

Dublin, Ireland, 16-18 January 2019

SUBJECT | Minutes of the 9th Management Committee Meeting of COST Action CA15104 "Inclusive Radio Communication Networks for 5G and beyond (IRACON)"

16 JAN 2019

1. Welcome to participants

Prof. Claude Oestges, Chair of the Action, opened the meeting on January 16th, 2019, at 9.00 am. The participants were welcomed by the Local Organizer, Prof. Conor Brennan, Dublin City University. Information about the local arrangements were provided to the audience.

The Chair acknowledged the fulfilment of the quorum, i.e. at least two thirds of the COST countries participating in the Action are represented at the 9th MCM.

2. Adoption of agenda

The agenda of the 9th MCM was adopted without modifications, based on the online version previously circulated.

3. Approval of minutes and matters arising from last meeting (MCM7, Cartagena and MCM8, Podgorica)

As previously anticipated by the Chair, the meeting in Dublin was the occasion to approve the minutes of the previous two meetings: 7th meeting in Cartagena and 8th meeting in Podgorica.

With no further comments from the attendees, the minutes of both events were officially approved.

The Chair reminded to sign the official attendance list for each day of the meeting attended and to sign one attendance list for each WG/EWG attended. No reimbursement of travel expenses (for those entitled to) will be processed if attendance lists are not duly signed.

The Newsletter Meeting among the members of the steering committee will take place on Wednesday at 6 pm sharp in the room "PG09".



4. Status of the Action

The Chair moved on to update the audience on the overall status of the Action. Here below the main figures presented:

Partners

- Number of signatory countries: **35** (out of 36)
- Number of MC Members: **66** (+ Chair)
- Near Neighbour Country Institutions: **4** approved
 - National Research Tomsk Polytechnic University Russian Federation
 - YK State University of Grodno Belarus
 - RUDN University Russian Federation
 - University of Prishtina Kosovo
- International Partner Country Institutions: **13** approved and activated, **1** conditionally approved:

Beijing Jiaotong University	China
Tokyo Institute of Technology	Japan
Comsearch	United States of America
NIST	United States of America
Samsung Electronics Co.	Korea, Republic of
Japan Advanced Institute of Science and Technology	Japan
Motorola Mobility LLC	United States of America
Universidad Icesi	Colombia
Niigata University	Japan
Northeastern University	United States of America
CSIR	South Africa
Huawei Device Company	China
ETS	Canada
University of Canterbury	New Zealand

The Chair reminded that contributing to the Action is important and that Action participants must fulfil some obligations, namely:

COST Country institutions & Near Neighbour Country institutions

- Commitment to have contributions (TD, tutorial, etc.) at least at **ONE** meeting / training school per year
- Deregistration from the internal website access if not fulfilled

International Partner Country Institutions

The Chair reviewed the rules for accepting an IPC in the Action, i.e.:

- mutual benefit (COST rule)
- scientific excellence (Universities)
- role in industrial context (Industries)



- technical topics and WGs addressed
- geographic balance

The obligations for IPCs are similar to those of the other Partners:

- Commitment to have contributions (TDs, tutorial, etc.) at **TWO** meetings/training schools per year
- Deregistration from the internal website access if not fulfilled

Important Reminders

The Chair went on to remind the participants about some important procedures and internal rules of the Action, such as: reimbursement eligibility, deadlines and procedures, e-Mailing and acknowledgments.

DEADLINES AND PROCEDURES

The Chair reminded everyone to request TD numbers and submit TDs on time!

- TD submission
 - ✓ Request a TD number (usually **20 days** before the meeting)
 - ✓ Send to the secretary a full TD (**10 days** before the meeting) using the cover page available on the website

These deadlines are set to enable the StC to prepare the meeting schedule

- Meeting registration: two actions are required
 - ✓ Register on IRACON website (**20 days** before the meeting)
 - ✓ Accept the e-cost invitation
- Reimbursement (for those entitled to)
 - ✓ Accept the e-cost invitation
 - ✓ Fill the the e-cost and submit the claim (after the meeting)

The reimbursement procedure MUST take place on e-cost

- ✓ If you cannot attend but are replaced by an eligible substitute
 - Send a request to the Chair and GH (cc: secretary) at least **20 days** prior to the event to enable the reimbursement of your official substitute

Those entitled to a reimbursement should always keep their original supporting documents (tickets, receipts, invoices), even after uploading the claim on the e-COST.

