



We hope you enjoy this issue of "Our Highlights" where our Partners share their news on what has been happening inside their organizations, Odiseas Raptis and Harry Kalliaras give us their input on what is happening inside e-Trikala and Dr. Konstantinos Katsaros gives us his insights on how AI/ML can support Verticals! Happy reading!

## An interview with e-Trikala



*Odiseas Raptis, CEO of e-Trikala S.A.*

In this issue of "Our Highlights", we are honoured to interview Odiseas Raptis, CEO of **e-Trikala S.A.**, and Harry Kalliaras, Advisor to the Mayor of Trikala in Strategic and Operational Planning!

*Trikala is widely recognized for its positive public perception, especially in terms of technological innovation, and is regarded as one of the most advanced towns in Greece for implementing technological solutions. Could you share with us the key strategies and decisions that have enabled Trikala to achieve this distinction?*

After ten years of dedicated efforts and the implementation of specific policies, Trikala has successfully surmounted deep-seated resistance to change by actively engaging the community in adopting new technologies. With the motto "No one can stop the changes that are coming, so the smartest thing to do is be better prepared for them", the local ecosystem moves forward. One of its most ambitious projects is the installation of

5G wireless technology, initiated in 2019. This infrastructure is designed to support advanced smart services throughout the entire city.

*Please tell us a few words about e-Trikala S.A. and its role and methodology. In particular with regards to the recent floodings that affected the Trikala area, are you working on any plans or initiatives to strengthen Trikala's resilience against such natural disasters in the future?*

Since 2004, the e-Trikala office of the Municipality of Trikala, in cooperation with and in accordance with the operational program "The Information Society" acted in the fields of new broadband technologies, successfully implementing municipal projects.

On April 8, 2008, leveraging the necessary expertise, it underwent transformation into e-Trikala S.A., an emerging company established under the Municipality of Trikala. The Municipality is the basic stakeholder, owning 99%, while the remaining 1% is owned by the local Chamber of Commerce. By creating infrastructure and providing services, e-Trikala continuously aims to the development of Information and Communication Technology (ICT) based applications, oriented to the improvement of all citizens' everyday life in a medium sized city, simplifying public transactions, reducing telecommunication costs, and delivering new services related to the local way of life.

During the recent flood incidents that hit the wider area of Trikala, the network of the flood forecasting / early warning sensors which we have installed in specific points into the 3 main rivers of the area, gave us plenty of information to monitor the flooding incident and assist the Civil Protection Department in a decision making level. Moreover, through our engagement to the EU Mission of 100 Climate Neutral & Smart Cities, in which our City was selected by the European Commission, we plan to develop several infrastructures or apps to increase the resiliency of the City (i.e. air quality sensors, energy saving through BEMS and BMS, etc).



*Harry Kalliaras, Advisor to the Mayor of Trikala in Strategic and Operational Planning*

*Considering Trikala's ambition to become a leading testbed for new technologies, especially in areas like smart city solutions and sustainable urban development, what would be the initial steps and strategies required to achieve this?*

What is Trikala's secret to getting ahead in the technological race? It's simple! The city makes effective use of EU projects, tapping into both National and European Commission funds. It's worth noting that these are funds that just about any municipality can access, yet most fail to do so due to a lack of the right preparation. With the help of these initiatives, Trikala regularly invites innovators to share their ideas, teams up with private companies and allows itself to be used as a real test bed for ideas.

If successful, these ideas are then scaled up and applied to cover the needs of the entire city. Yet most importantly, this innovation-driven approach is positioning Trikala at the forefront for the adoption of new technologies across Greece.

