Country	Name	Surname
LT	Rimvydas	Aleksiejūnas
PL	Slawomir	Ambroziak
ES	Carles	Anton-Haro
TR	Hüseyin	ARSLAN
RS	Dragana	Bajić
RO	Titus Constantin	Balan
RS	Lazar	Berbakov
HU	Janos	Bito
RO	Vasile	Bota
IT	Chiara	Buratti
UK	Alister	Burr
ES	Narcis	Cardona
EL	Periklis	Chatzimisios
PL	Krzysztof	Cichoń
FR	Laurent	Clavier
UK	Bruno	Clerckx
FR	Jean-Marc	Conrat
HU	Botond Tamas	Csatho
PL	Agnieszka	Czapiewska
DE	Andreas	Czylwik
IT	Natascia	De Fenzo
BE	Margot	Deruyck
DE	Diego	Dupleich
NO	Torbjörn	Ekman
FR	Davy	Gaillot
ES	Ana	Garcia Armada
ES	Concepcion	Garcia-Pardo
BA	Gordana	Gardasevic
MK	Atanas	Hristov
SI	Tomaž	Javornik
CY	Konstantinos	Katzis
PL	Adrian	Kliks
ME	Enis	Kocan
DE	Wim	Kotterman
FI	Ali	Kourani
KV	Bujar	Krasniqi
PL	Paweł	Kułakowski
DE	Thomas	Kürner

NL	Ioan Ernest	Lager
NO	Per Hjalmar	Lehne
UK	Jiteng	Ma
CZ	Roman	Marsalek
NL	Yang	Miao
FI	Konstantin	Mikhaylov
SI	Tomi	Mlinar
ES	Jose-Maria	Molina-Garcia-Pardo
AT	Raheeb	Muzaffar
BE	Claude	Oestges
ME	Milica	Pejanovic-Djurisic
BG	Marinela	Petrova
UK	Liang	Qiao
AT	Arash	Sahbafard
UK	Sana	Salous
EE	Vitaly	Skachek
DE	Carsten	Smeenk
MK	Biljana	Stojkoska
CZ	Jan	Sykora
PT	Fernando José	VELEZ
CH	Jean Frederic	Wagen
AL	Blerina	Zanaj
AT	Thomas	Zemen
HR	Radovan	Zentner
NL	Haibin	Zhang
LOS	Luis M	Correia

TD Number	TD Author	TD Title	TD Abstract	TD WG	TD Data	Name	Surname	Email	Acronym	PDF
TD(24)07001	Juan E. Galeote-Cazorla, Alejandro Ramirez-Arroyo, Salvador Moreno-Rodriguez, Jose-Maria Molina-Garcia-Pardo, Maria-Teresa Martinez-Ingles, Pablo Padilla, Juan F. Valenzuela-Valdes	A Study on W-Band Frequency Attenuation in the Presence of Human Blockage	The fifth generation (5G) of mobile communications has been established as the current paradigm. Nevertheless, it has some limitations for cutting-edge applications. The sixth generation (6G) is being conceived to approach these new services. It is expected to reach 1 Tbps with ultra-low latency communications, which will be possible by enabling sub-THz and THz frequency bands. These bands are challenging in terms of propagation since the diffraction phenomenon is degraded by blocking due to the size of the objects in terms of wavelength. Therefore, Non Line-of-Sight (NLoS) condition produced by the human blockage is not negligible for communication reliability. In this work, the signal attenuation and the blockage duration produced by human blockage are analyzed in the W-Band (75 - 110 GHz). The study shows significant differences in terms of the frequency within the W-Band, the distance between antennas, the human blockage orientation, or the blockage human sample.	WG1,Sub-WG1.1	2023-12-12 11:18:33	Jose-Maria	Molina-Garcia-Pardo	josemaria.molina@upct.es	UPCT	Y
TD(24)07002	Salim Janji, Pawel Sroka, Adrian Kliks	Enhancing V2X Communications with UAV-mounted Reconfigurable Intelligent Surfaces	This paper addresses the crucial need for reliable wireless communication in vehicular networks, particularly vital for the safety and efficacy of (semi-)autonomous driving amid increasing traffic. We explore the use of Reconfigurable Intelligent Surfaces (RISes) mounted on Drone Relay Stations (DRS) to enhance communication reliability. Our study formulates an optimization problem to pinpoint the optimal location and orientation of the DRS, thereby creating an additional propagation path for vehicle-to-everything (V2X) communications. We introduce a heuristic approach that combines trajectory optimization for DRS positioning and a Q-learning scheme for RIS orientation. Our results not only confirm the convergence of the Q-learning algorithm but also demonstrate significant communication improvements achieved by integrating a DRS into V2X networks.	Sub-WG1.2	2023-12-12 13:40:16	Salim	Janji	salim_janji@hotmail.com	PUT	Y

TD(24)07003	Danijel Ljepojević, Gordana Gardašević	An Approach to Link Quality Measurement in 6TiSCH Networks	Radio link quality estimation is of crucial importance for providing required network performances and long-term stability. Using a single metric (e.g., Received Signal Strength Indicator - RSSI) can only provide a partial characterization of the particular link. Therefore, this paper proposes the method for link quality measurements in 6TiSCH networks based on several indicators for performance evaluation: the RSSI, Packet Delivery Ratio (PDR) for packet sequences, and CRC (Cyclic Redundancy Check). Additionally, for a two-dimensional graphical representation of RSSI measurements, the RSSI spatial heatmap has been implemented. The measurement campaign was performed on the OpenMote B hardware platform and OpenWSN software implementation and carried out in a home environment.	WG3,VT3	2023-12-12 16:18:08	Gordana	Gardasevic	gordana.gardasevic@etf.unibl.org	UNIBL	Y
TD(24)07004	Arash Sahbafard, Andreas Springer, Petar Popovski, Hans-Peter Bernhard	Scalable Uplink Modeling for Resource Management in 5G URLLC Networks	The third generation partnership project (3GPP) has outlined ultra-reliable low latency communication (URLLC) essential to ensure enhanced network dependability under stringent latency constraints. A transmission scheme known as configured grant (CG) transmission, defined in 3GPP Release 15, allows devices to compete for resources and transmit their data without explicit permission in a specified time budget. In this study, we introduce an enhanced modeling approach for CG transmission that takes into account the state of the communication channel, allowing a thorough evaluation of network performance. The numerical results shed light on configuring CG transmission settings to attain a predetermined probability of success for successful packet decoding. Importantly, the system model in the paper closely follows 3GPP-based Transmission Time Interval (TTI) models, which helps in mapping the observed results to a real system performance	WG3	2023-12-13 14:33:46	Arash	Sahbafard	arash.sahbafard@silicon-austria.com	SAL	Y

TD(24)07005	Gianluca Rizzo	Green Operations of SWIPT Networks: The Role of End-User Devices	In this paper, we propose an analytical framework for the characterization of the performance of a SWIPT network serving a combination of broadband users and energy harvesting (EH) IoT devices, and we propose an algorithm for the identification of energy-optimal network configurations satisfying constraints on user perceived QoS. Numerical results suggest that substantial energy savings are possible by schemes that adapt the main network parameters to fluctuations in user density, as well as to the characteristics of the EH devices. We also show that such schemes remain essential even in more energy proportional cloud-RAN settings. The most interesting insight provided by our results is that very high device densities facilitate energy harvesting before interference becomes a problem. As a result, the optimal base station density can be very low even when the network load is high. This suggests that optimal base station sleep modes in SWIPT networks should follow radically different dynamics with respect to those applicable to networks that deliver only connectivity.	WG3,VT4	2023-12-13 15:15:36	Gianluca	Rizzo	gianluca.antonio.rizzo@gmail.com	HES SO	Y
TD(24)07006	David Löschenbrand, Markus Hofer, Lukas Eller, Markus Rupp, Thomas Zemen	Machine Learning-based Channel Prediction for Widely Distributed Massive MIMO with Real-World Data	Widely distributed massive multiple input multiple output (WD-MIMO) systems are promising candidates for future mobile networks, given their improved energy efficiency, coverage and throughput. To spatially separate the users, WD-MIMO relies heavily on accurate and timely channel state information (CSI), which is hard to obtain in high mobility scenarios. To reduce the amount of pilot overhead necessary for obtaining CSI, we investigate linear and machine learning (ML)-based CSI prediction techniques and compare them in terms of achievable spectral efficiency (SE). The considered methods are constant continuation, Wiener prediction, dense, and long short term memory (LSTM) neural networks (NNs). Real-world data from a widely distributed massive MIMO channel measurement campaign with various base station (BS) antenna array aperture sizes is utilized for NN training and validation purposes. The capability of the considered CSI prediction methods to mitigate the effects of channel aging in realistic high-mobility scenarios is analyzed for different geometries of the massive MIMO BS antenna arrays. We can demonstrate a SE improvement of 2 bit/s/Hz for the LSTM NN compared to a Wiener predictor.	WG1,WG2	2023-12-14 10:57:05	Thomas	Zemen	thomas.zemen@ait.ac.at	AIT	Y

TD(24)07007	Piotr Rajchowski, Luis M. Correia, Krzysztof K. Cwalina	Experimental Analysis of 5G-NR Based Positioning in Outdoor and Indoor Environments	In the paper the experimental analysis of the localization accuracy in the 5G network operating in various urban environments is presented. Authors realized measurements of the 5G-NR downlink signals in a real propagation condition to realize the user equipment localization process. The goal of conducted studies is to present the differences in the estimated positions accuracy in three different environments, e.g. the outdoor, indoor, deep-indoor, when the terminal uses signal from the same gNodeBs and is in the same test area. The presented results show that the localization accuracy may degrade by 146-273 m when the localization process is realized just after moving the terminal from outside to inside of the building.	WG2,VT4	2023-12-14 11:45:39	Piotr	Rajchowski	piorajch@eti.pg.edu.pl	PG	Y
TD(24)07008	Markus Ulmschneider, Christian Gentner and Armin Dammann	Mixture Density Networks for Multipath Assisted Positioning-based Fingerprinting	In multipath assisted positioning schemes, the spatial information contained in multipath propagation of wireless radio systems is exploited for localization of a receiver. However, such schemes suffer from a high computational complexity. We have proposed before a fingerprinting localization system based on multipath assisted positioning, where the fingerprinting database is encoded in a deep neural network (DNN). Within this paper, we propose and evaluate a mixture density network approach in our DNN to analyze ambiguities among fingerprints at different locations. We show that our scheme shows a very good positioning performance with an error of around 2m for the most part, while having a low computational complexity in the online stage and a very low effort compared to traditional fingerprinting schemes.	WG2	2023-12-14 14:37:23	Markus	Ulmschneider	markus.ulmschneider@dlr.de	DLR	Y

TD(24)07009	Monika Drozdowska, Sławomir J. Ambroziak, Krzysztof K. Cwalina, Piotr Rajchowski, Narcis Cardona	Transmission and Reflection Loss Measurements for Indoor Environments at 26 to 40 GHz and 55 to 65 GHz Frequency Bands	This paper describes the transmission and reflection loss of materials used in office and conference rooms. The set of 22 different materials was created and divided into 5 classes: wall, wood, glass, chair, and other. Furniture and rooms' structures were characterised in two bands: Band 1 (26-40 GHz) and Band 2 (55-65 GHz). It is observed that transmission loss increases in Band 2. The increase depends on the material's type and thickness. The values of reflection loss show a stronger relation to instantaneous frequency values, especially in Band 1.	WG1	2023-12-15 11:10:27	Monika	Drozdowska	mdrozdo@upv.edu.es	UPV	Y
TD(24)07012	Jean-Marc Conrat, Mohamed Aliouane, Jean-Christophe Cousin, Xavier Begaud	Material reflection/transmission losses and permittivity/conductivity estimation from 2 GHz up to 260 GHz	The academic and industrial research communities are proposing for the new 6G wireless communication system a radio interface operating at sub-THz frequencies above 100 GHz due to the wide unused available bandwidth in the sub-THz spectrum. A channel model valid from a few GHz to a few hundred GHz is required to assess the performance of such systems and compare them with current wireless systems operating at centimeter or millimeter waves. This paper presents material reflection-transmission coefficients and permittivity-conductivity results continuously between 2 GHz and 260 GHz. It aims to extend the current knowledge on wave-material interaction and make the link between below and above 100 GHz frequencies. Twenty-two different building materials commonly used in an indoor environment such as plasterboard, concrete, glass or wood are measured. The measurement setup is a normal incidence free space setup based on a vector network analyzer with optional millimeter wave extension modules connected at frequencies above 50 GHz. Measurement results are compared to simulations using the ITU model P.2040-3 and an ITU-like model where the ITU model theoretical approach is kept but the permittivity and conductivity are fitted by measurements. Measurements agree the ITU-fitted model for most of the materials up to 60 GHz. Rough surfaces and heterogeneous materials explain differences between the model and measurements that are generally equal to a few dB but exceeds 10 dB for some materials	WG1,Sub-WG1.1	2023-12-17 12:18:30	Jean-Marc	Conrat	jeanmarc.conrat@orange.com	OLABS	Y

TD(24)07013	Torbjörn Ekman	Fading Distribution Model for the Maritime Radio Channel	The envelope fading distribution is derived for the round earth loss maritime radio channel. The propagation environment considered consist of a LOS, and from the sea a specular reflection and a diffuse component. The phase difference between LOS and specular component is given by the relative path lengths and the change of phase in the sea reflection. The relative path length change locally with the vertical movement of a ship mounted antenna. The height variations are modelled as Normal distributed, resulting in a Normal distributed phase difference. This is an extension of the TWDP model in which the phase difference between LOS and specular reflection is modelled as uniformly distributed.	WG1,VT2	2023-12-19 12:00:44	Torbjörn	Ekman	torbjorn.ekman@ntnu.no	NTNU	Y
TD(24)07014	Gurjot Singh Bhatia, Yoann Corre, Thierry Tenoux, M. Di Renzo	Exploring RIS Coverage Enhancement in Factories: From Ray-Based Modeling to Use-Case Analysis	Reconfigurable Intelligent Surfaces (RISs) have risen to the forefront of wireless communications research due to their proactive ability to alter the wireless environment intelligently, promising improved wireless network capacity and coverage. Thus, RISs are a pivotal technology in evolving next-generation communication networks. This paper demonstrates a system-level modeling approach for RIS. The RIS model, integrated with the Volcano ray-tracing (RT) tool, is used to analyze the far-field (FF) RIS channel properties in a typical factory environment and explore coverage enhancement at sub-6 GHz and mmWave frequencies. The results obtained in non-line-of-sight (NLoS) scenarios confirm that RIS application is relevant for 5G industrial networks.	WG1,Sub-WG1.2	2023-12-19 15:05:39	Gurjot Singh	Bhatia	gsbhatia@siradel.com	SIRADEL	Y

TD(24)07015	Manuel Castillo-Cara and Luis Orozco-Barbosa	On the relevance of synthetic images for the development of hybrid neural networks: MIMO-based indoor localisation a case study	Indoor localization, the determination of an object's position within enclosed spaces, has attracted significant scientific interest due to its diverse applications, such as navigation, asset tracking, robotics, and context-aware computing. The technologies underpinning this domain range from WiFi and Bluetooth to more advanced systems like Massive Multiple Input-Multiple Output (MIMO). MIMO, initially purposed for enhancing wireless communication, is now prominent in indoor positioning due to its capacity to harness spatial diversity and multipath propagation. This study investigates the integration of MIMO-based indoor localization with Hybrid Neural Networks (HyNN), emphasising the conversion of structured datasets into synthetic images - a growing technique for deep learning using two dimensional Convolutional Neural Networks (CNNs). This conversion is carried out using a solution named TINTO, a previous contribution of the authors that is exploited in this work to successfully convert tidy data into synthetic images tailored for regression challenges. This study represents the pioneering application of HyNNs using synthetic images, specifically focusing on MIMO-based indoor localization. Our contributions detail the successful adaptation of the TINTO tool, the innovative use of synthetic images for model input, and the design and enhancement of a HyNN, demonstrating improved results compared to prior literature	WG2	2023-12-19 18:23:48	Luis	Orozco	luis.orozco@uclm.es	UCLM	Y
TD(24)07016	Markus Hofer, David Löschenbrand, Faruk Pasic, Danilo Radovic, Benjamin Rainer, Jiri Blumenstein , Christoph F. Mecklenbräuker, Seun Sangodoyin, Hussein Hammoud, Gerald Matz, Andreas F. Molisch and Thomas Zemen	Similarity of Wireless Multiband Propagation in Urban Vehicular-to-Infrastructure Scenarios	Cooperative connected automated mobility depends on sensing and wireless communication functions for realizing novel advanced driver assistance system (ADAS) features. With increasing carrier frequency both, sensing and communication, can be realized within the same radio frequency front end, being implemented in a joint communication and sensing framework (JCAS). The attenuation of radio signals increases with increasing carrier frequency. Thus, beamforming by means of antenna arrays becomes key to achieving a signal to noise ratio at the receiver that allows for a reliable data link. Beamforming from the transmitter to moving receivers is a challenging task, especially at higher velocities, but can be improved by exploiting correlations of channel responses in different frequency bands. In this paper we therefore investigate the statistical properties of the vehicle-to-infrastructure (V2I) radio channel in three frequency bands with center frequencies of 3.2 GHz, 34.3 GHz and 62.35 GHz using measurement data with 155.5 MHz bandwidth and a sounding repetition rate of 31.25 µs. The channel impulse responses are collected simultaneously at all three carrier frequencies. Using the high temporal sampling rate we apply the CLEAN algorithm, enabling the estimation of the path loss, delay and Doppler frequency of different multipath components. We show that path information from lower frequency bands can be used for establishing communication links at higher frequency bands.	WG1,Sub-WG1.1,Sub-WG2	2023-12-20 10:44:29	Markus	Hofer	markus.hofer@ait.ac.at	AIT	Y

TD(24)07017	Jozef Lukac, Jan Sykora	Asynchronous NOMA and PLNC with iterative decoding	Assume a single-carrier MAC (Multiple Access Channel), where the delay of sources is a fraction of the symbol period. We review the channel likelihood function and propose two approaches to deal with inter-symbol interference (ISI); namely either to track ISI or to remove ISI by a one-step marginalization of the likelihood. For ISI tracking, we model ISI as a virtual convolutional code observed in a multipath channel. We use both approaches to compare joint decoding (JD) of sources and hierarchical decoding (H-decoding) -- decoding of XOR frame. Concatenated convolutional codes are used as a channel code and the relay receiver applies BCJR (Bahl, Cocke, Jelinek, Raviv) decoding algorithm. The proposed methods are suitable for equally strong sources. In that case, we lose about 2 dB when using ISI elimination w.r.t. the ISI tracking.	WG2	2023-12-20 12:48:20	Jozef	Lukac	lukacjo1@fel.cvut.cz	CVUT	Y
TD(24)07018	Yang Miao, Minseok Kim, Chiachia Kang, Naoya Suzuki, Sofie Pollin, Junichi Takada	Dual-band mmWave measurements of human body scattering and blockage effects using distributed beamforming for ISAC applications	Millimeter-wave (mmWave) systems are designed for shorter transmission distances and with directive beams. Their performance is easily harmed by the presence of human blockers. Although the impact of a single human body blocking direct path between mmWave transmitter and receiver has been investigated in literature, the effect of multiple humans, as not only blockers but also reflectors/scatterers, is lacking. It is also crucial to study human scattering and blockage effects altogether in distributed multi-input multi-output (MIMO) setups exploiting mono-/bi-/multi-static links.We present our distributed multi-static doubledirectional measurements using a 24/60 GHz dual-band channel sounder with commercial phased arrays. We've performed novel quasi-static measurements with the presence of up to 3 persons standing at diverse locations with various facing directions. The measurement setup also incorporated four distributed depthcameras to capture ground truth positions/geometry of the humans. The angular-delay domain power spectra of the distributed links at the concurrent dual bands are visualized and insights are given.	WG1,Sub-WG2	2023-12-21 08:58:40	Yang	Miao	y.miao@utwente.nl	UT	Y

TD(24)07019	Danilo Radovic, Faruk Pasic, Markus Hofer, Thomas Zemen, Christoph F. Mecklenbräuker	Stationarity of Multiband Channels for OTFS-Based Intelligent Transportation Systems	The development of communication systems for intelligent transportation systems (ITS) relies on their performance in high-mobility scenarios. Such scenarios introduce rapid fluctuations in wireless channel properties. As a promising solution for vehicle-to-everything (V2X) communication, the orthogonal time frequency space (OTFS) approach has emerged. Nevertheless, the performance of OTFS systems is closely tied to time- and frequency diversity of the wireless propagation channel. However, there is a lack of understanding of the stationarity of the wireless channels, especially in the millimeter wave (mmWave) frequency bands. In this paper, we address this research gap by conducting a comprehensive stationarity analysis of measured sub-6 GHz and mmWave high-speed wireless channels. We evaluate the spatial stationarity of a scenario, where the transmitter is moving at high velocity. Furthermore, we investigate the influence of the transmit antenna orientation on the channel spatial stationarity. We could show that the spatial stationarity is proportional to the wavelength.	WG1,Sub-WG1.1,WG2,VT2	2023-12-21 14:36:10	Danilo	Radovic	danilo.radovic@tuwien.ac.at	TU WIEN	Y
TD(24)07020	D.Raja Kumar, C.Antón-Haro, X. Mestre	Applicability of Data-driven RSMA Receivers: Linear and Non-linear channels	Data driven techniques are becoming viable alternatives to many signal processing tasks, at a slightly higher computational cost. This paper explores the use of neural network (NN)-based receivers to improve the reception of a Rate Splitting Multiple Access (RSMA), by investigating its applicability to linear and non-linear channels. The focus is on NN-based architectures that do not need to be retrained at each channel realization. The study covers single and multi-antenna receivers employing QPSK and 16QAM modulation schemes, to analyze the associated increase in computational complexity. Three different architectures are explored: simple black-box model mimicking successive interference cancellation (SIC), joint NN, and a well-designed neural architecture fed with the right information. The main idea is to show the advantages of a hybrid model-/data driven-based approach that preserves the main procedures in the model-based signal demodulation chain, complemented by data-driven schemes.	WG2	2023-12-21 15:48:00	Carles	Anton-Haro	carles.anton@cttc.es	CTTC	Y

TD(24)07021	Anna-Malin Schiffarth, Thanh Tam Julian Ta, Dirk Heberling	Assessment Procedure for Maximal RF Exposure to 5G-Massive-MIMO Base Stations at Measurement Points without Line-of-Sight	Measurement and extrapolation procedures already exist to determine the maximal exposure in the vicinity of 5G-massive-MIMO base stations at measurement points (MP) with line of sight (LOS) to the base station. However, incorrect estimations of the maximal exposure have been found for MPs with non-line-of-sight (NLOS) to the base station. Therefore, the exposure was determined at 63 outdoor NLOS-MPs in the vicinity of seven Huawei Massive-MIMO base stations. The gain correction factors, previously assumed to be based on free-space propagation, have been compared with actual gain correction factors derived from measurements. It has been shown that the resulting misestimation and actual gain correction factors depend on the distance between the MP and the base station. Based on this, generalised extrapolation factors have been derived for NLOS MPs.	WG1,VT1,Sub-VT1	2023-12-22 08:58:58	Anna-Malin	Schiffarth	schiffarth@ihf.rwth-aachen.de	RWTH	Y
TD(24)07022	J. M. Sánchez-Martín, C. Gijón, M. Toril, J. L. Bejarano-Luque and S. Luna-Ramírez	Anomaly detection of High-Mobility MDT Traces Through Self-Supervised Learning	Radio access network optimization is one of the most critical tasks in cellular systems. For this purpose, Minimization of Drive Test (MDT) functionality provides mobile operators with geolocated network performance statistics to tune radio propagation models in replanning tools. However, MDT traces contain critical location errors due to energy-saving modes, which require filtering out wrong samples to guarantee an adequate performance of MDT-driven algorithms. The design of such a classifier detecting valid measurements can be automated by training a supervised learning model with a labeled dataset. Unfortunately, labeling MDT data is a labor-intensive process. In this context, self-supervised learning (SSL) arises as a promising solution to automate labeling of MDT measurements compared to rule-based solutions. This work presents a novel SSL method to filter MDT measurements in road scenarios by combining user mobility traces constructed with unlabeled MDT data and freely available land-use maps. Once labeled, measurements are used to train a supervised learning model. To this end, a proper set of hand-crafted features is first derived. Model assessment is carried out over real MDT data collected in a live Long-Term Evolution~(LTE) network. Performance analysis includes well-known supervised models, such as Support-Vector Machine, Random Forest, k-Nearest Neighbors and Multi-Layer Perceptron. Results show that all models perform better in MDT measurements including positioning accuracy information. Nevertheless, it is shown that models without this feature can still be used obtaining reliable results and more generalizable models.	WG3	2023-12-22 11:46:21	Joaquin M.	Sanchez Martin	jmsanchez@ic.uma.es	UMA	Y

