Action full title:

Universal, mobile-centric and opportunistic communications architecture

Action acronym:

UMOBILE

Deliverable:

D1.4 “Project Management Reports (2)”

Project Information:

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Project Acronym	UMOBILE
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Programme	EU Framework Programme for Research and Innovation HORIZON 2020
Project Coordinator	Prof. VassilisTsaoussidis, Athena R.C.

Deliverable Information:

Deliverable Number-Title	D1.4 Project Management Reports (2)
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WP Leader	Prof. Vassilis Tsaoussidis
Task Leader (s)	Agapi Papakonstantinou
Contributing Partners	All partners
Authors	A.Papakonstantinou, V. Tsaousidis, I. Psaras, S. Rene, J. Crowcroft, A. Sathiaseelan, P. Mendes, S. Pérez Sánchez, Luis Deprez, R. Sofia, A. Pineda and J. Pablo Salvador, F. Amorosa
Contact	apapako@ipet.athena-innovation.gr
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Document History:

Version	**Date**	**Description**
Version 1	19/03/2018	First draft to the consortium for comments and feedback
Version 2	30/04/2018	Second draft including feedback from all beneficiaries
Version 3	04/05/2018	Third draft
Version 4	08/05/2018	Fourth draft- final

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Abbreviations and Acronyms

EU	European Union
WP	Work Package
ICT	Information and communication technologies
EC	European Commission
DESCA	Development of a Simplified Consortium Agreement
PCC	Project Coordination Committee
PTC	Project Technical Committee
IPR	Intellectual Property Rights

Executive Summary

Background: This report is written in the framework of Tasks 1.2. "Project Administration" and 1.3 "Periodic Management Reports" of UMOBILE project and summarizes the management activities that took place during the second reporting period of the project (August 2016-April 2018). It also presents the key issues addressed in the project, achievements and open issues.

Objectives: The aim of this report is to inform about UMOBILE management procedures and activities that took place from August 2016 till the end of the project. Deviations from project plan and open issues are also presented.

Results and implications: This is a full report of management activities. It must be noticed that this report express only the authors' views -the European Commission is not liable for any use that may be made of the information contained therein.

Introduction

This report is divided into three sections: Section 1 describes UMOBILE management activities and Work Package 1 progress during the period August 2016 – April 2018. The second Section presents deviations from the project plan during the 2nd reporting period of the project. In Section 3, internal management reports are presented.

Section 1- Part A/Project management activities

"Universal, mobile-centric and opportunistic communications architecture-UMOBILE" proposal was submitted in "H2020-ICT-2014" call, under "ICT-05-2014 Smart Networks and novel Internet Architectures" topic. "H2020-ICT-2014" results were announced in September 2014; the proposal was positively evaluated and the grant agreement was signed in December 2014. UMOBILE project was implemented in 6 work packages:

WP1 "Project Management"
WP2 "System requirements"
WP3 "System and node architecture development"
WP4 "Services enablement"
WP5 "Overall platform integration and validation"
WP6 "Dissemination, exploitation and standardisation".

Deliverable 1.4 "Project Management Reports (2)" describes WP1 progress from the beginning of the 2nd reporting period (August 2016) till the end of the 2nd reporting period (January 2018).

The following project management activities took place during the 2nd reporting period of the project, August 2016 – April 2018:

- Consortium agreement follow up
- Coordinator change/ amendment
- 1st payment distribution
- Project meetings
- Internal management reports preparation
- Management deliverables preparation
- Mailing lists administration
- Internal website administration
- Management tools update
- Research participant portal administration
- 1st Periodic report preparation & submission
- 1st review & interim review coordination & participation
- 2nd Periodic report & Final report preparation

1.1. Consortium agreement signature

UMOBILE consortium followed the consortium agreement rules for the 2nd reporting period of the project. Athena R.C, the new Coordinator accessed the consortium agreement.

1.2. Coordinator change

UMOBILE consortium faced a significant change during the 2nd reporting period of the project. The participation of the Coordinating organization was terminated following a

consortium decision. A project amendment was necessary and was submitted on December 2016. UCL was in charge of the project amendment submission as a temporal project Coordinator. A new Coordinating organisation entered UMOBILE consortium, Athena R.C. and UMOBILE team managed despite the circumstances to submit on time deliverables and complete the project without problems.

1.3. 1st payment distribution

UMOBILE prefinancing was distributed according to the following table:

A)	**U-MOBILE BUDGET**	3.010.742,00 €
B)	**PRE-FINANCING (33% OF TOTAL GRANT)**	993.544,00 €
C)	**GUARANTEE FUND (5% OF TOTAL GRANT)**	150.537,10 €
D)	**NET PRE-FINANCING (B-C)**	**843.006,90 €**
E)	**EACH PARNTER PROJECT SHARE TO THE BUDGET:**	
1	DUTH	12,64%
2	UCL	14,85%
3	UCAM	19,92%
4	COPELABS—COFAC	8,84%
5	TECNALIA	9,28%
6	TEKEVER AU	10,60%
7	SENCEPTION	5,56%
8	FON TECHNOLOGY	7,68%
9	AFA SYSTEMS	10,64%
F)	**NET PRE-FINANCING DISTRIBUTION**	
1	DUTH	106.539,89 €
2	UCL	125.159,87 €
3	UCAM	167.941,24 €
4	COPELABS—COFAC	74.549,92 €
5	TECNALIA	78.189,92 €
6	TEKEVER AU	89.319,91 €
7	SENCEPTION	46.899,95 €
8	FON TECHNOLOGY	64.736,28 €
9	AFA SYSTEMS	89.669,91 €

Following the periodic report approval UMOBILE Coordinator, Athena R.C, received and distributed the 1st payment (765.224,99€):

BENEFICIARY	BUDGET	SHARE	INTERIM PAYMENT
ATHENA	195.942,86€	6.51%	49.801,80
UCL	447.000€	14.85%	113.611,72
UCAM	599.790,75€	19.92%	152.445,77
COPELABS	266.250€	8.84%	67.671,41
TECNALIA	279.250€	9.28%	70.975,55

TEKEVER	319.000€	10.60%	81.078,61
SENCEPTION	167.500€	5.56%	42.572,62
FON	231.201,25€	7.68%	58.763,25
AFA	320.250€	10.64%	81.396,31

46.907,95€, the percentage of DUTH budget, remained in ATHENA account and were used by ATHENA.

1.4. Project meetings

Project meetings are a significant management tool and took place either physically or through teleconference. Project meeting procedures are defined in the consortium agreement and also in the project handbook and are applied not only to the physical meetings but also to the meetings that took place via teleconference. The main meetings procedure is described below:

- UMOBILE Coordinator is in charge of the agenda preparation that it is circulated by e-mail to all consortium members
- Beneficiaries can add items to the agenda
- All partners are present to each meeting with at least with one participant
- Meeting minutes are circulated via e-mail by the project Coordinator
- Both meeting agenda and minutes are uploaded to the internal website.

During the kick off meeting UMOBILE consortium decided to arrange monthly meetings via teleconference in order to handle any issue that would arise in the project. As a result 5 physical and 12 teleconference meetings were arranged within the 1st reporting period of the project. Some of them are Technical and Steering Committee meetings, whereas 2 of them are also IPR Committee meetings. 2 review meetings took also place and several technical meetings. The following table includes all relevant details:

Dates	**Meeting Description**	**Location**
25/08/2016	Monthly consortium teleconference: discussion of the 1st version of the periodic report circulated to the consortium. Periodic report submission plan. Preparation of the forthcoming physical meeting. IPR Committee meeting: report on IPR findings.	-
21/09/2016 - 22/09/2016	Physical meeting in Cambridge: overview of the current version of the periodic report. W1, W2, WP3, WP4, WP5, WP6 overview and activities planning. Discussion on the architecture, design and demos that will be presented in the review.	UCAM premises, Cambridge, UK.
10/10/2016	Extra ordinary Project Coordination Committee meeting for the termination of Coordinating organization	-
20/10/2016	Review meeting	Brussels, Belgium

27/10/2016	Monthly consortium teleconference: discussion about the 1st review outcome. Organization of March review & resubmission of deliverables.	-
17/11/2016	WP5 task leaders teleconference	-
24/11/2016	Monthly consortium teleconference, technical integration plan	-
01/12/2016	WP5 teleconference	-
15/12/2016	WP5 teleconference	-
05/01/2017	WP5 teleconference	-
18/1/2017-19/1/2017	Physical meeting in Lisbon. Techical update and work on W2, WP3, WP4, WP5, WP6. Preparation for the project review on March	COPELABS premises, Lisbon, Portugal
23/2/2017	Monthly consortium teleconference: focus on the review preparation. Coordination of the pre-review and the review meeting. Project Coordination Committee meeting- discussion about project extention and payments.	-
09/03/2017	Pre review meeting	Brussels, Belgium
10/03/2017	Interim review	Brussels, Belgium
27/04/2017	Monthly consortium teleconference: focus on deliverables that must be submitted by Month 30. Dissemination activities planning. Next meeting in Madrid organization.	-
10/05/2017	WP5 teleconference	-
29/05/2017	WP5 teleconference	-
06/6/2017-07/6/2017	Physical meeting in Madrid. WPs overview. IPR findings check.	FON premises, Madrid, Spain.
21/6/2017	Project Coordinator teleconference with TEKEVER to update on PTC comments for their progress	-
22/6/2017	Project Coordination Committee meeting- discussion about project extension (UCAM-UCL proposal) & TEKEVER update	-
05/07/2017	WP5 teleconference	-
21/07/2017	WP5 teleconference	-
27/07/2017	Monthly consortium teleconference: deliverables update, demo discussion, next meeting coordination, dissemination activity discussion ACM ICN 2017	-
31/08/2017	Monthly consortium teleconference: consortium discussion with Nicola Berni, deliverables & project extention discussion	-
13/09/2017	WP5 teleconference	-
12/10/2017	Project Coordination Committee meeting- TEKEVER discussion, WP5 status evaluation	-
26/10/2017	Project Coordination Committee meeting- TEKEVER discussion, WP5 status evaluation	-
22/11/2017	WP5 teleconference	-
04/12/2017 -	Physical meeting in London: WP2, WP3, WP4 overview. WP5 detailed plan. TEKEVER demo	UCL premises, London

05/12/2017	presentation. WP1 overview, extension. Final review discussions. WP6 future actions agreement.	
04/01/2018	Monthly teleconference: Review coordination (dates, technical needs etc). WP discussion	-
15/02/2018	WP5 teleconference	--
01/03/2018	WP5 teleconference	
20/03/2018	WP5 teleconference	-
17/04/2018 - 18/04/2018	Project Demo. Consortium meeting	Italy

Several other technical teleconferences also took place.

1.5. Internal management reports

UMOBILE Coordinator prepared the templates for the internal management reports at the beginning of the project:

- "beneficiary management internal report template" that each beneficiary should fill and send to the Project Coordinator
- "project internal management template" that the Coordinator fills based on the beneficiaries reports.

Procedure and deadlines were agreed on the kick off meeting and reported on the project handbook.

Prior to the end of each reporting period UMOBILE Coordinator reminded the beneficiaries of deadlines regarding internal reports, collected each beneficiary report, contacted the beneficiaries in case of deficiencies or questions and then compiled a synthesis report that includes:

- achievements per work package for the reporting period;
- work planned per work package for the next reporting period;
- problems/risks arose during the period, or risks foreseen;
- resources used during the period and;
- deviations from Annex 2 or paragraph 2.3.5.
- evaluation of the implementation of the project workplan: Gantt chart control, milestones and indicators.

The final consortium reports were forwarded to consortium members.

7 internal management reports were prepared and submitted during UMOBILE 1nd reporting period:

Report number	**Reporting period**
6	M16-M18 (May 2016-July 2016)

7	M19-M21 (August 2016-October 2016)
8	M22-M24 (November 2016- January 2017)
9	M25-M27 (February 2017-April 2017)
10	M28-M30 (May 2017-July 2017)
11	M31-M33 (August 2017-October 2017)
12	M34-M36 (November 2017-January 2018)

Internal management reports are a significant management tool that:

1. gives the opportunity to the whole consortium to have a clear picture of the project progress and risks

2. gives the opportunity to the Coordinator to check and report deviations regarding personmonths, resources etc. Such deviations will be reported on part b.

1.6. Management Deliverables preparation

One deliverable was prepared and submitted under WP1. UMOBILE Coordinator was responsible for the deliverable preparation. Beneficiaries provided feedback when needed and the deliverable was submitted according to workplan, as depicted below:

- Deliverable 1.4 "Project Management Reports (2)"(i.e. the present report) due to 30/04/2018.

1.7. Mailing lists

UCL created UMOBILE e-mail list: Umobile@ee.ucl.ac.uk, which includes all team members; UCL is responsible for administrating the list.

UMOBILE e-mail list has been actively used by all partners as a main communication tool between them. Minor issues with temporarily blocked addresses due to some partners' mail server configurations were reported. This issue was handled successfully by UCL.

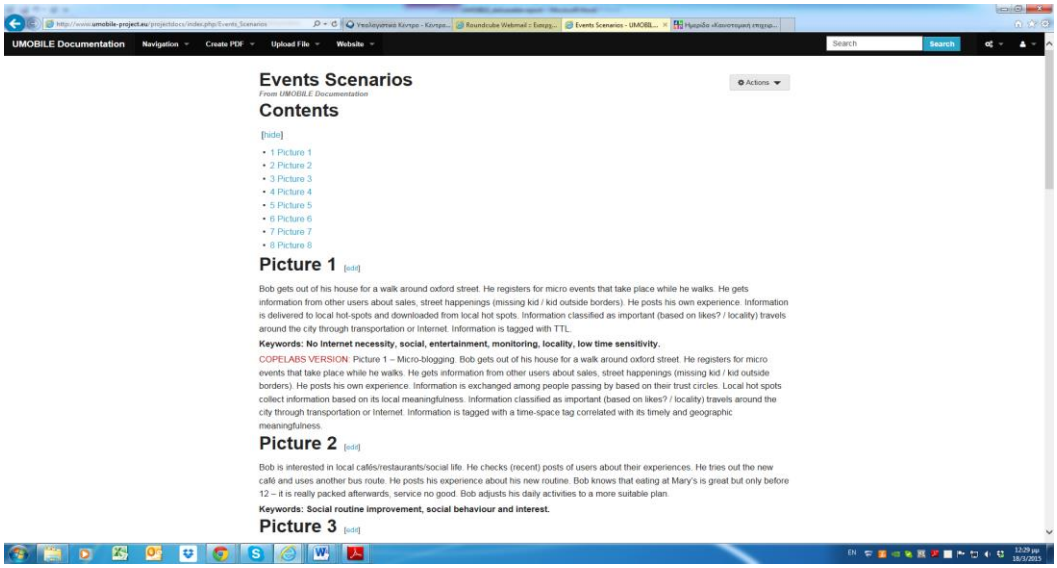
1.8. Internal website

According to UMOBILE workplan, the Leader of Work Package 6, AFA Systems, created the internal website of the project, based on an extended implementation of the popular framework "Mediawiki". Consortium members can access UMOBILE internal website through this link:

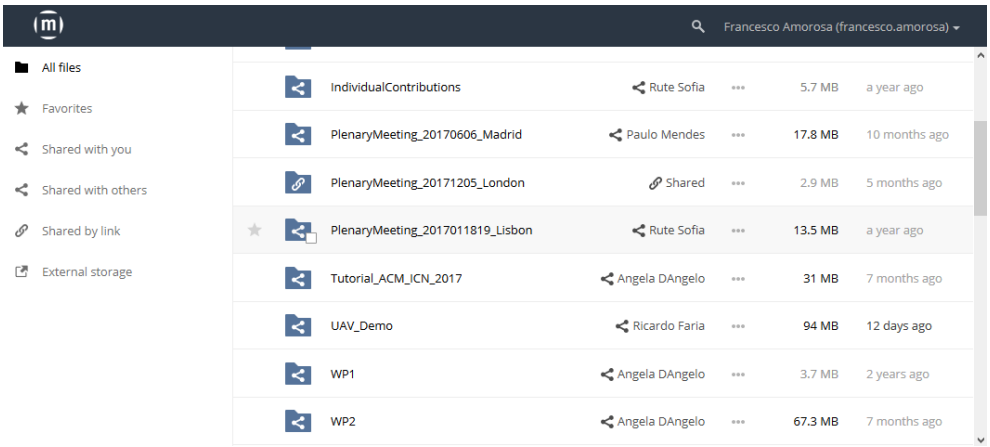
http://www.umobile-project.eu/projectdocs/index.php/Main_Page

It helps consortium members to collaborate easily on writing documents. With its embedded revision system, it provides the management of changes to documents, saving version histories of all pages. Each page is tagged in appropriate categories in order to easily search and navigate the whole document structure.

All management material along with updated technical work and dissemination activities are typically uploaded there. The internal website gives the opportunity for discussions among the consortium members and allows for preparing collaborative reports. It is also possible to draft deliverables through the internal websiteand convert them directly in PDF format ready to be uploaded to the EC portal. The internal website is integrated with an advanced access control list (ACL) system, in order to grant the access to consortium members and possibly a restricted access to other users.



A web drive has been added to share documents among the Consortium member; it is reachable at:
https://lab1.umobile-project.eu/frontend/drive



1.9. Management tools update

- UMOBILE calendar: A UMOBILE calendar with information on upcoming meetings, deliverables, milestones and reports per month is updated on a monthly basis, included in the internal management reports and uploaded in UMOBILE internal website.

