Netstar Strategic Solutions Practice Development Methodology

Netstar Corporation

Abstract

This document contains a high level description of the development methodology used by the Netstar Strategic Solutions Practice for software development projects. This methodology, known as the "Practical Release Methodology", is used for projects that produce:

- Web-based products
- Intranet applications
- Systems integration
- Shrink-wrapped software

This document explains the rationale for the way in which the methodology is designed and provides a high level overview of the methodology.

This document is intended to provide senior executives that are considering an engagement with the Netstar Strategic Solutions Practice an idea of what they can expect from such an engagement.

Executive Summary

The purpose of the Practical Release Methodology is to provide a flexible framework for software development projects that can be used to deliver software on time, on budget and with the level of quality expected of business critical applications. The framework leads each software development project from initial inception through successful delivery.

The Practical Release Methodology draws from the best practices of several approaches commonly used in the IT industry. The process has been refined over the years based on the lessons learned during each project and the findings published by experts in the software development field.

Chaos vs. Control

In the early days of software development, the development process used for many projects could best be described as “chaotic”. Even today, some development teams are plagued by the unpleasant challenges of a chaotic process.

Chaotic projects have no mechanisms for defining what is to be done, when it is to be completed, how much it will cost and who will do it. Team members are usually out of touch with what the project stakeholders need and stakeholders usually have unrealistic expectations about what is to be delivered. Communication between team members is ad-hoc and efforts to coordinate activities are ineffective.

A totally chaotic project will never end. It will lurch unpredictably from false start to false start based on the most recent heated discussion with project stakeholders. The team will occasionally be able to focus on moving in one direction long enough to make some progress, but before they finish a new set of undiscovered requirements will derail their efforts and lead to expensive re-work of what they have created to date.

The software development industry avoids the problems associated with chaotic projects by creating development processes designed to help define, measure and control those efforts. This represents a significant improvement in the practice of “software engineering”. Detailed requirements analysis, project planning, system architecture and program design efforts help resolve the questions of who, what, when, where, why and how related to software development.

Unfortunately, the development methodologies used by some organizations take this emphasis on process and control to the extreme. The process becomes more important than the product. Bureaucracy develops and expands over time, building roadblocks in the form of inflexible mandates for technology standards, ineffective committees that fail to make timely decisions and approval procedures that bog down the project team. Participants in projects that fall toward the totally inflexible end of the continuum insist on getting every minute detail analyzed, prioritized, revised, diagrammed, reviewed and approved by hordes of uninterested meeting participants so that there will be absolutely no surprises and no changes. By the time the team overcomes this analysis paralysis, the landscape will shift in some way and the intended software will be out of step with what is really needed.

Software development practitioners have again begun to adapt their development methodologies. “Agile” methods are being explored to provide development teams with a process that will better support the need for flexibility. Proponents of agile methods

suggest that these processes are best suited to smaller projects where requirements are very volatile. These projects have the greatest need for the ability to adapt to change. Because they have smaller teams, the expense of formal means of communication such as detailed documentation and meetings with numerous participants is not justified.

The real value in the growing popularity of agile methods may not be in the details of the methodologies themselves, but in the recognition that not all projects are the same and, therefore, development processes should be flexible enough to adapt to the circumstances that make each project unique. The trick is to strike the proper balance between the planning and control required to avoid the chaos of an undisciplined approach, and the rigidity and bureaucracy that can arise when control is taken to the extreme.

Guiding Principles of the Practical Release Methodology

The Practical Release Methodology balances the benefits of the predictable approach of more traditional methodologies against the flexibility of newer "agile" project management techniques. This approach helps Netstar avoid the analysis paralysis, bureaucratic roadblocks and inability to adapt to change that are sometimes experienced with the more traditional methodologies while providing a stable framework that can be used for planning and forecasting.

