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WP8: 8.3

Final Evaluation Report

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Statement of originality

This document contains original unpublished work except where clearly indicated otherwise. Acknowledgement of previously published material and of the work of others has been made through appropriate citation, quotation or both.

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Glossary

D= Deliverable
HAA= Haaga-Helia University of Applied Sciences
HEI = higher education institution
KPI= Key performance indicator
IoT= Internet of Things
LEI= University of Leiden
TUD= Technische Universiteit Delft
WP=Work package

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Introduction

This report chapter covers the activities and results of the IoT Rapid-Proto Labs evaluation work package (WP8). First, it will list the activities that have been carried out by this WP, after which it will evaluate the project against the goals set in D8.1 Evaluation Plan.

In the IoT Rapid-Proto Labs project, WP8 has been organised as a management-supporting function with specific goals described in the Evaluation plan (D8.1). In contrast, the evaluation of project deliverables was conducted in a peer-review process as described in the quality plan (D2.1) and the student pilots of the project were evaluated by the LEI pedagogical team as part of WP6 (see D6.4).

The evaluation activities in WP8 aimed at ensuring that the project reaches the performance level and end-results expected by the funding agency. As specified in the Evaluation plan (D8.1.), the main focus of evaluation activities was on SIIV-goals: **S**ustainability, **I**nnovation, **I**mpact and **V**alue for money. The annual meeting of 2018 selected four KPIs for these goals. For sustainability, the KPI was the number of external collaboration partners; for innovation, the KPI was the number of disruptive projects; for the impact, the KPI was teacher satisfaction with cross-board collaboration, and the KPI for value for money was the balance of budget and work packages.

Evaluation activities

As specified in the evaluation plan (D8.1), in addition to the participation at the WP leaders and HAA internal meetings, the WP 8 was involved in a range of evaluation activities, as listed in Table 1.

Table 1. Evaluation activities performed

Activity type	Performance
Monitoring the project work plan and recommendations for correcting actions	This task has been performed by collecting the biannual reports, discussing them with the project lead, and making recommendations in connection with presenting the evaluation scorecards in WP leaders' meetings
Evaluation reports	Produced interim evaluation chapter in 2019 and facilitated an evaluation workshop in the 2018 annual meeting.
Participation in the interim and final report submission and suggesting corrective actions	The evaluation scorecard was used for the interim report. Supported the project lead to collect information for the final report.
Provision of additional evaluation tools and activities during the course of the project	A scorecard was developed for communicating the evaluation outcomes to WP leaders. The contents of the scorecard have been created to reflect the contents of EACEA project reviews. The six scorecards produced in the project are in appendix 1.

Communicating the interim evaluation results to the project	Participation in making the plan for corrective actions (database, deliverables numbering)
Participation in the sustainability planning	Linking the sustainability goals set in D8.1. with the sustainability plan and interim sustainability report
Participation in financial checking	As one of the KPIs was the balance of budget and the distribution of work between WPs, participated in the evaluation of financials and made suggestions for improvement.

Work Package deviations

There were some deviations between the Evaluation plan and the Project proposal regarding the evaluation activities. These differences resulted from the division of work between WP2 and WP8 to create two separate but closely collaborating work packages that both support the project from different points of view. It was agreed that WP8 would aim at assessing the project progress and outcomes against the funding agency's evaluation criteria and not to carry out e.g. meeting surveys and student feedback.

Involvement of partners

All partners have been involved in the evaluation activities as participants of the WP leaders' monthly meetings and annual meetings of 2018 and 2019, where evaluation aspects have been discussed. Moreover, all WP leaders have submitted biannual progress reports.

Project goals and KPIs

Sustainability

In the Evaluation plan (D8.1), the sustainability of IoTLabs was defined to mean:

1. the partnership between the institutional partners will sustain beyond the project lifetime
2. the relationships between IoTLabs institutional partners with companies will sustain beyond the project lifetime
3. the IoTLabs curriculum will sustain beyond the project lifetime
4. the IoTLabs arena will sustain beyond the project lifetime
5. the accumulated learning benefits for primary stakeholders (i.e., those individuals and institutions) involved in the project will be sustained beyond the project lifetime and transferable to new environments.

