Capgemini's Model Based Testing Workbench

A tool driven approach to automate test design and accelerate testing for commercial financial services applications

People matter, results count.

IT for the financial services industry has been undergoing some fundamental changes. As more commercial applications became available for key banking, investment and insurance processes—tailored to the unique needs of a complex industry—many financial institutions have chosen to lower costs by using commercial software in place of proprietary, custom developed systems. The potential savings in time and money from this "buy versus build" trend are compelling. However, careful planning and a focused effort are required to realize these benefits.

One of the most time-consuming and resource-intensive components of any software implementation project is systems testing. For global financial firms multi-country rollouts and enhancement implementations can be extremely challenging and complex. Testers create test scripts and test cases to verify the software product is properly implemented and complies with the required functional specification. These scripts are further used to confirm the new system supports business processes, addresses performance requirements, and meets the expectations of business users.

MODEL BASED TESTING IN PRACTICE

Capgemini helped a leading European bank increase test coverage by 300%, creating over 2,600 test cases in one month.

Why Model Based Testing?

Model Based Testing is a methodology and IT toolset designed to accelerate the creation of test scripts. The tools let users describe the system under test using process models which then automate the generation of test cases. Since this approach is supported by automation tools, further time savings can be achieved by automating test execution.

Capgemini has extensive experience implementing commercial off the shelf software for key financial services business processes including insurance claims processing, core banking, payments processing and securities trading. We understand the common challenges that occur when testing these systems:

- **Business processes are difficult to test end-to-end.** Key financial services processes tend to be complex and highly integrated so there are often steps that are partially tested or untested.

- **Testing requirements may be incomplete.** Testing requirements are recorded as use cases which can be verbose and complicated. Use cases test commercial systems by module, not process. Traditional test cases address a wider scope of functionality including use cases.

- **The impact from change can be hard to determine.** Changes to a specific module or business process often lead to an evaluation of the entire system.

Due to these challenges, it is difficult to ensure product quality when commercial applications are moved into production.

Model Based Testing Features

Model based testing is a more effective method that supports better test coverage. Key features include:

- **Requirements are modeled rather than written.** Models are visual in nature so dependencies between functions or features are built into the model rather than making assumptions in the requirements

- **Requirement models serve as a single source of truth** for all key stakeholders: developers, testers, analysts, subject matter experts, and business users

- **Models help you understand impacts due to change** so you can manage change automatically

- **Test cases can be generated automatically** since they are based on models, not requirements documents. Models minimize testing time and effort on end-to-end business processes

- **Test coverage is easier to manage** due to automatic traceability and integration to standard test management tools

Experienced testing professionals with domain knowledge can reduce testing time for commercial software by as much as 30% through model based testing.

Capgemini's Model Based Testing Workbench helps banks, insurers and investment firms accelerate testing

Our Model Based Testing Workbench lets testing professionals build test cases efficiently and effectively by using predefined accelerators and tools.

Capgemini created a Model Based Testing Workbench to address the challenges of testing commercial applications for financial services. The Workbench lets testing professionals build test cases efficiently and effectively by using predefined accelerators and tools. We've used this approach on major engagements across the world to help Capgemini's Financial Services clients lower costs, reduce time to market, manage scope and raise quality for commercial off the shelf applications implementation.

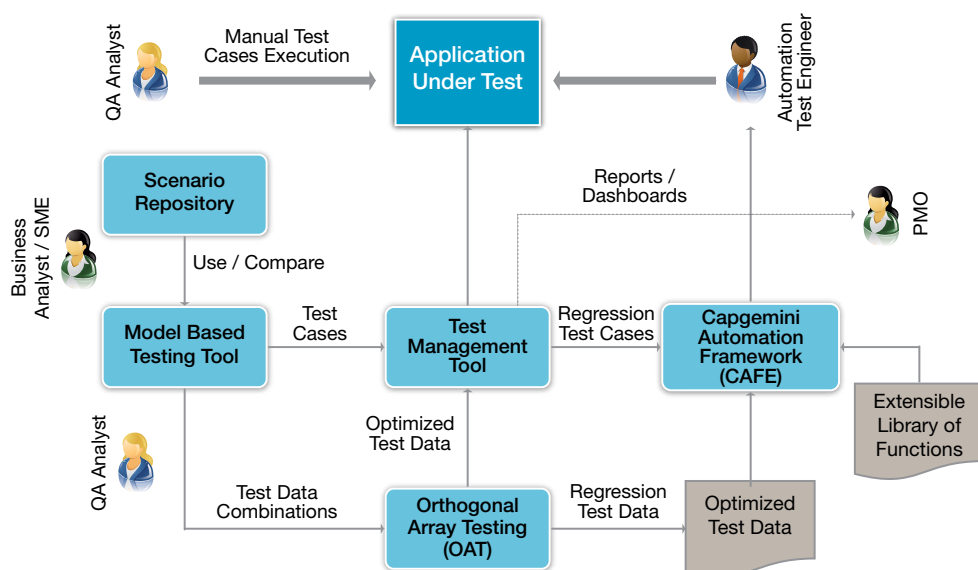### Tools, Methods, Models and Resources to Power Your Model Based Testing Efforts

