20+ RealTime CONSULTING

ENGINEERING EMBEDDED SOLUTIONS

SINCE 1997

Capabilities

RTC Overview

Providing Engineering Services since 1997!

Aerospace Systems, Equipment & Software

Full Lifecycle Development Capabilities

- Program Management
- Requirements – Client, Concept, Systems & Software (High & Low level)
- Design – including Model Based Design and Agile Prototyping
- Implementation - Code/Integration/System & SW Verification
- Electronic Hardware/FPGA/IO/Board Support
- Labs/Tools/Development Environments/Simulations & Training
- Artifacts/Tracing/Validation/Audits/Certification

Experience on a wide range of Commercial Aircraft Black Boxes

RTC Overview

12,000+ Sq. Ft. – DD-254 Capable

- 3 Top Secret Bays, 1 Top Secret Lab
- 3 Top Secret Conference Rooms

70 Engineers - Avg. 20 Years Experience
2013 INC 5000 Fastest Growing Companies

Certified Small Business (SB)
24/7 Badge Entry, Security
DVR Cameras & Recorder

The RTC Advantage

Experience

Our staff averages over 20 years of experience developing innovative safety-critical, embedded electronics, software, sensors, controls and network connectivity that enable devices to collect and exchange data to support your Internet of Things (IoT) initiatives

Interactive Communication

Real Time Consulting maintains the highest industry standards by working directly with clients to understand and control fast-paced, high-profile projects. Customized reports are offered for monitoring project and program progress

Security

Our facilities offer program and project security with badge-only access, separated DD-254 work bays and is ITAR and EAR controlled

Engineering Services

Core Capabilities

Systems & Software
Program & Project Management
DO-178/DO-254 Certification Support
Verification & Validation

Additional Capabilities

Complex Electronic Hardware Design & Integration
Lab Development & Hosting
Safety Assessments
Controls
Testing & Simulation
Tools Development
Training
Rapid Prototyping
Hardware

Systems Engineering

ARP4754 Processes
Safety (ARP4761) including FMEA & FHA
Human Factors Analysis/Effectiveness
Requirements Analysis, Capture & Trace
System & Functional Integration
Model Based Development
Architectural Definition
Configuration Identification
Acceptance Test Criteria
Full Lifecycle Development
Use Case Scenario
Reliability Analyses

>>> Core Capability <<<

Software Engineering

- Software Architecture
- Requirements (High & Low Level)
- Software Design & Allocation
- Multiple Software Languages
- Code Generation
- Documentation with Tracing
- Software/Hardware Integration
- DO-178B/C Development Processes
  - Criticality Level A => D
- Embedded, Windows, BSPs, & Drivers

>>> Core Capability <<<

Program Management

Active Management of:

- Resources, Content, Schedules & Budgets
- Client, Cert Authority & Suppliers
- Scope, Objectives, Deliverables, Milestones

Provide Technical Leadership

Progress, Metrics, & Reporting

Risk Management & Recovery Planning

Track Record of Success: Client Processes or RTC Processes

Small to Large Programs Short to Long Programs

Remote Programs

>>> Core Capability <<<

Verification & Validation

- Certification Planning
- Reviews & Audits
- Test Plans & Procedure Creation
- Test Execution & Results Analysis
  - Manual & Automated, Desktop & Lab-Based
  - Requirements-based, Regression Analysis
  - Coverage (Statement, Decision, Modified Condition/Decision)
  - Acceptance Testing, Compliance Analysis
- Tool Qualification (DO-330/ED-215)
- Outsource Oversight & Coordination
- Customer & Cert Authority Meetings
- Certification Document Submittals

>>> Core Capability <<<

Avionics Certification

Project Certification Documents

- PSAC & PHAC (Project Start) to SAS & HAS (Project End)
- Configuration Index Document (CID)
- Open/Closed Problem Reports & Justifications
- Verification Test Plan & Results (VTPR)
- Trace Matrix
- All Deliverable Artifacts

Audit Support

- Project/Client/Cert Authority
- Stage of Involvement (SOI) Audits

>>> Core Capability <<<

Electronic Hardware Engineering

Hardware Solutions developed with our Alliance Members

Hardware Architecture
Analog & Digital Design
RF Design
Documentation with Tracing
DO-254 & DO-160 Processes
CPLD & FPGA & ASIC to FPGA Conversions
Custom FPGA Development
Mechanical Design
Packaging Design

