



International Conference on Tourism and Social Support Technologies

ABSTRACT PROCEEDINGS OF
INTERNATIONAL CONFERENCE ON
TOURISM AND SOCIAL SUPPORT TECHNOLOGIES
INNOVATION AND LOCAL DEVELOPMENT



**systems and technologies to support
monitoring and follow-of people
in the social and tourist context**

Project INFO PATHS NORTE-01-0145-FEDER-023623



LAMEGO, PORTUGAL 21-22 MARCH 2019

Polytechnic Institute of Viseu



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Cover page picture: “Lamego brilha” by Marta Barata

***“If you're not having doubt, then you're not
pushing it hard enough, or you're not looking
at the details close enough...”***

Tony Fadell

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March, 2019

PREFACE

Dear All,

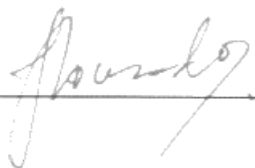
It is with great pleasure that we are receiving you at the "International Conference on Tourism and Technologies of Social Support - Innovation and Local Development" in Lamego.

The topics presented are of great relevance to the current context of Information Technology as well as its application in two sectors of the economy which are the focus of this project which is also the origin of this conference: tourism and all its aspects as a support in intelligent monitoring and recommendation systems and the social area, namely in the prevention of accidents, non-intrusive and pervasive real-time monitoring which allow a significant improvement in the quality of life of people with certain types of pathologies, such as dementia, Alzheimer's disease and other pathologies that usually imply reduced mobility.

We hope that the selected communications can be of common interest and that the findings may contribute to an improvement in the quality of life for people in general in the future.

Many thanks to all who made this conference possible.

Chairman of ICTSST2019



Professor José Paulo Lousado

PREFÁCIO

Caros colegas,

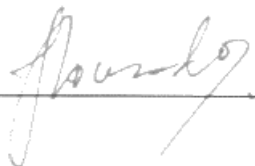
É com grande satisfação que os recebemos na "Conferência Internacional sobre Turismo e Tecnologias de Apoio Social: Inovação e Desenvolvimento Local" em Lamego.

As temáticas apresentadas são de grande relevância para o contexto atual das Tecnologia de Informação, estando naturalmente na ordem do dia a sua aplicação em dois setores da economia, foco do projeto que está na gênese da conferência: o turismo e todas as suas vertentes, quer de suporte quer nos sistemas inteligentes de monitorização e de recomendação, suportadas em algoritmos de elevada complexidade; a área social, nomeadamente na prevenção de acidentes, na monitorização em tempo real não intrusiva e pervasiva que permitem melhorar consideravelmente a qualidade de vida das pessoas com determinados tipos de patologias, como demência, alzheimer e outras patologias que implicam normalmente uma mobilidade reduzida.

Esperamos que as comunicações selecionadas sejam do interesse comum e que as conclusões permitam no futuro, contribuir decisivamente para a melhoria da qualidade vida das pessoas em geral.

Muito obrigado a todos os que tornam esta conferência possível.

Coordenador da ICTSST2019



Professor José Paulo Lousado

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Laticínios do Paiva

FUNDED BY



SCIENTIFIC PROGRAM

Program of ICTSST'2019 (EN)

Day 1: mar 21, 2019

14:00 – On-Site Registration

14:30 – Conference Opening and Welcome

Professor João Luís Paiva - President of Polytechnic Institute of Viseu (IPV)

Professor José Paulo Lousado - President of ESTGL /Chairman of ICTSST2019

Professor Didiana Fernandes - President of Technical and Scientific Council of ESTGL

15:00 –Special Session

Moderation: Ricardo Gama

Invited Speaker - Roberto Montemanni, “ICT AND AI FOR HEALTHCARE AND RESCUING TECHNOLOGIES”

Invited Speaker – Nuno Dionísio, “DIGITAL REINVENTION FOR THE COGNITIVE ERA”

16:00 - Scientific Session 1: Information Technologies applied on tourism

Moderation: Helena Teixeira

16:00 – 16:20: (Main Speaker) Silvia Feliu, “APLICACIÓN DE LAS TIC EN EL SECTOR DEL ALOJAMIENTO TURÍSTICO, CON ESPECIAL ATENCIÓN A LAS PLATAFORMAS DIGITALES”

16:20 – 16:40: Andreia Pereira, “THE IMPORTANCE OF STORYTELLING FOR CULTURAL TOURISM” (FP)

16:40 – 17:00: Xiaochen Chou, “MONTE CARLO SAMPLING FOR THE TOURIST TRIP DESIGN PROBLEM” (FP)

17:00 – 17:15: Afonso Café, “O CONTRATO DE HOSPEDAGEM COM BASE EM PLATAFORMA DIGITAL”

17:15 – 17:30: Belén Ferrer, “LAS PLATAFORMAS VIRTUALES, LOS PRESTADORES DE SERVICIOS TURÍSTICOS Y LOS TURISTAS: SU POSICIÓN EN EL TURISMO COLABORATIVO”

17:30 – 17:45: João Vidal, “COLLABORATIVE TOURISM: AN APPROACH TO THE PROBLEMS OF LIABILITY OF DIGITAL PLATFORMS FOR HOUSING MARKETING”

17:45 – 18:00: Carlota Lemos, “SPATIAL AND STATISTICAL ANALYSIS OF TOURISM INDICATORS – CONTRIBUTION TO TOURISM ACCOMMODATION PLANNING”

18:00 – 18:15: Maria Lúcia Pato, “A RELAÇÃO (APARENTEMENTE) DISTANTE ENTRE TURISMO RURAL E CERTIFICAÇÕES AMBIENTAIS - ESTUDO DE CASO DA REGIÃO VISEU DÃO-LAFÕES”

18:15 – 18:30: María Lúcia Pato, “AS CERTIFICAÇÕES AMBIENTAIS EM PROL DO DESENVOLVIMENTO DO TURISMO RURAL”

18:30 – 18:45: Ana Branca Carvalho, “THE DIGITAL TOURISM AND THE IMPACT OF MARKETING 4.0”

19:00 – Welcome Drink

20:30 – Conference Dinner (previous inscription)