With over 20 years of experience in providing testing solutions for some of the largest financial institutions, Capgemini Financial Services has a robust library of knowledge on testing

and implementing commercial off the shelf packages used by banks, insurers and investment firms.

Capgemini's testing processes are based on TMap®. The TMap® approach addresses all the delivery approaches and implements uniform testing processes to support client goals. We used the latest release, TMap NEXT® structured testing management methodology, to develop our Model Based Testing Workbench for financial-industry applications. This approach uses four essentials which help build the models:

- Based on business driven test management
- Describes a structured test process
- Includes a complete test management toolbox
- Is adaptive to any test practice

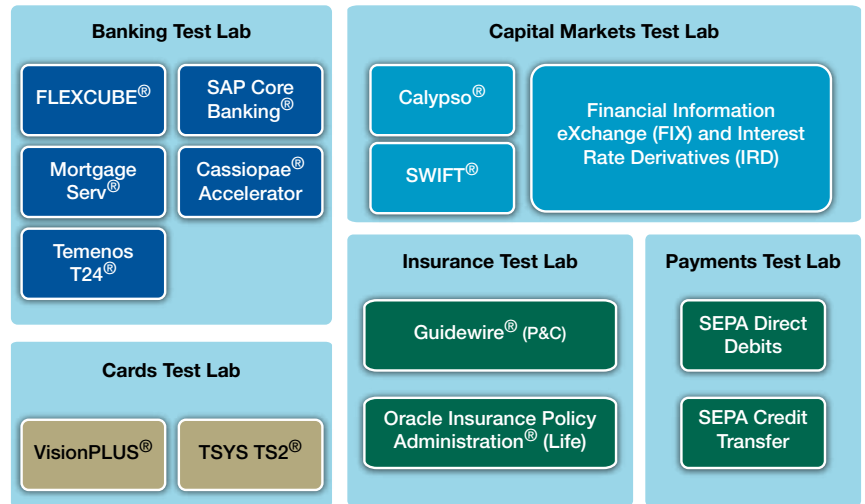**Exhibit 1: Capgemini's Model Based Testing Workbench Framework**

Capgemini has a testing practice devoted to financial institutions with a proven track record of delivering mid to large scale testing engagements across banking, payments, insurance and capital markets domains.

Our Model Based Testing Workbench contains methodologies and accelerators for several common financial services applications:

- **Banking:** FLEXCUBE, SAP Core Banking, MortgageServ, Temenos T24, and Cassiopae
- **Capital Markets:** Calypso, SWIFT, Financial Information eXchange (FIX) and Interest Rate Derivatives (IRD)
- **Cards:** VisionPLUS and TSYS TS2
- **Insurance:** Guidewire, Oracle Insurance Policy Administration
- **Payments:** SEPA Direct Debits and Credit Transfer

Exhibit 2: Capgemini has Model Based Testing Workbenches devoted to common financial services systems and processes

Banking Test Lab

FLEXCUBE®
SAP Core Banking®
Mortgage Serv®
Cassiopae® Accelerator
Temenos T24®

Cards Test Lab

VisionPLUS®
TSYS TS2®

Capital Markets Test Lab

Calypso®
SWIFT®
Financial Information eXchange (FIX) and Interest Rate Derivatives (IRD)

Insurance Test Lab

Guidewire® (P&C)
Oracle Insurance Policy Administration® (Life)

Payments Test Lab

SEPA Direct Debits
SEPA Credit Transfer

Capgemini's Model Based Testing Workbench for each system or process helps automate the creation and execution of test scripts which serve as the foundation to test the underlying business processes. Our workbench lets you generates test cases from a process model based on the business requirements, so it's easy to re-create test cases for requirement changes. Whenever a process model is updated, test professionals can use the workbench to re-create all associated test cases. The dynamic creation of test cases is a tremendous time-saving advantage over traditional, manual methodologies. Once test cases are created, test professionals can continue to use the Model Based Testing Workbench to:

