

Minutes of the Second Management Committee Meeting of COST Action CA15220: “Quantum Technologies in Space ”

Valletta, Malta
27/03/2017

1. Welcome to participants

The participants were welcomed by Prof. Angelo Bassi, Chair of the Cost Action, who chaired the meeting.

2. Verification of the presence of two-thirds of the Participating COST Countries or, if applicable, a quorum

Countries having signed the MoU: Austria, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Israel, Italy, Latvia, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Spain, Sweden, Switzerland, Turkey, United Kingdom. Total: 25

Parties present at the meeting: Austria, Czech Republic, Denmark, Finland, Germany, Greece, Hungary, Ireland, Italy, Malta, Netherlands, Norway, Poland, Portugal, Romania, Switzerland, Turkey, United Kingdom. Total: 18

3. Adoption of agenda

The agenda (Annex I) was adopted

4. Approval of minutes and matters arising of last meeting

The minutes of the 1st MC meeting (20th October, Brussels) were approved.

Between the 1st and 2nd MC meeting, two evotes were set up:

- 28th November 2016: “Website, Malta meeting (evote), STSMs (evote) and more”
- 19th December 2016: “Reimbursement rules for the Malta meeting (evote) ”

(Annex II and Annex III)

During the first MC meeting, the Action Chair was given the mandate to define the Web Host Institution and the Developing Company of the Action Website. The Chair reported that the domain www.qtspace.eu belongs to the University of Trieste (Italy), and the website is physically hosted on servers of I.N.F.N. (Italy). The website was developed by Mr. Matteo Carlesso.

5. Update from the Action Chair

a) Status of Action: start and end dates of Action, participating COST countries, participating NNC/IPC institutions and Specific Organisations.

b) Short Term Scientific Missions (STSM): review of completed reports and new applications

Start of the Action: 20/10/2016

End of Action: 19/10/2020



Participating COST countries: Austria, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Israel, Italy, Latvia, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Spain, Sweden, Switzerland, Turkey, United Kingdom. Total: 25

Since the first MC meeting, there have been three new entries: Poland, Romania and Turkey.

Participating NNC/IPC institutions: None

Specific Organisations: ESA – European Space Agency

STSMs. One call was launched on 8th December 2016, with deadline 31st January 2017. The allocated budget was 2400 Eur, and about 3 STSMs were foreseen. Only one application was received, having a cost of 800 Eur.

The CG discussed whether the received proposal was pertinent to the Action, and in alignment with its objectives; no unanimous consensus was reached. The STSMs was approved by a majority vote.

The CG agreed that two specific actions have to be taken:

- Intensify advertisement of the tool, first among MC members and next to the larger community.
- Clarify the rules for approval of STSMs, to be implemented starting with the next call.

6. Update from the Grant Holder: Action budget status

Budget as approved by the MC

Activity	Eur
MC/WG meetings + Workshop (Malta)	43.690,00 Eur
STSMs	2.400,00 Eur
Dissemination (Website)	2.000,00 Eur
OERSA (Bank charges)	170,87 Eur
Subtotal	48.260,87 Eur
FSAC (overheads) 15% of subtotal	7.239,13 Eur
TOTAL	55.500,00 Eur

Current budget status

Activity	Eur
MC/WG meetings + Workshop (Malta)	45.460,87 Eur
STSMs	800,00 Eur
Dissemination (Website)	2.000,00 Eur
OERSA (Bank charges)	0 Eur
Subtotal	48.260,87 Eur
FSAC (overheads) 15% of subtotal	7.239,13 Eur
TOTAL	55.500,00 Eur

7. Update from the COST Association

Presentation given by Dr. Fatima Bouchama, Science Officer (Annex IV)

Presentation given by Ms. Cassia Azevedo, Administrative Officer (Annex V)

8. Monitoring of the Action

The Action was developed as originally planned

- The Malta meeting was organized as originally planned, with no significant change.

- The website has been setup and now is fully functioning.
- STSMs have been launched.
- A draft of Work and Budget Plan for GP2 is ready.

9. Implementation of COST policies on:

a) Promotion of gender balance and Early Career Investigators (ECI)

b) Inclusiveness and Excellence

As for Gender Balance and ECIs, the situation is the following:

Action members (member = who registered on the Action website)

Total: 48

Male: 45

Female: 3

ECIs: 10

Core Group (Chair, Deputy Chair, WG leaders and Deputy Leaders, Manager)

Total: 11

Male: 10

Female: 1

ECIs: 3

STSMs: 1 (Male, ECI)

Regarding Gender Balance, the statistics show the difficulty in engaging female scientists in physics. Our STSM manager & COST Mission and Policies Supervisor, Dr. Catalina Curceanu, is engaged in promoting the Action and the role of women in science

1. <http://edu.lnf.infn.it/international-day-of-women-and-girls-in-science-2017/>

(10th February 2017 – Frascati)

2. <http://w3.lnf.infn.it/career-day-giornata-allinsegna-dellorientamento/>

(4th April 2017 – LNF Open Days)

3. Scheduled talk at TEDx Brasov (Romania)

Regarding ECIs, the situation is much better than what the numbers show. Many ECIs are not aware of the Action website and did not register. Registration to the Malta meeting however proves that there is a significant interest of ECIs in the Action. This also shows that the Action still needs to be known in the community.

As for Inclusiveness, the situation is as follows:

Action participating countries

Total: 25

ITCs: 10

Action Members

Total: 48

ITCs: 15

Core Group

Total: 11

ITCs: 3

Events: GP1 (100% in ITCs), GP2 (33% in ITCs)

As per MoU: at least 30% in ITCs

Therefore we successfully met the goals of the Action.

As for Excellence, the situation is the following:

Major scientific actors: contacted/involved

Space Agencies

- ESA (Bruno Leone, Eamonn Murphy, Eric Wille – attending the meeting)
- ASI (Roberto Battiston - President, Daniele Dequal – attending the meeting)

Companies

- Airbus (Paolo Bianco – attending the meeting)
- OHB Systems (Norbert Lemke, Matthias Lettner – the latter attending the meeting). Satellite and space technology company. It has experience in the development and building of several satellites, including satellites for the Galileo positioning system.
- Thales Alenia (Cyril Michel). One of Europe's largest satellite manufacturers and built several satellites and modules for the International Space Station.
- Tesat Spacecom (Herwig Zech). Owned by Airbus Defense & Space, is an expert in space communication and the world-leader in optical satellite communication technology. Several of its Laser Communication Terminals already operate within the European Data Relay System that serves several environmental observation satellites.

More needs to be done, in terms of involvement of Space Agencies and Industries, but the first actions taken are successful and promising.

10. Follow-up of MoU objectives: progress report of working groups

The Action Chair reminded the MC about the Objectives of the Action, as per MoU.

The Action Deputy Chair, Prof. Mauro Paternostro, presented the structure and goals of the Malta meeting. An extended presentation will be given during the plenary session following the MC meeting.

The WG Leaders commented on the structure of each WG meeting taking place during the week in Malta.

11. Scientific planning

- a) Scientific strategy (MoU objectives, GP Goals, WG tasks and deliverables)**
- b) Action Budget Planning**
- c) Long-term planning (including anticipated locations and dates of future activities)**
- d) Dissemination planning (Publications and outreach activities)**

The GP goals for GP1 are:

1. Identify the most relevant fundamental questions to be addressed, for space missions; initiate the discussion about the scientific/technical requirements.
2. Identify first applications of quantum technology in space; initiate the discussion about the scientific and technical requirements.
3. Initiate the discussion about principles that should be demonstrated on ground before launching a space mission.
4. Initiate the discussion about common challenges on technology needs for space missions, mission parameters, mission design, technology.

The (yet to be finalised) goals for GP2 are:

1. Identify potential industrial partners and their specific interests for quantum technologies in space
2. Identify potential applications of quantum technology in fundamental tests of physical principles in space
3. Define the state of the art of proof of principle experiment relevant for quantum experiments in space and expectations for tests needed in the near future.
4. Identify experimental ideas for implementing quantum technologies in space and define a brief guideline of implementation challenges, including the identification of the theoretical developments needed to enable such experimental endeavours.
5. Train researchers, as well as private and public sector stakeholders, interested in quantum technologies in space.

The Action Chair reminded the MC about tasks and deliverables of each WG, as per MoU. No specific deliverable was discussed, as the Action is still in the early stage of development.

The draft budget for GP2 is

Activity	Eur
MC meeting	20.000,00 Eur
Training School	30.000,00 Eur
WG meetings	40.000,00 Eur
STSMs	8.000,00 Eur
Dissemination	2.800,00 Eur
OERSA (Bank charges)	69,57 Eur
Subtotal	100.869,57 Eur
FSAC (overheads) 15% of subtotal	15.130,44 Eur
TOTAL	116.000,01 Eur

However the CG is still working on the Work and Budget Plan for GP2.
The tentative scheduled activities are:

MC meeting: Lisbon (14th September 2017)

Training School & Workshop & WG2 meeting: “Lisbon Summer School and Workshop on Quantum Technology in Space”
Lisbon – Portugal (11th-14th September 2017)

WG3 Meeting & Workshop: “Workshop on proof of principle quantum experiments in space”
Arcachon – France (2nd-8th July 2017)

WG4 Meeting & Workshop: “Implementing Quantum Technologies in Space”
Erlangen – Germany (6th-8th September 2017)

As for dissemination, the QTSpace website (www.qtspace.eu) has been set up and is working. The following four functions have been implemented:

- Public area: for communicating/disseminating to the wider community.
- Reserved area: for registered members (registration is moderated), where access is given to the relevant documents of the Action.
- Collection of information (gender and country of residence of members, whether or not they are ECIs) for statistics and reports
- Newsletter service (as an “official” communication channel to all registered members)

As for publications, it is too early to have joint publications as outcome of COST meetings.

Another foreseen output is a “state of the art” paper on quantum technologies in space, to be prepared based on the discussions taking place during the Malta meeting.

The CG is discussing on preparing a video on quantum technologies in space.

12. Requests to join the Action from:

a) COST countries

b) Institutions in Near Neighbouring Countries, International Partner Countries, and/or Specific Organisations: EU agencies, European RTD Organisation, International Organisations

No new request to be approved.

13. AOB

The Action Chair asks the MC to delegate the CG to decide on requests of “International Conference Grants”, according to the COST rules (as presented by Ms. Cassia Azevedo). The request was unanimously approved.

The budget for International Conference Grants will be taken from that of STSMs.

14. Location and date of next meeting

The next MC meeting will take place in Lisbon (Portugal) on 14th September 2017

15. Summary of MC decisions

The CG has been delegated to decide on requests of “International Conference Grants”.

16. Closing

The Action Chair acknowledges support and assistance from:

- The COST Association (Dr. Fatima Bouchama and Ms. Cassia Azevedo)
- The MC
- The CG
- Special thanks to Mauro and André

The Action Chair reminds the MC members to sign the attendance list.

ANNEXES

Annex I. Agenda of the MC meeting.

Annex II. eVote of 28th November 2016: “Website, Malta meeting (evote), STSMs (evote) and more”

Annex III. eVote of 19th December 2016: “Reimbursement rules for the Malta meeting (evote) ”

Annex IV. Presentation given by Dr. Fatima Bouchama, Science Officer.

Annex V. Presentation given by Ms. Cassia Azevedo, Administrative Officer.

Annex VI. Presentation by the Action Chair.

COST Action CA15220
Action Title: Quantum Technologies in Space

Draft Agenda
Management Committee Meeting
Malta, Malta
27 March 2017

1. Welcome to participants
2. Verification of the presence of two-thirds of the Participating COST Countries or, if applicable, a quorum
3. Adoption of agenda
4. Approval of minutes and matters arising of last meeting
5. Update from the Action Chair
 - a) Status of Action: start and end dates of Action, participating COST countries, participating NNC/IPC institutions and Specific Organisations.
 - b) Short Term Scientific Missions (STSM): review of completed reports and new applications
6. Update from the Grant Holder: Action budget status
7. Update from the COST Association, if a representative is present
8. Monitoring of the Action
9. Implementation of COST policies on:
 - a) Promotion of gender balance and Early Career Investigators (ECI)
 - b) Inclusiveness and Excellence
10. Follow-up of MoU objectives: progress report of working groups
11. Scientific planning
 - a) Scientific strategy (MoU objectives, GP Goals, WG tasks and deliverables)
 - b) Action Budget Planning
 - c) Long-term planning (including anticipated locations and dates of future activities)
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12. Requests to join the Action from:
 - a) COST countries
 - b) Institutions in Near Neighbouring Countries, International Partner Countries, and/or Specific Organisations: EU agencies, European RTD Organisation, International Organisations
13. AOB
14. Location and date of next meeting
15. Summary of MC decisions
16. Closing

eVote 2016.11.28 CALL

From: Maurice Macartney m.macartney@qub.ac.uk
Subject: Fwd: COST Action CA15220 - Website, Malta meeting (evote), STSMs (evote) and more
Date: 8 December 2016 at 09:57
To:

MM

From: Angelo Bassi <angelo.bassi@gmail.com>
Subject: COST Action CA15220 - Website, Malta meeting (evote), STSMs (evote) and more

Date: 28 November 2016 at 16:29:28 GMT

To: "bassi@ts.infn.it" <bassi@ts.infn.it>, Mauro Paternostro <m.paternostro@qub.ac.uk>, "rupert@ursin.com" <rupert@ursin.com>, "rainer.kaltenbaek@univie.ac.at" <rainer.kaltenbaek@univie.ac.at>, "usenko@optics.upol.cz" <usenko@optics.upol.cz>, "albert.roura@uni-ulm.de" <albert.roura@uni-ulm.de>, "christoph.marquardt@mpl.mpg.de" <christoph.marquardt@mpl.mpg.de>, "drewsen@phys.au.dk" <drewsen@phys.au.dk>, "jha@dfm.dk" <jha@dfm.dk>, "maciej.lewenstein@icfo.es" <maciej.lewenstein@icfo.es>, "romain.quidant@icfo.es" <romain.quidant@icfo.es>, "philippe.bouyer@institutoptique.fr" <philippe.bouyer@institutoptique.fr>, "antoine.heidmann@lkb.upmc.fr" <antoine.heidmann@lkb.upmc.fr>, "smanis@utu.fi" <smanis@utu.fi>, "sorin.paraoanu@aalto.fi" <sorin.paraoanu@aalto.fi>, "lucia.hackermuller@nottingham.ac.uk" <lucia.hackermuller@nottingham.ac.uk>, "vvk@iesl.forth.gr" <vvk@iesl.forth.gr>, "diosi.lajos@wigner.mta.hu" <diosi.lajos@wigner.mta.hu>, "geza.toth.hu@gmail.com" <geza.toth.hu@gmail.com>, "mario.stipcevic@irb.hr" <mario.stipcevic@irb.hr>, "catalina.curceanu@Inf.infn.it" <catalina.curceanu@Inf.infn.it>, "tino@fi.infn.it" <tino@fi.infn.it>, "hagai.eisenberg@huji.ac.il" <hagai.eisenberg@huji.ac.il>, "retzker@phys.huji.ac.il" <retzker@phys.huji.ac.il>, "emanuele.pelucchi@tyndall.ie" <emanuele.pelucchi@tyndall.ie>, "slava@latnet.lv" <slava@latnet.lv>, "Marcis.Auzins@lu.lv" <Marcis.Auzins@lu.lv>, "andre.xuereb@um.edu.mt" <andre.xuereb@um.edu.mt>, "joakim.bergli@fys.uio.no" <joakim.bergli@fys.uio.no>, "lars.m.johansen@hbv.no" <lars.m.johansen@hbv.no>, "s.groeblicher@tudelft.nl" <s.groeblicher@tudelft.nl>, "yasser.omar@lx.it.pt" <yasser.omar@lx.it.pt>, "jleitao@lx.it.pt" <jleitao@lx.it.pt>, "jarek@miszczak.eu" <jarek@miszczak.eu>, "boure@fysik.su.se" <boure@fysik.su.se>, "jan-ake.larsson@liu.se" <jan-ake.larsson@liu.se>, "ziman@savba.sk" <ziman@savba.sk>, "nicolas.gisin@unige.ch" <nicolas.gisin@unige.ch>, "Inovotny@ethz.ch" <Inovotny@ethz.ch>

Cc: Maurice Macartney <m.macartney@qub.ac.uk>, Aveen Lavery <a.lavery@qub.ac.uk>

To: MC Members of the COST Action CA15220 "Quantum Technologies in Space"
Cc: Maurice Macartney (Action's Manager) and Aveen Lavery (Action Administrator)

Subject: Website, Malta meeting (evote), STSMs (evote) and more

Dear Friends and Colleagues,

I am writing for several pieces of information, and decisions to take. I kindly ask you to read this email till the end.