Program of ICTSST'2019 (EN)**Day 2: mar 22, 2019****9:30 – Special Session****Moderation:** Paula Santos*Invited Speaker* – Mahmoud Shafik, “MEDICAL CARE PLATFORM SOLUTION FOR PEOPLE WITH LONG TERM HEALTH CONDITION BASED ON WIRELESS SENSORS NETWORK TECHNOLOGY”*Invited Speaker* – David Mota, “COGNITIVE SERVICES AND REAL APPLICATIONS INTO DAILY SCENARIOS”**10:30 – Scientific Session 2: Information Technologies applied on social context****Moderation:** Sandra Antunes10:30 – 10:50: (Main Speaker) José Paulo Lousado, “IMS4EP - INDOOR MONITORING SYSTEM FOR ELDERLY PEOPLE” (FP)10:50 – 11:10: Filipe Fidalgo, “RETEMP – REMOTE TEMPERATURE MONITORING” (FP)11:10 – 11:30: Ângela Oliveira, “UPSENIORES APLICAÇÃO PARA A 3ª IDADE” (FP)11:30 – 11:50: Paula Santos, “ICT CHALLENGES TO ELDERLY SUPPORT – PROFILE AND NEEDS DIAGNOSIS OF NON-INSTITUTIONALIZED ELDERLY, IN LAMEGO MUNICIPALITY” (FP)11:50 – 12:05: Nayra Martins, “UMA ANÁLISE DOS FATORES QUE CONDICIONAM A ADOÇÃO DE MOBILE HEALTH (MHEALTH) ENTRE OS JOVENS”12:05 – 12:20: Cristina Azevedo Gomes, “VIAS | VISEUINTERGESTORIES: UMA APLICAÇÃO MÓVEL INTEGERACIONAL COLABORATIVA”12:20 – 12:35: Fernando Santos, “HEART RATE MONITORING WITH ARDUINO COMPATIBLE SENSORS”**12:35 – Closing and conclusions of the Conference****12:45 – Free Lunch****14:30 - Social Program: Visit Lamego/ Douro River Trip (previous inscription)****Responsible for organizing:** Miguel Mota and Helena Teixeira

Programa da ICTSST'2019 (PT)**Dia 1: 21.mar.2019****14:00 – Registo de participantes****14:30 – Sessão de abertura**

Prof. Dr. João Luís Paiva - Presidente do IPV

Prof. Dr. José Paulo Lousado - Presidente da ESTGL/Coordenador da ICTSST2019

Prof.ª Dr.ª Didiana Fernandes - Presidente do Conselho Técnico-Científico da ESTGL

15:00 – Sessão Especial

Moderador: Ricardo Gama

Orador convidado - Roberto Montemanni, "ICT AND AI FOR HEALTHCARE AND RESCUING TECHNOLOGIES"

Orador Convidado – Nuno Dionísio, "DIGITAL REINVENTION FOR THE COGNITIVE ERA"

16:00 - Sessão: Tecnologias de Informação aplicadas no turismo

Moderador: Helena Teixeira

16:00 – 16:20: (Oradora Principal) Silvia Feliu, "APLICACIÓN DE LAS TIC EN EL SECTOR DEL ALOJAMIENTO TURÍSTICO, CON ESPECIAL ATENCIÓN A LAS PLATAFORMAS DIGITALES"

16:20 – 16:40: Andreia Pereira, "THE IMPORTANCE OF STORYTELLING FOR CULTURAL TOURISM" (FP)

16:40 – 17:00: Xiaochen Chou, "MONTE CARLO SAMPLING FOR THE TOURIST TRIP DESIGN PROBLEM" (FP)

17:00 – 17:15: Afonso Café, "O CONTRATO DE HOSPEDAGEM COM BASE EM PLATAFORMA DIGITAL"

17:15 – 17:30: Belén Ferrer, "LAS PLATAFORMAS VIRTUALES, LOS PRESTADORES DE SERVICIOS TURÍSTICOS Y LOS TURISTAS: SU POSICIÓN EN EL TURISMO COLABORATIVO"

17:30 – 17:45: João Vidal, "COLLABORATIVE TOURISM: AN APPROACH TO THE PROBLEMS OF LIABILITY OF DIGITAL PLATFORMS FOR HOUSING MARKETING"

17:45 – 18:00: Carlota Lemos, "SPATIAL AND STATISTICAL ANALYSIS OF TOURISM INDICATORS – CONTRIBUTION TO TOURISM ACCOMMODATION PLANNING"

18:00 – 18:15: Maria Lúcia Pato, "A RELAÇÃO (APARENTEMENTE) DISTANTE ENTRE TURISMO RURAL E CERTIFICAÇÕES AMBIENTAIS - ESTUDO DE CASO DA REGIÃO VISEU DÃO-LAFÕES"

18:15 – 18:30: Maria Lúcia Pato, "AS CERTIFICAÇÕES AMBIENTAIS EM PROL DO DESENVOLVIMENTO DO TURISMO RURAL"

18:30 – 18:45: Ana Branca Carvalho, "THE DIGITAL TOURISM AND THE IMPACT OF MARKETING 4.0"

19:00 - Espumante de Honra

20:30 - Jantar da conferência (inscrição prévia)

Programa da ICTSST'2019 (PT)**Dia 2: 22.mar.2019****9:30 – Sessão Especial****Moderadora:** Paula Santos

Orador Convidado – Mahmoud Shafik, “MEDICAL CARE PLATFORM SOLUTION FOR PEOPLE WITH LONG TERM HEALTH CONDITION BASED ON WIRELESS SENSORS NETWORK TECHNOLOGY”

Orador Convidado – David Mota, “COGNITIVE SERVICES AND REAL APPLICATIONS INTO DAILY SCENARIOS”

10:30 - Sessão: Tecnologias de Informação aplicadas na área social**Moderadora:** Sandra Antunes

10:30 – 10:50: (Orador Principal) José Paulo Lousado, “IMS4EP - INDOOR MONITORING SYSTEM FOR ELDERLY PEOPLE” (FP)

10:50 – 11:10: Filipe Fidalgo, “RETEMP – REMOTE TEMPERATURE MONITORING” (FP)

11:10 – 11:30: Ângela Oliveira, “UPSENIORES APLICAÇÃO PARA A 3ª IDADE” (FP)

11:30 – 11:50: Paula Santos, “ICT CHALLENGES TO ELDERLY SUPPORT – PROFILE AND NEEDS DIAGNOSIS OF NON-INSTITUTIONALIZED ELDERLY, IN LAMEGO MUNICIPALITY” (FP)

11:50 – 12:05: Nayra Martins, “UMA ANÁLISE DOS FATORES QUE CONDICIONAM A ADOÇÃO DE MOBILE HEALTH (MHEALTH) ENTRE OS JOVENS”

12:05 – 12:20: Cristina Azevedo Gomes, “VIAS | VISEUINTERAGESTORIES: UMA APLICAÇÃO MÓVEL INTEGERACIONAL COLABORATIVA”

12:20 – 12:35: Fernando Santos, “HEART RATE MONITORING WITH ARDUINO COMPATIBLE SENSORS”

12:15 – Encerramento e conclusões da conferência**12:30 – Almoço livre****14:00 - Programa Social: Visitar Lamego/Passeio no Douro (inscrição prévia)****Responsáveis pela organização:** Miguel Mota e Helena Teixeira

Regresso a Lamego.

INVITED SPEAKERS



Mahmoud Shafik

University Professor AC in Intelligent Mechatronics Systems and Technology.

Principal Technology Investigator of University of Derby, UK

Founder Editor-In-Chief of International Journal of Robotics and Mechatronics

Professor Mahmoud Shafik is an international expert who has made a personal distinction and international leadership recognition, in the field of Intelligent Systems and Technology, with more than 20-years industrial applied research experience in Intelligent Systems Hardware and Software, IoT, 3D Smart Sensors and Actuators for Autonomous Vehicle, Robotic Systems and Machine Vision, Steer-by-wire, Innovation for Sustainable Engineering, Control and instrumentation, Cancer Treatment using CVD Diamond Radio Therapy Technology, Information Technology for Blind and Visually Impaired people, Chronic Diseases ICT Technological Solutions, Assisted Living Technology, AD-HOC Wireless Technology, TeleHealth, Telecare, Climate Change, Electro-Rheological Fluid Micro Actuators Technology and Software Tools.

