

Improving Acquisition in
Government—Requirements
Management Leading
Practices:
CMMI-ACQ | Visualization

July 2008 | Capgemini Government Solutions

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1 The Challenge: Increase Acquisition Process Maturity

Leveraging suppliers' capabilities to rapidly deliver quality solutions at lower cost is a trend that continues to accelerate. This trend, combined with the scope and complexity of the mission, has placed additional stress on the acquisition process for many government agencies.

According to Dun & Bradstreet, 20 to 25 percent of the larger Information Technology (IT) acquisition projects fail within two years, while 50 percent fail within five years. Factors contributing to such project failure include mismanagement, the inability to articulate customer needs, poor requirements definition, and uncontrolled change.

The ability to take advantage of suppliers' capabilities to deliver quality solutions more rapidly and at a lower cost, requires more mature acquisition processes and better, more direct communication with suppliers.

A key factor in the success of any solution acquisition is the extent to which business needs are clearly articulated. Another involves demonstrating that the resulting acquisition requirements demonstrably support the program in achieving its business and mission objectives.

Challenges for traditional acquisition approaches include accurately eliciting user-centered acquisition requirements, while developing an airtight understanding of technology needs in environments involving diverse stakeholders, poorly aligned performance measures, or an unclear vision of the solution. Today's government executives increasingly seek to "service-orient" aspects of their operating model in order to enhance agility, particularly in areas where constituent needs are constantly changing. New levels of collaboration across organizational silos in achieving the promised benefits of Service Oriented Architecture (SOA), are required to develop associated business requirements and such a robust business architecture.

Successful IT programs increasingly adopt the principle of strong acquirer-supplier communication. Mature acquisition processes result in the continued involvement of business stakeholders throughout the acquisition lifecycle to ensure the supplier delivers capabilities that

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Capgemini has helped pioneer the implementation of service orientation in global commercial, government, and military organizations. By supporting our clients in transformative programs in both acquirer and supplier roles, we have refined our Collaborative Acquisition Management approach. This includes operational support and process improvement services in:

- Program Planning, Management & Control;
- Requirements Development & Management;
- Performance Measurement & Value Achievement;
- Organizational Alignment & Change Management; and
- Acquisition Validation & Verification.

This whitepaper shares some of the approaches, techniques, and leading practices that have proven effective in addressing those challenges specifically associated with acquisition requirements development and requirements management.

In elaborating upon these approaches, techniques, and leading practices, we will use the term “acquisition” to describe the process by which user needs are satisfied, while allowing the “supplier” to perform the necessary tasks to develop and provide for the solution. The term “acquisition” should not be confused with the procurement process the government uses to purchase services and products.

2 The Challenge: Developing Effective Requirements

While systems engineering processes have been a focus of improvement for over a decade, organizations increasingly recognize that immature processes for translating user needs into clear requirements are barriers to rapidly deploying new business capabilities for the IT organization.

Capgemini's approach to requirements management leverages leading practices, industry knowledge, and lessons learned from thousands of public sector and commercial transformation programs.

Capgemini understands that one of the key objectives of the requirements management process is to improve the efficiency and effectiveness of defining end-user requirements. We leave no ambiguity surrounding the needs of the customer. Conceptually, when these acquisition requirements have been developed and agreed to by all stakeholders, the supplier is able to design, build, and implement the desired solution with minimal change to the supplier agreement.

This objective is shared by organizations in software-intensive industries, including healthcare and government, which must efficiently and cost-effectively deploy differentiating solutions in response to customer and regulatory demands. While systems engineering processes have been a focus of improvement for over a decade, organizations increasingly recognize that immature processes for translating user needs into clear requirements for the IT organization are a barrier to rapidly deploying new business capabilities. Closely related is the trend for managing the delivery of IT services to the organizations through managed service level agreements that depend on increased IT process maturity and effective IT governance.

In Capgemini's experience, these trends are resulting in better defined processes and improved collaboration between the business in need of a new capability (the "acquirer") and the IT organization chartered with delivery of the capability (the "supplier"). The collaboration between acquirer and supplier utilizing mature, well-defined processes is critical to successful the delivery of IT products and services.

