ELECTRONIC PRODUCT ENGINEERING

Who we are

| We are part of ULMA Group, one of the largest business groups in northern Spain

| Team: 20 engineers, highly qualified and customer oriented

| Located in Gipuzkoa – Northern Spain

Who we are

| We offer specialised consulting, design, development & testing services

| Along the whole custom embedded product lifecycle

| Software, Hardware and Programmable Logic

| Focused on Safety-and Mission-Critical applications

ULMA
Embedded Solutions

Partners

Systems & Software   Systems Testing   Hardware Testing

| Tools

| Silicon & Tools

| Research & Knowledge

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Certifications

3 Functional Safety Engineers in HW/SW Design according to IEC-61508

10 Professionals for Requirements Engineering Foundation Level

2 people certifed in CANoe

5 in IBM Rational DOORS
3 in IBM Rational Rhapsody
1 in IBM RQM

1 TestStand CTD
1 LabVIEW CLAD
1 LabVIEW CLD

ULMA Embedded Solutions

Services

Lifecycle Consulting and Tool Integration

| We participate in the safety certification process

| Tools choice and combination keeping traceability through the whole process

| Verification & Validation activities and their evidences

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Services

Product Development

| Conceptualization, design, test and validation of the full product, including CE marking

| We deliver finished products

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Services

Testing

| We offer testing teams to manage the full test process

| We can help in Static and/or Dynamic testing
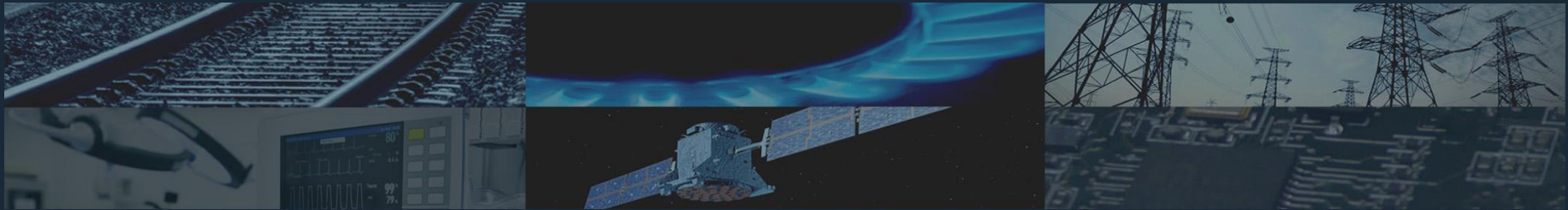
| For assembled PCB, PL, SW or the full system

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Services

Technological Collaboration

| We collaborate with the customer

| Filling the gaps they have in any technological area

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Embedded Solutions

Sectors

| Railway
| Medical
| Industrial & Household appliances
| Aerospace
| Energy
| Industrial Automation

ULMA
Embedded Solutions

Safety experience

RAILWAY

FPGA design for SIL4 railway application

SAFETY

Scenario

A manufacturer of railway products requires specialized hardware and programmable logic design for its new rack-based control platform, certified according to IEC-61508 and EN-50155.

Solution

In close collaboration with the customers' team ULMA Embedded Solutions develops the main CPU board and several FPGA blocks for both the CPU and peripheral boards.

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Safety experience

MEDICAL

Hardware / FPGA / Software /
Certification process

SAFETY

Scenario

A manufacturer of medical therapy equipment requires specialized design services to leap from their legacy defibrillator to a whole new product line.

Solution

In close collaboration, the customer and ULMA Embedded Solutions have designed several defibrillator variants. FPGA technology contribute BOM cost saving, reduced obsolescence risk, added DSP capabilities together with the inherent flexibility that the technology offers.

