

7th Innovation &
Entrepreneurship Forum

“
**THE CURIOUS
ENTREPRENEUR**
”

IEF 2022 | November 30th





Centre for Entrepreneurship,
University of Cyprus University Avenue
2109, Nicosia, Cyprus
www.c4e.org.cy

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WELCOME MESSAGE

From the Vice-Rector for Academic Affairs

It is a pleasure to welcome you at the 7th Innovation & Entrepreneurship Forum: “The Curious Entrepreneur”, organized by the Centre for Entrepreneurship and the Research and Innovation Support Service of the University of Cyprus (C4E) with the ongoing invaluable support of PwC Cyprus.

I would like to extend our gratitude to the major sponsor, contributor and strategic partner of the Centre for Entrepreneurship and University of Cyprus, PwC Cyprus.

Since its establishment in 2015 the Centre for Entrepreneurship reached out to the University community seeking to identify needs, expectations, and opportunities regarding innovation and entrepreneurship. C4E’s motto, “Educating, Innovating, Networking,” emerged out of this effort. This triptych epitomizes C4E’s mission, activities, and aspirations. The Centre’s aim, first and foremost, has been the empowerment of University of Cyprus’ students, researchers, faculty, and staff with the skills and the knowledge required to engage in creative, innovative, entrepreneurial activities leading to new ventures or innovative new practices and solutions.

In its first seven years of operation, C4E has designed, established, and operated numerous initiatives and processes to advance the three pillars of its mission:

The establishment of the Certificate Program in Entrepreneurship an individually tailor-made program for students of all disciplines. The delivery of semester-long and short courses, hands-on training seminars, mentoring programs and distinguished lectures. The Annual Student Innovators Competition – SINN, that eventually developed as the major “pipeline” of early stage startup ideas to the whole Cyprus entrepreneurial ecosystem. The Cyprus Entrepreneurship

Competition with a high quality, zero-equity mini acceleration program open to all permanent residents of Cyprus vested with the support of a prominent Network of Mentors and Trainers. The Centre is the National Coordinator for the 6th consecutive year, and represents Cyprus in the Global Entrepreneurship Monitor (GEM) Study. In 2022 the Centre with the support of PwC Cyprus presented the first study on the Mapping of the Cyprus entrepreneurial ecosystem: the basic characteristics of the Cypriot start-up ecosystem, the stakeholders and drivers that govern entrepreneurship in Cyprus in the last decade. A project that aims to create a useful tool for monitoring the course of the ecosystem based on critical specific indicators.

This is the 7th annual Forum. The 7th Forum will highlight the pathways to novel discoveries and the evolving journey from basic research to entrepreneurship and innovation. This year we will discuss the current debates and future directions, shifting the focus of academic research towards more business-oriented models. The 7th Forum is expected to bring together the Cypriot academic, research and start-up communities and professionals, decision-makers, change makers, thought leaders, technologists, and industry experts offering an engaging opportunity for exchange of ideas and collaboration.

In this year’s The PwC Distinguished Lecture “*The power of purposeful curiosity: How asking the right questions will change your life*”, we are honored to host Professor of Innovation and Entrepreneurship Costas Andriopoulos from Bayes Business School, University of London along with our prominent panel consisting of Mr. Philippos Soseilos - CEO & Chairman, PwC Cyprus, Professor Marios Dikaiakos, Chairman C4E Council, Maria Terzi Co-founder & CEO, Malloc Inc and Olympia Pachoumi, Innovation Hub

Manager at KIOS Research and Innovation Center of Excellence.

The Research Results Exhibition hosted in this year’s Forum, is the University of Cyprus biennial flagship event on emerging research results and projects with a strong market or societal potential/impact that can be materialized through novel products, processes or services delivered by new or existing ventures, private or public organizations, governmental institutions or non-governmental initiatives. The exhibition is divided in the following sectors: Smart Infrastructures, Health Sciences, Life Sciences, Energy and Clean Tech and IT, Communications and Devices. The Exhibition is organized by the Research and Innovation Support Service of the University of Cyprus.

Moreover, in this year’s Forum we are presenting the Finalists of the third edition of the Cyprus Entrepreneurship Competition. The competition is initiated by the Centre of Entrepreneurship (C4E) of the University of Cyprus with the support of the Ministry of Energy Commerce and Industry. A business development competition designed to take innovative ventures to new heights, with the support of experts and entrepreneurs through a multidisciplinary network of Mentors and Partners. The competition aims to turn ventures into viable businesses, with global orientation. We are looking forward to see the winning teams of 2022!

For the last 7 years the Forum aims to promote successful entrepreneurial action, innovation and research commercialization and contribute to the continuous open dialogue of University, industry, economy and society. The Forum aspires to establish and maintain bridges with economic and social stakeholders: the market and the society, and add constructive value to all national attempts into translating knowledge and ideas into impact with a tangible benefit for the local and regional ecosystem.

In the University of Cyprus, we strongly believe that:

- We are surrounded by a community that is driven and focused on creating new knowledge, products, technologies and primarily value for the society.
- We intend to create and train a steady stream of graduates who are able to transfer their ideas to the market and society as new businesses and or societal activities and services.

In the University of Cyprus, we seek to generate knowledge outside academic environments to the benefit of the social, cultural and economic development and sustain our function as an important node in distributed innovation surroundings.

We hope you find the event beneficial, stimulating and productive!

Thank you for joining us at the 2022 Innovation & Entrepreneurship Forum.

Eleni-Tatiani Synodinou,
Vice-Rector for Academic Affairs,
University of Cyprus

FOREWORD

From the Director of C4E

The 7th Innovation & Entrepreneurship Forum is entitled “The Curious Entrepreneur” and it seeks to highlight the role of dedication, fruitful pursue and discovery in bringing about economic and social impact.

Many individuals and organizations worked closely with the Centre for Entrepreneurship and the Research and Innovation Support Service of the University of Cyprus to bring about this multifaceted event.

