



WIPRO
Applying Thought

Wipro's TTCN Journey “Telecom to Finance”

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Company Overview

Where Do We Stand Today



Wipro Ltd. has grown to be a \$5.76* billion organization serving customers across the globe

- Leading global service provider of Consulting, IT Services, BPO and R&D Services
- Largest independent R&D services provider in the world
- Largest India based Remote Infrastructure Management (RIM) service provider
- Largest offshore Testing Service provider
- Leading Enterprise Information Management Services Provider
- Leading offshore Information Security Solutions provider
- Among the few companies in the world to be assessed at maturity level 5 for CMMI V1.2 across offshore and nearshore development centers

***India GAAP figures**

Testing Services

Business Snapshot

- FY'08-09 Revenue of US\$ 488Mn; 27% YoY growth
- 8300 + testing consultants as on 31-March-09
- 12+ years of experience in independent testing services

Services

Testing as a Managed Service

Functional & Non-functional testing

Specialized Testing Services

Automation Testing

Performance Testing

Data-warehouse Testing

Package Application Testing

SOA Testing

Localization Testing

Virtualization in Testing

Test Consultancy

“We are very excited by choice of Wipro as our partner. We are convinced that savings in IT can contribute to our cost leadership, and we feel that Wipro have the quality and experience that we are looking for”.

Leon Hintzen, Lead Demand Manager, Akzo Nobel

Leadership

- No.1 Independent 3rd party offshore Testing Services provider
- Pioneers in Testing as Managed Services (TMS)TM for end-to-end testing ownership along with domain solution labs, technology labs.
- World's only service provider to set-up Wi-Fi pre-certification and certification lab.
- Testing in Software-as-a-Service model: multiple Labs- on-hire with Testing Infrastructure + Software Licenses

Industry / Technology solutions and frameworks

- **FIX ExamenTM** test suite to test FIX Protocol.
- **ExamenTM for SWIFT** financial messaging standard
- **POS Application Testing** Solution for Retail domain
- **Wip-CAFÉTM** Test Automation Management solution
- **StORMTM** Statistical and Mathematical tools for Testing quality