Professor Shafik has been chairing and leading several industrial applied research projects from European Commission and UK Research Council, of a budget of several millions of Euro's and have made a great economic and social impact in his area of expertise in UK and EU, as a whole. His research work has brought many innovative outcomes that have been used commercially by a number of Small to Medium and Large enterprise organisations around the world. This includes: Intersurgical Ltd – UK, Veslatec Oy – Finland, Semelab plc. – UK, PTW Freiburg – Germany, Neotek – France, Kirchmayer Handel & Consulting GmbH – Austria, Spectrum Telecom Installations Ltd – Ireland, Diamond Materials GmbH – Germany, Fireworks International Ltd – UK, Pirotecnia Oscense SA – Spain, Total Motion Systems Ltd –UK, Micromech Limited – UK, Smart Technology Ltd – UK, Audi -Germany, Ford – UK, Schlumberger – France, Nissan – Japan and Rolls Royce - UK.

He has been supervising and external examiners for a number of PhD and MSc research students, across Europe and has a number of industrial notes and several publications in international/world leading journals and conferences. He has also a number of patents in his areas, of industrial applied research and sustainable technology.

Professor Mahmoud Shafik is a visiting professor for a few universities in EU and Middle East. He is co-leading investigator of BHIMASENA Research and Development Network. He is also the Principal Technology Investigator of the University of Derby and hold the position of Professor AC (Reader) within the Collage of Engineering and Technology and is the founder of International Journal of Robotics and Mechatronics and serving as an editorial board member of a few International Journals. He has been also serving as a Knowledge Transfer Expert for the UK-Egypt UK/Kenya Technology/Knowledge Transfer Network.



Roberto Montemanni

Full Professor at Dept. of Engineering Sciences and Methods, University of Modena and Reggio Emilia, Italy.

Dalle Molle Institute for Artificial Intelligence (IDSIA), University of Applied Sciences of Southern Switzerland (SUPSI), Switzerland.

Roberto Montemanni is professor of advanced algorithms at the University of Modena and Reggio Emilia, Italy, and University of Applied Sciences of Southern Switzerland. He is also active as senior researcher at the Dalle Molle Institute for Artificial Intelligence and as research advisor for PhD students at the University of Lugano, Switzerland.

He obtained a Laurea degree in Computer Science from the University of Bologna, Italy in 1999 and a Ph.D. in Applied Mathematics from the University of Glamorgan, UK in 2002.

He has been leading basic and applied research projects both at national and international levels. His research interests are primarily in the fields of mathematical modelling, algorithms and machine learning, with applications in ICT, transportations, logistics and industrial engineering. He has authored more than 150 peer-reviewed publications.

His main research interests are Operations Research, Machine Learning, Combinatorial Optimization.

Invited keynote/ plenary talks / tutorials / seminars:

13 conference keynotes: IEEE-ICIEA 2019; ICITT 2018; ICTLE 2018; ICTTE 2017; ICITT 2017; IEEE-ICOICT 2016; ICTTE 2016; ICTTE 2015; ICAOR 2015; ICTTE 2014; FORS40; ESM 2012; ICAOR 2012

4 conference tutorials: IEEE-ICOICT 2016; ICTTE 2016; ACM-SAC 2012; MobiCON 2012

12 invited seminars: University of Brescia, 2018; ETHZ Singapore, 2018; University of Modena and Reggio Emilia, 2018; Queen Mary University of London 2016; South China University of Technology 2015; SINTEF 2012; Universit `a del Salento, 2008; ETH Zurich, 2005; Universit `a di Lecce, 2005; Politecnico di Milano, 2004; Technische Universitat Dresden, 2004; IDSIA, 2001

Professor Roberto Montemanni is author of several publications:

6 Edited Books/ Journal Special Issues

65 Journal Articles

21 Chapters in Books and Volumes

62 Articles in Reviewed Conference Proceedings

Professor Roberto Montemanni is evolved in various research projects (as Project Leader/ Author of the Proposal)

6 Swiss National Science Foundation Projects

2 Research Project with Swiss Private Foundations

2 Swiss Innovation and Research Projects (InnoSuisse)

2 Innovation Projects with Swiss Companies

2 EU Research and Innovation Projects

**Silvia Feliu Sotomayor**

Facultad Derecho

Universitat de les Illes Balears, ES

Silvia Feliu Álvarez de Sotomayor es Licenciada en Derecho por la Universidad de Salamanca (1999) y Doctora en Derecho (2005) por la Universidad de las Islas Baleares. Es Prof. Contratada Doctora (2008) en el área de Derecho internacional privado de la Universidad de las Islas Baleares. Ha ocupado los cargos de Vicedecana de la Facultad de Derecho (2009-2013) y actualmente es Asesora jurídica de la Sindica desde 2016.

Su actividad investigadora se ha centrado en Derecho Procesal Civil Internacional; Mediación; Derecho de las Nuevas tecnologías y Derecho del Turismo. Ha participado en siete proyectos de investigación I+D y en contratos de investigación de especial relevancia con empresas turísticas y, actualmente, es Investigadora Principal del Proyecto I+D “Tratamiento legal del Turismo colaborativo y Plataformas online” (DER2017-83073).

Autora de la monografía La contratación internacional por vía electrónica con participación de consumidores (Granada, 2006) y la monografía Viajes combinados y servicios de viaje vinculados. Directiva (UE) 2015/2302. Cuestiones de ley aplicable (2018), y de diversos artículos de investigación en revistas españolas y extranjeras, así como capítulos de libro, entre los que se encuentran “Determinación de la ley aplicable a los contratos internacionales de paquetes dinámicos”, en (AAVV) Paquetes dinámicos: problemas y soluciones jurídicas desde una perspectiva internacional (2014); “Nulidad de las cláusulas de jurisdicción y ley aplicable a la luz de la Ley 13/2014 por la que se modifica el texto refundido de la Ley General para la Defensa de Consumidores y Usuarios”, Revista Electrónica de Estudios Internacionales (2015), “La resolución de litigios en línea aplicada a la comercialización de servicios turísticos”, La Ley Unión Europea 42 (2016), “Package travel and Linded travel arrangements: internacional protection for traders or for travellers?”, en The New Package Travel Directive, Lisboa 2017, entre otros.

Ha presentado ponencias o conferencias en Congresos; Jornadas y Seminarios nacionales e internacionales y ha realizado estancias de investigación en la Academia de La Haya de Derecho Internacional (Holanda); en el Max-Planck-Institut für ausländisches und internationales Privatrecht (Hamburgo, Alemania); en el Max Planck Institut für Geistiges Eigentum Wettbewerbs und Steuerrecht (Munich, Alemania) y en la Bodleian Library Law (Oxford).

**Nuno Dionísio**

Nuno Dionísio, Head of Delivery Centers at Softinsa, an IBM subsidiary company in Portugal, has more than 15 years of professional experience in Management Consulting and IT Management.

