

Oulu, Finland, 27-29 May 2019

**SUBJECT** | Minutes of the 10<sup>th</sup> Management Committee Meeting of COST Action CA15104 "Inclusive Radio Communication Networks for 5G and beyond (IRACON)"

**MONDAY, 27 MAY 2019**

## **Welcome to participants**

Prof. Claude Oestges, Chair of the Action, opened the meeting on May 27<sup>th</sup>, 2019, at 10.00 am. The participants were welcomed by the Local Organizer, Prof. Pekka Kyösti, University of Oulu. 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 10th MCM.

### **1. Invited speakers**

The first part of the meeting was dedicated to the Keynote Sessions. Four speakers coming from as many Finnish companies were introduced by Prof. Pekka and gave the following presentations:

Keynote 0: **Matti Latva-aho** (Centre for Wireless Communications Oulu, Director of 6G Flagship program), on: *Challenges for 6G*

Keynote 1: **Janne Kolu** (Keysight Technologies)

Keynote 2: **Olli Liinamaa** (Nokia), on: *5G for Business-Critical Industry - Practical Experiments*

Keynote 3: **Kimmo Hyrynkangas** (Verkotan), on: *The future of Big Antenna Testing*

### **2. Adoption of agenda**

After the keynote sessions, the Chair presented the agenda of the 10<sup>th</sup> MCM, which had been previously circulated online. The Agenda was adopted without modifications.

The Chair took the opportunity to remind all participants to sign the official COST Attendance List for every day of attendance and to sign only once the attendance list of every WG/EWG session attended. No reimbursement of travel expenses (for those entitled to) will be processed if the attendance lists are not duly signed.

Finally, the attendees were informed that the Newsletter Meeting, involving the



Members of the steering committee, will take place on Tuesday at 6:00 pm in the plenary room.

### 3. Approval of minutes and matters arising from last meeting (MCM9 - Dublin, Ireland)

With no further comments from the attendees, the minutes of the 9<sup>th</sup> MC Meeting, previously circulated online, were officially approved.

### 4. Status of the Action

The Chair moved on to update the audience on the overall status of the Action. Since the last meeting in Dublin, no new Partners have become part of IRACON. The University of Canterbury from New Zealand had been previously approved as Partner, but they have never participated in the Action’s event, therefore their participation is still to be finalised.

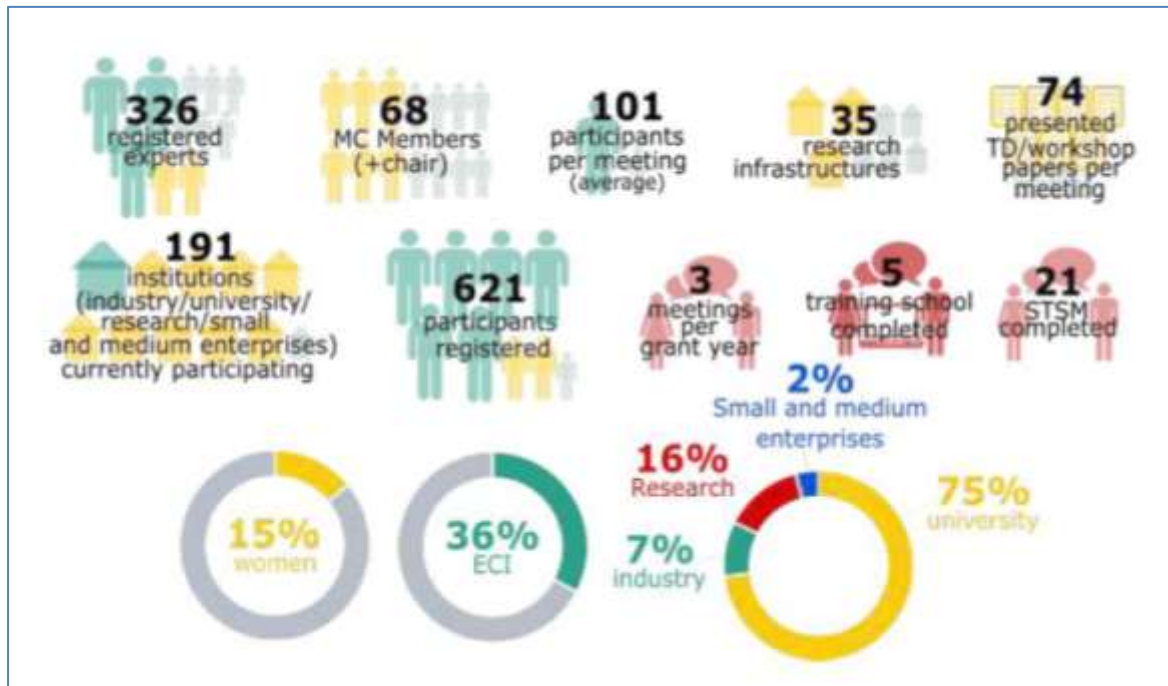
Here below the main figures presented:

