Understanding Gartner's Hype Cycles

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Initiatives: Digital Future

Gartner Hype Cycles are a graphic representation of the maturity, relevancy and adoption rate of emerging and mainstream innovations. Here's how CIOs and IT leaders can use Hype Cycles and associated Priority Matrices to strategize roadmaps for investing in the right innovations at the right time

Overview

Key Findings

- Hype Cycles provide a snapshot of the relative market penetration, maturity and benefit of innovations within a certain segment, such as a technology area or business markets.
- Most innovations technologies, services and disciplines progress through a pattern of overenthusiasm and disillusionment, followed by mainstream adoption and productivity.
- Hype Cycles and Priority Matrices help CIO and IT leaders to evaluate innovations based on perceived value, business benefit, adoption rate and future direction.

Recommendations

CIO and IT leaders responsible for innovation and technology investments should:

- Leverage Gartner 2023 Hype Cycles as key inputs to formulating your technology roadmap. Use the insights from the innovation profiles and illustrative vendor lists as a starting point for strategic analysis of your innovation and technology investment portfolio.
- Exploit the contextualized Hype Cycles to dive deeper into industry-specific views of various innovations to ensure adoption, penetration and maturity for your situation.

 Plan for change by developing a strategy that helps you manage the unique socioeconomic, regional and industry factors according to your organization's risk appetite, need for competitive edge, speed and budget.

Introduction

What Is the Hype Cycle?

Gartner Hype Cycles provide a graphic representation of the maturity and adoption of innovations and how they are potentially relevant to solving real business problems and exploiting new opportunities. Gartner Hype Cycles are developed by expert analysts according to a common methodology.

Analysis

Gartner's Hype Cycle depicts a common pattern that occurs when any innovation emerges. An innovation often progresses through a period of overenthusiasm, to a period of disillusionment, to an eventual understanding of the innovation's relevance and role in a market or domain.

This document helps Gartner clients to:

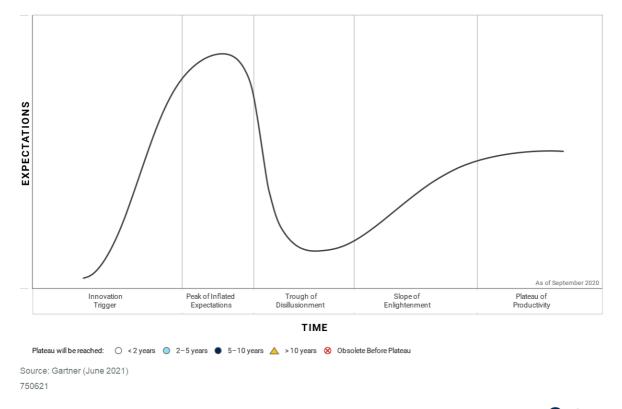
- Understand the phases and components of the Hype Cycle and how we position innovations
- Plan for common pitfalls and opportunities when utilizing Gartner's Hype Cycles
- Develop adoption strategies that reflect their organization's risk and opportunity profile priorities
- Answer frequently asked questions about Hype Cycles

Each year, Gartner creates more than 100 Hype Cycles across various domains to help clients track the maturity and potential of innovations. For a complete list, see the Hype Cycles page on gartner.com.

Figure 1 shows the basic form of the Gartner Hype Cycle.

Figure 1: The Gartner Hype Cycle

The Hype Cycle



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The two axes of the Hype Cycle are:

- Time (horizontal axis). An innovation will progress through each stage as time passes. Most Hype Cycles are a snapshot that shows the relative positions of a set of innovations at a single point in time.
- Expectations (vertical axis). The expectations for an innovation will surge and diminish as it progresses. The level of expectations for an innovation fluctuates based on the marketplace's assessment of its anticipated and confirmed value. This axis highlights the changing sentiment of potential and actual adopters and the shifting pressures surrounding investment decisions.

