

Stage-Gate® Innovation

A Robust Idea-to-Launch System for Conceiving, Creating & Delivering New Products



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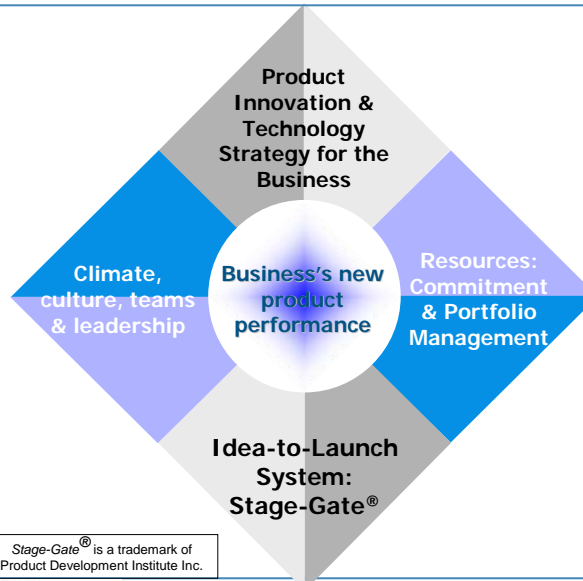

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Leading Firms Have Adopted Stage-Gate® Methods – Nearly 75% of N.A. Industry Uses Some form of Stage-Gate® –



It's the Process, Not the Pocketbook¹

- ❑ Superior results are a function of the quality of an organization's innovation process
 - The bets it makes
 - How it pursues them
- ❑ Rather than either the magnitude of its innovation (R&D) spending
- ❑ Example:
 - Apple's 2004 R&D-to-Sales ratio of 5.9% trails the computer industry average of 7.6%
 - Its \$489 million spend is a fraction of its larger competitors



Install an effective idea-to-launch Innovation Process – Stage-Gate –
within the business to enable productive R&D spending

¹ Source: Global Innovation Study, Booz-Allen & Hamilton, New York.

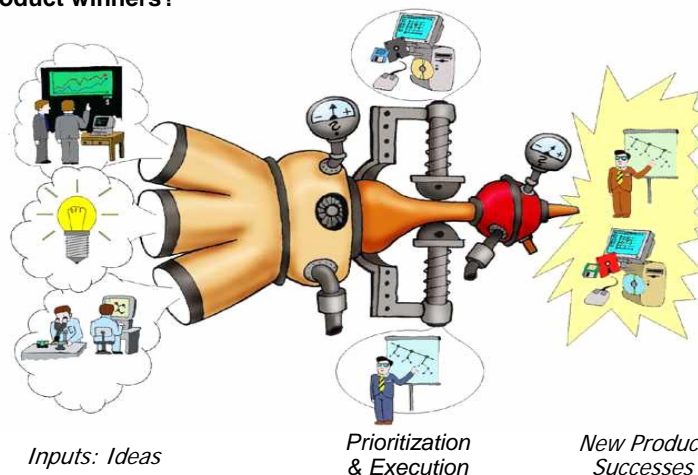
It's the Process, Not How Much Money You Spend

- By rigorously focusing its development resources on a short list of projects with the greatest potential, the company created an innovation machine that eventually produced the iMac, iBook, iPod & iTunes.
- “The competitive value of a fast and effective innovation engine has never been greater,” said Kevin Dehoff, Booz Allen Vice President¹
 - Noting the trend toward shorter product life cycles & an ever-faster flow of new offerings
- "Yet of all the core functions of most companies, innovation may be managed with the least rigor"
- “The key is to identify the priority areas where process improvements will have the greatest impact"

¹ Source: Global Innovation Study, Booz-Allen & Hamilton, New York.

