G00214001

Understanding Gartner's Hype Cycles, 2011

Published: 19 July 2011

Analyst(s): Jackie Fenn, Mark Raskino

Hype Cycles help technology planners to decide when to invest in a technology. If a company launches its efforts too soon, it may suffer unnecessarily through the painful and expensive lessons associated with deploying an immature technology. If it delays action for too long, it runs the even-greater risk of being left behind by competitors that have succeeded in making the technology work to their advantage.

Key Findings

Hype Cycles:

- Establish the expectation that most technologies will inevitably progress through the pattern of overenthusiasm and disillusionment.
- Provide a snapshot of the relative maturity of technologies within a certain segment, such as a technology area, horizontal or vertical business market, or a certain demographic audience.
- Show the speed at which each technology is progressing through the Hype Cycle by indicating how long it will take to reach the Plateau of Productivity and the start of mainstream adoption.

Recommendations

- Do not invest in a technology just because it is being hyped, nor ignore a technology just because it is not living up to early overexpectations.
- Be selectively aggressive and move early with technologies that are potentially beneficial to your business. For technologies that are of lower impact, let others learn the hard lessons, putting off your adoption until the technology is more mature.
- Use the Priority Matrix that accompanies each Hype Cycle to evaluate the potential benefit of each technology and determine investment priorities.

Table of Contents

Analysis....3
What Is the Hype Cycle?....3
Positioning a Technology on the Hype Cycle....6
On the Rise....7
At the Peak....8
Sliding Into the Trough....9
Climbing the Slope....10
Entering the Plateau....10
Why the Hype Cycle Matters....11
How to Use the Hype Cycle....15
Hype Cycle Speed: The "Years to Mainstream Adoption" Assessment....18
The Priority Matrix and Benefit Ratings....18
Market Penetration and Maturity Assessments....20
Hype Cycle Q&A....23
Advanced Hype Cycle Topics....27
Behind the Hype Cycle....27
Hype Cycle Speed....29
Special Hype Cycle Circumstances....31
Recommended Reading....32

List of Tables

Table 1. Maturity Levels....21
Table 2. Typical Correspondence Between Hype Cycle Technology Fields....23

List of Figures

Figure 1. The Hype Cycle....4
Figure 2. Phases of the Hype Cycle....7
Figure 3. Hype Cycle Traps....13
Figure 4. Hype Cycle Opportunities....14
Figure 5. Adoption Patterns by Type A, Type B and Type C Organizations....16
Figure 6. Key Hype Cycle Questions....17
Figure 7. Priority Matrix....19
Figure 8. Components of the Hype Cycle....27
Figure 9. Double "Peak" of Hype Triggered by Meaningful Improvements and Adoption....28

Figure 10. "Horse Tail" Effect of Industry-Specific Hype Cycles.....29
Figure 11. Fast-Track Hype Cycle.....30
Figure 12. Long-Fuse Hype Cycle.....31

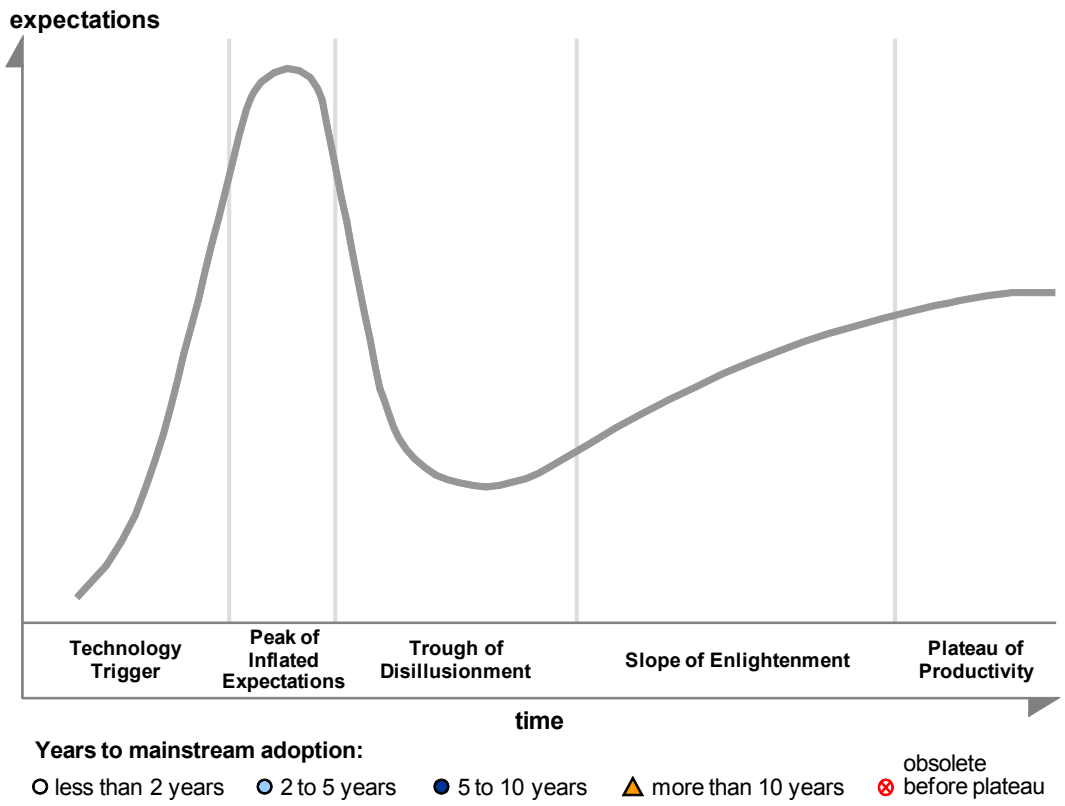
Analysis

What Is the Hype Cycle?

The Hype Cycle is a graphical depiction of a common pattern that arises with each new technology or other innovation. Each year Gartner creates more than 80 Hype Cycles in various technology (such as cloud computing and ERP), topic (smart cities, sustainability and green IT) and industry (retail, life insurance) domains as a way for clients to track technology maturity and future potential. This document is a companion to these Hype Cycles. It explains why the Hype Cycle is important for organizations deciding which new technologies to adopt and when, how the positioning is determined, and what actions should be taken by strategic and technology planners based on knowledge of the Hype Cycle.

Gartner's Hype Cycle, introduced in 1995, characterizes the typical progression of innovation, from overenthusiasm through a period of disillusionment to an eventual understanding of the innovation's relevance and role in a market or domain (see Figure 1).

Figure 1. The Hype Cycle



Source: Gartner (July 2011)

A technology (or related innovation) passes through several stages on its path to productivity:

- **Technology Trigger:** The Hype Cycle starts when a breakthrough, public demonstration, product launch, or some other event generates press and industry interest in a technology innovation.
- **Peak of Inflated Expectations:** A wave of "buzz" builds and the expectations for this new technology rise above the current reality of its capabilities. In some cases an investment bubble forms, as happened with the Web, social media and cloud computing.
- **Trough of Disillusionment:** Inevitably, impatience for results begins to replace the original excitement about potential value. Problems with performance, slower-than-expected adoption or a failure to deliver financial returns in the time anticipated all lead to missed expectations, and disillusionment sets in.
- **Slope of Enlightenment:** Some early adopters overcome the initial hurdles, begin to experience benefits and recommit efforts to move forward. Drawing on the experience of the early adopters, understanding grows about where and how the technology can be used to good effect and, just as importantly, where it brings little or no value.

- **Plateau of Productivity:** With the real-world benefits of the technology demonstrated and accepted, growing numbers of organizations feel comfortable with the now greatly reduced levels of risk. A sharp uptick ("hockey stick") in adoption begins, and penetration accelerates rapidly as a result of productive and useful value.

Note that, although many of Gartner's Hype Cycles are focused on specific technologies, the same pattern of hype and disillusionment applies to higher-level concepts such as IT methodologies and management disciplines. In this document, we will refer to the individual elements mapped on the Hype Cycles as "technologies," but in many cases, the Hype Cycles also position higher-level trends and ideas such as strategies, standards, management concepts, competencies and capabilities.

The horizontal axis of the Hype Cycle is labeled "time," reflecting the fact that a single technology will progress through each stage as time passes. In practice, most Gartner Hype Cycles are a snapshot showing the relative positions of a set of technologies at a single point in time. However, single-topic Hype Cycles can be useful to predict the future path of a technology. One notable example was the e-business Hype Cycle published in 1999, which accurately predicted the dot-com bust of 2001 and the eventual emergence of e-business as "business as usual."

The vertical axis is labeled "expectations." The distinctive vertical shape of the Hype Cycle curve shows how expectations surge and contract over time as a technology progresses, based on the market's assessment of its future expected value. Historically, this axis was labeled "visibility," but this was changed in 2009. The original label focused on the level of buzz and market discourse that drives the peak, but the current label more accurately reflects the deeper root cause and nature of the buzz as the technology progresses (a technology may be in the trough yet still visible in the form of negative press). In particular, it highlights the changing sentiment of potential and actual adopters of the technology and the shifting pressures surrounding investment decisions.

The vertical scale of each technology's hype curve typically varies, based on the technology's overall perceived importance to business and society. For visualization purposes, we have normalized the scale of these individual hype curves so they will all fit in one Hype Cycle graphic. For example, mesh networks are an interesting method of leveraging peer-to-peer wireless networking bandwidth, but they will be relevant primarily to wireless network service providers, thus reaching a relatively low amplitude of overall expectation and hype. Other technologies that will appeal to a large number of companies (for example, cloud computing) or consumers (for example, media tablets) will attain much higher levels of exposure and hype. Therefore, even when mesh networking is at the peak of its hype curve, it may still receive less overall "hype volume" than cloud computing or media tablets.

The Hype Cycle ends at the start of the Plateau of Productivity, where mainstream adoption of the technology surges. As with the height of the Peak of Inflated Expectations, the final height of the Plateau of Productivity varies according to whether the technology is broadly applicable and highly visible, or benefits only a niche market. For a model that tracks technologies through the entire life cycle until they can no longer be viably used or exploited, see "Understanding Gartner's IT Market Clocks, 2010."

For a comprehensive discussion of the Hype Cycle, its traps and opportunities, and advice about timing innovation adoption, see "Mastering the Hype Cycle: How to Choose the Right Innovation at the Right Time," by Jackie Fenn and Mark Raskino, Harvard Business School Press, October 2008.