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The Final sustainability report (D1.7) gives sufficient proof that bilateral or triparty relationships between HEIs and business partners are likely to sustain beyond project lifetime (items 1 and 2 above). However, the partnership of the entire consortium is not likely to sustain. Moreover, the Final sustainability report D1.7, as well as the course examples listed in the Final curriculum report (D4.5.), provide evidence that the project has had a direct influence on the course and curriculum plans of TUD and HAA, and thus, it can be concluded that the learning benefits will sustain beyond project lifetime at least at these institutions (items 3 and 5 above). Whereas at the early stages of the project, the goal was for the IoTLabs arena to sustain over project lifetime (item 4), D1.7 indicates that the IoT Solution Platform created in the course has more potential in securing future collaboration between partners in the future.

The KPI selected for sustainability in the annual meeting in 2018 was the number of projects conducted by other than original IoTLabs partners. However, no external partners were invited to the collaboration within the project's lifetime as the global pandemic severely affected IoTLabs project opportunities to find new partners due to travel restrictions and cancellations of international networking events (see also D2.5 Final quality report).

Innovation

The Evaluation plan (D8.1) referred to the goal of innovation by emphasizing:

1. the innovative collaborative, active and cross-disciplinary learning methods developed and enhanced in the project
2. the innovative new curriculum developed in the project
3. enhancement of students' innovation competence
4. enhancement of teacher-facilitators' skills to support students' innovation competences
5. the innovative IoTLabs Arena
6. the innovation activities of the companies who give assignments to IoTLabs

The curriculum guidelines produced in IoTLabs (D4.5) were based on a comprehensive view of literature on e-compentences and, together with the final review of pilots (D6.4), provide good evidence that the learning methods developed and enhanced in this project were innovative (items 1 and 2 above). In addition, the IoTLabs Arena was created in business - HEI collaboration and, as reported in Arena Review (D5.2), has been carefully tested to serve as an innovative collaboration arena (item 5 above).

The evaluation of the pilot projects (D6.4) provides evidence that both students' innovation skills and teachers' skills to enhance this type of disruptive innovation-focused pedagogy were improved within the project lifetime (items 3 and 4). Moreover, as the final sustainability report indicates,

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three pilot project results were transferred to the industry, and the ideas and prototypes of multiple pilot projects were well received by the commissioners (item 6).

The KPI set for the evaluation was the number of disruptive projects. As defined in D6.4, this KPI was interpreted to refer to the type of education that breaks the existing pattern of education with a new method. The pedagogical team of LEI estimated that seven IoTLabs were considered disruptive in this sense.

Impact

The evaluation plan (D8.1) defined the evaluation criteria for impact as follows:

1. measurable changes in the higher education institutions and companies
2. measurable changes in the students learning and innovation competencies
3. the IoTLabs curriculum and arena are transferable to a larger network of institutions and companies
4. the IoTLabs learning concept (of cross-disciplinary multinational student teams) can be transferable to other disciplines

The number of teachers involved in pilot projects was 30, and the number of students 263. These numbers exceed the numerical targets in the project proposal and, in addition to the new courses developed in HAA and TUD (see D7.1), provide evidence that measurable changes in higher education institutions and student learning have been achieved. Furthermore, as also reported in D7.1, student projects have provided new insight and ideas for companies and other stakeholders who have been involved in the project commissions (n=8). Thus, it can be concluded that there is sufficient evidence for saying that the project has impacted items 1 and 2 above.

The Final sustainability plan (D7.1.) includes process models both for HEI-business collaboration and project funnel, thus increasing the potential impact on the project in the future (item 3 above). As already stated, the extension of the network during the project lifetime was not successful (item 4 above).

The KPI selected for measuring impact was teacher assessment of getting additional value from cross-border projects. As indicated by the Final pilot report (D6.4), this was achieved as the teachers interviewed found the collaboration fruitful.

