

11.3.3 Details on the Internal Applications Services Proposed Solution

11.3.3.1 Application Services Development

The Commonwealth Partners will support Application Development for Internal Applications. Internal Applications are defined as in-scope internal administration systems used by VITA for managing delivery and chargeback of VITA services. The currently defined Internal Applications are the five chargeback applications that were developed by VITA. Future applications may be defined by VITA through Program Change Requests. The Commonwealth Partners will also support warranty services and maintenance services to correct defects in the Internal Applications. Furthermore, minor functional enhancements requiring less than 20 person-days will be performed with the existing staff if development team staffing is available.

The Internal Applications will be installed in the primary Data Center. Software distribution will only be required if there are in-scope servers that must remain at remote locations. With the new Chargeback System, client Access to the chargeback systems will utilize a web interface, and no client-side chargeback software is required. Appropriate security and regularly scheduled backups to the Data Center facility will be performed as documented in Sections 6.1 and 6.3.

Development is currently planned to be performed in the administrative office building. The Commonwealth Partners will obtain concurrence from VITA if the development location changes. Hardware, software, and tools will be provided to the developers of the Internal Applications.

The Commonwealth Partners will perform all project lifecycle phases for new Internal Applications development. This includes all phases from project planning through deployment.

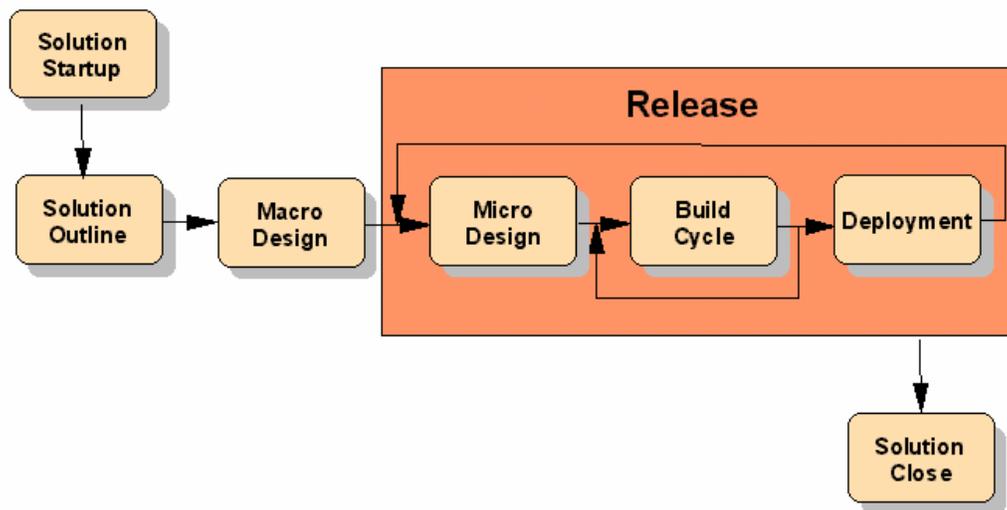


Figure 11.3.3.1-1 – Project Lifecycle

We will assist VITA in architecture planning and design activities. Recommendations on software technologies, commercial packages and tools will be provided. The Commonwealth Partners will work with VITA in defining the data architecture and data standards. Using the logical data models, the Commonwealth Partners will create any physical database(s) that may be required.

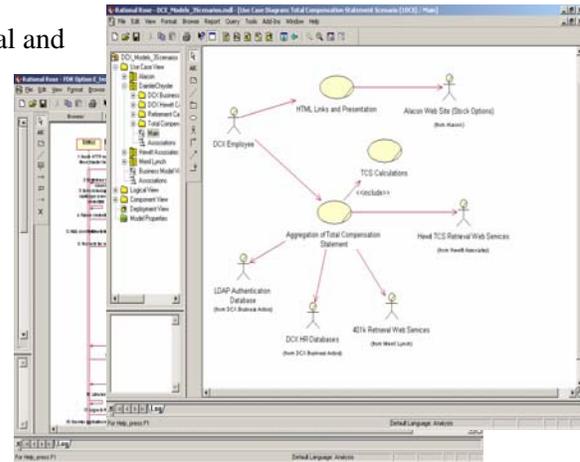
A software inventory will be maintained for commercial licenses procured in providing Internal Applications. For chargeback, procurement of commercial software is anticipated for collection of server consumption information and for the billing application.