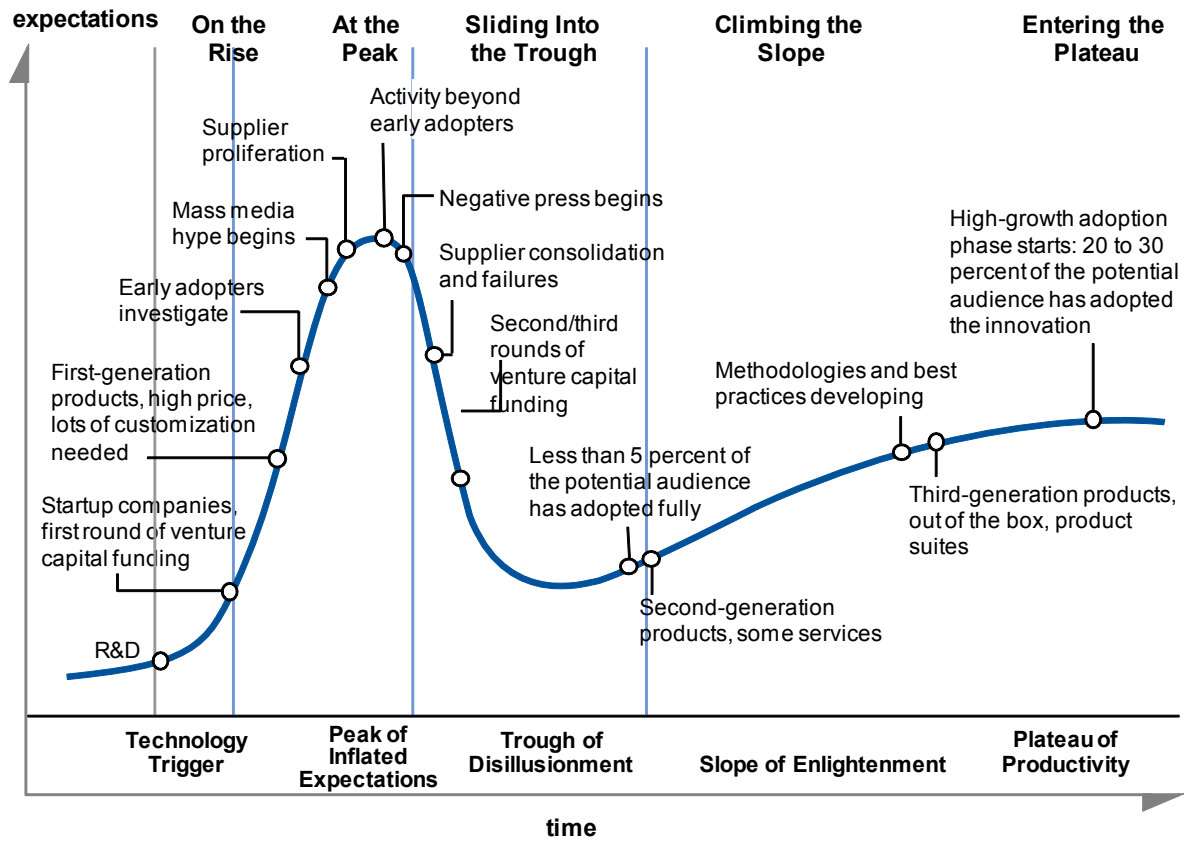
Positioning a Technology on the Hype Cycle

Gartner analysts position technologies on the Hype Cycle based on a consensus assessment of hype and maturity. They select a variety of relevant market signals and proxy indicators to establish the level of expectations. Some of these inputs may be quantitative, but overall, the Hype Cycle is a structured, qualitative research tool. During the first part of the Hype Cycle, when there are many uncertainties regarding a technology, its position on the curve is guided more by its hype levels than its maturity. At the later stages, as more information about maturity, performance and adoption becomes available, the hype plays a lesser role in determining the technology's position on the Hype Cycle.

A technology may have radically different positions on different Hype Cycles. This occurs when there are different applications of a technology — for example, speech recognition in the call center may be more mature (approaching the Plateau of Productivity) than speech recognition on the desktop (pulling out of the Trough of Disillusionment). Application considerations may lead to different positions of the same technology on different horizontal (for example, customer relationship management) or vertical (for example, government) Hype Cycles.

In Hype Cycle reports, technologies are presented in five categories representing the various stages on the Hype Cycle. These stages are characterized by distinct investment, product and market patterns that technology planners can use to understand where a technology is on the Hype Cycle (see Figure 2).

Figure 2. Phases of the Hype Cycle



Source: Gartner (July 2011)

On the Rise

A Technology Trigger is anything that sets off a period of rapid development and growing interest, and it will be different for each technology. It may be a product launch, a major improvement in price/performance, adoption by a respected company, or simply a rush of media interest that socializes and legitimizes the concept. It may also be a trigger external to the IT industry, such as new legislation or the demands of an economic or political crisis. Some technologies can have an extremely long research and development preamble before they reach a meaningful trigger point, including several false starts with minor peaks and troughs. The Hype Cycle cannot start until there is a "marketplace of minds" actively discussing how to apply the innovation.

Many types of innovation can follow the Hype Cycle, including things such as management techniques (for example, Six Sigma) that are not usually thought of as technologies. However, our research content is mostly technology, so we refer to Technology Trigger as one case of a more general Innovation Trigger.

The gap between trigger and peak is often quite short. For an innovation that takes 10 years from trigger to plateau, the rise from trigger to peak might take only one to two years. The most common

indicator that an innovation is past the trigger is that it becomes available for purchase from a commercial vendor rather than a lab. Other indicators that an innovation is past the trigger but has not yet reached the peak include:

- Only a handful of suppliers are selling the innovation (often only one or two).
- The suppliers are funded by seed rounds of venture capital.
- An established provider brings a radically innovative product to market (such as Apple's iPad or Microsoft's Kinect).
- The innovation requires significant customization to work in an operational environment. The customization is performed primarily by the supplier.
- The price is high relative to the cost of production and to the cost of related, but more-established, products.
- Suppliers are not yet able to provide references.
- Consumer-driven innovation, such as social media, often experiences a particularly short pre-peak period as the trigger for success is rapid, viral adoption.

At the Peak

At the Peak of Inflated Expectations, the technology seems to be featured on the front cover of every business and industry magazine. Suppliers adopt the latest buzzwords into their marketing arsenals to make their offerings more attractive, and the marketplace is flooded with overlapping, competing and complementary offerings. When investors see an emerging hot spot in the market, they want "one of those" in their portfolio, which encourages the proliferation of companies with similar offerings.

As word of the new technology spreads, companies that like to be ahead of the curve seek out the technology and jump on it before their competitors. The suppliers of the technology boast about their early prestigious customers, and other companies want to join in so they aren't left behind. A bandwagon effect kicks in, and the technology is pushed to its limits as companies try it out in a range of settings. At this point, the technology is viewed as a panacea, with little regard to its suitability for each application. Stories in the press capture the excitement around the technology and reinforce the need to become a part of it or be left behind. The pressure on companies to adopt the technology, in many cases without a full understanding of the associated challenges and risks, is intense.

Hype bubbles in the consumer world may last from a few months to a year or so, but in the commercial world, the peak of hype usually lasts at least a year because of the slower pace of corporate decision-making and investment. Major peaks, such as the dot-com era or "green" technology, may last for two or three years.

Indicators that an innovation is at the peak include:

- The trade and business press run frequent stories about the innovation and how early adopters are using it.
- A popular name catches on in place of the original, more-academic or specialist engineering terminology; for example, the wireless networking technology called 802.11g became "Wi-Fi."
- Analysts, bloggers and the press speculate about the future impact and transformational power of the innovation.
- Simple, highly exaggerated, nonspecific declarative marketing slogans appear, such as "I have cloud power" and "cloud is the answer."
- A surge of suppliers (often 30 or more) offer variations on the innovation.
- Suppliers with products in related markets align their positioning and their marketing with the theme of the innovation.
- Suppliers can provide one or two references of early adopters.
- Investors aggressively hunt down a representative supplier for their portfolio. Some early-stage venture capitalists may sell at this point.
- Toward the end of the peak, one or two early leading suppliers are bought by established companies in expensive, high-profile acquisitions.

Sliding Into the Trough

The same few stories of early success have been repeated over and over, but now a deeper look often shows those same companies still struggling to derive meaningful value. Many of these failures center on inappropriate uses of the technology. Less-favorable stories start to emerge as most companies realize things aren't as easy as they first seemed. The media, always needing a new angle to keep readers interested, switches to featuring the challenges rather than the opportunities of the technology. Because the technology does not live up to the early overinflated expectations of enterprises and the media, it is rapidly discredited.

There is not always an actual drop in the overall adoption numbers as an innovation slides into the trough. Instead, the anticipated rapid growth in adoption may simply be delayed. What suppliers and investors anticipated as a "hockey stick" uptake remains a depressingly slow growth path. As a result, supplier consolidation and failure occurs because there is too little adoption growth to sustain so many similar products.

Amid the disillusionment, trials are ongoing and vendors are improving products based on early feedback regarding problems and issues. Some early adopters find benefit in adopting the technology. For some slow-moving technologies, workable and cost-effective solutions emerge and provide value in niche domains, even while the technology remains in the Trough of Disillusionment.

Indicators that an innovation is, or will soon be, in the trough include:

- The tenor of press articles turns negative, featuring the challenges and failures around the innovation. Terms like "DOA," "failure" and "backlash" are used in headlines.
- There is general cynicism about the transformational potential of the innovation.
- Supplier consolidation starts, including buyouts by larger companies and investors.
- Second- and third-round funding by investors is required to sustain suppliers.
- The same few case studies and references for successful adopters are used by suppliers.

Climbing the Slope

Over time, a technology matures as suppliers improve products on the basis of early feedback, and obstacles in performance, integration, user adoption and business case justification are overcome. Methodologies for applying it successfully are codified, and best practices for its use are socialized.

By the Slope of Enlightenment, many of the big lessons have been learned, and the reputation of the technology is rising again. What's learned is incorporated into second- and third-generation products, and methodologies and tools are created to ease the development process. For some technologies there is a significant new capability or a performance improvement that changes the value proposition and makes the innovation more broadly useful. The marketing around these maturing products or the new capability often acts as a mini-trigger to launch the innovation out of the trough. In other cases, the change or improvement is slow and subtle and may catch organizations unaware unless the progress is being actively tracked.

At the beginning of the Slope of Enlightenment, the penetration often is significantly less than 5% of the potential market segment. This will grow to 20% to 30% as the technology enters the Plateau of Productivity. The journey up the slope may last from one to three years.