The reason Netstar is able to take advantage of the best practices of the project management discipline is Netstar's recognition that:

- Projects will surely fail unless proper controls are put in place to define, measure and regulate the scope, cost, schedule, quality and risks associated with the effort.
- Communication with project participants, stakeholders and sponsors is critical for:
    - Understanding what is required for a project and setting proper expectations.
    - Coordination of all efforts directed at implementing the project.
    - Obtaining and maintaining support for the project.
- Projects change over time. The magnitude of change will increase with the duration of the effort.
    - Plan for change and be prepared to support it. Reacting to change is key to ensuring that the project truly meets client needs.
    - Delivering large, complex systems in short, phased releases is better than a single deliverable that takes a long time to complete.
- The product is more important than the process. The only meaningful measurement of success is that the client is satisfied with the software at the end of the project. If the client is not satisfied, no one will care if the forms were filled out properly and the committees all gave their approval.
- Keep things simple.
    - Try to avoid doing things that do not have to be done.
    - Try to approach large, complex problems as a series of small projects with short delivery time frames.
    - When in doubt, err on the side of the simpler/faster/cheaper alternative.
    - Keep meetings as short as possible and justify the attendance of each participant. Have one person represent the interests of multiple groups whenever possible.

What is the Practical Release Methodology?

The Practical Release Methodology consists of a set of tools that support the project team in their efforts throughout the project. The leadership, individual contributors and

stakeholders involved in an engagement will use this methodology to guide the project through the Initiation, Planning, Construction, Testing, Delivery and Completion stages. These tools include:

- Definitions for the roles that project participants must fill during the course of the project. These definitions are critical in helping identify the individual that is responsible for completing each task.
- Documents that define the tasks that must be completed during each stage of a software development project to ensure that no task is overlooked.
- Documents that provide standardized guidelines and techniques for estimating, planning, scheduling, tracking and reporting on the activities of the project team.
- Standard document templates for cost and schedule estimation, requirements specification, project scheduling, status reporting, risk analysis and change management that support a repeatable, self-optimizing process.
- Standards for coding, automated test scripting and documentation to ensure quality and consistency from project to project.
- Processes for using software packages for requirements management, software architecture and design, defect tracking, communication, source code management and automated regression and load testing.
- Procedures for managing external development partners or using third party software packages in development projects.

An important strength of the Practical Release Methodology is that it scales with the magnitude of the project. One of the initial tasks for the project leadership team will be to analyze the project to see how best to apply the Practical Release Methodology. Some tasks defined in the methodology may not apply to the project. For example, there will be no need to create an installation program to deploy client software on end user computers if the project involves building a web-based application. Netstar will provide project managers, technical experts and business analysts that have extensive experience using this methodology to complete projects scaling from small, short-term efforts to large projects covering several releases of a software product.

Roles of Project Participants

A clear understanding of the roles of the individuals involved in a project is a critical success factor for each project. When participants are confused about their responsibilities and the responsibilities of other contributors, tasks may not be completed in a timely manner (or at all); critical decisions may be delayed because issues may not be escalated to the proper decision makers; and participants will not feel an appropriate sense of ownership for the effort. The result of this confusion is a measurable increase in the risk that the project will fail.

The Practical Release Methodology directs the project team to eliminate this confusion. Each project participant will understand his or her role and the tasks for which they are responsible. Each participant will also understand the roles and responsibilities of other participants.

Project Leadership

The leadership team for a project consists of those individuals that are responsible for ensuring that the project is a success. The leadership team will direct the efforts of the individual contributors that will perform the detailed tasks associated with creating the desired work products such as software and documentation. The leadership team will include representatives from Netstar and from the client. The coordinated efforts of the

leadership team to support each other and all project participants in completing their tasks will be a major contributing factor to the success of each project.

Netstar representatives of the leadership team include the project leader, business analyst and technical lead. The client will be asked to appoint individuals to act as the executive sponsor, primary contact and subject matter expert for the project. In some cases, a single person can fill more than one role. This is more likely with a smaller project as opposed to a larger effort.

