

TATA CONSULTANCY SERVICES



Telecom Embedded Solutions

Engineering and Industrial Services



Experience certainty.

IT Services
Business Solutions
Outsourcing

The amount of intelligence & complexity being incorporated in telecom instruments, devices and equipments is increasing day by day. Consumers are looking for quality products with high reliability and availability. At Tata Consultancy Services (TCS), our telecom embedded solutions help telecom product companies like yours to meet your business objectives by leveraging our strong domain expertise, IP portfolio and solution accelerators, thereby achieving reduced time-to-market.

Overview

Telecom industry is evolving rapidly. Convergence is the buzz word in the telecom industry spurring the advent of next-generation technologies such as 4G, WiMAX, LTE, SDR, UWB, IMS, NGN etc. Moreover, mobile devices are becoming much more sophisticated and powerful. End users want to be able to access services anytime, anywhere regardless of device, location and network. This makes essential for you to ensure that products are built with the best of design and that they meet local and international standards.

At TCS, we constantly track the standards relevant to the design and development space and have undertaken many key initiatives like WiMax, 3GLTE, Mobile IP and IMS for our customers. Our thought leadership and commitment in the telecom sector and unique positioning with leading OEMs and ODMs enable us to give you quality solutions. With expertise in product DDD&V (Definition, Design, Development & Validation) and systems integration, we work to ensure that you are ably supported in product development and sustenance activities.

Our Global Network Delivery Model™, a collaborative, superior framework of people, processes and infrastructure, makes it possible for us to consistently ensure success of your initiatives- anytime, anywhere.

Why TCS

At TCS, we provide you profit impacting innovative solutions which help you stay ahead of the competition. Our advantages include:

- **Telco exposure:** Our telecom embedded domain expertise includes wireless protocols, handset technologies, product hardware design, product testing and interoperability testing. We have a large service provider base where these solutions have been deployed. Our professionals have architected, developed and deployed solutions on Triple play, 3G and convergent networks, bringing with them adequate skills to create the right solutions for our clients
- **Concept to product solutions:** Our capabilities include development of embedded software, design of embedded hardware systems with focus on micro-controllers and processors, FPGAs and ASICs, DSP and VLSI chip design, complex electromechanical products, sub-assemblies and box build. With the ability to undertake various hardware and software related activities, we are all set to be the single source of solutions for all your requirements.
- **Solution accelerators:** In-line with the latest technology trends, we invest significantly in developing assets and solution accelerators to enable our customers reduce time to market for products. Some of our key solution accelerators for telecom industry are in areas of WiMAX, IMS, WLAN and SmarTEST.
- **In-house electromechanical manufacturing:** Our electromechanical manufacturing facility which is 100% Export Oriented Unit (EOU) enables us to undertake activities such as prototype & box build, wire harness assembly, sub assembly, testing, visual inspection, pre-qualification, etc. Backed by ISO9001 certified quality systems, products manufactured are certified by UL, TuV, CE and CSA.
- **Operational excellence approach:** involves measuring customer satisfaction through metrics such as projects delivered on time, on budget and with zero defects.

What we offer

Our telecom embedded solutions address the requirements of OEMs, ODMs and service providers in following domains:

Wireless devices & equipments. We partner with our customers in various product lifecycle activities such as conceptualization, prototyping, design/development, verification, certification and sustenance. We help you by partnering with you to reduce new product introduction costs & time by developing subsystems for core network and radio access network elements spanning across technologies such as GSM, GPRS, CDMA, 3G, LTE and WiMAX. We also help in developing components and solutions for entire spectrum of handset development services for handhelds like feature phones and smart phones.

Our product sustenance services help wireless vendors to address the challenges of supporting multiple product lines in different stages of the product life cycle. We also provide verification and validation services for wireless product vendors.

Test and measuring equipments. We deliver customized software & hardware solutions for test and measurement manufacturers of RF power measurement related equipment for broadcast, semiconductor and wireless industries. Our strong domain knowledge coupled with our technological capabilities helps us to deliver value to our customers.

Wired equipments. Our wired network solutions help telecom equipment vendors and service providers to design, develop, test and support data-communication equipments and services for SOHO, access, metro edge, carrier and enterprise networking. The services offered cover the areas of product engineering, consulting, system integration, sustenance & product validation.

Data com. The marketplace is undergoing tremendous changes with the advent of VoIP, IMS, IPTV, MPLS and VPLS services. TCS offers its comprehensive expertise in packet data services in the areas of Edge, Core & Access networks in addition to enterprise equipments

Our other offerings to the telecom embedded industry include:

- Handset technology stack
- Wireless access
- Test lab services
- Test & measuring equipment
- Packet networks
- Wired equipment
- Hardware design & testing
- VLSI (ASIC, FPFA, SoC) design & verification
- Mechanical design & packaging
- Device qualification

How we help our customers

Operational excellence for major hi-tech OEM

A major hi-tech OEM specializing in microelectronic, testing and measurement products for telecom industry was seeking for a partner who can help in wireless protocol development and testing for products such as Mobile-IP, CDMA-2000, 1x EV-DV, GAN, WiMAX and LTE. TCS teamed with the customer to validate industry's first HSDPA test cases. With our application support, worldwide demonstration capabilities and strong technology change management via enhanced test cases to standard bodies such as 3GPP/3GPP2; we helped the customer to enhance end customer experience. Our solutions coupled with productivity initiatives with in-house tools, helped the customer to increase test coverage and achieve cost benefits through reduced onsite release efforts.

Re-engineering solution for telecom major

A major wireless network OEM was looking for a partner for product re-engineering, sustenance and green compliance of the BTS and BSC products. TCS with its telecom embedded systems capabilities engaged with the customer in areas such as component qualification, RoHS compliance, digital design/re-engineering, software design & support, mechanical design/re-engineering, RF re-engineering/ testing, environmental testing and manufacturing support. TCS with its Global Network Delivery Model™ was able to meet challenges of managing the projects on global scale. We helped the customer in test tool development for automated testing, exhaustive documentation (approximately 300 different documents and reports) and HALT process implementation at customer location. Our automation tools development as a part of Six Sigma process ensured that there was a reduction of 25% in component qualification time.

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 100,000 of the world's best trained IT consultants in 50 countries. The company generated consolidated revenues of US \$5.7 billion for fiscal year ended 31 March 2008 and is listed on the National Stock Exchange and Bombay Stock Exchange in India. For more information, visit us at www.tcs.com

Contact us

To know more about our Telecom Embedded Solutions, contact corporate.engineering@tcs.com

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