*Are there any models or lessons from other cities that have become testbeds that could be applied to Trikala?*

Trikala is not the only best practice in the EU and on a global level. There are plenty of good examples from which you can learn a lot of knowledge and experience. From our collaboration with many European Cities and Institutions from the Academia & Research sector, we always see different approaches and try to adopt them in our own needs and context. Among other initiatives we developed during the previous years, the most challenging is our Innovation & Entrepreneurship Hub of the Municipality of Trikala, the "GiSeMi HUB", which is a joint initiative between the Municipality and e-Trikala SA. GiSeMi's main objective is to highlight new innovative business ideas, which provide solutions to the challenges and problems faced by modern cities. Initiatives of this nature are widespread on a European scale, and our current challenge involves establishing a supportive framework to attract start-ups, spin-off enterprises, and young entrepreneurs in connection with local economic sectors.

*Looking forward, what do you see as the biggest challenges and opportunities for e-Trikala?*

e-Trikala S.A. serves as the primary partner within the Municipality of Trikala, overseeing the establishment and maintenance of Intelligent Transportation Systems (ITS) for the past 15 years. Its involvement in European Union mobility and sustainability projects has transformed the city of Trikala into a successful pilot project of global interest. e-Trikala S.A. is actively involved in various EU-funded and national projects aimed at benefiting the citizens of Trikala Municipality. The organization is already investing in initiatives to enhance the quality of life, focusing on areas such as mobility, sustainability, e-education, environment, e-Health, culture governance, and social projects. These projects serve as test beds for specific cases, contributing to ongoing efforts to improve the well-being of the community. Through collaborations with academia and the private sector, and by synergizing with ongoing initiatives, the primary focus and simultaneous major challenge are centered on addressing the needs of our citizens. Through community cooperation, the aim is to alleviate citizens from bureaucracy, tribulations, and unnecessary time spent waiting in queues for municipal services. Furthermore, fostering creativity and bolstering productivity are integral aspects of building a "smart city" that significantly improves the quality of life for its residents.

Furthermore, despite the economic constraints we faced, we have managed to create a mutually beneficial situation between the municipality and private enterprises. These businesses have demonstrated confidence in our vision and are provided with the opportunity to test and promote their applications and IT solutions.

*What would you say has been the most rewarding aspect of being involved in e-Trikala's journey?*

"Everything is possible" and if you want to change the mentality and the perceptions on a local level, share your vision and motivate the community to be an active stakeholder. Many people fear change and technology adaptation, but at the end of the day, the results validated the choices we made!

## Insights from our Experts

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## AI/ML fostering vertical service support!

Article by **Dr. Konstantinos Katsaros**,  
Senior Researcher / Team Leader -  
Intelligent Networks & Services Team,  
I-SENSE Group, Institute of  
Communication & Computer Systems  
(ICCS)

Recent years have witnessed a boom in the adoption of AI/ML technology, largely fueled by data availability, as well as HW and SW advances in the field. The telecommunications sector has joined this stream actively developing solutions on various fronts, largely focusing on the support of autonomous operations, such as self-configuration, self-monitoring, self-healing and self-optimization; that is, without further human intervention. While emphasis has been placed on allowing Mobile Network Operators (MNOs) to simplify their operations and bring down their operational expenditure (e.g., intelligent energy management, server consolidation, etc.), other efforts have been targeting the interaction of the vertical services/applications with the network. In this context, Predictive QoS (PQoS) has been considered as a promising approach in enabling the graceful adaptation of vertical services/application to the anticipated conditions in the network. Applying analysis on historical and contextual data that describe network performance and conditions, PQoS enables the proactive identification of significant fluctuations and the generation of corresponding notifications (i.e., In-advance Quality of Service Notifications, IQNs) towards the vertical service/application. These notifications subsequently allow the vertical service/application to adjust its operation within the anticipated environment. A typical example comes from remote control services in the broader automotive sector, where a vehicle (passenger car, truck, crane, vessel) is teleoperated by a (human) operator in a remote control room: with PQoS, the network predicts that network latency will drastically increase (or supported data rates will drop below a threshold value) in a time horizon of 10 secs and issues a notification towards the control room application SW; as a result, control is handed back to a passenger, or to the autonomous driving SW stack of the vehicle or simply the vehicle is slowed down or stopped.