TD(24)07023	Alvaro Villaescusa-Tebar, Alberto Najera, Jesus Gonzales-Rubio, Concepcion Gracia-Pardo	Instantaneous vs Theoretical Maximum Exposure under Real Traffic Conditions: Example in the City of Valencia	With the ongoing deployment of the fifth generation (5G) mobile telecommunications, there is an increasing need for standardized methodologies to assess human exposure to radiofrequency electromagnetic fields from 5G base stations. Thus, the development of proper assessment methodologies will impact the adequate deployment of 5G systems as well as ensure the safe operation of devices for people. This work focuses on comparing total exposure and theoretical maximum exposure levels in commercial 5G operational networks in the City of Valencia for the frequency band below 6 GHz. This study is based on results from measurements using a code-selective methodology as well as a personal exposimeter in addition to an omnidirectional antenna and one-user equipment (UE) to measure the downlink exposure in a real scenario.	Sub-VT1	2023-12-22 12:59:06	Álvaro	Villaescusa Tébar	alvilte1@teleco.upv.es	UPV	Y
TD(24)07024	Manuel M. Ferreira, Filipe D. Cardoso, Sławomir J. Ambroziak, Mariella Särestöniemi and Luís M. Correia	System Loss Model for Body Area Networks in Room Scenarios	This paper presents an analysis of system loss in Body Area Networks for room scenarios, based on a wideband measurement campaign at 5.8 GHz. The measurements were performed with a fixed antenna transmitting vertically and horizontally polarised signals, while the user wears dual-polarised antennas. The average system losses in co- and cross-polarised channels are 41.4 and 42.6 dB for vertically polarised transmitted signals and 41.8 and 45.0 dB for horizontally ones, showing that polarisation plays a role in the radio channel. Analytical models for the average and standard deviation of system loss are presented, with a linear dependence on user mobility, on transmitted/received polarisation, and on link visibility and dynamics. Overall, a good fit between model and measurements is obtained, with a mean square error of 2.3 and 0.12 dB for the average and standard deviation, respectively.	WG1	2023-12-22 14:00:32	Manuel	Ferreira	manuel.ferreira@estsetubal.ips.pt	IPS	Y

TD(24)07025	Faruk Pasic, Markus Hofer, Mariam Mussbah, Sebastian Caban, Stefan Schwarz, Thomas Zemen and Christoph F. Mecklenbräuker	Channel Estimation for mmWave MIMO using sub-6 GHz Out-of-Band Information	Future wireless multiple-input multiple-output (MIMO) communication systems will employ sub-6 GHz and millimeter wave (mmWave) frequency bands working cooperatively. Establishing a MIMO communication link usually relies on estimating channel state information (CSI) which is difficult to acquire at mmWave frequencies due to a low signal-to-noise ratio (SNR). In this paper, we propose three novel methods to estimate mmWave MIMO channels using out-of-band information obtained from the sub-6 GHz band. We compare the proposed channel estimation methods with a conventional one utilizing only in-band information. Simulation results show that the proposed methods outperform the conventional mmWave channel estimation method in terms of achievable spectral efficiency, especially at low SNR and high K-factor.	WG1,WG2	2023-12-22 22:18:50	Faruk	Pasic	faruk.pasic@tuwien.ac.at	TU WIEN	Y
TD(24)07026	Pawel Sroka, Pawel Kryszkiewicz	Amplifier-aware power and subcarriers allocation for low-data rate NB-IoT devices	IoT devices become an important segment of communication systems. These can use a small subset of subcarriers enabling low-datarate communications while connecting with existing 5G/LTE base stations like in the Narrowband-IoT standard. However, IoT devices should be extremely energy-efficient and simple from the hardware perspective. This can be achieved only if the power amplifiers (PAs) in the uplink operate in their nonlinear region. Unfortunately, this results in nonlinear distortion introduced into the utilized subcarriers and the adjacent ones. This paper leverages new degrees of freedom in uplink subcarriers and power allocation considering a realistic power amplifier nonlinearity model, and rapid changes of nonlinearity power spectral density with the number of allocated subcarriers. The problem of maximization of the minimum rate for a set of IoT devices with constraints is formulated. While it is a non-convex mixed binary problem it is solved by exhaustive search and suboptimal solutions are proposed. The simulation results show that there are many cases when the state-of-the-art distortion-neglecting allocation is outperformed by the proposed scheme.	WG2	2023-12-27 16:05:39	Pawel	Kryszkiewicz	pawel.kryszkiewicz@put.poznan.pl	PUT	Y

TD(24)07027	Nuria Llombart, Andrea Neto, Daniele Cavallo, and Ioan E. Lager	Hardware solutions for high-throughput / low-latency communications – the Delft University of Technology vision	Securing the expected evolutions in wireless communications is unthinkable without transforming progress in the physical layer implementing the projected 6G (and beyond) protocols. The Terahertz Sensing group at Delft University of Technology has assembled over the past decade a broad portfolio of proven technological solutions covering applications ranging from ultra-fast, point-to-point communications to broad-band, broad-scanning-angle, agile-beam arrays. While focusing on a selection of highly relevant devices to be considered for future communication standards, the presentation will also highlight recent theoretical developments that are deemed to have the potential of opening new paths in antenna design.	WG1	2023-12-27 16:47:26	Ioan Ernest	Lager	i.e.lager@tudelft.nl	TUDELFT	Y
TD(24)07028	Guillermo Diaz, Iker Sobron, Iñaki Eizmendi, Iratxe Landa and Manuel Velez	Cross-Domain CSI-Based Sensing for Human Activity Recognition Through Fine-Tuning	Human Activity Recognition (HAR) using channel state information (CSI) from wireless systems in bistatic deployment has been a field in progress for the last few years. In particular, amplitudes of WiFi-based CSI have been widely used for HAR in indoor scenarios. In contrast, CSI phases are less exploited due to higher sensitivity to timing errors in channel estimation. This paper further explores a recent phase processing method to obtain environmental information from CSI and improves classification using a Convolutional Neural Network in few-sampled scenarios. For this purpose, a new dataset has been generated with measurements of three receivers on different days and with different people, for activity recognition and people counting. In addition, we incorporate a transfer learning strategy using fine-tuning along with a data fusion model from different receivers to improve accuracy metrics by training the model and validating it on data taken on different days. Promising results with accuracies higher than 80\% have been obtained with transfer learning between days using 5\% of data for fine-tuning.	Sub-WG2	2023-12-28 11:20:17	Guillermo	Diaz	guillermo.diaz@ehu.eus	EHU	Y

TD(24)07029	Anja Dakić, Benjamin Rainer, Peter Priller, Guo Nan, Anamarija Momić, Xiaochun Ye and Thomas Zemen	Wireless V2X Communication Testbed for CCAM	Connected cooperative and automated mobility (CCAM) can benefit from reliable wireless vehicle-to-everything (V2X) communication links in safety and time critical situations. The ego vehicle's perception with LIDAR, RADAR and cameras can be augmented by V2X communication beyond the visible line-of-sight, i.e., sensor information from other cooperative vehicles or infrastructure elements in the near vicinity can be obtained. We identify CCAM use cases that benefit from the knowledge about spatial reliability regions for the communication link. Frame error rate (FER) classes for these regions from the ego cars perspective are provided for the decision-making of the autonomous vehicle (AV). We propose a testbed architecture for system validation, verification and test scenario generation that integrates FER prediction through the high performance open-source computing reference framework (HOPE). We prove that the measured FER within a city scenario matches very well with the predicted FER obtained with a geometry-based stochastic channel model (GSCM) that uses OpenStreetMap data enriched with event-specific static objects.	WG1,VT2	2023-12-28 14:18:34	Anja	Dakic	anja.dakic@ait.ac.at	AIT	Y
TD(24)07030	Ali Kourani, Mar Francis De Guzman, Ruiyuan Tian, Katsuyuki Haneda	Real-Time Over-the-Air Emulation of Rician Fading Channels for Mobile Antenna Testing	As the ubiquity of 5G technology permeates various domains, coupled with the introduction of new carrier frequencies under the New Radio (NR) framework, devices employing this advanced technology require stringent and repeatable operational conformance tests. Those tests are essential to ascertain the AUT performance under realistic deployment scenarios, thereby ensuring reliability. Hence emulating realistic channel characteristics is fundamental to reach a reliable evaluation of radio components. Considering small-scale fading phenomena is imperative in evaluating the operational integrity of radio devices, as it pervades everything from vehicular communications to the mobility of user equipment. This work demonstrates implementing and validating the operation of a Rician fading channel emulator which can be integrated in an over-the-air antenna testbed. It provides a real-time cost-effective solution using off-the-shelf software defined radios (SDR). The paper provides an overview on the hardware setup and the software implementation of the Rician fading emulator. The setup is tested in an anechoic chamber and comparative analysis showed a robust correlation between the empirical data and theoretical plots of the Rician fading magnitude statistics. Keywords: Real-time, channel emulation, Rician Fading, Over-The-Air, multipath, antenna testing, SDR, USRP, FPGA.	WG1	2023-12-29 09:08:41	Ali	Kourani	ali.kourani@aalto.fi	AALTO	Y

TD(24)07031	Narcis Cardona	Integrated Sensing and Communications (ISAC) Bistatic Channel Estimation by Monostatic Sensing	The current growing interest in integrated sensing and communications (ISAC) for the next generation of radio access networks towards 6G is opening new challenges in channel estimation and modeling. This TD discusses the challenges in channel estimation and modeling for ISAC in the context of the next generation of radio access networks towards 6G. The authors propose a dual-channel model description for ISAC, compatible with the potential extension of the current 3GPP standard model. A technique to relate the sensing and the communications channel is described analytically and verified with measurements. The method exploits the mutual interference between radar sensors to estimate the multipath communications channel between them.	WG1,Sub-WG2	2023-12-29 20:45:48	Narcis	Cardona	ncardona@iteam.upv.es	UPV	Y
TD(24)07032	J. A. Villegas, C. Gijón, M. Toril	A Predictive Analysis of Slice Performance in B5G Systems with Network Slicing	In 5G and beyond systems, Network Slicing (NS) enables the deployment of multiple logical networks customized for specific verticals over a common physical infrastructure. In the radio access network, mobile operators need to forecast slice performance for a proactive slice (re)dimensioning. In the latest years, models based on Supervised Learning (SL) have shown excellent performance for forecasting tasks ins several fields. Nonetheless, a preliminary analysis of slice-level KPI time series is key to select the optimal SL-based model to predict slice performance. This work presents a slice-level KPI dataset created with a dynamic system-level simulator emulating a realistic 5G radio access network with NS. The dataset comprises historical measurements for several KPIs collected per cell and slice for 15 minutes of network activity. Then, the dataset is thoroughly an alyzed considering correlation- and seasonality-related features, aiming to characterize slice-level KPI time series for different slice instances and data aggregation resolutions. Results have distilled that some key aspects for designing forecasting models (e.g., seasonal behavior, predictability, or correlation among time series from different KPIs) strongly depend on slice and data	WG3	2023-12-30 00:46:47	Carolina	Gijon Martin	cgm@ic.uma.es	UMA	Y

TD(24)07033	Jarosław Magiera	A simplified channel estimation procedure for NB-IoT downlink	This paper presents a low-complexity channel estimation procedure which is suitable for use in energy-efficient NB-IoT user equipment devices. The procedure is based on the well-established least squares scheme, followed by linear interpolation in the time domain and averaging in the frequency domain. The quality of channel estimation vs. signal-to-noise ratio is evaluated for two channel models and compared with the performance of channel estimation function implemented in the Matlab LTE Toolbox. The computational complexities of both implementations are assessed by measuring the average processing times required to obtain channel estimates for a given number of consecutive downlink frames. The results indicate that the proposed method provides a similar quality of channel estimation with considerably shorter processing time compared to its counterpart.	WG2	2024-01-02 10:41:37	Jarosław	Magiera	jaroslaw.magiera@pg.edu.pl	PG	Y
TD(24)07034	Minseok Kim, Minghe Mao, Riku Takahashi	Outdoor Double-Directional Channel Measurements in an Open Square Environment at 300 GHz	In this paper, outdoor double-directional channel measurements in an open square outdoor environment using an in-house developed 300 GHz channel sounder are presented. In the measurements, narrow-beam horn antennas were used at both the transmitter and receiver sides to investigate the scattering processes. The multipath propagation mechanisms were identified by using the angular and delay power spectra obtained from the measurement data. The results reveal that the outdoor terahertz channel exhibits significant sparsity. Finally, the performance of an SU-MIMO transmission to leverage power-significant multipath components was evaluated by Ergodic channel capacity for up to four-stream spatial multiplexing.	WG1,Sub-WG1.1	2024-01-02 14:40:21	Minseok	Kim	mskim@eng.niigata-u.ac.jp	NU	Y

TD(24)07035	Irina E. Bocharova, Boris D. Kudryashov, and Vitaly Skachek	Shaping for LDPC coded QAM signaling	In this report, we review recently proposed techniques for matching of error-correcting codes (ECC) with unshaped and shaped QAM signaling. The ECCs under consideration are used in conjunction with modulation and shaping. We discuss non-binary (NB) low-density parity-check (LDPC) coded QAM signaling. Two variants of shaping are presented, which are called shaping before coding and shaping after coding. Simulation results for the error performance of the proposed schemes are compared to the corresponding theoretical bounds.	WG2	2024-01-02 16:15:38	Vitaly	Skachek	vitaly.skachek@gmail.com	TUUT	Y
TD(24)07037	Lucian Ilca, Petre Ogrutan, Titus Balan, Marian Alexandru	Enhancing Cyber-Resilience of Edge Processing Devices with Prescriptive Malware Analysis, Detection and Response	Edge processing devices with communication features, including software-defined radio edge processing, have increased their complexity, including ML algorithms for decision systems. Such examples include the military IoT domain, where digital solutions using VHF/UHF communications (so not necessary broadband) need to take decisions on-the-fly with edge processing. As every mission critical system needs to take care of security and data protection issues, localized/deployable cybersecurity solutions should also be part of the software-defined radio edge processing devices. In this study, the methodology of cyber-resilience for deployable/edge solutions is investigated, and a comprehensive solution utilizing prescriptive malware analysis, detection and response using open-source solutions is proposed for detecting new emerging threats. By leveraging open-source solutions and software, a deployable system, suitable also for SMEs with up to 250 employees is developed, focusing on the detection of new threats. Through extensive testing and validation, as well as efficient algorithms and techniques for anomaly detection, safety, and security, the effectiveness of the approach in enhancing SMEs' cyber-defense capabilities and bolstering their overall cyber-resilience is demonstrated. By employing machine-learning algorithms and behavior-based analysis, the system can effectively detect and classify sophisticated malware strains, including those previously unseen. To evaluate the system's effectiveness, extensive testing and validation were conducted using real-world datasets and scenarios. The results demonstrate significant improvements in malware detection rates, with the	WG3,VT3,VT4	2024-01-02 20:58:04	Titus Constantin	Balan	titus.balan@unitbv.ro	TBV	Y

TD(24)07044	Botond Tamás Csathó, József Pávó, Zsolt Badics, Bálint Péter Horváth	Efficient Analysis of Two-Dimensional Reconfigurable Intelligent Surfaces by Characteristic Basis Functions	The paper presents a Fourier technique suitable for efficiently evaluating the scattered electromagnetic (EM) field due to periodically configured reconfigurable metasurfaces (MTSs), which are the predominant realization approach of reconfigurable intelligent surfaces (RISs). The underlying analysis method, to which the Fourier technique is applied, has been recently eveloped by the authors for fast calculation of the EM field due to MTSs. It is also demonstrated that the efficiency of the Fourier technique can often be improved significantly when the proximity effect between neighboring cells can be neglected. The efficacy of the technique for RIS simulation is illustrated by analyzing a reconfigurable line MTS, which is an RIS invariant in one direction.	WG1,Sub-WG1.2	2024-01-03 09:23:40	Botond Tamas	Csatho	csatho.botond@edu.bme.hu	BME	Y
TD(24)07045	Iñigo Bilbao, Nhan T. Nguyen, Diana P. Moya Osorio, Visa Tapio, Markku Juntti, Eneko Iradier, Jon Montalbán, and Pablo Angueira	PHYSICAL LAYER SECURITY BEAMFORMING DESIGN VIA DEEP UNFOLDING	This temporary document investigates analog beamforming in a massive multiple-input-multiple-output system with an eavesdropper and a jammer. To ensure secure communications, we formulate the secrecy rate maximization problem under the constant modulus constraint of the analog beamforming coefficients. The problem is highly challenging due to the non-convexity and complicated objective function. To overcome the challenges, we propose a deep unfolding architecture that leverages the learning capability of deep neural networks to improve the convergence of the projected gradient ascent (PGA) optimizer. Simulation results show that the proposed deep unfolding beamforming design offers a substantial gain of 33.33 % in secrecy rate and a 70 % reduction in complexity and run-time concerning the conventional PGA scheme.	WG2	2024-01-03 12:49:46	Inigo	Bilbao	inigo.bilbao@ehu.eus	EHU	Y

TD(24)07046	Iñigo Bilbao, Ana García Armada, Eneko Iradier, Jon Montalbán, Pablo Angueira	Non-Coherent mMIMO detection for Ricean channels: A learning approach	Non-coherent communications have demonstrated comparable performance to coherent communications, with some use cases proving more suitable for non-coherent schemes. While significant progress has been made in validating the effectiveness of these techniques, certain areas, such as the impact of Ricean channels in massive multi-input multi-output (mMIMO), still need to be sufficiently addressed. The importance of studying the effect of Ricean channels lies in the fact that many realistic scenarios can be modeled using these channels. This paper provides a comprehensive analysis of the impact of Ricean channels in mMIMO, along with light machine learning (ML)-based solutions. The analytical and numerical results show that the methods outperform the previously studied solutions for both the Ricean and Rayleigh cases, allowing constellations of twice the order of the previous proposals of the state-of-the-art (SoA). These results represent an important milestone in generalizing non-coherent mMIMO to a more demanding channel.	WG2	2024-01-03 12:50:52	Eneko	Iradier	eneko.iradier@ehu.eus	EHU	Y
TD(24)07047	Francesca Conserva, Francesco Linsalata, Marouan Mizmizi, Maurizio Magarini, Umberto Spagnolini, Roberto Verdone and Chiara Buratti	A Thorough Analysis of Radio Resource Assignment for UAV-Enhanced Vehicular Sidelink Communications	The rapid expansion of connected and autonomous vehicles (CAVs) and the shift towards millimiter-wave (mmWave) frequencies offer unprecedented opportunities to enhance road safety and traffic efficiency. Sidelink communication, enabling direct Vehicle-to-Vehicle (V2V) communications, play a pivotal role in this transformation. As communication technologies transit to higher frequencies, the associated increase in bandwidth comes at the cost of a severe path and penetration loss. In response to these challenges, we investigate a network configuration that deploys beamforming-capable Unmanned Aerial Vehicles (UAVs) as relay nodes. In this work, we present a comprehensive analytical framework with a groundbreaking performance metric, i.e. average access probability, that quantifies user satisfaction, considering factors across different protocol stack layers. Additionally, we introduce two Radio Resources Assignment (RRA) methods tailored for UAVs. These methods consider parameters such as resource availability, vehicle distribution, and latency requirements. Through our analytical approach, we optimize the average access probability by controlling UAV altitude based on traffic density. Our numerical findings validate the proposed model and strategy, which ensures that Quality of Service (QoS) standards are met in the domain of Vehicle-to-Anything (V2X) sidelink communications.	WG3,VT2	2024-01-03 16:22:28	Francesca	Conserva	francesca.conserva@unibo.it	CNIT	Y

TD(24)07048	Tommi Jamsa, Francesc Fons, Shen Yan, Changqing Yang, et al., Huawei Technologies	SparkLink – a new solution for short range wireless communications	Short range wireless communication technologies play an enormous role in modern society. The annual number of short-range radio devices sold in the market is higher than the earth population, and there is no sign of saturation. The existing systems are challenged by the number of simultaneous users, reliability, data rate, and latency demanded. A new standard called SparkLink, provides technological solutions for these challenges, aimed at overcoming state-of-the-art. Beyond high throughput and low energy cost, SparkLink focuses on providing standardized capabilities of ultra-low latency, ultra-high reliability, high-precision synchronization and ultra-high concurrency to emerging applications. The high performance of SparkLink makes it an excellent candidate for new high demanding short-range applications in four verticals: smart homes, devices, industries and vehicles. This paper introduces the SparkLink standard and highlights several key performance indicators as well as some relevant results coming from some proofs-of-concept already develop by the SparkLink community. The authors would like to initiate a lively discussion on the SparkLink technology within the COST INTERACT consortium.	WG1,WG2	2024-01-03 19:52:24	Tommi	Jämsä	tommi.jamsa@huawei.com	HUAWEI	Y
TD(24)07050	Michael Walter, Miguel A. Bellido-Manganell	Non-Stationary 3D M2M Channel Modeling and Verification with Aircraft-to-Aircraft, Drone-to-Drone, Vehicle-to-Vehicle, and Ship-to-Ship Measurements	Mobile-to-mobile (M2M) propagation channels have gained significant attention over the last years with the development of advanced communication systems for all kind of mobile stations such as aircraft, drones, cars, and ships. However, most available channel models do not account for the environment where the stations are located, but are defined for either average or worst-case conditions, not being able to predict the channel behaviour in specific scenarios. This is especially true for the scattering components of the channel, which are generally either ignored or defined as a rough extrapolation of the scattering components observed in other scenarios. In this work, we propose a geometry-based channel modeling technique that can be applied to any M2M scenario and that can calculate the channel accurately based on the environment around the stations. We first use finite and infinite planes to model the environment. Then, we use the proposed channel modeling technique to obtain analytically the contributions of each plane to the delay-dependent and joint delay Doppler probability density functions of the channel, as well as its squared delay/Doppler-spread function. Our technique focuses mainly on the scattering components but it also addresses the line-of-sight and specular reflection components. We apply the proposed channel modeling technique to different aircraft-to-aircraft, drone-to-drone, car-to-car, and ship-to-ship scenarios where channel measurements are available. In all scenarios, the channel estimated using the proposed channel modeling technique matches the channel measurements very accurately. Specifically, we observe that the scattering components are recreated very faithfully, and that we can even estimate how the channel evolves over time as	WG1	2024-01-04 07:37:19	Michael	Walter	m.walter@dlr.de	DLR	Y

TD(24)07051	Grégory Gougeon, Frédéric Munoz, Yoann Corre, Raffaele D'Errico, Gurjot Singh Bhatia	Millimeter-wave In-Factory Ray-tracing Calibration from Channel Sounding Measurements	New-generation communication and sensing systems are gaining strong interest in the context of Industry 4.0 e.g., related to mapping techniques, environmental sensing, automation or hyper-vision. The radio propagation in confined, cluttered and heavily metalized factory environments is a critical challenge; thus an evaluation by accurate propagation channel models is necessary Site-specific channel emulation can be obtained from Ray-tracing (RT); but RT validation for factory environments is still an on-going work. For this purpose, a measurement campaign was performed in a machine room with many metallic objects and machines, using a mmWave channel sounder. Wideband channel responses were collected and compared to RT simulations. The RT prediction tool was calibrated to minimize the error observed on some large scale statistics, thus reaching a very good agreement between the simulation and the measurement. Average error in received power, delay spread and azimuth spread is below 1.5 dB, 5 ns and 2° respectively.	WG1,VT3	2024-01-04 09:46:00	Gurjot Singh	Bhatia	gsbhatia@siradel.com	SIRADEL	Y
TD(24)07052	Robert Burczyk, Agnieszka Czapiewska, Malgorzata Gajewska and Slawomir Gajewski	LTE Performance Estimation Based on Indicators Measured by the Radio Module	Monitoring the operating parameters of power grids is extremely important for their proper functioning as well as for ensuring the security of the entire infrastructure. As the idea of the Internet of Things becomes more ubiquitous, there are tools for monitoring the state of the complex electrical grid and means to control it. There are also developed new measuring devices and transmission technologies allowing for the transfer of performed measurements from many places to the network management center. There is a need for devices that act as data concentrators, which would integrate many transmission technologies and protocols in one device, supporting the communication between those different transmission technologies and which would realize edge computing to assist the management center by prioritizing and combining transmitted data. Such device should have implemented a decision algorithm to select proper radio interface for particular transmission. In the paper are presented research results leading to the development of a decision algorithm, called Multilink—ML. This algorithm should select available radiocommunication interface for packet transmission without the need to burden the communication system with additional transmissions. In the paper are presented results for LTE.	VT3,VT4	2024-01-04 11:26:18	Agnieszka	Czapiewska	agnieszka.czapiewska@pg.edu.pl	PG	Y

