

# Test the Line

Testing and Quality Assurance for Telcos

**Performance driven. Quality assured.**





# The challenge for telcos

**Testing and Quality Assurance Services provide telcos with a clear path to reduce total cost of ownership and time-to-market, while providing carrier class quality-of-services and flexible resourcing.**

The technology of telcos is driving fundamental changes in communications, society, and consumerism – with an increasing proportion of us spending more and more time interacting for example via mobile handsets.

The technology, now focused on mobile telephony, applications and browser-based functionality, as well as on embedded communications systems in infrastructure such as transport and healthcare, is certainly advanced. However, growth in usage does not necessarily equate to growth in revenues.

The perennial challenges of the telco remain:

- Intense competition in an industry that consistently attracts progressive new entrants from all sectors, and makes differentiation tough;
- Constant pressure to launch new bundled services and evolve towards an ever more sophisticated offer, (triple and even quadruple play);
- Ever longer value chain, from content-rich applications to huge portfolio of complex devices, supported by a growing ecosystem of partners;
- Cost of customer acquisition as well as managing churn, resulting in pressures on gross margins and average usage per customer;
- Providing a consistent and seamless customer experience across a growing number of channels.

Telcos, in common with many competitive and fast-paced industries, also face the multiple challenges of minimizing IT costs, moving from legacy systems, driving value for customers and delivering new products and functionality in line with best-practice.

The telco is also facing challenges in balancing market and technology spend, and return on investment. Whichever route to incremental growth is taken, it must be done quickly and confidently.

# Testing is crucial to smooth delivery

In meeting these challenges, testing has a major underpinning role to play. Though it is often considered a necessary evil, in fact it is critical to protecting a telco's brand, ensuring data security, enabling robust end-to-end delivery processes, and most importantly contributing to a consistent and smooth user experience, essential to customer retention.

But too often, telcos are held back by testing that is poorly controlled, performed by multiple vendors with little Independent Verification and Validation (IV&V) oversight, and insufficient standardization in approach. This is particularly the case in outsourced application development and maintenance to multiple third parties, responsible for testing their own code.

To develop and deliver technology and business services, and ensure these complex systems integrate seamlessly, a robust and dynamic testing approach is invaluable. This is what Capgemini Group, comprising the joint capabilities of Capgemini and Sogeti, delivers.

## Commitment to highly effective testing services to telcos

Capgemini Group are dedicated to providing telcos with a testing approach that can reduce the total cost of ownership through an increase in quality, an optimization of labor costs, faster time to market through process efficiency and industrialization, and greater resource and project flexibility.

Capgemini and Sogeti have become leaders in testing, through a combination of:

- In-depth telco knowledge and expertise, evidenced in our large team of 8,000 telecom specialists and over 1,600 specialist professional testers dedicated to supporting telco clients, in our Centers of Excellence around the world;
- Our *de facto* industry standard structured testing methodologies such as TMap® and TPI®/Quality Blueprint;
- Dedicated Rightshore® teams, ensuring the perfect blend of onshore management and offshore delivery;
- Contractual models that enable us to quickly ramp up and down both onshore and offshore resources;

- Output-based pricing, providing transparency of value for money and return on investment;
- A strong record of thought leadership, incubated in our Innovation Labs in Europe, US and India;
- Sector-wide expertise, noted by industry analysts NelsonHall as **“the [testing] company most oriented towards domain knowledge”<sup>1</sup>**.

This expertise is further enhanced by our specialist Mobile Application Test Lab with 150 mobile models under test at any one time, enabling us to create the finest granular testing environments and the most accurate tests possible.

Together these resources and expertise are leveraged for every testing scenario and every testing environment required for a wide range of providers of fixed line, wireless communication, internet, cable and satellite, voice and data services, handsets, set-top boxes and content.

<sup>1</sup>NelsonHall: *Software Testing Assessment and Forecast*, April 2010

# Our spectrum of testing services

Testing every aspect of the telco business from the most advanced technology development environments to the baseline business processes requires a wide range of skills and expertise, all of which Capgemini Group leverages. Industry analyst NelsonHall noted that the **Capgemini Group's testing portfolio was "probably the most comprehensive offering of the market"**<sup>2</sup>.

Our experience is leading-edge in every sphere of software, business process, applications, interface and systems testing. Enhanced by our partnerships and alliances with the major technology companies, we bring specialist expertise whether a legacy or emergent technology environment.

## Our service portfolio includes:

1. End-to-end testing of telco core systems – Operations and Business Support Systems (OSS/BSS) test frameworks;
2. Mobile application and device testing;
3. High tech, network and embedded systems testing.

