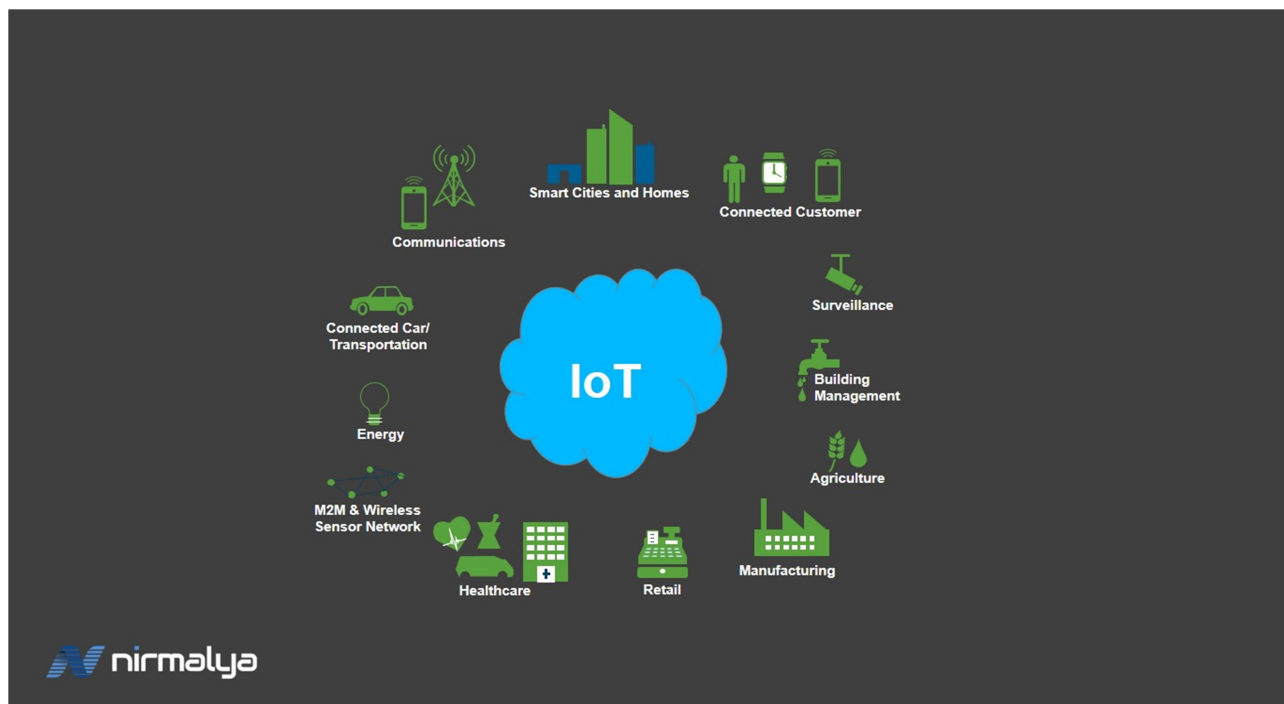


## IoT Testing Approach

The Internet of Things (IoT) is the network of physical objects or “things” embedded with electronics, software, sensors, and network connectivity, which enables these objects to collect and exchange data. IoT testing is different from traditional QA because it requires more focus on user centric testing, just not find bugs and preventing, influencing both development and operational processes and requires experience of testing hardware or embedded systems. Users don’t care why your product has failed in the connected chain and with time users will become more accustomed to connected devices and the Internet of Things (IoT), they will expect the new technologies to work flawlessly from the inception. IoT products testing will be the game changer. A comprehensive testing strategy is required to cover the depth and breadth of IoT testing. IoT test areas broadly divided into Device Interaction Layer and User Interaction Layer.

**Device Interaction Layer:** Where the software and the hardware components of a real-time IoT environment interact. One typical example is a Bluetooth device transmitting real-time data to a mobile device app. Many a times, lot of interaction testing occurs on the functional side of testing.

**User Interaction Layer:** This is the touch point between the Things and the users. The success of the overall system depends on the user receiving a seamless experience.



Broader testing areas of IoT are Connectivity, Security, Performance, Functionality, Compatibility, and User Experience. Basic Test area for IoT testing are follows:

#### Connectivity:

- Verify that all the gadgets involved in the Internet of things testing are able to register to the network.
- Verify that application ensure data security and storage so that whenever the connection is restored, data is back to shape as it was.

#### Security:

- Verify no unauthorized access to device or information - Identity and Authentication.
- Verify data on compromised IoT devices can be remote wiped out.
- Verify Data Protection, • Data Encryption and storage Data Security in Local and Remote Clouds

#### Performance:

- Verify response time against benchmarked time with defined connectivity conditions

#### Functionality:

- Verify Web/Mobile Functional/business requirements
- Verify Access control, Data Storage and Identity/Roles management

#### Compatibility:

- Verify Device-to-device communication protocols are not compatible, forcing the user to select a family of devices that employ a common protocol as lack of standardization leads to incompatibility issues
- Verify IoT software supports combinations of devices, protocols, operating systems

#### User Experience:

- With a multitude of devices of different shapes and form factors, expectations and perceptions vary from one user to the other. Thus, Usability and User experience testing becomes crucial.