Value for money

In the Evaluation plan (D8.1), the focus on "value for the money" was defined as the overall effectiveness of the project against the EACEA criteria to ensure that the project uses the money for

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the purpose it was granted for. The biannual scorecards (see Appendix 1) demonstrate that this was achieved throughout the project. In addition, when items were flagged as "yellow" or "red" by this WP, the management took corrective action.

Moreover, in D8.1, the interim measure for "value for money" from the EACEA perspective was that a minimum of 70 points should be received in the interim report. This was achieved, as the interim evaluation scored 75 points in EACEA interim assessment.

The KPI set for this evaluation was the balance of the budget. The Q1/2021 financial results show that the management succeeded in adjusting the budget among partners.

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APPENDIX 1. Project biannual scorecards 2018 2020

Colour codes

- Green: sufficient proof of progress demonstrated and documented (deliverables, memos of WP-meetings, biannual reports)
- Yellow: proof of progress demonstrated and documented (deliverables, memos of WP meetings, biannual reports). However, not quite fulfilling the target by the date of examination due to reasons that have been jointly acknowledged in WP leaders' meetings and corrective action plans have been taken.
- Red: no proof of progress demonstrated.

Table 2. Project scorecard 1/2018

1.Relevance of the project (25 points)			
	1.1 EU policy relevance		late
	1.2. Aims and objectives		
	1.3. EU added value		late
2. Quality of the project design and implementation (30 points)			
	2.1. Quality and coherence between WPs and delivered activities/products		late
		Main outputs/results	late
	(2.2. Learning mobility	NO)	
	2.3. Quality assurance		
	2.4. Financial management		info not available on 11 Sept
3. Quality of the project team and the cooperation arrangements (25 points)			
	3.1. Partnership, cooperation and participation		
	3.2 Management		
4. Impact and dissemination (20 points)			
	4.1 Dissemination		late
	4.2. Exploitation		
	4.3. Impact		
	4.4. Sustainability		
	4.5. Visual identity of the ERASMUS+ programme		

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	4.6. Publishable results on the Erasmus+ project results platform		

Table 3. Project scorecard 2/2018

1.Relevance of the project (25 points)			
	1.1 EU policy relevance		late
	1.2. Aims and objectives		
	1.3. EU added value		late
2. Quality of the project design and implementation ((30 points)			
	2.1. Quality and coherence between wps and delivered activities/products		late
		Main outputs/results	late
	(2.2. Learning mobility	NO)	
	2.3. Quality assurance		
	2.4. Financial management		info not available on 11 Sept
3. Quality of the project team and the cooperation arrangements (25 points)			
	3.1. Partnership, cooperation and participation		
	3.2 Management		
4. Impact and dissemination (20 points)			
	4.1 Dissemination		late
	4.2. Exploitation		
	4.3. Impact		
	4.4. Sustainability		
	4.5. Visual identity of the ERASMUS+ programme		
	4.6. Publishable results on the Erasmus+ project results platform		

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Table 4. Project scorecard 1/2019

1.Relevance of the project (25 points)			
	1.1 EU policy relevance	 	
	1.2. Aims and objectives	 	
	1.3. EU added value	 	
2. Quality of the project design and implementation (30 points)			
	2.1. Quality and coherence between wps and delivered activities/products	 	
	2.2. Learning mobility		Not applic.
	2.3. Quality assurance	 	
	2.4. Financial management		info not available on 6 Feb
3. Quality of the project team and the cooperation arrangements (25 points)			
	3.1. Partnership, cooperation and participation	 	
	3.2 Management	 	
4. Impact and dissemination (20 points)			
	4.1 Dissemination	 	
	4.2. Exploitation		Cannot evaluate yet
	4.3. Impact		Cannot evaluate yet
	4.4. Sustainability	 	
	4.5. Visual identity of the ERASMUS+ programme	 	
	4.6. Publishable results on the Erasmus+ project results platform	 	

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Table 5. Project scorecard 2/2019