TD(24)07053	Robert Burczyk, Agnieszka Czapiewska, Malgorzata Gajewska and Slawomir Gajewski	LTE Performance Estimation Based on Indicators Measured by the Radio Module	Monitoring the operating parameters of power grids is extremely important for their proper functioning as well as for ensuring the security of the entire infrastructure. As the idea of the Internet of Things becomes more ubiquitous, there are tools for monitoring the state of the complex electrical grid and means to control it. There are also developed new measuring devices and transmission technologies allowing for the transfer of performed measurements from many places to the network management center. There is a need for devices that act as data concentrators, which would integrate many transmission technologies and protocols in one device, supporting the communication between those different transmission technologies and which would realize edge computing to assist the management center by prioritizing and combining transmitted data. Such device should have implemented a decision algorithm to select proper radio interface for particular transmission. In the paper are presented research results leading to the development of a decision algorithm, called Multilink—ML. This algorithm should select available radiocommunication interface for packet transmission without the need to burden the communication system with additional transmissions. In the paper are presented results for LTE.	VT3,VT4	2024-01-04 11:27:19	Agnieszka	Czapiewska	agnieszka.czapiewska@pg.edu.pl	PG	
TD(24)07054	Muhammad Sohaib J. Solaija, Salah Eddine Zegrar, Hüseyin Arslan	Is OFDM the Way Forward for 6G PHY?	6G promises to have a variety of applications, as well as network entities, in terms of power, range, data rates, latency, and propagation environment. The overall heterogeneity of the network poses significant challenges in terms of physical (PHY) layer design. This paper first identifies some of the areas where the 5G multi-numerology orthogonal frequency division multiplexing (OFDM) falls short before discussing the possible approaches towards PHY design. In particular, we discuss a backward-compatible, forward-looking, and extendable PHY layer framework that can be extended as new requirements arise to enable a graceful and sustainable network evolution. This is illustrated with a simple case study where users with differ-ent requirements are allowed to use the same time-frequency resources in a cohesive manner. The paper concludes with the discussion of some critical research problems/areas pertaining to the said framework.	WG2	2024-01-04 12:04:33	Hüseyin	ARSLAN	arslan.usf@gmail.com	IMU	Y

TD(24)07055	Sebastian Urwan, Krzysztof K. Cwalina	User Orientation Detection in Relation to the Antenna Geometry in UWB WBANs Using Deep Learning	In the paper an issue of detecting the user’s position in relation to the antenna geometry in the ultra-wideband (UWB) off-body Wireless Body Area Networks (WBAN) radio link using the classic threshold method and deep learning methods is presented. In order to measure the impulse response of the channel, a measurement stand was developed, consisting of EVB1000 devices and DW1000 radio modules and indoor, static measurement scenarios were performed.	VT1	2024-01-04 12:54:09	Krzysztof	Cwalina	kkcwalina@eti.pg.edu.pl	PG	Y
TD(24)07056	Grega Morano, Aleš Simončič, Tomaž Javornik, Andrej Hrovat	Single Access Point Localization in TSCH Network	In today's landscape of industrial operations, the demand for real-time asset tracking, workflow optimization and efficient management of resources has led to an urgent need for A robust indoor positioning systems. In this paper, we propose a new single node localization approach using the IEEE 802.15.4 Time Slotted Channel Hopping (TSCH) protocol, which specifically tailored for industrial applications. We complement the protocol by integrating the Angle of Arrival (AoA) estimation method and the Multi-Carrier Phase Difference (MCPD) ranging method alongside the communication, so that an AoA and distance estimates are provided with each packet sent. With an experimental study in a real scenario in an office building, we evaluate the proposed localization system using low-cost proprietary devices. A single node positioned in the center of the room estimates both the AoA and the distance to each node within the network. The employed joint localization algorithm achieves sub-meter accuracy in localizing nodes in a 2-D space.	WG2,Sub-WG2	2024-01-04 13:14:03	Grega	Morano	grega.morano@ijs.si	IJS	Y

TD(24)07057	Aleš Simončič, Andrej Hrovat, Tomaž Javornik	Enhancing DoA accuracy in single RF chain systems through CFO-aware switching pattern	Single RF chain systems are increasingly favored for Direction of Arrival (DoA) applications due to their cost, efficiency and simplicity. However, challenges arise from non-simultaneous signal sampling across all antennas and the adverse impact of carrier frequency offset (CFO) on DoA accuracy if it is not accurately estimated and corrected. Accurate CFO estimation and correction often requires significant computational effort, which is undesirable for low-cost devices. To mitigate this problem, we propose two methods to obtain an optimized switching pattern in which the antennas sample the signal to minimize the CFO effect on the DoA estimation accuracy. In the first approach, the switching pattern is optimized to limit the accumulation of high phase progressions due to CFO on one part of the array. In the second approach, a mirror switching pattern is employed. To validate our proposed methods, we formulated a signal model and performed simulations using MATLAB, considering uniform linear and circular arrays. The in-phase and quadrature (IQ) signals sampled on all antennas contained the CFO, and the DoA was estimated using the MUSIC algorithm. The results show that the DoA errors in both proposed methods approach zero. Moreover, we observed a high-frequency limit for these methods, making them applicable in scenarios where only a coarse CFO estimation is possible due to limited computational resources and where the errors might exceed application-specific limits without an optimized switching pattern.	WG2	2024-01-04 13:14:44	Aleš	Simončič	ales.simoncic@ijs.si	IJS	Y
TD(24)07058	Simone Del Prete, Franco Fuschini, Marina Barbiroli, Mohammad Hossein Zadeh	A study on propagation of Frequency Diverse Array in multipath environments	Frequency Diverse Arrays are gaining interest for radar and wireless power transfer applications. Their capabilities to focus the field in a desired area is an interesting property in order to mitigate interference or enhance communications privacy. However, their current applications rely mostly on ideal free space propagation conditions, without considering the effect of multipath propagation in a real environment. In this work, Frequency Diverse Array characteristics and focus capability in real scenarios are primarily investigated through Ray Tracing simulations. Surprisingly, results show an overall fair resistance against multipath thanks to a sort of spatial diversity of the array elements, even though the field distribution undergoes clear spatial fluctuations triggered by multipath interference.	WG1	2024-01-04 14:48:48	Simone	Del Prete	simone.delprete4@unibo.it	UNIBO	Y

TD(24)07060	Vasile Bota, Ciprian Sandu, Communications Department, Technical University of Cluj-Napoca	Theoretical Analysis of Relay-assisted Transmissions Using Concatenated FEC-Rateless Coding	This TD analyzes the message non-recovery probabilities (pNR) and spectral efficiencies provided concatenated FEC-rateless coding employed within two relay-assisted (RA) algorithms using both the direct source-destination (S-D) link and the source-relay-destination path. It derives the expressions of the post FEC-decoding block-error, the pNRs and spectral efficiencies ensured ensured by the Repetition Redundancy (RR) and Incremental Redundancy (IR) RA algorithms over Rayleigh faded channels. The performances provided by the studied algorithms are compared the ones provided by the direct S-D transmission and to those provided by the Two-Hop Relaying (THR) scheme, both using the same concatenated FEC-rateless coding.	WG2	2024-01-04 16:07:40	Vasile	Bota	vasile.bota@com.utcluj.ro	UTCN	Y
TD(24)07061	Sergio Micó-Rosa, Concepcion Garcia-Pardo, Matteo Frasson, Narcís Cardona, Vicente Pons Beltrán	Preliminary Characterization healthy and malignant in vivo and ex vivo Human Colon Tissues under Surgery Procedures	The dielectric characterization of human tissues can play a crucial role in the development of new medical diagnostic tools. In particular, the characterization of healthy and pathological tissues can provide vital information for diagnosis. In this paper, preliminary results from a small-scale measurement campaign conducted in 0.5-26.5 GHz during real surgeries on healthy and malignant human colon tissues are presented. Those measurements were carried out externally to the colon, without direct contact to the tumor growing inside the colon. Furthermore, different tumor stages are taken into account. Initial findings reveal that advanced tumor stages are related with increased higher values of dielectric properties in malignant tumor tissues compared to the healthy ones.	VT1	2024-01-04 16:36:29	Sergio	Micó	sermiro@teleco.upv.es	UPV	Y

TD(24)07063	Mostafa Rahmani Ghourtani, Abigail MacQuarrie, Alister Burr, Lianet Méndez-Monsanto Suárez, Manuel J. López Morales, Ana García Armada	5G NR BLER-SNR curves under O-RAN compression techniques with AWGN and frequency selective channel	In this study we give BLER vs SNR curves for the 5G-NR air interface in an Open-RAN system with compression/quantization techniques specified by O-RAN Alliance. These curves cover all modulation and coding schemes (MCS) for both an AWGN channel and for an example frequency selective channel using OFDM. Care has been taken to ensure the no-compression results agree with the curves included in TD-23-06013. O-RAN compression techniques are used to compress the in-phase and quadrature (IQ) signal data to reduce the fronthaul load. For each MCS we present figures that show the BLER performance of all three compression techniques, and also optimum quantization. To gain a more in-depth understanding of these compression/quantization techniques with different modulation schemes we compare SNR performance with a benchmark: here the benchmark is the required SNR with no compression. We evaluate the required SNR at BLER 0.1 and calculate the SNR difference of the compression/quantization methods with the benchmark. To present the obtained SNR difference results, we have employed a comprehensive approach utilizing bar charts. Evaluation of each compression/quantization method provides a guide to the appropriate use for each modulation coding scheme within 5G NR in accordance with the O-RAN standards.	WG2	2024-01-04 16:56:57	Mostafa	Rahmani Ghourtani	rahmani.mostafa@york.ac.uk	UOY	Y
TD(24)07065	Liqin Ding, Artem R. Vilenskiy, Rahul Devassy, Mikael Coldrey, Thomas Eriksson, Erik G. Ström	Shannon Capacity of LOS MIMO Channels with Uniform Circular Arrays	The Shannon capacity for the line-of-sight (LOS) multiple-input multiple-output (MIMO) channel between two perfectly aligned uniform circular arrays (UCAs) is derived from first principles in a tutorial fashion. It is well known that harmonically related complex exponentials (also known in the literature as orbital angular momentum (OAM) modes) are eigenmodes for the spatially continuous channel. We show that the corresponding eigenvalues can be expressed as Bessel functions of the first kind. Moreover, we show that the spatially discrete channel that results from using two UCAs with the same finite number of Hertzian dipole antennas on both sides has eigenmodes that are spatially sampled continuous OAM modes and that the discrete eigenvalues are aliased versions of the continuous eigenvalues. Through numerical solution of Maxwell's equations, we verify that the discrete eigenvalues for UCAs with realistic dipole antennas are the same as with the Hertzian dipoles for the studied geometries (1 km hop distance, UCA radius 1 and 2 m, carrier frequency 70 GHz) as long as antenna spacing is not very dense.	WG2	2024-01-04 19:27:25	Erik	Ström	erik.strom@chalmers.se	CHALMERS	Y

TD(24)07066	Jiri Blumenstein (Brno University of Technology, Czech Republic); Josef Vychodil (Brno University of Technology & BUT Brno, Czech Republic); Radek Zavorka, Jan Bolcek and Malek Abdulmalek Ali (Brno University of Technology, Czech Republic); Golsa Ghiaasi (Silicon Austria Lab, Austria); Roman Marsale	Channel Measurements and Characterization in Industrial Environment at 60 GHz	This paper presents outcomes of a novel channel sounding and parametrization campaign in terms of both Doppler and delay statistics. The utilized frequency band is centered at 60 GHz with a 500 MHz of bandwidth. The experiments are conducted within an industrial environment featuring a substantial presence of highly blocking and reflective metallic surfaces. We utilize our in-house developed Orthogonal time-frequency space (OTFS)-based channel sounder/communication testbed. The presented sounding campaign encompasses a range of diverse human activities conducted during the measurement in presence of factory machines.	Sub-WG1.1	2024-01-04 19:28:23	Jiri	Blumenstein	blumenstein@vutbr.cz	HUAWEI	Y
TD(24)07070	A. Ziganshin, E. M. Vitucci, J. Myint, W. Kotterman, C. Schneider, V. Degli-Esposti	Ray-Based Simulation of Scattering from Discretized Curved Bodies	This TD shows the results of the STSM at UniBo. Vehicular applications are becoming a significant part of wireless communications. An essential task of channel modeling in such applications is a prediction of scattering or radar cross-section from curved bodies. We adhere to an approach where the curved body is discretized onto tiles, and then Ray Tracing (RT), combined with the Uniform Theory of Diffraction, is used to find the scattered field. We show that advanced diffraction methods are required to achieve realistic results: one of them is the vertex diffraction method, and its implementation within the RT tool is considered in this work. Simulation by the advanced RT tool is compared against electromagnetic simulation for several geometric objects.	WG1	2024-01-04 20:01:07	Ainur	Ziganshin	ainur.ziganshin@tu-ilmenau.de	TUIL	Y

TD(24)07071	Silvi Kodra, Jiahao Hu, Marina Barbiroli, Vittorio Degli-Esposti, Sana Salous	Multi-frequency measurements of material and floor penetration losses	To address the challenge of seamless indoor wireless coverage, continuous wave (CW) measurements were conducted to estimate the penetration loss of floors in the FR3 band of 7-15 GHz frequency range and for typical indoor walls and doors at 25, 77 and 153 GHz. In the FR3 band, through-floor losses varied between 44 to 64 dB with an increase with frequency from 7-15 GHz on the order of 18-20 dB for all the considered cases. Similarly, the variations of losses for the walls and doors increased with frequency between 22 to 33 dB across the three measured frequency bands.	WG1	2024-01-04 22:47:57	Sana	Salous	sana.salous@durham.ac.uk	DURHAM	Y
TD(24)07072	Roger H. Lang and Saúl A. Torrico	Frequency Correlations Functions for 2D-Trunk Dominated Forest	With the emergence of 5G wireless communications systems, there is the need to assess and improve the capacity of these systems. The improvements should not come just by meeting the required loss between the transmitter and the receiver, but should also come from the modulation and multiple access schemes that spread the transmission over wide bandwidths. To realize the increased capacity of these new systems, it is important to understand the coherent bandwidth of the propagation channel. The objective of this presentation is to describe a stochastic radiowave propagation model useful for assessing the effects of a 2D-trunk dominated forest on the correlation bandwidth of a 5G communication system.	WG1	2024-01-04 22:51:33	Saul	Torrico	storrico@gwu.edu	COMSEARCH	Y

TD(24)07073	Nopphon Keerativoranan, Jun-ichi Takada	Enabling Wireless Channel Emulator in Site-specific Device-to-Device Scenario with Grid-based Channel Modeling	The forthcoming wireless system is predicted to incorporate a huge number of wireless devices that communicate not only with the base station (BS) but also between moving devices. The wireless channel emulator (WCE) enables evaluation of wireless system performance prior to actual implementation with high reproducibility and time and cost efficiency. However, due to the computational complexity of deterministic propagation modeling, conventional WCE is unable to accurately predict a wireless channel in a site-specific scenario. The concept of two-layered grid-based channel modeling is presented as alternative approach to realize site-specific WCE in device-device scenario. In this model, the site-specific channel between two wireless devices is synthesized based on the pre-computed path parameters located at the reference positions (e.g., grid nodes) thorough interpolation. These reference positions for each wireless device are coexisted and spatially distributed in the simulation space and its path parameters are stored in WCE database. With such a technique, the huge computation of deterministic modeling between two moving wireless devices is migrated to offline processing.	WG1	2024-01-05 01:23:53	Nopphon	Keerativoranan	nopphon.keerativoranan@ap.ide.titech.ac.jp	TITECH	Y
TD(24)07074	Peize Zhang, Pekka Kyösti, Mar Francis de Guzman, Yejian Lyu, Katsuyuki Haneda, Nuutti Tervo, and Aarno Pärssinen	Evaluating the Beamforming Impact on Channel Dispersion Characterization Using Multi-Scenario Sub-THz Channel Measurements	To provide substantially high capacity, future 6G networks will be able to operate in higher frequency bands than current 5G networks. However, owning to the significant differences in channel characteristics between lower bands (< 100 GHz) and sub-terahertz (sub-THz) band, novel waveform and air interface design for sub-THz systems needs to account for the radio channels observed by practical beam patterns. In this paper, we investigate the beamforming impact on angular and time dispersion based on extensive measured channel data at 100 GHz and 140 GHz across multiple environments and scenarios. A framework for analysis of beamforming impact on channel dispersion is proposed using measured propagation channel data. Since sub-THz radio links necessitate high antenna gains, we first find the potential beam directions from beamformed channels and then form single- and multi-beam patterns towards desired directions under practical constraints. The angular spread of the beamformed channels observed by steered beams will be widened especially in line-of-sight scenario. Beam-weighted radio channel is considered as the basis of calculating time dispersion parameters, i.e., beam gains are multiplied with the measured propagation path gains prior to the analysis. Preliminary results show that the reduction of root-mean-square delay spread and maximum excess delay depends mainly on scenario, link distance, and used beamwidth, and partly on sidelobe level.	WG1,Sub-WG1.1	2024-01-05 08:16:48	Peize	Zhang	peize.zhang@oulu.fi	OULU	Y

TD(24)07075	Marina Barbiroli, Vittorio Degli-Esposti, Andrea Garzia, Simona Valbonesi, Paolo Grazioso, Luis M. Correia, Custódio Peixeiro	Current Challenges in the Evaluation of EMF Exposure at RF Bands	This paper addresses EMF exposure at RF bands. Under the general problem of estimating exposure and modelling exclusion zones around base stations, there are a number of open and new problems, mostly originated by 5G and beyond technologies. Exposure concerns wearables and phones, near base stations and access points, and Reconfigurable Intelligent Surfaces. As a consequence, new modelling approaches are required for: exclusion zones for active antennas, Reconfigurable Intelligent Surfaces in near- and far-fields, near-field of antennas and corresponding propagation scenarios, power transmission and antenna beam allocation, and users' distributions and their usage of services. Current challenges are addressed, and a brief state of the art is presented, after which potential approaches are listed, with examples being shown. Finally, the establishment of a correct risk communication on these topics is mentioned.	Sub-VT1	2024-01-05 10:37:59	Paolo	Grazioso	pgrazioso@fub.it	FUB	Y
TD(24)07078	Sergio Castelló-Palacios; Eva Antonino-Daviu; Antonio Vila-Jiménez; Ana Vallés-Lluch; Narcís Cardona; Concepcion Garcia-Pardo	Tailored EM Materials for Millimeter-Wave Direct Ink Write Printed Antennas	This paper presents the development of dielectric materials with tailored dielectric properties (electric permittivity and loss tangent) at Gigahertz frequencies for their use in low-cost millimeter-wave flexible Direct Ink Write (DIW) printed antennas. The materials can be created to exhibit specific mechanical properties (liquid, semi-solids, temperature-sensitivity, ink adhesion, flexibility, or stretchability) to cover different application needs. Electromagnetic performance of microstrip antennas manufactured through DIW technique on two crafted custom semi-solid materials will be presented for millimeter-wave applications. The antennas exhibit remarkable characteristics for 6G systems, particularly in terms of cost-effectiveness, owing to the low-cost fabrication process employed.	VT1	2024-01-05 11:16:34	Sergio	Castelló Palacios	sercaspa@iteam.upv.es	UPV	Y

TD(24)07079	Kenan Turbic	Correlation Properties of Channels with von Mises-Fisher Scattering	The von Mises-Fisher (vMF) distribution is a widely adopted statistical model for the angular distribution of scatterers associated with clusters of multipath components in radio channels. This paper presents an exact and simple analytical expression for the spatial correlation function in channels with vMF scattering. In contrast to previous results based on spherical harmonics expansion, involving infinite sums of spherical Bessel functions, the new expression is based on an elementary function, revealing the impact of underlying parameters in a straightforward manner. The analytical result is validated by a comparison against the one obtained via numerical integration, where an exact match is observed. To demonstrate its utility, the presented result is used to analyze spatial correlation across different antenna array geometries and to investigate temporal correlation of a radar signal from a moving target, represented by a cluster of vMF-distributed scatterers.	WG1	2024-01-05 11:21:53	Kenan	Turbic	kturbic@gmail.com	HHI	Y
TD(24)07081	Adam Samorzewski, Adrian Kliks, Margot Deruyck	RES-aware User Allocation Procedure in 5G Networks	One of the domains that is not highlighted enough, is the use of Renewable Energy Sources (RES) to feed the wireless network. As RES do not have guaranteed provisioning due to changing weather conditions, the wireless network still highly relies on fossil fuels (Conventional Energy Sources – CES). In this paper, we study the impact of operating algorithms for a base station powered by Renewable Energy Sources on its energy cycle factors, i.e., power consumption, renewable energy harvesting and losses, and energy efficiency including the ability to handle mobile terminals with predefined service requirements. The investigation was tested for two user association (UA) algorithms – the RES-aware proposed one and the standard SNR-based one named as reference approach.	WG2,WG3,Sub-VT1	2024-01-05 11:23:28	Adam	Samorzewski	adam.samorzewski@doctorate.put.poznan.pl	PUT	Y

TD(24)07086	Alicja Olejniczak, Krzystof K. Cwalina., Jaroslaw Sadowski, Jacek Stefanski	Phase correction and detection of GMSK signal using machine learning	The reception of the wireless signal is not a trivial task, especially considering harsh environment with multipath propagation and fading. The recent dynamic development of artificial intelligence has provided new possibilities to solve this issue. The given paper analyses the potential usage of the machine learning methods to improve the performance of GMSK signal detection in comparison to classic MLSE approach. This simulation study includes detection and phase correction aspects for EPA channel model.	WG1,WG2	2024-01-05 11:27:32	Alicja	Olejniczak	alicja.olejniczak@pg.edu.pl	PG	Y
TD(24)07087	Lorenzo Rubio, Vicent M. Rodrigo-Peñarrocha, Juan Reig , Jesús R. Pérez, Rafael P. Torres, Luis Valle	K-factor estimation at mmWave frequencies in a closed laboratory environment	In this contribution, the K-factor is analyzed in a closed laboratory environment based on wideband channel measurements carried out at millimeter-wave (mmWave) frequencies, covering the 24-40 GHz spectrum. The value of the K-factor is estimated from the method of moments applied directly to the envelope of the measured complex channel transfer function. The dependence of the K-factor on frequency and distance has been investigated. The results derived from this work are interesting for understanding the selectivity behavior of the propagation channel in these particular environments at mmWave frequencies.	Sub-WG1.1	2024-01-05 11:33:26	Juan	Reig	jreigp@dcom.upv.es	UPV	Y

TD(24)07088	CheChia Kang, Xin Du, and Jun-ichi Takada	Point Cloud-based Diffraction Path Extraction for Dynamic Human Body Shadowing Channel at 300 GHz Band in Corridor Scenario	The broad bandwidth availability of the sub-THz band enables the next generation of mobile communication systems. Since the high-gain antennas are used to compensate for the severe propagation loss, the communication link depends on the line-of-sight (LoS) channel and suffers from a deep fading when the LoS is shadowed by the head-size object. This paper proposes a method to find the diffraction path from the point cloud (PC) of the human body for the shadowing channel simulation using the uniform theory of diffraction (UTD). The shadowing gains at the 300 GHz band in a corridor environment (15 m) based on the equivalent edge currents (EECs) method, the screen UTD method, and the proposed method are compared against the measurement.	WG1,Sub-WG1.1	2024-01-05 12:07:07	CheChia	Kang	kang.c.aa@m.titech.ac.jp	TITECH	Y
TD(24)07089	Zhixiang Zhao, Carsten Smeenk	Radar Sensing Assisted Beam Management in 5G NR with Deep Reinforcement Learning	In 5G NR, particularly at millimeter-wave (mmWave) frequencies, utilizing large antenna arrays with narrow beams enhances channel capacity and compensates for high propagation loss. Concurrently, this also introduces challenges in beam training and tracking. Traditional communication solutions for Beam Management (BM) rely on reference signals, incurring high overheads, and reducing data transmission efficiency. Moreover, classical control methods for beam tracking such as the Kalman filter face performance degradation under nonlinearities or the model mismatch from assumptions. This paper proposes a radar sensing-assisted beam management method joined with Deep Reinforcement Learning (DRL). First, periodic Synchronization Signal (SS) bursts are sent through a group of wide beams sweeping the environment. Then based on the Channel State Information (CSI) report from user equipment (UE) the initial connection is established. After that, to reduce communication overhead, the base station transmits orthogonal frequency-division multiplexing (OFDM) data symbols and processes the echoes back from the UE, extracting DoA and Doppler information for training a DRL agent to perform beam refinement and tracking.	Sub-WG2	2024-01-05 14:47:53	Zhixiang	Zhao	zhixiang.zhao@tu-ilmenau.de	TUIL	Y