Project planning activities include technology assessments and reviews, process improvement recommendations, portfolio analyses, development process improvement recommendations, security planning (if applicable), and project estimation. The preferred estimation technique is to base the size on the actual size of an existing, similar project. If no similar projects exist, function point analysis is an alternative technique. Once project size has been estimated, effort estimation will be based on historical data from prior projects. Historical data would include productivity factors based on project criticality and programming language. Formal software estimation tools such as COCOMO may be used to help validate the estimation of effort.

The Commonwealth Partners will work jointly with VITA to create requirements for new Internal Applications. Functional and Non-Functional Requirements (e.g. conversion, security, scalability, maintainability, extensibility, performance, capacity requirements) will be developed. Based on requirements, a System Test Plan will also be created.

Design Specifications will be created from the Functional and Non-Functional Requirements documents. Standards will be defined for design and associated documentation. Commercial software solutions will be considered for cost and schedule reduction. Larger projects may require both high level and detailed design phases. A single design phase will suffice for smaller projects.

Once the design has been completed, the Commonwealth Partners will perform software construction and Unit test. Software development will conform to project standards.



Integration and System Test Plans will be created to validate the software. Test artifacts also include Test Cases to be executed. Categories of Test Cases include nominal tests, error tests, performance / stress tests, and reliability tests. Test data will be created (if required) and end-to-end testing will be performed. The Commonwealth Partners will have primary responsibility for all test phases leading up to Acceptance Testing. Acceptance Test is a VITA responsibility. The Commonwealth Partners will assist VITA with Acceptance Testing. End-to-end testing with live interfaces (to the degree possible) will be performed.

Problem reports will be created for defects discovered during testing. A defect tracking system, such as Rational ClearQuest, will be used for defect tracking.

Once the Acceptance Test criteria have been satisfied, the software will be available for deployment into production. The Commonwealth Partners will schedule and install the software into the production system with authorization from VITA. Installation components include any commercial software, custom software and hardware. End user documentation, such as User's Guides, will also be delivered at or before the time of software installation. If existing systems are being replaced, migration to the replacement system will be performed.

For new releases or code maintenance, promotion of software changes will be performed. Code will be maintained in a Software Configuration Management (SCM) system such as Rational ClearCase. The SCM database will provide the repository of all baselined software. The SCM tool will provide version control with check-in / check-out capabilities and support tracking of configuration items. A Software Configuration Management Manual will be created. SCM procedures will be consistent with the SEI SCM Key Process Area (KPA). The SCM KPA is required for SEI Level 2 and above projects.

Program Change Requests (PCRs) will be used as the instrument to identify new functionality. PCR procedures will be defined and followed for new changes. PCRs include a description of the change, an

impact analysis section, and a disposition section. The impact analysis will identify cost and schedule associated with implementing the change. The Commonwealth Partners will work with VITA for release planning and scheduling of approved PCRs.

Training and training materials will be provided to VITA for new features that add or modify end user interfaces. In addition, appropriate training for Help Desk personnel will be performed. If appropriate, the knowledge databases will also be updated.

The following documentation will be required for new Internal Applications:

- Business Requirements
- System Specifications
- Design Specifications
- Test Plans
- End-User documentation
- Security Plans (if appropriate)
- Disaster Recovery Plans (if appropriate)
- Release Notes and Operational Notes.

Formal deliverables will be maintained in the SCM repository.

11.3.3.2 Development Methodologies

A systematic approach is needed in order to effectively develop and successfully deploy software. IBM tops Gartner's Leader's magic quadrant for Methodware and is recognized by Giga as the leader in the methodology market.

The figure below illustrates our leadership position in methodologies.

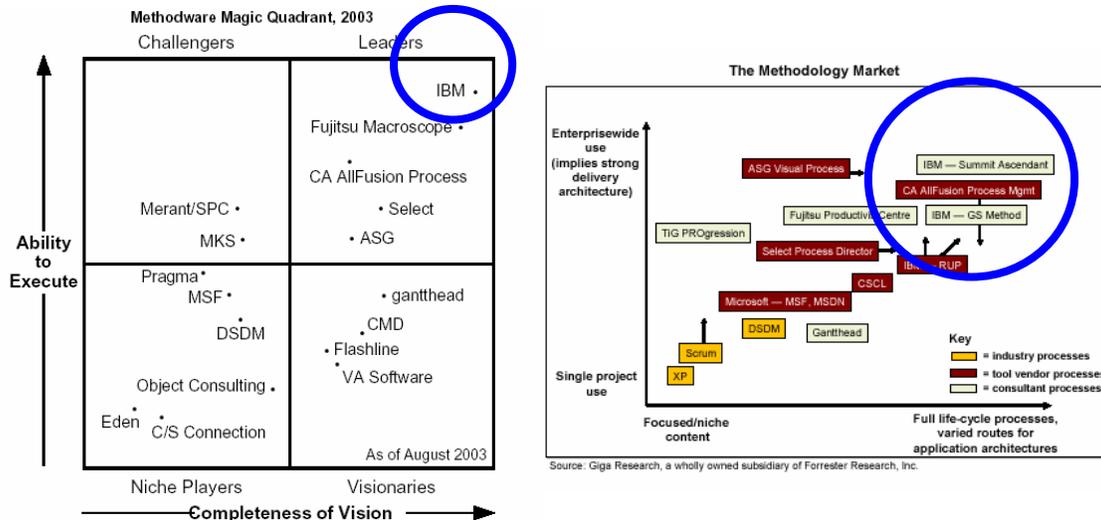
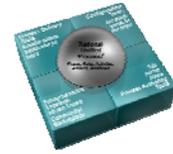


