

Speeding Product Development Time-to-Market with OPM3, ISO, and CMMI

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Abstract

Successful product development groups reinvent themselves with the aid of best-in-class process standards like Organizational Project Management Maturity Model (*OPM3*[®]) and Capability Maturity Model Integration (CMMI[®]) that drive increases in process maturity. They also link the use of these standards to strategic imperatives that challenge project delivery systems to increased levels of efficiency and productivity. Process maturity is linked to business value. This drives standardization and measurement to cause the intended behavior while delivering quantifiable benefits to the corporation.

Introduction

Harris Corporation delivers technology that makes battlefield communications reliable, secure, and simple, and the RF Communications Division (RFCD) is number one in the global tactical radio market. Harris's comprehensive line of software-defined radio products and systems supports critical missions around the world. The company is known for delivering reliable communications products, systems integration, and information technology to government and commercial customers. The need to bring these solutions to market fastest throws the importance of project management into sharp relief.

Process excellence is not just good business. It can make a difference in the delivery of solutions that impact lives. Being the best-in-class global provider of mission-critical systems and services to its customers, combining advanced technology and application knowledge, requires a commitment to excellence in the project management culture, its processes, and the project management delivery system

The solutions that RFCD offers are the products of dedicated cross-functional project teams that translate process excellence into the culture. RFCD focuses on some of the most specialized areas of technological expertise. Project teams are comprised of highly educated, skilled engineers and research scientists in electrical, mechanical, test, components, hardware, software, systems, and advanced materials. Processes apply these skills to communications and information technology applications. The building of capable project management processes used by RFCD project teams and the transformation of the project management culture that enables these processes go hand in hand. In today's troubled economy, project management is the competitive advantage.

Organizational project management (OPM) refers to the portfolio, program, and project management processes and practices necessary to execute a firm's strategies via projects. As a discipline it is codified in the PMI *OPM3*[®] standard (Project Management Institute [PMI], 2008), which captures the experience of hundreds of project management practitioners vis-à-vis the form and function of management by projects (Schlichter, 2001). Development of capable OPM processes involves a transformation of the organizational culture in a manner that considers the organization's structure (Schlichter, 2009, in press). RFCD has begun such a transformation by combining *OPM3*, ISO, and CMMI standards (Scott, 2009).

Product and Process Quality

RFCD's pursuit of product and process quality is viewed as a journey, not a destination. Since early 2000, RFCD has established, maintained, and implemented a continuous improvement roadmap for the pursuit of

higher process and product development capabilities. The roadmap helps the RFCD community understand the historical, current, and future state of process management and improvement.

RFCD’s early implementation of process standards gave rise to self-optimizing teams in Engineering and among RFCD functional organizations and business groups. A by-product of the earlier approaches was the creation of multiple product development engines, each having its own unique set of project phases and project management processes. Project Management processes overlapped and were duplicated among the engines. See Exhibit 1.

