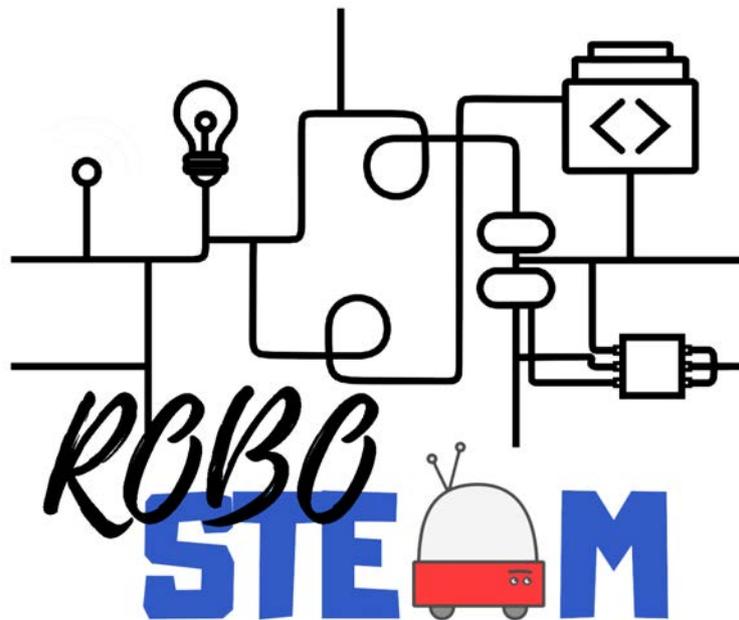


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# RoboSTEAM Quality Assurance Plan

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## 1 INTRODUCTION

Quality management is an important process in all spheres of business life. It is not only proved by the growing number of publications on quality assurance, but also by the requirement of contractors for the implementation of such activities.

Quality management is more than an externally imposed obligation. It is seen as an inseparable part of project management, which ensures the quality of project's processes and results. Therefore, all projects funded by the European Commission include quality management in their work.

Quality management process should satisfy the following four basic requirements:

- Usefulness, e.g. clearly defined goals for evaluation of the results.
- Feasibility, e.g. accurate planning of methods, time, costs.
- Fairness, e.g. respect to the "objects" of evaluation.
- Accuracy, e.g. production of valid results regarding the evaluation questions, aims and targets.

The European Commission has set it as a requirement that all funded projects should plan quality management processes in order to:

- Simplify the consultation process within the project partnership.
- Predict the development of the project and prepare the project team for pressure points in the course of the project life span.
- Assist the project coordinator in quantifying results and relating these to the project objectives.

All partners will be involved in evaluation and quality assurance processes and will commit to procedures of critical review and improvement.

Quality management will provide practical and direct support for the project implementation. All partners will be involved in and committed to the procedures and activities described in the following plan.

## **2 PURPOSE OF THE QUALITY ASSURANCE PLAN**

The purpose of the Quality Assurance Plan, in addition to monitor the general satisfaction of the partners, is to ensure that the RoboSTEAM project [1-3] activities are developed within the agreed timetable and with the agreed quality, according to the framework set to achieve the expected milestones and results.

More in detail, the aim of quality assurance plan is to ensure that all partners contribute with the necessary documents and information to the correct development of the project.

In summary, the project Quality Assurance Plan, aims to:

- Create confidence in the quality of the work that the consortium will perform by showing how the project will be carried out, measured, monitored, accounted for and safeguarded during and after development.
- Define roles and responsibilities, with emphasis on the required skill sets to address the complexities and risks of the project.
- Show how changes and problems can be identified and reported.
- Clearly define the content, format, sign-off and review process, and responsibilities for each output.
- Make visible all the means that are and will be applied to meet the technical and quality requirements.

### **2.1 Quality Assurance Approach**

The purpose for managing quality is to validate that the project outputs are completed with an acceptable level of quality.

Quality management assures the quality of the project outputs and of the processes used to develop the project activities and the outputs.

Key components of the quality management plan are:

- Project outputs, which must respond to the expected quality standards and to stakeholders' expectations.
- Project processes, which must respond to the expected quality standards and to stakeholders' expectations.

The quality management structure and procedures shall:

- Be adequate to the objectives and complexity of the project (activities as described in the implementation section G of the proposal).
- Not be too time consuming.
- Not lead to a lack of flexibility in the project.

That is why the Project Quality Assurance Plan is focused on specific activities and outputs, which seem essential to the participants.

