



**software framework for runtime-Adaptive and secure  
deep Learning On Heterogeneous Architectures**

**Project Number 780788**

**Project Acronym ALOHA**

<b>D8.2</b>	<b>First progress and management report</b>		
<b>Work Package:</b>	WP8	<b>Lead Beneficiary:</b>	ST-I
<b>Type:</b>	Report	<b>Dissemination level:</b>	Public
<b>Due Date:</b>	30 <sup>th</sup> September 2018	<b>Delivery:</b>	30 <sup>th</sup> September 2018
<b>Version:</b>	D8.2_First progress and management report_v1.0.doc		

**Brief description:**

The purpose of this deliverable is to provide an overview of the progress and results achieved by the Consortium in the first 9 months of the project.



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**Deliverable Revision History:**

Reviewer Beneficiary	Issue Date	Version	Comments
ST-I	01/08/2018	v0.1	Released of the Table of Content and introduction
ST-I	04/09/2018	v0.2	Added UNISS, CA contributions
UNICA	20/09/2018	v0.3	Added PKE contribution
UNICA	27/09/2018	v0.4	Completed section 3.4
UNICA	28/09/2018	v0.5	Completed sections 3.2 and 3.3
UNICA	30/09/2018	v1.0	Final version

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## 1 Executive Summary

The main objective of this deliverable is to provide an overview of the progress made and the results achieved by the Consortium in the first 9 months (January 2018 to September 2018) of the ALOHA project. The deliverable also provides information on the use of resources for each Work Package (WP), in terms of personnel effort.

This document extends the information exposed in the previous deliverable *D8.1 – Kick-off progress report*, in which we summarized the progress made from month M1 (January 2018) to month M6 (June 2018).

After a description of the general progress of the Action, an explanation of the work carried out per each WP is provided in Section 3. In Section 4 a preliminary estimation of the project effort in person-months is provided.

All partners contributed to this deliverable.

### 1.1 Acronyms and abbreviations

Acronym	Meaning
M	Month
WP(s)	Work Package(s)
DL	Deep Learning
GA	General Assembly
IPR	Intellectual Property Right
DSE	Design-Space Exploration
SEC	Security evaluation
CSDF	Cyclo-Static Data Flow
DNN	Deep Neural Network

## 2 General progress of the Action

The ALOHA project aims at developing a software development toolflow for supporting the implementation of Deep Learning (DL) algorithms on heterogeneous low-energy computing platforms. The main objectives of the project are summarized below:

- automate the selection of an optimal algorithm configuration,
- automate the optimization of its partitioning and mapping on a target processing platform,
- automate the optimization of power and energy savings during its deployment,
- assess the proposed approach over three different use-cases, involving surveillance, smart insustry and medical application domains,
- validate the approach on two/three reference platforms, showing that it can actually be supported by state-of-the-art technologies.

In order to achieve these objectives, a work plan was defined in Annex 1 of the ALOHA Grant Agreement. It organizes the project in five phases, as shown in Figure 1.