TD(24)07091	Damir Hamidovic, Armin Hadziaganovic, Raheeb Muzaffar, Hans-Peter Bernhard	5G Campus Network Factory Floor Measurements with Varying Channel and QoS Flow Priorities	5G is considered a promising wireless communication technology to fulfill the high-demanding communication requirements of many Industry 4.0 applications. This work evaluates a 5G campus network for indoor factory floor scenarios using the latest commercially available 3GPP release-16 developments. The measurement campaign is conducted to obtain detailed coverage maps with reference signal received power, channel quality indicators, and downlink and uplink throughput (TP). Moreover, end-to-end delay measurements with varying channel conditions, 5G quality of service (QoS) priorities, and traffic loads were evaluated. It was concluded that even without ultra-reliable low-latency features, the TP and latency performance could be controlled by configuring QoS parameters. The evaluations suggest scenarios where QoS allocation and retention priority levels can be used in order to ensure the required performance of a specific QoS flow within the 5G system.	VT3	2024-01-05 15:01:38	Raheeb	Muzaffar	raheeb.muzaffar@silicon-austria.com	SAL	Y
TD(24)07092	Jakub Dobosz, Pawel Kulakowski	Angle of Arrival Estimation With Automotive Radars Using Machine Learning Based on Simulation Data	In the automotive industry, radar technology is gaining growing importance as it is applied for object detection, collision avoidance, and cruise control. Given the substantial amount of data inherent in radar signals, machine learning emerges as an ideal tool for making predictions and decisions essential for vehicle situation awareness. This technical document reports an initial study focused on estimating the direction to a target, a signal angle of arrival, by an automotive radar utilizing machine learning techniques. Initially, simulations of radar scenarios on a road were conducted, resulting in a dataset of 64 GB comprising around 200 thousand samples. Subsequently, this dataset was utilized to train two types of deep learning algorithms: classical dense neural networks and convolutional neural networks. The results are compared to a classical signal direction of arrival algorithm known as MUSIC.	WG2,VT2	2024-01-05 15:06:15	Pawel	Kulakowski	kulakowski@agh.edu.pl	AGH	Y

TD(24)07093	François De Saint Moulin and Guillaume Thiran, Christophe Craeye, Claude Oestges, Luc Vandendorpe	Near-Field EM-Based Multistatic Radar Range Estimation	Radar targets are usually modelled as point target reflectors, even in the near-field region. Yet, for radar systems operating at high carrier frequencies and small distances, traditional radar propagation models do not accurately model the scatterer responses. In this paper, a novel electromagnetic-based model is thus developed for the multistatic radar detection of a rectangular plate reflector in the near-field region. This model is applied to an automotive scenario, in which a linear antenna array is spread out at the front of a vehicle, and performs a radar measurement of the distance to the back of the vehicle ahead. Based on the developed received signal model, a maximum likelihood estimator of the range is designed. By exploiting the near-field target model, this estimator is shown to provide a significant gain with respect to traditional range estimators. The impact of the system and scenario parameters, i.e. the carrier frequency, bandwidth and distance to the target, is furthermore evaluated. This analysis shows that the radar resolution in the near-field regime is improved at high carrier frequencies, while saturating to the traditional bandwidth-dependent resolution in the far-field region.	WG2	2024-01-05 15:11:39	François	De Saint Moulin	francois.desaintmoulin@uclouvain.be	UCLOUVAIN	Y
TD(24)07094	Guillaume Thiran, Luc Vandendorpe	Absolutely secure beamforming in non-coherent cell-free networks	In a network in which Alice and Bob communicate while avoiding information leakage towards the eavesdropper Eve, secure beamforming methods degrade as much as possible the Alice-Eve channel while improving the Alice-Bob one. The situation becomes increasingly complicated with the number of transmitters, as traditional security requires each individual link to be secured. The recently developed absolutely secure coding mechanism changes this paradigm: by sending linear combinations of the transmissions, it is sufficient to have a single link secure to ensure absolute security. In this context, this paper studies the beamforming design in non-coherent cell free networks, with several transmitters, receivers and eavesdroppers. A nonconvex optimisation problem is formulated, which minimises the information leakage towards any eavesdropper while ensuring the receivers have a sufficient signal-to-noise ratio. A local optimum of this problem is obtained through sequential minimisation, which can be performed in a decentralised way by each transmitter. The subproblems which must be solved by the transmitters are shown to be convex, and they are tackled through conic optimisation. Numerical validations are performed, showing that secure communications are possible even when they are many eavesdroppers, and when some of them are located between the receiver and one of the transmitters.	WG2	2024-01-05 15:11:40	Guillaume	Thiran	guillaume.thiran@student.uclouvain.be	UCLOUVAIN	Y

TD(24)07095	Adrian Kliks, Łukasz Kułacz	UTILIZATION OF RECONFIGURABLE INTELLIGENT SURFACES WITH CONTEXT INFORMATION	Reconfigurable intelligent surfaces can be successfully used to control the radio environment. Simple control of the reflection angle of the signal from the surface allows maximization or minimization of the received power in specific places. The paper presents simulations where it is possible to receive a signal in a place where it was not possible, to detect the occupancy of the spectrum in a place where the sensor was unable to make correct detection or to minimize interference in a specific receiver.	WG1	2024-01-05 16:48:30	Adrian	Kliks	adrian.kliks@put.poznan.pl	PUT	Y
TD(24)07097	Olga Błaszkiewicz, Piotr Rajchowski, Jarosław Sadowski	A survey of working group documentations in terms of synchronization signal (NPSS) for NB-IoT radio interface	NPSS signal, as previously in LTE, is based on Zadoff-Chu sequence. However, neither of PSS sequences from LTE system have the same structure as NPSS. This documentation is a survey of RAN1 working group documentations in terms of NPSS in NB-IoT system.	WG2	2024-01-05 16:53:41	Olga	Błaszkiewicz	olga.blaszkiewicz@pg.edu.pl	PG	Y

TD(24)07101	Jiteng Ma, Liang Qiao, and Mark Beach	Millimeter Accuracy Indoor Localization System Using an Attention Convolution Model	In this work, we present a novel deep-learning model for achieving millimeter accuracy for indoor localization. The model comprises a multi-head self-attention model and a convolutional neural network (CNN), allowing for robust feature extraction from the captured wireless signals. To further enhance the localization accuracy, we also introduced a data augmentation method to increase the size and diversity of the dataset by creating synthetic variants. The performance of the proposed model is tested on an open dataset containing measured channel state information (CSI) signals from a massive multiple-input multiple-output (MIMO) system. The validation accuracies for all three cases are more than seven times higher than the state of the art. The model has also been further evaluated in the COST INTERACT CA20120 Machine Learning Challenge. The performance of our model is competitive with the measured position and significantly outperforms other teams. The proposed model and the associated approaches contribute to the development of practical millimeter-level indoor localization systems using deep learning architectures.	WG1,Sub-WG1.1,WG2	2024-01-05 17:17:14	Jiteng	Ma	jiteng.ma@bristol.ac.uk	BRISTOL	Y
TD(24)07103	Ana Ramalho, Luis M. Correia and Adalberto Santos	Implementation of 5G Private Networks at Portuguese Air Force	This work studies the implementation of 5G private networks at the Portuguese Air Force, focusing specifically on their potential applications and benefits. Private networks have been the centre of attention since 5G technology was introduced due to its capacity to provide increased connection, reduced latency, and data security. This research aims at identifying and studying the aspects and characteristics of 5G private networks. It also investigates real-world use services in restricted scenarios, such as an Airbase, the Portuguese Air Force Wide Area Multilateration System, and a Remote-Controlled UAV Squadron, to demonstrate the practical implications of this technology. To guarantee service performance, the developed model considers the MEC node deployment options, Splitting Option 7.2 functionalities, and network architectures as variables to analyse the deployment performance of a private network. The results show that even when adopting adequate latency reduction strategies and radio techniques applied to a 5G private network architecture, it is impossible to ensure some services' requirements, removing the possibility of deploying a private network integrated into a commercial Operator infrastructure.	WG3	2024-01-05 18:32:15	Luis M	Correia	luis.m.correia@tecnico.ulisboa.pt	ULISBOA	Y

TD(24)07104	José Reis, Luis M. Correia and Henrique Ribeiro	Analysis of the extension of 5G Networks to the mm wave band	The development of 5G mmWave networks arises from the need to achieve ultra-fast transmission speeds and low latency values. However, the limited propagation conditions for the relevant frequency bands require a structured planning approach for such systems. Given the absence and imminence of the introduction of these systems in mobile networks in Portugal, this paper assesses the deployment conditions for a set of scenarios with different characteristics in the metropolitan area of Lisbon, based on coverage and capacity analyses. Both analyses are grounded in the latest protocols defined by the 3GPP to ensure verification and comparison of results with other works in the literature. Additionally, a method is presented that enables cell radius control based on user location and their used services and applications within the coverage radius. Finally, the influence of fundamental network design parameters and user characteristics on aspects such as cell radius and number of users is examined. Based on the obtained results, it is possible to indicate network configuration parameters for each scenario, considering different user characteristics. This study contributes to the understanding of the deployment challenges and optimization strategies for 5G mmWave networks in the specific context of the metropolitan area of Lisbon, providing valuable insights for future implementations in Portugal.	WG3	2024-01-05 18:36:30	Luis M	Correia	luis.m.correia@tecnico.ulisboa.pt	ULISBOA	Y
TD(24)07105	Bernardo Galego, Luis M. Correia, Fernando Sousa and Sofia Patricio	Analysis of Exposure to EMF Time-Dependence in 5G Base Stations Deployment	This work aims to develop a model capable of simulating and analysing the behaviour of electromagnetic fields around a 5G base station, over time. The model allows for the computation of the transmitted power of each individual beam in a 5G antenna, and from this the calculation of the time-dependent exclusion zone around it. In order to achieve realistic results, real-life scenarios are created, along with several common mobile services, which are described in terms of required throughput or download size, to realistically simulate a base station's environment. With the aim of maintaining the realism of the simulation, various sub-models are designed, such as the beamforming sub-model, which realistically and dynamically adjusts the antenna's beams in accordance to the spatial distribution of the users serviced by the base station. Furthermore, in order to compare with the results from the model and with previous work, on-site measurements with Huawei were performed. The procedure for these, and the discussion of results, both simulated and measured, are also presented in this work.	Sub-VT1	2024-01-05 18:41:16	Luis M	Correia	luis.m.correia@tecnico.ulisboa.pt	ULISBOA	Y

TD(24)07106	Pedro Mateus, Luis M. Correia and Fernando Santana	Implementation of 5G Private Networks in Railway Communications	Railway systems are evolving, and new applications are appearing to improve the passenger experience and optimize the railway processes in terms of performance and safety. 5G Private Networks take advantage of the latest cellular technology by offering a dedicated network with high standards of reliability, performance and security. The purpose of this work is to study and identify the network architectures and private network configurations that best meet the requirements of applications, such as latency and capacity. Some of the outputs of the developed model are the provided throughput, the required throughput as well as the delays across the network that compose the E2E Total Latency. The possibility of using a MEC node is also considered for latency reduction as well as different radio configurations. Moreover, the private network deployment options considered were isolated, shared and network slice. Results show that the shared option between the railway operator and the commercial operator is the only solution that satisfies the requirements of all the studied services of which some are railway specific, and the others associated with the passengers. For the passenger services, one obtained a required capacity of 1355.16 Mbps with a margin of 133.96 Mbps to the provided and a required capacity of 29.75 Mbps with a margin of 1.05 Mbps to the provided for the railway services. Regarding latency, for the railway signalling service, which is the most critical, one obtained a total node latency of 3.77ms.	VT2	2024-01-05 18:44:45	Luis M	Correia	luis.m.correia@tecnico.ulisboa.pt	ULISBOA	Y
TD(24)07107	Diogo Pereira, Rodolfo Oliveira	Model-driven Deep Learning Interference Estimation in Grant-Free NOMA Uplink Networks	Accurate estimation of aggregate interference in wireless communication systems plays a pivotal role in resource allocation, spectral efficiency optimization, and interference mitigation. To achieve that, we propose a low-complex and accurate deep leaning algorithm (DL) to predict the aggregate interference probabilistic distribution parameters in an uplink grant-free channel access scheme adopting a spreading-based NOMA scheme. Concerning the modelling of the DL algorithm, we combined the data-driven and model-driven approaches. Through the adopting of this hybrid-model scheme, the DL model learns through data created by the governing equations of the communication network model. Finally, we accessed the algorithm’s generalization error by evaluating its performance in network communication scenarios with different nodes' density per area values, where the algorithm was not trained.	WG2	2024-01-05 19:14:21	Diogo	Pereira	dfca.pereira@campus.fct.unl.pt	UNINOVA	Y

TD(24)07108	Jean-Frederic Wagen, Yann Maret	On rate adaptation in the context of future MANETs or VANETs	In May 2021, an Ericsson's white paper stated: "In order to realize high data rate time-critical applications at a large scale with 5G networks, it is essential that these applications are able to react to network congestion delays and meet desired latency targets by adapting bitrates in real time. » [https://www.ericsson.com/en/reports-and-papers/white-papers/enabling-time-critical-applications-over-5g-with-rate-adaptation]. All modern copper (xDSL, G.Fast, DOCSIS) and wireless (cellular, WiFi, Bluetooth, LoRa) use adaptive bit rates to enhance the link delivery ratio at the expense of bit rate thanks to adaptive Modulation and Coding Schemes (MCS). This contribution explores some pros and cons of ideal rate adaptations in the context of Mobile or Vehicular Area NETworks (M/VANETs). The QoS metrics considered here are limited to delivery ratio before congestion, goodput before congestion, and delivery ratio given a fair source bit rate. Preliminary results are provided to motivate future work despite the complexity of the implementation of rate adaptation.	WG1,WG2,VT2,VT3,VT4	2024-01-05 19:15:24	Jean Frederic	Wagen	jean-frederic.wagen@hefr.ch	HES SO	Y
TD(24)07109	Heraldo Cesar Alves Costa, Saw James Myint, Carsten Andrich, Sebastian W. Giehl, Christian Schneider, Reiner S. Thomä	Bistatic Micro-Doppler and Reflectivity Measurements for Distributed ICAS	The integration of wireless communication and radar sensing is now getting a huge interest from researchers of two big societies, wireless communication and radar. The road map to the final goal and individual solutions to the challenges might differ in developing the Integrated Communication and Sensing (ICAS) system. However, since the detection, localization, and classification of the targets are involved, the electromagnetic signature of the targets will be still valid for all variants of the ICAS system. Therefore, the study on static reflectivity and micro-Doppler signatures of targets such as drones, pedestrians, and cyclists is of great importance to the ICAS community. This document presents some micro-Doppler and reflectivity measurements, performed using the state-of-the-art measurement system, BiRa.	WG1,WG2	2024-01-05 20:50:23	HERALDO CESAR	ALVES COSTA	heraldo-cesar.alves-costa@tu-ilmenau.de	TUIL	Y

TD(24)07110	Nicola Di Cicco, Klevis Duka, Vittorio Degli-Esposti, Enrico M. Vitucci	A preliminary study on the use of convolutional networks for RF coverage evaluations in urban environments	U-nets are a type of Fully Convolutional Neural Network that has been widely adopted for image segmentation applications and has shown high accuracy and fast performance. In the present study, U-nets are applied to wide area prediction of radio propagation parameters in urban environment. Coverage maps involving different propagation parameters (e.g. presence of line-of-sight, path-loss, delay spread) in a typical urban scenario are generated through simulations with a ray tracing tool. The generated dataset is then used to train and test the U-net. Preliminary results look promising.	WG1	2024-01-05 21:48:02	Enrico Maria	Vitucci	enricomaria.vitucci@unibo.it	UNIBO	Y
TD(24)07111	Enrico M. Vitucci, Matteo Albani, Silvi Kodra, Marina Barbiroli, Vittorio Degli-Esposti	A Fully Ray-based Modeling Approach for Scattering from RIS: analytical formulation and validation	In recent years, Reconfigurable Intelligent Surfaces (RISs) have garnered significant attention in research studies focused on both their technological aspects and potential applications. Following the approach proposed in a previous TD, we have developed a fully ray-based algorithm for the computation of the re-radiated field by a RIS that can be easily embedded in efficient, forward ray tracing (also known as ”ray launching”) tools. The work presented in TD(23)05075 is here suitable extended to edge diffraction, in the framework of the Uniform Theory of Diffraction (UTD): in particular, we show that a new Keller’s cone, the ”anomalous Keller cone”, has to be taken into account in addition to the ordinary one and a novel, heuristic modification of the UTD diffraction coefficients is proposed. We validate the proposed model by comparison to well established methods available in the literature, such as Physical Optics and full-wave simulations using the tool CST microwave studio. Results show that the ray model is far more efficient in term of computation time, but corresponding results are very similar in a number of benchmark cases.	WG1,Sub-WG1.2	2024-01-05 22:13:51	Enrico Maria	Vitucci	enricomaria.vitucci@unibo.it	UNIBO	Y

TD(24)07113	Alister Burr, Mostafa Rahmani, Abigail MacQuarrie (University of York, UK), Lianet Méndez-Monsanto Suárez, Manuel J. López Morales and Ana García Armada (Carlos III University, Madrid, Spain)	Truncated Shannon Bound for System Level Simulation of 5G-NR	The Truncated Shannon Bound (TSB) uses a shifted and scaled version of the Shannon bound to approximate the throughput versus SINR mapping for an adaptive modulation and coding scheme (AMCS). It was proposed by 3GPP for use in system level simulation (SLS) for LTE systems. However 5G-NR uses a different set of modulation and coding schemes (MCSs), and hence requires a revised version. In this paper we use recent results for required SINR for each of the MCSs in the 5G-NR standard to derive shifting and scaling parameters for a TSB for 5G-NR. We also outline the theoretical basis for the calculation of these parameters, which is intended to ensure that the estimated throughput in an SLS using the TSB will match that using the actual AMCS. We also consider the effect of O-RAN fronthaul compression on required SINR and adapt the parameters accordingly.	WG2,WG3,HA1	2024-01-05 23:11:13	Alister	Burr	alister.burr@york.ac.uk	UOY	Y
TD(24)07117	Nila Bagheri, Fernando J. Velez and Jon M. Peha	Advancements in High-Frequency Antenna Design: Integrating Photonic Crystals for Next-Generation Communication Technologies	This temporary document delves into the realm of high-frequency antennas, exploring their utilization in achieving superior data transmission rates and enhanced signal quality across extensive distances. The fundamental advantage lies in the inverse relationship between radio signal frequency and its data-carrying capacity. Higher frequency signals, characterized by shorter wavelengths, exhibit an increased ability to convey more cycles of data within identical timeframes compared to lower frequency counterparts. Consequently, these high-frequency signals facilitate heightened data transmission rates, making them optimal for swift and efficient wireless communication. Additionally, their shorter wavelengths enable greater flexibility in maneuvering around obstacles, thereby mitigating interference from external sources. The core contribution of this study involves the innovative design of a photonic crystal-based microstrip patch antenna array with high gain. This novel antenna system is meticulously crafted to cater to the evolving landscape of next-generation wireless communication technologies and their diverse applications. Leveraging the Photonic Band Gap (PBG) structure and Finite Element Method (FEM), a fractal microstrip patch antenna operating within the E-band of the electromagnetic spectrum is engineered and simulated using the High Frequency Structure Simulation (HFSS) software. The integration of the PBG structure significantly enhances the antenna's gain and bandwidth, while the incorporation of fractal geometry effectively reduces antenna size and augments input impedance. Notably, the antenna's operational frequency spans 60.88 GHz to 162.63 GHz, featuring a resonant band	WG1,Sub-WG1.2,VT4	2024-01-05 23:54:02	Fernando José	VELEZ	fjv@ubi.pt	UBI	Y

TD(24)07118	João Pedro Baiensea,*, Paulo Jorge Coelhob,c, Ivan Miguel Piresd and Fernando José Velez	Wearable solution for health monitoring of car drivers	The need for creative solutions in real-time health monitoring has been highlighted by the rise in health-related incidents involving drivers of motor vehicles. It has led to the development of wearable technology that seamlessly integrates with the Internet of Medical Things (IoMT) to improve driver safety and healthcare responsiveness. The development of a revolutionary wearable technology system is presented in this study as an innovative approach to vehicle safety and healthcare. This system's real-time ability to track a driver's health is a significant development in guaranteeing driver safety and wellness. The study examines the hardware component's complex design and implementation, particularly concerning the printed circuit board (PCB) layout and electrical schematic. The gadget emphasizes wearability, robustness, affordability, and user-friendliness and is a shining example of valuable and effective medical technology. The research delves deeper into possible improvements for the system, like adding complex algorithms and a user-friendly interface. Enhancing user involvement and system intelligence hopes to maximize the system's potential for real-time health monitoring. The significance of this study in utilizing Internet of Medical Things (IoMT) technology is highlighted by its junction with multiple fields, including electronics, hardware engineering, human-computer interaction, and health informatics. This dissertation emphasizes the potential of wearable technology in bridging the gap between healthcare monitoring and vehicle safety by focusing on	WG1,Sub-WG1.2,VT4	2024-01-05 23:55:02	Fernando José	VELEZ	fjv@ubi.pt	UBI	Y
TD(24)07119	António Brito* , Pedro Sebastião* , Jon M. Peha+ , and Fernando J. Velez	Double Threshold Waveform-based Detection Spectrum Sensing	In the context of cognitive radio, Waveform-based Detection (WBD) is a spectrum sensing technique that may be considered in the Cyclic Prefix Orthogonal Frequency Division Multiplexing (CP-OFDM), e.g., within 5G New Radio (NR). This new technique overcomes the limitations of previous techniques, like Energy Detection (ED), Matched Filter Detection (MFD), and Hybrid MFD (HMFD). In this study, a Double Threshold Waveform-based Detection (DTWBD) is proposed (based in WBD). The DTWBD performance is investigated by obtaining the probability of miss-detection (Pmd) using Monte-Carlo simu lations while varying parameters, like signal-to-noise ratio (SNR), number of samples (N), and probability of false alarm (Pfa). DTWBD outperforms WBD, particularly for low SNR, low N, and low Pfa. WBD and DTWBD have shorter simulation running times when compared to MFD and HMFD, respectively. The study also proposes a method to determine the minimum N and SNR complying with the IEEE 802.22 Wireless Regional Area Network (WRAN) recommendation requirements. By considering an analytical approach, the results also show that WBD and MFD techniques outperformed ED technique (N.B. there is not analytical formulation approach of DTWBD yet).	WG1,Sub-WG1.2,VT4	2024-01-05 23:56:03	Fernando José	VELEZ	fjv@ubi.pt	UBI	Y

Lisbon MEETING / 22-25 January 2024

Monday 22/01

08:30 Welcome

09:00 **Room A**

40 YAW

10:30 Coffee break

11:00 **Room A**

40 YAW

13:00 Lunch

14:00 **Room A**

40 YAW

15:30 Coffee break

16:00 **Room A**

40 YAW

17:30

19:00 **Departure to social event**

Tuesday 23/01

08:30 Welcome

09:00 **PLENARY Room A**

Management Comittee meeting
General Information

11:00 Coffee break

11:30 **PLENARY Room A**

Keynotes	**Bruno Clerckx**
	Mário A. T. Figueiredo

13:00 Lunch

14:00	**Room A**	**Room 2.1**	**Room 2.2**	**Room 2.3**
	WG1-Propagation	WG2-Coding	WG3-B5G, ML/RA	
	70	35	4	
	72	60	32	
	13	63	103	
	73	113		

15:30 Coffee break

16:00	**Room A**	**Room 2.1**	**Room 2.2**	**Room 2.3**
	VT2+WG1	WG2-IoT	WG3-Net. Quality	SWG1.2-RIS
	29	26	5	44
	30	48	81	95
	50	97	104	111
			Disc-WG3	14
17:30		**WIRS meeting**		Disc RIS

Wednesday 24/01

08:30 Welcome

09:00	**Room A**	**Room 2.1**	**Room 2.2**	**Room 2.3**
	WG1-WG2 Channel	SWG2-ISAC	SWG1-Scatterers	VT1
	6	28	74	78
	25	31	117	61
	33	89	79	118
	27	109		

10:30 Coffee break

11:00	**Room A**	**Room 2.1**	**Room 2.2**	**Room 2.3**
	WG1-Loss	VT2+WG2	WG2 - Localisation	VT4
	71	19	56	37
	9	92	57	52
	12	16	101	110
		106		DISC VT4

12:30 Lunch

14:00	**Room A**	**Room 2.1**	**Room 2.2**	**Room 2.3**
	SWG1.1 - Mesure	WG2 - Modulation	VT2+WG3	VT3-WG1
	34	54	22	66
	58	86	47	51
	87	119	2	91
			DISC VT2	

15:30 Coffee break

16:00	**Room A**	**Room 2.1**	**Room 2.2**	**Room 2.3**
	SWG1.1 - Human	WG2-Iter. Dec.	VT3-WG3	SVT1-EMF
	1	17	3	21
	18	20	108	23
	88	107	Disc VT3	75
	Disc WG1	Disc WG2		105
17:30	& SWG1.1			Disc EMF
18:00	**Newsletter meeting**			

Thursday 25/01

08:30 Welcome

09:00	**Room A**	**Room 2.1**	**Room 2.2**
	WG2-MIMO-BF	WG2 - Localisation	VT1
	45	7	24
	46	8	55
	65	15	Disc VT1
	94	93	

10:30 Coffee break

11:00 **PLENARY Room A**

MC meeting	Summary of WG activities

12:30 Lunch

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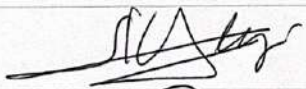
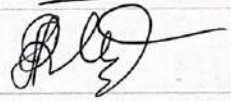
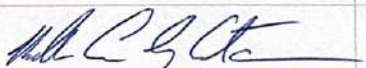
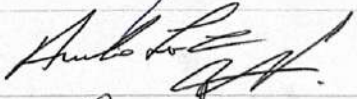
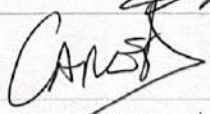
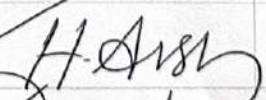
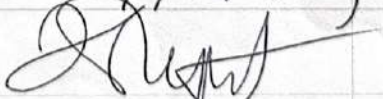
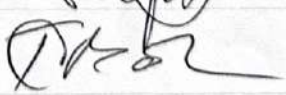
MEETING ATTENDANCE LIST OF (7TH MC AND SCIENTIFIC MEETING - 22/01/2024)

The attendance list provides the names of the participants who confirmed attendance via their personal e-COST invitation link.

