

Life Cycle Success Factors That Reduce the Failure Rate of IT Projects and Programs

Eddie Williams

With over 25 years of managing and overseeing successful projects and programs spanning aerospace, DOD, commercial and government agencies before and within Portfolio, Program and Project Management Offices, I am indebted to my initial two mentors who early in my career emphasized keeping a focus on:

- The Customer/Client (and User)
- Business and System Requirements
- The Triple Constraint and other areas
- Success Factors

With that emphasis over the years I have had a focus on two areas:

- 1) While not limited to, addressing at least the following group of items including the Triple Constraint components:
 - a. Scope (project/requirements)
 - b. Time/Schedule
 - c. Approved Budget/Cost (approved changes going forward beyond the baseline)
 - d. Risk Management
 - e. Quality (approved and implemented requirements)
 - f. Customer/User Operational Satisfaction (product/system operating reliably in the operational environment)

As my success continued, I continued to be customer (and user) and requirements focused. I managed all my projects and programs with the above emphasis; a balancing act that was, and is, worth it.

Note: About a couple of decades ago it had been reported by Gartner and Standish that 60-80 % of IT projects and programs failed. By whatever criteria, I was extremely disappointed to hear/see that and made a personal commitment to assist in ways that would contribute to a change; increase the success rate. And on the other hand, I was EXTREMELY PLEASED THAT PROJECTS AND PROGRAMS THAT I AND MY TEAMS (because it is about teams) had managed were within the 20% successes.

- 2) The other area was not only knowing and understanding the goals and objectives of the projects and programs but understanding and identifying Critical/Business Success Factors (C/BSFs). (The information can be used to create and develop a checklist to review and evaluate a project or program.)

Life Cycle Success Factors for the 21st Century

Overview

- Leadership
- Planning and Management
- Development/Implementation
- Communication
- Knowledge Transfer
- Lessons Learned

Leadership

1. Senior Management Support & Commitment

Senior management and executives provided their support and commitment.

Senior management and executives supported and were committed to the project or program. They participated as required, and were committed to the project or program. This support and commitment was, and is, absolutely necessary. Ensure that senior management is involved and committed (without that the project is sure to become troubled and may fail).

2. Good Project and Program Leadership

Good leadership existed and was displayed.

A project and program manager, and Leads, must be responsible and accountable. Yes, a project manager must be responsible and accountable, and not be just a facilitator. The PM may serve different roles but a Project Manager or Program Manager serves as the primary lead. I recall when I was monitoring a troubled project that was turned around to success. When there were inquires to the PM about issues, risks, and problems, he stated he was just a facilitator and did not have a grasp/knowledge of all the issues and risks. Project and program managers must be accountable, and ensure that the leads and teams are accountable (and empowered), to achieve the goals and objectives of the project or program.

3. Customer, User, and Key Stakeholder Participation

Customers, users and key stakeholders participated and were involved.

The absence of, or lack of, client/customer and user participation and involvement as team members and Subject Matter Experts (SMEs,) (for functional areas and departments) directly contributes to project and program failure. Senior management support and this

item impacts getting users' participation in focus groups, pilots, etc. to provide input or feedback, including feedback on prototypes and mockups early in the development process.

4. Use of Best Practice Processes (BPPs)

Best Practice Processes (BPPs) were planned and implemented.

Projects and programs planned and implemented Best Practice Processes (BPPs): Project/Program Management, the Development Process/Methodology, Configuration Management and Quality Assurance ([see itprofessionalfacilitator.com](http://itprofessionalfacilitator.com)). Best (and Good) Practices for each of the disciplines/processes were used. Note: At one time, for Aerospace and DOD contracts, before a contract was awarded or initiated plans for each of these disciplines and processes had to be approved by the client/customer and company that was planning and executing a project and program.

5. Building the "Core" Team

A "Core" team was built.

