Design and Governance of Formal Review Gates for Systems Integration Projects

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Many articles have been published on the design and governance of Formal Review Gates (also referred to as "Quality Gate," "Tollgates," or simply "Gates") in the field of software/application development. This article addresses the design considerations and governance of Formal Review Gates for composite application development and infrastructure implementation, commonly referred to as "Systems Integration projects" in this context. Although the basic design principles and governance between software development and Systems Integration do not widely differ, there are technology implementation aspects that alter the governance (including a set of deliverables, team of reviewers, and timing during the project life cycle phase) of these gates.

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Project life cycle is an IT services delivery methodology pertaining to gathering customer requirements and designing and implementing solutions for complex projects. From a holistic view, the IT solutions may encompass Software (Custom or COTS solutions), Physical Infrastructure (End User Compute devices, Servers, Storage, etc.) and/or Network Infrastructure (LAN, WAN, etc.) solutions integration. Although the requirements will be different for each project, the solution-providing organization (whether it is an internal IT shop, third-party supplier, or an outsourcing vendor) will need to adhere to the standards and processes adopted by the client IT governance policies and procedures.

Due to the complexity and integrated nature of solutions development and implementation, it is also imperative that the project management methodology employs an integrated view of scope, cost, schedule, and quality aspects for the entire project. It is not sufficient to know how well a project is meeting its schedule commitments; it is equally important to measure how the budget is being spent (i.e., on, under, or over budget) as well as the quality of the work products being produced.

A Quick Primer on Methodology

To better understand the perspective of this article, we should first establish a common understanding and context about the systems integration methodology so that the reader can clearly understand the perspective for rest of the article. Most organizations dealing with systems integration solutions development and implementation (as stated above) rely on some type of structured life cycle methodology. This methodology produces tangible deliverables in a sequence of work as it progresses from initiation through requirements gathering, planning, solutions design/development/testing, implementation/deployment, and closeout phases of the project. From my experience with large manufacturing clients, typical systems integration uses a sequence of phases as listed below:

- Initiation
- Requirements

- Design
- Build/Configure/Test
- Implementation Planning
- Deployment
- Close
- Operations Support

In order for IT to deliver on commitments made to the business, it is extremely important that the IT delivery organization monitor the health of the project. One of the means to accomplish that is via the implementation of Formal Review Gates.

What is a Formal Review Gate?

As the name suggests, formal review gates are "formal acceptance criteria reviews" that are scheduled at the end of a major project phase. Due to outsourcing of IT solutions, planning and execution along with back office operations across the globe (near-shore or offshore), it is becoming increasingly critical to ensure that systems integration projects are managed with as much care as any classic software development project. One of the simplest ways to communicate the project status, progress, risks, and issues is to have a cadence of formal reviews known as "Formal Review Gates" or "Tollgates."

The basic concept is to have a central forum where business, technical, and performing supplier(s) representatives, or any other stakeholder that has an interest in a particular project meet with the project leaders for a status review. These Tollgates define where the project stands at a particular phase in the life cycle. Stakeholders have the opportunity to make a go/no-go decision for the next phase of the life cycle. In addition to the major decisions, these forums provide an opportunity for the project teams(s) to raise awareness about impending risks and outstanding issues and to share progress and positive project milestones (something that is often overlooked in such meetings).

This article will discuss the specific deliverables and artifacts that may be required for a Gate review. Often, there is an Executive Summary that documents high-level scope, baseline vs. actual costs/forecast costs, baseline schedule vs. actual/forecast dates for key milestones, risks, issues, and next steps.

Key Parameters for a Quality Gate Process

- Quality Gates and associated deliverables are predefined in the structured life cycle methodology.
- Quality Gates occur at the conclusion of a significant phase of a project.
- A well-defined set of key deliverables must be completed in preparation for each Gate review.
- Gate deliverables that support a specific project life cycle are required to be reviewed by designated stakeholders before the actual Gate meeting.
- Gates must be passed before the project may proceed to the next phase. The project may pass conditionally if the identified conditions/issues are not serious enough to halt the project altogether. These conditions/issues are logged in the meeting minutes with due dates.

