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# Idea-to-Launch Gating Systems

## Better, Faster, and More Agile

*Leading firms are rethinking and reinventing their idea-to-launch gating systems, adding elements of Agile to traditional Stage-Gate structures to add flexibility and speed while retaining structure.*

**Robert G. Cooper**

The original Stage-Gate process was created in the late 1980s to meet the need to build best practices into new-product projects in a more systematic and disciplined fashion (Cooper 1990). Indeed, the original Stage-Gate idea-to-launch system was based on an in-depth study of successful intrapreneurs within major corporations as they drove new products to market. Their practices provided the foundation for that early stage-and-gate model. Overall, the Stage-Gate process has had a positive impact on the conception, development, and launch of new products. It has proved a flexible and powerful tool, evolving to incorporate new practices, such as portfolio management, continuous improvement through post-launch reviews, effective ideation (via the addition of Stage 0, Discovery), and spiral or iterative development for constant product validation (see, for instance, Cooper 1994, 2008, 2011).

But the R&D world was much different when Stage-Gate was created: budgets were more relaxed, resources less constrained, markets not as dynamic and fluid, and thus the pressure for efficiency, speed, and R&D productivity was not as great. Times have changed, though—markets are now faster paced, more competitive and global, and less predictable. In this context, the traditional Stage-Gate process can be too linear, too rigid, and too planned to handle today's more innovative, dynamic projects. According to critics, it is not adaptive enough and does not encourage experimentation; it's not context-based; and it is too bureaucratic (see, for instance, Lenfle and Loch 2010). Some authors have taken issue with these criticisms,

arguing that most of the perceived failings of Stage-Gate can be chalked up to faulty implementation rather than flaws in the underlying approach (Becker 2006), and some of the deficiencies have been corrected in recent evolutions of the approach (Cooper 2011).

But issues do remain, and a handful of leading firms are rethinking and re-inventing their idea-to-launch gating systems, seeking to add flexibility and speed while retaining the useful structures of Stage-Gate. These hybrid systems, which allow for iteration and continuous evolution, represent the future, not just of Stage-Gate, but of new product development.

### The Evolution of Stage-Gate

What these leaders have developed is a system that, at first glance, looks a lot like the traditional process: there are still stages where work gets done, and there are still gates where decisions are made (Figure 1). But the details of the process and its function are quite different, incorporating build-test-revise cycles and flexible decision structures to accommodate different kinds of projects. What emerges is a more adaptive and flexible idea-to-launch gating process that's also leaner, more dynamic, and significantly accelerated, one that can adapt to fluid requirements and evolving designs while it provides the right level of control and support for each project's level of risk and likely rewards.

### Adapting to Changing Requirements

"Sharp, early and fact-based product definition" was a fundamental principle of the original Stage-Gate model (Cooper 2011, 2013). But in today's fast-changing world, a stable product definition early in the process is just not possible for some businesses and projects. Customers may not be clear on what they want (or need)—as Steve Jobs, never a proponent of traditional market research, famously said, "People don't know what they want until you show it to them" (Isaacson 2011, p. 567)—or requirements may change while development is in process—a new customer need, a new competitive product, or a new technological possibility emerges, and the original product definition is rendered invalid. The next-generation idea-to-launch

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system is adaptive, meaning it adjusts to fluid information—for example, changing customer requirements. Rather than requiring a product definition to be completely stable once the concept moves into development, the newer systems accommodate and even thrive on changing requirements and evolving designs.

This adaptivity is accomplished through the incorporation of iterative development cycles designed to get something in front of potential users early and often.

