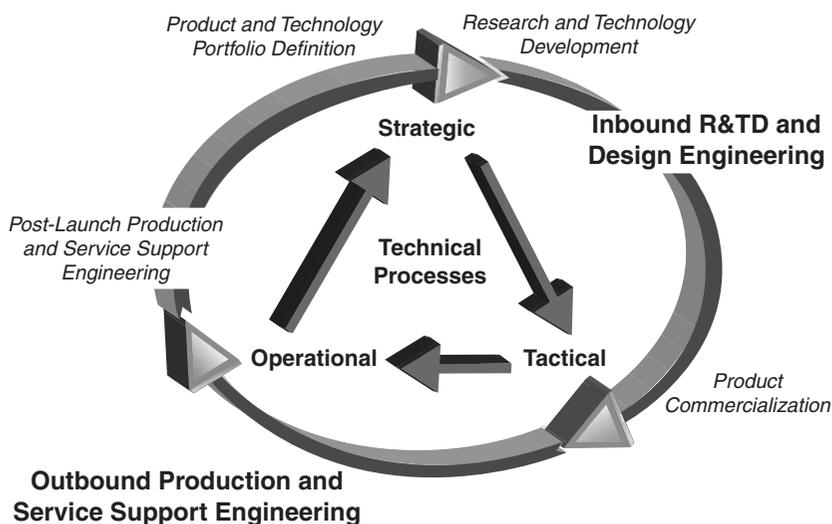


SCORECARDS FOR RISK MANAGEMENT IN TECHNICAL PROCESSES



A system of scorecards to measure the use of tools, completion of tasks, and the resulting deliverables across strategic, tactical, and operational technical processes.

Scorecards in Technical Processes

Whether we are working in the strategic, tactical, or operational technical environment, we need to take into account how we will measure a team or individual's progress against goals. Accountability within and across technical teams is essential for proper risk management within a system of phases and gates. As technical work is designed and performed, the issue of pay for performance must also be addressed. Thus, we have two distinct reasons to establish formal methods for measuring technical task performance:

1. Manage risk and make key decisions at gate reviews and key project milestones
2. Pay for performance in light of specific requirements and deliverables

We all expect to be paid fairly for the value we add to the business from our work. We all want the technologies and products we are working on to be successful, and we want our compensation to be aligned with that success. But how do we pay fairly for projects that are unsuccessful for good reasons? The reasons become “good” and are justified based upon the data from our use of tool/task clusters. Without a balanced system of scorecards, it is not possible to tell whether we are truly compensating in a fair and balanced way, even when we cancel projects. The questions “Am I personally doing okay?” and “Are we, as a team, doing okay?” and “Are we all on target for meeting our gate requirements by way of our deliverables?” must be asked frequently enough to ensure that we can make adjustments when the data suggests that we are off-track relative to clear requirements. A system of scorecards can help.

Scorecards exist all around us, but what do they mean to technical professionals?

Checklists

One traditional form of accountability is the checklist. A checklist describes items that are assessed for two states of completion: done or not. Did you do a certain task? Did you use this tool or that tool to enable the task? Yes or no? Checklists suffer from a lack of discrimination; they reveal little regarding the quality or quantity of a tool used or how a task was done in terms of percent completion against its original requirements.

Scorecards

We use this hierarchy in this text to discuss accountability for getting the right things done at the right time:

1. Gate or milestone requirements
2. Gate or milestone deliverables
3. Tasks
4. Tools, methods, and best practices

This four-level flow is well-suited to measurement by using an integrated system of scorecards. A system of scorecards can be designed and linked so that each subordinate level adds summary content up to the next level.

The most basic level of scorecard is filled out by technical team members, who actually use specific sets of tools, methods, and best practices to help complete their within-phase tasks. This is called a tool scorecard. Tool scorecards are easy to fill out and should not take more than 15 minutes or so to complete at the end of a tool application. Typically, they are filled out in collaboration with the team leader for supervisory buy-in. When finished using a certain tool, the

person or set of team members who apply that tool should account for the measurable items in Table 2.1.

TABLE 2.1 Tool Scorecard

SS-R&TD Tool	Quality of Tool Use	Data Integrity	Results vs. Requirements	Average Score	Data Summary, including Type & Units	Task Requirement

Quality of tool use can be scored on a scale of 1–10 based upon the suggested criteria and levels in Table 2.2. You can adjust these ranks as you see fit for your applications.