- Improve process-function traceability and clarify business-requirement definitions;

- Reduce the effort associated with software customizations by 70 to 75%, once the base model is ready
- Simplify testing scope for new release installations

❝Capgemini's Model Based Testing Workbench is a proven, proprietary solution that includes testing assets, tools and accelerators with a financial services focus. Unlike most testing solutions, our Workbench was created in partnership with Capgemini clients including some of the world's largest financial institutions to help solve their real-world testing challenges. Our solution is targeted to financial services applications such as Guidewire, Calypso, SWIFT and VisionPLUS.❞

Govind Muthukrishnan
Vice President and Global Financial Services Testing Leader

Get the Results You Need, Year After Year

Because financial products and applications rely heavily on IT, a growing number of financial services companies consider themselves technology companies. The business criticality of IT differs by sub-sector. For example, most insurance providers are still driven by customer service and cost, while trading portals cannot exist without a complex and sophisticated technology infrastructure. As the industry recovers from the recent financial crisis, companies are directing their IT investment toward innovation driven by competition and customer demand.

Capgemini's Model Based Testing Workbench helps banks, insurers and investment firms speed time to market and ensure that the performance of their most critical systems meet business requirements—year after year, release after release. The workbench:

- Uncovers gaps and supports better communication to ensure requirements are complete and understood by all stakeholders
- Automatically generates test scenarios which can be run through standard test management tools
- Integrates with industry-leading HP and IBM solutions
- Automatically creates bi-directional traceability
- Supports easy implementation of change requests

Explore the World Quality Report 2011–2012

What percentage of your application security budget is motivated by regulatory compliance requirements? How does your firm stack up against other companies across the globe? Find out the answers in the 2011–2012 World Quality Report, published by Capgemini, Sogeti and HP. The third edition of this annual report covers the quality markets by industry and geography and includes over 20 expert contributors including **Govindarajan Muthukrishnan**, Global Financial Services Testing Practice Leader discussing quality trends in financial services. Visit **www.capgemini.com/testing** to download a copy.

In Practice

Capgemini's Model Based Testing Workbench for FLEXCUBE helps a leading European Retail Bank roll out to nine countries

The Situation

Capgemini's client is one of the largest retail banks in France and was rolling out FLEXCUBE Version 10.2 to nine countries. Ad hoc testing was being performed by business users but the project leadership decided that a test suite was required with country-specific parameters. During the first country roll out the team experienced over 4,000 post production issues. Our client asked Capgemini to:

- Reduce the testing window
- Standardize test cases across different workstreams
- Increase test coverage to minimize defects

The Solution

Capgemini used our Model Based Testing Workbench for FLEXCUBE to accelerate the testing cycle while also expanding the scope of test coverage.

