CRITICAL SOFTWARE

DEPENDABLE TECHNOLOGIES FOR CRITICAL SYSTEMS

SPACE

SYSTEMS, DEVELOPMENT AND CONSULTANCY

SPACE: SYSTEMS, DEVELOPMENT AND CONSULTANCY

In the Space, Ground and Application/Exploitation areas, CRITICAL Software has established itself as a reliable, proactive and cost-effective partner for customers seeking innovative solutions to their most demanding challenges. The company's first customer was the NASA Jet Propulsion Laboratory, followed by Eumetsat in 2000 and the European Space Agency (ESA) in 2001. Currently, CRITICAL Software is a prime contractor or subcontractor for a wide range of companies and institutions, including ESA, NASA, JAXA, EADS Astrium and Thales Alenia Space, among others.

SPACE SEGMENT AND LAUNCHERS

CRITICAL Software is a key partner in the development and validation of high-integrity on-board software for satellite and payload control. CRITICAL Software's services support the whole development lifecycle and multiple technologies.

- High Integrity Software (real-time, embedded, on-board satellite software), covering the full life-cycle from requirements to verification and validation;
- Production of artefacts for certification according to the applicable regulations (ECSS Q-40, NASA STD-8719.13, DO-178B/C and IEC 61508);
- System and software-independent Software Verification & Validation (ISVV) and Reliability, Availability, Maintainability and Safety (RAMS) Analysis;
- Safety-critical assessment for on-board and airborne systems;
- Distributed architectures, IMA and data distribution services;
- Advanced engineering - parallel computing, control engineering and programmable logic.

GROUND SEGMENT

CRITICAL Software supplies software solutions for mission control, modelling, simulation and control and intelligence (C2I).

- Mission Control Systems (SCOS-2000 Monitoring & Control System);
- Simulation - particularly Operational Simulators and Validation Facilities;
- Mission Planning;
- Payload Data Processing.

APPLICATIONS

CRITICAL Software provides space end-user services through the exploitation of satellite-based products. These services include information management (including extraction and integration) and software application development, combining satellite imagery, geo-positioning information, communications and meteorological information with information from other ground and airborne systems.

Maritime Applications:

- Integrated maritime situational awareness;
- Early warning;
- Operation planning and decision support;
- Incident management.

Emergency response and prevention services:

- Fire risk mapping, hot-spot detection and monitoring and burnt area mapping;
- Flood risk mapping and assessment;
- Landslide risk mapping and assessment.

Land, Soil and Forest monitoring services:

- Thematic land use and land cover (for example forest mapping);
- Temporal and spatial analysis for specific application domains;
- Forestry management (for example to support FSC certification);
- Soil Quality and Desertification Monitoring;
- Water Management (for example watersheds or hydro-power water levels).

SAFETY/MISSION-CRITICAL EMBEDDED SOFTWARE

CRITICAL Software's capabilities span the whole system and software lifecycle. These wide-ranging competences, together with the company's in-house Project Management Office (PMO), ensures the company's ability to manage the entire process of systems development, from requirements elicitation to final user acceptance.

- Supplier of software solutions, certifiable services and products for subsystems and interfaces since 1998;
- Expertise in major safety standards and guidelines: ECSS Q-40, NASA STD-8719.13, DO-178B/C and IEC 61508;
- Proven track record in the development of safety and mission-critical space systems and software.

In critical sectors, new applications and systems must be intensively tested before deployment to guarantee that the system and built-in fault-tolerance mechanisms are working as they should. Ensuring the system responds appropriately to unusual or exceptional events is a problem that requires something more than traditional testing. Fault Injection is the solution; XCEPTION performs like no other program.

Used by space agencies around the world, XCEPTION uses advanced debugging and performance monitoring hardware features, available in common processors, to inject faults and subsequently monitor the errors they produce and their impact on the target system. XCEPTION can test systems in exceptional field situations and worst failure scenarios. It spots weak points and provides feedback for correction or redesign. Systems can be evaluated under realistic conditions, with minimal intrusion and reliable validation of fault tolerance mechanisms.

XCEPTION

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We are **CMMI® Maturity Level 5** rated.
For a list of our certifications & standards visit our website.