Nuno's academic background is a Management Business graduation and a Post-Graduation in Management of Information Systems by Universidade do Minho.

Worked in clients and projects in several industries (Finance, Insurance, Healthcare, Retail, Telecommunications, Public sector) and managed several of them in Portugal, Netherlands, Mozambique and Cape Verde with different job roles such as IT Director of a Banco Comercial de Investimento, Senior Project Manager at Critical Software and Management Consultant in Pricewaterhousecoopers.

As Head of Delivery Centers in Softinsa, the role is to promote the adoption of the best practices related to processes, methodologies (agile) and tools at Delivery Centers in Portugal that can be helpful in the innovation and growth of Softinsa's Clients. Additionally, as part of the job role, ensuring that Delivery Center's staff is skilled, allocated and driven to delivery which is the key to built loyalty and a good customer experience.

**David Mota**

Digital Competence Center Partnership Network Lead (Bizdirect)

David Mota has a Computer Science Degree from Universidade da Beira Interior. David is now responsible for the co-management of the Bizdirect Digital Competence Center, management of development teams, and management of the relationship with Bizdirect partners for the Digital Competence

Center. David is also leads some of the innovation projects and ideas explored at the Bizdirect Digital Competence Center Microsoft Lab.

David began to work as a trainee in Microsoft, where Office 365 was part of his daily work, he then worked as an Office 365 consultant with some of Microsoft Partners. In his last year in Microsoft David worked as a PFE (Premier Field Engineer) helping customers across EMEA with Office 365 migrations and deployments.

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ABSTRACTS

SPECIAL SESSION - MAR, 21 2019

Scientific and Technical Oral Presentations

ICT AND AI FOR HEALTHCARE AND RESCUING TECHNOLOGIES

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ABSTRACT

Information and Communications Technologies (ICT) is becoming pervasive in our society, gaining a role in virtually any aspect of everyday life.

We present recent solutions based on the combination of ICT, Robotics and Artificial Intelligence (AI) and we show how these solutions can be fundamental in achieving significant social and economic benefits in their sectors.

In particular we focus our attention on the healthcare and rescuing domains.

In this talk some recent research results on the use of ICT and AI to control autonomous agents are discussed. Two applications will be presented:

- Autonomous wheelchairs moving indoor based on diffused environmental sensor information. This result has been achieved in the framework of the EU project ALMA [1]. This solution, developed for the healthcare domain and inspired by swarm robotics, is designed to improve the quality of life of mobility-impaired patients;
- Autonomous drones, relying on their own camera only and powered by Deep Learning, able to travel along trails in forest environments [2]. The applications of such a technology to the rescuing domain are important, since it is possible to deploy several autonomous agents in impervious areas to locate persons either lost or injured. The results of a related project [3], where an heterogeneous team composed of humans, robots (flying drones) and animals (dogs) is coordinated to increase the efficiency of rescuing missions, are finally discussed.

Keywords: Artificial intelligence, Robotics, Healthcare, Rescuing

1. ALMA: Ageing without Losing Mobility and Autonomy, <http://www.aal-europe.eu/projects/alma/>

2. On the Visual Perception of Forest Trails, <http://people.idsia.ch/~giusti/forest/>

3. SWARMIX: Synergistic Interactions in Swarms of Heterogenous Agents, <http://swarmix.org>

DIGITAL REINVENTION FOR THE COGNITIVE ERA

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ABSTRACT

Digital transformation isn't enough. Since 2000, over half the names on the Fortune 500 list no longer exist [1]. The case for Digital Reinvention has arrived.

In terms of industry disruption, global executives feel that value chains are fragmenting and being replaced, traditional industries are converging and new ecosystems are emerging.

On the other side, there is a economy E2E (everyone-to-everyone) with distinct characteristics that contribute to the digital reinvention operating environment which contributes with new experiences to a redefined customer through new products and services.

The need for change You can't open a business journal or newspaper today without reading about the impact of technology on business. All around us, industries are being altered, and – in many cases – reinvented by the transformative power of digital technologies. To stay ahead, executives are recognizing the need to change both what they do and how they do it. But change is not easy. Many companies are failing to adapt fast enough to avoid the negative, and at times dire, impacts of disruption.

Keywords: Digital reinvention, E2E, Cognitive, Cloud

[1] Pierre Nanterme, "Digital disruption has only just begun", January 2016

THEMATIC SESSION - MAR, 21 2019

1. Information Technologies Applied on Tourism

ORAL PRESENTATIONS

APLICACIÓN DE LAS TIC EN EL SECTOR DEL ALOJAMIENTO TURÍSTICO, CON ESPECIAL ATENCIÓN A LAS PLATAFORMAS DIGITALES

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ABSTRACT

Las plataformas digitales están modificando los negocios internacionales y se está planteando la necesidad de un marco legal que permita el desarrollo de los nuevos modelos de negocio y al mismo tiempo proteja a los consumidores. La economía colaborativa supone, por tanto, un nuevo reto para el mercado europeo, afectando especialmente en 5 cuestiones clave marcadas por la Comunicación de la Comisión al Parlamento Europeo, al Consejo, al Comité Económico y Social europeo y al Comité de las Regiones: Una Agenda Europea para la economía colaborativa (SWD (2016) 184 final) que serán objeto de estudio en la ponencia.

Las cuestiones se centran en los requisitos de acceso al mercado y en los regímenes de responsabilidad de los sujetos intervinientes en estos nuevos modelos de negocio, especialmente las plataformas digitales. El régimen de responsabilidad de las mismas está acaparando el protagonismo en la jurisprudencia del Tribunal de Justicia de la Unión Europea, así como de los tribunales nacionales. Por otro lado, se presenta como cuestión clave la protección de usuarios. La economía colaborativa desdibuja la frontera entre consumidores y empresa, ya que hay una relación multilateral que puede implicar transacciones entre empresas, empresas y consumidores, consumidores y empresas, y consumidores. Esto plantea la cuestión central de qué condiciones deben darse en una prestación de servicios entre pares para que el prestador del servicio subyacente pueda considerarse un comerciante. La economía colaborativa plantea problemas también en materia de Derecho laboral, así como en el ámbito fiscal. Si bien estos son los retos más destacables para la Comisión, no son los únicos. La economía colaborativa extiende sus problemas en todo el ámbito jurídico y plantea, en definitiva, cuestiones relacionadas con la aplicación de los marcos jurídicos existentes, lo cual crea una incertidumbre sobre las normas aplicables.

Palabras Clave: TIC's, sharing economy, alojamiento turístico, plataformas digitales

THE IMPORTANCE OF STORYTELLING FOR CULTURAL TOURISM

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ABSTRACT

Introduction: Cultural tourism is progressively growing, being responsible for the diversification of goods and services of tourist products. More destinations recognize the importance of spreading their traditions, as they represent their cultural identity (Talavera, 2003). In this context, storytelling acts as a promoter of the intangible culture, bringing tourists closer to the places visited, through inspiring narratives, facts and myths. These stories operate as a mechanism for transmission of knowledge, with the aim of exalting past events, historical figures, expressions, behaviors and local customs.