Indications that the innovation is moving up the slope include:

- Suppliers of the innovation offer second- or third-generation products that work with little or no consulting from the supplier.
- For technology innovations, suppliers offer product suites that incorporate the innovation into a broader range of tools.
- Consulting and industry organizations publish methodologies for how to adopt the innovation.
- Press articles focus on the maturing capabilities and market dynamics of the suppliers.
- New success stories and references start to proliferate.
- Reliable figures regarding costs, value and time to value become available.

Entering the Plateau

The Plateau of Productivity represents the beginning of mainstream adoption, when the real-world benefits of the technology are predictable and broadly acknowledged. By the time they reach the plateau, technologies are increasingly delivered as out-of-the-box solutions. As a technology

matures, particularly if it is a major, high-profile innovation, an "ecosystem" of related products and services often evolves around it. This may trigger a fresh Hype Cycle around the components of the ecosystem.

As a technology achieves full maturity and supports thousands of enterprises and millions of users, the hype around it typically disappears and is replaced by a solid body of knowledge about the best ways to apply and deploy it.

Indicators that a technology has reached the plateau include:

- Trade journals and websites start to focus on best-practices articles about how to deploy the innovation.
- Clear leaders emerge from the many suppliers that joined the market during the Slope of Enlightenment.
- Investment activities focus on acquisitions and IPOs.
- Many examples of successful deployments can be found in multiple industries.
- The terminology around the innovation becomes part of everyday speech, such as Googling, texting and blogging.

Why the Hype Cycle Matters

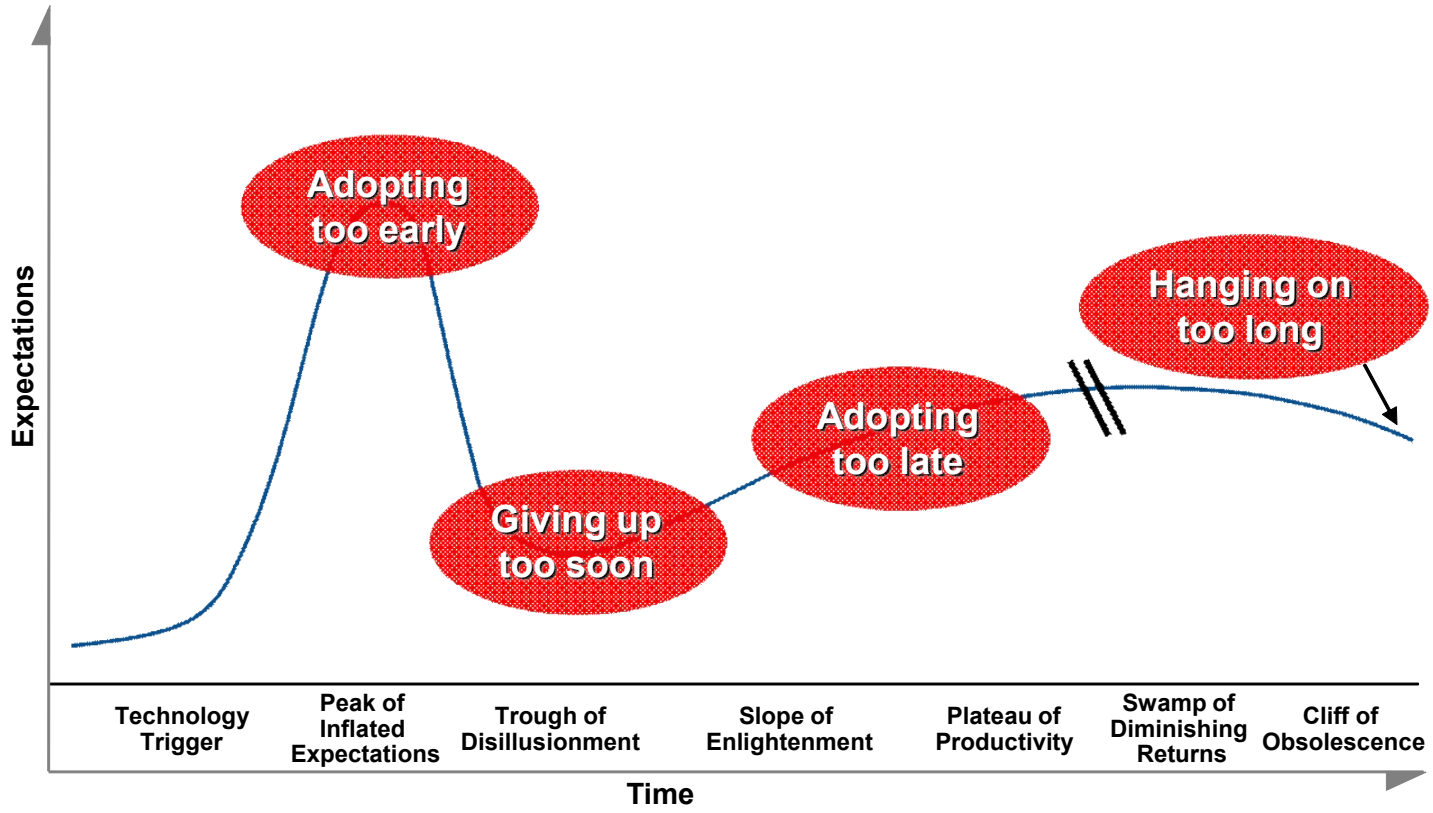
The constant barrage of positive and negative hype often leads organizations to behave in ways that may not represent the best use of their resources. The peaks and troughs of the Hype Cycle exert pressure to adopt risky technologies without knowing the potential value, and also mask opportunities to embrace less-visible technologies that may be highly relevant. This leads to the four traps of the Hype Cycle: adopting too early, giving up too soon, adopting too late or hanging on too long (see Figure 3).

- **Adopting Too Early and Giving Up Too Soon:** Technologies should not be adopted just because they are at the Peak of Inflated Expectations, nor should they necessarily be abandoned at the Trough of Disillusionment. Rather, enterprises should identify which technologies are potentially beneficial to their business and evaluate those items earlier in the Hype Cycle. The additional risk of adopting early is justified only for potentially high-benefit technologies.
- **Adopting Too Late:** Beware of the "noise filter" that most business and IT strategists apply as an essential coping strategy in a world of information overload. By blocking out all but the most visible trends, planners find their attention limited to two points on the Hype Cycle: the Peak of Inflated Expectations (when the noise overwhelms the filter) and the Plateau of Productivity (when the actions of successful competitors become a problem). During the Trough of Disillusionment and early Slope of Enlightenment phases, the filter can create a blind spot that may cause an enterprise to miss some urgent and important opportunities. This is compounded by the fact that the peak and trough are very visible shifts, but the beginning of the slope can be a much more subtle change, and so easier to miss. If an organization finds a potentially

interesting technology early in the Hype Cycle but planners feel that the technology is not yet ready, a good strategy is to identify target performance levels or price points and track progress through the "quiet phase" to identify when the technology is finally ready to drive value.

- **Hanging On Too Long:** Although Gartner only plots technologies on the Hype Cycle up to the beginning of the Plateau of Productivity, a full Hype Cycle could be viewed as extending to a "Swamp of Diminishing Returns" when legacy systems start to bog down new initiatives, and a "Cliff of Obsolescence" where maintaining the system become a significant pain point. Like the beginning of the slope, the decline into these end-of-life issues can be slow and easily missed until they start to cause problems. Gartner's IT Market Clock address these phases of the life cycle in more detail.

Figure 3. Hype Cycle Traps

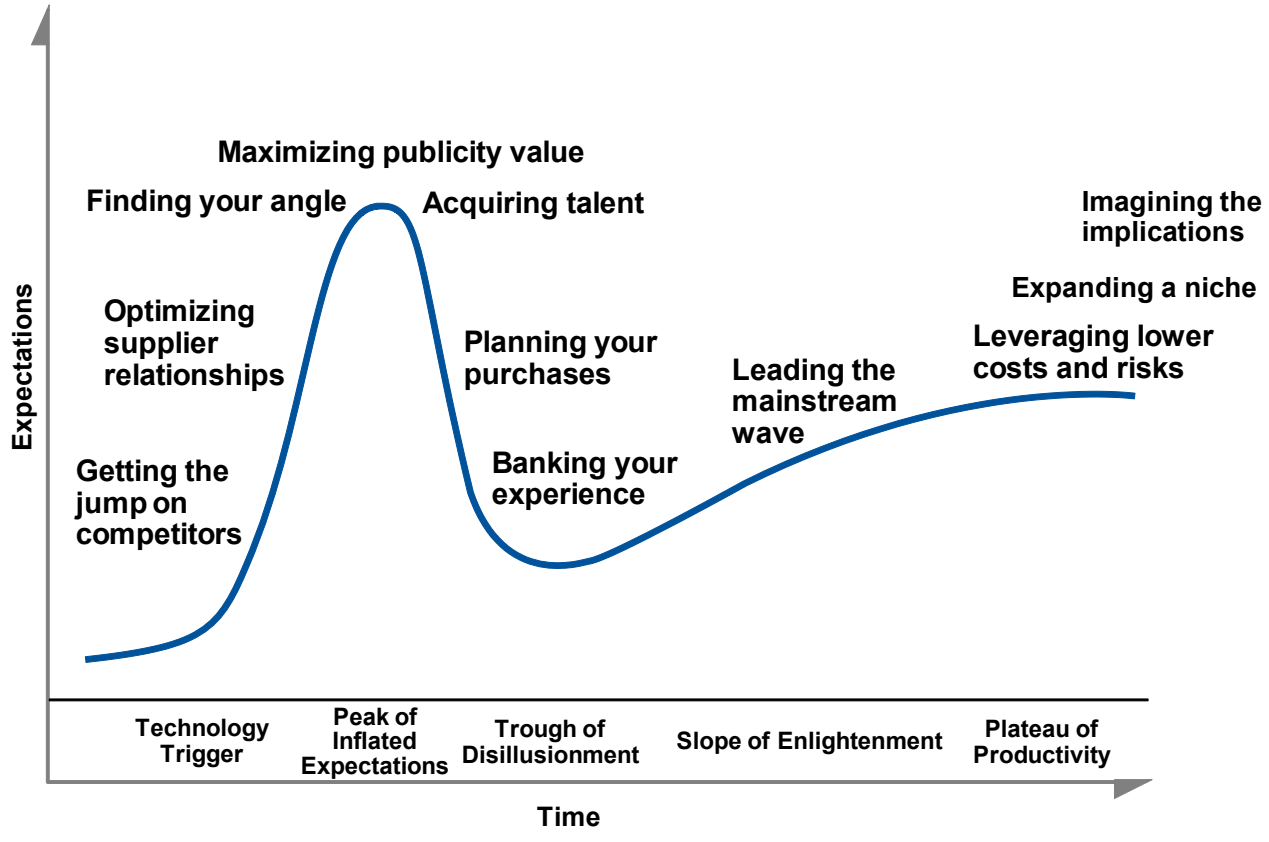


Source: Gartner (July 2011)

While it's important to understand the traps that can snare unwary adopters, it's equally important to examine the opportunities that arise from the inevitability of the Hype Cycle. Any time you can predict major shifts in behavior — such as the major turning points on the Hype Cycle — you can take advantage by being ahead of the crowd.