Our Mentors and Trainers have contributed their time and expertise to advise, guide and accelerate the progress of the startups who have reached the final stage of the Cyprus Entrepreneurship Competition. The Research and Innovation Support Service of the University of Cyprus organized the Research Results Exhibition. Researchers in University of Cyprus Research Laboratories as well as in the KIOS, CYENS and biobank.cy Centers of Excellence, have put in the hard work required to create economic and social impact from first principles, from basic and applied research. From the power of their intellect. We celebrate these researchers today, as they personify the central message of the 7th Innovation & Entrepreneurship Forum. The message of passion and grit, of unbounded curiosity and excellence. A message that our keynote speaker Costas Andriopoulos from Bayes Business School, University of London, clarified and crystallized.

This year’s Forum contributes towards the fulfillment of one of the central goals of the Centre for Entrepreneurship and the Research and Innovation Support Service, to establish the foundation of a long-term sustainable research commercialization activity for the benefit of society, contributing at the same time towards the national goal of economic diversification that builds on technology and innovation. Indeed, the research teams that exhibited their

research results in our previous Research Results Exhibitions have went on to attract millions of euros worth of EU funds, while previous winners of the Cyprus Entrepreneurship Competition have raised capital by international VC funds, and are today growing fast, spreading their wings across technology markets globally. So we are looking at the research teams and the startups of the 7th Innovation & Entrepreneurship Forum with confidence and expectation.

In this booklet, you will find the abstracts of the projects highlighted at this year’s Forum and a short description of the business models of the Cyprus Entrepreneurship Competition finalists. Depth and innovation leap out of the text. But so does diversity. I risk the prediction that looking back in a few years, we will be amazed by how many of them went on to succeed in their future endeavours, that are as far from each other as distant scientific fields can possible be. And yet their successes will share the energy and dedication, curiosity and hard work that turns scientists, engineers and entrepreneurs into innovators and creators, drivers of economic and social progress. And their paths crossed at the 7th Innovation & Entrepreneurship Forum.

I would like to extend our gratitude to our corporate sponsors and especially to our major sponsor, contributor and strategic partner of the Centre for Entrepreneurship and University of Cyprus PwC Cyprus, as well to the Ministry of Energy Commerce and Industry, sponsor of the Cyprus Entrepreneurship Competition.

Panos Markopoulos,
Director of C4E, University of Cyprus

ABOUT THE ORGANIZER

The Centre for Entrepreneurship

The Centre for Entrepreneurship (C4E) of the University of Cyprus (UCY) aspires to:

- foster a culture of innovative entrepreneurship within the University and to develop relevant in-house expertise;
- provide the entire University community with high-quality services and the connections required to bring scientific innovations and novel ideas produced inside the University to global marketplaces and
- contribute to the creation of a sustainable innovation ecosystem in Cyprus. C4E strives to provide the training, expertise, mentorship, support and connections that UCY’s students and young scientists need to become effective entrepreneurs.

C4E considers Entrepreneurship in its broadest sense, namely as a mind-set in scientific and scholarly work that embraces creativity, critical thinking, imagination, risk-taking and the bold experimentation with new ideas and transformative scientific approaches.

C4E aspires to turn new knowledge into real “value” that can serve the common good through novel products, processes and services, implemented by new or existing ventures, private or public organizations, governmental institutions or non-governmental initiatives.

C4E serves the entire University of Cyprus community, namely undergraduate, postgraduate and doctoral students, researchers and young scientists, faculty, and staff. Beyond the University, we contribute to the emergence of Cyprus’ “start-up” ecosystem, participating in relevant initiatives and liaising with people and support structures, such as accelerators, incubators and makerspaces.

We promote the uptake of innovative results, the exploitation of scientific know-how and the use

of advanced research infrastructures of UCY by existing private and public organizations, contributing to the competitiveness and growth of the Cypriot economy. We work with policy makers and the government to promote policies that support research, innovation, and entrepreneurship. We invite alumni to participate and contribute to our activities. We engage the Cypriot diaspora of entrepreneurs and innovators to become our ambassadors abroad.

Our Guiding Principles comprise the pursuit of excellence, an emphasis on collaboration, networking and mentorship, a philosophy of experimentation, embracing diversity and pursuing honesty and transparency.

PARTNERS

Organizer



Strategic Partner



Research Results Exhibition Organiser



CyEC Supporters



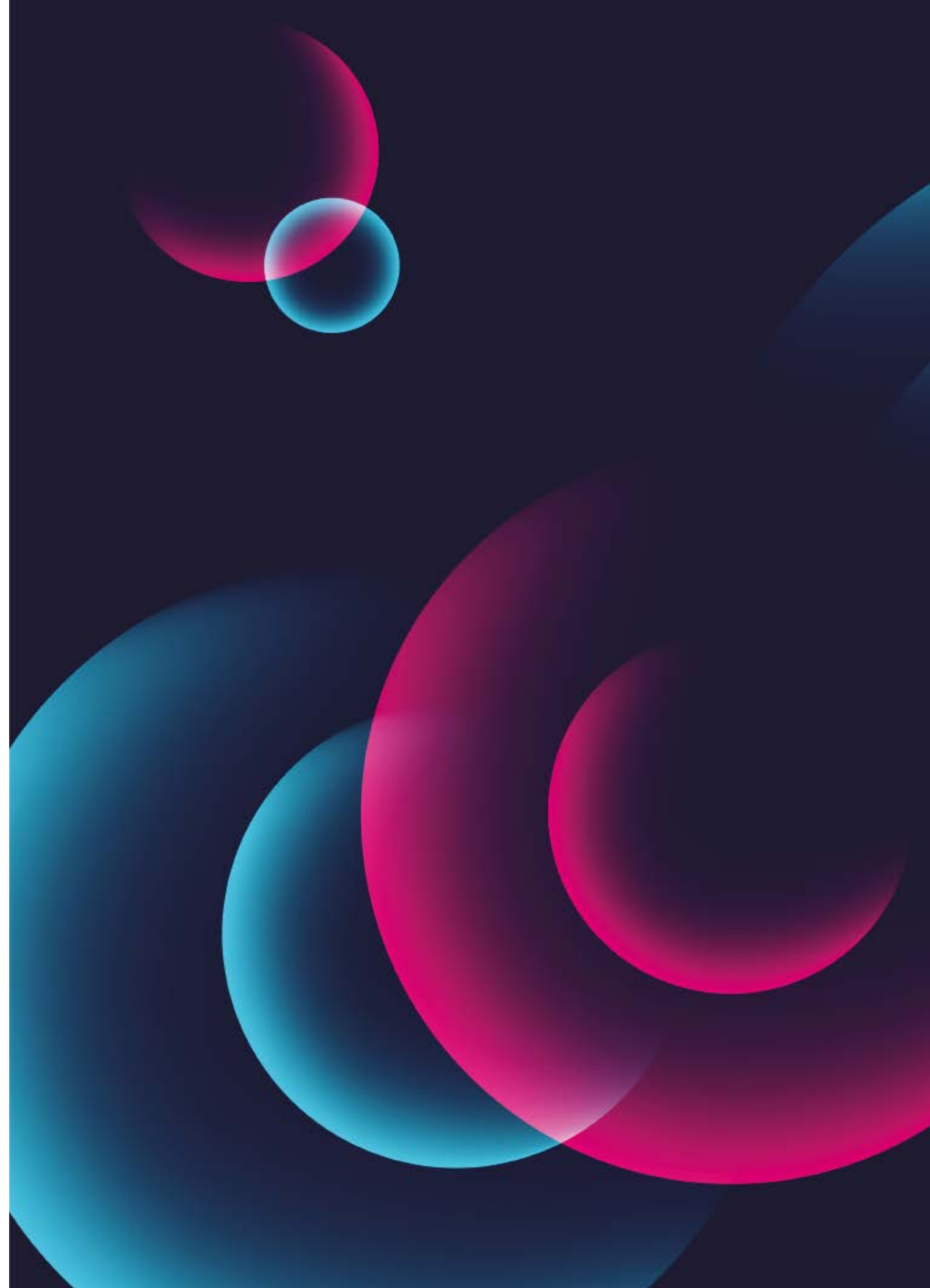
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AGENDA

