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Project:	Network of Competence on Internet of Things [NEON]
Project ID:	618942-EPP-1-2020-1-AT-EPPKA2-CBHE-JP
Work Package 7:	Dissemination and exploitation
Title:	D7.4 Report on open events to reach the community at-large and disseminate the results at ICT conferences
Lead Organization:	UNS
Participating Organizations:	UC3M, UCU, UDR, UK, UNC, UNMDP, UNS
Editors:	J. Cousseau
Contributors:	J. Cousseau, F. Gregorio, F. Masson, M. Peruzzi, C. Schmidt

Deliverable data	Work Package and Outcome ref.nr	WP7 D7.4
	Title	[D7.4 Report on open events to reach the community at-large and disseminate the results at ICT conferences
	Type	☐ Teaching material ☐ Event ☐ Learning material ☒ Report ☐ Training material ☐ Service / Product
	Description	The project outcome will be presented at three project's annual open events in Mar del Plata (Open Event 1), Montevideo (Open Event 2) and Bahia Blanca (Open Event 3). The open events are designed to disseminate to the society at large the project activities and outcomes. This report corresponds to Open Event 3.
	Date	October 2023
	Language	Mainly Spanish (English available)
Target groups	☒ Teaching staff ☒ Students ☒ Trainees ☐ Administrative staff ☐ Technical staff ☐ Librarians ☒ Industry partners ☒ Higher education authorities	
Dissemination level	☒Department/Faculty ☒ Local ☒ National ☒ Institution ☒ Regional ☒ International	
WP Lead Organization	UNS	
Participating Organizations	UNI-KLU, UC3M, UNC, UNS, UNMDP, UdelaR, UCU, TEAC, EYCON, ALLIANSYS SRL, CONAE	
Task	T7.4 Organize an annual open event outreaching a wide audience that includes public authorities, industry, students, pupils and non-expert people .	

Revision History				
Version	Date	Author(s)	Organization(s)	Brief description of change
1	20/10/2023	J. Cousseau	UNS	First draft
2	22/10/2023	M. Peruzzi	UNS	Final version

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1. Introduction

One of the main objectives of the NEON project [1], in addition to the consolidation of academic training and specific Internet of Things (IoT) laboratories, is the dissemination of Internet of Things in the community. IoT technology dissemination activities generally focus on the academic field (to reach authorities, staff, technicians, students) and also the industrial field (to encourage its adoption by entrepreneurs, technicians and managers).

For this purpose, Open Events have already been carried out by other NEON participating institutions. Specifically: Open Event 1, held by the Universidad Nacional de Mar del Plata (UNMdP), Argentina, in 2021 and Open Event 2, organized by the Universidad Católica de Uruguay (UCU), in 2022. This time, Open Event 3 has been organized by staff from the Universidad Nacional del Sur (UNS), on September 29, 2023, in the city of Bahía Blanca, Argentina.

In this new version, the Open Event 3 was held in a single intense day of presentations, aimed at the widest possible audience. With this objective, on the one hand, a series of plenary talks by international experts on motivating subjects related to the central topic of IoT were included in the morning of the event. Due to resource limitations, the conferences were held with the speakers remotely. On the other hand, various companies (with a profile of both services and research and development) with experience in the subject were invited at the afternoon to present the results of their initiatives and/or products. In this case, the talks were held in person and even included examples of products and their operation.

2. Objectives of the Deliverable

The objective of this report is to describe in detail the characteristics of the Open Event 3 held at UNS in September 2023. In addition, the results will also be reported in terms of audience and dissemination achieved.

The report has the following contents: characteristics of the Open Event (how the format and agenda of the event were defined; how the event was disseminated), use of NEON budget for the Open Event, presentation of the results of the event (dissemination material generated, registration list, surveys) and, finally, the conclusions.

3. Characteristics of the Open Event 3 (UNS – 2023)

Format of the Opent Event: To capture the attention of all types of audiences, both in academia and in companies, the content offering had to be broad. So, on the one hand, he thought of an offer of formal talks on cutting-edge (and consequently high-level) technologies for the academic field (teachers, students, technicians) related to IoT. On the other hand, the idea was to present talks on specific applications and/or application markets in IoT given directly by experienced companies.

Also to optimize in terms of time and resources, it was decided to leave the academic part for the morning (with a limited number of formal talks in virtual form, 3) and the company

part for the afternoon (with a greater number of talks in person, 6). In order for the day to be complete, and for the participants to integrate, coffee breaks and a very short lunch were offered.

Agenda:

The organization of the Open Event was the following:

Morning Part

Time	Activity	Speaker
8:30	**Reception, identification**	Organizers
9:00	**Welcome at NEON Open event at UNS (DIEC) & IIIE (English & Spanish)**	J. Cousseau - UNS
9:20	**Opening and presentation of NEON** (English)	A. Tonello - UNIKLU
9:40	**Neural accelerators for low consumption portable systems**	P. Julián – ALLEGRO MICROSYSTEMS (Argentina)
COFFEE BREAK		
10:30	**Connecting People and Devices Through Mixed Reality**	J. Nieto – MICROSOFT (Swiss)
11:10	**Challenges in Circuits and Systems for IoT** (English)	R. Reis – Univ. Federal do Rio Grande do Sul (Brazil)
LUNCH BREAK		

Evening Part

Time	Activity	Speaker
13:00	**Reception, identification**	Organizers
13:30	**Application of antenna technologies in the context of IoT**	N. Pieri - VENG
14:10	**Experiences and learnings from the design and deployment of Atheling IoT system**	G. Guichal - EMTECH
15:00	**Smart energy meters**	G. Isla Vieyra – DESA GROUP
COFFEE BREAK		
15:50	**A clean future: how IoT technology revolutionizes waste management**	E. Córdoba - ALLIANSYS
16:30	**Meteorological station network: example of a successful public-private agreement**	M. E. Antonelli - BOLSA DE CEREALES Y PRODUCTOS
17:00	**IoT as support for electronic payment in transportation and parking**	M. Pascualin - EYCON
17:30	**Closing words**	J. Cousseau - UNS
FAREWELL – DELIVERY OF CERTIFICATES – RECEPTION OF SURVEYS		

Most of the talks were given in Spanish (except indicated).

A short biography of each lecturer is given in Appendix 1. In the afternoon, except for the conferences of the DESA Group and the Bolsa de Cereales y Productos de Bahía Blanca (Cereals and Products Exchange of Bahía Blanca), all the speakers are associate partners of the NEON project.

Dissemination: The dissemination of the event was carried out using the collaboration of the Department of Electrical and Computer Engineering – Universidad Nacional del Sur (DIEC-UNS) and the Instituto de Investigaciones en Ingeniería Eléctrica (IIIE-CONICET). In relation to DIEC-UNS, an interview was carried out on Radio Universidad (AM 1240, Bahía Blanca) and its social networks (Facebook, Instagram, Linkedin, etc.) and website were used. Something similar was done in relation to the dissemination carried out through the IIIE.
In particular, through collaboration with the Centro Científico Tecnológico Regional (CCT-CONICET), radio interviews were conducted in FM De la Bahía 91.5 and FM Tabooradio 102.5, both of Bahía Blanca city (https://flamedia.com.ar/2023/09/internet-de-las-cosas-la-tecnologia-que-se-produce-en-bahia-y-la-region-es-tecnologia-de-exportacion/).

4. Use of NEON budget

A detail of the costs related to the Open Event is given in Table 1. In particular, some expenses were allocated to the participation of Nicolás Pieri, from VENG – Córdoba city. The rest of the costs are related to the cattering for the event (coffee breacks, etc.) and banner and/or additional supplies for the event.
The corresponding invoices are included in Appendix 2 (the convertion rate from pesos to euros is: € 1.00 = $ 397.5).

Table 1: NEON Open Event expenses detail.

Item	Detail	Amount (€)
1	N. Pieri – Fligth tickets (Córdoba – Buenos Aires - Bahía Blanca – Buenos Aires - Córdoba).	304.62
2	N. Pieri – Ground transportation between airports at Buenos Aires city.	11.69
3	N. Pieri – Hotel in Bahía Blanca city.	75.65
4	Banner	326.62
6	Cattering	763.52
7	Meeting bags	558.38
8	Meeting paper notebooks	418.78
9	Supplies	68.11
TOTAL		**2546.38**

5. Some Results

Diffusion material: Very basic, but useful flyers used for publication of Open Event details were included in the following links:

- NEON Consortium website https://neon-iot.org/?page_id=2672
- Facebook (Spanish) https://fb.watch/nEnQN1pYqG/
- Instagram (spanish) https://www.instagram.com/p/CwfvAXfKlAe/

Some pictures of the event:

Figure 1. Welcome to the NEON Open Event: Dr. S. Sañudo (DIEC-UNS secretary), Dr. J. Cousseau and Ms. M. Cardoso (IIIE-CONICET administrative).

