

SECTION 6 – RAPID APPLICATION DEVELOPMENT METHOD

A. RAD

Rapid application development (RAD) integrates project management techniques, development techniques, users and tools to build quality application systems in a fixed time frame to deliver business value. Rapid development combines very focused teams working in a highly structured environment. A rapid development team consists of between three and seven people focused on creating a specific application from a prioritized and fixed set of requirements. Certain types of applications lend themselves to this development approach. See RAD criteria to determine project applicability.

Rapid development is a focused process in which the conceptual requirements of the application are fed into construction iterations. The construction iterations occur within a fixed timebox that regulates the resources that can be expended during the iterations. The iterations ultimately result in the system that is rolled out to the production sites.

Rapid development consists of three stages and a management layer which support the application development process from project planning through roll-out. An iterative development approach is applied to construction activities with extensive use of evolutionary prototyping. Joint Application Development (JAD) is used to collect and prioritize application requirements. (See Reference VI.D.3 for an expanded discussion about JAD.)

The Manage layer in rapid development is responsible for project organization, project management and scope control. This layer also covers the management of the project's business case. Activities in the Manage layer are used to oversee rapid development's core process activities, including establishing the project team, the scope and organization of the construction process, and the conversion and roll out plans. Techniques related to timeboxing and construction iterations are found in this stage.

General steps in the manage project and business case task include:

- Organize RAD project, confirming the project's overall scope and objectives, establishing executive sponsorship, establishing the initial business case, identifying and classifying appropriate user characteristics and types, identifying appropriate user and IS personnel for the rapid development team, and obtaining commitments for their involvement, establishing a work plan for rapid development activities, and orienting the rapid development team and initiating the project.
- Manage project analysis.
- Establish "Timebox" iterations by determining the overall scope of the project based on the requirements, selecting an organizational approach for the construction iterations, determining the scope and objective of each iteration, defining the testing approach for each iteration, confirming the overall approach and scope with the sponsor and project team, and determining the migration approach.
- Manage project construction by identifying and resolving issues, communicating status to executive sponsor, coordinating project team use of IS resources and personnel, and assessing the progress of the project team against the work program.
- Plan and manage the project roll-out by organizing roll-out and training activities, identifying and resolving issues, communicating status to executive sponsors, and coordinating project team use of IS resources and personnel

B. Analyze

Identifying the users business needs, the related requirements and the priorities of those requirements is the primary objective of the Analyze stage. This stage includes tasks and techniques related to identifying and prioritizing system requirements that define the scope and functionality of the system. Joint Application Development (JAD) supports the requirements definition activities in this stage.

General steps to conduct the analysis task include:

- Creating an Event Model (See the “Events Analysis” section” of the SMALL PROJECT SDLC.)
- Identifying User Requirements (See the “User Requirements Analysis” section of the SMALL PROJECT SDLC.)
- Prototyping Business Process (See the “Business Process Prototyping” section of the SMALL PROJECT SDLC.)
- Creating a Data Model Process (See the “Data Analysis” section of the SMALL PROJECT SDLC.)
- Creating a Process Model (i.e. to complete the internal behavior of the application in response to business transactions and events) by selecting the process modeling approach (i.e. Data Flow Diagramming, Business Function Decomposition and Elementary Process Description), developing the process model, verifying the completeness of the process model (e.g. relative to the requirements, relative to the data and event models) and validating the process model with users. The process model forms the basis for the design of application code.

C. Construct

Rapid development uses an iterative approach to the design, build and test activities in the Construct stage. These iterations, managed through a timebox, give the project team the flexibility needed to implement the system in increments rather than in a single effort. The construction process supports the implementation of the requirements according to their value or risk and incorporating user comments and requirements into the system.

The general construct tasks include:

- User Interface design: The user interface should support the business processes. It incorporates the design of the components visible to the user: systems windows, reports and forms. In rapid development, the user interface design should use feedback generated from the business process prototype.
- Messaging and processing flow design: In this stage, one designs internal program, program-to-program, and file-generation and maintenance controls, identifies additional programs required for ancillary processes, and documents resulting processing flow. This is an iterative process.
- Database design: The rapid development teams use of existing database management systems is assumed as one of the entry criteria for this development approach. Existing technical architecture components like the DBMS and existing production databases, in addition to the highly focused project scope manages the breadth of the database design. These factors support condensing the logical and physical data base design into this single task.
- Data and process network distribution design: Data and process distribution are primary concerns associated with developing client/server and other forms of distributed systems. Of course, you

would omit this task if you are developing systems whose data and process will be centrally located, such as host based systems.

- Generate and code work units: To execute this step review the specifications, generate program components including completion of the programming work units, documentation of potential test conditions, conduct unit-testing routines, compile until correct, and perform design or peer and user reviews. Iterate as necessary. Rapid developments use of existing technical architectures and development environments are intended to reduce the complexity and risk associated with coding and generation. The rapid development team should seek to leverage the capabilities of the application development environment and the application architecture in order to focus their efforts on correctly implementing the requirements.

D. Roll Out

The Roll Out stage follows the completion of the construction effort. It includes creating procedures, training the users and converting the application into production.

The general roll-out tasks include:

- Identification of procedures and development of operations manuals.
- Development of training materials, train instructors, and conduct training sessions as needed.
- To verify that programs in the new system communicate properly with one another, prepare testing plans, execute test cycles, verify results, make changes and retest as necessary, and obtain sign-off.
- To transfer the system to operational status, prepare conversion plan verifying prerequisites and resources are in place, reviewing plan with conversion team, resolving open issues, converting files, verify results, and set up transfer support group to remove the old system and transfer responsibility.
- Finally, monitor progress recording variances from design, documenting, reviewing and implementing change requests.

End of Section 6