

THE ALFREC3D PROJECT COMES TO AN END WITH OPTIMUM RESULTS

High frequency devices for wireless communication made by additive manufacturing have been developed and tested in this project.

A multidisciplinary team integrated by members of UPV

and CSIC has developed a new manufacturing method based on 3D printing, metallization and integration of the high frequency devices which are used in terrestrial and space communication systems.

As a result of the project activities, a complete set of filters, antennas, resonators and transmission lines have been developed, in integrated technology in substrate and waveguide, perfectly functional. The manufactured prototypes have a high dimensional and surface precision, which makes this technology optimal for the manufacture of high-frequency devices.



In addition, dimensional, temperature, power and vibration control tests have been carried out, which certify the manufacturing tolerances of the process, the response to changes in temperature, to mechanical waves and the power handling of the manufactured devices.

These devices provide a fundamental advantage, which is their flexibility and modularity thanks to a new integration system in planer technology systems.

UPV AT MOBILE WORLD CONGRESS

The attendees to the Mobile World Congress 2022 in Barcelona were able to live an immersive experience while controlling in real time and with gestures a robot submerged in the shark aquarium of the Oceanogràfic de València. Thanks to the joint work between the iTEAM Institute of the Universitat Politècnica de València, Orange, the Oceanogràfic, Huawei and Ender Ocean, it has been possible to enjoy this experience 400 km away.

5G technology makes this experience possible thanks to its huge bandwidth and ultra-low latency, which transmits mo-



vement control commands in real time, while receiving the images captured by the two cameras located in Valencia and allows an immediate response.

This use case has potential applications in the exploration,

research, monitoring, dissemination and conservation of the underwater ecosystem and aims to raise awareness of the importance of preserving marine biodiversity through 5G technology.

TELECOMMUNICATIONS FOR SOCIETY – SMART CITIES SEMINAR

Representatives of the public administrations, sector companies, telecommunication professionals, researchers and professors met at the “Telecommunications for society – Smart Cities” seminar which took place at the Gandia Campus of the UPV.

The seminar was addressed to students, research and public administration staff and persons concerned about information and communication technologies.

Prof. David Gómez-Barquero from iTEAM took part of the round table “5G: The forefront of telecommunications” as an expert in Wireless Communications and 5G Systems.

BEST DEGREE FINAL PROJECT AWARDED BY COITT

The Official School and Spanish Association of Graduated and Technical Engineers in Telecommunication celebrated the XV Future of Telecommunications Awards.

It was conceded the 1st award in the Telecommunication

Systems to Sergio Martorell Ortega for his Degree Final Project “Colorectal Cancer Diagnosis Using Electromagnetic Tissue Characterization and Video Endoscopic Analysis”, which was conducted at iTEAM in collaboration with CVLab and La Fe Hospital in Valencia.



ITEAM (UPV) RESEARCHERS DEVELOP THE FIRST 5G BROADCAST TRANSMITTER

A group of iTEAM researchers formed by Aarón Montilla, Álvaro Ibáñez and Jaime Sánchez worked together with ORS Group to push the implementation of various components of the 5G-MAG Reference Tools.

Workshop took place between 21st to 24th February and helped to develop a SDR prototype based on a 5G Broadcast transmitter. In addition, efforts were carried out to implement RaptorQ with the Media Deli-

very BitRipple solution to improve broadcast transmissions. SDR prototype will be tested in the 5G TOURS European project.

The radio equipment defined by software that was used for the tryouts was acquired thanks to VLC-CAMPUS-5G II project, supported by European Union through the operative programme of European Regional Development Fund (FEDER).

DGT IS COMMITTED TO 5G TECHNOLOGY

À Punt's A la Ventura program connected live with iTEAM researcher Danaís Prado to learn more about the DGT 3.0 proposal to improve road safety.