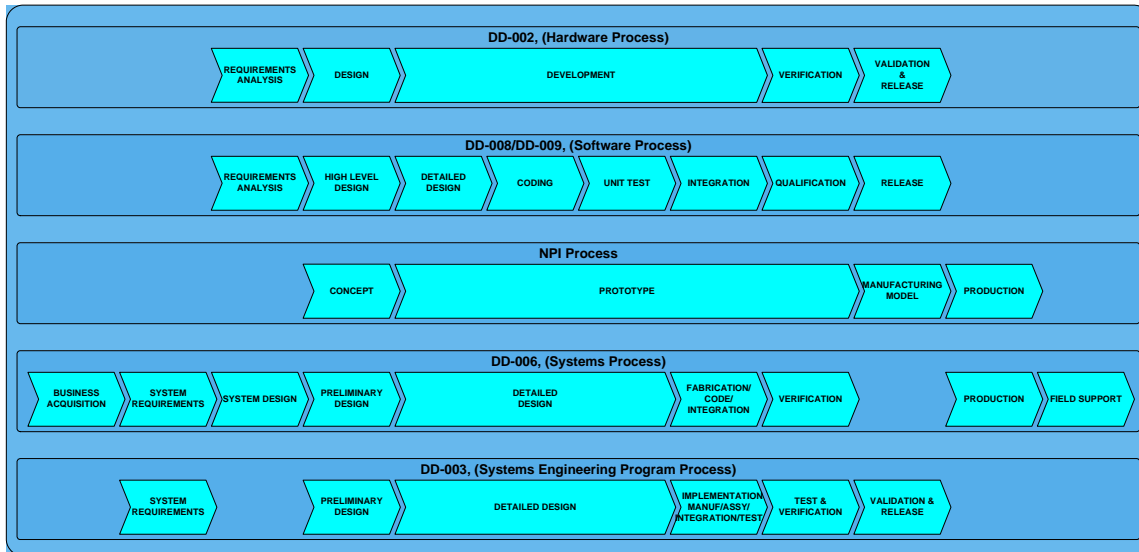


Exhibit 1 - Multiple Product Development Engines

In 2007, Engineering launched a lean product development initiative to achieve greater efficiencies in functional and cross-functional process performance. This ongoing effort has sought to eliminate waste and increase subprocess cycle time within and among the development engines.

The introduction of *OPM3* has its origins in the Lean Product Development initiative, with the intent to pilot the standard and later spread the standard throughout the Engineering community. RFCD’s Divisional Process Group (DPG) initially used *OPM3* to provide project management best practice support to improvement projects within the standard’s project management domain. The DPG stewards and facilitates the achievement of Engineering process improvement goals and objectives. It is the operational arm of the Engineering Continuous Improvement Program and champions the program’s creation and maintenance. This approach allowed the DPG time to develop *OPM3* expertise and deployment competencies with help from OPM Experts LLC before a more widespread use of the standard within the organization.

Exhibit 2 shows the three phases of the lean product development initiative. Phase 1 is characterized by best practice introductions and demonstrated compliance to key process standards. Phase 2 shifts from process improvement to process performance—more specifically, process interfaces between Engineering disciplines and other RFCD functions. Process reengineering is the final phase. The product development capability is viewed as a key component of the overall business process system.

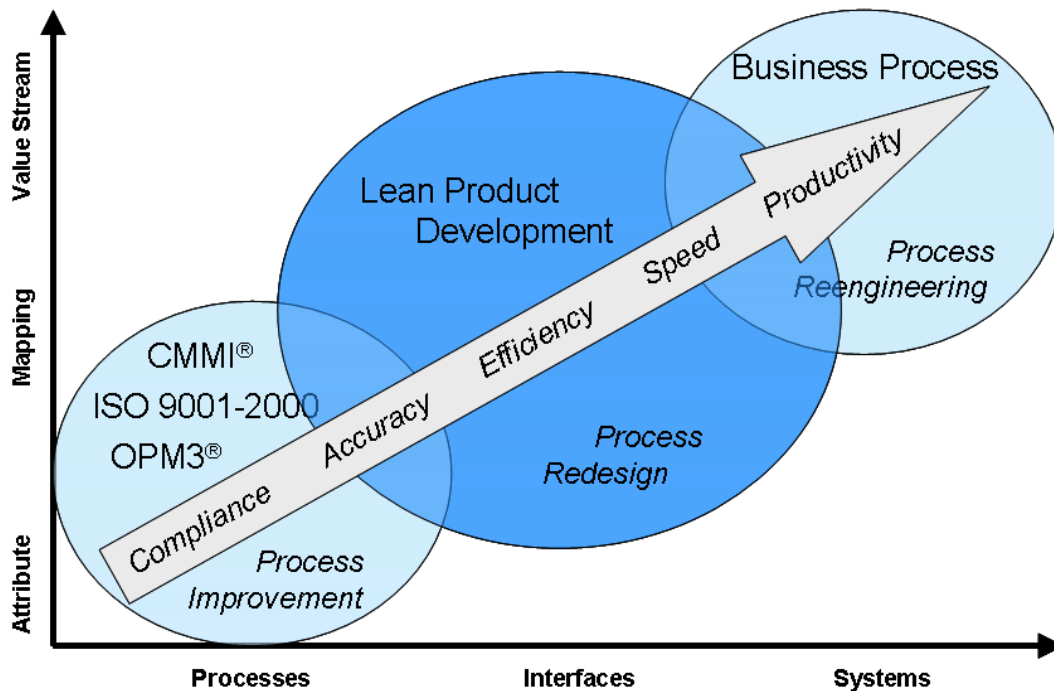


Exhibit 2 . RFCD's Lean Product Development Initiative.