1. WEBSITE. The Action's website is now online: www.qtspace.eu

You are welcome to visit it. We are implementing a registration system, for the WG groups as well as for all activities. We are still testing it, so please do not register till future notification.

2. MALTA MEETING. On the Action's website, you will find the announcement of the forthcoming Malta meeting. The direct link to the meeting's website is:

<https://qtspace.malta.sciencesconf.org>

which contains all relevant information. I wish to thank Andr e for the help and significant amount of work in acting as local organizer. As you will see, there is a rich agenda with a MC meeting, WG meetings (to kick off the science/technology) and a workshop. Speakers will be announced in due time.

We now face the issue of optimizing the budget for the meeting. I will write you (and ask for your evote) regarding the reimbursement rules shortly in a separate email; however travel and living expenses for MC members will be covered. You well understand that we need to know exactly and in advance, who will come and who will not, so that we can use the leftover money to invite and support other people, informing them early enough. Therefore, please use the doodle:

<http://doodle.com/poll/mgtht678qs8sumah>

to kindly let me know

1. If you come;

2. For which days.

(Please do not write me emails; answer via the doodle.)

We would also like to ask you whether you are willing to pay the flights by yourself (asking for reimbursement from your institution, instead of us). The general strategy will be that MC members will be reimbursed for their travel and local expenses (but hopefully several of you will take charge of their travel expenses), and the remaining money will be used to cover the local expenses of other invited speakers, and in some limited cases also the travel expenses (e.g. for early career investigators). But be informed that you, as MC members, have the right to claim reimbursement also for your flight. Mine is simply and only a kind invitation, for those of you who have sufficient travel grants.

Please send an email to Maurice Macartney (see below) telling him if you or your institution can or cannot cover the cost of your own flights. This kind of information will remain strictly confidential and will not be distributed around.

Maurice's address: m.macartney@qub.ac.uk

Deadline for responses: Monday 12 December 2016

No answer means that you will *not* come. or if you come. you lose your right to reimbursement.

Be also informed that you are entitled to be replaced by an MC substitute member from your country, in case you cannot attend the MC meeting. That also has to be arranged within the next two weeks, with the same procedure described here above for the MC members.

3. STSMs. Catalina kindly prepared the first call for STSMs, which is herewith attached. I kindly ask for your approval.

Deadline for voting: Monday 5 December 2016

No answer means that you approve (as per COST rules).

After the deadline, in case of approval, the call will become operative and will be advertised on the Action's website. Many thanks to Catalina for the work and collaboration.

4. ACTION MANAGER AND ADMINISTRATOR. Last but not least, you know that Queen's University Belfast is the Action's Grant Holder (GH) Institution, and Mauro Paternostro the GH representative. He has selected:

- Aveen Lavery as Action Administrator. She will be responsible for reimbursements.

- Maurice Macartney as Action Manager. You will refer to him for all technical questions (non-scientific ones);

Contact details can be found on the Action's website:

<http://www.qtspace.eu/?q=organization>

I wish to express my gratitude both to Aveen and Maurice for their work and assistance. Welcome on board.

To summarize, there is a doodle to fill in and an email to send within two weeks, and one vote to take within one week.

Thank you for the collaboration and kind regards,

Angelo

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eVote 2016.11.28 RESULT

From: Maurice Macartney m.macartney@qub.ac.uk
Subject: Fwd: COST Action CA15220: Result of evote of 28th Nov 2016 - STSMs
Date: 8 December 2016 at 09:43
To:



From: Angelo Bassi <angelo.bassi@gmail.com>
Subject: COST Action CA15220: Result of evote of 28th Nov 2016 - STSMs
Date: 6 December 2016 at 04:22:06 GMT
To: Angelo Bassi <bassi@ts.infn.it>, Mauro Paternostro <m.paternostro@qub.ac.uk>, Rupert Ursin <rupert@ursin.com>, Rainer Kaltenbaek <rainer.kaltenbaek@univie.ac.at>, Vladyslav Usenko <usenko@optics.upol.cz>, Albert Roura <albert.roura@uni-ulm.de>, Christoph Marquardt <christoph.marquardt@mpl.mpg.de>, Michael Drewsen <drewsen@phys.au.dk>, "Jan Hald" <jha@dfm.dk>, Maciej Lewenstein <maciej.lewenstein@icfo.es>, "Romain QUIDANT" <romain.quidant@icfo.es>, Philippe BOUYER <philippe.bouyer@institutoptique.fr>, Antoine Heidmann <antoine.heidmann@lkb.upmc.fr>, Sabrina Maniscalco <smanis@utu.fi>, Gheorghe-Sorin Paroanu <sorin.paroanu@aalto.fi>, Lucia Hackermuller <lucia.hackermuller@nottingham.ac.uk>, Wolf von Klitzing <wvk@iesl.forth.gr>, Lajos Diosi <diosi.lajos@wigner.mta.hu>, Géza Toth <geza.toth.hu@gmail.com>, Mario Stipcevic <mario.stipcevic@irb.hr>, "Catalina Curceanu" <catalina.curceanu@inf.infn.it>, Guglielmo Tino <tino@fi.infn.it>, Hagai Eisenberg <hagai.eisenberg@huji.ac.il>, Alexander RETZKER <retzker@phys.huji.ac.il>, Emanuele Pelucchi <emanuele.pelucchi@tyndall.ie>, Vyacheslavs Kashcheyevs <slava@latnet.lv>, Marcis Auzinsh <Marcis.Auzins@lu.lv>, Andre Xuereb <andre.xuereb@um.edu.mt>, <joakim.bergli@fys.uio.no>, <lars.m.johansen@hbv.no>, Simon Groeblacher <s.groeblacher@tudelft.nl>, Yasser Omar <yasser.omar@lx.it.pt>, Jose Leitao <leitao@lx.it.pt>, Jaroslav Miszczak <jarek@miszczak.eu>, <bouere@fysik.su.se>, Jan-Åke Larsson <jan-ake.larsson@liu.se>, Mario Ziman <ziman@savba.sk>, Nicolas Gisin <nicolas.gisin@unige.ch>, Lukas NOVOTNY <inovotny@ethz.ch>
Cc: Maurice Macartney <m.macartney@qub.ac.uk>

To: MC Members of the COST Action CA15220 "Quantum Technologies in Space"
Cc: Maurice Macartney (Action's Manager)

Subject: Result of evote of 28th Nov - STSMs

Dear Friends and Colleagues,

Yesterday was the last day for approving the first call for STSMs. I received no objections, therefore it is unanimously approved. I also remind you that you have one more week to register to the Malta meeting (deadline: 12th December). Please refer to my previous email of 28th November.

Thank you and kind regards,
Angelo

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From: Maurice Macartney m.macartney@qub.ac.uk
Subject: COST Action CA15220: Result of evote of 28th Nov 2016 - Malta meeting
Date: 13 December 2016 at 16:26
To:



From: Angelo Bassi <angelo.bassi@gmail.com>
Subject: COST Action CA15220: Result of evote of 28th Nov 2016 - Malta meeting
Date: 13 December 2016 at 16:05:30 GMT

To: Angelo Bassi <bassi@ts.infn.it>, Mauro Paternostro <m.paternostro@qub.ac.uk>, Rupert Ursin <rupert@ursin.com>, Rainer Kaltenbaek <rainer.kaltenbaek@univie.ac.at>, Vladyslav Usenko <usenko@optics.upol.cz>, Albert Roura <albert.roura@uni-ulm.de>, Christoph Marquardt <christoph.marquardt@mpl.mpg.de>, Michael Drewsen <drewsen@phys.au.dk>, Jan Hald <jha@dfm.dk>, Maciej Lewenstein <maciej.lewenstein@icfo.es>, Romain QUIDANT <romain.quidant@icfo.es>, Philippe BOUYER <philippe.bouyer@institutoptique.fr>, Antoine Heidmann <antoine.heidmann@lkb.upmc.fr>, Sabrina Maniscalco <smanis@utu.fi>, Gheorghe-Sorin Paroanu <sorin.paroanu@aalto.fi>, Lucia Hackermuller <lucia.hackermuller@nottingham.ac.uk>, "wyk@iesl.forth.gr" <wyk@iesl.forth.gr>, Lajos Diosi <diosi.lajos@wigner.mta.hu>, Géza Toth <geza.toth.hu@gmail.com>, Mario Stipcevic <mario.stipcevic@irb.hr>, Catalina Curceanu <catalina.curceanu@inf.infn.it>, Guglielmo Tino <tino@fi.infn.it>, Hagai Eisenberg <hagai.eisenberg@huji.ac.il>, Alexander RETZKER <retzker@phys.huji.ac.il>, Emanuele Pelucchi <emanuele.pelucchi@tyndall.ie>, Vyacheslavs Kashcheyevs <slava@latnet.lv>, Marcis Auzinsh <Marcis.Auzins@lu.lv>, Andre Xuereb <andre.xuereb@um.edu.mt>, "joakim.bergli@fys.uio.no" <joakim.bergli@fys.uio.no>, "lars.m.johansen@hbv.no" <lars.m.johansen@hbv.no>, Simon Groeblacher <s.groeblacher@tudelft.nl>, Yasser Omar <yasser.omar@lx.it.pt>, Jose Leitao <jleitao@lx.it.pt>, "jarek@miszczak.eu" <jarek@miszczak.eu>, "boure@fysik.su.se" <boure@fysik.su.se>, Jan-Åke Larsson <jan-ake.larsson@liu.se>, Mario Ziman <ziman@savba.sk>, Nicolas Gisin <nicolas.gisin@unige.ch>, Lukas NOVOTNY <lnovotny@ethz.ch>
Cc: Maurice Macartney <m.macartney@qub.ac.uk>

To: MC Members of the COST Action CA15220 "Quantum Technologies in Space"
Cc: Maurice Macartney (Action's Manager)

Subject: Result of evote of 28th Nov - Malta meeting

Dear Friends and Colleagues,

Yesterday was the last day for filling in the doodle for the Malta meeting. Please see the attached list.

- For those who registered. Please check that the days you indicated are the right ones. They should include both the arrival and the departure day. We need this type of information to keep the budget under control. For any change, please write to our Action Manager Maurice <m.macartney@qub.ac.uk>
Many thanks to those who accepted to pay for their flight on their own.

- For those who did not register. You are always welcome to come to the meeting of course. However reimbursement will not be guaranteed anymore, and will depend on budget availability. Again, please write to Maurice in case you plan to attend the meeting.

Soon you will receive further information regarding the meeting.

Kind regards,
Angelo

Department of Physics
Strada Costiera 11
34151 Miramare-Trieste
ITALY
Email: bassi@ts.infn.it
Web: www.gmts.it



Poll "QTSpace Malta Meeting CLOSED"

<http://doodle.com/poll/mgtht678qs8sumah>

		March 2017					
		Sun 26	Mon 27	Tue 28	Wed 29	Thu 30	Fri 31
André Xuereb		OK	OK	OK	OK	OK	OK
Rainer Kaltenbaek		OK	OK	OK	OK	OK	OK
Yasser Omar			OK	OK	OK		
Mauro Paternostro		OK	OK	OK	OK		
Angelo Bassi		OK	OK	OK	OK	OK	OK
Hendrik Ulbricht		OK	OK	OK	OK	OK	OK
Catalina Curceanu		OK	OK	OK	OK	OK	OK
Sabrina Maniscalco		OK	OK	OK	OK	OK	OK
Simon Groeblacher		OK	OK	OK	OK		
Vladyslav Usenko		OK	OK	OK	OK	OK	OK
Lajos Diosi		OK	OK	OK	OK	OK	OK
Marcis Auzinsh							
Joakim Bergli							
Hagai Eisenberg							
Guglielmo Tino			OK	OK	OK		
Albert Roura		OK	OK	OK	OK	OK	OK
Kjetil Børkje		OK	OK	OK	OK	OK	OK

	March 2017					
	Sun 26	Mon 27	Tue 28	Wed 29	Thu 30	Fri 31
Jarek Miszczak	OK	OK	OK	OK	OK	OK
emanuele pelucchi	OK	OK	OK	OK	OK	
Geza Toth	OK	OK	OK	OK	OK	OK
Michael Drewsen	OK	OK	OK	OK		
Maciej Lewenstein sending Alessio Celi	OK	OK	OK	OK	OK	OK
Lars M. Johansen	OK	OK	OK	OK	OK	OK
Jose Leitao	OK	OK	OK	OK	OK	OK
Sorin Paraoanu						
Christoph Marquardt	OK	OK	OK	OK	OK	OK
Count	20	22	22	22	17	16

From: Maurice Macartney m.macartney@qub.ac.uk
Subject: Fwd: COST Action CA15220 - Reimbursement rules for the Malta meeting (evote)
Date: 4 January 2017 at 09:17
To:



From: Angelo Bassi <angelo.bassi@gmail.com>
Subject: COST Action CA15220 - Reimbursement rules for the Malta meeting (evote)

Date: 19 December 2016 at 17:08:40 GMT

To: Angelo Bassi <bassi@ts.infn.it>, Mauro Paternostro <m.paternostro@qub.ac.uk>, Rupert Ursin <rupert@ursin.com>, Rainer Kaltenbaek <rainer.kaltenbaek@univie.ac.at>, Vladyslav Usenko <usenko@optics.upol.cz>, Albert Roura <albert.roura@uni-ulm.de>, Christoph Marquardt <christoph.marquardt@mpl.mpg.de>, Michael Drewsen <drewsen@phys.au.dk>, "Jan Hald" <jha@dfm.dk>, Maciej Lewenstein <maciej.lewenstein@icfo.es>, "Romain QUIDANT" <romain.quidant@icfo.es>, Philippe BOUYER <philippe.bouyer@institutoptique.fr>, Antoine Heidmann <antoine.heidmann@lkb.upmc.fr>, Sabrina Maniscalco <smanis@utu.fi>, Gheorghe-Sorin Paraoanu <sorin.paraoanu@aalto.fi>, Lucia Hackermuller <lucia.hackermuller@nottingham.ac.uk>, Wolf von Klitzing <wvk@iesl.forth.gr>, Lajos Diosi <diosi.lajos@wigner.mta.hu>, Géza Toth <geza.toth.hu@gmail.com>, Mario Stipcevic <mario.stipcevic@irb.hr>, "Catalina Curceanu" <catalina.curceanu@lnf.infn.it>, Guglielmo Tino <tino@fi.infn.it>, Hagai Eisenberg <hagai.eisenberg@huji.ac.il>, Alexander RETZKER <retzker@phys.huji.ac.il>, Emanuele Pelucchi <emanuele.pelucchi@tyndall.ie>, Vyacheslavs Kashcheyevs <slava@latnet.lv>, Marcis Auzinsh <Marcis.Auzins@lu.lv>, Andre Xuereb <andre.xuereb@um.edu.mt>, <joakim.bergli@fys.uio.no>, <lars.m.johansen@hbv.no>, Simon Groeblacher <s.groeblacher@tudelft.nl>, Yasser Omar <yasser.omar@lx.it.pt>, Jose Leitao <jleitao@lx.it.pt>, Jaroslaw Miszczyk <jarek@miszczyk.eu>, <boure@fysik.su.se>, Jan-Åke Larsson <jan-ake.larsson@liu.se>, Mario Ziman <ziman@savba.sk>, Nicolas Gisin <nicolas.gisin@unige.ch>, Lukas NOVOTNY <lnovotny@ethz.ch>
Cc: Maurice Macartney <m.macartney@qub.ac.uk>

To: MC Members of the COST Action CA15220 "Quantum Technologies in Space"
Cc: Maurice Macartney (Action's Manager)

Subject: Reimbursement rules for the Malta meeting (evote)

Dear Friends and Colleagues,

it is time to set the reimbursement rules for the forthcoming meeting in Malta (<https://qtspacemalta.sciencesconf.org>)
I propose the following rules:

Accommodation: 115 Eur/night for max 5 nights.