- Gantt chart: UMOBILE gantt chart is updated on a monthly basis and it is included in the internal management reports

- Communication platform details: a template of the communication details of each consortium member was drafted from the beginning of the project and is updated accordingly

- Management structure template: the management structure of the project was defined in the Kick off meeting. A new version of this structure was agreed on June 2017 and updated accordingly. The current management structure is:

UMOBILE MANAGEMENT STRUCTURE/07-06-17	
Project Coordinator	Prof. Vassilis Tsaoussidis
Project Coordination Committee	ATHENA –Vassilis Tsaoussidis
	UCL– George Pavlou
	UCAM– Jon Crowcroft
	COPELABS—COFAC– Paulo Mendes
	TECNALIA– Susana Pérez Sánchez
	TEKEVER AU– André Oliveira
	Senception–Rute Sofia
	Fon Technology–Alberto Pineda
	AFA Systems–Francesco Amorosa
Project Technical Committee	ATHENA –Sotirios Diamantopoulos, Alexandros Sarros
	UCL – Ioannis Psaras
	UCAM – Adisorn Lertsinsrubtavee
	COPELABS—COFAC - Paulo Mendes
	TECNALIA – Susana Pérez Sánchez
	TEKEVER AU– André Oliveira
	Senception-Rute Sofia
	Fon Technology -Alberto Pineda and Jose Pablo Salvador
	AFA Systems – Francesco Amorosa and Angela D'Angelo
WP Leaders	
WP1 Leader	ATHENA- Vassilis Tsaoussidis
WP2 Leader	UCAM- Adisorn Lertsinsrubtavee
WP3 Leader	ATHENA- Sotirios Diamanantopoulos, Alexandros Sarros
WP4 Leader	Senception- Rute Sofia
WP5 Leader	Fon Technology- Alberto Pineda and Jose Pablo Salvador
WP6 Leader	AFA Systems-– Francesco Amorosa and Angela D'Angelo
WP/Task Leader	
Task 1.1 Leader	ATHENA –Agapi Papakonstantinou
Task 1.2 Leader	ATHENA–Agapi Papakonstantinou
Task 1.3 Leader	ATHENA –Agapi Papakonstantinou
Task 1.4 Leader	ATHENA –Vassilis Tsaoussidis
Task 2.1 Leader	UCAM – Carlos Molina Jimenez
Task 2.2 Leader	COPELABS--COFAC - Paulo Mendes
Task 2.3 Leader	TEKEVER AU -– Luis Deprez
Task 3.1 Leader	ATHENA – Sotirios Diamantopoulos, Alexandros Sarros
Task 3.2 Leader	UCL – Ioannis Psaras, Sergi Rene
Task 3.3 Leader	TECNALIA – Susana Pérez Sánchez
Task 4.1 Leader	UCAM – Carlos Molina Jimenez
Task 4.2 Leader	Senception - Rute Sofia
Task 4.3 Leader	UCL - Ioannis Psaras, Sergi Rene
Task 5.1 Leader	Fon Technology – Alberto Pineda and Jose Pablo Salvador
Task 5.2 Leader	ATHENA – Sotirios Diamanantopoulos, Alexandros Sarros
Task 5.3 Leader	AFA Systems –Francesco Amorosa and Angela D'Angelo
Task 5.4 Leader	Fon Technology –Alberto Pineda and Jose Pablo Salvador
Task 6.1 Leader	AFA Systems - Francesco Amorosa and Angela D'Angelo
Task 6.2 Leader	Fon Technology - Alberto Pineda and Jose Pablo Salvador
Task 6.3 Leader	UCAM - Adisorn Lertsinsrubtavee, Carlos Molina Jimenez
Liaison Delegates	Same as technical committee

IPR Management Committee	Same as technical committee

*Angela Dangelo participates till September 2017

1.10. Research Participant Portal administration

UMOBILE Coordinator is in charge of the research participant portal administration.

1.11. Periodic report preparation

Mrs Agapi Papakonstantinou proposed deadlines for the submission of the 2nd periodic report and the final report which were accepted by the consortium. UCAM and UCL will be able to submit their audit statement by that times.
Following communication with the Project Officer and the consortium the review meeting was arranged for 03/07/18. Participation of all consortium representatives was confirmed.

Section 2- Deviations from workplan

The following deviations from workplan were reported:

2.1 Deviations to personmonths

This report is being prepared prior to the end of the project. As a result, **numbers below are not finalized**, but are the best possible estimation for the closure of the project. The finalized tables with the correct figures will be included in the periodic report.

Athena RC:

	Grant Agreement pms	Consumed pms (project start day-project end day)	Deviation	Justification
WP1	3	2.85	-0,15	-
WP2	1.5	1.5	-	-
WP3	15	14.5	-0,5	Minor deviation
WP4	5	5	-	-
WP5	17	15.5	-1.5	Less effort needed
WP6	2.5	7.5	+5	Initial estimation was bad. More time was needed in order to provide feedback for WP6 deliverables, disseminate project results and participate in dissemination events
Total:	44	46.85	+2.85	Deviation is only 2.85 in total

UCL:

	Grant Agreement pms	Consumed pms (project start day-project end day)	Deviation	Justification
WP1	2	5	+3	We did extra effort in WP1 because the replacement of DUTH by ATHENA
WP2	4	7	+3	We had to have more participation for the requirements definition because it was affecting the architecture.
WP3	21	37	+16	We had to add more pms due to the deliverables amended
WP4	12	18	+6	There is a slight deviation caused by unplanned effort in simulations

WP5	5	14	+9	We did an extra effort testing interfaces with FON and UCAM
WP6	4	8.8	+4.8	We participated in more conferences and events than the planned initially
Total:	48	89.8	+41.8	

UCL comment on more personmonths: Eventhough there is a huge deviation in personmonths, the amount of money spent is the initially planned. Is just that we used cheaper staff (such as Phds students) and more people has been paid from the project.

UCAM:

	Grant Agreement pms	Consumed pms (project start day-project end day)	Deviation	Justification
WP1	2	1	-1	Less effort needed for management activities
WP2	12	12	-	No deviation
WP3	23	20.5	-2.5	Less effort needed for WP3 activities
WP4	20	19.5	-0.5	No deviation
WP5	17	15.4	-1.6	Less effort needed for WP5 activities
WP6	7	9.4	+2.4	More dissemination activities were planned and implemented. This was also due to the project extension. These overspent PMs are compensated by the PMs moved from WP3 and WP4. The Project officer was consulted.
Total:	81	77.8	-3.2	Minor deviation to total personmonths

COPELABS:

	Grant Agreement pms	Consumed pms (project start day-project end day)	Deviation	Justification
WP1	2	2	0	
WP2	6	6	0	
WP3	17	17	0	
WP4				
WP5	15	15	0	
WP6	9	9	0	
Total:	49	49	0	

TECNALIA:

	Grant Agreement pms	Consumed pms (project start day-project end day)	Deviation	Justification
WP1	2	2,12	+0,12	Due to project extension, more teleconferences and internal coordination than initially planned
WP2	5	5,40	+0,40	A little bit extra effort to contribute to postponed deliverable D2.4
WP3	20	20,68	+0,68	Due to shift within task 3.3 focus, some extra effort dedicated to redefining implementation work
WP4	0	0		
WP5	14	16,71	+2,71	Related with the shift in the routing approach, initial implementation work was then discontinued and different option adopted, so extra effort devoted
WP6	2	2,08	+0,08	Due to project extension (WP6 extended), participation in the final demo and related dissemination
Total:	43	46,98	+3,98	

TEKEVER:

	Grant Agreement pms	Consumed pms (project start day-project end day)	Deviation	Justification
WP1	2	1.7	-0.3	
WP2	3	3.1	+0.1	
WP3	2	1.9	-0.1	
WP4	0	0	0	
WP5	16	15.8	-0.2	
WP6	1	0.8	-0.2	
Total:	24	23.3	-0.7	

Regarding TEKEVER, the reported values are relative to the effort that took place between the start of the project until February 2018. It is predicted that until April 2018 (end of project), it will be consumed the remaining effort.

Senception:

	Grant Agreement pms	Consumed pms (project start day-project end day)	Deviation	Justification
WP1	2	1.96	-0.04	-
WP2	4	3.37	-0.63	Deviation due to less staff applied on task 2.4, as this task experienced delays and design changes derived from the change in task coordinator (from Tekever to FON) – mentioned in QMR 4. This deviation had no impact whatsoever in Senception's project responsibilities, and on the respective task.
WP3	4.8	4.35	-0.45	Deviation due to delay in hiring staff. This minor deviation occurred in the first year of the project and had no impact in the development of the proposed support of Senception. Goals have been reached as proposed.
WP4	15	8.4	-6.6	After the first review, the partners have committed to develop an integration effort . The re-design of such vision lead to a shift of staff, where Senception, upon agreement with the other partners, opted to shift staff to WP5 and WP6, in order to reach a stronger integration effort. The staff has been shifted into WP5 and WP6, with the larger effort being placed in implementation and integration – WP5. The goals of WP4, which Senception lead, were achieved successfully and delivered in M30.
WP5	10	11.7	+1.7	The shift of staff from WP3/WP4 to WP5 was done to assist the development of a more consolidated vision of

				UMOBILE. In addition to its own responsibilities, Senception therefore assisted the implementation of the UMOBILE UES, intended to assist facility of use of UMOBILE.
WP6	3.2	9.43	+6.19	Staff shifted from WP3/WP4 to WP6 have been dealing with the dissemination and exploitation aspects, including the integration of UMOBILE concepts (such as the Contextual Manager and interfaces to the routing module) into the PerSense product line of Senception.
Total:	39	39.18	+0.18	Albeit Senception has shifted, upon request and agreement of the consortium staff between Wps with the purpose of further strengthening implementation, dissemination, and exploitation, overall Senception did not use more resources than initially planned.

Fon:

	Grant Agreement pms	Consumed pms (project start day-project end day)	Deviation	Justification
WP1	2	2.1	+0.1	One additional internal report due to project extension, more teleconferences than initially planned
WP2	9			
WP3	0			
WP4	0			
WP5	18	18.5	+0.2	More teleconferences than initially planned, more effort in the integration

				part
WP6	7	7,2	+0,2	More effort than initially planned with the project extension
Total:	36	36.5	+0.5	

Fon has a deviation of 0,5 PM. This cost will be assumed internally. The deviation is in WP1 +0,1, WP5 +0,2 and WP6 +0,2.

AFA:

	Grant Agreement pms	Consumed pms (project start day-project end day)	Deviation	Justification
WP1	2.64	2.00	0.64	Minor deviation
WP2	3.87	3.00	0.87	Minor deviation
WP3	8.38	8.00	0.38	Minor deviation
WP4	2.64	10.00	-7.36	Explained below
WP5	18.37	11.00	7.37	Explained below
WP6	9.91	10.00	-0.09	Minor deviation
Total:	45.8	44	1.8	

AFA's PMs under WP4 have been reduced because some ideas expressed in the Proposal have not been developed; in particular, sensors and video surveillance IP cameras resulted out of the scope of the project as it was shaped after the Consortium activities had been started and integration and specification aspects of the work done in WP4 were actually continued into WP5. This has led to a reduction of AFA's PMs under WP4.

On the other hand, under WP5, the role of AFA (especially as the leader of the Task 5.3 – Proof-of-Concept) was to contribute to systematize all the logical modules (as software and even hardware components), to get a consistent and deployable ecosystem useful to prove the integration and validation of the network infrastructure based on the UMOBILE nodes.

The first idea, expressed in the Proposal, was to base the proof-of-concept on a set of specific demos and not necessarily on prototype as a whole ('a set of independent technological demonstrations'), as time-wise integration of the innovative concepts developed might not be possible. During the work of the Consortium, the idea of a UMOBILE laboratory has appeared as a common ground for the different architecture and service components. The Consortium approved the idea to have a laboratory and AFA started its realization since 2016.

As envisioned in the Proposal, the laboratory is an important component also of the dissemination plans of WP6, and we expect to open it to the research community more and more. Since June 2017, the UMOBILE Lab, physically located at AFA Systems's premises, has become a part of the Named Data Networking (NDN) project (https://named-data.net/project/). At the moment, in the context of NDN, we can run in the lab several experiment connecting two local wireless networks (e.g. at AFA and at COPELABS), being the NDN traffic sent over the NDN testbed. The experiments aim to test an extension of NDN for wireless networks and a set of novel applications, such as Oi! for short messaging and Now@ for data exchange, both apps being developed by COPELABS on top of NDN.

All the described activities on the lab have led AFA to spend to a larger effort on WP5 than approved.

2.2 Resources not described in paragraph 2.3.5

For this period:

Athena R.C.: -room rent (100 euro) in order to host a consortium meeting prior to Brussels technical review. -the average person month is a bit more than foreseen

UCL: nothing for this period. Personmonths deviation explained above.

UCAM: UCAM bought equipment (e.g., laptops, PC desktop, raspberry Pis) for the development task. This purchase was not described in paragraph 2.3.5 of the grant agreement, but it is consistent with UMOBILE workplan

COPELABS: nothing for this period.

Tecnalia: nothing for this period.

Tekever: : nothing for this period.

Senception: Senception had a total of 2000 Euros assigned for equipment to be used in the context of experimentation, as described in the Grant Agreement (Mobile devices for experiments). The equipment acquired has been referred to in the respective QMRs, and a total of 3200 Euros for equipment used in the context of code development; experimentation, validation and demonstration. The acquired equipment is listed in the next table, which details: equipment description and type/model; serial number; purpose; cost in Euros; QMR where it has been first reported; respective invoice(s) number and date(s).

Equipment	Type/Model	Serial nr	Purpose	Cost (Euros)	QMR	Invoice nr and date-format
2 smartphones	Samsung G900 S5 16GB	357749068533034 357749068533109	Development and validation of work developed in W2, WP4, WP5, and support for demos (POC2) in WP6.	939.98	QMR1	FNAC FT FA15/50030, 2015-03-13
1 tablet	Samsung TAB S2 9.7'' 32GB	R52GB03M76L	Validation and compliance of the software developed in WP4, WP5, WP6 (POC2 and POC1)	449.99	QMR6	FNAC FT FA16/169077, 2016-08-03
1 smartphone	Alcatel 5051D	357368071486047	Development, validation and	141.99	QMR8	Worten Mobile, FT BFU804/015513, 2016-12-14

			compliance testing concerning work developed in WP4, WP5 and WP6 (PerSense Mobile Light and the Contextual manager)			
2 smartwatches	Sony SmartWatch 3 SWR50		Validation and testing for compliance (PML and CM, mobility possibility), WP4, WP5.	303.43	QMR10	VIPDOMO 19YVRL3E940P2, Invoice 19772, 2017-06-27
2 laptops	HP Pav 15-AW001NP	5CD6423NX8 and 5CD6423NX8	Development, validation and testing for compliance WP4, WP5, WP6.	1189.98	QMR10	FNAC Portugal, FT FA17/133478 26.06.2017
1 serial mouse	WIR Z3700 Silver	7CH702WYNW	Development, validation and testing for compliance WP4, WP5, WP6.	24.99	QMR10	FNAC Portugal, FT FA17/133478 26.06.2017
1 LCD screen 24''	Samsung MON LS24F350F 24''/FHD/4MS	ZZMYH4ZJ104512	Development, validation and testing for compliance WP4, WP5, WP6.	149.99	QMR10	FNAC Portugal, FT FA17/133478 26.06.2017
Total				3200.35		

Fon: nothing for this period

AFA: The project has not covered sensors and video-surveillance scenarios, as foreseen in the proposal; this is consistent with the Consortium's idea to focus on "end-user devices" as the sole UMOBILE end-points. For this reason, there has been a reduction of AFA's PMs under WP4; for the same reason, AFA has reported less equipment costs than planned.

During the project, the Consortium has approved the idea of a "UMOBILE laboratory", proposed by AFA, as a common ground for the different architecture and service components. The lab incorporates and outdoes the first idea, expressed in the proposal, to have a set of specific demos as the base the proof-of-concept. The lab has been developed under the WP5 and AFA (as the leader of the Task 5.3 – Proof-of-Concept) has been in charge of its realization since 2016. For this reason, under WP5, AFA has reported more PMs than planned.
The decreased PMs in WP4 and the increased PMs in WP5 are about the same, so the total AFA's PMs balance remains substantially unchanged.
The total equipment costs of AFA are less than planned. A small part of these unused costs has been diverted to other costs, in order to cover the final demo costs, which were not foreseen in the proposal. In fact, the two-days final demo event in Italy will produce costs aimed to boost the dissemination effects, also through TV news and press. The costs will be covered with a small amount of the unused equipment funds.
Summarizing: accordingly to the project's needs, AFA's PMs and costs were redistributed between WP4 and WP5, with an unchanged amount of PMs and an overall reduction of costs.
The "UMOBILE laboratory"
The "UMOBILE laboratory", developed by AFA under WP5, has become also an important component for the dissemination activities and it is expected to be opened to the research community at the end of the project. Since June 2017, the UMOBILE Lab, physically located at AFA Systems's premises, has become a part of the Named Data Networking (NDN) project (https://named-data.net/project/). At the moment, in the context of NDN, several experiments can be run in the lab, connecting two NDN-wireless networks (e.g. at AFA and at COPELABS), being the NDN traffic sent over the NDN testbed. The experiments allow to test the UMOBILE NDN modules for wireless networks and a set of novel applications (e.g. such as Oi!, KEBAPP, NDN-Opp and Now@ developed on top of NDN during the project).

2.3 Technical deviations

Notihng to add for this period.

Section 3- Internal Management Reports

3.1 Internal Management Report 6

UMOBILE QUARTERLY REPORT

Action full title:*Universal, mobile-centric and opportunistic communications architecture*
Action acronym:*UMOBILE*
Grant Agreement number: *645124*
Period covered:*M16 – M18(May 2016-July 2016)*

A) UMOBILE achievements of the last reporting period:

WP1:

- 5th internal management report preparation and submission
- 4thconsortium physical meeting coordination (scheduled for September 2016)
- 26/5/16 Technical teleconference&Project Coordination Committee meeting - agenda and minutes preparation.
- 20/6/16 Technical teleconference & Project Coordination Committee meeting - agenda and minutes preparation
- 28/7/16 Technical teleconference & Project Coordination Committee meeting - agenda and minutes preparation
- Periodic report preparation
- Deliverable 1.3 preparation and submission
- Mailing lists maintenance

WP2:

- Discussion regarding the possible change in the submission date of D2.3. It was decided to release a version of this deliverable by M28.
- Discussion on the preliminary system specification and the structure of D2.3
- Contributions to the network deployability design aspects of Task 2.3
- Validation of scenarios to match the system and network requirement specifications

WP3:

- Task 3.1/Task 3.2: Progress towards the integration of the NDN and the IBR-DTN implementations
- Task 3.1: Preparation and submission of D3.1 (on M16) which describes in detail the different components of the UMOBILE architecture and their implementation status
- Task 3.2/Task 3.3: Development (early specification) of the sociability software module and potential application of the PerSense usage context tracking in the context of routing (contributions to a paper describing a “smart routing” approach by UMOBILE)
- Task 3.3: Progress on the joint publication on a smart routing framework
- Integration of the NDN communication protocol with virtualization technologies (e.g., Docker) to support service migration

- Development of a push and pull service over NDN and application in the implementation of a smart lighting system. These results were published as a research paper accepted as a poster in ACM SIGCOMM 2016.
- Implementation of the keyword-based mobile application sharing solution(KEBAB-COM/NET) over Android
- Development of the SOCIO framework able of supporting opportunistic communications based on dLife (social-aware opportunistic) forwarding protocol.
- Development of the Oi! Application (short-messaging app) based on the SOCIO framework, to exchange information opportunistically, in large-scale scenarios.
- Experimental validation of the Oi!/SOCIO framework in a real scenario: preparation of publication.
- Bluetooth support integration on the NFD forwarding engine with the aim of providing the smart routing technique with the option of using Bluetooth connectivity for neighbour detection.
- Study on the integration of the planned architecture with UAVs.
- Set up of the UMOBILE Lab. The Lab was presented to the Consortium members during the July teleconference. The Lab components were prepared according to the results of the related tasks and the discussion in Xanthi during the plenary meeting and during the following day.
- The paper on the keyword-based mobile application sharing solution(KEBAB-COM/NET) has been submitted and accepted in the 11th ACM Workshop on Mobility in the Evolving Internet Architecture (MobiArch) 2016.
- The paper on Information-Centric Connectivity, submitted to the IEEE Communications Magazine, has been accepted and will be published in August.
- The paper about the Information-Centric Connectivity solution, with an extension of the performance evaluation that we have submitted to the ACM ICN 2016 conference on the 15th of May has been rejected.