Each bubble contains a portfolio of improvement projects. The vertical axis shows the types of process notations used to characterize and measure RFCD processes. The horizontal axis identifies the focus of process-related evaluations. The center arrow identifies measures of interest. The large lean product development bubble indicates the primary area of improvement emphasis. Improvement projects may overlap these phases, depending on their scope. The DPG executes improvement projects in accordance with *OPM3* recommended guidelines.

Having achieved success with the pilot of *OPM3* in lean product development, the DPG made plans to extend the *OPM3* methodology throughout Engineering. RFCD operates in a multi-standard, multi-model process improvement environment. The division has a Quality Management System (QMS) that includes best practice requirements associated with ISO9001:2000, CMMI®, and other process standards. The QMS embodies the core process requirements of the organization

As shown in Exhibit 3, practices from various process standards, such as *OPM3*, are mapped and evaluated for goodness of fit before being introduced into the QMS. Process requirements are the focus of change, not the standard.

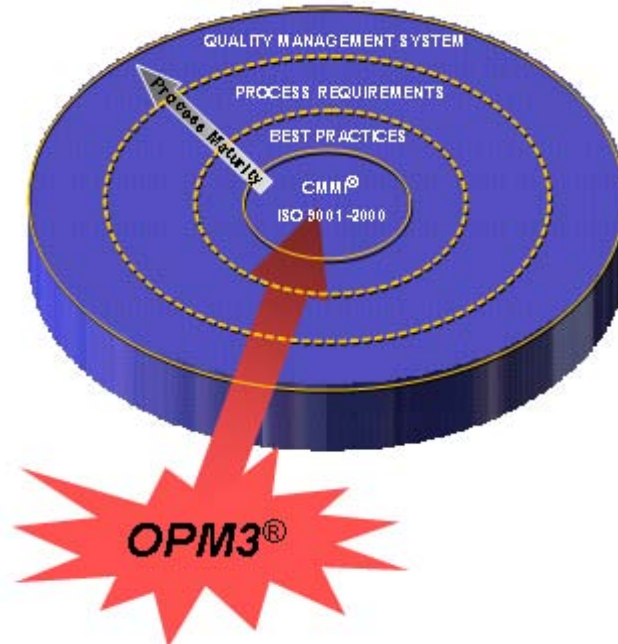


Exhibit 3: RFCD's multi-standard quality management system.

The DPG codified *OPM3*'s introduction into the QMS using Engineering's yearly process improvement plan. The plan included provisions for:

- Senior management sponsorship and oversight
- Aligning *OPM3* with the division's strategic growth plan (SGP)
- Linking *OPM3* to other process initiatives (e.g., Lean Product Development)
- Mapping *OPM3* best practices into the QMS
- Establishing a project management office
- Identifying and involving partner RFCD functions and projects

Special care was taken to bill *OPM3* as a complementary standard and not a competing standard to other process standards and improvement initiatives. For RFCD Engineering, knowing excellence is all about knowing the current process context of the organization and how a new process standard can modify that context to successfully promote and advance a culture of excellence responsive to the strategic imperatives of the organization.

Maturity Assessments

Entry into the *OPM3* via an assessment is an attractive feature of the model. While other standards may require process build-ups before appraising the organization, *OPM3* begins with an assessment.

RFCD Engineering values assessments as a means to measure process maturity and to identify improvement opportunities. The division is registered as an ISO 9001-2000 company, and its Systems and Software engineering groups have been successfully appraised to CMMI® Maturity Level Three.