Meeting Title: 7th MC and scientific meeting	
Meeting Reference: E-COST-MEETING-CA20120-220124-c9bae64b	**Action Number: CA20120**
Meeting Administrator: Natascia De Fenzo	**E-mail: natascia.defenzo@cnit.it**

- **Workshop/Conference - Workshops/Conferences (Start Date: 22/01/2024 End Date: 22/01/2024)**

Nr	Participant	Country	Signature	Is Attending
1	Adeogun, Ramoni ra@es.aau.dk	DK		
2	ahmadi, hamed hamed.ahmadi@ucd.ie	UK		
3	Alayón Glazunov, Andrés andres.alayon.glazunov@liu.se	SE		Yes
4	Aleksiejūnas, Rimvydas rimvydas.aleksiejunas@ff.vu.lt	LT		Yes
5	Alexandru, Marian marian.alexandru@unitbv.ro	RO		
6	ALVES COSTA, HERALDO CESAR heraldo-cesar.alves-costa@tu-ilmenau.de	DE		Yes
7	Ambroziak, Slawomir slawomir.ambroziak@pg.edu.pl	PL		Yes
8	Anton-Haro, Carles carles.anton@cttc.es	ES		Yes
9	ARSLAN, Hüseyin arslan.usf@gmail.com	TR		Yes
10	Bajić, Dragana dragana.bajic@gmail.com	RS		Yes
11	Balan, Titus Constantin titus.balan@unitbv.ro	RO		Yes

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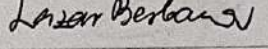
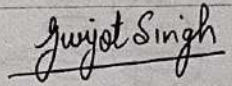
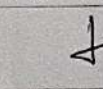
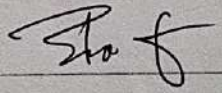
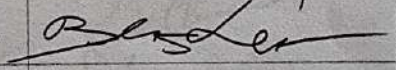
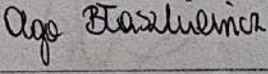
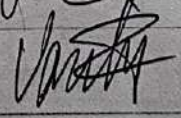
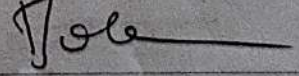
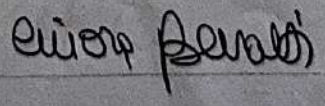
- **Workshop/Conference - Workshops/Conferences (Start Date: 22/01/2024 End Date: 22/01/2024)**

Nr	Participant	Country	Signature	Is Attending
12	Batagelj, Boštjan bostjan.batagelj@fe.uni-lj.si	SI		
13	Berbakov, Lazar lazar.berbakov@pupin.rs	RS		Yes
14	BERBINEAU, Marion marion.berbineau@univ-eiffel.fr	FR		Yes
15	Bhatia, Gurjot Singh gsbhatia@siradel.com	n/a		Yes
16	Bilbao, Inigo inigo.bilbao@ehu.eus	ES		
17	Bito, Janos bito.janos@vik.bme.hu	HU		Yes
18	Blazek, Thomas wtblazek@gmail.com	AT		
19	Blumenstein, Jiri blumenstein@vutbr.cz	CZ		Yes
20	Błaszkiewicz, Olga olga.blaszkiewicz@pg.edu.pl	PL		Yes
21	Boban, Mate mate.boban@huawei.com	DE		
22	Bota, Vasile Vasile.Bota@com.utcluj.ro	RO		Yes
23	Brennan, Conor conor.brennan@dcu.ie	IE		
24	Buehler, Hermann Hermann.Buehler@buehler.at	AT		Yes
25	Buratti, Chiara c.buratti@unibo.it	IT		Yes

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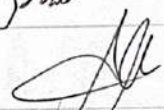
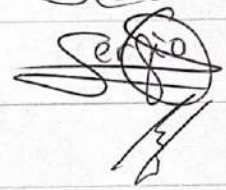
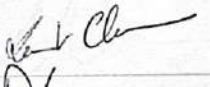
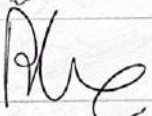
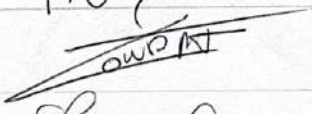
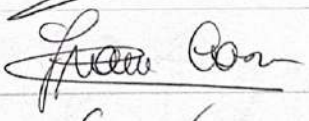
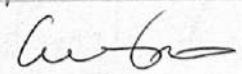
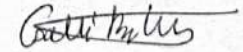
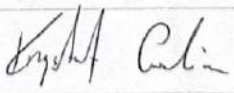
Nr	Participant	Country	Signature	Is Attending
26	Burr, Alister alister.burr@york.ac.uk	UK		Yes
27	Cardona, Narcis ncardona@iteam.upv.es	ES		Yes
28	Cardoso, Filipe filipe.cardoso@estsetubal.ips.pt	PT		Yes
29	Castelló Palacios, Sergio sercaspa@iteam.upv.es	ES		Yes
30	Chatzimisios, Periklis pchatzimisios@ihu.gr	EL		Yes
31	Chatzinotas, Symeon schatzin@ieee.org	LU		
32	Cichoń, Krzysztof krzysztof.cichon@put.poznan.pl	PL		Yes
33	Clavier, Laurent laurent.clavier@imt-nord-europe.fr	FR		Yes
34	Clerckx, Bruno b.clerckx@imperial.ac.uk	UK		Yes
35	Conrat, Jean-Marc jeanmarc.conrat@orange.com	FR		Yes
36	Conserva, Francesca francesca.conserva@unibo.it	n/a		Yes
37	Correia, Luis M luis.m.correia@tecnico.ulisboa.pt	PT		Yes
38	Csatho, Botond Tamas csatho.botond@edu.bme.hu	HU		Yes
39	Cwalina, Krzysztof kkcwalina@eti.pg.edu.pl	PL		Yes

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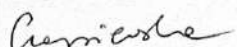
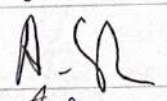
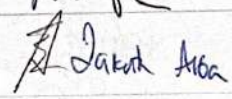
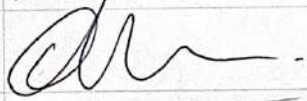
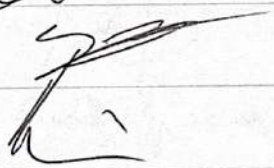
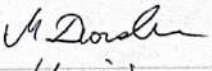
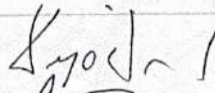
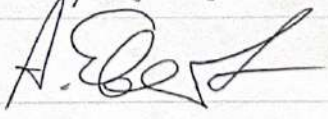
- **Workshop/Conference - Workshops/Conferences (Start Date: 22/01/2024 End Date: 22/01/2024)**

Nr	Participant	Country	Signature	Is Attending
40	Czapiewska, Agnieszka agnieszka.czapiewska@pg.edu.pl	PL		Yes
41	Czylwik, Andreas czylwik@nts.uni-duisburg-essen.de	DE		Yes
42	Dakic, Anja anja.dakic@ait.ac.at	n/a		
43	Das, Kallol kallol.das@tno.nl	NL		Yes
44	De Saint Moulin, François francois.desaintmoulin@uclouvain.be	BE		Yes
45	Degli-Esposti, Vittorio v.degliesposti@unibo.it	IT		
46	Del Prete, Simone simone.delprete4@unibo.it	IT		
47	Deruyck, Margot margot.deruyck@ugent.be	BE		Yes
48	Diaz, Guillermo guillermo.diaz@ehu.eus	ES		Yes
49	Dittmann, Lars ld@com.dtu.dk	DK		Yes
50	Drozdowska, Monika mdrozdo@upv.edu.es	ES		
51	Dupleich, Diego diego-andres.dupleich@tu-ilmenau.de	DE		Yes
52	Ebert, Alexander alexander.ebert@tu-ilmenau.de	DE		
53	Ekman, Torbjörn torbjorn.ekman@ntnu.no	NO		Yes

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- **Workshop/Conference - Workshops/Conferences (Start Date: 22/01/2024 End Date: 22/01/2024)**

Nr	Participant	Country	Signature	Is Attending
54	Fan, Wei wfa@es.aau.dk	DK		
55	Ferreira, Manuel manuel.ferreira@estsetubal.ips.pt	PT		
56	Gaillot, Davy davy.gaillot@univ-lille.fr	FR		Yes
57	Garcia Armada, Ana agarcia@tsc.uc3m.es	ES		Yes
58	Garcia-Pardo, Concepcion cgpardo@iteam.upv.es	ES		Yes
59	Gardasevic, Gordana gordana.gardasevic@etf.unibl.org	BA	Gordana Gardasevic	Yes
60	Ghiaasi, Golsa golsa.ghiaasi@silicon-austria.com	AT		
61	ghourtani, mostafa rahmani.mostafa@york.ac.uk	UK		Yes
62	Gijon Martin, Carolina cgm@ic.uma.es	ES		Yes
63	Grazioso, Paolo pgrazioso@fub.it	IT		Yes
64	Haddad, Yoram haddad@g.jct.ac.il	IL		
65	Hofer, Markus markus.hofer@ait.ac.at	AT		YES
66	Horvath, Balint horvath.balint@vik.bme.hu	HU		
67	Hristov, Atanas atanas.hristov@uist.edu.mk	MK		Yes

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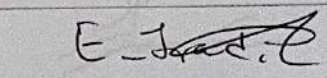
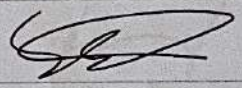
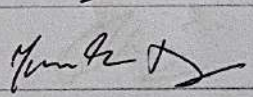
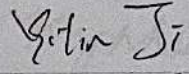
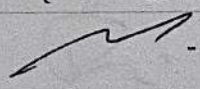
Nr	Participant	Country	Signature	Is Attending
68	Hron, Petr hronpetr@fel.cvut.cz	CZ		
69	Iradier, Eneko eneko.iradier@ehu.eus	ES		
70	Ivashina, Marianna marianna.ivashina@chalmers.se	SE		
71	Jämsä, Tommi tommi.jamsa@huawei.com	n/a		Yes
72	Janji, Salim salim_janji@hotmail.com	PL		
73	Javornik, Tomaž tomaz.javornik@ijs.si	SI		Yes
74	Ji, Yilin yilin.ji@viavisolutions.com	UK		
75	Joseph, Wout wout.joseph@ugent.be	BE		Yes
76	Kang, CheChia kang.c.aa@m.titech.ac.jp	JP		Yes
77	Katzis, Konstantinos K.Katzis@euc.ac.cy	CY		Yes
78	Keerativoranan, Nopphon nopphon.keerativoranan@ap.ide.titech.ac.jp	JP		Yes
79	Kim, Minseok mskim@eng.niigata-u.ac.jp	JP		
80	Kliks, Adrian adrian.kliks@put.poznan.pl	PL		Yes
81	Kocan, Enis enisk@ucg.ac.me	ME		Yes

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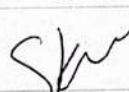
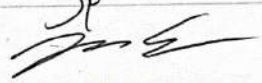
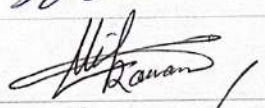
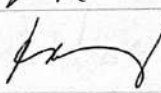
Nr	Participant	Country	Signature	Is Attending
82	Kodra, Silvi silvi.kodra2@unibo.it	IT		Yes
83	Kokkoniemi, Joonas joonas.kokkoniemi@oulu.fi	FI		Yes
84	Kotterman, Wim wim.kotterman@tu-ilmenau.de	DE		Yes
85	Kourani, Ali ali.kourani@aalto.fi	FI		
86	Kováčiková, Tatiana tatiana.kovacikova@uniza.sk	SK		Yes
87	Krasniqi, Bujar bujar.krasniqi@uni-pr.edu	KV		Yes
88	Kryszkiewicz, Pawel pawel.kryszkiewicz@put.poznan.pl	PL		Yes
89	Kułakowski, Paweł kulakowski@agh.edu.pl	PL		Yes
90	Kürner, Thomas kuerner@ifn.ing.tu-bs.de	DE		Yes
91	Kyösti, Pekka pekka.kyosti@keysight.com	FI		
92	Lager, Ioan Ernest i.e.lager@tudelft.nl	NL		Yes
93	Lagunas, Eva eva.lagunas@uni.lu	LU		
94	Lehne, Per Hjalmar per-hjalmar.lehne@telenor.com	NO		Yes
95	Lipovac, Adriana adriana.lipovac@unidu.hr	HR		

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Nr	Participant	Country	Signature	Is Attending
96	Lukac, Jozef lukacjo1@fel.cvut.cz	CZ		
97	Lukic, Djordje djordje.lukic@aspiretechnology.com	RS		Yes
98	Ma, Jiteng jiteng.ma@bristol.ac.uk	UK	Jiteng Ma	Yes
99	Machaj, Juraj juraj.machaj@feit.uniza.sk	SK		
100	Magiera, Jarosław jaroslaw.magiera@pg.edu.pl	PL		Yes
101	Mallik, Mohammed mohammed.mallik.etu@univ-lille.fr	FR		
102	Marsalek, Roman marsaler@vut.cz	CZ		Yes
103	Miao, Yang y.miao@utwente.nl	NL		Yes
104	Micó, Sergio sermiro@teleco.upv.es	ES		
105	Mikhaylov, Konstantin konstantin.mikhaylov@oulu.fi	FI		Yes
106	Mlinar, Tomi tomi.mlinar@fe.uni-lj.si	SI		Yes
107	Molina-Garcia-Pardo, Jose-Maria josemaria.molina@upct.es	ES		Yes
108	Morano, Grega grega.morano@ijs.si	SI		Yes
109	Muzaffar, Raheeb raheeb.muzaffar@silicon-austria.com	AT		Yes

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Nr	Participant	Country	Signature	Is Attending
110	Oestges, Claude claude.oestges@uclouvain.be	BE		Yes
111	Olejniczak, Alicja alicja.olejniczak@pg.edu.pl	PL		
112	Orozco, Luis luis.orozco@uclm.es	ES		Yes
113	Ozdemir, Mehmet Kemal mkozdemir@medipol.edu.tr	TR		
114	Pamp, Jörg pamp@ihf.rwth-aachen.de	DE		Yes
115	Papaj, Ján jan.papaj@tuke.sk	SK		
116	Pasic, Faruk faruk.pasic@tuwien.ac.at	n/a		Yes
117	Pedersen, Troels troels@es.aau.dk	DK		Yes
118	Pejanovic-Djurisic, Milica milica@t-com.me	ME		Yes
119	Pereira, Diogo dfca.pereira@campus.fct.unl.pt	PT		Yes
120	Petrova, Marinela marinnela.petrova@gmail.com	BG		Yes
121	Qiao, Liang liang.qiao@bristol.ac.uk	UK	Liang Qiao	Yes
122	Radovic, Danilo danilo.radovic@tuwien.ac.at	n/a		Yes
123	Rajchowski, Piotr piorajch@eti.pg.edu.pl	PL		Yes

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Nr	Participant	Country	Signature	Is Attending
124	Reig, Juan jreigp@dcom.upv.es	ES		
125	Rizkalla, Shrief shrief.rizkalla@silicon-austria.com	AT		Yes
126	Rizzo, Gianluca gianluca.antonio.rizzo@gmail.com	CH		Yes
127	Rudd, Richard richard.rudd@plumconsulting.co.uk	UK		Yes
128	Rumney, Moray moray@rumneytelecom.com	UK		Yes
129	Sahbafard, Arash arash.sahbafard@silicon-austria.com	AT		Yes
130	Salous, Sana sana.salous@durham.ac.uk	UK		Yes
131	Samorzewski, Adam adam.samorzewski@doctorate.put.poznan.pl	PL		
132	Sanchez Martin, Joaquin M. jmsanchez@ic.uma.es	n/a		
133	Sarrazin, Julien julien.sarrazin@sorbonne-universite.fr	FR		
134	Sayrafian, Kamran kamran.sayrafian@nist.gov	US		Yes
135	Schiffarth, Anna-Malin schiffarth@ihf.rwth-aachen.de	DE		Yes
136	Schneider, Christian christian.schneider@tu-ilmenau.de	n/a		
137	Simončič, Aleš ales.simoncic@ijs.si	SI		Yes

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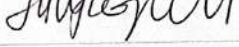
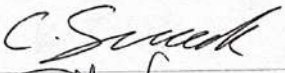
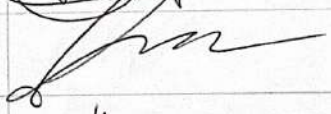
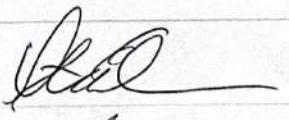
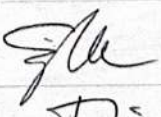
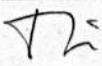
Nr	Participant	Country	Signature	Is Attending
138	Skachek, Vitaly vitaly.skachek@gmail.com	EE		Yes
139	Skocaj, Marco marco.skocaj@unibo.it	IT		
140	Skoric, Tamara tamara.ceranic@gmail.com	RS		Yes
141	Smeenk, Carsten carsten.smeenk@iis.fraunhofer.de	DE		
142	Sobron, Iker iker.sobron@ehu.eus	ES		Yes
143	Sommerkorn, Gerd som@tu-ilmenau.de	DE		Yes
144	Stojkoska, Biljana biljanastojkoska@yahoo.com	MK		Yes
145	Ström, Erik erik.strom@chalmers.se	SE		Yes
146	Studer Ferreira, Lucio lucio.studer@ulusofona.pt	PT		
147	Stuebner, Ralph ralph.stuebner@cost.eu	BE		Yes
148	Sykora, Jan jan.sykora@fel.cvut.cz	CZ		Yes
149	Teich, Werner werner.teich@uni-ulm.de	DE		Yes
150	Teixeira, Emanuel emanuelt@ubi.pt	PT		
151	Thiran, Guillaume guillaume.thiran@uclouvain.be	BE		Yes

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IN SCIENCE & TECHNOLOGY

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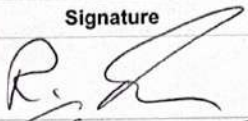
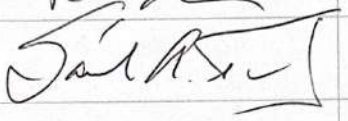
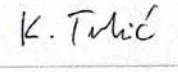
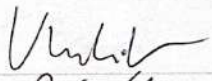
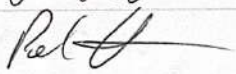
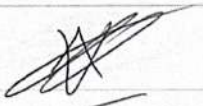
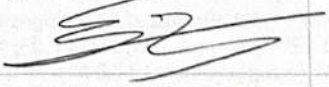
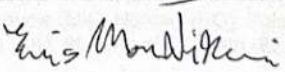
- **Workshop/Conference - Workshops/Conferences (Start Date: 22/01/2024 End Date: 22/01/2024)**

Nr	Participant	Country	Signature	Is Attending
152	Thomä, Reiner reiner.thomae@tu-ilmenau.de	DE		Yes
153	Torrico, Saul storrico@gwu.edu	US		Yes
154	Tufvesson, Fredrik fredrik.tufvesson@eit.lth.se	SE		
155	Turbic, Kenan kturbic@gmail.com	DE		Yes
156	Ulmschneider, Markus markus.ulmschneider@dlr.de	DE		Yes
157	Unterhuber, Paul paul.unterhuber@dlr.de	DE		Yes
158	Vassiliou, Vasos vasosv@ucy.ac.cy	CY		
159	VELEZ, Fernando José fjv@ubi.pt	PT		Yes
160	Verdone, Roberto roberto.verdone@unibo.it	IT		Yes
161	Villaescusa Tébar, Álvaro alvilte1@teleco.upv.es	n/a		Yes
162	Villemaud, Guillaume guillaume.villemaud@insa-lyon.fr	FR		Yes
163	Vitucci, Enrico Maria enricomaria.vitucci@unibo.it	IT		
164	Wagen, Jean Frederic jfowagen@gmail.com	CH		Yes
165	Walter, Michael m.walter@dlr.de	DE		Yes

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IN SCIENCE & TECHNOLOGY

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- **Workshop/Conference - Workshops/Conferences (Start Date: 22/01/2024 End Date: 22/01/2024)**

Nr	Participant	Country	Signature	Is Attending
166	Wilding, Thomas thomas.wilding@tugraz.at	AT		
167	Zammit, Joseph A. joseph.a.zammit@mcast.edu.mt	MT		
168	Zanaj, Blerina bzanaj@ubt.edu.al	AL		Yes
169	Zanaj, Elma ezanaj@fti.edu.al	AL		
170	Zemen, Thomas thomas.zemen@ait.ac.at	AT		Yes
171	Zentner, Radovan radovan.zentner@fer.hr	HR		Yes
172	Zhang, Haibin haibin.zhang@tno.nl	NL		Yes
173	Zhang, Peize peize.zhang@oulu.fi	FI		
174	Zhao, Zhixiang zhixiang.zhao@tu-ilmenau.de	DE		Yes
175	Ziganshin, Ainur ainur.ziganshin@tu-ilmenau.de	DE		Yes

Country Codes: Albania (AL), Austria (AT), Belgium (BE), Bosnia and Herzegovina (BA), Bulgaria (BG), Croatia (HR), Cyprus (CY), Czech Republic (CZ), Denmark (DK), Estonia (EE), Finland (FI), France (FR), Germany (DE), Greece (EL), Hungary (HU), Iceland (IS), Ireland (IE), Israel (IL), Italy (IT), Latvia (LV), Lithuania (LT), Luxembourg (LU), Malta (MT), Montenegro (ME), The Netherlands (NL), the North Republic of Macedonia (MK), Norway (NO), Poland (PL), Portugal (PT), The Republic of Moldova (MD), Romania (RO), Serbia (RS), Slovakia (SK), Slovenia (SI), Spain (ES), Sweden (SE), Switzerland (CH), Turkey (TR), United Kingdom (UK).

Meeting Secretary

(Chair or local organiser)

Name + signature

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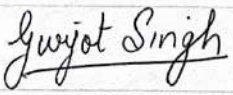
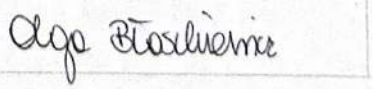
MEETING ATTENDANCE LIST OF (7TH MC AND SCIENTIFIC MEETING - 23/01/2024)

The attendance list provides the names of the participants who confirmed attendance via their personal e-COST invitation link.