E-MAILING AND ACKNOWLEDGMENT

The Chair reminded that is it very important to acknowledge the Action, because it is one of the few metrics to show that the Action is doing well.



- Usage of global reflector
 - ✓ From this meeting on, the global reflector (all_ca15104@iracon.org, **moderated**) should not be used to advertise events (outside those of the Action itself)
 - ✓ Ask Alice (a.baldini@unibo.it) to include your announcement on the IRACON Web Page
- WG reflectors have been created
- **Acknowledge COST CA15104 IRACON on all joint publications**
 - *This work was carried out in the framework of COST Action CA15104 IRACON*
 - *The authors acknowledge the fruitful discussions in COST Action CA15104 IRACON*

Afterwards, the Chair reported about the activities, events and dissemination actions that had taken place since the last MC meeting in Podgorica and reviewed the future steps:

October 2018

8th MCM (Podgorica, 1-3 Oct 2018)
Organized by Enis Koçan
49 TDs
1 invited speaker
76 participants

November 2018

COST Action Sustainability networking event (Brussels, 29 Nov 2018)
IRACON represented by Claude Oestges

November 2018

4th IRACON Training School (Lyon, France 18-22 November 2018)
Information Theory and Signal Processing for Internet of Things

January 2019

9th MCM (Dublin, 16-18 Jan 2019)
Organized by Conor Brennan
90 TDs (including 4 workshop contributions)
3 invited speakers
131 (!) participants

February 2019

COST Academy - Storytelling: spotting and writing a good story. Getting people to listen (Brussels, 19-20 February 2019)
IRACON to be represented by Luis Correia

March 2019

COST Connect event on "Data sharing" (Brussels, 13-14 March 2019)
IRACON to be represented by ? (we must consider inclusiveness criteria)

ECI Representative

The Chair reviewed the definition of ECI, i.e. an Early Career Investigator, maximum 8 years after the PhD (in this case no PhD degree after June 1, 2010).

The role of the ECI Representative in the Core Group (one-year mandate) is to participate in the core group discussions and in the preparation of the MC meetings Newsletter as editor and blog moderator.

The ECI Representatives of the previous/current Grant Periods were:

- Margot Deruyck (BE) was elected for Year 1
- Luca Feltrin (IT) was elected for Year 2
- Conchi Garcia Pardo (ES) was elected for Year 3

The election of the next ECI Representative for Year 4 will take place during the 10th MC meeting in Oulu, in May 2019. Applications are welcome. The GH Secretary will send an email with the deadlines and the procedure to follow.

5. Review of action deliverables

The Chair updated the participants on the status of the technical deliverables (in green the deliverables already provided):

Technical deliverables for the first two years

- **Deliverable 1 (M14, May 2017):** Working Groups first year term annual report summarising the achievements of every WG → all WGs
- **Deliverable 2 (M20, November 2017):** Overview of IRACON Reference Scenarios and assessment of 5G radio access techniques through experimental platforms → WG3, EWG-RA
- **Deliverable 3 (M24, March 2018):** Submission to international bodies of contributions about concerted 5G radio channel models → WG1
- **Deliverable 4 (M24, March 2018):** Collaborative white paper on new localization techniques suitable for 5G and the Internet of Things → EWG-LT+IoT
- **Deliverable 5 (M26, May 2018):** Working Groups second year term annual report summarising the achievements of every WG → all WGs



Technical deliverables for the last two years

- **Deliverable 6** (M36, March 2019): Collaborative white paper on future architecture and protocols for the Internet of Things → **EWG-IoT**
- **Deliverable 7** (M38, May 2019) : Working Group third year term annual report summarising the achievements of every WG → **all WGs**
- **Deliverable 8** (M42, September 2019): Technical inputs and liaison statements to Standardisation Groups on metrics for Over the Air (OTA) testing
→ **EWG-OTA**
- **Deliverable 9** (M42, September 2019): IRACON concerted radio channel models for 5G and beyond (draft book chapter) → **WG1**
- **Deliverable 10** (M50, May 2020): Working Group final report summarising the achievements of every WG in the overall Action (draft book) → **all WGs**

The Chair focused particularly on the timelines of Deliverables 6 and 7, to be submitted respectively in March and May 2019.