Netstar Project Manager

The Project Management Institute defines project management as "the application of knowledge, skills, tools and techniques to a broad range of activities in order to meet the requirements of a particular project". Netstar uses a project management approach wherein experienced, professional project managers are provided the tools they need and follow a standard methodology that leads to success.

Netstar recognizes that project management is a unique discipline that requires proper training and experience. Industry literature supports this assertion, showing that initiatives that are led by inexperienced or poorly trained managers have a much higher failure rate than those led by professional project managers. The broad scope of responsibility assigned to the project manager clearly illustrates the importance of having a skilled professional fill this role. Netstar uses only professional project managers that have the training, tools and experience required to be successful.

The responsibilities of the project manager include:

- Ensure that the resources allocated to a project are used in an effective and efficient manner.
- Prepare a detailed Project Plan that describes the tasks, schedule, major milestones and risks for the project.
- Work with team members to provide all cost estimates, project plans and milestone information to be included in the Project Plan.
- Follow a well-defined approach that helps identify risks that threaten the success of a project as early as possible and helps mitigate those risks to eliminate or greatly reduce their impact on the project.
- Facilitate communication with the team members participating in the project and with senior executives responsible for ensuring that the client's IT budget helps drive business results.
- Ensure that after the work is planned, the team follows the plan and delivers all work products as required to make the project a success.
- Act as the client's primary contact for all matters related to the Project.
- Hold regular status meetings (usually on a weekly basis) to track and report on the progress of the project.
- Publish regular reports that:
  - Describe progress against the schedule and budget forecast set forth in the Project Plan.
  - Track issues that must be closed if the project is to be successful.
  - Track changes to the original Requirements Specification and Project Plan that have been incorporated into the project, rejected or deferred.
  - Track acceptance of the work products delivered to the client.

Netstar Business Analyst

Netstar business analysts provide a bridge between those that supply the vision and strategic direction for the client's organization and those that will create the software that will be instrumental in helping the client achieve those objectives. This can be a difficult task in that it requires the ability to understand problems from a business perspective while staying in touch with the technical issues that may arise while devising an effective solution. Netstar analysts are experts at translating business needs into specific, complete, correct, necessary and feasible requirements statements that technicians can understand and implement.

The responsibilities of the business analyst include:

- Work with the client to gain an understanding of the problem that the software needs to solve.
- Work with the project stakeholders, executive sponsor and subject matter experts to help them discover the requirements for software that will solve the problem and document those requirements in a Requirements Specification for the project team.
- Ensure that the solution will be an effective one that meets the needs of the user community and is consistent with the vision and strategic objectives of the client.
- Work with other team members to ensure that all Netstar participants have the information required to understand the project and to provide accurate estimates and project schedules.
- Act as the Netstar subject matter expert for the project, providing guidance to the project team on what must be done to create an effective solution for the problem.
- Work with all project participants to help the project team deliver software that is consistent with the intended solution described in the Requirements Specification.
- Provide training to the client at the end of the project. The experienced gained while working with the client to understand the problem and define the solution will be of tremendous benefit to the analyst as they help the client prepare to use and support the software. Adequate training is essential to ensure that the software is used effectively to achieve the client's business objectives.

Netstar Technical Lead

Netstar technical leads have extensive experience with software development using a variety of different technologies. Technical leads know the advantages and disadvantages of all major technology tools and platforms. The technical lead will have the expertise and experience necessary to identify the proper technical approach for each project.

The responsibilities of the technical lead include:

- Act as architect and designer for the software.
- Provide technical leadership to those individual contributors that will create, test and document the software.
- Ensure that the software is written in an efficient manner and that proper standards are followed for coding, testing and documentation.
- Provide technical guidance to the business analyst to ensure that the solution described in the Requirements Specification is feasible and cost effective.
- Work with the leadership team to provide cost and schedule estimates for the project.
- Work with technical contacts identified by the client to ensure that they are comfortable with the software being created during the project.