TIME	SESSION
	IEF 2022 Research Results Exhibition Atrium (Ground Floor) Anastasios Leventis Council & Senate Building University of Cyprus
09:15 - 10:00	Registration and Welcoming Coffee at the Research Results Exhibition
09:30 - 15:00	Research Results Exhibition
	IEF 2022 Key Note and Discussion Auditorium B108 (Basement) Anastasios Leventis Council & Senate Building University of Cyprus
10:00 - 10:05	Opening remarks by Associate Professor <i>Panos Markopoulos</i> , C4E Director
10:05 - 10:10	Welcoming Note by the Vice-Rector for Academic Affairs, Professor <i>Tatiana Eleni Synodinou</i>
10:10 - 10:15	Welcoming Note by Dr <i>Nikolas Mastrogiannopoulos</i> , Chief Scientist for Research & Innovation of the Republic of Cyprus. Chairman of the board of directors of Research & Innovation Foundation
	The PwC Distinguished Lecture
10:15 - 10:45	"The power of purposeful curiosity: How asking the right questions will change your life" <i>Costas Andriopoulos</i> , Professor of Innovation and Entrepreneurship, Bayes Business School, University of London
10:45 - 11:00	Q/A

TIME	SESSION
11:00 - 12:00	Panel Discussion "Fostering the journey from research to entrepreneurship": Present debates and future directions for the Cyprus ecosystem While the distinction between basic and applied research is often vague, opportunities to commercialize new knowledge can come from both. University researchers, entrepreneurs, and even technologists and managers in private companies can often intermediate between knowledge and commercial products, and even help push a-priori unspecific and unpredictable outcomes towards profitable ventures. Who are the people that can do this? How can we move them from the edges of the entrepreneurial ecosystem to the forefront? How can we create world-class research that balances academic excellence with a persistent commitment to social, economic and environmental progress? Coordination: Philippos Soseilos - CEO & Chairman, PwC Cyprus Panel Members: Professor Costas Andriopoulos Professor Marios Dikaiakos, Chairman C4E Council Maria Terzi Co-founder & CEO, Malloc Inc Olympia Pachoumi, Innovation Hub Manager at KIOS CoE
12:00 - 14:00	Research Results Exhibition Stroll and Networking Lunch Atrium (Ground Floor) The CyEC 2022 Session Auditorium B108 (Basement) Anastasios Leventis Council & Senate Building University of Cyprus
14:00 - 14:30	CyEC 2022 Finalists Pitching presentation CrowdBase DeSign Group Half past five Heroes Made Multians Pay Paya
14:30 - 14:40	Awards Ceremony

PwC DISTINGUISHED SPEAKER



Professor Costas Andriopoulos
Bayes Business School,
University of London

“The power of purposeful curiosity: How asking the right questions will change your life”

We are constantly bombarded by a flood of information through social media, texts, email, and streaming services that distract us from seeking deeper understanding and knowledge. And yet when we dedicate time to hone our interests and expertise, curiosity—if harnessed purposefully—can take us to unexpected places and provide new paths to fulfilment and success. Based on interviews with hyper-curious people—including Formula One engineers, scientists working to grow food on Mars, polar explorers, athletes, and Michelin-starred chefs, I will explain how accomplished individuals cut through the ‘noise’ of information overload and use the productive power of curiosity to discover, create and succeed.

Bio

Costas Andriopoulos is a Professor of Innovation and Entrepreneurship. He joined Bayes Business School (formerly Cass) in September 2014. Before joining Bayes, Costas held a Chair in Strategy at Cardiff Business School, and, prior to that held posts at Brunel Business School, University of Aberdeen Business School and the University of Strathclyde Business School. He has also been a visiting Professor at Said Business School (University of Oxford), Indian Institute of Management (Ahmedabad), Grenoble Ecole de Management, International Hellenic University, and ALBA Graduate Business School.

His main research interests focus on how organizational paradoxes enable innovation in the face of changing technological environments. In particular, he studies how entrepreneurial firms in high-velocity markets can excel at both incremental (exploiting current capabilities) and discontinuous innovation (exploring into new space).

His research, funded by the Carnegie Trust and the Institute for Innovation & Information Productivity has been published in leading academic journals such as Organization Science, Human Relations, Long Range Planning, California Management Review, European Journal of Marketing, International Small Business Journal, among others. He is the co-author of the book “Managing Change, Creativity and Innovation” (2nd Edition, Sage, 2014). Currently Professor Andriopoulos is working on a book about corporate curiosity.