This proposal aims to minimize accidents and emissions,

relying on the digitization and electrification of vehicles. The iTEAM Mobile Communications Group is working on both technological part and regulatory part associated with connected car industry, making these proposals a reality.

VALENCIA, CAPITAL OF 5G TECHNOLOGY – V5G DAYS 2022

More than 60 companies met at the second edition of the V5G Days, which took place on May 30th and 31st at the Oceanogràfic of Valencia. The event brought together professionals from the telecommunications sector and leaders in 5G with the aim of discussing the latest developments, achievements

and challenges in the application of this technology in the industrial field.

The director of iTEAM and coordinator of the V5G Days explained: "5G opens up an infinite field for us; it is the first mobile communications network faster than the human senses

and that means that machines can react faster, communicate faster and therefore act sooner than we would."

The conference emphasized the leadership of Valencia and Spain in 5G research and development and attendees were able to interact with connected robotics applications, virtual and immersive reality and immersive telepresence, among others.



SCIENTIFIC COFFEE ON THE DIGITAL UNIVERSITY WITH DAVID ROLDÁN

In the first face-to-face iTEAM scientific coffee after the COVID-19 pandemic, we were able to count on David Roldán, Solutions Architect at Sensedia, who spoke about the Digital University and the digital transformation applied to the University.

The Digital Transformation is based on a change in techno-

logy, culture and processes and opens the door to many opportunities for teaching and research staff. In addition to this, David Roldán also gave advice on how to gain visibility for our research and position ourselves on networks like LinkedIn.

David Roldán Martínez is a Doctor in Telecommunications Engineering from the

UPV, associate professor in the Department of Applied Mathematics, affiliated researcher at VRAIN and solutions Architect at Sensedia. He has worked as an Applications Analyst and has published more than 20 books and numerous articles related to the dissemination of science and technology.

JOINT WORKSHOP COST INTERACTIVE + 6G JIC HUAWEI- ITEAM

iTEAM and Huawei organised the COST INTERACT + 6G JIC Huawei-iTEAM Workshop on "Enabling Technologies for 6G" held at the UPV Campus on 19th September 2022.

Prof. Narcís Cardona introduced the event to the attendees in person and online after the welcome coffee. Among the speakers from Huawei and Universities such as Bologna or Twente, it is worth mentioning the participation of iTEAM members, Professors Jose Monserrat and Jose Capmany and Dr. Conchi García-Pardo.

LIVE ELECTRONICS AND INTERACTIVE VIDEO CREATION WITH THE PARTICIPATION OF SOUNDCOOL

The Palau de les Arts with the Municipal Band of Valencia received on September 2022 the work CHAPITRES, a composition which harmonized a symphonic band with live electronics and interactive video.

Stefano Scarani and Roser Domingo were in charge of live electronics and interactive video creation, both made with the Soundcool system of the Universitat Politècnica de València (UPV), and performed by Stefano Scarani, Marcel Estornell and Jorge Sastre.

FIRST EXPERIMENTAL DEMONSTRATION OF DISPERSION-DIVERSITY MULTICORE FIBER OPTICAL BEAMFORMING

A joint work from APL and PRL groups about dispersion-diversity multicore fiber optical beamforming has been published in Optics Express journal.

As a compact and efficient solution to provide tunable beam steering simultaneously to parallel antenna distribution and connectivity, researchers demonstrate, for the first time to their knowledge, tunable opti-

cal beamforming implemented on a dispersion-diversity multicore optical fiber.

Dispersion-diversity MCFs open the door towards the implementation of compact and versatile fiber-distributed signal processing, where both distribution and processing functionalities are provided within the same fiber medium.

MICROWAVE APPLICATIONS GROUP (GAM) AND ELECTROMAGNETIC RADIATION GROUP (GRE) OF ITEAM COORDINATE THE CAFTAM PROJECT FOR THE DEVELOPMENT OF NOVEL DEVICES FOR WIRELESS COMMUNICATIONS THROUGH ADDITIVE MANUFACTURING

Saturation of the electromagnetic spectrum of today's telecommunication systems requires efficient communication devices and further integration of radiation, guidance, filtering, etc. equipment.

