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AppTheory

Solution Framework

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AppTheory Solution Framework

The AppTheory Solution Framework (ASF) is the development process and methodology utilized by AppTheory.

This document is a summarized presentation of the ASF. Depending on the scope of the project, elements may be combined or extrapolated to accommodate different client and project needs.

Introduction

A ASF project is best described by its Lifecycle and its Functional Roles:

1. *Life Cycle*

- a. Envisioning
- b. Planning
- c. Developing
- d. Stabilizing
- e. Deploying

2. *Functional Roles*

- a. Program Management
- b. Product Management
- c. User Experience
- d. Development
- e. Test
- f. Release Management

Every AppTheory project will follow this lifecycle and have team members to represent these roles.

The Functional Project Team Roles

The following roles are present in every project. On a smaller project, multiple roles may be filled by a single team member. On a larger project roles may be split with multiple members comprising a single role.

Certain roles are almost always separated such as Product Management and Program Management.

Program Management Role

The focus of the Program Management Role is to meet the goal of delivering the solution within project constraints. This can be viewed as ensuring that the project sponsor is satisfied with the outcome of the project. To meet this goal, Program Management owns and drives the schedule, the feature set, and the budget for the project. Program Management ensures that the right solution is delivered at the right time and that the project sponsor's expectations are understood and managed throughout the project.

Program Management Role Functional Areas:

Project Management

- Track and manage budget.
- Manage master project schedule.
- Drive risk management process.
- Facilitate communication and negotiation within the team.
- Track progress and managing project status reporting.
- Manage resource allocation.

Solution Architecture

- Drive overall solution design.
- Manage the functional specification.
- Manage the solution scope and critical trade-off decisions.

Process Assurance

- Drive process quality assurance.
- Define and recommend improvements.

Administrative Services

- Implement the project management processes and support the team leads in using them.
- Provide a range of administrative services to support efficient team work.

Product Management Role

The key goal of the Product Management Role is satisfied customers. Projects must meet the needs of customers in order to be successful. However, first the customer must be clearly identified and understood. In some cases the customer requesting a solution or set of features may be different from the sponsor who is paying or supporting effort. Thus there must be a clear distinction and requirements analysis for the success factors for both parties. Only then can the responsibilities of setting and meeting the expectations be assigned to the appropriate function areas. It is possible to meet budget and time goals but still be unsuccessful if customer and business needs have not been met. To achieve the goal of satisfied customers, the Product Management Role requires several functional areas: product planning, business value, advocacy, and marketing.

Product Management Role Functional Areas:

Marketing

- Drive marketing and public relations messages that have an impact on the target customer.
- Be highly differentiated so the solution stands out from the competition.
- Place the solution into distribution so that the target customer can easily acquire it.
- Provide support so that customers have a positive experience buying and using the solution.

Business Value

- Define and maintain the business justification for the project.
- Define and measure the business value realization and metrics.

Customer Advocacy

- Drive a shared project and solution vision.
- Manage customer expectations and communications.

Product Planning

- Gather, analyze and prioritize customer and business requirements.
- Perform market research, market demand, competitive intelligence/analysis.
- Determine business metrics and success criteria.
- Identify multi-version release plan.

Development Role

The “build to specification” goal is the focus for the Development Role during a ASF project. To succeed in meeting its quality goal, the role of Development is to build a solution that meets the customer’s expectations and specifications as expressed in the functional specification. Development adheres to the solution architecture and designs that, together with the functional specification, form the overall specifications of the solution.

In addition to being the solution builders, Development serves the team as the technology consultant. As technology consultant, Development provides input into design and technology selection decisions, as well as constructing functional prototypes to validate decision-making and mitigate development risks.

As builders, Development provides low-level solution and feature design, estimates the effort required to deliver on that design, and then builds the solution. Development estimates its own effort and schedule because it works daily with all developmental contingency factors. This concept is referred to as bottom-up estimating. Its goal is to achieve a higher quality of schedule and to increase accountability of those providing the estimates and of their work performance.

Development Role Functional Areas:

Technology Consulting

- Serve the team as a technology consultant.

- Evaluate and validate technologies.
- Participate actively in the creation and review of the functional specification.
- Contribute to defining development standards for the organization.

Implementation Architecture and Design

- Map the Enterprise Architecture (EA) to the solution's implementation architecture by providing solution-specific detail for application, data, and technology views of the architecture.
- Own and implement the logical and physical designs of the solution.

Application Development

- Code features to meet the design specifications.
- Conduct code reviews during development to share knowledge and experience.
- Carry out unit testing as defined in the test plan with the support of the test role.