DELIVERABLE 6 TIMELINE

Edition

- ✓ WG chairs are the editors

Content

- ✓ Defined by WG(s)

Schedule

- ✓ Draft version by this meeting
- ✓ Delivery by March 31, 2019

DELIVERABLE 7 TIMELINE

Edition

- ✓ WG chairs are the contributors
- ✓ Chair and Vice-Chair are the editors

Content

- ✓ 1 page per WG/meeting
- ✓ Scientific results and dissemination activities (no equations!)
- ✓ Will be published on IRACON website

Schedule

- ✓ Draft version by March 31, 2019
- ✓ Delivery by May 31, 2019



6. Final Book

The Chair provided an update on the preparation of the Action's final book, which is intended as a report on the TDs presented throughout the 4 years.

He presented the different options and publishers available to publish the Final Action Book. The MC unanimously agreed to choose an open access publication, which will be covered by the Final Action Dissemination Grant to be requested by the Chair.

The final Table of Contents was reviewed:

1. Introduction

2. Radio propagation modelling methods and tools

- 2.1 5G and beyond propagation environments
- 2.2 Channel model classification
- 2.3 Algorithms for estimation of radio channel parameters

3. IRACON measurements and channels for 5G and beyond communications

- 3.1 Measurement scenarios
- 3.2 Millimetre wave and THz channels
- 3.3 MIMO and massive MIMO channels
- 3.4 Fast time-varying channels
- 3.5 Electric properties of materials for 5G channel simulators

4. Over-the-Air testing for 5G

- 4.1 Field emulation for electrically large test objects
- 4.2 Emulation of millimetre wave channels
- 4.3 Emulation techniques for testing hardware internals

5. Coding and processing for advanced wireless networks

- 5.1 Advanced waveforms, coding and signal processing
- 5.2 Distributed and cooperative PHY processing in wireless networks
- 5.3 Massive MIMO
- 5.4 Implementation and HW driven solutions and full duplex communications

6. 5G and beyond networks

- 6.1 Wireless connectivity
- 6.2 Spectrum management and sharing
- 6.3 Scheduling and RRM
- 6.4 5G radio access platforms
- 6.5 HetNet and UDN
- 6.6 CRAN
- 6.7 SDN and NFV
- 6.8 UAVs
- 6.9. Application domains and solutions

7. IoT protocols, architectures and applications

- 7.1 Low power Wide Area Networks
- 7.2 Routing and MAC protocols for IoT
- 7.3 Vehicular communications
- 7.4 Energy efficient/constrained solutions for IoT
- 7.5 Software Defined Networking and Virtualization for IoT
- 7.6 Special applications of IoT

8. IoT for healthcare applications

- 8.1 Nano-communications
- 8.2 Wearable and implantable IoT-Health Technology
- 8.3 IoT-Health Networking and Applications



9. Localization and tracking

- 9.1 Measurement acquisition, modeling, and performance limits
- 9.2 Positioning methods, data fusion and tracking
- 9.3 Channel modeling and multipath exploitation
- 9.4 System study and system-level performance analysis
- 9.5 Testbed and prototyping activities

10. Future trends in communications, networking and beyond

7. Action sustainability

The Chair moved on to update the attendees on the action sustainability. Anyone with ideas is warmly encouraged to present their contributions on a shared document, which will remain open.

8. Report from the Grant Holder

On behalf of the Grant Holder – Prof. Roberto Verdone – the Chair reviewed the changes to the budget allocation, which had been approved following a budget top-up from COST:

1. Increase the LOS for the training schools in Dublin and Lyon (from 1000 EUR to 3000 EUR);
2. Increase the number of training school grants;
3. Increase the number of STSMs and the maximum budget per each STSM (from 1200 EUR to 1500 EUR)
4. Add and partially fund (through grants(reimbursements) one training workshop, to be held Dublin.