We refer to the individual elements that are mapped on the Hype Cycle as "innovations." Each innovation will be depicted as a dot on the Hype Cycle graphic. Some innovations are specific technologies, while others are higher-level trends and concepts such as methodologies and strategies, operating and consumption models, management disciplines and standards, competencies, and capabilities.

An innovation typically transitions through five stages on its path to productivity:

- 1. **Innovation Trigger**. A breakthrough, public demonstration, product launch or other event sparks media and industry interest in a technology or other type of innovation.
- 2. **Peak of Inflated Expectations**. The excitement about, and expectations for, the innovation exceed the reality of its current capabilities. In some cases, a financial bubble may form around the innovation.
- 3. **Trough of Disillusionment**. The original overexcitement about the innovation dissipates, and disillusionment sets in due to performance issues, slower-than-expected adoption or a failure to deliver timely financial returns.
- 4. Slope of Enlightenment. Some early adopters overcome the initial hurdles and begin to see the benefits of the innovation. By learning from the experiences of early adopters, organizations gain a better understanding of where and how the innovation will deliver significant value (and where it will not).
- 5. **Plateau of Productivity**. The innovation has demonstrated real-world productivity and benefits, and more organizations feel comfortable with the greatly reduced level of risk. A sharp uptick in adoption begins until the innovation becomes mainstream.

Innovations do not move through the Hype Cycle at a uniform speed. Each is categorized based on how long it will take to reach the Plateau of Productivity. Icons on the Hype Cycle show the timelines for mainstream adoption:

White circle: Less than two years

Light-blue circle: Two to five years

Dark-blue circle: Five to 10 years

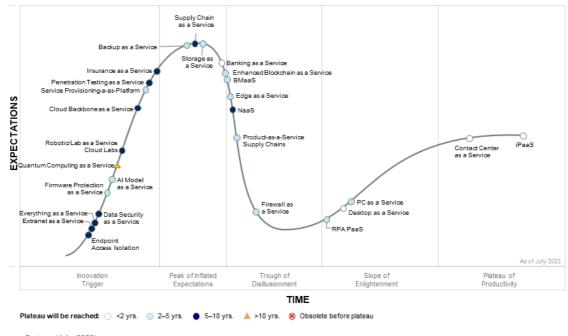
Yellow triangle: More than 10 years

Circle with red "X": Obsolete before plateau (that is, the innovation will never reach
the Plateau of Productivity — it will fail in the market, or be overtaken by or absorbed
into competing innovations)

Figure 2 shows an example of a Hype Cycle with innovations mapped onto the curve.

Figure 2: Example: Hype Cycle for XaaS, 2023

Hype Cycle for XaaS, 2023



Source: Gartner (July 2023)

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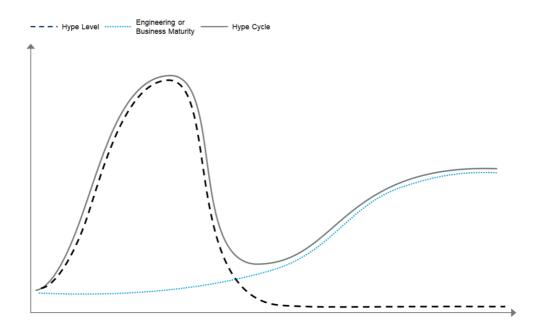
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The Hype Cycle curve incorporates two key drivers of increased expectations — hype (excitement, promise and expectations) and maturity level (see Figure 3):

- As market hype for an innovation builds, the innovation begins its ascent of the Peak of Inflated Expectations. Excitement occurs in a rush, creating unrealistic expectations that are not met because of the innovation's low maturity level or unforeseen headwinds. With high expectations and low maturity, the innovation falls into the Trough of Disillusionment.
- As the innovation matures, it climbs the Slope of Enlightenment. Early adopters realize real-world benefits from the innovation. Organizations increase their expectations until the innovation reaches mainstream adoption at the Plateau of Productivity.

