An Adaptive trust-based e-assessment System for Learning
TeSLA
(Technical Annex. Sections 4-5)

Topic: ICT-2015-20 Technologies for better human learning and teaching [c) Innovation Action]

Name of the coordinating person: Ana Elena Guerrero Roldán (aguerreror@uoc.edu)

List of participants

Participant no.	Participant organisation name	Participant short name	Country
1 (coordinator)	Fundació per a la Universitat Oberta de Catalunya	UOC	Spain
2	European Association for Quality Assurance in Higher Education AISBL	ENQA	Belgium
3	Université de Namur ASBL	UNamur	Belgium
4	Agència per a la Qualitat del Sistema Universitari de Catalunya	AQU	Spain
5	LPLUS GmbH	LPLUS GmbH	Germany
6	Open Universiteit Nederland	OUNL	Netherlands
7	Sofiiski Universitet Sveti Kliment Ohridski	SU	Bulgaria
8	The Open University	OU	UK
9	Protos Sistemas de Información, S.L	PROT-OS Soluciones Educativas	Spain
10	Institut Mines-Télécom	IMT	France
11	Imperial College of Science, Technology and Medicine	IMPERIAL	UK
12	Technical University of Sofia	TUS	Bulgaria
13	Anadolu University	AU	Turkey
14	Jyväskylän Yliopisto	JYU	Finland
15	European Quality Assurance Network for Informatics Education, e.V.	EQANIE	Germany
16	Instituto Nacional de Astrofísica, Óptica y Electrónica	INAOE	Mexico
17	Fondation de l'Institut de Recherche IDIAP	IDIAP	Switzerland
18	WFSW, S.A.	Watchful Software	Portugal

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Section 4: Members of the consortium

4.1   Participants (applicants)

4.1.1   Fundació per a la Universitat Oberta de Catalunya (UOC)

A state-of-the art technological university with a highly **innovative learning model**, providing a benchmark for quality in both teaching and R&D. This is the philosophy of the *Universitat Oberta de Catalunya* (UOC, Open University of Catalonia), created in **1994** as one of the world's very first completely online Higher Education establishments and that currently has more than 50,000 **students**. The UOC's core goal is to be **the university of the knowledge society**, promoting innovative education, personalised learning, technological leadership, R&D work on the information society and eLearning and the dissemination of knowledge. The UOC promotes **R&D activities** via 45 **groups** linked to a study or to one of the university's two centres: the eLearn Center, which studies eLearning, and the **Internet Interdisciplinary Institute** (IN3), specialising in the study of the **networked society** and the **knowledge economy**, network **technologies** and specific software areas. In total, more than 400 people work in R&D at the UOC. Over the last five years, the UOC has participated in more than **260 R&D projects**, e**ither national** or **European**. What is more, the UOC works to promote **knowledge transfer** and has, over the last four years, signed **more than 1,000 agreements** to this end. The UOC forms part of **more than 30 international networks**, including the European University Association (EUA), the International Council for Open and Distance Education (ICDE) and the IMS Global Learning Consortium.

Partner role

The UOC will mainly work in the overall management of the project in order to achieve the TeSLA goals. As an online university that was born in 1994 with its own virtual learning environment, the UOC team has a successful expertise in how the teaching and learning process is conducted through the net. Thus, the educational framework behind the project will be lead by this institution (WP2).

Due UOC expertise in the development in new technologies for its own learning environment and the continuous pilots that we always are performing for improving our virtual campus, we will foster participate in the large scale pilots (WP7) and their evaluation (WP8) providing learners to different pilots for testing the TeSLA system (Computer Science, Psychology and Business bachelors learners among others). Due the variety of degrees and bachelors offered by our institution, and the number of learners enrolled into them, UOC will provide a balanced number of learners for large scale pilots. Moreover, it will contribute to legal and ethics issues at national level (WP3).

Besides this, the UOC will intensively collaborate with other online, distance, traditional and blended universities included into the consortium in order to provide an European framework and the e-assessment system for educational porpoises. Our university will also collaborate in the technological development and requirements (WP5) to integrate TeSLA system into virtual learning environments enhancing the interoperability and scalability of the system (WP6). UOC will also collaborate in the dissemination of the project through papers and conferences, and the organization on the final international TeSLA show. In addition to this, UOC can contribute to exploit the TeSLA system in South America market (WP9).

Key personel

Dr. Ana Elena Guerrero Roldán (female) holds a PhD focused on eLearning and technology by the Open University of Catalonia (UOC). She has a Bachelor in Pedagogy from the Ramon Llull University and is a specialist in online education. She is a lecturer at the Computer Science, Multimedia and Telecommunication Studies at UOC. She is a member of the Digital Literacy area which provides a compulsory subject related with a set of ICT competencies in all university Bachelor's degrees. She has participated in several national and international research projects related with the teaching and learning process in distance learning environments. in several national and international research projects related with the teaching and learning process in distance learning environments. She focuses her research on the design of technology enhanced systems for online teaching and learning processes, focusing in the e-assessment and feedback issues. She developed an adaptive learning path system for online Higher Education that respond to users' needs from both personal and educational perspectives using ICT.

Dra. Ana Elena Guerrero will be involved in UOC tasks within WP1, WP2. These WP are related with the management of the project as well as the definition of the e-assessment framework for educational institutions behind the project. She is the PC (project co-ordinator)

Dr. Josep Prieto-Blázquez (male) he obtained his Ph.D. in Computer Science from the Open University of Catalonia (UOC), Spain. He also holds a master's degree in Computer Science from the Universitat Politècnica de Catalunya-BarcelonaTech (UPC), Spain. Since 1998, he has worked as a lecturer in the Computing, Multimedia and Telecommunication Studies Department at the UOC, where he has been the director of the Computer Engineering degree course since 2001 and the dean since 2013. His line of research focuses on exploratory and application technology in the field of ICTs. He has participated in wireless, free software and virtual learning environment projects, and is also a member of the Mobility, Multimedia and Multidevice innovation group (mUOC) and of the Cryptography and Information Security for Open Networks (KISON) research group. He is currently the Dean of the Computing, Multimedia and Telecommunication Studies (UOC).

Dr. Josep Prieto will be involved in UOC tasks within the WP5, WP6 and WP9. These WP are centered in the design and the integration of the TeSLA system from a technical point of viwe. He will also be actively involved in the dissemination and explotaition WP.

Dr. Xavier Baró (male) received his B.S. degree in Computer Science at the Universitat Autònoma de Barcelona (UAB) in 2003. In 2005 he obtained his M.S. degree in Computer Science at this university, and in 2009 the Ph.D degree in Computer Engineering. At the present he is a lecturer and researcher at the IT, Multimedia and Telecommunications department at Universitat Oberta de Catalunya (UOC). He is involved on the teaching activities of the Computer Science, Telecommunication and Multimedia degrees of the UOC, and collaborates as professor assistant on the teaching activities of the Computer Science degree at the Applied Mathematics and Analysis of the Universitat de Barcelona (UB). In addition, he is involved on the Interuniversity master on Artificial Intelligence (UPC-UB-URV). He is co-founder of the Scene Understanding and Artificial Intelligence (SUNAI) group at the Internet Interdisciplinary Institute (IN3) of the UOC, and collaborates with the Computer Vision Center of the UAB, as member of the Human Pose Recovery and Behavior Analysis (HUPBA) group.

Dr. Xavier Baró will be involved in UOC tasks within the WP5 and WP6 with tasks related to the biometric and system integration on the UOC campus. He will also be involved in pilots conducted in WP7 on the UOC subjects.

Dr. M. Elena Rodríguez-González (female) received her B.Sc. and Ph.D. degrees in Computer Science from the Universitat Politècnica de Catalunya and Universidad de Alcalá, respectively. Since June 2001, she is a lecturer at the Computer Science, Multimedia and Telecommunication Studies of the Universitat Oberta de Catalunya (UOC) with a permanent position. She has participated in several national and international research projects devoted to the development of technology that applies the Semantic Web to eLearning specifications and standards. Her current research interests deal with knowledge representation with particular application in technology enhanced learning. From a teaching perspective, she coordinates Undergraduate and Master database courses.

Dra. Elena Rodriguez will be involved in UOC tasks within the WP5 and WP7, which are basically centered in to design the TeSLA system and she will also be in the development of pilots with her UOC subjects.

Dr. David Baneres (male) is an expert in the field of learning digital systems, intelligent tutoring systems and distance education. He is a lecturer at the IT, Multimedia and Telecommunications Department in the Universitat Oberta de Catalunya in the specialty of Computer Architecture and Microelectronics. His research interests and publications are in the field of design EDA tools for high-speed circuits and intelligent tutoring systems for distance learning. Recently, he has participated in 3 national (Spanish) research projects and more than 5 internal innovation projects at the university.

Dr. David Bañeres will be involved in UOC tasks within the WP5, WP 6, with tasks related to the plagiarism detection and the forensic analysis and its integration in UOC system.

Dr. Mercè Boixadós Anglès (female) is a lecturer at Psychology and Educational Science department at UOC, Program Director of Master of the Society of Information and Knowledge and she is a member of the PSINET (Psychology,Health & the Net) research group in Internet Interdisciplinary Institute (IN3). From 1991 to now she is teaching subjects related with Data Analysis and Research Methods. Her research interests and publications are in the fields of values in sport, and in the analysis of the psychological aspects associated with the use of ICT in relation to health and the quality of life of people. She participates in different competitive projects (10 projects). And from 2003 to 2011 she coordinated two of these projects (with a budget of 84.000 €).

Dra. Mercé Boixados will be involved in UOC tasks within the WP7, which is basically centered in the development of pilots and its evaluation in WP8.

Dr. Adriana Ornellas (female), PhD in Pedagogy, is currently a full-time Lecturer at the Computing, Multimedia and Telecommunication Department of the UOC. She is an associate researcher at the eLearn Center of the UOC where her

research focuses on: emerging environments and technologies for learning in contemporary society; initial training and professional development of teaching staff in ICT; new literacies in the digital society; and collaborative teaching and learning in virtual environments. She has participated in a range of national and international competitive projects and has numerous publications in her research field.

Dra. Adriana Ornellas will be involved in UOC tasks within WP2 and WP7. These WP are related with the definition of the e-assessment framework for educational institutions behind the project and she will be also conducting pilots.

Israel Conejero Arto. (male) He is R&D Project Manager Advisor at the eLearn Center at the UOC, where he works since 2006. He holds a Master in Education and ICT and a Degree in Business, specialised in Financial and Marketing strategies. He has a long-standing experience in the **management** of national and international projects (European, USA and Latin-American) in the fields of Learning and ICT. Related to Erasmus+, he has participated in the coordination teams of two other EC funded projects: SpeakApps (2010 and 2012, UOC) and HANDSON (2012). He is specialised in project management of large consortia and budgets of up to 15 million euro. He is also experienced in entrepreneurship. He is a facilitator of web 2.0 and mobile learning tool courses for adults for the Provincial Government of Barcelona, the Catalan Health Institute and the Cibernarium of Barcelona.https://www.linkedin.com/in/iconejero

Israel Conejero will be involved in UOC tasks within WP1 and WP9 (management, communication, dissemination, exploitation).

Relevant publications

PRIETO-BLÁZQUEZ, J.; ARNEDO-MORENO, J; HERRERA-JOANCOMARTÍ, J. (2008). "An Integrated Structure for a Virtual Networking Laboratory". *IEEE Transactions on Industrial Electronics*. Vol. 55, núm. 6. Pág. 2334-2342. ISSN: 0278-0046. JCR2008=5.468

Jordi Herrera, Josep Prieto, "A personal authentication Scheme using Mobile Technology" , ITCC-03: Information Technology: Coding and Computing, pp. 253-257, *Ed. IEEE Press.* Las Vegas (USA), April 2003. ISBN-0-7695-1916-4. ISI

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J. Herrera-Joancomarti, Josep Prieto-Blazquez and J. Castella-Roca, A secure electronic examination protocol using wireless networks, Vol. 2, International Conference on Information Technology: Coding and Computing (ITCC'04), 2004, p.p.:263-267

Martín, C., Urpí, T., Casany, M.J., Xavier Burgués, X., Quer, C., Rodríguez, M.E., & Abelló, A. (2013), "Improving Learning in a Database Course using Collaborative Learning Techniques", *International Journal of Engineering Education* 4(29), pp. 1-12, ISSN 0949-149X, Category: Education, Scientific Disciplines/Engineering, Multidisciplinary, IF: 0.360 (Q4).

Sicilia, M. A., Lytras, Rodríguez, M. E. & García-Barriocanal, E. (2006), "Integrating Descriptions of Knowledge Management Learning Activities into Large Ontological Structures: a Case Study", *Data & Knowledge Engineering* 57(2), pp. 111-121, ISSN 0169-023X, Category: Computer Science, Artificial Intelligence/Computer Science, Information Systems, IF= 1.422 (Q2).

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Baneres, D.; Marco M.J., "Análisis del retorno personalizado en un entorno virtual de aprendizaje," *XIX Jornadas sobre la Enseñanza Universitaria de la Informática (JENUI)* , vol., no., pp.85-92, 10-12 July 2013 doi:10.6035/e-TIiT.2013.13

Arnedo-Moreno, Joan; Baneres, David; Baró, Xavier, Caballé, Santi; Guerrero-Roldán, Ana-Elena; Mas, Xavier; Porta Laura; Prieto, Josep. "ValID: A trust-based virtual assessment system". Sixth International Conference on Intelligent Networking and Collaborative Systems (INCOS 2014), Salerno, Italy. September 10-12, 2014. In proceedings of the Sixth IEEE International Conference on Intelligent Networking and Collaborative Systems, pp. 328-335. IEEE Computer Society. ISBN: 978-1-4799-6387-4/14

Mor, Enric; Guerrero-Roldán, Ana-Elena; Hettiarachchi, Enosha; Huertas, M.Antonia. "Designing Learning Tools: The Case of a Competence Assessment Tool". Learning and Collaboration Technologies. Designing and Developing Novel Learning Experiences. Lecture Notes in Computer Science (LNCS), Volume 8523, 2014, pp 83-94. ISBN 978-3-319-07481-8. ISSN 0302-9743.