#### 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



### Important Reminders: Deadlines and Procedures

The Chair went on to remind the participants about some important procedures and internal rules of the Action, such as: TD submission, meeting registration, reimbursements and acknowledgments.

- TD submission

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

- ✓ 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

It's important to meet the deadlines, as these are set to enable the StC to prepare the meeting schedule.

Indeed, some late TD requests were rejected because there was no more time to prepare the allocation.

- 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 (before the meeting)
- ✓ Fill the e-cost and submit the claim (after the meeting)



Reimbursement claims must be submitted on time, the risk being that everyone's reimbursement process is slowed down.

The reimbursement procedure MUST take place on the e-COST.

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

If you cannot attend and wish to be 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.

### **Important Reminders: e-Mailing and Acknowledgment**

- Usage of global reflector
  - ✓ The global reflector ([all\\_ca15104@iracon.org](mailto:all_ca15104@iracon.org), moderated) should not be used to advertise events (outside those of the Action itself)
  - ✓ If you need to circulate a message among the IRACON members, the correct procedure is to ask Alice ([a.baldini@unibo.it](mailto:a.baldini@unibo.it)) to include your announcement on the IRACON website, in the "News" section
- Furthermore, WG reflectors have been created to circulate messages that are specifically related to WG issues
- COST CA15104 IRACON should be acknowledged on all joint publications, as follows:
  - ✓ *This work was carried out in the framework of COST Action CA15104 IRACON*
  - ✓ *The authors acknowledge the fruitful discussions in COST Action CA15104 IRACON*

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

After reviewing the main procedures, the Chair briefly summarised the most recent events that took place within the Action, namely:

### **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 represented by Luis Correia, who briefly reported on the event

## **March 2019**

COST Connect event on "Data sharing" (Brussels, 13-14 March 2019)  
IRACON represented by Margot Deruyck, who briefly reported on the event

## **ECI Representative**

The 10<sup>th</sup> MCM was the first meeting of the fourth and last Grant Period of the Action. Thus a new ECI Representative had to be elected for the period 2019/2020.

The Chair reminded everyone what exactly is the definition of ECI, i.e.:

Early Career Investigator, maximum 8 years after the PhD (*no PhD degree* or PhD degree after June 1, 2011)

The role of the ECI representative in the Core Group is to participate in the core group discussions and to prepare the MC meetings Newsletter, as editor and blog moderator. The ECI representatives of the previous year were:

- ✓ Margot Deruyck (BE), elected for Y1
- ✓ Luca Feltrin (IT), elected for Y2
- ✓ Conchi Garcia Pardo (ES), elected for Y3

Two applications were received for Y4:

- ✓ Piotr Rajchowski
- ✓ Nuno Leonor

Piotr Rajchowski presented himself to the audience, whereas Nuno Leonor, who could not be physically in Oulu for the 10<sup>th</sup> MCM, sent a video-presentation of himself and his career. The video was circulated via email and all the ECI attending the meeting were invited to watch the video before the election, scheduled for Monday at 3:45 pm in the plenary room, Saalastinsali.



## 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**
- **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**

Prof. Oestges focused particularly on the timeline of Deliverables 7, to be submitted by June 30, 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 → postponed to June 15, 2019
- ✓ Delivery by June 30, 2019

## 6. Final Book

Afterwards, 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 stressed that there are still missing parts in the first draft of the book and that Chapter 5 is entirely missing. Therefore everyone is invited to send their contribution and to make sure that the book is delivered on time.