Figure 3: Key Drivers of Increased Expectations

Key Drivers of Increased Expectations



Source: Gartner 793868

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The vertical scale of an innovation's hype curve varies based on its perceived importance to organizations and society. In general, innovations that appeal to a wide range of organizations will attract greater exposure, hype and expectations than innovations that benefit a niche market. This principle applies to both the Peak of Inflated Expectations and the final height of the Plateau of Productivity.

For visualization purposes, we normalize the vertical scale of individual hype curves so that they fit on one Hype Cycle graphic.

Positioning an Innovation on the Hype Cycle

Gartner analysts position an innovation on the Hype Cycle based on a consensus assessment of its hype and maturity. They use a variety of market signals and proxy indicators to establish the level of expectations for an innovation. Some inputs may be quantitative, but the Hype Cycle is largely a structured, qualitative research tool.

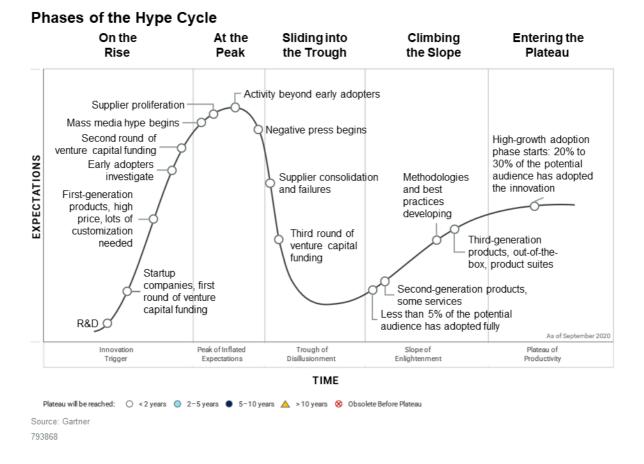
During the early stages of an innovation in the Hype Cycle — when uncertainty about an innovation is high — an innovation's position is guided mainly by its hype levels and market expectations. At the later stages — as more information about the innovation's performance and adoption becomes available — maturity plays a greater role in determining the innovation's position.

An innovation may have radically different positions in different applications or industries, and thus on different Hype Cycles. Take as an example how the use and market penetration of various intelligent automation innovations varies across different industries. Regulated industries are much more conservative and cautious in changing business processes and leveraging intelligent automation, while financial services has an entire category of fintech companies developing new products and services.

Movement Through the Hype Cycle

We categorize innovations into the five phases — Innovation Trigger, Peak of Inflated Expectations and so on — based on distinct indicators related to investment, product and market patterns (see Figure 4). As we place them on the Hype Cycle, we track and describe their movement through these phases on their journey toward mainstream adoption. Use these indicators and patterns as a guide for creating your own Hype Cycle (see Tool: Create Your Own Hype Cycle With Gartner's Hype Cycle Builder).

Figure 4: Movement Through the Phases of the Hype Cycle



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On the Rise

An innovation that is on the rise has passed the Innovation Trigger, but not yet reached the Peak of Inflated Expectations.

An Innovation Trigger is an event that sets off a period of rapid development and growing interest in the innovation, such as:

- A product launch or public demonstration
- A major improvement in price or performance
- Adoption by a respected company
- A rush of media interest that socializes and legitimizes the concept

New legislation or emerging demands due to economic or political factors

At the Peak

At the Peak of Inflated Expectations, the excitement about an innovation dominates the media landscape. As the media hype builds, companies that are less risk-averse often rush to adopt the innovation before their competitors. Other organizations follow suit to avoid missing an opportunity.

At the peak, the innovation is viewed as a panacea. Many organizations feel intense pressure to adopt the innovation without fully understanding the potential challenges and risks. Organizations adopt it with little regard for its suitability to their context, and the innovation is pushed to its limits as they experiment across different settings.

Sliding Into the Trough

An innovation begins sliding into the trough when the early success stories are displaced by less favorable stories about early adopters. The media coverage starts featuring the challenges associated with the innovation rather than the opportunities. Most early adopters struggle to derive meaningful value from the innovation, often due to their inappropriate application of it. If the innovation has not lived up to the overinflated expectations of enterprises and the media, it may be rapidly discredited.

