North Carolina
Department of Environment and Natural Resources

DENR ENTERPRISE PROJECT MANAGEMENT OFFICE (DENR EPMO)

METHODOLOGY

EXECUTION AND BUILD PHASE

Information Technology Division

PHASE 3: EXECUTION AND BUILD

The Execution and Build phase is a combination of the traditional Detailed Design, Code and Test phases. Given the advances made in methodology, software technology, and the advent of Web Services, software engineering has advanced to a point where code generation encompasses the tooling of reusable code and interfacing it with plug-and-play COTS utilities to create very viable systems. In today's field of computer software, the term **Software Build** refers either to the process of converting source code files into executable code or to the result from doing so. This may be reminiscent of the days when the sources code for programs designed to run on mainframes had to be 'compiled' and then Link Edited to produce one version of the Executable Code. This process was single-file sensitive. But in the present era of software engineering the source code for complex software may consist of many files and may be combined in different ways to produce many different versions. For example, the source code for current versions of the Linux operating system consists of millions of lines of source code in thousands of files; these files are built to produce a number of different versions including the enterprise, home and small business versions. The process of building a computer program nowadays is usually managed by a build tool, a program that coordinates and controls other programs.

Hence, the traditional Design, Code and Test phases have been replaced by Execution and Build. However, the required activities and tasks have not significantly changed. If anything, Version Control and Release Management have become absolutely imperative.

The 'Detailed Design' section of the Technical Architecture System Design document will be the focal point of this phase. Security considerations, Network and Bandwidth issues and hardware topology will be finalized and the entire Technical Architecture System Design document should be forwarded to Enterprise Technology Strategies (ETS) – the technical branch of the EPMO. <u>It should be noted that the Technical Architecture document consists of architecture-related information that the SCIO requires as the Exit Criteria for the Execution and Build Phase. It is therefore advisable to create a Project-related System Design Document (SDD) as a parallel exercise.</u> The following aspects of software design should be covered in it:

- Identify & Document System Components & Interfaces
- Identify & Document Design Constraints
- Identify & Document Future Contingencies
- Identify & Document System Internal Communications
- Identify & Document User/Operator Input Media and Devices
- Document the details of Hardware Design to address Memory and Storage, Processor speed and functionality (Fail-Over & Load Balancing concerns)
- Hardware Client requirements (Hard Drive capacity, Monitor, etc)
- Operating System requirements, including Version)

The System Design Template is located at:
http://www.epmo.scio.nc.gov/itplansbudgetsprojects/technical%20architecture%20system%20design%20template.doc

Click object below for a view of the document

http://www.ncsta.gov/docs/System%20Design%20Template/technical%20architecture%20system%20design%20template.doc

The following documents will also have to be created in the Execution and Build Phase:

- Disaster Recovery/Business Continuity Plan
- Test and Acceptance Results (compared to the Acceptance Criteria in the previous phase
- Results of a Pilot, if DENR opts to develop a pilot prior to the main development effort
- Operations and Maintenance Transition Plan (It should be noted that the total cost of project investment is the total cost of all phases plus 5 years of Operational costs).
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The preparation for Gate 3 Implementation Approval includes performing updates to several of the same documents that were updated in the previous phase: These updated documents will have to be re-presented to the SCIO for Gate 3 Approval, after they have been reviewed and signed off internally by DENR management.

The documents that may undergo changes and revisions at the end of Phase 2 are listed below. They represent the Execution and Build *Exit* criteria for Phase 3.

- Updated Roles/Responsibilities
- Updated High Level Assumptions / Constraints
- Updated Key Dependencies external to project
- Updated Significant Issues / Risks – 'Issues & Risk' tab in the PPM tool
- Updated Detailed Design section of the Technical Architecture System Design document
- Updated Project Schedule / Milestones
- Updated Budget Cost – Level 3 &4 Budget Cost tab in the PPM tool
- Updated Financial Benefits – Level 2 benefits tab
- Project Status Reporting
  Projects approved for Planning & Design with a TCO over $500K are required to submit monthly status reports. The purpose of the monthly status reporting process is to provide complete, accurate and timely project information to the SCIO for assisting in accomplishing legislatively mandated oversight duties and responsibilities. A Project Status Reporting Indicator has been added to the PPM Tool.

  Click the object below for further details.

http://portal.ncdenr.org/c/document_library/get_file?p_l_id=17988&folderId=260801&name=DLFE-6907.pdf

The Template for preparing the status report is available in the Project Portfolio Management Tool via the 'NC Help' tab. Click the object below to view the template:

http://www.epmo.scio.nc.gov/documents/docs_PortfolioManagmentInitiative/Templates/PPM%20StatusTab%20Template.doc

A Checklist for preparing the Monthly Status Report is also available on the S: drive. Click the object below to view the checklist:

http://www.epmo.scio.nc.gov/documents/docs_PortfolioManagmentInitiative/Status_Reporting_Checklist.doc

- Updated Business Case
- Project Charter
- Budget
- Benefits Estimate
- Strategic Impact
- Risk Assessment
- Project Schedule
- Cost Tracking

- Update Budget Information Section
- Update Security Questions
- Monthly Status Reports Current
  State that the monthly reporting is current and if not, let the PMA know as to when it will be current.

GLOSSARY

CASE - Computer Aided Software Engineering

COTS - Commercial off-the-shelf software designed to be easily installed and to interoperate with existing system components.

DBMS - Database Management System

DENR – Department of Environment and Natural Resources

DENR EPMO – Department of Environment and Natural Resources Enterprise Project Management Office

EPMO - Office of Information Technology Services (OITS) Enterprise Project Management Office

EPMO QA – Team within the OITS EPMO that reviews all projects and status reports.

GOTS - Government off-the-shelf, generally preferred for government purposes.

ITS - Information Technology Services

OITS - State Office of Information Technology Services

PMA - Project Management Advisor

PPM - Project Portfolio Management

RAD - Rapid Application Development as used in software development/management

RFP - Request for Proposal

SCIO - State Chief Information Officers who directs the Office of Information Technology Services

UMT - UMT Consulting Group the developers of the project portfolio tool