



LOW Power Heterogeneous Architecture  
for NExt Generation of SmaRt Infrastructure and Platforms  
in Industrial and Societal Applications

## Meeting minutes



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**LIST OF TABLES**

Table 1 - Planning of meetings of the Steering Committee .....	7
Table 2: Kick-off participants .....	9

## EXECUTIVE SUMMARY

This deliverable aims to present an overview of all the meeting and phone conferences that involved all the partners of the project or only a part of them for discussions about activities related to the project.

The OPERA consortium has planned at the beginning of the project four global meetings of the general assembly in order to meet at specific important phases of the project.

The other intermediate meetings have been planned as audio/video phone calls of the general assembly in order to check the progresses of the project and properly identify any issue and select any corrective action needed.

In parallel to these general calls and meeting each work package has organized a set of phone conferences for the fine tune of the activities

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**TABLE OF CONTENTS**

1	GENERAL ASSEMBLY MEETINGS .....	7
1.1	ACTUAL STATUS OF THE PLAN .....	7
1.1.1	Project kick-off .....	8
1.1.2	First global Steering Committee call .....	9
1.1.3	Second global Steering Committee call.....	10
1.1.4	Meeting ad Edinburgh .....	10
2	WP PERIODIC MEETINGS .....	11
2.1	WP2 .....	11
2.2	WP3 .....	12
2.3	WP5 .....	13
2.4	WP6 .....	14
3	PLANNING FOR THE NEXT PERIOD.....	16
3.1	ISSUES DETECTED AND CORRECTIVE ACTIONS.....	16

## 1 GENERAL ASSEMBLY MEETINGS

The plan for the OPERA project, as described in the Description of Action, provides five Face to Face meetings of the representative of all the partners of the Consortium, that are indicated as Steering Committee. These meetings are key events for the project since they will set the pace of all the technical activities. The Steering Committee between two face-to-face meetings will also have at least one audio/video conference meeting (based on GoToMeeting). The plan of these meeting are described in Table 1.

Meetings	Period	Country	Main Items to be discussed
Kick-off Meeting	M1	Italy	Overall objectives and Administrative/ Financial procedures
Progress Meeting 1 (audio/video conference)	M5	---	OPERA Progress Meeting + WP meeting
Progress meeting 2	M10	UK	OPERA Progress Meeting (Milestone1) + WP meeting
Progress meeting 3 (audio/video conference)	M15	---	OPERA Progress Meeting + WP meeting
Progress meeting 4	M20	France	OPERA Progress Meeting (Milestone2) + WP meeting
Progress meeting 5 (audio/video conference)	M24	---	OPERA Progress Meeting + WP meeting
Progress meeting 6	M28	Israel	OPERA Progress Meeting (Milestone3) + WP meeting
Progress meeting 7 (audio/video conference)	M32	---	OPERA Progress Meeting + WP meeting
Final Meeting	M36	Netherlands	Final review: Achievement of the project (Milestone 4)

**Table 1 - Planning of meetings of the Steering Committee**

If necessary, the Steering Committee will meet at any other time. Based on the available communication infrastructure (e.g. e-mail, a project WWW site, and group audio and GoToMeeting videoconferencing facilities), also a detailed and technical organization of the work will be carried out. Based on the work to be accomplished, as for active WPs, periodic meetings will be organized. There are expected two types of WP meetings:

- Planning Meetings – during which will be taken all the main decisions about the work to be accomplished.
- Integration Meetings – during which the WP members will finalise their contributions. These meetings will mainly be audio or video conference ones

### 1.1 ACTUAL STATUS OF THE PLAN

The Steering Committee organized the first meeting of the OPERA project in Turin, in the ISMB premises, from the 1<sup>st</sup> to the 3<sup>rd</sup> of December 2015.

The OPERA partners organized after this first event two general calls involving the full steering committee. They took place at 11<sup>th</sup> of May 2016 and at 1<sup>st</sup> of September 2016. In the first call the consortium discussed the status of the project and review the first quarterly report from all the WPs.



The second call had the same goals of the first, and it also organized the activity for the last month before the first milestone in order to verify the feasibility in the planned time of all the activities.

The second physical meeting has been organized in Scotland, at Edinburgh, and the meetings have been hosted by Nallatech partner. The meeting minutes for this event are not ready at the time this document is released, so they will be added to the next deliverable on meetings reporting.