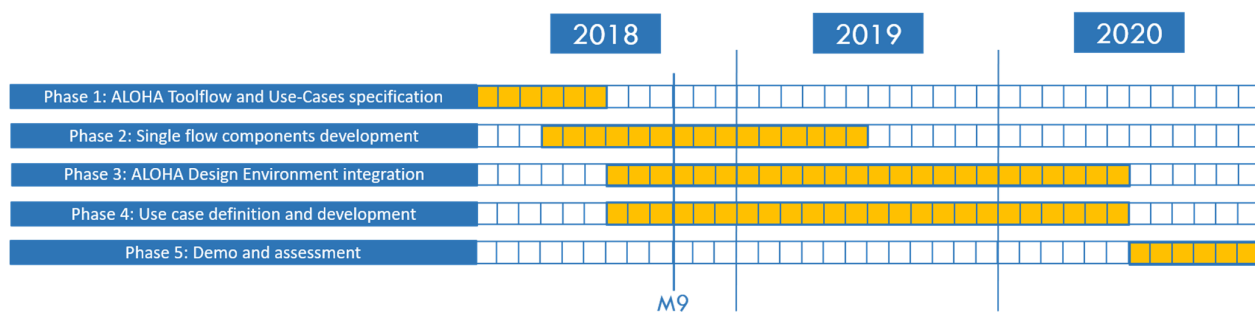


Figure 1: Overview of the ALOHA development macro-phases

- Phase 1 of the project was completed at the end of June 2018 (M6), with WP1 activities focused on specifying the different components of the ALOHA toolflow and the interfaces among them, and on identifying use cases' requirements. At the end of this phase, the first Milestone of the project, *MS1 – Successful kick-off and specification phase*, was reached.
- Phase 2 started at M4 and is currently ongoing (M4-M18). It involves activities of WP2, WP3 and WP4, which are responsible for developing the single components of the ALOHA toolflow.
- Phases 3 started at M7 and is currently ongoing (M7-M30). It involves integration activities needed to have the single components developed in WP2, WP3 and WP4 completely ready to be interfaced each other to become a complete system.
- Also Phase 4 started at M7 and is currently ongoing (M7-M30). It mainly deals with the definition and testing of the three use-cases indentified in the project.
- Phase 5 is the final phase of the project (M30-M36) and will start at M31. It will be focused on final demonstration activities.

All the activities envisaged for the first 9 months of the project have been accomplished in accordance with the timeline identified in Annex 1 of the ALOHA Grant Agreement. All WPs have started their work. There were no major deviations from the original project planning. All the 17 Deliverables due in the first 9 months have been completed and submitted on time through the ECAS portal. The only milestone due over this period was MS1 and it has been met on time. We report a detailed list of the submitted Deliverables and Milestones for each WP in the following sections.

### 3 Explanation of the work carried out per WP

In this section we provide a summary of the progress made by the Consortium in each WP.

#### 3.1 WP1 – Specification, requirements and integration

WP1 started at M1 and is going to be completed at M30. The activities of WP1 are carried out in three different tasks. **Task 1.1 (System specification and subsystem definition)** and **Task 1.2 (Use-cases specification)** were completed and their activities led, respectively, to the identification of the components of the ALOHA toolflow and the definition of the interaction between them as described in Deliverable D1.1, and to the general specification of the use cases as described in Deliverables D1.4, D1.5 and D1.6.

**Task 1.3 (ALOHA toolflow integration)** started at M7 and is currently ongoing. The Consortium agreed on adopting Agile Continuous Integration practice and to use containerized modules to reduce technological dependencies between components. A document with the integration guidelines was prepared and distributed in late M7. Together with the integration guidelines, a code generator was released. This code generator was created with the purpose of facilitating the implementation of required ALOHA components by avoiding developers to set up common ALOHA component features such as containerization, testing, database access, and documentation. The code generator was published in the official repository of the project, which is finally hosted on GitLab and all consortium members were given access to it.

An initial timeline for the integration has also been discussed and agreed, and the task is currently running as expected. At M18 we are expected to deliver the first Report on tool flow integration (Deliverable D1.2).

**Table 1: WP1 effort in person-months from M1 to M9**

Partner number and short name	Planned person months (Annex I)	Actual person months
1 - ST-I	3	3
2 - UniCA	2	2
3 - UvA	1	1
4 - UL	1	1
5 - ETHZ	2	2
6 - UniSS	1	1
7 - PKE	3	3
8 - CA	7	5
9 - SCCH	1	2
10 - REPLY	2	2
11 - IBM	2	2
12 - IL	2	2
13 - P-ONE	1	1
14 - MaxQ-AI (formerly MM)	1	1

**Table 2: WP1 deliverables due within M9**

Del No	Title	Lead Benef.	Nature	Dissem. level	Est. Del. Date (Annex I)	Submission date
D1.1	Report on general specifications and interface definition	UNICA	Report	Public	30/06/18	30/06/18



D1.4	General specification of the surveillance use-case	PKE	Report	Confident	30/06/18	30/06/18
D1.5	General specification of the smart industry use-case	REPLY	Report	Confident	30/06/18	30/06/18
D1.6	General specification of the medical application use-case	MM	Report	Confident	30/06/18	30/06/18

Table 3: Milestones achieved in WP1

No	Name	Lead Beneficiary	Delivery Date (Annex I)	Delivery Date (actual)
MS1	Successful kick-off and specification phase	UNICA	01/07/18	30/06/18

