INFOSYS CONNECTED
DEVICE TESTING:
BUILDING A SMART
ECOSYSTEM WITH
CONFIDENCE
Introduction
The connected device market is booming. Smart devices now outnumber the world’s population. This presents an opportunity for accelerated business growth. But organizations must act swiftly. The scope of connected device implementation is vast and complex. Therefore, smooth integration of system components and their compatibility with different platforms and operating systems is essential. With dynamic and growing market demands as well as business needs, connected solutions require a sound end-to-end testing strategy for stability, scalability, and interoperability, in order to provide a rich user experience.

Connected Ecosystem: Factors Driving Innovation
A connected ecosystem involves four primary factors interacting to create innovative smart services. Figure 1 depicts this complex amalgamation driving the emergence of the new service types.

![Figure 1: Combination of factors that empower the smart and connected system](image)

Infosys Connected Device Testing: Addressing Industry Challenges
Infosys Connected Device Testing uses a structured approach to address industry challenges related to the usage of various devices, network options, protocols, and businesses use cases. Infosys validates smart scenarios and ensures optimal user experience to satisfy business needs. Additionally, we prioritize scalability and performance testing to ensure system efficiency under load. Our testing portfolio includes system cohesiveness, device interoperability, and compatibility with different technologies and protocols. We leverage device and data virtualization as well as automation to enhance value.

In summary, Infosys delivers end-to-end functional and non-functional validation services for all connected and smart scenario implementations.
Infosys Connected Device Testing has the following key features:

1. Smart scenario and user experience testing
   - Seamless integration of smart devices with multiple network operators, connectivity protocols, cloud services, and end-user applications
   - Functional testing of Android, iOS, and other smart device applications
   - Usability and accessibility testing
   - Evaluating user experience under different application conditions and across multiple channels

2. Device interoperability testing
   - Seamless integration of smart devices with multiple network operators, connectivity protocols, cloud services, and end-user applications
   - Integration with multiple devices to ensure functional compatibility
   - Validation of device-to-device and device-to-cloud communication for cloud integration
   - Interoperability testing with multiple communication and data protocols to address potential technology or protocol issues
3. Performance and scalability testing

Assessing capability levels of devices and networks to handle varying levels of load and usage without compromising their functionality and reliability

Performing validation under network conditions like intermittent connectivity, packet loss, and network bandwidth variance

Testing and benchmarking services under different conditions using load simulation

Endurance and spike capacity validation services

4. API/microservices testing

Validation of connections, contracts, and seamless communication between connected devices

Validation of each external interface

Validation of services and integration layer

5. Device and data virtualization

Uninterrupted testing despite unavailability of devices or data

Real devices testing services and virtualized device simulations

Virtualization of test data

Validation services using cloud-based devices with or without automation
Infosys Differentiators

Infosys’ edge-to-cloud testing solution offers comprehensive automation for connected device testing. Our optimized solution comprises seven components that cater to various types of testing requirements for connected devices. Table 1 lists and describes the seven components.
Table 1: The seven components of Infosys Connected Device Testing

<table>
<thead>
<tr>
<th>Testing problems solved</th>
<th>Components</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessibility testing compliance across mobile and web applications</td>
<td>Infosys Accessibility Testing Tool (IATT)</td>
<td>IATT is a web application that enables enterprises to plan their web, mobile, and PDF accessibility strategy. It considers dimensions such as legal, economic, and corporate social responsibility. It supports automated accessibility checks for guidelines, including the WCAG1.0, WCAG2.0, WCAG2.1, DDA Australia, DDA UK, SECTION 508, STQC Guideline, and BITV Germany.</td>
</tr>
</tbody>
</table>
| User journey experience testing                                                        | Infosys customer experience testing framework   | **Customer Experience (CX) Index:** Validates various aspects of customer experience, including functional, performance, usability, security, and accessibility. It provides a unified score of perceived CX across web and mobile platforms.  
**Customer Sentiment Analytics:** Utilizes machine learning techniques to analyze customer feedback and derive insights. |
| Interoperability testing across device/cloud platform/protocol                          | Infosys Internet of Things (IoT) testing framework | Infosys IoT testing framework offers end-to-end test automation, covering the edge of the device to the IoT hub in the cloud. It supports testing for smart and connected device implementations and includes features such as device simulation and automated supervisory control and data acquisition (SCADA) testing. |
| Automated device and data virtualization                                               |                                                |                                                                                                                                                                                                      |
| Network and performance testing                                                        | Infosys Network Testing Solution (INITS)       | INITS facilitates testing a connected device under various network conditions. It allows users to emulate actual end-user conditions.                                                                       |
| Security testing                                                                       | Infosys security assurance framework            | Infosys security assurance framework assists in evaluating vulnerabilities and security threats across the device layer, gateway, back-end enterprise components, and connected system application layers. It enables assessment of the security implementation in alignment with the Open Web Application Security Project’s (OWASP) top 10 risks. |
| API and microservices testing                                                          | Infosys API/microservices testing framework     | Infosys API/microservices testing tool is a lightweight framework that simplifies API/microservices testing. It provides a single interface to orchestrate testing activities, reducing time required for test planning and execution. The tool is highly customizable and can be easily enhanced to adapt to evolving trends in the API world. |
| End-to-end test automation                                                             | Artificial intelligence (AI) and machine learning (ML) based testing framework | The AI and ML-based testing framework utilizes generative AI and ML models for regression test automation. The framework helps in optimizing test cases based on risk-based assessment, past performance data and the most probable cause of failure. It performs requirement traceability and identifies gaps in test coverage. |
Creating Business Value

