With digital becoming the default, technology is disrupting a wide variety of industries, from those with digital offerings (music, news, photography) to ones delivering digitally enabled services (taxis, hotels, restaurants). To maintain market leadership, companies must harness technology-driven breakthroughs relevant to their industry.

Tata Consultancy Services (TCS) has a strong research base across domains at its global Innovation Labs, where scientists and technologists develop solutions for crucial business problems. With a diverse Co-Innovation Network (COIN™) that includes leading universities and researchers, promising startups, venture capital firms, and senior industry executives, TCS offers a complete innovation ecosystem to help strengthen business leadership.

We Collaborate to Innovate

TCS follows a proven process to develop a full spectrum of research and innovation solutions:

- **Derivative innovations** – Drive continual improvement across current services and solutions.

- **Platform innovations** – Make significant changes in the delivery of products and services across technologies and markets. Such innovations typically have a two- to three-year horizon.

- **Disruptive innovations** – Identify breakthroughs and develop potentially game-changing business offerings or models. Such innovations have a time horizon of about five years.

A Systematic Approach for Proven Results

With significant in-house research capabilities across different domains, TCS offers an unparalleled innovation ecosystem through its vibrant, global Co-Innovation Network. A proven innovation model allows TCS to adapt the framework to different organizations and develop custom networks. This enables companies to leverage specialized expertise and insights from our Innovation Labs.

TCS follows a 4-E framework to develop and nurture new ideas, evaluate and prototype promising ones, and ensure business viability for those that present significant commercial potential. The process includes four activities:

1. **Explore**: Early-stage ideation and creative application of technology to a business environment

2. **Enable**: Prototyping of the promising ideas and solutions; building in scalability in real-world settings

3. **Exploit**: Commercial development of the selected solutions that present significant potential. This includes both technical and business aspects, focusing on defining the value propositions

4. **Evangelize**: Taking solutions to customers, understanding their requirements, organizing interactions, and coordinating the other three activities

TCS’ Global Innovation Labs

The growing network of TCS Innovation Labs focuses on cutting-edge technologies applicable to different organizations. The industries include banking and finance, energy, government, healthcare, high tech, insurance, life sciences, manufacturing, media and information services, natural resources, retail, consumer goods, telecom, travel and transportation, and utilities. Our thematic and sectoral research areas include intelligent infrastructure; integrated computational materials engineering; genomics, metagenomics, and systems biology; human centric systems; green solutions; virtual reality; machine learning; digital security; the Internet of Things; and Digital Technologies.

TCS’ research offerings further our clients’ business objectives in the following key ways:

- **Simplification**: Software-defined computing infrastructure, robotic automation, personalized learning

- **Reimagination**: Cyber-physical systems, social and human systems, predictive and prescriptive insights, future workplaces

- **Governance**: Security, privacy-respecting enterprises, domain-specific governance, risk, and compliance

- **Sustainability**: Materials, energy, health and wellness, water, education, cities
## Recent Academic Partnerships

<table>
<thead>
<tr>
<th>Partner</th>
<th>Area of Engagement</th>
</tr>
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<tbody>
<tr>
<td>Columbia University, USA</td>
<td>Member Of Columbia Particulate And Surfactant Systems</td>
</tr>
<tr>
<td>University of California, Berkeley (UCB), USA</td>
<td>Next Generation Genome Sequencing</td>
</tr>
<tr>
<td>University of Toronto, Canada</td>
<td>Smart Citizen</td>
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<tr>
<td>Singapore Management University</td>
<td>Intelligent City Labs</td>
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<tr>
<td>University of New South Wales, Australia</td>
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<td>University of Technology, Sydney, Australia</td>
<td>Advanced Analytics and Data Visualization</td>
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<tr>
<td>Indian Institute of Technology - Bombay, India</td>
<td>Multiple Areas of Collaboration</td>
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<tr>
<td>Indian Institute of Technology - Guwahati, India</td>
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<tr>
<td>Chennai Mathematical Institute, India</td>
<td>Verification of Embedded Automotive Software</td>
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<tr>
<td>IIT Madras, India</td>
<td>Intelligent Transportation</td>
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<tr>
<td>IISc Bangalore, India</td>
<td>Multiple Areas of Collaboration</td>
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<tr>
<td>IIT Kanpur, India</td>
<td>Integrated Computational Materials Engineering Multiple</td>
</tr>
<tr>
<td>IIT Kharagpur, India</td>
<td>Areas of Collaboration</td>
</tr>
</tbody>
</table>

### Access to Sophisticated Research with COIN™

As one of the early adopters of collaborative innovation, TCS has actively pursued the development of new models for research and innovation. Through COIN™, TCS connects companies with thriving, customized innovation ecosystems that enable the development of breakthrough solutions. Our COIN network comprises leading university and research communities, tech startups, venture capital firms, industry analysts, and senior industry executives.