Additive manufacturing technologies enable a very wide spectrum of volumetric topologies, as well as reducing manufacturing time, weight and cost compared to traditional metal milling processes.

The main objective of the CAFTAM project is therefore to develop experimental pro-

cedures and technologies that enable the additive manufacturing and plating of radio frequency communications devices for terrestrial, maritime and space applications.

The GAM and GRE groups of iTEAM are already working together with the companies DISMUNTEL and AIJU, and with the Institute of Chemical Technology (ITQ) of CSIC for the implementation of this project funded by the Agència Valenciana de la Innovació (AVI) within the Strategic Projects in Cooperation Programme. Ref. INNEST/2022/138.

SCIENTIFIC COFFEES

Scientific coffees were created as a way to disseminate the different studies that are carried out in iTEAM and share knowledge with all researchers. Numerous voices of scientific research have participated in them since their creation, providing an intangible and essential value. With the advent of the pandemic caused by COVID-19, these meetings ceased to be face to face, giving way to seeing and listening to each other through video calls.

The beginning of this year 2022 was marked by a first coffee in January, focused on junior professors, and another in February, this one dedicated to doctoral students.

The first scientific coffee with alumni took place in April and we were able to count on luxury guests who had completed their PhD at iTEAM: PhD David Vargas (BBC R&D, UK), PhD Jose Escolano (Hudson Data, USA) and PhD Enric Miralles (Qorvo, Germany).



May was marked by three different scientific coffees, each of them focused on a different research profile, which served to resolve many doubts from the attendees and listen to experienced voices from iTEAM research.

We finally had the chance to meet again in person. On June 20th, the first face-to-face scientific coffee after the Covid

pandemic was held, in which we had David Roldán, PhD in Telecommunications Engineering from the UPV, associate professor in the Department of Applied Mathematics, researcher attached to VRAIN and Solutions Architect at Sensedia. The coffee was focused on Digital Transformation and how it can open the door to numerous opportunities for teaching and



research staff, derived not only from Open Science and the sharing of information but also from the ability to add value to the results of the research.

In the month of July, we were fortunate to have the presence of Prof. Navin Kumar from the Amrita School of Engineering in India. In the coffee, the topics "5G Architecture and Call processing" and "LiFi Network Design and Challenges" were

discussed, which were of great interest for the work carried out by the attendees.

Finally, to close the calendar year of scientific coffees, but also to start the coffees for the 2022-2023 academic year, on November 3rd Dr. Addison Salazar visited us and all the attendees could enjoy his talk entitled "Learning from Small Data".

With this last coffee we concluded 2022, a year that has been full of new experiences and in which we have been lucky to have fantastic professionals in the field of telecommunications to learn from in each scientific coffee. There is no doubt that 2023 will be even more exciting and we are looking forward to launching ourselves into new challenges in iTEAM.

PADDLE TENNIS AND TABLE TENNIS ITEAM TOURNAMENTS

Since not everything was going to be work, this year we have had time to practice a bit of sport and we have done it in a big way... With two tournaments!

The paddle tennis tournament was very disputed in each round in which we experienced some vibrant and emotion-filled matches where the opposing couples were very even. Other couples... well, let's just say they had a good time and enjoyed being involved, but this will only improve. The best game came with the final match played between the couples formed by Aarón Montilla and Borja Iñesta against Andrés Macho and Luis Torrijos, who ended up prevailing and winning the tournament.

In the table tennis tournament, Pablo Picazo did not give any rival a chance and prevailed with solvency throughout the competition until he won the iTEAM champion trophy.

This initiative was very well received by all the people who make up iTEAM, so we are convinced that this is just the beginning of this type of event and we hope that the 2023 championships will be even more exciting.