Infrastructure Development

- Develop features that meet the design specifications.
- Conduct code reviews during development to share knowledge and experience.
- Carry out unit testing as defined in the test plan with the support of the test role.
- Develop scripts for automated deployment.
- Develop deployment documentation.

Test Role

The goal of the Test Role is to approve for release only after all product quality issues are identified and addressed. All software is delivered with defects. A key goal is to ensure those defects are identified and addressed prior to releasing the product. Addressing can involve everything from fixing the defect in question to documenting work-around solutions. Delivering a known defect that has been addressed along with a work-around solution is preferable to delivering a product containing unidentified defects that may surprise the team and customer later.

Test Role Functional Areas:

Test Planning

- Develop testing approach and plan.
- Participate in setting the quality bar.
- Develop test specification.

Test Engineering

- Develop and maintain automated test cases, tools and scripts.
- Conduct tests to accurately determine the status of product development.
- Manage the build process.

Test Reporting

- Provide the team with data related to product quality.
- Track all bugs and communicate issues to ensure their resolution before product release.

User Experience Role

The goal of the User Experience Role is enhanced user effectiveness. User Experience is comprised of six functional areas: accessibility, internationalization, user advocacy, training/support material, usability research and testing, and user interface design. The User Experience team acts as an advocate between the user and the entire project team.

User Experience Functional Areas:

Accessibility

- Drive accessibility concepts and requirements into design.

Internationalization

- Improve the quality and usability of the solution in international markets.

User Advocacy

- Act as the user advocate to the project team.

Training/Support Material

- Design and develop documentation for support systems (Help desk manuals, KB articles, and more).
- Document Help/assistance.
- Develop and execute learning strategy (build/buy/deliver).

Usability Research and Testing

- Gather, analyze, and prioritize user requirements.
- Provide feedback and input to solution design.
- Develop usage scenarios and use cases.

User Interface Design

- Drive user interface design.

Release Management Role

The goal of the Release Management Role is smooth deployment and ongoing operations. Release Management is the role that directly involves operations on the ASF team. It includes the following functional areas of responsibility:

- Acts as primary advocate between project development and operations groups
- Manages tool selection for release activities and drives optimizing automation
- Sets operational criteria for release to production
- Participates in design, focusing on manageability, supportability, and deployability
- Drives training for operations
- Drives and sets up support for pilot deployment(s)
- Plans and manages solution deployment into production
- Ensures that stabilization measurements meet acceptance criteria

Release Management Functional Areas:

Infrastructure

- Enterprise infrastructure planning.
- Coordinate physical environment use and planning across geographies (data centers, labs, field offices).
- Provide the team with policies and procedures for consistent infrastructure management and standards.
- Provide infrastructure services to the ASF team (building servers, standard images, installing software).
- Manage hardware/software procurement for the team.
- Build test and staging environments that accurately mirror production environments.

Support

- Provide primary liaison and customer service to the IT users.
- Support the business by managing the SLA with the customer and ensuring commitments are met.
- Provide incident and problem resolution; rapid response to user requests and logged incidents.
- Give feedback to development and design team.
- Develop failover and recovery procedures.

Operations

- Account and system setup controls; manage user accounts and permissions
- Messaging, database, telecom operations; network operations
- Systems administration, batch processing
- Firewall management; security administration
- Application services
- Host integration services
- Directory service operations

Logistics

- Provide logistics management support to the team.
- Procure and set up equipment needed for development and testing.
- Procure software needed for development and testing.
- Manage network connectivity needs for the team.

Release Management

- Licensing management
- Packaging and Deployment

The Project Lifecycle

Envisioning

Overview

The envisioning phase addresses one of the most fundamental requirements for project success—unification of the project team behind a common vision. The team must have a clear vision of what it wants to accomplish for the customer and be able to state it in terms that will motivate the entire team and the customer. Envisioning, by creating a high-level view of the project's goals and constraints, can serve as an early form of planning; it sets the stage for the more formal planning process that will take place during the project's planning phase.

The primary activities accomplished during envisioning are the formation of the core team (described below) and the preparation and delivery of a vision/scope document. The delineation of the project vision and the identification of the project scope are distinct activities; both are required for a successful project. Vision is an unbounded view of what a solution may be. Scope identifies the part(s) of the vision can be accomplished within the project constraints.

Risk management is a recurring process that continues throughout the project. During the envisioning phase, the team prepares a risk document and presents the top risks along with the vision/scope document.