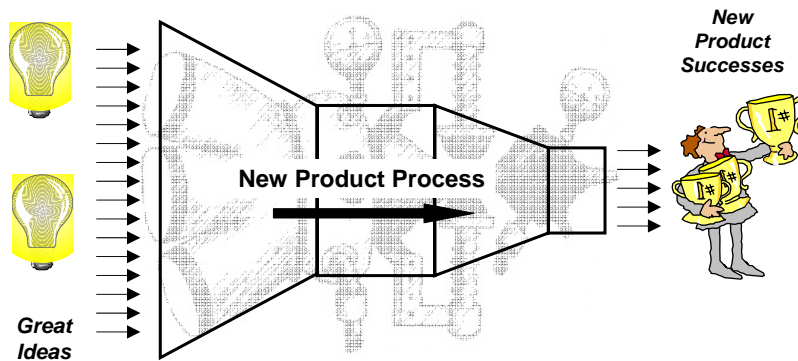
The Idea-to-Launch New Product System

How about a machine where we put our ideas in, and after processing them, the machine gives an optimal set of projects & a steady stream of new product winners?



The Stage-Gate® System

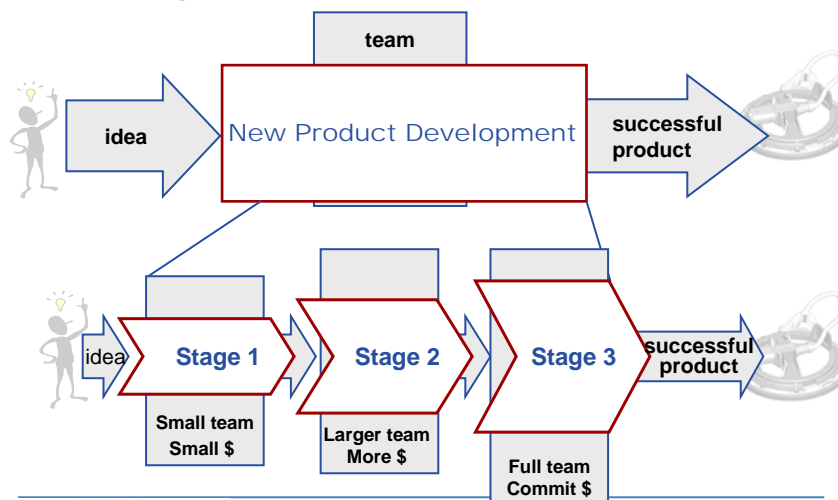
- Views new product development as a process



- All work is a process
- Any process can be redesigned to be faster & more effective

Stages in the Stage-Gate® System

Breaks the NPD process into a series of manageable & simple stages with increasing resource requirements

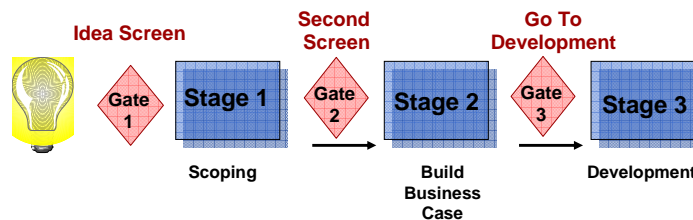


Stages:

- ❑ **Each stage consists of a set of prescribed and concurrent best-practice activities, such as... Stage 2:**
 1. Undertake a voice-of-customer user needs & wants study
 2. Undertake a detailed technical appraisal
 3. Perform a detailed financial analysis
 4. Define product: target market, benefits, specs.
- ❑ **Each stage is multi-functional:**
 - Engineering, R&D, Marketing, Sales, Operations, IT, etc.
 - Requires resources & people from many functions
 - No such thing as a Marketing or Manufacturing Stage!
- ❑ **Each stage typically costs more than the preceding stage:**
 - Incremental commitment (like buying options)
 - As resource commitments increase, uncertainties must come down
 - A risk management model