He then showed the **Updated Work and Budget Plan for Y3**, after the top-up:

Top-up: 28 748.06 EUR		
Networking Tool	Description	Budget
Meetings	3 MCMs	127 676.82 EUR
Training Schools	3 TSs	48 631.50 EUR
STSMs	At least 12 STSMs	14 400.00 EUR
ITC Conference Grants	Conference grants	4 600.00 EUR
Other Expenses Related to Scientific Activities	Bank fees	976.50 EUR
Total Science Expenditure		196 284.82 EUR
Financial and Scientific Administration and Coordination (MAX. 15%)	15 %	29 442.72 EUR
Total Grant		225 727.54 EUR

As well as the current **Status of expenditures** and the expected final balance:

Steps		Budget
Total Grant, after top-up		225 727.54 EUR
1st Instalment received (August) → 50% pre top-up		98 489.74 EUR
Budget for science		85 643.25 EUR
Reimbursements for Cartagena (<i>completed</i>)		39 272.75 EUR
Reimbursements for Podgorica (<i>completed</i>)		44 010.61 EUR
Reimbursement for EuCNC 2018 (<i>completed</i>)		743.26 EUR
ITC Conference Grants	3	2 025.00 EUR
STSMs	3+2	5 200.00 EUR
Bank fees / OERSA (approx.)		1 110.00 EUR
Balance		- 6 718.37 EUR
Estimated cost of Dublin (workshop + meeting)	> 73 people	58 880.00 EUR
Expected balance on 30 April 2019		~ 3 000.00 EUR



9. Report from Training Manager (STSMs, Training Schools and Tutorials)

The Training Manager, Prof. Laurent Clavier, reviewed the list of Training School that had taken place in the previous Grant Periods:

2017/2018

4th Training School: IRACON/Met5G Training School on interference in 5G – April 16-17, 2018 Guildford, Surrey, UK .

3rd Training School: VTS PT Chapter/COST-IRACON Joint Winter School on Beyond 5G Networks operating in the Millimetre Wavebands enabled by Joint Analogue-digital Signal Processing – March 5-9, 2018 Lisbon, Portugal

2nd Training School: ESoA/COST-IRACON Joint Training School on Large Scale Radio Propagation – June 12-16, 2017 Louvain-La-Neuve, Belgium

2016/2017

1st Training School: WIBEC/COST-IRACON Joint Training School on Antennas and Propagation Modeling for Body Environment Communications – May 1-3, 2017 Dresden, Germany

Then he presented the Training Schools, which took or will take place during GP3, namely:

IRACON Winter School on Information Theory and Signal Processing for Internet of Things – 18-22 Nov 2018, Lyon, France.

Planned

April 8-11

Training School on Machine Learning and Wireless Communication.

Barcelona

CTTC, Carles Anton, Adriano Pastore.

And the proposed training schools for GP4, which are still being discussed:

Proposal

End 2019 Winter School on System Level Optimization and Waveforms in Radio Communication Networks for 5G and Beyond"

With Marie Curie action TeamUp5G MSCA ITN

Fernando Velez

The upcoming Training School in Barcelona was then presented more in details, with the collaboration of the Local Organisers Carles Antón-Haro (CTTC) and Adriano Pastore (CTTC):



TRAINING SCHOOL ON 'MACHINE AND DEEP LEARNING TECHNIQUES FOR (BEYOND) 5G WIRELESS COMMUNICATION SYSTEMS'

April 8-11, 2019, Castelldefels (Barcelona)
Centre Tecnològic de Telecomunicacions de Catalunya (CTTC)

This training school will revolve around the application of Machine and Deep Learning techniques to the design of (beyond) 5G communication systems, with particular emphasis on physical and lower layers. The training school will comprise keynote and **tutorial lectures** by renowned researchers from academia and industry, **focused presentations** on recent advances in this research field, **panel discussions**, and **hands-on sessions**.