Hettiarachchi, Enosha; Huertas, Maria Antonia; Mor, Enric; Rodríguez González, M. Elena. "A Technology Enhanced Assessment System for Skill and Knowledge Learning". Proceedings of the 6th International Conference on Computer Supported Education (CSEDU 2014). Barcelona Spain. Pp 184-191. DOI 10.5220/0004845601840191

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Escalera, S., Baró, X., Vitrià, J., Radeva, P., Raducanu, B. "Modelling and Analyzing Multimodal Dyadic Interactions Using Social Networks". A: *Proceeding of the International Conference on Multimodal Interfaces and the Workshop on Machine Learning for Multimodal Interaction*. Beijing: ACM Press. ISBN. 978-1-4503-0414-6. 2010.

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Àngels Rius, Xavier Aracíl, Xavier Baró. *UOC API Site, a seed for new eLearning applications.* Proceedings of the IX Multidisciplinary Symposium on the Design and Evaluation of Digital Content for Education, pp. 245-252. June 2012.

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Ponce, V., Gorga, M., Baró, X., Radeva, P., Escalera, S. (2011). "Análisis de la Expresión Oral y Gestual en Proyectos Fin de Carrera vía Un Sistema de Visión Artificial". ReVisión. Núm. 1, Pàg. 8-18. ISSN.1989-1199.

Relevant projects

ICT-FLAG (Mejora de la Formación TIC mediante Evaluación Formativa, Analíticas de Aprendizaje y Gamificación). The main goal of this project is to design and build a set of eLearning tools and services to provide support to the learning process in university degrees in the field of ICT (Information and Communication Technologies).

GenPORT (An Internet portal for sharing knowledge and inspiring). The overall objective of the genPORT project is to develop an Internet portal which co-ordinates and communicates the results, networking and knowledge of national and European research projects and policy initiatives on gender and science, creates a sustainable community of practice and promotes worldwide awareness and collaboration in the pursuit of gender equality in science, technology and innovation.

MAVSEL (Mining, data analysis and visualization based on social aspects of eLearning). Learning usually takes place in social settings, with direct or indirect interaction of learners with peers or tutors. Indeed, the contribution of social interaction to learning has been recognized by diverse theories of learning, and it has become a fundamental component in several approaches to instructional design. Also, the design, creation and publishing of learning resources of various kinds can be considered as mediated by community dynamics, especially when considering the expanding model of open educational resources (OER). At the same time, the rise of eLearning for pure or blended online education and the increasing use of

learning technologies and Web-based systems have resulted in a new landscape for research on education based on empirical data.

PERSONAL(ONTO) (Personalizing the Learning Process in Virtual Environments by means of Adaptive Formative Itineraries based on Reusable Learning Objects and Ontologies). The PERSONAL(ONTO) project regards all phases of design, creation, management and distribution of the teaching contents that compose a learning object repository, and establishes the requisites needed for its integration in content management tools, as a digital library, for instance, and the interoperability among learning and multimedia content description standards. Based upon these elementary learning units, we establish the necessary customization criteria to assure itineraries are correctly used by students, allowing content adaptation, taking into account both the declared and proved competencies of every student profile, and the learning goals. Thus, it is important to include usability studies and an analysis of the user experience, providing to the teaching team a response mechanism to the students' use of the learning itineraries and the basic learning units, in order to continually adapt and improve them, increasing the learning contents reusability degree. Finally, this project will also allow us to deepen our knowledge of the learning process in itself, because it will give us quantitative data about the students' user experience and their interaction with the system, so we will be able to analyse the learning itineraries and contents, allowing their continuous improvement, in a closed cycle of design, use and analysis.

eLene-TT (eLene-TT: eLearning network for Teacher Training). The central idea of the project eLene-ELene-TT is to improve the competencies of teachers at Higher Education to use ICT in the process of teaching and learning through the development of a Virtual Resource Centre (TTCenter) which provides guidelines and technological resources for trainers and teachers themselves, that guide training and/or the training of teachers in the pedagogical use of ICT. Gathering and validating technological resources and defining methodological criteria for use is the shared goal by partners from a wide European context. It was funded by the European Comission.

eLene-TLC (eLene-TLC: eLearning network for the development of a Teaching and Learning service Centre). A Europe-wide collaborative space for teachers, trainers, instructional designers and learners in educational ICT use to meet the skills, needs and expectations of the Internet-generation students. It was funded by the European Comission.

Living and learning with new literacies in and outside secondary school: contributions to reducing drop-out, exclusion and disaffection among youth. MINECO. EDU2011-24122.

CONSOLIDER MIPRCV 22502: Multimodal Interaction in Pattern Recognition and Computer Vision (2007-2012). This project was devoted to the analysis of human interaction for improving computer vision tasks. My role in this project was the design, implementation and maintenance of a text recognition challenge in uncontrolled conditions. In addition, I was developing methods to deal with pattern recognition proposals in the context of the project.

Consolidated Research Groups 2009SGR696: Shape recognition and image analysis group (2009-2013). This grant is given to research groups with a consolidated scientific production during the recent last years to advance in a certain topic, in this case to the pattern recognition on images. My role in this project is to perform research on evolutionary algorithms applied to pattern recognition.

Not oriented fundamental research grant TIN2009-14404-C02-02: Machine learning techniques for large-scale computer vision systems: Application to the medical imaging analysis (2010-2012). This grant is given to groups of researchers to advance in some research topic, in this case to the extension of basic learning methods to deal with large-scale problems in the context of medical image analysis. My role on this project was to apply incremental and evolutionary machine learning techniques to deal with large amounts of image data.

Not oriented fundamental research grant TIN2012-38187-C03-02: Revisiting the representation models for visual recognition: Social and cultural perception (2013-2015). This grant is given to groups of researchers to advance in some research topic, in this case to the research on new models for pattern recognition from images, advancing on novel features that better represents visual contents. This project will concentrate on the application of the research results to social and cultural problems. My role on this project is to deal with new data representations for gesture analysis, more concisely, redefine the problem allowing the use of evolutionary methods.

European Association for Quality Assurance in Higher Education AISBL (ENQA)

The European Association for Quality Assurance in Higher Education (ENQA) is an umbrella organization that represents its members at European level and internationally, especially in political decision making processes and in co-operation with stakeholder organizations. ENQA membership is open to QA agencies operating in all the signatory states of the Bologna Declaration. ENQA disseminates information, experience and good practices in the field of quality assurance in Higher Education to European QA agencies, public authorities and Higher Education institutions. Its activities are designed to facilitate the implementation of the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG), which were approved by the Ministers of Education in Bergen in May 2005.

Partner role

ENQA will mainly contribute to:

WP4. Quality Assurance in Online Higher Education → Lead the activity on the analysis of the ESG from the online teaching and learning perspective and producing a report. Organisation of a workshop on the ESG and online teaching & learning for ENQA membership. Contribute to other activities within WP4.

WP 9. Dissemination and exploitation → dissemination of project results to ENQA membership and other stakeholders.

As the European body responsible for quality assurance of Higher Education in the European Higher Education Area and one of the main authors/promoters of the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG), ENQA has extensive knowledge and capacity to contribute to the work package on quality assurance of online Higher Education. In addition, ENQA has a broad knowledge in European projects as coordinator and as partner.

ENQA was a partner in the LLP-funded "Supporting Quality in the ELearning European Networks (SEQUENT)" project and is currently a partner in a Tempus project focusing on quality assurance of technology-enhanced learning in Jordan.

ENQA will also belong to the "external auditory" board in WP8, together with EQANIE and AQU

Key personnel:

Maria Kelo (female) is currently serving as the Director of the Secretariat of the European Association for Quality Assurance in Higher Education and has a wide range of experience related to Higher Education. Her tasks within ENQA include: management of the ENQA Secretariat, act as Secretary to the ENQA Board, support and coordinate ENQA member agencies, manage projects, and represent the Association. She has previously worked as Senior Officer for the Academic Cooperation Association where was actively involved as an expert in Higher education policy developments and reforms at national and European level (Bologna, ET2010); Higher Education internationalisation and international cooperation; mobility; student services and attractiveness of European Higher Education; trans-national education. In addition, she has also worked as Programme Manager at the European University Association and as a freelance Higher Education Consultant. Maria is currently actively involved in quality assurance in Higher Education, European Higher Education area and the Bologna process, and the internationalisation of Higher Education.

Maria Kelo will be involved in ENQA tasks within WP4 (analysis, report, workshop).

Zeynep Olcen (female) is working as Project Officer within the ENQA Secretariat and her main tasks include daily operational (including management of partnership) and financial management of the on-going ENQA EU projects, and drafting project reports and proposals. Zeynep has been involved in the management of several European projects until now including Leonardo da Vinci, Comenius, jean Monnet, and Erasmus projects. Zeynep also coordinates ENQA policy working groups as well as ENQA external evaluation of quality assurance agencies. In addition, Zeynep is involved, on behalf of ENQA, in the Tempus project focusing on quality assurance of technology-enhanced learning in Jordan.

Zeynep Olcen will be involved in ENQA tasks within WP4 (analysis, report, workshop).

Anaïs Gourdin (female) is working as Project and Finance Officer for the European Association for Quality Assurance in Higher Education (ENQA) since June 2014. Anaïs has joined ENQA in 2012, first as a trainee and then as Administrative Assistant. Anaïs studied foreign languages applied to international affairs and project management and is a graduate of the Université Jean Monnet, Saint Etienne (2006-2009) and Aix-Marseille Université (2009/2010-2011/2012). In between her studies, Anaïs worked as a French teaching assistant in a secondary education institute in Italy for 7 months.

Anaïs Gourdin will be involved in ENQA's main tasks within WP4 (workshop, financial management)

Relevant publications

European Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG), Third Edition, 2009

J. Grifoll, E. Huertas, A. Prades, S. Rodriguez, Y. Rubin, F. Mulder & E. Ossiannilsson, *Quality Assurance of ELearning*, ENQA Workshop Report 14, Helsinki, Finland,2009

M. Frederiks, J. Grifoll, K.Hiltunen & A. Hopbach, *Quality Assurance of Joint Programmes*, ENQA Workshop Report 19, Brussels, Belgium, 2012

Overview of Quality Assurance of Technology-Enhanced Learning in Europe, ENQA Report for the Tempus project "Enhancing Quality of Technology-Enhanced Learning at Jordanian Universities".

Relevant projects

Programme or initiative	Reference number	Beneficiary Organisation	Title of the Project
Erasmus Mundus – Action 3 – Promotion Projects	545856-EM-1-2013-1-BE-ERAMUNDUS-EMA3	European Association for Quality Assurance in Higher Education	Quality Assurance of Cross-border Higher Education - QACHE
Lifelong Learning Programme – Erasmus Multilateral Projects	510502-LLP-1-2010-1-FI-ERASMUS-EMHE	European Association for Quality Assurance in Higher Education	Mapping the implementation and application of the Standards and Guidelines for Quality Assurance in the European Higher Education Area – MapESG
Tempus - Tempus IV / Structural Measures in Governance Reform	544491-TEMPUS-1-2013-1-ES-TEMPUS-SMGR	Princess Sumaya University for Technology	Enhancing Quality of Technology-Enhanced Learning at Jordanian Universities - eQTeL
Tempus - Tempus IV / Structural Measures in Governance Reform	530616-TEMPUS-1-2012-1-ES-TEMPUS-SMGR	Universitat de barcelona	Enhancing Quality Assurance Management in Jordanian Universities - EQuAM
Lifelong Learning Programme – Erasmus Accompanying Measures	540300-LLP-1-2013-1-NL-ERASMUS-EAM	European Association of Distance Teaching Universities	Supporting Quality in eLearning European NeTworks - SEQUENT

4.1.2   Université de Namur ASBL (UNamur)

The Research Centre on Information, Law and Society (CRIDS) at the University of Namur brings together more than forty senior and junior researchers to address questions relating to information systems and technological choices that match the ethical requirements of a human life. This includes a large scope of issues, from the protection of digital consumers or patients to the privacy protection, from new modes of governance to the production of common cultural goods, from electronic communication law to identity issues raised systems of profiling and personalization. The mission statement of CRIDS is to lead applied and fundamental research with a critical stance and pay permanent care to democratic and human values. CRIDS is and has been involved in several FP6 and FP7 projects. It is in charge of many national and regional R&D projects and has been awarded by the Belgian Science Policy Office for the quality of its research.

Partner role

The CRIDS – University of Namur will mainly work on the legal and ethical issues raised by the project. Indeed, such a project using ICTs and biometric measures has to manage legal and ethical challenges and CRIDs will be in charge of these challenges thanks to its background.

Besides this, CRIDS will collaborate to the dissemination of the results through articles, papers and conferences organised by itself or others.

CRIDS will also collaborate to the exploitation through its educational competencies.

CRIDS has a long background in data protection and is well known in this field of competencies. It also possesses an important knowledge in ethical and social acceptability.

These two aspects are needed in this project as it has to be compliant with the data protection legislation from the beginning (privacy by design) and needs to meet the parameter of social acceptability which is a condition for the viability of this project.