Professor Andriopoulos is an award-winning teacher. He teaches New Venture Creation at the EMBA programme and New Product Innovation at the MSc in Marketing Strategy and Innovation at Bayes Business School (formerly Cass). He has taught executive and senior leadership teams how to manage organizational change and innovation, high-performing teams, entrepreneurial/design thinking, strategic paradoxes and breakthrough innovation. In his teaching, he systematically intertwines theory and practical application (e.g. teaching cases, simulations, in-class exercises).

PANEL DISCUSSION

“Fostering the journey from research to entrepreneurship”: Present debates and future directions for the Cyprus ecosystem

COORDINATOR



Philippos Soseilos
CEO & Chairman, PwC Cyprus

PANEL MEMBERS



Professor Costas Andriopoulos
Bayes Business School, University of London



Professor Marios Dikaiakos
Chairman C4E Council



Dr. Maria Terzi
Co-founder & CEO, Malloc Inc



Dr. Olympia Pachoumi
Innovation Manager, KIOS Research & Innovation
Center of Excellence, University of Cyprus



**CYPRUS
ENTREPRENEURSHIP
COMPETITION**



The Cyprus entrepreneurship competition (CyEC) is a business plan competition designed to help early-stage entrepreneurs transform their ideas into world-changing companies. Participants will have the unique opportunity to develop their ideas, grow their business skills and network through a series of carefully designed workshops by local and international partners, mentoring sessions, and networking events.

Our focus is on sustainable solutions that respond to real and global challenges through entrepreneurship, technology and innovation and have the potential to compete on a global scale.

We are looking for ambitious teams who want to develop their ideas quickly and who are both agile and adaptive in pursuit of finding the best problem-solution and product-market fit.

Team/Start-up Name

Crowdbase

Team membersFrixos Larkos, Daniel Koudouna
Panayiotis Kakourides

Sector	Business Model
Fintech	B2B2C

**Business Idea**

Crowdbase is the first investment-based crowdfunding platform in Cyprus, regulated as a Cypriot Investment Firm (CIF) by the Cyprus Securities and Exchange Commission (CySEC). Crowdbase was founded with the target of improving the efficiency of financial markets in Cyprus and beyond. Crowdbase facilitates capital fundraising for Startups, SMEs and Real Estate, either in the form of Equity or Debt.

Team/Start-up Name

(HPF) Half past five

Team membersMikaella Kitiri, Nikolas Lambrianou,
Andreas Naoum, Andreas Giorkatzi,
Loukas Papalazarou, Konstantinos
Larkos, Mikaella Chrysostomou

Sector	Business Model
Healthtech	B2B, B2C

**Business Idea**

One of the biggest issues regarding end-stage cancer patients is the management of their pain and the personalisation of their treatment. HPF's goal is to create a product that detects the concentration of certain biomarkers in a patient's saliva and assist the doctor regarding the medical care they provide. Nowadays, this process is being based on a subjective method which is using a pain scale to identify the amount of pain a patient experiences. More specifically, the company aims to design an alternative way of acknowledging patients' perception of pain as it is a highly subjective matter.

Team/Start-up Name

Multians

Team membersPanagiotis Polemitis,
Andreas Papagiannis

Sector	Business Model
Marketing	B2B

**Business Idea**

Multians is a community made up of creators with the purpose of functioning as a Multimedia Production Marketplace (Two-Sided). It is essentially aimed at businesses and marketing agencies, who have the freedom to choose to collaborate simultaneously with various creators such as videographers, photographers, producers, copywriters, graphic designers, performers, and influencers to create a video-first multimedia production product(s) for advertising purposes.

Team/Start-up Name

Heroes Made

Team membersGeorge Tziadas, Maria Lavithi,
Daniel Howard, Christina Shailas

Sector	Business Model
EdTech	B2B, B2C

**Business Idea**

Heroes Made is a SaaS platform for Social-Emotional Learning and it's marketed at the most direct way to teach SEL in elementary schools. The company combined technology and evidence-based methods to bring all students on equal footing for success. The platform is a complete solution along with customizable immersive storybooks, guides and assessments. Heroes Made aims to guide children to understand and manage their emotions to develop healthy identities.

Team/Start-up Name

PayPaya

Team membersFotis Karkampoulas, Alexis
Georgiou, Renos Skoufarides,
Loukas Loizou, Maria-Christina
Metaxa

Sector	Business Model
E-Commerce/ Fintech	B2B2C

**Business Idea**

PayPaya is a technology Company offering a state-of-the-art marketplace with the possibility to purchase any product or service listed (or not) in 4 to 10 monthly installments depending on the price of the item. The Company (currently active under the brand name Atokes) has set up its online marketplace which handles orders and customers, processes multiple financial data points, automatically sets up installment plans and manages customer payments. The Company is aiming to be a leading "Buy Now Pay Later" service in Cyprus and across the EEA, with innovative and high-quality services.

Team/Start-up Name

DeSigN Inspiration Group

Team membersSpirydon Tzanetos, Nikos
Iordanou, Melina Panagiotopoulou,
Daniil Sourianos, Iakovos Fakes,
Marialena Tsitsi, Konstantinos
Tzeiranidis

Sector	Business Model
Real Estate	B2C

**Business Idea**

DSN aims to receive a service which will help users not only to create their ideal house faster than ever, since DSN will communicate with design companies and construction companies digitally as partners, but also help the user select the characteristics and features of his/her house or house-section by answering these detailed specific questions choosing ideal 3D renders structured for customers by our architects.



**RESEARCH RESULTS
EXHIBITION ABSTRACTS**



Research and Innovation Support Service

The Research and Innovation Support Service (RISS) is the executive administrative arm for the promotion and enhancement of research and innovation at the University of Cyprus. This is made possible through support in attracting funding, in the management of internal and external research projects, through the parallel development and promotion of best practices in project management, in the evaluation and protection of intellectual property rights and in the exploitation of research results through knowledge transfer activities. The RISS also has as main objectives to support the Committees and the Rectorate in the establishment of research and innovation policies, the optimal allocation and management of internal funds related to research and innovation, the increase of successful research proposals through quality support to the academic/research community of UCY, the efficient financial management of research projects and the optimal protection and exploitation of their research results. RISS is also responsible for the operation of the University of Cyprus YUFE (Young Universities for the future of Europe) office.