An innovation's descent into the Trough of Disillusionment is not always accompanied with a decrease in overall adoption. The amount of time that an innovation spends in the trough varies widely. On average, innovations slide into the trough over the course of two to four years. However, a rapidly moving or consumer-driven innovation may suffer only a temporary setback of six to nine months. But an innovation with challenging engineering or business case issues could remain in the trough for a decade — or it could skip the trough altogether and move directly to the Slope of Enlightenment.

Climbing the Slope

An innovation begins climbing the slope as suppliers improve products based on early feedback and overcome obstacles to performance, integration, user adoption and business case justification.

When an innovation reaches the Slope of Enlightenment, suppliers apply many of these lessons to create second- and third-generation products. Suppliers and enterprises also codify methodologies for successful adoption and share best practices for deriving the most value from the innovation. These improved products and processes help rebuild the innovation's reputation.

Entering the Plateau

The Plateau of Productivity represents the beginning of mainstream adoption. The real-world benefits of the innovation are predictable and broadly acknowledged, and it is increasingly delivered as an out-of-the-box solution. As an innovation achieves full maturity and mainstream adoption, its hype typically subsides and is replaced with a solid body of knowledge about best practices for applying and deploying it.

Why the Hype Cycle Matters

The Hype Cycle helps organizations to avoid common traps and anticipate opportunities when adopting innovations. It helps organizations plan to avoid four traps:

- Adopting too early
- Giving up too soon
- Adopting too late
- Hanging on too long

When an innovation hits the peak or passes the trough in the Hype Cycle, organizations often feel pressured to take actions that are not in their best interest. They may adopt high-profile innovations at the Peak of Inflated Expectations without complete knowledge of the potential risks or value. Organizations may also overlook a valuable innovation because it is receiving less hype or is sliding into the Trough of Disillusionment.

Organizations should not adopt an innovation solely because it is at the Peak of Inflated Expectations, nor should they necessarily abandon the innovation as it slides down the Trough of Disillusionment. Rather, organizations should identify which innovations are potentially beneficial and evaluate each innovation profile in the early phases of the Hype Cycle. The Hype Cycle helps organizations to set more realistic expectations for an innovation over time.

Single-topic Hype Cycles can be useful to predict the future path of an innovation. One notable historic 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." One current example of a single-topic Hype Cycle is the Hype Cycle for Open-Source Software, 2023, which explores one common subject of interest across business domains, technology choices and roles, and promotes and informs engagement with OSS according to organizations' risk appetite. For a list of all Gartner's Hype Cycles, see the Hype Cycles page on gartner.com.

How to Use the Hype Cycle

To determine the optimal timing for adopting an innovation, organizations must balance three variables:

- The innovation's position on the Hype Cycle
- The potential value of the innovation to the organization
- The organization's risk tolerance

Organizations that operate exclusively in their comfort zones will miss opportunities. Based on their risk tolerance, they will always tend to either adopt everything too early or too late. Thus, organizations should recognize their comfort level with risk, but be prepared to step outside these parameters for innovations that are of high strategic importance. Some innovation leaders use Hype Cycles to structure discussions about innovations with their executives. To focus these conversations, divide the chart into two parts: pre- and post-Trough of Disillusionment:

- For pre-trough innovations, the team should ask itself, "What's here that we could be using?" That is, where is it worthwhile to adopt aggressively, even if it is outside the usual comfort level?
- For post-trough innovations, the team should ask itself, "What's here that we are *not* using?" That is, what are they missing, and do they need to do something about it?