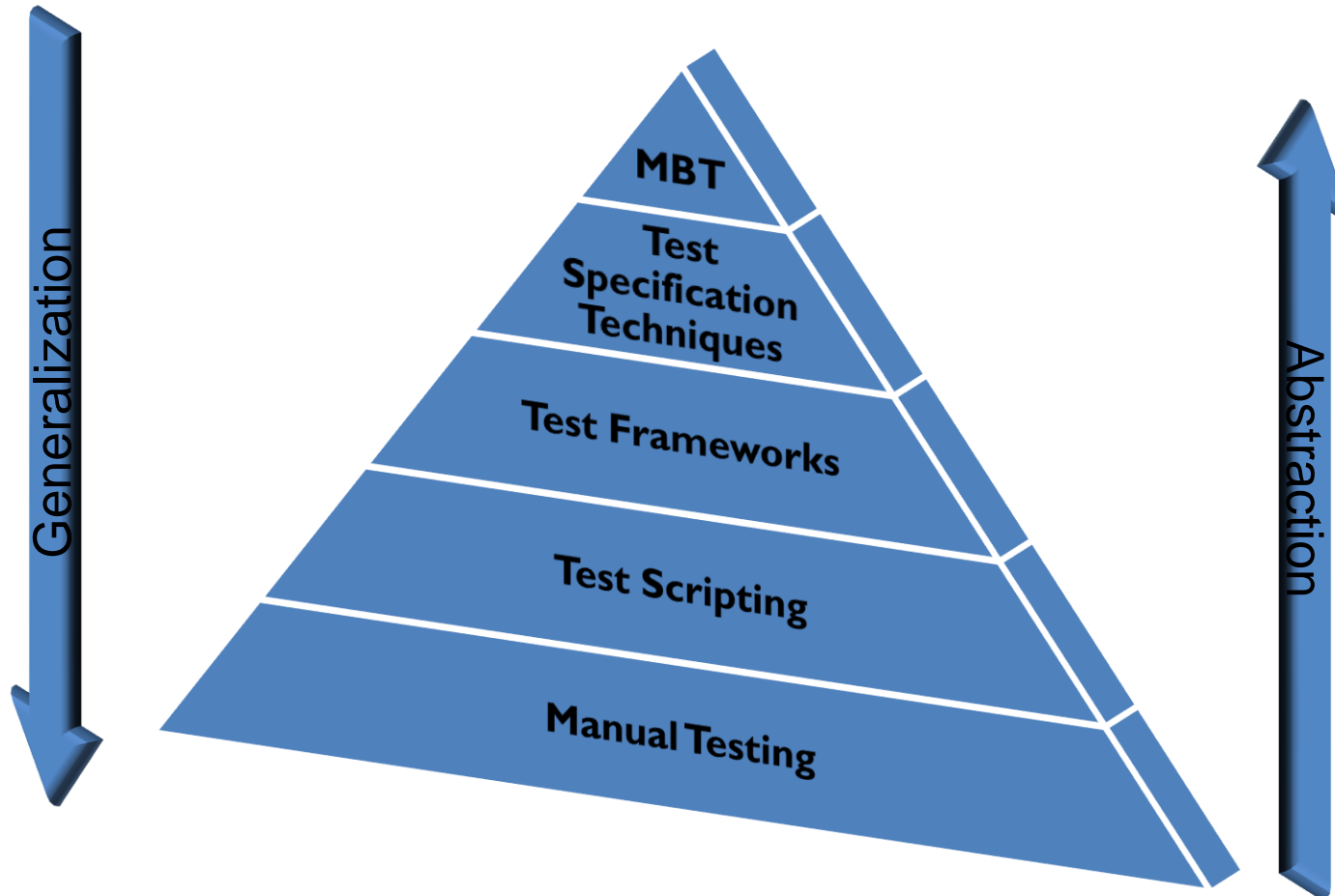
Strategic partners





Why TTCN

Testing Evolution



Challenges in Test Specification

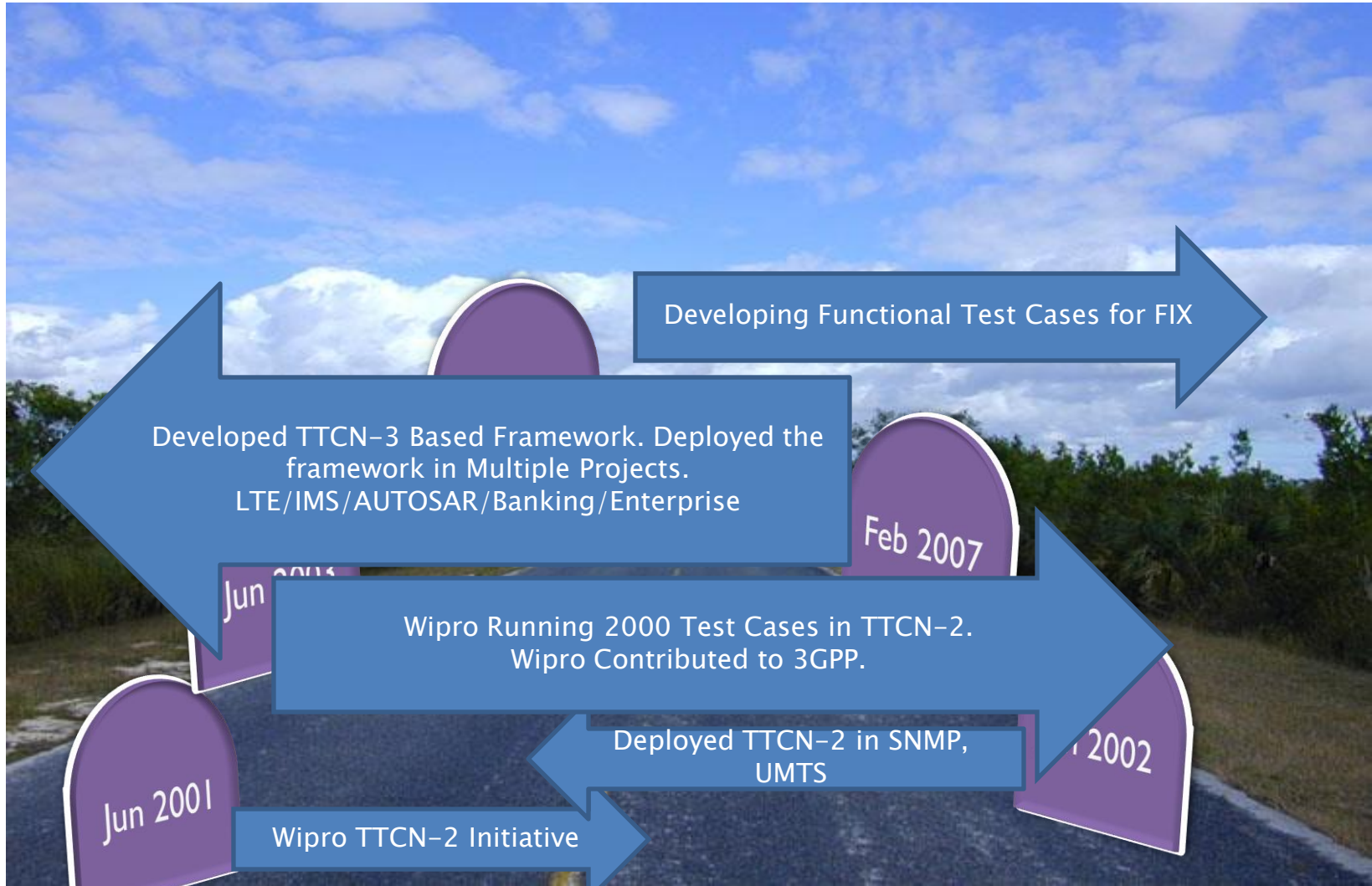
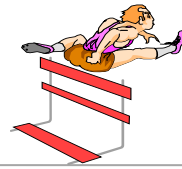


- 1 Tightly coupled with the test data
- 2 Tightly coupled with the know-how of how to test
- 3 Tightly coupled with all the entities in the test bed