Our workbench provided pre-defined accelerators and tools which addressed common issues, provided a future state model, and minimized the effort for test preparation.
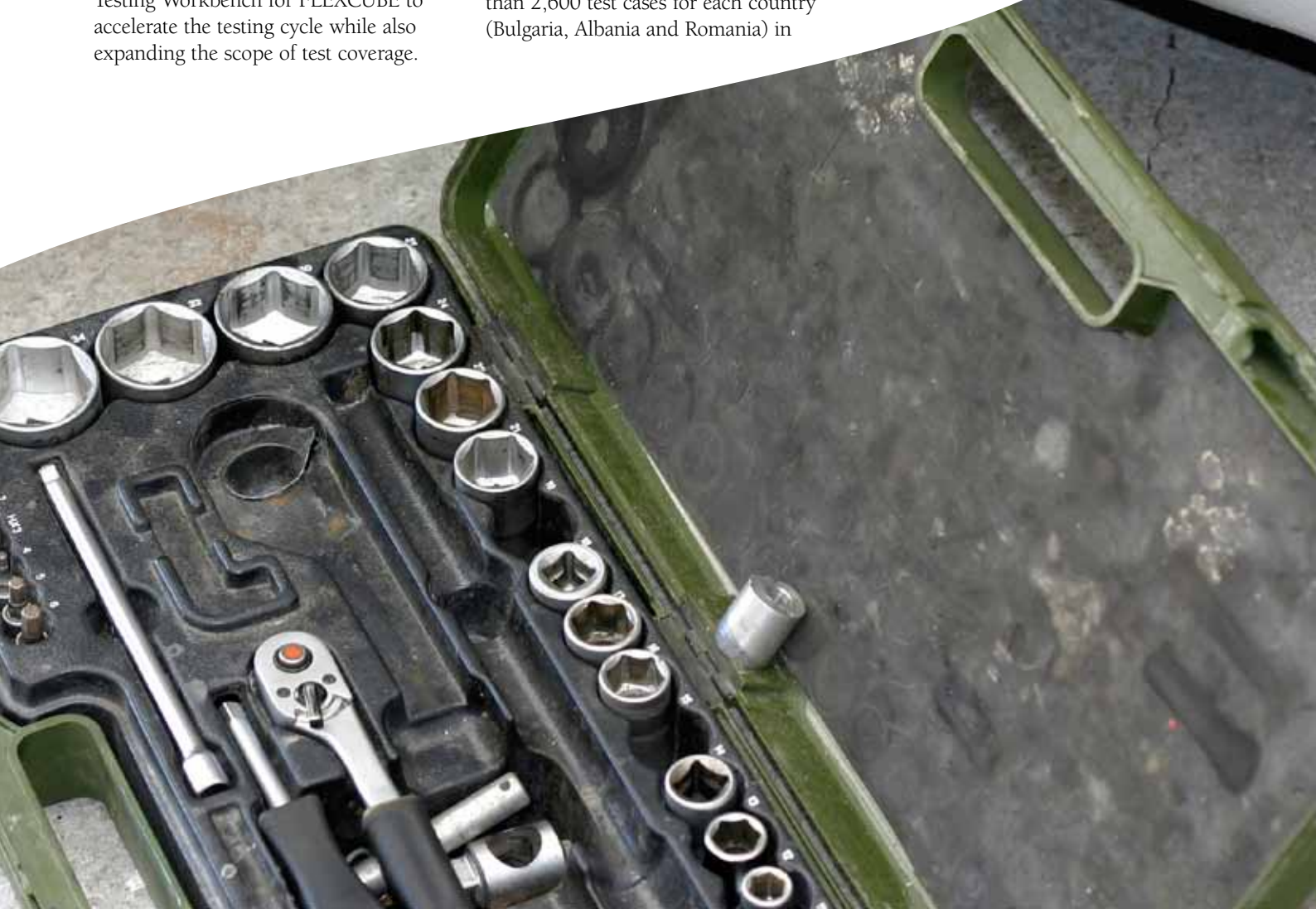
By using our Workbench, we ensured all FLEXCUBE Core Banking modules were tested in a timely manner. We developed models for a multi-country rollout which included Bulgaria, Albania and Romania using a global team including both onsite and offshore test professionals.

The Benefits

Our client manually created over 660 test cases in three months for the Bulgarian release of FLEXCUBE. After joining the project, Capgemini developed a test repository with more than 2,600 test cases for each country (Bulgaria, Albania and Romania) in one month using our Workbench and increased test coverage by almost 300%.

In addition, we significantly decreased testing time on the project. Testing for the first country rollout and customization took three months. Each subsequent country rollout which utilized a test repository created with Capgemini's Workbench took one month to complete and saved 70% per country. Post production defects for each country rollout were reduced by 90% and our client now has a standard test case design approach which can be used for subsequent testing efforts across the organization.

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Learn more about Capgemini's Model Based Testing Workbench for Financial Services. Email us at **fstesting@capgemini.com** or visit **www.capgemini.com/fstesting**.

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Capgemini, one of the world's foremost providers of consulting, technology and outsourcing services, enables its clients to transform and perform through technologies.

Capgemini provides its clients with insights and capabilities that boost their freedom to achieve superior results through a unique way of working, the Collaborative Business Experience™.

The Group relies on its global delivery model called Rightshore®, which aims to get the right balance of the best talent from multiple locations, working as one team to create and deliver the optimum solution for clients.

Present in 40 countries, Capgemini reported 2010 global revenues of EUR 8.7 billion and employs around 112,000 people worldwide.

Capgemini's Global Financial Services Business Unit brings deep industry experience, innovative service offerings and next generation global delivery to serve the financial services industry.

With a network of 18,000 professionals serving over 900 clients worldwide, Capgemini collaborates with leading banks, insurers and capital market companies to deliver business and IT solutions and thought leadership which create tangible value.

For more information please visit **www.capgemini.com/financialservices**