



CARLOS ALBERTO CATALINA ORTEGA

Director of Simulation Technologies

PERSONAL INFO

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PROFILE

During the last 14 years of my professional career, I have been working in the **Simulation, Virtual Reality, Augmented Reality and Computer Vision** fields mainly.

I am used to working in complex and multidisciplinary projects as some of the projects involve collaboration with other international partners (**several H2020 projects**), to include other perspectives (design, psychological, product...), the integration of third parties HW/SW. I am very used to manage complex projects from the **basic idea to a final project/product** using different technologies (computer vision, sensorization, data gathering, industrial applications...).

During my career I have worked as a **Unit Head, Project Manager, Scrum master, Product owner, Producer** and Technician.

AREAS OF EXPERTISE:

Project Management, Product Management, Producer, Product Owner, Unit management, Agile Management, Team Building and Leadership, Creativity, Teamwork, Mentoring and Training, Team Collaboration, Virtual Reality, Augmented Reality, Simulation, AR, VR, MR, XR.

WORK EXPERIENCE:

ITCL Instituto Tecnológico de Castilla y León www.itcl.es. Private non-for-profit Research Centre, Spain. 2004- Present, several roles:

Director of the Simulation Technologies Unit (2008 – present) (ITCL)

Head of the Unit consisting of **14 people** (3 remotely). Management of the different projects and teams. Lead of 4 European Projects (1 AAL and 3 H2020), 12 National Research Project, 4 Regional research projects, several projects for private companies. The unit was created in 2004, while my leadership began in 2008 (only 2 technicians in that moment).

Also performing commercial activities with direct contact with clients and collaborating with the OTRI unit in the preparation of proposals to research projects for national and European calls.

Being a small centre, also other general management tasks are under my responsibility: Human resources, reporting to the general board, communication activities, budgets...

Most relevant projects:

- **SIMUSAFE:** H2020 project to create 4 types of simulators that interact in the same virtual environment (car, motorcycle, bicycle and pedestrian) to safely assess risk perception and decision making of road users. The simulators will measure the bias of driving in real (with naturalistic and control environment test) and simulated vehicles. 8M€ projects with 14 partners.
The lead of the concept in the project proposal and leading the project with the ITCL team.
- **ECONFIDENCE:** H2020 project to create a methodology to create Serious Games that promote a Behavioural Change. I create the methodology (publication pendant) that was applied in the two games. At ITCL we created "School of empathy" Serious game <https://www.youtube.com/watch?v=DZY98YT2cH8> with Unity 3D. I worked as a Producer, very involved in the storyboard creation. Project valued by the European Commission as excellent, invited to present the project in an exposition of Technologies for Social Good in the European parliament. The commercial partner in the consortium Everis has started commercial activities in schools.
- **Drivesim:** Car simulator for Driving schools <https://www.youtube.com/watch?v=G08obxAexLI>. I was the Project Manager and Producer and was highly involved in the design and coding of the project, developed under C# Unity3D 4.2-4.6. The client is selling the product in several countries. In 2014 the project was awarded the prize for the Best Serious Game of Business Strategy in the Fun and Serious Game Festival.

WORK EXPERIENCE:

Director of the Simulation Technologies Unit (2008 – present) (ITCL)

(continuation)

- Other National Research projects (involved in getting the project, design of the product and management):
 - PRODUCTIO: VR and AR for industry 3D interactive manuals and AR information access.
 - INSPECTOR: Facilities simulator for safety training and assessment with VR.
 - InRoad: Drone simulator for infrastructures review training.
 - Secusim: Multipost military simulator for indirect fire, mortar (Instructor, Commander, FOW and Mortar crew).
 - PIGADVISOR: Development of a pig disease classifier with tissue images.
 - TISSUSIM. 3D reconstruction of tissues at thread level for simulation.
 - SV3D: Visualizer of point cloud 3D model for web sites.
 - TextoSign: 3D avatar to translate text to Spanish Sign Language.
 - Estarteco: Serious Game to show the values of ecosystems (14 simultaneous AR markers)
 - SIMPRO: Editor for industrial machinery simulation.
- Other Client projects
 - App with a 3D avatar for voice care for Mutua Universal.
 - Serious game "Mi Tienda 2.0" to show SME companies the value of technologies.
 - Kinect based serious game for the elderly with heart problems.
 - Experience for the Human Evolution Museum in Burgos with AR.