A "Core" team(s) existed that had the appropriate skill sets, (hard/technical and soft), including customer/user representatives and Subject Matter Experts (SMEs). Ensure that other key stakeholders and third party representatives are actively involved. Create a resource backup and retention plan. They were committed teams, members were empowered. Open communication was/should be practiced. Recognition must take place and professional development and training should not be ignored for team members.

Planning and Management

1. Clear Understanding of the Business and Technical Problems

Understood the business and technical problems and selected the appropriate solution.

First understand the business problem(s), select a feasible solution and understand what an implementation is going to improve. Create a business case and charter that are thorough and detailed with realistic estimates for costs.

2. Reengineering

Reengineering was completed.

All the necessary reengineering was completed before the implementation project/program. You want to be sure that obsolete applications or business processes, inaccurate and incorrect information and data are not included in the final implementation. You also want to ensure that other business processes, applications, and data are cleaned to insure inaccurate or incorrect information and data does not move into the conversion process. Remember that garbage in = garbage out.

3. Well-Defined Scope of Work & Realistic Estimates

The scope was defined and realistic estimates were determined.

Determine the scope (that addresses all work and accounts for all approved requirements) and provide realistic estimates for plans, schedules and milestones, resources, and time frames and costs. The scope was documented in the plan, Task or Work Breakdown Structure (WBS) and schedules. This may seem obvious but often pressure from company management, customer expectations, etc. can cause a program/project manager and team leads to provide information and estimates that are not realistic in order to win a contract or satisfy management's budget expectations. Provide estimates that are realistic, (based on experience, history, etc.), and that have a minimum to maximum that the implementation can be achieved with. That minimum and maximum could be based on junior and senior levels rates, or determine a blended rate for employees and for contractors.

4. Selection of an Appropriate Solution (an upfront activity)

Understood the business and technical problems and selected the appropriate solution.

First understand the business problem(s), select a feasible development/implementation solution and the methodology to implement the solution. Understand what an implementation is going to improve. Select a methodology that is feasible and agreed to (approved). Create a business case and charter that are thorough and details realistic estimates for costs.

Note: When we speak of projects and programs, two life cycles are considered for a project: The Project Management life cycle and the Development/Implementation life cycle (e.g., SDLC Waterfall, Agile, etc.).

6. Create an Appropriate Master Schedule

An appropriate project or program (master) plan and schedules were created and used.

Project and program plans and schedules were created, developed, and used. Changes and revisions were made based on approved changes resulting from the Change and Configuration Control process and Review Team/Board.

A Plan is a guide and map to achieve goals and objectives. A Work Breakdown Structure (WBS) must exist to provide the scope of work, and to identify other activities and present the phases/stages of a project and the program. It does not matter if you used a traditional, iterative or incremental or Agile, or combined methodology, a plan must exist. A plan being clear and detailed as required, may be broken down into an iterative process or sprints for Agile but for large scale initiatives including ERP it must be adequately detailed to capture a realistic schedule and estimates (cost).

Note: For plans, at the “Go or No Go” gates, it is important to examine where you are, if any modifications are required, or if it is a “No” to move on to the next phase or iteration required. Also, at the decision gates any revisions that have to be made, any refactoring that must be considered, can be evaluated and discussed. Revisions and changes that affect the system/product and its development documentation (configuration identification documentation such as requirements, design) must be made through the proper Change and Configuration Control process.

7. Risk Identification and Management

Risk identification and management was performed.

No project or program, small or large, is without challenges issues and risks. Perform risk identification and management. A Risks Management plan was created and used throughout the project/program and development life cycles. Create a risk management plan (see this short risk management presentation:

Note: When creating a risk management plan consider scope, resources, schedule, architecture, vendor, the budget, etc., use a system perspective that accounts for impact to technology, the organization, processes, and people. It may be a significant change to the organization, impacting other processes and applications, etc. Risk identification and management must continue from the beginning and throughout a project or program.

