Capgemini
CONSULTING.TECHNOLOGY.OUTSOURCING

Utilities | the way we do it

AMI System Test Offering

A robust approach using industrialized assets and accelerators for efficient AMI testing resulting in reduced cost of ownership

People matter, results count.

The Smart Metering market has made significant headway over the last few years. The market has seen strong growth in North America driven by government incentives, and in Europe policy mandates have been the key driver. The future seems to be one of increasing penetration of Smart Meters with continuous growth predicted through to 2020. The growth, however, is expected to differ significantly by geography, with Europe and emerging markets now expected to contribute significantly to Smart Meter penetration in the future.

Testing for Smart Meter Installations

Testing of the software components is a critical success factor in a overall Smart Meter deployment program. An AMI implementation results in significant new and improved business processes. The AMI solution landscape includes multiple components, comprising meters, communication infrastructure, and Head End system, MDM System which are integrated with existing Utility systems such as the Billing / CIS systems, Outage Management System, Analytics and other applications.

It is imperative that each of the system components meet the functional and non-functional requirements. It also requires that the end-to-end integration between all these components meet the business and other performance/security requirements. The Capgemini AMI Testing offering provides Ready-To-Go assets, leveraging our excellent understanding and experience in the smart metering area with cutting edge accelerators. All these are backed by a standardised framework providing a concise approach to AMI testing.

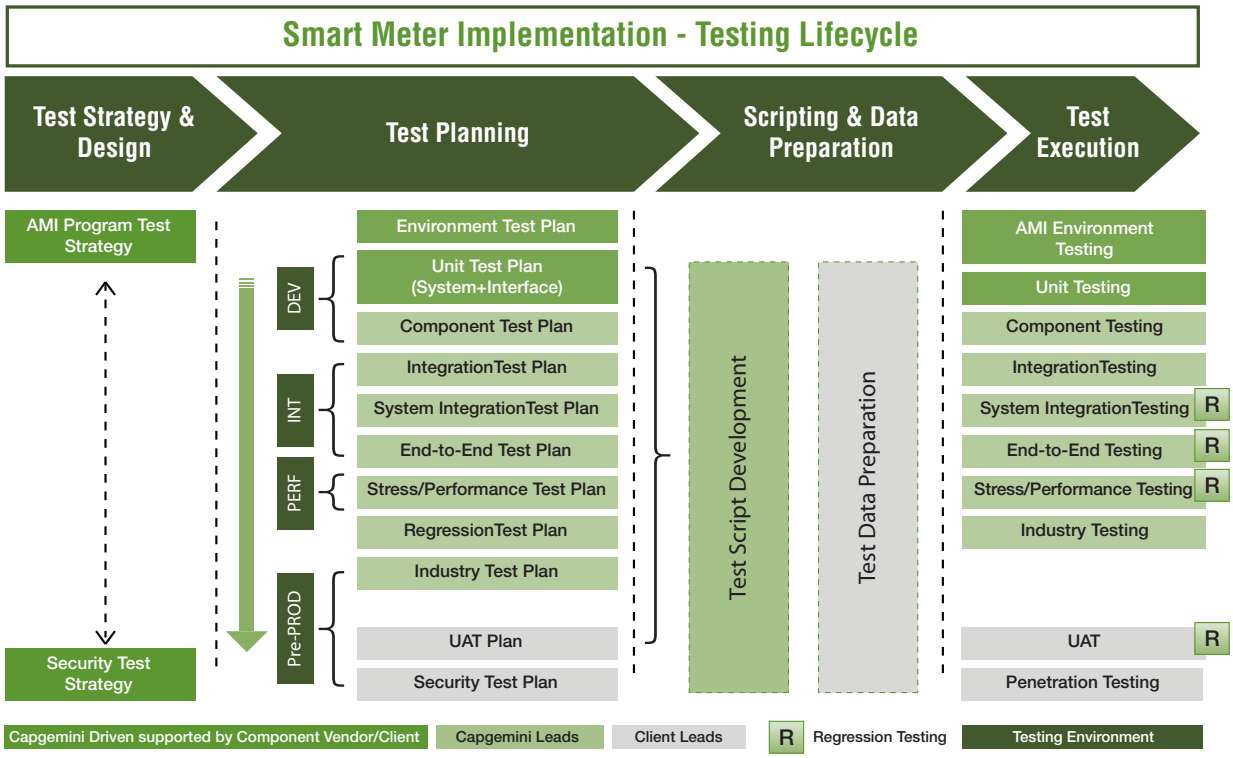
Framework for AMI Testing

Testing for Smart Meters involves a range of activities from ensuring that the individual components meet all the business requirements to making sure that the end-to-end systems (including integration with the legacy billing systems) are working properly. The AMI landscape, with various components and the required integration, entails carrying out multiple testing activities.