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3 The Solution: Leverage CMMI Standards to Mature the Requirements Management Process

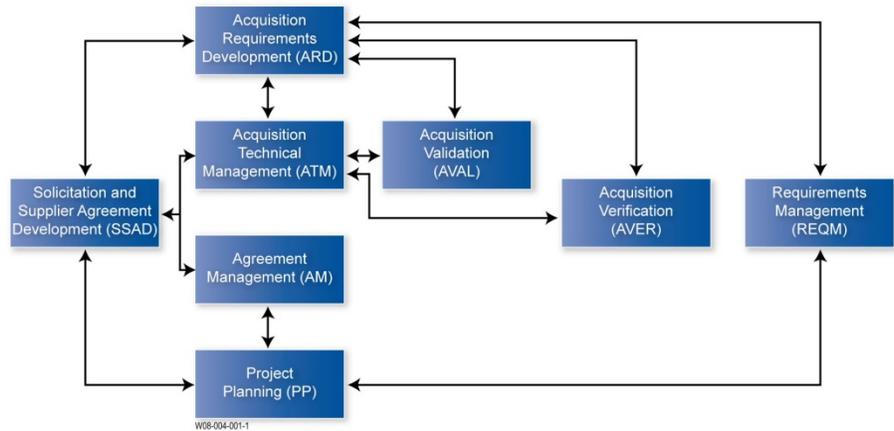
Multi-sourcing strategies to obtain new or enhanced capabilities are driving the adoption of standard, mature processes to assure the acquirer-supplier relationship results in maximum value.

The ability to leverage industry standards and best practices will enable the organization to mature the requirements management process. Two applicable industry standard models are provided by Carnegie Mellon’s Software Engineering Institute (SEI). SEI’s mission is to “advance software engineering and related disciplines to ensure the development and operation of systems with predictable and improved cost, schedule, and quality.” The two models are CMMI for Acquisition (CMMI-ACQ) and CMMI for Development (CMMI-DEV):

- **CMMI-ACQ.** This model was released in November 2007 and its development was a collaborative (government- and industry-led) effort that included General Motors Information Systems and Services, HP, and Capgemini. As described on its website (www.sei.cmu.edu/acquisition) “CMMI-ACQ is a model designed for use by acquirers who obtain needed capabilities (products and services) from suppliers. This model is a continuation of work to define leading best practices for organizations that acquire products and services or outsource development and support.” A subset of the CMMI-ACQ processes focuses on developing and managing the development of acquisition requirements. This is represented in **Figure 1**.

Learn more about this collaborative effort between government and industry by visiting www.sei.cmu.edu: [HCarnegie Mellon® Software Engineering Institute \(SEI\)H](#), along with General Motors’ Information Systems and Services (GM IS&S) department and top officials from [HHPH](#), [HCapgeminiH](#) and the U.S. government - formally unveiled a comprehensive new model, called [HCMMI for Acquisition \(CMMI-ACQ\)H](#), it believes will revolutionize the way governments and businesses around the world acquire or outsource their software-intensive systems and services.

Figure 1. CMMI-ACQ Selected Project Processes



(Source: Carnegie Mellon, System Engineering Institute)

- **CMMI-DEV.** SEI description: “CMMI for Development (CMMI-DEV) is a model designed for use by suppliers who develop products and services.”

Figure 2. Roles of Business “Customer” and IT “Suppliers”



The Acquisition lifecycle process integrates with the engineering/development lifecycle to assure capabilities are delivered with maximum ROI.

Figure 2 depicts Capgemini’s recommended view of how these CMMI models should be used to help define a framework for improving the requirements management process. Paraphrasing comments by SEI, CMMI-ACQ provides a comprehensive set of leading best practices for acquiring products and services. Based on the acquisition requirements, CMMI-DEV focuses on the associated solution design and development effort.

4 The Solution: Utilizing Collaborative Techniques to Mitigate Risks & Accelerate Results

Ensure your organization accelerates the decision-making process and resolves challenges before they become major program issues.

As is true with all transformational programs spanning multiple organizations' divisions and business units, there are considerable challenges in achieving program objectives. Challenges often result from the inability of the acquisition process to reach agreement on requirements at a sufficient level of specificity needed to guide the supplier. Requirement ambiguity transfers risk to the supplier of the new capability. But, at what cost?