Two types of opportunity arise from the Hype Cycle. The first set of opportunities comes from timing your adoption of each innovation with precision to optimize the amount of value you can derive. If you're going to invest your organization's time and money (and also some of its limited capacity for change) in an innovation, you want to make sure not only that it's the right one, but that you jump in at the time that gives you the longest lifetime value at an acceptable level of risk. The second type of opportunity lies in harnessing the energy of the Hype Cycle in the broader marketplace by taking advantage of the needs and actions of other players. Avoiding the traps that others fall into is one element of this. If you can be smarter than the crowd even some of the time in avoiding the money pits of adopting too early or giving up too soon, and the lost opportunity costs of adopting too late or hanging on too long, you'll come out ahead. But if on top of that you can anticipate the tendencies of suppliers, investors, competitors, and skilled individuals at each stage of the Hype Cycle, you'll be able to find the best deals, the best talent, the best publicity, and many other opportunities to advance your innovation adoption efforts (see Figure 4).

Figure 4. Hype Cycle Opportunities



Source: Gartner (July 2011)

The Hype Cycle is most useful in explaining why the recommendations of technology planning groups may be different from what enterprises are hearing or reading in the media. At the Peak of Inflated Expectations, technology planners will caution, "Don't get caught up in the hype. Let's adopt it only if it is strategically important to us. Otherwise, let's wait for others to learn the hard lessons." In the Trough of Disillusionment, technology planners will recommend, "Let's start looking at the technology now because there are some solid products emerging, as well as real-world experience about how to use the technology."

For more details on best practices in the innovation adoption process, see "Driving the STREET Process for Innovation and Emerging Technology Management."

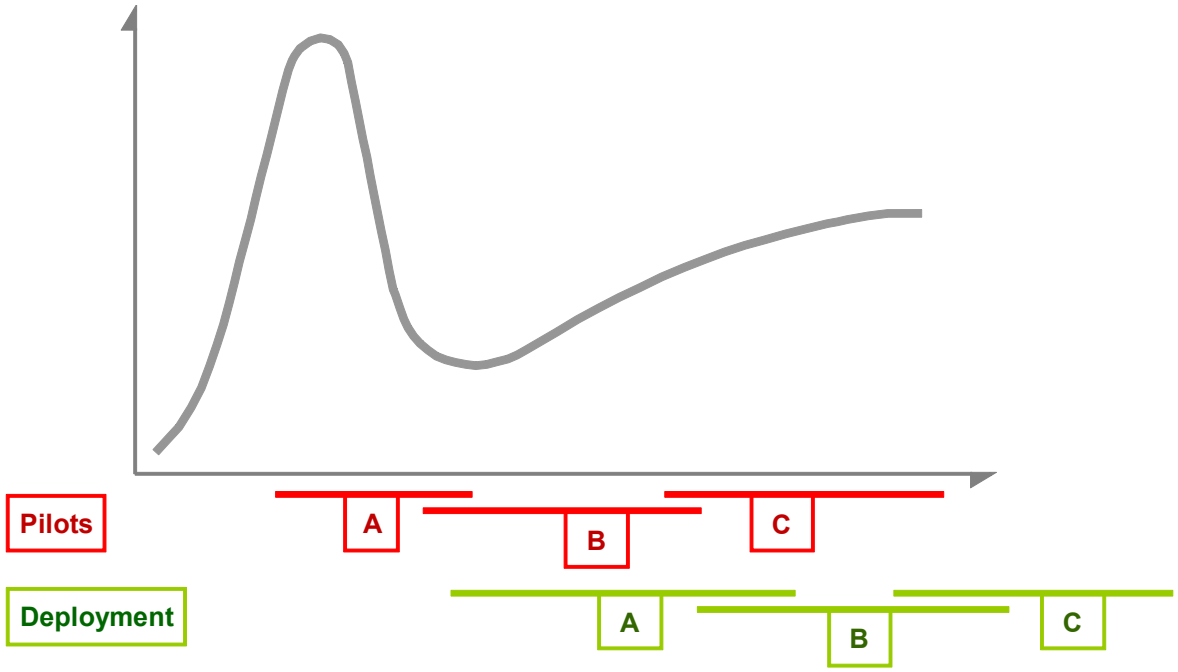
How to Use the Hype Cycle

The Hype Cycle incorporates a measurement of knowledge and risk. At the beginning of the cycle, companies know little about a technology and cannot make informed judgments about its costs and benefits. Therefore, the risk is high. As the technology enters the Plateau of Productivity, organizations know more about the technology; thus, they can make informed decisions about when and where to apply it. Therefore, the risk is much lower.

To make a good decision about when to adopt a technology, you need to balance three variables: how potentially valuable the innovation is to you, where the technology is currently positioned on the Hype Cycle, and how good your organization is at tolerating and managing risk.

In general, Type A (aggressive) organizations deliberately try to adopt more innovations early in the Hype Cycle because they are prepared to brave the risks associated with early adoption in return for the reward. Type Cs (conservative) deliberately try to minimize risks by adopting late in the Hype Cycle, once the innovation hits the Plateau of Productivity. The Type B majority try to hit the middle of the Hype Cycle to learn from the Type As but not wait so long that they lag behind their competitors and become Type Cs. The trouble is, if an organization operates exclusively within its comfort zone, it will miss opportunities. It will always tend to adopt everything early, or late, in line with its enterprise personality (see Figure 5).

Figure 5. Adoption Patterns by Type A, Type B and Type C Organizations

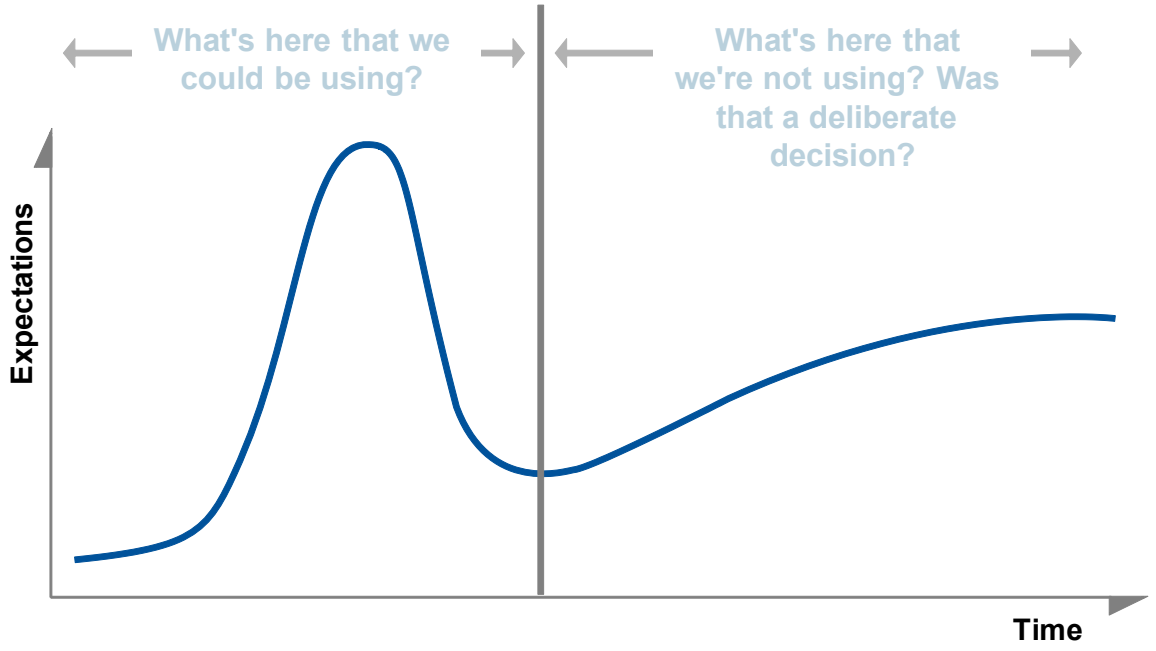


Source: Gartner (July 2011)

Organizations should recognize their risk comfort zones, but be prepared to step outside them depending on the strategic importance of an innovation. That is, they should aim to be *selectively aggressive*. For example, because of the additional risk, even Type A companies should be selectively aggressive regarding which technologies they adopt early. Conversely, Type B and Type C enterprises should consider adopting technologies early if the technologies contribute to key business objectives. Special care should be taken at extreme highs and lows of economic cycles when natural Type Bs can be drawn into Type A behavior by market "group think" (e-business opportunity risk-taking in 2000 and overzealous high-risk offshoring in an attempt to lower costs in 2003).

Some innovation leaders use Hype Cycles as a way to structure a discussion about their innovation candidates with their executives. One useful focusing mechanism is to divide the chart into two parts: pre- and post-trough (see Figure 6). For pre-trough technologies, the team asks itself, "What's here that we could be using?"—that is, where is it worthwhile for the organization to adopt aggressively, even if it is outside the organization's usual comfort level? For technologies positioned after the trough, the team asks, "What's here that we are not using?" In other words, what are they missing, and do they need to do something about it? The insight from these discussions can inform an emerging technology team's ranking and prioritization decisions.