Infosys Connected Device Testing solution provides comprehensive test coverage and significant return on investment (ROI) for end-to-end connected device implementations.

The testing process is accelerated 7x through parallel device testing and reusable components for smart app testing.

The solution ensures 100% accuracy in validating accessibility standards with over 60% automated testing of WCAG guidelines.

Why Choose Infosys?

Infosys has a team of seasoned professionals known for their expertise and trustworthiness. We take a tailored approach to address the unique requirements of all our clients, ensuring that our testing services meet their specific needs with the highest quality. We leverage state-of-the-art testing tools to ensure that devices function seamlessly, delivering optimal performance and complete security.
A collaboration between Infosys and a multinational conglomerate resulted in remarkable outcomes for the company’s smart facility project. By automating 80% of test requirements, the solution significantly reduced implementation time by 25%. This enabled the development team to deliver more releases and features at speed.

Infosys partnered with Microsoft Azure to build smart spaces leveraging AI and IoT. With AI-based validation solutions, the team ensured the seamless testing of digital twin validation use cases such as smart parking, smart meeting room, and lobby management. This highly successful testing implementation resulted in the delivery of the smart facilities project with zero-failure and high-reliability.
Infosys played a pivotal role in helping a car manufacturer optimize its after-sales vehicle servicing platform. By leveraging Bluetooth and Wi-Fi technologies, Infosys developed a solution to efficiently manage the platform and collect crucial vehicle information, including parts, control unit software, and diagnostic fault-tracing data.

Automated daily regression through continuous integration and continuous delivery (CI-CD) implementation achieved 100% test coverage with zero production defects. This robust testing approach ensured the stability of the platform and enhanced customer satisfaction by delivering a seamless after-sales experience.
Infosys enabled a leading broadband connectivity and cable company to enhance their video capabilities across multiple platforms. By developing applications for smartphones and tablets on iOS, Kindle, and Android platforms as well as Roku devices, Samsung TV, Apple TV, TV Everywhere (TVE), and online video portals, Infosys enabled seamless video streaming experiences for over 32 million customers.

The company witnessed a 30% reduction in cycle time for releasing content and new application features. Additionally, the application received a reputation boost, with the App Store rating increasing to 4.4 out of 5. The improved customer experience was key to driving rapid business growth.

Infosys achieved 75% regression automation within the agile sprint using the Espresso, Appium, Selenium, and Kotlin frameworks, in collaboration with Mobile Labs and Sauce Labs partners.
Infosys played a crucial role in transforming the digital insurance experience for a leading insurance providing company. They merged multiple standalone applications into a unified platform, offering policy details and payments services. This innovative solution enabled flawless trip recording and management for customers through a single application available on both Android and iOS devices.

By implementing automated regression testing, Infosys significantly reduced the cycle time for releasing updates and enhancements while achieving a notable 30% reduction in effort.

The incorporation of trip simulation, we ensured accurate tracking of trips and events based on GPS, enhancing the reliability and functionality of the application. This successful collaboration empowered the client to provide insurance services more efficiently to their customers.
Infosys Cobalt is a set of services, solutions and platforms for enterprises to accelerate their cloud journey. It offers over 35,000 cloud assets, over 300 industry cloud solution blueprints and a thriving community of cloud business and technology practitioners to drive increased business value. With Infosys Cobalt, regulatory and security compliance, along with technical and financial governance come baked into every solution delivered.