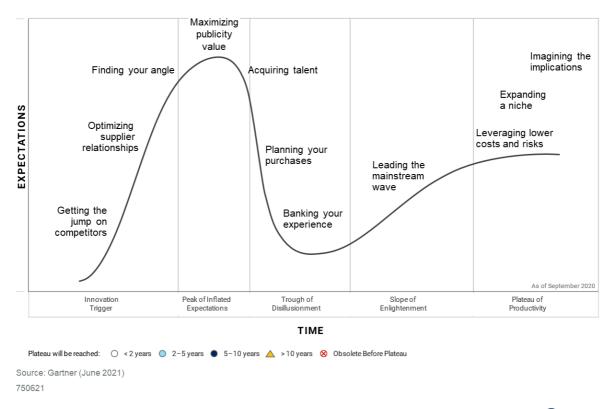
The insights from these discussions will help organizations to prioritize their innovation adoption strategy.

The Hype Cycle helps organizations to invest their time and resources in the right innovations — at the right time — to maximize value while maintaining an acceptable risk profile.

By anticipating the tendencies of suppliers, investors, competitors and skilled individuals at each stage of the Hype Cycle, organizations can secure the best deals, talent and publicity while unlocking new opportunities for innovation (as Figure 5 shows).

Figure 5: Hype Cycle Opportunities

Hype Cycle Opportunities



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What Is the Priority Matrix?

While the Hype Cycle helps navigate the common pattern of hype and disillusionment that inevitably accompanies new innovations, services or disciplines, Gartner's Priority Matrix enables organizations to look beyond the hype.

To plan and prioritize adoption of emerging innovations, organizations must assess each one based on its potential benefit and its maturation timeline. The Priority Matrix complements the Hype Cycle by providing this critical information for each innovation (see Figure 6).

Figure 6: The Priority Matrix

Priority Matrix

Benefit Years to mainstream adoption				
	Less than 2 years	2 - 5 years	5 - 10 years	More than 10 years
Transformational	Invest aggressively if not already adopted	Conservative investment profile	Moderate investment profile	Aggressive investment profile
High	Conservative investment profile	Moderate investment profile	Aggressive investment profile	Invest with caution
Moderate	Moderate investment profile	Aggressive investment profile	Invest with caution	Invest with extreme caution
Low	Aggressive investment profile	Invest with caution	Invest with extreme caution	Invest with extreme caution

Source: Gartner (June 2021) 750621

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The vertical axis of the Priority Matrix focuses on the potential benefit rating for the innovation:

- Transformational. Establishes new ways of doing business within and across industries, resulting in major shifts in industry dynamics.
- High. Enables new ways of performing horizontal or vertical processes that will significantly increase revenue or cost savings for an organization.
- Moderate. Enables incremental improvements to established processes that will increase revenue or save money for an organization.
- Low. Enables a slight improvement in processes, but may not translate into increased revenue or cost savings.

The horizontal axis of the Priority Matrix categorizes innovations based on the time to plateau — that is, when the innovation is expected to reach mainstream adoption. The time-to-plateau rating is a simple measure of risk based on the projected rate of maturation for an innovation. There may be some variability on this axis between organizations and industries, but typically to a lesser degree than on the benefit axis. Innovations rated as "obsolete before plateau" do not appear on the Priority Matrix.

How to Use the Priority Matrix

The Priority Matrix is a useful framework for:

- Making explicit judgments about the potential benefits of an innovation to an organization.
- Comparing innovations in terms of relative benefits and risks. This comparison can help mitigate scenarios where an influential individual pushes for an innovation that may not be in the organization's best financial interest.

Innovation Metadata

Profiles of innovations along the Hype Cycle provide definitions, importance, business context, obstacles, drivers and recommendations, but they also provide two other key measures — maturity rating and market penetration.

Maturity Rating

Table 1 shows the six possible maturity ratings for an innovation.

Table 1: Innovation Maturity Levels

(Enlarged table in Appendix)

Maturity Level ψ	Status ↓
Embryonic	In labs
Emerging	■ Commercialization by vendors
	Pilots and deployments by industry leaders
Adolescent	 Evolving capabilities, methodologies and associated infrastructure and ecosystems
	Adoption levels typically between 5% and 20% of target audience
Early Mainstream	 Innovation is proven and value is relatively predictable in many (but not all) environments
	 Capabilities continue to evolve
	Adoption level typically between 20% and 50% of target audience
Mature Main stream	 Proven innovation with well-understood value proposition
	 Innovation is commoditized; limited evolution in vendors or capabilities
	Adoption levels exceed 50%
Legacy	 Still functional, but not appropriate for new developments
	Vendors focus on maintenance revenue
	Cost of migration constrains replacement
Obsolete	Available in used, resale or maintenance markets only
Note: Mature main stream, legacy and obsolete innovation s rarely appear in Hype Cycles.	

