Pedro Palomo Pérez

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Education

Academic Degree: M.S. Degree in Computer Science – Universidad Politécnica de Madrid 2002

Languages

English Professional competence

Spanish Mother Tongue

Abstract

Software engineer with fifteen years of experience and wide experience in international projects for embedded SW production for flight and ground applications, with strong knowledge in all the phases of the software life cycle.

Most of my career I have been involved in the development of Real Time Systems, Critical Software and Software Engineering applied for operational systems and real time test benches.

I have been Project Manager in several projects with capabilities and formal education to face duties of higher responsibilities within the development cycle (including scoping, scheduling, budgeting), team coordination and technical lead.

Experience

At present Project Manager of Embedded System Division of the Aerospace Engineering Business Unit at Deimos Space S.L.U.

2017 **Elecnor Deimos - Flight Systems Business Unit – Embedded Systems**

Project Manager

Project S3CDISVV (Sentinel 3-C & Sentinel 3-D Satellites ISVV)

Perform the Independent Software Verification and Validation of the Software for the critical element to detect as many and as critical defects in the flight SW as possible given the constraints in terms of schedule and resources.

Responsible of reviewing datapacks, providing findings, and managing the relations with customer as well as the coordination of the ISVV team.

JIRA, FOLIO

2017 **Elecnor Deimos - Flight Systems Business Unit – Embedded Systems**

Project Engineer

Project NEXCODE (Next Generation Uplink Coding Techniques)

The project aims to introduce new coding techniques able to improve performances in terms of supported data rate and maximum distance which are key for both near Earth and deep space missions, allowing maximization of Telecommand (TC) data volume in point to point communication links between Earth stations and spacecraft.

Responsible of implementing and testing several parts of the system; the telecommands and telemetry tool coded in Java and the test bench software application running in the ARM processor over the freeRTOS.

C, JAVA, TCP/IP COMMS, FREERTOS, ARM, MICROBLAZE, ZYNQ-7000, XILINX DEVELOPMENT KIT

2016 **Elecnor Deimos - Flight Systems Business Unit – Embedded Systems**

Project Engineer

Project COREGAL (Combined Positioning-Reflectometry Galileo CodeReceiver for Forest Management)

The project COREGAL is a combined Position+Reflectometry (P+R) Galileo receiver developed as main sensor for platform positioning (cm level) and biomass estimation, the latter using reflected GNSS signals (also called GNSS-R) on tree canopies and ground. COREGAL uses Galileo E5 AltBOC modulation to achieve the requirements imposed (P+R).

Responsible of porting the GNSS receiver software solution to a board Mercury ZX1 Zynq-7000, over operating system eCos. Adapt low layers to POSIX API, solve several operating system bugs. Develop TM/TC communication layer with external tools.

C, JAVA, TCP/IP COMMS, ARM, ASSEMBLER, ECOS, ZYNQ-7000 XILINX, DEVELOPMENT KIT

2016 **Elecnor Deimos - Flight Systems Business Unit – Embedded Systems**

Project Engineer

DRAMA (Debris Risk Assessment and Mitigation Analysis)

Upgrade of ESA’s Debris Risk Assessment and Mitigation Analysis (DRAMA) Tool Spacecraft Entry Survival Analysis Module

Responsible of designing and implementing several modules in the software architecture in C++ as well as preparing the development infrastructure for coding, testing, packing and validating the system in differents platforms.

C++14, GOOGLETEST, ECLIPSE, GCC, CLANG, VISUAL STUDIO, CMAKE, NETCDF, MATLAB, SVN

2015 **Elecnor Deimos - Aerospace Engineering Business Unit – Embedded Systems**

Project Engineer

Project *Meteosat Third Generation Scan Assembly (MGT SCA) ISVV*. Perform the Independent Software Verification and Validation of the Boot Software for the critical element MTG SCA (DAL-B).

Responsible of the review of datapacks and provide findings.

Project *E-GEM* is the design, development, integration, and operation of the 3Cat-2 cubesat satellite. 3Cat-2 launch and operations are supported by the E-GEM European GNSS-R Environmental Monitoring project, a FP7 Project 2014-2016 on the use of GNSS-Reflectometry for environmental monitoring from the 3Cat-2 nanosat.

Responsible of the advisory and consultancy in the onboard computer software analysis, design and development. The activity includes a tailoring of the ECSS-E-ST-40C, and the evaluation and monitoring of the SW activities.

