

**Oak Systems Pvt Ltd** (*Oaksys*) is a specialist Software Services Company headquartered in Bengaluru. *Oak* is the brainchild of software technology specialists with proven track record of managing & executing global software assignments to the satisfaction of clients.

*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 software system to suit current and future requirements through inherent quality culture and process maturity.

Our service capabilities delivered through our “onsite-offshore” model is aimed at helping companies lower costs, improve productivity and increase customer satisfaction. In order to achieve this, we have established a state-of-the-art software facility in Bengaluru (India) to cater to the global customers.

In order to provide better customer focus, *Oaksys* has created the following business/Technology verticals.

- Embedded Software Business Unit (ESBU)
- Banking Business Unit (BBU)
- Enterprise Application Testing Unit (EATU)
- Test Automation Solutions Unit (TASU)
- Professional Services Group (PSG)

Under **Embedded Software Business Unit** (ESBU), we offer our specialist software development, V&V and testing services around number of international standards and models (such as DO178B, IEEE12207, ISO26262, IEC61508, 21 CFR 11, HIPAA) with our domain expertise and technical skills. We are very well experienced in **Avionics, Automotive, Defense, Medical and Pharma domains**. We also cover services in *Rail, Space, Nuclear, Networking* and such other domains.

Our service offerings cover the full lifecycle software development, Verification & Testing activities and variety of SDLC models. Our portfolio of services spans across Requirement analysis, design & modeling, coding and development, Software Testing, IV&V and Automated testing.

Under **Banking Business Unit** (BBU), we offer our services around number of international Banking products (such as **Finacle** from Infosys) with our domain expertise and technical skills. Our portfolio of services spans across *Product Customization, Implementation, Technical support, IT Operations, Migration, System/Integration Testing, User Acceptance Testing (UAT) and User Training*.

Under **Enterprise Application Testing Unit** (EATU), we offer our testing services for a variety of domains and technologies. Web based, client-server based software, mobility, cloud testing, agile testing, Big data, BI/analytics and such other applications are covered.

As part of **Test Automation Solutions Unit** (TASU), we provide matured test automation solutions for functional, regression and load/performance testing of software products.

Our **Professional Services Group** (PSG) provides staff augmentation and temporary staffing services in software domain to our esteemed customers to take care of their peak loads.

## Our Vision

***“Doing the right thing, in the right way, at the right time, within the right budget”***

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

## Domains:

• Embedded, Avionics, Automotive
• Defence, Pharma & Medical
• Banking, Financial Services, Insurance
• Network Management, Telecom
• Mobile, Cloud Applications
• Client Server & Web Applications
• ERP, Manufacturing, Gaming Software
• BI/Analytics, Agile Testing

**Prime drivers for considering Oaksys as your partner**

- Oaksys is equipped to manage end-to-end span of activities of the project involving Project Manager, Subject matter experts (SME), Project Leads and Team Members.
- Flexible approach: To us, each client is unique. So is each client solution. We know that the key to a successful project is the ability to adapt. We take a constructive approach to problem solving.
- Comprehensive delivery: We deliver the knowledge and backup of a specialist organization. We have the depth to offer a full range of specialist skills, ranging from project management to design, develop, test and automation, focused on your requirements.
- We can also take-up segmented activities within the SDLC, if need be.

**Processes**

Oaksys is an AS9100D and ISO 9001:2015 certified company. We follow processes that are tailored from CMMI, DO and IEEE standards. We have well-designed customer-focused processes covering the following aspects.

<ul style="list-style-type: none"> <li>• <b>Project Governance</b> <ul style="list-style-type: none"> <li>– Project planning, tracking &amp; management</li> <li>– Issue management</li> <li>– Service level agreement (SLA) management</li> <li>– Domain specific knowledge repository</li> <li>– Software configuration management</li> <li>– Software metrics and project estimation</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <b>Development Methodology</b> <ul style="list-style-type: none"> <li>– Structured, object oriented and agile practices</li> <li>– Model based development &amp; formal modeling</li> <li>– Experience in using variety of IDE &amp; technologies</li> <li>– Expertise in using stringent international standards</li> <li>– Well-versed with popular tools &amp; technologies</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <b>Test Methodology</b> <ul style="list-style-type: none"> <li>– Test &amp; defect management</li> <li>– Data generation and mining</li> <li>– Test case repository / Test calendar repository</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <b>Test Automation</b> <ul style="list-style-type: none"> <li>– Functional &amp; regression test automation</li> <li>– Performance/load test automation</li> </ul> </li> </ul>