During the envisioning phase, business requirements must be identified and analyzed. These are refined more rigorously during the planning phase.

The primary team role driving the envisioning phase is the product management role.

Vision/Scope Approved Milestone

The vision/scope approved milestone culminates the envisioning phase. At this point, the project team and the customer have agreed on the overall direction for the project, as well as which features the solution will and will not include, and a general timetable for delivery.

Deliverables

The deliverables for the envisioning phase are:

- Vision/scope document.
- Risk assessment document.
- Project structure document.

Team Focus during the Envisioning Phase

The following table describes the focus and responsibility areas of each team role during the envisioning phase.

Role	Focus
Product Management	Overall goals; identify customer needs, requirements; vision/scope document
Program Management	Design goals; solution concept; project structure
Development	Prototypes; development and technology options; feasibility analysis
User Experience	User performance needs and implications
Testing	Testing strategies; testing acceptance criteria; implications
Release Management	Deployment implications; operations management and supportability; operational acceptance criteria

Planning

Overview

The planning phase is when the bulk of the planning for the project is completed. During this phase the team prepares the functional specification, works through the design process, and prepares work plans, cost estimates, and schedules for the various deliverables.

Early in the planning phase, the team analyzes and documents requirements in a list or tool. Requirements fall into four broad categories: business requirements, user requirements, operational requirements, and system requirements (those of the solution itself). As the team moves on to design the solution and create the functional specifications, it is important to maintain traceability between requirements and features. Traceability does not have to be on a one to one basis. Maintaining traceability serves as one way to check the correctness of design and to verify that the design meets the goals and requirements of the solution.

The design process gives the team a systematic way to work from abstract concepts down to specific technical detail. This begins with a systematic analysis of user profiles (also called "personas") which describe various types of users and their job functions (operations staff are users too). Much of this is often done

during the envisioning phase. These are broken into a series of usage scenarios, where a particular type of user is attempting to complete a type of activity, such as front desk registration in a hotel or administering user passwords for a system administrator. Finally, each usage scenario is broken into a specific sequence of tasks, known as use cases, which the user performs to complete that activity. This is called "story-boarding."

There are three levels in the design process: conceptual design, logical design, and physical design. Each level is completed and baselined in a staggered sequence.

The results of the design process are documented in the functional specification(s). The functional specification describes in detail how each feature is to look and behave. It also describes the architecture and the design for all the features.

The functional specification serves multiple purposes, such as:

- Instructions to developers on what to build.
- Basis for estimating work.
- Agreement with customer on exactly what will be built.
- Point of synchronization for the whole team.

Once the functional spec is baselined, detailed planning can begin. Each team lead prepares a plan or plans for the deliverables that pertain to their role and participates in team planning sessions. Examples of such plans include a deployment plan, a test plan, an operations plan, a security plan, and/or a training plan. As a group, the team reviews and identifies dependencies among the plans.

All plans are synchronized and presented together as the master project plan, not to be confused with the Microsoft Project .mpp file. The number and types of subsidiary plans included in the master project plan will vary depending on the scope and type of project.

Team members representing each role generate time estimates and schedules for deliverables. The various schedules are then synchronized and integrated into a master project schedule.

At the culmination of the planning phase—the project plans approved milestone—customers and team members have agreed in detail on what is to be delivered and when. At the project plans approved milestone, the team re-assesses risk, updates priorities, and finalizes estimates for resources and schedule.

Project Plans Approved

At the project plans approved milestone, the project team and key project stakeholders agree that interim milestones have been met, that due dates are realistic, that project roles and responsibilities are well defined, and that

mechanisms are in place for addressing areas of project risk. The functional specifications, master project plan, and master project schedule provide the basis for making future trade-off decisions.

After the team approves the specifications, plans, and schedules, the documents become the project baseline. The baseline takes into account the various decisions that are reached by consensus by applying the three project planning variables: resources, schedule, and features. After the baseline is completed and approved, the team transitions to the developing phase.

After the team defines a baseline, it is placed under change control. This does not mean that all decisions reached in the planning phase are final. But it does mean that as work progresses in the developing phase, the team should review and approve any suggested changes to the baseline.

Deliverables

The following deliverables are produced during the planning phase:

- Functional specification
- Risk management plan
- Master project plan and master project schedule

Team Focus during Planning

The following table describes the focus and responsibility areas of each team role during planning.