Source: Gartner (July 2023)

Market Penetration

Market penetration is an innovation's current penetration as a percentage of the anticipated target market. We categorize innovations into five ranges:

- 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 innovations, assessing the market penetration is straightforward. For example, market penetration for mobile phones can be measured by determining the percentage of the population that owns one. However, assessing market penetration for some innovations is difficult if the offerings are still nascent or emerging. Expert analysts often use client inquiries, polling, surveys and other data points to estimate the range for current penetration.

Correlation Between Hype Cycle Ratings

Table 2 outlines the typical correlation between an innovation's location on the Hype Cycle, its maturity level, its time to plateau and its market penetration level.

Table 2: Relationship Between Maturity Level, Time to Plateau and Market Penetration (Enlarged table in Appendix)

Hype Cycle Section $_{\downarrow}$	Maturity Level \downarrow	Time to Plateau \downarrow	Market Penetration (as Percentage of Target Audience)	1
On the Rise	■ Embryonic	■ More than 10 years	Less than 1%	
	Emerging	■ Five to 10 years	■ 1% to 5%	
At the Peak	Emerging	■ Five to 10 years	■ 1% to 5%	
	Adolescent	Two to five years	■ 5% to 20%	
Sliding Into the Trough	■ Emerging	■ Five to 10 years	■ 1% to 5%	
	Adolescent	Two to five years	■ 5% to 20%	
Climbing the Slope	Adolescent	■ Two to five years	■ 5% to 20%	
	Early mainstream	Less than two years	20% to 50%	
Entering the Plateau	Early mainstream	Less than two years	20% to 50%	
	Mature main stream		More than 50%	

Source: Gartner (July 2023)

There can be exceptions to this typical pattern, such as:

- Niche innovations that are mature but have low market penetration.
- Innovations that mature slowly (that is, they move slowly from the Trough of Disillusionment to the Plateau of Productivity).

These exceptions, where they exist, are explained in the Drivers and Obstacles sections of the innovation profile.

Hype Cycle Q&A

Does the Hype Cycle apply to IT only, or does it work in other contexts?

The Hype Cycle was derived from innovation and technology observation, but the same pattern applies to many contexts where:

- There is an innovation to be transferred and translated into use.
- There is open discourse and a market of early adopters for that innovation.
- The innovation cannot be "right the first time," but must be modified, engineered and have evolved through application use and learning in the market.

The Hype Cycle does not align well with pure fads (such as fashion trends), which are often intangible and too short-lived to pull through the trough and reach a sustained market plateau.

Can an innovation be at different points on the Hype Cycle in different industries?

Yes, Gartner creates industry-specific and region-specific Hype Cycles. Some innovations may be of greater benefit in certain industries or regions, and some innovations may be at different positions on the contextualized Hype Cycle depending on their use cases.

Sometimes, a class of innovations may be further ahead or behind in a particular region or industry; but in most cases, the variation is more specific to the innovation. For example, an innovation's adoption may be lagging in many emerging economies due to budgetary constraints. Conversely, certain countries that may have not invested in many years and are thus not encumbered by legacy systems investments may be first to embrace a new innovation very early and leap ahead of developed nations.

How does the Hype Cycle relate to Magic Quadrants?

Magic Quadrants are about providers, while Hype Cycles are more focused on the users'/buyers' experience. Some innovations are associated with a Magic Quadrant that provides detailed analysis of an innovation's marketplace. Clients use Magic Quadrants as a first step to understanding the providers they might consider for a specific investment opportunity. Magic Quadrants provide a graphical competitive positioning of four types of providers in a market: Leaders, Visionaries, Niche Players and Challengers.