TABLE 2.2 Quality of Tools

Rank	Right Tool	Fullness of Use	Correct Use
10	x	High	High
9	x	Medium	High
8	x	High	Medium
7	x	Low	High
6	x	Medium	Medium
5	x	Low	Medium
4	x	High	Low
3	x	Medium	Low
2	x	Low	Low
1	Wrong tool		

The integrity of the data produced by the tool's use can be scored using the suggested but modifiable ranking structure in Table 2.3.

TABLE 2.3 Integrity of Data

Rank	Right Type of Data	Proper Units	Measurement System Capability	Percentage of Data Gathered
10	Excellent	Direct	High	High %
9	Excellent	Direct	High	Medium %
8	Excellent	Direct	Medium	High %
7	Good	Close	High	High %
6	Good	Close	Medium	Medium %
5	Good	Close	Medium	Low %
4	Weak	Indirect	Medium	High %
3	Weak	Indirect	Low	Medium %
2	Weak	Indirect	Low	Low %
1	Wrong	Wrong	None	—

You can adjust the nature of the scoring criteria as you see fit for your applications. The key is to make very clear delineation among various levels of measurable fulfillment of the criteria.

The capability of the tool results to fulfill the task requirements is scored with the help of the following criteria:

10 = Results deliver all data necessary to completely support the fulfillment or lack of fulfillment of the task requirements.

9–8 = Results deliver a major portion of the data necessary to support the fulfillment or lack of fulfillment of the task requirements.

7–4 = Results deliver a moderate amount of the data necessary to support the fulfillment or lack of fulfillment of the task requirements.

3–1 = Results deliver a very limited amount of the data necessary to support the fulfillment or lack of fulfillment of the task requirements.

Here we want to account for how well our data fulfills original requirements. It is acceptable to find that, through a full set of data, we cannot meet the requirement a task was designed to fulfill. We have to reward technical professionals for doing good work that, unfortunately, tells us the truth about bad results. The intent is to avoid false positives and false negatives when making decisions about a project’s viability. This metric helps quantify the underdevelopment of data and facts that can lead to poor decisions.

Task Scorecards

Task scorecards (see Table 2.4) have the capability to discriminate at the aggregate level of tool completion and summary performance relative to each major task and its requirements.

TABLE 2.4 Task Scorecard

Phase Task	Average Tool Score	Percentage Task Fulfillment	Task Result vs. Delinquent Requests	Red	Yellow	Green	Deliverable Requirements

A very insightful metric is the percent of completion that has been attained for each major task within a phase. We believe this is where the real mechanics of cycle-time are governed. If a technical team is overloaded with projects or is not given enough time to use tools, it is almost certain that it will not be able to fully complete its critical tasks. Undercompleted tasks are usually a leading indicator that a schedule likely will slip. Too few tools are being used, and those that are being used are not being fully applied. So a double effect results: poor tool use leading to incomplete data sets and tasks that

simply are not finished. This means we make risky decisions on the wrong basis. The data is underdeveloped. High-risk situations are acceptable in our projects, but not because we are too busy to do things right. Task incompleteness is a major contributor to why we make mistakes and fail to grow on a sustainable basis. This is a suggested ranking scale to illustrate how you can assign a value from 1 to 10 to quantify the level of risk inherent in the percent of uncompleted tasks:

10 = The task is complete in all required dimensions. A well-balanced set of tools has been fully applied to 100% completion.

9–8 = The task is approximately 80% to 90% complete. Some minor elements of the task are not fully done. A well-balanced set of tools has been used, but some minor steps have been omitted.

7–4 = The task is not complete somewhere across the range of 70% to 40%. Moderate to major elements of the task are not done, and tool selection and use has been moderate to minimal. Selected tools are not being fully used, and significant steps are being skipped.

3–1 = The task is not complete across a range of 30% to 10%. Very few tools have been selected and used. Steps have been heavily truncated, and major steps are missing altogether.

Task Fulfillment vs. Gate Deliverable Requirement

If we do complete all the critical tasks and use a balanced set of enabling tools to underwrite the integrity of our deliverables, we are doing our best to control risk. We can produce outstanding deliverables, full of integrity and clarity, that simply do not meet the requirements for the project and its business case. We then have great data

that tells us we can't meet our goals. This is how a gate-keeping team can kill a project with confidence. Not many companies kill projects very often, and even fewer do it with tool/task/deliverable confidence.