### 3.2 WP2 – Automated algorithm design and configuration

WP2 started at M4 and is going to be completed at M24. The activities of WP2 are carried out in four different tasks. All tasks kicked off at M4. **Task 2.1 (Algorithm configuration tool)** proceeded with the initial setup of a genetic-algorithm based design-space exploration (DSE) tool for the DNN topology design space, targeting a subset of the final functionality, tested on the VGG topology. **Task 2.2 (Security by design)** proceeded by setting up a security evaluation (SEC) engine based on the PyTorch framework, whose output can be subsequently used to augment the training data for better security/robustness. **Task 2.3 (Parsimonious inference)** worked on a preliminary version of the refinement for parsimonious inference (RPI) tool, also based on the PyTorch framework, by setting up a procedure for iterative algorithm quantization tested on VGG. **Task 2.4 (Model-based design: architecture and application model)** worked on the model/energy evaluation tool, focusing on the translation of the DNN model into a cyclo-static data flow internal model (CSDF) which will subsequently be used for energy estimation.

For more details please refer to deliverable D2.1 “Report on automated algorithm configuration”.

Table 4: WP2 effort in person-months from M1 to M9

Partner number and short name	Planned person months (Annex I)	Actual person months
1 - ST-I	2	1
2 - UniCA	2	2
3 - UvA	7	7
4 - UL	9	9
5 - ETHZ	7	7
6 - UniSS	1	1
7 - PKE	0	0
8 - CA	5	5
9 - SCCH	6	4
10 - REPLY	1	1
11 - IBM	0	0
12 - IL	3	1
13 - P-ONE	5	5
14 - MaxQ-AI (formerly MM)	1	1

Table 5: WP2 deliverables due within M9

Del No	Title	Lead Benef.	Nature	Dissem. level	Est. Del. Date (Annex I)	Submission date
D2.1	Report on automated algorithm configuration	ETHZ	Report	Public	30/09/18	30/09/18

### 3.3 WP3 – Automated application portioning and mapping

WP3 started at M4 and is going to be completed at M24. The activities of WP3 are carried out in four different tasks. All tasks kicked off at M4 and are progressing according to the plans. In the period from M7 to M9, the main activities performed were the investigation of different representations of a DNN model and the definition of a workflow to convert a DNN model into a Cyclo-Static Data-Flow model. Moreover, during the reported period a first attempt was made towards the modeling of the DNN inference application in Sesame and as Mathematical Programming model in AOW. An initial investigation of some possible solutions for automating the Parsimonious Inference pruning technique was also conducted.

For more details please refer to deliverable D3.1 “Report on automated application partitioning and mapping”.

Table 6: WP3 effort in person-months from M1 to M9

Partner number and short name	Planned person months (Annex I)	Actual person months
1 - ST-I	5	6
2 - UniCA	2	2
3 - UvA	5	5
4 - UL	3	3
5 - ETHZ	0	0
6 - UniSS	1	1
7 - PKE	0	0
8 - CA	0	0
9 - SCCH	0	0
10 - REPLY	1	1
11 - IBM	7	7
12 - IL	7	5
13 - P-ONE	1	1
14 - MaxQ-AI (formerly MM)	1	1

Table 7: WP3 deliverables due within M9

Del No	Title	Lead Benef.	Nature	Dissem. level	Est. Del. Date (Annex I)	Submission date
D3.1	Report on automated application portioning and mapping	IBM	Report	Public	30/09/18	30/09/18

### 3.4 WP4 – Hardware abstraction layer generation and runtime management

WP4 started at M4 and is going to be completed at M24. The activities of WP4 are carried out in four different tasks. **Tasks 4.1, 4.2 and 4.3** are dedicated to the identification of APIs and IPs and development of adapters and wrappers, needed to implement inference task on FPGA-based heterogeneous platforms, Orlando SoC prototype and Snapdragon platform, respectively. These tasks kicked off at M4 and are progressing according to the plans. In the period from M7 to M9, the main activities performed were the definition of an architecture description format and the collection of information on the computing resources and programming primitives available for each target architecture. For more details please refer to deliverable D4.1 “Report on hardware abstraction layer techniques”. **Task 4.4 (Runtime platform management)** will start at M13 and will be focused on the implementation of techniques for the adaptive management of the target hardware platforms during the inference.