It will fully cover accommodation in the suggested conference hotel.

Meals: 20 x 2 per day for max five days.

This is the maximum allowed by COST rules.

As for travel/transport, there will be two set of rules:

A. For MC members/substitutes who registered in the doodle (evote of 28th November 2016):

Flight: max 250 Eur. A limited number of exceptions are possible, upon approval of the MC Chair. Please write to our Action's manager Maurice, in case your flight costs more than 250 Eur, before booking the flight.

Local transport: max 25 Eur

B: Everybody else.

No support for travel or local transport.

In a limited number of cases, travel and transport will be covered (as for option A) upon approval of the MC Chair, taking into account the COST policies of scientific excellence, gender balance, support of ECIs, and inclusiveness.

I remind you that you have seven days to vote against these rules.

No answer means that you approve.

Thank you and kind regards,
Angelo

Department of Physics
Strada Costiera 11
34151 Miramare-Trieste
ITALY
Email: bassi@ts.infn.it
Web: www.qmts.it

From: Maurice Macartney m.macartney@qub.ac.uk
Subject: Fwd: COST Action CA15220: Result of evote of 19th Dec - Reimbursement rules for the Malta meeting
Date: 4 January 2017 at 08:58
To:

MM

From: Angelo Bassi <angelo.bassi@gmail.com>
Subject: COST Action CA15220: Result of evote of 19th Dec - Reimbursement rules for the Malta meeting
Date: 27 December 2016 at 13:05:29 GMT
To: Angelo Bassi <bassi@ts.infn.it>, Mauro Paternostro <m.paternostro@qub.ac.uk>, Rupert Ursin <rupert@ursin.com>, Rainer Kaltenbaek <rainer.kaltenbaek@univie.ac.at>, Vladyslav Usenko <usenko@optics.upol.cz>, Albert Roura <albert.roura@uni-ulm.de>, Christoph Marquardt <christoph.marquardt@mpl.mpg.de>, Michael Drewsen <drewsen@phys.au.dk>, "Jan Hald" <jha@dfm.dk>, Maciej Lewenstein <maciej.lewenstein@icfo.es>, "Romain QUIDANT" <romain.quidant@icfo.es>, Philippe BOUYER <philippe.bouyer@institutoptique.fr>, Antoine Heidmann <antoine.heidmann@kb.upmc.fr>, Sabrina Maniscalco <smanis@utu.fi>, Gheorghe-Sorin Paraoanu <sorin.paraoanu@aalto.fi>, Lucia Hackermuller <lucia.hackermuller@nottingham.ac.uk>, Wolf von Klitzing <wvk@iesl.forth.gr>, Lajos Diosi <diosi.lajos@wigner.mta.hu>, Géza Toth <geza.toth.hu@gmail.com>, Mario Stipcevic <mario.stipcevic@irb.hr>, "Catalina Curceanu" <catalina.curceanu@lnf.infn.it>, Guglielmo Tino <tino@fi.infn.it>, Hagai Eisenberg <hagai.eisenberg@huji.ac.il>, Alexander RETZKER <retzker@phys.huji.ac.il>, Emanuele Pelucchi <emanuele.pelucchi@tyndall.ie>, Vyacheslavs Kashcheyevs <slava@latnet.lv>, Marcis Auzinsh <Marcis.Auzins@lu.lv>, Andre Xuereb <andre.xuereb@um.edu.mt>, <joakim.bergli@fys.uio.no>, <lars.m.johansen@hbv.no>, Simon Groeblacher <s.groeblacher@tudelft.nl>, Yasser Omar <yasser.omar@lx.it.pt>, Jose Leitao <jleitao@lx.it.pt>, Jaroslaw Mischczak <jarek@mischczak.eu>, <boure@fysik.su.se>, Jan-Åke Larsson <jan-ake.larsson@liu.se>, Mario Ziman <ziman@savba.sk>, Nicolas Gisin <nicolas.gisin@unige.ch>, Lukas NOVOTNY <lnovotny@ethz.ch>
Cc: Maurice Macartney <m.macartney@qub.ac.uk>

To: MC Members of the COST Action CA15220 "Quantum Technologies in Space"
Cc: Maurice Macartney (Action's Manager)

Subject: Result of evote of 19th Dec - Reimbursement rules for the Malta meeting

Dear Friends and Colleagues,

Yesterday was the last day for approving the reimbursement rules for the Malta meeting (evote). I received no objection, therefore they are unanimously approved.

I take the occasion to wish you all Happy Holidays and a New Year full of joy.

Kind regards,
Angelo

Department of Physics
Strada Costiera 11
34151 Miramare-Trieste
ITALY
Email: bassi@ts.infn.it
Web: www.qmts.it



Growing
ideas
through
networks

Update from the COST Association to the Management Committee

Dr. Fatima Bouchama - Science Officer



Funded by the Horizon 2020 Framework Programme
of the European Union

CONTACT POINTS

- Science Officer

fatima.bouchama@cost.eu

Dr Fatima Bouchama

Tel: +32 (0)2 533 38 32

- Administrative Officer

cassia.azevedo@cost.eu

Ms Cassia Azevedo

Tel: +32 (0)2 533 38 44

- Communications Officer

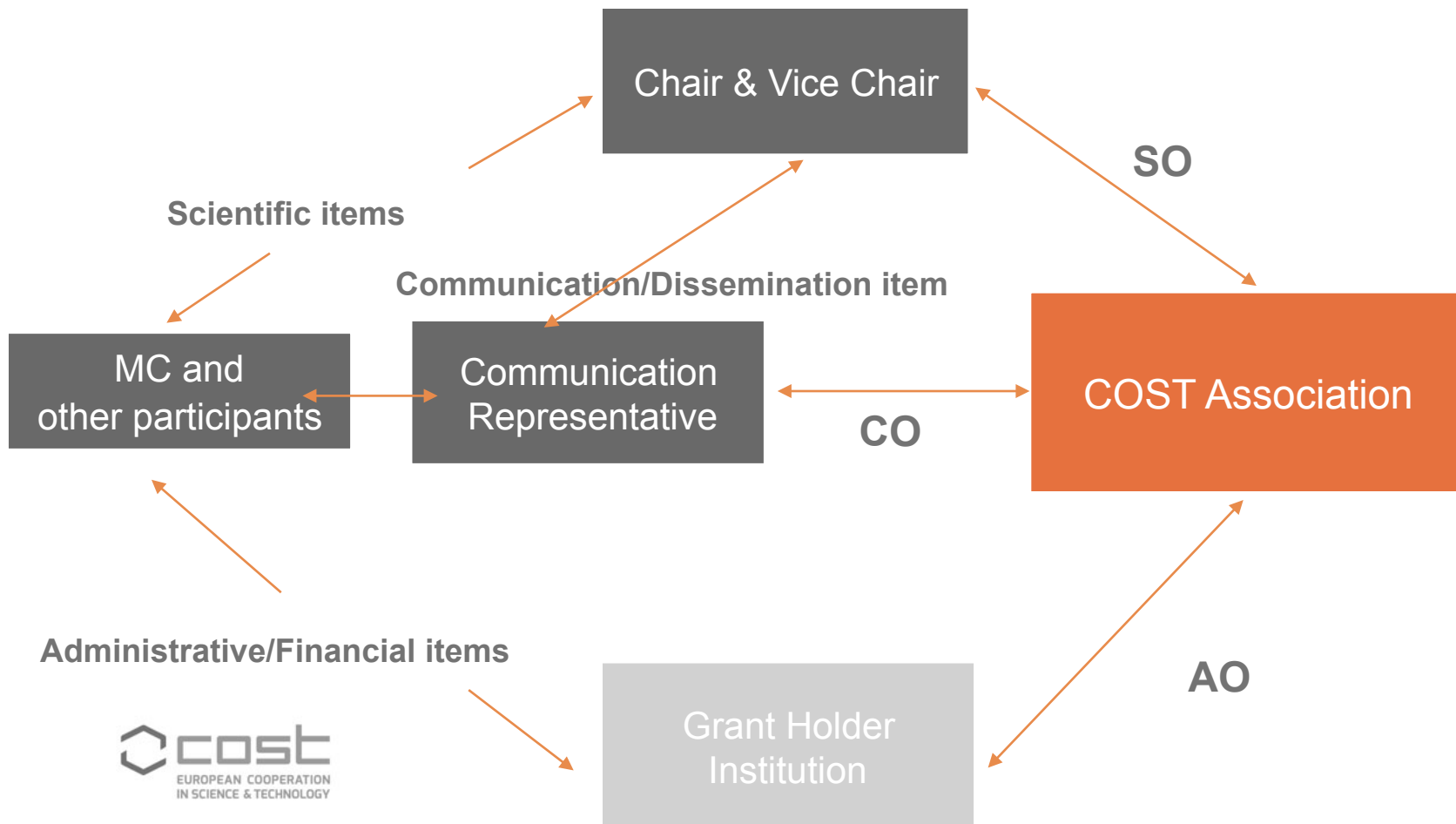
Ms Silvia Alexe

silvia.alex@cost.eu

Tel: +32 (0)2 533 3854

Always indicate Action Number in email subject line!

Interaction with COST



DISSEMINATION & COMMUNICATION

Guidelines http://www.cost.eu/download/guidelines_action_dissemination_results_outcomes

If possible always ask our communication team to upload also on our website the dissemination material as publications, proceedings, books, videos,...

Acknowledging COST

Communication representative

Our Communications department is committed to helping you share your Action's activities and success.

We are setting up a **network of communications representatives from each running Action**.

MC should select one of its members for this role. Ideally, the person should have a basic understanding of digital communications channels/be active on social media, and have a general interest in science communication and/or science journalism

Contact **Silvia Alexe** for questions

UPDATES DOCUMENTS

See <http://www.cost.eu/participate>

- **Vademecum**

<http://www.cost.eu/download/COSTVademecum>

- **Guidelines for Action Management, Monitoring and Assessment**

http://www.cost.eu/download/Guidelines_Action_management_monitoring_assessment

- **Guidelines for Dissemination of COST Action Results and Outcomes**

http://www.cost.eu/download/guidelines_action_dissemination_results_outcomes

STATUS OF THE ACTION

e-COST

Home | COST Actions | COST Association | CA15220 | Parties

CA COST Action CA15220

Parties

Action details

MoU	Draft: OC-2015-2-20185
CSO Approval date	28/02/2016
Start of Action	20/10/2016
End of Action	19/10/2020

Participations

Country	Date	Status
▶ Austria	04/03/2016	Confirmed
▶ Croatia	09/05/2016	Confirmed
▶ Czech Republic	08/04/2016	Confirmed
▶ Denmark	01/04/2016	Confirmed
▶ Finland	29/03/2016	Confirmed
▶ France	31/03/2016	Confirmed
▶ Germany	18/03/2016	Confirmed
▶ Greece	18/07/2016	Confirmed
▶ Hungary	21/03/2016	Confirmed
▶ Ireland	30/03/2016	Confirmed
▶ Israel	27/03/2016	Confirmed
▶ Italy	14/03/2016	Confirmed
▶ Latvia	16/03/2016	Confirmed
▶ Malta	28/02/2016	Confirmed
▶ Netherlands	29/03/2016	Confirmed
▶ Norway	19/09/2016	Confirmed
▶ Poland	26/10/2016	Confirmed
▶ Portugal	28/04/2016	Confirmed
▶ Romania	10/01/2017	Confirmed
▶ Slovakia	29/04/2016	Confirmed
▶ Spain	03/05/2016	Confirmed
▶ Sweden	25/07/2016	Confirmed
▶ Switzerland	22/04/2016	Confirmed
▶ Turkey	25/01/2017	Confirmed
▶ United Kingdom	16/03/2016	Confirmed
Total:	25	

Specific Organisations

Organisation Name
ESA - European Space Agency

COST Association COST Action CA15220

▶ Description

▶ Parties

▶ Management Committee

General Information*

Chair of the Action:
[Prof Angelo BASSI](#) (IT)

Vice Chair of the Action:
[Prof Mauro PATERNOSTRO](#) (UK)

Science officer of the Action:
[Dr Fatima BOUCHAMA](#)

Administrative officer of the Action:
[Ms Cassia AZEVEDO](#)

Downloads*

Action Fact Sheet
[Download AFS as RTF](#)

Memorandum of Understanding
[Download MoU as PDF](#)

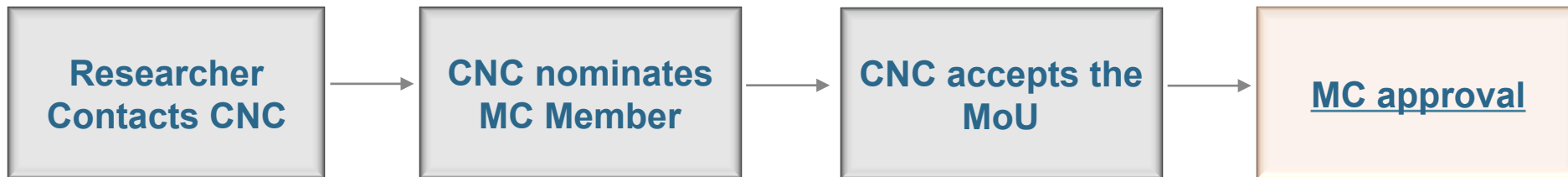
Websites*

Action website:
<http://www.ctspace.eu>

* content provided by e-COST.
Data is synchronised once per night.