2012 - 2014 **Elecnor Deimos - Aerospace Engineering Business Unit – Embedded Systems**

Project Manager

Project *G(N)C & HDA Software Prototyping of the Lunar Lander Phase B1.* Implementation of the Hazard Detection and Avoidance algorithm in a real time platform composed by a PPC and an FPGA. Performing the functional decomposition in HW/SW, defining the real time system architecture, and validating the system against functional simulators.

Responsible of the management activities, relations with subcontractors and customer, performing technical specification, V&V plans and system/software design, preparation of the document releases and involved in the development of some parts of the software system.

UML, Visual Paradigm, FPGA, PPC, VHDL, C lenguage, VxWorks 6.6, Spacewire, Ethernet, PCI, Simulink, ECSS-E-ST-40C

2012 **Elecnor Deimos - Aerospace Engineering Business Unit – Embedded Systems**

Project Manager

Project *EXOMARS EDM Guidance, Navigation and Control SCOE*. Deimos is responsible in this project of the Real Time Simulator, the RTS is in charge of simulating the Environment, Dynamics, and GNC equipments. All the models will be developed in C code and integrated in a DLL library.

In charge of scheduling and managing the activities of the project, the relations with the customer and the coordination of the members projects. Performing technical specification, V&V plans and software design. Preparation of the document release.

UML, Simulink, Embedded Coder, Redmine, Visual Paradigm

2011 **Deimos Space - Aerospace Engineering Business Unit – Embedded Systems**

Project Engineer

The Project *IXV Real Time Test Bench integrates* the GNC for the IXV mission developed in Simulink environment in a Real Time Bench, using autocoding with Embedded Coder Tool. The objective of the project is to run the GNC in a PIL configuration, and validates the GNC design in the Simulink Tool. The Real Time Test Bench is composed by the target processor (LEON3) where the GNC runs and the dSPACE platform where the DKE runs, both nodes interchange data through serial line.

In charge of performing the analysis to port the functional model to real time platform, defining the interfaces and implementing the embedded application on the LEON2

dSPACE, ControlDesk, Matlab/Simulink, Embedded Coder, C Code, SVN, LEON3 board.

2011 **Elecnor Deimos - Aerospace Engineering Business Unit – Embedded Systems**

Project Engineer

The Project *AEROFAST (AEROcapture for Future spAce tranSporTation) GNC Real Time Test Bench* integrates the GNC developed in Simulink environment in a Real Time Bench, using autocoding techniques with The Embedded Coder tool. The objective of the project is to run the GNC in a PIL configuration, and validates the GNC design in the Simulink Tool. The Real Time Test Bench is composed by the target processor (LEON3) where the GNC runs and the dSPACE platform where the DKE runs, both nodes interchange data through serial line. The operating System used in the LEON3 is RTEMS.

In charge of performing the analysis to port the functional model to real time platform, defining the interfaces and implementing the embedded application on the LEON2

dSPACE, ControlDesk, Matlab/Simulink, Embedded Coder, C Code, SVN, LEON3 board.

2008 - 2011 **Deimos Space – Real Time Systems Division**

SW-Development-Manager

Project MGF (Message Generation Facility). MGF is the system in charge of build and distribute the navigation and integrity message for GALILEO satellites, collecting all the information from the other elements of the GMS (Ground Mission Segment). Hard Real Time SW system with parts classified as DAL B. Critical SW Development compliant with Safe Coding Standards (MISRA-C).

SW Development Manager at MGF project, coordinating a team of 7 software engineers in the coding phase, unit testing, pre-integration and integration, planning the work of the development team, solving conflicts between interfaces and participating in the codification of critical parts, resolution of issues involved in configuration management and coordinating the changes control in the SW during the validation and verification phases. All this according to the standards of the ESA and the Galileo project.

C Code, Cantata, Cplusplus, LynxOS-178, Galileo Software Standard, VME, Pentium M.

2007 - 2008 **Deimos Space – Real Time Systems Division**

SW-Development-Manager

Project MGF: To make detail design of one of the components of the system using the HOOD methodology. Analysis of the functionality of the system and its shedulability. In charge of the coordination of three software engineer.

2006 - 2007 **Deimos Space – Real Time Systems Division**

SW-Development-Manager

Project *MGF*: Working in the preliminary phases of the design: user requirement analysis, to extract element and software requirement, interface definition, high level design using: use case, sequence diagram and packet diagrams.

2005 **Deimos Space – Real Time Systems Division**

Project Engineer

Project *RDG* (Raw Data Generetor), tool in charge of simulate the constellation of GALILEO satellites, this tool is useful to help in the development of the other elements of GMS (Ground Mission Segment) of Galileo.