## 1. Telco core systems end-to-end testing

End-to-end testing of the core business systems of a telco is essential for the smooth running of key commercial processes and technological infrastructure, as well as ensuring the expected customer experience. Testing must be executed in line with the ultimate goals of the business.

Our Managed Testing Service (MTS) provides this level of reassurance in terms of breadth of capability, cost-effectiveness and quality levels achieved. It provides **output-based pricing and a commitment to business KPIs**. We have extensive expertise in all major telco applications used for running operations – and extensive experience in delivering the end-to-end testing of every aspect of the telco application stack from customer interface to network management.

**Automated, end-to-end tests** cover every aspect of a telco's complex processes that cut across systems, mesh together and drive the business. Our service tests single and multiple processes, including application and module testing, regression (changes and fixes) testing, performance testing, non-regression testing, and user acceptance testing.

## Typical benefits achieved for clients include:

- Significantly **reduced total cost** of testing – an optimal balance between local and offshore execution can result in cost savings of at least 25% in year one;
- **Standardization** of reliable best-practice test processes – the right conditions can produce up to 30% reduction in the overall test effort;
- **Measurable improvement** in quality and greater precision – proven detection rates of 97% or higher for high-severity defects can be achieved;
- **Improved time-to-market** of 15% or more and greater transparency of testing processes and procedures;

- **Scalable resource and delivery flexibility** – highly skilled capacity to accommodate increased demand from the business;
- **Skills transfer** – capabilities and a quality focus are embedded into the telco organization and consistent quality assurance is delivered across multiple supplier environments;
- **Continuous optimization** and access to innovation techniques, such as Cloud Testing and Virtualization, to establish and maintain a competitive edge.

## Case study: Setting up a Managed Testing Service Center for a European telco

As part of their overall IT strategy, this European telco engaged Capgemini/Sogeti to tender for a complete Managed Testing Service, to take system and end-to-end test responsibility for all domains, programs and competencies. The main criteria for selecting Capgemini/Sogeti were: innovation, continuity of operations and teams, volume and a commitment to work on a fixed-price/fixed-result basis.

The service includes test management, migration to dedicated highly-automated test lines, developing a test demand/supply model and knowledge transfer, and is focused on system, end-to-end and acceptance testing, as well as test performance improvement. The contract is underpinned by comprehensive KPIs focused on the cost reduction, industrialization and customer satisfaction.

The key benefits achieved in this contract are:

- Cost reduction: structural savings of 25% have been made, evidenced by their own KPIs and reduction in overall IT development costs;
- Transfer of in-house test operations to our test lines onshore and an increasing percentage of the testing work now carried out offshore;
- Dynamic improvement of test operations with greater control and a shorter time to market;
- Establishment of a company-wide test operation and a more manageable number of test specialists;
- Introduction of professional quality assurance, covering the complete system development cycle.

## 2. Mobile application and device testing services

As the market shifts to shorter handset life spans and a plethora of 'apps', telcos need to ensure that they invest and launch new mobile applications to help grow consumer and business user revenue, minimize churn and retain market share and also leverage advanced technology platforms quickly and profitably. Our Mobile Application Testing Services meets this challenge head-on.

Capgemini Group is a world leader in testing mobile applications – an increasingly critical area of telco strategy. Our dedicated Mobile

Application Test Lab in Europe puts mobile devices, applications and platforms through a rigorous validation process prior to launch. Currently we serve over 130 telco clients and have completed more than 10,000 rounds of tests in the last 7 years.

### Inherent complexity in mobile testing

Testing applications in the mobile space is far more complex than in traditional telco technologies, as it requires a very specific and detailed knowledge of how mobile developers factor such elements as portability and screen size, battery life, onboard memory and bandwidth – and how to allow for them.

Because mobile technologies rely so much on software and interface of hardware, OS, browsers and middleware, testers need to understand how these elements are used by developers, how they are balanced, and again adjust the testing environment accordingly. Ultimately, testing on any mobile platform is implicitly 'end-to-end' as the environments are much more complex than any other.

Where high throughput and repeatability are crucial, our solutions are powered by automation systems and tools, such as our own TAKT® (Testing, Automating, Knowledge, Tools) approach, Model-Based Testing and DeviceAnywhere – whatever the mobile phone technology. We design and deploy fully unattended testing supply, able to manage test request, test object preparation, test execution, test report assessment and delivery.

### Certification testing: the critical benchmark

Because of this greater complexity and the wide range of interacting technologies, platforms and interfaces, standards are crucial. This puts the onus on testing to establish rigorous metrics and ensure that they are met by devices, platforms and applications.

Our mobile certification ensures the necessary level of quality is met, providing visibility, traceability and assurance for a telco – that the brand is protected, verification knowledge is fed back to developers, and overall program costs are lowered.

