

Avionics Engineering and Industrial Services

We provide state-of-the-art system solutions across the spectrum of civil and military avionics to Aerospace prime suppliers/ OEMs and Defense majors, covering safety and mission critical software, hardware, firmware development and electronics manufacturing. These solutions typically involve new product design support, extensive modeling, simulation, design and development, testing and certification support till flight trials.

Tata Consultancy Services (TCS) has 4 major delivery centers in North America and 3 in UK/Europe to bring near-site delivery capability, including centers like TCS Peterborough in UK and TCS Cincinnati in North America to handle ITAR/EAR related work.

Avionics Systems Experience

Systems (Civil Aircrafts):

Landing Systems

- Nose Wheel Steering
- Flap Actuation
- Brake-by-Wire

Control Systems

- Auto-pilot
- Engine Data Concentrator
- Cabin Pressure

Fuel Quantity Management

Core Avionics Computer

Displays

- EICAS
- iSFD

Systems (Military Aircrafts):

Navigation

- Mission Computer
- GPS

Ground based Systems:

- Command & Control Systems
- Cargo Simulator
- Fuel System Analysis System
- Flight Data Acquisition & Analysis System
- Test Equipment

Offerings

- Full Software Development Lifecycle Projects as per DO178 B (Level A through D)/ MIL-STD-498
- Independent Verification & Validation as per DO-178B (Level A through D)
- Certification Support (Audits, Documentation)
- Hardware Design from Specifications to Prototyping, meeting DO254 Guidelines up to Level A
- Complex System Integration Testing on Rigs/ Aircraft and Flight Test Data Analysis
- Simulator/Test Rigs/ PC based Test Equipment Development – Software, Hardware & Mechanical Assemblies
- Manufacturing Support for Electronics, Cardcages, Wiring Harnesses & Cabinets
- Modeling and Simulation using Formal Methods
- Technical Publications

People

- Highly qualified associates with Embedded Systems/Real-time Systems domain expertise
- Dedicated core avionics domain experts (via Avionics CoE)
- Consultants with extensive experience of working on major Avionics systems

Certification

- AS9100 Rev B (Compliance to AS9006)
- CMMI Level 5

Some Avionics Programs Executed

Sr. No.	Project	Certification Level	Program
1	Nose Wheel Steering/ Flaps Actuation system SW IV&V.	DO178B level B	Business Jets
2	Fuel Quantity Measurement System/ Main Engine Data Concentrator SW IV&V.	DO178B level A/B	Large Civil Aircraft
3	EICAS SW Development and IV&V	DO178B level A	14 Seater civil aircraft
4	Auto-pilot SW IV&V	DO178B level A	14 Seater civil aircraft
5	Mission Computer SW Integration Testing, Flight test data analysis	MIL498	Fighter aircraft
6	FPGA design for iSFD	DO254 level B	Civil/ Military
7	Analog Circuit design for Brake-by-Wire System	DO254 level A	Business Jet
8	PCB design for Aerospace & Defense applications	Customer standards	Civil/ Military

Technology Skills

Requirement Analysis

- DOORS
- RHAPSODY
- SCADE
- RATIONAL REQUISITE PRO

Design and Architecture

- Team Work
- SCADE
- MATLAB/SIMULINK
- RATIONAL ROSE

Development/ Coding

- ADA 83 / 95
- ANSI C
- C++
- ASSEMBLY LEVEL
- OPEN GL
- GREEN HILL IDE
- CodeWarrior
- Code Composer Studio

Hardware Design Tools

- Cadence – Orcad
- Zuken – Cadstar
- Mentor – Expedition
- Board Station
- PADS
- ICX

- PCAD
- Protel

Verification and Validation

- CANTATA++
- LDRA
- Ada TEST
- RTRT
- VECTOR CAST
- ASSENT MISRA C

RTOS

- VxWorks
- QNX
- pSOS
- Open VMS
- Solaris
- Windows

Communication Protocols

- ARINC 429/629
- MIL 1553B
- RS 422/232
- CAN
- AFDX
- TCP/IP

Configuration Management

- Rational Clear Case
- MS VSS
- Rational Clear Quest
- PVCS

Why TCS

- Quality driven by robust internal process guidelines
- Comprehensive capabilities (end-to-end solutions both hardware and software)
- Quick ramp-up capability
- R&D center focusing on in-house development of software tools and processes aiming for zero-defect products, increased productivity and reduced time to market
- Near-site delivery centers in North America, UK and Europe

Alliances

Aeronautical Design and Development Centre (TCS and SAAB Joint-venture), HAL, NAL, TATA Advanced Materials, TAL, IISc Bangalore.

About Tata Consultancy Services (TCS)

Tata Consultancy Services is an IT services, business solutions and outsourcing organization that delivers real results to global businesses, ensuring a level of certainty no other firm can match. TCS offers a consulting-led, integrated portfolio of IT and IT-enabled services delivered through its unique Global Network Delivery Model™, recognized as the benchmark of excellence in software development.

A part of the Tata Group, India's largest industrial conglomerate, TCS has over 160,000 of the world's best trained IT consultants in 42 countries. The Company generated consolidated revenues of over US \$6.3 billion for fiscal year ended 31 March 2010 and is listed on the National Stock Exchange and Bombay Stock Exchange in India.

For more information, visit us at www.tcs.com

Contact

To know more about TCS Avionics solutions, contact corporate.engineering@tcs.com

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