Prof. Sykora, referent for chapter 5, took the opportunity to solicit the editors to send their contributions at the earliest, in order for him to complete the chapter.

Additionally, Prof. Ahmadi stated that they need a professional book editor, such as OVERLEAF ([www.overleaf.com](http://www.overleaf.com)) to keep track of who made changes and when. The next step should be to check with COST if this can be reimbursed (€20/month for about 5 months).

### Timeline

The timeline for the book preparation is as follows:

- During Cartagena meeting, each WG discusses about a list of sections
- After Cartagena meeting, the WG chairs finalize the discussion and propose the list of sections to the Chair
- Integration of all sections into a set of coherent chapters by the BEC
- The ToC is frozen at Podgorica meeting (40 pages per chapter)
- Chapter and section editors are identified at Podgorica meeting
- IRACON Chair must search for publisher between MCM8 and MCM9
- **The first draft of the book is ready by April May 2019**

The **Book Editors** are:

- Claude Oestges and François Quitin



Prof. Oestges reviewed the Table of Contents:

## **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. Report from the Grant Holder

On behalf of the Grant Holder – Prof. Roberto Verdone – the Chair showed the **Work and Budget Plan for Year 3**, including the top-up that had been previously granted by COST:

Networking Tool	Quantity/Description	Budget
Meetings	3 MCMs	127 676.82 EUR
Training Schools	3 TSs	48 631.50 EUR
STSMs	2 STSMs	14 400.00 EUR
ITC Conference Grants	4 conference grants	4 600.00 EUR
Other Expenses Related to Scientific Activities	Bank fees	976.50 EUR
<b>Total Science Expenditure</b>		<b>196 284.82 EUR</b>
Financial and Scientific Administration and Coordination (MAX. 15%)	15 %	29 442.72 EUR
<b>Total Grant</b>		<b>225 727.54 EUR</b>

He then presented the **Status of expenditures** at the end of the Action's 3<sup>rd</sup> Grant Period:

Steps	Budget
<b>Total Grant</b>	<b>225,727.54 €</b>
1 <sup>st</sup> Instalment received (Aug'18) → 50% pre top-up	98,489.74 €
2 <sup>nd</sup> instalment received (Feb'19) → 35% after top-up + difference	93,378.67 €
3 <sup>rd</sup> instalment (approx.) → to be received after FFR	30,047.16 €
Meetings (4)	130,945.06 €
Training Schools (3)	43,371.57 €
STSMs (11)	13,695.00 €
ITC Conference Grants (4)	3,185.00 €
Bank fees / OERSA (approx.)	1,773.43 €
<b>Total spent</b>	<b>192,970.06 €</b>
FSAC - Financial and Scientific Admin. and Coordination (approx.)	28,945.51 €
<b>Grand total</b>	<b>221,915.57 €</b>
<b>Percentage of budget spent</b>	<b>98.5%</b>



Finally, he presented the **Approved Work and Budget Plan for Year 4.**

In this regard, he underlined that the budget for GP4 is significantly lower than that of GP3, therefore some difficult choices in the allocation of funds had to be made.

<b>Networking Tool</b>	<b>Description</b>	<b>Budget</b>
Meetings	3 MCMs	111 550.00 EUR
Training Schools	3 TSs	19 000.00 EUR
STSMs	5 STSMs	6 000.00 EUR
ITC Conference Grants	2 Conference grants	600.00 EUR
Other Expenses Related to Scientific Activities	Bank fees	1546.00 EUR
<b>Total Science Expenditure</b>		<b>138 696.00 EUR</b>
Financial and Scientific Administration and Coordination (MAX. 15%)	15 %	20 804.40 EUR
<b>Total Grant</b>		<b>159 500.40 EUR</b>

It was also suggested to use part of the surplus saved by EURACON while collecting the contribution to the various IRACON events, to increase the budget for the Action's book.



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

The Training Manager, Prof. Laurent Clavier, reviewed all the Training Schools that have taken place during the Action:

2017/2018

- 4- IRACON/Met5G Training School on **interference in 5G** – April 16-17, 2018, Guildford, Surrey, UK.
- 3- 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
- 2- ESoA/COST-IRACON **Joint Training School on Large Scale Radio Propagation** – June 12-16, 2017, Louvain-La-Neuve, Belgium

2016/2017

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

He focused particularly on the last 3 Training Schools, all very successful, which took place during Grant Period 3 (2018/2019), namely:

- 7- Training School on **Machine Learning and Wireless Communication** – 8-11 Apr. 2019 - Barcelona, CTTC.