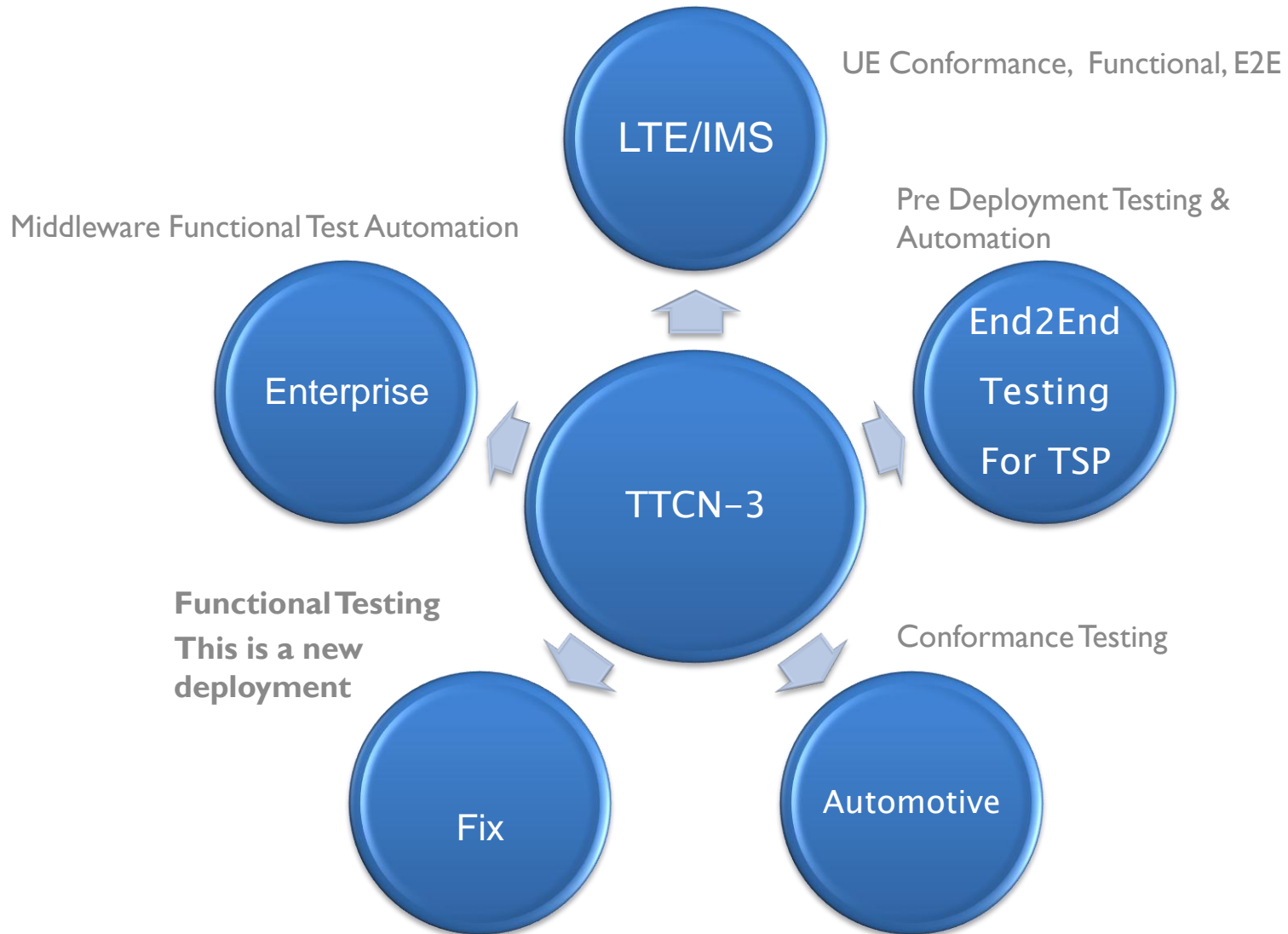


Wipro's tryst with TTCN

TTCN Journey



TTCN-3 Footprint in Wipro



Enterprise Application Testing – Scope & Challenges



CUSTOMER

- A Global Petrochemical Company

SCOPE

- Retail Middleware Application Testing

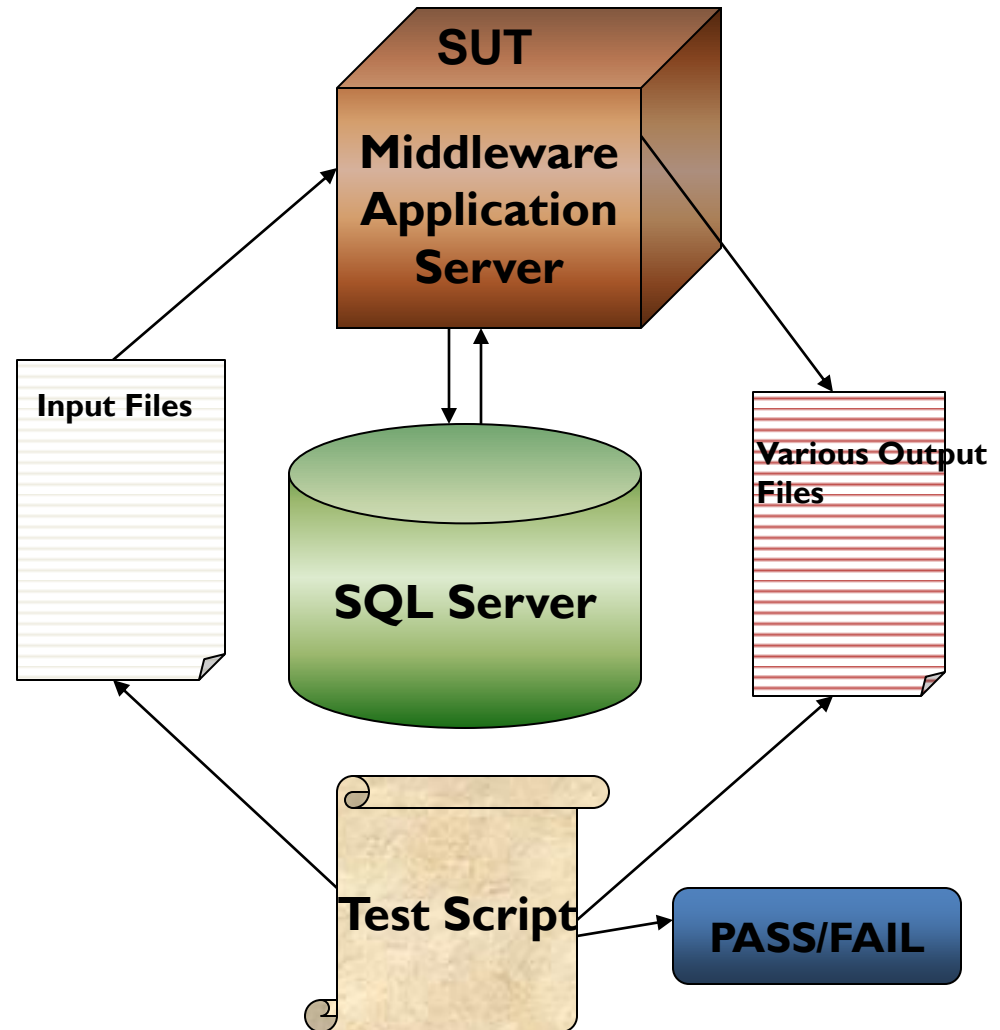
CHALLENGES

- Multiple Short Releases
- Cryptic Input and Output file, and frequent changes to these file based on the number of independent application
- Business rule engines are often used to make decisions in workflows.

Middleware Application Setup

WIPRO's SOLUTION

- The test cases were scripted using TTCN
- The framework was augmented with a component to communicate with the Microsoft SQL database. This component will make use of ODBC.
- An XML parser was developed to verify the output file generated.
- The solution includes TMS for selecting test cases, viewing report, viewing logs etc.