To ensure those two aspects, UNamur will lead the WP3 devoted to analyse data privacy and ethics related to the TeSLA project and define the restrictions and guidelines. In addition, will participate for supervising the correct application of such aspects in the development process (WP6 and WP7), the pilots (WP8) and in the exploitation (WP9

Key personnel

Claire Lobet-Maris (female) has a Master Degree in Sociology and PhD in Sciences du Travail (Catholic University of Louvain). She is senior professor in Sociology at the University of Namur, Computer Sciences faculty and Director of the Interdisciplinary Research Centre, which focuses on scientific issues regarding interactions between ICTs and Society. Her main domain is the sociological understanding of ICT's objects as shaped by actors and shaping the social interactions. Her main scientific interest regards the inter-normativity questions related to the confrontations between technological and social norms. She has more than 50 research projects at European, North-American, national and regional levels. She is the Belgian representative for the Social Sciences Committee of the European Science Foundation.

Jean-Marc Van Gyseghem (male) Since December 2001, Jean-Marc Van Gyseghem has been working at the Research Centre on Information, Law Society (www.crids.eu) at the University of Namur (Belgium) where he is now Senior Researcher and Head of the Research Unit "Liberties in the information society". Since November, he has also been Financial and Executive Manager of the advanced Master in TIC and Cri's vocational trainings 'JuriTIC, InfoSafe and DocSafe). He is frequently invited to present communications on medical data protection and on eHealth. He is the author of several papers and book chapters in this domain. He is a member of an ethical committee in a Belgian hospital and Deputy Manager of the collection "Collection du Crids". He has been member of the scientific Panel of the review "Lex electronica" (www.lex-electronica.org) from the University of Montreal. He is expert for the ITU (UN agency for information and communication technologies) and Council of Europe in data protection, mainly pseudonomisation and personal data. He is also a member of the Bar of Brussels and Partner at Rawlings Giles Law firm (www.rawlingsgiles.be). He is specialized in Medical Law (including civil liability), Insurance, Privacy, Medical Data Protection and eHealth Services and Products.

Cécile de Terwangne (female) has a Master Degree in Law (University of Louvain), a PhD in Law (FUNDP) and a LLM in European and International Law (European University Institute of Florence). She is professor at the Law Faculty of the FUNDP, where she teaches courses in Computer and Human Rights, and in Data Protection. She is Director of the post-graduate

program in IT Law at the University of Namur, and Research Director of the 'Freedoms in the Information Society' unit of the CRIDS. She has taken part in numerous European and national research projects in the fields of data protection, privacy and ICT, freedom of information, e.Governement, etc. She is an appointed expert for the Council of Europe.

Relevant services

CIDS – University of Namur has a teaching activity which is very relevant for the project:

Vocational trainings:

- JuriTIC (www.juritic.be)

- InfoSafe (www.infosafe.be)

- DocSafe (www.docsafe.info)

The Faculty of Law also organizes:

- Baccalauréat in law (3 years) (www.unamur.be/en/dro/teaching)

- Advanced Master in ICTs (1 year) (www.unamur.be/en/dro/teaching)

- Advanced Master in Human Right (1 year) (www.unamur.be/en/dro/teaching)

The faculty of Computer Science also organizes:

- Baccalauréat in Computer Science (3 years) (www.unamur.be/en/inf/teaching)

- Master in Informatics (2 years) (www.unamur.be/en/inf/teaching)

- Advanced Masters (1 year) (www.unamur.be/en/inf/teaching)

4.1.3   Agència per a la Qualitat del Sistema Universitari de Catalunya (AQU)

 The Catalan University Quality Assurance Agency, AQU Catalunya, is the main instrument for the promotion and assurance of quality in the Catalan Higher Education system. AQU Catalunya is entrusted with the assessment, accreditation and certification of quality in the universities and Higher Education institutions in Catalonia.

AQU Catalunya is a full member of the European Association for Quality Assurance in Higher Education (ENQA), and has been one of the first three agencies to be included in the European Quality Assurance Register for Higher Education (EQAR). AQU is also a member of the International Network for Quality Assurance Agencies in Higher Education (INQAAHE), of which the Agency has hosted the Secretariat since 2013, the Spanish Network of Spanish Quality Assurance Agencies (REACU) and the European Consortium for Accreditation (ECA). AQU Catalunya was the first European quality agency to be ISO certified.

The origins of AQU Catalunya lie in the consortium, Agency for the Quality of the University System in Catalonia, which was constituted on 29 October 1996. It was the first agency for quality in Higher Education to be set up in Spain. After the passing of the LUC (Catalan Universities Act, 2003) the consortium became the present-day Agency.

Partner role

- Analyse the European Standards and Guidelines (ESG) taking into account the online characteristics of institutions and degree programmes.
- Identification of the elements to consider in the system, in terms of academic activities, competency evaluation, assessment models and the guarantees provided by technological systems.
- Propose a set of quality indicators that will be used to follow the performance and achievements of the pilots.
- Verify the quality aspects of the pilots and extract recommendations for improving future pilots (metaevaluation).
- Define a framework of e-assessment, taking into account all the information gathered during the Tesla project.

Since 1997, AQU Catalunya is operating in quality assurance for Higher Education. The experience gained in almost 20 years in the field is significant and recognised nationally and internationally (listed EQAR, full member of ENQA and ECA). AQU Catalunya is undertaking cyclical reviews for all university programmes of Catalonia under the scheme of the European Standards and Guidelines (including online programmes). The agency is also very active in international projects and it is responsible for designing and implementing projects for knowledge generation on Higher Education matters.

This expertise will help on the definition of the quality aspects and indicators that must be considered in the project. Moreover, it will also belong to the "external auditory" board in WP8, together with ENQA and EQANIE

Key personnel

Josep Grifoll, (male) economist with a long experience in quality assurance (QA) for HE. Since 1997, he has been working in AQU developing QA processes for programmes and institutions. Since 2003, he is the head of the Quality Assessment Department in AQU Catalunya. Between 2008 and 2014, he was elected member of the Board of ENQA and taking up the post of Vice-President in 2014. He was member of the steering committee of the European Quality Assurance Forum (EQAF) in 2010 and 2011. He has experience in international QA projects and processes within Europe, Latin America and South East Asia; as a consultant for QA agencies and Higher Education institutions, as assessor in review panels and as a trainer of staff working for QA for Higher Education at international level. Recently, he has been coordinating the third and the fourth editions of the European Survey of Quality Assurance Processes (on the future of QA for Higher Education and on the internationalization of QA).

Esther Huertas (female) received her qualification as Agronomist Engineer from the Polytechnic University of Catalonia and her B.S. (Food Science and Technology) and M.S. (Environmental Sciences) degrees from the University of

Barcelona. She has also received her Ph.D. in Chemical Engineering from the University of Barcelona. In her first appointment, Huertas served as researcher at the University of Barcelona and followed her professional activity as an assistant professor at the University of Barcelona for three years. She began to collaborate with AQU Catalunya as a student expert at TEEP II project, and in 2006 she got a position at the Agency. Huertas participates in different international groups as European Consortium for Accreditation and AUDIT network (non-formal group) and she has also contributed to international seminars as ENQA Workshops, EQAF, etc.

Relevant publications

Huertas, E; Rodríguez S.; Prades A,; Grifoll, J. (2010) ELearning in the context of the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG). Workshop report ENQA.

Grifoll J.; Hopbach A.; Kekäläinen H.; Lugano N.; Rozsnay C.; Shopov T. (2012) Quality Procedures in the European Higher Education Area and Beyond. Visions for the future. Occasional paper. ENQA. Retrieved

Mateo Andrés, Joan; Sangrà Morer Albert; Rodríguez Espinar, Sebastián; Prades Nebot, Anna (2007).Guide to the external review of eLearning degree programmes. Guide to institutional evaluation. (http://www.aqu.cat/doc/doc_29737323_1.pdf)

Mateo Andrés, Joan; Sangrà Morer Albert; Rodríguez Espinar, Sebastián; Prades Nebot, Anna (2007). Guide to the external review of eLearning degree programmes. Guide to the evaluation of degree programmes. (http://www.aqu.cat/doc/doc_34046349_1.pdf).

Relevant projects

2010-2013 JOQAR Joint Programmes Quality Assurance. European HE Area. This is a project to facilitate mutual recognition on external Quality Assurance for Joint Programmes. In that respect, this should be useful in case of developing eLearning opportunities in international joint programmes.

2010-2012 FLLLEX QA for Lifelong learning. European HE Area. The experience of this project can be also used for those eLearning programmes addressed to lifelong learners.

2007-2012 ESABIH. Developing accreditation standards for university programmes Bosnia & Herzegovina. The experience accumulated in this project is also interesting to consider the European Standards and Guidelines in different situations and national contexts

2013-2016 EQTEL, aims to improve the quality and relevance of technology-enhanced learning (TEL) at Jordanian Higher Education institutions in order to decrease the level of unemployment of young people and to enable the country's easier inclusion into European Higher Education Area. The main project objective is to improve, develop and implement accreditation standards, guidelines and procedures for quality assurance of TEL courses and study programs at a national level.

Significant infrastructure

AQU Catalunya is equipped with an up-to-date software and hardware to support daily operations of more than 40 staff members. The agency is also connected with a high capacity Internet link which is required to be permanently connected with partners, assessed institutions, programmes and teachers, and with the stakeholders in general.

4.1.4   LPLUS GmbH (LPLUS GmbH)

Niche provider for e-examination management solutions. Founded in 1985, LPLUS has a wide experience in the sensitive field of examinations, such as continuous, adaptive and final examination. LPLUS delivers consulting, technical hosting and self-developed software to achieve more and more paperless workflows for e-exams. LPLUS focuses especially on a very high level of legal security of e-exams as well as on keeping the systems flexible enough to consider different customer based standard exams and to allow customers keep their exam designs. LPLUS is today's market leader for e-examinations in the field of theoretical exams of aviation staff, like pilots, maintenance engineers and Air Traffic Controllers. Behind this market, LPLUS provides some major German universities with the LPLUS TestStudio which is able to handle high stake centralized and de-centralized e-exams.

Partner role

It offers a leading participation in Work Package 5 and provides technical expertise and solutions for the adaptive trust-based e-assessment system. It will alos define technical standards for both the initial identification of students for "exams at home" and how to monitor running e-exams at home.

LPLUS has over 25 years of experience of e-examination management especially regarding large scale exams under decentralized conditions. Examples are continent wide e-exams in Australia, New Zealand and Fidschi-Islands. We spend a lot of research and development to achieve trust based e-exams for many different kinds of e-exams (open book / standardized) and demands such as continuous, adaptive and final exams. LPLUS covers all areas of examination management and workflow as well as consulting, programming and hosting.

In order to ensure the correct integration of instruments developed in WP5, LPLUS will participate in the integration of the final TeSLA patform (WP6), being the bridge between the developer partners of each instrument and the integrator of the platform. FInaly, LPLUS will be involved in the exploitation of the platform (WP9), improving their own solution with the instruments developed in this project

Key personnel

Lutz Pleines, (male) CEO of LPLUS director and senior consultant

- Diploma Business and IT Teacher
- Developer of the first online exams for pilots in Europe
- Participant & consultant in some key projects for the implementation of e-exams in large Universities
- Business developing

Hugo Prinhorn Mendia, (male) Senior programmer at LPLUS since 2007

- Telekom Engineer (Bolivian degree)
- German Diploma for Informatics science,
- Special certificate "Digital media in the pedagogical context" (DIMEPÄD)
- Responsible Developer of an integrated language testing system
- Responsible Developer for proctored exam solutions at LPLUS
- Mother Tongue: Spanish

Relevant products and services

- Methodology of creating MC questions on behalf of EASA (European Aviation Safety Agency)
- Implementation of nation-wide online exams in Slowakia
- LPLUS-TestStudio® (e-examination system)
- LPLUS-TS/TM-Editor® (Authoring system)
- LPLUS Exam@Home® (Protorimng tool)
- LPLUS Exam2Go® (Online/Off-Line e-exam APP)
- LPLUS PEXO® (Part Aviation Examination Office)
- LPLUS-LIMA-TANGO® (Language Proficiency Testing System)
- LPLUS Booking Tool (Internet based Registration, Reservation and Payment tool)
- LPLUS BatMan (Integrated Learning & Testing System for German Air Traffic Controller)

Relevant projects

- Implementing Proctored Exams System for the company GASQ (Germany)
- Development of a monitoring system for exam at home supervisor
- Developing of an interface to synchronize an e-examination system and a proctoring system

Relevant infrastructure

- LPLUS is operating an own data-centre located in Bremen, Germany
- LPLUS is operating its own streaming servers in the data centre and at customer sites

4.1.5   Open Universiteit Nederland (OUNL)

The Open University of the Netherlands develops and provides open higher distance education. There is a special focus on the use of new ICTs and teaching/learning methods to provide effective, efficient, attractive and accessible lifelong learning facilities and education to Dutch citizens. The Open University of the Netherlands has 26,000 students and about 750 employees. Within the Open University, the Welten Institute (formerly known as CELSTEC) (Research Centre for Learning, Teaching and Technology) integrates expertise in learning sciences and technology-enhanced learning. New technologies and approaches to learning and innovation are extensively tested in our laboratories and in practice. The Technology-Enhanced Learning group at the Welten Institute has a special focus on electronic learning environments and combines expertise in the areas of pedagogical scenarios for learning and learning support, interoperability, learning management systems, virtual learning environments, social media mash-ups (personal learning environments), social and situational awareness, usability, as well as expertise related to content authoring, content management, workplace learning, and lifelong learning at large.

OUNL/Welten Institute has been an active coordinator and participant in numerous European research projects from FP5 – FP7 as well as Horizon 2020.

Partner role

OUNL will take part in all work packages to provide relevant input on a local/national level and takes a keen interest particularly in work packages 2, 5 and 7. With regard to work package 2, the OUNL team can contribute expertise in educational theory and practice as well as expertise in formal modelling. Although we do not anticipate to be developing any tools in work package 5, we can contribute here drawing on our own R&D experiences in the field of remote sensors and usability testing. The Welten Institute provides a Master of Learning Sciences – a test bed for the models and technology to be developed. Besides, OUNL provides a wide range of Bachelor and Master programmes that can included in the pilots to be carried out in work package 7.

