Offshore Delivery of TTCN-3 Testing Services

Miguel Ramos
miguel.ramos@mtp.es

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About Us

- The Spanish Leader Company in SW & Quality Engineering

- Preferred Leader Provider in Telecommunications companies:

- Strong alliances with testing and quality software companies:

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About Us

- **The First Spanish Organization Certified in ISO 9001:**
  Factory Software Testing Services

- Leader in TTCN-3, with an operative TTCN-3 Lab in Spain

- We carry out 400,000 Hours/year in testing activities

- MTP offers more than 250 Quality and Testing Engineers, certified: CSQE, ISTQB, PMI, CMMi and ITIL.

- Important activity in R+D projects:
  - TTCN-3 Tool - Exhaustif
  - Fault injection tool (SWIFI techniques)
  - Wireless Sensor Network

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MTP Delivery Centers

- Providing the best mix of local and global delivery

Centers
- Spain (HQ)
  (250 Resources)
- Canaries
  (50 Resources)
- Mexico
  (90 Resources)
- Brasil
  (100 Resources)

International Projects
- France
- Germany
- UK
- Mexico
- USA
- Dominican Republic
- Sweden
- Portugal

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Validation Services

- **Testing during the development lifecycle**
  - Functionality, Load, Stress, Capacity and Stability, Security and Vulnerability Analysis, Usability, Portability and Compatibility, Exploitability, Regression Testing Automation

- **TTCN-3**
  - Simulation of protocol, interface, or network system independently of the platform used.
  - Migration and modification of test cases

- **Software Product Evaluation and Certification**
  - Evaluations based on the ISO/IEC 9126 standard

Verification Services

- **Requirement Engineering**
  - Verifying Business, systems and software requirements

- **Code Quality Assurance**
  - Deployment of code and monitoring of code degradation, regulations and standards

- **Reliability and Security**
  - Preventing defects in early development stages
Our TTCN-3 Services

- Types of TTCN Development services offered:
  - **TTCN-3** Test Environment Development
  - **TTCN-3** Test Case Development

- Broad and deep knowledge on TTCN-3 standards

- Large experience with all TTCN-3 tools:
  - Titan, TTWorkbench, HP-Telelogic...

- Deep knowledge of different technologies, protocols & nodes:
  - GSM/GPRS, IMS, UMTS...
Our TTCN-3 Operational Approaches

- **Onsite**
  - CLIENT
  - Service Manager
  - Operator

- **Onsite-Nearshoring**
  - CLIENT
  - Service Manager
  - Operator

- **Nearshoring-Offshoring**
  - CLIENT
  - Service Manager
  - Operator

- **Offshore Service**
  - MTP Site
  - Operator

- **Graph**
  - Testing Services
  - Other Services

- Website: www.mtp.es
Our Model for an Offshore TTCN-3 Testing Centre

TTCN-3 Transition Methodology/Model

- Model based in processes
- Processes that provide value to the client
- Processes in line with ITIL best practices
To design a service solution to fulfil the requirements outlined in the commercial offer, considering efficiency parameters.

This phase enables the industrialization of the service to become a TTCN-3 centre:

- Gathering initial information
- Road map of the service becoming a TTCN-3 offshore centre
- Definition of processes, procedures, indicators, tools, etc.

To provide the necessary infrastructure and tools defined in the design phase:

- To setup the HW & SW infrastructure
- To allocate consultancy resources and a training plan
Design/Provision Phase

- **ESTABLISH PROCESSES**
  - Deliverables: Test Specification, Test Scripts, Execution Logs
  - Processes to control deliverables (continuous checks to early detect errors):
    - Weekly or monthly deliverables
  - Communication workflow: Client & Internal relationships
  - Service Level Agreement (SLA)
  - TTCN-3 Framework
  - TTCN-3 Style Guide and TTCN-3 Best practices

- **INFRASTRUCTURE**
  - Information Repository: Wiki
  - Version control: CVS, ClearCase
  - Incidence management tool: Mantis, ClearQuest
  - Execution environment: licenses, adapters, etc

- **TEAMS**
  - TTCN-3 Adapters Skills
  - Functional Protocols Skills
  - TTCN-3 Advanced & Protocols Skills
To setup and start up the operation of the service that guarantees success within the estimated costs, quality and deadlines.

- Development of TTCN-3 Framework
- Development of initial TTCN-3 testcases to test Framework
- Agreement of Transition plan with the client, evaluating risks:
  - Deployment Phases
  - Transition Monitoring
- Closing of agreements and services with the client
- Agreement of milestones of deliverables (price based on deliverables)
TTCN-3 Project & Framework

- There are three parts to the development of TTCN-3 test cases
  - Framework based on reusable modules arranged by functionality and message type

- Advantages:
  - Framework modules are used by any or all TTCN-3 Test cases
  - Makes easier to maintain TTCN-3 for future changes
  - Reduces the development time of TTCN-3 testcases

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<th>Framework</th>
<th>Description</th>
<th>Team</th>
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<td>TTCN-3 Test Cases</td>
<td>Functional TTCN-3 (protocols &amp; nodes)</td>
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To perform on a daily basis the full set of activities defined on previous phases

- **Internal activities**
  - Management of Internal Demand: *minimum & agreed internal productivity*
  - Operation Service Management:
    - Localization and autonomy of the teams involved: *i.e. Madrid, Brazil*
    - Availability: *Time-Zone difference*
    - Services incident Management: *Mantis, ClearQuest*

- **External activities**
  - Management of Service Demand: *productivity*
  - Management of Service Quality: *SLA & KPIs*
To minimize the level of burden from the client's perspective
Operation Phase

Baseline Management

- Production capacity based on an estimated production baseline: FTEs fulltime equivalents
- Baseline established using historical data, experience on previous projects

![Diagram showing baseline adjustments with credits and debits]

- Credits and Debits are accumulated separately
- The excess is invoiced separately, applying previously agreed rates for each activity
- Revisions agreed with the client & a new baseline can be agreed as necessary
Activities to transfer the TTCN-3 service back to the client

- **Training Activities**: TTCN-3 scripts & framework
- **Closing activities**:
  - Security: i.e. passwords
  - Documentation Delivery
Exclusive dialogue with the service manager: No resources management

Make use of KPIs y SLAs Higher quality control, time and costs

Greater control over work done: Follow up meetings Control Panel

Process Industrialization: Costs Reduction

Availability of resources: Expertise in TTCN-3, technology (Protocols & Nodes)

Flexible working teams: Able to cope with workload peaks

The client can concentrate on its own business: To delegate support tasks

OUTSOURCED TTCN-3 PROJECTS CAN BRING GREATER EFFICIENCY AT COMPETITIVE COSTS
Issues to consider when outsourcing

The TTCN-3 offshore service has to be:

- **CLEARLY DEFINED**
  - Clear requirements defined by the client
  - Support available from the client to the TTCN-3 team offshore

- **CONTROLLED AND MONITORED**
  - Indicators are part of the contract
  - KPIs, SLA, Process Based, Relationship model

- **EFFICIENT**
  - Able to cope with agreed overload
  - Flexible Team Structure & Specialized Personnel