Figure 6. Key Hype Cycle Questions



Source: Gartner (July 2011)

The Hype Cycle is one of several graphical tools that Gartner uses to assess technologies and innovations:

- **Priority Matrix:** Associated with each Hype Cycle is a companion graphic that shows the same technologies mapped against axes — *benefit* and *years to mainstream adoption*. Whereas the Hype Cycle is a useful educational tool for helping enterprises understand the inevitable pattern of excitement and disillusionment, the Priority Matrix may be more effective for internal prioritization within the technology planning function.
- **Magic Quadrants:** Some Hype Cycle entries are also associated with a Magic Quadrant or MarketScope that provides detailed analysis of the technology's marketplace. Clients use Magic Quadrants as a first step to understanding the technology providers they might consider for a specific investment opportunity. Magic Quadrants provide a graphical competitive positioning of four types of technology providers, where market growth is high and provider differentiation is distinct: leaders, visionaries, niche players and challengers.
- **IT Market Clock:** Hype Cycles track the expectations of technologies from their emergence through early maturity. IT Market Clocks highlight the market progress of IT assets from the first time they can be used to when they must be retired. Both models depict "relative time," and the two overlap, although the coverage of the IT Market Clock is longer. The IT Market Clock is complementary to Gartner's Hype Cycle methodology and fulfills a separate objective. In simple terms, the Hype Cycle supports "technology hunting" decisions, while the IT Market Clock supports "farming" decisions for assets already in use. Many technologies that move off

Gartner Hype Cycles when mature will continue to be represented as assets on IT Market Clocks as they progress through their useful market lives.

The Hype Cycle Toolkit (see "Toolkit: My Hype Cycle, 2010") is a planning tool based on Gartner's annual Hype Cycle research. It pulls into a single spreadsheet more than 1,800 technologies featured in the Hype Cycles published as part of the annual Special Report during July and August. Technology planners can filter, search and sort the spreadsheet entries to generate a shortlist of technologies for discussion in IT portfolio and strategic planning meetings. There is also a feature to auto-populate a custom Hype Cycle with technologies selected by the user.

Hype Cycle Speed: The "Years to Mainstream Adoption" Assessment

Technologies do not move at a uniform speed through the Hype Cycle. To represent the varying speeds, each technology on the Hype Cycle is assigned to a category representing how long it will take to reach the Plateau of Productivity from the technology's current position on the Hype Cycle — that is, how far the technology is from the start of mainstream adoption:

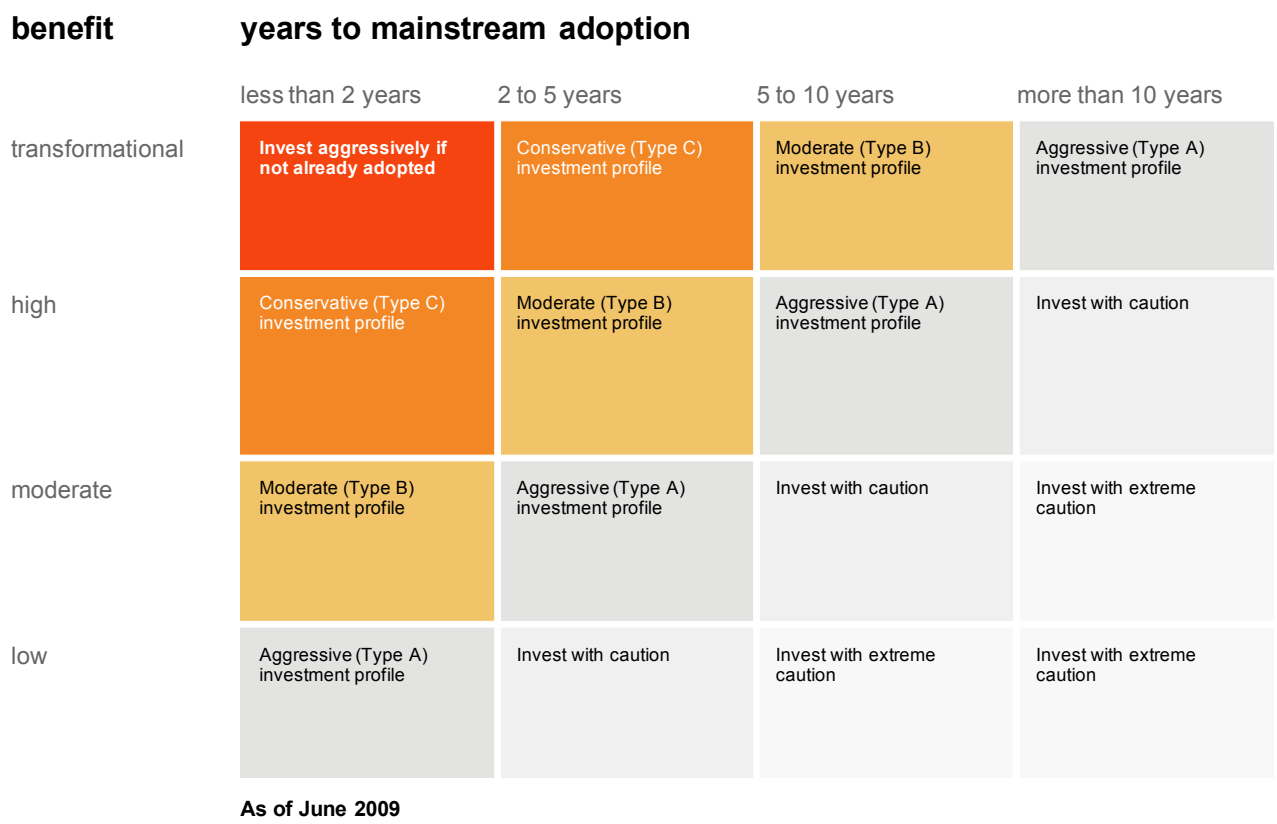
- Less than two years
- Two to five years
- Five to 10 years
- More than 10 years
- Obsolete Before Plateau (that is, the technology will never reach the plateau, as it will fail in the market or be overtaken by other competing solutions)

The Priority Matrix and Benefit Ratings

The Gartner Hype Cycle is widely used to provide a snapshot of a set of technologies in terms of their level of hype and their rate of maturation. The Hype Cycle is an excellent educational tool to show business and other executives the common pattern of excitement and subsequent disillusionment that inevitably accompanies new technology.

However, for internal planning and the prioritization of emerging technologies, technology planners must look beyond the hype and assess technology opportunities in terms of their relative impact on the enterprise. A useful graphical tool for presenting this information is the Priority Matrix (see Figure 7). Most Gartner Hype Cycle reports also contain a Priority Matrix for the same set of technologies featured on the Hype Cycle.

Figure 7. Priority Matrix



Source: Gartner (July 2011)

In the Priority Matrix, the vertical axis focuses on the potential benefit of the technology (rather than on the hype/expectation levels presented in the Hype Cycle). Options for the benefit rating are:

- **Transformational:** Enables new ways of doing business within and across industries that will result in major shifts in industry dynamics
- **High:** Enables new ways of performing horizontal or vertical processes that will result in significantly increased revenue or cost savings for an enterprise
- **Moderate:** Provides incremental improvements to established processes that will result in increased revenue or cost savings for an enterprise
- **Low:** Slightly improves processes (for example, improved user experience), but in a manner that will be difficult to translate into increased revenue or cost savings

The horizontal axis groups the technologies according to the same years-to-mainstream-adoption rating used on the Hype Cycle. The years-to-mainstream-adoption rating is a simple measure of risk based on the projected rate of maturation for a technology. If desired, a more complex risk rating could be derived from a combination of the market penetration and maturity ratings, the years-to-

mainstream-adoption rating and position on the Hype Cycle, and other project-specific factors such as cost and level of organizational disruption. Note that technologies rated as "Obsolete Before Plateau" do not appear on the Priority Matrix.

High-priority investments are in the top left of the Priority Matrix, where the technologies will potentially have a high impact and have reached a reasonable level of maturity. Companies that are conservative in their technology adoption (Type C organizations) may limit their focus to this area. Companies that are more-aggressive technology adopters (Type A and Type B organizations) are likely already using technologies that will mature in less than two years. Therefore, they will probably want to evaluate technologies further to the right or lower on the Priority Matrix — for example, technologies that will not be in widespread use for at least five years, but that may provide a competitive edge in the interim.

As with the Hype Cycle position and the years-to-mainstream-adoption assessment, Gartner analysts provide a subjective, peer-reviewed opinion on the most-appropriate benefit rating of each technology. The benefit rating assigned by Gartner reflects an average, cross-industry benefit. For industry-specific Hype Cycles, it reflects the average benefit within that industry. The potential benefit for a specific organization may vary considerably from this average perspective, so technology planners should be prepared to replace the average benefit rating with their own customized version for technologies in their portfolio.

There may also be some intercompany and interindustry variations on the horizontal years-to-mainstream-adoption axis — but typically to a lesser degree than on the benefit axis. When creating its own Priority Matrix, an organization may wish to replace the simple years-to-mainstream-adoption assessment of risk with a more sophisticated risk rating for the horizontal axis. Additional risk factors might include cost and potential disruption to infrastructure and processes.

The value of the Priority Matrix lies in focusing the discussion on where a company should target its evaluation of emerging technologies. In particular, it is a useful framework for:

- Making explicit judgments about the potential benefits of a technology in a company.
- Defending against personality-driven investment decisions, whereby an influential individual champions a technology or project that may not be the best investment for the company. The Priority Matrix lets technology planners show how the proposed technology compares with other candidates in terms of relative benefit and risk.

Market Penetration and Maturity Assessments

In addition to the data points used to create the Hype Cycle and Priority Matrix graphics, Gartner Hype Cycle reports contain descriptions of each technology on the Hype Cycle, including the technology's definition, a justification for its positioning, its business impact areas, user advice and selected vendors (which are examples, not a comprehensive listing). It also includes two other rating-style descriptions — maturity and market penetration.

Table 1 shows the options for the maturity rating, although mature mainstream, legacy and obsolete technologies are not typically included on the Hype Cycle.