Governance Considerations for Establishing Formal Review Gates

Gates are not popular with the masses. Often, they are viewed as an unnecessary hassle that is meant to create more paperwork for the already busy teams. Therefore, it is very important that the value proposition and intent of Gates is documented and blessed by the senior IT and business leadership in the organization. Also, great care must be given while designing the logistics, structure, and scheduling aspects of these gates.

Gates are typically facilitated and managed by the Project Management Office (PMO). Many project teams view the PMO as a nemesis that is constantly coming up with process additions and changes and templates to pile more work on project teams. To mitigate this perception, keep the following suggestions in mind:

- **Recommended Formal Review Gates and Associated Deliverables**

It is assumed that the performing organization will follow some type of integrated project management and systems engineering methodology throughout the project life cycle. The following table shows typical Gates and recommended deliverables for a large project:

Not all projects must go through all of the Gates. Depending upon the complexity and size of a project, the number of gates and associated deliverables can be decided at the Initiation Gate. Our experience has resulted in the following general guidelines:

- Large Projects (usually over 2,000 effort hours). Will need to go through all gates
- Medium Projects (usually between 500 to 2,000 effort hours). May need to go through some gates

Quality Tollgate	Initiation	Requirements	Application Design	Infrastructure Design	Configure/Build /Test	Implementation Planning	Deployment	Close
Recommended Deliverables for Large Projects	Executive Summary	Executive Summary	Executive Summary	Executive Summary	Executive Summary	Executive Summary	Executive Summary	Executive Summary
	Project Charter	Requirements Document	Application Design Document	Infrastructure Design Document	Configure/Build/ Test Documents	Implementation Plan(s)		
	Project Schedule (Initial)	Project Schedule (baselined)				Pilot Test Results		
	SOW (Initial)	SOW (Final)						
	Deployment Completion Criteria (Initial)	Completion Criteria (Updated)				Deployment Completion Criteria (Final)	Completion Criteria (Completed)	Legacy Decommisson Report
	Communication Plan (Initial)	Communication Plan (Updated)				Communication Plan (Final)	Communication Plan	Project Close Communication
	SLA Exclusions (Initial)	SLA Exclusions (Final)						SLA Report
	Risk Log	Risk Log	Risk Log	Risk Log	Risk Log	Risk Log	Risk Log	Lessons Learned

Figure 1: Gates and deliverables matrix for a large project.

(e.g., Initiation, Requirements, Design/Build/Test, Deployment and Close)

- Small Projects (less than 500 hours). May go through two or three gates (e.g., Initiation/Requirements, Configure/ Build/Test, and Deployment/Close).

Figure 2 shows typical Gates and recommended deliverables for a small project.

As previously noted, the management system must provide flexibility to the project teams to customize the gate structures in order to minimize the overhead. However, it is strongly recommended that Initiation, Requirements, and Close gates be mandatory for all of the projects (with a flexibility to combine Initiation/Requirements and Deployment/Close).

- **Differentiating Complex Systems Integration Project vs. Infrastructure Implementation Only Project**
  The above matrices provide a combined Systems Integration solution (i.e., it is assumed that the project will have some aspect of Software, Infrastructure, and/ or Network solution implementation). However, it is pointed out here that the Gate review methodology must

Quality Tollgate	Initiation/ Requirements	Design/Build/ Test	Implementation Planning/ Deployment	Close
Recommended Deliverables for Small Projcts	Executive Summary	Executive Summary	Executive Summary	Executive Summary
	Project Charter/ Requirements Document	Design Documents	Implementation Plan(s)	
	Project Schedule	Configure/Build/ Test Documents	Pilot Test Results	
	SOW			
	Deployment Completion Criteria		Deployment Completion Criteria	Legacy Decommisson Report
	Communication Plan		Communication Plan	Project Close Communication
	SLA Exclusions			SLA Report
	Risk Log	Risk Log	Risk Log	Lessons Learned

Figure 2: Gates and deliverables matrix for a small project.

be flexible enough to accommodate and be customizable for any one type of solution. If a solution provider is expected to provide only an infrastructure solution, then all that needs to happen in the matrix is to eliminate the software-related references and you have got the Infrastructure solution methodology.