## 2.2 Quality Assurance Objectives

The main objectives of the quality management plan are to:

- Monitor the project progress.
- Ensure the quality completeness of each activity and output separately and of the whole project.
- Ensure the quality of the key processes and the key results of the project.
- Identify possible bottlenecks and enable corrective activity.

### 2.3 Evaluation Framework

Quality Assurance will focus on ensuring that all the activities, resources and objectives planned in the proposal are correctly executed, used and achieved. The quality assurance plan developed early in the project (M1), will be implemented along the project lifecycle and reports on the progresses will be provided in M6, 12, 18, 24 (questionnaires and individual and group interview techniques to identify partners perceptions and issues that may arise will be used) so to ensure timely completion of the work and early anticipation of problems and the support of the external evaluation.

Organisation: It will be led by the USAL. All partners will be involved according to their participation in the monitoring activities.

The quality of the ROBOSTEAM project activities and results will be monitored through a continued assessment of the achievements against the agreed schedules for the project. This will include regular reviews of the project, of the successful delivery of project activities, outputs, communications plans, dissemination and exploitation targets and all other aspects of project delivery. Activities' leaders will be responsible for answering the questions and for data collection. The main instruments that we will use are questionnaires, face to face interviews, group discussions, document analysis and observations. These monitoring tools will be developed by USAL as responsible of the monitoring and evaluation of the project.

USAL will be responsible for providing progress and final quality reports (months 6, 12, 18, 24). The interim reports will provide information on the evaluation activity carried out during the previous months to assure the quality of the work actions carried out, and the resources and other outcomes produced. They will include both feedback on past project activities and recommendations regarding future activities. The final report will be produced at month 24 and will provide with information on the evaluation activity carried out during the whole project and the results of these actions.

It is intended that the USAL will facilitate both a formative and summative evaluation process to ensure that evaluation will be that part of the project where the partners

stand back and take stock. It is where each of the partners individually and as a group will:

- Monitor what they are doing, with whom and how.
- Measure what they have done and achieved.
- Find out what was effective and what was not.
- Identify innovation and best practice.

USAL will organize the discussion during the face to face meetings.

Evaluation will not be an add-on feature but an integrated part of the project to ensure the learning, the products and the impact is sustained beyond the life of the funding available. Evaluation is at its best when it is fully integrated into all project stages, so this has been planned to be delivered as a formative evaluation process. The role of the internal evaluation process is crucial at each transnational meeting in particular asking:

- Can we learn from our mistakes?
- Can we pass on the benefits of our experience to others?
- Can we account for the money and resources being used?

## 2.4 Assessment Questions

Evaluation is about asking the right questions at the right time. The evaluation will consider the following aspects at each stage as shown below:

- Clarity of Objectives Outcomes Targets and Measures.
- How clear are the objectives of the project?
- Are they well defined?

- Are they quantified?

Design of evaluation will help decide on the best way to organise the project. Typical questions are:

- What is the most effective way to respond to particular problems?
- What have other communities with similar problems done?
- How effective have comparable projects been?
- What sort of outcomes can realistically be expected?
- What sort of resources, funds and skills will be required?
- What management will be needed?
- How clear are the objectives of the project?
- Are they well defined?
- Are they quantified?

These are questions to be discussed at each transnational meeting. The results will be summarized by the use of questionnaires completed by each partner after each meeting as a formative part of the project evaluation.

**Process** or interactive evaluation examines the project's implementation and whether it was delivered in the way it was intended. Typical questions are:

- Was the project implemented as planned?
- What led to any variations of the implementation plan?
- What does the project need to do in response to any changes?
- How significant are the changes in delivery (incremental or transformational)?

The **Outputs** of the project at each stage of evaluation (interim and final):

- How is the project performing against these targets?
- At what stage were objectives agreed?
  - How effective is the project in working towards achieving its objectives?
  - How much of the outcome to date can be attributed to the project and how much to other factors (e.g. underlying trends or wider initiatives that complemented the project)?
  - Is it possible to compare the project with a 'control group', who experience the same influences but are excluded from the project?
  - Has there been a demonstrable improvement in the quality of teaching/teacher-parent-pupil communication?
  - Were there any changes in levels of problem being addressed?
  - Were there any unexpected effects?
  - What dissemination has taken place to date and how effective has this been?
  - What has been the impact of dissemination?