Meeting Title: 7th MC and scientific meeting	
Meeting Reference: E-COST-MEETING-CA20120-220124-c9bae64b	**Action Number: CA20120**
Meeting Administrator: Natascia De Fenzo	**E-mail: natascia.defenzo@cnit.it**

- **Management Committee - Management Committee Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
1	Adeogun, Ramoni ra@es.aau.dk	DK		
2	ahmadi, hamed hamed.ahmadi@ucd.ie	UK		
3	Alayón Glazunov, Andrés andres.alayon.glazunov@liu.se	SE		Yes
4	ALVES COSTA, HERALDO CESAR heraldo-cesar.alves-costa@tu-ilmenau.de	DE		Yes
5	BERBINEAU, Marion marion.berbineau@univ-eiffel.fr	FR		Yes
6	Bhatia, Gurjot Singh gsbhatia@siradel.com	n/a		Yes
7	Bilbao, Inigo inigo.bilbao@ehu.eus	ES		
8	Blazek, Thomas wtblazek@gmail.com	AT		
9	Blumenstein, Jiri blumenstein@vutbr.cz	CZ		Yes
10	Blaszkiewicz, Olga olga.blaszkiewicz@pg.edu.pl	PL		Yes

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- **Management Committee - Management Committee Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
11	Boban, Mate mate.boban@huawei.com	DE		Y
12	Buehler, Hermann Hermann.Buehler@buehler.at	AT		Yes
13	Cardoso, Filipe filipe.cardoso@estsetubal.ips.pt	PT		Yes
14	Castelló Palacios, Sergio sercaspa@iteam.upv.es	ES		Yes
15	Cichoń, Krzysztof krzysztof.cichon@put.poznan.pl	PL		Yes
16	Conserva, Francesca francesca.conserva@unibo.it	n/a		Yes
17	Cwalina, Krzysztof kkcwalina@eti.pg.edu.pl	PL		Yes
18	Dakic, Anja anja.dakic@ait.ac.at	n/a		
19	Das, Kallol kallol.das@tno.nl	NL		Yes
20	De Saint Moulin, François francois.desaintmoulin@uclouvain.be	BE		Yes
21	Degli-Esposti, Vittorio v.degliesposti@unibo.it	IT		
22	Del Prete, Simone simone.delprete4@unibo.it	IT		
23	Diaz, Guillermo guillermo.diaz@ehu.eus	ES		Yes
24	Drozdowska, Monika mdrozdo@upv.edu.es	ES		

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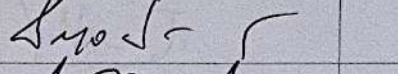
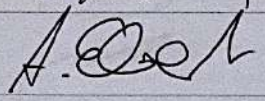
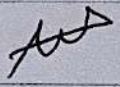
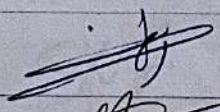
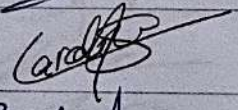
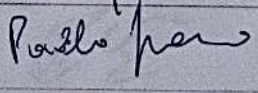
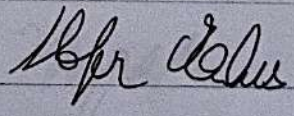
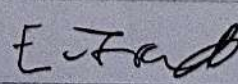
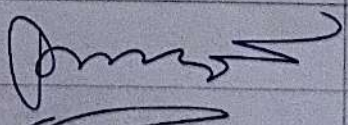
- **Management Committee - Management Committee Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
25	Dupleich, Diego diego-andres.dupleich@tu-ilmenau.de	DE		Yes
26	Ebert, Alexander alexander.ebert@tu-ilmenau.de	DE		
27	Fan, Wei wfa@es.aau.dk	DK		
28	Ferreira, Manuel manuel.ferreira@estsetubal.ips.pt	PT		
29	Garcia Armada, Ana agarcia@tsc.uc3m.es	ES		Yes
30	Ghiaasi, Golsa golsa.ghiaasi@silicon-austria.com	AT		
31	ghourtani, mostafa rahmani.mostafa@york.ac.uk	UK		Yes
32	Gijon Martin, Carolina cgm@ic.uma.es	ES		Yes
33	Grazioso, Paolo pgrazioso@fub.it	IT		Yes
34	Hofer, Markus markus.hofer@ait.ac.at	AT		YES
35	Hron, Petr hronpetr@fel.cvut.cz	CZ		
36	Iradier, Eneko eneko.iradier@ehu.eus	ES		
37	Jämsä, Tommi tommi.jamsa@huawei.com	n/a		Yes
38	Janji, Salim salim_janji@hotmail.com	PL		

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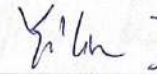
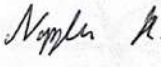
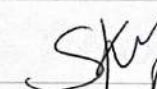
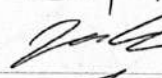
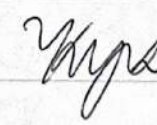
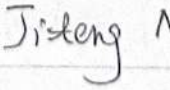
- **Management Committee - Management Committee Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
39	Ji, Yilin yilin.ji@viavisolutions.com	UK		
40	Joseph, Wout wout.joseph@ugent.be	BE		Yes
41	Kang, CheChia kang.c.aa@m.titech.ac.jp	JP		Yes
42	Keerativoranan, Nopphon nopphon.keerativoranan@ap.ide.titech.ac.jp	JP		Yes
43	Kim, Minseok mskim@eng.niigata-u.ac.jp	JP		
44	Kliks, Adrian adrian.kliks@put.poznan.pl	PL		Yes
45	Kodra, Silvi silvi.kodra2@unibo.it	IT		Yes
46	Kokkoniemi, Joonas joonas.kokkoniemi@oulu.fi	FI		Y
47	Krasniqi, Bujar bujar.krasniqi@uni-pr.edu	KV		Yes
48	Kryszkiewicz, Pawel pawel.kryszkiewicz@put.poznan.pl	PL		Yes
49	Kyösti, Pekka pekka.kyosti@keysight.com	FI		
50	Lukac, Jozef lukacjo1@fel.cvut.cz	CZ		
51	Lukic, Djordje djordje.lukic@aspiretechnology.com	RS		Yes
52	Ma, Jiteng jiteng.ma@bristol.ac.uk	UK		Yes

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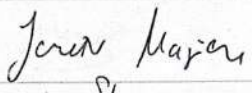
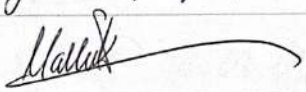
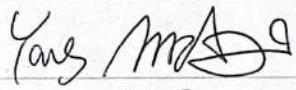
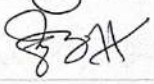
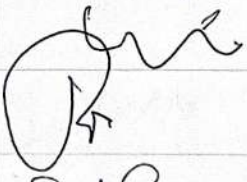
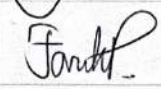
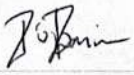
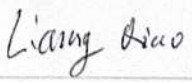
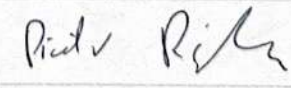
- **Management Committee - Management Committee Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
53	Magiera, Jarosław jaroslaw.magiera@pg.edu.pl	PL		Yes
54	Mallik, Mohammed mohammed.mallik.etu@univ-lille.fr	FR		Yes
55	Miao, Yang y.miao@utwente.nl	NL		Yes
56	Micó, Sergio sermiro@teleco.upv.es	ES		
57	Morano, Grega grega.morano@ijs.si	SI		Yes
58	Muzaffar, Raheeb raheeb.muzaffar@silicon-austria.com	AT		Yes
59	Olejniczak, Alicja alicja.olejniczak@pg.edu.pl	PL		
60	Orozco, Luis luis.orozco@uclm.es	ES		Yes
61	Pamp, Jörg pamp@ihf.rwth-aachen.de	DE		Yes
62	Pasic, Faruk faruk.pasic@tuwien.ac.at	n/a		Yes
63	Pereira, Diogo dfca.pereira@campus.fct.unl.pt	PT		Yes
64	Qiao, Liang liang.qiao@bristol.ac.uk	UK		Yes
65	Radovic, Danilo danilo.radovic@tuwien.ac.at	n/a		Yes
66	Rajchowski, Piotr piorajch@eti.pg.edu.pl	PL		Yes

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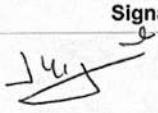
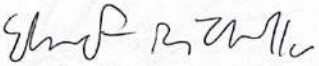
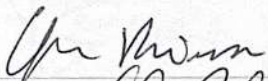
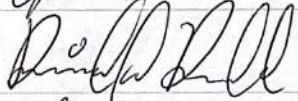
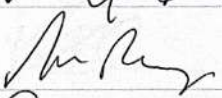
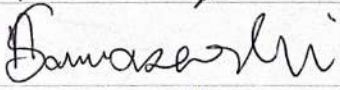
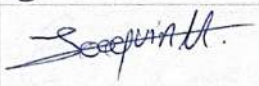
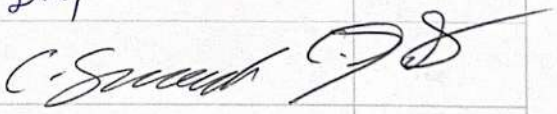
- **Management Committee - Management Committee Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
67	Reig, Juan jreigp@dcom.upv.es	ES		Yes
68	Rizkalla, Shrief shrief.rizkalla@silicon-austria.com	AT		Yes
69	Rizzo, Gianluca gianluca.antonio.rizzo@gmail.com	CH		Yes
70	Rudd, Richard richard.rudd@plumconsulting.co.uk	UK		Yes
71	Rumney, Moray moray@rumneytelecom.com	UK		Yes
72	Samorzewski, Adam adam.samorzewski@doctorate.put.poznan.pl	PL		
73	Sanchez Martin, Joaquin M. jmsanchez@ic.uma.es	n/a		YES
74	Sayrafian, Kamran kamran.sayrafian@nist.gov	US		Yes
75	Schiffarth, Anna-Malin schiffarth@ihf.rwth-aachen.de	DE		Yes
76	Schneider, Christian christian.schneider@tu-ilmenau.de	n/a		
77	Simončič, Aleš ales.simoncic@ijs.si	SI		Yes
78	Skocaj, Marco marco.skocaj@unibo.it	IT		
79	Skoric, Tamara tamara.ceranic@gmail.com	RS		Yes
80	Smeenk, Carsten carsten.smeenk@iis.fraunhofer.de	DE		

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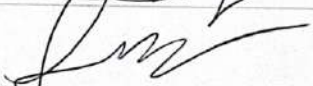
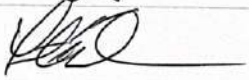
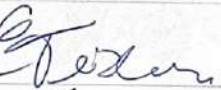
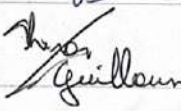
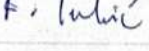
- **Management Committee - Management Committee Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
81	Sobron, Iker iker.sobron@ehu.eus	ES		Yes
82	Sommerkorn, Gerd som@tu-ilmenau.de	DE		Yes
83	Ström, Erik erik.strom@chalmers.se	SE		Yes
84	Studer Ferreira, Lucio lucio.studer@ulusofona.pt	PT		
85	Stuebner, Ralph ralph.stuebner@cost.eu	BE		Yes
86	Teich, Werner werner.teich@uni-ulm.de	DE		Yes
87	Teixeira, Emanuel emanuelt@ubi.pt	PT		
88	Thiran, Guillaume guillaume.thiran@uclouvain.be	BE		Yes
89	Thomä, Reiner reiner.thomae@tu-ilmenau.de	DE		Yes
90	Torrico, Saul storrico@gwu.edu	US		Yes
91	Turbic, Kenan kturbic@gmail.com	DE		Yes
92	Ulmschneider, Markus markus.ulmschneider@dlr.de	DE		Yes
93	Unterhuber, Paul paul.unterhuber@dlr.de	DE		Yes
94	Villaescusa Tébar, Álvaro alvilte1@teleco.upv.es	n/a		Yes

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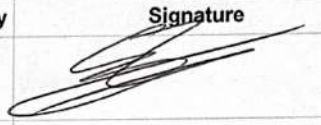
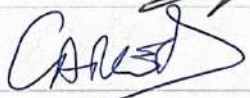
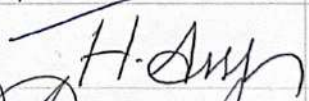
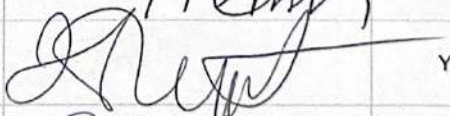
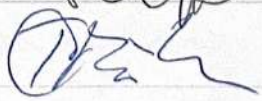
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
95	Villemaud, Guillaume guillaume.villemaud@insa-lyon.fr	FR		Yes
96	Vitucci, Enrico Maria enricomaria.vitucci@unibo.it	IT		
97	Walter, Michael m.walter@dlr.de	DE		Yes
98	Zhang, Peize peize.zhang@oulu.fi	FI		
99	Zhao, Zhixiang zhixiang.zhao@tu-ilmenau.de	DE		Yes
100	Ziganshin, Ainur ainur.ziganshin@tu-ilmenau.de	DE		Yes
101	Aleksiejūnas, Rimvydas rimvydas.aleksiejunas@ff.vu.lt	LT		Yes
102	Alexandru, Marian marian.alexandru@unitbv.ro	RO		
103	Ambroziak, Slawomir slawomir.ambroziak@pg.edu.pl	PL		Yes
104	Anton-Haro, Carles carles.anton@cttc.es	ES		Yes
105	ARSLAN, Hüseyin arslan.usf@gmail.com	TR		Yes
106	Bajić, Dragana dragana.bajic@gmail.com	RS		Yes
107	Balan, Titus Constantin titus.balan@unitbv.ro	RO		Yes
108	Batagelj, Boštjan bostjan.batagelj@fe.uni-lj.si	SI		

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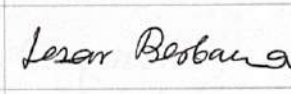
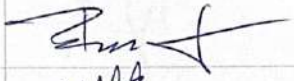
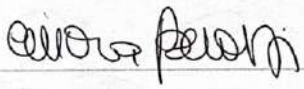
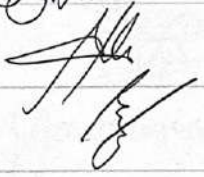
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
109	Berbakov, Lazar lazar.berbakov@pupin.rs	RS		Yes
110	Bito, Janos bito.janos@vik.bme.hu	HU		Yes
111	Bota, Vasile Vasile.Bota@com.utcluj.ro	RO		Yes
112	Brennan, Conor conor.brennan@dcu.ie	IE		
113	Buratti, Chiara c.buratti@unibo.it	IT		Yes
114	Burr, Alister alister.burr@york.ac.uk	UK		Yes
115	Cardona, Narcis ncardona@iteam.upv.es	ES		Yes
116	Chatzimisios, Periklis pchatzimisios@ihu.gr	EL		Yes
117	Chatzinotas, Symeon schatzin@ieee.org	LU		
118	Clavier, Laurent laurent.clavier@imt-nord-europe.fr	FR		Yes
119	Clerckx, Bruno b.clerckx@imperial.ac.uk	UK		Yes
120	Conrat, Jean-Marc jeanmarc.conrat@orange.com	FR		Yes
121	Correia, Luis M luis.m.correia@tecnico.ulisboa.pt	PT		Yes
122	Csatho, Botond Tamas csatho.botond@edu.bme.hu	HU		Yes

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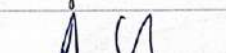
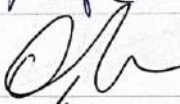
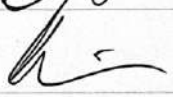
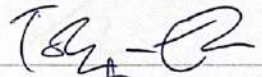
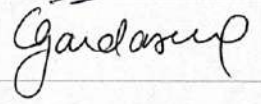
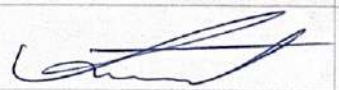
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
123	Czapiewska, Agnieszka agnieszka.czapiewska@pg.edu.pl	PL		Yes
124	Czylwik, Andreas czylwik@nts.uni-duisburg-essen.de	DE		Yes
125	Deruyck, Margot margot.deruyck@ugent.be	BE		Yes
126	Dittmann, Lars ld@com.dtu.dk	DK		Yes
127	Ekman, Torbjörn torbjorn.ekman@ntnu.no	NO		Yes
128	Gaillot, Davy davy.gaillot@univ-lille.fr	FR		Yes
129	Garcia-Pardo, Concepcion cgpardo@iteam.upv.es	ES		Yes
130	Gardasevic, Gordana gordana.gardasevic@etf.unibl.org	BA		Yes
131	Haddad, Yoram haddad@g.jct.ac.il	IL		
132	Horvath, Balint horvath.balint@vik.bme.hu	HU		
133	Hristov, Atanas atanas.hristov@uist.edu.mk	MK		Yes
134	Ivashina, Marianna marianna.ivashina@chalmers.se	SE		
135	Javornik, Tomaž tomaz.javornik@ijs.si	SI		Yes
136	Katzis, Konstantinos K.Katzis@euc.ac.cy	CY		Yes

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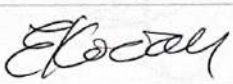
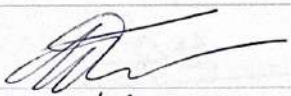
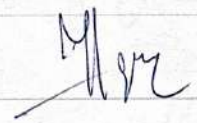
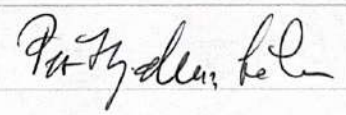
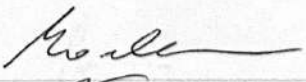
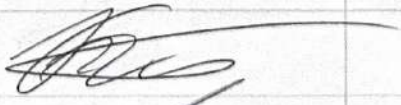
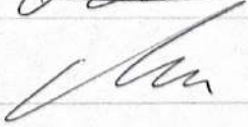
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
137	Kocan, Enis enisk@ucg.ac.me	ME		Yes
138	Kotterman, Wim wim.kotterman@tu-ilmenau.de	DE		Yes
139	Kourani, Ali ali.kourani@aalto.fi	FI		Yes
140	Kováčiková, Tatiana tatiana.kovacikova@uniza.sk	SK		Yes
141	Kułakowski, Paweł kulakowski@agh.edu.pl	PL		Yes
142	Kürner, Thomas kuerner@ifn.ing.tu-bs.de	DE		Yes
143	Lager, Ioan Ernest i.e.lager@tudelft.nl	NL		Yes
144	Lagunas, Eva eva.lagunas@uni.lu	LU		
145	Lehne, Per Hjalmar per-hjalmar.lehne@telenor.com	NO		Yes
146	Lipovac, Adriana adriana.lipovac@unidu.hr	HR		
147	Machaj, Juraj juraj.machaj@feit.uniza.sk	SK		
148	Marsalek, Roman marsaler@vut.cz	CZ		Yes
149	Mikhaylov, Konstantin konstantin.mikhaylov@oulu.fi	FI		Yes
150	Mlinar, Tomi tomi.mlinar@fe.uni-lj.si	SI		Yes

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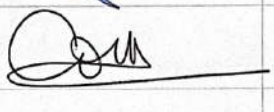
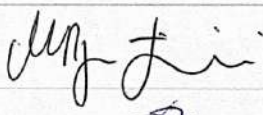
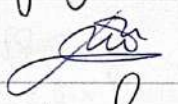
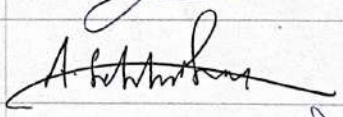
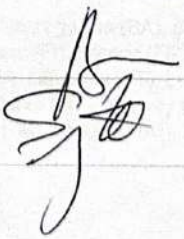
- **Management Committee - Management Committee Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
151	Molina-Garcia-Pardo, Jose-Maria josemaria.molina@upct.es	ES		Yes
152	Oestges, Claude claude.oestges@uclouvain.be	BE		Yes
153	Ozdemir, Mehmet Kemal mkozdemir@medipol.edu.tr	TR		
154	Papaj, Ján jan.papaj@tuke.sk	SK		
155	Pedersen, Troels troels@es.aau.dk	DK		Yes
156	Pejanovic-Djurisic, Milica milica@t-com.me	ME		Yes
157	Petrova, Marinela marinnela.petrova@gmail.com	BG		Yes
158	Sahbafard, Arash arash.sahbafard@silicon-austria.com	AT		Yes
159	Salous, Sana sana.salous@durham.ac.uk	UK		Yes
160	Sarrazin, Julien julien.sarrazin@sorbonne-universite.fr	FR		
161	Skachek, Vitaly vitaly.skachek@gmail.com	EE		Yes
162	Stojkoska, Biljana biljanastojkoska@yahoo.com	MK		Yes
163	Sykora, Jan jan.sykora@fel.cvut.cz	CZ		Yes
164	Tufvesson, Fredrik fredrik.tufvesson@eit.lth.se	SE		

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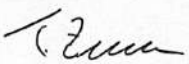
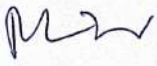
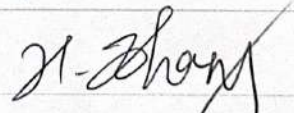
- **Management Committee - Management Committee Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
165	Vassiliou, Vasos vasosv@ucy.ac.cy	CY		
166	VELEZ, Fernando José fjv@ubi.pt	PT		Yes
167	Verdone, Roberto roberto.verdone@unibo.it	IT		Yes
168	Wagen, Jean Frederic jfowagen@gmail.com	CH		Yes
169	Wilding, Thomas thomas.wilding@tugraz.at	AT		
170	Zammit, Joseph A. joseph.a.zammit@mcast.edu.mt	MT		
171	Zanaj, Blerina bzanaj@ubt.edu.al	AL		Yes
172	Zanaj, Elma ezanaj@fti.edu.al	AL		
173	Zemen, Thomas thomas.zemen@ait.ac.at	AT		Yes
174	Zentner, Radovan radovan.zentner@fer.hr	HR		Yes
175	Zhang, Haibin haibin.zhang@tno.nl	NL		Yes

Country Codes: Albania (AL), Austria (AT), Belgium (BE), Bosnia and Herzegovina (BA), Bulgaria (BG), Croatia (HR), Cyprus (CY), Czech Republic (CZ), Denmark (DK), Estonia (EE), Finland (FI), France (FR), Germany (DE), Greece (EL), Hungary (HU), Iceland (IS), Ireland (IE), Israel (IL), Italy (IT), Latvia (LV), Lithuania (LT), Luxembourg (LU), Malta (MT), Montenegro (ME), The Netherlands (NL), the North Republic of Macedonia (MK), Norway (NO), Poland (PL), Portugal (PT), The Republic of Moldova (MD), Romania (RO), Serbia (RS), Slovakia (SK), Slovenia (SI), Spain (ES), Sweden (SE), Switzerland (CH), Turkey (TR), United Kingdom (UK).

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Meeting Secretary

(Chair or local organiser)

Name + signature

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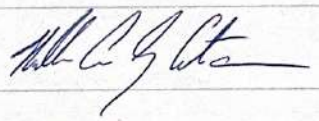
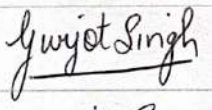
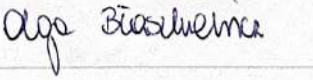
MEETING ATTENDANCE LIST OF (7TH MC AND SCIENTIFIC MEETING - 24/01/2024)

The attendance list provides the names of the participants who confirmed attendance via their personal e-COST invitation link.