Executive Sponsor

The executive sponsor for a project is the final decision maker for the client. This person is usually given responsibility for the success of the project within the client organization. The executive sponsor will provide guidance and information that will be critical to the project team, especially during the project Planning stage. This person must remain engaged and interested in the project throughout the effort. There will not be a major time commitment to the project for the executive sponsor, but this individual must be available and responsive when needed. This person will:

- Identify the ways in which the project supports the strategic objectives for the client.
- Obtain and maintain support for the project within the client's organization. This includes support from project stakeholders as well as from the client's executive management team.
- Obtain commitment for the project budget and schedule from the client's organization.
- Provide the "final answer" for second level issue escalation.
- Provide final acceptance for delivery at each project milestone.

Primary Contact

The primary contact will help the Netstar project manager lead the project within the client's organization. The primary contact will:

- Help the project team obtain access to client personnel and resources as needed throughout the project.
- Assist the project manager in keeping the executive sponsor and project stakeholders informed on the status of the project. The primary contact will be asked to participate in regular status meetings, usually on a weekly basis.
- Help the project manager schedule meetings with participants from the client's organization.
- Escalate issues for resolution within the client's organization.
- Help manage the scope of the project.
- Encourage client participants to become and remain involved in the project as appropriate.
- Help manage risks that threaten the success of the project.

Subject Matter Expert

Subject matter experts are the individuals that are intimately familiar with the problem that must be solved. They will be key resources to help define the desired solution. The client will be asked to identify one or more individuals to fill this role. These participants will work closely with the business analyst to help define the problem and the solution in the Requirements Specification.

Project Stakeholders

Project stakeholders are the representatives from the groups within the client's organization that will be affected by the release of the software product produced by the project. Examples of these groups include intended end users of the product; administrators of those end users; product support personnel; systems, network and database support personnel; and any groups associated with companion products that share the same infrastructure or that interact with the new software product in some way.

The client will be asked to identify an individual from each group that can represent the interests of that group to the project team. The representative should be a senior

member of the group that is capable of speaking on behalf of the group and making commitments for the group.

The degree of involvement by project stakeholders will vary dramatically with each project based on the degree to which their group is affected by the effort. At minimum, all stakeholders will be informed of the project and kept up to date on its progress. They will be invited to status meetings and requirement reviews. They will receive status reports.

Some projects will only have a minimal impact on a particular group. Some groups will only be affected by the project at particular points in the process. In such cases, the stakeholder will not, and should not, devote a tremendous amount of effort toward the project. That would be a waste of time for the stakeholder and a waste of time for the project team.

If, however, a project will have a significant impact on a group, that stakeholder should be actively involved starting with requirements gathering activities and remaining engaged throughout the project. Stakeholders that have a substantial interest in the project will be considered required attendees at all meetings where requirements are gathered and project status is discussed.

Project Stages

Each project is divided into six stages, Initiation, Planning, Construction, Testing, Delivery and Completion. Each task that must be performed for a project is associated with one of these stages. This section of the document describes the stages for each project and the main tasks that must be performed during each stage.

The Practical Release Methodology begins by helping the leadership team for a project make the proper decisions on how the effort should proceed. This includes reviewing the characteristics that make the project unique and tailoring the Practical Release Methodology to effectively and efficiently deliver the desired software.

These individuals must agree on the goals and approach for the project. They must actively support each other and help lead the project team in a coordinated manner to achieve the project's objectives. The initial tasks in the Initiation and Planning stages of the process ensure that:

- The project is aligned with the strategic objectives of the client.
- The leadership team for the project has realistic expectations for the cost, schedule and scope of the project.
- Project stakeholders and executive sponsors are committed to the project and support its objectives.
- A change request process and budget are in place and agreed upon by the leadership team for the project so that the team can react to the unexpected.
- A process is in place to communicate with the team and all project stakeholders. This process will be used to publish project status information, identify and resolve issues in a timely manner and keep project participants working as a team toward the objectives of the project.
- The leadership team for the project agrees on the high level tasks that must be performed to complete the project.