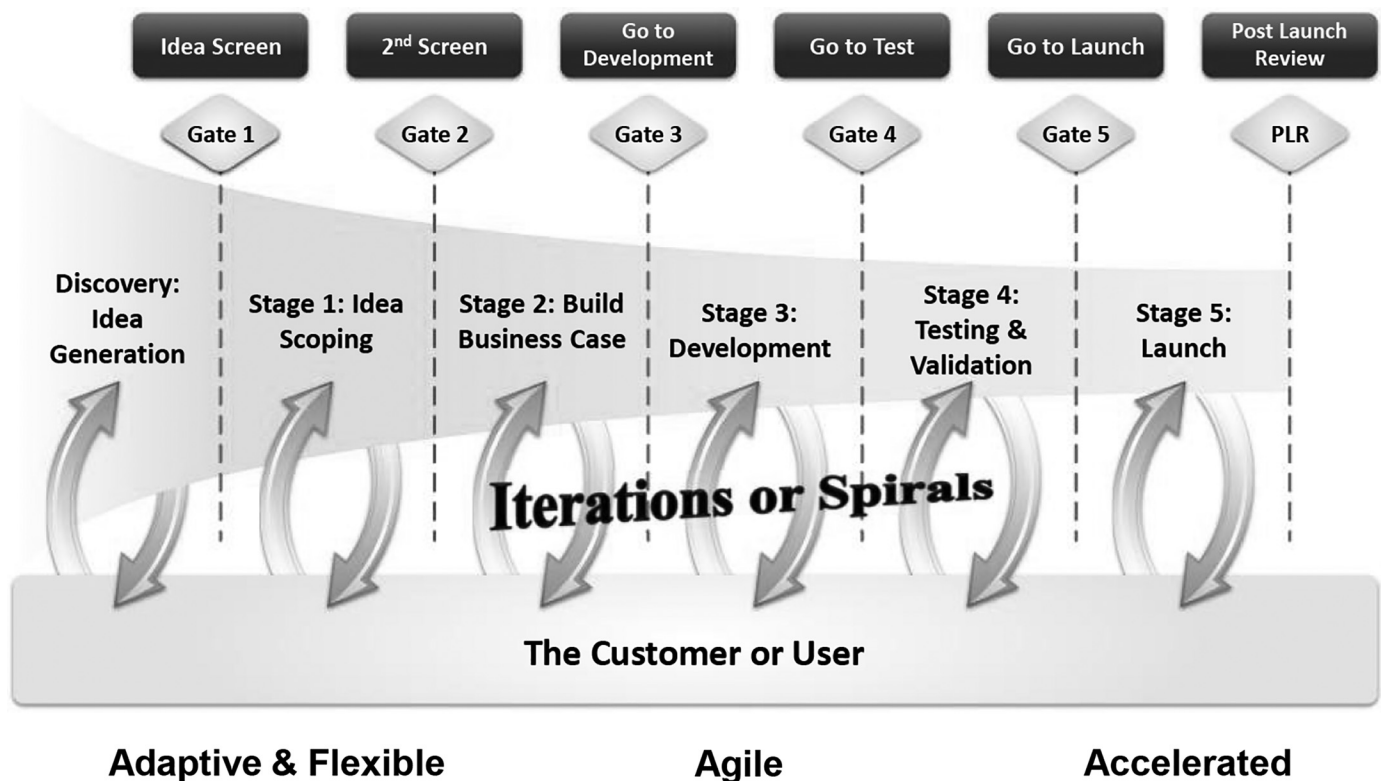
The product may be less than 50 percent defined as development begins; the definition solidifies throughout development, driven by new information, customer feedback, and changing market or technology conditions. Product definition is ultimately reached through a series of cycles, with each cycle producing a more refined product design, spiraling toward a complete product. Each cycle incorporates four steps:

1. *Build.* In each iteration, build something to show the customer—a rapid prototype, a concept (a representation of the proposed product, more developed than a concept but not yet a working prototype), a crude working model, a beta version.
2. *Test.* Test each version of the product with actual customers and likely users—watch how they interact with it and let them point out what value they see.
3. *Feedback.* Gather feedback on that version of the product from customers and users.
4. *Revise.* Use feedback to reset thinking about the value proposition and benefits of the product, as well as its design.

This spiral approach promotes experimentation and encourages project teams to fail often, fail fast, and fail cheaply on the way to a successful product.

#### *Allowing for Flexible Responses to Project Needs*

Perhaps the most significant departure from standard gating systems in the next-generation model is the ability



**FIGURE 1.** The next-generation idea-to-launch system (Cooper 2014)

to tailor the process to each project—the polar opposite of traditional Stage-Gate’s standard operating procedure (SOP) approach. In this new approach, appropriate activities and deliverables in each stage are defined by an assessment of the project’s underlying assumptions and risk level. In some leading companies, there is not a single Stage-Gate process, but several; a project enters one process or another depending entirely on that baseline risk assessment (Figure 2). The nature of the uncertainties and risk specific to a project determine what happens in that project.