How new COST countries will join now

Management Committee approval required when a new COST country requests participation later than one year after the CSO approval date, i.e. after 25/02/2017)



MC approval requested by CNC to Chair
Vote by e-vote or in meeting initiated by Chair
Decision to be encoded directly in e-COST by Chair

How NNC& IPC institutions join an Action

- Chair encodes applicant details in e-COST
- Applicant and Chair complete application form in e-COST
- Online approval by MC and COST Association

Once the Institution is approved the applicant becomes a MC Observer

SCIENTIFIC REPORTING

Monitor running Actions and assess ended Actions with regards to :

- **achievement of MoU objectives**
- **provision of MoU deliverables**
- **contribution to the COST Mission**
- **implementation of COST policies**

Progress report 1 & 2

Review Type	Purpose and features	Reviewed by
Progress Review 1 (M12)	Implementation of Scientific Committee Recommendations & COST Policy on Excellence and Inclusiveness	S c i e n t i f i c Committee
	Identifies any specific interventions needed	
	The Action will have to assess their implementation of the COST Policy on Excellence and Inclusiveness (data of the Action will be provided by the COST Association)	
Progress Review 2 (M24)	Monitors the progress (towards achievements), Impacts & Successes, Dissemination & Exploitation	Independent External Expert assigned by the COST Association
	Identifies specific interventions / urgent needs for improvement	
	An Action Rapporteur will be appointed by the COST Association and will perform the evaluation remotely based on a report prepared by the Action Chair	

Final assessment

Review Type	Purpose and features	Reviewed by
Final Assessment (End of the Action)	Identify how well the Action has reached the defined MoU objectives and deliverables (Achievements, Impacts & Successes, Dissemination & Exploitation, and added value of the networking)	Independent External Expert assigned by the COST Association
	Collects data for: <ul style="list-style-type: none">▪ COST Association reporting to EC▪ Impact Analyses▪ The identification of success stories▪ The identification of emerging themes/ potentially important future developments	
	An Action Rapporteur will be appointed by the COST Association and will perform the evaluation remotely based on a report prepared by the Action Chair (MC approval needed)	

Progress report 1: Month 12

- **Time line: October 2017 (12 months)**
- **e-COST based reporting by Action Chair on behalf of MC**
(data provided by the COST Association-comments by the Action)

Statistics prepared based on the leadership roles (Chair, Vice Chair, WG leaders)

Comparison between proposal stage and Action implementation, as well comparison to the average of all Actions

- **SC recommendation & COST policy on Excellence and Inclusiveness implementation analysis by the SC**

“The proposed Action must ensure that it implements its very good specific plans to enhance the involvement of Early Career Investigators and, to the extent possible given the field, gender balance. The proposed Action should explore the potential industrial dimension.”

- **SC analysis and outcome of PR1 either:**
 - "Implementation sufficient"
 - "Implementation insufficient but plans adequate – repeat policy implementation monitoring in one year"
 - "Implementation insufficient and plans inadequate – Action to meet with Scientific Committee"

GRANT PERIODS

Foreseen Grant Periods:

GP1: 01 / 11 / 2016 → 30 / 04 / 2017

GP2: 01 / 05 / 2017 → 30 / 04 / 2018

GP3: 01 / 05 / 2018 → 30 / 04 / 2019

GP3: 01 / 05 / 2019 → 30 / 04 / 2020

GP5: 01 / 05 / 2020 → 19 / 10 / 2020

GP2: Work & Budget Plan

- 2nd Grant period: *01/05/2017 – 30/04/2018*
- Allocated budget up to: **116.000 EUR** (based on 25 COST Countries)

A. SUMMARY BUDGET

- (1) MEETINGS
- (2) SHORT-TERM SCIENTIFIC MISSIONS
- (3) TRAINING SCHOOLS
- (4) PUBLICATIONS, DISSEMINATION, OUTREACH
- (5) OTHERS

B. TOTAL SCIENCE EXPENDITURE (sum of (1) to (5))

C. Financial and Scientific Administration and Coordination (FSAC) (max. of 15% of B.)

D. TOTAL EXPENDITURE (B+C) = 116.000 EUR

NEW ACTIONS: Full lists

http://www.cost.eu/COST_Actions



- ▶ Home
- ▶ Sitemap
- ▶ Restricted Area
- ▶ FAQ
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COST Actions

COST Actions are a flexible, fast, effective and efficient networking instrument for researchers, engineers and scholars to cooperate and coordinate nationally funded research activities. COST Actions allow European researchers to jointly develop their own ideas in any science and technology field.

COST Actions are bottom-up science and technology networks, open to researchers and stakeholders with a duration of four years. They are active through a range of [networking tools](#), such as workshops, conferences, training schools, short-term scientific missions (STSMs), and dissemination activities. COST does not fund research itself.

COST prides in its support for high-risk, innovative and emerging research themes. However, COST does not set any research priorities.

COST Actions can also pave the way to or establish synergies with [EU-funded research projects](#). Moreover, collaboration within research projects can also lead to new Actions, thus enhancing the networking potential of such consortia.

COST Actions cover scientific and technological research activities for peaceful purposes and of public interest, aiming to contribute to the [COST Mission](#).

Notice board

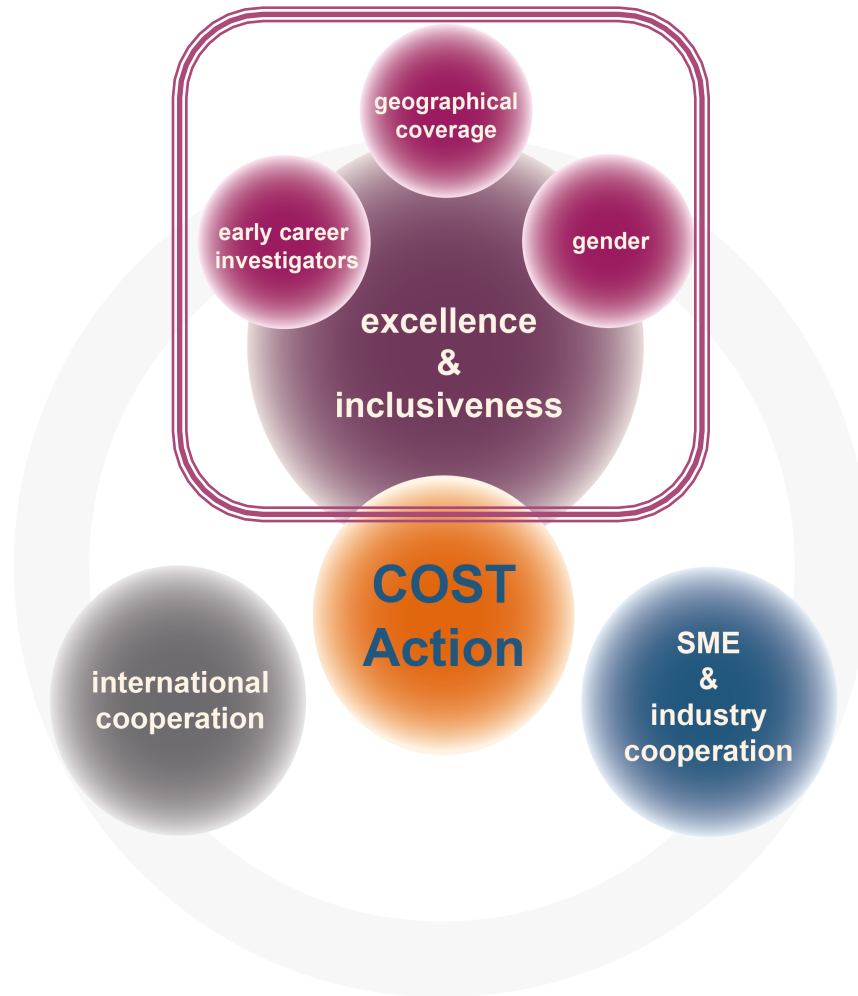
During FP7 (2007-2013), all COST Actions followed the Domain structure. COST Actions funded under the [new COST Open Call](#) will no longer follow this structure.

The new scientific organisation reflects a fully open and bottom-up approach through a single Scientific Committee. The new approach includes a [renewed Submission, Evaluation, Selection and Approval](#) favouring excellence and encouraging multi- and interdisciplinary approaches.

Key Documents

- ▶ Approved Actions - [October 2016](#) (PDF, 274 kB)
- ▶ Approved Actions - [February 2016](#) (PDF, 425 kB)
- ▶ Approved Actions [2015](#) (PDF, 370 kB)
- ▶ Approved Actions 2014 (PDF, 964 kB)

COST POLICIES UNDER H2020



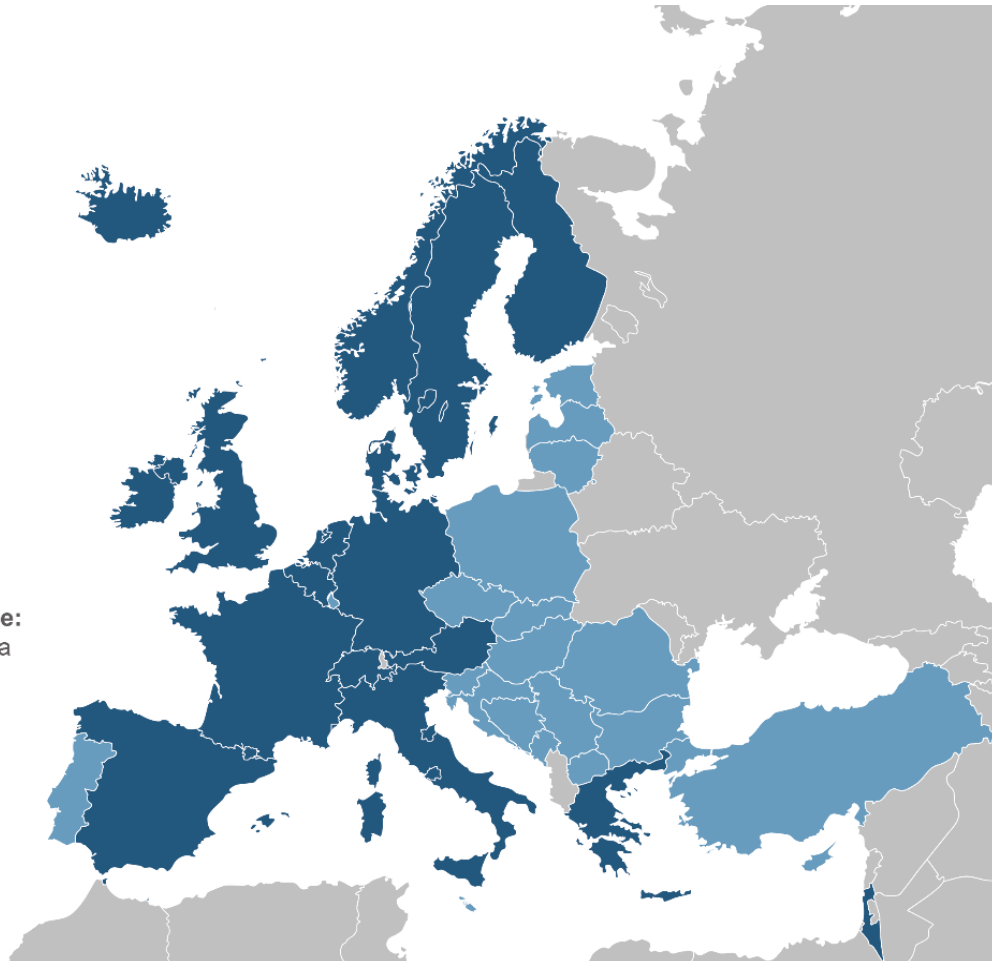
Inclusiveness Target Countries

- **EU 13:**
 - Bulgaria
 - Croatia
 - Cyprus
 - Czech Republic
 - Estonia
 - Hungary
 - Latvia
 - Lithuania
 - Malta
 - Poland
 - Romania
 - Slovakia
 - Slovenia

- EU Candidates:**
 - fYR Macedonia
 - Montenegro
 - Republic of Serbia
 - Turkey

- EU Potential Candidate:**
 - Bosnia and Herzegovina

- EU Countries targeted by EC:**
 - Luxembourg
 - Portugal





Growing
ideas
through
networks

COST Action CA15220 - Quantum Technologies in Space

2nd Management Committee Meeting

Cassia Azevedo
Malta 27/03/2017



Funded by the Horizon 2020 Framework Programme
of the European Union

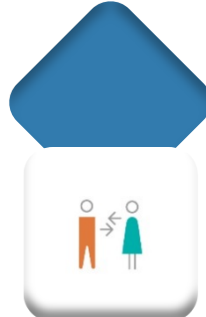
Status of the Action

CSO Approval:
26/02/2016



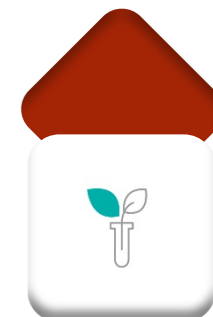
Start date:
20/10/2016

End Date:
19/10/2020



Number of Parties: 25

Grant Holder:
The Queen's University of
Belfast (Belfast, United
Kingdom)



Grant Holder Manager:
Mr Maurice Macartney

WRITTEN PROCEDURE / E-VOTE

MC MEETINGS



Decisions only valid if at least 2/3 of the Participating COST Full Members/COST Cooperating Member are represented

Simple majority vote of MC Members with one vote per Participating COST Full Member/COST Cooperating Member

MC decision must be minuted and sent to COST Association



Initiated and managed by the MC Chair

All MC members are in the e-mail list

Vote open (7 days)

Simple majority vote of MC Members with one vote per Participating COST Full Member/COST Cooperating Member

MC decision must be minuted and should be included in the official MC minutes of the following MC Meeting

How to Obtain MC Decisions 2 Options

Content

1

News from COST
Office

2

Payment of the Grant

3

COST Branding for
Dissemination

4

Reminders -
Reimbursement





News from COST Association

New COST Vademecum entering into force



Terminology changes



Changes to scientific reporting requirements



Changes to financial reporting requirements



Insertion of provisions on Rejection of expenses



Revision of sections concerning reimbursement entitlements to reflect the new category of COST Partner Members



Revision of Local Transport – Shuttle classified as Bus travel and not a Taxi service



Revision of Dissemination Section



Insertion of provisions on a procedure in case of Non-Fulfilment of contractual Obligations or Mismanagement of Funds



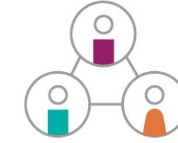
Revision of the General Non-Eligible Expenses under the COST Grant System (CGS)



Individuals from Approved Institutions of International Organisations now eligible to be reimbursed as a Trainer at approved Training Schools



Numerous minor text adjustments throughout the document for language optimisation