Meeting Title: 7th MC and scientific meeting	
Meeting Reference: E-COST-MEETING-CA20120-220124-c9bae64b	**Action Number: CA20120**
Meeting Administrator: Natascia De Fenzo	**E-mail: natascia.defenzo@cnit.it**

- **Management Committee - Management Committee Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
1	Adeogun, Ramoni ra@es.aau.dk	DK		
2	ahmadi, hamed hamed.ahmadi@ucd.ie	UK		
3	Alayón Glazunov, Andrés andres.alayon.glazunov@liu.se	SE		Yes
4	ALVES COSTA, HERALDO CESAR heraldo-cesar.alves-costa@tu-ilmenau.de	DE		Yes
5	BERBINEAU, Marion marion.berbineau@univ-eiffel.fr	FR		Yes
6	Bhatia, Gurjot Singh gsbhatia@siradel.com	n/a		Yes
7	Bilbao, Inigo inigo.bilbao@ehu.eus	ES		
8	Blazek, Thomas wtblazek@gmail.com	AT		
9	Blumenstein, Jiri blumenstein@vutbr.cz	CZ		Yes
10	Błaszkiewicz, Olga olga.blaszkiewicz@pg.edu.pl	PL		Yes

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- **Management Committee - Management Committee Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
11	Boban, Mate mate.boban@huawei.com	DE		
12	Buehler, Hermann Hermann.Buehler@buehler.at	AT		Yes
13	Cardoso, Filipe filipe.cardoso@estsetubal.ips.pt	PT		Yes
14	Castelló Palacios, Sergio sercaspa@iteam.upv.es	ES		Yes
15	Cichoń, Krzysztof krzysztof.cichon@put.poznan.pl	PL		Yes
16	Conserva, Francesca francesca.conserva@unibo.it	n/a		Yes
17	Cwalina, Krzysztof kkcwalina@eti.pg.edu.pl	PL		Yes
18	Dakic, Anja anja.dakic@ait.ac.at	n/a		
19	Das, Kallol kallol.das@tno.nl	NL		Yes
20	De Saint Moulin, François francois.desaintmoulin@uclouvain.be	BE		Yes
21	Degli-Esposti, Vittorio v.degliesposti@unibo.it	IT		
22	Del Prete, Simone simone.delprete4@unibo.it	IT		
23	Diaz, Guillermo guillermo.diaz@ehu.eus	ES		Yes
24	Drozdowska, Monika mdrozdo@upv.edu.es	ES		

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- **Management Committee - Management Committee Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
25	Dupleich, Diego diego-andres.dupleich@tu-ilmenau.de	DE		Yes
26	Ebert, Alexander alexander.ebert@tu-ilmenau.de	DE		
27	Fan, Wei wfa@es.aau.dk	DK		
28	Ferreira, Manuel manuel.ferreira@estsetubal.ips.pt	PT		
29	Garcia Armada, Ana agarcia@tsc.uc3m.es	ES		Yes
30	Ghiaasi, Golsa golsa.ghiaasi@silicon-austria.com	AT		
31	ghourtani, mostafa rahmani.mostafa@york.ac.uk	UK		Yes
32	Gijon Martin, Carolina cgm@ic.uma.es	ES		Yes
33	Grazioso, Paolo pgrazioso@fub.it	IT		Yes
34	Hofer, Markus markus.hofer@ait.ac.at	AT		YES
35	Hron, Petr hronpetr@fel.cvut.cz	CZ		
36	Iradier, Eneko eneko.iradier@ehu.eus	ES		
37	Jämsä, Tommi tommi.jamsa@huawei.com	~~DE~~ n/a		Yes
38	Janji, Salim salim_janji@hotmail.com	PL		

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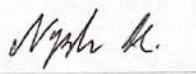
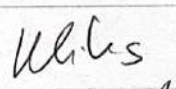
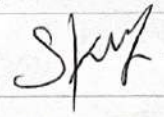
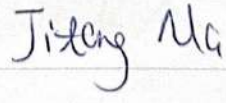
- **Management Committee - Management Committee Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
39	Ji, Yilin yilin.ji@viavisolutions.com	UK		
40	Joseph, Wout wout.joseph@ugent.be	BE		Yes
41	Kang, CheChia kang.c.aa@m.titech.ac.jp	JP		Yes
42	Keerativoranan, Nopphon nopphon.keerativoranan@ap.ide.titech.ac.jp	JP		Yes
43	Kim, Minseok mskim@eng.niigata-u.ac.jp	JP		
44	Kliks, Adrian adrian.kliks@put.poznan.pl	PL		Yes
45	Kodra, Silvi silvi.kodra2@unibo.it	IT		Yes
46	Kokkoniemi, Joonas joonas.kokkoniemi@oulu.fi	FI		Y
47	Krasniqi, Bujar bujar.krasniqi@uni-pr.edu	KV		Yes
48	Kryszkiewicz, Pawel pawel.kryszkiewicz@put.poznan.pl	PL		Yes
49	Kyösti, Pekka pekka.kyosti@keysight.com	FI		
50	Lukac, Jozef lukacjo1@fel.cvut.cz	CZ		
51	Lukic, Djordje djordje.lukic@aspiretechnology.com	RS		Yes
52	Ma, Jiteng jiteng.ma@bristol.ac.uk	UK		Yes

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- **Management Committee - Management Committee Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
53	Magiera, Jarosław jaroslaw.magiera@pg.edu.pl	PL		Yes
54	Mallik, Mohammed mohammed.mallik.etu@univ-lille.fr	FR		Yes
55	Miao, Yang y.miao@utwente.nl	NL		Yes
56	Micó, Sergio sermiro@teleco.upv.es	ES		
57	Morano, Grega grega.morano@ijs.si	SI		Yes
58	Muzaffar, Raheeb raheeb.muzaffar@silicon-austria.com	AT		Yes
59	Olejniczak, Alicja alicja.olejniczak@pg.edu.pl	PL		
60	Orozco, Luis luis.orozco@uclm.es	ES		Yes
61	Pamp, Jörg pamp@ihf.rwth-aachen.de	DE		Yes
62	Pasic, Faruk faruk.pasic@tuwien.ac.at	n/a		Yes
63	Pereira, Diogo dfca.pereira@campus.fct.unl.pt	PT		Yes
64	Qiao, Liang liang.qiao@bristol.ac.uk	UK		Yes
65	Radovic, Danilo danilo.radovic@tuwien.ac.at	n/a		Yes
66	Rajchowski, Piotr piorajch@eti.pg.edu.pl	PL		Yes

COST Association AISBL
Avenue du Boulevard - Bolwerklaan 21, box 2 | 1210 Brussels, Belgium
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- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
67	Reig, Juan jreigp@dcom.upv.es	ES		
68	Rizkalla, Shrief shrief.rizkalla@silicon-austria.com	AT		Yes
69	Rizzo, Gianluca gianluca.antonio.rizzo@gmail.com	CH		Yes
70	Rudd, Richard richard.rudd@plumconsulting.co.uk	UK		Yes
71	Rumney, Moray moray@rumneytelecom.com	UK		Yes
72	Samorzewski, Adam adam.samorzewski@doctorate.put.poznan.pl	PL		
73	Sanchez Martin, Joaquin M. jmsanchez@ic.uma.es	n/a		
74	Sayrafian, Kamran kamran.sayrafian@nist.gov	US		Yes
75	Schiffarth, Anna-Malin schiffarth@ihf.rwth-aachen.de	DE		Yes
76	Schneider, Christian christian.schneider@tu-ilmenau.de	n/a		
77	Simončič, Aleš ales.simoncic@ijs.si	SI		Yes
78	Skocaj, Marco marco.skocaj@unibo.it	IT		
79	Skoric, Tamara tamara.ceranic@gmail.com	RS		Yes
80	Smeenk, Carsten carsten.smeenk@iis.fraunhofer.de	DE		

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- **Management Committee - Management Committee Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
81	Sobron, Iker iker.sobron@ehu.eus	ES		Yes
82	Sommerkorn, Gerd som@tu-ilmenau.de	DE		Yes
83	Ström, Erik erik.strom@chalmers.se	SE		Yes
84	Studer Ferreira, Lucio lucio.studer@ulusofona.pt	PT		
85	Stuebner, Ralph ralph.stuebner@cost.eu	BE		Yes
86	Teich, Werner werner.teich@uni-ulm.de	DE		Yes
87	Teixeira, Emanuel emanuelt@ubi.pt	PT		
88	Thiran, Guillaume guillaume.thiran@uclouvain.be	BE		Yes
89	Thomä, Reiner reiner.thomae@tu-ilmenau.de	DE		Yes
90	Torrico, Saul storrico@gwu.edu	US		Yes
91	Turbic, Kenan kturbic@gmail.com	DE	K. Turbić	Yes
92	Ulmschneider, Markus markus.ulmschneider@dlr.de	DE		Yes
93	Unterhuber, Paul paul.unterhuber@dlr.de	DE		Yes
94	Villaescusa Tébar, Álvaro alvilte1@teleco.upv.es	n/a		Yes

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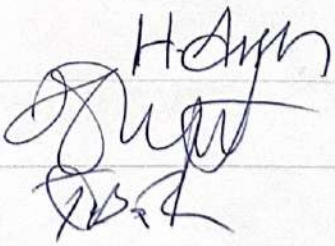
- **Management Committee - Management Committee Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
95	Villemaud, Guillaume guillaume.villemaud@insa-lyon.fr	FR		Yes
96	Vitucci, Enrico Maria enricomaria.vitucci@unibo.it	IT		
97	Walter, Michael m.walter@dlr.de	DE		Yes
98	Zhang, Peize peize.zhang@oulu.fi	FI		
99	Zhao, Zhixiang zhixiang.zhao@tu-ilmenau.de	DE		Yes
100	Ziganshin, Ainur ainur.ziganshin@tu-ilmenau.de	DE		Yes
101	Aleksiejūnas, Rimvydas rimvydas.aleksiejunas@ff.vu.lt	LT		Yes
102	Alexandru, Marian marian.alexandru@unitbv.ro	RO		
103	Ambroziak, Slawomir slawomir.ambroziak@pg.edu.pl	PL		Yes
104	Anton-Haro, Carles carles.anton@cttc.es	ES		Yes
105	ARSLAN, Hüseyin arslan.usf@gmail.com	TR		Yes
106	Bajić, Dragana dragana.bajic@gmail.com	RS		Yes
107	Balan, Titus Constantin titus.balan@unitbv.ro	RO		Yes
108	Batagelj, Boštjan bostjan.batagelj@fe.uni-lj.si	SI		

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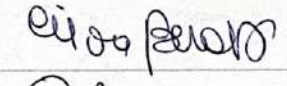
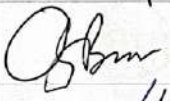
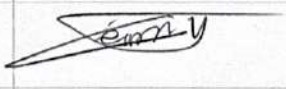
- **Management Committee - Management Committee Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
109	Berbakov, Lazar lazar.berbakov@pupin.rs	RS		Yes
110	Bito, Janos bito.janos@vik.bme.hu	HU		Yes
111	Bota, Vasile Vasile.Bota@com.utcluj.ro	RO		Yes
112	Brennan, Conor conor.brennan@dcu.ie	IE		
113	Buratti, Chiara c.buratti@unibo.it	IT		Yes
114	Burr, Alister alister.burr@york.ac.uk	UK		Yes
115	Cardona, Narcis ncardona@iteam.upv.es	ES		Yes
116	Chatzimisios, Periklis pchatzimisios@ihu.gr	EL		Yes
117	Chatzinotas, Symeon schatzin@ieee.org	LU		
118	Clavier, Laurent laurent.clavier@imt-nord-europe.fr	FR		Yes
119	Clerckx, Bruno b.clerckx@imperial.ac.uk	UK		Yes
120	Conrat, Jean-Marc jeanmarc.conrat@orange.com	FR		Yes
121	Correia, Luis M luis.m.correia@tecnico.ulisboa.pt	PT		Yes
122	Csatho, Botond Tamas csatho.botond@edu.bme.hu	HU		Yes

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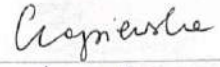
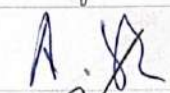
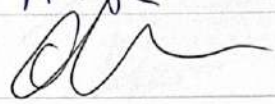
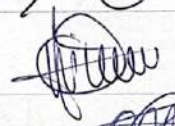
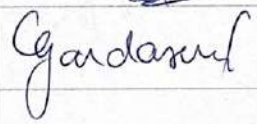
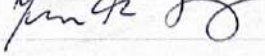
- **Management Committee - Management Committee Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
123	Czapiewska, Agnieszka agnieszka.czapiewska@pg.edu.pl	PL		Yes
124	Czylwik, Andreas czylwik@nts.uni-duisburg-essen.de	DE		Yes
125	Deruyck, Margot margot.deruyck@ugent.be	BE		Yes
126	Dittmann, Lars ld@com.dtu.dk	DK		
127	Ekman, Torbjörn torbjorn.ekman@ntnu.no	NO		Yes
128	Gaillot, Davy davy.gaillot@univ-lille.fr	FR		Yes
129	Garcia-Pardo, Concepcion cgpardo@iteam.upv.es	ES		Yes
130	Gardasevic, Gordana gordana.gardasevic@etf.unibl.org	BA		Yes
131	Haddad, Yoram haddad@g.jct.ac.il	IL		
132	Horvath, Balint horvath.balint@vik.bme.hu	HU		
133	Hristov, Atanas atanas.hristov@uist.edu.mk	MK		Yes
134	Ivashina, Marianna marianna.ivashina@chalmers.se	SE		
135	Javornik, Tomaž tomaz.javornik@ijs.si	SI		Yes
136	Katzis, Konstantinos K.Katzis@euc.ac.cy	CY		Yes

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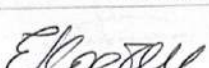
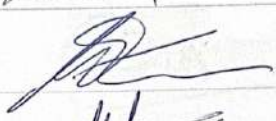
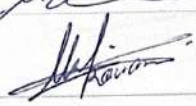
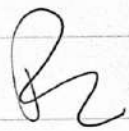
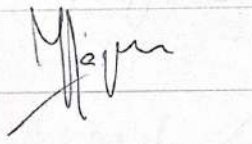
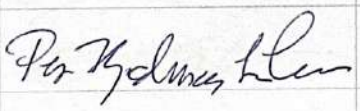
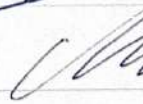
- **Management Committee - Management Committee Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
137	Kocan, Enis enisk@ucg.ac.me	ME		Yes
138	Kotterman, Wim wim.kotterman@tu-ilmenau.de	DE		Yes
139	Kourani, Ali ali.kourani@aalto.fi	FI		Yes
140	Kováčiková, Tatiana tatiana.kovacikova@uniza.sk	SK		Yes
141	Kułakowski, Paweł kulakowski@agh.edu.pl	PL		Yes
142	Kürner, Thomas kuerner@ifn.ing.tu-bs.de	DE		Yes
143	Lager, Ioan Ernest i.e.lager@tudelft.nl	NL		Yes
144	Lagunas, Eva eva.lagunas@uni.lu	LU		
145	Lehne, Per Hjalmar per-hjalmar.lehne@telenor.com	NO		Yes
146	Lipovac, Adriana adriana.lipovac@unidu.hr	HR		
147	Machaj, Juraj juraj.machaj@feit.uniza.sk	SK		
148	Marsalek, Roman marsaler@vut.cz	CZ		Yes
149	Mikhaylov, Konstantin konstantin.mikhaylov@oulu.fi	FI		Yes
150	Mlinar, Tomi tomi.mlinar@fe.uni-lj.si	SI		Yes

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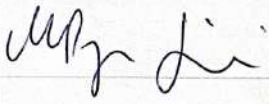
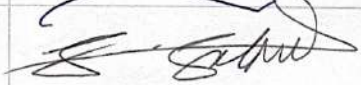
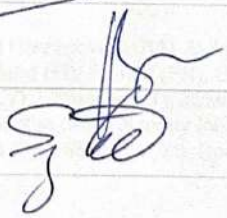
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
151	Molina-Garcia-Pardo, Jose-Maria josemaria.molina@upct.es	ES		Yes
152	Oestges, Claude claude.oestges@uclouvain.be	BE		Yes
153	Ozdemir, Mehmet Kemal mkozdemir@medipol.edu.tr	TR		
154	Papaj, Ján jan.papaj@tuke.sk	SK		
155	Pedersen, Troels troels@es.aau.dk	DK		Yes
156	Pejanovic-Djurisic, Milica milica@t-com.me	ME		Yes
157	Petrova, Marinela marinnela.petrova@gmail.com	BG		Yes
158	Sahbafard, Arash arash.sahbafard@silicon-austria.com	AT		Yes
159	Salous, Sana sana.salous@durham.ac.uk	UK		Yes
160	Sarrazin, Julien julien.sarrazin@sorbonne-universite.fr	FR		
161	Skachek, Vitaly vitaly.skachek@gmail.com	EE		Yes
162	Stojkoska, Biljana biljanastojkoska@yahoo.com	MK		Yes
163	Sykora, Jan jan.sykora@fel.cvut.cz	CZ		Yes
164	Tufvesson, Fredrik fredrik.tufvesson@eit.lth.se	SE		

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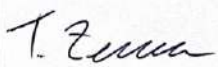
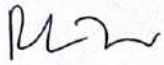
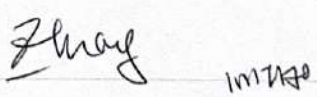
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
165	Vassiliou, Vasos vasosv@ucy.ac.cy	CY		
166	VELEZ, Fernando José fjv@ubi.pt	PT		Yes
167	Verdone, Roberto roberto.verdone@unibo.it	IT		Yes
168	Wagen, Jean Frederic jfowagen@gmail.com	CH		Yes
169	Wilding, Thomas thomas.wilding@tugraz.at	AT		
170	Zammit, Joseph A. joseph.a.zammit@mcast.edu.mt	MT		
171	Zanaj, Blerina bzanaj@ubt.edu.al	AL		Yes
172	Zanaj, Elma ezanaj@fti.edu.al	AL		
173	Zemen, Thomas thomas.zemen@ait.ac.at	AT		Yes
174	Zentner, Radovan radovan.zentner@fer.hr	HR		Yes
175	Zhang, Haibin haibin.zhang@tno.nl	NL		Yes

Country Codes: Albania (AL), Austria (AT), Belgium (BE), Bosnia and Herzegovina (BA), Bulgaria (BG), Croatia (HR), Cyprus (CY), Czech Republic (CZ), Denmark (DK), Estonia (EE), Finland (FI), France (FR), Germany (DE), Greece (EL), Hungary (HU), Iceland (IS), Ireland (IE), Israel (IL), Italy (IT), Latvia (LV), Lithuania (LT), Luxembourg (LU), Malta (MT), Montenegro (ME), The Netherlands (NL), the North Republic of Macedonia (MK), Norway (NO), Poland (PL), Portugal (PT), The Republic of Moldova (MD), Romania (RO), Serbia (RS), Slovakia (SK), Slovenia (SI), Spain (ES), Sweden (SE), Switzerland (CH), Turkey (TR), United Kingdom (UK).

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Meeting Secretary

(Chair or local organiser)

Name + signature

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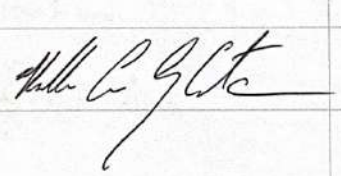
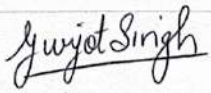
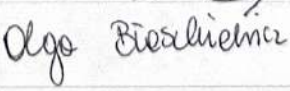
MEETING ATTENDANCE LIST OF (7TH MC AND SCIENTIFIC MEETING - 25/01/2024)

The attendance list provides the names of the participants who confirmed attendance via their personal e-COST invitation link.

Meeting Title: 7th MC and scientific meeting	
Meeting Reference: E-COST-MEETING-CA20120-220124-c9bae64b	**Action Number: CA20120**
Meeting Administrator: Natascia De Fenzo	**E-mail: natascia.defenzo@cnit.it**

- **Management Committee - Management Committee Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
1	Adeogun, Ramoni ra@es.aau.dk	DK		
2	ahmadi, hamed hamed.ahmadi@ucd.ie	UK		
3	Alayón Glazunov, Andrés andres.alayon.glazunov@liu.se	SE		Yes
4	ALVES COSTA, HERALDO CESAR heraldo-cesar.alves-costa@tu-ilmenau.de	DE		Yes
5	BERBINEAU, Marion marion.berbineau@univ-eiffel.fr	FR		Yes
6	Bhatia, Gurjot Singh gsbhatia@siradel.com	n/a		Yes
7	Bilbao, Inigo inigo.bilbao@ehu.eus	ES		
8	Blazek, Thomas wtblazek@gmail.com	AT		
9	Blumenstein, Jiri blumenstein@vutbr.cz	CZ		Yes
10	Błaszkiewicz, Olga olga.blaszkiewicz@pg.edu.pl	PL		Yes

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EUROPEAN COOPERATION
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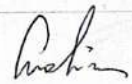
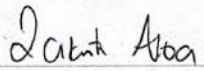
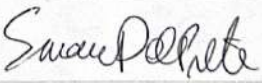
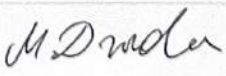
- **Management Committee - Management Committee Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
11	Boban, Mate mate.boban@huawei.com	DE		
12	Buehler, Hermann Hermann.Buehler@buehler.at	AT		Yes
13	Cardoso, Filipe filipe.cardoso@estsetubal.ips.pt	PT		Yes
14	Castelló Palacios, Sergio sercaspa@iteam.upv.es	ES		Yes
15	Cichoń, Krzysztof krzysztof.cichon@put.poznan.pl	PL		Yes
16	Conserva, Francesca francesca.conserva@unibo.it	n/a		Yes
17	Cwalina, Krzysztof kkcwalina@eti.pg.edu.pl	PL		Yes
18	Dakic, Anja anja.dakic@ait.ac.at	n/a		
19	Das, Kallol kallol.das@tno.nl	NL		
20	De Saint Moulin, François francois.desaintmoulin@uclouvain.be	BE		Yes
21	Degli-Esposti, Vittorio v.degliesposti@unibo.it	IT		
22	Del Prete, Simone simone.delprete4@unibo.it	IT		
23	Diaz, Guillermo guillermo.diaz@ehu.eus	ES		Yes
24	Drozdowska, Monika mdrozdo@upv.edu.es	ES		

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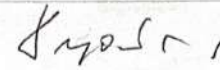
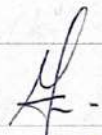
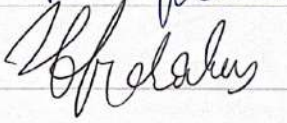
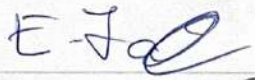
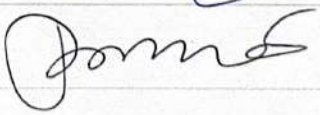
Nr	Participant	Country	Signature	Is Attending
25	Dupleich, Diego diego-andres.dupleich@tu-ilmenau.de	DE		Yes
26	Ebert, Alexander alexander.ebert@tu-ilmenau.de	DE		
27	Fan, Wei wfa@es.aau.dk	DK		
28	Ferreira, Manuel manuel.ferreira@estsetubal.ips.pt	PT		
29	Garcia Armada, Ana agarcia@tsc.uc3m.es	ES		Yes
30	Ghiaasi, Golsa golsa.ghiaasi@silicon-austria.com	AT		
31	ghourtani, mostafa rahmani.mostafa@york.ac.uk	UK		Yes
32	Gijon Martin, Carolina cgm@ic.uma.es	ES		Yes
33	Grazioso, Paolo pgrazioso@fub.it	IT		Yes
34	Hofer, Markus markus.hofer@ait.ac.at	AT		
35	Hron, Petr hronpetr@fel.cvut.cz	CZ		
36	Iradier, Eneko eneko.iradier@ehu.eus	ES		
37	Jämsä, Tommi tommi.jamsa@huawei.com	n/a		Yes
38	Janji, Salim salim_janji@hotmail.com	PL		

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IN SCIENCE & TECHNOLOGY

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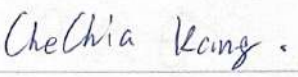
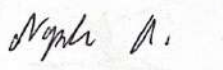
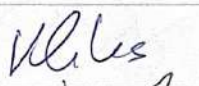
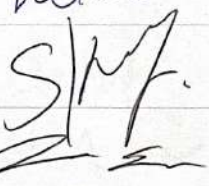
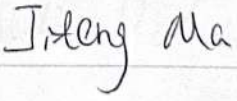
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
39	Ji, Yilin yilin.ji@viavisolutions.com	UK		
40	Joseph, Wout wout.joseph@ugent.be	BE		Yes
41	Kang, CheChia kang.c.aa@m.titech.ac.jp	JP		Yes
42	Keerativoranan, Nopphon nopphon.keerativoranan@ap.ide.titech.ac.jp	JP		Yes
43	Kim, Minseok mskim@eng.niigata-u.ac.jp	JP		
44	Kliks, Adrian adrian.kliks@put.poznan.pl	PL		Yes
45	Kodra, Silvi silvi.kodra2@unibo.it	IT		Yes
46	Kokkoniemi, Joonas joonas.kokkoniemi@oulu.fi	FI		Y
47	Krasniqi, Bujar bujar.krasniqi@uni-pr.edu	KV		Yes
48	Kryszkiewicz, Pawel pawel.kryszkiewicz@put.poznan.pl	PL		Yes
49	Kyösti, Pekka pekka.kyosti@keysight.com	FI		
50	Lukac, Jozef lukacjo1@fel.cvut.cz	CZ		
51	Lukic, Djordje djordje.lukic@aspiretechnology.com	RS		Yes
52	Ma, Jiteng jiteng.ma@bristol.ac.uk	UK		Yes

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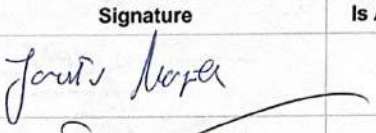
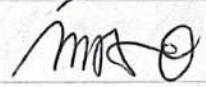
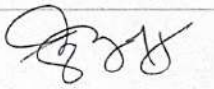
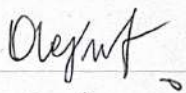
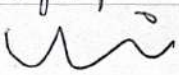
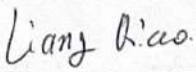
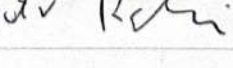
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
53	Magiera, Jarosław jaroslaw.magiera@pg.edu.pl	PL		Yes
54	Mallik, Mohammed mohammed.mallik.etu@univ-lille.fr	FR		
55	Miao, Yang y.miao@utwente.nl	NL		Yes
56	Micó, Sergio sermiro@teleco.upv.es	ES		
57	Morano, Grega grega.morano@ijs.si	SI		Yes
58	Muzaffar, Raheeb raheeb.muzaffar@silicon-austria.com	AT		Yes
59	Olejniczak, Alicja alicja.olejniczak@pg.edu.pl	PL		
60	Orozco, Luis luis.orozco@uclm.es	ES		Yes
61	Pamp, Jörg pamp@ihf.rwth-aachen.de	DE		Yes
62	Pasic, Faruk faruk.pasic@tuwien.ac.at	n/a		Yes
63	Pereira, Diogo dfca.pereira@campus.fct.unl.pt	PT		Yes
64	Qiao, Liang liang.qiao@bristol.ac.uk	UK		Yes
65	Radovic, Danilo danilo.radovic@tuwien.ac.at	n/a		Yes
66	Rajchowski, Piotr piorajch@eti.pg.edu.pl	PL		Yes

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- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
67	Reig, Juan jreigp@dcom.upv.es	ES		
68	Rizkalla, Shrief shrief.rizkalla@silicon-austria.com	AT		Yes
69	Rizzo, Gianluca gianluca.antonio.rizzo@gmail.com	CH		Yes
70	Rudd, Richard richard.rudd@plumconsulting.co.uk	UK		Yes
71	Rumney, Moray moray@rumneytelecom.com	UK		Yes
72	Samorzewski, Adam adam.samorzewski@doctorate.put.poznan.pl	PL		
73	Sanchez Martin, Joaquin M. jmsanchez@ic.uma.es	n/a		
74	Sayrafian, Kamran kamran.sayrafian@nist.gov	US		Yes
75	Schiffarth, Anna-Malin schiffarth@ihf.rwth-aachen.de	DE		Yes
76	Schneider, Christian christian.schneider@tu-ilmenau.de	n/a		
77	Simončič, Aleš ales.simoncic@ijs.si	SI		Yes
78	Skocaj, Marco marco.skocaj@unibo.it	IT		
79	Skoric, Tamara tamara.ceranic@gmail.com	RS		Yes
80	Smeenk, Carsten carsten.smeenk@iis.fraunhofer.de	DE		