Lead Scrum organization and Digital Transformation. (2018 – present) (ITCL)

In parallel with my normal activity, I have been leading the Digital transformation of the whole ITCL centre to obtain the ISO 33000 on Quality of the Software Process. Teaching and integrating Scrum and related Tools (Jira, Confluence, SonarQube, Bitbucket) within the organization.

Engineering Simulation Technologies Unit (2006-2008) (ITCL)

- Development of a Forklift Simulator in a National Research Project, <https://youtu.be/R3BWCi0RwGg?t=54> Lead programmer of the project created with the Virtools game engine. Including the integration of the hardware and the physics created by another partner of the project.
- Developer in the Virtual Factory project that uses a Motion capture suit and VR Gloves to interact with a Virtual Factory, the system retrieved information about the interactions. Developed with Virtools as a game engine and Java for the management of the interactions and to show the results.
- Developer of a simulator of the official exam to get the motorcycle driving license in Spain. Using Irrlicht as a game engine.
- Develop of an Augmented Reality Editor with the Irrlicht game engine. The editor created in windows platform allows the user to add several 3D objects and 3D text to AR markers and create several steps. The created operation was saved in a special format that can be reproduced in windows and PDA (Symbian SO). I was the only programmer. <https://www.youtube.com/watch?v=hwQxYcol5GA> Used as my final project in Computer Science.

Internship partial time (2004-2006) (ITCL)

- Developer and tester in several projects of industrial applications, computer vision and serious games.

National Evaluation and Foresight Agency Spain. August 2015 - Present (**ANEP**)

R&D Projects evaluator. Independent evaluator of R&D project related to Virtual and Augmented Reality and Simulators. Several National research funding programs to assess the financial and technical quality of the presented proposals.

EOI (Industrial Organization School) Spain. November 2017 (**EOI**)

I worked as an expert in Virtual Reality and Augmented Reality for the EOI to guide several startups in Polo Digital Malaga on the application and possibilities of such technology in different fields.

LANGUAGES:

- Spanish: Native speaker.
- English: Advanced speaker.

PRODUCTS DELIVERED:

- Serious Game: School of Empathy (Project management, Methodology and Storyboard) <http://www.schoolempathy.com/>
- eSIMOX Indirect Fire Tactical simulator (Project manager/Producer)
- Driving Simulator: Drivesim (Producer and coding) <https://drivesimsimulator.com/> Awarded in the Fun and Serious game Festival.
- Avatar for Sign Language translation: Textosign (Project manager) <http://www.textosign.es/> The project wins several prizes (Vodafone, Simo network...).

EDUCATION AND CERTIFICATION:

- Expert Scrum Foundations (2014)
- Rey Juan Carlos University, Madrid, Spain. Master's Degree in Computer Graphics, Videogames and Virtual Reality (2012)
- Burgos University, Burgos, Spain. Degree in Computer Science (2009)
- Burgos University, Burgos, Spain. Degree of Technical Engineer in Computer Science Management (2005)
- Burgos University, Burgos, Spain. Degree of Industrial Technical Engineer Specializing in Industrial Electronics (2004)

TECHNICAL CAPABILITIES:

- Data Science: Virtual Reality, Augmented Reality, Simulation.
- Infrastructure, Operations, and Tools: JIRA, Confluence, Navision, Database, Office
- Programming/Scripting: C#, Java, Unity3D.
- Communication: Spanish, English.

