

Embedded Software Business Unit

OAK SYSTEMS is a boutique *Independent Software V & V and Testing* Company headquartered in Bangalore, India and has been helping clients globally providing quality software solutions and services. Oaksys is the brainchild of software technocrats with proven track record of managing & executing global software assignments to the satisfaction of clients.

Oak Systems (*Oaksys*) understands and appreciates the need of clients to have better, faster and cost effective solutions to manage their businesses. We bring about right mix of business process knowledge, technical expertise and cutting edge technology to deliver flexible and scalable system to suit current and future requirements through inherent quality culture and process maturity.

Oaksys provides comprehensive Software Quality Assurance and testing services to Software developers as well as the end users of IT solutions. Oak Systems has a proven track record of establishing and running dedicated test labs with disciplined and mature quality processes. Our service capabilities delivered through our “AnyShore” model, can help companies lower costs, improve productivity and increase customer satisfaction.

In order to provide better customer focus, Oak Systems has created a unique **Embedded Software Business Unit** (ESBU). Under ESBU, we offer our specialist software services around number of international standards and models with our domain expertise and technical skills. Under EBSU, we offer services to *Aerospace, Defense, Automotives, Rail, Space, Nuclear, Medical, Networking* and such other domains.

Our Vision

“Doing the right thing, in the right way, at the right time, within the right budget ... the hallmark of Oak Systems”

Oaksys aims to provide unrivaled value to its customers by Quality, competitive and cost effective prices and high standards of service, and ensure that our customers have the service possible.

Service Delivery Capabilities

Through its expertise in concurrent project execution and remote project management, *Oaksys* delivers services collaboratively while working with geographically dispersed teams located in various time zones.

Oaksys specializes in DO178B, IEEE12207, ISO26262, IEC61508 and such other models and standards. The safety critical/mission critical requirements are clearly understood under these standards and the software is validated at the appropriate level of criticality.

Our service offerings cover the Verification & Testing activities associated with the complete Software Development Lifecycle (SDLC) and variety of SDLC models. Our portfolio of services spans across Software Testing (Unit / Component / module, Integration, System, HSI, UAT etc), Independent Verification & Validation (IV&V) and Automated testing. As part of these activities, number of tools (both COTS and in house) such as LDRA, RTTRT, PRQA, TestCast etc. are used based on the project requirements.

SOFTWARE QUALITY CHALLENGES

In any software development work, Verification and Validation (V&V) is a very critical activity. No matter what development lifecycle is chosen, reviews, testing and other V&V activities form an integral part. In spite of this fact, testing is normally perceived as a low end, unimportant, disposable activity and is considered as a support function.

Experience has shown that when there is insufficient, ineffective V&V and testing of software, organizations are exposed to high risks due to software failures leading to loss of credibility and business.

People

Attitude does matter. We have a definite positive attitude towards V&V and all our 100+ engineers are hard-core testers with a defined career path in testing.

Processes

We are an ISO 9001:2008 certified company. Our processes are approved by CEMILAC (Center for Military Airworthiness and Certification, a DRDO lab, Govt of India). We follow software processes that are tailored from CMMi, DO178B and IEEE standards. We have well-designed customer-focused processes covering the following aspects.

Tools

OAKSYS staffers have extensive familiarity in the following environments –

• Unix/Linux, Solaris, Windows, AIX, HPUX
• OS internals, RTOS, TCP/IP, WLAN, ATM
• LDRA, MATLAB, Logiscope, RTRT, PRQA
• Rational Rose, Requisite Pro, UML
• Insure++, Jtest, TCA, Javascpe, Purify
• QTP, Silk, Selenium, Sahi, RFT
• C++/C, VC++, Java, Ada, VB, TTCN-3
• TestCast, XMLSimulator, SoapUI, WHQL, WLK, ARM Tool Chain
• PVCS, ClearCase, VSS, SVN, Perforce, CVS
• QC, BugZilla, Testlink
• ASP, HTML, Perl, Tcl/Tk, Python, Ruby

Our experience

Our experience (not an exhaustive list) in executing Software projects under various international standards is outlined below-

- Testing of subsystems of a civilian aircraft system as per DO-178B under LDRA test harness
- IV&V of Digital Engine Control Unit (DECU) as per IEEE12207 / IEEE1012 standards
- IV&V of a multi-mode Radar system - Signal Processor software as per DOD-STD-2167A
- Testing of a Radar system as per DO-178B involving RTRT toolset and homegrown test rigs. Software size was around 100KLOC.
- IV & V and Testing of Flight Test Panel
- Formal modeling of subsystems of a fly-by-wire military aircraft. The main objective of the project was to write the unambiguous, concise, consistent formal specification of an existing 'Avionics System specification' using Esterel specification language
- IV&V of Flight Control System (FCS), MC, DP etc.
- IV&V of Solid State Flight Data Recorder (SSFDR)
- IV & V of Antenna control system software based on MIL2167A

QUALITY FACTS

✓ Cost of Quality is 41% of total project effort (As per benchmarking data published by BSPIN)
✓ Defect density is 11 per KLOC (As per benchmarking data published by BSPIN)
✓ Testing activity starts with the Requirements phase of the life cycle and ends with software delivery
✓ Testing involves – Planning, Design, Development, Execution, Analysis and Correction
✓ V&V is identified as PA in the CMMI model

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