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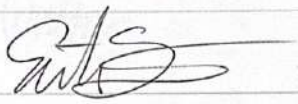
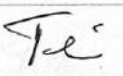
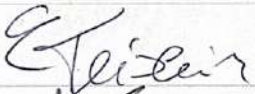
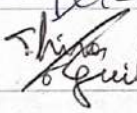
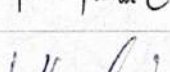
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
81	Sobron, Iker iker.sobron@ehu.eus	ES		Yes
82	Sommerkorn, Gerd som@tu-ilmenau.de	DE		Yes
83	Ström, Erik erik.strom@chalmers.se	SE		Yes
84	Studer Ferreira, Lucio lucio.studer@ulusofona.pt	PT		
85	Stuebner, Ralph ralph.stuebner@cost.eu	BE		Yes
86	Teich, Werner werner.teich@uni-ulm.de	DE		Yes
87	Teixeira, Emanuel emanuelt@ubi.pt	PT		
88	Thiran, Guillaume guillaume.thiran@uclouvain.be	BE		Yes
89	Thomä, Reiner reiner.thomae@tu-ilmenau.de	DE		Yes
90	Torrico, Saul storrico@gwu.edu	US		Yes
91	Turbic, Kenan kturbic@gmail.com	DE		Yes
92	Ulmschneider, Markus markus.ulmschneider@dlr.de	DE		Yes
93	Unterhuber, Paul paul.unterhuber@dlr.de	DE		Yes
94	Villaescusa Tébar, Álvaro alvilte1@teleco.upv.es	n/a		Yes

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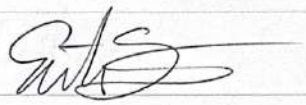
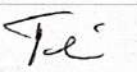
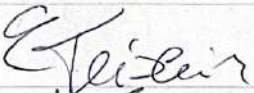
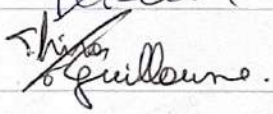
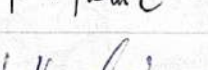
Nr	Participant	Country	Signature	Is Attending
81	Sobron, Iker iker.sobron@ehu.eus	ES		Yes
82	Sommerkorn, Gerd som@tu-ilmenau.de	DE		Yes
83	Ström, Erik erik.strom@chalmers.se	SE		Yes
84	Studer Ferreira, Lucio lucio.studer@ulusofona.pt	PT		
85	Stuebner, Ralph ralph.stuebner@cost.eu	BE		Yes
86	Teich, Werner werner.teich@uni-ulm.de	DE		Yes
87	Teixeira, Emanuel emanuelt@ubi.pt	PT		
88	Thiran, Guillaume guillaume.thiran@uclouvain.be	BE		Yes
89	Thomä, Reiner reiner.thomae@tu-ilmenau.de	DE		Yes
90	Torrico, Saul storrico@gwu.edu	US		Yes
91	Turbic, Kenan kturbic@gmail.com	DE		Yes
92	Ulmschneider, Markus markus.ulmschneider@dlr.de	DE		Yes
93	Unterhuber, Paul paul.unterhuber@dlr.de	DE		Yes
94	Villaescusa Tébar, Álvaro alvilte1@teleco.upv.es	n/a		Yes

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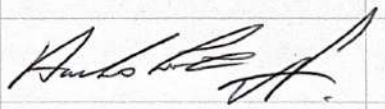
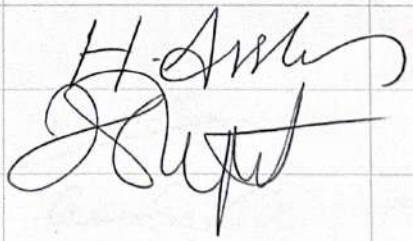
- **Management Committee - Management Committee Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
95	Villemaud, Guillaume guillaume.villemaud@insa-lyon.fr	FR		Yes
96	Vitucci, Enrico Maria enricomaria.vitucci@unibo.it	IT		
97	Walter, Michael m.walter@dlr.de	DE		Yes
98	Zhang, Peize peize.zhang@oulu.fi	FI		
99	Zhao, Zhixiang zhixiang.zhao@tu-ilmenau.de	DE		Yes
100	Ziganshin, Ainur ainur.ziganshin@tu-ilmenau.de	DE		Yes
101	Aleksiejūnas, Rimvydas rimvydas.aleksiejunas@ff.vu.lt	LT		Yes
102	Alexandru, Marian marian.alexandru@unitbv.ro	RO		
103	Ambroziak, Slawomir slawomir.ambroziak@pg.edu.pl	PL		Yes
104	Anton-Haro, Carles carles.anton@cttc.es	ES		Yes
105	ARSLAN, Hüseyin arslan.usf@gmail.com	TR		Yes
106	Bajić, Dragana dragana.bajic@gmail.com	RS		Yes
107	Balan, Titus Constantin titus.balan@unitbv.ro	RO		Yes
108	Batagelj, Boštjan bostjan.batagelj@fe.uni-lj.si	SI		

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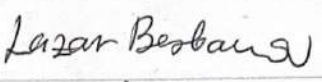
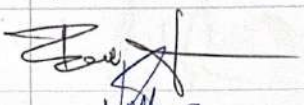
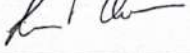
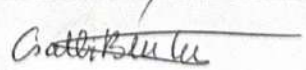
- **Management Committee - Management Committee Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
109	Berbakov, Lazar lazar.berbakov@pupin.rs	RS		Yes
110	Bito, Janos bito.janos@vik.bme.hu	HU		Yes
111	Bota, Vasile Vasile.Bota@com.utcluj.ro	RO		Yes
112	Brennan, Conor conor.brennan@dcu.ie	IE		
113	Buratti, Chiara c.buratti@unibo.it	IT		Yes
114	Burr, Alister alister.burr@york.ac.uk	UK		Yes
115	Cardona, Narcis ncardona@iteam.upv.es	ES		Yes
116	Chatzimisios, Periklis pchatzimisios@ihu.gr	EL		Yes
117	Chatzinotas, Symeon schatzin@ieee.org	LU		
118	Clavier, Laurent laurent.clavier@imt-nord-europe.fr	FR		Yes
119	Clerckx, Bruno b.clerckx@imperial.ac.uk	UK		Yes
120	Conrat, Jean-Marc jeanmarc.conrat@orange.com	FR		Yes
121	Correia, Luis M luis.m.correia@tecnico.ulisboa.pt	PT		Yes
122	Csatho, Botond Tamas csatho.botond@edu.bme.hu	HU		Yes

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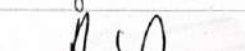
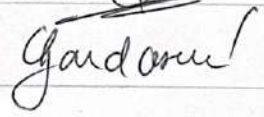
- **Management Committee - Management Committee Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
123	Czapiewska, Agnieszka agnieszka.czapiewska@pg.edu.pl	PL		Yes
124	Czylwik, Andreas czylwik@nts.uni-duisburg-essen.de	DE		Yes
125	Deruyck, Margot margot.deruyck@ugent.be	BE		Yes
126	Dittmann, Lars ld@com.dtu.dk	DK		
127	Ekman, Torbjörn torbjorn.ekman@ntnu.no	NO		Yes
128	Gaillot, Davy davy.gaillot@univ-lille.fr	FR		Yes
129	Garcia-Pardo, Concepcion cgpardo@iteam.upv.es	ES		Yes
130	Gardasevic, Gordana gordana.gardasevic@etf.unibl.org	BA		Yes
131	Haddad, Yoram haddad@g.jct.ac.il	IL		
132	Horvath, Balint horvath.balint@vik.bme.hu	HU		
133	Hristov, Atanas atanas.hristov@uist.edu.mk	MK		Yes
134	Ivashina, Marianna marianna.ivashina@chalmers.se	SE		
135	Javornik, Tomaž tomaz.javornik@ijs.si	SI		Yes
136	Katzis, Konstantinos K.Katzis@euc.ac.cy	CY		Yes

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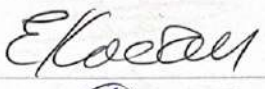
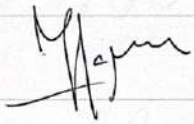
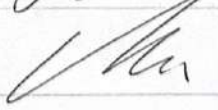
- **Management Committee - Management Committee Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
137	Kocan, Enis enisk@ucg.ac.me	ME		Yes
138	Kotterman, Wim wim.kotterman@tu-ilmenau.de	DE		Yes
139	Kourani, Ali ali.kourani@aalto.fi	FI		Yes
140	Kováčiková, Tatiana tatiana.kovacikova@uniza.sk	SK		Yes
141	Kułakowski, Paweł kulakowski@agh.edu.pl	PL		Yes
142	Kürner, Thomas kuerner@ifn.ing.tu-bs.de	DE		Yes
143	Lager, Ioan Ernest i.e.lager@tudelft.nl	NL		Yes
144	Lagunas, Eva eva.lagunas@uni.lu	LU		
145	Lehne, Per Hjalmar per-hjalmar.lehne@telenor.com	NO		Yes
146	Lipovac, Adriana adriana.lipovac@unidu.hr	HR		
147	Machaj, Juraj juraj.machaj@feit.uniza.sk	SK		
148	Marsalek, Roman marsaler@vut.cz	CZ		Yes
149	Mikhaylov, Konstantin konstantin.mikhaylov@oulu.fi	FI		Yes
150	Mlinar, Tomi tomi.mlinar@fe.uni-lj.si	SI		Yes

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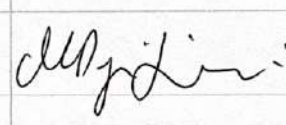
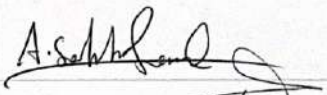
- **Management Committee - Management Committee Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
151	Molina-Garcia-Pardo, Jose-Maria josemaria.molina@upct.es	ES		Yes
152	Oestges, Claude claude.oestges@uclouvain.be	BE		Yes
153	Ozdemir, Mehmet Kemal mkozdemir@medipol.edu.tr	TR		
154	Papaj, Ján jan.papaj@tuke.sk	SK		
155	Pedersen, Troels troels@es.aau.dk	DK		Yes
156	Pejanovic-Djurisic, Milica milica@t-com.me	ME		Yes
157	Petrova, Marinela marinnela.petrova@gmail.com	BG		Yes
158	Sahbafard, Arash arash.sahbafard@silicon-austria.com	AT		Yes
159	Salous, Sana sana.salous@durham.ac.uk	UK		Yes
160	Sarrazin, Julien julien.sarrazin@sorbonne-universite.fr	FR		
161	Skachek, Vitaly vitaly.skachek@gmail.com	EE		Yes
162	Stojkoska, Biljana biljanastojkoska@yahoo.com	MK		Yes
163	Sykora, Jan jan.sykora@fel.cvut.cz	CZ		Yes
164	Tufvesson, Fredrik fredrik.tufvesson@eit.lth.se	SE		

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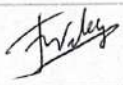
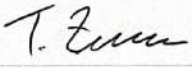
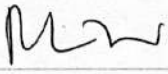
- **Management Committee - Management Committee Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
165	Vassiliou, Vasos vasosv@ucy.ac.cy	CY		
166	VELEZ, Fernando José fjv@ubi.pt	PT		Yes
167	Verdone, Roberto roberto.verdone@unibo.it	IT		Yes
168	Wagen, Jean Frederic jfowagen@gmail.com	CH		Yes
169	Wilding, Thomas thomas.wilding@tugraz.at	AT		
170	Zammit, Joseph A. joseph.a.zammit@mcast.edu.mt	MT		
171	Zanaj, Blerina bzanaj@ubt.edu.al	AL		Yes
172	Zanaj, Elma ezanaj@fti.edu.al	AL		
173	Zemen, Thomas thomas.zemen@ait.ac.at	AT		Yes
174	Zentner, Radovan radovan.zentner@fer.hr	HR		Yes
175	Zhang, Haibin haibin.zhang@tno.nl	NL		Yes

Country Codes: Albania (AL), Austria (AT), Belgium (BE), Bosnia and Herzegovina (BA), Bulgaria (BG), Croatia (HR), Cyprus (CY), Czech Republic (CZ), Denmark (DK), Estonia (EE), Finland (FI), France (FR), Germany (DE), Greece (EL), Hungary (HU), Iceland (IS), Ireland (IE), Israel (IL), Italy (IT), Latvia (LV), Lithuania (LT), Luxembourg (LU), Malta (MT), Montenegro (ME), The Netherlands (NL), the North Republic of Macedonia (MK), Norway (NO), Poland (PL), Portugal (PT), The Republic of Moldova (MD), Romania (RO), Serbia (RS), Slovakia (SK), Slovenia (SI), Spain (ES), Sweden (SE), Switzerland (CH), Turkey (TR), United Kingdom (UK).

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Meeting Secretary

(Chair or local organiser)

Name + signature

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- **Workshop/Conference - Workshops/Conferences (Start Date: 22/01/2024 End Date: 22/01/2024)**

Nr	Participant	Country	Signature	Is Attending
40	Czapiewska, Agnieszka agnieszka.czapiewska@pg.edu.pl	PL		Yes
41	Czylwik, Andreas czylwik@nts.uni-duisburg-essen.de	DE		Yes
42	Dakic, Anja anja.dakic@ait.ac.at	n/a		
43	Das, Kallol kallol.das@tno.nl	NL		
44	De Fenzo, Natascia natascia.defenzo@cnit.it	IT	NDeFenzo	Yes
45	De Saint Moulin, François francois.desaintmoulin@uclouvain.be	BE		Yes
46	Degli-Esposti, Vittorio v.degliesposti@unibo.it	IT		
47	Del Prete, Simone simone.delprete4@unibo.it	IT		
48	Deruyck, Margot margot.deruyck@ugent.be	BE		Yes
49	Diaz, Guillermo guillermo.diaz@ehu.eus	ES		Yes
50	Dittmann, Lars ld@com.dtu.dk	DK		
51	Drozdowska, Monika mdrozdo@upv.edu.es	ES		
52	Dupleich, Diego diego-andres.dupleich@tu-ilmenau.de	DE		Yes
53	Ebert, Alexander alexander.ebert@tu-ilmenau.de	DE		

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- **Management Committee - Management Committee Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
123	Czapiewska, Agnieszka agnieszka.czapiewska@pg.edu.pl	PL		Yes
124	Czylwik, Andreas czylwik@nts.uni-duisburg-essen.de	DE		Yes
125	De Fenzo, Natascia natascia.defenzo@cnit.it	IT	NDefenzo	Yes
126	Deruyck, Margot margot.deruyck@ugent.be	BE		Yes
127	Dittmann, Lars ld@com.dtu.dk	DK		
128	Ekman, Torbjörn torbjorn.ekman@ntnu.no	NO		Yes
129	Gaillot, Davy davy.gaillot@univ-lille.fr	FR		Yes
130	Garcia-Pardo, Concepcion cgpardo@iteam.upv.es	ES		Yes
131	Gardasevic, Gordana gordana.gardasevic@etf.unibl.org	BA		Yes
132	Haddad, Yoram haddad@g.jct.ac.il	IL		
133	Horvath, Balint horvath.balint@vik.bme.hu	HU		
134	Hristov, Atanas atanas.hristov@uist.edu.mk	MK		Yes
135	Ivashina, Marianna marianna.ivashina@chalmers.se	SE		
136	Javornik, Tomaž tomaz.javornik@ijs.si	SI		Yes

- **Management Committee - Management Committee Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
123	Czapiewska, Agnieszka agnieszka.czapiewska@pg.edu.pl	PL		Yes
124	Czylwik, Andreas czylwik@nts.uni-duisburg-essen.de	DE		Yes
125	De Fenzo, Natascia natascia.defenzo@cnit.it	IT		Yes
126	Deruyck, Margot margot.deruyck@ugent.be	BE		Yes
127	Dittmann, Lars ld@com.dtu.dk	DK		
128	Ekman, Torbjörn torbjorn.ekman@ntnu.no	NO		Yes
129	Gaillot, Davy davy.gaillot@univ-lille.fr	FR		Yes
130	Garcia-Pardo, Concepcion cgpardo@iteam.upv.es	ES		Yes
131	Gardasevic, Gordana gordana.gardasevic@etf.unibl.org	BA		Yes
132	Haddad, Yoram haddad@g.jct.ac.il	IL		
133	Horvath, Balint horvath.balint@vik.bme.hu	HU		
134	Hristov, Atanas atanas.hristov@uist.edu.mk	MK		Yes
135	Ivashina, Marianna marianna.ivashina@chalmers.se	SE		
136	Javornik, Tomaž tomaz.javornik@ijs.si	SI		Yes

- **Management Committee - Management Committee Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**
- **Working Group - Working Group Meeting (Start Date: 23/01/2024 End Date: 25/01/2024)**

Nr	Participant	Country	Signature	Is Attending
123	Czapiewska, Agnieszka agnieszka.czapiewska@pg.edu.pl	PL		Yes
124	Czylwik, Andreas czylwik@nts.uni-duisburg-essen.de	DE		Yes
125	De Fenzo, Natascia natascia.defenzo@cnit.it	IT	NDefenzo	Yes
126	Deruyck, Margot margot.deruyck@ugent.be	BE		Yes
127	Dittmann, Lars ld@com.dtu.dk	DK		
128	Ekman, Torbjörn torbjorn.ekman@ntnu.no	NO		Yes
129	Gaillot, Davy davy.gaillot@univ-lille.fr	FR		Yes
130	Garcia-Pardo, Concepcion cgpardo@iteam.upv.es	ES		Yes
131	Gardasevic, Gordana gordana.gardasevic@etf.unibl.org	BA		Yes
132	Haddad, Yoram haddad@g.jct.ac.il	IL		
133	Horvath, Balint horvath.balint@vik.bme.hu	HU		
134	Hristov, Atanas atanas.hristov@uist.edu.mk	MK		Yes
135	Ivashina, Marianna marianna.ivashina@chalmers.se	SE		
136	Javornik, Tomaž tomaz.javornik@ijs.si	SI		Yes

WG1 - Radio Channels

We had five sessions, two of which were WG1-only session

- Propagation (analytical characterization and ray-based simulation of curved bodies, maritime channels, GSCM emulation)

- Measurements (material characterization, transmission loss modeling)

There were also three joint sessions, with WG2 (MIMO channels), VT2 (channels for land, air, maritime vehicles), and VT3 (industrial channels). Furthermore, there were 3 sessions in SWG THz, covering the thematic of measurements and simulation of scattering, human blockage and ISAC applications, beam-fomring at mmWave with frequency diverse arrays, K-factor measurements at mmWave and channel measurements in open-square scenario at THz.

SWG1-THZ

There were 3 sessions with a total of 9 TDs in SWG1.1 covering the topics of measurements and simulation of scattering, human blockage and ISAC applications, beamforming at mmWave with frequency diverse arrays, K-factor measurements at mmWave and channel measurements in open-square scenario at THz. A very good diversity of topics addressing the frequencies of interest of the sub-working group have been presented and a promising progression of work is observed from meeting to meeting. In addition, one of the sessions was chaired by Monika Drozdowska from UPV as part of the efforts from INTERACT on giving visibility and the opportunity to gain confidence to the junior female colleagues.

WG2 - Signal Processing and Localization & SWG2 ISAC

35 papers were presented in WG2, some individually but many in the two joint sessions with VT2 and one with WG1, plus a further 4 to SWG2.1 ISAC. This large number of papers denoted a big interest in the topics of WG2 and necessitated parallel sessions. The topics covered were wide including FEC coding (LDPC and Rateless), OAM, beamforming, modulation, and multiple access (NOMA was discussed in several papers), as well as many localisation works and a few on ISAC. Non-linear effects, security, synchronisation and standardisation issues were also discussed. ML tools were often used to enhance the capabilities of more classical signal processing. There was a discussion session focussed on the White Paper that is under preparation: the table of contents was reviewed and revised and matched with a number of volunteers who had offered to cover topics.

For the ISAC session: there were 4 papers: 1) measurement capability of micro-Doppler and reflectivity; 2) preliminary work of 5G vehicular beam management using radar processing and deep reinforced learning; 3) Wi-Fi CSI and neural network based human activity recognition; 4) to infer bistatic communication channel using two monostatic radar channels. In WG1, there was a ISAC paper regarding ISAC channel measurement as well.

For the two localization sessions, there were 7 papers. 1) protocol modification in time slotted channels for single access localization; 2) CFO-aware array antenna switching pattern for DOA estimation; 3) the data competition winner using transformer and attention deep neural network for localization; 4) synthesize image hybrid neural networks; 5) experiment using 5G NR SSB for indoor outdoor localization; 6) multi-path assisted channel-SLAM fingerprinting using offline/online training; 7) near-field multi-static radar range estimation.

The highlight of the ISAC session was chosen to be 4) to infer bistatic communication channel using two monostatic radar channels, and that for the localization sessions was 5) experiment using 5G NR SSB for indoor outdoor localization. Both with measurement and theory.

WG3 - Network Architectures and Protocols

In Lisbon, WG3 had two sessions and six TDs in WG3-only sessions, discussing the different aspects of resource management beyond 5G and mmWave networks, UAVs and V2X, and resource-aware network design and implementations. Notably, the sustainability aspect of wireless network design has been raised. Also, we had two joint sessions with VT2 and VT3, where seven more application-grounded TDs were presented. Similar to previous meetings, communications for 3D networks, UAVs, and V2X draw much interest and attention.

VT1 - Health and Well-Being

During this meeting, Vt1 hosted 2 sessions with 21 attendees. The TDs covered various topics: development of dielectric materials for flexible printed antennas; dielectric characterization of healthy and malignant human colon tissues; a wearable health monitoring solution for car drivers; system loss analysis in UWB BANs indoors, and user position detection in off-body UWB BANs. Regarding the EMF SWG, TDs dealt with maximal RF exposure to 5G-Massive-MIMO base stations, instantaneous and theoretical maximum exposure in Valencia and challenges in the evaluation of EMF Exposure at RF Bands. EMF is holding a session at EuCAP 2024 with 6 papers, and an IEEE PIMRC 2024 workshop is planned.

SWG-EMF

The group had one session in which 4 TDs related to exposure where presented. There were 28 attendees on site in Lisbon, that really actively participated in the meeting.

Regarding the EMF TDs, the 4 TDs investigate a procedure for maximal RF exposure to 5G-Massive-MIMO base stations (NLOS), investigate instantaneous and theoretical maximum exposure (real traffic) in Valencia, present current challenges in the evaluation of EMF Exposure at RF Bands, and present an analysis of exposure to EMF Time-Dependence in 5G BS deployments. Discussion focused on exposure measurements of 5G-NR in LOS and NLOS situations.

After the session, there was a good discussion about workshops, the COST book structure for EMF, STSM, special issues about EMF, data sets, and next plans.

An EMF INTERACT convened session at EuCAP 2024 with 6 papers is realized and a workshop at IEEE PIMRC 2024 will be organized (workshop, paper submission deadline mid-March 2024).

VT2 - Transportation

Three VT2 sessions were held, each linked to a WG, with a total of 10 TDs. In the first session, there was a debate on a dedicated testbed for V2X communications in the CCAM context. There were two papers on channel emulation and modeling: real-time over-the-air emulation for antenna testing, and aircraft-to-aircraft, drone-to-drone, vehicle-to-vehicle and ship-to-ship applications. In the WG2-related session, discussions revolved around multiband channels for OTFS-based ITS and propagation in urban V2I scenarios. There was a paper addressing AoA estimation and private network performance for railways. Finally, in the WG3-related session, topics included drone base stations for on-ground V2X communication, and anomaly detection in minimizing drive tests procedure.

VT3 - Industrial Automation

VT3 had two joint sessions together with WG1 and WG3 on the third day of the meeting, Wednesday 23rd 2024. The sessions focused on channel measurements and characterization in industrial environment, link quality measurements, rate adaptation, and 5G campus network measurements. The discussions led on defining rate adaptation mechanisms with channel link quality.

I would nominate TD(24)07066 “Channel Measurements and Characterization in Industrial Environment at 60 GHz” for VT3.

VT4 - Smart Building and Cities

In VT4 we had a Session followed by interesting discussions. The first TD was on "Enhancing Cyber-Resilience of Edge Processing Devices with Prescriptive Malware Analysis, Detection and Response. The second one was on LTE Performance Estimation Based on Indicators Measured by the Radio Module and the last one was on A preliminary study on the use of convolutional networks for RF coverage evaluations in urban environments . VT4 members are preparing a

position paper based on the document about VT4 challenges. The topics of the paper and the so far received contributions were discussed in detail during the Session.