End-To-End Testing – Scopes and Challenges

CUSTOMER

- Wireless Service Provider

SCOPE

- Pre-deployment End-to-End Testing

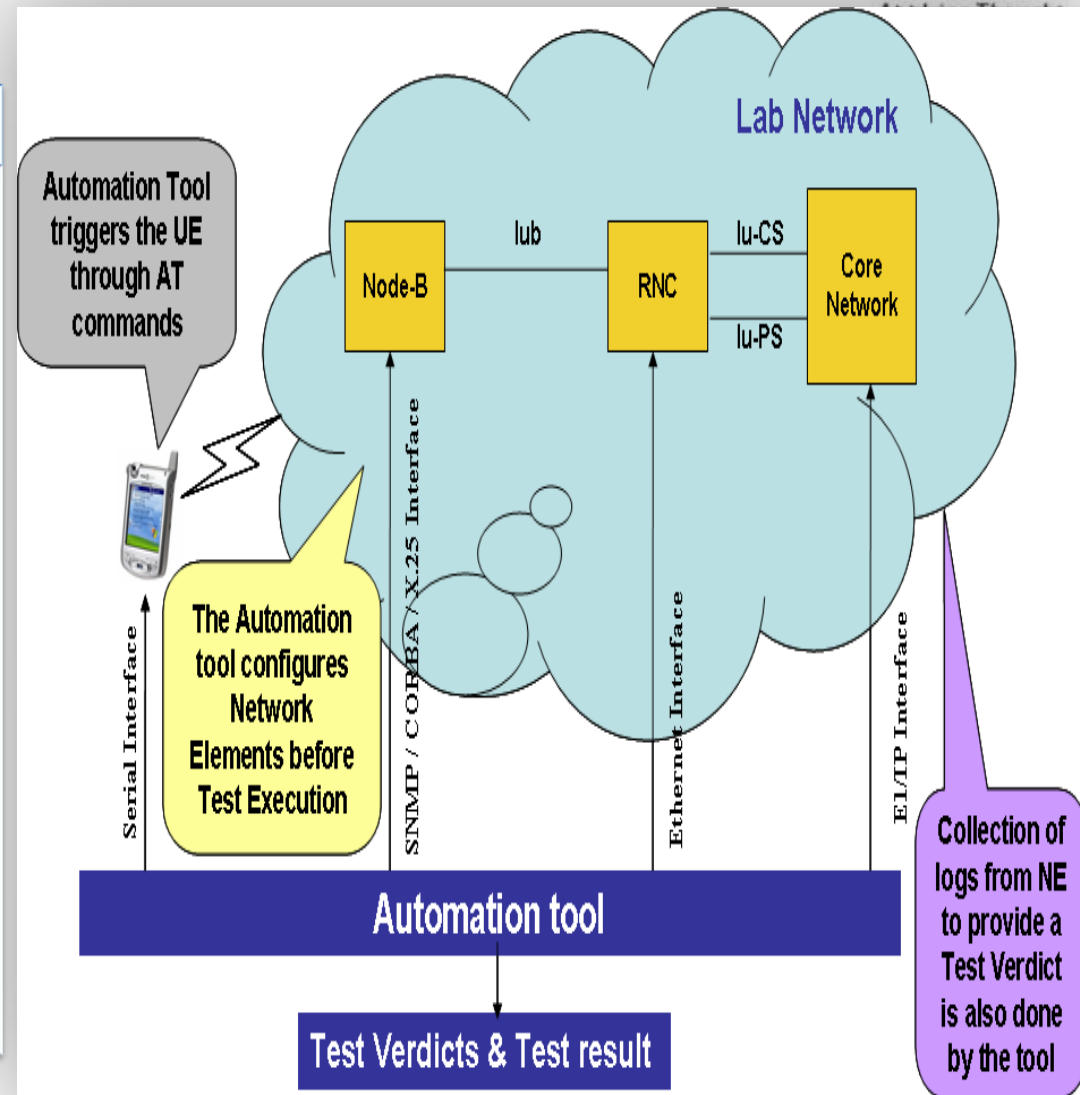
CHALLENGES

- Faster Time-to-Market need
- Manual & time consuming testing
- Ensuring all services are fully tested and deployment ready

End-to-End Testing Environment

WIPRO's SOLUTION

- Automation Framework to facilitate E2E Testing of pre-deployment scenarios
- The framework communicates with the entities involved in this setup.
- It communicates with the mobile handset on the serial interface to trigger AT command.
- It communicates with network elements like NodeB or RNC etc or to Network Monitoring tools like K1297 to configure the network elements or to simulate any network elements.
- The framework also provides a log parser to download the logs from the NE, parse it, verify it based on user requirement and give a verdict to support the test case verdict.