How has **dissemination** informed the validation, exploitation and sustainability of the project? Sustainability evaluation is to find out if the project will continue / be mainstreamed, typical questions are:

- Have risks and barriers been identified for taking the project forward?
- Have opportunities for joining up with other schools/associations been fully considered?
- Have opportunities for leveraging been considered?

- Is the project 'future proofed'?
- Could the project be copied by other organisations?
- Would the benefits be different in those organisations?
- What leverage do the other organisations have?
- Are they in a position to mandate/ encourage/ facilitate wider adoption?
- Have they been involved in the project throughout its lifetime?

Quality of the **consortium's work** (lessons learned during the project implementation):

- Was the project delivered on time and within budgeted costs?
- What are the key lessons for the delivery of the project and what have you done to disseminate them?
- How did the partnership operate?
- Was there conflict?
- How was consensus reached?
- What decision-making and steering mechanisms were employed?
- Who held accountability for delivery?
- Was this shared?
- How significant was the change in delivery (incremental or transformational)?
- Did the organizations have experience of using technology before the project?

- E-delivery, how was take-up addressed and was this strategy successful?
- What support mechanisms were put in place to assist customers to use electronic services?
- How was progress monitored against: a) delivery milestones; b) target outcomes?
- What have you done to disseminate these? (the evaluation will also ensure there is constant review of dissemination activity throughout the project implementation)
- Once strategy and objectives were set, how smooth was implementation?
- What went wrong or could have been done better?
- How did leadership address the change and bring the organization on board?
- How has the project changed the organizations involved positives and negatives?

## 2.5 Assessment Tools

The evaluation plan will be validated and followed by all participants in these activities (researchers, trainers, trainees, administrative staff, partner representatives, etc).

Reports of these evaluation activities will be distributed to all partners and used during the life of the project to improve the project results and assure the good management of the project.

### Evaluation questionnaires for transnational meetings

In every partnership meeting all the partners will fill an evaluation questionnaire regarding the previous, present and future phases of the project, in order to identify potential threats and have the opportunity to operate in a flexible manner. Reports of these evaluation activities will be distributed to all partners.

The feedback-evaluation (needs, expectations, threats, important phases of the project, national specificities regarding project's procedures and objectives etc) is important because the leader of the work Evaluation and the coordinator have information to manage better the project in the future, in a constructive way.

### *Evaluation of the outputs and activities*

Special evaluation questionnaires will be created to assure the correctness and high quality of the joint staff training (C1) and the students exchange (C2, C3, C4, C5 and C6).

Feedback and assessments from beneficiaries and wider stakeholders will be captured where appropriate (O2, O3 and the multiplier events E1, E2 and E5) by questionnaires and semi-structured interviews.

## **2.6 Collaboration Tools**

The Consortium will use the RoboSTEAM Moodle environment <http://robosteampoint.eu/moodle/> to support collaborative project working and assessments and above all the recording of all the different results, drafts and final version of documents, monitoring reports.

This will allow all partners to share materials and knowledge in an effective way as well as allowing them all to access and update the project web site remotely in a very simple way. This tool will provide the focal point for project following of quality activities.

There will be the feedback of the monitoring reports as well as the feedback from the evaluation questionnaires on the key components and outputs in an on-going indicators scheme.

## **2.7 Risk Analysis**

The measures to handle project risks will be captured in the development of a risk mapping and resolution plan. USAL will take over this as part within the monitoring and evaluation systems created for quality assurance. They will be strongly supported

by the coordinator. The plan will help to identify who will be involved into the respective processes, the tools to be used, if required, the expected results and how to proceed in case the desired risk mitigation is not obtained. The steering committee will resolve any major risk or conflict with a democratic vote.

## **2.8 Progress and final Evaluation Reports**

Progress and Final evaluation reports, on the evaluation of the outputs as compared to those planned, their quality, their short-term and long-term impact, and on the evaluation of the coordination and effectiveness of the consortium will be written and approved by the coordinator and all partners.

These Reports (Progress and Final Evaluation Reports) will be the consolidation of all the results of evaluation tools.