SMART INFRASTRUCTURES

OCEANOS Integrated Smart Water Management Platform

AUTHORS' DETAILS

Marios S. Kyriakou, Pavlos Pavlou, Stelios G. Vrachimis, Demetrios G. Eliades, Marios M. Polycarpou

RESEARCH UNIT DETAILS

KIOS Research and Innovation Center of Excellence, University of Cyprus

DESCRIPTION

The integrated smart water management platform OCEANOS has been developed by the KIOS COE Innovation Hub as part of a research collaboration agreement with the Water Board of Limassol. This innovative platform collects, stores and analyzes data from water distribution networks, thus becoming a useful decision-making tool for water utilities. OCEANOS integrates geospatial information with an advanced network modeling system, for enabling utilities to answer questions such as: what might be the effects of new development, or how much pressure can be reduced to satisfy consumption and reduce water losses. Utilizing this platform, the water utilities are able to better monitor and detect leaks, manage repairs and quality measurements, as well as automatically compute KPIs.

EMPOWER platform

AUTHORS' DETAILS

Markos Asprou, Lenos Hadjidemetriou, Panayiotis Demetriou, Kyriakos Kyriakou, Demetris Stavrou, George Milis, Christos Panayiotou

RESEARCH UNIT DETAILS

KIOS Research and Innovation Center of Excellence, University of Cyprus

DESCRIPTION

The high penetration of renewable energy sources as well as the ever-increasing electricity demand poses several critical challenges to the power system operators for maintaining the stability of the system. In order to face these challenges, the operators should have powerful tools at their disposal that will have real time monitoring and control capabilities. The EMPOWER project aims to address the challenges faced by the power system operators today by developing innovative monitoring applications that enable the real time visualization of the power system operation. One of the main outcomes of the EMPOWER project is the EMPOWER platform which can receive, process and exploit measurements from advanced measurement devices that are installed in the power system substations called Phasor Measurement Units (PMUs). In this context, the

EMPOWER platform includes smart modules for processing the PMU measurements and provide real time monitoring and control capabilities to the power system operators. In particular, the EMPOWER platform processes measurements and through the novel state estimation module can provide real time, wide area estimations of the operating condition of the system. It can also improve the post-disturbance analysis by providing insights regarding the behaviour of the frequency and voltage of the system in case of a disturbance through high resolution PMU measurements, while it can enhance the power system modelling by estimating critical parameters of the power system model. The EMPOWER platform has a TRL 6 since it is tested and operated in a relevant environment.

iNicosia Digital Twin

AUTHORS' DETAILS

Panayiotis Charalambous, Kyriacos Larmos, Andreas Lernis, Tereza Kourra

RESEARCH UNIT DETAILS

CYENS Centre of Excellence, Research Department

DESCRIPTION

CYENS is creating iNicosia, a digital twin of the city that integrates all sources of available data - smart city, research, crowd-sourced and online - into a real-time 3D model. Through visualizations and simulations, users of the digital twin can

observe the real-time conditions of the city while glimpsing into the future based on information and projections. Simulation solutions are used to optimize planning activities and to assist in better decision-making. Through multidisciplinary collaboration, iNicosia aims to become a point of reference in quality of life improvements, creativity and progress for local authorities, policy makers, scholars, residents and visitors.

Integrated Decision Support System for the Low-Cost Condition Assessment of Transport Networks

AUTHORS' DETAILS

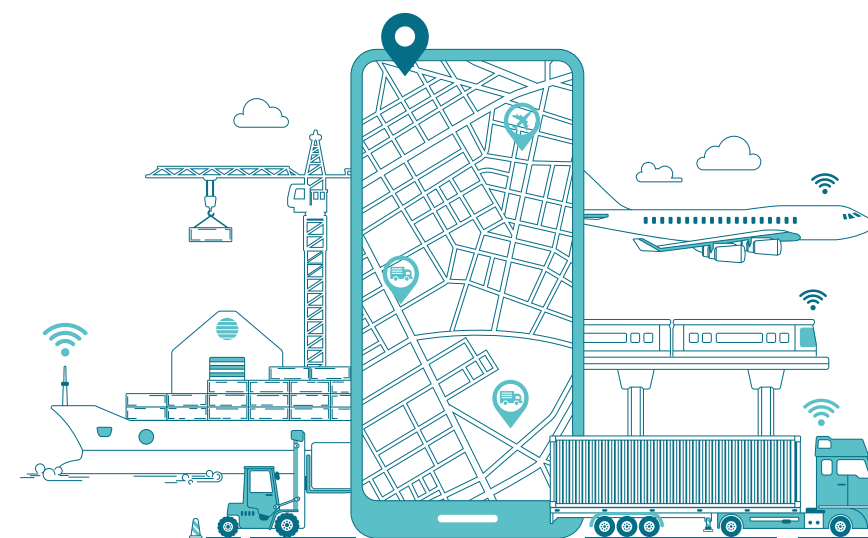
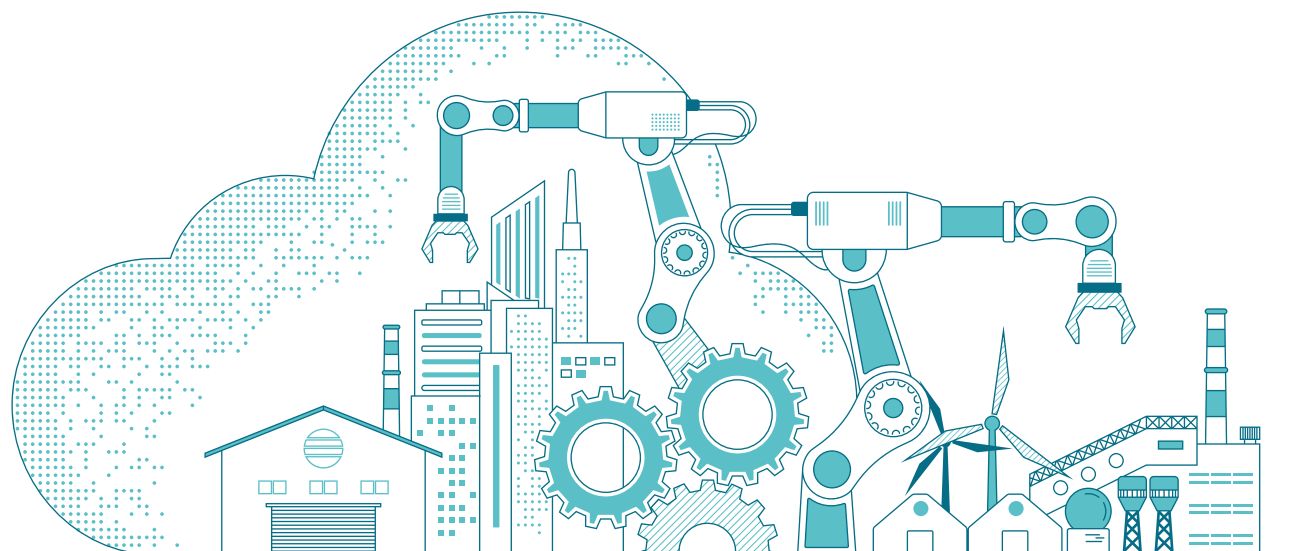
Symeon Christodoulou and RONDA Research Consortium