Table 8: WP4 effort in person-months from M1 to M9

Partner number and short name	Planned person months (Annex I)	Actual person months
1 - ST-I	10	7
2 - UniCA	6	6
3 - UvA	0	0
4 - UL	0	0
5 - ETHZ	3	3
6 - UniSS	1	0
7 - PKE	1	0
8 - CA	0	0
9 - SCCH	0	0
10 - REPLY	1	1
11 - IBM	0	0
12 - IL	3	3
13 - P-ONE	0	0
14 - MaxQ-AI (formerly MM)	1	1

Table 9: WP4 deliverables due within M9

Del No	Title	Lead Benef.	Nature	Dissem. level	Est. Del. Date (Annex I)	Submission date
D4.1	Report on hardware abstraction layer techniques	ST-I	Report	Public	30/09/18	30/09/18

### 3.5 WP5 – Toolflow assessment

WP5 started at M7 and is going to be completed at M36. The activities of WP5 are carried out in four different tasks. **Tasks 5.1, 5.2 and 5.3** are dedicated to the implementation of the three ALOHA use cases, respectively Smart Industry, Surveillance and Medical use-case.

All these tasks kicked off at M7 and are progressing according to the plans. In the period from M7 to M9, the main activities performed were: definition of a roadmap, identification and preparation of use-case related dataset, initial evaluation of embedded hardware and baseline algorithms to be used in each demonstrator. For more details please refer to deliverable D5.1 “Report on Use Case Implementation”.

Table 10: WP5 effort in person-months from M1 to M9

Partner number and short name	Planned person months (Annex I)	Actual person months
1 - ST-I	2	1
2 - UniCA	0	0
3 - UvA	0	0
4 - UL	0	0
5 - ETHZ	3	3
6 - UniSS	0	0
7 - PKE	3	4
8 - CA	0	0
9 - SCCH	1	0
10 - REPLY	3	4
11 - IBM	0	0
12 - IL	0	0
13 - P-ONE	0	0
14 - MaxQ-AI (formerly MM)	1	1

Table 11: WP5 deliverables due within M9

Del No	Title	Lead Benef.	Nature	Dissem. level	Est. Del. Date (Annex I)	Submission date
D5.1	Report on use-case implementation	PKE	Report	Confidential	30/09/18	30/09/18

### 3.6 WP6 – Exploitation

WP6 started at M1 and is going to be completed at M36. The activities of WP6 are carried out in two different tasks.

**Tasks 6.1** and **Task 6.2** cover both the open-source and the industrial exploitation, and will be active throughout the whole lifetime of the project. WP6 is a horizontal workpackage, as the continuous work performed in this workpackage will influence the technical WPs to make sure that the outcomes are aligned with the market needs. Similarly, the technology developed in the rest of WPs will also affect the exploitation work, since it will help use refine the exploitable outcomes and increase the obtained impact.

At M4 the first exploitation plan was delivered in D6.1. This document was the result of the work of the whole consortium on analysing the different markets that ALOHA targets, describing the exploitable outcomes of ALOHA, and also drafting strategies to make sure that these outcomes have an impact in the different markets.

Currently, the work in WP6 is focused on analyzing the technical workpackages to better define the exploitable outcomes and start defining a definitive exploitation strategy. At the same time, the consortium is continuously analyzing the market to detect changes or new competitors. In a similar way, standards were initially analysed in D6.1 and are now followed closely to see how current related standards evolve but also if new ones appear. It is worth mentioning that the ISO/IEC JTC 1/SC 42 met in April 2018 and already created different working groups, from which we will pay attention to the ones working on Foundational standards, trustworthiness, and use cases and applications.

One of the objectives of ALOHA (O06) is a successful exploitation of the ALOHA results, which includes three KPIs that involve developing a users' community and having an impact in industrial products. To achieve these KPIs, we must have a robust plan. D6.1 also outlined some exploitation-oriented activities. This plan has been continuously updated as new opportunities appear. We will continue to develop both the plan and the outreach to an interested community for the life of the project. Exploitation and in particular building a community that supports exploitation is a long-term effort that cannot be postponed to the last months of a complex project such as ALOHA.

**Table 12: WP6 effort in person-months from M1 to M9**

Partner number and short name	Planned person months (Annex I)	Actual person months
1 - ST-I	1	1
2 - UniCA	1	1
3 - UvA	0	0
4 - UL	0	0
5 - ETHZ	0	0
6 - UniSS	0	0
7 - PKE	1	0
8 - CA	2	2
9 - SCCH	0	0
10 - REPLY	1	1
11 - IBM	0	0
12 - IL	1	0
13 - P-ONE	0	0
14 - MaxQ-AI (formerly MM)	1	1

**Table 13: WP6 deliverables due within M9**

Del No	Title	Lead Benef.	Nature	Dissem. level	Est. Del. Date (Annex I)	Submission date
D6.1	Exploitation plan	CA	Report	Public	30/04/18	30/04/18

### 3.7 WP7 – Dissemination

WP7 started at M1 and is going to be completed at M36. The main objective of WP7 is to establish a project dissemination and communication plan to ensure widespread use of the toolflow and maximize the project impact. The activities of WP7 are carried out in three different tasks.