### 1.1.1 Project kick-off

The main purposes of the Kick-off Meeting were:

- To remind the technological objectives fixed from the proposal
- To remind the project and the original Gantt
- To discuss for each work Packages the main objectives and tasks activities
- To discuss around preliminary requirements and context for all uses cases

The meeting was in Turin, Italy organised by partner ISMB. The KO meeting was planned at the beginning of the first month of the project.

The list of participants is published in the following table:

	Partner	Name	December 1 <sup>st</sup>	December 2 <sup>nd</sup>	December 3 <sup>rd</sup>
1	ST	Giulio Urlini	x	x	x
2	ST	Giuseppe Desoli	x		
3	ST	Fabien Castanier	x		
4	ISMB	Olivier Terzo	x	x	x
5	ISMB	Pietro Ruiu	x	x	x
6	ISMB	Alberto Scionti	x	x	X
7	ISMB	Flavio Renga	X	x	x
8	NEAVIA	Jean-Hubert Wilbrod	x	X	
9	CSI	Ignazio Cassano	x	x	X
10	CSI	Vittorio Vallero	x	x	X
11	CSI	Luca Scanavino	x	x	X
12	HP	Alberto Galli	x	x	X
13	IBM	Mike Rapoport	x	x	X
14	IBM	Joel Nider		x	X
15	LD38	Florence Martin	x	X	
16	LD38	Olivier Latouille	x	X	
17	LD38	Jean Christophe Maisonobe	x	X	
18	LD38	Jean Daniel Demond	x	X	
19	TECHNION	Dan Tsafir	x	X	
20	TECHNION	Idan Yaniv	x	X	
21	NALLATECH	Craig Petrie	x	x	X
22	CERTIOS	Frank Verhagen	x	X	

23	CERTIOS	Dirk Harryvan	x	X	
24	TESEO	Florin Apopei	x	x	X
25	TESEO	Roberto Peveri	x	x	X
26	TESEO	Stefano Serra		X	

**Table 2: Kick-off participants**

A recap of the project plan and the main objectives have been presented and highlighted to the partners.

Three main innovative aspects was defined in term of objectives:

- Design of next generation Low Power (LP) and Ultra Low Power (ULP) systems
- Improving energy efficiency in computing by means of heterogeneous architectures
- Providing smart and energy efficient solution for interaction between embedded smart systems and remote small form factor datacentre.

The management plan and tools to be used in the project have been presented: the web portal, the mailing list, the restricted repository for document and work management.

The management of the project has bene presented highlighting the organization of meetings, calls, reporting periods and interactions between WPs.

The partners that are representing the potential users of the results of OPERA have presented the use cases in which the OPERA system will be tested and evaluated.

In particular the traffic monitoring, civil protection truck, virtual desktop use cases have been detailed to the partners.

After the overview of the use cases the work package leaders have presented the activity plan for each WP and the first actions to be taken to start the work.

The management of the different WPs have bene presented, defining case by case the frequency of calls, the internal documents to be shared, and the organization of this material in the OPERA repository.

At the end of the meeting a special session on the evaluation of actual hardware platforms and discussion on the critical integration issues have bene held between a subset of partners, more involved in the hardware integration activity, IBM, ISMB, ST, NALLATECH, CSI, TESEO.

### 1.1.2 First global Steering Committee call

At the beginning of the call the status of the management activities have bene presented. The finalization of pre-payment distribution have been officialised to the partners, even if it happened few months before, but after the first meeting.

Another important point reviewed was the appointment of the executive board. The final decision has bene to select a reference person from each partner as components of the board. Any decision will be evaluated by the executive board and submitted to the steering committee for the ratification.

The final point related to management has been the discussion on the amendment to be prepared and submitted to the EU commission for evaluation.

The status of the WPs have been presented, and a set of quarterly report has been approved by the members. No major deviation to the plan has been highlighted, except for the light modifications of the project plan to be inserted in the amendment, basically for the early availability of needed technologies that has accelerated some tasks.

The use cases have been detailed and properly finalized respect to the initial situation presented at the kick off.

### **1.1.3 Second global Steering Committee call**

The main focus of the second global call of the project has been the review of the status of the deliverables planned or months M10 and the related milestone.

The activities discussed have been the quality of management of the work packages and the frequency of contacts between the involved partners, and the potential issues.

The status of deliverables was in time with the scheduling, so no major issues have been raised in the call.

A report of the WPs for the second quarter of the project has been presented during the call.

