

# V&V topics & trends identified by ULMA Embedded Solutions

# Who we are

- | Part of ULMA Group, one of the largest business groups in northern Spain.
- | Team: 20 engineers
- | Located in Oñati, 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

# What we do

## Life cycle activities

- | We participate in the safety certification process
- | Tools choice and combination keeping traceability through the whole process
- | Verification & Validation activities and their evidences

# Activities and tools

- | Test and quality management. IBM: Rational Quality Manager
- | Standards compliance. EN 50128, IEC 60730...
- | Model-Based Testing. IBM: Rhapsody TestConductor
- | Unit & integration Testing. LDRA: Tool Suite. Open Source: Unity, CUnit, CppUnit
- | User Interface Testing. Froglogic: Squish. IBM: Rational Functional Tester
- | Protocol testing. IBM: SDL & TTCN Suite
- | Static code checking. Gimpel: PC-lint
- | System verification and validation. National Instruments: TestStand
- | Hardware-in-the-Loop. National Instruments: VeriStand. MathWorks: Simulink

# Topics and trends

- | Integral Safety and Security concept
- | Adapting legacy code to new standards requirements.  
Refactoring code and test to comply with new requirements
- | Security standards, tools and processes
- | Integration testing for heterogeneous applications:  
embedded, PLC, desktop / COTS and proprietary code
- | Programmable Logic Testing
- | Tool interoperability and integration
- | Automation: generation & execution
- | Continuous Integration
- | Model-Based Testing
- | Product Line Testing

# Contact us

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