WP4:

- Task 4.1: Discussion on the congestion control mechanisms that the UMOBILE platform will support
- Task 4.1: Support for meetings to assist in a more clear analysis/design of congestion control aspects in UMOBILE
- Task 4.2:
    - Continuation of the work started in the prior period for data collection and inference of affinity networks based on digital networking footprint.
    - Improvement of the wireless tracking application PerSense Mobile Light (available as beta via Google Apps), for the research community: https://plus.google.com/communities/104874036636715946374 http://www.umobile-project.eu/projectdocs/images/2/21/2016-04-12-UMOBILE_PerSenseLight_Senception.pdf
    - Paper "A Characterization Study of Human Wireless Footprints based on non-intrusive Pervasive Sensing" resubmitted to IEEE JSAC (special issue). This scientific paper has been submitted and accepted in MobiArch2016 as short paper which meant reducing the paper from 10 to 3 pages and as such, the authors have opted out of MobiArch2016 and resubmitted the paper to IEEE JSAC special issue "Human-In-The-Loop Mobile Networks".
    - Traces collected for the period of 1 month, in Lisbon, 7 users / traces to be available via CRAWDAD.

- Task 4.3: Initial aspects of naming by assisting the debate of operational aspects in the context of naming application into UMOBILE routing aspects
- Task 4.3: Analysis on prioritization rules to consider in naming (based on behavior inference and "sociability" forecasting).
- D4.1 (Flowlet Congestion control – Initial report) submitted in July 2016
- Results of the implementation of the In-Network Resource Pooling Protocol (INRPP) included in D4.1
- Finalization of the design of service placement algorithms. The preliminary evaluation was conducted over the Guifi network. The outcome is a research paper accepted in IEEE LCN 2016.
- Meeting between UCL and UCAM partners in London to discuss the challenges in the architectural design of QoS framework which will be useful for the development of flowlet congestion control and different QoS services.
- Submission of a paper in the ACM CoNEXT conference on the 17th of June.
- Approach to the operation planned in the WP. First analysis of the opportunity to recruit people as UMOBILE app users.

WP5:

- Teleconference that marked the start of Task 5.1
- Task 5.3: Contributions to the UMOBILE Lab proposed by partner AFA, via the integration of an application derived from the PerSense Mobile Light app developed by Senception in the context of UMOBILE.
- Initial draft of the UMOBILE demonstration scenarios, which will be part of deliverable D5.1 "Validation methodology and evaluation report".
- Initiation of work outlining the final demonstration, including internal discussions regarding the integration of UAVs

WP6:

- Results presentation at ACM MobiSysDronet 2016, ICNRG interim meeting, IEEE LANMAN 2016, IFIP Networking 2016 conference, "Expoemergenze", WWIC 2016
- Cleaning of traces (to be provided via CRAWDAD).
- Proposal of a PerSense Mobile Light for ACM MobiHoc 2017 demo, app contest
- Updates on the Facebook profile, on the project & beneficiaries websites
- Deliverables 6.2 & 6.4 preparation and submission
- Dissemination of UMOBILE on COPELABS Scientific Advisory Board meeting (May 5th and 6th in Lisbon).

B) UMOBILE actions planned for the next 3 months:

WP1:

- Organisation of regular teleconference on August.
- Arrangement of the 5th physical meeting (21-22 Septeber)
- Periodic report submission
- Review meeting (20 October 2016)
- Consortium coordination
- Maintenance of the project's mailing list

WP2:

- Work on the system and network requirements report (D2.3), as well as system and network deployabilityreport (D2.4)
- Collection of traces in different locations worldwide, with the purpose of characterizing affinity networks and human mobility (based on Wi-Fi direct, with tool PerSense Mobile Light).

WP3:

- First fully integrated version of NDN and IBR-DTN by October
- Analysis of work on Task3.1, related to the usage of the DTN and ICN architectures on the UMOBILE abstraction layer.
- Work on Task3.3 related to the specification of the first version of the UMOBILE smart routing proposal.
- New version of the paper about smart routing.
- Migration of the Oi! app and SOCIO framework to the NDN platform.
- Beginning of the development of the Now@ application (local news app) based on a new version of SOCIO, which all integrate also the SCORP forwarding protocol to disseminate data based on users' social behaviour and data interests.
- Development of a service migration on an NDN architecture and evaluation over the UMOBILE testbed.
- First version of the implementation of the KEBAB-COM/NET solution over Android
- Evaluation of the routing solution presented in the IEEE LANMAN 2016 paper.
- Specification of the interface between the available modules/UMOBILE apps that may produce user-related information and definition of how to exploit that information in order to develop an enhanced (smart) routing and forwarding engine within the UMOBILE architecture.
- Contribution with a light API capable of tracking affinity networks and correlating such networks with a social routine behavior (integration of user context and usage context) - ongoing work, sociability forecasting module
- Contribution to the networking definition and integration of the social routine module (UMOBILE context plane).
- Upgrade of the UMOBILE Lab with the latest UMOBILE libraries (e.g. ndn-cxx_umobile libraries, etc.)
- Internet draft (ICNRG) describing SCORP routing protocols.
- Feedback regarding the UAV integration

WP4:

- Work on QoS and flow control.
- Work on QoS at service level while considering the service placement algorithms.
- Work on name-based replication
- Work on the INRPP extension for NDN networks and the UMOBILE architecture for the D4.2
- Steering of the common vision of WP4, by assisting convergence between the three different tasks towards the proposed goals.
- Validation of some aspects of context derived from the PerSense tool; adjust it as required by UMOBILE.
- Recruitment of users of the UMOBILE app(s) and start of the operations related to the data collection.
- Extension of the paper submitted to CoNEXT conference about INRPP

WP5:

- Inputs to the demo story document provided by FON
- Input to the validation methodology and evaluation report
- Definition of a demo to be shown during the review meeting in Brussels
- Mid-term proof of concept to showcase the final demo plans regarding the implementation of a hybrid method to be applied as (smart) routing and forwarding engine integrated within the UMOBILE architecture
- Planning and preparation of the final demonstration setup. Planning of the UAV integration and adaptation for the demonstration.
- Development of a demo story concerning sociability forecasting and its potential applicability in the context of routing.
- Integration of the PerSense Mobile Tool in the UMOBILE Lab.
- Simulation of planned demo trials in the UMOBILE Lab.

WP6:

- Project results dissemination.
- Poster presentation in ACM SIGCOMM 2016
- Results presentation in MobiArch workshop
- Potential submission of one scientific paper about the new concept of smart routing.
- Potential submission of one scientific paper about Oi!/SOCIO framework.
- UMOBILE newsletter circulation via several channels
- Submission of scientific study concerning roaming behavior with poles worldwide
- Potential contributions to Internet drafts: GAIA, ANIMA.
- Select non-academic magazines to popularize the UMOBILE activities.
- Increase activity via the social networks

C) Problem/risk arose during this period, or any risk foreseen on the future and decisions taken to handle them:

-

D) Resources used during the period in a project level:
(Double-click on the following table to edit cells in Excel)

WP	No of pms	Personnel Cost	Travel	Equipment	Other	Subcontracting	Subtotal	Indirect costs	Total costs
1	2.55	10733.93	282.68			0			
2	3.95	15587.35				0			
3	14.10	52564.31		3230.42		0			
4	12.14	43110.11				0			
5	3.79	17350.56				0			
6	4.61	20620.62	2394.67	208.88	2811.8	0			
	41.14	**159966.88**	**2677.35**	**3439.3**	**2811.8**	**0**	**168895.3**	**42223.83**	**211119.1**

E) Short description for other direct costs:

Travel costs for physical meetings, travel costs for dissemination (MobiSys-Dronet conference, WWIC 2016)
Equipment for experimental settings & storage, mobile devices for development an experimentation, Rasp PI, laptop and accessories for development the service migration platform.

F) Deviation from Annex 2 and/or paragraph 2.3.5including subcontracting:

Minor deviations in project months (1-2 personmonths).

G) Evaluation of the implementation of the project workplan: Gantt chart control, milestones and indicators:

The Project is implemented according to the plan. Specifically:

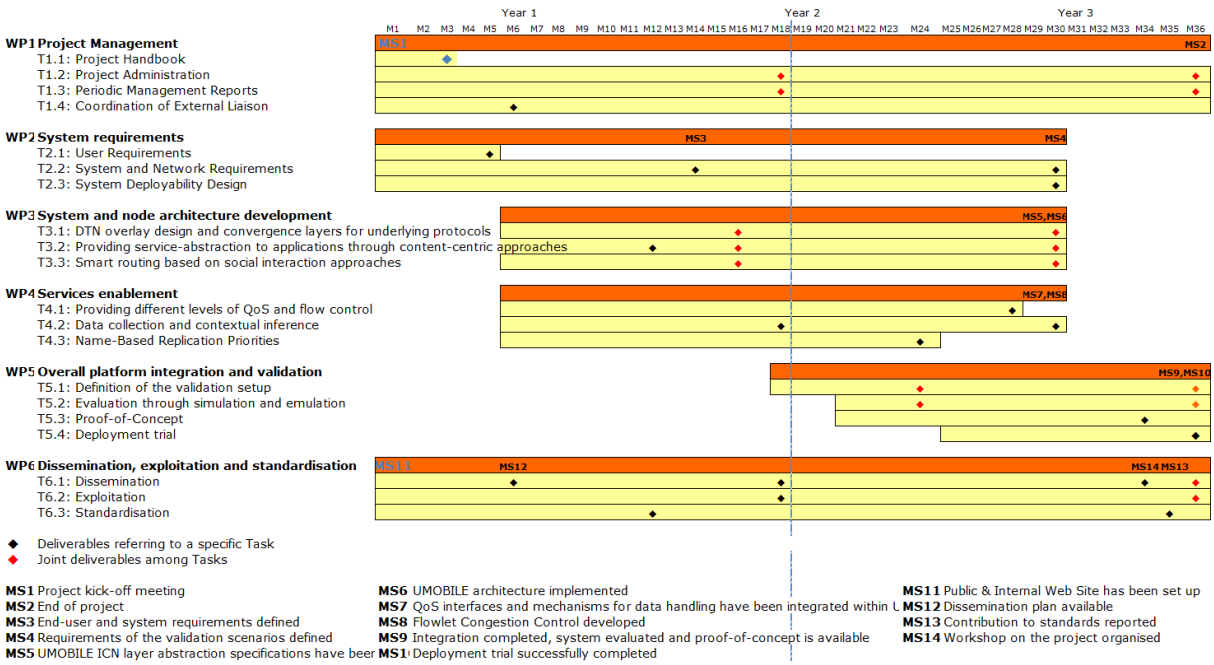
Period Milestones: MS1, MS3, MS11 and MS12 are accomplishedaccording to the plan. The next milestones are scheduled for Month 30.

Period Deliverables: All deliverables are submitted according to the grant agreementtimetable.D4.1 was submitted on M18 (UMOBILE Coordinator asked permission on the behalf of the consortium to submit "D4.1 Flowlet Congestion -Initial Report" on month 18, as described in page 22 of the grant agreement instead of Month 12 included in the deliverables tables. The change has been accepted).

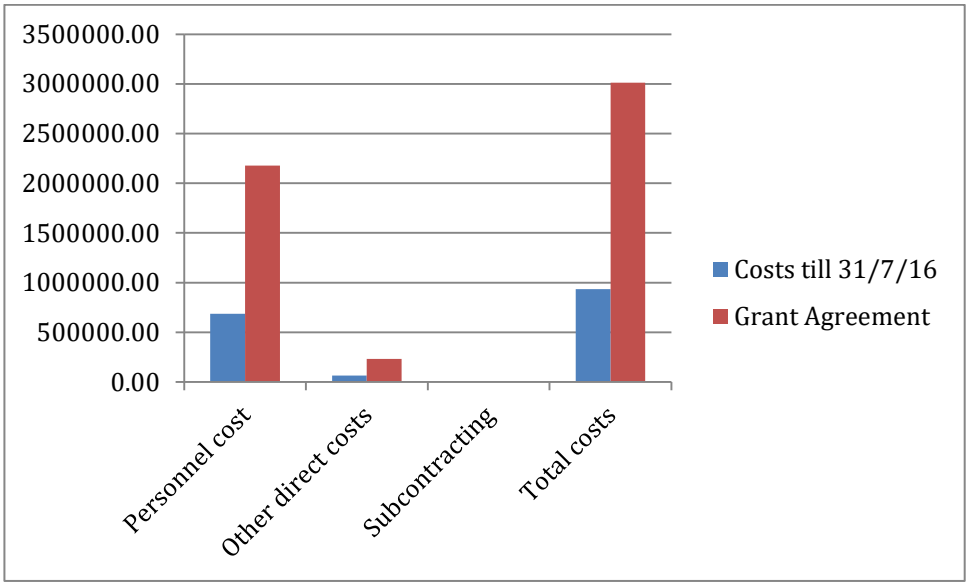
The table below summarizes the UMOBILE activities for the period May 2016-July 2016:

M..	Project Month	Meeting	Deliverable	Milestone	Report	Additional events
M16	May 2016	teleconference: 26/5/16	D3.1 UMOBILE architecture report		3 monthly report for: M13 to M15	ACM MobiSys Dronet 2016, ICNRG interim meeting, IEEE LANMAN 2016, IFIP Networking 2016 conference, "Expoemergenze"
M17	June 2016	teleconference: 30/6/16	-	-	-	
M18	July 2016	teleconference: 28/7/16	D1.3 Project Management reports D6.2 Dissemination Report D4.1 Flowlet Congestion Control-Initial Report D6.4 Exploitation Plan	-	1st periodic report	

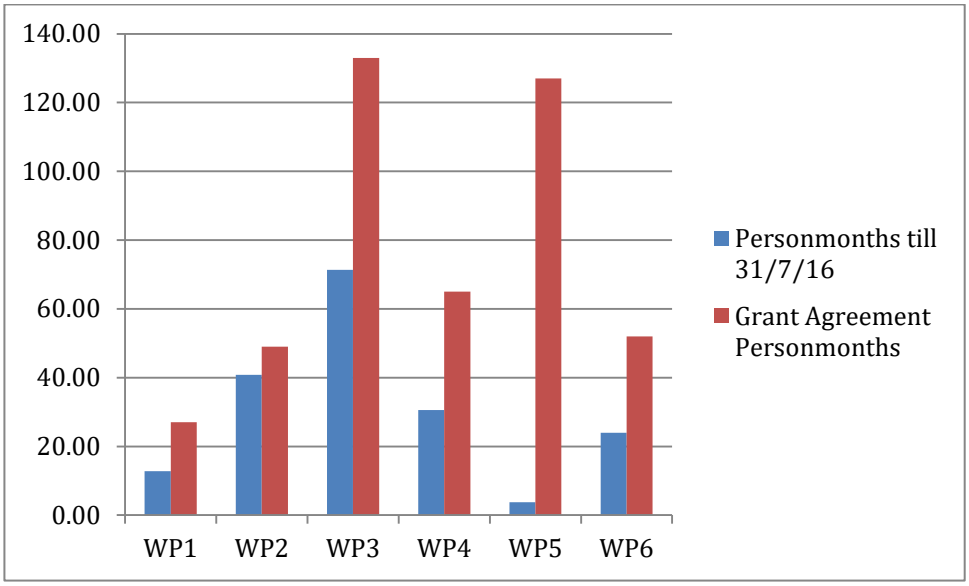
An updated gantt chart follows:



31.05% of total budget has been consumed for the activities described above (31.46% of the personnel costs, 27.21% of the other direct costs, 31.06% of the indirect costs), as presented in the following graph:



40.47% of the personmonths have been consumed for the activities described above:



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This report was written by DUTH on the behalf of the UMOBILE consortium

3.2 Internal Management Report 7

UMOBILE QUARTERLY REPORT

Action full title: *Universal, mobile-centric and opportunistic communications architecture*
Action acronym: *UMOBILE*
Grant Agreement number: *645124*
Period covered:*M19 – M21 (August 2016-October 2016)*

A) UMOBILE achievements of the last reporting period:

WP1:

- 6th internal management report preparation and submission
- 4thconsortium physical meeting (21/9/16-22/9/16) coordination- agenda and minutes preparation
- 25/08/16 Technical teleconference meeting - agenda and minutes preparation
- 10/10/16 Coordination Committee meeting- agenda and minutes preparation
- 27/10/16 Technical teleconference meeting - agenda and minutes preparation
- Periodic report preparation & submission
- Mailing lists maintenance

WP2:

- Contributions to D2.3

WP3:

- NDN-Docker integration.
- Revision of Deliverables D3.1 and D3.3
- Implementation of the Oi! Application
- Start of the development of NDN-Opp mobile node architecture
- Alignment of the contextual manager definition based on the PerSense context tracking approach, and interface definition to the routing module as well as to the application layer.
- Implementation of KEBAPP over Android

WP4:

- Design of the QoS framework
- Specification of the contextual manager module, interfaces to the routing module, analysis of the internal modules and required extensions
- Preparation of the PerSense Mobile Light demo for the review
- Work on the In-Network Resource Pooling Protocol (INRPP)

WP5:

- Teleconference that marked the start of Task 5.1
- Task 5.3: Contributions to the UMOBILE Lab proposed by partner AFA, via the integration of an application derived from the PerSense Mobile Light app developed by Senception in the context of UMOBILE.