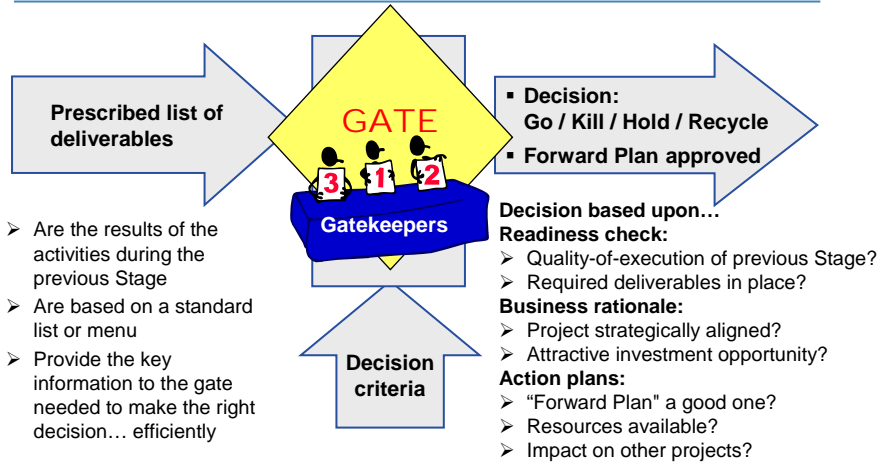
Gates in the Stage-Gate® System

- ❑ **Each stage is preceded by a Gate**
- ❑ **Gates = Decision Points or GO / KILL Points**



- ❑ **Each Gate opens or closes the road for the project to move on to the next stage**
- ❑ **Gates are the quality control check points in the process**

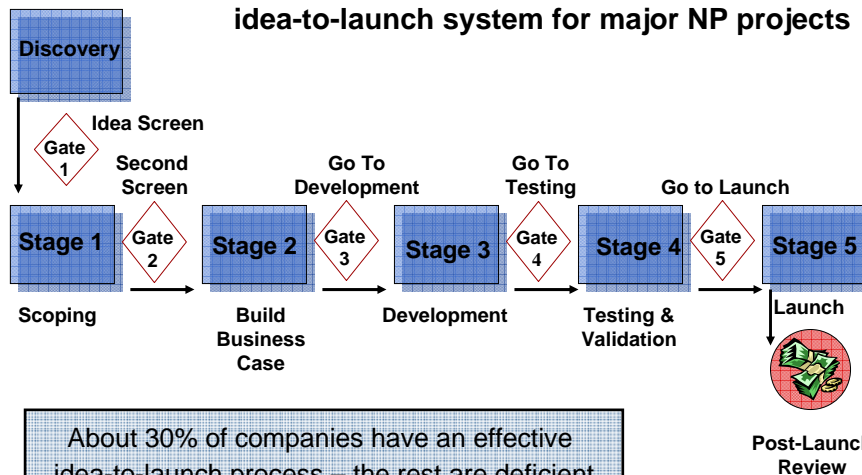
Gates: The Go/Kill Decision Points



Gates ensure that only the right projects move forward

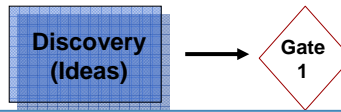
An Overview of the Stage-Gate® System

Stage-Gate®: A five stage, five-gate idea-to-launch system for major NP projects



About 30% of companies have an effective idea-to-launch process – the rest are deficient

Discovery



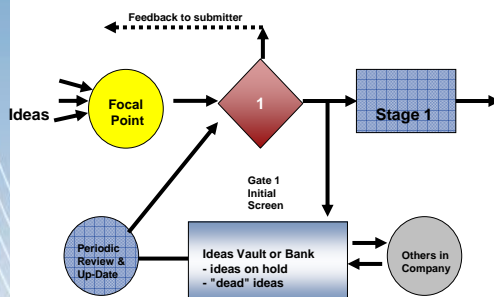
Multiple Sources of Ideas

- **Multiple routes:**
 - Strategically driven (top down – strategic product roadmap)
 - Serendipitous (bubble up)
- **Both external and internal sources:**
 - Customers & users
 - Competitors
 - Technical Groups
 - Marketing Groups
 - Salesforce, tech service
 - Creativity events
 - Open innovation
 - New external technology
 - Alliances
 - Suppliers



Set Up an "Idea Capture" System

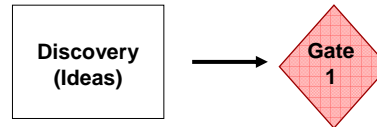
With an Innovations Champion as Focal Point



- Innovations Champ. receives all ideas
 - Takes ideas to Gate 1
- Gets decision
 - Move forward to Stage 1
 - Or into Vault
- Actively solicits ideas:
 - Brainstorming sessions
 - Events with customers
 - Idea contest or suggestion scheme
 - Scenarios generation
 - MRG events
 - Lead user initiatives

Note: The Innovations Champion is also usually the Process Manager of the Stage-Gate® Process