Engineering supplemented its internal *OPM3* pursuits by contracting OPM Experts LLC to perform a rigorous assessment. The third party rigorous assessment focused on project management capabilities associated with the systems, software, and hardware engineering disciplines. Multiple project management policies and processes were embedded in these disciplines. While one of the authors (Mark Scott) is a certified *OPM3* ProductSuite® Consultant and an employee of RFCD, the other author (John Schlichter) is a management consultant who is also a certified *OPM3* ProductSuite Consultant. Combining the perspectives of an internal and an external consultant provided a unique value by leveraging insider

knowledge of the company with an objective third party perspective that brought other external assessment experiences to bear.

Although the Engineering development life cycles differ to some degree, the overlaying of *OPM3* standard helped distinguish how the project management processes can be the same, tailorable when appropriate, and applicable to most projects most of the time.

The *OPM3* with value-added insight from OPM Experts LLC inspired the DPG to seek greater maturity in product development by transforming multiple product development engines (Exhibit 2) into a single, unified product development framework (Exhibit 4). To support this concept, the DPG has sought to institutionalize a standard set of lean project management processes that Engineering project managers can use to deliver their solutions faster and cheaper through the framework.



Exhibit 4: Single product development engine.

The *OPM3* rigorous assessment revealed how the various project management processes within Engineering could be consolidated, thus reducing the costs and complexity of maintaining multiple sets of project management processes for each product development engine. As shown in Exhibit 5, by establishing a unified set of lean project management procedures, process asset links among the engines could be reduced by more than 2 to 1. The DPG used the published standard *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)* to steer the reduction effort.

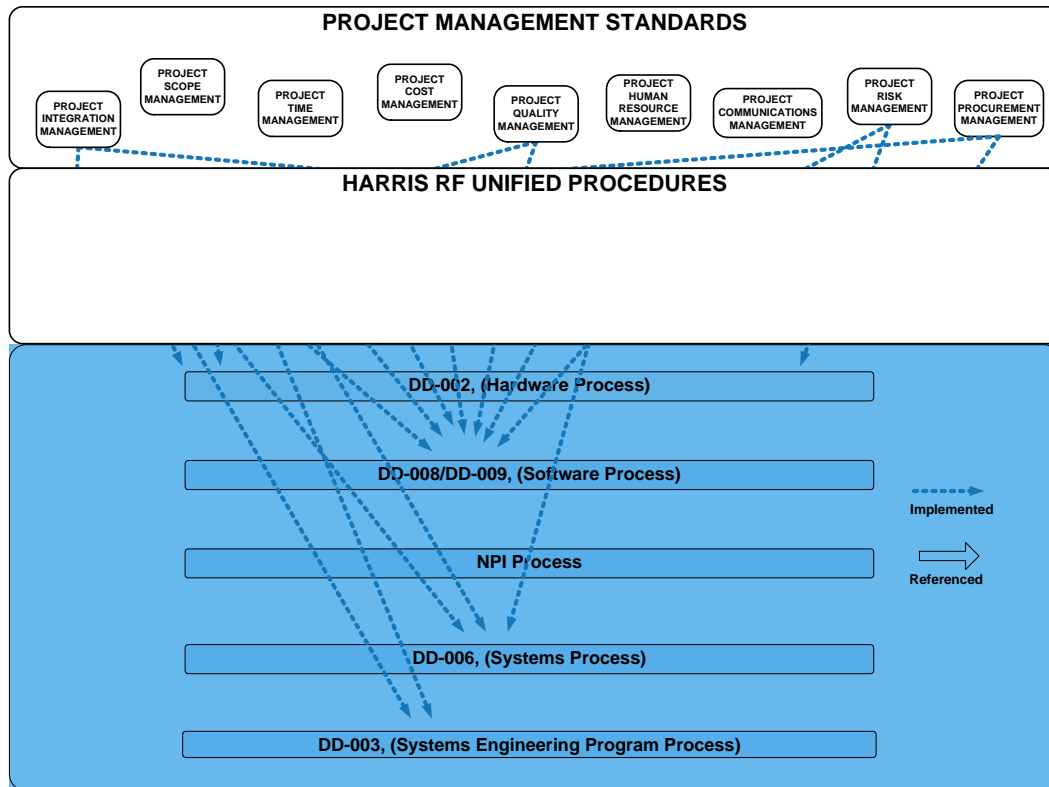


Exhibit 5 - Reducing Process Complexity in Harris with *OPM3*

Exhibit 5: Reducing process complexity in Harris with *OPM3*.