- **Level of Documentation**
  Documentation is the most important factor. One of the most widely used artifacts in Gates is the executive summary (see Appendix A for an example of a table of contents for a typical executive summary deck). Although it will depend on project scope and complexity, it is recommended that the majority of the information that goes in this artifact be selected from other detailed deliverables. The objective of an Executive Summary is to assemble a story of the project scope, progress from the last major milestone, current status, next steps, and any hindrances (risks, issues) that may impede the progress of the project. The executive summary may also identify how the key stakeholders can help the project team to overcome those hindrances.

  Additional documentation may be useful. If your organization uses an online system as a central project management tool, project teams can log in and show various dashboard reports for the project. Review of detailed deliverables (such as requirements, design, implementation plans, etc.) should be completed with designated reviewers ahead of the Gate meeting so that they can prepare their perspective for the review meeting. It is possible that there might be several other deliverables, besides the ones listed in Figure 1 (such as requirements traceability matrix, disaster recovery plan, data migration plan, etc.) that will be created during project life cycle. It is recommended that Gate deliverables contents be limited to a subset of key deliverables.
- **Review Committee Formation**
  Review committee formation will vary with each project and with each phase of the project. However the following roles are expected to be permanent members of the review committee:
  - Project manager (of the assigned project)
  - Program manager/senior project manager (of the assigned portfolio)
  - PMO manager
  - PMO analyst
  - Technical lead

PMO and project leads can determine which other stakeholders should attend each gate. Recommended structure for a large project is depicted in Figure 3:

Recommended structure for a small project is depicted in the Figure 4.