Once a project enters the stage-and-gate system, the entire process, from idea to launch, is viewed as a series of activities designed to reduce uncertainty and manage risk by gathering information to validate or disprove underlying assumptions (Cooper 2011, 2014). In each stage of the project, the project team identifies key unknowns and uncertainties, pinpoints the critical assumptions (critical in the sense that they have economic consequences), and determines what information is needed to validate these assumptions. These information needs define the deliverables required at the next project review and hence the activities required in that stage. In this way, the project team maps out its own set of deliverables and stage activities specific to the project. Tools such as the Innovation Project Canvas may act as useful facilitators for the project team in the process of defining the actions required. The result is a customized, logically based plan of action for each project at each stage.

### Agile and Stage-Gate

These elements of flexibility and adaptability, and particularly the integration of iterative development cycles, are consistent

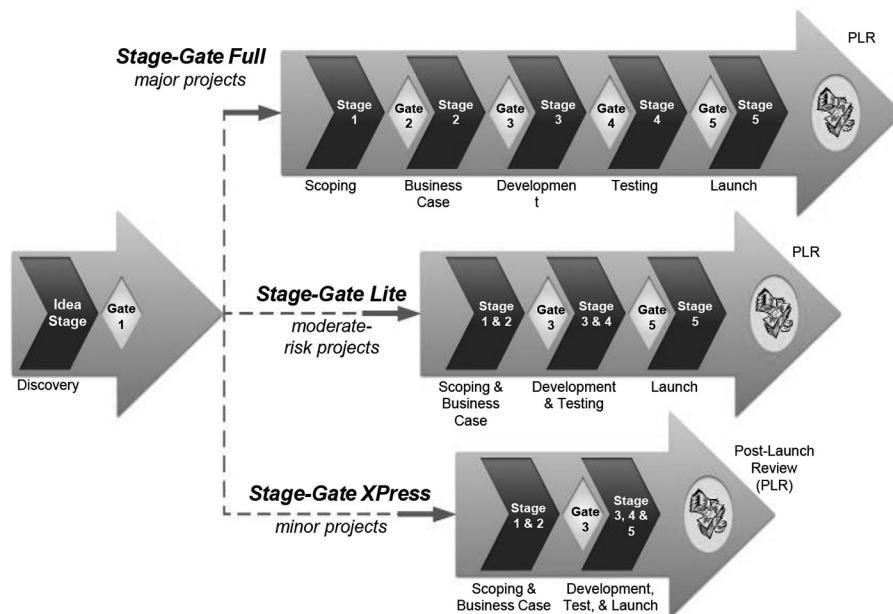
with the core tenets of the Manifesto for Agile Software Development, which calls for:

Individuals and interactions over processes and tools.  
Working software over comprehensive documentation.  
Customer collaboration over contract negotiation.  
Responding to change over following a plan (Beck et al. 2001).

Agile development methods, based on the Manifesto, have been widely adopted in the software world, with very positive results (Begel and Nagappan 2007). As Agile took hold in the software world, its methods were integrated with traditional gating approaches borrowed from manufacturers to yield a hybrid model that balanced the flexibility and adaptability of Agile’s iterative prototyping approach with the disciplined decision making of Stage-Gate (Boehm and Turner 2004; Karlstrom and Runeson 2005, 2006).

It was only a matter of time before manufacturers, interested by the results software developers were seeing from these kinds of processes, began adopting and adapting the hybrid model for their own new product development. Recent research with early adopters in the manufacturing world suggests that this hybrid model can be applied to physical products (hardware, not just software), from food and toys to heavy industrial equipment, with dramatically positive results (Cooper 2014; Sommer, Dukovska-Popovska, and Steger-Jensen 2014; Sommer et al. 2015; Cooper 2016; Cooper and Sommer 2016a, 2016b). These studies find that the benefits of this Agile–Stage-Gate hybrid model are quite broad, ranging from responsiveness to changing customer needs (a critical advantage in fluid markets where things change quickly) to improved productivity and better prioritization (Figure 3). If this evidence holds up, this new approach promises to be the most significant change to our thinking