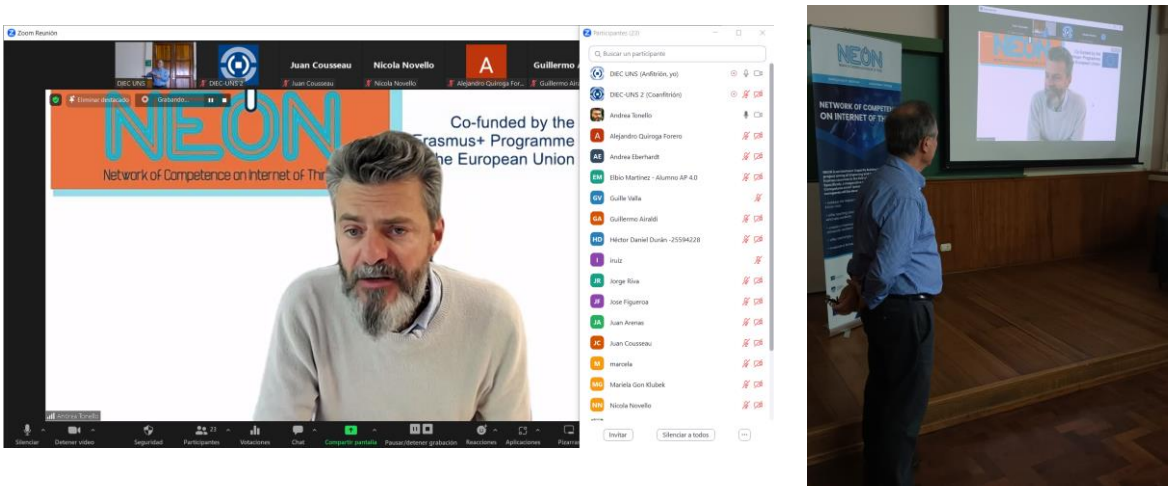


Figure 2: Morning initial words of the NEON Open Event in Bahía Blanca by Profs. A. Tonello and J. Cousseau

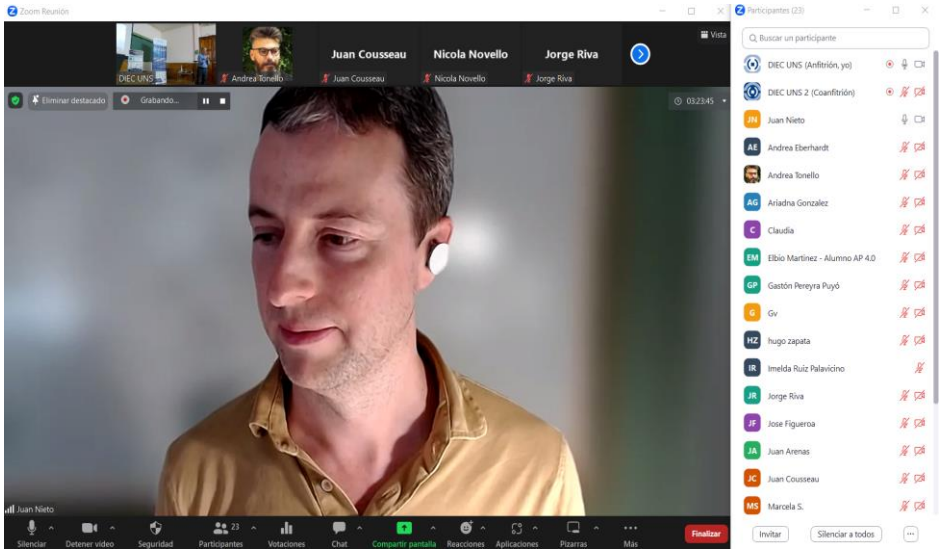
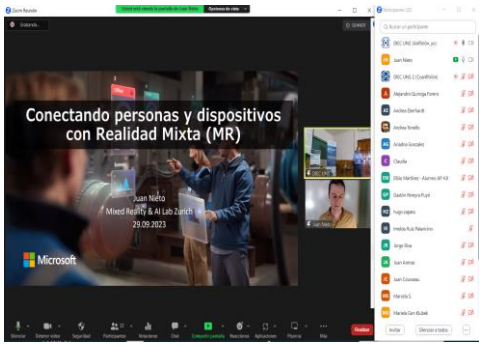


Figure 3: An illustration of the starting virtual audience in the morning part of the Open Event.



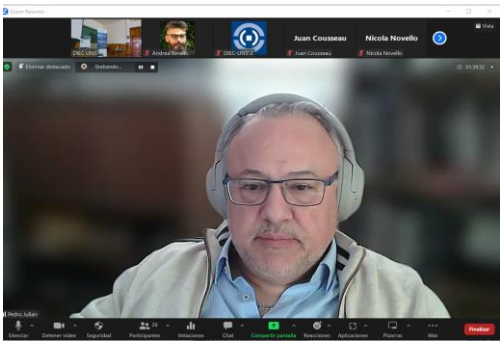


Figure 4: Open Event 1st morning talk by Dr. P. Julián (ALLEGRO Microsystems)

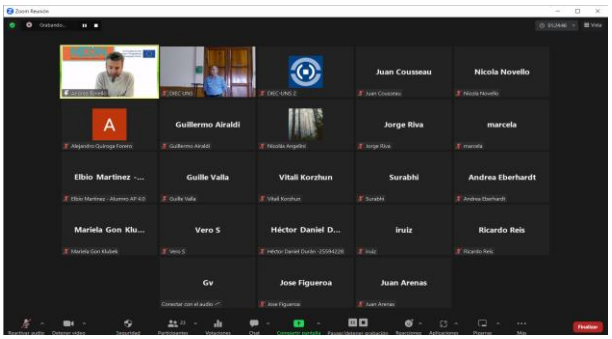


Figure 5. Open Event 2nd morning talk by Dr. J. Nieto (MICROSOFT Inc.).

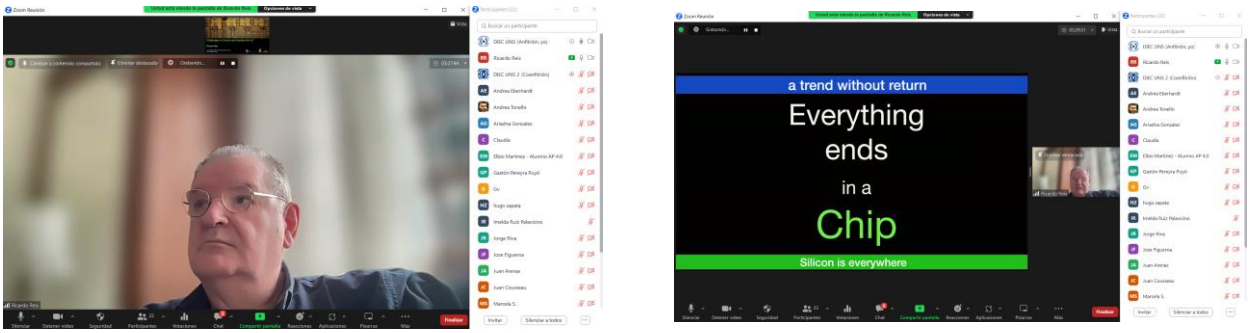


Figure 6. Open Event 3rd morning talk by Dr. Ricardo Reis (Univ. Federal do Rio Grande do Sul).