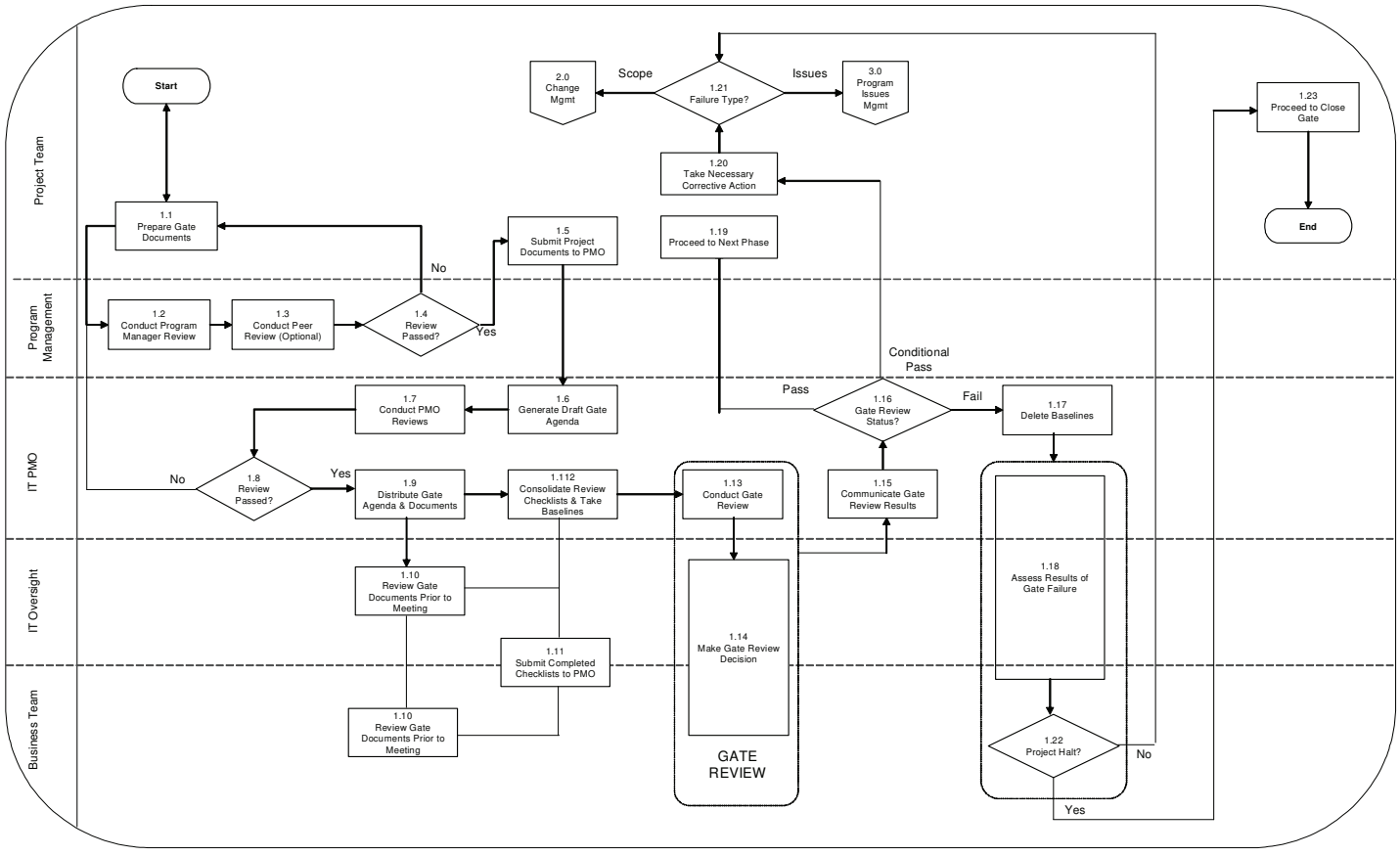
Quality Tollgate	Initiation	Requirements	Application Design	Infrastructure Design	Configure/Build/ Test	Implementation Planning	Deployment	Close
Recommended Reviewers for Large Projects	Project Manager	Project Manager	Project Manager	Project Manager	Project Manager	Project Manager	Project Manager	Project Manager
	Program Manager	Program Manager	Program Manager	Program Manager	Program Manager	Program Manager	Program Manager	Program Manager
	IT Functional Director	IT Functional Director				IT Functional Director	IT Functional Director	IT Functional Director
	Project Sponsor	Project Sponsor				Project Sponsor	Project Sponsor	Project Sponsor
	PMO Manager	PMO Manager	PMO Manager	PMO Manager	PMO Manager	PMO Manager	PMO Manager	PMO Manager
	PMO Analyst	PMO Analyst	PMO Analyst	PMO Analyst	PMO Analyst	PMO Analyst	PMO Analyst	PMO Analyst
			Architects (Application, Data)	Architects (Infrastructure, DBA)				
	Technical Lead	Technical Lead	Technical Lead	Technical Lead	Technical Lead	Technical Lead	Technical Lead	Technical Lead
	Operations Representatives	Operations Representatives			Operations Representatives	Operations Representatives	Operations Representatives	Operations Representatives
		Business Analyst	Business Analyst		Business Analyst	Business Analyst	Business Analyst	
		Regional Site Lead(s)			Regional Site Lead(s)	Regional Site Lead(s)	Regional Site Lead(s)	
	IT Oversight Manager	IT Oversight Manager	IT Oversight Manager	IT Oversight Manager	IT Oversight Manager	IT Oversight Manager	IT Oversight Manager	IT Oversight Manager

Figure 3: Gate reviewers matrix for a large project.