This training school is open to all but *young PhDs* and *early-stage researchers* in electrical engineering, computer science or related fields are particularly welcome to attend and participate!

The program includes a student poster session and a Machine Learning challenge.

Confirmed speakers (list to be completed):

Mérouane Debbah (Huawei Paris, FR)

Sebastian Cammerer (U. Stuttgart, Germany)

Yair Be'ery (Tel-Aviv University, Israel)

Deniz Gunduz (Imperial College, London, UK)

Oswaldo Simeone (King's College London, UK)

Finally, the Training Manager reviewed the list of STSMs that had been organised throughout the Action:

STSMs for GP1

Spain (x2), Austria, Denmark (x2), Croatia, Belgium, Italy (x3), Germany (x2), France (x3), Finland (x2), Portugal, Bosnia and Herzegovina (x2)

1. Multi-bands MIMO dual-Pol measurements and characterization of Radio Propagation for future 5G and B5G Wireless systems
2. Spatial Consistency in 5G Radio Channel Propagation mm-wave Spectrum
3. Characterization and Modeling of the MIMO Radio channel in the W-band
4. Concealed, Chassis Integrated, Pattern Reconfigurable, Automotive Antenna
5. Over-the-air performance evaluation of massive MIMO antenna systems in anechoic chambers
6. Implementation and measurement of 5G waveform candidate using OpenAirInterface
7. Introducing Multiple UAV Trajectories in UAV-Aided B5G Networks
8. Impact of Radio Channel on the Performance of ALOHA-based Medium Access Control Schemes
9. Experimental Characterization of Joint Scheduling and Routing algorithm over 6TiSCH
10. Performance Evaluation of MCF (minimum cost forwarding) and SRMCF (source routing MCF) routing protocols over 6TiSCH (IPv6 over the TSCH mode of IEEE 802.15.4e)



STSMs for GP2

11 accepted – 2 rejected – 1 cancelled

Sweden (x5), Belgium, Austria (x2), UK, Finland, Spain (x3), Poland (x2), Portugal (x3), Italy, Russia, France, Germany

1. Measurement and Characterisation of a Real-Time Channel Emulator based on a Software Defined Radio
2. Characterization and design of mm-wave antennas for 5G
3. Polarised Off-body Channel Measurements with Dynamic User
4. Simulations of the radio channel in off-body communications in a passenger ferry environment
5. 5th Generation (5G) Communications: Parameterizing COST2100 at 60 GHz for the establishment of simplified user scheduling for Massive MIMO
6. Full-Duplex device-to-Device Communications
7. Implementation of Low-complexity Hybrid Analogue-digital Solutions in CAP-MIMO
8. Power-efficient and reliable mm-wave communications in dynamic environments
9. Design RF devices in millimetres with glide-symmetry structures
10. Tactile internet enabled Drone Control over LTE for Ultra-Dense Cloud Drone Networks
11. Elaboration and description of multipath propagation for mmW

STSMs for GP3

11 submitted - 5 accepted – 5 rejected – 1 still under review

Denmark, Belgium (x2), Spain (x2), Croatia, Portugal, Italy, **Russia, USA**

1. Air-to-ground channel characterization at mmWave frequencies
2. New channel estimation algorithms at the physical level to improve the performance of future communications systems relying on the use of a new waveform.
3. Utilization of Advanced RFID Physical Layer Modeling for the Design of Advanced Reception/Transmission Algorithms
4. Modulation based Simultaneous Wireless Information and Power Transfer
5. Robust Bayesian Parametric/Nonparametric Statistical Inference for Indoor Localization, Tracking and Navigation

The reasons why an STSM application could be rejected were summarised as follows:

1. Not enough experience (Master Students) → and a risk of non-continuity
2. Topics a bit far from the core of the activities (antenna design)
3. Involvement in the action questionable ...
4. Application received too late

The Training Manager encouraged the attendees to submit further applications during GP3, as long as the involvement in the action is clear, the subjects are within the Action objectives and they contribute to the networking of active users.

In addition to the online procedure, applicants should send the Training Manager a copy of the workplan, including the requested budget (max: € 1500). The document should include a detail of what will be achieved during the mission, the preparatory work and the outputs (including a TD).