The Welten Institute focuses on improving the quality of education by educational research that is scientifically of excellent quality and at the same time practically oriented. The Welten Institute has chosen the approach of the 'ecology of education'. This means that the institute is not only active in the field of theoretical scientific research but also collaborates with users in developing and implementing scientifically sound learning environments, forms of education and didactics. The research activities take into account the complexity of education and the use of rapidly developing technologies play an important part in them. The underlying thought is that the contact between educational science and educational practice is of vital importance for good educational research and therefore for the improvement of educational quality.

Key personnel

Dr. José Janssen (female) is Assistant Professor at the Open University in the Netherlands with expertise in the area of lifelong learning, eLearning and learning technology standards. Her current and recent research and development activities include:

- documentation and recognition of informal learning by means of an e-portfolio and related decision support system

- integrated eLearning systems for lifelong learning
- remote assessment using multimodal interfaces

Dr. Dirk Börner (male) is Assistant Professor at the Welten Institute at the Open University in the Netherlands (OUNL). In 2007, he graduated from the University of Applied Sciences in Dresden with a Degree in Computer Science. In 2013 he defended his dissertation on Ambient Learning Displays focusing on the utilisation of ambient information presentation in combination with mobile technology to support learners in authentic situations. Besides his work in European projects, such as MACE, OpenScout, STELLAR, weSPOT, and METALOGUE, he conducts and supervises research on the use of sensors and tangibles for mobile and ubiquitous learning support.

Prof. Dr. Marco Kalz (male) is Professor for Open Education at the Faculty for Management, Science and Technology at the Welten Institute of the Open University of Netherlands. Marco is a fellow of the Interuniversity Center for Educational Sciences (ICO) and the Dutch research school information and knowledge systems (SIKS). He is the chair of the special interest group on Technology-Enhanced Assessment (SIG TEA) of the European Association of Technology-Enhanced Learning (EATEL). He is a member of the editorial board of the International Journal of Technology-Enhanced Learning (IJTEL) and serves as program committee member of the core conferences in the TEL field. His research interest lies on the use of open education, pervasive technologies and formative assessment to support self-directed lifelong learning. He has more than 30 peer-reviewed journal publications and conference papers in the TEL field.

Relevant publications

Berlanga, A. J., Kalz, M., Stoyanov, S., Van Rosmalen, P., Smithies, A., & Braidman, I. (2011). Language technologies to support formative feedback. Educational Technology & Society, 14(4), 11–20.

Börner, D., Kalz, M., & Specht, M. (2014). Attention Sensor [Software]. Available under the GNU LGPL licence version 3 or higher. http://dspace.ou.nl/handle/1820/5740

Janssen, J., Berlanga, A., & Koper, R. (2012). On Quality Assessment of Learning Technology Specifications. In J. C. Ramalho, A. Simões, & R. Queirós (Eds.), Innovations in XML Applications and Metadata Management: Advancing Technologies (pp. 78–95). Hershey, PA, USA: IGI Global.

Kalz, M. & Ras, E. (2014). Computer Assisted Assessment -- Research into E-Assessment. Proceedings of the 17th International Conference on Computer Assisted Assessment. Vol. 439. Zeist, The Netherlands: Springer.

Schneider, J., Börner, D., van Rosmalen, P., & Specht, M. (2015). Augmenting the Senses: A review on sensor-based learning support. Sensors, 15(2), 4097-4133

Relevant projects

METALOGUE: Multiperspective Multimodal Dialogue (FP7 2013-2016 http://www.metalogue.eu)

ECO: Elearning, Communication and Open Data; Mobile, Massive and Ubiquitous Learning (FP7 2014-2017 http://ecolearning.eu)

PREATY: PRoposing modern E-Assessment approaches and Tools to Young and experienced in-service teachers (LLP 2012-2014 http://portal.ou.nl/en/web/preaty)

4.1.6   Sofiiski Universitet Sveti Kliment Ohridski (SU)

Sofia University "St. Kilment Ohridski" is the oldest school of Higher Education in Bulgaria, with 16 Faculties and more than 104 Bachelor and over 400 Master degree programmes in Humanities and Sciences. The University academic and teaching staff consists of over 1,800 people employed full time. The staff are involved in a range of research projects at international and national level, including projects funded by the EU programmes - 6th and 7th Framework Programmes, the SOCRATES and LEONARDO programmes, the Lifelong Learning Programme, as well as projects funded by the World Bank, the Open Society Foundation, the National Scientific and Research Fund, the EU structural fund and many other national and international donors.

The Integral University Elearning center (http://e-center.uni-sofia.bg/), which is situated at the Sofia University and is based at the Faculty of Education is uniting all educational professionals from university. It has developed a strong expertise in ICT in teaching and learning over the 6 years of its existence. With 7 successful large scale national and international projects, the Elearning centre established itself as a leading unit in ICT in teacher training, university staff development, elearning design and implementation, distance education. The Elearning centre team consists of teaching staff, young researchers and PhD students with high level competencies in elearning design and delivery in the context of Formal and Non-formal, Higher and Secondary education.

Partner role

Sofia University is going to lead the WP7 – Design and development of the pilots. It is also going to contribute to WP 2, 6, 8 and 9.

The Faculty of Education and the Elearning centre team staff in particular are running courses in ICT in Education at Bachelor and Master Degree level. The Master Degree programme "ICT in education" offers modules in online learning design and implementation. One of the courses offered in this program is E-assessment. In the frame of the EU structural fund project with a budget of over 650 000 leva, the Elearning centre staff trained in design and delivery of online education more than 120 university lecturers (http://edo.e-center.uni-sofia.bg/). Thanks to this, elearning was introduced in all pedagogical faculties and departments and over 1,200 student-future teachers were trained as online students.

The staff of the Elearning center was involved in several research and development project related to elearning in Higher Education (see the list below)

The Elearning centre was a coordinator of the first three projects with a budget of over one and a half million leva. The participation in these projects built a strong capacity in the staff in project management and coordination as well as in the key areas of expertise – all very important for the fulfilment of the objectives of the current proposal.

Two of the members of the Elearning Centre are certified as head reviewers by Epprobate – The international quality label for eLearning courseware (http://www.epprobate.com) (2014).

Key personnel

Prof. Dr. Roumiana Peytcheva-Forsyth (female) is an expert in teacher training, elearning design and implementation, distance education, ICT in education, serious games. She is a Professor at the Faculty of Education; Head of the Department of Didactics and Director of Sofia University distance education centre. Professor Peytcheva-Forsyth is a programme leader of "ICT in education" Master Degree programmes and one year CPD programme on online design and implementation for university staff. Her research interests and publications are in the field of technology-enhanced learning, integration of ICT in all levels of education and training, and quality of elearning. She has been a project manager, coordinator and partner of more than 25 EU and national research and developmental projects over the last 20 years. Recently she has been coordinating 3 EU Structural Fund projects with a budget of over 1.5 million BGN.

Dr. Lyubka Aleksieva (female) is an assistant Professor at Sofia University "St. Kl. Ohridski"", Faculty of Primary and Preschool Education (http://www.fnpp.uni-sofia.bg). From 2012 to 2014 – Faculty coordinator of project "Raising the capacity of academic staff from pedagogical specialties at Sofia University for design, implement and provide quality eLearning distance education", funded by the European Social Fund and European Structural Funds (http://edo.e-center.uni-sofia.bg/za-proekta/). She is also a designer and teacher in many courses intended for blended learning of future primary teachers. Lyubka Aleksieva was a very successful Lead Facilitator for Bulgaria in the third edition of the Learning Design Studio for ICT-based Learning Activities MOOC, within the project "Hands-On ICT: Learn, practice, teach creativity and ICT" (http://handsonict.eu/project/). Under her facilitation, the Bulgarian group has achieved the greater completion rate than all of the other six language groups.

Dr. Blagovesna Yovkova (female) is a researcher at the Sofia University Elearning Centre since 2008. Her present research interests and publications are in the field of ICT in education and oral rehabilitation of children with SEN, especially assistive computer systems, design of effective multimedia materials and benefits that new technology offer for teaching and learning of children with SEN for developing literacy skills, vocabulary development, the computer's role in speech therapy. Additionally, her research topics are focused on the design of elearning activities and serious games in preparation of teachers. She has been a researcher in some EU and national research and developmental projects over the last 5 years.

Relevant publications

Peytcheva-Forsyth, R., Yovkova, B. How Students' Experience in ELearning Affects Their Judgements about the Quality of an Online Course. In: - International Journal of Human Capital and Information Technology Professionals (IJHCITP) 6(1), IGI Global Publishing, Hershey, USA 2015

Peytcheva-Forsyth, R., Yovkova. Quality of online education from the perspective of the students (Sofia university experience). – In: International conference on eLearning, eLearning'14, La Laguana, Spain, 12 September, 2014.

Peytcheva-Forsyth, R., Yovkova, B. Using serious games to improve the preparation of pre-service teachers in Bulgaria. – In: World academy of science, engineering and technology, issue 66, Paris, France, 27-28 June 2012.

Fernàndez, C., Peytcheva, R., Yovkova, B., Asenova, A. SimAULA. Training our teachers through innovative methodologies based on serious games. – In: 16-th International Conference "The Heart of Education: Learning to Live Together", 21-23 November, ,Bangkok, Thailand, 2012.

Relevant projects

EU Structural fund project BG051PO001-4.3.04/11 aiming at "Increasing the capacity of the academic staff from the pedagogical specialities in Sofia University in the design and delivery of elearning";

EU SF project № BG051PO001-3.3.06/0026 „Development of University Doctoral programme in educational research and elearning"

Bulgarian National Research Fund, project № INZ01/0111: „Integrated University Center for Research, Design and Delivery of Quality eLearning (eLearning Centre)"

„SimAula - Tomorrow's Teachers Training", Education, Audiovisual and Culture Executive Agency, Lifelong Learning; project № 511472-LLP-1-2010-1ES-KA3_KA3MP - aiming at the development of virtual practicum for teacher training;

WEBWISE - Web 2.0 supporting Higher Education - Scenarios for Collaborative Learning, Reference number: 510453-LLP-1-2010-1-DE-ERASMUS-EMHE

4.1.7   The Open University (OU)

The Open University (UK) in a distance learning Higher Education provider based in Milton Keynes, UK. It defines its mission as "open to people, places, methods and ideas". The OU promotes educational opportunity and social justice by providing high-quality university education to all who wish to realise their ambitions and fulfil their potential. Through academic research, pedagogical innovation and collaborative partnership, it seeks to be a world leader in the design, content and delivery of supported open and distance learning.

Partner role

- Lead and contribute to all deliverables in WP8
- Contribute to the development of the Education Framework (WP2)
- Undertake an institutional review of technical systems and processes (WP6)
- Undertake pilot/s and related data capture in the second and third year of the project (WP6/7)
- Join with other partners in the dissemination of the project outputs (WP9)
- Contribute expertise in respect to deliverable relating to disability and accessibility (WP3)

The OU is the largest provider of part-time distance education and assessment in Europe with over 200,000 part-time students and an extensive and well established VLE. This makes it an excellent choice as one of the pilot sites for the trials of assessment technologies proposed in this project. Furthermore, the OU is well placed to lead WP8 and contribute to WP2 as it is recognised as one of the leaders in educational technology research in the UK and the particular unit involved in this bid has expertise in leading evaluation work-packages including on many EU and UK funded research projects. The OU has also around 20,000 disabled students and is a market leader in terms of the provision of Higher Education learning opportunities for those with disabilities and in the evaluation of technology and course designs for accessibility issues. The OU model of teaching provides many potential opportunities for piloting the emerging assessment technologies discussed in this project.

Key personnel

Prof. Denise Whitelock – BSc PGCE MEd PhD (female) has over twenty years experience in designing, researching and evaluating online and computer-based learning in Higher Education. She is a Professor of Technology Enhanced Assessment and Learning in the Open University's Institute of Educational Technology and has just completed directing SAFeSEA an EPSRC funded e-assessment project. She has directed four JISC funded projects including 'Open Mentor' and other e-Assessment projects. She has edited four special journal issues on e-Assessment for BJET, LMTECI, .IJCELL and IJEA and is an adviser to the European Union's project into the use of e-assessment for PISA testing. She has chaired the International CAA Conference for the past 4 years. Her work has received international recognition as she holds visiting chairs at the Autonoma University, Barcelona and the British University in Dubai. She is also a serving member of the Governing Council of Society for Research into Higher Education.

Dr Simon Cross – MA PhD PCGE Cert Mngt (male) is a lecturer at the Institute of Educational Technology and has worked at the Open University (UK) for eight years. His research interests include assessment, learning design, and the role and use of digital achievements and badges in teaching and has made important and sustained contributions to projects such as the JISC funded OU Learning Design Initiative and university sponsored assessment projects associated with assessment benchmarking, authentic assessment and the student experience of assessment. Simon has experience of working on the European Commission funded projects: OpenED, JuxtaLearn and LACE.

Dr. Bart Rienties (male) is a Reader in Learning Analytics at the Institute of Educational Technology at the Open University UK. He is Programme Director of Learning Analytics within IET and Chair of the Student Experience Project Intervention and Evaluation group, which focuses on evidence-based research on intervention on OU modules to enhance student experience. As educational psychologist, he conducts multi-disciplinary research on work-based and collaborative learning environments and focuses on the role of social interaction in learning, which is published in leading academic journals and books. His primary research interests are focused on Learning Analytics, Computer-Supported

Collaborative Learning, and the role of assessment in learning. In the last 15 years, he has successfully experimented with and implemented various forms and approaches of assessment, such as adaptive assessment, online assessment, peer assessment, peer feedback, student surveys, and social networking. He successfully led a range of institutional/national/European projects and received several awards for his educational innovation projects.