As the project moves through the Initiation, Planning, Construction, Testing, Delivery and Completion stages, the Practical Release Methodology also ensures that:

- The work products for the project are defined well enough that all participants understand what must be delivered.
- Project milestones are established to measure progress of the project toward completion and to track performance against the budget forecast.
- Quality assurance and customer acceptance testing requirements are clear to all participants.
- Adequate resources will be available when needed so that the project will not be delayed. This includes personnel, equipment, software licenses and any other resource required to complete the effort.
- The resources allocated to the project are used in an effective and efficient manner.
- Risks that threaten the success of a project are identified as early as possible so that plans to help mitigate those risks can be devised to eliminate or greatly reduce their impact on the project.
- The test plan for the project will ensure that all of the requirements listed in the Requirements Specification are tested and that they perform as defined. All tests will tie back to specific requirements and all requirements will have a specific test case that proves the software functions properly.
- A defect tracking tool will be used to facilitate all discussions and activities related to defect repair. This tool will be used to track issues reported internally during unit and integration testing as well as issues reported by the client during client acceptance testing.
- A source code management tool will be used to store all source code and all documents related to the project in a central location. Source code will be backed up on a regular basis to ensure that work is not lost if there is a disk failure in the source code repository.
- Formal librarian procedures are used to promote software from the development environment into a clean integration test environment and ultimately into the production environment. These procedures are intended to ensure that the software is installed properly and that there will be no adverse affects on the production environment because of the installation.
- Training is provided to end users, the client's end user support personnel, the client's internal IT staff, the staff of the client's hosting vendor and the client's internal training staff. Training will be especially important for projects where clients will assume full support for the software at the end of the engagement. The client's internal staff must be self sufficient in supporting the operation and maintenance of the software.
- The client is satisfied with the work products delivered during the project.

Each project progresses through the following stages.

Initiation: During the Initiation stage of the project, Netstar will work with the client to provide a Preliminary Estimate for the project. The goal of the Preliminary Estimate is to ensure that the project is aligned with the strategic objectives of the client and to provide a high level estimate of the cost and schedule for the project.

Planning: The Planning stage of the project will result in the creation of a detailed Requirements Specification and Project Plan for the project. The Requirements Specification and Project Plan will define what will happen for all of the remaining stages of the project. These two documents will provide details on what will be done, why it is needed, when it will be done, what it will cost and who will perform each task.

Construction: The Construction stage of the project will include the design, coding and documentation tasks for the project. Test plans with detailed test cases and any required training materials will be created during this stage of the project.

Testing: The Testing stage will cover the unit, integration and client acceptance testing activities for the project. This will include a detailed review of all documentation and

training materials to ensure that they accurately reflect the software that will be delivered to the client.

Delivery: The Delivery stage will cover the training of those that will use or support the software, the installation of the software into production and the warranty period as defined in the requirements for the project. All source code, test scripts, documentation and training materials will be provided to the client during this stage of the project.

Completion: The Completion stage of the project includes a project review performed with the client. The goal for this review is to identify those tasks where Netstar did well and those tasks where Netstar could have done better. The Practical Release Methodology becomes a self-optimizing one because of these engagement reviews. The lessons learned from each project help improve the process for subsequent projects.

Conclusion

The Practical Release Methodology used by the Netstar Strategic Solutions Practice helps clients reach their business objectives by successfully completing software development projects. The process allows Netstar to avoid the problems that can cause projects to fail. Emphasis is placed on planning and communication to ensure that problems are identified and prevented before they derail the project. A repeatable, self-optimizing process is used for each project to ensure that all important tasks are performed and that the experience gained during each project can be applied to future endeavors.

The Practical Release Methodology is designed to scale from small projects to large ones. It is designed to be configured to the special needs of each project, striking the proper balance between control and rigidity while avoiding bureaucracy and analysis paralysis.