2005 **Deimos Space – Real Time Systems Division**

Project Engineer

GOCE On Board Software Independent Software Verification and Validation. Responsible for the development of the high-fidelity software simulation of the GOCE Command and Data Management Unit (CDMU), based on TSIM/ERC32.

2004 - 2005 **Deimos Space – Real Time Systems Division**

Project Engineer

Interferometer Constellation Control (ICC2) Responsible for the development of the communication layer between different boards (three LEON processor) and software simulation models of the spacecraft, hosted on a Dspace.

C lenguage , compilers and real time kernel RTEMS-4.6, hardware simulator TSIM-GRMON.Hardware: board LEON-PCI-XC2V, with serial-lines and Ethernet.

2003 - 2004

Deimos Space – Real Time Systems Division

Project Engineer

Development of the *Onboard Basic Software for the Precision Agile Control Systems (PACS) real-time test bench,* responsible for the development of the target computer (ERC32-based) HW/SW interface drivers, other tools were developed for this project like cmg simulator and tmtc tool for monitoring the onboard software.Hardware:

C and Ada95 lenguages, compilers ObjectAda and gcc, hardware simulator TSIM.Hardware: board ERC32-SC-VME, with serial-lines and VME buses.

2002 - 2003

Project Engineer – Ground Segment Divison

Project Engineer at DEIMOS of RGT ("ROP Generation Tool"). Operational tool developed to support ENVISAT Mission Management in the planning of ENVISAT mission planning. Implementation and validation of new improvements to File Transfer Process.

UNIX, C++, Ilog views, ORACLE, Perl, Bash Script.

Technical Skills

Managerial Skills

Project management, management of technical groups.

Managerial Tools

Redmine, Jira, Microsoft Project, PMBOK guide

Operating Systems

- Windows - Good
- Linux - Excellent
- LyxOS-178 - Excellent
- ORK - Excellent
- RTEMS - Excellent
- Object Ada - Excellent
- XGC – Excellent
- VxWorks - Good

Programming Languages

- Matlab - Fair
- C - Excellent
- C++ - Excellent
- Java - Excellent
- Modula-2 - Excellent
- Ada95 - Excellent
- Assembly language on Intel and SPARC architectures – Excellent
- Perl – Good
- Shell Script (bash, sh)- Good
- Ruby - Fair

Analysis, Design and Development Methodologies

- UML - Excellent
- HRT-HOOD - Excellent
- HOORA – Excellent
- Structured design - Good

Software Applications	• Microsoft office suite - Excellent • Matlab/Simulink – Fair • Embedded Coder • SCADE Suite • dSPACE – Good • Hardware simulators: TSIM, GRMON - Good
Software Standards	• ESA PSS-05, GSWS, ARINC-653, ECSS-E-ST-40C
Web/Mobile Development	• Nodejs • Express • React • React native • MongoDB • HTML5 • CSS3 • Bootstrap • Webpack • Firebase • Heroku

Others (specify)	• Distributed systems: corba, client/server application with sockets, java RMI.
	• Relational databases: ORACLE, SQL.
	• Parallel systems: concurrency with threads and MPI.
	• HW platforms:
	  ○ Servers: SUN, Intel
	  ○ Clients: Personal Computers
	• Embedded Computer : ERC32, LEON, Microblaze, ARM, CPCI-CPU/750
	• Communication Buses : SpaceWire, MIL-STD-1553B, Serial Lines, Ethernet
	• Configuration management : SVN, CVS, Git
	• UML Design Tools : Visual Paradigm
	• Development Environment : Eclipse
	• HW Simulators: TSIM
	• HW Boards : LEON2, LEON3

Training

Course/Seminar	Full stack Web development: • The complete React Native and Redux course • Webpack 2 the complete developer's guide • The complete developers guide to MongoDB • Modern React with Redux • Advanced React and Redux *Udemy*	Year: 2017
Course/Seminar	MongoDB for NODEJS developers *MongoDB University*	Year: 2016
Course/Seminar	SCADE Seminar: Simulink Gateway, SCADE Suite and SCADE Lifecycle. *ANSYS*	Year: 2015

Course/Seminar	Negotiation Skills: Focus in gain insight into the habits of dealmakers as you build your own skills. *Elecnor Deimos*	Year:	2012
Course/Seminar	Project Management Professional: 60 PDUs. *International Institute for Learning (IIL)*	Year:	*2008*
Course/Seminar	LynxOS-178 and ARINC653	Year:	2006
Course/Seminar	*Introduction to Software Safety and Dependability Engineering, at DEIMOS Space.* *SoftWcare.*	Year:	*2004*