Relevant publications

Whitelock, D. (2011) 'Activating Assessment for Learning: are we on the way with Web 2.0?' In M.J.W. Lee & C. McLoughlin (Eds.) **Web 2.0-Based-ELearning: Applying Social Informatics for Tertiary Teaching**. IGI Global. pp 319–342.

Whitelock, D. & Cross, S. (2011). 'Assessment Benchmarking: Accumulating and accelerating institutional know-how for best practice'. *International Journal of e-Assessment (IJEA)*, 1(1). http://journals.sfu.ca/ijea/index.php/journal/article/view/18

Whitelock, D. (2013). 'GCP18: New Forms of Assessment for Social TEL Environments'. In F. Fischer, F. Wild, R. Sutherland & L. Zirn (Eds.) **Grand Challenges in Technology Enhanced Learning: Outcomes of the 3rd Alpine Rendez-Vous**. Springer Cham Heidelberg New York Dordrecht London. pp 53-55. doi 10.1007/978-3-319-01667-2

Whitelock, D., Twiner, A., Richardson, J.T.E., Field, D. & Pulman, S. (2014). Feedback on academic essay writing through pre-emptive hints: Moving towards 'advice for action'. **Winner of Best Research Paper Award**. 8th EDEN Research Workshop: Challenges for Research into Open and Distance Learning, (eds. A.M. Tixeira and A. Szucs). Published by European

Whitelock, D., Pinto. R. & Saez, M. (2010) 'Modelling the teachers' feedback process for the design of an electronic interactive science tool with automatic feedback'. In P. Brna & D. Whitelock (Eds). *Special Issue of International Journal of Continuing Engineering Education and Life-long Learning,* Focussing on Electronic Feedback: feasible progress or just unfulfilled promises? 20(2), pp 189-207.

Rienties, B. (2014). Understanding academics? resistance towards (online) student evaluation. *Assessment& Evaluation in Higher Education, 39*(8), 987-1001. doi: 10.1080/02602938.2014.880777

Rienties, B., Kaper, W., Struyven, K., Tempelaar, D. T., Van Gastel, L., Vrancken, S., . . . Virgailaite-Meckauskaite, E. (2012). A review of the role of Information Communication Technology and course design in transitional education practices. *Interactive Learning Environments, 20*(6), 563-581. doi: 10.1080/10494820.2010.542757

Rienties, B., Toetenel, L., & Bryan, A. (2015). *?Scaling up? learning design: impact of learning design activities on LMS behavior and performance.* Paper presented at the 5th Learning Analytics Knowledge conference, New York.

Relevant projects

OpenMentor (http://www.openmentor.org.uk/): an open source mentoring tool for tutors that analyses and displays the different types of comments provided by the tutor as feedback to the student.

SAFeSEA Project / OpenEssayist: a system that has been built to assist students in higher education to understand the weaknesses in their draft essays by exploiting automatic natural language processing analysis techniques.

OpenComment: an open source text recognition question type for Moodle.

SEGA: An institutional-wide Initaitve for Securing Greater Accessibility (SeGA) by ensuring that the OU curriculum is accessible to disabled students.

Nefreduca: project that developed a series of open source science inquiry based web learning materials and feedback for children with chronic kidney disease.

Relevant infrastructure

The OU VLE is based on MOODLE and the OU is an active contributor to the international MOODLE development community.

4.1.8   Protos Sistemas de Información, S. L. (PROT-OS Soluciones Educativas)

protOS Soluciones Educativas SL main objectives include the design, development and commercialization and distribution of state of the art technology solutions for education. protOS is incorporated in Valencia, Spain where it is based. Additionally, protOS is the only Gold partner/distributor for Blackboard solutions in Europe.

Partner role

protOS main tasks will focus on the Dissemination and Exploitation of TeSLA. Additionally, protOS Soluciones Educativas will also collaborate in the final technical specification to ensure conformity with existing and future Learning Management System standards. Moreover, protOS will also collaborate in the definition of integration points and plugins to ensure TeSLA´s framework can communicate with partner learning frameworks like Moodle or Blackboard.

As experts in both Open Source learning technology and Blackboard we can ensure the specification of each system considers existing and future learning technology interoperability standards. Furthermore, protOS has extensive experience promoting and raising awareness of technology related solutions in different European markets.

PROTOS will contribute with its knowledge and experience on the field of learning platforms leading the dissemination and the exploitation of the project (WP9) and advising on the integration process (WP6).

Key personnel

Pablo Langa (male) 10 years of involvement in learning innovation projects in 5 different continents in a variety of roles. Lastly as the director of the Mobile division for Blackboard Inc. Frequent speaker at technology education events. Computer Science and a M.Sc. in Marketing complete his education background together with industry accreditations such as the Project Management Professional from the PMI.

Pablo Cervera (male) For the last 10 years, Pablo Cervera has been involved management and leading roles of various companies in the technical sector. His focus has been mainly on the technical aspect of healthcare systems, management of healthcare systems implementation projects for Philiphs Medical Systems and General Electric Healthcare in Spain. In addition, he has also performed as General manager of technical training in Anesthesia and surgical devices. As a natural born innovator and entrepreneur, he is always hungry for new professional challenges.

Miguel Moreno (male) Miguel has over 16 years in the software industry and has worked in leading software engineering roles for large fortune 500 companies, such as American Express, Beckman Coulter and Microsoft. He grew up up in Holland has also lived in Italy, Brazil, Venezuela and finally in the US for 14 years. He holds three passports and is fluent in English, Spanish, Dutch and Italian. His innovative spirit and near insatiable curiosity keeps him involved with the latest technologies.

Relevant products and services

On a yearly basis protOS develops 10 to 15 plugins and custom services for different higher education learning management solutions.

Custom services developed and promoted include advanced grading schemes and complex integrations in between different learning networks

Relevant activities

Proof of concept to include random biometric questions within Blackboard assessments, using the API of a biometry service provider

In addition to learning and development software solutions, protOS also works on other innovation technology in the global space of education. As an example zeroacoso.com a sms based software solution that aims to help mitigate

bullying at primary and secondary schools. Besides the development and pilots protOS is individually promoting and raising awareness of this sort of technology

Significant infrastructure

protOS has the ability to make available for sandbox and testing purposes sample setups and typical architectures for LMSs solutions like Blackboard or Moodle.

4.1.9   Institut Mines-Télécom (IMT)

Institut Mines-Télécom (IMT) is a French public research and education organization placed under the authority of the Minister of Economy, Industry and Employment. Its missions are Higher Education, research and support to economic development in ICT (Information Communication Technologies) fields. IMT is one of the major French players of the R&D Framework Programme in ICT (Information Communication Technologies). The member school from IMT that will participate in the project is Télécom SudParis (TSP), RST department (Networks and Telecommunication Services department). TSP has been a key contributor in several EU-funded projects, such as FP7-DEMONS, FP7-MASSIF (coordination), FP7-NECOMA (coordination), FP7-PANOPTESEC (coordination), and H2020-SUPERCLOUD.

Partner role

IMT members participating in the project have a solid background in ICT security and protection technologies. They have pioneered research and education in the field. They expect to contribute in terms of authentication and authorization solutions. IMT members also have a large experience in specifying and implementing security exchange protocols and new data formats. IMT will provide this experience for the specification tasks of the project. Finally, IMT members can leverage work on policy-driven mechanisms for the protection of large organizational assets, as well as validation of security requirements. IMT can provide to the project consortium its experience on the use of formal methods for the validation of security needs, as well as experience on the use of security assessments tools.

IMT has been included in the project to bring competencies and innovative results concerning management of security and protection aspects, as well as competencies in regulatory issues in cyber defence activities (e.g., active collaboration with the French Network and Information Security Agency, ANSSI). Besides supporting the project in these crucial aspects, IMT is a major French group of grandes écoles, with over 13,000 students and 4,600 staff members, including academic members and researchers. IMT is also involved in the construction of the Université Paris-Saclay, officially inaugurated this 2015, and which is expected to welcome over 60,000 students and more than 11,000 academic members. This will permit the project to extend its insights and promote its results in which will probably be the largest university in France.

IMT will develop the security instruments related with digital signature and timestamp (WP5) and in the definition of all the security measures in the final platform (WP6) to avoid non authorized access to the platform or its data

Key personnel

Joaquin Garcia-Alfaro: (male) Professor at IMT, he holds a full professorship habilitation from the French Ministry of Education and a research habilitation from University Pierre and Marie Curie, Sorbonne Universities. His research interests are on network security problems, with an emphasis on the management of security policies, analysis of vulnerabilities, and enforcement of counter-measures. He has been involved in several national and European projects on ICT security, including FP7 DEMONS, FP7 NECOMA, FP7 PANOPTESEC, and H2020 SUPERCLOUD.

Maryline Laurent: (female) Professor at IMT, she is head of the research team R3S (Network, Systems, Services, Security) of the CNRS UMR 5157 SAMOVAR lab. Co-founder of the Chair Values and Policies of Personal Information of IMT. Her main topics of interest are related to security and privacy, applied to several application domains: clouds, miniaturized systems (RFID, sensors), social networks and identity management.

Hervé Debar (male) is Professor at IMT and Head of the RST Department at Telecom SudParis. His activity is related to ICT security. He has been heavily involved in intrusion detection research in the past and is still conducting research in the area. His research has an important emphasis on automated threat mitigation. He is involved in several research projects at European and French level, related to ICT security. He has coordinated several European projects on ICT security, including FP7 NECOM and FP7 PANOPTESEC.

Relevant publications

Standardization:

H. Debar et al., "IDMEF", RFC 4765, http://www.ietf.org/rfc/rfc4765.txt

Scientific Publications:

J. Garcia-Alfaro, N. Cuppens, and F. Cuppens. Complete Analysis of Configuration Rules to Guarantee Reliable Network Security Policies, *International Journal of Information Security*, Springer, 7(2):103-122, DOI: 10.1007/s10207-007-0045-7, April 2008.

D. Palomares, D. Migault, H. Hendrik, M. Laurent, G. Pujolle. Elastic virtual private cloud, *10th ACM Symposium on QoS and Security for Wireless and Mobile Networks* (Q2SWinet 2014), pp. 127-131, 2014.

G. Gonzalez-Granadillo, M. Belhaouane, H. Debar, G. Jacob, "RORI-based countermeasure selection using the OrBAC formalism", International Journal of Information Security, Springer, 13(1):63-79, DOI: 10.1007/s10207-013-0207-8, August 2013.

E. I. Papagiannakopoulou, M. N. Koukovini, G. V. Lioudakis, J. Garcia-Alfaro, D. I. Kaklamani, I. S. Venieris, F. Cuppens and N. Cuppens-Boulahia, "A Privacy-Aware Access Control Model for Distributed Network Monitoring", Computers and Electrical Engineering, 39(7):2263-2281, DOI: 10.1016/j.compeleceng.2012.08.003, October 2013.

Relevant projects

H2020 SUPERCLOUD (User-centric Management of Security And Dependability in Clouds of Clouds), http://t.co/c4t5fj1V4p

FP7 MASSIF (MAnagement of Security information and events in Service Infrastructures), http://www.massif-project.eu/

FP7 DEMONS (DEcentralized, cooperative, and privacy-preserving MONitoring for Trustworthiness), http://fp7-demons.eu/

ITEA2 PREDYKOT (Policies REfined DYnamically and Kept On Track), http://www.itea2-predykot.org/

ITEA2 Role-ID (Role-centric identity), https://itea3.org/project/role-id.html

Significant infrastructure

IMT can provide to the project consortium access to an internal research security testbed platform. The platform is a network-oriented, carrier-class environment for working on ICT security and defence of large scale networks. It focuses on the ability to create realistic network configurations including heterogeneous domains and systems of systems. The platform is a joint effort between IMT and local authorities (city, department, region) to create a co-innovation space, where researchers from the school will mix with industry partners to evaluate research results prior to integration in novel products.

4.1.10 Imperial College of Science, Technology and Medicine (IMPERIAL)

Imperial College London embodies and delivers world-class scholarship, education and research in science, engineering and medicine. It is consistently rated amongst the world's best universities. The Department of Computing (DoC) of Imperial College London is involved in this proposal. DoC is one of the largest computing departments in the UK and is a world leader in academic research in computer science. The primary interest of the Visual Information Processing (VIP) section, to which the Intelligent Behaviour Understanding Group (i-BUG) who participates in the @TeSLA project proposal is associated, is to pursue fundamental research and real-world applications of Computer Vision. This research has led to over 800 publications, including over 300 peer reviewed journal papers. Much of this research has been sponsored by the UK Government's Research Councils and the European Union.

Partner role

i-Bug group will be involved in WP 5 and particularly in Tasks 5.1.2 and 5.4.2. In Task 5.1.2 ICL, along with the other partners involved in WP 5, will define the specifications of the face recognition technology required for the e-assessment portal (i.e., real-time performance etc.). In Task 5.4.2, ICL will implement the face tracking and recognition tool for continuous identity verification.

The i-BUG group of DoC is one of world-wide leaders in vision-based face analysis, including deformable face tracking, facial behaviour analysis, as well as facial biometrics. i-Bug group is currently coordinating an H2020 project (SEWA: Automatic Sentiment Analysis in-the-wild). It has attracted more than 5 Million Euro funding from EU FP7 (TERESA, FROG, SSPNet, MAHNOB, SEMAINE) and UK (EmoPain, 4D-FAB, ADAManT) projects, the majority of which are relevant to face analysis (including deformable face tracking and facial biometrics).