Quality Tollgate	Initiation/ Requirements	Design/Configue/ Build/Test	Implementation Planning/ Deployment	Close
Recommended Reviewers for Small Projects	Project Manager	Project Manager	Project Manager	Project Manager
	PMO Analyst	PMO Analyst	PMO Analyst	PMO Analyst
	Technical Lead	Technical Lead	Technical Lead	Technical Lead
	Operations Representatives		Operations Representatives	Operations Representatives
	IT Oversight Manager	IT Oversight Manager	IT Oversight Manager	IT Oversight Manager

Figure 4: Gate reviewers matrix for a small project.

Gates Work Flow Process



Functions of Key Stakeholders in the Gate Review Process

This section documents a typical workflow process that can be applied and adopted by any organization. The discussion is limited to each major group (e.g., project team, PMO) rather than each step in the process.

Project Team

Project team in this context consists of Individual Performers (analysts, developers, DBAs, etc.), team lead(s), and project manager(s). The project team prepares the gate documents and submits them to next steps (1.2, 1.3, 1.5, and 1.19) within the baseline review cycle. This team is also

responsible for triggering other related project management processes (e.g., 2.0 Change Management and/or 3.0 Issues Management) to manage change in scope and issues resulting from the baseline reviews.

Program Management

Program management in this context includes a senior project manager, a program manager, or even a director/executive–level person (depending on the complexity, scope, and cost considerations). This team (which could be either a single- or multiple-person team) performs the next level of reviews from a management perspective.

Some organizations also choose to have a small team of Quality Assurance (QA) personnel to do thorough reviews and then report their findings to the program/senior managers.

> "The IT oversight group acts as the focal point with the business organization and manages the relationship with the service provider organization."

IT PMO

IT PMO is an independent entity that reviews project documentation to ensure that all process requirements have been fulfilled. They distribute documents to IT oversight and business representatives. Typically this group also maintains a set of checklists for each phase of the project to assist reviewers in documenting their responses so that the actual Gate review meeting can be conducted objectively and efficiently.

PMO also publishes the gate meeting agenda, distributes it to all the relevant stakeholders, maintains project baselines, facilitates the gate meetings, takes meeting minutes, and communicates review results to all the stakeholders.

Distribution of documents, agendas, and meeting minutes can be facilitated via collaborative tools (websites, shared drives, etc.).

IT Oversight

In a typically outsourced environment, there is an IT oversight group that acts as the focal point with the business organization and manages the relationship with the service provider organization. In the context of Gate reviews, the primary IT oversight manager will be involved during all of the project life cycle phases. They may choose to engage other levels of leadership in the Gate reviews, again depending upon the complexity, scope, and cost considerations. If the implementation includes any regional considerations, then regional lead and other relevant representatives must be involved for the relevant phases.

Business Team

It is very important to engage the business team. Typically, a business analyst will be involved with most of the Gate reviews and engage other levels of leadership as previously mentioned.