Objectives: Storytelling is not limited to reporting events. It enables tourists to connect with the visited destination in a sensorial way, allowing a closer relationship with the community, with its locals and with their culture. This study aims demonstrate the impact of local history and storytelling on tourists visiting UNESCO World Heritage sites.

Methods: The empirical study was carried out by conducting surveys in Historical Centers recognized by UNESCO in Portugal: Évora, Guimarães and Porto.

Results: This article intends to collaborate for the study of storytelling in the tourist market. Despite an extensive literature review, research on this subject is scarce. The discussion centers on the contribution of storytelling to the promotion of cultural tourist destinations.

Keywords: Cultural Tourism, History, Storytelling, Heritage Centers

MONTE CARLO SAMPLING FOR THE TOURIST TRIP DESIGN PROBLEM

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ABSTRACT

Introduction: The Tourist Trip Design Problem is a variant of a route-planning problem for tourists interested in multiple points of interest. Each point of interest has different availability, and a certain satisfaction score can be achieved when it is visited.

Objectives: The objective is to select a subset of points of interests to visit within a given time budget, in such a way that the satisfaction score of the tourist is maximized and the total travel time is minimized.

Results: In this work we demonstrate that the existing model of the Probabilistic Orienteering Problem fits a probabilistic variant of this problem and that Monte Carlo Sampling techniques can be used inside a heuristic solver to efficiently provide solutions.

Keywords: The Tourist Trip Design Problem, Probabilistic Orienteering Problem, Monte Carlo Sampling, Combinatorial Optimization

O CONTRATO DE HOSPEDAGEM COM BASE EM PLATAFORMA DIGITAL

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ABSTRACT

Introduction: It is intended to study the accommodation contract for tourists on short-term stays, with provision of other services ancillary to accommodation, however considered by Portuguese law as non-tourist services, marketed through digital platforms. Analyzing it as a social, commercial and commercial phenomenon, its various forms of marketing and the regulation to which it is subject, both within the European Union and in the Portuguese legal order.

Objectives: A study will be carried out on the contract that aims to commercialize the types of accommodation that currently integrate the category of local accommodation when marketed through online platforms.

It is also intended to ascertain whether the rules in the European Union and in Portugal in relation to this contract satisfy the needs felt by the various subjects in the legal relations established, as well as by the other competing interests.

Methods: Juridical

Results: It will be sought to contribute to a definition of the terms and characteristics of this type of contract, in order to contribute to a better regulation of the activity of the, usually referred to as collaborative accommodation, both for accommodation providers and for companies which commercially exploit the marketing platforms for this type of accommodation.

Conclusion: It will be approached some considerations of this type contract, in order to analyse if the current legal regime is the one who protects the best way all the interests of all the involved actors.

Keywords: Sharing tourism, local accommodation

VIRTUAL PLATFORMS, TOURISM SERVICE PROVIDERS AND TOURISTS: THEIR POSITION IN COLLABORATIVE TOURISM

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ABSTRACT

Introduction: The rise of new technologies has undoubtedly changed the way of contracting, and collaborative tourism is a good example of this. This has led to the redefinition of concepts that until now were peaceful for both doctrine and jurisprudence. In this way the emergence of the so-called collaborative tourism has generated the need to rethink issues as if a collaborative platform meets the conditions to be considered a trader, if the provider of the underlying tourism service is a trader, or if the tourist is a consumer. Internet has also caused the changing from the tourist who went to the travel agency to schedule and hire his trip to the tourist who configures and hires his vacation from his home through a computer, or the tourist who performs these operations through his Smartphone.

Objectives: In this work we will try to define and adjust the ideas of travel agency-virtual platform, service provider-merchant, and tourist-consumer to this new reality.

Methods: logical-deductive legal method

Results: There are no results in this method

Conclusion: To get a secure contracting process for all the subjects involved.

Keywords: Tourist; platform; merchant; consumer; virtual

COLLABORATIVE TOURISM: AN APPROACH TO THE PROBLEMS OF LIABILITY OF DIGITAL PLATFORMS FOR HOUSING MARKETING

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ABSTRACT

Introduction: This work aims to analyse the issues of civil liability arising from the new forms of contracting tourism services and, in particular, the so-called collaborative tourism applied to tourist accommodation, all from an European law perspective. Thus, the main characteristics of collaborative tourism and their implications in the field of subjective and objective civil liability will be presented, especially in the relationship established between intermediaries and users of collaborative tourism platforms for renting tourist accommodation.

Objectives: To establish if the legal framework regarding liability is adequate to this new forms of business and, if not, to explore different paths.

Methods: logical-deductive legal method

Results: There are no results in this method

Conclusion: Extension of objective civil liability (strict liability) to the holders of tourist rental platforms.

Keywords: Tourism; liability; accommodation; users; platforms

SPATIAL AND STATISTICAL ANALYSIS OF TOURISM INDICATORS – CONTRIBUTION TO TOURISM ACCOMMODATION PLANNING

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ABSTRACT

Introduction: Considering the importance of tourism in the region of Viseu Dão Lafões which is differentiated by cultural values, thermal resources and wine-growing heritage, technologies of spatial and statistical analysis are essential for strategic planning in tourism in the region.

Objectives: Analyze and map the tourism supply and demand, by municipality, regarding annual tourism indicators, with integration of GIS and statistical analysis.

Methods: We used data of the INE tourism indicators by municipality and the CAOP2018. GIS was used to delimit the study area, georeferentiation and spatial analysis. Descriptive analysis of differences in tourism indicators between municipalities was integrated applying Kruskal-Wallis test ($\alpha = 5\%$) and cluster analysis. The software SPSS (version 25) and ARCGIS (version 10.5) were used.

Results: In the tourism accommodation sector, there are statistically significant differences between municipalities in accommodation capacity, number of guests and overnight stays, total revenue and net bed occupancy rate, especially the differences from Carregal do Sal and Oliveira de Frades to S. Pedro do Sul and Viseu. By cluster analysis applied to every and each indicator under study, the municipalities can be grouped in 4 clusters, despite individual differences. We produced digital cartography to support the main results from spatial and statistical analysis.

Conclusion: Despite tourism growth in the region, our study shows statistical differences in the indicators analyzed between municipalities.

Keywords: tourism indicators; accommodation; Viseu Dão Lafões; cluster analysis; GIS.

A RELAÇÃO (APARENTEMENTE) DISTANTE ENTRE TURISMO RURAL E CERTIFICAÇÕES AMBIENTAIS - ESTUDO DE CASO DA REGIÃO VISEU DÃO- LAFÕES

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RESUMO

Introdução: Numa altura em que os problemas ambientais atingem proporções alarmantes, as certificações ambientais e a responsabilidade social dos empreendimentos de turismo, em particular do turismo rural, parecem ganhar força. Mas para que os turistas tenham conhecimento dos empreendimentos ambientalmente sustentáveis e com responsabilidade social, as tecnologias de informação e comunicação são fundamentais. Efetivamente estas ferramentas ajudam a promover o respetivo empreendimento de turismo rural, conferindo-lhe geralmente um posicionamento que o distingue dos demais.