LTE UE Testing – Scopes and Challenges

CUSTOMER

- LTE UE Protocol / Device Vendor

SCOPE

- LTE UE GCF Conformance Testing, Interoperability Testing

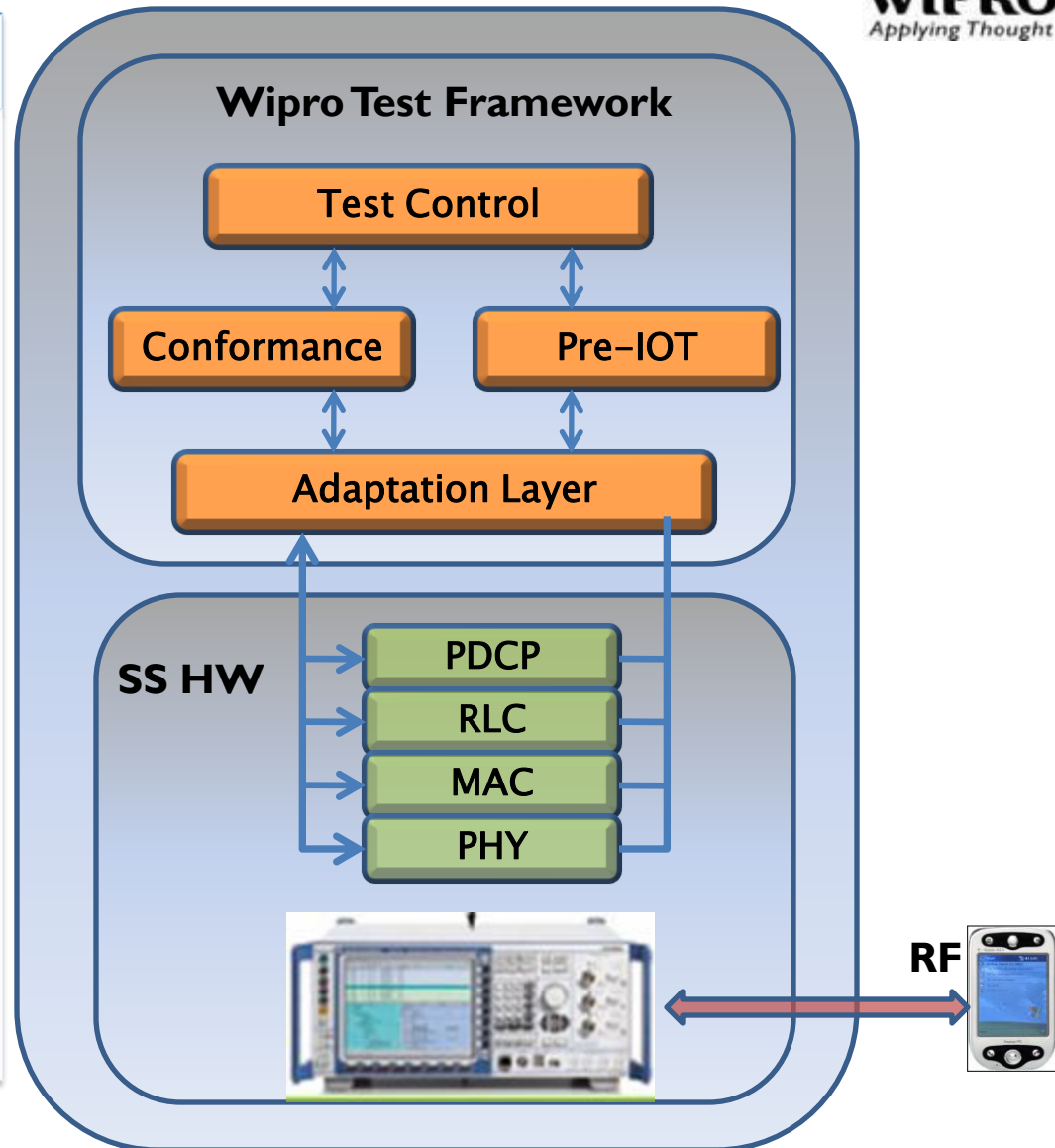
CHALLENGES

- Constantly evolving Protocol Specifications
- Frequently Changing Conformance Specifications
- High Complexity

LTE UE Test Setup

WIPRO's SOLUTION

- The solution validates the GCF test cases on COTS platform against 3GPP Specs and offers them as ready to run solution.
- The solution offers the Pre-IOT test suites based on Field trial guidelines published by GSMA and 3GPP.
- These test cases are developed in TTCN-3. These test cases enable the LTE device vendors perform their Pre-IOT testing in a simulated network environment (COTS platform).





Roadmap

Increase Footprint of TTCN-3

- Implement TTCN-3 in Banking and securities.
 - SWIFT
- Expand to large enterprises
- Create Domain Specific TTCN-3 Test Case Libraries
- Adopt Model Based Testing and implement in multiple domains
- Create a Graphical Editor for the Wipro TTCN Framework



Q&A



WIPRO
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Thank You