*20 Grants, 80+ attendees (Limited due to logistic reasons)*

- 6- Joint Training Workshop IRACON-WaveComBE on **Milimeter Wave Indoor Channels**, Jan. 2019.

*16 Grant (29 requests) – 45 attendees*

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

*16 grants – 40 attendees (Space limitations due to practical works)*

Prof. Clavier took the opportunity to remind the attendees that the Trainees' Grants offered by COST are allocated on a first arrived first served basis, with a limitation to one per institution, if necessary.

He finally presented the planned and the proposed Training Schools for GP4:



## PLANNED

**COST CA15104 (IRACON) Training School:  
Network Models, Architectures and Applications for 5G  
7 – 11 October 2019  
RUDN University, Moscow, Russia**

**Scope** Global view in key features of the emerging 5G technologies from the networking perspective

- models,
- architectures and
- applications.

Lectures will give background on **5G wireless communications networks concepts**, ranging from the more fundamental ones related to concepts and mathematical modelling to experimental and applied ones connected to the incoming standardisation features.

### Speakers

Andres Gonzalez, Telenor, NO

Antonio Orsino, Ericsson, FI

Carles Anton, CTTC, ES

David Calligaris, Huawei, DE

Hamed Ahmadi, U. Essex, UK

Konstantin Samouylov, RUDN, RU

Luis M. Correia, IST-U. Lisbon, PT

Paul Sutton, SRS, ES

Roberto Verdone, U. Bologna, IT

Silvia Ruiz, UPC, ES

Yuliya Gaidamaka, RUDN, RU

### Organisers

Hamed Ahmadi, U. Essex, UK

Konstantin Samouylov, RUDN, RU

Luis M. Correia, IST-U. Lisbon, PT

Silvia Ruiz, UPC, ES

## PROPOSED

**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  
Referent: Fernando Velez



The Training Manager moved on to review the list of STSMs that have been organised throughout the Action:

## STSMs for GP1

10 accepted

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

16 submitted - 11 accepted – 5 rejected

Denmark, Belgium (x3), Spain (x3), Croatia, Serbia, France (x2), Poland (x2), Portugal (x4), Italy, **Russia (x3), USA**

1. Air-to-ground channel characterization at mmWave frequencies
2. Simulation of polarised off-body channels with dynamic users
3. New channel estimation algorithms at the physical level to improve the performance of future communications systems relying on the use of a new waveform.
4. Utilization of Advanced RFID Physical Layer Modeling for the Design of Advanced Reception/Transmission Algorithms
5. Modulation based Simultaneous Wireless Information and Power Transfer
6. Experimental validation of Physical Layer Security using SISO and MISO configurations.
7. Implementation of algorithms or designs in Software Defined Radio (SDR) nodes, in order to evaluate diverse communication scenarios using FIT/CortexLab
8. SLA-based network slicing analytical modelling
9. Analytical modelling of the mobile computing offloading
10. Robust Bayesian Parametric/Nonparametric Statistical Inference for Indoor Localization, Tracking and Navigation
11. Communication interfaces for medical chips in patients bodies suitable for early detection of infections

## STSMs for GP4

4 submitted - 2 accepted – 2 under revision

Austria (x2), France (x2), Norway, Spain, Sweden, Ireland

1. New Measures of Service Reliability for Shared Mobile Networks
2. Exploitation of 3D deterministic channel models for realistic hybrid 5G and GNSS positioning simulations and Navigation
3. User Separability in Distributed Massive MIMO Systems
4. Millimetre Wave Over-the-Air Testing with Measured Channels

The attendees were encouraged to apply as there are still some funds available for further STSMs in GP4. However, the involvement in the action has to be clear and the applicant must include in her/his application any details regarding previous participation to IRACON meetings or plans to attend future meetings.

The maximum grant allocated for STSMs is € 1200.