**Task 7.1 (Communication strategy and planning)** and **Task 7.2 (Dissemination, Training and Education)** are active since M1 and led to the completion of D7.1 (definition and set up of ALOHA website, social media channels and visual identity) and D7.2 (strategy and plans for dissemination and communication). Communication and dissemination activities, as reported in D7.2 and D8.1, already took place. **Task 7.3 (Users community)** started at M7 and we are currently defining the appropriate strategies to involve people and set-up the user community.

Table 14: WP7 effort in person-months from M1 to M9

Partner number and short name	Planned person months (Annex I)	Actual person months
1 - ST-I	1	0
2 - UniCA	1	1
3 - UvA	0	0
4 - UL	0	0
5 - ETHZ	0	0
6 - UniSS	0	0
7 - PKE	0	0
8 - CA	1	1
9 - SCCH	0	0
10 - REPLY	1	0
11 - IBM	0	0
12 - IL	0	0
13 - P-ONE	2	2
14 - MaxQ-AI (formerly MM)	1	1

Table 15: WP7 deliverables due within M9

Del No	Title	Lead Benef.	Nature	Dissem. level	Est. Del. Date (Annex I)	Submission date
D7.1	Project digital presence	P-ONE	Demo	Public	28/02/18	27/02/18
D7.2	Plan for the dissemination and communication	P-ONE	Report	Public	30/04/18	30/04/18

### 3.8 WP8 – Management

WP8 deals with all the management activities required to keep the project on track, to synchronize the activities performed by different partners in different WPs, to solve any administrative and financial issue, and to ensure the achievement of the planned outcomes on time and with the highest quality possible. WP8 is organized around five tasks, that started at M1 and will run in parallel up to the end of the project. The summary of progress towards WP8 tasks is described below.

**Task 8.1 (Kick-off and Periodic meetings)** - In the period considered by this report, the Consortium has met twice face-to-face and numerous times by conference call and email.

#### Consortium meetings

The Consortium has met twice face-to-face, in January 2018 in Cagliari (Italy) and in June 2018 in Alghero (Italy). Both times, all beneficiaries were represented.

- *Kick-off Meeting* – organized and hosted by UNICA on 25th of January 2018 in Cagliari. All 14 consortium partners were represented, with a total of 31 attendees. The meeting was an opportunity for all consortium members to meet and present their role in the project. A large part of the meeting was focused on discussing the expected features of the ALOHA toolflow and the needs and requirements for the three industrial use cases to be implemented.
- *First General Assembly (GA) meeting* - held jointly with the kick-off meeting in Cagliari on 26<sup>th</sup> of

January 2018.

- *First regular meeting* - organized and hosted by UNISS from 18th to 20th of June 2018 in Alghero. All 14 consortium partners were represented, with a total of 25 attendees. This technical plenary meeting offered the opportunity for the Consortium to synchronize activities across different WPs, refine specification of the ALOHA toolflow components and of the use cases, and discuss the next actions and responsibilities for the coming 6 months (July 2018 to December 2018).
- *Second GA meeting* - held jointly with the first regular meeting in Alghero on 19<sup>th</sup> of June 2018.

Further details on these meetings are available in deliverable *D8.1 – Kick-off progress report*. The next plenary meeting will be held in Barcelona, hosted by CA, at the end of January 2019.

### Technical online meetings

In order to track progress of the project, support the cooperation among partners, and synchronize activities with the project schedule, various online meetings have been organised within the reporting period, as shown in Table 16.