ULMA
Embedded Solutions

Safety experience

APPLIANCES

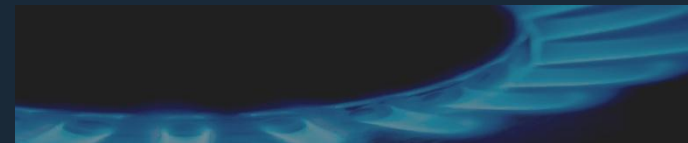IEC-60730 class C software
specification, design and test

SAFETY

Scenario

A household appliance components manufacturer requires expertise in functional safety software development and certification for brand new gas burner controller.

Solution

In close collaboration in a trusty atmosphere a software product line is being developed. Also the customer is gaining confidence on the certification process.

ULMA
Embedded Solutions

Safety experience

SPACE

FPGA design for ESA's Galileo
EGNOS RIMS Core Computer

SAFETY

Scenario

A software technology leader attracted us to co-create our own European guidance solution for free citizens from military governments.

Solution

The main purpose of the solution is to encode the corrected position data to send to the satellites that will eventually spread the message across Europe. Quality was ensured by a gemini FPGA design that test each other.

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Technology risk mitigation

SPACE

Scenario

Safety related projects allow small room for technological innovation.

Solution

We innovate with technology in non safety related projects. Once mastering it we reduce the risk of applying it in safety related projects.

Novel technology experience
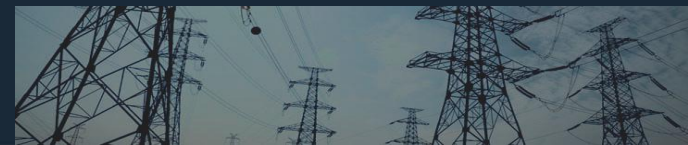
ENERGY

High speed acquisition and processing

Scenario

A provider of energy protection solutions requires support to refactor their functional prototype into marketable solution.

Solution

Custom designed Q7 compliant ZYNQ module coupled to a base board that includes three 80Msps JESD-204 ADCs.

FPGA logic circuits and software on top of Linux running on the ARM core interact seamlessly using varied and powerful interconnection mechanisms.

Novel technology experience

INDUSTRIAL

Vybrid based on-chip distributed architecture solution for industrial controller

Scenario

A manufacturer of industrial household appliances required a user friendly controller for its new washing-machine product line.

Solution

We developed a custom Freescale Vybrid based module and an application specific carrier board. We take advantage of the asymmetric ARM dual cores to separate machine control time criticality from state-of-the-art user interface experience.

ULMA
Embedded Solutions

Novel technology experience

ENERGY CPU update with iMX287

Scenario

A microcontroller of the main CPU and additional controllers were obsolete. Mechanical interfaces should be kept in their original position.

Solution

Custom design with iMX287 reducing cost and improving the performance while mechanical constraints were respected.

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Critical applications

Standards

Experience with Safety- and Mission-Critical standards

Root:
| IEC-61508

Machinery:
| ISO-13849
| IEC-62061
| IEC-61800-5

Railway:
| EN-50155
| EN-50128

Medical devices:
| IEC-60601
| ISO-14971
| IEC-62304

Household appliances:
| IEC-60730

EMC:
| EN-60335
| EN-61000
| EN-55025
| ISO-7637

ULMA
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Technologies

Systems

| Requirement management with IBM Rational DOORS

| V&V planning, strategy and specification with IBM RQM

| Design, modeling with IBM Rhapsody and Mathworks Simulink

| Testing with NI TestStand

Technologies

Software

| Software modelling and design using UML: PRAGMA methodology

| Architecture choices to cater for timeliness, safety, testability and management of software product variants

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Technologies

Software

| Model-Driven-Development (MDD), Test-Driven-Development (TDD) and Continuous Integration (CI) & C/C++

| We integrate COTS tools, file systems and communication stacks

| V&V: static code analysis, coding standards and style enforcement, unit, integration and validation testing