Objetivos: O objetivo deste estudo é o de explorar o uso das tecnologias de informação e comunicação no turismo rural na Região Viseu Dão-Lafões e a sustentabilidade dos mesmos.

Metodologia: Para além da revisão da literatura, foram observadas as páginas web dos empreendimentos de turismo rural na RVDL. Para os empreendimentos que possuem certificações ambientais foi ainda observado qual ou quais são as que ostentam.

Resultados: Os resultados revelam que poucos são os empreendimentos de turismo rural da RVDL que aparentemente possuem certificações ambientais. Mesmo **que** assim não seja, pela observação da página web dos empreendimentos essa não é comunicada.

Conclusões: A ausência de certificações ambientais ou a sua não divulgação assume-se como uma fragilidade que deve ser criteriosamente ponderada pelos promotores de turismo rural da região.

Palavras Chave: Turismo Rural, Viseu Dão-Lafões, Sustentabilidade ambiental

Agradecimentos: Este trabalho é financiado por fundos nacionais através da FCT – Fundação para a Ciência e a Tecnologia, I.P., no âmbito do projeto UID/Multi/04016/2016. Agradecemos adicionalmente ao Instituto Politécnico de Viseu e ao CI&DETS pelo apoio prestado.

AS CERTIFICAÇÕES AMBIENTAIS EM PROL DO DESENVOLVIMENTO DO TURISMO RURAL

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RESUMO

Introdução: Numa era de problemas ambientais crescentes, as certificações de índole ambiental dos empreendimentos de turismo, em particular do turismo rural, assumem hoje uma importância fulcral. Uma boa parte do mercado tende efetivamente a procurar um empreendimento sustentável. Daí que as tecnologias de informação e comunicação, sejam fundamentais para a transmissão dos empreendimentos ditos “amigos do ambiente”.

Com efeito não só promotores, mas também empresas de e-commerce no ramo das viagens tomam consciência desta realidade e necessidade, tentando comunicar habilmente a respetiva oferta turística sustentável. Um exemplo notável que realça a importância da sustentabilidade ambiental e mais valias da utilização das tecnologias de informação e comunicação, está localizado na Região Viseu Dão-Lafões (RVDL), mais precisamente numa das comunidades mais interiores da mesma.

Objetivos: Tomando como unidade de análise um empreendimento de turismo rural na RVDL, o objetivo deste estudo é explorar a importância das ferramentas de informação e comunicação na comunicação/promoção da sustentabilidade ambiental e respetivas certificações ambientais.

Métodos: O estudo utiliza uma metodologia de estudo de caso, implicando o uso de diversas fontes de informação. Neste caso, recorreu-se à informação documental e a uma entrevista semiestruturada à promotora do empreendimento de turismo rural.

Resultados: Seja no desenvolvimento e atualização da página web, redes sociais, resposta a avaliações no TripAdvisor/Booking e atualização de canais de divulgação quando são feitas reservas, a promoção/comunicação da oferta turística mais sustentável através das novas tecnologias de informação e comunicação, ocupa a maioria do tempo que a promotora dedica ao empreendimento.

Conclusões: A existência de uma conduta ambiental por parte do empreendimento de turismo rural, e a comunicação dessa conduta, assume-se como um ingrediente fundamental para o sucesso da atividade turística do empreendimento e para a atração de um novo turista mais preocupado com as questões ambientais.

Palavras Chave: Turismo Rural; Sustentabilidade Ambiental; Tecnologias de informação e Comunicação.

Agradecimentos: Este trabalho é financiado por fundos nacionais através da FCT – Fundação para a Ciência e a Tecnologia, I.P., no âmbito do projeto UID/Multi/04016/2016. Agradecemos adicionalmente ao Instituto Politécnico de Viseu e ao CI&DETS pelo apoio prestado.

THE DIGITAL TOURISM AND THE IMPACT OF MARKETING 4.0

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ABSTRACT

Introduction: This paper has attempted to reveal the transformative influence of technology in tourism activities. According to Amadeus Travel Intelligence, the future travel industry isn't just about moving people from A to B, unveiling new destinations, or organising trips. Megatrends in digital technology and society are connected with "Digital trends in tourism". Marketing 4.0 emerged in consequence of various changes sourced from intense global competition, new type of consumers and rapid development in technologies (Vassileva, 2017, p. 47-56).. Instead it is about a thoroughly progressive, completely 360-degree view of the traveller and everything that goes into creating special, unique, memorable experiences. Digital Tourism has in the literature many different names and are diferente its application as DT – digital tourism, e-Tourism – electronic tourism and e-tourist – electronic tourist (Gelter, 2017).

Objetives: Is very importante to analyse the impact of the shared economy on the creation of platforms based on the P2P business model and how it is significant in the tourism sector. In addition to physical products, technology has also affected the basic characteristics of the service.

Methods: In this chapter it will be presented a theoretical analysis about digital tourism and sustainable development. Nowadays, consumers can easily get information about the services they need or want using web technology. They are interested in through search engines, web sites, social media environments, blogs, forums, satellite images, animations, videos and photos (Sun, 2012, p. 106-111)

Results: However, businesses should move to Marketing 4.0 in order to survive in the digital tourism era. It depends on management of big data therefore businesses should invest in talento management in order to train and/or hire employees who make advanced analysis by using big data.

Conclusion: Moreover, technology continues to improve rapidly. Thus, fast movement is the most important business asset now. Tourism business should speed up their marketing activities and follow the changes continuously in order to contribute to a more sustainable world through ethically correct consumption including ethical tourism.

Keywords: Digital tourism, marketing 4.0, sustainable development, technologic information.

SPECIAL SESSION - MAR, 22 2019

Scientific and Technical Oral Presentations

MEDICAL CARE PLATFORM SOLUTION FOR PEOPLE WITH LONG TERM HEALTH CONDITION BASED ON WIRELESS SENSORS NETWORK TECHNOLOGY

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ABSTRACT

Many of the Ambient Assisted Living Technologies (AALT) available in the market to the end-users with long term health condition have no common inter-operational protocol. Each product has its own communication protocols, different interfaces and interoperation which limits their solution reliability, flexibility and efficiency.

The main intention of this talk is to share the state-of-the-art of our inventive assisted living platform solution for people with long term health condition based on wireless sensors network technology. The front-end of the platform solution includes multi feedback wireless sensor arrangements. Each sensor has been integrated with the necessary near-real-time embedded and wireless protocols that allow data collection, transfer and interoperate in ad-hoc bases. The data has been communicated wirelessly to central data base system and shared through cloud network. The collected data has been processed and relevant intelligent algorithms has been deployed using edge computing technology to ensure certain actions taken place when health condition warnings arise.

It is much believed that the platform solution will provide the reliability, flexibility and efficiency to analyse most of the health conditions based on near real time monitoring technology. It will enable the population with long term health condition to manage their daily life activities within multiple environments i.e. from their comfort home, care centres and hospitals. It will also allow caring and assisting robotics system to communicate emergency information and unexpected malfunction need immediate attention. The talk is to conclude with some of the technological challenges and governing regulations that still facing the healthcare industry to ensure end-users integrity and dignity have been maintained.