## 3 KEY PERFORMANCE INDICATORS

### 3.1 Project Management Indicators

Performance Indicator	Themes/issues addressed in the evaluation
<b>Quality of project management arrangements</b>	<ul style="list-style-type: none"> <li>– commitment and equitable involvement of all partners</li> <li>– detailed arrangements for implementation of workplans and administration of budgets</li> <li>– clarity of project coordination</li> </ul>
<b>Effective management and leadership qualities demonstrated by project co-ordinator</b>	<ul style="list-style-type: none"> <li>– professional competence and commitment displayed by project co-ordinator</li> <li>– leadership qualities</li> <li>– quality of relationship with partners and development of teamwork</li> </ul>
<b>Effectiveness of the process of monitoring and evaluation</b>	<ul style="list-style-type: none"> <li>– quality of the proposals for on-going monitoring and evaluation of the project and of its impact at local/regional/national/European level</li> </ul>
<b>Quality of the dissemination process</b>	<ul style="list-style-type: none"> <li>– quality of the arrangements for disseminating project information/results</li> </ul>
<b>Implementation of the workplan</b>	<ul style="list-style-type: none"> <li>– adherence to the workplan by all partners</li> <li>– deviation from the workplan based on well-considered reasons and mutual agreement</li> </ul>
<b>Integration of project activities into the department's/ institution's development plan</b>	<ul style="list-style-type: none"> <li>– evidence of the project's integration into the development plan and normal activities of the participating institutions</li> </ul>

### 3.2 Consortium's Engagement Indicators

Performance Indicator	Themes/issues addressed in the evaluation
<b>Strong commitment to the project by each partner</b>	<ul style="list-style-type: none"> <li>– extent to which each partner is prepared to commit time and resources as required in line with the jointly agreed work plan</li> <li>– willingness to resolve problems</li> </ul>
<b>Agreement amongst partners</b>	<ul style="list-style-type: none"> <li>– mutual understanding about project rationale, overall aims and short-term/long-term objectives</li> <li>– clear evidence in the workplan of sharing of roles and responsibilities amongst partners</li> </ul>
<b>Effective and on-going communication amongst partners and with other agencies</b>	<ul style="list-style-type: none"> <li>– effectiveness of communication with account being taken of any language difficulties</li> <li>– clarity of communication, particularly by the project co-ordinator</li> <li>– range, purpose, fullness and effectiveness of contacts and communications amongst partners and with other agencies e.g. National Agency, European Commission</li> </ul>
<b>Trust amongst partners</b>	<ul style="list-style-type: none"> <li>– development of mutual trust throughout the life of the project</li> <li>– development amongst partners of a sense of ownership of the project</li> </ul>
<b>Development of positive attitudes</b>	<ul style="list-style-type: none"> <li>– development of positive attitudes towards Europe and transnational activities</li> </ul>

### 3.3 Consortium's Work Indicators

Performance Indicator	Themes/issues addressed in the evaluation
<b>Structure of the project</b>	<ul style="list-style-type: none"> <li>– clear rationale and clarity of objectives</li> <li>– realistic timescales</li> <li>– pertinence of topics and activities</li> <li>– clarity and consistency of the general design of the project</li> </ul>
<b>Quality of the project</b>	<ul style="list-style-type: none"> <li>– quality of the project in terms of its short, medium and long-term impact at local/regional/national/ European level</li> </ul>
<b>Quality of project materials/products</b>	<ul style="list-style-type: none"> <li>– quality of materials/guides/reports/products throughout the life-cycle of the project</li> </ul>
<b>Quality of the promotion of the European Dimension</b>	<ul style="list-style-type: none"> <li>– appropriate emphasis placed on the European dimension in education</li> <li>– effective promotion of knowledge and understanding about Europe</li> </ul>
<b>Innovation and variety of approach</b>	<ul style="list-style-type: none"> <li>– evidence of a varied range of approaches by all partners within the project</li> <li>– use, where appropriate, of innovative methodology and effective use of new technologies</li> <li>– extent of the opportunity for partners to input their own expertise and learn from each other</li> </ul>

### 3.4 Dissemination Indicators

Performance Indicator	Themes/issues addressed in the evaluation
<b>Completion of dissemination and exploitation activities</b>	Percentage of activities remaining to be completed without resulting to unfinished activities. Threshold for this indicator is less than 20%.
<b>Participation level for dissemination events</b>	Number of expected users per dissemination tool and/or activity with respect to the number of actual users per dissemination tools and/or activity Difference in % between expected users and actual users. Threshold for this indicator is a difference of less than 30%
<b>Perceived quality of the on-line dissemination activities and tools</b>	Number of unique visitors Repeating visitors