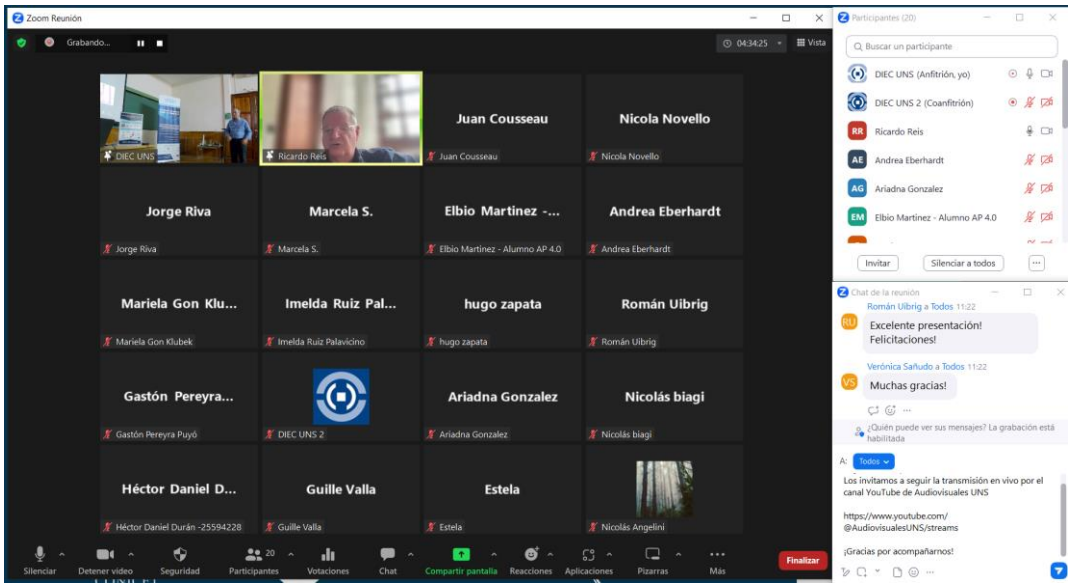


Figure 7. An illustration of the virtual audienceby the end of the morning part of the Open Event.

Figure 8. First afternoon talk by N. Pieri (VENG).

Figure 9. Second afternoon talk by personnel of EMTECH.

Figure 10. Open Event afternoon talk by G. Isla Vieyra (DESA Group).

Figure 11. Opent Event afternoon talk by E. Córdoba from Alliansys.

Figure 12. Open Event afternoon talk by personnel of Bolsa de Cerales de Bahía Blanca. (BCP)

Figure 13. Open event afternoon presentation by M. Pascualín of EYCON.

Figure 14. Some pictures of the afternoon NEON Open Event audience.

Registration:

It was carried out using Google Forms in Spanish and English. The total number of remains was: 82 in Spanish and 21 in English. A description of the characteristics of the event audience (nationality, formation and participation) is illustrated in the Figures 15 to 20.

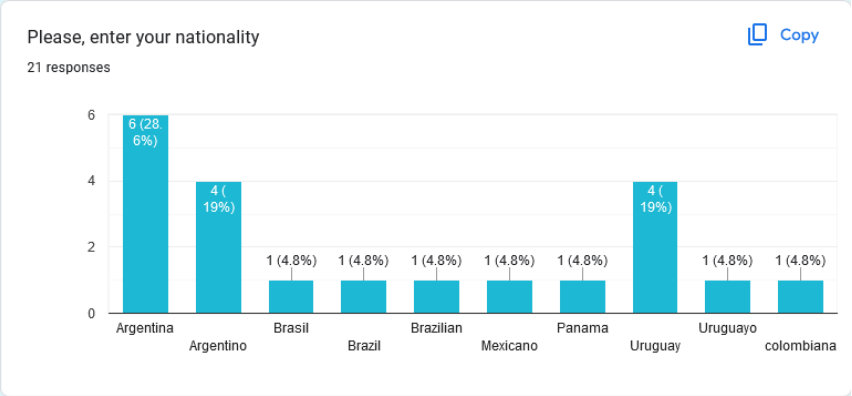


Figure 15. Answers to nationality question (English registration).

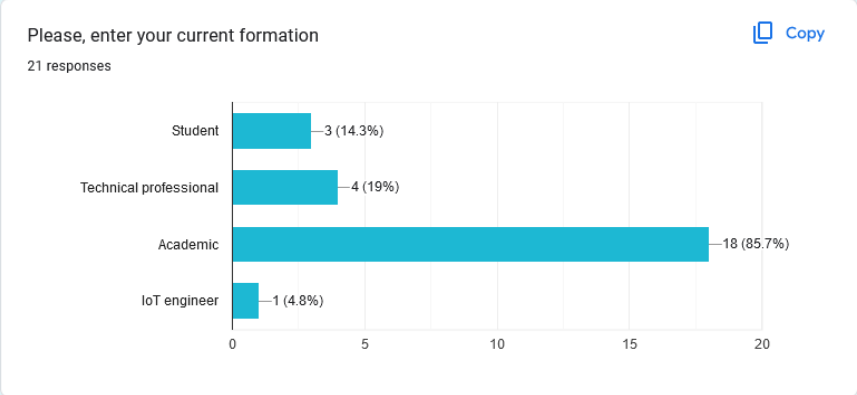


Figure 16. Answers to current formation question (English registration).

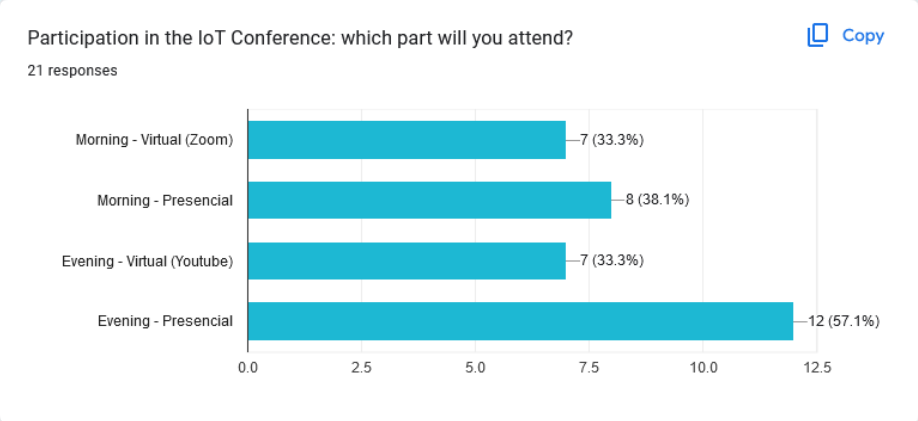


Figure 17. Answers to Opent Event participation question (English registraton).

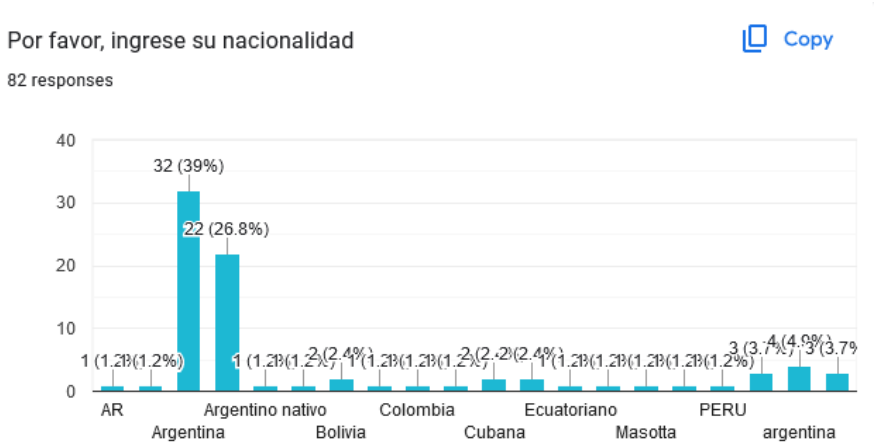


Figure 18. Answers to nationality question (Spanish registration).

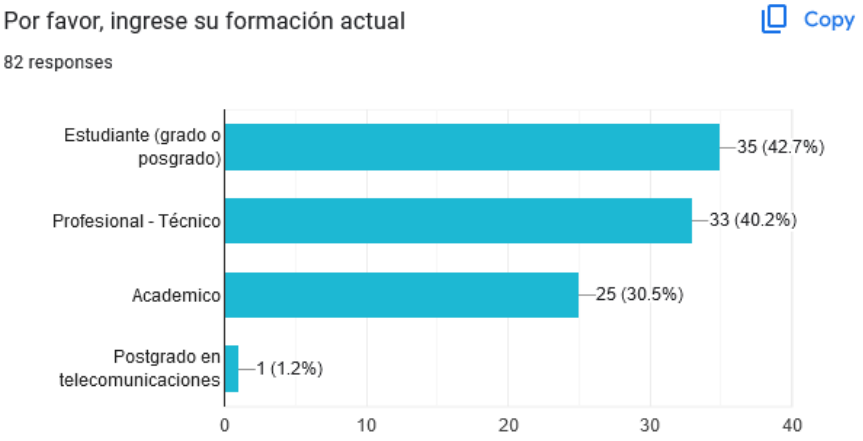


Figure 19. Answers to current formation question (Spanish registration).