Table 1. Maturity Levels

Maturity Level	Status
Embryonic	In labs
Emerging	Commercialization by vendors Pilots and deployments by industry leaders
Adolescent	Evolving technology capabilities, methodologies, and associated infrastructure and ecosystems Adoption levels typically between 5% and 20% of target audience
Early mainstream	Technology is proven and value is relatively predictable in many, but not all, environments Capabilities continue to evolve Adoption level typically ranges from 20% to 50% of target audience
Mature mainstream	Proven technology with well-understood value proposition Technology is commoditized; not much evolution in vendors or capabilities Adoption levels above 50%
Legacy	Still functional, but not appropriate for new developments Vendors focus on maintenance revenue Cost of migration constrains replacement
Obsolete	Used/resale/maintenance markets only

Source: Gartner (July 2011)

Ranges for the market penetration, which refers to current penetration as a percentage of the anticipated target market, are:

- Less than 1% of target audience
- 1% to 5% of target audience
- 5% to 20% of target audience
- 20% to 50% of target audience
- More than 50% of target audience

For some technologies, assessing the market penetration is relatively straightforward. For a mobile phone, for example, the percentage of the population that owns one would be a simple measure of progress. However, there are a number of complicating factors in arriving at a figure for market penetration, including:

- **Estimating the ultimate penetration level:** At the dawn of an innovation, the projected target market may be wildly misjudged. When mobile phones were first commercialized in 1984 at a price around $4,000, the target market might have been viewed as "all mobile business executives." More ambitiously, some may have hypothesized that one day every person in a country might have a mobile phone and that would be the maximum extent of the market. Some might also anticipate the amount of use based on substituting half, or even all, of the existing landline telephony minutes consumed per person at that time. Nobody would have forecast the volume of minutes consumed today, the time spent using the device for other things (such as game playing) or that the total number of active handsets would commonly exceed 100% of the population. Realistically, for the purposes of Hype Cycle research, the anticipated target market is likely to be the saturation that analysts expect in a 10- to 20-year horizon (as opposed to a 20- to 50-year horizon).
- **Determining when an individual has "adopted" a technology:** If a user has joined a social-networking site but only visited twice in the past year, should that be viewed as having "adopted" social networking in determining the current penetration? In general, we would regard a technology as adopted only if it is used regularly.
- **Determining when an organization has "adopted" a technology:** Organizational adoption is complicated by the distinction between an organization's acquisition of a technology, and the extent of its use within the organization. Since any given technology or discipline might penetrate deeply in a small number of organizations — or, conversely, may penetrate only slightly in a large number of organizations — the percentage of organizations using a given technology or discipline does not necessarily equate to the number of actual current users (for example, as measured by seats or copies of software) as a percentage of all future users. The penetration level must consider the number of copies or seats of a technology deployed within the enterprise. This issue will be compounded by the proliferation of cloud and SaaS models.
- Determining the appropriate measure of granularity for adoption: For some technologies, the "target user base" within the organization is not individual users, but development teams (for example, reusing SOA across a large enterprise) or whole business units (for example, opting into a master data management strategy). For these more complex organizational innovations, the measure of progress is harder still to ascertain as it involves the scope of adoption. Using SOA in a couple of small projects is not the same as a full-scale adoption of SOA as an enterprise standard. Deploying one function in a CRM suite is not the same as rolling out a customer-centric corporate strategy. For complex technologies and innovations, the measure of current penetration needs to consider the level of sophistication of current deployments versus what is possible in the medium to long term.

The way that market penetration is calculated varies among innovations, but each method must consider penetration of the innovation across the relevant audience *and* within each participant. This applies to both individual and organizational adoption. To stay true to standard industry definitions of market penetration, the default measure for Hype Cycle market penetration is the percentage of "numbers of copies/seats" acquired to date and used by customers versus the "number of copies/seats" that can be reasonably expected to be deployed across the life of the technology or discipline. Market penetration levels for each technology are reviewed with each

update to reflect changes in adoption and addressable market. In cases where the addressable market grows significantly, our assessment of market penetration may be revised downward.

In some cases, the more relevant statistic is the raw percentage of organizations that have adopted a given technology or discipline, without regard for the level of internal penetration. In these cases, the percentage of adopting organizations is used instead of true market penetration, and explained in the justification or business impact sections of the technology's description.

The expected correspondence between the various fields of a technology is shown in Table 2. There may be exceptions to this typical pattern, for example when a technology is mature but not well penetrated (i.e., stuck as a niche technology), or when a technology is very slow moving so is climbing the slope but is still more than five years to mainstream adoption. Such exceptions are explained in the "Position and Adoption Speed Justification" descriptions.

Table 2. Typical Correspondence Between Hype Cycle Technology Fields

Hype Cycle Section	Maturity Level	Years to Mainstream Adoption	Market Penetration as % of Target Audience
On the Rise	Embryonic or Emerging	More than 10 years or Five to 10 years	Less than 1% of target audience or 1% to 5% of target audience
At the Peak	Emerging or Adolescent	More than 10 years or Five to 10 years or Two to five years	1% to 5% of target audience or 5% to 20% of target audience
Sliding into the Trough	Emerging or Adolescent	Five to 10 years or Two to five years or Less than two years	1% to 5% of target audience or 5% to 20% of target audience
Climbing the Slope	Adolescent or Early Mainstream	Two to five years or Less than two years	5% to 20% of target audience or 20% to 50% of target audience
Entering the Plateau	Early Mainstream or Mature Mainstream (rarely used)	Less than two years	20% to 50% of target audience or More than 50% of target audience (rarely used)

Source: Gartner (July 2011)

Hype Cycle Q&A

Does the Hype Cycle apply to IT only or does it work for surgical treatment/politics/bio-fuels/ management techniques/love?

The Hype Cycle was derived in technology observation, but works for many situations where the following conditions are true:

- There is an "innovation" to be transferred or purveyed from one to another
- There is an open discourse market of adopters for that innovation
- The innovation cannot be "right first time," but must be modified, engineered and evolved through application use and learning by that market.

We have found many examples of where people outside of Gartner have applied the Hype Cycle to non-IT topics such as nanotechnology, medicine and food products. Even Sarah Palin referenced the Hype Cycle in the 2008 election campaign (see http://blogs.gartner.com/hypecyclebook/2008/09/17/hype-hype-everywhere/). Gartner has also created Hype Cycles in nontechnology areas such as regulations (see "Hype Cycle for Legal and Regulatory Information Governance, 2010") and business trends (see "Executive Perspectives: Strategic Business Capabilities and the Gartner Hype Cycle"). However, it does not apply to pure fashion or fads, which tend to just trend up and down, with nothing — no artifact, core idea, talent or other value — to pull the fad out of the trough and on to eventual productivity. As for love, the authors have had more than one client comment that the Hype Cycle applies perfectly to their personal relationships.

Why is it called the Hype Cycle, when it's not a true cycle, just a curve?

The actual shape of each Hype Cycle is a dampened wave, not a cycle, in that it doesn't have a loop backward like a true cycle would. This is because it is not the technologies themselves that loop around and around. They progress inexorably toward maturity (or obsolescence), albeit at a slower pace than we want or expect. The cycle itself relates to the behavior of people. As individuals, as marketplaces and industries, we go round and round a cycle of enthusiasm and disillusionment with each new technology or trend.

Is the Hype Cycle based on empirical science?

The Hype Cycle is a structured, qualitative analytical tool. There is no single measure for "expectations" (the Y axis variable), although proxies can be found and are used by our analysts to help establish positions (see "The New Hype Cycle Y-Axis Measure: Expectations"). The Hype Cycle is not a mechanically derived quantitative chart. It does involve expert judgment. We believe its strength lies in combining data and human judgment. Management is not a pure science. The Hype Cycle is a working management decision tool, not an academic endeavor, though we welcome third-party research that further evolves the model and guidance on related adoption decisions.

Is the Hype Cycle the same as Geoffrey Moore's Crossing the Chasm?

The Trough of Disillusionment coincides with the "chasm" in Geoffrey Moore's classic book on technology marketing, "Crossing the Chasm." During this stage, vendors need to increase product adoption from a few early adopters to a majority of enterprises to begin the climb up the Slope of Enlightenment. We view Moore's Chasm work and the Hype Cycle as analytic "yin and yang." The Chasm is written from the innovation originator (vendor) perspective, while the Hype Cycle takes the innovation adopter (buyer) point of view. The main management issues and key decisions faced by each side are different.

Does everything take the same time to pass through the Hype Cycle?

No, and people often misunderstand this by skim reading, or seeing the Hype Cycle republished on the Web without its supporting key. We show each item taking a different time to plateau. You may notice there is no fixed timeline on the chart. If you fixed the timeline on the X axis, disparate technologies could not be compared, specifically because they do move, although at different rates. We occasionally publish a Hype Cycle for a single technology or concept with a fixed dateline (for example see "Emerging Trend: The E-Book's Day Is Finally Ready to Dawn").

Do things go around the Hype Cycle several times?

In most cases, no. On a very few occasions, over a very long period, there may be more than one Hype Cycle iteration as a technology seems to cycle between the Peak and the Trough. We refer to these as Phoenix technologies. Agents are a prime example of a Phoenix technology. Agent technology is embedded in certain product classes that have matured (for example, network management and comparison shopping), but there are many other capabilities and interpretations of agent functionality that re-emerge year after year. In this case, the individual applications move through the Hype Cycle, while the higher-level concept seems to cycle.

Do things fall off the Hype Cycle?

If innovations are tracked at the level of capabilities, rather than specific ways of delivering the capability, then very little "falls off" the Hype Cycle. Failure typically occurs where there are multiple ways to deliver the same capability or benefit. For example, broadband connectivity has made its way through the Hype Cycle over the past decade, but some of the techniques to deliver the capability (e.g., ISDN, broadband over power lines) have fallen off the Hype Cycle along the way, while others (cable modem and DSL) have reached maturity. The actual capabilities — broadband, speech recognition, biometrics and videoconferencing, for example — do not fall off the cycle, whereas specific techniques, protocols, operating systems, products and devices may be supplanted by alternatives. Obsolescence before the plateau is most common in the area of telecommunications and standards.

Do companies and products follow the Hype Cycle?

Occasionally, and under very specific conditions, the fortunes of one company can follow the Hype Cycle. As an example, for Amazon's first eight years, its stock price followed a perfect Hype Cycle curve. For this to happen, the company needs to be associated with just a single innovation.

However, it is not usually helpful to use the Hype Cycle this way. We typically use the Hype Cycle to track technologies at the "class of products" level rather than at the level of individual products and vendors, so you'll see "cloud computing" on a Gartner Hype Cycle rather than "Amazon S3." Sometimes a single vendor becomes so synonymous with a new capability that coming up with a generic description feels like an unnatural act. Most people identify with "YouTube" more than "consumer-generated media" and "Twitter" remains more recognizable than "microblogging," even as the capability becomes embedded in other social networking tools. However, in general, the

capability level, rather than a specific company, product or service, is a more useful way to track and evaluate a technology.

Can a technology be at different points on the Hype Cycle in different geographies?

Yes. Gartner creates industry-specific and region-specific Hype Cycles to show that some technologies are more important, and may be at different positions, in different industries or geographic regions. There may be some industries and regions where technologies are generally further behind or ahead than the general position, but in most cases the variation is more specific than that. For example, even though technology adoption may be lagging in many emerging economies, mobile peer-to-peer payments are much further ahead than in developed nations because of the lack of alternative infrastructure for centralized banking.