Industry and academia are actively exploring the technoeconomic solution space of PQoS. On the standardization front, 3GPP Rel-17 specifications support the provisioning of predictive QoS sustainability analytics to vertical service providers, based on historic network monitoring data, through the invocation of the network data analytics function (NWDAF); while the architecture further also foresees interfaces and components for the support of generic ML model management by the MNO. At the same time, the automotive vertical industry also seeks over-the-top (OTT) solutions i.e., solutions that are based on data observations available at the application layer. This state-of-affairs reveals the importance of data ownership and exposure also on a business/economic level: MNOs and vertical service providers have strong business interest to not share their data, seeking stand-alone solutions that can increase revenue (e.g., for PQoS provisioning by MNOs) or reduce costs (e.g., by employing competitive OTT solutions). However, research has shown that multi-featured data sets i.e., data sets combining observation from multiple locations and administrative domains, yield substantially superior performance in terms of accuracy, rendering stand-alone solutions sub-optimal. As a result, a series of new technological approaches are currently being investigated, including for instance Federated Learning, Split Learning and Transfer Learning techniques, which realize various forms of collaborative, yet privacy-preserving ML training process. The industry appears to follow up on this trend, with 3GPP Rel-17 specifications providing preliminary support for primitive Federated Learning operations.

In all, a multi-faceted and fast pacing environment is being developed for



Predictive QoS, where research and innovation are driving developments and start to shape new business relationships and interactions centered around the value of data.

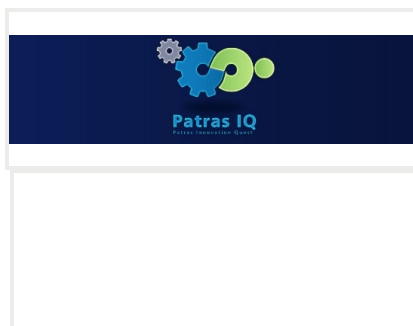
## Our event highlights



p-NET took part in the Opening Panel Discussion at **5G Techritory** held in Riga, Latvia, one of the largest technology events in Europe, where Business Development Director, Marios Nicolaou moderated the opening discussion with senior leaders Audrey Plonk, OECD-OCDE, Jaroslaw Ponder, International Telecommunication Union, Tonko Obuljen, HAKOM and Zaneta Vegnere, European Commission. The topic of discussion was the connectivity and digitalization agenda for 2024.



The '**5G and GovTech** Workshop' organized by p-NET and GRdigiGOV-innoHUB on 25/10/23 at the Foundation of the Hellenic World, provided a great opportunity for thought leaders and experts to exchange ideas, insights, and strategies related to the integration of 5G, 6G, XR and AI/ML into the public sector and various industries. Key opportunities were uncovered in areas of Education, Culture, Smart Ports, Industry 4.0, PPDR, Smart Cities, Smart Islands!





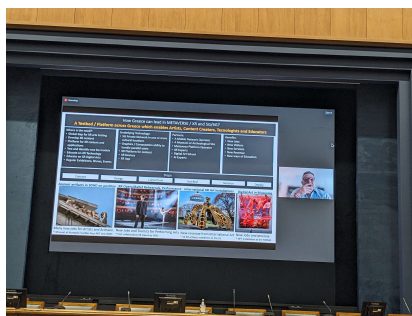
Our Competence Center was excited to have participated in this year's **Patras IQ 2023 (Έκθεση Καινοτομίας & Μεταφοράς Τεχνογνωσίας Patras IQ)**, on the 25/11/23 at the Conference & Cultural Center of the University of Patras! We participated in the session entitled "Competence Centers: Catalyst for the Development and Exploitation of Innovation" together with the Competence Centers: Hellenic Center for Additive Manufacturing (H-CAM), I4byDesign, Smart Agro Hub, Architectural Aluminium Academy, Energy Competence Center and Teaching Factory.