We have two views to consider when managing risk and making gate decisions:

1. Fulfillment of the requirements so that we have a positive “green light” to continue investing in the project
2. Lack of fulfillment of the gate requirements so that we have a negative “yellow or red light” that signals a redirection of the project or an outright discontinuance of the project

Gatekeepers concern themselves with only yellow and red deliverables that they can do something about in terms of their influence, budgets, and control of resources. Gatekeepers should see only items of risk that they truly can affect. All subordinate areas of risk should be dealt with at the appropriate level. Bringing risk items to executives at the tool and task levels is a waste of their time; those items belong down in the functional management area, with those who have the ability to directly deal with the issue.

A color-coded scheme of classifying risk can be defined as follows:

- **Green**—All major deliverables are properly documented and fulfill the gate requirements. A few minor deliverables might be lagging, but present no substantive risk to the success of the project in time, cost, or quality.
- **Yellow**—A very few major deliverables are not complete or fall short of fulfilling their requirements. A corrective action plan is documented, and a very high probability exists that the problems can be overcome in a reasonable and predictable amount of time.
- **Red**—One or more major deliverables are not done or do not meet requirements, and no corrective action plan exists to close this gap. The project will be either killed or redirected or

postponed until a corrective set of specific actions is defined and a predictable path to project timing is in hand.

This is a suggested set of ranking values to quantify the risk associated with varying levels of mismatch between what is delivered from a major task against the gate requirement:

10 = Results deliver all data necessary to completely support the fulfillment or lack of fulfillment of the gate requirements.

9–8 = Results deliver a major portion of the data necessary to support the fulfillment or lack of fulfillment of the gate requirements.

7–4 = Results deliver a moderate amount of the data necessary to support the fulfillment or lack of fulfillment of the gate requirements.

3–1 = Results deliver a very limited amount of the data necessary to support the fulfillment or lack of fulfillment of the gate requirements.

We have demonstrated how a tool scorecard documents the quality of tool use, integrity of the data, and fulfillment of a task. We have gone on to the next level of scoring risk by defining a task scorecard. Here we can quantify how well one or more enabling tools have contributed to completing a major task, what percentage of the task has been completed, and how well the deliverables from the task fulfill the gate requirements. We are now ready to look at the final summary scorecards that a gate-keeping team can use to quantify risk accrual at the end of a phase of work.

Gate Review Scorecards

Gate review scorecards help assess accrued risk and make decisions at each gate review or major milestone. Two kinds of gate reviews exist: functional-level gate reviews and executive-level gate reviews.

Functional reviews are detailed and tactical in nature and help prepare for executive review. Executive reviews are strategic in nature and look at macro-level risk in terms of how this particular project contributes to the overall portfolio of projects being commercialized or managed in the post-launch environment. Functional gatekeepers worry about microdetails within their particular project; executive gatekeepers worry about accrued risk across all projects that represent the future growth potential for the business as a portfolio. One looks at alignment of project risk across the business strategy, whereas the other looks at alignment of risk within the specific project's tactics and requirements. Functional reviews can be done for technical teams as independent events from other teams on the project. Executive reviews are summary presentations that include both technical and marketing, as well as all other forms of macro-gate deliverables.

Table 2.5 is an example of a generic template for a functional gate review.

Table 2.5 Functional Gate Review Scorecard

Gate Deliverables	Grand Average Tool Score	Summary of Tasks' Completion	Summary of Tasks Results vs. Delinquent Requests	Red	Yellow	Green	Corrective Action and Due Date Comments on Risk

The integrated system of tool, task, and gate deliverable scorecards provides a control plan for quantifying accrued risk in a traceable format that goes well beyond simple checklists. The task scorecard feeds summary data to this gate deliverable scorecard.

The next gate review format is used for executive reviews, where deliverables are summarized for rapid consumption by the executive gate-keeping team (see Figure 2.1).