8. Change Management

A Change Management Process including Configuration Control was established in the beginning of the project and program.

Change and Configuration Control Process was established in the beginning of the project or program and consistently used throughout the project and program.

- Provides the process to address project and program changes
- Provides the method to address scope; and in scope and out of scope changes
- Provides formal control for the product/system throughout the product lifecycle

Include a process to expedite critical or time sensitive changes.

This is one of the main reasons that Configuration Management is not only an essential discipline and process to set up early but it also is necessary to begin the control for product/system life cycle development.

Development/Implementation

1. Required Assessments

Required assessments were performed.

Assessments were performed, as required, of the organization, business processes, infrastructure and network, etc. to understand where you are (as is) and where you expect to be (when implemented and operational). Conducted or performed in an early and in a timely manner to provide recommendations, and support the procurement process for any resources for purchase and/or delivery.

Note: This is a key activity because delays can extend projects and/or add money to the project or program... If not performed when required, could delay recommendations for what is to implementation and the required resources and infrastructure, etc.

2. Security Planning and Management (a critical concern now more than ever)

Security Planning and Management was addressed.

Security assessments and planning were performed, as required, of the organization, business processes, infrastructure and network, etc. to understand what security had to be applied but now projects and programs must address organization security, policy and procedures for the protection of sensitive and confidential information.

3. Choose an Appropriate Development Methodology

An appropriate development methodology was used.

Once the best solution had been determined and selected a development methodology was identified or created for projects system/software development life cycle. In my experience a system development process can also be modified and used for IT development projects and programs implementing an infrastructure and a network. My teams and I have modified and used successfully the SDLC methodology for a number of projects and programs, including web/portal, ecommerce, development migration, infrastructure, network development. It may have been a traditional (Waterfall, Spiral, RUP, etc.) or an Agile development methodology or another one because there are enough methodologies being used or mandated. But realize they are “road maps”, subject to change control.

4. Document Requirements

Requirements were defined, specified and/or documented.

Business, user, functional or system requirements were adequate, complete and agreed to; mutually agreed to for implementation. Document and specify requirements (whether Agile, etc.) the amount of documentation that is requirements and the appropriate and adequate, agreed upon documentation and requirements are (customer/ user, company and development team including significant or third party stakeholders. (Remember a Change and Configuration Control process is established for project, product/systems changes and to prevent scope creep. (*See CM also)

Note: What is necessary here is to separate activities and the processes of requirements gathering to Business and Functional Requirements. It is important to initiate Business Requirements early, during Initiation/Planning Phases to ensure Business User Requirements can be passed on to System Analysis of the development life cycle to determine and document the Functional Requirements for the product/system. Document and specify requirements (whether for Agile iterations or Traditional (e.g., waterfall, spiral, etc.)

5. Design, Build, and Test Prototypes before Coding

Significant Prototypes were created by the coding process

This is where you reduce the chance of developing software that ends up being unusable. Of course, you need to do usability testing again when you write the *real* code. After understanding the Business/Technical problem(s), providing the appropriate business process requirements and solution, design, build and test prototypes before coding.

6. Applying Proper Configuration Management (CM)

Configuration Management (CM) was used for product/system life cycle development.

CM began with requirements and includes such things as requirements, configuration change control, requirements, design, release management and allows for deliverables to be identified. CM was not ignored, misunderstood or improperly applied or used: a missing link in many projects and programs and often times is not included as a “Knowledge Area” but must be. [Is configuration-management-your-it-projects-missing-link?](#) CM is a Best Practice Process, used to complement the SDLC while controlling and identifying the required deliverables. Configuration Management is not just about documentation for documentation sake. Its scope goes beyond version and library control. It’s about the content; a product/system functionality and description.

7. QA Verification and Validation (V & V) and Testing

Development testing and QA Verification and Validation/Testing were performed.