10. Report from Dissemination Manager

The Dissemination Manager, Prof. Luis Correia, reviewed the Dissemination Actions that are taking place, namely:

IRACON SPECIAL SESSIONS

- **EuCAP 2019, Krakow, March 31-April 5, 2019**
→ 2 IRACON special sessions, and 2 IRACON-inspired special sessions

IET / COST session CA15104 (IRACON): Propagation Measurements and Modelling for 5G and Beyond	Sana Salous	Enrico Maria Vitucci
COST session CA15104 (IRACON): Measurements and Simulations in Channel Modelling in Wireless Body Area Network	Krzysztof K. Cwalina	Luis M. Correia
Assessment and Modelling of Antennas and Radio Channels Jointly	Alain Sibille	Ke Guan
Propagation Channels for Wide Sense Vehicle to X Communications	Ke Guan	Uwe-Carsten Fiebig

IRACON WORKSHOPS

- **Joint IRACON-WaveComBE Training Workshop on Radio Channel Modelling for 5G Millimetre Wave Communications in Built Environments, Dublin, 15 January 2019**
 - ✓ Workshop organizers: Narcis Cardona, Sana Salous, Katsuyuki Haneda
 - ✓ 57 participants

PARTICIPATION IN COST-ORGANIZED SPECIAL SESSIONS

- **ICT 2018, Vienna, Dec 4-6, 2018**
 - ✓ COST networking session (organized by Ralph Stübner and Karina Marcus)
 - ✓ IRACON represented by Claude Oestges

He then updated the attendees on the use of IRACON SOCIAL MEDIA:

- A **Dissemination list** will be created specifically to inform about PhD training events.
- The **Leaflet** is meant as a high-level introduction of the Action and it is updated after each meeting.
- The Action **Newsletters** are all available at www.iracon.org under "Publications", a new issue is to be expected after each meeting.

- **Ultan Mulligan** (ETSI)
 - ✓ Standardization Solutions for Researchers
- **Ihab Zine & Philip Caffrey** (COMREG, www.comreg.ie)
 - ✓ Mobile Handset and Building Materials Testing

18 JAN 2019

The Management Committee Meeting resumes on Friday at 11:15 am.

13. Action sustainability

The Chair explained more in detail the rules to submit proposals for the next Action. There should be at least 7 proponents from 7 different countries, but there is no upper limit. Furthermore, a quota with regards to the COST Inclusiveness Target Countries has to be fulfilled, which is equal or greater than 50% (as per COST Action Proposal Submission, Evaluation, Selection and Approval (COST 133/14; http://www.cost.eu/proposal_sesa), chap. 4 and Annex II).

Those interested should send an email to Claude Oestges. It is important that emails are sent from the email address used to create the personal e-COST account, as proponents are added on a e-COST list.

A shared document is made available to everyone who wish to include suggestions.

Proposal rules

1. General features (title, acronym, summary, keywords), *online form*
2. Technical annex (15 pages), [WORD template](#)
 - Section 1. S&T EXCELLENCE
 - Section 2. NETWORKING EXCELLENCE
 - Section 3. IMPACT
 - Section 4. IMPLEMENTATION
3. References, *online form*
4. COST mission and policy

References

- Non mandatory
- Max. 500 words
- Free text section to list relevant references on the topic of the proposal further demonstrating your awareness on the state-of-the-art of the given field(s). The list of references is optional. It is shown to the evaluators, but not assessed during the evaluation.

N.B. In compliance with the eligibility criterion of anonymity, proposers should ensure that the bibliography submitted respects this criterion (see section 3.2 of these Guidelines)

Note on "References": In the "References" section of the proposal, you may quote proposals' work publications, only provided that: a) there is no evidence that the publication is authored by one or more proposers and b) it is only one of a set of other bibliographical references.

5. Network of proposers

The Main Proposer needs to invite the Secondary Proposers through the e-COST Submission tool, by clicking the "Network" section of the proposal under preparation. He/she has then to fill in the mandatory fields (first name, last name and e-mail address. The e-mail address has to be the one that is set as primary address in e-COST).