The main reasons for a possible rejection are:

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



## 9. 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

### SOCIAL MEDIA

- **Dissemination list** for PhD training events
- **Leaflet**
  - Goal: high-level introduction of the Action
  - Updated after each meeting
- **Newsletters**
  - All issues available at [www.iracon.org](http://www.iracon.org) under "Publications"
  - Next issue to be expected after this meeting
- **Blog**
  - To launch discussions and/or express views
- **Instagram, youtube, facebook, linkedin**
  - Send contributions to Alice

### A SPECIAL ISSUE IN RADIO SCIENCE



## 10. Presentation and Discussion of Technical Documents

The Chair informed the audience that a total of **65 TDs** will be presented during the Working Group meetings and shared the schedule:

10th MCM and Technical Meeting - COST CA15104 (IRACON) - Oulu, Finland, May 27-29, 2019										
Days (Fri) May 27-29, 2019	Monday			Tuesday			Wednesday			
Room										
Start time	10:00			09:00			09:00			
Hours	10:00 - 13:00			09:00 - 10:45			09:00 - 10:45			
Sessions	MC Plenary and invited speakers			WG1		WG3	WG1		LT	IoT-Health
Topics				Indoor		Planning/Opt	Antennas		Algorithms	BANs
TD number or other				7		19	14		12	3
TD number or other				34		37	26		13	18
TD number or other				41		68	61		46	56
TD number or other				24		DISC	DISC		51	DISC
TD number or other	25		DISC	DISC		5	DISC			
Coffee Break				10:45-11:15			10:45-11:15			
Hours				11:15 - 13:00			11:15 - 13:00			
Sessions	MC Plenary			WG1		LT	WG3 + RA		Radio Access	
Topics				mm-Wave + V2X		UAV	mm-Wave + V2X		UAV	Radio Access
TD number or other				13		27	63		63	63
TD number or other				48		36	64		64	64
TD number or other				16		DISC	65		65	65
TD number or other				55		DISC	30		30	30
TD number or other	DISC		DISC	DISC (RA)		DISC (RA)	DISC (RA)			
Lunch	13:00-14:00			13:00-14:00			13:00-14:00			
Hours	14:00 - 15:45			14:00 - 15:45			End of meeting			
Sessions	WG1		WG2	WG3	WG1		IoT	OTA		
Topics	Stoch. Models		Signal Proc.	Performance	Ray-tracing		IoT	OTA		
TD number or other	11		8	40	2		20	4		
TD number or other	67		17	42	8		21	23		
TD number or other	32		50	62	52		53	47		
TD number or other	44		54	66	38		31	57		
TD number or other	35		DISC	DISC	0		DISC	58		
Coffee Break	15:45 - 16:15			15:45 - 16:15						
Hours	16:15 - 18:00			16:15 - 18:00						
Sessions	WG1		WG2	WG3 + IoT	WG1+WG2+WG3					
Topics	Radar + misc.		Book	Book	1					
TD number or other	29		DISC	DISC	22					
TD number or other	45		DISC	DISC	15					
TD number or other	49		DISC	DISC	28					
TD number or other	43		DISC	DISC	DISC (book)					
TD number or other	29		DISC	DISC	DISC (book)					
End time							Social event			

He also stressed that the Working Groups discussions should include the following topics:

- Next deliverables (September 2019)
- Joint activities with H2020 projects
- Tutorial offers for upcoming meetings
- Final book
- Joint activities (experiments, papers, etc.)
- Short Term Scientific Missions among participant institutions





**WEDNESDAY, 29 MAY 2019**

The Management Committee Meeting resumed on Wednesday at 1:00 pm.

## **ECI Representative**

The Chair informed the audience that Piotr Rajchowski from Gdansk University of Technology (Poland) was elected as ECI Representative for 2019-2020.

## **11. Final Book**

The Chair returned to the subject of the Final Book, in particular to the future versions to be released.