It is important to establish the necessary techniques to manage internal battles, dissenting opinions, losing sight of the vision, lack of alignment, and the inability to reach group decisions that eventually prevent programs from realizing expected outcomes.

Capgemini follows leading practices that mitigate risks and accelerate results utilizing group design techniques known for achieving consensus and identifying barriers early in the development of new capabilities requirements. We have found that identifying problems early in the process minimizes requirements changes and associated rework, when it is more expensive to rework the supplier's solution. To mitigate risks, we bring the parties together in a neutral setting and guide them through a highly structured process to reach concurrence on key decisions regarding topics such as vision, strategy, requirements, solution designs, and implementation programs and plans. By bringing the right people in the room together at the right time, Capgemini Government Solutions is able to accelerate the decision-making process and resolve challenges -- in days rather than months -- before they become real, long-term problems.

To implement this leading practice, we utilize a unique, proven methodology, process, and facility called the Accelerated Solutions Environment (ASE). Over the past 12 years, Capgemini has conducted more than 3,500 ASE events with organizations representing the commercial (including 55 percent of the Fortune 500)

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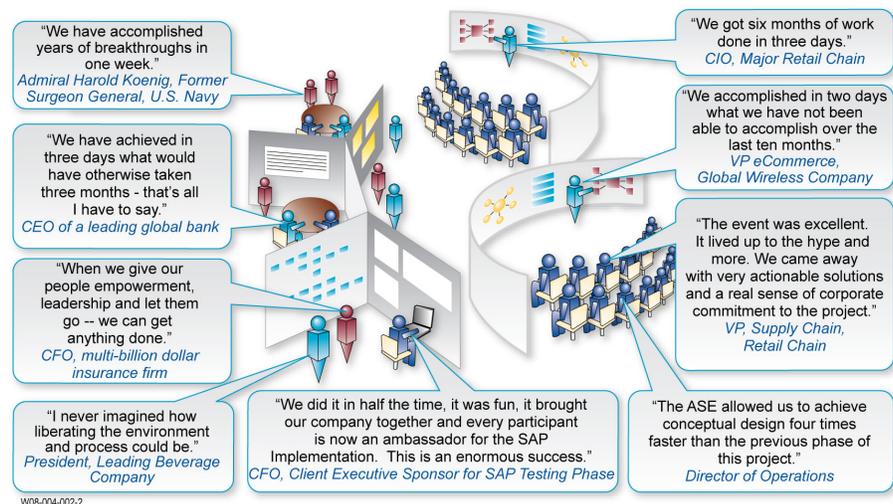
Capgemini has helped accelerate results for government clients that include HHS, DHS and the U.S. Air Force.

The ASE reduces risks associated with complex problem solving and helps organizations achieve faster, better, more sustainable results. ASE sessions have helped organizations reduce project duration by 50% and resource costs by up to 35%.

as well as government side of business, including the Departments of Health and Human Services, Homeland Security, and the U.S. Air Force. **Figure 3** below depicts a conceptual picture of the ASE environment along with quotes from key clients that have realized value in using the ASE to mitigate risk and accelerate their initiatives.

The ASE reduces risks associated with complex problem solving, aligns key stakeholders, and helps organizations achieve faster, better, more sustainable results. ASE sessions have helped organizations reduce project duration by 50% and resource costs by up to 35%.

Figure 3. Capgemini Customers Value Our ASE



Capgemini utilizes a unique process and a one-of-a-kind facility known for applying a variety of techniques that address different learning styles, singular approaches to problem solving, the psychology of teams, and whole system thinking.

5 The Solution: Utilizing Solution Simulation Techniques to Articulate User Needs and Optimize Return on Investment

If one creates an approach to solution development that provides stakeholders the ability to assess the project’s feasibility, allowing end users to test the solution before it is built, the return on the development investment is significantly improved—at reduced costs to the government.

Due to poor requirements-gathering, analysis, and management, very few acquisition requirements documents accurately capture the user needs, ultimately leading to ineffective solutions. Root problems such as lack of a clearly articulated and shared vision, defining success as technology delivery instead of business results, and failure to document sufficient requirements are contributing factors to such ineffectual solutions. Capgemini addresses these issues by utilizing an innovative approach to identifying user needs, which we call Rapid Design & Visualization (RDV). RDV originated from a simple notion: If one creates an approach to software development that gives stakeholders the ability to assess the project’s feasibility and allows end users to test the solution early in that process, the return on the development investment is significantly improved at reduced costs to the government.