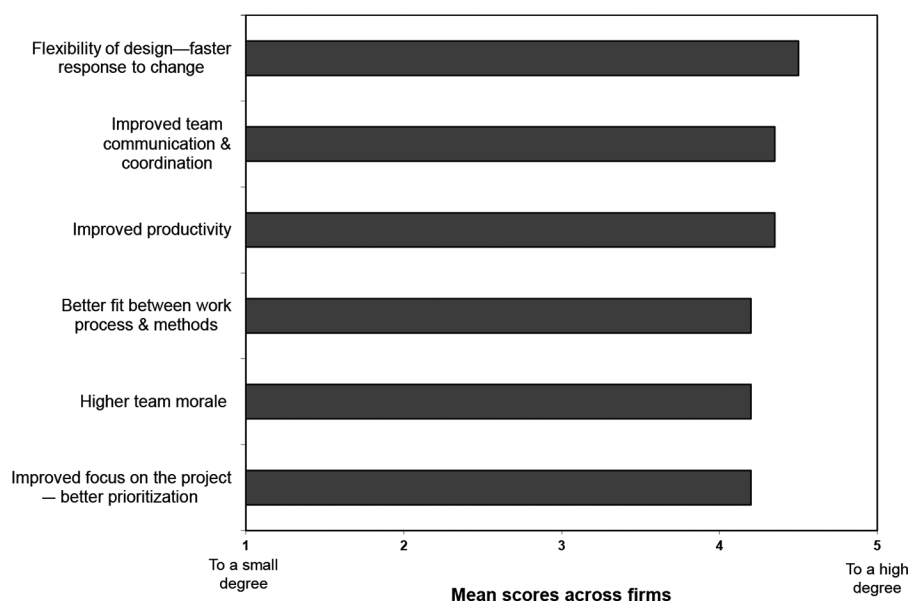
about new-product development since the introduction of Stage-Gate 30 years ago.



**FIGURE 2.** Scalable Stage-Gate systems to handle projects of different sizes or risk levels (adapted from Cooper 2014)

### The Agile–Stage-Gate Hybrid in Practice

Most manufacturers, when integrating Agile with Stage-Gate, rely on the Scrum version of Agile (there are at least eight different Agile methods; Scrum is the most popular). The hybrid model integrates Agile’s sprints and scrums by breaking the development process within stages into short increments driven by short-term, minimal planning; these increments, *sprints* in the Agile terminology, are limited to very short time frames, typically one to four weeks. These sprints produce a rhythm, with a pattern of activities that defines the heartbeat of the project (Figure 4). Each sprint begins



**FIGURE 3.** Payoffs from implementing an Agile-Stage-Gate hybrid in five manufacturing firms (Cooper and Sommer 2016b)

with a sprint planning meeting, in which the project team determines realistic goals for the sprint and then maps out an action plan to accomplish those goals. Each day of the sprint begins with a daily *scrum*, or stand-up meeting, in which the team members review what was accomplished the previous day, what the plan is for today, and what problems have arisen.

At the end of each sprint, the team must deliver something physical that can be demonstrated to stakeholders (both management and potential customers). For software, the sprint deliverable is usually a working product feature—executable code. But the manufacturing world is clearly different: not too many physical products or features can be developed in just a few weeks. Thus, the definition of a “done sprint” is a little more flexible; for example, a “done sprint” deliverable could be completed design drawings, a working model, a

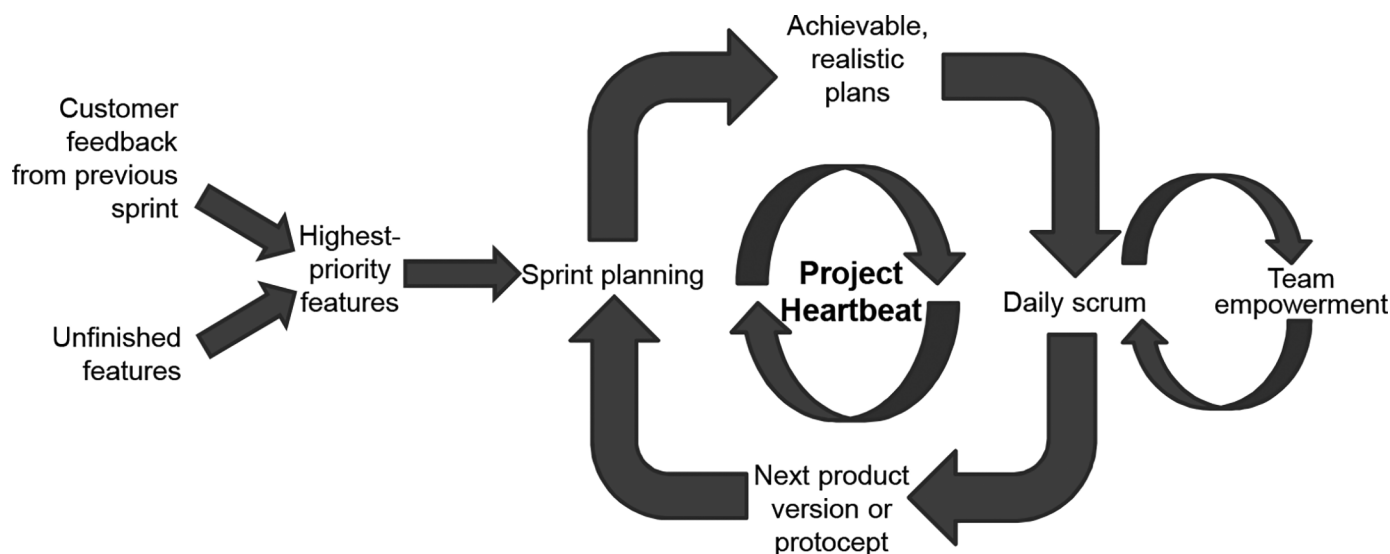
prototype, or even the results of a VoC study—but it must be something tangible, and not just a PowerPoint show. Sprints conclude with a retrospect meeting, where team members consider how they could improve the team’s functioning for the next iteration.