Has the Hype Cycle accelerated since you first published it?

A question we get quite frequently is whether the Hype Cycle has "sped up" since we first introduced it in 1995. At the heart of this question is a feeling that the pace of innovation has accelerated and that we are being hit with new technologies at an ever-increasing rate.

When we look at the velocity that innovations are moving through the Hype Cycle, there is one type of innovation that does seem to move at a much higher speed. These are the innovations that arise from the consumer Web world, in particular those that involve collaboration and social networking. These technologies, as typified by YouTube, Facebook and Twitter, seem to launch fully formed and move rapidly from the early adopters to the Peak of Inflated Expectations, often in less than a year. There is still some inevitable disillusionment as individuals figure out how to manage a new source of potential information overload, and companies scratch their heads about finding the business value. For corporate adoption in particular, it may still take several years for the innovation to move from the Peak to the Plateau of Productivity. But overall, the path is distinctly more rapid than a traditional, multidecade Hype Cycle.

The feature that distinguishes these technologies is that they are born not from years of visible, documented laboratory R&D, but from the viral melting pot of the Web. For every Facebook and Twitter, a thousand similar ideas were also launched that didn't have quite the right set of features, or the right interface, to rise above the crowd. Once the next viral site emerges, it has already won a Darwinian battle and is ready for broader adoption.

Outside of this class of technology, it seems that in most cases the overall speed through the Hype Cycle hasn't necessarily increased. Some of the innovations that will start to hit the Peak this year — such as augmented reality, tablets and touch technologies — have already been in the labs for decades. In particular, technologies that involve fundamental hardware advances, such as a new type of display or networking capability, tend to have a long period of laboratory fermentation. Overall the pace varies considerably: "podcasting" took only three or four years to completely traverse the Hype Cycle, but "mobile commerce" has taken 15 years so far and probably has another five years or more to go.

Going forward, we are likely to see a growing proportion of innovations arising in the consumer world, particularly with the growth of platforms and app stores that encourage and reward a broad

set of innovators. It will be important to track these sources as well as traditional labs and vendors. But the Hype Cycle still seems to be holding up as a pattern that reflects our attitudes to most types of innovation, and accounting for both "fast track" and "long fuse" technologies. Perhaps what is accelerating is not so much the pace of innovation itself, but rather society's splintering levels of attention, causing us to cycle more rapidly between our peaks of enthusiasm for each next new thing.

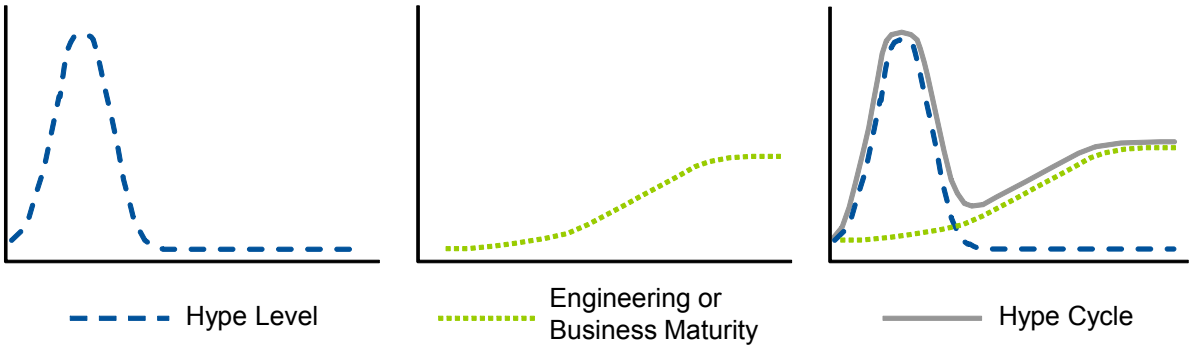
Advanced Hype Cycle Topics

Behind the Hype Cycle

In looking at the rationale for the Hype Cycle, it becomes clear that the cycle is not so much about technology as it is about human attitudes toward innovation. The same Hype Cycle applies to new business models and management approaches, and to consumer phenomena such as rising movie or music stars. Investors are intensely aware of the hype effect as a new company gains popularity and visibility.

The Hype Cycle curve is formed by the conjunction of the *human perceptions* of the progress an innovation makes and the *real* scientific progress. As with other subjective metrics such as stock prices, part of the public's perception of the value of a technology comes from pure speculation or promise (that is, the benefit that people feel the technology might someday deliver), and part comes from the real engineering or business maturity as perceived in the form of real experiences and measured outcomes. Both factors evolve over time (see Figure 8).

Figure 8. Components of the Hype Cycle

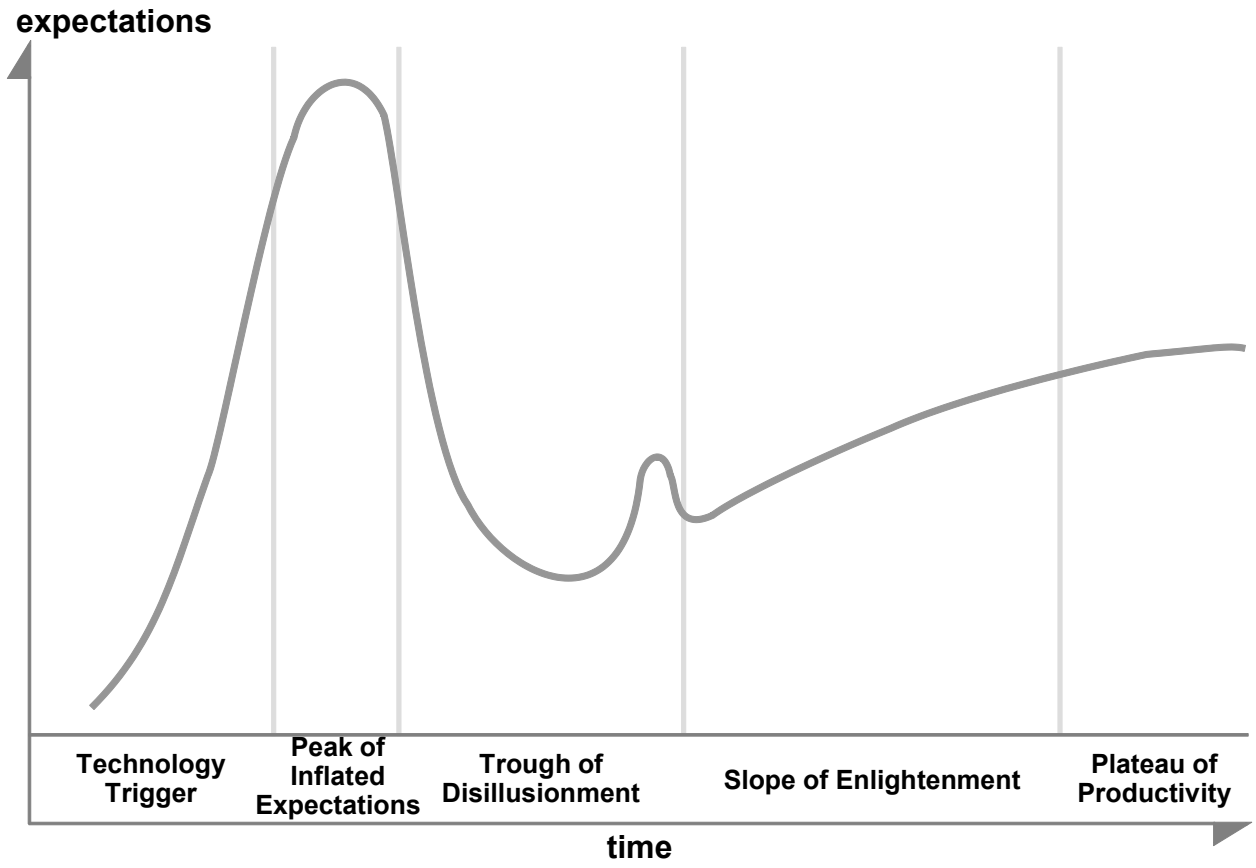


Source: Gartner (July 2011)

Excitement is a psychological factor that occurs in a rush, rises to a peak and eventually dies down, while real maturity (for example, of a product) builds slowly via development and use. Normally, there is a handoff from potential to maturity, as actual experience takes the place of speculation as the primary determinant of the public mind-set. Combining the two curves yields the Hype Cycle, with the hype preceding real capability, resulting in the distinctive peak and trough prior to maturation.

The Hype Cycle shows two stages of upward direction (that is, increasing expectations) — the lead-up to the Peak of Inflated Expectations and the rise up to the Slope of Enlightenment. The first rise is the primarily unsubstantiated hype that occurs when a technology is first discussed in the media. Some technologies experience multiple rounds of vacuous hype before beginning a more serious growth path based on an understanding of where and how to apply the technology. The second stage of rising expectations is associated with the beginning of real adoption growth. In many technology markets, another "minipeak" of hype may occur, triggered by product vendors, that launches the technology up the Slope of Enlightenment (see Figure 9). As with the first peak, this mini-peak often plays a beneficial role in alerting people that something has changed in the maturity or value proposition of the technology.