### Benefits of TCS’ Approach to Research and Innovation

TCS helps clients adopt new and disruptive technologies for competitive advantage, while mitigating risks. Our research involves the exploration of futuristic concepts and thought leadership in technology. We help businesses by:

- Scanning for new and disruptive technologies for competitive advantage
- De-risking new technologies
- Providing well-tested, innovative solutions
- Offering futuristic exploration and thought leadership in the technology space

### Opportunities to Connect and Collaborate

TCS establishes channels of communication between thought leaders and clients through events such as:

- **Innovation Forums**: TCS organizes annual Innovation Forums in America, Europe, Asia, and Australia. This forum is a unique opportunity to interact with an eclectic group of innovation and technology experts from academia, startups, venture capital funds, multilateral organizations, TCS’ R&D Labs, and chief technology officers of client organizations.

- **Innovation Days**: These are full day workshops focusing on specific innovation needs, conducted by TCS at the client’s office.

- **Collaborative Innovation**: TCS helps companies build a customized network of technology organizations for collaborative innovation.
Investing in Talent

TCS invests in the next generation of computer scientists. Our Research Scholar program sponsors computer science students pursuing PhD, with research in areas relevant to real world problems. The program currently sponsors over 80 scholars from 26 universities.

Recognition

- Ranked #66 in Forbes' Most Innovative Companies list, 2016
- Achieved 82 percentile in Innovation Management in the Dow Jones Sustainability Index (DJSI) 2015; awarded the bronze status and included in the DJSI Emerging Markets and DJSI World indexes
- Awarded Best In-house IP Team of the Year – IT and Technology, at the Global IPR Conclave 2015

Innovation

It is complex to manage. Its budget is no guarantee of success. It has competing priorities. Its costs are too hard to control. Not surprisingly most innovations fail. Yet, companies that don’t innovate become footnotes.
### Research Areas


- **Chennai**: Water, Energy analytics, social workplace, drones, cyberphysical systems modelling, intelligent transportation, Digital citizen.

- **Delhi**: Data and Decision Sciences: machine perception and understanding – speech and natural language processing, predictive modelling and insight discovery, intelligent planning and control; robotics; next-generation data management.

- **Hyderabad**: Cryptography, Hash functions, access control, mobile device security, digital watermarking; blockchain; Computational Finance & Risk; Biometrics, SCADA; Computational Life sciences: Genomics, Service design.


- **Mumbai**: Speech technology, Mobility & Social innovation, Performance engineering, Optimization & Planning; Internet of Things.

- **Pune**: Modeling and Analysis of Software and Systems, Computational materials engineering, Process modeling and data analytics; Nano technologies, Digital enterprise; High performance computing; Computational biology; metagenomics; Privacy and Security; Data Markets; trusted platforms; Behavioural, social and business sciences; Compliance Automation.

- **Cincinnati**: Digital manufacturing and operations.

### Academic Alliance Labs

- **Mumbai**: Power Answers Lab in collaboration with IT Bombay

- **Singapore**: Singapore Management University

### Location

- **Mumbai**: Life Science and Pharma
- **Chennai**: Retail, Telecom, Banking, Travel & Hospitality, Insurance, ITES & IFS
- **Cincinnati**: Supply Chain

### Domain Labs

- **Silicon Valley**: Customer collaboration center

### Notes

- **SINGAPORE**: Domain Labs
- **AMERICA**: Academic Alliance Labs
- **INDIA**: Research Areas
About Tata Consultancy Services Ltd (TCS)

Tata Consultancy Services is an IT services, consulting and business solutions organization that delivers real results to global business, ensuring a level of certainty no other firm can match. TCS offers a consulting-led, integrated portfolio of IT and IT-enabled infrastructure, engineering and assurance services. This is 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 a global footprint and is listed on the National Stock Exchange and Bombay Stock Exchange in India.

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

To know more
Visit the Innovation Labs page on tcs.com
Email: innovation.info@tcs.com
Blog: Research and Innovation