The Agile-Stage-Gate hybrid is very resource intensive. The project team must be 100 percent dedicated to the project and co-located in one team room to enable daily scrums, rapid problem solving, and instant within-team communication and to build a strong sense of team identity, which helps drive engagement and sustain the intense effort of the sprint. Further, senior management is very much engaged in the many post-sprint reviews.

Manufacturing adopters of the Agile-Stage-Gate hybrid typically begin by applying Agile methods only in the two technical phases of the Stage-Gate model, namely Development and Testing. With maturity, however, Agile is soon integrated into earlier phases—the Ideation and Business Case stages—and then right through to the Launch stage. Further, not every project uses the Agile-Stage-Gate methodology; most firms reserve the hybrid model for riskier and less-defined initiatives where dedicated people can be committed—typically about 20 percent of the project portfolio.

### Accelerating the Process

Integrating Agile with Stage-Gate opens up new opportunities not only to improve performance in product development but also to accelerate the process. Early adopters are also borrowing elements from other models



**FIGURE 4.** The heartbeat of an Agile-Stage-Gate sprint (adapted from Wells 2009)

to further speed product development. For instance, value stream analysis, borrowed from Lean Six Sigma, maps the entire idea-to-launch process and identifies work that adds no value so that it can be stripped from the process. Removing that unnecessary work can cut the time to market significantly. Perhaps not coincidentally, this kind of lean approach is consistent with Agile principles, which value simplicity, defined as “the art of maximizing the amount of work not done” (Beck et al. 2001).

Another way to accelerate projects is simultaneous execution—allowing key activities and even entire stages to overlap, so that projects move ahead when information is reliable and stable, rather than waiting for perfect information. Development becomes a rugby game, with multiple parallel activities moving the ball forward, rather than a relay race, with activities strung out in a series of clean, one-time baton passes.

Finally, fully dedicated teams are a must to maximize speed. Agile requires this kind of resource allocation, but even in the absence of an Agile component, a lack of focus and inadequate resources—spreading people too thinly across too many projects—has been identified as a major impediment to rapid delivery of new products. Benchmarking studies show that top-performing businesses in new-product development are considerably more focused than others, with dedicated resources for product innovation: half have dedicated product development teams, and more than half have fully dedicated product innovation groups that work on new products full time (Cooper 2011, 2013).

## Conclusion

The future will likely see a continued shift toward faster, less predictable, more ambiguous, and riskier markets and development projects. Consequently, the need for a more accelerated, adaptive, and flexible new-product process will only grow. But one size does not fit all—companies must assess their own requirements and pick those elements of Agile, accelerated, and adaptive practices that apply to their market, industry, and project. Agile and iterative development methods are best applied where things change quickly, where the market and needs are uncertain, and where speed is essential. Less dramatic situations, such as a project facing a less extreme market but where constant validation is required, may require only the adaptive or spiral development practice and extend the length of iterations to a month or more instead of weeks. And those firms primarily seeking to reduce their time to market might look to tools for leaning down the system, such as value stream analysis, simultaneous execution, and dedicated allocation of resources.

Think of the agile, adaptive, and accelerated practices outlined in this article as a tool set from which you can choose the optimal set for your company and market.

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