### **1.1.4 Meeting ad Edinburgh**

The meeting has been organized for the days 27<sup>th</sup> and 28<sup>th</sup> of September 2016. The meeting has just been closed at the date this deliverable has been uploaded. A full meeting report will be produced in the next release of this deliverable (D1.6).

The main topics discussed during the meeting have been:

- The status of the WPs in terms of achievements and preparation of deliverables
- The status of the prototypes and the revision of the time planning
- The review of the project and the management
- The preparation of the review with the European Community

## 2 WP PERIODIC MEETINGS

For several WPs in the period considered by this document several regular calls have been planned.

The active WPs were WP2, WP3, WP4, WP5 and WP6.

For the WP1 and WP8 the discussions have been held during the global calls and meetings, since these WPs are horizontal to all the project and activities.

For WP2, WP3, WP5 and WP6 regular calls have been held. The WP4 was about technical studies and the integration between the involved partners has been achieved mainly with off-line discussions and by documents exchange.

The WP7 will start in M11, so it is outside the period considered in this document.

### 2.1 WP2

For WP2 the partners have some difficulties to build up the overall picture that was based initially on fragmented information. The input from the other WPs allowed to clarify the whole picture and the final outcome have been the description of requirements of the OPERA system, and the overall architecture and interconnections. This second document will be refined in successive iterations following the agile methodology chosen for the project. Several iteration and refinements of the architecture will be reported in the next versions of the deliverable.

A notice should be also highlighted for the activities related to task 2.3 on innovation management. This task will provide inputs to the other WPs and will summarize the results in the future reloaded of the connected deliverables.

The final recommendation for the partners involved is to increase the calls between all the partners on the activities of this task, with the new inputs coming from other Work packages.

The list of calls and minutes of WP2 are presented in the deliverables related to WP2 and reported here.

For the truck use case the calls have been:

#### **Meeting Call 25-01-2016 – Scope and Requirements**

Attendees: (13): CSI: Luca Scanavino; Vittorio Vallero; HP: Alberto Galli; Gallig Renaud; IBM: Joel Nider; Michael Rapoport; CERTIOS: Dirk Harryvan; Frank Verhagen; ISMB: Olivier Terzo; Pietro Ruiu; Alberto Scionti; NALLATECH: Craig Petrie; ST: Giulio Urlini.

Summary: discussion about the current situation in terms of hardware and software elements. It's important to provide the electrical schema and exchange information about open source versions of the software required to transform photo in to orthophoto, and to take advantage from the FPGA card.

#### **Meeting Call 09-03-2016 – Baseline**

Attendees: (13): CSI: Luca Scanavino; HP: Alberto Galli; CERTIOS: Dirk Harryvan; ISMB: Olivier Terzo; NALLATECH: Craig Petrie.

Summary: discussion about the baseline system, with particular attention to the second term of comparison, because we have two different ways to obtain orthophotos (using the same software, or adopting different ones). We agree that it's necessary to analyze better the situation.

#### **Meeting Call 06-06-2016 – Baseline II°**

Attendees: (13): CSI: Luca Scanavino; HP: Gallig Renaud; IBM: Michael Rapoport; IBM: Joel Nider; CERTIOS: Dirk Harryvan; ISMB: Olivier Terzo; Alberto Scionti; NALLATECH: Craig Petrie.

Summary: we define the second term of comparison. To this end, we will use OPERA hardware to run an open source software, and we will compare results with the current infrastructure used to transform

photos in to orthophotos. We define the general architecture and the strategy about measurements during the integration phase. CSI started activities to define if GRASS GIS fits with the needs of Protezione Civile, and to find an alternative in case of GRASS GIS cannot be used. To this end the best open source product to transform photos in to orthophoto will be take into consideration.

For the virtual desktop use case the calls have been:

### **Meeting Call 18-02-2016 - Scope**

Attendees: CSI: Luca Scanavino; Ignazio Cassano; HP: Alberto Galli; HP: Gallig Renaud; IBM: Joel Nider; ISMB: Olivier Terzo

Summary: discussion about the scope of the USE CASE, specifically about the applications involved and the definition of the second term of comparison against OPERA project solutions. Clarification of the use case scope is necessary to correctly define the element of comparison.

### **Meeting Call 08-03-2016 – Scope and Requirements**

Attendees : (5): CSI: Luca Scanavino; Ignazio Cassano; HP: Alberto Galli; IBM: Joel Nider; IBM: Michael Rapoport; CERTIOS: Dirk Harryvan;

Summary: it was agreed that we involved Virtual APP and VDI environment. Discussion about the software to do that.