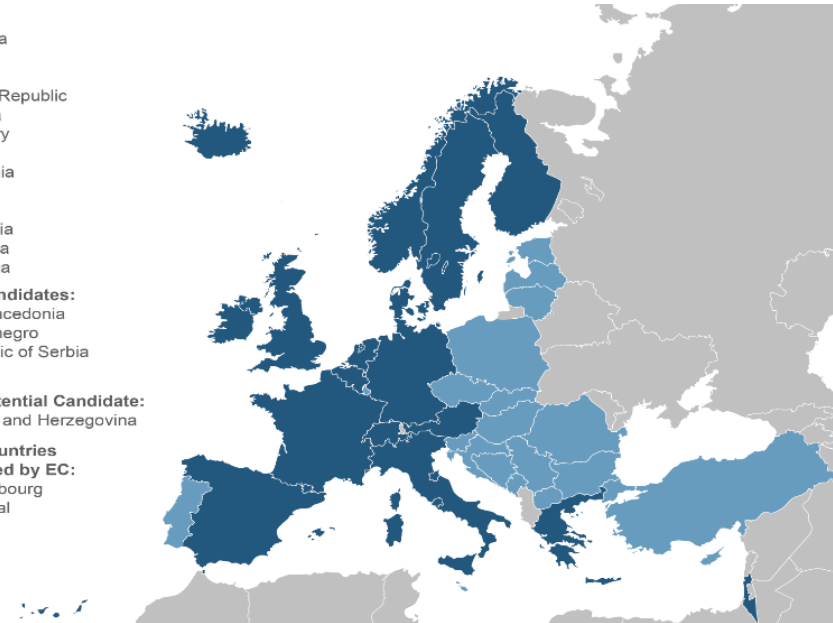
News with effect as from May 2017 for Researchers from a Participating Inclusiveness Target Country (ITC)

● **EU 13:**
Bulgaria
Croatia
Cyprus
Czech Republic
Estonia
Hungary
Latvia
Lithuania
Malta
Poland
Romania
Slovakia
Slovenia

EU Candidates:
fYR Macedonia
Montenegro
Republic of Serbia
Turkey

EU Potential Candidate:
Bosnia and Herzegovina

**EU Countries
targeted by EC:**
Luxembourg
Portugal

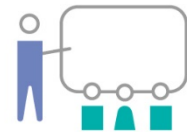


STSMs

CAN receive 50% of the grant upon completion of the 1st day of the STSM



ITC Conference Grants



Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, FYR Macedonia, Hungary, Latvia, Lithuania, Luxembourg, Malta, Montenegro, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Turkey



ITC Conference Grants – Eligibility

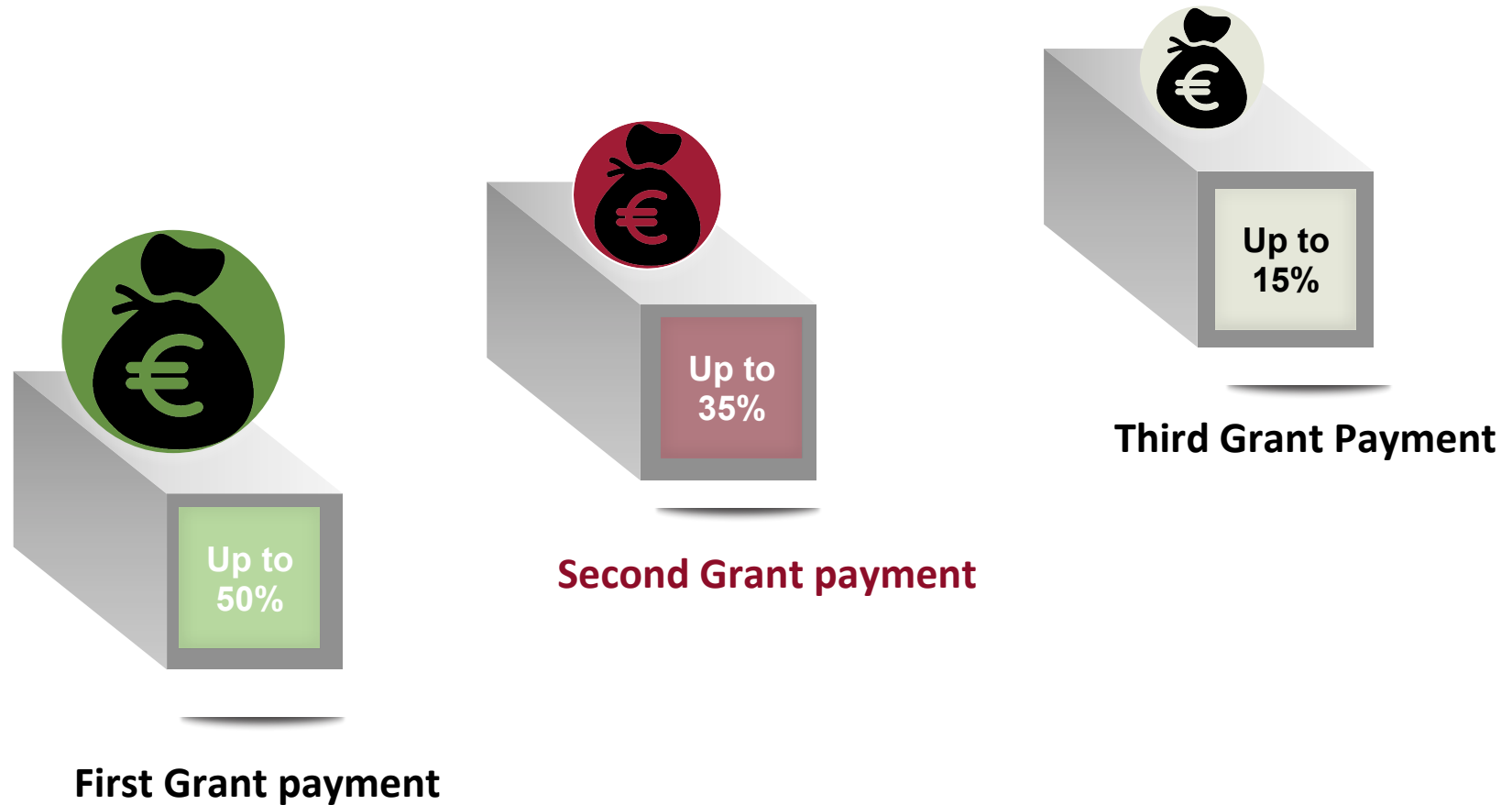
- **Exclusively for PhD students and Early Career Investigators (ECI) with affiliation in a Participating Inclusiveness Target Country (ITC)**
- At least oral/poster presentation
- Listed in the official programme
- Pre-Approval by the MC



ITC Conference Grants – Financial Support

- Up to Maximum EUR 2 500 (no receipts)
- Up to Maximum EUR 160 per day for accommodation and meals
- Up to Maximum EUR 500 for conference fees
- Payment subject to approval of the Scientific Report by the MC Chair

Payment of the Grant



COST Networking Tools



Meetings



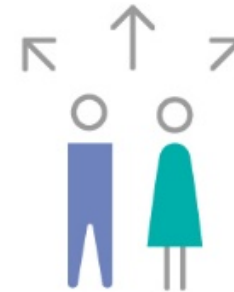
Training Schools

Short Term Scientific Mission (STSM)

Dissemination

COST Branding for Dissemination

- Reference: www.cost.eu/media/visualidentity
 - COST Logo
 - EU Emblem
 - Accompanying text
- To be used for:
 - Action website
 - Promotional materials
 - Publications
 - Final Action Dissemination



Reminders – Rules for Reimbursement



Wed 15/03/2017 14:43

COST Association <noreply@cost.eu>

[COST] Action CA15220 Meeting Participant invitation to Quantum Technologies in Space

To

Cc

OFFICIAL INVITATION



You are invited to attend the following COST Meeting as a Meeting Participant:

- COST Action: CA15220
- Meeting Title: Quantum Technologies in Space
- Location: To Be Determined, Malta, Malta
- Meeting Type: Meeting Participant
- Meeting Dates: from 2017-03-27 09:00:00 to 2017-03-30 17:00:00

Please confirm or decline your participation in this event by clicking on the following link:

<https://e-services.cost.eu/invitation/92e9d6b16c2772575f9f90bf3cf5007/>

If you are new to e-COST, you can register a new e-COST profile on the following link:

<https://e-services.cost.eu/>

By accepting this invitation, you confirm that you accept the set of COST Rules as approved by the COST CSO and described in the COST Vademecum. Any additional documents (user guide etc.) are provided for information purposes only and its contents are not intended to replace the set of COST Rules as approved by the COST CSO, or the COST Vademecum. Neither the COST Association, nor any person acting on its behalf can be held responsible for the use of these additional documents.

The following link contains the reimbursement rules and gives you clear instructions on how to fill in the Travel Reimbursement Request: www.cost.eu/StrongAuthentication

Kind regards,

Mr Maurice Macartney

E-mail address: m.macartney@qub.ac.uk

Phone: +442890976074

**INVITATIONS TO BE SENT AT LEAST 4
WEEKS BEFORE THE EVENT**

**CLAIMS SUBMISSION
30 DAYS AFTER THE EVENT END DATE**



Reminders – Rules for Reimbursement

Flight expenses:

- Economy class only
- Max EUR 1200

You must submit an invoice and full itinerary



Car travel expenses:

- Maximum distance 2000 km at
 - ✓ EUR 0.20 per km
 - ✓ EUR 0.30 per km with 2 or more eligible participants

Proof of distance (i.e Google Maps)



Trains, bus and ferry expenses:

- first, second and business class

You must submit invoice / receipts



Local Transport – travel within 1 country

Public transport expenses (shuttle, bus, train, metro and tram):

- Claimed amount ≤ EUR 25 → No receipts required
- Claimed amount > EUR 25 → All receipts required



Taxi expenses:

- No other means of public transport
- To/From airport between 10pm and 7am

AND

Up to EUR 80 in total with receipts



Also eligible (receipts are required):

- Ferry travel
- Car travel
- Luggage fees
- Parking expenses
- Visa fees

Accommodation Expenses

- Flat rate: EUR 120 per night
- No receipts
- Maximum nights: **actual number of meeting days attended** + the night before the event
- MC decision: lower flat rate
- Same flat rate for all

Meals expenses

- Flat rate: EUR 20 for lunch and dinner
- No receipts
- Number of meals based on travel time
- Offered meals by Local Organiser Support (LOS)
- MC decision: lower flat rate
- Same flat rate for all

Thank you

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COST Action CA15220

QTSpace: Quantum Technologies in Space

Management Committee Meeting

Malta, 27th March 2017

Angelo Bassi – Action Chair

COUNTRY	PRESENCE
Austria	Yes
Croatia	No
Czech Republic	Yes
Denmark	Yes
Finland	Yes
France	No
Germany	Yes
Greece	Yes
Hungary	Yes
Ireland	Yes
Israel	No
Italy	Yes
Latvia	No
Malta	Yes
Netherlands	Yes
Norway	Yes
Poland	Yes
Portugal	Yes
Romania	Yes
Slovakia	No
Spain	No
Sweden	No
Switzerland	Yes
Turkey	Yes
United Kingdom	Yes
TOTAL: 25	TOTAL PRESENT: 18

Verification of the presence

Agenda

1. Welcome to participants
2. Verification of the presence of two-thirds of the Participating COST Countries or, if applicable, a quorum
3. Adoption of agenda
4. Approval of minutes and matters arising of last meeting
5. Update from the Action Chair
 - a) Status of Action: start and end dates of Action, participating COST countries, participating NNC/IPC institutions and Specific Organisations.
 - b) Short Term Scientific Missions (STSM): review of completed reports and new applications
6. Update from the Grant Holder: Action budget status
7. Update from the COST Association
8. Monitoring of the Action
9. Implementation of COST policies on:
 - a) Promotion of gender balance and Early Career Investigators (ECI)
 - b) Inclusiveness and Excellence
10. Follow-up of MoU objectives: progress report of working groups
11. Scientific planning
 - a) Scientific strategy (MoU objectives, GP Goals, WG tasks and deliverables)
 - b) Action Budget Planning
 - c) Long-term planning (including anticipated locations and dates of future activities)
 - d) Dissemination planning (Publications and outreach activities)
12. Requests to join the Action from:
 - a) COST countries
 - b) Institutions in Near Neighbouring Countries, International Partner Countries, and/or Specific Organisations: EU agencies, European RTD Organisation, International Organisations
13. AOB
14. Location and date of next meeting
15. Summary of MC decisions
16. Closing

4. Approval of minutes and matters arising of last meeting

Approval of minutes of last MC meeting

Brussels – 20th October 2016

Minutes sent to MC on 1st December 2016

Matter arising in last meeting

The Action Chair has been delegated on deciding

- Web Host institution: Domain of University of Trieste; server of INFN, Italy.
- Developing Company: Matteo Carlesso

MC eVotes:

- 28th November 2016: “Website, Malta meeting (evote), STSMs (evote) and more”
- 19th December 2016: “Reimbursement rules for the Malta meeting (evote) ”

All documents have been uploaded on the Action’s website

5. Update from the Action Chair

a) Status of Action: start and end dates of Action, participating COST countries, participating NNC/IPC institutions and Specific Organisations

Start Date: 20 October 2016

End date: 19 October 2020

Participating COST countries (25): Austria, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Israel, Italy, Latvia, Malta, Netherlands, Norway, **Poland**, Portugal, **Romania**, Slovakia, Spain, Sweden, Switzerland, **Turkey**, United Kingdom.

Participating NNC/IPC institutions: None

Specific Organizations: **ESA**

5. Update from the Action Chair

b) Short Term Scientific Missions (STSM): review of completed reports and new applications

One call posted on 8th December 2016, with deadline 31st January 2017.

Available budget: 2400 Eur

Cost per STSM: 800 Eur (estimated number of STSM: 3)

Only one application received (D. Bruschi) – to be carried out in April 2016

Critical points

- Only one application received, out of three we estimated
- No consensus on whether the project was directly related to the Action

Actions to take

- Improve advertisement
- Clarify the rules for approval

6. Update from the Grant Holder: Action budget status

Kick Off meeting / followed by MC vote

Activity	Eur
MC/WG meetings + Workshop (Malta)	43.690,00 Eur
STSMs	2.400,00 Eur
Dissemination (Website)	2.000,00 Eur
OERSA (Bank charges)	170,87 Eur
Subtotal	48.260,87 Eur
FSAC (overheads) 15% of subtotal	7.239,13 Eur
TOTAL	55.500,00 Eur

Current status

Activity	Eur
MC/WG meetings + Workshop (Malta)	45.460,87 Eur
STSMs	800,00 Eur
Dissemination (Website)	2.000,00 Eur
OERSA (Bank charges)	0 Eur
Subtotal	48.260,87 Eur
FSAC (overheads) 15% of subtotal	7.239,13 Eur
TOTAL	55.500,00 Eur

7. Update from the COST Association

Presentations of

Dr. Fatima Bouchama – Science Officer

Ms. Cassia Azevedo – Administrative Officer

8. Monitoring of the Action

Things went as planned.

Malta meeting: will take place as originally planned

Website: ready

STSMs: done

Grant Period 2: Activities almost defined (MC meeting, WG meetings, STSMs...)