Keywords: Assisted Living Technologies; Intelligent Algorithms; Wireless Sensors

COGNITIVE SERVICES AND REAL APPLICATIONS INTO DAILY SCENARIOS

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ABSTRACT

The democratization of the artificial intelligence (AI) systems, brings to the IT companies, like us, another world of possibilities to integrate AI in the Applications. In our days more than ever we have the opportunity to bring together a lot of different technologies, and intelligent systems to solve some of the most commons challenges that companies face every day. The big fabricants like Microsoft are just creating very powerful AI platforms and let them be available for all of us in a very fast way. In this session we will explore some of those technologies that use AI and map them with real challenges of the real world.

Keywords: Artificial Intelligence; Information Technologies; Intelligent Systems

THEMATIC SESSION - MAR, 22 2019

2. Information Technologies Applied on Social Context

ORAL PRESENTATIONS

IMS4EP - INDOOR MONITORING SYSTEM FOR ELDERLY PEOPLE

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ABSTRACT

Introduction: Today there are significant changes in the institutions that support older people, namely IPSS. The use of information systems increasingly powerful and able to monitor in real time both vital signs and the location of people, is contributing to significant changes in the functions that these institutions have in society, from the mere treatment of disabling diseases and palliative care, for the prevention and monitoring of users, promoting their mobility and improving the quality of life.

Objectives: The main objective of the system presented here is the acquisition of information related to the health of IPSS users indoor context, in a discreet and non-intrusive way, through information and communication technologies in order to allow the institution not only to follow up on real time of the state of its users as the family leaders.

Methods: The use of sensors, which can be incorporated into clothing, accessories and day-to-day objects, will enable the use of high-speed communication networks, wireless communication technologies, ubiquitous computing and embedded systems. Sensors no longer need to be invasive to accurately monitor a patient's health status.

Conclusion: Whereas the systems oriented to the monitoring and management of people's data are in a state of great evolution, that pervasive and ubiquitous computing is present in our daily lives, from small devices such as blood pressure meters to larger equipment such as appliances, energy efficiency controllers and more, this work will have a significant impact on the quality of life of IPSS users, especially the older population.

Keywords: IoT, Ubiquitous Computing, Monitoring Systems, ICT

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RETEMP – REMOTE TEMPERATURE MONITORING

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ABSTRACT

Controlling environments as always played an important role either in organizations or in our home. Nowadays Internet of Things (IOT) give us the opportunity to control and to be advised in real time about those environments.

Temperature is one of the most important things to control in an environment. If temperature is higher than the expectable in a room, may indicate a problem. If the difference is only a couple of degrees, may indicate, for example, an air conditioned malfunction. But if the difference is much higher, maybe a fire can be happening.

There are a lot of different temperature sensors, like contact or infrared, most of them can be plugged to devices (eg. Raspberry, Arduino,...) in order to be give them the possibility to store and communicate the temperature.

ReTemp – Remote Temperature Monitoring is the project we present in this paper as a proof of concept with two elements: a web based information system; and a remote temperature monitoring system (Raspberry PI 3 with an infrared sensor).

The remote systems monitors a room, and send temperatures to the information system, with a regular intervals, using internet connection. The information system store those readings and compare it to the defined ranges. If they present significant differences, then alerts (eg. sms, emails,...) can be send.

As told this project is a proof of concept, and it is a working progress. For now the project is developed and in tests. After that we intended to add other sensors to the remote system, and to explore other applications.

Keywords: Monitor Systems, Raspberry, IR Temperature, IoT

UPSENIORES - APLICAÇÃO PARA A 3ª IDADE

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RESUMO

A esperança média de vida tem vindo a aumentar nas últimas décadas, associado ao tipo de vida da população ativa, obriga a que os mais idosos passem muito tempo sozinhos ou em instituições. Existe uma clara necessidade de desenvolver atividades que os ocupem e que promovam um envelhecimento ativo.

A procura de soluções tecnológicas viáveis e utilizáveis por estas faixas etárias, foi o impulsionador deste trabalho.

Foram desenvolvidos em Flash, cinco jogos didáticos. Divididos em 3 grupos: Sob o tema Pares foram desenvolvidos dois jogos, o primeiro, tem como objetivo encontrar o par correto, em peças viradas ao contrário. O segundo, tem com o objetivo eliminar todas as peças, formando pares. Sob o tema Bubble, foi desenvolvido um jogo com o objetivo de formar grupos de três ou mais bolas com o mesmo padrão, de modo a evitar que o ecrã fique preenchido. No tema, Puzzle foram desenvolvidos dois jogos, o primeiro, que apresenta um conjunto de peças, tendo como objetivo colocar as peças no sítio de modo a formar o padrão escolhido, por troca sucessiva das peças contíguas, o segundo, idêntico ao anterior, no entanto sendo possível colocar as peças na posição correta, arrastando-as.

Foram realizados testes com o público alvo, de modo a identificar problemas de usabilidade e jogabilidade, bem como observar a reação dos utilizadores à medida que usam o jogo.

Conclusão: Com base na observação das sessões realizadas, constataram-se algumas dificuldades, no que diz respeito à questão das tecnologias. Em relação à jogabilidade constatou-se a necessidade de acompanhamento inicial para adaptação às regras e dinâmica dos jogos, no entanto depois de apreendidas as regras e a dinâmica foi demonstrado um elevado interesse.

Palavras Chave: Aplicação Multimédia para Idosos, Computação centrada no idoso, Jogos Didáticos para Idosos, Aplicação Flash.

ICT CHALLENGES TO ELDERLY SUPPORT – PROFILE AND NEEDS DIAGNOSIS OF NON- INSTITUTIONALIZED ELDERLY, IN LAMEGO MUNICIPALITY

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ABSTRACT

Introduction: This paper intends to present a study about the importance of adapting the current social services to the profile, preferences and effective needs of the elderly individual, developing adapted solutions, with the support of ICT.

Objectives: To identify the challenges of ageism; To realize the importance of adapting the services provided by social organizations to the elderly population; To present the profile of the non-institutionalized elderly in the municipality of Lamego; To present a proposal of intervention, according to the defined profile.

Methods: In the empirical dimension of research, essentially descriptive in nature, a pre-test form was used, which served as the basis for a structured interview, administered personally to 33 elderly people from the county of Lamego, selected according to the principles sample for convenience. Data was submitted to SPSS software, version 25.0, using descriptive statistics measures selected to answer to the proposed objectives.

Results and conclusions: The present study presents the profile of the non-institutionalized elderly in the municipality of Lamego, as well as the proposal of social services adapted to the needs and tastes identified, with the design of technological systems for monitoring and supporting the daily activities of these individuals.

Keywords: Profile of the elderly; diagnosis; needs; innovation in social services; ICT.

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THE FACTORS THAT CONDITION THE ADOPTION OF MOBILE HEALTH (MHEALTH) AMONG YOUNG PEOPLE

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ABSTRACT

Introduction: Health issues have always been very relevant in all spheres of society. With the increasing use of the Internet and mobile technologies, it has become vital to understand what conditions the adoption of Mobile Health (mHealth).