We are able to provide expertise and capacity so that we can offer a resilient service that can: deliver within short turnaround time, flex to manage a peak in volume of applications with minimal advance notice, test whatever the nature of the app (from consumer games to B2B field sales apps), and adapt to the technological evolution.

### Case study: Mobile and Web applications certified

Ensuring the quality of the application is one of the major challenges to ensure success of mobile applications requiring a rigorous, efficient and cost-effective testing process.

From our specialist Mobile Application Test Center in France, we have been managing mobile application testing for many

years on behalf of Java Verified, Symbian Signed and Nokia Testing, performing the required tests, against pre-defined test plans and processes, on 3rd party applications and certifying them with the required signature.

Testing developers' applications from anywhere around the world, our team makes sure they are compliant against pre-determined parameters – meeting operator, developer and user requirements.

For a specific brand of applications for example, we test for functionality, performance, metadata accuracy, user opt-in for certain type of data, fraudulent ad applications, trademark violations and content appropriateness. Developers are then given detailed feedback at every stage and reasons are specified for rejected applications.

### 3. High tech, network and embedded systems testing

#### Embedded systems testing

Our High Tech Center in Europe develops and tests telecoms and embedded software components for some of the industry leaders in areas such as payment terminals, navigation equipment, and professional video, surveillance and IT server equipment.

Testing these systems is often more complex and crucial than other forms of testing and involves increased attention being paid to the separation between application

development and execution platforms, coexisting and dynamic relationships between implementations, a lack of clear modeling and still emerging certification standards.

The timing and interaction of these systems is just as important as the working of the systems themselves. We leverage a range of specialist expertise in technical areas such as: functional periphery testing; in-circuit test and programming; environmental testing; and immunity and emission testing.

#### Case Study: Network and Device testing for a global developer and manufacturer

At one of our European Centers of Excellence, we work as part of a consortium for a global player in handsets, network infrastructure systems, equipment and products.

Our Center devises and carries out the testing of several areas including stack validation, certification testing and reference design, for the client's mobile and network development projects.

This portfolio of test activities combines our key assets: onshore and offshore resources, a standardized and industrialised approach (TMap®) coupled with an agile development methodology, a managed testing contractual basis and increasingly a cloud-based test environment.

#### Conclusion

The advanced technologies developed by telcos are more and more critical to every aspect of the way we live, work, play and interact. They are embedded in every system we use and so must operate consistently and be balanced by, and work with, a reliable service infrastructure.

To ensure quality, information security and efficiency within their business, telcos need to move to a more structured, compliant testing model, ensuring the integrity of the processes that underpin every aspect of their business, from the business support service layers to the applications and technology that comprise their core offer.

Capgemini and Sogeti are perfectly placed to support telcos with our comprehensive testing services, measured by business-oriented KPIs, and based on specialist industry expertise, infrastructure and technological innovation.

### **About Capgemini and Sogeti**

The Capgemini Group is one of the world's foremost providers of consulting, technology and outsourcing services, enabling its clients to transform and perform through the use of technologies. Present in over 35 countries, the Capgemini Group reported 2009 global revenues of EUR 8.4 billion and employs more than 100,000 people worldwide. Sogeti, its wholly-owned subsidiary, is a leading provider of local professional services, bringing together more than 20,000 professionals in 15 countries and is present in over 100 locations in Europe, the US and India.

Together, Capgemini and Sogeti have developed innovative, business-driven quality assurance (QA) and testing services, combining best-in-breed testing methodologies (TMap® and TPI®) and the global delivery model, Rightshore®, to help organizations achieve their testing and QA goals. Capgemini and Sogeti have one of the largest dedicated testing practices in the world, with over 8,200 test professionals and a further 12,500 application specialists, notably through a common center of excellence with testing specialists developed in India.

### **Contact**

For more information about how Capgemini and Sogeti's Testing Services can help organizations achieve their testing and QA goals, please contact your local Capgemini or Sogeti testing representative or our **Global Testing Services Sales Team**:

#### **Mark Buenen**

**Global Testing Services, Europe and Asia Pacific**

E: mark.buenen@sogeti.nl

T: +31 (0) 6 6493 2665

#### **Pierre Marin**

**Vice President, TME Global Sector**

E: pierre.marin@capgemini.com

T: +33 (0) 1 4967 3572

#### **Charlie Li**

**Vice President, Global Testing Services,  
North America**

E: charlie.li@capgemini.com

T: + 1 (0) 678 644 7594

[www.capgemini.com/testing](http://www.capgemini.com/testing)

[www.sogeti.com/testing](http://www.sogeti.com/testing)