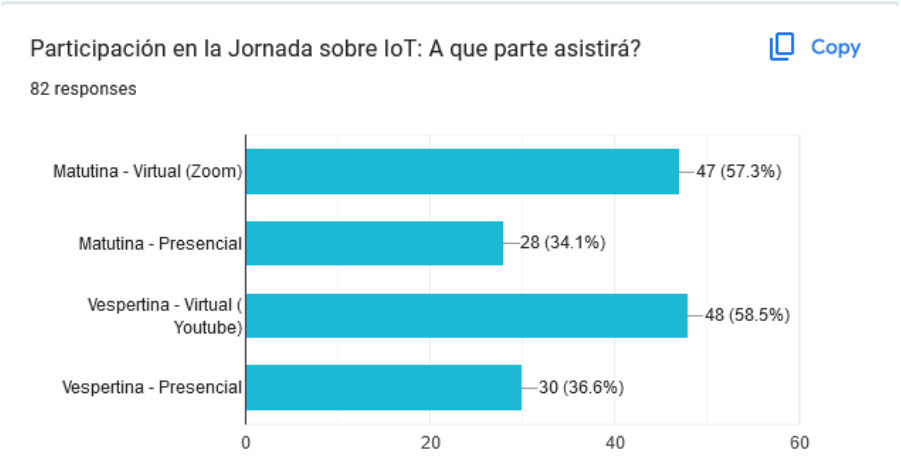


Figure 20. Answers to Opent Event participation question (Spanish registraton).

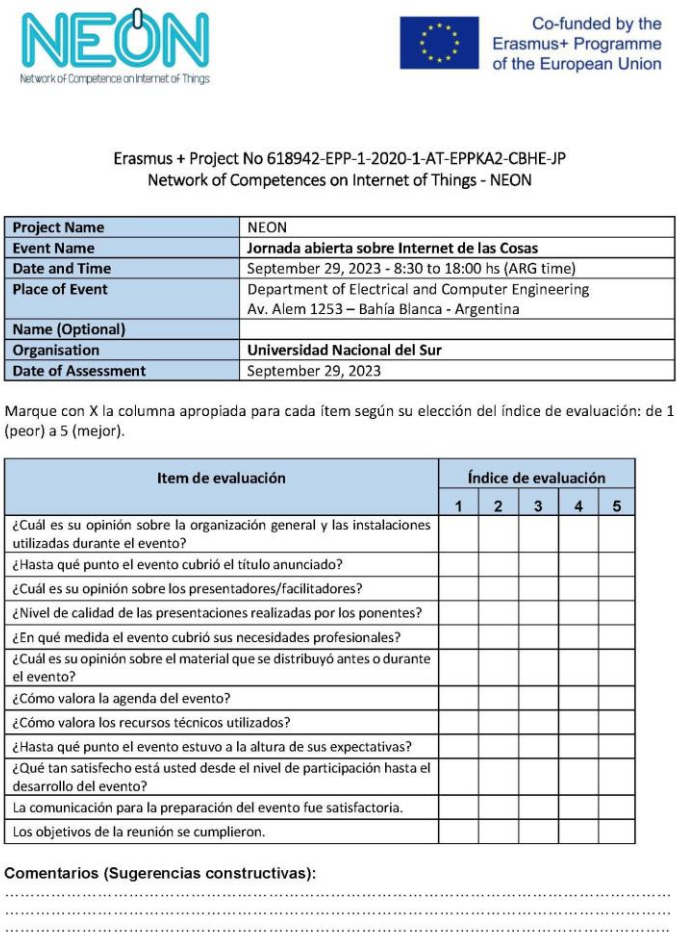
The analysis of the audience and motivation to participate of the Open Event is the following:

- Of the registration in English, the majority of the audience has an academic background, they mostly preferred to attend the afternoon talks and come not only from Argentina but also from other Latin American countries.
- Of the registration in Spanish, the majority of the audience is local, they have a broad training profile (students, professionals and a smaller number of academics) and in terms of participation the preference was virtual (almost 60% in the morning and afternoon).

Registration lists details are available at the following links:

- Spanish: https://docs.google.com/spreadsheets/d/1RvQ_hH01rP4Hg-IPTO3F-QeDDWxehuzznv5hsh8df_M/edit#gid=10000339
- English: https://docs.google.com/spreadsheets/d/1uuVIxw0PyMdS4jOGDz0EioSpDZ3Z1Fw9DyS1T5kDQBQ/edit#gid=69223216

Surveys: The survey (in Spanish) of Figure 21 was presented to the assistants to the Open Event.



NEON
Network of Competence on Internet of Things

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Erasmus + Project No 618942-EPP-1-2020-1-AT-EPPKA2-CBHE-JP
Network of Competences on Internet of Things - NEON

Project Name	NEON
Event Name	**Jornada abierta sobre Internet de las Cosas**
Date and Time	September 29, 2023 - 8:30 to 18:00 hs (ARG time)
Place of Event	Department of Electrical and Computer Engineering Av. Alem 1253 – Bahía Blanca - Argentina
Name (Optional)	
Organisation	**Universidad Nacional del Sur**
Date of Assessment	September 29, 2023

Marque con X la columna apropiada para cada ítem según su elección del índice de evaluación: de 1 (peor) a 5 (mejor).

Item de evaluación	Índice de evaluación				
	1	2	3	4	5
¿Cuál es su opinión sobre la organización general y las instalaciones utilizadas durante el evento?					
¿Hasta qué punto el evento cubrió el título anunciado?					
¿Cuál es su opinión sobre los presentadores/facilitadores?					
¿Nivel de calidad de las presentaciones realizadas por los ponentes?					
¿En qué medida el evento cubrió sus necesidades profesionales?					
¿Cuál es su opinión sobre el material que se distribuyó antes o durante el evento?					
¿Cómo valora la agenda del evento?					
¿Cómo valora los recursos técnicos utilizados?					
¿Hasta qué punto el evento estuvo a la altura de sus expectativas?					
¿Qué tan satisfecho está usted desde el nivel de participación hasta el desarrollo del evento?					
La comunicación para la preparación del evento fue satisfactoria.					
Los objetivos de la reunión se cumplieron.					

Comentarios (Sugerencias constructivas):

Figure 21. NEON Open Event survey.

The answers to the survey are available in the following link:
https://drive.google.com/file/d/1N1rjwTEA8u3NUMDOulivXYCgDVphaLyI/view?usp=sharing

The previous survey was offered to all in-person attendees. 33 surveys were returned. Their analysis is very positive, both due to the format of the event, the organization and also due to the participation of companies.

Additional information:

- The CCT-CONICET collaborated by including some Open Event information in its website: https://bahiablanca.conicet.gov.ar/2023/09/30/el-iiie-impulsa-la-innovacion-con-una-jornada-sobre-iot/

- Links to video recordings of the talks are included in Appendix 3.

6. Conclusions

In general terms, the event was held successfully, meeting the planned objectives: to disseminate the technology of Internet of Things and expand its application and knowledge in the region. It was also very useful to show the growing interest of different types of companies in the topic.

As a corollary of the meeting, the organization received recognition from the local agency of the Ente Nacional de Comunicaciones (ENACOM), the state regulatory entity for the entire field of communications, for the objectives, organization and format of the event.

6. References

[1] NEON project proposal, 2020.

7. Annexes:

7.1. Annex 1: Short biography of speakers

Neural accelerators for low-power portable systems

In this talk, an introduction to machine learning methods will be given, emphasizing computing strategies inspired by the functioning of the brain, and implementations and architectures for their implementation in integrated circuits will be shown.

Pedro Julián is an Electronic Engineer, graduated from the Universidad Nacional del Sur (UNS), Bahía Blanca, Argentina, in 1994 and a Doctor in Systems Control, from the same university in 1999. He is currently an Associate Professor at UNS and Principal Investigator of CONICET. He is the author of 5 books, co-editor of 13 conference proceedings, co-author of 2 patents, co-author of 2 book chapters, co-author of 40 papers in top-level international journals, including IEEE Transactions on Circuits and Systems, Electronics Letters, International Journal on Circuit Theory and Applications, IEEE Transactions on VLSI and co-author of more than 50 papers at national and international conferences. He has directed 12 doctoral theses and 5 master's theses on topics of his specialty. He has received the 2009 Bernardo Houssay Award in Engineering, Architecture and Computer Science, from the Ministry of Science, Technology and Productive Innovation of the Nation (MINCyT), in 2009; the 2010 Engineer Gerardo Luis Ventura Stimulus Award, from the Academy of Engineering of the Province of Buenos Aires, in 2010; the 2010 Stimulus Award in Electronic Engineering Ramón Termeyer, Engineering Section, from the National Academy of Exact, Physical and Natural Sciences (ANCEFN), in 2010; the Recognition of the Honorable Chamber of Deputies of the Province of Buenos Aires for scientific work, Res. D/2706/09-10, in April 2010; the Citizen Recognition of the City of Bahía Blanca for performance in the Engineering Area, Expte. 1127-HCD-2010 in 2010; a FULBRIGHT-CONICET Scholarship for Researchers in the USA, in May-August 2009.
He is one of the creators of the Argentine School of Micro and Nano Electronics (EAMTA), which since 2007 has been teaching training courses in integrated circuit technology in different cities in the country. Between 2015 and 2019 he was Associate Professor at Johns Hopkins University, Baltimore, USA.