**Tools**

Oaksys staffers have extensive familiarity in the following environments (not exhaustive) –

<ul style="list-style-type: none"> <li>• Unix/Linux, Solaris, Windows, pSOS, VxWorks</li> </ul>
<ul style="list-style-type: none"> <li>• UFT/QTP, Selenium, RFT, Ranorex, Appium</li> </ul>
<ul style="list-style-type: none"> <li>• Insure++, Jtest, TCA, Purify, SoapUI</li> </ul>
<ul style="list-style-type: none"> <li>• C#/C++/C, VC++, VB, Java, Ada, TTCN-3</li> </ul>
<ul style="list-style-type: none"> <li>• Oracle EBS, Marshal, SAP, Siebel</li> </ul>
<ul style="list-style-type: none"> <li>• TestCast, LabVIEW, MATLAB, Simulink</li> </ul>
<ul style="list-style-type: none"> <li>• LoadRunner, StressTester, RPT</li> </ul>
<ul style="list-style-type: none"> <li>• OpenSTA, JMeter, Silk Performer</li> </ul>
<ul style="list-style-type: none"> <li>• PVCS, ClearCase, VSS, QC/ALM, JIRA</li> </ul>
<ul style="list-style-type: none"> <li>• LDRA, RTTR, VectorCAST, Gcov, Logiscope</li> </ul>
<ul style="list-style-type: none"> <li>• Perl, python, Tcl/Tk, JavaScript</li> </ul>
<ul style="list-style-type: none"> <li>• Oracle, MySQL, SQLServer, Access, DB2</li> </ul>
<ul style="list-style-type: none"> <li>• IIS, Weblogic, Websphere, Tomcat</li> </ul>
<ul style="list-style-type: none"> <li>• Oracle, MySQL, SQL Server, Access, DB2</li> </ul>
<ul style="list-style-type: none"> <li>• JUnit, HttpUnit, FlexMonkey, QuickUnit</li> </ul>
<ul style="list-style-type: none"> <li>• Rhapsody, Qt, DOORS, Synergy, AutoIt</li> </ul>

**Key Differentiators**

- Long-term, mutually beneficial engagement
- Flexible approach to accommodate project-specific scenarios
- Matured business and technical processes providing cost and schedule benefits
- Productivity gains by Continuous process review giving Cost advantages
- Proven track record of over 15 years

**Service Delivery Capabilities**

Oaksys staffers have a vast experience on a variety of platforms, tools and domains. Our experience enables us to quickly internalize the domain and apply the right approach with positive attitude to achieve the desired project objectives.

As a matured organization (since 1998), Oaksys has successfully delivered more than 8500 person months of software effort spanning over 200 projects. 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.

## Engagement Models

We can be your *partners* in multiple ways. Our flexible and adaptive engagement models are designed to suit your business model. The following few engagement models are indicative and can further be adapted to fit into your specific business model.

### Offshore Delivery Centre (ODC)

*Oaksys* will setup a full-fledged offshore delivery center for you and dedicate resources for you to take care of all your delivery needs. A well-established onsite-offshore delivery model to provide reduced costs and risks while maintaining required service quality levels would be setup. The center can be jointly managed with you.

### Oak Managed Service (OMS)

OMS will enable you to focus on your core activities while we take care of scoped activities. We commit to the deliverables and their schedules. Under this Managed Service, we will operate the scoped activities for a defined duration till your product is stabilized.

## Flexible Cost Models

### Turnkey/Fixed-Cost model

*Oaksys* can provide a turnkey – fixed scope-fixed cost solution to the requirements. *Oaksys* can carry out the work either at your premises or at its own labs.

### T & M model

*Oaksys* can provide the services with its complete team or as part of your team. You will be charged on ‘actual effort’ basis. The work location could be onsite at your location or offsite at our labs.