- Initial draft of the UMOBILE demonstration scenarios, which will be part of deliverable D5.1 “Validation methodology and evaluation report”.
- Initiation of work outlining the final demonstration, including internal discussions regarding the integration of UAVs
- Preparation of Deliverables D5.1 and D5.3

WP6:

- Poster in the ACM SIGCOMM 2016
- Publication of a paper on the IEEE Healthcom 2016 conference: Rute C. Sofia, SaeikFirdose, Luis Amaral Lopes, Waldir Moreira and Paulo Mendes, "NSense: A People-centric, non-intrusive Opportunistic Sensing Tool for Contextualizing Social Interaction", in Proc. of IEEE Healthcom, Munich, Germany, September 2016
- PerSense Mobile Light showed in MobiHoc2016 demo contest (https://www.sigmobile.org/mobicom/2016/program.php)
- Integration of requirements derived from UMOBILE into the Senception product line PerSense ™.
- Presentation of a paper in MobiArch 2016
- Submission of 2 tutorial proposals (IEEE IM 2017 and IEEE ICC 2017)

B) UMOBILE actions planned for the next 3 months:

WP1:

- Organisation of regular monthly teleconferences
- Project amendment
- Consortium coordination
- Maintenance of the project’s mailing list

WP2:

- Work on the system and network requirements report (D2.3), as well as system and network deployabilityreport (D2.4)
- Development of experiments to collect traces in different locations worldwide, with the purpose of characterizing affinity networks and human mobility (based on Wi-Fi direct, with tool PerSense Mobile Light).

WP3:

- Development of the Service Migration platform on NDN
- Specification of the NDN-Opp mobile node architecture.
- Analysis of name-based opportunistic routing approaches.
- Implementation of NDN-Opp v1.0.
- Implementation of the Oi! and Now@ application based on NDN-Opp v1.0.
- Specification of the first version of the UMOBILE smart routing proposal.
- Definition of the output of the contextual manager for the routing module (routing metrics interface).
- Work on KEBAPP, OOCD, NREP, INRPP

WP4:

- Work on QoS and decision engine.

- Full specification of the contextual manager (internal and external interfaces) (4.2)
- Definition of contextual output relevant in the context of prioritization (4.3).

WP5:

- Inputs to the demo story document provided by FON
- Integration of the PerSense Mobile Tool in the UMOBILE Lab.

WP6:

- Presentation of a research paper at ACM AINTEC 2016
- Potential submission of one scientific paper about the new concept of smart routing.
- Potential submission of one scientific paper about NDN-Opp framework.
- Submission of scientific study concerning roaming behavior with poles worldwide.
- Potential contributions to Internet drafts: GAIA, ANIMA

C) Problem/risk arose during this period, or any risk foreseen on the future and decisions taken to handle them:

The Project Coordinating organization decided to internally suspend the project and did not submit their financial form. However, the periodic report was submitted and the project review was organized and took place according to the plan. UMOBILE consortium decided to terminate the coordinating organization participation. A project amendment was initiated.

D) Resources used <u>during the period</u> in a project level:
(Double-click on the following table to edit cells in Excel)

WP	No of pms	Personnel Cost	Travel	Equipment	Other	Subcontracting	Subtotal	Indirect costs	Total costs
1	2.39								
2	1.35								
3	7.10								
4	1.83								
5	10.16								
6	3.23	125202.22	15808.01	99					
	26.06	**125202.22**	**15808.01**	**99**	**0**	**0**	**141109.23**	**35277.31**	**176386.5**

E) Short description for other direct costs:

Travel costs for physical meeting & project review, travel costs for dissemination (ACM SIGCOMM conference, IEEE Healthcom 2016 conference, ACM Workshop on Mobility in the Evolving Internet Architecture (MobiArch) 2016).
Equipment for Apple developer program.

F) Deviation from Annex 2 and/or paragraph 2.3.5including subcontracting:

AFA personmonths for WP2: plus 0,15

G) Evaluation of the implementation of the project workplan: Gantt chart control, milestones and indicators:

The Project is implemented according to the plan. Specifically:

Period Milestones: MS1, MS3, MS11 and MS12 are accomplished according to the plan. The next milestones are scheduled for Month 30.

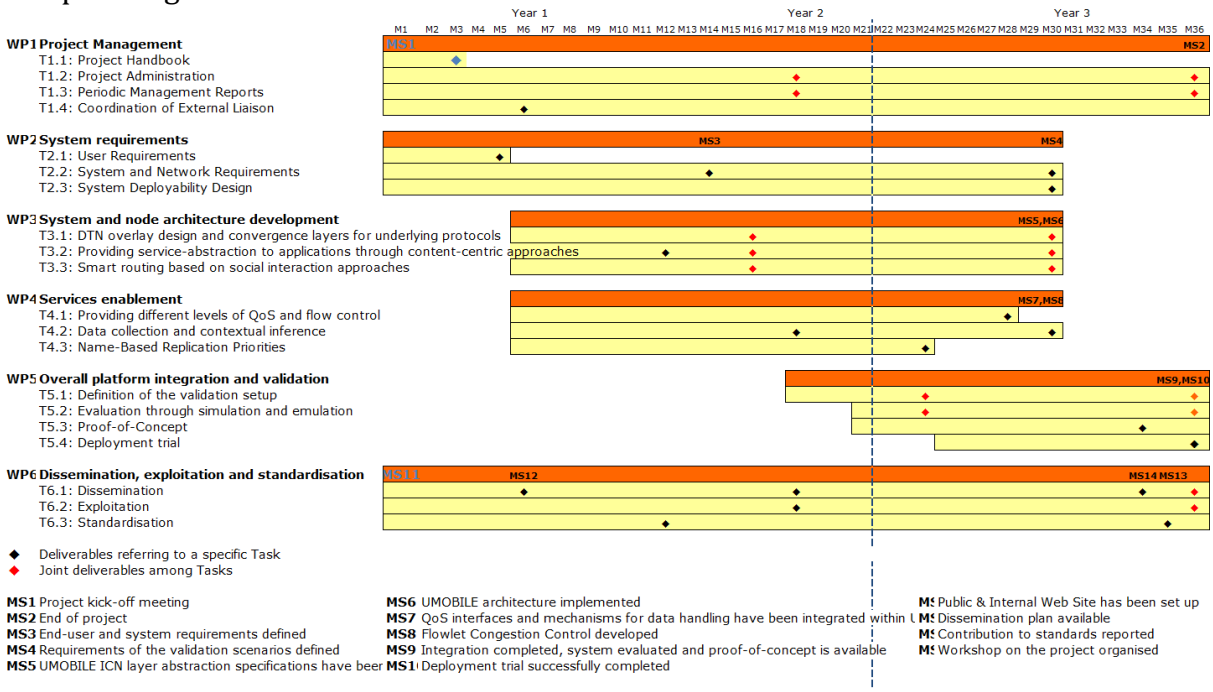
Period Deliverables: All deliverables are submitted according to the grant agreement timetable. D4.1 was submitted on M18 (UMOBILE Coordinator asked permission on the behalf of the consortium to submit "D4.1 Flowlet Congestion -Initial Report" on month 18, as described in page 22 of the grant agreement instead of Month 12 included in the deliverables tables). The change has been accepted.

The table below summarizes the UMOBILE activities for the period August 2016-October 2016:

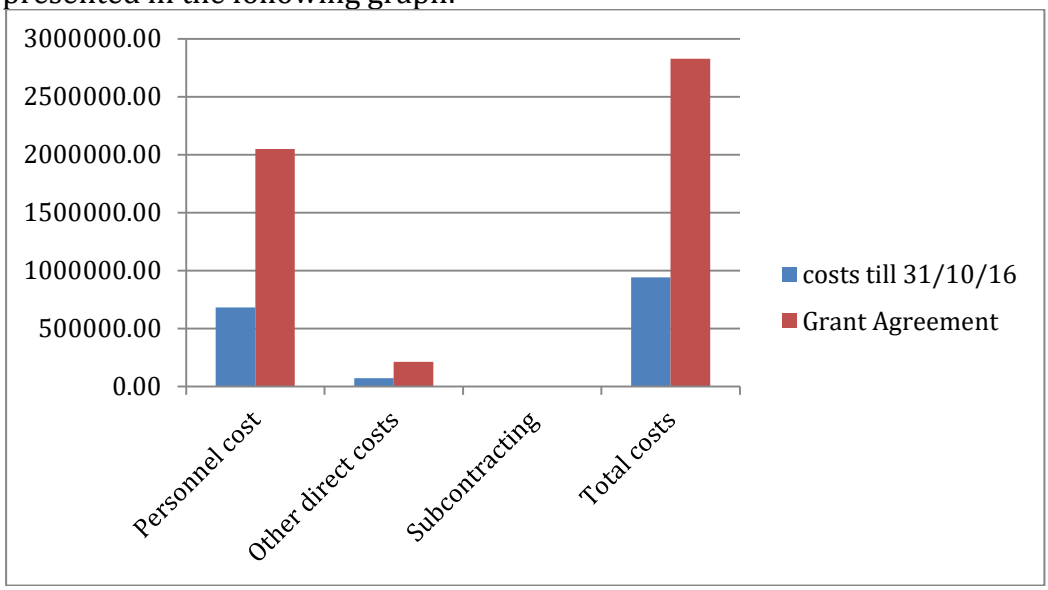
M..	Project Month	Meeting	Deliverable	Milestone	Report	Additionalevents

M19	*August 2016*	*teleconference: 25/8/16*	*-*	*-*	*3monthly report for: M16 to M18*	*IEEE Healthcom 2016, ACM SIGCOMM conference*
M20	*September 2016*	*4rth physical meeting: 21/9/16-22/9/16*	*-*	*-*	*1st periodic report submission*	
M21	*October 2016*	*teleconference: 10/10/16* *Review meeting: 20/10/16* *teleconference: 27/10/16*	*-*	*-*	*-*	

An updated gantt chart follows:

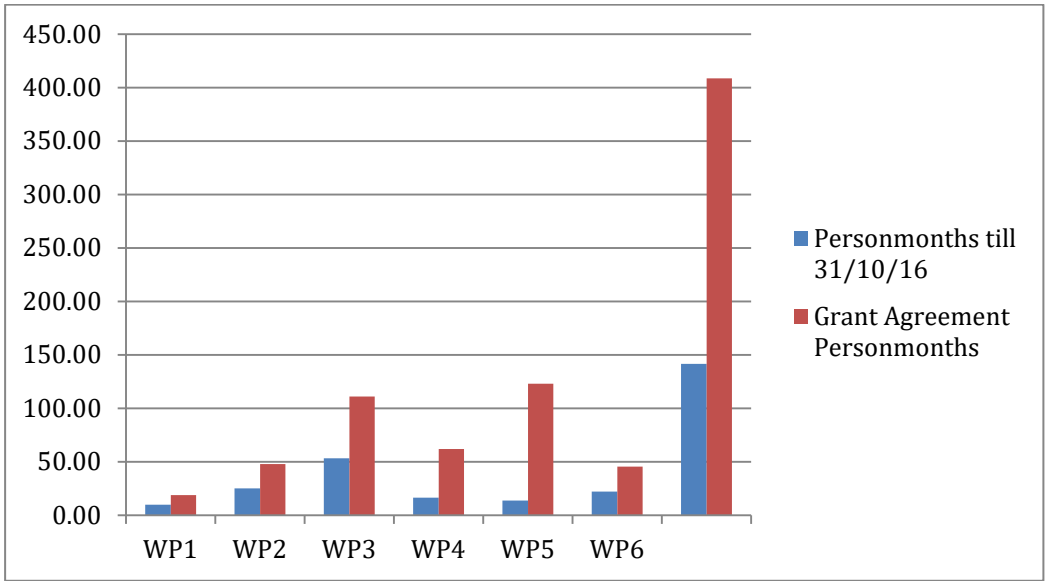


33.30% of total budget has been consumed for the activities described above (33.24% of the personnel costs, 33.93% of the other direct costs, 33.31% of the indirect costs), as presented in the following graph:



This graph does not include the terminated partner expenses, so resources consumption is actually more than 33.30%.

34.65% of the personmonths have been consumed for the activities described above:



Personmonths of the terminated partner are not included, since they were not reported.

……

This report was written by Athena R.C. on the behalf of the UMOBILE consortium

3.3 Internal Management Report 8

UMOBILE QUARTERLY REPORT

Action full title:*Universal, mobile-centric and opportunistic communications architecture*
Action acronym: *UMOBILE*
Grant Agreement number: *645124*
Period covered: *M22 – M24 (November 2016-January 2017)*

A) UMOBILE achievements of the last reporting period:

WP1:

- 5th consortium physical meeting (18/01/17-19/1/17) in Lisbon coordination-agenda and minutes preparation
- 17/11/16 Technical teleconference meeting - agenda and minutes preparation
- 24/11/16 Technical teleconference meeting - agenda and minutes preparation
- 15/12/16 Technical teleconference - agenda and minutes preparation

- March review preparation
- Mailing lists maintenance
- Project Amendment was accepted on 17/1/17

WP2:

- Contributions to D2.3 System and network requirement specification

WP3:

- Validation of the service migration over UMOBILE testbed.
- Preparation and submission of the revised version of D3.1
- Preparation and submission of the revised version of D3.3
- Implementation of the NDN-Opp framework to support the UMOBILE operation in opportunistic networks, based on wi-fi direct.
- Implementation of the Now@ application to support direct exchange of data based on interests. Now@ aims to operate on top of NDN-Opp.
- Initial specification of the NDN-Opp framework, to be submitted as IETF informative draft (ICRNG research group).
- Specification of the contextual manager module interfaces for routing and application.
- Specification of the end-user UMOBILE service

WP4:

- Specification and implementation of the contextual manager module.
- Evaluation of resources consumed in a raspberry Pi and the response time of the service. The finding results will instruct the rules in decision engine.
- Preparation of a first draft for the deliverable D4.4
- Submission of a paper describing thenovel congestion control framework of Task 4.1:“In-Network Resource Pooling Protocol” (INRPP), to the ACM SIGCOMM 2017 conference.
- Preparation of deliverable D4.3.

WP5:

- Service migration platform was integrated with KEBAPP and NDN-DTN.
- Configuration of UMOBILE Lab for testing NDN-DTN with service migration.
- UMOBILE Lab configuration for the proof of concept.
- Preparation and submission of deliverables D5.1 and D5.3.
- Work on the integration of NREP with the contextual manager module.

WP6:

- Submission of NDN-Opp extended abstract to the NDNComm 2017 workshop.
- Initial contacts with UCLA in order to disseminate NDN-Opp within the NDN community.
- A paper was presented in the ACM SIGCOMM AINTEC 2016.
- Submission of a paper named “On the Feasibility of a User-Operated MobileContent Distribution Network” to the IEEE WoWMoM 2017 conference.

- Acceptance of the paper named "Efficient content delivery through fountain coding in opportunistic information-centric networks" in the Computer Communications journal.
- Dissemination of the project's results in several occasions with the most notable being the keynote speech at the "Future Internet for Development" (FI4D) workshop at the CCNC conference.
- Organization of two workshops alongside prestigious conferences. Both proposals got accepted. Details of each of them follows:
    - Information-Centric Fog Computing (ICFC) together with IFIP Networking 2017, 12-16 June, Stockholm, Sweden. Website: http://networking.ifip.org/2017/index.php/workshops/workshop-on-information-centric-fog-computing-icfc
    - Mobile Edge Communications (MECOMM) workshop together with ACM Sigcomm 2017, 21-25 August, Los Angeles, USA. Website: http://conferences.sigcomm.org/sigcomm/2017/workshop-mecomm.html
- Integration of requirements derived from UMOBILE into the Senception product line PerSense ™.

B) UMOBILE actions planned for the next 3 months:

WP1:

- Organisation of regular monthly teleconferences
- Consortium coordination
- Maintenance of the project's mailing list

WP2:

- Finalization of the system and network requirements report as well as system and network deployability contributing to D2.3 and D2.4, respectively.
- Proposal of experiments to collect traces in different locations worldwide, with the purpose of characterizing affinity networks and human mobility (based on Wi-Fi direct, with tool PerSense Mobile Light).

WP3:

- Integration of service migration and NDN-DTN.
- Continuation of work on the solutions proposed for the UMOBILE arch (KEBAPP, OOCD, NREP, INRPP) and the integration of all of them into a single architecture with the solutions presented by other partners.
- Work on the deployment of KEBAPP into Raspberry Pi
- Integration of KEBAPP with the UCAM service migration platform.
- Specification and implementation of NDN-Opp.
- Analysis of alternative solutions to implement push-communication model in NDN-Opp.
- Analysis of alternative solutions for routing in NDN-Opp.
- Release of NDN-Opp v1.0.
- Implementation of the Now@ application based on NDN-Opp v1.0.
- Adaptation of the Oi! application to operate on top of NDN-Opp.
- Implementation of the contextual manager interface for the routing module (routing metrics interface).

- Contribution to the networking definition and integration of the contextual manager.
- Specify and start the implementation of the UMOBILE end-user service.

WP4:

- Work on QoS at service level while focusing on decision engine.This work will be contributed to D4.4.
- Start of the operations related to the data collection.
- Full specification of the contextual manager (internal and external interfaces) (4.2) and start the implementation.
- Conclude Deliverable 4.3 (4.3).

WP5:

- Validation of the service migration platform while considering the QoS.
- Validation of the integrated platform of service migration, KEBAPP and DTN-NDN
- Preparation of demo running in the lab for the project review meeting.

WP6:

- Increase the activity of website and social networks (also with pay per click ads).
- Select magazines to popularize the UMOBILE activities.
- Start the activities related to the UMOBILE Workshop organization.
- Participation in the NDNComm 2017 workshop and NDN hackathon.
- Submission of IETF informative draft to ICNRG about NDN-Opp.
- Exploitation of NDN-Opp within the NDN community.
- Submission of scientific study concerning roaming behavior with poles worldwide.
- Potential contributions to Internet drafts: GAIA, ANIMA.
- Monitoring of potential contributions to Wi-Fi Alliance.

C) Problem/risk arose during this period, or any risk foreseen on the future and decisions taken to handle them:

The Project Coordinating organization changed.

D) Resources used <u>during the period</u> in a project level:
(Double-click on the following table to edit cells in Excel)

WP	No of pms	Personnel Cost	Travel	Equipment	Other	Subcontracting	Subtotal	Indirect costs	Total costs
1	1.44								
2	2.96								
3	9.73								
4	5.41								
5	12.69								
6	2.53					0			
	34.76	**149929.98**	**8861.06**	**141.99**	**1808**	**0**	**160741.03**	**40185.26**	**200926.29**

E) Short description for other direct costs:

Project meeting in Lisbon, project results dissemination (CCNC conference)
Equipment: Smartphone Alcatel 5051D (Android) , experimentation and validation, WP4 (4.2); WP5 and WP6
Other costs:Layout design, tools and preparation of the exploitation plan (WP6)

F) Deviation from Annex 2 and/or paragraph 2.3.5 including subcontracting:

UCL: plus 0,3 personmonths to WP1. Justified since UCL was involved in the project amendment as a temporary Coordinator.

G) Evaluation of the implementation of the project workplan: Gantt chart control, milestones and indicators:

The Project is implemented according to the plan. Specifically:

Period Milestones: MS1, MS3, MS11 and MS12 are accomplished according to the plan. The next milestones are scheduled for Month 30.