- **Version 1.2 (to be released before MCM11)**
  - ✓ Only for chapters 2, 3 and 5
  - ✓ All sections completed
- **Version 2 (to be released by end 2019)**
  - ✓ For all chapters
  - ✓ Must include TDs from MCM10 and 11
  - ✓ Copy-right free figures and graphs
  - ✓ Updated references (replace TDs by papers if any)

He then informed the attendees of the **deadlines for chapters 2, 3 and 5.**

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

<b>AP</b>	<b>WHAT</b>	<b>WHO</b>	<b>WHOM</b>	<b>WHEN</b>
B/1	Send revised sections (chapters 2, 3, 5)	SE	CE	June 30
B/2	Send draft chapters (tex files, bib files)	CE	BE	July 15
B/3	Send reminders and compile all chapters	BE	-	Aug 1
B/4	Upload draft book v1.2	BE	Secretary	Aug 20



Finally he showed the **deadlines for all chapters**:

AP	WHAT	WHO	WHOM	WHEN
B/5	Send revized sections (with MCM10&11 TDs)	SE	CE	Sep 30
B/6	Send draft chapters (tex files, bib files)	CE	BE	Oct 15
B/7	Send reminders and compile all chapters	BE	-	Nov 1
B/8	Upload draft book v2	BE	Secretary	Dec 1

It was decided that the Conclusions of the Book should be written by someone external to the Action, for a more detached and objective point of view. The person that could cover this task is Prof. Andreas Molisch from USC Viterbi, California, but a final decision is yet to be made.

## 12. AOB

### ELIGIBILITY OF SECRETARY'S TRAVELS TO MEETINGS

Following a recent update in COST regulations, namely a change of eligibility of the Grant Holder Manager:

- ✓ In the case that the Grant Holder Manager must travel to the meeting place in an administrative role (e.g. ensuring the attendance list is signed, assisting the MC Chair with the Minutes, providing support to the Local Organiser, etc) then the travel costs of the Grant Holder Manager can be funded with the Action's budget.

the Chair asked whether the MC agreed to include this rule in IRACON's set of reimbursement eligibility rules.

A vote was taken: [the majority of the MC approved the reimbursement of the GH Manager.](#)

### 13. Future Meetings

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

- **11th IRACON MC/technical meeting**
  - ✓ Dates: 4-6 Sep 2019
  - ✓ Gdansk (PL)
  - ✓ Organizer: Slawomir Ambroziak
- **12th (final) IRACON MC/technical meeting and workshop**
  - ✓ Proposed dates: Jan 27-29 2020
  - ✓ Louvain-la-Neuve (BE)
  - ✓ Organizer: Claude Oestges

### 14. Reports from Working Group Chairs

The WG Chairs reported about the activities carried out within their own Group. The detailed WG reports are attached to this document.

#### DWGs

1. WG-1 (radio channels): Sana Salous and Katsuyuki Haneda
2. WG-2 (PHY-MAC): Hanna Bogucka and Jan Sykora
3. WG-3 (NET): Silvia Ruiz and Hamed Ahmadi

#### EWGs

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

### 15. Liaisons with International Bodies, Standards and Projects

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

- **3GPP** – Moray Rumney
- **URSI** – Sana Salous
- **ITU-R** – Sana Salous and Belen Montenegro



- **H2020 5G-XCAST** – Narcis Cardona
- **5G-PICTURE** – 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-HEART** – Per Hjalmar Lehne
- **5G-EVE** – Florian Kaltenberger
- **EMPOWER** – Per Hjalmar Lehne
- **5G-SMART** – Fredrik Tufvesson

Attached to this document are a few reports on the new and ongoing liaisons.



## 16. Close of Meeting

The Chair reminded the attendees about the upcoming deadlines and Action Points:

AP	WHAT	WHO	WHOM	WHEN
10/1	Submit reimbursement forms	Those entitled to	e-cost	June 15
10/2	Send Minutes of Group Meetings	Group Chairs	Chair + Secretary	June 15
10/3	Send deliverable 7 inputs	Group Chairs	Chair + Secretary	June 15
10/4	Send STSM Applic.	Those interested	e-cost + Training Chair	Open call
10/5	Register to 11th MCM	Attendees	Website	Aug 16
10/6	Request TD number	Authors	Website	Aug 16
10/7	Submit TD	Authors	Website	Aug 25



**List of Annexes**

Annex 1- Agenda

Annex 2- Chair's Presentation

Annex 3- List of persons entitled for reimbursement

Annex 4- List of TDs

Annex 5- TDs Schedule

Annex 6- Attendance lists

Annex 7- WG Reports

Annex 8- Liaisons Reports