RESEARCH UNIT DETAILS

University of Cyprus, Dept. of Civil and Environmental Engineering, EUPALINOS Lab, and Lab for Transport Engineering (LTE)

DESCRIPTION

The project focuses on the development of low-cost technology/methodology for the assessment of roadway pavements, and for providing the means for a decision support system for the operations and maintenance of roadway networks. Key outputs are the developed low-cost sensors, web-based platform and the methodologies for pavement management, as well as their pilot implementations in Nicosia.



HEALTH SCIENCES

Innovative digital health behavior changes interventions

AUTHORS' DETAILS

Maria Karekla

RESEARCH UNIT DETAILS

ACThealthy laboratory, Department of Psychology, University of Cyprus

DESCRIPTION

Despite important medical and psychological advances, current treatments for many psychological and medical problems where health behaviors are involved, are at best moderately effective. Patients continue to fail to follow clinical recommendations, changing their health-behaviours (e.g., quitting smoking, exercising), or effectively coping with elevated stress and depression levels. What all chronic diseases and mental health problems have in common is the need for the chronic and consistent use of and adherence to recommendations for condition management. What is needed are evidence-based therapeutic techniques (grounded in solid behavior change theory and practice) that are general skills needed to effectively manage a problem. Also, interventions need to be individually tailored to the unique needs and motivators of the individual within their health condition group, that is delivered just at the time when the person needs this in their life. We need to do this not just by asking patients but developing unobtrusively measures and indicators associated with patient's biases, memory-recall biases and (non)intentional concealment. In combination with data about problem progress and treatment efficacy we may help to support the patient at just-the-right-time. Different digital interventions developed by our ACThealthy laboratory aimed to achieve these aims. Programs such as Flexiquit, AcceptME, AlgeApp were digital interventions tested and demonstrated acceptability, feasibility, and efficacy among the groups

targeted (e.g., young smokers, females at high-risk for developing eating disorders, chronic pain patients) compared to controls. Smartphone applications (e.g., "Stay-on-Track") aiming to deliver empirically supported interventions to various groups of patients (e.g., cancer, diabetes, asthma), targeted medical adherence improvements.

Tumor microenvironment normalization agents to improve cancer therapy

AUTHORS' DETAILS

Triantafyllos Stylianopoulos, Fotios Mpekris, Myrofora Panagi, Chrysovalantis Voutouri

RESEARCH UNIT DETAILS

Cancer Biophysics Lab, Department of Mechanical and Manufacturing Engineering, University of Cyprus

DESCRIPTION

Abnormalities in the microenvironment of many tumors pose significant barriers to therapy and for many tumor types, such as subsets of pancreatic and breast cancer, they can have detrimental effects leading to treatment failure. In the past years, we have studied these abnormalities and have suggested new therapeutic strategies for overcoming the barriers. Our therapeutic strategies involve either the repurposing of approved drugs with the aim to remodel the tumor microenvironment and normalize any tumor abnormalities or the development of new therapeutic agents optimized for this purpose. Testing of the new strategies and therapeutic formulations in preclinical tumor models has demonstrated the efficacy of our approaches to overcome the barriers posed by the tumor microenvironment and to potentiate chemo-, nano- and immuno-therapies leading to complete cure in many tumor models.

Biobanking and the Cyprus Human Genome Project, CY-Biobank

AUTHORS' DETAILS

Constantinos Deltas, Professor of Genetics, School of Medicine, University of Cyprus

RESEARCH UNIT DETAILS

The CY-Biobank project enabled the creation of the biobank.cy Center of Excellence in Biobanking and Biomedical Research, University of Cyprus

DESCRIPTION

The Smart Specialization Strategy of Cyprus places a high premium on eHealth and research into genetic diseases. The best way to implement the approach is to build a Center of Excellence (CoE) with the following two pillars: a) a modern Biobank as a medical research infrastructure that integrates eHealth; and b) a facility to support the Cyprus Human Genome Project and advance translational research on genetic illnesses, strengthening the European Research Area. In order to accelerate biomedical research, biobanks are organized collections of medical information and biospecimens that act as distribution points and repositories. Biobanking and genomics infrastructures in Cyprus are lagging to European levels, thus limiting the prospects for research and innovation potential.

The CY-Biobank is updating the current infrastructure while putting high-standard practices and quality management systems in place to secure highly reliable data and materials, hence enabling Big Science and next generation biomedical research in Cyprus. To improve patient care and advance precision medicine, the CoE will include the entire Cypriot research community, act as a hub for creative ideas, and house a tertiary medical and educational facility for both rare monogenic and frequent complex disorders. With the participation of all stakeholders in the medical and patient communities, the biobank.cy Center of Excellence is pursuing a patient-centric approach while respecting delicate ethical, legal, and social problems. By

creating the MediEuro Network with nations in the Mediterranean and the Middle East, the CoE hopes to play a bigger role and support efforts to connect the EU with this region of the world.