Key personnel

Principal Researcher: Stefanos P. Zafeiriou (male) is currently an Associate Professor in Pattern Recognition/Statistical Machine Learning for Computer Vision with the Department of Computing, Imperial College London, U.K. He was a recipient of the prestigious Junior Research Fellowships of Imperial College London in 2011. He was a finalist for the research award of the European Biometric Forum in 2006. He currently serves as an Associate Editor of the IEEE Transactions on Cybernetics and the Image and Vision Computing Journal. He has co-authored over 40 journal papers mainly on face analysis such as 2-D/3-D face recognition, deformable face tracking etc. published in the most prestigious journals in his field of research.

Co-Researcher: Maja Pantic (female) is a Professor in Affective and Behavioural Computing at the Computing Department, Imperial College London, United Kingdom, and at the Department of Computer Science, University of Twente, The Netherlands. She has received various awards for her work on automatic analysis of human behaviour including the European Research Council Starting Grant Fellowship 2008 and the Roger Needham Award 2011. She currently serves as an editor-in-chief at Image and Vision Computing Journal, and as an associate editor for the IEEE Transactions on Cybernetics and the IEEE Transactions on Pattern Analysis and Machine Intelligence. She is a fellow of the IEEE.

Relevant publications

A. Asthana, S. Zafeiriou, S. Cheng, & M. Pantic, (2013, June). Robust Discriminative Response Map Fitting with Constrained Local Models. In IEEE Conference on Computer Vision and Pattern Recognition (pp. 3444-3451). [A software implementation of the paper has been recently licenced by Seeing Machines]

G. Tzimiropoulos, S. Zafeiriou, & M. Pantic (2012). Subspace learning from image gradient orientations. IEEE Transactions Pattern Analysis and Machine Intelligence, 34(12), 2454-2466

A. Asthana, S. Zafeiriou, G. Tzimiropoulos, S. Cheng, & M. Pantic, From Pixels to Response Maps: Discriminative Image Filtering for Face Alignment in the Wild. IEEE Transactions on Pattern Analysis and Machine Intelligence, in press (available in ieee explore)

J. Alabort-i-Medina, E. Antonakos, J. Booth, P. Snape, & S. Zafeiriou, (2014, November). Menpo: A Comprehensive Platform for Parametric Image Alignment and Visual Deformable Models. In Proceedings of the ACM International Conference on Multimedia (pp. 679-682). ACM [The paper introduces the first comprehensive open-source platform for rigid and deformable alignment. It's users already run in hundredths]

C. Sagonas, G. Tzimiropoulos, S. Zafeiriou, & M. Pantic, (2013, December). 300 faces in-the-wild challenge: The first facial landmark localization challenge. In Computer Vision Workshops (ICCVW), 2013 IEEE International Conference on (pp. 397-403). [The database and the benchmark for facial landmark localization introduced with this paper are the current gold standards in the field. The database of annotations has been downloaded more than 10,000 times[

Relevant projects

4D-FAB: Analysis of Facial Behaviour for Security and Biometrics in 4D (4D-FAB) (2013-2017, UK EPSRC Project).

ADAManT: Adaptive Facial Deformable Models For Tracking (2014-2016, UK EPSRC Project).

Dynamic Facial Behaviometrics (D-FaBio) (2011-2014, Junior Research Fellowship, Imperial College London)

EC FP7 FROG: Fun Robotic Outdoor Guide (2011-2014)

SEWA H2020 Project: Automatic Sentiment Analysis in the Wild (2015-2018)

Relevant infrastructure

The i-BUG group has an established, very well equipped laboratory for research on face analysis, as well as facial biometrics. This includes: (i) a multi-sensorial set-up for recording human-computer interactions by means of 6 fully synchronised high precision cameras, (ii) a multi-sensorial setup for recording human-human interactions by means of 15 fully synchronised high precision cameras and 2 head-tracking devices, (iii) two 4D cameras for recording faces in 3D in time, and (iv) powerful data processing servers of 100 cores and many powerful NVIDIA Tesla GPU Accelerators necessary for training using large amounts of facial images as required in the @TeSLA. The estimated value of this facility is about 400,000 euro.

4.1.11   Technical University of Sofia (TUS)

The Technical University of Sofia (TUS) (www.tu-sofia.bg) is the **largest higher engineering institution** in Bulgaria with long years of experience in providing engineers. TUS trains specialists in Bachelor, Master and Doctoral degree engineering courses essential for industrial development and management.

In its structure, TU Sofia has **15 faculties** and **4 separated departments** with research staff of more than 1,100, of which 63 are professors, 436 are associated-professors and 345 are assistant professors. The university offers **twinning research programs delivered in German, English, and the French language** with association of foreign university partners and governmental organizations for international cooperation. Further training and interdisciplinary research are also available at the Open Faculty.

TUS has signed several **international cooperation agreements** with technical universities in the following countries – France, Germany, United Kingdom, Austria, Czech Republic, Greece, Hungary, Poland, Slovak Republic and Russia, USA and Japan.

Partner role

We plan to participate in:

WP 2. Requirements and modeling of the educational model – tasks related to design of educational framework for e-assessment, design of assessment models, development of technological specifications, report;

WP 3. Data privacy and ethics – to explore the legal aspects in context of the project, to identify an ethical and legal framework, report;

WP 7. Design and development of pilots – definition, realization and assessment of pilots;

WP 8. Pilot evaluation – collecting, analysing data, preparation of report;

WP 9. Dissemination and exploitation – results and analysis dissemination online and offline – institutional media, national media, workshop, scientific events.

The TUS team consists of researchers working in the area of Mathematics, Informatics and Computer Science with expertise and research interests in data modeling, business intelligence, data and text mining, ontologies and semantic web, cryptography, applications of computer algebra, intelligent technologies for learning and teaching, fuzzy logic, eLearning, personal learning and adaptation, technology enhanced learning, intelligent technologies for learning and teaching, web 2.0 and social networking, security and privacy. The combination and correlation of such scientific experience will contribute to the successful performance of the above mentioned tasks.

Key personnel

Anna Rozeva, PhD, Associate Professor in Informatics – Bulgarian team leader/ administrative manager. (female) PhD degree in Informatics on the topic: "Formalization of interfaces in a data management system"; Associate Professor in Informatics and application of computer science in economics. Experience and participation in R&D projects at institutional and national level. Research interests: data warehousing, data modeling, business intelligence, data and text mining, ontologies and semantic web. Her papers have been published in conference proceedings, journals and book chapters. Member of the scientific committee of the conference "e-Governance".

Mariana Durcheva, PhD, Assistant Professor in Mathematics. (female) She has an MSc degree in Mathematics and Informatics from Sofia University and a PhD degree in the field of Cryptography under the theme: "Discrete logarithms and generalizations of cryptographic protocols using semigroups and semirings" from the Technical University of Sofia. She is a participant in several research schools and institutes such as research stays in the Sixth Summer School on Potential Theory and Applications, Sofia, 2007 Ninth Summer school in potential theory, Budapest 2009, Applications of Computer Algebra, NY 2014 , NATO Advanced Study Institute, Ohrid 2014, Arithmetic of Hyperelliptic Curves. She has experience and participation in R&D projects at institutional and national level. Her research interests include: cryptography, applications of computer algebra, intelligent technologies for learning and teaching, fuzzy logic. She is

author of many papers, published in conference proceedings and journals. She is part of two conference Program Committees: AMEE (scientific Secretary) and Sixth Summer School on Potential Theory and Applications.

Malinka Ivanova, PhD, **Associate Professor in Computer Science and Communications**. (female) She has an MSc degree in Electronics and Automation and a PhD degree in Automation of Engineering Work under the theme: "Research and Development of eLearning Platforms" from the Technical University of Sofia. She realized several short research stays at the Tokyo Institute of Technology, Japan, Goethe University in Frankfurt, Germany, Slovak Academy of Science, Technical University in Bratislava, Slovak Republic as well as several training periods in the area of eLearning in Slovenia, Austria and France. She has experience and participation in R&D projects at institutional, national and international level. Her research interests include: eLearning, personal learning and adaptation, technology enhanced learning, intelligent technologies for learning and teaching, web 2.0 and social networking, security and privacy. She is the author of many papers published in conference proceedings, journals and book chapters. She is part of many conference Program Committees: eLSE, the PLE, DULP & SPeL @ ICALT, eCONF, ICSLE, ICWL, others and guest-editor and reviewer of several international journals like: Information Technology and Management, Interactive Learning Environments, Journal of Educational Technology Systems, Journal of Engineering and Computer Innovations, others.

Relevant publications

Assoc. Prof. Dr. Anna Rozeva

Deliyska, B., A. Rozeva, (2009). MULTIDIMENSIONAL LEARNER MODEL IN INTELLIGENT LEARNING SYSTEM, Proceedings of the 35th International conference "Application of Mathematics in Engineering and Economics AMEE", Sozopol, Bulgaria, 7-12 June, 2009, AIP Conference proceedings 1184, pp.301-308, ISBN 978-0-7354-0750-3.

Rozeva, A., B. Delijska, (2010). MULTIDIMENSIONAL (OLAP) ANALYSIS FOR DESIGNING DYNAMIC LEARNING STRATEGY. Proceedings of the 36th International Conference Applications of Mathematics in Engineering and Economics AMEE, Sozopol, June 5-10, 2010, AIP Conference proceedings 1293, pp.263-270, ISBN 9780735408500 0735408505

Rozeva, A. (2013). TEXT ANALYSIS WITH ONTOLOGY REASONING. Proceedings of the Third International Symposium on Business Modeling and Software Design BMSD'13, Noordwijkerhout, The Netherlands, July 8-10, 2013, pp. 64-73, ISBN 978-989-8565-26-6

Rozeva, A. (2013). ENHANCING DOMAIN KNOWLEDGE WITH SEMANTIC MODELS OF WEB DOCUMENTS, Journal of Mathematics and System Science, Vol.3 (7), July 2013, pp.319-326.

Rozeva, A., (2014). SEMANTIC WEB SERVICES – APPROACH AND FRAMEWORK FOR E-SERVICE DISCOVERY, Proceedings of the 28th International Conference on Information Technologies InfoTech-2014, St. St. Constantine and Elena resort, Bulgaria, September 18-19, 2014, pp. 174-181.

Dr. Mariana Durcheva

Durcheva, M. (2014). "An application of different dioids in public key cryptography, AIP Conference Proceedings 1631 (2014), 336-343, ISSN: 0094-243X.

Durcheva, M. (2014). "Public Key Cryptosystem Based on Two Sided Action of Different Exotic Semirings", Journal of Mathematics and System Science, 4 (2014) 6-13, ISSN 2159-5291.

Durcheva, M., K. Peeva (2015). "Constructing Solution Set of Fuzzy Linear Systems of Equations in Product Algebra", Proceedings of Bulgarian Academy of Sciences, v.68, No 2, ISSN 1310-1331.

Durcheva, M. (2015). "Cryptography based on curves (elliptic and hyperelliptic)", International Journal on Information Technologies and Security (IJITS), No 1 (vol. 7), 2015, ISSN 1313-8251.

Durcheva, M., I. Trendafilov, M. Rachev, (2014). "Public key cryptosystem based on endomorphism semirings of a finite chain", AIP Conference Proceedings 1631 (2014), 330-335, ISSN: 0094-243X.

Assoc. Prof. Dr. Malinka Ivanova

Ivanova, M., M. Nakayama (2014). ANALYSIS OF A PERSONAL LEARNING ENVIRONMENT FROM MULTIMEDIA PERSPECTIVE. Proceedings of the International Conference on Information Technologies (InfoTech-2014), ISSN 1314-1023, 18-19 September 2014, St. St. Constantine and Elena, Bulgaria, pp. 166-173.

Ivanova, M., M. Markova, (2014). PERSONAL LEARNING IN ENGINEERING: COMPARATIVE ANALYSIS OF EDU20 AND BLACKBOARD. Proceedings of the XIII-th International Conference "Challenges in Higher Education and Research in the 21st Century", June 3-6, 2014, Sozopol, Bulgaria

Ivanova M., C. Holotescu, G. Grosseck, Multimedia, Hypermedia and Transmedia in Support of Learning, In proceedings of Eighth International Conference on Complex, Intelligent and Software Intensive Systems, Birmingham, UK, 2-4 July 2014, pp. 504-509.

Ivanova, M. Researching Affective Computing Techniques for Intelligent Tutoring Systems, Proceedings of International Conference on Interactive Collaborative Learning (ICL), Kazan, Russia, 25-27 September, 2013, pp. 611-617.

Ivanova, M., M. Minor. Case-based Workflow Modeling in support of Automation the Teachers' Personal and Social Behavior, the PLE2013 conference, Berlin, Germany, June 2013.

Relevant projects

Assoc. Prof. Dr. Anna Rozeva

Project financed by the Ministry of Education of Bulgaria, Topic: "Centre for research and education in e-Governance", Contract № 02-78/2009-2012.

Project supported by R&D Sector at the University of Forestry – Sofia, Contract № 22/2006, Topic: „Research on the functionality for developing learning content and activities for eLearning".

Project supported by R&D Sector at the University of Forestry – Sofia, Contract № 10/2007, Topic: "System for assessment of e-materials for the purposes of eLearning".

Project supported by R&D Sector at the University of Forestry – Sofia, Contract № 113/2008, Topic: "Methodology, technology and tools for designing eLearning course".

Dr. Mariana Durcheva

Project supported by R&D Sector at Technical University – Sofia, Contract № 102пд042-11/2010-11, Topic: „Computing the discrete logarithms in some finite fields and applications in cryptography"

Project supported by R&D Sector at Technical University – Sofia, Contact № 91ни027-11/2009-11, Topic: "Decomposition of functions in Fourier series and Faber series"

Assoc. Prof. Dr. Malinka Ivanova

International Project FP6 Integrated IST-TEL of TENCompetence: "The European Network for Lifelong Competence Development – TENCompetence"

Project financed by Microsoft/Bulgaria, Topic: "Microsoft Peer Coaching Program for Professional Development of Educators – learning by activities in social-oriented and technology-rich environments"

Project supported by R&D Sector at Technical University – Sofia, Contract № 6190-3/2005, Topic: „Conceptions for implementation of electronic and distance education in Bulgarian High Schools"

Project supported by R&D Sector at Technical University – Sofia, Contact № 091ni009-10, Topic: "Development of Distributed Information System for Modeling of Simulations"

International Project "Chalkface Project", Topic: "Translation in Bulgarian and testing of Yacapaca-free online assessment platform", with partners of UK.