Figure 11.3.3.1-2 – Methodology Leadership

Our approach is to use a unified process that emphasizes the developmental and maintenance of models to represent the software under development. IBM Rational has defined the Rational Unified Process that includes a knowledge base, guidelines, templates, and tools mentors for key development activities.



The diagram below shows that the beginning of an activity is not bound to the end of another, but the various artifacts associated with the activities are revised as the problem or the requirements are better understood. In an iterative process, activities such as test are spread incrementally throughout the cycle.

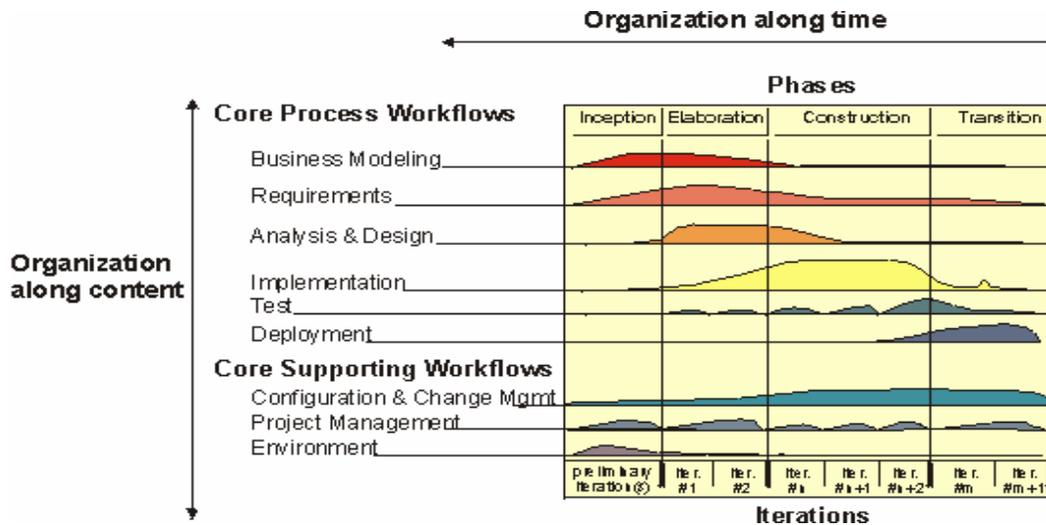


Figure 11.3.3.1-3 – Workflows ad Phases

A methodology provides the project with guidelines on what must be done and how to do the work. A methodology also provides a work breakdown structure that contains information on every task that must be performed. The IBM Global Systems Method has evolved to emphasize Work Products, which define a standard set of outcomes for software development. These Work Products introduce a common language for all practitioners delivering an end-to-end solution and thereby accelerate development, increase productivity, and minimize risk and time to delivery. The engagement models cover a wide variety of projects from web-based development, to legacy custom development, and maintenance.

The Global Services Method meets the project’s needs by fusing IBM team’s special capabilities into the methodology, eliminating unnecessary overlap, and allowing for more efficient and faster implementation. The Method shortens the implementation life cycle by harnessing vast amounts of data, information, knowledge, wisdom, and ideas – in short, by delivering the intellectual capital of IBM. The GS Method will guide the Commonwealth Partners team by systematically aligning processes, systems, and teams to quickly and efficiently realize your business strategy and to maximize return on project investment.



The IBM Global Services Method has two major components: work products and work breakdown structures. Engagement Models package useful subsets of the method.