Connecting people and devices through mixed reality

The combination of Mixed Reality (MR) and Spatial Artificial Intelligence (Spatial AI) will transform how we interact with the digital and the physical. This talk focuses on showing how these technologies can unite people with the digital world and the advantages of maintaining spatial context. Mixed Reality takes us beyond screens, immersing us in environments that mix the real and the virtual, while Spatial Artificial Intelligence makes our devices better understand the space around us and can

assist us. This union creates a new type of human connection, where people not only communicate, but also understand space beyond our current capabilities. In this talk, I will present a summary of the work we are doing at Microsoft to advance these goals.

Juan Nieto is a Principal Research Scientist in the Mixed Reality and AI lab at Microsoft in Zurich, where he manages a team of engineers and researchers working on various aspects of Spatial Computing. He received his bachelor's degree in Electrical Engineering from Universidad Nacional del Sur (2000) and then obtained a Ph.D. in robotics from the University of Sydney (2006). After completing his Ph.D., he worked at the University of Sydney as a Research Fellow on diverse robotic projects applied to various domains such as mining, autonomous cars, and agriculture.
In 2015, he moved to ETH Zurich as Deputy Director in the Autonomous Systems Lab until 2020 when he joined Microsoft. His current research interests encompass sensing, perception, and decision-making, with a focus on cloud mapping and localization. He is the recipient of several Best Paper awards, including Best Paper at IEEE SSRR 2017, Best Cognitive Paper Finalist at IEEE Robotics and Automation Letters 2029, Best Paper Award at IEEE RAS Magazine, and Best Award Finalist at IEEE TRO 2021. He was also the recipient of the Amazon Research Award and Google Research Award. He has also participated in robotic challenges, he led the ETH Team at MBZIRC 2017 obtaining silver medal, and led the mapping team at the DARPA Subterranean Challenge 2021 with the winning team (team Cerberus). He regularly participates on conference and workshops panels as an organizer and reviewer.

Challenges in Circuits and Systems for IoT

The Internet of Things presents new challenges in the design of computing and electronics systems. The main challenges are related to the optimization of the devices connected to the internet, mainly power consumption, but also reliability and security. This also brings several challenges in Embedded Systems, Computer Architectures, Fault Tolerance and Integrated Circuits and Systems. One common point is the power optimisation, as the demanding energy is increasing year by year. Optimisation must be done in all levels of design abstraction, system, computer architecture till the physical design. Another issue is reliability and fault tolerance as systems at ground level can be affected by radiations reaching the ground. Also, as several devices in IoT are related to sensitive applications, security is also an important issue in different design levels, including the physical one. The talk will present an overview of all these issues, proposing also some solutions.

Ricardo Reis received a Bachelor degree in Electrical Engineering from Federal University of Rio Grande do Sul (UFRGS), Porto Alegre, Brazil, in 1978, and a Ph.D. degree in Microelectronics from the National Polytechnic Institute of Grenoble (INPG), France, in 1983. Doctor Honoris Causa by the University of Montpellier in 2016. He is a full professor at the Informatics Institute of Federal University of Rio Grande do Sul. His main research includes physical design automation, design methodologies, fault tolerant systems and microelectronics education. He has more than 700 publications including books, journals and conference proceedings. He was vice-president of IFIP (International Federation for Information Processing) and he was also president of the Brazilian Computer Society (two terms) and vice-president of the Brazilian Microelectronics Society. He is an active member of CASS and he received the 2015 IEEE CASS Meritorious Service Award. He was vice-president of CASS for two terms (2008/2011). He is the founder of the Rio Grande do Sul CAS Chapter, which got the World CASS Chapter of The Year Award 2011, 2012, 2018 and 2022, and R9 Chapter of The Year

2013, 2014, 2016, 2017 and 2020. He is a founder of several conferences like SBCCI and LASCAS, the CASS Flagship Conference in Region 9. He was the General or Program Chair of several conferences like IEEE ISVLSI, SBCCI, IFIP VLSI-SoC, ICECS, PATMOS.
Ricardo was the Chair of the IFIP/IEEE VLSI-SoC Steering Committee, vice-chair of the IFIP WG10.5 and he is Chair of IFIP TC10. He also started with the EMicro, an annually microelectronics school in South Brazil. In 2002 he received the Researcher of the Year Award in the state of Rio Grande do Sul. He is a founding member of the SBC (Brazilian Computer Society) and also founding member of SBMicro (Brazilian Microelectronics Society). He was member of CASS DLP Program (2014/2015), and he has done more than 70 invited talks in conferences. Member of IEEE CASS BoG and IEEE CEDA BoG. He is the CASS representative at the IEEE IoT TC. Ricardo received the IFIP Fellow Award in 2021 and the ACM/ISPD Lifetime Achievement Award in 2022. He received the 2023 IEEE CASS John Choma Educational Award.

Application of Antenna Technologies in the IoT Context

Antenna technologies play a crucial role in the development and successful implementation of the Internet of Things. Its ability to enable wireless communication between a variety of devices in different environments is critical to achieving reliable connectivity. The design and optimization of specific antennas for IoT applications, considering size constraints, power consumption and spectrum management, are essential elements to fully exploit the potential of this technology.

Nicolas Pieri (Electronic testing manager – VENG), is an Electronics Engineer graduated from the Universidad Tecnológica de Córdoba, with six certifications as a welder and electronic welding inspector from the European Space Agency. He also holds degrees in “Space Mission Management and Control,” and “Space Systems Engineering and Assurance.”
He has been working for 11 years in the company where he always worked in the area of electronic design and testing, specifically in antennas and where he participated in the testing and design of antennas for the SAOCOM and SABIA-MAR missions. He had previously worked for 8 years in companies dedicated to radio frequency links with antennas. Passionate about RF and teamwork, throughout his career he has participated in a large number of technological innovation projects. He is currently responsible for the electronic testing area at the VENG company, where he is designing, building and testing antennas for CONAE satellite projects and also for CUBESATS missions.

Experiences and learnings from the design and deployment of Atheling IoT system

Presentation of the Atheling platform, a framework for the development of IoT systems initially oriented to AgriTech

Guillermo Güichal (UNS Electronic Engineer) is an Argentine entrepreneur with more than 20 years of experience in the design of electronic systems. He is the CEO and Founder of EmTech and Rydev, two companies that provide technological solutions focused on the development of embedded systems and ASICs for various industries, including aerospace, telecommunications, industrial and IT.

Smart energy meters

The presentation introduces the use of IoT in electric energy meters. The elements of a smart metering network will be presented and what are the benefits of using these technologies in electrical distribution companies. As an example I am going to explain the case of the DESA Group with our Smart Meters project.

Gonzalo Isla Vieyra (Applications Manager at DESA Group), is a Computer Systems Engineer graduated from the Universidad Nacional del Sur, Bahía Blanca, Argentina, with certification in different areas related to technology. He worked in Teaching and in other IT positions (Information Technology, refers to information and communication technologies that are responsible for the management of information in a business, related to the Internet, computing and technology). Passionate about teamwork, throughout his career he has participated in a large number of digital transformation projects. He served as Manager in the Systems area of various companies in the Energy sector (Electric / Oil & Gas) with more than 10 years of experience in charge of various work teams.
Currently he is Applications Manager at the DESA Group (EDEA, EDELAP, EDEN EDES, EDESA), a group in charge of electrical distribution concessions in the provinces of Buenos Aires and Salta with more than 3,000 employees and more than 1,800,000 Users.

A clean future: how technology revolutionizes waste management

Introduction to WAIOT: optimization through IoT for the Management and Monitoring of Urban Solid Waste. The main objective is to revolutionize route planning, allowing shorter and more dynamic itineraries to be drawn up based on the current state of the containers.