Gate 1: Idea Screen



□ Purpose:

- The initial GO / KILL decision on a project
- The first but tentative commitment of resources
- A “flickering green light”

□ Gatekeepers:

- Mid-Management Cross-Functional Decision Team

□ Output:

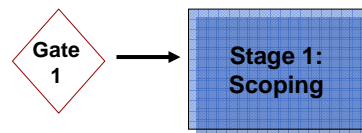
- Decision: Go/Kill
- Forward Plan for Stage 1

Criteria for Go:

- **Must Meet criteria** (Yes / No – knock-outs)
 - Within Strategic Mandate
 - Minimum Market Size
 - No show-stoppers
- **Should Meet criteria** (Scored 0-10 – added for point count)
 - Strategic Fit
 - Technical Feasibility
 - Market Attractiveness
 - Competitive Advantage... etc.

Largely qualitative (non-financial)

Stage 1: Scoping



□ Purpose:

- An inexpensive & quick set of activities to learn more about the project
- A *preliminary investigation*

□ Effort:

- Within one month
- 5-20 person-days
- Less than \$5-10K total cost
- Mostly desk research

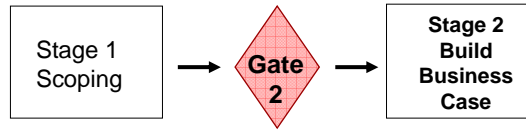
Key Tasks:

- Prelim. Market Assessment
- Prelim. Technical Assessment
- Prelim. Business Analysis
- Others: IP, Regulatory, Safety

Gate Deliverables:

- Preliminary Business Case
- Preliminary Product Definition

Gate 2: Second Screen



□ Purpose:

- A second review of the project, but with better information (the result of Stage 1)
- Opens the door to a more expensive second stage, Build Business Case

□ Gatekeepers:

- Some from Gate 1
- Some senior people too (Technical, Marketing)

□ Output:

- Approval of Forward Plan
- Commit Stage 2 resources

Criteria for Go:

**Like the first screen, Gate 1
Same Must Meet criteria**

Should Meet (scored):

1. Strategic Fit & Importance
2. Competitive (Product) Advantage
3. Market Attractiveness
4. Leverages Core Competencies
5. Technical Feasibility
6. Risk & Reward (magnitude & certainty of payoff)



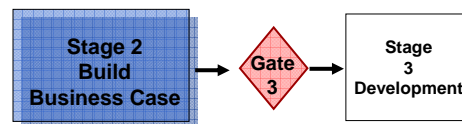
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Stage 2: Build Business Case



□ Purpose:

- Detailed investigation – the key homework stage
- Market, technical & source-of-supply analysis
- Business & financial analysis

□ Effort:

- 2-3 person-months

□ Key deliverable:

- Full Business Case

Key Tasks:

1. Market analysis (size, trends, segmentation)
2. Market research: user needs & wants study (voice of customer)
3. Competitive analysis
4. Concept test with users
5. Technical: preliminary development work, prove technical feasibility
6. Operations: operations assessment, costing & source of supply appraisal
7. Alliance assessment – needs, search & vetting
8. Legal: patent & legal searches
9. Regulatory, health, environmental, safety reviews
10. Detailed financial analysis: Payback, NPV, IRR & sensitivity analysis



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Key Deliverable: A Full Business Case

Product Definition

- Project scope
- Target market
- Product concept: benefits and positioning
- Value proposition
- Product design: features and attributes, requirements and specifications

Project Justification

- Financials and business rationale

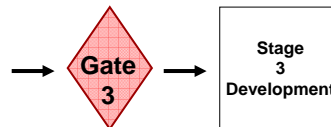
Project Plan

- Detailed Development Plan
- Preliminary Market Launch & Operations Plans
- Full Project Team defined



Templates exist for all deliverables so that expectations are clear to the team

Gate 3: Go to Development



Purpose:

- The pivotal decision: the "money gate"
- Opens the door to full scale development & heavy commitment

Gatekeepers:

- Leadership Team of the business

Output:

- Development Plan approved
- Resources for Stage 3 committed

Criteria for Go:

- **Readiness check:**
- **Deliverables in place & OK**
- **Should Meet (point count):**
 1. Strategic Fit & Importance
 2. Competitive (Product) Advantage
 3. Market Attractiveness
 4. Leverages Core Competencies
 5. Technical Feasibility
 6. Risk & Reward (magnitude & certainty of payoff)
- **Full financial review – meets hurdles?**
- **Review & approval of Action Plans & resources required**

Stage 3: Development



Key Tasks:

1. **Implement Development Plan**
 - Develop the product, as per Gate 3 Definition
2. **Undertake in-house product testing (lab, alpha)**
 - Produce lab-tested (alpha) prototype or sample
3. **Conduct limited customer tests**
 - Limited feedback via "show & tell"
4. **Develop manufacturing (operations) process**
 - On paper or lab-based pilot plant
5. **Update Financial Analysis**
6. **Develop detailed Test Plans (for Stage 4)**
7. **Develop Launch Plans for Stage 5:**
 - Detailed Market Launch Plan
 - Production / Operations & Quality Assurance Plans



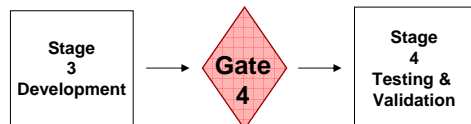
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Gate 4: Go to Testing



❑ Purpose:

- Opens the door to Stage 4, Testing & Validation
- Go "semi-commercial"

❑ Gatekeepers:

- Again the Leadership Team

Criteria for Go:

- **Quality of activities in Stage 3, Development**
- **Deliverables & readiness check**
- **Consistency check: delivered prototype consistent with Gate 3 definition?**
- **Revisit Gate 3 scored criteria**
- **Review of financials – meet hurdles?**
- **Review & approval of Test Plans**



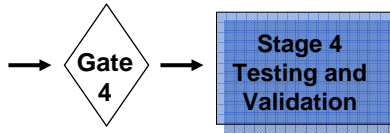
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Stage 4: Testing & Validation



□ Purpose:

- The final tests of the product, operations & marketing plans

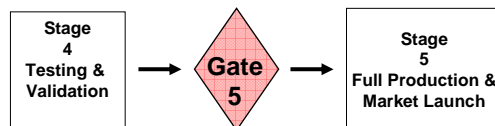
Stage 4 Tests:

1. Continued in-house prototype, alpha or lab tests
2. Customer tests of product (in-use tests, field trials, betas, preference tests)
3. Plant trials, pilot plant or limited production
4. Test market or trial (limited) sell

Key Tasks:

1. Execute Stage 4 Tests
2. Update financial analysis
3. Prepare final Launch Plans for Stage 5:
 - Market Launch Plan
 - Production / Operations & QA Plans
4. Develop Post Launch Plans:
 - Plan to Post Launch Review
 - Life Cycle Plan

Gate 5: Go to Launch



□ Purpose:

- The final GO / KILL gate
- The "parade gate"

□ Involves:

- A critical review of all Stage 4 activities & results
- A review of updated financials
- A review & approval of finalized Production / Operations, Quality Assurance & Market Launch Plans (for Stage 5)

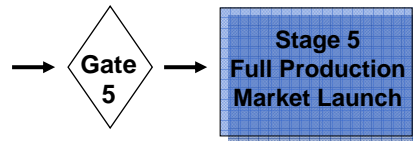
□ Based on a set of criteria:

- Commercial readiness check
- Financials are still positive

Criteria for Go:

- All test results positive:
 - Operations
 - Marketing
- Purchase intent established
- Financials meet hurdles
- All Launch Plans in place

Stage 5: Launch

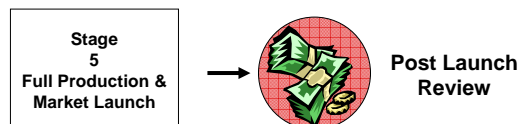


- ❑ Execute the Launch!