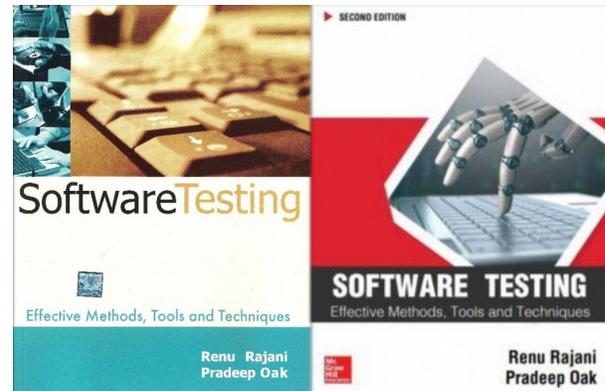
## Leadership Team

### Pradeep P Oak, Director & CEO

Pradeep has been part of the IT industry since 1988. After doing his M Tech from IIT Kanpur, Pradeep worked as a software developer, designer, project leader, QA lead, and Manager in TCS, ANZ-IT, etc.

He is among the first twenty CQAs in India. Pradeep has been a well-known thought leader, active evangelist and speaker at conferences, workshops and seminars in India and other countries.

He has co-authored a book “Software Testing – Effective Methods, Tools and Techniques ” published by McGraw Hill (ISBN: 9780070583528). Second edition of the book is published in Dec 2017 (ISBN 9789387432673)



**Narendranath Pai**, BE, GM Technical - has over 28 Years Experience in software development, test automation, Consulting and Customer Support. He has expertise in different domains such as Avionics, ERP, CRM, e-Commerce, Banking, Office Automation. Naren has earlier worked with SAP, ANZ, and Logix.

**Asmita P Oak**, BE, Director - has over 20 years experience in software V&V, QA and process consultancy. She has been working on Real-time applications, Avionics & SQA activities. She is an expert in AS9100D and ISO 9001:2015 processes.

**Hanumanth Managoli**, BE, Senior Consultant - has over 28 years experience in Embedded, Automotive & Space segments and has experience of working with world-wide OEMs and Tier-1s. Hanumanth has earlier worked with KPIT-cummins, CG Smith, ABB and ISRO.

**Radhakrishnan S**, BSc, Practice Leader - is a banking domain expert with 30 years experience in functional requirement, GAP analysis, development, support, testing, training, implementation, project management. He has worked in multiple core banking solution implemented for various banks across the globe.

## Embedded Software Business Unit

Under **Embedded Software Business Unit (ESBU)**, we offer our specialist software development, V&V and Testing services around number of international standards and models (such as DO178B, IEEE12207, ISO26262, IEC61508, 21 CFR 11, HIPAA) with our domain expertise and technical skills. We are very well experienced in Avionics, Automotive, Defense, Medical and Pharma domains. We also cover services in Rail, Space, Nuclear, Networking and such other domains

Our service offerings cover the full lifecycle Software Development, Verification & Testing activities and variety of SDLC models. Our portfolio of services spans across Requirement Analysis, Design & Modeling, Coding & Development, Software Testing (Unit / Component / module, Integration, System, HSI, UAT etc), IV&V and Automated testing.

As part of these activities, number of tools (both COTS and in house) such as DOORS, Rhapsody, LDRA, RTRT, gCOV, UFT, Selenium etc. are used based on the project requirements.

We are also **approved by CEMILAC** (Center for Military Airworthiness and Certification, a DRDO lab, Govt of India) for carrying out V&V and testing of Avionics software.



## Our experience under ESBU

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

- IV & V and Testing of Navigation System, Landing Gear Controller system of UAV as per DO178B Level 'A'
- IV&V and Testing of Display Units of Helicopters
- Development of TestRig for Flight Control System
- Testing of subsystems of Medical devices – Cardio vascular, Ultrasound, X-Ray devices
- Testing of subsystems of civilian Aircraft Systems as per DO-178B under LDRA test harness
- Formal modeling of subsystems of a Fly-by-Wire aircraft
- IV&V of Digital Engine Control Unit (DECU) as per IEEE12207 / IEEE1012 standards
- Testing and Test Automation of analytical software products that provide proactive intelligence on care, cost and compliance quality for health care industry
- IV&V and Testing of Radar Systems as per DO-178B using LDRA/RTRT toolsets and homegrown test rigs.
- IV&V of Flight Control System (FCS), MC, DP etc.
- IV&V of Flight Data Recorder (FDR)
- Unit Test Automation using RTRT for Radar System Software involving 100% code coverage, unit tests to check for compliance to stringent DO178B guidelines
- Model based development and testing using DOORS, Rhapsody, LDRA and Test Conductor for CMS module of a Tactical Control System
- Testing of multiple Industrial Automation software systems as per IEC61508 and UL1998 standards
- Module & integration testing of Transponder software as per DO178C