The Role of the PMO

The building of capable project management processes and the transformation of the project management culture go hand in hand. For Engineering, these two concepts converge in two RFCD strategic imperatives: time-to-market (TTM) and cost reduction. For the kinds of applications that RFCD develops, only the best will do, and getting these solutions to market fastest can make a life-saving difference.

The DPG uses *OPM3* to continually improve the RFCD brand of lean project management processes and to establish a common lexicon in support of the unified product development approach. Such a process involves accountability, especially in the establishment and maintenance of key organizational enablers, such as a PMO, to help steer the development and institutionalization of processes supporting a unified product development system.

The DPG launched a PMO to advance the unified product development agenda by increasing RFCD Engineering capabilities in the *OPM3*-specified project, program, and portfolio management domains. Project Management Professionals (PMPs)[®], Six Sigma Black Belts, and a PMI licensed *OPM3* assessor staff the PMO.

The PMO has a threefold mission:

1. To establish and maintain a standard set of lean project, program, and portfolio management processes;
2. To develop lean project, program, and portfolio management competencies; and,
3. To measure the benefits of increased project management maturity in both engineering product development and internal improvement projects.

The chief duty of the PMO is to oversee the creation and deployment of lean project, program, and portfolio management processes that enable a lean project management culture responsive to RFCD strategic growth imperatives. It works hand-in-hand with the Engineering community to reduce duplication in project management processes, where appropriate, and to develop “vanilla” project management processes (i.e., processes that are not hardwired to a specific Engineering discipline).

The PMO strategy for developing lean project management processes included value stream mapping, cycle time reduction, queue identification, and waste removal, per Exhibit 6. The PMO is enhancing value-added activities (speed) through the product realization value stream, using existing project management and Engineering processes as the basis for improvements. Techniques for time-to-market compression include:

- Value stream/process mapping (resolve for leaner processes)
- Standardized work/tools (workforce flexibility, training)
- Innovation (seeking better ways of doing things)
- Knowledge-based engineering (stable and capable processes)
- Automation and simulation (remove the “manual”)
- Front-load technical solution at product concept
- Technology transfer
- Supplier integration