9. Implementation of COST policies

a) Promotion of gender balance and Early Career Investigators (ECI)

Action's members (member = who registered on the Action website)

Total: 48

Male: 45

Female: 3

ECIs: 10

Core Group (Chair, Deputy Chair, WG leaders and Deputy Leaders, Manager)

Total: 11

Male: 10

Female: 1

ECIs: 3

STSMs: 1 (Male, ECI)

MoU

Gender balance. QTSpace already includes a significant representation from female scientists (in line with typical percentage in the community). The Action will ensure that female members of QTSpace take leading roles in its management. Moreover, suitable measures will be taken to facilitate the participation of female scientists to any meeting of QTSpace, whenever necessary (for example in the form of childcare facilities). Finally, the Action will liaise with any country-specific initiative for the enhancement of the participation of women in science to establish factual joint-programme for the stimulation of a balanced contribution from all genders.

Early Career Investigators (ECIs). Significant space will be given to ECIs as speakers at workshops and conferences. ii. Participation of ECIs to Action's events will be supported through targeted measures of financial support. iii. WG Vice Leaders will be selected among ECIs (or, in any case, among junior researchers). iv. In the selection of STSMs, priority will be given to ECIs.

9. Implementation of COST policies

a) Promotion of gender balance and Early Career Investigators (ECI)

Gender Balance. More needs to be done.

Talks of our STSM manager & COST Mission and Policies Supervisor Catalina on the role of women in science

1. <http://edu.inf.infn.it/international-day-of-women-and-girls-in-science-2017/>
(10th February 2017 – Frascati)
2. <http://w3.inf.infn.it/career-day-giornata-allinsegnamento/>
(4th April 2017 – LNF Open Days)
3. Scheduled talk at TEDx Brasov (Romania)

ECIs. Things are going better than what the numbers show. Many simply did not register on the website yet.

In general. The Action still needs to be better known in the community

9. Implementation of COST policies

b) Inclusiveness

Action participating countries

Total: 25

ITCs: 10

Action's Members

Total: 48

ITCs: 15

Core Group

Total: 11

ITCs: 3

Events: GP1 (100% in ITCs), GP2 (33% in ITCs)

As per MoU: at least 30% in ITCs

MoU

ITC participation. QTSpace will be advertised to colleagues working in ITCs to encourage their active participation in the Action, above and beyond the level of participation from such countries that have already been secured (9 countries already). Action members from ITCs will be given leading roles in the Action and at least 30% of the QTSpace events will be organized in ITCs.

Inclusiveness countries: Bosnia-Herzegovina, Bulgaria, Cyprus, Czech Republic, Estonia, Croatia, Hungary, Lithuania, Latvia, Luxembourg, Malta, Montenegro, Poland, Portugal, Romania, Slovenia, Slovakia, the former Yugoslav Republic of Macedonia, Republic of Serbia and Turkey.

9. Implementation of COST policies

b) Excellence

Major scientific actors: contacted/involved

Space Agencies

- ESA (Bruno Leone, Eamonn Murphy, Eric Wille – attending the meeting)
- ASI (Roberto Battiston - President, Daniele Dequal – attending the meeting)

Companies

- Airbus (Paolo Bianco – attending the meeting)
- OHB Systems (Norbert Lemke, Matthias Lettner – the latter attending the meeting). Satellite and space technology company. It has experience in the development and building of several satellites, including satellites for the Galileo positioning system.
- Thales Alenia (Cyril Michel). One of Europe's largest satellite manufacturers and built several satellites and modules for the International Space Station.
- Tesat Spacecom (Herwig Zech). Owned by Airbus Defense & Space, is an expert in space communication and the world-leader in optical satellite communication technology. Several of its Laser Communication Terminals already operate within the European Data Relay System that serves several environmental observation satellites.

10. Follow-up of MoU objectives: progress report of working groups

Challenge: Develop core technologies for space applications of quantum mechanics and the understanding of the foundations of physics.

1. Identify fundamental questions to be addressed as well as the scientific/technical requirements to perform related experimental tests in space.
2. Identify possible applications of quantum technology in space, define the scientific and technical requirements.
3. Identify principles that should be demonstrated on ground, coordinate which experiments to perform.
4. Share knowledge with respect to available technologies and experimental techniques for performing experiments in space-relevant settings.
5. Identify common challenges regarding technology needs, mission parameters, mission design.
6. Technology development in international cooperation, with space agencies and with industrial partners.
7. Share experience and coordinate efforts in hardware testing in space-relevant environments (vibrations, radiation hardness, vacuum, cryogenic environment, temperature cycling, etc.).
8. Identify funding opportunities, communication with funding agencies.
9. Further broaden international support by researchers and their respective national space agencies.
10. Identify and coordinate technology-development or mission-proposal opportunities, communication with industry and space agencies.
11. Identify common ground and possible synergies.
12. Exchange know-how related to hardware testing, space-relevant proof-of-principle experiments, data acquisition and evaluation, mission design, ground-segment operation.
13. Share relevant contacts to industry, funding agencies and national agencies.

10. Follow-up of MoU objectives: progress report of working groups

	Mon. 27	Tue. 28	Wed. 29	Thu. 30
9:00	MC Meeting	WG2: E Murphy (30) WG2: S Plant (30) WG2: S Schiller (30)	WG3: W von Klitzing (45) WG4: B Leone (45)	Dinkelaker (25+5) Bedington (25+5) Pugh (25+5)
9:30				
10:00				
10:30		Coffee break	Coffee break	Coffee break
11:00	Coffee break	WG2: S Joshi (30) WG2: D Vitali (30) WG2: Guided discussions	WG4: M Lettner (30) WG4: P Bianco (30) WG4: Guided discussions	Makarov (25+5) Oi (25+5) Zimboras (25+5)
11:30	Plenary Session			
12:00				
12:30	Lunch	Lunch	Lunch	Lunch
13:00				
13:30	WG1: S Donadi (30) WG1: D Bruschi (30) WG1: A Roura (30)	WG4: E Beckert (45) WG3: P Villoresi (45)	Quantum Technology in Space Roadmap Discussions	Roediger (25+5) Guenther (25+5) Dequal (25+5)
14:00				
14:30				
15:00	Coffee break	Coffee break	Coffee break	Coffee break
15:30	WG1: T Sumner (30) WG1: G Genta (30) WG1: Guided discussions	WG3: J Bateman (45) WG3: Guided discussions	Carlesso (25+5) Gagatsos (25+5) Diosi (25+5)	Wrap-up: WGs
16:00				
16:30				Wrap-up: Roadmap
17:00			Break	Break
17:30	Quantum Technology in Space Roadmap Discussions	Quantum Technology in Space Roadmap Discussions	Pelucchi (25+5) Arnold (25+5) Stefanov (25+5)	Closure
18:00				
18:30	Free-discussion time & posters	Free-discussion time & posters		
19:00			Free-discussion time	

GP1 Goals

1. Identify the most relevant fundamental questions to be addressed, for space missions; initiate the discussion about the scientific/technical requirements.
2. Identify first applications of quantum technology in space; initiate the discussion about the scientific and technical requirements.
3. Initiate the discussion about principles that should be demonstrated on ground before launching a space mission.
4. Initiate the discussion about common challenges on technology needs for space missions, mission parameters, mission design, technology.

During the meeting we will evaluate the status quo of QT in space, assessing all aspects relevant for fundamental concepts, applications, proof-of-principle experiments and implementations which are the four pillars defined as working groups (WGs) of the COST Action QTSpace. The community will gather insight into the possibilities for near-future missions. We aim to transfer knowledge and mature expertise coming from prominent scientists interested in the fields of quantum science/technology and space, which we aim to merge further. We plan to make available to everyone the gathered information in the form of a contemporary proceedings publication.

11. Scientific planning

a) Scientific strategy (MoU objectives, GP Goals, WG tasks and deliverables)

GP1 Goals

1. Identify the most relevant fundamental questions to be addressed, for space missions; initiate the discussion about the scientific/technical requirements.
2. Identify first applications of quantum technology in space; initiate the discussion about the scientific and technical requirements.
3. Initiate the discussion about principles that should be demonstrated on ground before launching a space mission.
4. Initiate the discussion about common challenges on technology needs for space missions, mission parameters, mission design, technology.

GP2 Goals

1. Identify potential industrial partners and their specific interests for quantum technologies in space
2. Identify potential applications of quantum technology in fundamental tests of physical principles in space
3. Define the state of the art of proof of principle experiment relevant for quantum experiments in space and expectations for tests needed in the near future.
4. Identify experimental ideas for implementing quantum technologies in space and define a brief guideline of implementation challenges, including the identification of the theoretical developments needed to enable such experimental endeavours.
5. Train researchers, as well as private and public sector stakeholders, interested in quantum technologies in space.

MALTA MEETING

11. Scientific planning

a) Scientific strategy (MoU objectives, GP Goals, WG tasks and deliverables)

WG1: Fundamental Studies

TASKS

- T1.1) Evaluate tests of fundamental theories in a space environment.
- T1.2) Evaluate experimental possibilities to test fundamental theories.
- T1.3) Explore the possibility of joint space mission for the different experimental platforms.

DELIVERABLES

- D1.1) List of experiments with different physical systems [scientific paper].
- D1.2) List of fundamental tests [report].
- D1.3) List of key parameters to enable tests [technical paper].
- D1.4) Information about possible joint mission [report].

WG2: Applications

TASKS

- T2.1) Technology developments (from proof of principles to applications) with industrial partners.
- T2.2) Link to industry partners to develop enabling technologies for space experiment.
- T2.3) Investigate applications of quantum technologies outside fundamental tests.
- T2.4) Investigate the need of society and industry for QT in space.

DELIVERABLES

- D2.1) At least two identified concrete applications of QT in space [white paper].
- D2.2) List of technical requirements for each application [technical paper].
- D2.3) Two alternative paths for each realization of applications in D2.1 [technical paper].
- D2.4) Industrial partners identified with interest/need in QT in space [report].

WG3: Proof-of-Principle Experiments

TASKS

- T3.1) Define the experimental details of each envisaged test in space.
- T3.2) Check the technical availability for space approved technology.
- T3.3) Definition of outstanding proof-of-principle tests.
- T3.4) Planning of Earth-based tests: parabola flights, drop tower, sounding rockets etc.

DELIVERABLES

- D3.1) List of experimental parameters to be reached for each envisaged test [scientific paper].
- D3.2) List of status quo of technology in space [review paper].
- D3.3) Delivery of realistic time schedule for outstanding proof-of-principle tests [scientific paper].
- D3.4) Plan for strategic preparation of space missions based on experimental reality [white paper].

WG4: Implementation

TASKS

- T4.1) Identify common challenges regarding technology needs, mission parameters and design.
- T4.2) Technology development in cooperation with space agencies and industrial partners.
- T4.3) Share experience and coordinate efforts in hardware testing in space-relevant environments.
- T4.4) Further international support by researchers and their respective national space agencies.
- T4.5) Identify and coordinate technology-development and mission-proposal opportunities.

DELIVERABLES

- D4.1) List of mission parameters [report].
- D4.2) List of technology [report].
- D4.3) List of partners [report].
- D4.4) List of opportunities [white paper].

11. Scientific planning

b) Action Budget Planning

GP1

Activity	Eur
MC/WG meetings + Workshop (Malta)	43.690,00 Eur
STSMs	2.400,00 Eur
Dissemination (Website)	2.000,00 Eur
OERSA (Bank charges)	170,87 Eur
Subtotal	48.260,87 Eur
FSAC (overheads) 15% of subtotal	7.239,13 Eur
TOTAL	55.500,00 Eur

GP2

Activity	Eur
MC meeting	20.000,00 Eur
Training School	30.000,00 Eur
WG meetings	40.000,00 Eur
STSMs	8.000,00 Eur
Dissemination	2.800,00 Eur
OERSA (Bank charges)	69,57 Eur
Subtotal	100.869,57 Eur
FSAC (overheads) 15% of subtotal	15.130,44 Eur
TOTAL	116.000,01 Eur

11. Scientific planning

c) Long-term planning (including anticipated locations and dates of future activities)

MC meeting: Lisbon (14th September 2017)

Training School & Workshop & WG2 meeting: Lisbon Summer School and Workshop on Quantum Technology in Space
Lisbon – Portugal (11th-14th September 2017)

WG3 Meeting & Workshop: Workshop on proof of principle quantum experiments in space
Arcachon – France (2nd-8th July 2017)

WG4 Meeting & Workshop: Implementing Quantum Technologies in Space
Erlangen – Germany (6th-8th September 2017)

Lisbon School & Workshop on Quantum Technology in Space



Lisbon – Portugal
11th – 14th September 2017

School: it will cover topics of the COST action in order to train the participants in the context of space technology and terminology and provide an overview of existing efforts to harness quantum technology in space.

Workshop: Scientific talks will cover the four central target communities of the action: (1) quantum communication, (2) atom interferometry, (3) atomic clocks, and (4) quantum optomechanics and high-mass matter-wave interferometry. There will be a poster session in parallel with an exhibition of space-related companies. There will be an afternoon session with a focus on **Working Group 2**.

Workshop on proof of principle quantum experiments in space



Arcachon – France
2nd – 8th July 2017

WG3 meeting & workshop. It will run in parallel to the conference ICOLS2017 (<http://icols2017.org>), which brings together world leading experts in AMO physics and spectroscopy - many of them relevant for quantum technologies in space.

Some invited speakers / participants will be paid thorough COST; other speakers will be chosen among participants to ICOLS. A round table discussion on the WG3 topic [proof of principle experiment for QTSpace] will be organised, open also to ICOLS participants.

Implementing Quantum Technologies in Space



Erlangen – Germany
6th – 8th September 2017

WG4 meeting & workshop. The meeting will provide for a platform to discuss the interplay between interesting experimental proposals and realistic implementation hurdles. The effective 3 day meeting should also kick-start concrete contacts

between industry, applied research institutes and more fundamental groups in academia. It will have several sessions with talks and posters, round table discussions and also networking get-togethers.

11. Scientific planning

d) Dissemination planning (Publications and outreach activities)

Website QTSpace (main activity)

- Public area: for the wider community
- Reserved area: for registered members (registration is moderated)
- Collect information for statistics and reports
- Newsletter service (create an “official” communication channel)

Publications: too early.

But already implemented on the Action website.

Video: yet to be defined. Else?

“State of the art” in QTSpace: output of Malta meeting.

12. Requests to join the Action

a) COST countries

Still via CNC

b) Institutions in Near Neighbouring Countries, International Partner Countries, and/or Specific Organisations: EU agencies, European RTD Organisation, International Organisations

No new request

13. AOB

Ask the MC to delegate the CG to decide on requests of “International Conference Grants”, according to the COST rules,

14. Location and date of next meeting

Lisbon – Portugal: 14th September 2017

15. Summary of MC decisions

The CG has been delegated to decide on requests of “International Conference Grants”.

16. Closing

Many thanks to:

- The COST Association (Fatima and Cassia)
- The MC
- The CG
- Special thanks to Mauro and André

REMEMBER to sign the attendance list.

Minutes of the Second Management Committee Meeting of COST Action CA15220: " *Quantum Technologies in Space* "

*Valletta, Malta
27/03/2017*

1. Welcome to participants

The participants were welcomed by Prof. Angelo Bassi, Chair of the Cost Action, who chaired the meeting.

2. Verification of the presence of two-thirds of the Participating COST Countries or, if applicable, a quorum

Countries having signed the MoU: Austria, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Israel, Italy, Latvia, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Spain, Sweden, Switzerland, Turkey, United Kingdom. Total: 25

Parties present at the meeting: Austria, Czech Republic, Denmark, Finland, Germany, Greece, Hungary, Ireland, Italy, Malta, Netherlands, Norway, Poland, Portugal, Romania, Switzerland, Turkey, United Kingdom. Total: 18

3. Adoption of agenda

The agenda (Annex I) was adopted

4. Approval of minutes and matters arising of last meeting

The minutes of the 1st MC meeting (20th October, Brussels) were approved.