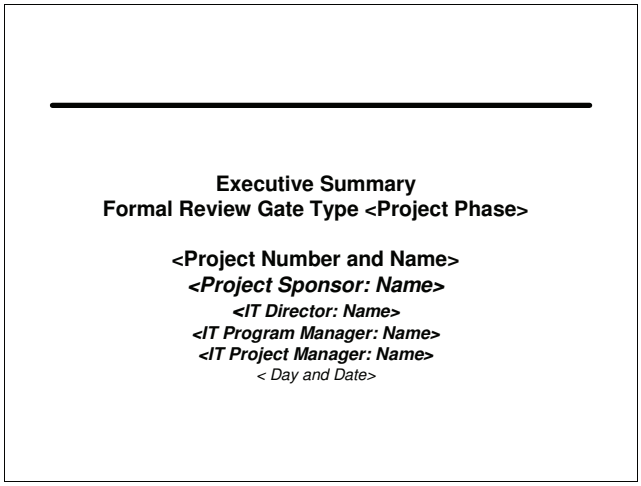
Summary

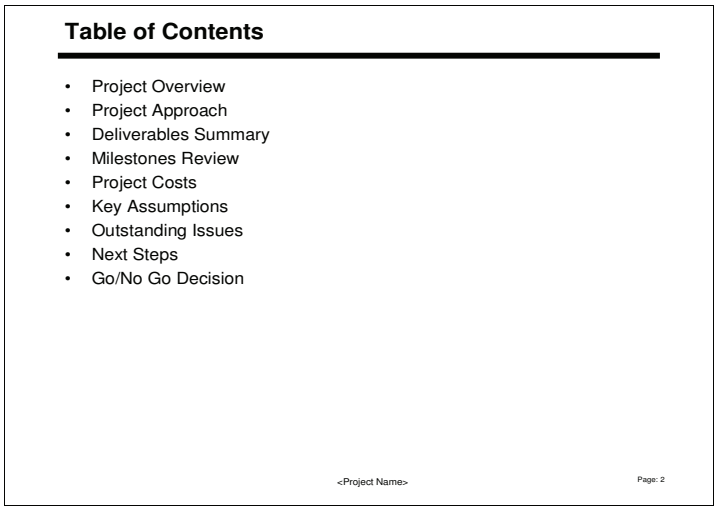
Formal Gate Reviews/Tollgates/Quality Gates (or, simply, Gates) can be a very effective medium to assess a project's progress, status, and future outlook with key stakeholders. However, care must be taken that performing organization(s) do not get bogged down with unnecessary paperwork. The creation of a great executive summary should communicate a compelling story in 15 to 20 minutes (for a medium-sized project) in the Gate review meeting, with an opportunity for stakeholders to review other key deliverables in advance. Gate meetings are typically held once per week with a predetermined agenda and submission of required artifacts. The whole process should be designed to be flexible, but at the same time it should encourage open communication, accountability, and support from the decision makers to improve the project delivery experience.

About the Author

Jeet Sandhanwalia, PMP, is PMI- and IBM-certified executive project manager with IBM Global Technical Services organization. Jeet has over 23 years of IT services delivery experience pertaining to business, engineering, and manufacturing systems. He is experienced in managing applications development, systems integration and infrastructure implementation projects. He has completed several global projects over the last 16 years as a project manager, program manager, and delivery project executive.

Appendix A: Key Components of a Typical Executive Summary





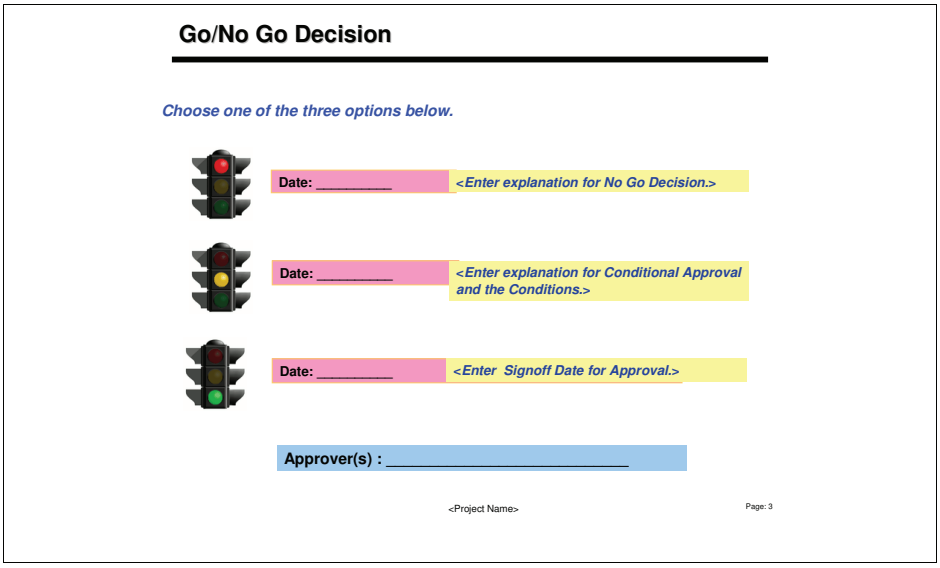


Figure 5: Key components of a Gate review executive summary.