Role	Focus
Product Management	Conceptual design; business requirements analysis; communications plan
Program Management	Conceptual and logical design; functional specification; master project plan and master project schedule, budget
Development	Technology evaluation; logical and physical design; development plan/schedule; development estimates
User Experience	Usage scenarios/use cases, user requirements, localization/accessibility requirements; user documentation/training plan/schedule for usability testing, user documentation, training
Testing	Design evaluation; testing requirements; test plan/schedule
Release Management	Design evaluation; operations requirements; pilot and deployment plan/schedule

Developing

Overview

During the developing phase the team accomplishes most of the building of solution components (documentation as well as code). However, some development work may continue into the stabilization phase in response to testing.

The developing phase involves more than code development and software developers. The infrastructure is also developed during this phase and all roles are active in building and testing deliverables.

Scope Complete Milestone

The developing phase culminates in the scope complete milestone. At this milestone, all features are complete and the solution is ready for external testing and stabilization. This milestone is the opportunity for customers and users, operations and support personnel, and key project stakeholders to evaluate the solution and identify any remaining issues that must be addressed before the solution is released.

Deliverables

The deliverables of the developing phase are:

- Source code and executables
- Installation scripts and configuration settings for deployment
- Frozen functional specification
- Performance support elements
- Test specifications and test cases

Team Focus during Developing

The following table describes the focus and responsibility areas of each team role during developing.

Role	Focus
Product Management	Customer expectations
Program Management	Functional specification management; project tracking; updating plans
Development	Code development; infrastructure development; configuration documentation
User Experience	Training; updated training plan; usability testing; graphic design
Testing	Functional testing; issues identification; documentation testing; updated test plan
Release Management	Rollout checklists, updated rollout and pilot plans; site preparation checklists

Stabilizing

Overview

The stabilizing phase conducts testing on a solution whose features are complete. Testing during this phase emphasizes usage and operation under realistic environmental conditions. The team focuses on resolving and triaging (prioritizing) bugs and preparing the solution for release.

Early during this phase it is common for testing to report bugs at a rate faster than developers can fix them. There is no way to tell how many bugs there will be or how long it will take to fix them. There are, however, a couple of statistical signposts known as bug convergence and zero-bug bounce that helps the team project when the solution will reach stability. These signposts are described below.

Once a build has been deemed stable enough to be a release candidate, the solution is deployed to a pilot group.

The stabilizing phase culminates in the release readiness milestone. Once reviewed and approved, the solution is ready for full deployment to the live production environment.

Release Readiness Milestone

The release readiness milestone occurs at the point when the team has addressed all outstanding issues and has released the solution or placed it in service. At the release milestone, responsibility for ongoing management and support of the solution officially transfers from the project team to the operations and support teams.

Deliverables

The deliverables of the stabilizing phase are:

- Golden release
- Release notes
- Performance support elements
- Test results and testing tools
- Source code and executables
- Project documents
- Milestone review

Team Focus during Stabilizing

The following describes the focus and responsibility areas of each team role during the stabilizing phase.

Role	Focus
Product Management	Communications plan execution; launch planning
Program Management	Project tracking; bug triage
Development	Bug resolution; code optimization
User Experience	Stabilization of user performance materials; training materials
Testing	Testing; bug reporting and status; configuration testing
Release Management	Pilot setup and support; deployment planning; operations and support training

Deploying

Overview

During this phase, the team deploys the core technology and site components, stabilizes the deployment, transitions the project to operations and support, and obtains final customer approval of the project. After the deployment, the team conducts a project review and a customer saASFaction survey.

Stabilizing activities may continue during this period as the project components are transferred from a test environment to a production environment.

Deployment Complete Milestone

The deployment complete milestone culminates the deploying phase. By this time, the deployed solution should be providing the expected business value to the customer and the team should have effectively terminated the processes and activities it employed to reach this goal.

The customer must agree that the team has met its objectives before it can declare the solution to be in production and close out the project. This requires a stable solution, as well as clearly stated success criteria. In order for the solution to be considered stable, appropriate operations and support systems must be in place.

Deliverables

Deliverables include:

- Operation and support information systems
- Procedures and processes
- Knowledge base, reports, logbooks
- Documentation repository for all versions of documents, load sets, and code developed during the project
- Project close-out report

- Final versions of all project documents
- Customer/user satisfaction data
- Definition of next steps

Team Focus during Deploying

The following describes the focus and responsibility areas of each team role during the deploying phase.

Role	Focus
Product Management	Customer feedback, assessment, sign-off
Program Management	Solution/scope comparison; stabilization management
Development	Problem resolution; escalation support
User Experience	Training; training schedule management
Testing	Performance testing; problem
Release Management	Site deployment management; change approval