### **Meeting Call 07-04-2016 – Requirements II°**

Attendees : (6): CSI: Luca Scanavino; Ignazio Cassano; HP: Alberto Galli; HP: Gallig Renaud; IBM: Joel Nider; IBM: Michael Rapoport; CERTIOS: Dirk Harryvan;

Summary: discussion about the proposal regarding Software and Applications involved. The scope is enough clear to start the study about the second element of comparison.

### **Meeting Call 24-05-2016 – Requirements III°**

Attendees : (6): CSI: Luca Scanavino; HP: Alberto Galli; HP: Gallig Renaud; IBM: Joel Nider; IBM: Michael Rapoport; CERTIOS: Dirk Harryvan;

Summary: discussion about the general architecture, where we agreed about the activities to carry out during the Integration Phase. Discussion about the second element of comparison: we agreed about the usage of a Citrix Environment.

### **Meeting Call 22-06-2016 – Baseline**

Attendees : (6): CSI: Luca Scanavino; HP: Alberto Galli; HP: Gallig Renaud; IBM: Joel Nider; IBM: Michael Rapoport; CERTIOS: Dirk Harryvan; ISMB: Olivier Terzo

Summary: discussion regarding the Citrix Report Measurements; we agreed to consider such measurements as baseline values for the OPERA project (i.e., the second element of comparison). We had no more open points to discuss.

For the road management use case the discussions have bene held in WP3, so they are not reported here.

## **2.2 WP3**

The activities of this work package have bene mainly focused in the analysis of the requirements of the road managers defining the use case and the technologies involved in the project with the purpose of drive the development for the fulfilment, where possible, of such requirements.

The calls have bene mainly focused on the detailed description of the use case, the possible locations of the outdoor demonstrations and the specificities of the environment in the different sites.

The environment conditions, the distance of the nodes and the centralized gateway that could receive the signal have been considered in the picture.

The last call have been devoted to the analysis of the requirements just defined and drive the software development of the applications on the local node, the choices for the protocol to be used of the wireless communication and the power harvesting techniques feasible in the specific environments.

A list of some of the calls is presented below.

### **25-01-2016 TRAFFIC MONITORING USE CASE**

Attendees (14): ISMB: Flavio Renga; ISMB: Giorgio Giordanengo; ISMB: Simone ciccia; LD38: Florence Martin; LD38: Jean C. Maisonobe; LD38: Jean Daniel Demond; LD38: Olivier Latouille; NEAVIA: Guillaume Grolleau; NEAVIA: Jean-Hubert Wilbrod; ST: Giulio Urlini; TESEO: Florin Apopei; TESEO: Roberto Peveri; TESEO: Salvatore Cammarata; TESEO: Stefano Serra

Summary: LD38 has lead the meeting discussions for:

@ISERE: provide to identify 2 use cases suitable for OPERA OBJECTIVES

@ISERE: Identification of existing implementations/examples in other regions

@NEAVIA/ISERE: Matrix definition in term of (precision/statistics/accuracy needed) needed

@ST: Neural Network capabilities check for Traffic Monitoring applications context

### **27-07-2016 TRAFFIC MONITORING USE CASE**

Attendees (8): ST - Giulio Urlini, ISMB - Olivier Terzo, Giorgio Giordanengo, Simone Ciccia, Flavio Renga, TESEO - Roberto Peveri, ISERE - Jean-Christophe Maisonobe, NEAVIA - Jean-Hubert Wilbrod

Summary: reviewed the environmental constraints for the location of the sensor in a real environment.

Reviewed the power harvesting device considering the dimension.

### **27-05-2016 TRAFFIC MONITORING USE CASE**

Attendees (7): ST - Giulio Urlini, ISMB - Giorgio Giordanengo, Simone Ciccia, Flavio Renga, TESEO - Roberto Peveri, ISERE - Jean-Christophe Maisonobe, NEAVIA - Jean-Hubert Wilbrod

Summary: Discussed the capabilities of the ULP computing platform. Reviewed the software architecture for traffic monitoring applications

## **2.3 WP5**

In the WP5 several calls have took place in the period under evaluation.