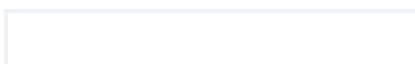
Prof. Spyros Denazis, Scientific Coordinator at p-NET, took part in the **Forum Ανάπτυξης** held in Patras at the Astir Hotel on the 18/11/2023 in the session entitled "smartHEALTH: Synergies in Research and Innovation & Applications in Health", which was organized by the Federation of Industries of the Peloponnese & Western Greece. With the motto of the event focusing on synergies, this event gave the go-ahead for organizations to collaborate!



Prof. Spyros Denazis, Scientific Coordinator at p-NET gave a presentation at the **5G Conference Southeastern Europe**, an event which focuses exclusively on 5th generation (5G) mobile networks, on 26/09/23 at the Zappeio Megaro, Athens. The event highlighted the opportunities, and challenges, in exploiting the potential of 5G networks, which are now growing at an extremely fast pace, both in Greece and the wider region of Southeastern Europe.



p-NET was a sponsor of the esteemed **MobileHCI'23 International Conference**, held in Athens, Greece from September 26th to 29th, 2023! Our Business Development Director, Marios Nicolaou, delivered a presentation on "Smart Networks and Services Empowering Business Verticals". Thank you to the organizers of MobileHCI'23 for an exceptional event!





p-NET participated in the **87th Thessaloniki International Fair**, where Marios Nicolaou gave a presentation at the GSRI / Patras Science Park booth, focusing on the exciting possibilities for Greece in 5G and the Metaverse!



We have been very active in our Horizon Europe Projects by participating in the **Fidal Project Plenary Meeting** held in Malaga, Spain (5th - 6th September, 2023), the **MetaCities Plenary Meeting** in Nicosia, Cyprus (2<sup>nd</sup> - 3<sup>rd</sup> October, 2023) and the **CUSTODES Kick-off Meeting** (13<sup>th</sup> - 14<sup>th</sup> December, 2023) in Stockholm, Sweden!

## Our partners' news



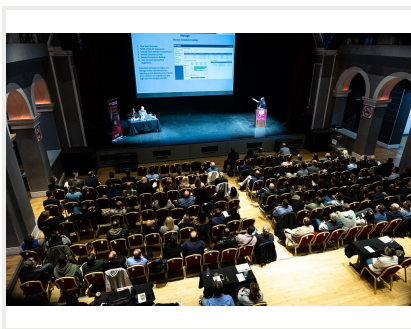
**Italian EOLO expands with Intracom Telecom Technologies!** Italian fixed wireless access (FWA) operator EOLO has selected Greece-based equipment vendor Intracom Telecom to supply its WiBAS™ G5 dual-BS base station device for the expansion of its 28GHz wireless network across Italy. EOLO has been using the WiBAS™ platform since 2017 and the new base stations will offer double the subscriber capacity and three times the throughput compared to the previous generation. Kartlos Edilashvili, Acting CEO of Intracom Telecom, expressed pride in supporting EOLO's growth as Italy's leading fixed access provider and a global connectivity leader and looks forward to implementing the new



expansion and connecting Intracom Telecom's brand with EOLO's success. On the other hand, Guido Garrone, CEO at EOLO, highlighted the 6-year collaboration with Intracom Telecom, emphasizing their determination in building a reliable mmWave FWA network for residential, business, and wholesale customers. EOLO's mission is to provide ultra-fast, high-performance internet to Italian families and businesses, even in remote areas, with Intracom Telecom's flexible support and technological expertise enhancing their offerings.