Key Launch Tasks:

1. Implement Operations Plan
2. Implement Quality Assurance Plan
3. Implement Market Launch Plan
4. Implement Post Launch (monitor & adjust)
5. Implement Product Life Cycle Plan

Post Launch Review(s)



- ❑ **First Review (Interim): 1-2 months into Launch**
- ❑ **Final Review: 12-24 months after launch**
 - Project Team remains accountable until this PLR

First Review:

- Initial results review
- Fixes and corrections needed for project & product
 - A complete retrospective analysis of the project:
 - Review of steps & actions
 - What we can learn
 - Provides essential organizational learning

Final Review:

- Terminates the "new product project":
 - The Project Team is disbanded
 - Product becomes a "regular product" in the firm's offering
- Accountability issues:
 - Actual versus projected results at G3 & G5 (and reasons why)
- Life Cycle Plan approved & implemented

Special Features of Stage-Gate®

Tough, rigorous gates with ...

- Go / Kill criteria spelled out
- Defined deliverables (quality standards)
- Agreed-to procedures at the gates
- "Rules of engagement" for the gatekeepers
- Resource allocation method at gate
- Linked to Portfolio Management

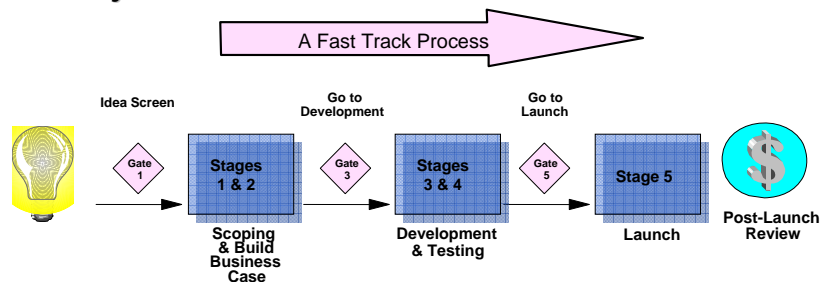


Organizational:

- Cross functional teams: empowered, available resources
- Gatekeepers defined for each gate, project level
- Process Manager, "key master" or "process shepherd" in place

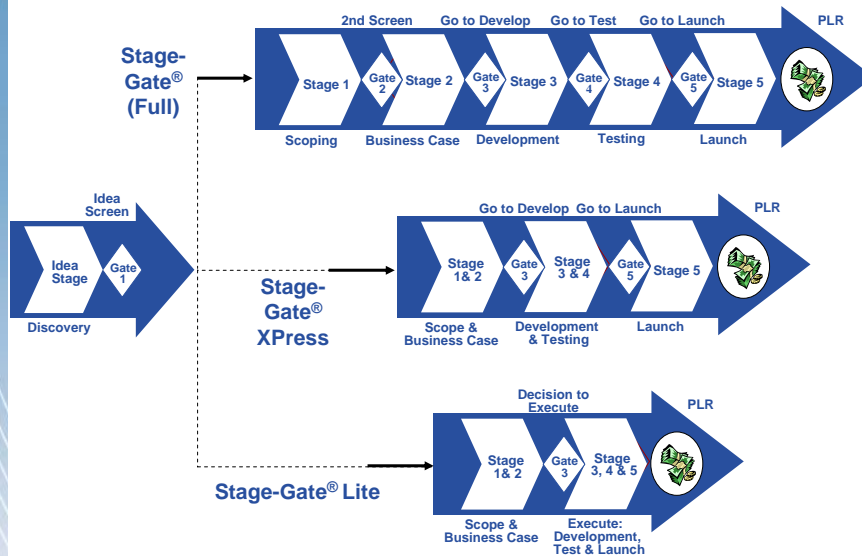
Stage-Gate® is Flexible, Adaptable & Scalable

Stage-Gate® XPress: A Three-Stage Version for Lower Risk Projects



Not every project goes thru the same system
 Stage-Gate® XPress is for lower risk, simpler projects:
 line extensions, product improvements, product modifications

NexGen Stage-Gate® Is Scalable



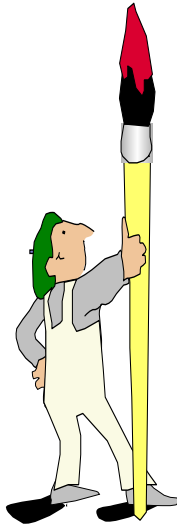
How Gates Work

- ❑ Gates are Go / Kill, project prioritization & resource commitment decision meetings – project specific
- ❑ Gatekeepers meet regularly to make **investment decisions** on those project ready to move onto the next stage:
 - Not every project is reviewed at every Gate meeting
 - Only those projects moving to the next Stage
 - Gate meetings are not...
 - Milestone checkpoints
 - Portfolio reviews
 - Project status & update meetings!