Relevant infrastructure

TUS possesses special computer laboratories where R&D activities as well as everyday laboratory practices in Computer Science and Informatics are performed.

4.1.12   Anadolu University (AU)

Anadolu University is a dual mode public Higher Education institution with its 16 faculties, 1 State Conservatory, 2 applied schools, 4 vocational schools, 9 graduate schools, 30 research centers, and 15 research, development and implementation units. With its 33 years of experience, distance education system has 2.6 million (1.3 million active and 1.3 million passive) learners which constitute 46% of the learners in the Higher Education system in Turkey. Currently, 13 Bachelor's, 48 Associate Degrees and 30 Certificate Programs are offered in distance education in a wide range of disciplines for Turkish people living in Turkey, 19 European countries, Azerbaijan and Turkish Republic of Northern Cyprus. Anadolu's open education system also provides educational opportunities to learners having physical, hearing and visually impaired disabilities and people in prisons.

Partner role

Anadolu University will take part in the design and development of pilots and evaluation of them.

The distance education system of Anadolu University offers a wide range of alternative sources for learning. Learners have the opportunity to get the printed books from the 106 offices all over the country and abroad. In addition to this, learning materials are delivered online through the ELearning Portal which includes several components such as interactive e-books, webinars, e-courses, videos, audio-books and e-facilitation services and formative assessment opportunities such as e-practices and e-exams. Learners have summative face-to-face exams in all degree-level programs except for e-certificate programs which constitute a minor part of the whole assessment practices of the Distance Education System.

Key personnel

Gulsun Eby (female) is a professor in Distance Education at the College of Open Education of Anadolu University. She undertook graduate studies at Anadolu University, Turkey (MA Educational Technology) and the University of Cincinnati, USA (Ed.D. Curriculum & Instruction), and also has worked a post-doctoral fellow at the College of Education at New Mexico State University, USA (2001-2002). Dr. Eby earned her B.S. degree in Computer Engineering from the College of Informatics Technologies and Engineering of Hoca Ahmet Yesevi International Turk-Kazakhstani University in the year 2012-2013. She has over 29 years of experience in distance education.

Serpil Kocdar, **Ph.D.**, (female) works as an Assistant Professor at the College of Open Education of Anadolu University. She has a BA degree from the Department of Economics and MA degree from the Department of Distance Education. She received her Ph.D. in Distance Education from Anadolu University in 2011. She worked in the Assessment Department of the College of Open Education for 12 years. She will be primarily responsible for carrying out the proposed research at Anadolu University.

Nejdet Karadag, **Ph.D.**, (male) works as the manager of the Assessment Department at the College of Open Education of Anadolu University. He has a BA degree from the Department of French Language Teaching and MA degree from the Department of Distance Education. He received his Ph.D. in Distance Education from Anadolu University. He has been working in the Assessment Department of the College of Open Education since 1997.

M. Recep OKUR (male) is an Assistant Professor at the Department of Distance Education and works as Vice-Dean at the College of Open Education of Anadolu University. He received a B.S. degree in Computer Education & Instructional Technology Department at Anadolu University (2002). He earned his M.S. degree at the Computer Engineering Department in Informatics at Anadolu University (2006). He received his Ph.D. degree from the Department of Distance Education at the Graduate School of Social Sciences (2012). He has fourteen years of experience in focusing on eLearning material design, content production, learning management systems and support systems.

4.1.13 Jyväskylän Yliopisto (JYU)

The University of Jyväskylä (http://www.jyu.fi) is a multidisciplinary, dedicated scientific and autonomic state university, with an absolute drive for quality in all areas. Measured according to the number of Master's degrees conferred, the University of Jyväskylä ranks as the second largest university in Finland. The University is also highly successful in attracting external competitive funding, from national as well as European funding agencies. In Framework Programme 7, the University has 56 projects among which six ERC-Starting Independent Researcher Grants, three Marie Curie Initial Training Networks and four Marie Curie IEF projects. In H2020, JYU has already 9 projects including one ERC project and two ITN projects. The Finnish Universities Act (558/2009) enforces that universities must promote lifelong learning. The Open University studies is one way to provide lifelong learning.

Partner role

The Open University of University of Jyväskylä will participate in the project as a full partner. We will actively participate in WP 2 (Requirements and modelling of the educational model), WP 6 (Integration of framework in learning environments) and WP 7 (Design and development of pilots).

The Open University of Jyväskylä is one of the most significant Open Universities in Finland (15,000 students, and about 50 Bachelor level subjects). During the last ten years, we have developed in-house a "study-concept" in eLearning and www-environments using many different platforms, eLearning environments and tools. In many subjects, the eLearning concept includes all the elements from the very beginning (student registration) until the end (exams and getting the certificate or diploma). The only, kind of "missing part", is the strong identification with the students.

Key personnel

Dr. Tarja Ladonlahti (female) Pedagogical Head of the Open University. University teacher in the field of Special Education and Research Methods. An author of national and international presentations, papers and articles about the obstacles to learning and teacher co-operation and guidance in eLearning environments.

IT- specialist and software developer Jussi Talaskivi (male). 10 years of work experience of video services, video encoding and delivery methods, digital identity management and provisioning, data integration models, interfaces and API:s of different LMS and CMS platforms.

M.Sc. (Sociology) Matti Nieminen (male). University teacher in the field of Social Sciences. 13 years of work experience in eLearning and distance learning at the Open University of Jyväskylä. Lecturing also at the Department of Social Sciences and Philosophy, University of Jyväskylä. Special expertise: environmental sociology, qualitative research methods, eLearning and distance learning.

M.Sc. (Econ. and Bus.Adm.) Minna Kallinen-Kuisma (female). University teacher in the field of Business Studies, especially Management and Leadership. 15 years of work experience in eLearning and distance learning at the University of Jyväskylä. Also experience in IT and eLearning environment development, in particular user testing and piloting.

M.A. (Literature) Anne Mari Rautiainen (female). University teacher in the field of Art and Culture Studies, especially Studies in Writing. 10 years of work experience in eLearning and distance learning at the Open University of Jyväskylä. Special expertise: writing as a learning tool, web writing, eLearning and distance learning.

M. Sc (Econ) and M of Arts (Art Education) Merja Laamanen (female). IT-specialist and teacher for eLearning and Web-based education tools and pedagogical models with 10 years of work experience in developing elearning models, training and support modules and new digital tools for Higher Education.

We would like to define the other participants' profile later based on discussion with the project co-ordinator.

Relevant publications

In the University of Jyväskylä, the ITC-Services have made a lot of in-house development with the Open University. We have created a) Korppi-data system (study transcripts and study methods, course registration and study fee, individual study plan, registration for exams, study attainment follow up and feedback of the students), b) Koppa-portal (study instructions and submitting written assignments) and c) Moniviestin-channel (web based publishing and delivery of video lectures).   The university is member of the national eExam-consortium, which develops new kind of e-assessment tools for Higher Education.

Relevant projects

Developing the eLearning concept. New ICT-based assessment tools for online students (remote-tests). Collecting very systematic feedback from our students about development work and the usability of our systems and tools. Partner of EU (ESF) project TIPTOP, which modelled and developed shared services for tracking study success of students, who have risk to drop-out, supporting tools for student study register, and credits data transfer between educational organizations and degree programs.

Relevant infrastructure

Korppi-data system (study transcripts and study methods, course registration and study fee, individual study plan, registration for exams, study attainment follow up and feedback of the students), Koppa-portal (study instructions and submitting written assignments) and Moniviestin-channel (web-based publishing and delivery of video lectures).

4.1.14   European Quality Assurance Network for Informatics Education, e.V. (EQANIE)

The European Quality Assurance Network for Informatics Education (EQANIE) is a non-profit association seeking to enhance the quality of informatics degree programmes and education in Europe through evaluation and quality assurance. EQANIE develops quality assurance criteria for the external assessment of Informatics Higher Education, and assumes responsibility for the protection of a corresponding European quality label. It establishes and operates a European Label Award System for informatics education programmes.

EQANIE was founded in 2009, with members ranging from professional societies and professors' associations to research organisations and quality assurance agencies in the field of informatics. EQANIE has already assembled a large expertise in the field of learning outcome development in collaboration with stakeholders.

Partner role

EQANIE will mainly contribute to work packages 4 – Quality and accreditation and 8 – Pilot evaluations. More specifically, within work package 4, EQANIE will contribute to the analysis of European Standards and Guidelines with regard to implications for online education and assessment, the development of quality indicators and carry out a meta-evaluation of the pilots in order to provide recommendations based on the lessons learnt during the pilots. With regard to the pilots themselves, EQANIE will also carry out those dealing with the field of informatics and computer science. Furthermore, EQANIE will share the project achievements and results within its own member base to contribute to its dissemination.

As a member based organisation for external quality assurance bringing together the academia and the professional world in the field of informatics education, EQANIE is well suited to contribute to several aspects of the project: Firstly, as a subject-specific European accreditation agency, EQANIE has a deep understanding of the requirements for assessment in accreditation. Secondly, EQANIE can bring in expertise with regard to relevant informatics aspects based on its academic members' experience. Thirdly, due to its membership throughout Europe, EQANIE spreads good practise in educational methodology and internal and external quality assurance.

Key personnel

Jana Möhren (female) acts as Secretary General of EQANIE. She is the Head of the International Office at ASIIN where she has been since 2006, responsible for managing quality assurance procedures and projects internationally. She manages and represents ASIIN in EU-sponsored Projects (LifeLongLearning, TEMPUS) and implemented numerous workshops and consulting activities in internal and external quality assurance and capacity building. Additionally, she is responsible for the certification of non-degree educational offers (VET). She is also the Secretary for the European Alliance for Subject-Specific and Professional Accreditation (EASPA). Jana has studied at the University Passau, Germany, and at University Laval, Canada, and holds an Integrated Masters degree in Languages, Business and Cultural Studies.

Eduardo Vendrell Vidal (male) is the current President of EQANIE. He received a BSc in Computer Science and a PhD in Computer Science from the Polytechnic University of Valencia, Spain. He is Associate Professor at Universitat Politècnica de València since 1991, at the Department of Systems Engineering and Control. Dr. Vendrell is currently the Dean of the School of Informatics (ETSINF) and President of the Spanish Council of Deans of Informatics Engineering (CODDII). He is also a member of the Education in Engineering Committee of the World Federation of Engineering Organizations (WFEO).

4.1.15   Instituto Nacional de Astrofísica, Óptica y Electrónica (INAOE)

INAOE is a research institute supported by the Mexican Council for Science and Technology (CONACyT). The main goals of INAOE are the generation of new knowledge, the development and spreading of fundamental and applied research, in the fields of astrophysics, optics, electronics and computer science, for the benefit of our country and the humanity.

Partner role

For this proposal, personnel from the human-language technology laboratory at INAOE will be participating. INAOE's team will be in charge of developing forensic analysis mechanisms for trusted assessment in the eLearning platform. Specifically, devices for the verification and attribution of authorship in written documents will be developed. The goal is to develop mechanisms for guaranteeing the authorship of documents written by students (e.g., homework, evaluations, exams).

The Human-language technology lab at INAOE is a group with proven experience in automatic authorship analysis and profiling in text documents. The group has developed state-of-the-art research in the field, as well as functional prototypes that have been evaluated in academic competitions and evaluation campaigns. INAOE is among the biggest groups in natural language processing within Latin America with active collaborations with European and north-American institutions. INAOE´s team has obtained the best results for three consecutive years in authorship identification/profiling tasks at the PAN-CLEF forum.

INAOE will implement the forensic analysis instrument (WP5) that will be integrated as part of the final platform, allowing to identify the authorship of a document

Key personnel

Hugo Jair Escalante Balderas (male), PhD in Computer Science, Associate researcher at INAOE, Mexico. Director of ChaLearn (the Challenges in Machine Learning organization) since 2011. Fellow of the Mexican System of Researchers, level 1. Member of the winning team of PAN2012's sexual predator detection task, and PAN2013- PAN2014's Author profiling tasks. Lecturer at the Russian Summer School on Information Retrieval, 2013. Best PhD thesis on Artificial Intelligence 2010 (Mexican society in artificial intelligence). Best student paper award IJCNN 2010.

Manuel Montes-y-Gómez (male), PhD in Computer Science, Associate researcher at INAOE, Mexico. President of the Mexican Association of Natural Language Processing. Fellow of the Mexican System of Researchers, level 2. Member of the Mexican Academy of Sciences. Member of the winning team of PAN2012's sexual predator detection task, and PAN2013- PAN2014's Author profiling tasks. Lecturer at the Russian Summer School on Information Retrieval, 2013.

Relevant publications

Upendra Sapkota, Thamar Solorio, Manuel Montes, Steven Bethard and Paolo Rosso. Cross-Topic Authorship Attribution: Will Out-Of-Topic Data Help?. 25th Int. Conference on Computational Linguistics, COLING 2014. 2014

H. J. Escalante, T. Solorio, M. Montes. Local Histograms of Character n-grams for Authorship Attribution. ACL'11: Proc. of the 49th ACL, pp. 288–298, 2011.