Between the 1st and 2nd MC meeting, two evotes were set up:

- 28th November 2016: "Website, Malta meeting (evote), STSMs (evote) and more"
- 19th December 2016: "Reimbursement rules for the Malta meeting (evote) "

(Annex II and Annex III)

During the first MC meeting, the Action Chair was given the mandate to define the Web Host Institution and the Developing Company of the Action Website. The Chair reported that the domain www.qtspace.eu belongs to the University of Trieste (Italy), and the website is physically hosted on servers of I.N.F.N. (Italy). The website was developed by Mr. Matteo Carlesso.

5. Update from the Action Chair

- a) Status of Action: start and end dates of Action, participating COST countries, participating NNC/IPC institutions and Specific Organisations.**
- b) Short Term Scientific Missions (STSM): review of completed reports and new applications**

Start of the Action: 20/10/2016

End of Action: 19/10/2020



Participating COST countries: Austria, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Israel, Italy, Latvia, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Spain, Sweden, Switzerland, Turkey, United Kingdom. Total: 25

Since the first MC meeting, there have been three new entries: Poland, Romania and Turkey.

Participating NNC/IPC institutions: None

Specific Organisations: ESA – European Space Agency

STSMs. One call was launched on 8th December 2016, with deadline 31st January 2017. The allocated budget was 2400 Eur, and about 3 STSMs were foreseen. Only one application was received, having a cost of 800 Eur.

The CG discussed whether the received proposal was pertinent to the Action, and in alignment with its objectives; no unanimous consensus was reached. The STSMs was approved by a majority vote.

The CG agreed that two specific actions have to be taken:

- Intensify advertisement of the tool, first among MC members and next in the larger community.
- Clarify the rules for approval of STSMs, to be implemented starting with the next call.

6. Update from the Grant Holder: Action budget status

Budget as approved by the MC

Activity	Eur
MC/WG meetings + Workshop (Malta)	43.690,00 Eur
STSMs	2.400,00 Eur
Dissemination (Website)	2.000,00 Eur
OERSA (Bank charges)	170,87 Eur
Subtotal	48.260,87 Eur
FSAC (overheads) 15% of subtotal	7.239,13 Eur
TOTAL	55.500,00 Eur

Current budget status

Activity	Eur
MC/WG meetings + Workshop (Malta)	45.460,87 Eur
STSMs	800,00 Eur
Dissemination (Website)	2.000,00 Eur
OERSA (Bank charges)	0 Eur
Subtotal	48.260,87 Eur
FSAC (overheads) 15% of subtotal	7.239,13 Eur
TOTAL	55.500,00 Eur

7. Update from the COST Association

Presentation given by Dr. Fatima Bouchama, Science Officer (Annex IV)

Presentation given by Ms. Cassia Azevedo, Administrative Officer (Annex V)

8. Monitoring of the Action

The Action was developed as originally planned

- The Malta meeting was organized as originally planned, with no significant change.



- The website has been setup and now is fully functioning.
- STSMs have been launched.
- A draft of Work and Budget Plan for GP2 is ready.

9. Implementation of COST policies on:

a) Promotion of gender balance and Early Career Investigators (ECI)

b) Inclusiveness and Excellence

As for Gender Balance and ECIs, the situation is the following:

Action members (member = who registered on the Action website)

Total: 48

Male: 45

Female: 3

ECIs: 10

Core Group (Chair, Deputy Chair, WG leaders and Deputy Leaders, Manager)

Total: 11

Male: 10

Female: 1

ECIs: 3

STSMs: 1 (Male, ECI)

Regarding Gender Balance, the statistics shows the difficulty in engaging female scientists in physics. Our STSM manager & COST Mission and Policies Supervisor, Dr. Catalina Curceanu, is engaged in promoting the Action and the role of women in science

1. <http://edu.lnf.infn.it/international-day-of-women-and-girls-in-science-2017/>

(10th February 2017 – Frascati)

2. <http://w3.lnf.infn.it/career-day-giornata-allinsegna-dellorientamento/>

(4th April 2017 – LNF Open Days)

3. Scheduled talk at TEDx Brasov (Romania)

Regarding ECIs, the situation is much better than what the numbers shows. Many ECIs are not aware of the Action website and did not register. Registration to the Malta meeting however proves that there is a significant interest of ECIs in the Action. This also shows that the Action still needs to be known in the community.

As for Inclusiveness, the situation is as follows:

Action participating countries

Total: 25

ITCs: 10

Action Members

Total: 48

ITCs: 15

Core Group

Total: 11

ITCs: 3

Events: GP1 (100% in ITCs), GP2 (33% in ITCs)

As per MoU: at least 30% in ITCs

Therefore we successfully met the goals of the Action.

As for Excellence, the situation is the following:

Major scientific actors: contacted/involved

Space Agencies

- ESA (Bruno Leone, Eamonn Murphy, Eric Wille – attending the meeting)
- ASI (Roberto Battiston - President, Daniele Dequal – attending the meeting)

Companies

- Airbus (Paolo Bianco – attending the meeting)
- OHB Systems (Norbert Lemke, Matthias Lettner – the latter attending the meeting). Satellite and space technology company. It has experience in the development and building of several satellites, including satellites for the Galileo positioning system.
- Thales Alenia (Cyril Michel). One of Europe's largest satellite manufacturers and built several satellites and modules for the International Space Station.
- Tesat Spacecom (Herwig Zech). Owned by Airbus Defense & Space, is an expert in space communication and the world-leader in optical satellite communication technology. Several of its Laser Communication Terminals already operate within the European Data Relay System that serves several environmental observation satellites.

More needs to be done, in terms of involvement of Space Agencies and Industries, but the first actions taken are successful and promising.

10. Follow-up of MoU objectives: progress report of working groups

The Action Chair reminded the MC about the Objectives of the Avtion, as per MoU.

The Actiojn Deputy Chair, Prof. Mauro Paternostro, presented the structure and goals of the Malta meeting. An extended presentation will be given during the plenary session following the MC meeting.

The WG Leaders commented on the structure of each WG meeting taking place during the week in Malta.

11. Scientific planning

- a) **Scientific strategy (MoU objectives, GP Goals, WG tasks and deliverables)**
- b) **Action Budget Planning**
- c) **Long-term planning (including anticipated locations and dates of future activities)**
- d) **Dissemination planning (Publications and outreach activities)**

The GP goals for GP1 are:

1. Identify the most relevant fundamental questions to be addressed, for space missions; initiate the discussion about the scientific/technical requirements.
2. Identify first applications of quantum technology in space; initiate the discussion about the scientific and technical requirements.
3. Initiate the discussion about principles that should be demonstrated on ground before launching a space mission.
4. Initiate the discussion about common challenges on technology needs for space missions, mission parameters, mission design, technology.

The (yet to be finalized) goals for GP2 are:

1. Identify potential industrial partners and their specific interests for quantum technologies in space
2. Identify potential applications of quantum technology in fundamental tests of physical principles in space
3. Define the state of the art of proof of principle experiment relevant for quantum experiments in space and expectations for tests needed in the near future.
4. Identify experimental ideas for implementing quantum technologies in space and define a brief guideline of implementation challenges, including the identification of the theoretical developments needed to enable such experimental endeavours.
5. Train researchers, as well as private and public sector stakeholders, interested in quantum technologies in space.

The Action Chair reminded the MC about tasks and deliverables of each WG, as per MoU. No specific deliverable was discussed, as the Action is still in the early stage of development.

The draft budget for GP2 is

Activity	Eur
MC meeting	20.000,00 Eur
Training School	30.000,00 Eur
WG meetings	40.000,00 Eur
STSMs	8.000,00 Eur
Dissemination	2.800,00 Eur
OERSA (Bank charges)	69,57 Eur
Subtotal	100.869,57 Eur
FSAC (overheads) 15% of subtotal	15.130,44 Eur
TOTAL	116.000,01 Eur

However the CG is still working on the Work and Budget Plan for GP2.
The tentative scheduled activities are:

MC meeting: Lisbon (14th September 2017)

Training School & Workshop & WG2 meeting: “Lisbon Summer School and Workshop on Quantum Technology in Space”
Lisbon – Portugal (11th-14th September 2017)

WG3 Meeting & Workshop: “Workshop on proof of principle quantum experiments in space”
Arcachon – France (2nd-8th July 2017)

WG4 Meeting & Workshop: “Implementing Quantum Technologies in Space”
Erlangen – Germany (6th-8th September 2017)

As for dissemination, the QTSpace website (www.qtspace.eu) has been set up and is working. The following four functions have been implemented:

- Public area: for communicating/disseminating to the wider community.
- Reserved area: for registered members (registration is moderated), where access is given to the relevant documents of the Action.
- Collection of information (gender and country of residence of members, whether or not they are ECIs) for statistics and reports
- Newsletter service (as an “official” communication channel to all registered members)

As for publications, it is too early to have joint publications as outcome of cOST meetings.

Another foreseen output is a “state of the art” paper on quantum technologies in space, to be prepared based on the discussions taking place during the Malta meeting.

The CG is discussing on preparing a video on quantum technologies in space.

12. Requests to join the Action from:

a) COST countries

b) Institutions in Near Neighbouring Countries, International Partner Countries, and/or Specific Organisations: EU agencies, European RTD Organisation, International Organisations

No new request to be approved.

13. AOB

The Action Chair asks the MC to delegate the CG to decide on requests of “International Conference Grants”, according to the COST rules (as presented by Ms. Cassia Azevedo). The request was unanimously approved.

The budget for International Conference Grants will be taken from that of STSMs.

14. Location and date of next meeting

The next MC meeting will take place in Lisbon (Portugal) on 14th September 2017

15. Summary of MC decisions

The CG has been delegated to decide on requests of “International Conference Grants”.

16. Closing

The Action Chair acknowledges support and assistance from:

- The COST Association (Dr. Fatima Bouchama and Ms. Cassia Azevedo)
- The MC
- The CG
- Special thanks to Mauro and André

The Action Chair reminds the MC members to sign the attendance list.

ANNEXES

Annex I. Agenda of the MC meeting.

Annex II. eVote of 28th November 2016: “Website, Malta meeting (evote), STSMs (evote) and more”

Annex III. eVote of 19th December 2016: “Reimbursement rules for the Malta meeting (evote)”

Annex IV. Presentation given by Dr. Fatima Bouchama, Science Officer.

Annex V. Presentation given by Ms. Cassia Azevedo, Administrative Officer.

Annex VI. Presentation by the Action Chair.

COST Action CA15220

QTSpace: Quantum Technologies in Space

Management Committee Meeting

Malta, 27th March 2017

Angelo Bassi – Action Chair

COUNTRY	PRESENCE
Austria	Yes
Croatia	No
Czech Republic	Yes
Denmark	Yes
Finland	Yes
France	No
Germany	Yes
Greece	Yes
Hungary	Yes
Ireland	Yes
Israel	No
Italy	Yes
Latvia	No
Malta	Yes
Netherlands	Yes
Norway	Yes
Poland	Yes
Portugal	Yes
Romania	Yes
Slovakia	No
Spain	No
Sweden	No
Switzerland	Yes
Turkey	Yes
United Kingdom	Yes
TOTAL: 25	TOTAL PRESENT: 18

Verification of the presence

Agenda

1. Welcome to participants
2. Verification of the presence of two-thirds of the Participating COST Countries or, if applicable, a quorum
3. Adoption of agenda
4. Approval of minutes and matters arising of last meeting
5. Update from the Action Chair
 - a) Status of Action: start and end dates of Action, participating COST countries, participating NNC/IPC institutions and Specific Organisations.
 - b) Short Term Scientific Missions (STSM): review of completed reports and new applications
6. Update from the Grant Holder: Action budget status
7. Update from the COST Association
8. Monitoring of the Action
9. Implementation of COST policies on:
 - a) Promotion of gender balance and Early Career Investigators (ECI)
 - b) Inclusiveness and Excellence
10. Follow-up of MoU objectives: progress report of working groups
11. Scientific planning
 - a) Scientific strategy (MoU objectives, GP Goals, WG tasks and deliverables)
 - b) Action Budget Planning
 - c) Long-term planning (including anticipated locations and dates of future activities)
 - d) Dissemination planning (Publications and outreach activities)
12. Requests to join the Action from:
 - a) COST countries
 - b) Institutions in Near Neighbouring Countries, International Partner Countries, and/or Specific Organisations: EU agencies, European RTD Organisation, International Organisations
13. AOB
14. Location and date of next meeting
15. Summary of MC decisions
16. Closing

4. Approval of minutes and matters arising of last meeting

Approval of minutes of last MC meeting

Brussels – 20th October 2016

Minutes sent to MC on 1st December 2016

Matter arising in last meeting

The Action Chair has been delegated on deciding

- Web Host institution: Domain of University of Trieste; server of INFN, Italy.
- Developing Company: Matteo Carlesso

MC eVotes:

- 28th November 2016: “Website, Malta meeting (evote), STSMs (evote) and more”
- 19th December 2016: “Reimbursement rules for the Malta meeting (evote) ”

All documents have been uploaded on the Action’s website

5. Update from the Action Chair

a) Status of Action: start and end dates of Action, participating COST countries, participating NNC/IPC institutions and Specific Organisations

Start Date: 20 October 2016

End date: 19 October 2020

Participating COST countries (25): Austria, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Israel, Italy, Latvia, Malta, Netherlands, Norway, **Poland**, Portugal, **Romania**, Slovakia, Spain, Sweden, Switzerland, **Turkey**, United Kingdom.

Participating NNC/IPC institutions: None

Specific Organizations: **ESA**

5. Update from the Action Chair

b) Short Term Scientific Missions (STSM): review of completed reports and new applications

One call posted on 8th December 2016, with deadline 31st January 2017.

Available budget: 2400 Eur

Cost per STSM: 800 Eur (estimated number of STSM: 3)

Only one application received (D. Bruschi) – to be carried out in April 2016

Critical points

- Only one application received, out of three we estimated
- No consensus on whether the project was directly related to the Action

Actions to take

- Improve advertisement
- Clarify the rules for approval

6. Update from the Grant Holder: Action budget status

Kick Off meeting / followed by MC vote

Activity	Eur
MC/WG meetings + Workshop (Malta)	43.690,00 Eur
STSMs	2.400,00 Eur
Dissemination (Website)	2.000,00 Eur
OERSA (Bank charges)	170,87 Eur
Subtotal	48.260,87 Eur
FSAC (overheads) 15% of subtotal	7.239,13 Eur
TOTAL	55.500,00 Eur

Current status

Activity	Eur
MC/WG meetings + Workshop (Malta)	45.460,87 Eur
STSMs	800,00 Eur
Dissemination (Website)	2.000,00 Eur
OERSA (Bank charges)	0 Eur
Subtotal	48.260,87 Eur
FSAC (overheads) 15% of subtotal	7.239,13 Eur
TOTAL	55.500,00 Eur

7. Update from the COST Association

Presentations of

Dr. Fatima Bouchama – Science Officer

Ms. Cassia Azevedo – Administrative Officer

8. Monitoring of the Action

Things went as planned.