## Banking Business Unit

At Oaksys, we craft innovative, integrated testing solutions and services to cater to Banking and Financial Institutions across the globe, taking care of their domain specific challenges and fast-paced industry trends. Armed with a mix of technical professionals and seasoned industry experts, Oaksys provides testing & other software services of the highest quality spanning across *System/Integration Testing, Functional & Performance Test automation, UAT, Product Customization, Implementation, Technical support, IT Operations, Migration and User Training.*

### Our Portfolio of Services

- Application Maintenance Services
- Application Operations Services
- Application & Data Transformation services

#### Application Maintenance Services

- Testing & Test automation Services
- Migration & Implementation
- 24\*7 Application Support
- Incident & Problem Management
- Enhancements / Customization

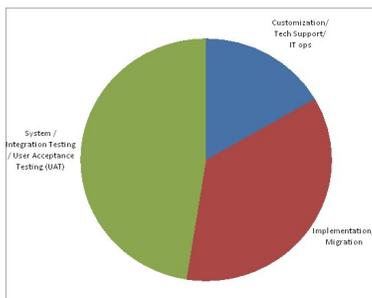
#### Application Operations Services

- L1, L2 & L3 and Production Support
- SLA Management & Help Desk
- Release Management & SCM Activities
- EOD / BOD and Backup Activities
- User Training

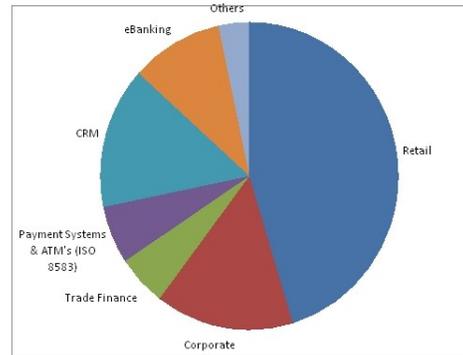
#### Application and Data Transformation Services

- Customization as per the client requirements
- Version Upgrades & Roll out Support
- Data Transformation services for Downstream Applications (Interfaces)

Experience of our team is presented here -



We have expertise in *Retail, Corporate, Trade Finance, Payment Systems & ATM's (ISO 8583), CRM, eBanking, mBanking, Investment Banking, Islamic banking* and other verticals in the banking domain. Our experience spread is here under -



## Business Benefits to our customers

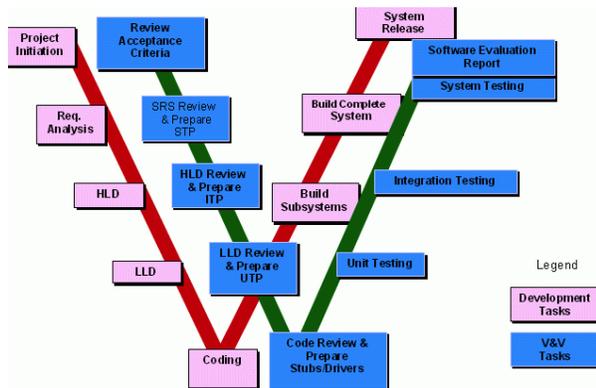
- Always ensure that SLA's are met
- Improve Application Operation & Performance through effective monitoring and management
- Improve Operational Excellence through real time monitoring and resolution
- Improved IT Reliability and Efficiencies
- Over 20% reduction in cycle time
- 100% Compliance management
- Near 0% Risk in IT/ERP Operations
- 99% System Uptime
- Specialized in Banking – Oaksys consultants have over 500 person years of combined experience in banking domain and are thus well placed to undertake activities across life cycle of products
- Our consultants have rich experience of implementation and support in various MNC, regional and new generation banks for more than 1500 branches and around 40 Co-Operative and rural sector banks.
- A very strong repository of over 20,000 end-to-end test cases covering most of the subsystems of core banking system.
- We have a proprietary ready-to-use regression test automation suite which ensures shorter test cycles and quicker turn-around time.
- We offer 'right-shore' model for ensuring cost-effective and reliable services

## Enterprise Application Testing Unit

Under **Enterprise Application Testing Unit (EATU)**, we offer our testing services for a variety of domains and technologies. Web based, client-server based software, cloud testing, agile testing, BI/analytics, mobile and such other applications are covered.

