AUDIENCE

Project Managers. Responsible for Cost, Schedule, and Performance. Manages execution details and plans. Constrained by availability of personnel to participate and deliver interoperability. Driven to reduce risk and confirm validation and verification. Has overall responsibility for cost management of solutions. Usually PMBOK trained and PMP certified.

WHAT IS INTEROPERABILITY?

Interoperability is a feature of software and hardware components that enables assembly of different configurations of components within or across organizations so that different capabilities can be enabled. As is depicted on the right, there are different kinds-of interoperability frameworks with each having its own levels-of Interoperability. Levels range from file sharing (levels 0 or 1) to autonomously deployed software components that discover each other during execution (levels 5 or 6).

Interoperability increases the range of capabilities for solutions that can be fielded, improves collaboration, is the basis for eliminating siloed systems, enables reuse of components in multiple business/ mission contexts, and promotes the delivery of a wide range of features that can be included.



Go to uml.standardscoordination.org/interoperability.htm.

Interoperability is also an approach to the design and delivery that permits quick and efficient assembly of customer-specific solutions from standard libraries of components. This improves quality, reduces risk, shortens delivery time, reduces costs, simplifies delivery, integrates security, promotes usage of standardized and reusable project plans, and improve value-for-risk. For a Project Manager, the selection of a kind-of interoperability and the resultant usage-of standardized components establishes the basis for what the project plan should include as activities, tasks, and resource roles to be utilized. MSProject templates for each level-of interoperability can be used to initialize project plans. In all cases, the plans include the same nine (9) activities overviewed in the graphic on the next page, but the task details and staff requirements differ based upon level-of interoperability. Regardless of the Interoperability level, each project template includes standard work estimates and BOEs (Basis of Estimate) used to justify both the role/labor mix and the hourly estimates for the task. Making these templates available to project/program managers can be considered as variations on the standard MSProject Software Development Plan project template and can be modified to comply with organization standards.

Value Proposition	How Addressed by Interoperability Profile and Engineering Approach
Reduce Risk	Not proprietary; standards organization based; multiple tools support; standardized project plans; testable; Built in Measures of Effectiveness(MOEs), Key Performance Parameters (KPPs), and Basis of Estimates (BOEs).
Usage of Standardized Plans	Standardized project plans for each type-of interoperability improve delivery assurance.
Quicker Time to Delivery	Proved by usage of similar kinds of frameworks: DRUPAL, Spring, and PHPBB.
Cost-effective	Lego-block like solution formation from a software catalog. Utilize skill classes (Framework Builders, Service Builders, and Solution Assemblers) to limit labor costs.
Standards-Based	Standards organization supported; able to support multiple Enterprise Architectures.
Common Engineering Approach	Standardized UML [®] Profile for Interoperability. Adaptable. Usage of UML and SysML [®] for engineering improves access to labor as well as cost-effective engineering.
Interoperable	Pattern-based description of interoperability at each level enables evaluation and delivery.
Across Organizational Boundaries	Supports organization-specific delivery as well as inter-enterprise service invocation to remote usage. Project plan specified.
Enables Security	Project Plan Tasks and Activities include Security Framework enablement.
Delivery Assurance & V&V	Testable, Model-checking, full simulation supported before code completion.

VALUE PROPOSITION FOR PROJECT MANAGERS

109 Highland Ave, Needham, MA 02494 USA ● Phone: +1 781-444-0404 ● Fax: +1 781-444-0320 Evening Star Building, Regis Group Office #358 ● 1101 Pennsylvania Ave., Washington, D.C., 20004 USA ● Phone: +1 703-231-6335

OTHER INTEROPERABILITY STAKEHOLDERS

Decision Makers. Managers and executives. Concerned with risk, cost, and ROI/ROA. Want to know how interoperability can support both strategic and tactical objectives. Generally, not concerned with technical details except that affordable and qualified personnel are readily available.

Architects and Engineers. Delivery oriented. Ease of design and delivery. What patterns, principles, and existing software can be used. UML/SysML trained. Time reduction and quality oriented. Viability of solution oriented. Testable. Code and recode oriented. Maintainability. Continuous delivery desirable. Code generation as much as possible.

PROJECT ACTIVITIES AND TASKS PERFORMED



(1) Pipeline: There are two kinds of Interoperability projects: <u>Development</u> projects and <u>Review</u> technical capabilities projects.	(6) Describe : Detailing occurs per project plan. Model elements are updated, removed, or added based upon needs of the prject.
(2) Analyze: Tasks and activities that detail the outcomes, business objectives, users, success measures, and other attributes identified. Initialize project asset library.	(7) Check: Quality, consistency checks, and validation/verification checks applied. Both model and tool-based as well external and independent review-based. Do (6) and (7) iteratively.
(3) Select: Type of Interoperability Framework and the framework's applicable Interoperability level that is consistent and expressive of the analysis. Select project template based on this.	(8) Generate: The website for the system; documentation for the system (e.g., Word document); and code for the system. Coding continues in IDE of choice.
(4) Specify: Project plan selected and Initialized. UML Profile components and packages selected. KPPs. selecteed.	(9) Remodel: Import code back into the model; remodel; recheck; revise t he model. Do (6) and (7) iteratively, then (8) Regenerate.
(5) Initialize: Project team in place. Model elements and procedures from UML Profile are selected for Interoperability type.	

WANT TO LEARN MORE?

Contact us at info@omg.org or go to uml.standardscoordination.org and click on 'Interoperability'.

ABOUT OMG

The Object Management Group is an international, open membership, not-for-profit computer industry standards consortium. OMG Task Forces develop enterprise integration standards for a wide range of technologies and an even wider range of industries. OMG's modeling standards enable powerful visual design, execution and maintenance of software and other processes. Visit www.omg.org for more information.



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