**Table 16: List of teleconference meetings**

<b>WP</b>	<b>Topic</b>	<b>Attendees</b>	<b>Date(s)</b>
WP6	Discussion aiming at developing a plan for the successful exploitation of ALOHA results. Content of deliverable D6.1. Description of already planned exploitation activities.	CA, UNICA, UNISS, IBM, ST-I, ETHZ, PKE	27/02/2018 15/03/2018 04/04/2018
WP5	Use cases description, requirements analysis and design of Key Performance Indicators.	UNICA, PKE, MaxQ-AI, REPLY	14/03/2018 15/03/2018 02/05/2018 09/05/2018
WP3	Role and functionality of the system-level DSE tool and evaluation of the design points with Sesame and AOW tools. Role and functionality of the Post-training refinement tool.	UNICA, UvA, UL, IBM, IL	05/04/2018 01/05/2018 03/05/2018
WP1, WP2, WP3, WP4	Definition of deliverable D1.1 content – specifications and interfaces. Role and functionality of the main toolflow components.	All	05/04/2018 03/05/2018 15/05/2018 24/05/2018
WP1	Interface definition and integration methodology.	UNICA, CA	02/05/2018 24/05/2018
WP2	Dataset specification and transfer learning task.	UNICA, SCCH, P-ONE, UL, UvA	09/05/2018 11/05/2018
WP1, WP8	Status of deliverables due at M6. Discussion about specifications, interfaces, constraints and KPIs. Agenda for the next face-to-face meeting in Alghero.	All	11/06/2018
WP1, WP2, WP3, WP4, WP5	Planning of activities for containerizing each ALOHA component and for starting testing data parsers. Possible solutions for VGG vs. CIFAR10 dataset problem. Overview of the technical deliverables due at M9.	All	17/07/2018
WP1, WP6	Feedback from partners on the integration guidelines provided by CA and on the use of the code generator. Next exploitation activities and user community contact form.	UNICA, UvA, UL, SCCH, CA, IL, UNISS, P-ONE, PKE, REPLY, ETHZ, ST-I	03/09/2018

WP4	Abstraction of the target platform characteristics. Available computing resources in Orlando and NEURAghe and supported programming models.	UNICA, ST-I, UNISS	14/09/2018
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Technical meeting minutes were made available for consortium members on Box.

### **Task 8.2 (Monitoring and Periodic Report Management)**

Critical implementation risks identified in Annex 1 of the ALOHA Grant Agreement have not affected the activities carried out in the period considered by this report. Therefore no mitigation actions were required. At month M5, the Project Coordinator on behalf of the Consortium submitted an amendment request using the Participant Portal (reference number AMD-780788-4). The request of amendment concerned the following items:

- *Addition of a Linked Third Party* – Partner CA Technologies Development Spain required to add CA TECHNOLOGY R&D LIMITED (CA-UK) as Linked Third Party and to transfer them 3 PMs (total budget of 39K euro for Personnel costs) + 4k euro for trips.
- *Increase of person-months* – Partner CA Technologies Development Spain required to add an extra effort of 26 PMs over the planned 70 PMs, without requiring additional budget.

**Task 8.3 (IPR Management)** - At month M1, the Consortium has identified an IPR Manager in the person of Michael Masin (IBM), who is responsible for assisting in the identification, capture and protection of intellectual property arising from research activities within ALOHA. A *Consortium Agreement* was discussed and elaborated during the first months of the project and signed by all partners at month M5. It provides guidelines for the management of all internal IPR-related issues related to the future use and dissemination of the foreground by all the project partners. The Consortium has defined the open research data strategy to be implemented with the qualitative and quantitative data produced and/or used in ALOHA. A first version of the *Open Data Management Plan* has been produced at M6 (see Deliverable D8.6). It includes a description of which data will be kept confidential and which will be made openly available to Third Parties for verification and re-use and, how these data will be curated and preserved for future researchers.

**Task 8.4 (Innovation Management)** - At month M1, the Consortium has identified an Innovation Manager in the person of Oscar Ripolles (CA), who is responsible for fostering and coordinating innovation through the development and implementation of the project. The different outcomes of the ALOHA research activities have been combined into exploitable innovative results and described in the first version of the *Exploitation plan* (see Deliverable D6.1 for details). A purpose of this task was also to create an Advisory Board of recognised experts in the field of embedded computing. Currently two experts, already contacted during the proposal preparation, have confirmed their interest to be a Member of the ALOHA Advisory Board, Michaela Blott from Xilinx (<https://www.linkedin.com/in/michaelablott>) and Dr. Frank Van Der Linden from Philips ([https://www.researchgate.net/profile/Frank\\_Linden](https://www.researchgate.net/profile/Frank_Linden)), while the selection of a third member is still ongoing.

