beneficiaries protected the IPR of the results with market potential (foreground) as planned in the DoA (including patents filing or any other formal IPR protection)? How do the beneficiaries plan to get return on investment over the generated IP? (for EIC Pathfinder)
<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Partially <input checked="" type="radio"/> Not applicable
5. Have the participants disseminated project results (foreground) and have they communicated project activities and results as planned in the DoA (e.g. through publications, a page for the project on social media, press-releases, a website, video/film, etc.) and have they included a reference to EU funding?
<input type="radio"/> Yes <input type="radio"/> No <input checked="" type="radio"/> Partially <input type="radio"/> Not applicable
<p>Only one article has been submitted as a result of realization of the QSI project. In this article: Alnhawi et al, submitted to EUROCRYPT, https://eprint.iacr.org/2023/1368, there is an appropriate reference to the EU funding: “Silvia Ritsch is part of the Quantum-Safe Internet (QSI) ITN which received funding from the European Union’s Horizon-Europe programme as Marie Skłodowska-Curie Action (PROJECT 101072637- HORIZON MSCA-2021-DN-01)”.</p>

In the project webpage there is an acknowledgement: “QSI is a European project funded by the European Union’s Horizon Europe research and innovation programme under the Marie Skłodowska-Curie grant agreement n° 101072637”.

Nothing can be said about references to the EU funding as far as conference papers, conference presentations, colloquia, and other dissemination means are concerned.

6. If the plan for exploitation and dissemination provides for exploitation primarily in non-associated third countries, have the participants explained how that exploitation is still in the EU interest? Is it acceptable?

- ☐ Yes
- ☐ No
- ☐ Partially
- ☒ Not applicable

7. Are the critical implementation risks and mitigation actions described in the DoA still relevant?

- ☒ Yes
- ☐ No
- ☐ Partially
- ☐ Not applicable

The critical implementation risks and mitigation actions described in the grant agreement are still relevant. No new risks and mitigation measures have been identified. The identified risks in the QSI project are managed well.

5. RESOURCES (N/A FOR LUMP SUM AND UNIT GRANTS)

1. Were the resources used as described in the DoA and were they necessary to achieve the project objectives?
<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Partially <input checked="" type="radio"/> Not applicable
2. If there are significant deviations from planned budget, have they been satisfactorily justified?
<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Partially <input checked="" type="radio"/> Not applicable
3. If unforeseen subcontracting costs are declared, do you agree with them?
<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Partially <input checked="" type="radio"/> Not applicable
4. If unforeseen in-kind contributions costs are declared, do you agree with them?
<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> Partially <input checked="" type="radio"/> Not applicable