Another Data

Presentations/ Publications/ Papers

DESIGN OF EMBEDDED SYSTEMS WITH COMPLEX TASK DEPENDENCIES AND SHARED RESOURCE INTERFERENCE

Fotios Gioulekas, Peter Poplavko, Rany Kahil, Panagiotis Katsaros, Marius Bozga, Saddek Bensalem and Pedro Palomo. SEFM 2017 (15th International Conference on Software Engineering and Formal Methods)

UPGRADE OF ESA'S DEBRIS RISK ASSESSMENT AND MITIGATION ANALYSIS (DRAMA) TOOL SPACECRAFT ENTRY SURVIVAL ANALYSIS MODULE

Irene Pontijas Fuentes, Davide Bonetti, Federico Letterio, Gonzalo Vicario de Miguel, Gonzalo Blanco Arnao, Pedro Palomo Pérez, Cristina Parigini, Stijn Lemmens, Tobias Lips, Ronny Kanzler. 7th European Conference for Aeronautics and Space Sciences, 2017

3CAT-2; AN EXPERIMENTAL NANO-SATELLITE FOR GNSS-R EARTH OBSERVATION; MISSION CONCEPT AND ANALYSIS

Hugo Carreno-Luengo, Adriano Camps, Pol Via, Juan Francisco Munoz, Alex Cortiella, David Vidal, Jaume Jané, Nuno Catarino, Miguel Hagenfeldt, Pedro Palomo and Stefania Cornara. IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing

A HW-SW CO-DESIGNED SYSTEM FOR THE LUNAR LANDER HAZARD DETECTION AND AVOIDANCE BREADBOARDING

Pedro Palomo, Antonio Latorre, Carlos Valle, Sergio Gómez de Agüero, Miguel Hagenfeldt, Baltazar Parreira, Almudena Lindoso, Marta Portela, Mario García, Enrique San Millán, Yuri Zharikov, Luis Entrena. Data Systems and Aerospace (DASIA) 2014

AN INTEGRATED SVF FOR REAL-TIME CLOSED-LOOP HIGH-COMPLEXITY SYSTEM SIMULATIONS

Juan Pérez, José A. Pulido, Pedro Palomo, Antonio Latorre, João S. Silva, Hugo D. Lopes and Alberto García. Data Systems and Aerospace (DASIA) 2014

SCOE FOR IXV AND EXOMARS GNC

Enrique Rodríguez García, Antonio Ayuso Barea, Ignacio Barrios Tascón , Ignacio de Miguel Matiacci, José María de las Casas Gilarranz, Pablo Giménez González, Vicente Fernández, Pedro Palomo, Rodrigo Haya Ramos, Cristina Parigini. Workshop on Simulation for European Space Programmes (SESP) 2012

AN INTEGRATED AND COST-EFFECTIVE SIMULATION TOOL FOR GNSS SPACE RECEIVER ALGORITHMS DEVELOPMENT

João S. Silva, Hugo D. Lopes, Tiago R. Peres, José M. Vasconcelos, Maria M. Coimbra, Pedro Freire, Pedro Palomo, Juan Pérez, José A. Pulido. ION GNSS 2013

A LIGHTWEIGHT COMMUNICATION PROTOCOL FOR EMBEDDED SYSTEMS

Antonio Latorre, José A. Pulido, Carlos Valle, Juan Pérez, Sergio Gómez de Agüero, Pedro Palomo. Data Systems and Aerospace (DASIA) 2012

AEROFAST FUNCTIONAL AND REAL-TIME SIMULATION FOR AEROCAPTURE GNC ASSESSMENT

Miguel Hagenfeldt, Andrea Mafficini, Vicente Fernández, Sergio Gómez, Carlos Valle, Pedro Palomo, Antonio Latorre. Simulation & EGSE Facilities for Space Programmes, SESP 2012

MARS PRE-AEROCAPTURE GNC FUNCTIONAL AND REAL TIME PERFORMANCE

Andrea Mafficini, Miguel Hagenfeldt, Carlos Valle, Pedro Palomo, Sergio Gómez, Luis Penin, José Manuel Rebordão, João Dinis. AIAA Guidance, Navigation, and Control Conference , August 15, 2012

GALILEO "MESSAGE GENERATION FACILITY" – SAFETY-CRITICAL AND REAL-TIME

Antonio Latorre, Adrián Mora, Pedro Palomo, Tomás Suarez, Mike Rennie. Data Systems and Aerospace (DASIA) 2008

Awards and Prizes

2nd place in the contest ADA-Spain, 2002, with work: Making the ORK's porting (Open Ravenscar Real Time Kernel) for space applications, from microprocessor ERC32 (SPARC V7) to i386-PC platform.