The categorization Program

AUTHORS' DETAILS

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RESEARCH UNIT DETAILS

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DESCRIPTION

Contemporary theoretical models of human cognition identify categorization as one of the most fundamental cognitive processes, crucial to other cognitive skills (for review the reader is referred to Constantinidou & Thomas, 2017, Thomas, & Best, 2004; Constantinidou & Thomas, 2010). Deficits in categorization interfere with the successful execution of daily activities of daily living because categorization skills are integral to memory and learning of new information, and are essential processes for decision making and successful problem solving. The Categorization Program is a rigorous systematic, hierarchical, eight level programs initially designed as a restorative cognitive rehabilitation program in adults with acquired brain injury. Initial research findings [12] (Constantinidou et al., 2005) and a subsequent randomized controlled trial (Constantinidou et al., 2008) indicate that the CP is an effective therapy tool for adults with brain injury who exhibit categorization deficits. Subsequent study with healthy older adults indicates that this is an effective modality to improve cognitive abilities in healthy older adults and in adults at risk for dementia (Constantinidou, 2019).



InvasiCell: A novel device to study cancer progression in vitro

AUTHORS' DETAILS

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RESEARCH UNIT DETAILS

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DESCRIPTION

Currently, animal models provide the optimal representation of the complex tumor microenvironment (TME) in a living organism. However, animal experiments are expensive, time-consuming, labor-intensive, and require large numbers of animals, making them an impractical choice for most studies and a non-viable option for others, such as drug screens. Therefore, a plethora of assays has been developed, such as the Boyden chamber, Microfluidic devices, and Spheroid assays, to evaluate each hallmark of cancer and study different aspects of cancer progression or to evaluate the efficacy of pharmacological agents outside a living organism. However, despite their significant contribution to our understanding of specific events of the metastatic cascade, the most widely used assays don't accurately replicate the TME and/or have several limitations that reduce their translational potential. Therefore, we have designed, developed, and characterized InvasiCell, a small device which through geometry and cell confinement can accurately replicate the TME. InvasiCell not only can discriminate between metastatic and non metastatic cells but uniquely allows the isolation of more aggressive subpopulations, which was previously only possible using animal models. . Consequently, InvasiCell has the potential to be a valid tool to study tumor progression, form the basis for a credible anti-metastatic drug screening platform and could also be used for prognostic testing and personalized medicine.

A full-body musculoskeletal biofeedback mirror tool

AUTHORS' DETAILS

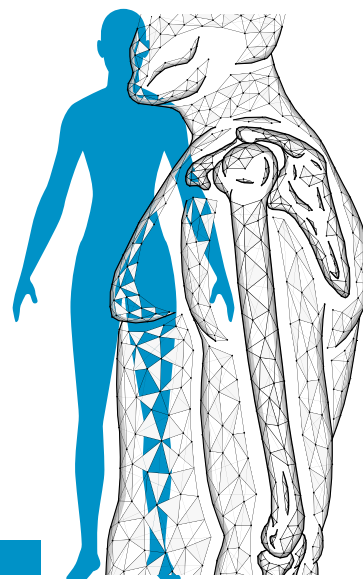
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RESEARCH UNIT DETAILS

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ABSTRACT

In the EU alone, the annual cost of work-related musculoskeletal disorders rises up to €476 billion per year. This cost, which represents the 3.3% of EU GDP, results from the complex aetiology of these disorders and the lack of effective treatments in the market. In the context of project TONE, we developed an innovative musculoskeletal biofeedback mirror tool that can be used for the prevention, diagnosis, and rehabilitation of various musculoskeletal and other task-specific movement disorders. Using motion tracking and electromyography sensors, the tool displays full-body musculo-postural feedback on a virtual character that simulates in real time the movement of the user, (e.g., a musician playing an instrument), allowing thus the execution of corrective actions. Empirical studies with professional musicians have demonstrated the effectiveness of the TONE tool in providing corrective musculo-postural feedback that may help patients overcome, in the long-run, their chronic musculoskeletal pain.



LIFE SCIENCES

Sustaining yield security through advanced seed treatments

AUTHORS' DETAILS

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RESEARCH UNIT DETAILS

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DESCRIPTION

Enhancing tolerance against abiotic stress factors in plants is of great significance for ameliorating their negative impact on crop yield and therefore to sustain global food security, but also for reducing water demand in the ever-intensifying agricultural sector. Plants treated at seed stage with certain chemical agents of natural

or synthetic origin, show prolonged, enhanced tolerance when exposed to sub-optimal abiotic conditions resulting in better crop establishment and enhanced growth. As a result, seed chemical priming is now gaining ground in the field of abiotic stress tolerance enhancement. We present a cutting-edge seed priming technology, aiming at optimizing the tolerance of important crop plant to combinations of major stress conditions related to global climate change (i.e. drought, salinity and heat), as plants are usually subjected to more than one adverse environmental conditions at the same time. This is examined through the employment of promising natural chemical compounds, aiming to optimize plant water use efficiency and secure yield under optimal and sub-optimal conditions. Furthermore, seed priming is coupled with advanced polymer coatings that enable the sustained release of the priming agents in the rhizosphere and maintain seed viability through optimized formulation of a new, ground-breaking product.



ENERGY AND CLEAN TECH

CIPROS (“Capital Investment Planning for Resilience Optimization of Smart Grids”)

AUTHORS’ DETAILS

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DESCRIPTION

Power grid investments always involve a tradeoff between risk mitigation, techno-economic sustainability, and return on investment. Using tools already available in the market, power industry stakeholders currently face challenges to get a full insight of this trilemma, especially when resilience against extreme events is a sociopolitical concern. CIPROS (Capital Investment Planning for Resilience Optimization of Smart Grids) is a software tool that enables the combined utility of monitoring, operating, and investment planning of smart and resilient

distribution energy systems. While necessary to tackle climate change and sustainability goals, the emerging highly digitalized and decentralized distribution energy grids are vulnerable to high-impact low-probability events (such as extreme weather, aggravated by climate change). CIPROS is the first of its kind to take such a holistic approach to resilience-informed distribution grid investment planning and monitoring, explicitly accounting for rapidly emerging dispersed low-carbon technologies. CIPROS has been selected in the 12 finalists of the 2022 Innovation Radar Prize competition by the European Commission and amongst the 4 finalists in the category “KickStarter”.