Figure 9. Double "Peak" of Hype Triggered by Meaningful Improvements and Adoption

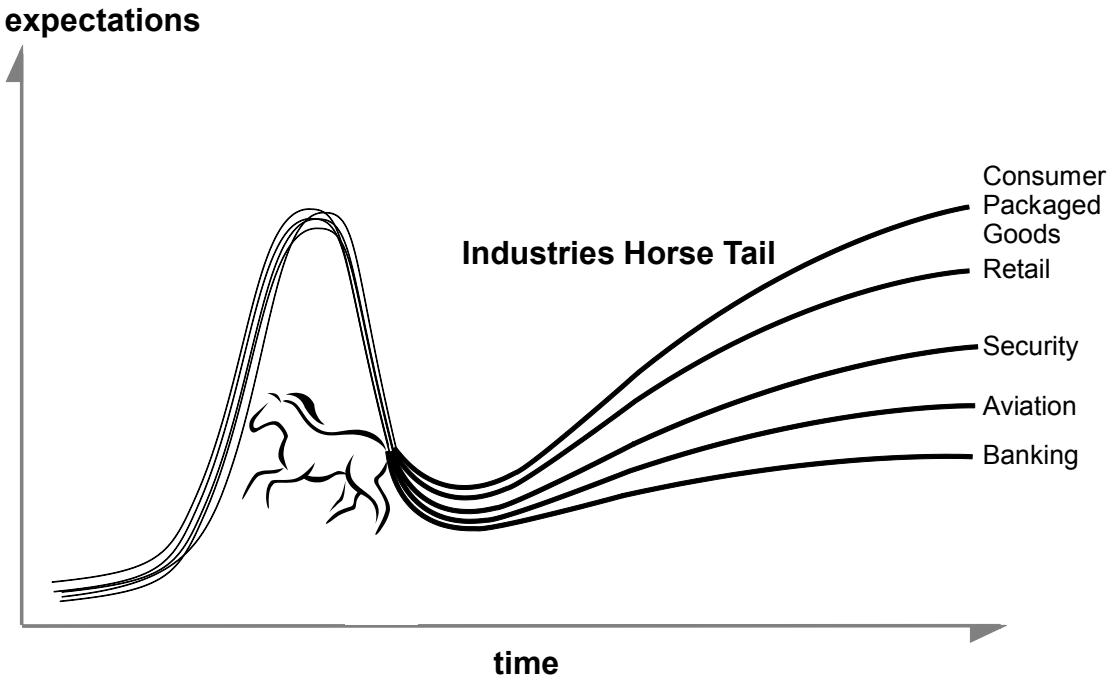


Source: Gartner (July 2011)

There can also be significant variation across industries. As the number of uses for the technology expands across different industries, they follow different paths up the Slope of Enlightenment and reach different Plateau of Productivity heights. Figure 10 shows this effect as a "horse tail" of plateau heights, in this case using a simplified view for the evolution of radio frequency identification (RFID) and its applications during the past decade. For a while, during the mid-1990s, the earliest proponents of the technology, such as Texas Instruments, were exploring all sorts of possible uses.

As the market for RFID became more serious during the early 2000s, it was focused very heavily on applications that would optimize the consumer packaged goods (CPG) supply chain to retail (following the so-called "Wal-Mart mandate"). Other uses, such as airline baggage tracing, failed to show value in early pilots, with the result that RFID has to date settled at a lower level of adoption in the aviation industry than in retail.

Figure 10. "Horse Tail" Effect of Industry-Specific Hype Cycles



Source: Gartner (July 2011)

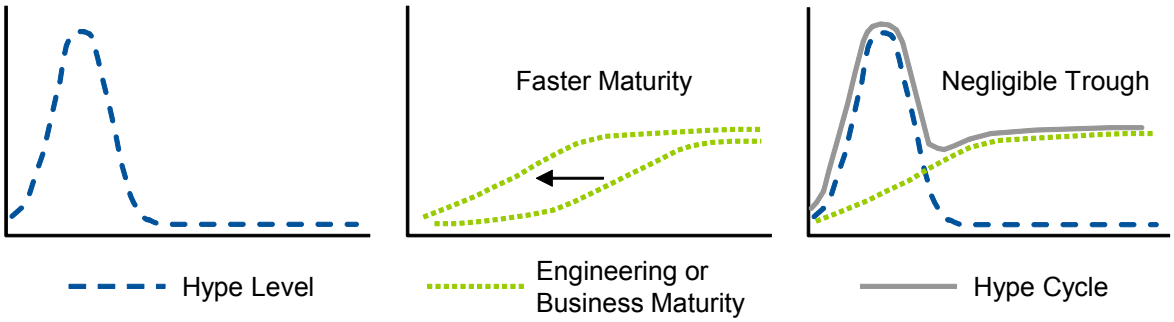
Hype Cycle Speed

It usually takes years for a technology to traverse the Hype Cycle — some technologies may take decades. Normal technologies with relatively few inhibitors usually traverse the Hype Cycle in five to eight years. Those that move faster are referred to as "fast track"; those that progress particularly slowly are called "long fuse."

Fast Track

Fast-track technologies go through the Hype Cycle within two to four years. This occurs when the maturity curve inflects early in the life cycle of a technology (see Figure 11).

Figure 11. Fast-Track Hype Cycle



Source: Gartner (July 2011)

Many examples of fast-track technologies are innovations that arise from the consumer Web world. The move from consumer technology to the more-demanding constraints of the enterprise (with respect to security, compliance, retention and more) is usually the cause of the trough in these cases.

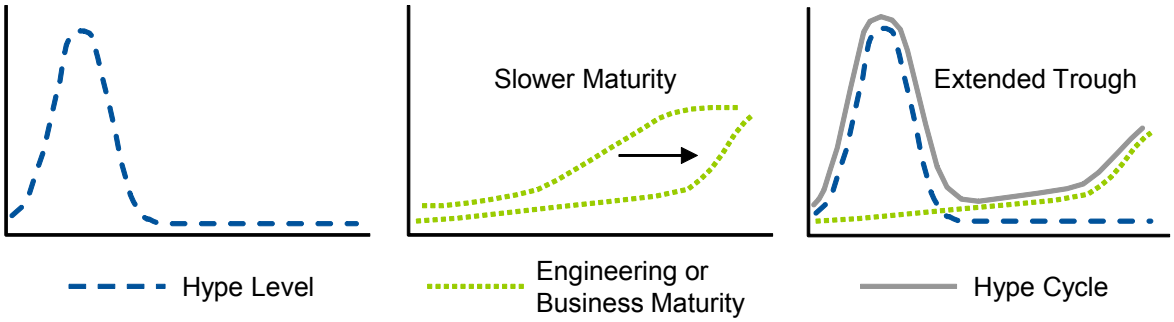
Fast-track technology indicators include:

- High value
- Simplicity of use by organizations and users
- Several strong vendors that support the technology
- Use of the current infrastructure
- Rapid transition from consumer to corporate use

Long Fuse

Long-fuse technologies spend a longer-than-average time in the Trough of Disillusionment, resulting in a slower overall traversal of the Hype Cycle — sometimes as long as one or two decades (see Figure 12). For example, PDAs were in the Trough of Disillusionment for several years after the Apple Newton, until the PalmPilot was launched and firmly established a viable new class of device. Another example is object orientation, which took 10 to 15 years to migrate from academia and other research organizations to become a mainstream development technique; the delay was partly due to skills and development process barriers. Many long-fuse technologies seem to be perpetually emerging and cycling between the peak and trough in public attention (for example, biometrics and artificial intelligence).

Figure 12. Long-Fuse Hype Cycle



Source: Gartner (July 2011)

Long-fuse technology indicators include:

- Inherent complexity that requires advances in basic science and engineering (for example, quantum computing and heads-up displays).
- User acceptance or regulatory issues (for example, biometrics).
- Reliance on a new infrastructure or ecosystem that needs time to evolve (for example, public-key infrastructure and digital signatures require regulation and standardized business applications, smart cards need readers and fuel cells require a distribution network).
- Dependence on professional skills that are unavailable or in short supply (for example, data mining, simulation or complex design).
- Major changes to business processes or the creation of a new business model (for example, customer relationship management).
- A science-fiction-style fascination with the technology that is far ahead of its real capabilities (for example, artificial intelligence, nanocomputing and robotics).

Special Hype Cycle Circumstances

Technologies can experience special or unusual circumstances as they move through the Hype Cycle:

- Technologies can become embedded. That is, they cease to exist as a technology category or concept; instead, the functionality is embedded in other products (for example, neural networks are now delivered as one of multiple techniques in analytic tools, rather than the stand-alone products of the early 1990s).
- Technologies can be split into several subconcepts (for example, cloud computing splits into public cloud and private cloud), as users differentiate between different application contexts and contextual requirements. Similarly, technologies from different disciplines can merge and

then re-emerge. For example, in the 1990s, machine learning from artificial intelligence and regression models from statistics merged to become data mining.

- "Phoenix" technologies continually cycle through enthusiasm and disillusionment (for example, intelligent agents and biometrics). Major events often can trigger new attention on a technology, such as terrorist attacks or disease outbreaks. Even some prominent media articles, or the complete lack thereof, can make some technologies cycle through repeatedly. These technologies usually are extremely slow-moving technologies with methodological challenges.
- "Zombie" technologies (for example, Internet terminals, interactive TV, video on demand and power line networking) are placed on hold because they have failed to deliver on their promises. These technologies basically work, but they do not have enough user interest or business justification to drive adoption. They usually are in the Trough of Disillusionment for a long time before they become obsolete or re-emerge, often as embedded functionality in other technologies.
- Technologies can become obsolete or "extinct" prior to reaching the Plateau of Productivity. This premature obsolescence typically results from the emergence of a competing technology. For example, VoxML was overtaken by VoiceML; analog high-definition TV has ceded to digital high-definition TV.

As part of the normal evolution of technology, the target audience for the technology may change from what was originally intended. The technology's applicability may grow to encompass new classes of users or shrink to become successful only in niche applications. Technologies that have been reduced to niche applications include the artificial intelligence technologies that were hyped during the 1980s, such as expert systems, virtual reality, genetic algorithms and fuzzy logic. Their original hype indicated that they should have had more impact on the world. However, these technologies may re-emerge from their current niche applications.

Recommended Reading

Some documents may not be available as part of your current Gartner subscription.

"*Mastering the Hype Cycle: How to Choose the Right Innovation at the Right Time,*" Jackie Fenn and Mark Raskino, Harvard Business School Press, October 2008

"Executive Perspectives: Strategic Business Capabilities and the Gartner Hype Cycle'

'Driving the STREET Process for Innovation and Emerging Technology Management'

"Applying the Hype Cycle as a Portfolio Review Tool in a Recession"

"A Hype Cycle Variant: The Industries 'Horse Tail'"

"The New Hype Cycle Y-Axis Measure: Expectations"

"Understanding Gartner's IT Market Clocks, 2010"

Regional Headquarters

Corporate Headquarters
56 Top Gallant Road
Stamford, CT 06902-7700
USA
+1 203 964 0096

Japan Headquarters
Gartner Japan Ltd.
Aobadai Hills, 6F
7-7, Aobadai, 4-chome
Meguro-ku, Tokyo 153-0042
JAPAN
+81 3 3481 3670

European Headquarters
Tamesis
The Glanty
Egham
Surrey, TW20 9AW
UNITED KINGDOM
+44 1784 431611

Latin America Headquarters
Gartner do Brazil
Av. das Nações Unidas, 12551
9° andar—World Trade Center
04578-903—São Paulo SP
BRAZIL
+55 11 3443 1509

Asia/Pacific Headquarters
Gartner Australasia Pty. Ltd.
Level 9, 141 Walker Street
North Sydney
New South Wales 2060
AUSTRALIA
+61 2 9459 4600