A. P. López, M. Montes-y-Gómez, H. J. Escalante, L. Villaseñor. Using Intra-Profile Information for Author Profiling, Working Notes for CLEF 2014, CEUR Workshop Proc. Vol. 1180:1116-1120, 2014 [Winning approach of the AP task at PAN-CLEF 2014]

A. P. López, M. Montes-y-Gómez, H. J. Escalante, L. Villaseñor, E. Villatoro. INAOE's participation at PAN'13: AP task. Working Notes for CLEF 2013, CEUR Workshop Proc. Vol. 1179, 2013. [Winning approach of the AP task at PAN-CLEF 2013]

E. Villatoro, A. Juárez, H. J. Escalante, M. Montes-y-Gómez, L. Villaseñor. A Two-step Approach for Effective Detection of Misbehaving Users in Chats. Working Notes for CLEF 2012, CEUR Workshop Proc. Vol. 1178, 2012. [Winning approach of the sexual predator detection task at PAN-CLEF 2012]

Relevant projects

WIQ-EI—Web Information Quality Evaluation Initiative (European Comission -FP7 2011-2015). International Research Staff Exchange Project. PI: Michael Granitzer; PI INAOE: Manuel Montes-y-Gómez.

A New Approach for Text Classification based on Similar Document Consensus. (Mexico CONACyT, 2011-2014). Fundamental research, P.I. Manuel Montes.

Multimodal Image Retrieval to Support Medical case--based Scientific Literature Search (USA Microsoft LACCIR, 2013-2015). Applied Research, PI INAOE: Hugo Jair Escalante

Relevant infrastructure

The Human-language technology lab at INAOE has computing infrastructure to develop research and applications on large scale text mining.

4.1.16   Fondation de l'Institut de Recherche IDIAP (IDIAP)

Idiap is a non-profit research foundation affiliated with the Swiss Federal Institute of Technology at Lausanne (EPFL) and recognized as part of the "ETH strategic domain" (through a joint development plan with EPFL). With an annual budget around 10 MCHF and about 100 staff members (including senior researchers, postdoc, PhD students, and development engineers), IDIAP's budget is currently covered by 40% from the Federal Government, the State of Valais and the City of Martigny together (hard funding), while the other 60% (soft funding) comes from competitive projects and collaborative projects with industry. IDIAP being a not-for-profit organization, the institute is exempt from taxes. However, IDIAP is subject to multiple financial audits, including an annual control by the Federal Department of the Interior for Foundations (DFI), the Secretary of State for Education and Research (SER), and the State of Valais. Being involved in multiple EU projects, IDIAP is also regularly audited by EU-accredited auditors.

Partner role

IDIAP and more particularly its Biometrics group will be involved in the specification and development of voice recognition (also known as speaker recognition) as well as security techniques against face and voice spoofing attacks (presentation attacks at sensor level). These technologies will be developed and transferred as satellite packages to our BOB signal processing and machine learning library (http://idiap.github.io/bob/).

IDIAP coordinated European research projects in Biometrics such as MOBIO (http://www.mobioproject.org) on Mobile Biometry, and TABULA RASA (http://www.tabularasa-euproject.org) on Trusted Biometrics under Spoofing Attacks and is currently coordinating BEAT (http://www.beat-eu.org) on Biometrics Evaluation and Testing.

The available systems developed by IDIAP related to voice recognition and anti-spoofing will be the base for the development of voice recognition instruments in WP5

Key personnel

Dr Sebastien Marcel (male) (http://www.idiap.ch/~marcel) is a Senior Research Scientist at the Idiap Research Institute where he leads the Biometrics group and conducts research on multi-modal biometrics including face recognition, speaker recognition, vein recognition, as well as spoofing and anti-spoofing. Among coordination and participation in European Research projects (FP7 MOBIO, FP7 BBFor2), he was coordinating the EU FP7 ICT TABULA RASA project which aimed to develop spoofing counter-measures for a wide variety of biometrics including mainstream and novel modalities, and he currently coordinates the EU FP7 SEC BEAT project. He serves as an Associate Editor for IEEE Transactions on Information Forensics and Security. He is also co-Editor of the Springer "Handbook on Biometric Anti-Spoofing". Finally, he is active in reproducing research in biometrics with the open source signal-processing and machine learning toolbox Bob (http://www.idiap.ch/software/bob).

Relevant publications

A Scalable Formulation of Probabilistic Linear Discriminant Analysis: Applied to Face Recognition", L. El-Shafey, C. McCool, R. Wallace, and S. Marcel. IEEE Transactions on Pattern Analysis and Machine Intelligence, 2013.

Motion-based counter-measures to photo attacks in face recognition", A. Anjos, and S. Marcel. IET Biometrics, 2013.

Joint speaker verification and anti-spoofing in the i-vector space. A. Sizov, E. Khoury, T. Kinnunen, Z. Wu, and S. Marcel.. IEEE Transactions on Information Forensics and Security, 2015. (to appear)

Hierarchical speaker clustering methods for the NIST i-vector challenge. E. Khoury, L. El Shafey, M. Ferras, and S. Marcel. In Odyssey: The Speaker and Language Recognition Workshop, 2014.

Bob: a free signal processing and machine learning toolbox for researchers", A. Anjos, L. El Shafey, R.Wallace, M. Gunther, C. McCool, and S. Marcel, In International Conference ACM Multimedia, 2012.

Relevant projects

"Biometrics Evaluation and Testing (BEAT)", EU FP7 SEC STREP, 2012-2016

"Trusted Biometrics under Spoofing Attacks (TABULA RASA)", EU FP7 ICT STREP, 2010-2014

"Mobile Biometry (MOBIO)", EU FP7 ICT STREP, 2008-2010

"Bayesian Biometrics for Forensics (BBfor2)", EU Marie-Curie ITN, 2010-2013

"Face Recognition Robust to Replay Attacks (REPLAY)", Swiss Commission for Technology and Innovation, 2010-2011

Relevant infrastructure

IDIAP operates a homogeneous computing farm consisting of about 100 linux workstations (centrally managed, running Linux) and additional shared computing resources (10 dual octo-cores Intel Xeon 64-bits CPU, 128GB RAM) using the open source batch-queuing system Oracle Grid Engine. For the administrative and the software development staff or, in case of special needs, Windows 7 and Mac OS X machines are also used. All the computing services offering specialized features are managed internally and setup using virtual server technology. IDIAP operates around 90TB of highly available and secure storage (based on NetApp systems). In addition to this, a high-capacity (300TB) and high-performance (aggregated bandwidth of several gigabytes per second) storage system based on the Lustre technology (see http://lustre.org) is available for research work. IDIAP is connected to Internet through the Swiss academic network with a 1Gb/s network connection. For the purposes of the FP7 BEAT project, IDIAP keeps as a separated infrastructure, 4 dual deca-cores Intel Xeon 64-bit CPU with 256GB RAM, interconnected to 20TB of secure storage via 8 10 Gb/s links. This farm composed of 80 cores is balanced into different processing queues in order to maximize computing capabilities and availability to the BEAT users. Storage and computing are fully virtualized services and can be expanded on demand to meet peak usage or expand the processing and storage capacity indefinitely and transparently. We expect this infrastructure will be used during this project.

4.1.17   WSFW, SA (Watchful Software)

Watchful Software is focused on providing data-centric information protection that works. It also provides advanced persistent security solutions that keep sensitive information safe from security breaches resulting from either accidental or malicious disclosure.

Our company was formed to protect an organization's most critical asset after its people – its information. Our technologies address the growing need for protecting sensitive and proprietary information against accidental or malicious theft, leakage, or loss. Leveraging key technologies including advanced encryption algorithms, digital rights management, and eBiometrics, Watchful has developed a suite of solutions that ensure only authorized personnel have access to enterprise systems and information, protecting against potentially massive economic and competitive damage from cyber-terrorists and information thieves.

Watchful Software is expert in the Keystroke Dynamics technique in persistent security mechanism to constantly authenticate users or detect intruders. We are expert in requirements of Keystroke Dynamics tool in terms of accuracy (False Rejection Rate vs False Acceptance Rate), text sample size to validate/detect and speed of detection.

We also have a patent pending for the system and method for intrusion detection through Keystroke Dynamics

Partner role

Coordinate to define the final framework to connect the learning platforms to TeSLA.

Describe the data for the Keystroke Dynamics module. Which information will be required to capture from the user and any detail important for our Keystroke Dynamics module to work.

Develop/adapt the Keystroke Dynamics module following the specifications of the final system.

Due to extensive experience of WSFS in the integration of biometric instruments for enforcing authentication, it will lead the integration process (WP6). In addition, they will be responsible on the development of the keystroke dynamics instrument in WP5, and will participate in the exploitation of the project (WP9), improving the security of their systems with some of the developed instruments

Key personnel

Paulo Pinto (male) is Portuguese, has got a PhD in Applied Math and is a Software Engineer.

He is responsible mainly for all implementation and R&D tasks related with TypeWATCH Enterprise and TypeWATCH for Individuals (Watchful Software products)

Bernardo Patrão (male) is Portuguese and has a Master in Computer Science and is a Senior Engineer.

He is responsible for TypeWATCH and RightsWATCH Product Owner (Watchful Software products)

Daniel Antunes (male) is Portuguese and is a Computer Science Engineer.

He is now a Senior Engineer and Senior developer and a leading architect.

Rui Silva (male) is Portuguese and is a Quality Assurance Senior Engineer.

He is responsible for all the Watchful Software Q&A process.

Nadia Valls (female)is Portuguese and has a Master in Information Management Systems.

He is a Quality Assurance Engineer and is responsible for defect registry, test planning, execution and improvement.

Sergio Cruz (male) is Portuguese and has a Master in Computer Science.

He is a Project Manager and is responsible for project management.

Relevant publications

Monrose, F., Rubin, A., Keystroke dynamics as a biometric for authentication, Future Generation Computer Systems, volume 16, page 351-359 (2000)

Magalhães, S., Keystroke dynamics stepping forward in authentication, GESTS International Transactions on Computer Science and Engineering, volume 29 (2006)

Ferreira, J., Santos, H., Patrão, B., Intrusion detection through keystroke dynamics, 10th European Conference on Information Warfare and Security (2011)

Pinto, P., Patrão, B., Santos, H., Free Typed Text Using Keystroke Dynamics for Continuous Authentication, Communications and Multimedia Security, Lecture Notes in Computer Science Volume 8735, 2014, pp 33-45 (2014)

TypeWATCH Enterprise and TypeWATCH for Individuals, Watchful Software products that offers continuous identity verification by analyzing free text typing patterns (www.watchfulsoftware.com/en/products/typewatch)

Relevant projects

TypeWATCH Enterprise - eBiometric solution that offers continuous identity verification. Recognizes a person by the way he/she types on a keyboard (Keystroke Dinamics thecnique), with a comprehensive set of Monitoring and Auditing capabilities for compliance purposes.

TypeWATCH for individuals - the B2C version TypeWATCH Enterprise, which features state-of-the-art, hardware-less biometrics technology to continuously verify that the people using a computer system are actually the people they say they are. TW4i is a "plug & play" software that protects anyone's laptop or desktop against hackers.

RightsWATCH - state-of-the-art data-centric information security solution that ensures sensitive information can only be used by those that have express authority to do so. Even if sensitive data is leaked, it is rendered useless to unauthorized parties that may acquire it. Leveraging Data Classification, Information Rights Management and Data Loss Prevention in a single solution, RightsWATCH keeps sensitive data safe and secure regardless of whether it is in transit or stored inside or outside your network perimeter defences.

4.2   Third parties involved in the project (including use of third party resources)

No third parties involved.

5   Section 5: Ethics and Security

⚠️ *This section is not covered by the page limit.*

5.1   Ethics

The work performed in the project will not raise ethical issues. The procedures and findings generated within the pilots will not mislead current practices or related protocols. They will only improve current systems.

With respect to personal data, it will be anonymised/pseudonymised by the scenario providers before analysis of the project. In situations where precise users need to be identified, the following principles will apply:

- Data Retention time. Data must be retained for a period of time no longer than what is necessary to the activities for which it was collected. If the data is required for detection and suppression of plagiarism, it can be stored for a longer period of time. Special authorization mechanisms to this data must be used; if possible, only one party – which would act as the interface with authorities in case the data is required by them – should have access to the data. This project aims to set this data retention time.

- Forensic support. Data that is retained for forensic purposes must be maintained exactly in the original form. Indeed, data handling and processing invalidate the content as forensic proof.

- Cross-Border Data Transmission. It must be possible to limit the transmission of data outside of certain borders (e.g. national border, company border). It should be possible to process data within such a border.

- International Data Transmission. If personal data must be transferred to another country outside the European Union territory, it must be ensured that the level of data protection in the country of destination is adequate.

- Least Persistence Principle. Only data strictly needed for security guarantee must be kept, while unnecessary details must be deleted or made anonymous.

- Flexible Security Measures. Considering state-of-the-art technology, security measures must be taken to preserve integrity, confidentiality, and availability of personal data. Such measures must be flexible in order to guarantee several levels of security.

- Minimum Security Measures. A minimum set of measures must be taken to preserve security of sensitive data. Such a minimum set depends on both the sensitiveness of data and the state-of-the-art technology at the time of implementation.

5.2   Security[1]

Please indicate if your project will involve:

- activities or results raising security issues: (NO)

- 'EU-classified information' as background or results: (NO)

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[1]   Article 37.1 of the Model Grant Agreement: *Before disclosing results of activities raising security issues to a third party (including affiliated entities), a beneficiary must inform the coordinator — which must request written approval from the Commission/Agency.* Article 37.2: *Activities related to 'classified deliverables' must comply with the 'security requirements' until they are declassified. Action tasks related to classified deliverables may not be subcontracted without prior explicit written approval from the Commission/Agency. The beneficiaries must inform the coordinator — which must immediately inform the Commission/Agency — of any changes in the security context and — if necessary —request for Annex 1 to be amended (see Article 55).*