Our service offerings cover Verification & Testing activities related to complete Software Development Lifecycle (SDLC) and variety of SDLC models such as Agile, Waterfall, OO, Incremental and Spiral.

We have our proprietary life cycle model (Oak-PV model) covering all the aspects of testing throughout the SDLC. The model is depicted below.



Oaksys specializes in interpreting the user requirements under the FURPS+ model. The functional and non-functional requirements are clearly understood under this model for testability.

<p><b>SOFTWARE QUALITY CHALLENGES</b></p> <p>In any software development work V&amp;V is a very critical activity. No matter what development lifecycle is chosen, reviews, testing and other V&amp;V activities form an integral part. In spite of this fact, testing is normally perceived as a low end, unimportant, disposable activity &amp; support function.</p> <p>Experience has shown that when there is insufficient, ineffective V&amp;V and testing of software, organizations are exposed to high risks due to software failures leading to loss of credibility.</p>
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Some of the service offerings are detailed below.

### Complete V&V Solution

We associate with your development team to build quality into the product right from the beginning of the software development process. Our Independent V&V Group (IVVG) will participate in the reviews of specifications, design, code and testing to assure quality is built-in.

While your engineers develop the software, our IVVG prepares the test plans and test suite. IVVG will take up actual Test Execution and provides the test results and defect analysis. We can start participating in the project from any phase of the lifecycle depending on the project and your needs.

### Test Case Design & Test Suite Preparation

We prepare various test plans (Acceptance, System, Integration, Unit) from the software artifacts. We design tests and develop test cases for the level of testing. Black box, White box and Grey box techniques are applied to identify test cases, as applicable.

The tests can be designed for Functionality, Load/Performance, Usability, Portability, etc.

### Test Automation Architecture, Design & Development

Automated testing gives much quicker turn-around and drastically reduces the time to deliver the product out of the door.

We define, design and develop automated test environment with and without off-the-shelf test tools. Depending on the characteristics of the project and your preferences, a right mix of test toolsets are chosen.

### Test Execution

From setting up the complete environment for testing, we execute tests manually or by using automated tools. The test results will be compiled, analyzed and submitted to you.

### Software Evaluation and User Acceptance Testing

Whenever a customer gets software developed from a third party vendor, it is critical for the customer to evaluate the software before signing off. On behalf of our customers, we can evaluate/carry out acceptance testing of the software for FURPS+ goals. We can verify correctness and completeness of associated documents and other work products.

### Traceability Analysis

When software development progresses from one phase to the next, it is important to ensure correctness and completeness of the phase deliverables to its predecessors. We can take up traceability analysis between work products in the software project.

### Reviews & Inspections

We conduct formal technical reviews of various software documents. We are well versed with Fagan inspections, walkthroughs and other review processes.

From our experience with a variety of global clients we can justifiably and proudly say, *“Whenever we have consulted we have produced amazing results on the assignment and also introduced a compensating culture, which greatly increases the probability of success”*.

### Cloud testing

Service assurance is the main challenge in cloud services. The provider has to assure timely delivery and even service availability when it doesn't control the data communication connection between the cloud service and users. In addition, security has to be ensured due to multi tenancy so that there is no crossing of data.

Oaksys has expertise and experience in testing of applications on the cloud, with focus on End-to-End functional coverage, multi tenancy, virtualization, load-balancing and performance. Risk based testing and test automation are the key.

### Mobility testing

Whole world is on the move. Every application is being made available on mobile. With 100s of mobile models and flexible user options, mobility has posed a greater challenge to the software provider community. Mobility testing holds the key as the companies look at better, faster and cheaper solutions while addressing the latest standards. We specialize in validating the mobility channel both with test automation frameworks and domain experts.