Hardware Supplier Management

Development Expertise

Software – C, C++, ADA, Assembler, Python…

Applications, OS Enhancements, Embedded Systems…

Hardware Platforms – 29xxx, 68xxx, 80xxx, MPC8xx…

RTOS – DEOS, Integrity, VxWorks, VRTX, Custom…

2D & 3D Graphics, Windows, Linux, Android…

Product Requirement Tools – DOORS, Team Center…

Configuration Management – Clear Case, PVCS, Subversion…

Change Control – Clear Quest, Mantis, JIRA…

Standards

Supported Standards Include

- DO-178B/C, DO-254 (Avionics)
  - Criticality Levels A => D
- SAE ARP 4754 (Systems), ARP 4761 (Safety)
- DO-160, DO-200, DO-260 (Avionics)
- IEEE/EIA 12207 (Software Lifecycle)
- FDA/CDRH 510(k), IEC 62304, IEC 60601 (FDA)
- ISO DIS 26262 (Automotive)
- Many More, including ARINC, AUTOSAR





Agile Development Methods

Functional Expertise

Flight Regime and Flight Management

Guidance

- Lateral
  - Leg Sequencing
- Vertical
  - Takeoff, Climb
  - Cruise
  - Descent
  - Approach

Navigation

- Position Determination
  - GPS
  - Inertial
  - Radio
  - Celestial
- RNP
- A424 Nav Database

Control

- Actuators/Motors
- Target Determination
- Closed-Loop
- Model-based
- Sensor Feedback

Communications

- CNS/ATN
- Datalink/SATCOM
- ATM
- Iridium
  - Payload
  - Ground Station

Surveillance

- ADS-B
  - TIS-B
  - FIS-B
- Transponder
- TCAS
- TAWS

Flight Planning

- Input Processing
- Waypoint Management
- Departures/Approaches
- Flight Legs
- Display Data Delivery

Performance

- Aero/Engine Performance Database (PDB)
- Trajectory (4D)
- Predictions
- Path Generation
- TOLD

Functional Expertise

Flight Deck Equipment Development

IO

Data and Signal
- Validation
- Packaging
- Routing

Data Acquisition

Signal Routing

Displays

MFD

PFD

Synoptics

Touch Screen

2D/3D Imaging

MCDU

Page Presentation

Key Processing

Flight Planning

Onboard Maintenance

Centralized Maintenance

Maintenance Information Systems

FOQA

MOQA

Built-In Test

Power On Self Test

Continuous

Board Support

Bootloaders

Device Drivers

OS Initiation

Operating System

Safety Aspects
- Time Partitioning
- Space Partitioning
- Criticality Partitioning

Multiple RTOS platforms
- GreenHills
- VxWorks
- DEOS
- Others

Power

Electrical Power Distribution

Data Control

All Projects

- Secure Data via Secure Server Share
  - Secure Configuration Management
  - Secure Change Control Processes
- Only Project Personnel Have Data Access
  - Physical separation of project data available
  - Physical separation of personnel available
- Hardware/Software Firewalls & Secure VPN

Secret/Top Secret

- Locked Down DD-254 Capable Bays & Lab, Training
- Isolated Servers, Printer, Fax

Data Expertise

Protocols:

ARINC 664
ARINC 429
ARINC 424
ARINC 629

ARINC 717
ARINC 653
ARINC 739
TCP/IP
Williamsburg

RS-485
RS-422
RS-232
MIL 1553
USB
CAN

and more…

Loadable Databases: Navigation, Aero/Engine, Performance, Terrain, Obstacles, Aircraft-Personality, Airline-Specific

ITAR/EAR Approach

International Traffic in Arms Regulations (ITAR) & Export Administration Regulations (EAR) are Important to our Clients & to RTC

RTC's Approach Provides:

- ITAR/EAR Compliance and Per-Project Instructions
- Secure IT Infrastructure
  - Access Controlled Shares
  - Layered Firewall Protections
- Physical Separation and Notifications
  - Badge-only Access with Separated Work Bays
  - ITAR/EAR Signage posted at Entry to Data Sensitive Areas
  - Project-specific Secure Printers

Contact

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Let's discuss how RTC can assist in making your program a success

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