Emanuel Córdoba is an Electronic Engineer graduated from the Universidad Nacional del Sur, specialized in the development of applied technologies. Currently, he works as a Project Manager leading an Intelligent Waste Management project for the company Alliansys.
With more than 6 years of experience focused on the development of various types of sensors and technologies for IoT (Internet of Things), he is passionate about creating innovative solutions that promote sustainability and improve people's quality of life.

Climate - Agro Technology: Applicability

The Bahía Blanca Cereal and Products Exchange, together with the Department of Electrical and Computer Engineering (DIEC) of the Universidad Nacional del Sur (UNS), have developed and installed 29 remote devices to have instantaneous environmental measurements in different geographical locations in the southwest of Buenos Aires. Monitoring meteorological variables in real time is very useful for the agroindustrial sector, and obtaining series of historical records is required by different institutions to be used in scientific work.

Maria Elena Antonelli (Agricultural Engineer at the Bahía Blanca Cereal and Products Exchange, BCP). The BCP is an institution founded in 1981 with the purpose of representing and providing services to all agents in the agroindustrial chain. That is why, since 2014, the BCP together with the Department of Electrical and Computer Engineering (DIEC) of the Universidad Nacional del Sur (UNS), have developed and installed 29 remote devices to have instantaneous environmental measurements in different geographical points of the southwest of Buenos Aires. The stations are classified into two types: Basic: they measure variables of air temperature - relative humidity - accumulated rain. Complete: also includes wind speed and direction, atmospheric pressure, radiation. Monitoring meteorological variables in real time is very useful for the productive sector, and obtaining series of historical records is required by different institutions in the sector to be used in scientific work.

IoT as electronic payment support in transportation and parking

It will be shown how to work when facing a project that involves IoT, especially in complex environments such as low energy operation. What are the normal challenges one encounters and how different hardware and communications technologies can be used to solve many specific issues. NB-IoT and LTE-M communication networks will also be discussed as an evolution of standard cellular networks with the specific objective of achieving an acceptable IoT ecosystem.

Marcos Pascualín (Electronic Engineer ay EYCON) graduated from Universidad Nacional del Sur in 2010. He has worked on mobile and low-consumption data systems. He has extensive experience in telemetry systems and distributed sensor networks in industrial and process automation applications. Additionally, he has worked heavily on the development of embedded systems for logistics control and mobile electronic billing systems using RFID / EMV, sensors, GPRS to LTE communications networks including NB-IoT and LTE-M and different energy harvesting techniques. The focus of his work has largely been IoT as support for the "Smart Cities" paradigm, with some forays into home automation.

7.2. Open Event invoices

N. Pieri Fligth ticket invoice (page 1)

Optar

Optar Operador Mayorista de Servicios Turisticos S. A.
EVT Leg:2146 Res: 1085/79
Dirección: Suipacha 1067 8° Piso CABA
Teléfono: 54 11 3723 9200
Email: adm-optar@optarargentina.com
IVA RESPONSABLE INSCRIPTO

B
Código N°:006

FACTURA 0005-00377303
Fecha de emisión: 24/08/2023
Vencimiento: 07/09/2023
CUIT: 30-66210960-2
Ingresos Brutos: C.M. 901-154274-3
Inicio de Actividades: 01/01/94

Cliente: UNIV DEL SUR - DIEC
Dirreción :AV COLON 80 - C.P.: 0-BAHIA BLANCA
Condición de IVA : EXENTO CUIT: 30546668785
Condición de venta:Cuenta corriente

DETALLE

Rva: F14341/A2073

Detalle Prestaciones

1 Tickets Aereos, según detalle adjunto 121088.20

DESGLOSE DE LA FACTURA

Tipo concepto electrónico: Servicios

Conceptos	
Servicios Exentos	4030.36
Servicios Computable tasa general (21.00%)	1900.00
Servicios NO Computables	0.00
Servicios Computables Tasa Especial (10.50%)	115157.84
TOTAL $	121088.20

AFIP
Comprobante Autorizado
Esta Administración Federal no se responsabiliza por los datos ingresados en el detalle de la operación

CAE: 73342951814963
Vencimiento CAE: 03/09/2023

Aclaraciones
Esta Factura esta emitida en PESOS
.

Optar S.A. declara expresamente que actúa como intermediaria entre los viajeros y las entidades que prestan servicios, habiendo efectuada la presente operación en nombre propio por cuenta y orden de los prestadores de servicios

Original para el cliente, duplicado para Optar

N. Pieri Travel ticket invoice (page 2)

Optar

Optar Operador Mayorista de Servicios Turisticos S. A.
EVT Leg:2146 Res: 1085/79
Dirección: Suipacha 1067 8º Piso CABA
Teléfono: 54 11 3723 9200
Email: adm-optar@optarargentina.com
IVA RESPONSABLE INSCRIPTO

B
Código Nº:006

FACTURA 0005-00377303

Fecha de emisión: 24/08/2023
Vencimiento: 07/09/2023
CUIT: 30-66210960-2
Ingresos Brutos: C.M. 901-154274-3
Inicio de Actividades: 01/01/94

ADJUNTO

		Monto Ticket	Monto Fee	Monto Total
PIERI/NICOLAS	Emisión:16Aug	119188.20	1900.00	121088.20
COR/BUE/BHI/BUE/MDQ/COR TKT AR 9317572303				

TOTAL $ 121088.20

N. Pieri – Ground transportation invoice

TiendaLeón
TRASLADOS ESPECIALES S.A.
Aeropuerto Internacional de EZEIZA

B
Cod. Nº 06

COMPROBANTE ELECTRÓNICO
FACTURA 0028-00304443

Orientación al Consumidor Pcia. de Buenos Aires 0800-222-9042

Atención al Cliente
Tel. 0810-888-5366 / 4314-3636

Fecha: 28/09/2023
CUIT: 30707581987
Inicio de Actividades: 01/01/2003
Ingresos Brutos: Convenio Multilateral 901-062482-0
IVA Responsable Inscripto

Señores: UNIVERSIDAD NACIONAL DEL SUR
Domicilio: ()
CUIT: 30546668785
Condición: IVA Exento
Ingresos Brutos:

Cliente nº
Servicio desde 28/09/2023 **hasta** 28/09/2023
Fecha de Vencimiento: 28/09/2023
Condición de pago: Contado
Hora: 15:19

Concepto	Importe
Bus Regular (3) EZE-AEP / AEP-EZE (IDA) Servicios Provincia: $ 4072.4	4.500,00

Tienda León no se responsabiliza por las demoras y/o cancelaciones de servicios, por causas ajenas a la empresa

Impuestos Globales	Jurisdiccion	% Impuesto	Importe
Impuesto al Valor Agregado	Nacional	10,5 %	427,60

$

Importe total factura: **4,500.00**

Son: PESOS CUATRO MIL QUINIENTOS
EL MONTO DE IVA DISCRIMINADO NO PUEDE COMPUTARSE COMO CREDITO FISCAL
Abonado en Tarjeta de Debito/Credito VISA ELECTRON

Atendido por: ETCHART CAROLINA GISELE (555)

C.A.E.: 73397697166261
Fecha Vto.: 08/10/2023
10200600280030444304

N. Pieri Hotel expenses invoice

HOTEL MUÑIZ

B
Código 06

FACTURA
00009 - 00003189 - ORIGINAL
Emisión 31/08/2023

O'Higgins 23 Telf (0291) 456-0060
(8000) Bahia Blanca - Buenos Aires
C.U.I.T.: 30-60973519-4
I.V.A. RESPONSABLE ISNCRIPTO

INICIO ACTIVIDAD: 01/12/1985
reservas@hotelmuñiz.com.ar
administracion@hotelmuñiz.com.ar

SEÑOR/ES	UNIVERSIDAD NACIONAL DEL SUR, 6894	**Condición I.V.A.**	EXENTO
Domicilio	AV COLON 80	**Nº C.U.I.T.**	30-54666878-5
Localidad	BAHIA BLANCA BUENOS AIRES	**Vencimiento**	31/08/2023
Telefono	4595051 TESORER	**Ref**	
Condición	CTA.CTE	V00R00L01	MINORISTAS

UNI.	CODIGO Y DESCRIPCION	PRE UNI.	DESC	UNI.C/DTO	TOTAL
1.000	1 COSTO DE HABITACION	16700.000	10.00	15030.000	15030.00
1.000	1 COSTO DE HABITACION	16700.000	10.00	15030.000	15030.00
1.000	PAX: PIERI NICOLAS				
1.000	IN: 28-09-23 - OUT:30-09-23				
1.000	HABIT: 103				

CAE: 73354598552462
Vencimiento: 10-09-23

30609735194060000973354598552462202309104

TOTAL 30060.00

Banner invoice

PYMEDIA S.A.