The RDV methodology is based on incorporation of early visualization and a defined end-user interaction design used to drive higher adoption of internal and external systems. RDV, thus, bridges the gap between the business user and IT by doing the following:

- By observing users and formulating design insights, scenarios and requirements are derived from how users behave, think, and learn;
- By reviewing, refining, and validating scenarios and requirements to clearly define critical paths and pain points;
- By creating functional simulations for use in testing, consensus-building, and design specification through collaborative design workshops;
- Through design, consensus, visualization, ideation, and iteration, a vision of the future is created with an understanding of the present.

We combine the latest simulation and Web 2.0 tools with new insight on how people create complex business applications, creating a visual ROI, uniting business and IT efforts by clearly demonstrating the interaction between Information Systems, workflow and business applications.

Capgemini’s Rapid Design and Visualization (RDV) can help organizations reduce the risk of delivery by testing requirements with end users, reducing rework costs by up to 70%, with a 20% faster time to market.

RDV combines the latest simulation and Web 2.0 tools with new insight on how people create complex business applications. RDV visualizations are built from defined user needs into highly functional representations of current or future systems. By applying this unique approach to development, RDV becomes synonymous with an improved “visual ROI.” RDV has clearly demonstrated it can help organizations:

- Unite business and IT efforts by clearly demonstrating the interaction between Information Systems, workflow, and business applications;
- Improve accuracy in development cost estimation by better confirming the accuracy of system requirements;
- Reduce the risk of delivery by testing requirements with end users, reducing rework costs by up to 70%, with a 20% faster time to market.

One of Capgemini’s clients used RDV to demonstrate the envisioned global application and discovered the systems integrator had missed 40% of their requirements.

6 About Capgemini Government Solutions

Capgemini Government Solutions is a member of the Capgemini global family of companies (“Capgemini”). For four decades, Capgemini has served the strategic, technological, and operational needs of local and national governments around the world.

Capgemini has the experience, knowledge, tools, and methods required to effectively manage and accelerate change.

Capgemini provides government agencies deep transformation, consulting, and IT expertise. There are three key reasons why clients benefit from collaborating with Capgemini to improve their Acquisition process: 1) the identification of requirements management leading best practices, 2) the definition of the framework for the Requirements Management Process, and in 3) the detailed planning for the implementation of this framework.

Understanding of the Requirements Definition & Demand Management Processes

Capgemini brings to its clients an unparalleled level of understanding of the issues and challenges involved. We also pay special attention to the importance and sensitivity of requirements definitions and demand management processes.

In addition, we have worked with our customers to:

- Develop solution delivery methodologies encompassing:
 - Strategy
 - Requirements
 - Design
 - Development
 - Test, implement, and operate
- Develop requirements packages for inclusion in Requests for Proposals (RFPs) and other solicitations where our customer wished to procure software/solution delivery services; and,
- Develop solutions based on requirements defined by the customer (an opportunity to learn from what works and does not work).

By providing public and private sector experience, leading best practices, and proven tools and methodologies tailored for the U.S. government's very demanding and unique requirements, we help our clients expand their knowledge and capabilities as we work together to drive their requirements management agendas.

As industry-recognized leaders in strategy, planning, and acquisition of new capabilities, Capgemini offers a unique blend of industry-leading practices, domain-specific expertise, and proven methods and tools that accelerate long-lasting results. Our understanding of government's most challenging issues is best demonstrated by the work we do and the relationships we build with our customers.

7 Related Publications

[Accelerating Collaboration in Mission-Critical Programs](#)

[Rapid Design and Visualization](#)

8 Citations

Special permission to reproduce and paraphrase portions of “CMMI® for Acquisition, Version 1.2,” CMU/SEI-2007-TR-017, copyright 2007 by Carnegie Mellon University and “CMMI® for Development, Version 1.2,” CMU/SEI-2006-TR-008, Copyright 2006 by Carnegie Mellon University, is granted by the Software Engineering Institute.

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