### Business Intelligence & Analytics testing

Big Data has brought about a paradigm shift in the way industry looks at storing and consuming data. There are number of Business Intelligence & Analytics software being developed in each domain. We have expertise in testing many BI and Analytics products for verticals such as Banking, Retail, medical, Supply Chain and Channels.

Some of the projects executed by us are ..

- Testing of ERP software systems
- System testing & UAT of HRMIS products
- System testing and UAT of insurance software
- Cross-platform testing of N/W management s/w
- Functional testing of web based systems
- System testing of browser based pension administration software
- System testing of planning software
- Agile testing of performance management s/w
- Integration and system testing of banking BI and analytics s/w product
- System testing of eLearning software
- Component testing of zoo management software
- Cloud testing of HR management software
- Testing of cloud based campus admin s/w
- System testing and test automation of BI products in supply chain management, FMCG, retail and channels domain.
- Cloud based employee self service portal
- Load testing of cloud based e-Mentoring portal
- Load testing of cloud based e-Learning portal
- Testing of Talent Acquisition portal on the cloud

## Test Automation Solutions Unit

As part of **Test Automation Solutions Unit (TASU)**, we provide matured test automation solutions for functional, regression and load/performance testing of software products. We use both proprietary as well as open source tools such as Selenium, QTP, Rational etc.

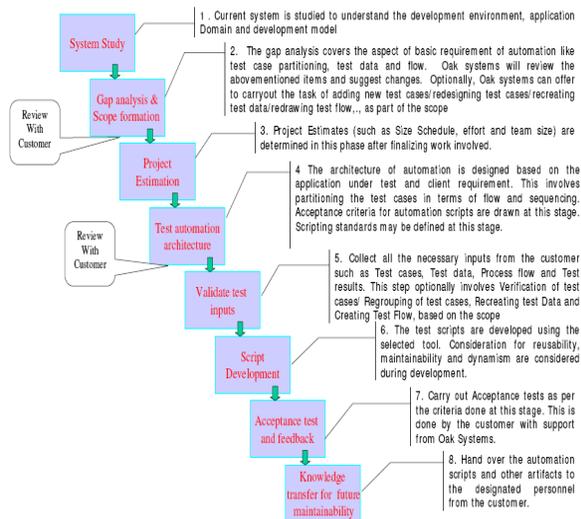
### Our Expertise in Functional Test Automation

Functional Test Automation is one of the major offerings. We have experience using a variety of test tools and under numerous test environments.

*Oaksys* can take up end-to-end activity of Functional Test Automation. Based on the experience gained over the years, *Oaksys* has developed a proprietary test automation model (Oak-TA model). *Oak* follows this model for the outsourced automation projects.

The model is depicted here below.

#### OAK-Test Automation Model



The following are some of the projects in the Functional Test automation space.

- Development of a test automation framework for an e-commerce portal using **Selenium**
- Executing automated regression tests involving over 20000 test cases release after release for a major banking product under **QTP** toolset

- Development of a Test Automation suite for payment gateway system using **SilkTest**
- Test Automation of fin. data aggregation product
- Test automation framework of **eCRM** product
- Development of Test automation framework for a data Analytics software using **Ranorex** and **C#**
- Test automation framework for a SIP based telephony application using **TCL/Tk** scripting.
- Test Automation for a telecom billing application using **Winrunner** & then porting to **QTP**.
- Test Automation of a leisure portal using **Selenium (Java RC)** and **JUnit**
- Test automation of life & non-life insurance software using **QTP**

### Our Expertise in Performance/Load Testing

We have experience in conducting performance testing and profiling using a variety of test tools. We have expertise of conducting Load/performance testing of software using many industry standard tools such as LoadRunner, OpenSTA, Jmeter, ACTS, ..

Some of our notable projects are listed below.

- Performance testing of enterprise applications of a large Fortune 500 company using **LoadRunner**
- Performance profiling and testing of Real Time Service Management suite of products using **Microsoft ACTS**
- Performance testing of several **insurance products** using **Loadrunner** and **OpenSTA**
- Performance profiling and testing of multiple e-Learning Software using **OpenSTA / Jmeter**
- Performance testing of freight management system using **OpenSTA**
- Performance profiling & load testing of number of web based systems using **Jmeter**

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