### 3.5 Intellectual Outputs Indicators

O2 (Guides for designing Open Hardware PD&R)	
<b>Quantitative Indicators:</b>	<b>Activities for measure and report:</b>
N° of other primary data analysed	Interim and Final Project Reports (A1)
N° of applications of the kits to STEAM challenges	Interim and Quality Final Reports (A2)
<b>Qualitative Indicators:</b>	<b>Activities for measure and report:</b>
Impact on and relevance on the development of O2	Interim and Quality Final Reports (A2)
Feedback from teachers and students of the partner schools	
O3 (RoboSTEAM Environment)	
<b>Quantitative Indicators:</b>	<b>Activities for measure and report:</b>
Instruments and methods downloaded	Interim and Final Project Reports (A1)
Instruments and methods compiled	Interim and Quality Final Reports (A2)
Registered users	
N° answers to the evaluation tools	
<b>Qualitative Indicators:</b>	<b>Activities for measure and report:</b>
Satisfaction of RoboSTEAM members	Interim and Final Project Reports (A1)
	Interim and Quality Final Reports (A2)
Answers to the evaluation tools	

### 3.6 Teachers Training and Exchanges Of Groups Of Pupils Indicators

<b>C1 SP-SCHOOL-EVENT - Short-term joint staff training events M18 - Germany</b>	
<b>Quantitative Indicators:</b> N° of teachers attending (planned 18) N° of trainers attending N° of days of training (planned 5)	<b>Activities for measure and report:</b> Interim and Final Project Reports (A1) Interim and Quality Final Reports (A2)
<b>Qualitative Indicators:</b> Feedback (through questionnaires) from teachers attending the training events	<b>Activities for measure and report:</b> Interim and Quality Final Reports (A2)
<b>C2 SP-SCHOOL-EXCH - Short-term exchanges of groups of pupils M13 - Spain</b>	
<b>Quantitative Indicators:</b> N° of teachers attending (planned 4) N° of pupils (planned 10) N° of days of training (planned 5)	<b>Activities for measure and report:</b> Interim and Final Project Reports (A1) Interim and Quality Final Reports (A2)
<b>Qualitative Indicators:</b> Feedback (through questionnaires) from teachers and pupils	<b>Activities for measure and report:</b> Interim and Quality Final Reports (A2)
<b>C3 SP-SCHOOL-EXCH - Short-term exchanges of groups of pupils M13 - Portugal</b>	
<b>Quantitative Indicators:</b> N° of teachers attending (planned 2) N° of pupils (planned 5) N° of days of training (planned 5)	<b>Activities for measure and report:</b> Interim and Final Project Reports (A1) Interim and Quality Final Reports (A2)
<b>Qualitative Indicators:</b> Feedback (through questionnaires) from teachers and pupils	<b>Activities for measure and report:</b> Interim and Quality Final Reports (A2)
<b>C4 SP-SCHOOL-EXCH - Short-term exchanges of groups of pupils M17 - Spain</b>	
<b>Quantitative Indicators:</b> N° of teachers attending (planned 2) N° of pupils (planned 5) N° of days of training (planned 5)	<b>Activities for measure and report:</b> Interim and Final Project Reports (A1) Interim and Quality Final Reports (A2)
<b>Qualitative Indicators:</b> feedbacks (through questionnaires) from teachers and pupils	<b>Activities for measure and report:</b> Interim and Quality Final Reports (A2)
<b>C5 SP-SCHOOL-EXCH - Short-term exchanges of groups of pupils M17 - Portugal</b>	
<b>Quantitative Indicators:</b> N° of teachers attending (planned 2) N° of pupils (planned 5) N° of days of training (planned 5)	<b>Activities for measure and report:</b> Interim and Final Project Reports (A1) Interim and Quality Final Reports (A2)
<b>Qualitative Indicators:</b> Feedback (through questionnaires) from teachers and pupils	<b>Activities for measure and report:</b> Interim and Quality Final Reports (A2)
<b>C6 SP-SCHOOL-EXCH - Short-term exchanges of groups of pupils M18 – Finland</b>	
<b>Quantitative Indicators:</b> N° of teachers attending (planned 6) N° of pupils (planned 15) N° of days of training (planned 5)	<b>Activities for measure and report:</b> Interim and Final Project Reports (A1) Interim and Quality Final Reports (A2)
<b>Qualitative Indicators:</b> Feedback (through questionnaires) from teachers and pupils	<b>Activities for measure and report:</b> Interim and Quality Final Reports (A2)

## 4 ACKNOWLEDGEMENTS

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