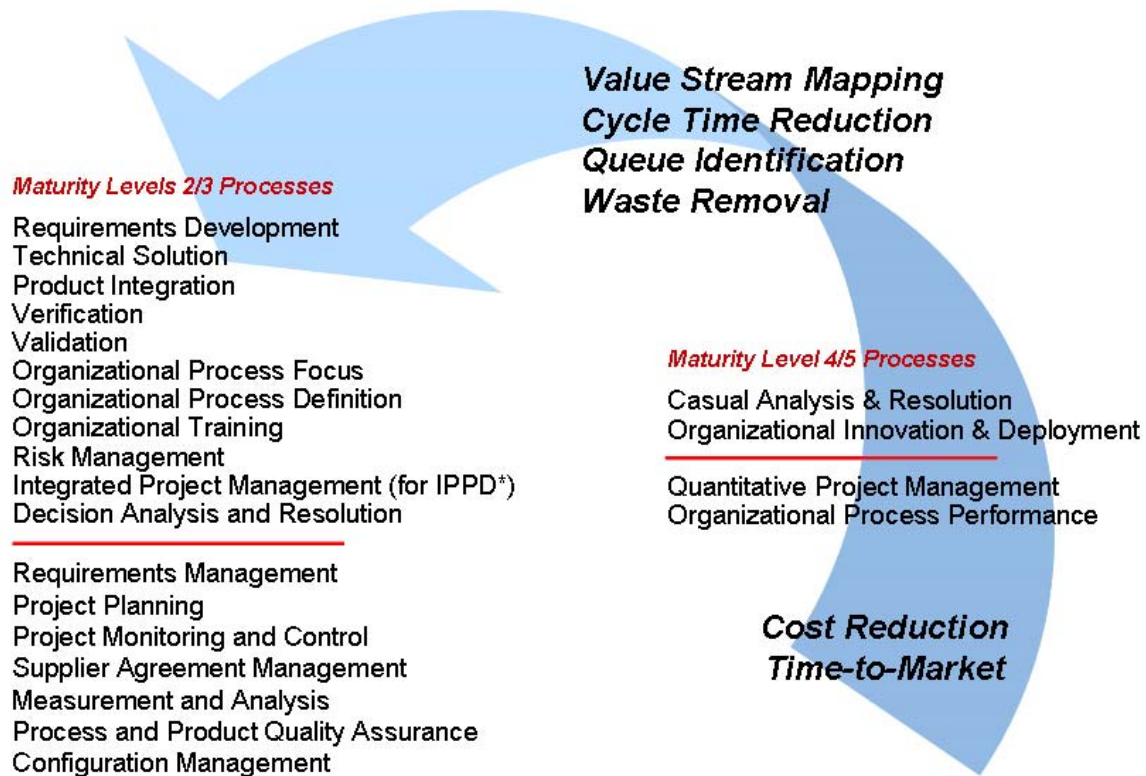


Exhibit 6: PMO strategy for developing lean project management processes.

Engineering has established tailoring guidelines to ensure that the right amount of process is applied to product development efforts. Lean project management processes are nonprescriptive and cover the full product development life cycle. Smart process selection and tailoring empowers Engineering project managers to achieve their schedule, cost, and quality objectives.

Tracking Improvements

The PMO created a web-based project management process asset library for use by the Engineering project management community. It has a project scheduling function that provides scheduling expertise when requested to all RFCD project managers. The PMO is sponsoring a collaborative environment for the sharing of best practices and lessons learned. It actively manages Engineering’s portfolio of improvement projects, and it supports RFCD leadership in its strategic growth imperatives in functional, cross-functional, and project environments.

As shown in Exhibit 7, the PMO publishes a lean product development dashboard that explicitly links its value proposition to RFCD TTM and cost reduction pursuits. The purpose of the dashboard is to help enable a lean project management culture through the use of measureable indicators. This dashboard only identifies support process improvement projects. Support processes are generic processes available for use by all Engineering projects. Project-specific improvements are not shown due to proprietary restrictions.

References

- Chrissis, Mary Beth, Mike Konrad, and Sandy Shrum. *CMMI: Guidelines for Process Integration and Product Improvement*. Boston, MA: Addison-Wesley, 2003 <www.sei.cmu.edu/cmmi/publications/cmmi-book.html>.
- [ISO 9000] International Organization for Standardization (ISO). 2000. Quality management systems - Fundamentals and vocabulary. ISO 9000:2000. See http://www.iso.ch/iso/en/iso9000-14000/iso9000/selection_use/iso9000family.html
- [ISO 9001] International Organization for Standardization (ISO). 2000. Quality management systems - Requirements ISO 9001:2000
- Kirwan, K., Urs, A., Sassenburg, H. and Andre Heijstek, *A Unified Process Improvement Approach for Multi-Model Improvement Environments*, a Carnegie Mellon University, Software Engineering Institute Publication, Pittsburgh, PA. 2006
- Matufelija, B. and H. Stromberg, *Systemic Process Improvement Using ISO 9001:2000 and CMMI®*, Boston, MA.: Artech House, 2003.
- Project Management Institute. (2008). *Organizational project management maturity model (OPM3®)*— Second edition. Newtown Square, PA: Project Management Institute.
- Schlichter, J. (2001). *PMI's Organizational Project Management Maturity Model (OPM3): Emerging standards. Proceedings of the Project Management Institute Annual Seminars & Symposium.* November 1-10, 2001, Nashville, TN.
- Schlichter, J. (2009). Transforming the project management culture with the PMO and OPM3. In M. P. Perry (Ed.), *Business driven PMO setup: Practical insights, techniques, and case examples for ensuring success*. Pp. 415-449. New York: J. Ross Publishing.
- Schlichter, J. (in press). *Using OPM3*. New York: McGraw-Hill
- Scott, M. (2009). Transforming the project management culture within Harris RFCD. In M. P. Perry (Ed.), *Business driven PMO setup: Practical insights, techniques, and case examples for ensuring success*. Pp. 440-449. New York: J. Ross Publishing.

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