**Task 8.5 (Quality Assurance Management)** - At month M1, the Consortium has identified a Quality Assurance Manager in the person of Daniela Loi (UNICA), who is responsible for ensuring a smooth quality monitoring over the whole project activities. A *Project Quality Handbook* was prepared and distributed among partners at M3 (see Deliverable D8.5). It provides guidelines and instructions to ALOHA partners on how to manage and assure quality and how to implement risk management throughout the lifecycle of the project. The report summarizes all relevant information about the project



management structure, the distribution of roles and responsibilities among partners, the communication strategy to be adopted within and outside the Consortium as well as the procedures and templates to be followed when preparing project documents and periodic reports.

**Table 17: WP8 effort in person-months from M1 to M9**

Partner number and short name	Planned person months (Annex I)	Actual person months
1 - ST-I	3	2
2 - UniCA	2	2
3 - UvA	0	0
4 - UL	0	0
5 - ETHZ	0	0
6 - UniSS	0	0
7 - PKE	0	0
8 - CA	1	1
9 - SCCH	0	0
10 - REPLY	0	0
11 - IBM	1	1
12 - IL	1	0
13 - P-ONE	1	1
14 - MaxQ-AI (formerly MM)	1	1

**Table 18: WP8 deliverables due within M9**

Del No	Title	Lead Benef.	Nature	Dissem. level	Est. Del. Date (Annex I)	Submission date
D8.1	Kick-off progress report	UNICA	Report	Public	30/06/18	30/06/18
D8.2	First progress and management report	ST-I	Report	Public	30/09/2018	30/09/2018
D8.5	Project quality handbook	ST-I	Report	Public	31/03/18	30/03/18
D8.6	Open Data Management Plan	UNICA	ORDP: Open Research Data Pilot	Public	30/06/18	30/06/18

### 3.9 WP9 – Ethics requirements

WP9 sets out the 'ethics requirements' that the project ALOHA must comply with. This work package contains the additional obligations in the form of two 'ethics deliverables', which have been completed and submitted through the ECAS portal at M3, as shown in Table 19.

Table 19: WP9 deliverables due within M9

<b>Del No</b>	<b>Title</b>	<b>Lead Benef.</b>	<b>Nature</b>	<b>Dissem. level</b>	<b>Est. Del. Date (Annex I)</b>	<b>Submission date</b>
D9.1	POPD - Requirement No. 1	ST-I	Ethics	Confident	31/03/18	04/04/18
D9.2	NEC - Requirement No. 2	ST-I	Ethics	Confident	31/03/18	04/04/18

## 4 Summary of the use of resources

Information on the use of resources for each WP (in terms of personnel effort) is reported in Table 20, with a comparison between planned and effective effort. Please note that all the numbers have been rounded up or down to the closest integer number, since we are providing an estimation of the effort spent so far. The numbers indicate that, at a global level, the project is progressing as expected.

Table 20: Planned versus Actual Effort overview

	WP1		WP2		WP3		WP4		WP5		WP6		WP7		WP8		Total PM	
	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual
ST-I	3	3	2	1	5	6	10	7	2	1	1	1	1	0	3	2	26	23
UniCA	2	2	2	2	2	2	6	6	0	0	1	1	1	1	2	2	16	16
UvA	1	1	7	7	5	5	0	0	0	0	0	0	0	0	0	0	13	13
UL	1	1	9	9	3	3	0	0	0	0	0	0	0	0	0	0	13	13
ETHZ	2	2	7	7	0	0	3	3	3	3	0	0	0	0	0	0	15	15
UniSS	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	4	4
PKE	3	3	0	0	0	0	0	0	3	4	1	0	0	0	0	0	7	7
CA	7	5	5	5	0	0	0	0	0	0	2	2	1	1	1	1	16	14
SCCH	1	2	6	4	0	0	0	0	1	0	0	0	0	0	0	0	8	6
REPLY	2	2	1	1	1	1	1	1	3	4	1	1	1	0	0	0	10	10
IBM	2	2	0	0	7	7	0	0	0	0	0	0	0	0	1	1	10	10
IL	2	2	3	1	7	5	3	3	0	0	1	0	0	0	1	0	17	11
P-ONE	1	1	5	5	1	1	0	0	0	0	0	0	2	2	1	1	10	10
MaxQ-AI (formerly MM)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	8	8
<i>Total PM for the reporting period</i>	29	28	49	44	33	32	25	22	13	13	8	6	7	5	10	8	173	160