	Criterium	Evaluation*	Comments
1.Relevance of the project			
	1.1 EU policy relevance	🟩	This project has demonstrated its ability to increase IoT and e-competences development in a multidisciplinary cross-border collaboration (Arena, pilots, IoT competences review, benchmarking). Feedback (faculty and students) from Pilot 1 projects validates this finding
	1.2. Aims and objectives	🟩	Progress towards project set goals have been demonstrated (pilots, dissemination)
	1.3. EU added value	🟩	This project enhances European co-operation in its working methods and outcomes (Arena, pilots, dissemination and business/higher education networking)
2. Quality of the project design and implementation			
	2.1. Quality and coherence between WPs and delivered activities/products	🟨	The outcomes (pilot projects) are of good quality, however the number of pilot projects delivered at this stage does not meet the goal (primarily due to withdrawal of one partner). Plans have been made to reach the target by Q4/2019 (pilot planning meetings and increased out-reach)
	2.3. Quality assurance	🟩	Quality assurance measures and tools support the project
	2.4. Financial management	🟨	A minority of work packages and partner expenditures are behind the budgeted amount. The interim funding threshold of 40%, however, was achieved. Moreover, some partners have lagged behind in their financial reporting which has caused problems for timely reporting (financial management). Improved reporting mechanisms are being planned for future reporting
3. Quality of the project team and the cooperation arrangements			
	3.1. Partnership, cooperation and participation	🟩	One consortium partner change has been made as a remedy to dysfunctional cooperation
	3.2 Management	🟩	Demonstrated proof of corrective action based on evaluation
4. Impact and dissemination			
	4.1 Dissemination	🟩	Different forms of dissemination activities were carried out which met expectations during the interim period
	4.2. Exploitation	🟩	Concrete plans made and documented
	4.3. Impact	🟨	Limited proof of impact can be reported due to the early stage of the project. This is primarily due to the complex nature of the project. Curriculum development and demonstration of student learning outcomes have been achieved
	4.4. Sustainability	🟩	Concrete plans made and activities initiated (outreach to business and higher educational parties)
	4.5. Visual identity of the ERASMUS+ programme	🟩	Consistent
	4.6. Publishable results on the	🟥	Public deliverables have been uploaded to the platform but have not been approved for publication

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Erasmus+ project results platform		

Table 6. Project scorecard 1/2020 (based on EACEA interim evaluation)

1.Relevance of the project (25 points)			
	1.1 EU policy relevance		
	1.2. Aims and objectives		
	1.3. EU added value		l
2. Quality of the project design and implementation (30 points)			
	2.1. Quality and coherence between wps and delivered activities/products		
	2.3. Quality assurance		
	2.4. Financial management		
3. Quality of the project team and the cooperation arrangements (25 points)			
	3.1. Partnership, cooperation and participation		
	3.2 Management		Deliverables numbers to be corrected as in the proposal
4. Impact and dissemination (20 points)			
	4.1 Dissemination		Database missing
	4.2. Exploitation		
	4.3. Impact		
	4.4. Sustainability		
	4.5. Visual identity of the ERASMUS+ programme		
	4.6. Publishable results on the Erasmus+ project results platform		

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Table 7. Project scorecard 2/2020

1.Relevance of the project (25 points)			
	1.1 EU policy relevance		
	1.2. Aims and objectives		
	1.3. EU added value		Pilot 3: no co-op?
2. Quality of the project design and implementation (30 points)			
	2.1. Quality and coherence between WPs and delivered activities/products		WP6?
	2.3. Quality assurance		
	2.4. Financial management		Data on expenditure
3. Quality of the project team and the cooperation arrangements (25 points)			
	3.1. Partnership, cooperation and participation		
	3.2 Management		budget reallocation urgent
4. Impact and dissemination (20 points)			
	4.1 Dissemination		Trento event?
	4.2. Exploitation		No customer data
	4.3. Impact		No data on where the money has been spent
	4.4. Sustainability		Azure
	4.5. Visual identity of the ERASMUS+ programme		
	4.6. Publishable results on the Erasmus+ project results platform		

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