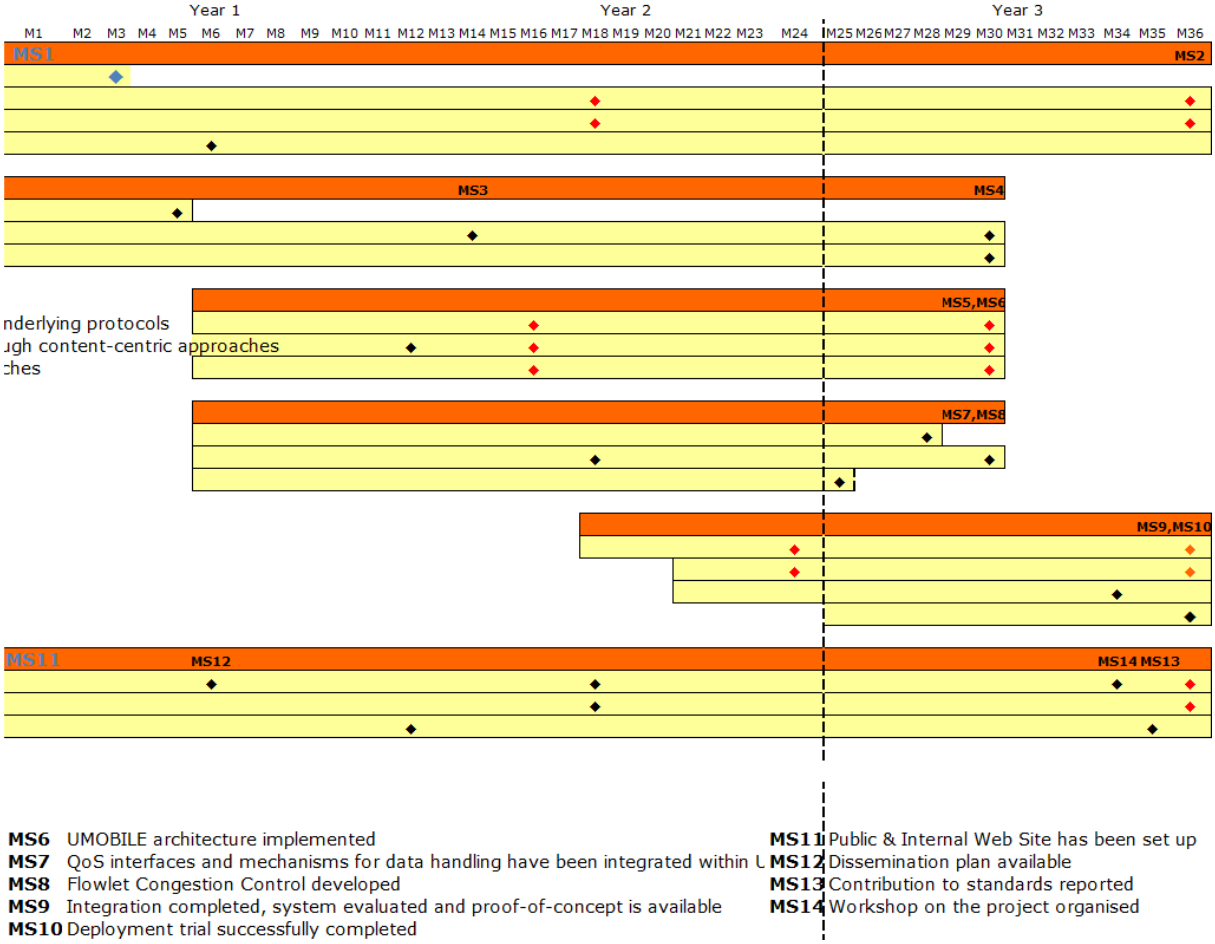
Period Deliverables: almost all deliverables are submitted according to the grant agreement timetable. D4.1 was submitted on M18 (UMOBILE Coordinator asked permission on the behalf of the consortium to submit "D4.1 Flowlet Congestion -Initial Report" on month 18, as described in page 22 of the grant agreement instead of Month 12 included in the deliverables tables). The change has been accepted. D3.1 and D3.3 were submitted again following reviewers comments. D4.3 was also submitted on early March instead of January 2017.

The table below summarizes the UMOBILE activities for the period November 2016-January 2017:

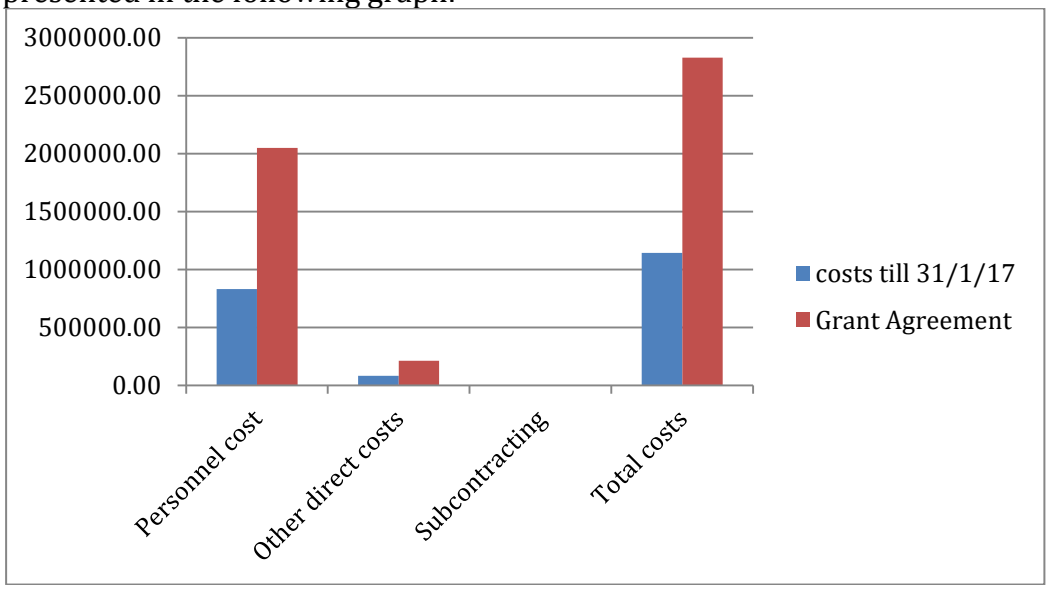
M..	Project Month	Meeting	Deliverable	Milestone	Report	Additional events
M22	November 2016	teleconference: 17/11/16, 24/11/16	-	-	-	ACM SIGCOMM AINTEC 2016, CCNC conference
M23	December 2016	teleconference: 15/12/16	-	-	-	

M24	Jan-17	Physical meeting 17/1/17-18/1/17	D5.1 Validation methodology and evaluation report D5.3 Proof of Concept	-	-	

An updated gantt chart follows:

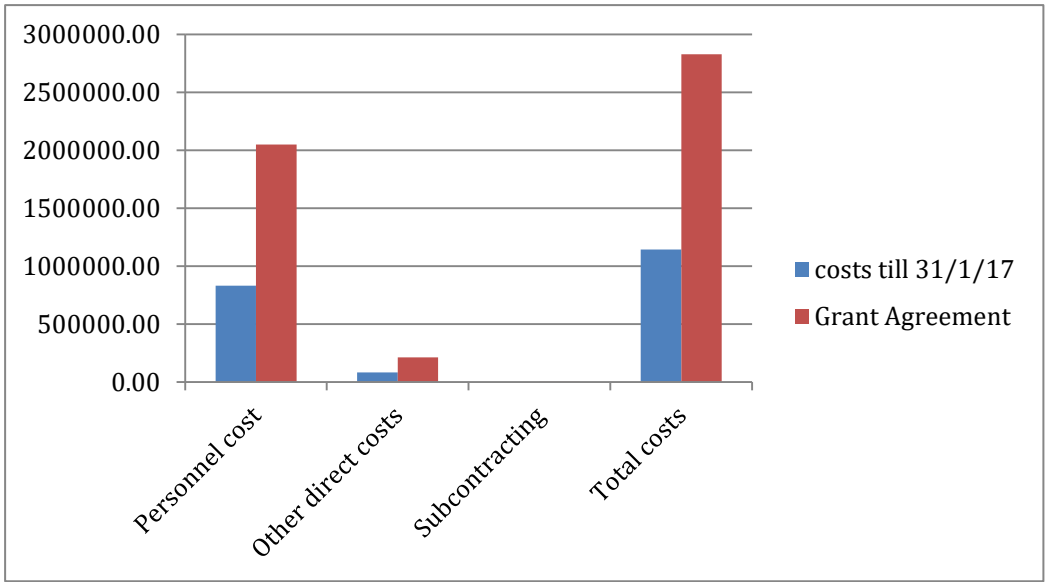


40.40% of total budget has been consumed for the activities described above (40.56% of the personnel costs, 39.02% of the other direct costs, 40.42% of the indirect costs), as presented in the following graph:



This graph does not include the terminated partner expenses, so resources consumption is actually more than 40.38%.

48.47% of the personmonths have been consumed for the activities described above:



Personmonths of the terminated partner are not included.

……

This report was written by Athena R.C. on the behalf of the UMOBILE consortium

3.4 Internal Management Report 9

UMOBILE QUARTERLY REPORT

Action full title:*Universal, mobile-centric and opportunistic communications architecture*
Action acronym: *UMOBILE*
Grant Agreement number: *645124*
Period covered: *M25 – M27 (February 2017-April 2017)*

A) UMOBILE achievements of the last reporting period:

WP1:

- Regular teleconference meetings organization
- Pre-review meeting organization and participation (16/3/17)
- Interim review meeting (17/3/17) organization and participation
- Next physical meeting (June) organization
- Organization of internal physical meetings between specific partners
- General financial management and project underspending check
- Project quarterly management reporting
- Maintenance of project mailing lists

WP2:

- System and Network requirements specification update, in the context of Task 2.2 and deliverable D2.3.
- Definition of network deployability issues in the context of Task 2.3 and development of the UMOBILE software components.

WP3:

- Contributions to the specification of the NDN-Oppframework and Contextual Manager interfaces.
- Progress in implementation of several UMOBILE modules, applications and services.
- Progress in tasks 3.1 “DTN overlay design and convergence layers for underlying protocols” and 3.3. “Smart routing based on social interaction approaches”

WP4:

- Progress in tasks 4.1. ”Providing different levels of QoS and flow control”(evaluation of the QoS aspects of the Service Migration platform, implementation of the NDN version of the INRPP protocol and specification of scenarios for QoS mechanisms based on the DTN interface).
- Progress in task 4.2. “Data collection and contextual inference” (specification and implementation of the contextual manager module, update of the PerSenseMobile Light tool)
- Progress in task 4.3 “Name-Based Replication Priorities”, reported in deliverable D4.3 which was submitted the 1st of March.
- Revision of Deliverable D4.3.

WP5:

- Progress in Task 5.1 “Definition of the validation setup” (collaboration between partners has begun)
- Progress in Task 5.2 “Evaluation through Simulation and Emulation” (basic UMOBILE has been simulated for different components, results have been presented in related project deliverables and papers)
- Progress in Task 5.3 “Proof-of-Concept” (integration of the different UMOBILE modules in the UMOBILE lab, definition of final POC scenarios)
- Organization of WP5 teleconferences.
- Preparation and presentation of integration demos during the interim review meeting (DTN/Service Migration, KEBAPP/Service Migration)
- General progress in the integration of several components (DTN interface with the Opportunistic Service Deployment platform, Service Migration platform with KEBAPP, NDN-Opp with the Contextual Manager)
- Revision of Deliverable 5.1 “Validationmethodology andevaluation report(1)”
- Revision of Deliverable 5.3 “Proof-of-Concept(1)”

WP6:

- Submission of a joint scientific paper describing the UMOBILE architecture(“Connecting the edges: A universal, mobile-centric and opportunistic communications architecture”) to IEEE Communications Magazine in April.
- Presentation and demo of NDN-Opp in the NDNComm 2017 workshop.
- Submission and acceptance of paper “On the Feasibility of a User-Operated Mobile Content Distribution Network” to IEEE WoWMoM 2017 conference by UCL. The paper focuses on analyzing how to best disseminate content to mobile users through D2D communications, such as KEBAPP.
- Delivery of a talk by Dr. IoannisPsarason the latest developments of the teams’ work at the Cisco Symposium on “Exceeding the Limits” at Cisco Paris Innovation Research Lab which took place on the 20th and 21st of March 2017.“Keyword-Based Mobile Application Sharing through Information-Centric Connectivity” was presented, which is related to work done in the context of the project.
- Preparation of a UMOBILE tutorial to be submitted to ACM ICN 2017 in July.
- Preparation of a poster regarding Service Migration/DTN integration (to be submitted to ACM SIGCOMM 2017 in May).
- Work on a scientific publication about NDN routing in opportunistic scenarios based on contextual information to be submitted in May.
- Update of project website and Facebook page
- Analytics report of project website
- Work on the improvement of the exploitation plan of the project and for the mid-term review.

B) UMOBILE actions planned for the next 3 months:

WP1:

- Organization of monthly teleconference meetings
- Project quarterly management reporting
- Organization of plenary meeting in June 2017 (Madrid, hosted by FON).
- Maintenance of the project’s mailing lists.

WP2:

- Specifications related to T2.2. “System and Network Requirements” and T2.3. “System Deployability Design”
- Submission of deliverables D2.3 “System and networkrequirementspecifications (2)” and D2.4 “System and NetworkDeployability Design”

WP3:

- Specification and implementation of several modules (NDN-Opp, opportunistic routing, DTN face for Android, end-user service)
- Refactoring of existing code to facilitate module integration (Contextual Manager interface for the routing module, Service Migration)
- Submission of D3.2 “UMOBILE architecture report (2)” and D3.4 “UMOBILE ICN layer abstraction final specification”

WP4:

- Implementation of the final aspects of QoS mechanisms(e.g. Service Migration decision engine, INRPP for NDN networks)
- Work on the integration of QoS mechanisms
- Start of the operations related to the data collection
- Convergence between the three different tasks towards the proposed goals.
- Finalization of D4.4. “Set of QoSinterfaces and algorithms”

WP5:

- Work on the integration of the UMOBILE platform in the UMOBILE testbed (Service Migration over IBR-DTN)
- Integration of different module functionality (NDN-Opp with the Contextual Manager, Service Migration and KEBAPP on Fon hardware)
- Development of experiments in the context of the UMOBILE Lab
- Work on the preparation of the final UMOBILE demos
- Periodic conference calls for WP5

WP6:

- Submission of a proposal for the call for tutorial at ACM ICN 2017.
- Increase the activity of website and social networks with pay per click ads.
- Sponsorship and participation in the organization of two workshops in the area of ICN and edge-/fog- computing alongside top-quality conferences (IFIP Networking 2017 and ACM Sigcomm 2017).
- Submission of several papers, posters and demos in scientific conferences by partners, related to ongoing work on the project.
- Submission of 2 Internet Drafts to the ICNRG group about “NDN-Opp” and “Information-Centric Connectivity”
- Tutorial on Information-Centric Networks at IEEE IM 2017 conference in Lisbon, Portugal (8-12 May 2017) by consortium member and dissemination of the project’s results.

C) Problem/risk arose during this period, or any risk foreseen on the future and decisions taken to handle them:

-

D) Resources used <u>during the period</u> in a project level:
(Double-click on the following table to edit cells in Excel)

WP	No of pms	Personnel Cost	Travel	Equipment	Other	Subcontracting	Subtotal	Indirect costs	Total costs
1	2.73								
2	4.43								
3	14.81								
4	5.80								
5	17.69								
6	3.08					0			
	48.54	**200244.55**	**17550.89**	**2329.08**	**123.97**	**0**	**220248.49**	**55062.12**	**275310.61**

E) Short description for other direct costs:

Travel costs: technical interim review participation & pre-review meeting participation.
Results presentation in NDNComm 2017 workshop.
Equipment: DTN nodes & equipment for demos for interim meeting.

F) Deviation from Annex 2 and/or paragraph 2.3.5 including subcontracting:

UCL: plus 1,3 personmonths to WP1. Justified since UCL was involved in the project amendment as a temporary Coordinator.
AFA: plus 0,26 personmonths for WP1, plus 1.55 personmonths for WP2, plus 4 personmonths for WP3, plus 0.68 personmonths for WP6. AFA is within the total number of its personmonths, but will have to explain in the final report why they distributed differently between wps.

G) Evaluation of the implementation of the project workplan: Gantt chart control, milestones and indicators:

The Project is implemented according to the plan. Specifically:

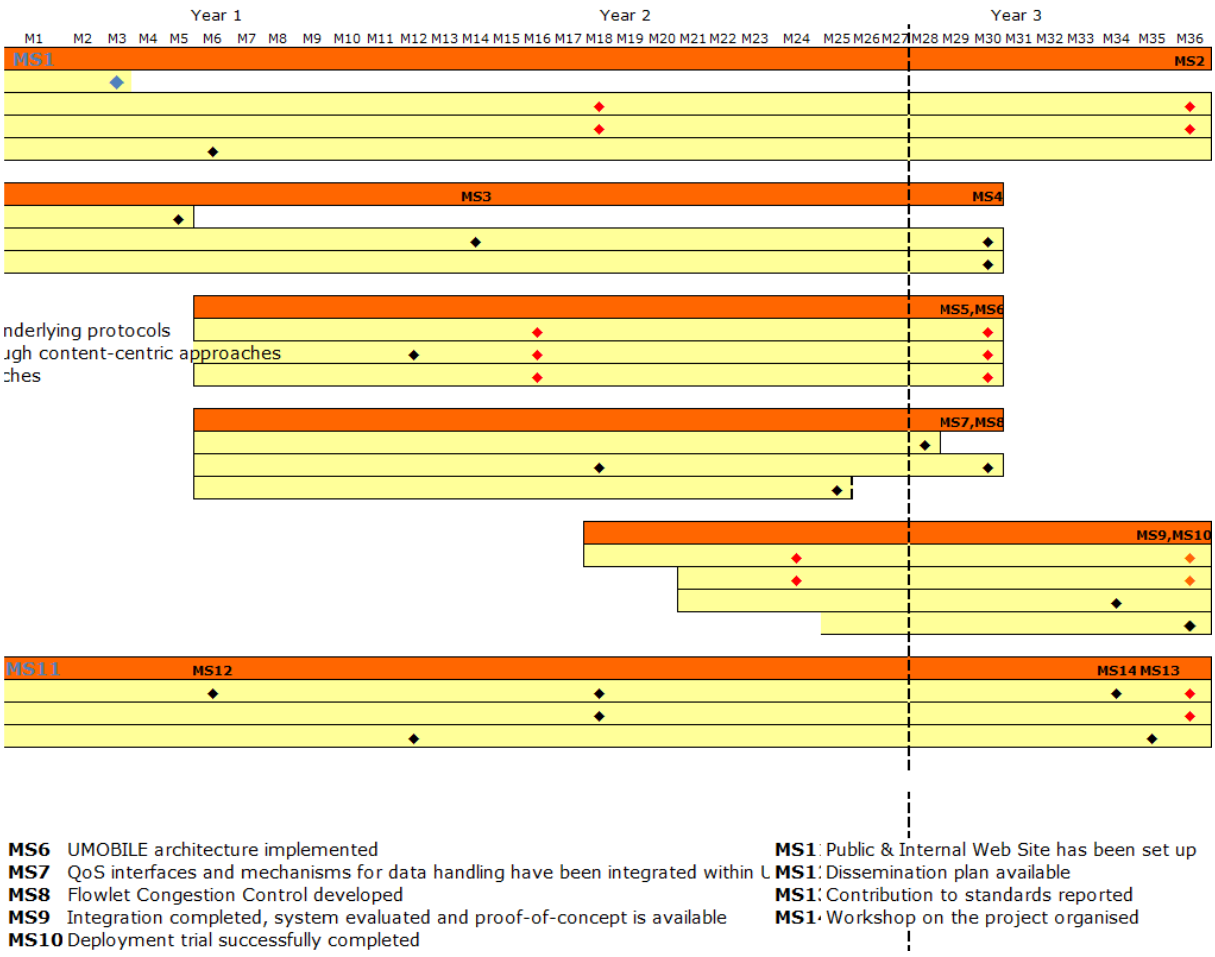
Period Milestones: MS1, MS3, MS11 and MS12 are accomplished according to the plan. The next milestones are scheduled for Month 30.