Objectives: To analyze the factors that determine the adoption of mHealth among young people, who have never used this technology before.

Methods: Reviewing of the literature on the concepts: Perceived Health Condition, e-Health Literacy, Perceived Health Competence and Adoption of mHealth (integrated in the conceptual model); elaboration and application of a structured questionnaire; and subsequent statistical analysis of the data collected.

Results: Focusing on what affects the consumer behavior in relation to mobile health technologies, the result provides a set of recommendations to companies that belong to this sector, to the government for the elaboration of public health policies and to the theoretical field with the production of content on this topic.

Conclusion: As it is a Research Project, it is expected that it will be able to produce relevant insights about what influences the adoption of mHealth, in order to enrich the existing theory.

Keywords: Adoption of Mobile Health; Perceived Health Condition; e-Health Literacy; Perceived Health Competence; Technology.

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VIAS | VISEUINTERAGESTORIES: A COLLABORATIVE INTERGENERATIONAL MOBILE APPLICATION

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ABSTRACT

Introduction: The exploration of reminiscences and memories of senior adults has been recognized as a good strategy to promote their real integration and inclusion, making them more active and participatory. Many of these reminiscences and memories are embodied in the places of their personal stories. On the other hand, participation in intergenerational activities is also a strategy explored to increase the concept of self-esteem of the elderly person.

Objectives: It is intended to develop an application for mobile devices (App) that allows the intergenerational meeting for senior people and children to tell stories about significant places in their city.

Methods: Taking the city of Viseu as scenario, an App was developed in a participatory methodological approach, through the realization of several intergenerational workshops.

Results: The application requirements were obtained through those iterations with the user pairs and with technical tests, that the development team accomplished through the use of other applications. From this survey it was possible to establish the requirements for the App: stories should be georeferenced and locally uploaded; stories should allow multiple representation integrating multimedia formats such as text, image or sound; allow participants, while walking in the city, to access stories previously upload by other participants.

Conclusions: The prototype was developed for the Android platform and allows children and seniors to "upload" georeferenced stories by adding text, picture, or audio to places while they wander around Viseu city. Tests with children and seniors showed the motivation and the involvement of both generations in this activities and have produced very interesting collaborative histories about several places.

Keywords: mobile app, social inclusion

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HEART RATE MONITORING WITH ARDUINO COMPATIBLE SENSORS

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ABSTRACT

Introduction: Based on socially vulnerable people (health problems, with age, subjected to high physical effort ...), it is necessary to implement low cost measures, to automatically monitor their heart rate, in order to preserve life and improve the quality of life.

Objectives: The aim is to develop a complete system (hardware and software) that allows a real-time monitoring of the heart rate, as well as the treatment of (historical) stored results.

Results: The developed system is equipped with an SOS system that detects when a user is rhythm passes the allowable limits (for normal functioning of the human heart, these being adjusted according to age). In this situation, an SOS request is sent to a contact pre-selected by the user, including: user name, type of problem, number of heartbeats and their location.

Conclusions: From the developed system results a practical prototype, which allows the validation of a set of technologies, which can serve as a basis, for the massification of this type of system(s).

Keywords: Cardiac Rhythm; Arduino; Bluetooth; Smartphone; Cloud - Data Storage.

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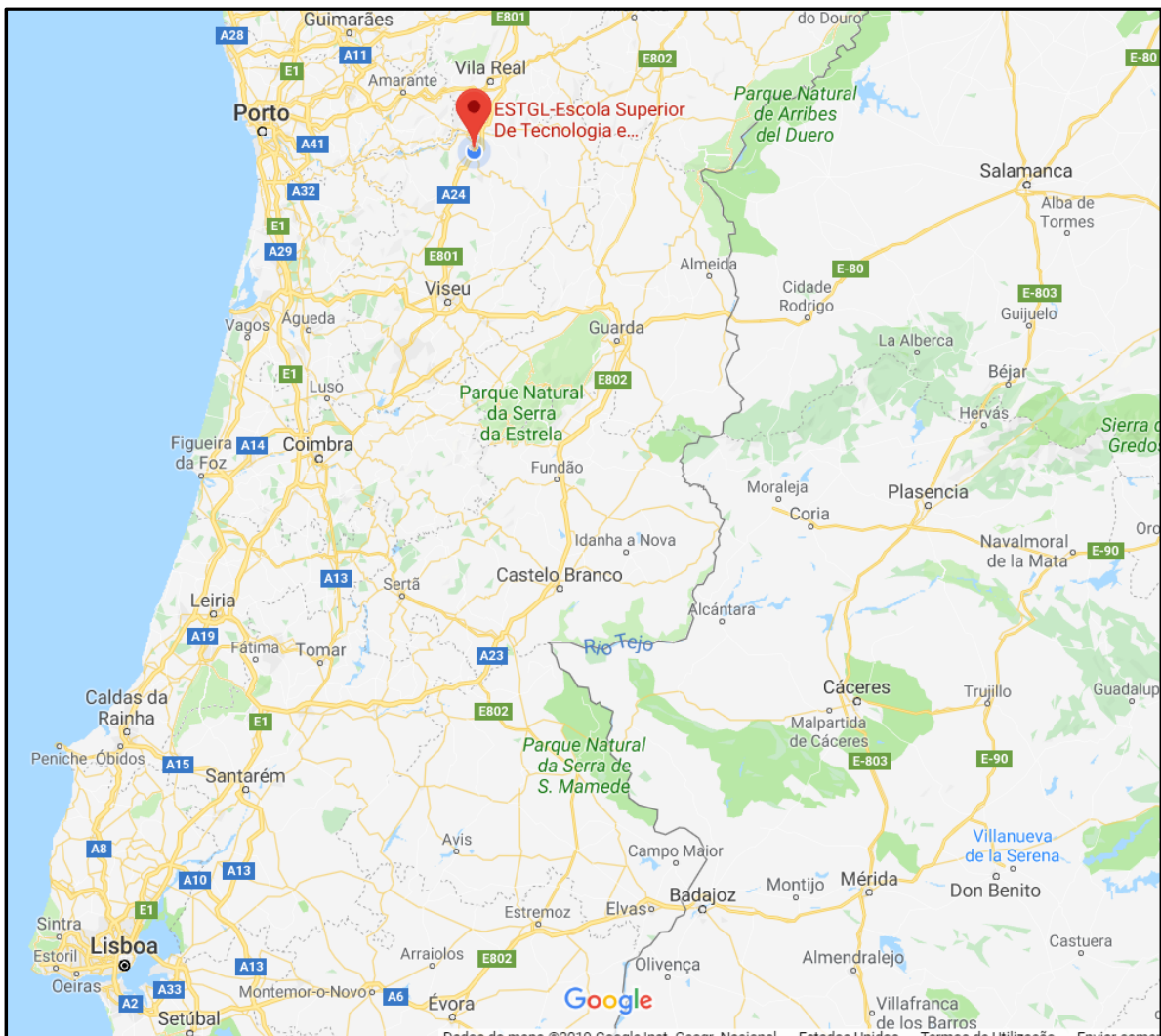
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