PERSONAL AWARDS:

- i3 Award 2010 granted by the Professional Association of Computer Engineers of Castilla y León, to the best Final Project (2009). Augmented Reality editor for PC and PDA <https://www.youtube.com/watch?v=hwQxYcol5GA>
- 2004 Award as the second-best project of the University of Burgos by the Official Industrial Engineers of Burgos and Palencia. Ububot, a small robot that follows a line, has a solar panel automatically oriented and has a radiofrequency control. The project was coded in assembly code for Microchip and controls 3 types of motors. I was in charge of most of the code, all the mechanical design and part of the electronic board design. https://www.youtube.com/watch?v=PdWf_fMMbAA

PUBLICATIONS:

- María Vega López González, Ana García-Varcáncel Muñoz-Repiso, Marta Martín del Pozo, Verónica Basilotta Gómez-Pablos, Carlos Alberto Catalina Ortega. Serious games evaluation and analysis metrics: Contribution for eConfidence project. II International Virtual Congress on Education, Innovation and ICT. 12-14 December 2017. Madrid, Spain
- Mobyen Uddin Ahmed, Shahina Begum, Carlos Alberto Catalina, Lior Limonad, Bertil Hök, Gianluca Di Flumeri. "Cloud-based Data Analytics on Human Factor Measurement to Improve Safer Transport". In 4th EAI International Conference on IoT Technologies for HealthCare October 24-25, 2017. Angers, France, At Angers, France.
- López García, C., Catalina Ortega, C. A., & Zednik, H (2017) "Realidade Virtual e Aumentada: Estratégias de Metodologias Ativas nas Aulas sobre Meio Ambiente". Informática na Educação, 20(1), 46-59.
- Carlos Alberto Catalina Ortega, Mario Martínez-Zarzueta "Virtual Reality for rehabilitation of cardiac pathologies" I Intersectorial Congress Aging and Dependency 2017
- Carlos Alberto Catalina Ortega "Current possibilities of virtual reality and augmented reality applied to maintenance according to case studies" Instituto Tecnológico de Castilla y León (ITCL) 6th SPANISH MAINTENANCE CONGRESS 2017
- Carlos Catalina Ortega y C. López García (2016) "The integration of Virtual Reality in education a challenge to achieve ". Communication and Pedagogy, 287-288, pp 92-98
- Carlos Catalina Ortega, C. López García and H. Zednik (2016) "Application of Virtual and Augmented Reality in activities to dynamize the classrooms on the Environment". XXIV Cycle of Lectures on New Technologies in Education. Awarded as Best Paper. Pp. 41-50
- Saracchini, Rafael FV, Carlos A. Catalina, R. Minetto, J Stolfi. "VOPT: Robust Visual Odometry by Simultaneous Feature Matching and Camera Calibration", - In Proceedings of the International Conference on Computer Vision Theory and Applications, 2016.
- Rafael Saracchini, and Carlos Catalina Ortega. "An augmented reality platform for wearable assisted living systems." Journal of Theoretical and Applied Computer Science 9.1 (2015): 56-79. 2015
- Rafael Saracchini, Carlos Catalina Ortega, Luca Bordoni "Mobile assistive technology, with augmented reality, for the elderly". Comunicar, 45, pp 65-74. DOI: 10.3916/C45-2015-07 2015
- Rafael F. V. Saracchini, Carlos C. Ortega. "An Easy to Use Mobile Augmented Reality Platform for Assisted Living Using Pico-projectors" International Conference on Computer Vision and Graphics ICCVG 2014
- Catalina Ortega, C.A. "IDE for creation of manuals with Augmented Reality for PC and PDA" JOREVIR: Third conference on Virtual Reality and Virtual Environments 2009
- Catalina Ortega C.A. "Forklift simulator " JOREVIR: Third conference on Virtual Reality and Virtual Environments 2009.