Intelligent Energy Storage Solutions

AUTHORS’ DETAILS

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RESEARCH UNIT DETAILS

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DESCRIPTION

Towards a climate neutral economy, a massive deployment of renewable resource is needed to decarbonize the energy system. However, the unpredicted nature of renewable energy imposes critical operational challenges to the energy infrastructure and therefore, new technologies and solutions should be integrated. In this context, energy storage seems to be an ideal and flexible solution for compensating the generation uncertainties by renewable resources, allowing the green transition of the energy domain without risking the system integrity and reliability. This project relies on the results of two ongoing

research projects, EMPOWER and WiseStorage, where several intelligent energy storage solutions have been developed, integrated in a hardware/software system, and applied in three operational pilots (TRL7). The first pilot is developed at the producer level and integrates a pilot battery system in a wind and photovoltaic park in Larnaca in order to enhance the controllability of the energy generation and maximize the producer profit. The second pilot is developed as a community storage system at the distribution grid level of the University of Cyprus where a battery and a flywheel storage are integrated to provide ancillary services to the grid for maximizing the allowable penetration of photovoltaics while minimizing the electricity cost of the community. The third pilot is developed at building level in a residential consumer in Nicosia where the battery is intelligently managed to minimize the electricity cost and to actively participate in the management of the local distribution grid.



IT COMMUNICATIONS AND DEVICES

DgiStreamer

AUTHORS' DETAILS

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RESEARCH UNIT DETAILS

DeepCamera, CYENS CoE

DESCRIPTION

Introducing graphical visualization into the task can massively benefit imaging experts to view pipeline construction through a simpler lens, offering them a greater insight into the structure of their pipeline as well as better control over their model's workings. With this idea in mind, we provide an innovative solution through a GUI pipeline fabricator, called DgiStreamer, which allows easy construction and deployment of imaging pipelines via an effective and user-friendly interface, without writing a single line of code.

GUIDed Assisted-Living and Social Interaction Platform (GUIDed)

AUTHORS' DETAILS

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RESEARCH UNIT DETAILS

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DESCRIPTION

GUIDed addresses the challenge of keeping older adults independent and functioning in their own homes for as long as possible by facilitating important activities of daily living through IT solutions. GUIDed users a modular and customizable smart kit and platform, consisting of assisted-living solutions and services to facilitate seniors' daily lives in their own home and the community. The main target areas of the smart kit and platform are smart home-control features, safety enhancement, outdoor navigation, health improvement and socialisation/communication. The end users will be GUIDed

with a tablet-based Augmented Reality (AR) tutoring service to simplify smart kit use and optimise usability. The smart kit will be created (some features further developed from previous projects) and integrated using a user-centered design methodology, in which end-users are actively involved in all stages of the project through to the business exploitation stage.

5G-Slicer: An emulation framework for 5G-enabled IoT applications

AUTHORS' DETAILS

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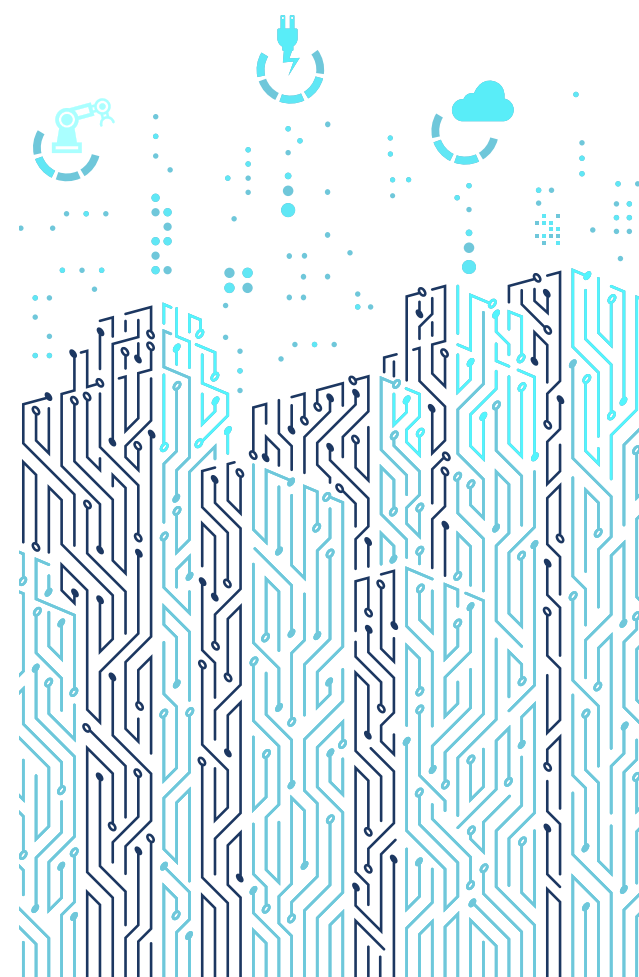
RESEARCH UNIT DETAILS

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DESCRIPTION

5G networking is a technology that promises to expand the reach and applicability of Internet of Things (IoT) applications and services to a vast number of application areas, providing the required communication bandwidth for billions of IoT devices, reducing the latency of wireless and mobile links, and enabling the implementation of the Edge Computing vision. However, businesses who wish to develop and deploy 5G-driven applications need to undertake substantial investments in cost, effort, and expertise, in order to develop, tune, deploy, validate, evaluate, and optimize their services. These costs increase the time-to-market period and the risks of their investment. To address this challenge, we introduce an emulation framework called 5G-Slicer, which enables repeatable, measurable, and controllable modeling, deployment, and experimentation of 5G-enabled services under realistic environment assumptions, mobility patterns, faults, and uncertainties, without the need to procure, configure, and use a real infrastructure. The framework provides high-level abstractions for the design of 5G

deployments, encapsulating Quality of Service (QoS) definition, user-plane network functions, physical components, such as access points and base stations, physical nodes' positioning and trajectories, new network technologies (multi-user MIMO and beamforming), Edge and Cloud resources. With the blueprint of an emulated testbed at hand, 5G-Slicer generates an experiment testbed by allocating Cloud resources and enforcing network QoS, while also altering at runtime network QoS based on mobile node positioning. Finally, 5G-Slicer provides dynamic maps with real-time object location updates to help users extract insights, visually contrasting the changing locations of emulated nodes against real-time application performance metrics.





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