Dirección: AVENIDA HIPOLITO YRIGOYEN 3265
SAN FERNANDO - Buenos Aires - CP: 1646
Teléfono: 01151932833
Email: cobranzas@pymedia.com.ar
IVA RESPONSABLE INSCRIPTO

B
COD.06

FACTURA B Nº00004-00004197

Fecha: 19/09/2023
CUIT: 30-71211892-6
IIBB: 30-71211892-6
Inicio de Actividades: 01/01/2012

INFORMACION DEL CLIENTE

Cliente: **UNIVERSIDAD NACIONAL DEL SUR**
Dirección: AVDA COLON 80 BAHIA BLANCA 8000-BUENOS AIRES BAHIA BLANCA Buenos Aires-No informada
CUIT: 30546668785
Email: mcardoso@iiie-conicet.gob.ar
Condición: IVA EXENTO

CONDICIONES DE VENTA

Condición de venta: Cuenta Corriente
Tipo: Producto

CONCEPTOS

Cantidad	Código	Descripción	% Bonificación	Precio Unitario	Subtotal
1,00	-	Portabanners Metálicos 2 x 2 - 1 a 5 unidades	0,00	$ 125.661,60	$ 125.661,60
1,00	-	Envio Especial	0,00	$ 3.026,00	$ 3.026,00

Subtotal	$ 128.687,60
Total Descuento	$ 0,00
TOTAL	**$ 128.687,60**

OBSERVACIONES

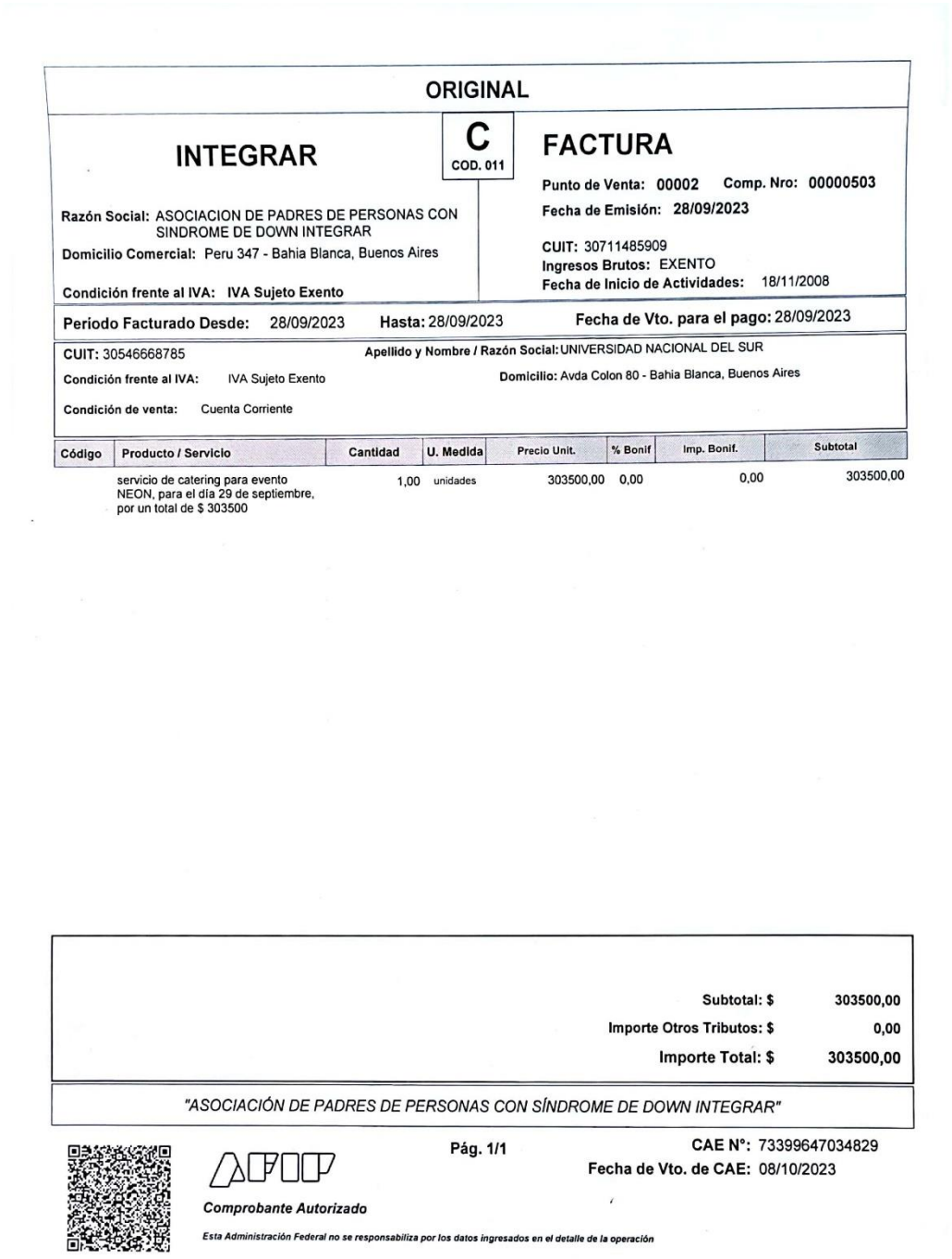
Pedido #111624 y Pedido #111620

MEDIOS DE PAGO: - Transferencia o depósito bancario (Por favor enviar comprobante de pago a cobranzas@pymedia.com.ar) - Banco Galicia • Titular: PYMEDIA S.A. • CUIT Nº 30-71211892-6 • CBU Nº 0070165120000004078322 • Sucursal: 165- San Isidro • Cuenta Corriente Nº 4078-3 165-2 - Banco Ciudad de Buenos Aires • Nombre PYMEDIA S.A. • CUIT n° 30-71211892-6 • CBU 0290064300000000084550 • Tipo Cuenta 03 – Cuenta Corriente $ • Número Cuenta 064-845/5 - Cheque contra entrega a 15 dias - Efectivo contra entrega - Tarjeta de crédito o Código QR (Mercado Pago) a través de nuestra página web. NOTA: DE NO TENER REGISTRADO EL PAGO DE LA FACTURA, NO PODREMOS REALIZAR LA ENTREGA DEL TRABAJO.

CAE Nº: 73386669841752
Fecha de Vto. de CAE: 29/09/2023

Powered by FACTURANTE

Catering invoice



ORIGINAL

INTEGRAR

C
COD. 011

FACTURA

Punto de Venta: 00002 Comp. Nro: 00000503
Fecha de Emisión: 28/09/2023

Razón Social: ASOCIACION DE PADRES DE PERSONAS CON SINDROME DE DOWN INTEGRAR
Domicilio Comercial: Peru 347 - Bahia Blanca, Buenos Aires
Condición frente al IVA: IVA Sujeto Exento

CUIT: 30711485909
Ingresos Brutos: EXENTO
Fecha de Inicio de Actividades: 18/11/2008

Periodo Facturado Desde: 28/09/2023 Hasta: 28/09/2023 Fecha de Vto. para el pago: 28/09/2023

CUIT: 30546668785
Apellido y Nombre / Razón Social: UNIVERSIDAD NACIONAL DEL SUR
Condición frente al IVA: IVA Sujeto Exento
Domicilio: Avda Colon 80 - Bahia Blanca, Buenos Aires
Condición de venta: Cuenta Corriente

Código	Producto / Servicio	Cantidad	U. Medida	Precio Unit.	% Bonif	Imp. Bonif.	Subtotal
	servicio de catering para evento NEON, para el día 29 de septiembre, por un total de $ 303500	1,00	unidades	303500,00	0,00	0,00	303500,00

Subtotal: $ 303500,00
Importe Otros Tributos: $ 0,00
Importe Total: $ 303500,00

"ASOCIACIÓN DE PADRES DE PERSONAS CON SÍNDROME DE DOWN INTEGRAR"

Pág. 1/1

CAE N°: 73399647034829
Fecha de Vto. de CAE: 08/10/2023

AFIP
Comprobante Autorizado

Esta Administración Federal no se responsabiliza por los datos ingresados en el detalle de la operación