Period Deliverables: all deliverables are submitted according to the grant agreement timetable. D4.1 was submitted on M18 (UMOBILE Coordinator asked permission on the behalf of the consortium to submit "D4.1 Flowlet Congestion -Initial Report" on month 18, as described in page 22 of the grant agreement instead of Month 12 included in the deliverables tables). The change has been accepted. D3.1 and D3.3 were submitted again following reviewers comments. D4.3 was also submitted on early March instead of January 2017.

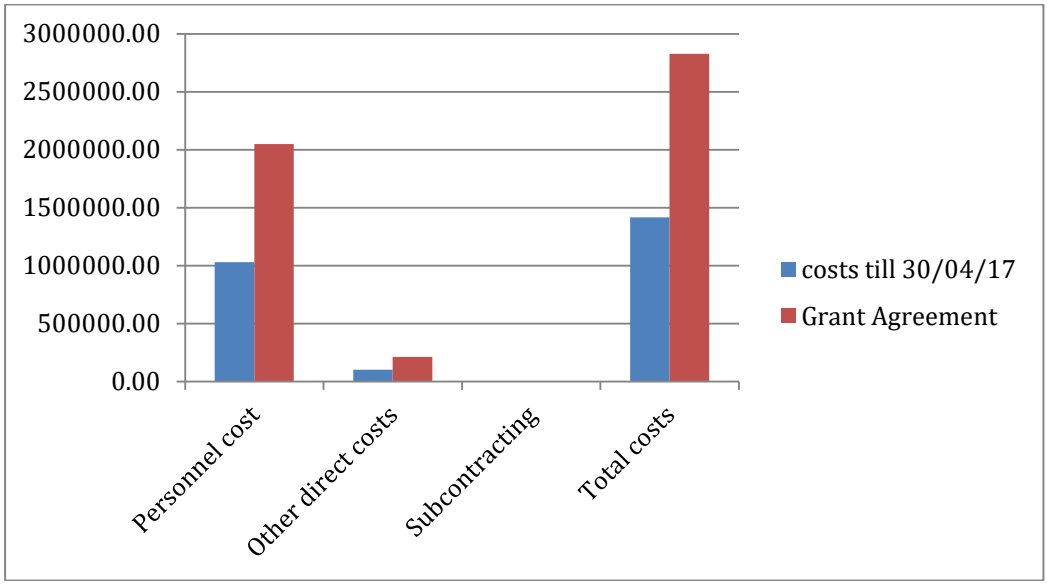
The table below summarizes the UMOBILE activities for the period February 2017-April 2017:

M..	Project Month	Meeting	Deliverable	Milestone	Report	Additional events
M25	February 2017	teleconference: 23/2/17	-	-	3monthly report for: M22 to M24	
M26	March 2017	Review meeting, Pre-review meeting	-	-	-	UCL talk at the Cisco Symposium on "Exceeding the Limits", presentation at NDNComm 2017 workshop
M27	April 2017	teleconference: 27/4/17	Revised D4.3, D5.1 D5.3 submissions	-	-	

An updated Gantt chart follows:

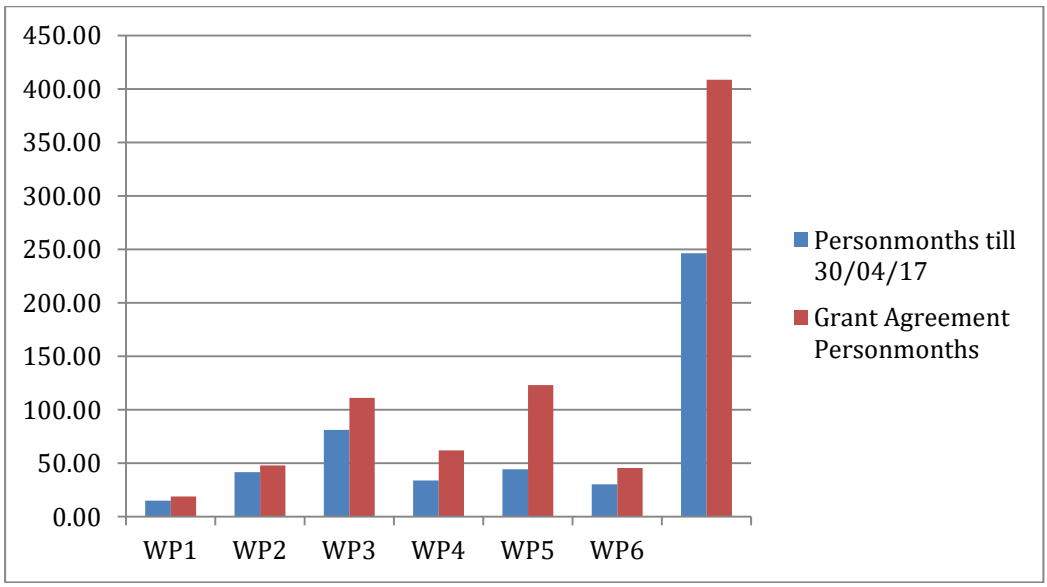


50.14% of total budget has been consumed for the activities described above (50.33% of the personnel costs, 48.44% of the other direct costs, 50.15% of the indirect costs), as presented in the following graph:



This graph does not include the terminated partner expenses, so resources consumption is actually more than 50.14%.

60.35% of the personmonths have been consumed for the activities described above:



Personmonths of the terminated partner are not included.

……

This report was written by Athena R.C. on the behalf of the UMOBILE consortium

3.5 Internal Management Report 10

UMOBILE QUARTERLY REPORT

Action full title:*Universal, mobile-centric and opportunistic communications architecture*
Action acronym:*UMOBILE*
Grant Agreement number: *645124*
Period covered:*M28 – M30 (May 2017-July 2017)*

A) UMOBILE achievements of the last reporting period:

WP1:

- Organization of monthly teleconference meetings (22/6/17, 27/7/17)
- WP5 teleconference meetings (10/5/17 - 29/5/17 - 5/7/17 - 21/7/17)
- Coordination of plenary meeting in Madrid, Spain (6/6/17 – 7/6/17)
- Financial management
- Project extension coordination
- Project quarterly management report
- Maintenance of project mailing lists

WP2:

- Preparation and submission of deliverable D2.3. "System and network requirement specifications" (M30)
- Final revision and validation of all requirements for implementation (in the context of T2.2 "Finalization of system and network requirements specification" and T2.3 "System deployability design")

WP3:

- Preparation and submission of deliverables D3.2 "UMOBILE architecture report (2)"and D3.4 "UMOBILE ICN layer abstraction final specification"
- Implementation of NDN-Opp framework, Now@ application, UMOBILE end-user service, smart routing based on social interaction approaches
- Update of service migration code for public release
- Development of the DTN tunneling functionality for Android hosts
- Specification of the contextual manager module interfaces for routing and application.

WP4:

- Preparation and submission of deliverable D4.2 "Flowlet Congestion Control – Final Report". Includes work in Task 4.1, on the NDN version of the "In-Network Resource Pooling Protocol" (INRPP), for congestion control in wide area networks
- Preparation and submission of deliverable D4.4. "Set of QoS interfaces and algorithms". Includes contributions in the context of Task 4.1,, on the work about QoS interfaces and algorithms.
- Specification and implementation of the contextual manager module.
- Update of the PerSense Mobile Light tool with Bluetooth
- Development of experiment in schools with PerSense Mobile Light, involving 80 children in Lisbon – contextual information concerning clustering and mobility.

WP5:

- Integration of service migration and NDN-DTN code.
- Collaborative implementations of hybrid routing solutions, both for the opportunistic environment of NDN and the DTN tunneling provided within UMOBILE.
- Contribution to the integration of routing with the Contextual Manager.
- Integration of NDN-Opp with the Contextual Manager.
- Integration of several UMOBILE modules into Foneras (KEBAPP, Service Migration).
- Definition of the final demo eventscenarios.
- Organization of WP5 teleconference meetings (May 10th, May 29th , July 5th, July 21st, July 27th).

WP6:

- Connection of the UMOBILE Lab to the Named-Data-Network (NDN).
- Meeting with the Civil Protection of Umbria Regione to discuss about the final demo.
- Work on the improvement of the exploitation plan of the project. Analysis of potential common exploitation interests between partners.
- Submission of an UMOBILE tutorial to ACM ICN 2017.
- Submission of a poster about Now@ to ACM ICN 2017.
- Submission of an NDN-Opp demo and poster to ACM ICN 2017.
- Submission of a Service Migration over DTN demo and poster to ACM ICN 2017.
- Work on a scientific publication about NDN routing in opportunistic scenarios based on contextual information to be submitted in May.
- Development of a scientific paper concerning Contextual-based Similarity opportunistic routing in NDN environments.
- Integration of requirements derived from UMOBILE into the Senception product line PerSense ™ (affinity network derived from Wi-Fi Direct and Bluetooth).
- Tutorial on Information-Centric Networks at IEEE IM 2017 conference in Lisbon, Portugal (8-12 May 2017) titled "The Information-Centric Networking Challenge from a Network and Resource Management Perspective". Well-attended with 12-15 people staying for the whole duration of the tutorial, very positive feedback from the attendees.
- Presentation of a paper named "On the Feasibility of a User-Operated MobileContent Distribution Network", in IEEE WoWMoM 2017 conference in Macau, in 12th-15th June. The paper focused on analysing how to best disseminate content to mobile users through D2D communications.
- Participation in the organization of the "Workshop on Information Centric Fog Computing (ICFC) that took place alongside with the IFIP Networking 2017 conference last 12th June. The UMOBILE project was disseminated during the event, including a poster of UMOBILE. There were more than 20 active participants throughout the duration of the workshop.
  The programme included a keynote speech from Dr Eve Schooler (Principal Engineer and Director, Intel IoT) on *"Information-Centric Networking in Wireless Edge Networks and Beyond".* An industry panel around the topic of "Adoption Challenges and Prospects of Information-Centric Fog Computing" was organized. Panelists were:

    - Eve Schooler (Principal Engineer and Director, Intel IoT)
    - Cedric Westphal (Principal Research Architect, Huawei)
    - Dirk Trossen (Senior Principal Engineer, InterDigital, Europe)
    - Chris Wood (Researcher, University of California, Irvine)

  The panel was moderated by the workshop TPC co-chair: Dirk Kutscher (Chief Technical Officer of Virtual Network Engine, Huawei German Research Centre).
  The full programme of the workshop can be found here: http://networking.ifip.org/2017/index.php/workshops/workshop-on-information-centric-fog-computing-icfc/icfc-technical-program.html
- Presentation of the IEEE WoWMoM 2017 paper (discussed above) in "CommNet2 &iCore joint workshop on Content Caching and Distributed Storage for Future Communication Networks" at Imperial College London on the 20th of June. Further details on the workshop, as well as the programme and slides can be found here: https://commnet.ac.uk/icore-cn2-joint-workshop/
- Presentation of the IEEE WoWMoM 2017 paper at the annual meeting of the UK computer networking academic community at the Cosener's House. Details on the programme, the presentations and the slides can be found here: http://coseners.net/coseners-2017/
- Participation in the July IETF in Prague, presentation of the Keyword-Based Mobile Application Sharing paper (ACM MobiArch 2016) developed in the context of the UMOBILE project.

B) UMOBILE actions planned for the next 3 months:

WP1:

- Organization of scheduled meetings and conference calls.
- Project quarterly management reporting.
- Maintenance of the project's mailing lists.

WP2:

- Finalization of the system and network deployability, to be documented in D2.4.
- Continuation of the collaboration in T2.2 and T2.3 while the packet is active.
- Development of further experiments with partners, to collect traces in different locations derived from the learning process of the current experiment being held with schools in Lisbon. Purpose is to assist in characterizing affinity networks and human mobility (based on Wi-Fi direct as well as Bluetooth, with tool PerSense Mobile Light).

WP3:

- This WP is finished.

WP4:

- Conclude deliverable D4.5.

WP5:

- Collaboration between partners to test service migration and KEBAPP on Fon's equipment.
- Testbed setup for final demo.
- Integration of service migration over NDN-IBRDTN in the UMOBILE Lab
- Development and organization of the final demo events
- Work on the integration of implemented solutions and test the routing performance within the overall UMOBILE platform. Implement testing on the UMOBILE Lab to be able to provide initial insights on the routing mechanism performance over the UMOBILE Proof-of-Concept scenarios.
- Integration of NDN-Opp with the Contextual Manager
- Contribution to the exploitation of NDN-Opp into the UMOBILE testbed
- Development of additional experiments in the context of the UMOBILE Lab

WP6:

- Presentation of an UMOBILE tutorial, 3 papers, 2 demos and 3 posters at ACM ICN 2017.
- Presentation of a paper at IEEE CloudNet 2017.
- Submission of IETF informative draft to ICNRG about NDN-Opp.
- Submission of a scientific paper on NDN routing in opportunistic scenarios based on contextual information.
- Submission of scientific study concerning roaming behavior with poles worldwide.
- Potential contributions to Internet drafts: GAIA, ANIMA.
- Monitoring of potential contributions to Wi-Fi Alliance.
- Organization of another workshop in the area of ICN and edge-/fog-computing alongside with ACM Sigcomm 2017 next August, where the UMOBILE project will be disseminated. Details on the workshop can be found here: http://conferences.sigcomm.org/sigcomm/2017/workshop-mecomm.html
- Preliminary activities for the organization of the final demo in Umbria (Italy).
- Work on the improvement of the exploitation plan of the project.
- Extended work to disseminate UMOBILE results near European academic and industry community.

C) Problem/risk arose during this period, or any risk foreseen on the future and decisions taken to handle them:

TEKEVER has been absent from the Madrid plenary meeting where the final demo plans were laid. The consortium has already offered them a plan for a separate demonstration event. Further decisions will be made during the next quarter, depending on their progress.

D) Resources used <u>during the period</u> in a project level:
(Double-click on the following table to edit cells in Excel)

WP	No of pms	Personnel Cost	Travel	Equipment	Other	Subcontracting	Subtotal	Indirect costs	Total costs
1	2.22						[redacted]	[redacted]	[redacted]
2	3.83						[redacted]	[redacted]	[redacted]
3	16.54						[redacted]	[redacted]	[redacted]
4	8.52						[redacted]	[redacted]	[redacted]
5	14.31						[redacted]	[redacted]	[redacted]
6	3.12					0	[redacted]	[redacted]	[redacted]
	48.54	**182978.35**	**10013.37**	**3422.99**		**0**	**196414.71**	**49103.68**	**245518.39**

E) Short description for other direct costs:

Travel costs: participation to the consortium meeting (Madrid, June 2017)
Equipment: nodes
Dissemination activities

F) Deviation from Annex 2 and/or paragraph 2.3.5 including subcontracting:

UCL: plus 1,3 personmonths to WP1. Justified since UCL was involved in the project amendment as a temporary Coordinator.
AFA: plus 0,26 personmonths for WP1, plus 1.55 personmonths for WP2, plus 4 personmonths for WP3, plus 0.68 personmonths for WP6. AFA is within the total number of its personmonths, but will have to explain in the final report why they distributed differently between wps.
UCAM: contacted the Project Officer to inform about remaining budget from WP3 and WP4. Justified and suggested to transfer budget to WP6.

G) Evaluation of the implementation of the project workplan: Gantt chart control, milestones and indicators:

The Project is implemented according to the plan. Specifically:

Period Milestones: MS1, MS3, MS11 and MS12 are accomplished according to the plan. M5, M6, M7, M8 scheduled for M30 (July 2017): accomplished (03 August 2017).

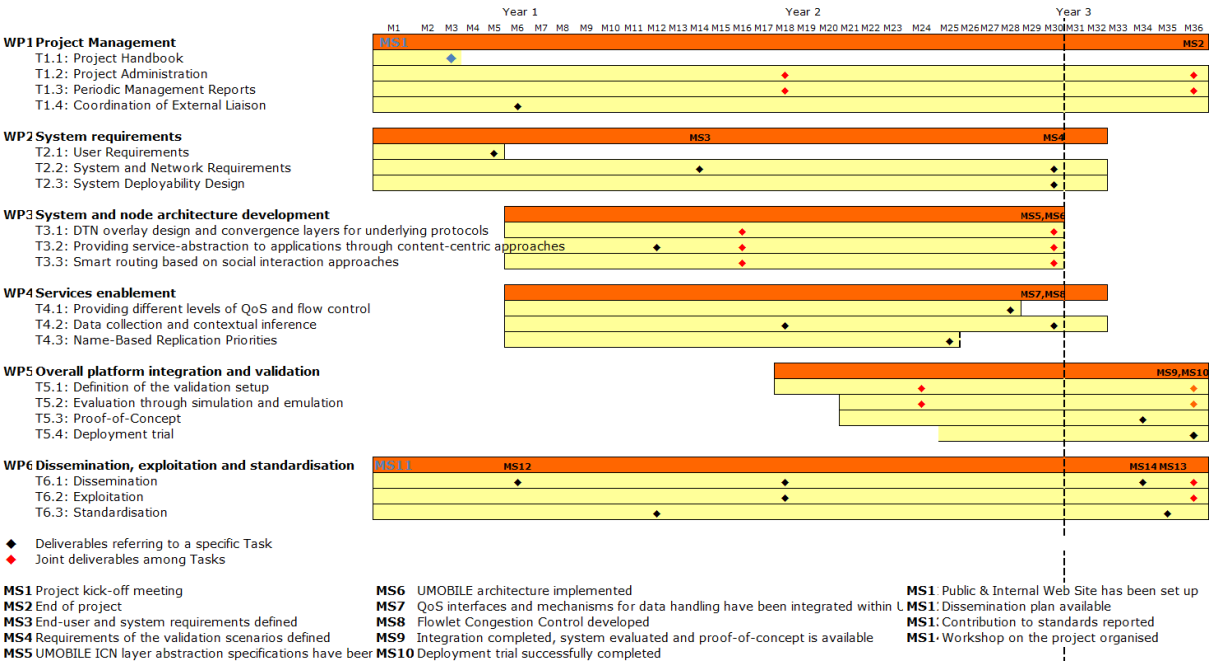
Period Deliverables: all deliverables are submitted according to the grant agreement timetable. Exceptions: D4.1 was submitted on M18 (UMOBILE Coordinator asked permission on the behalf of the consortium to submit "D4.1 Flowlet Congestion -Initial Report" on month 18, as described in page 22 of the grant agreement instead of Month 12 included in the deliverables tables). The change has been accepted. D3.1 and D3.3 were submitted again following reviewers comments. D4.3 was also submitted on early March instead of January 2017. D2.4 and D4.5 will be submitted on September instead of July.