**XGain: Intracom Telecom's Pioneering Role in Ultra-Fast FWA and Last-Mile Connectivity!** Intracom Telecom has been a leader in Ultra-Fast Fixed Wireless Access and is developing its own technology for rural last mile connectivity solutions since late 90s. The technology is embedded into the WiBAS™ product line connecting homes and business with Gigabit/s speeds. Intracom Telecom is taking part to XGain, a Research and Innovation project in Horizon Europe, aiming at delivering a Knowledge Facilitation Tool that will aid business model development, supporting decision-making in the selection of connectivity and edge processing solutions. With Intracom Telecom's contribution the consortium of the project, comprising 17 partners from research/academia and industry, as well as governmental organizations, aims to increase systemic resilience and energy efficiency, contribute to climate mitigation and reduce the digital divides between different types of citizens, farms, sectors and regions. These technologies are fueling the evolution of Intracom Telecom's own wireless transport platforms.



On 24/11/23 Intracom Telecom's local branch in Patras organized an **Employee-Driven Innovation Day** event, with groundbreaking presentations and intense collaboration, where 22 engineers unleashed their creativity! The most visionary ideas on Application Development Platform for Cloud Native Products, and Technologies & Processes domains were awarded!



**Team Candi**, 100% subsidiary of Info Quest Technologies and member of the Quest Group, **has successfully developed and implemented an advanced Email Archiving System for Uniteam Global Business Services**, a leading global business services organization. Tasked with addressing the challenges of managing the substantial volume of daily emails, Uniteam sought an effective solution. Facing issues such as handling massive mailboxes, increased complexity, and a lack of control, the organization turned to Team Candi for assistance. Team Candi designed and implemented a bespoke solution in three phases. Firstly, real-time email tracking was achieved through the implementation of Azure Logic Apps. Subsequently, an Azure function was utilized for email analysis, extracting metadata based on specific rules and securely storing it in a SQL database.

The final phase involved cloud archiving, saving both the email and its attachments in an Azure Storage Account. To enhance accessibility, Team Candi developed a user-friendly web application, providing easy search, reading, and downloading of entire email histories or attachments. This comprehensive solution has empowered Uniteam Global Business Services to efficiently and securely manage the vast repository of information contained in emails, significantly improving productivity and accessibility in a streamlined manner.

With a focus on process optimization and automation, Team Candi showcases high-level expertise in leveraging Microsoft low-code technologies and stands as a reliable partner for organizations seeking innovative and streamlined solutions to enhance their operational efficiency and data management capabilities.



WINGS ICT Solutions is honoured to have been awarded with a **Gold prize, at the Manufacturing Excellence Awards event**, for applications of WINGSChariot in the logistics and the food sectors! WINGS has logistics and manufacturing (industry 4.0) as one of the strategic focus areas.

[read more](#)



BPM's Managing Director Cathy Christidou is the new **Chairwoman of SESMA, the Hellenic Association of Management Consulting Firms.** Congratulations and good luck in this challenging new role!



**SDG House Greece, an initiative of Orange Grove,** has recently introduced its Sustainability Acceleration Programme for established ventures striving to integrate sustainability into their business models. This intensive training programme accelerates growth and enhances business development capacity through a series of high-paced workshops covering strategy design, regulation, trends, compliance, marketing and value chains, among other. The inaugural workshop, powered by The Rock Group, delved into Sustainability Strategy and Transition Thinking, guiding participating ventures through the essential aspects of developing a tangible sustainability strategy and transition plan. While the second workshop was a deep dive into regulation and reporting, exploring the important steps ventures need to take from early on to secure compliance. The programme is supported by a grant from Iceland, Liechtenstein and Norway through the EEA Financial Mechanism 2014-2021, in the frame of the Programme "Business Innovation Greece".

Best wishes for 2024

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As another important year for **p-NET Emerging Networks & Applications**, comes to an end, we thank you for being part of our Competence Center and we look forward to the opportunities and developments coming up in 2024!  
Our warmest wishes for a Merry Xmas and a New Year full of innovation and creativity!

*The p-NET team*

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p-NET Emerging Networks & Applications  
Patras Science Park  
Stadiou, Platani, 26504, Patras

Tel: +30 2610 391 260  
Mob: +30 6976 793 446  
email: [info@p-net.gr](mailto:info@p-net.gr)



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