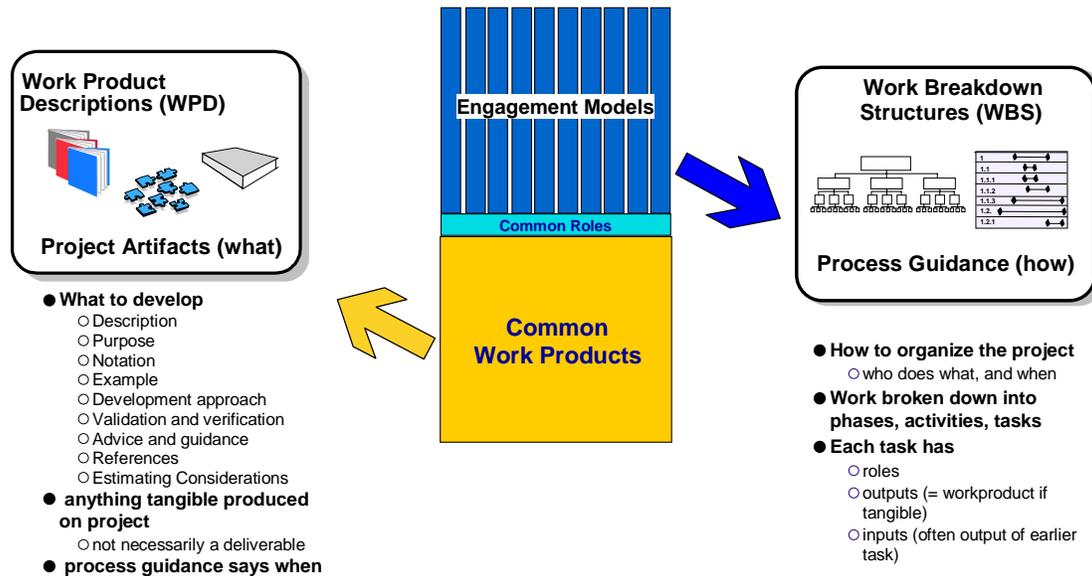


Figure 11.3.3.1-4 – GS Method Work Products & Work Breakdown Structure

CMM Compliance



IBM utilizes SEI CMM and CMMI frameworks internally to achieve higher levels of productivity and increased system quality. We have focused on software and system engineering process improvement and advanced the state of the practice in our laboratories and application development functions for many years. Our proven approaches have been shared with SEI and the application development and maintenance community through our participation in SEI advisory boards, as members of Software Capability Maturity Model® (SW-CMM) and the CMMI development teams, CMM/CMMI review and stakeholder teams, and through participation in the SEI Resident Affiliate program.

A measure of IBM's commitment to and understanding of SEI CMM based process improvement is the number of IBM organizations that have been assessed against SW-CMM and CMMI. Currently more than 35 IBM organizations have achieved SEI compliance. This compliance ranges from Maturity Level 2 to Maturity Level 5. Currently six (6) IBM Global Services organizations have achieved the highest level of maturity, CMMI Level 5.

IBM has approximately ten (10) authorized Standard CMMI Appraisal Method for Process Improvement (SCAMPI) lead appraisers and approximately 20 authorized CMM-Based Appraisal for Internal Process Improvement (CBA-IP) lead assessors.

IBM has a CMMI product suite license agreement with the SEI and is therefore an authorized CMMI transition partner.

11.3.3.3 Application Warranty and Maintenance Services

Application maintenance will be performed to correct defects in the Internal Applications. An Application Maintenance Plan will be created. For critical severity defects, emergency fixes will be provided to address the problem in an expeditious manner. Inclusion of non-critical changes in the emergency fix

package will be driven by dependencies on prior changes not yet incorporated in the formal baseline. Corrective maintenance packs will be provided periodically and be cumulative in nature. In addition, preventative maintenance will be provided for activities such as system software patches, performance tuning, and upgrades to new application or prerequisite software versions. Adaptive maintenance will be identified to verify the Internal Applications still perform adequately following changes such as operating system changes, new equipment, or interfaces changes. Tuning, performance, and storage usage analysis will be performed prior to release to production. We will monitor performance after release. These areas will be reviewed following significant changes or as a result of opened defects.

Release planning and packaging will be preformed. Version control of all software and associated deliverable documentation will be performed using an SCM tool. Release planning will be influenced by the size and complexity of the release contents.

Problems reported through the new, centralized Call Center that cannot be resolved through Level 1 will be forwarded to Level 2 support and subsequently to Level 3 support if software modifications are required. Level 2 and Level 3 support would be provided by the Internal Applications team.

11.3.3.4 Monitoring, Reporting and Review Services

Project plans and schedules for Internal Application tasks will be created and maintained on a regular basis. Status reviews and reports will be provided to VITA through the Governance model established when the contract begins. Reports will include service level metrics. For items not meeting service levels, improvement plans will be developed. Service levels are addressed in Appendix 2 of this section.