14. Final book

He then reminded what are the deadlines for the Final Book of the current Action:

SE: Section editors – CE: Chapter editors – BE: Book editors

AP	WHAT	WHO	WHOM	WHEN
B/1	Send draft sections	SE	CE	March 15
B/2	Send draft chapters (tex files, bib files)	CE	BE	April 1
B/3	Send reminders and compile all chapters	BE	-	April 31
B/4	Upload draft book v1	BE	Secretary	MCM 10

15. Future Meetings

The Chair reviewed the next meetings that will be organised within the Action.

UPCOMING MEETINGS

- **10th IRACON MC/technical meeting (with workshop?)**
 - ✓ Dates: 27-29 May 2019
 - ✓ Oulu (FI)
 - ✓ Organizers: U Oulu/Keysight

FUTURE MEETINGS

- **11th IRACON MC/technical meeting (with joint workshop?)**
 - ✓ Dates: 4-6 Sep 2019
 - ✓ Gdansk (PL)
 - ✓ Organizer: Slawomir Ambroziak
- **12th (final) IRACON MC/technical meeting and workshop**
 - ✓ Early 2020 (before March 22), e.g. end of January?
 - ✓ Louvain-la-Neuve (BE)

16. Reports from Working Group Chairs

The detailed WG reports are attached to this document.

DWGs

1. Sana Salous and Katsuyuki Haneda reported about the activities carried out within WG-1 (radio channels)
2. Hanna Bogucka and Jan Sykora reported about the activities carried out



within WG-2 (PHY-MAC)

3. Silvia Ruiz and Hamed Ahmadi reported about the activities carried out within WG-3 (NET)

EWGs

1. Wim Kotterman and Moray Rumney reported about the activities carried out within WG-OTA
2. Erik Ström and Chiara Buratti reported about the activities carried out within WG-IoT
 - ✓ Slawomir J. Ambroziak and Kamran Sayrafian reported about the activities carried out within SWG IoT-Health
3. Carles Anton and Klaus Witrissal reported about the activities carried out within WG-LT
4. Florian Kaltenberger and Mark Beach reported about the activities carried out within WG-RA

17. Liaisons with International Bodies, Standards and Projects

The Action is involved with several international bodies and other projects:

- **3GPP** – Moray Rumney
- **URSI** – Sana Salous
- **ITU-R** – Sana Salous and Belen Montenegro
- **H2020 5G-XCAST** – Narcis Cardona
- **H2020 5G X-haul** – Mark Beach
- **CommNet** (EPSRC network) – Mark Beach
- **IEEE 1900.6** – Kostas Katzis
- **EurAAP** – Claude Oestges
- **EURACON** – Roberto Verdone
- **WiBEC** – Conchi Garcia
- **5G initiative** – Fernando Velez
- **Met5G** – Tim Brown
- **Clear5G** – Haibin Zhang
- **Wavecombe** – Sana Salous/Narcis Cardona
- **5G-VINNI** – Per Hjalmar Lehne
- **5G-EVE** – Florian Kaltenberger
- **EMPOWER** – Per Hjalmar Lehne



18. Close of Meeting

ACTION POINTS

AP	WHAT	WHO	WHOM	WHEN
9/1	Submit reimbursement forms	Those entitled to	e-cost	Jan 28
9/2	Send Minutes of Group Meetings	Group Chairs	Chair + Secretary	Jan 28
9/3	Send STSM Applic.	Those interested	e-cost + Training Chair	Open call
9/4	Send ITC Conf. Grant Application	ITC ECIs	e-cost + Action Chair	Open call
9/5	Register to 10th MCM	Attendees	Website	May 6
9/6	Request TD number	Authors	Website	May 6
9/7	Submit TD	Authors	Website	May 16



List of Annexes

Annex 1- Agenda

Annex 2- Chair's Presentation

Annex 3- List of persons entitled for reimbursement

Annex 4- TDs list

Annex 5- TDs Schedule

Annex 6- Attendance lists

Annex 7- Report on WIBEC

Annex 8- Report on VINNI + EMPOWER