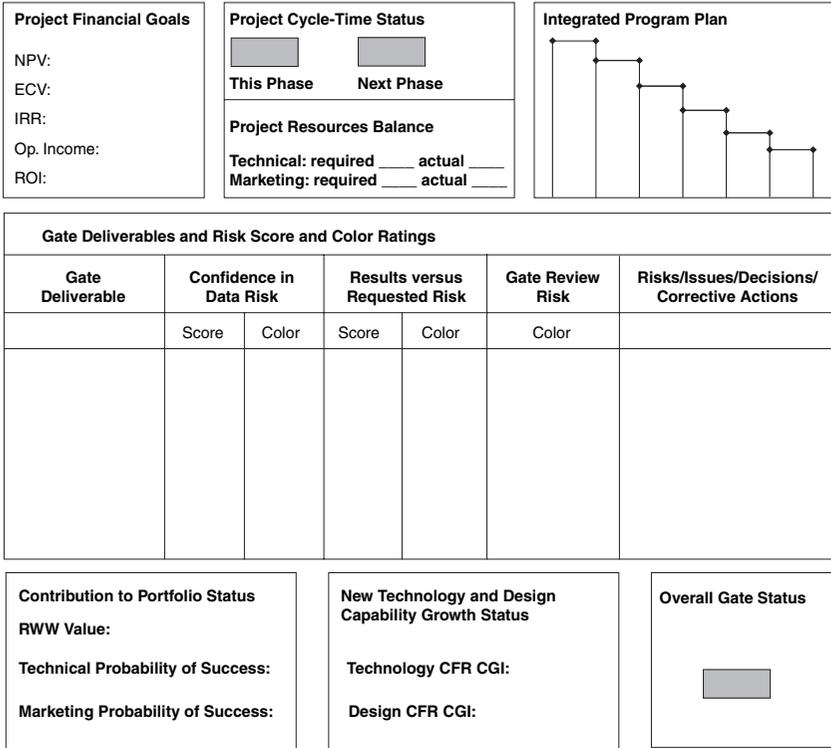


FIGURE 2.1 Strategic gate review scorecard.

Numerous companies committed to strategic portfolio management use this common format. The executive gate-keeping team looks at a number of these scorecards to balance risk across its portfolio of projects as the team seeks to grow the top line according to its business strategy. No project is immune from scrutiny or elimination if the summary data warrants that decisive action. Scorecards aid in decisiveness.

Summary

We have built an integrated system of scorecards (see Figure 2.2) that can be modified to suit any organization's phase-gate process. The design of scorecards must follow the design of your tool/task groups (clusters) and your deliverable/gate requirement groups as they are aligned with the phases of your product and technology portfolio-renewal process, product-commercialization process, and post-launch engineering process.

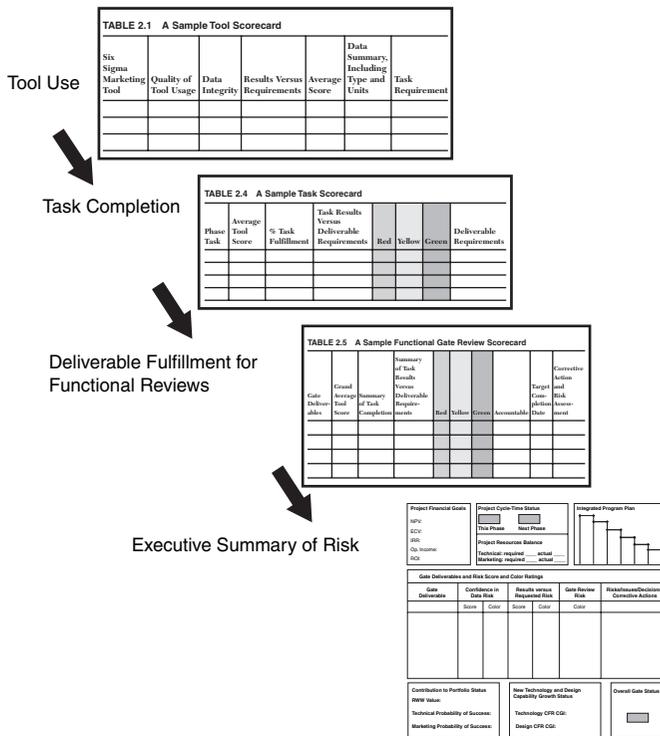


FIGURE 2.2 Integrated system of scorecards.

The system of scorecards can be used to manage the portfolio-renewal process. The first three scorecards are sufficient to manage risk across the portfolio-renewal process. As the portfolio-renewal team

activates each technology-development and product-commercialization project, an executive summary scorecard is initiated and updated during technology development and commercialization.

As the old saying goes, “That which gets measured, gets done.” We discourage the use of checklists and highly recommend the harder but more responsible use of a designed set of scorecards that will help you design what to measure and when to measure it so that you have a much higher probability of sustaining growth across your enterprise.