### **Meeting call 12-01-2016: WP5 Status**

Attendees (5): CERTIOS Frank VERHAGEN; CSI: Vittorio Vallero; NALLATECH: Craig Petrie; ST: Giulio Urlini; TECHNION: Idan Yaniv

Summary: Review partners & current tasks (T5.1, T5.2)

### **Meeting call 26-01-2016: WP5 Status**

Attendees (6): CSI: Luca Scanavino; IBM: Joel Nider; IBM: Michael Rapoport; NALLATECH: Craig Petrie; ST: Giulio Urlini; TECHNION: Idan Yaniv

Summary:

CSI has uploaded a spreadsheet regarding the VDI use case - all partners should review the document here: [\[\[http://130.192.86.167:10980/documents/46\]\]](http://130.192.86.167:10980/documents/46)

Technion will upload a list of relevant papers to DropBox, and send a link

IBM will put together a plan for T5.2 (Power-aware Cloud Model)

#### **Meeting call 05-04-2016: WP5 Status**

Attendees (4): CERTIOS Frank VERHAGEN; IBM: Joel Nider; ISMB: Alberto Scionti; TECHNION: Idan Yaniv

Summary: review of the open points and discussion on tasks status.

Shared some preliminary information on TOSCA

#### **Meeting call 19-04-2016: WP5 Status**

Attendees (11): CERTIOS Frank VERHAGEN; CERTIOS: Dirk Harryvan; CSI: Luca Scanavino; CSI: Vittorio Vallero; IBM: Joel Nider; IBM: Michael Rapoport; ISMB: Alberto Scionti; ISMB: Pietro Ruiu; NALLATECH: Craig Petrie; TECHNION: Dan Tsafir; TECHNION: Idan Yaniv

## **2.4 WP6**

#### **Meeting call 18-04-2016: WP6 Status**

In the WP6 several calls have took place in the period under evaluation.

Summary: provided a status update regarding Tasks 6.1 and 6.2. Review open actions with HPE and IBM

#### **Meeting call 21-04-2016: WP6 T6.1 - FPGA and Low Power server specification**

Attendees (2): HP: Gallig Renaud; IBM: Joel Nider; NALLATECH: Craig Petrie

Summary: Reviewed the features and specification of the proposed Nallatech 385A-SoC accelerator card. Nallatech would like both platforms to feature one internal USB connector per card allowing a "side-band" channel to be used to measure power consumption, voltage and temperature, Also acts as a failsafe for re-programing the FPGA card, should there be a problem.

Nallatech is investigating the PROs and CONs of different optical protocols to be supported in OpenCL.

#### **2016-06-01: WP6 status meeting**

Attendees (3): HP: Gallig Renaud; IBM: Joel Nider; NALLATECH: Craig Petrie

Summary: WP6 status update, review of open actions, log new actions

#### **2016-06-16: WP6 status meeting**

Attendees (3): HP: Gallig Renaud; IBM: Joel Nider; NALLATECH: Craig Petrie

Summary: 385ASOC schematics are now complete and have been shared with Intel/Altera UK for review. Software engineer has been experimenting with Altera SoC evaluation card. OPERA truck use case moving from "OpenDroneMap" to "GRASS".

#### **2016-06-30: WP6 status meeting**

Attendees (2): IBM: Joel Nider; NALLATECH: Craig Petrie

Summary: WP6 status update, review of open actions, log new actions

#### **2016-07-12: WP6 status meeting**

Attendees (3): HP: Gallig Renaud; IBM: Joel Nider; NALLATECH: Craig Petrie

Summary: This status meeting was focused on reviewing WP6 schedule and proposal update in preparation for upcoming review meetings. The amendment details of WP6 have been dicussed.

#### **27-07-2016: WP6 status meeting**

Attendees (3): HP: Gallig Renaud; IBM: Joel Nider; NALLATECH: Craig Petrie

Summary: PCB layout of Nallatech 385A-SoC progressing to plan. Expected to conclude PCB layout phase by Friday 5th August. Need to speak to Luca regarding choice of open source application. Moving from GRASS to MICMAC.



## 3 PLANNING FOR THE NEXT PERIOD

### 3.1 ISSUES DETECTED AND CORRECTIVE ACTIONS

The analysis of the progresses obtained so far in the various WPs with the current plan of interaction highlighted a need for more physical meetings, especially in the next period when several technologies will be integrated together.

The recommendation to the consortium that has been agreed among partners will be to organize devoted physical meeting with few partners involved for the execution of operative actions in the next eight months of the project.

In general the interaction has been good and didn't highlight issues in the interaction with the partners.