Gate Meetings are Go / Kill decision meetings
An irrevocable decision to commit
resources to a project

How Gates Work (continued)



- ❑ The Project Leader drives the project from stage to stage, gate to gate
- ❑ The Leader submits team's inputs or deliverables to each gate at the completion of a stage
- ❑ These inputs or deliverables are pre-set:
 - A visible list of requirements: clear expectations!
 - Based on a standard list or menu
- ❑ Deliverables provide only the information necessary for the Gate decision

Keep the deliverables package lean – "lean gates"
Only the information the gatekeepers need to know
to make the investment decision
Use templates & guides!

Who are the Gatekeepers?

- ❑ Gatekeepers: a decision-making group comprised of management
- ❑ Senior management at later & expensive gates – Gate 3 onward & for larger & important projects
 - The Leadership Team of the Business
 - Gatekeepers must have the authority to approve action plans and to commit resources to support these plans
- ❑ Gatekeepers typically represent different functional areas: Marketing, R&D, Mfg, etc.
 - Commit all needed resources
 - Secure alignment across functional areas
 - Commitment of functions to same projects & same priorities

Rule: Gatekeepers are the resource-owners
of resources required for the next stage

Gatekeepers and Their Role

□ Gatekeepers rules of the game:

1. Gatekeepers must themselves be disciplined
2. Hold the meeting and be there – no cancellations!
3. Arrive prepared
4. Use the pre-set list of criteria – no hidden criteria; no capricious decision-making; use a scorecard
5. Ensure that all projects pass through the gates – no cheating on executive pet projects
6. Provide fast, same day decisions at gates – by 6 PM
7. Agree to abide by this set of rules!



□ Gatekeepers also have a mentoring and helping role:

- Help the Project Leader cut through organizational bureaucracy: Executive Sponsors or "godfathers"
- Provide advice & assistance on projects

Develop a set of "gatekeeper "rules of engagement"
Stick to these!

The Benefits of the Stage-Gate® System

1. A roadmap or "playbook" for the Project Leader & Team – defines their duties & deliverables
2. Puts discipline into a somewhat ad-hoc, chaotic process
3. A visible process – known & understood by all
4. Forces more attention to quality of execution: the gates are the quality control check points
5. Makes for a complete process – no critical errors of omission; no missing steps
6. Cross-functional – inputs from all sides
 - At Project team level
 - At Gatekeeper level
7. A faster process via parallel processing: new product rugby

Results



- More effective
- More efficient
- Faster and ...
- More successful developments

What distinguishes the top performing firms¹ is how they implement Stage-Gate®

Dangers

- Over-bureaucratizing the process:**
 - Building in much non-value-added work
 - Deliverables overkill
 - Failure to build in flexibility (e.g. for smaller, low risk projects)
- Failure of gatekeepers to adhere to the rules of the game:**
 - Cheating on pet projects – circumvent the process
 - Gate meetings not held or not timely
 - No decisions made, hollow gate decisions
- No resources or wrong talents:**
 - Too few resources to properly execute Stage-Gate®
 - Resources not clearly committed to projects
 - Team members not given release time
- Underestimating implementation challenges**
 - It takes time (1-2 years)
 - Senior management commitment is a must
 - Not a “quick fix” – hold the course!

But the effort is worth it – the pay-offs are huge!

References – Books:

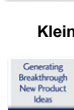


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Lean, Rapid & Profitable New Product Development, Cooper & Edgett. Outlines the seven principles to maximize your NPD productivity. www.stage-gate.com



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New! Creating Breakthrough New Product Ideas: Feeding the Innovation Funnel, by R.G. Cooper & S.J. Edgett. Provides an in-depth look at the best ways to generate, capture and manage ideas for new products. 2007 www.stage-gate.com



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An Investigation into Best Practices in Product Innovation: What Distinguishes the Top Performers, March 2003. Reports the results of the latest and definitive benchmarking study, done thru APQC, Houston.

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Also, see selected articles on line (no charge) at www.stage-gate.com



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