Capgemini proposes a testing framework which starts with unit/development testing of components and interfaces and progresses on to end-to-end testing and finally followed by the User Acceptance Testing.

The AMI Testing Framework divides the testing lifecycle into four generic phases with a clean set of activities for each phase.

Framework for AMI Testing



- Test Strategy and Design – Design and development of the overall test strategy including the project plan, environmental evaluation, finalizing the team and identifying test scenarios "coverage".
- Test Planning – This phase entails detailing the test plans for the various kinds of testing activities.
- Scripting and Data Preparation – This stage involves preparing the individual test scripts for the various tests to be executed. Test data preparation, with help from the client team, is also carried out during this stage
- Test Execution – This is the final stage where the test scripts are executed. The testing cycle is completed with User Acceptance Testing (UAT) and Security Testing

Capgemini Assets and Accelerators

The AMI testing offering has a range of domain specific assets and core testing accelerators. The domain assets include an AMI-specific detailed test strategy, supported by test plan templates for the various testing activities.

A set of standard and elaborate test scenarios adds to the effectiveness of the test offering. These serve as technology-agnostic scenarios across Meter Deployment, Operational Support, Demand Side Management/ Distributed Generation and Customer Services and Billing. The test scenarios are especially useful in planning and preparing for the End-to-End and User Acceptance Test executions.

A set of core testing accelerators includes a Model-Based Testing accelerator for generating efficient test procedures, using models and the Capgemini Automation Framework (CAFE), and a framework for Orthogonal Array Testing.

Benefits

The present offering provides a ready-to-go set of templates and assets and brings forth the following benefits.

- Reduced total cost of ownership through an industrialized approach.
- Reduced risks and lower efforts through reusable assets and accelerators.
- Leverages Capgemini's excellent experience in the smart metering area.

Depending on the actual product landscape the Test Offering can enable a reduction of up to 20% in the overall AMI testing efforts.

Assets and accelerators

	Asset/Accelerator	Brief Description	Phase(s)
●	AMI Test Strategy Document	Key artifact laying out the strategy and approach for AMI Testing along with defining the risks with suggested tools	
●	Standard AMI Test Case Scenarios	Standard test case scenarios identified across various AMI specific functional areas with detailed sub-steps	
●	Test Plan Documents	Test plans for SIT, E2E testing, UAT and Performance testing	
●	System Test Scripts	Test scripts for unit testing and development testing for specific products (MDMs and Head End Systems)	
●	EUC Testing Workbench	Workbench that includes key processes for AMI testing Repository of indicative reusable test scenarios Reusable test scripts – Integration between MDMS and Legacy systems	
●	Test Engine	Test Design "In a box" – Create, optimise, model and generate test scenarios automatically Combines industry best practices such as Model Based Testing and Orthogonal Array Testing	
●	Model Based Testing	Automated Test "Authoring" technique Generates efficient test procedures using models	
●	Capgemini Automation Framework (CAFE)	Tool-less scripting Generic framework – Technology independent, Off the shelf toolkits for accelerated script development and easy integration with Configuration Management tools	
●	Orthogonal Array Testing Framework	Test Case Optimization framework No sacrifice on test coverage or quality	

● Domain Focused Asset ● Core Testing Accelerator Phase(s) where useful

For more details contact:

Sanjay Neogi
Director
Utilities CoE, Capgemini India
sanjay.neogi@capgemini.com

Sudhakar Kulkarni
Senior Manager
Testing CoE, Capgemini India
sudhakar.kulkarni@capgemini.com

About Capgemini

With more than 120,000 people in 40 countries, Capgemini is one of the world's foremost providers of consulting, technology and outsourcing services. The Group reported 2011 global revenues of EUR 9.7 billion.

Together with its clients, Capgemini creates and delivers business and technology solutions that fit their needs and drive the results they want.

A deeply multicultural organization, Capgemini has developed its own way of working, the Collaborative Business Experience™, and draws on Rightshore®, its worldwide delivery model.

Capgemini's Global Utilities Sector serves the top Utilities worldwide and draws on a network of more than 8,400 dedicated sector consultants. As a leader in smart grid and advanced metering infrastructure solutions, Capgemini's Smart Energy Services is helping Utility customers throughout the world. Our integrated Digital Utilities Transformation framework empowers utilities to drastically improve their customer experience, operating and business models through disruptive technologies.

More on industry specific solutions is available at
www.capgemini.com/utilities