D2.3, D3.2, D3.4, D4.2, D4.4 were submitted according to the plan on M30.

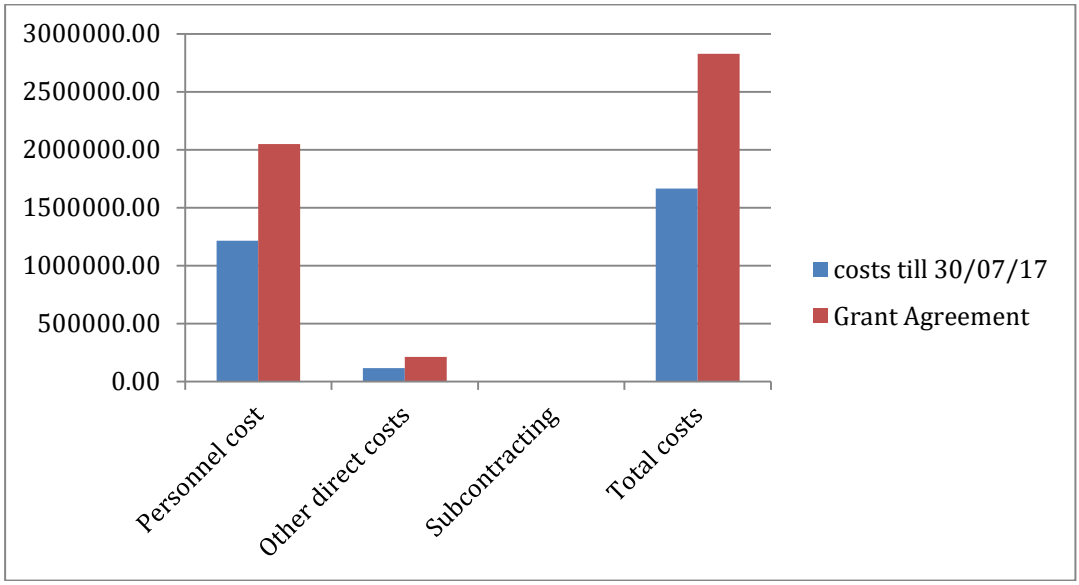
The table below summarizes the UMOBILE activities for the period May 2017-July 2017:

M..	Project Month	Meeting	Deliverable	Milestone	Report	Additional events
M28	May 2017		D4.4 Set of QoS interfaces and algorithms	-	3monthly report for: M25 to M27	
M29	June 2017	physical meeting: 06/06/17-17/06/17 teleconference: 22/6/17	-	-	-	
M30	July 2017	teleconference: 27/7/17	D3.2 UMOBILE architecture report D3.4 UMOBILE ICN layer abstraction final specification D4.5 Report of data collection and inference models	MS5 UMOBILE ICN layer abstraction specifications have been defined MS6 UMOBILE architecture implemented MS7 QoS interfaces and mechanisms for data handling have been integrated within UMOBILE platform MS8 Flowlet Congestion Control Developed	-	

An updated Gantt chart follows:

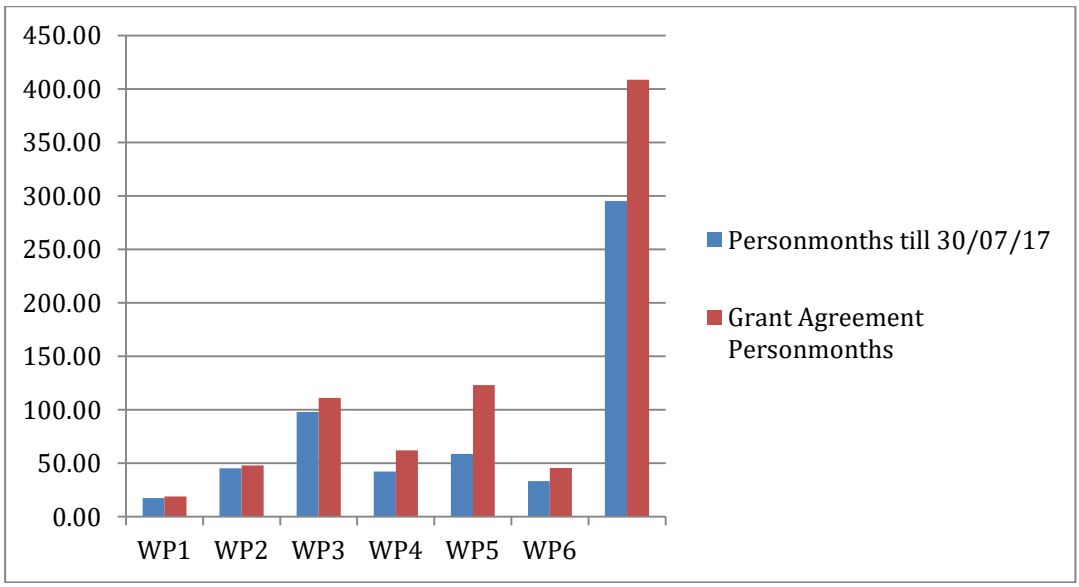


58.88% of total budget has been consumed for the activities described above (59.33% of the personnel costs, 54.77% of the other direct costs, 58.90% of the indirect costs), as presented in the following graph:



This graph does not include the terminated partner expenses, so resources consumption is actually more than 58.88%.

72.23% of the personmonths have been consumed for the activities described above:



Personmonths of the terminated partner are not included.

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This report was written by Athena R.C. on the behalf of the UMOBILE consortium

3.6 Internal Management Report 11

UMOBILEQUARTERLY REPORT

Action full title:*Universal, mobile-centric and opportunistic communications architecture*
Action acronym:*UMOBILE*
Grant Agreement number: *645124*
Period covered:*M31– M33(August 2017-October 2017)*

A) UMOBILE achievements of the last reporting period:

WP1:

- Physical meeting (04/12-05/12) in London coordination- agenda preparation
- Regular teleconference meetings organization
    - Consortium teleconference- 31/08/2017
    - Consortium teleconference- 12/10/17
    - Consortium teleconference- 26/10/17
- Technical meetings via teleconference: 13/09/17
- Project extension- submission
- DUTH termination report submission
- General financial management and project underspending check
- Project quarterly management reporting
- Maintenance of project mailing lists

WP2:

- Preparation and submission of D2.4 in M33.

WP4:

- Preparation and submission of D4.4 in M33.

WP5:

- Development of the Contextual Manager for the final demo (proof of concept)
- Task 5.3, development of the contextual manager and of the interface towards routing.
- Evaluation of the NDN-Opp framework.
- Evaluation of the applications Now@ and Oi!.
- Progress on the integration of NDN-Opp with the Contextual Manager.
- UAV testing
- Progress on the routing automation for establishing/configuring DTN tunneling in Android between NFD and the IBR-DTN API.
- Definition of demo events.
- Progress on the integration of the KEBAPP and the service migration platform in FON access points.
- Update of the UMOBILE Lab, with new software releases for each device.
- Evaluation of service migration code in the real network and testbed.

WP6:

- Presentation of a paper at IEEE CloudNet 2017, Prague.
- Presentation of a demo at ACM ICN 2017.
- Participation in the 4th ACM Conference on Information-Centric Networking in Berlin (Sept. 26-28).
- Analysis of the two intiatives: "Showcase your project!" and “Common Dissemination Booster”.
- Two conference call with Regione Umbria to discuss the site of the final demo.
- Preparation of the documentation for the plenary meeting in London at the beginning of Dec. 2017.
- Organisation of a workshop in the area of ICN and edge-/fog-computing alongside with ACM Sigcomm 2017 last August, where the UMOBILE project was disseminated.
- Presentation of three papers in the ACM ICN 2017 conference that took place in September in Berlin in the area of edge/fog computing. The papers presented are the following:
    - A Native Content Discovery Mechanism for Information-Centric Networks
    - A Keyword-based ICN-IoT platform
    - NFaas: Named Function as a Service
- Participation in the ICNRG Interim Meeting in Berlin, held right after the ACM ICN 2017 conference and presentation of ongoing work on “Adapting ICN to Function Execution for Edge Computing”
- Presentation of a Now@ poster in ACM ICN 2017.
- Presentation of an NDN-Opp demo in ACM ICN 2017
- Submission of a joint scientific paper concerning the global UMOBILE architecture (submitted to IEEE Commag, special issue).
- Integration of requirements derived from UMOBILE into the Senception product line PerSense ™ - contextualization aspects.
- Development of a PerSense Mobile Light Flyer and FAQ.

B) UMOBILE actions planned for the next 3 months:

WP1:

- Organization of monthly teleconference meetings
- Project quarterly management reporting
- Organization of next physical meeting
- Maintenance of the project’s mailing lists
- Periodic report guidelines preparation
- Review meeting details coordination

WP5:

- Work on the integration of the UMOBILE platform in the UMOBILE testbed (Service Migration over IBR-DTN)
- Integration of different module functionality (NDN-Opp with the Contextual Manager, Service Migration and KEBAPP on FON hardware)
- Development of experiments in the context of the UMOBILE Lab
- Work on the preparation of the final UMOBILE demos
- Periodic conference calls for WP5

WP6:

- Submission of scientific study concerning roaming behavior with poles worldwide.
- Potential contributions to Internet drafts in IETF and IRTF.
- Monitoring of potential contributions to Wi-Fi Alliance.
- Submission of IETF informative draft to ICNRG about NDN-Opp.
- Submission of IETF informative draft to ICNRG about push mechanism on NDN.
- Submission of a scientific paper on NDN routing in opportunistic scenarios based on contextual information.
- Organization of the final demo in Umbria (Italy).

C) Problem/risk arose during this period, or any risk foreseen on the future and decisions taken to handle them:

Internal changes to the TEKEVER team have resulted in delays in communicating with partners and in delivering contributions. The team is now stable and we do not foresee further delays.

D) Resources used <u>during the period</u> in a project level:
(Double-click on the following table to edit cells in Excel)

WP	No of pms	Personnel Cost	Travel	Equipment	Other	Subcontracting	Subtotal	Indirect costs	Total costs
1	2.41								
2	1.12								
3	0.50								
4	0.00								
5	36.95								
6	5.61					0			
	46.59	**223765.94**	**18288.47**	**3908.6**		**0**	**245963.01**	**61490.75**	**307453.76**

E) Short description for other direct costs:

Travel costs: results presentation in IEEE CloudNet, ACM ICN Conferece, meeting participation
Equipment: laptop

F) Deviation from Annex 2 and/or paragraph 2.3.5including subcontracting:

UCL: plus 2personmonths to WP1. Justified since UCL was involved in the project amendment as a temporary Coordinator.
TECNALIA: plus 1.52 personmonths for WP5
SENCEPTION: plus 0.6 personmonths for WP6

AFA: plus 0,5personmonths for WP1, plus 0.3 personmonths for WP2, WP3, plus 5 personmonths for WP5. AFA is within the total number of its personmonths, but will have to explain in the final report why they distributed differently between wps.
UCAM: contacted the Project Officer to inform about remaining budget from WP3 and WP4, justified the deviation and suggested to transfer budget to WP6.
COPELABS: has some remaining budget that will use for travel costs.

G) Evaluation of the implementation of the project workplan: Gantt chart control, milestones and indicators:

The Project is implemented according to the plan. Specifically:

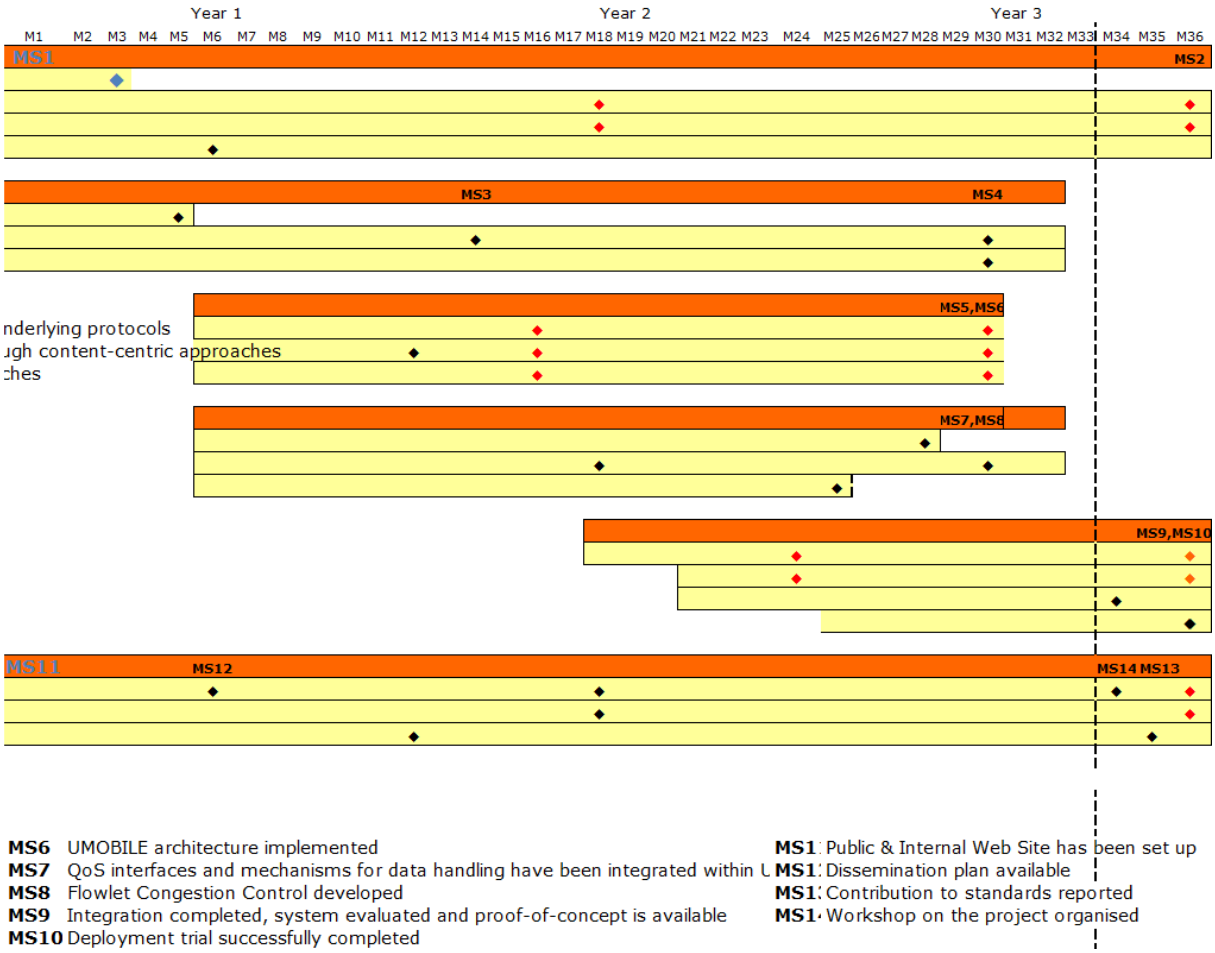
Period Milestones: MS1, MS3, MS11 and MS12 are accomplishedaccording to the plan.
M5, M6, M7, M8 scheduled for M30 (July 2017): accomplished (03 August 2017).

Period Deliverables: deliverables due to October 2017 have been submitted.D4.1 was submitted on M18 (UMOBILE Coordinator asked permission on the behalf of the consortium to submit "D4.1 Flowlet Congestion -Initial Report" on month 18, as described in page 22 of the grant agreement instead of Month 12 included in the deliverables tables). The change has been accepted.D3.1 and D3.3 were submitted again following reviewers comments. D4.3 was also submitted on early March instead of January 2017.
D2.3, D3.2, D3.4, D4.2, D4.4 were submitted according to the plan on M30.
D2.4 and D4.5were submitted on early October (October 2017) instead of July 2017.