Meeting bags invoice

ORIGINAL

JOYERIA GASPARINI

B
COD. 006

FACTURA

Punto de Venta: 00003 **Comp. Nro:** 00000244
Fecha de Emisión: 20/09/2023

Razón Social: COLALONGO RAFAEL NAZARENO

Domicilio Comercial: Alsina 172 Dpto:12 - Bahia Blanca, Buenos Aires

Condición frente al IVA: IVA Responsable Inscripto

CUIT: 20251960233
Ingresos Brutos: 20251960233
Fecha de Inicio de Actividades: 01/08/2001

CUIT: 30546668785 **Apellido y Nombre / Razón Social:** UNIVERSIDAD NACIONAL DEL SUR

Condición frente al IVA: IVA Sujeto Exento **Domicilio:** Avda Colon 80 - Bahia Blanca, Buenos Aires

Condición de venta: Cuenta Corriente / Otra

Código	Producto / Servicio	Cantidad	U. Medida	Precio Unit.	% Bonif	Imp. Bonif.	Subtotal
	Presentes evento.	10,00	unidades	22000,00	0,00	0,00	220000,00

Subtotal: $ 220000,00
Importe Otros Tributos: $ 0,00
Importe Total: $ 220000,00

Pág. 1/1

CAE N°: 73383780841033
Fecha de Vto. de CAE: 30/09/2023

AFIP

Comprobante Autorizado

Esta Administración Federal no se responsabiliza por los datos ingresados en el detalle de la operación

Meeting paper notebooks invoice

ORIGINAL

PRODUCTOS Y SERVICIOS RECUP S.R.L.

B COD. 006

FACTURA

Punto de Venta: 00001 **Comp. Nro:** 00000019

Fecha de Emisión: 21/09/2023

Razón Social: PRODUCTOS Y SERVICIOS RECUP S.R.L.

Domicilio Comercial: Drago 26 Piso:3 Dpto:3 - Bahia Blanca, Buenos Aires

Condición frente al IVA: IVA Responsable Inscripto

CUIT: 30716877872

Ingresos Brutos: 30716877872

Fecha de Inicio de Actividades: 01/08/2020

Período Facturado Desde: 21/09/2023 **Hasta:** 21/09/2023 **Fecha de Vto. para el pago:** 21/09/2023

CUIT: 30546668785 **Apellido y Nombre / Razón Social:** UNIVERSIDAD NACIONAL DEL SUR

Condición frente al IVA: Consumidor Final **Domicilio:** Avda Colon 80 - Bahia Blanca, Buenos Aires

Condición de venta: Cuenta Corriente

Código	Producto / Servicio	Cantidad	U. Medida	Precio Unit.	% Bonif	Imp. Bonif.	Subtotal
	Impresión de 150 cuadernillos, formato A5 anillado, 80 hojas lisas papel obra de 80 grs., tapa y contratapa en cartulina triplex de 240 grs., tapa impresa full color.	1,00	unidades	165000,00	0,00	0,00	165000,00

Subtotal: $ 165000,00

Importe Otros Tributos: $ 0,00

Importe Total: $ 165000,00

Pág. 1/1

CAE N°: 73382994041599

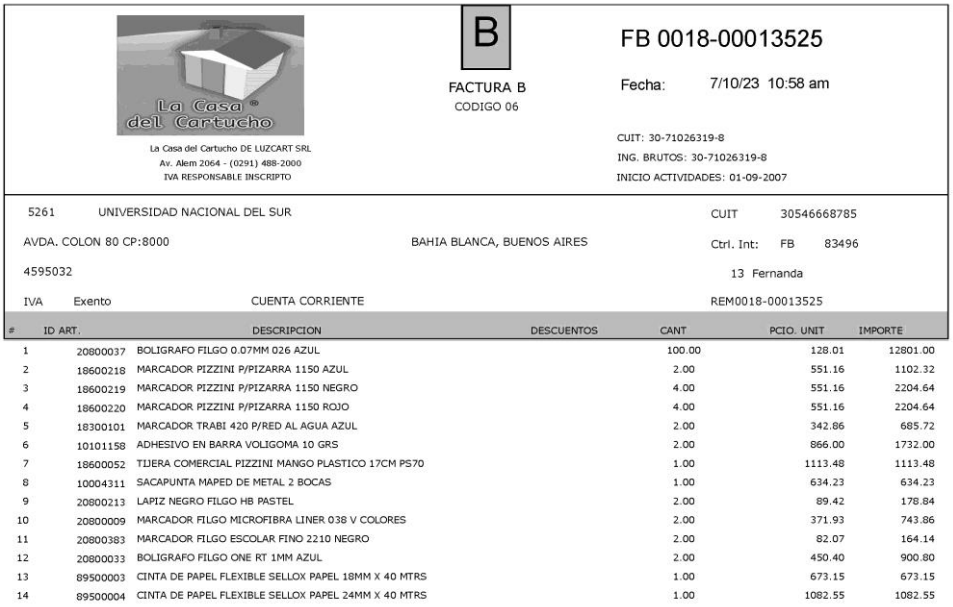
Fecha de Vto. de CAE: 01/10/2023

AFIP

Comprobante Autorizado

Esta Administración Federal no se responsabiliza por los datos ingresados en el detalle de la operación

Supplies invoice



La Casa del Cartucho DE LUZCART SRL
Av. Alem 2064 - (0291) 488-2000
IVA RESPONSABLE INSCRIPTO

B

FACTURA B
CODIGO 06

FB 0018-00013525

Fecha: 7/10/23 10:58 am

CUIT: 30-71026319-8
ING. BRUTOS: 30-71026319-8
INICIO ACTIVIDADES: 01-09-2007

5261 UNIVERSIDAD NACIONAL DEL SUR — CUIT 30546668785

AVDA. COLON 80 CP:8000 — BAHIA BLANCA, BUENOS AIRES — Ctrl. Int: FB 83496

4595032 — 13 Fernanda

IVA Exento — CUENTA CORRIENTE — REM0018-00013525

#	ID ART.	DESCRIPCION	DESCUENTOS	CANT	PCIO. UNIT	IMPORTE
1	20800037	BOLIGRAFO FILGO 0.07MM 026 AZUL		100.00	128.01	12801.00
2	18600218	MARCADOR PIZZINI P/PIZARRA 1150 AZUL		2.00	551.16	1102.32
3	18600219	MARCADOR PIZZINI P/PIZARRA 1150 NEGRO		4.00	551.16	2204.64
4	18600220	MARCADOR PIZZINI P/PIZARRA 1150 ROJO		4.00	551.16	2204.64
5	18300101	MARCADOR TRABI 420 P/RED AL AGUA AZUL		2.00	342.86	685.72
6	10101158	ADHESIVO EN BARRA VOLIGOMA 10 GRS		2.00	866.00	1732.00
7	18600052	TIJERA COMERCIAL PIZZINI MANGO PLASTICO 17CM PS70		1.00	1113.48	1113.48
8	10004311	SACAPUNTA MAPED DE METAL 2 BOCAS		1.00	634.23	634.23
9	20800213	LAPIZ NEGRO FILGO HB PASTEL		2.00	89.42	178.84
10	20800009	MARCADOR FILGO MICROFIBRA LINER 038 V COLORES		2.00	371.93	743.86
11	20800383	MARCADOR FILGO ESCOLAR FINO 2210 NEGRO		2.00	82.07	164.14
12	20800033	BOLIGRAFO FILGO ONE RT 1MM AZUL		2.00	450.40	900.80
13	89500003	CINTA DE PAPEL FLEXIBLE SELLOX PAPEL 18MM X 40 MTRS		1.00	673.15	673.15
14	89500004	CINTA DE PAPEL FLEXIBLE SELLOX PAPEL 24MM X 40 MTRS		1.00	1082.55	1082.55

Subtotal $26221.37 — Descuento: % 0.00 ($ 0) — Subtotal c/dto: $ 26221.37

PROYECTO NEON

TOTAL $: 26221.37

Página 1 de 1

AFIP

Comprobante Autorizado

Esta Administración Federal no se responsabiliza por los datos ingresados en el detalle de la operación

CAE: 73408775345459

Fecha de Vto. de CAE: 17/10/2023

7.3. Links to video recorded material

Complete videos of the Open Event at UNS (mostly in Spanish):

- NEON Journey over Internet of Things - September 29, 2023 – Morning part:

https://drive.google.com/file/d/16pPbJguoHGplGR3Szcr7RbIdHJCnNu0r/view?usp=drive_link

- NEON Journey over Internet of Things - September 29, 2023 – Afternoon part:

https://www.youtube.com/watch?v=MfpJklcqUuc