Malta meeting: will take place as originally planned

Website: ready

STSMs: done

Grant Period 2: Activities almost defined (MC meeting, WG meetings, STSMs...)

9. Implementation of COST policies

a) Promotion of gender balance and Early Career Investigators (ECI)

Action's members (member = who registered on the Action website)

Total: 48

Male: 45

Female: 3

ECIs: 10

Core Group (Chair, Deputy Chair, WG leaders and Deputy Leaders, Manager)

Total: 11

Male: 10

Female: 1

ECIs: 3

STSMs: 1 (Male, ECI)

MoU

Gender balance. QTSpace already includes a significant representation from female scientists (in line with typical percentage in the community). The Action will ensure that female members of QTSpace take leading roles in its management. Moreover, suitable measures will be taken to facilitate the participation of female scientists to any meeting of QTSpace, whenever necessary (for example in the form of childcare facilities). Finally, the Action will liaise with any country-specific initiative for the enhancement of the participation of women in science to establish factual joint-programme for the stimulation of a balanced contribution from all genders.

Early Career Investigators (ECIs). Significant space will be given to ECIs as speakers at workshops and conferences. ii. Participation of ECIs to Action's events will be supported through targeted measures of financial support. iii. WG Vice Leaders will be selected among ECIs (or, in any case, among junior researchers). iv. In the selection of STSMs, priority will be given to ECIs.

9. Implementation of COST policies

a) Promotion of gender balance and Early Career Investigators (ECI)

Gender Balance. More needs to be done.

Talks of our STSM manager & COST Mission and Policies Supervisor Catalina on the role of women in science

1. <http://edu.Inf.infn.it/international-day-of-women-and-girls-in-science-2017/>
(10th February 2017 – Frascati)
2. <http://w3.Inf.infn.it/career-day-giornata-allinsegnamento/>
(4th April 2017 – LNF Open Days)
3. Scheduled talk at TEDx Brasov (Romania)

ECIs. Things are going better than what the numbers show. Many simply did not register on the website yet.

In general. The Action still needs to be better known in the community

9. Implementation of COST policies

b) Inclusiveness

Action participating countries

Total: 25

ITCs: 10

Action's Members

Total: 48

ITCs: 15

Core Group

Total: 11

ITCs: 3

Events: GP1 (100% in ITCs), GP2 (33% in ITCs)

As per MoU: at least 30% in ITCs

MoU

ITC participation. QTSpace will be advertised to colleagues working in ITCs to encourage their active participation in the Action, above and beyond the level of participation from such countries that have already been secured (9 countries already). Action members from ITCs will be given leading roles in the Action and at least 30% of the QTSpace events will be organized in ITCs.

Inclusiveness countries: Bosnia-Herzegovina, Bulgaria, Cyprus, Czech Republic, Estonia, Croatia, Hungary, Lithuania, Latvia, Luxembourg, Malta, Montenegro, Poland, Portugal, Romania, Slovenia, Slovakia, the former Yugoslav Republic of Macedonia, Republic of Serbia and Turkey.

9. Implementation of COST policies

b) Excellence

Major scientific actors: contacted/involved

Space Agencies

- ESA (Bruno Leone, Eamonn Murphy, Eric Wille – attending the meeting)
- ASI (Roberto Battiston - President, Daniele Dequal – attending the meeting)

Companies

- Airbus (Paolo Bianco – attending the meeting)
- OHB Systems (Norbert Lemke, Matthias Lettner – the latter attending the meeting). Satellite and space technology company. It has experience in the development and building of several satellites, including satellites for the Galileo positioning system.
- Thales Alenia (Cyril Michel). One of Europe's largest satellite manufacturers and built several satellites and modules for the International Space Station.
- Tesat Spacecom (Herwig Zech). Owned by Airbus Defense & Space, is an expert in space communication and the world-leader in optical satellite communication technology. Several of its Laser Communication Terminals already operate within the European Data Relay System that serves several environmental observation satellites.

10. Follow-up of MoU objectives: progress report of working groups

Challenge: Develop core technologies for space applications of quantum mechanics and the understanding of the foundations of physics.

1. Identify fundamental questions to be addressed as well as the scientific/technical requirements to perform related experimental tests in space.
2. Identify possible applications of quantum technology in space, define the scientific and technical requirements.
3. Identify principles that should be demonstrated on ground, coordinate which experiments to perform.
4. Share knowledge with respect to available technologies and experimental techniques for performing experiments in space-relevant settings.
5. Identify common challenges regarding technology needs, mission parameters, mission design.
6. Technology development in international cooperation, with space agencies and with industrial partners.
7. Share experience and coordinate efforts in hardware testing in space-relevant environments (vibrations, radiation hardness, vacuum, cryogenic environment, temperature cycling, etc.).
8. Identify funding opportunities, communication with funding agencies.
9. Further broaden international support by researchers and their respective national space agencies.
10. Identify and coordinate technology-development or mission-proposal opportunities, communication with industry and space agencies.
11. Identify common ground and possible synergies.
12. Exchange know-how related to hardware testing, space-relevant proof-of-principle experiments, data acquisition and evaluation, mission design, ground-segment operation.
13. Share relevant contacts to industry, funding agencies and national agencies.

10. Follow-up of MoU objectives: progress report of working groups

	Mon. 27	Tue. 28	Wed. 29	Thu. 30
9:00	MC Meeting	WG2: E Murphy (30) WG2: S Plant (30) WG2: S Schiller (30)	WG3: W von Klitzing (45) WG4: B Leone (45)	Dinkelaker (25+5) Bedington (25+5) Pugh (25+5)
9:30				
10:00				
10:30	Coffee break	Coffee break	Coffee break	Coffee break
11:00	Coffee break	WG2: S Joshi (30) WG2: D Vitali (30) WG2: Guided discussions	WG4: M Lettner (30) WG4: P Bianco (30) WG4: Guided discussions	Makarov (25+5) Oi (25+5) Zimboras (25+5)
11:30	Plenary Session			
12:00				
12:30	Lunch	Lunch	Lunch	Lunch
13:00				
13:30	WG1: S Donadi (30) WG1: D Bruschi (30) WG1: A Roura (30)	WG4: E Beckert (45) WG3: P Villoresi (45)	Quantum Technology in Space Roadmap Discussions	Roediger (25+5) Guenther (25+5) Dequal (25+5)
14:00				
14:30				
15:00	Coffee break	Coffee break	Coffee break	Coffee break
15:30	WG1: T Sumner (30) WG1: G Genta (30) WG1: Guided discussions	WG3: J Bateman (45) WG3: Guided discussions	Carlesso (25+5) Gagatsos (25+5) Diosi (25+5)	Wrap-up: WGs
16:00				
16:30				Wrap-up: Roadmap
17:00	Quantum Technology in Space Roadmap Discussions	Quantum Technology in Space Roadmap Discussions	Break	Break
17:30			Pelucchi (25+5) Arnold (25+5) Stefanov (25+5)	Closure
18:00				
18:30	Free-discussion time & posters	Free-discussion time & posters	Free-discussion time	
19:00				

GP1 Goals

1. Identify the most relevant fundamental questions to be addressed, for space missions; initiate the discussion about the scientific/technical requirements.
2. Identify first applications of quantum technology in space; initiate the discussion about the scientific and technical requirements.
3. Initiate the discussion about principles that should be demonstrated on ground before launching a space mission.
4. Initiate the discussion about common challenges on technology needs for space missions, mission parameters, mission design, technology.

During the meeting we will evaluate the status quo of QT in space, assessing all aspects relevant for fundamental concepts, applications, proof-of-principle experiments and implementations which are the four pillars defined as working groups (WGs) of the COST Action QTSpace. The community will gather insight into the possibilities for near-future missions. We aim to transfer knowledge and mature expertise coming from prominent scientists interested in the fields of quantum science/technology and space, which we aim to merge further. We plan to make available to everyone the gathered information in the form of a contemporary proceedings publication.

11. Scientific planning

a) Scientific strategy (MoU objectives, GP Goals, WG tasks and deliverables)

GP1 Goals

1. Identify the most relevant fundamental questions to be addressed, for space missions; initiate the discussion about the scientific/technical requirements.
2. Identify first applications of quantum technology in space; initiate the discussion about the scientific and technical requirements.
3. Initiate the discussion about principles that should be demonstrated on ground before launching a space mission.
4. Initiate the discussion about common challenges on technology needs for space missions, mission parameters, mission design, technology.

GP2 Goals

1. Identify potential industrial partners and their specific interests for quantum technologies in space
2. Identify potential applications of quantum technology in fundamental tests of physical principles in space
3. Define the state of the art of proof of principle experiment relevant for quantum experiments in space and expectations for tests needed in the near future.
4. Identify experimental ideas for implementing quantum technologies in space and define a brief guideline of implementation challenges, including the identification of the theoretical developments needed to enable such experimental endeavours.
5. Train researchers, as well as private and public sector stakeholders, interested in quantum technologies in space.

MALTA MEETING

11. Scientific planning

a) Scientific strategy (MoU objectives, GP Goals, WG tasks and deliverables)

WG1: Fundamental Studies

TASKS

- T1.1) Evaluate tests of fundamental theories in a space environment.
- T1.2) Evaluate experimental possibilities to test fundamental theories.
- T1.3) Explore the possibility of joint space mission for the different experimental platforms.

DELIVERABLES

- D1.1) List of experiments with different physical systems [scientific paper].
- D1.2) List of fundamental tests [report].
- D1.3) List of key parameters to enable tests [technical paper].
- D1.4) Information about possible joint mission [report].

WG2: Applications

TASKS

- T2.1) Technology developments (from proof of principles to applications) with industrial partners.
- T2.2) Link to industry partners to develop enabling technologies for space experiment.
- T2.3) Investigate applications of quantum technologies outside fundamental tests.
- T2.4) Investigate the need of society and industry for QT in space.

DELIVERABLES

- D2.1) At least two identified concrete applications of QT in space [white paper].
- D2.2) List of technical requirements for each application [technical paper].
- D2.3) Two alternative paths for each realization of applications in D2.1 [technical paper].
- D2.4) Industrial partners identified with interest/need in QT in space [report].

WG3: Proof-of-Principle Experiments

TASKS

- T3.1) Define the experimental details of each envisaged test in space.
- T3.2) Check the technical availability for space approved technology.
- T3.3) Definition of outstanding proof-of-principle tests.
- T3.4) Planning of Earth-based tests: parabola flights, drop tower, sounding rockets etc.

DELIVERABLES

- D3.1) List of experimental parameters to be reached for each envisaged test [scientific paper].
- D3.2) List of status quo of technology in space [review paper].
- D3.3) Delivery of realistic time schedule for outstanding proof-of-principle tests [scientific paper].
- D3.4) Plan for strategic preparation of space missions based on experimental reality [white paper].

WG4: Implementation

TASKS

- T4.1) Identify common challenges regarding technology needs, mission parameters and design.
- T4.2) Technology development in cooperation with space agencies and industrial partners.
- T4.3) Share experience and coordinate efforts in hardware testing in space-relevant environments.
- T4.4) Further international support by researchers and their respective national space agencies.
- T4.5) Identify and coordinate technology-development and mission-proposal opportunities.

DELIVERABLES

- D4.1) List of mission parameters [report].
- D4.2) List of technology [report].
- D4.3) List of partners [report].
- D4.4) List of opportunities [white paper].

11. Scientific planning

b) Action Budget Planning

GP1

Activity	Eur
MC/WG meetings + Workshop (Malta)	43.690,00 Eur
STSMs	2.400,00 Eur
Dissemination (Website)	2.000,00 Eur
OERSA (Bank charges)	170,87 Eur
Subtotal	48.260,87 Eur
FSAC (overheads) 15% of subtotal	7.239,13 Eur
TOTAL	55.500,00 Eur

GP2

Activity	Eur
MC meeting	20.000,00 Eur
Training School	30.000,00 Eur
WG meetings	40.000,00 Eur
STSMs	8.000,00 Eur
Dissemination	2.800,00 Eur
OERSA (Bank charges)	69,57 Eur
Subtotal	100.869,57 Eur
FSAC (overheads) 15% of subtotal	15.130,44 Eur
TOTAL	116.000,01 Eur

11. Scientific planning

c) Long-term planning (including anticipated locations and dates of future activities)

MC meeting: Lisbon (14th September 2017)

Training School & Workshop & WG2 meeting: Lisbon Summer School and Workshop on Quantum Technology in Space
Lisbon – Portugal (11th-14th September 2017)

WG3 Meeting & Workshop: Workshop on proof of principle quantum experiments in space
Arcachon – France (2nd-8th July 2017)

WG4 Meeting & Workshop: Implementing Quantum Technologies in Space
Erlangen – Germany (6th-8th September 2017)

Lisbon School & Workshop on Quantum Technology in Space



Lisbon – Portugal
11th – 14th September 2017

School: it will cover topics of the COST action in order to train the participants in the context of space technology and terminology and provide an overview of existing efforts to harness quantum technology in space.

Workshop: Scientific talks will cover the four central target communities of the action: (1) quantum communication, (2) atom interferometry, (3) atomic clocks, and (4) quantum optomechanics and high-mass matter-wave interferometry. There will be a poster session in parallel with an exhibition of space-related companies. There will be an afternoon session with a focus on **Working Group 2**.

Workshop on proof of principle quantum experiments in space



Arcachon – France
2nd – 8th July 2017

WG3 meeting & workshop. It will run in parallel to the conference ICOLS2017 (<http://icols2017.org>), which brings together world leading experts in AMO physics and spectroscopy - many of them relevant for quantum technologies in space.

Some invited speakers / participants will be paid thorough COST; other speakers will be chosen among participants to ICOLS. A round table discussion on the WG3 topic [proof of principle experiment for QTSpace] will be organised, open also to ICOLS participants.

Implementing Quantum Technologies in Space



Erlangen – Germany
6th – 8th September 2017

WG4 meeting & workshop. The meeting will provide for a platform to discuss the interplay between interesting experimental proposals and realistic implementation hurdles. The effective 3 day meeting should also kick-start concrete contacts

between industry, applied research institutes and more fundamental groups in academia. It will have several sessions with talks and posters, round table discussions and also networking get-togethers.

11. Scientific planning

d) Dissemination planning (Publications and outreach activities)

Website QTSpace (main activity)

- Public area: for the wider community
- Reserved area: for registered members (registration is moderated)
- Collect information for statistics and reports
- Newsletter service (create an “official” communication channel)

Publications: too early.

But already implemented on the Action website.

Video: yet to be defined. Else?

“State of the art” in QTSpace: output of Malta meeting.

12. Requests to join the Action

a) COST countries

Still via CNC

b) Institutions in Near Neighbouring Countries, International Partner Countries, and/or Specific Organisations: EU agencies, European RTD Organisation, International Organisations

No new request

13. AOB

Ask the MC to delegate the CG to decide on requests of “International Conference Grants”, according to the COST rules,

14. Location and date of next meeting

Lisbon – Portugal: 14th September 2017

15. Summary of MC decisions

The CG has been delegated to decide on requests of “International Conference Grants”.

16. Closing

Many thanks to:

- The COST Association (Fatima and Cassia)
- The MC
- The CG
- Special thanks to Mauro and André

REMEMBER to sign the attendance list.