Development Unit/Component (Module), Integration, and Functional testing were performed as required (successfully). During the development process peer reviews/code inspections were performed as required. QA was involved early verification reviews and/or audits and validation/testing were performed as required. QA (or another group other than the development team) performed system/functional tests.

Performing system or application testing is essential for implementation. Ensure that a thorough verification and validation process is performed with all the key parties involved for acceptance based on previously identified and agreed upon success criteria. Perform system testing before implementation and after the system is deployed.

8. Acceptance Testing

User Acceptance Testing was performed.

After successful functional and system test, User Acceptance Testing (UAT) proceeded well with elements of functional testing and user current Standard Operations Procedures were used to validate the system/product. Perform by the User representatives and supported by QA and development representatives.

Communication

1. Create and Execute the Communication Plan

A Communication plan was created and executed.

A Communication plan was created that addressed all levels (senior management on down to functional and department management, and the team(s)). A plan will include the required information for each level of communication, performance and status reporting, frequency, and content required. Senior management requires a higher level status information, content, and costs. Lower level management requires more content and a more detailed breakdown of cost and performance information.

2. Education and Training

Education and training was provided to management and employees.

There were consistent and continuous education, communication, and training for the organization's management and employees about the implementation and change for the environment. There were consistent and continuous educating and communications sessions.

Have a plan to train the "Trainer" to allow these employee-trainers to do internal training to supplement the training of the users and management. Training is required for not only using the system but for support.

Knowledge Transfer

1. Ensure Knowledge is Transferred

Knowledge transfer occurred.

Knowledge that was shared through full participation (and involvement) by stakeholders: customer/clients, users team members and third parties

Knowledge Transfer occurred through several project or program activities:

- Team membership with all required stakeholders (including customers, users, and third party vendors and subcontractors, etc.)
- Co-leads and competencies specialists
- Inexperience , experience or seasoned team members working together, collaborating
- Open communication
- SMEs interaction with development groups or teams
- Sharing the lessons learned through a project and program

2. Knowledge Transfer took place because of Team Collaboration

Customer and users, the prime contractors, vendor and subcontractor were involved and participated and teams members.

Stakeholders are essential, if we expect to increase the success rate. Take advantage of the experience and knowledge of both the business and technical team members. There are significant business relationships; partnerships. Knowledge transfer requires collaboration, being committed as team members.

Lessons Learned

1. Document and Apply Lessons Learned

Lessons Learned were documented and used.

Lessons Learned were documented and used within an implemented project or program and shared and archived for future use. Document lessons learned after each phase, processes, activity and task and not just at the end of the project (post mortem). Use within current projects and for future projects and programs.

2. Management Commitment to the use of Lessons Learned

Lessons learned were identified, documented/captured and used

PMO's and/or Management encouraged and enforced the use of lessons learned for current and future programs and projects. This activity should occur after each phase/stage and at closing or projects and programs. Note: during planning a repository can be established to archive for current and future projects and programs

About the Author



Eddie R. Williams

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Eddie R. Williams, a senior business and technical program manager, has over 25 years of experience as a program and project manager for system/software engineering, business solutions, and Information Technology (IT) development and management in aerospace, DOD, and commercial IT industries. He has been a Project Manager, Sr. PM, Program Manager, and Sr. Program Manager. Mr. Williams has been a certified Project Management Professional (PMP) through the Project Management Institute since 1999. Before becoming a certified project and program manager, he held positions such as Systems and Procedures Analyst (programming and creating system/software specifications), Configuration Management Specialist and Manager, Software Product/Quality Assurance Engineer and Manager, Division Administrator/Manager (development methodologies, management and control).

He is also a coach/mentor and educator, has been a speaker at numerous conferences, and is the author of: *Software/Firmware Configuration Management (Within the System Development Process)*, *Management Control and Quality*. He also provided program management content that was published in Wiley publication, *Program Management for Improved Business Results, Second Edition, 2014*. Eddie can be contacted at <http://www.itprofessionalfacilitator.com/>.

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