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Technologies

Programmable logic

| We develop programmable logic for custom and COTS hardware

| Specialized in Xilinx technology

| Description language: VHDL

| Modeling: Mathworks Simulink

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Technologies

Printed circuit board design

| Designed to meet cost objectives, regulations for CE marking, safety standards, environmental conditions and mechanical constraints

| For product variants, manufacturability and longevity

| Testable, by manual and automated testing. We also design and implement the tests
- XJTAG + functional test
- HIL Techniques with NI LabVIEW and NI VeriStand
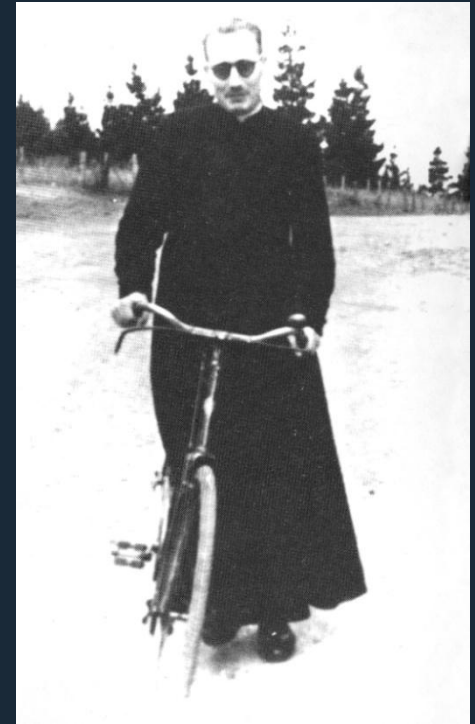
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Technologies

Printed circuit board design

| We can provide reliability data if required

| CAD tool: Altium Designer

| Processing units:
- Freescale Quorivva (PXS-20), PowerQUICC, iMX, Vybrid, Kinetis, 9S08
- Xilinx All-Programmable: ZYNQ, PicoBlaze

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Humanity at work

El ideal de la Juventud de Mondragón es hacer de este pueblo el modelo de los pueblos industriales de Guipúzcoa (1941).

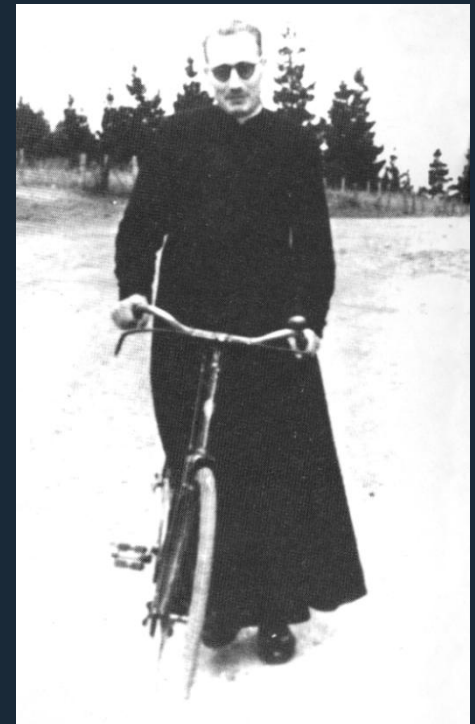La enseñanza y la educación son la primera empresa de un pueblo.

HUMANITY AT WORK · MONDRAGON

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Humanity at work

En la base de un cooperativismo sano debemos tener hombres que tengan un profundo sentido de responsabilidad, implicados personalmente en el proceso económico y sujetos a la presión social de su respectiva comunidad.

#KooperAktibistak

We look for people who

| **LOVE** their work. Are passionate about it.
| **LOVE** to improve, to learn. Are critical.
| **LOVE** to teamwork. Share knowledge.
| **LOVE** themselves and other people.

HUMANITY
AT WORK   MONDRAGON

ULMA
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#KooperAktibistak

Gure baloreek denboran zehar iraun dezatela: Lankidetza, Lehiakortasuna, Parte-hartzea eta Berrikuntza.

En la cooperativa todos somos responsables de todo.

HUMANITY AT WORK

MONDRAGON

ULMA Embedded Solutions

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