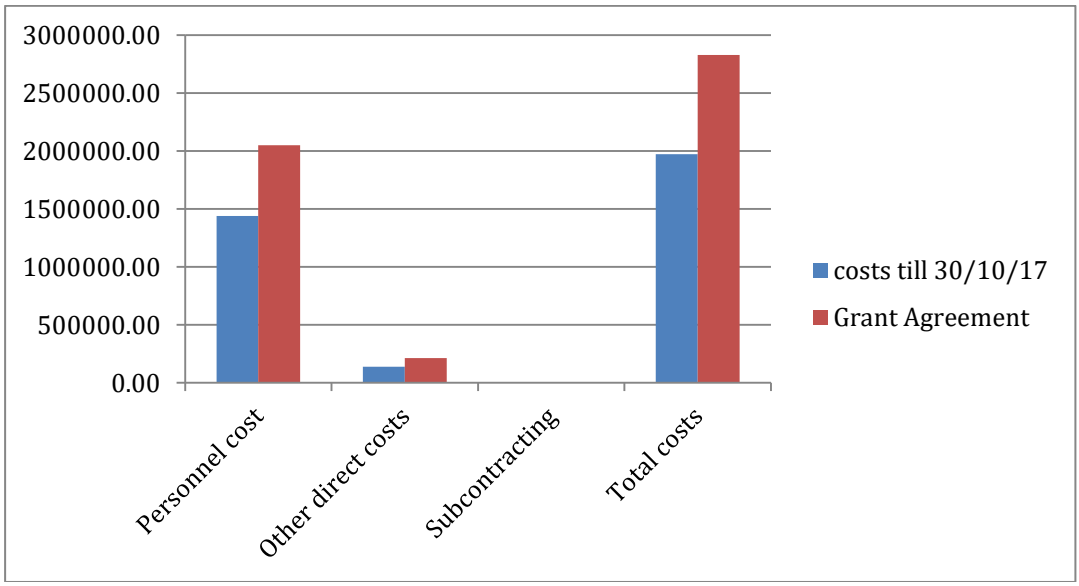
The table below summarizes the UMOBILE activities for the period August 2017-October 2017:

M..	Project Month	Meeting	Deliverable	Milestone	Report	Additional events
M31	August 2017	teleconference: 31/8/17	-	-	3monthly report for: M28 to M30	
M32	September 2017	technicalteleconference: 13/09/17	-	-	-	
M33	October 2017	teleconference: 12/10/17, 26/10/17	D2.4, D4.5 submission	-	-	ACM ICN Conferece

An updated Gantt chart follows:

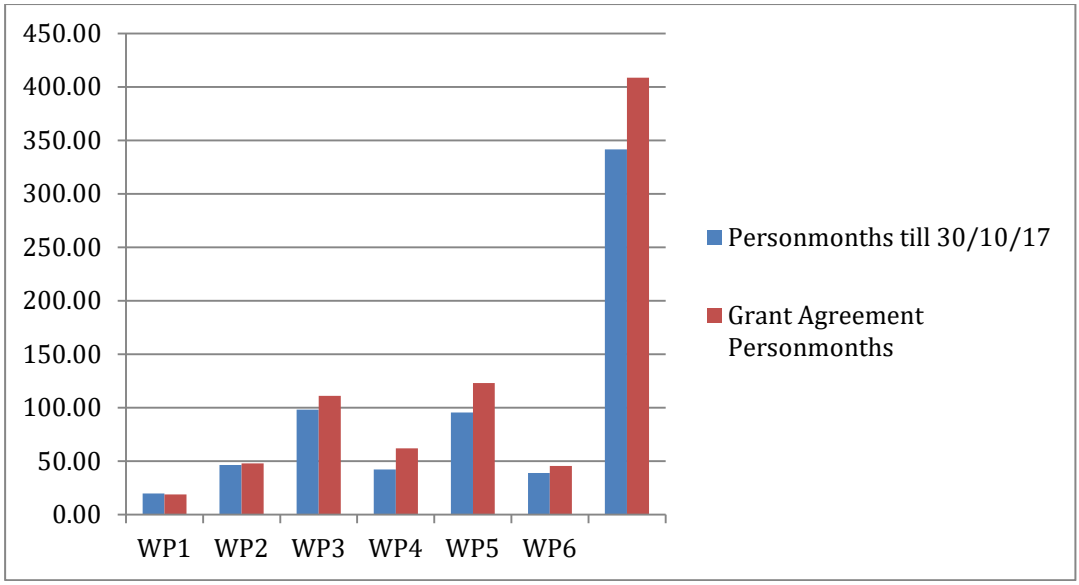


69.75% of total budget has been consumed for the activities described above (70.24% of the personnel costs, 65.22% of the other direct costs, 69.77% of the indirect costs), as presented in the following graph:



This graph does not include the terminated partner expenses, so resources consumption is actually more than 69.75%.

83.64% of the personmonths have been consumed for the activities described above:



Personmonths of the terminated partner are not included.

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This report was written by Athena R.C. on the behalf of the UMOBILE consortium

3.6 Internal Management Report 12

UMOBILE QUARTERLY REPORT

Action full title:*Universal, mobile-centric and opportunistic communications architecture*
Action acronym:*UMOBILE*
Grant Agreement number: *645124*
Period covered:*M34– M36 (November 2017-January 2018)*

A) UMOBILE achievements of the last reporting period:

WP1:

- Physical meeting (04/12-05/12) in London
- Regular teleconference meetings organization
    - Consortium teleconference- 04/01/18
    - Consortium teleconference-
    - Consortium teleconference-
- Technical meetings via teleconference: 22/11/17
- Review dates coordination
- General financial management and project underspending check

- Project quarterly management reporting
- Maintenance of project mailing lists
- Terminated partner DUTH submitted its expenses

WP2:

WP4:

WP5:

- UCAM conducted the field trail of deploying service migration platform in Guifi Community network.
- Update of the devices, in order to prepare the final demo. Improved remote usability of the lab, with new Android images with both Wi-Fi and Ethernet interfaces.
- Reshaping the lab monitoring system to allow remote users to understand the status of each device in the lab.
- Evaluation of the NDN-Opp framework.
- Evaluation of the applications Now@ and Oi!.
- Contribution to the integration of NDN-Opp with the Contextual Manager
- KEBAPP integration with FON access points
- Evaluation of the INRPP congestion control protocol
- Development of the contextual manager and of the interface towards routing.
- The consortium defined the demo events in the last plenary meeting
- Implementation work on Android for NDN-DTN testing, reflected on deliverable D5.2. Description of some extended tests and support for specific use cases
- Testing on the AFA router and revision of test data (for data rates and S/N for the signals)
- Description of the scope of tests using UAVs and UMOBILE solutions in an emergency scenario in Portugal

WP6:

- D6.7 submission
- Preparation of a draft of the market proposition of the project outcomes, for the plenary meeting in London (AFA)
- Many calls with Regione Umbria and visit to the places for the final demo in Norcia and Foligno (Umbria - Italy) (AFA)
- Participation in the development of a joint scientific paper with COPELABS, concerning Contextual-based Similarity opportunistic routing in NDN environments (Senception)
- Participation in the development of an IETF draft, concerning Contextual-based Similarity opportunistic routing in NDN environments (DABBER)- (Senception)
- Integration of requirements derived from UMOBILE into the Senception product line PerSense ™ - contextualization aspects.
- Development of a PerSense Mobile Light Flyer and FAQ (from the last period)- Senception
- Talk at Berkman Klein Center for Internet & Society at Harvard University in November 2017

- Paper presentation "On Uncoordinated Service Placement in Edge-Clouds" in the the 9th IEEE International Conference on Cloud Computing Technology and Science (CloudCom 2017),
- Project dissemination in "Open Source IoT & Blockchain Hackathon" (https://iothon.io) in Berlin on the 18th and 19th of January 2018
- Work on the improvement of the exploitation plan of the project
- Integration of requirements derived from UMOBILE into the Senception product line PerSense ™ - contextualization aspects.
- Development of a PerSense Mobile Light Flyer and FAQ (from the last period).

B) UMOBILE actions planned for the next 3 months:

WP1:

- Organization of monthly teleconference meetings
- Project quarterly management reporting
- Organization of next physical meeting
- Maintenance of the project's mailing lists
- Periodic/final report guidelines preparation
- Review meeting details coordination
- WP1 reports preparation/submission

WP5:

- Periodic conference calls for WP5
- Implementation of the contextual manager interface for the routing module (routing metrics interface).
- Continue the implementation of the UMOBILE end-user service and integration with the other UMOBILE available services.
- Continue with the support of the integration of output of the contextual manager to a routing approach (NDN-Opp).

WP6:

- Organization and participation to the final demo in Umbria. Short informative meetings and workshops to share the UMOBILE outcomes with selected ICT and Civil Protection players.
- Extended work to disseminate UMOBILE results near European academic and industry community.
- Submission of IETF informative draft to ICNRG about NDN-Opp.
- Submission of IETF informative draft to ICNRG about push mechanism on NDN.
- Submission of a scientific paper on NDN routing in opportunistic scenarios based on contextual information.
- Development of the DABBER draft.
- Development of a scientific paper with other partners (validation of DABBER)
- Presentation of the UMOBILE project and the service migration platform in the context of UMOBILE in IRTF GAIA workshop held in London during 19-20 March 2018

C) Problem/risk arose during this period, or any risk foreseen on the future and decisions taken to handle them:

Given the previous internal changes to the TEKEVER team and the consortium resolution to not involve UAVs in the Italian demo, the team worked together to design and propose a demonstration scenario involving UAVs in Portugal that is capable of feeding and providing inputs to the final Italian demo. This has been successfully achieved. No other risks are foreseen for the final trimester.

D) Resources used <u>during the period</u> in a project level:
(Double-click on the following table to edit cells in Excel)

WP	No of pms	Personnel Cost	Travel	Equipment	Other	Subcontracting	Subtotal	Indirect costs	Total costs
1	1.74								
2	2.00								
3									
4									
5	32.69								
6	6.72								
	43.15	**210953**	**11693.94**	**2760.92**		**0**	**225407.86**	**56351.97**	**281759.83**

E) Short description for other direct costs:

Travel costs for the consortium meeting in London, for disseminating project results/talk at Berkman Klein Center for Internet & Society at Harvard, at CloudCom 2017 and "Open Source IoT & Blockchain Hackathon", for field trail of deploying service migration platform in Guifi Community network.

F) Deviation from Annex 2 and/or paragraph 2.3.5including subcontracting:

UCL: plus 2.5 personmonths to WP1. Justified since UCL was involved in the project amendment as a temporary Coordinator.
TECNALIA: plus 3 personmonths for WP5
SENCEPTION: plus 3.4 personmonths for WP6, within the total personmonths (will justify in the final report the pms changed allocation)
AFA: plus 0,5 personmonths for WP1, plus 0.3 personmonths for WP2, WP3, plus 5 personmonths for WP5. AFA is within the total number of its personmonths, but will have to explain in the final report why they distributed differently between wps.
UCAM: contacted the Project Officer to inform about remaining budget from WP3 and WP4, justified the deviation and suggested to transfer budget to WP6.
COPELABS: has some remaining budget that will use for travel costs, has contacted the Project Officer.

G) Evaluation of the implementation of the project workplan: Gantt chart control, milestones and indicators:

The Project is implemented according to the plan. Specifically:

Period Milestones: MS1, MS3, MS11 and MS12 are accomplishedaccording to the plan. M5, M6, M7, M8 scheduled for M30 (July 2017): accomplished (03 August 2017).

Period Deliverables: D1.1, 1.2, 1.3, 2.1, 2.2, 3.1, 3.2, 3.3, 4.1, 4.3, 5.1, 5.3, 6.1, 6.2, 6.4 , 6.6, 6.10, 7.1, 7.2 submitted/approved.
D2.3, 2.4,3.4, 4.2, 4.4, 4.5, 5.2, 5.4 submitted

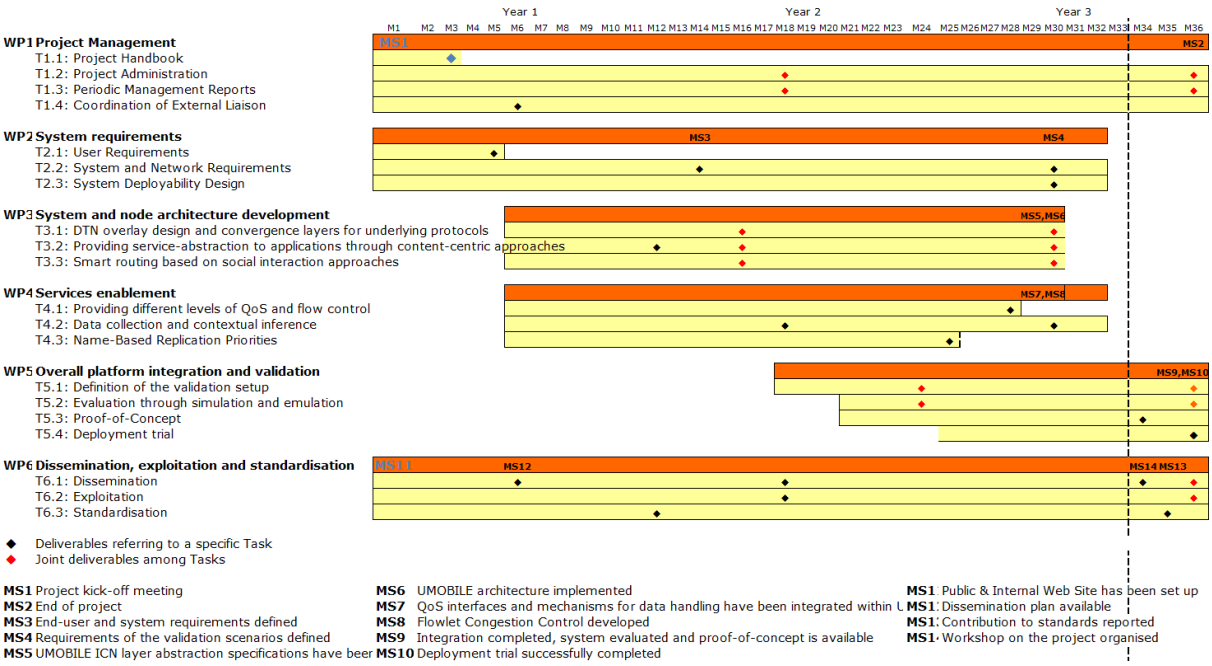
D1.4, 6.3, 6.5, 6.7, 6.8, 6.9 due on April 2018
D5.5 due on January 2018: Project Coordinator informed the Project officer and justified the need to submit to April 2018.

Comments: D4.1 was submitted on M18 (UMOBILE Coordinator asked permission on the behalf of the consortium to submit "D4.1 Flowlet Congestion -Initial Report" on month 18, as described in page 22 of the grant agreement instead of Month 12 included in the deliverables tables). The change has been accepted. D3.1 and D3.3 were submitted again following reviewers comments. D4.3 was also submitted on early March instead of January 2017. D2.4 and D4.5 were submitted on early October (October 2017) instead of July 2017. D5.5 will be submitted on April 2018 instead of January 2018 following communication with the Project Officer.

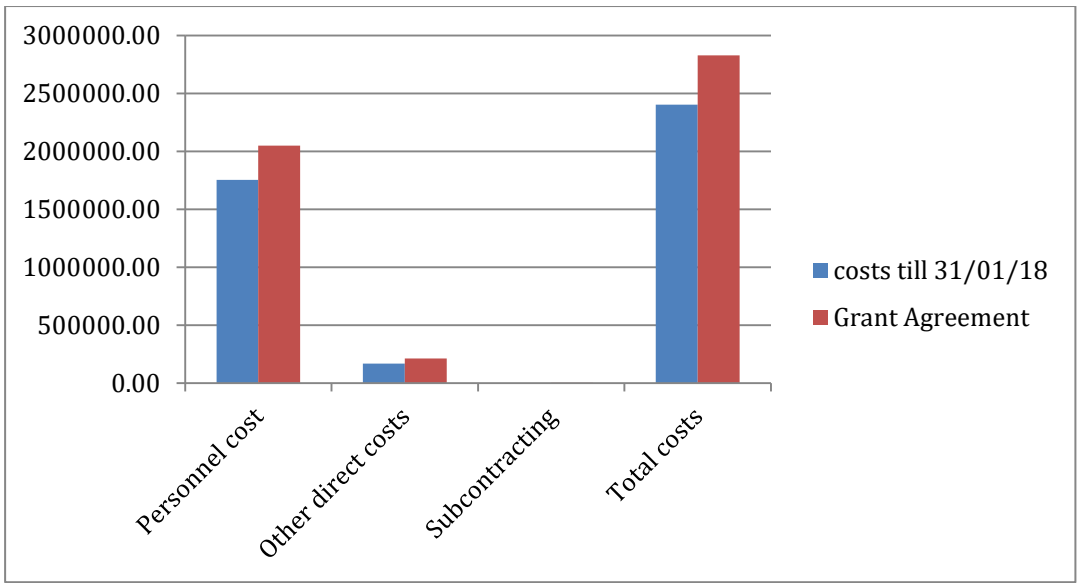
The table below summarizes the UMOBILE activities for the period November 2017-January 2018:

M..	Project Month	Meeting	Deliverable	Milestone	Report	Additional events
M34	November 2017	teleconference: 22/11/17	D5.4 Proof-of-Concept		3monthly report for: M31 to M33	• talk at Berkman Klein Center
M35	December 2017	physical meeting: 04/12/17				Cloudcom 2017
M36	January 2018	teleconference: 04/01/18	D5.2 Validation methodology and evaluation report	MS9 Integration completed, system evaluated and proof-of-concept is available MS10 Deployment trial successfully completed	3monthly report for: M34 to M36	Open Source IoT & Blockchain Hackathon"

An updated Gantt chart follows:

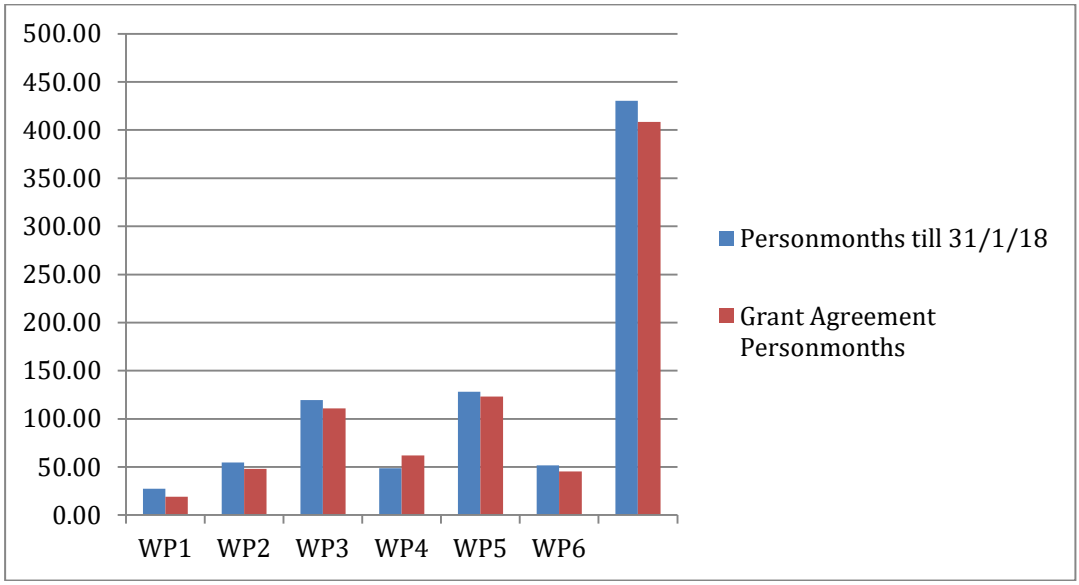


84.97% of total budget has been consumed for the activities described above (85.59% of the personnel costs, 79.34% of the other direct costs, 85% of the indirect costs), as presented in the following graph:



This graph DOES include the terminated partner expenses, submitted on December 2017.

105.33% of the personmonths have been consumed for the activities described above:



Personmonths of the terminated partner ARE included.
The consortium will have to justify personmonths overspending.

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This report was written by Athena R.C. on the behalf of the UMOBILE consortium