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

The actual shape of each Hype Cycle is a dampened wave, not a cycle, in that it does not loop backward like a true cycle would. The innovations themselves do not cycle; rather, they move along the curve toward maturity (or obsolescence), albeit at a pace that we may predict.

However, the "cycle" in the Hype Cycle relates to the behavior of people — the inevitable cycle of enthusiasm and disillusionment we experience whenever an innovation emerges.

Is the Hype Cycle based on empirical science?

The Hype Cycle is a qualitative analytical tool. The Hype Cycle is not a mechanically derived quantitative chart, nor is it an academic endeavor; rather, it is a working management decision tool.

The Hype Cycle involves expert judgment. For instance, there is no single measure for expectations (the y-axis variable). Our analysts often use surveys, forecasts and other evidence to help position innovations. The strength of the Hype Cycle is its synthesis of evidence-based data and highly experienced human judgment.

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 "Crossing the Chasm: Marketing and Selling Disruptive Products to Mainstream Customers." During the chasm stage, vendors need to expand product adoption beyond the few early adopters to begin climbing up the Slope of Enlightenment. However, the chasm model does not have the equivalent of the Peak of Inflated Expectations (as the vertical axis of the chasm represents adoption levels, not expectations).

We view Moore's Chasm work and the Hype Cycle as complementary ideas. "Crossing the Chasm" is written from the innovation originator (vendor) perspective, while the Hype Cycle takes the innovation adopter (buyer) point of view. These cohorts have differing management priorities and key decisions.

Do all innovations take the same time to pass through the Hype Cycle?

No. Each innovation varies in terms of how long it takes to progress through each stage and how long it will take to reach the Plateau of Productivity.

Do innovations fall off the Hype Cycle?

Innovations are triggered to fill a technology gap or business need. As such, complete obsolescence is rare. A superior innovation or capability emerges to displace it. The innovations do not "fall off" a Hype Cycle. In some cases, they run the course and reach the Plateau of Productivity, which means that they are mainstream innovations. They no longer generate "hype" and are therefore not part of the Hype Cycle research. An innovation may transition or morph from the way it was originally positioned, or may be bundled with other innovations and thus appear to "fall off" the Hype Cycle as it appears under another name.

Evidence

Updated annually, approximately 100 Hype Cycles are published each year. Unlike other franchises like Gartner Magic Quadrants and Market Guides, the market categories, names and position change year over year — delivering fresh and timely insights. And many align directly with our clients' personas and industries. As a result, Sales and Services teams can target roles directly with highly relevant and visually clear insights. They are created and proposed by Hype Cycle Lead authors, who in turn work with the individual Innovations and their lead authors. Over 1600 innovations and Hype Cycles align to structured Key Initiatives and planned research through the year and are highlighted in an annual Technical Trends Insight Report.

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Tool: Create Your Own Hype Cycle With Gartner's Hype Cycle Builder

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Table 1: Innovation Maturity Levels

Status ↓
In labs
Commercialization by vendorsPilots and deployments by industry leaders
 Evolving capabilities, methodologies and associated infrastructure and ecosystems Adoption levels typically between 5% and 20% of target audience
 Innovation is proven and value is relatively predictable in many (but not all) environments Capabilities continue to evolve

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Maturity Level ↓	Status \downarrow
Mature Mainstream	 Proven innovation with well-understood value proposition Innovation is commoditized; limited evolution in vendors or capabilities Adoption levels exceed 50%
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Source: Gartner (July 2023)

Table 2: Relationship Between Maturity Level, Time to Plateau and Market Penetration

Hype Cycle Section ↓	Maturity Level ↓	Time to Plateau \downarrow	Market Penetration (as Percentage of Target Audience)	
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Climbing the Slope	■ Adolescent	■ Two to five years	■ 5% to 20%	
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Hype Cycle Section ↓	Maturity Level \downarrow	Time to Plateau ↓	Market Penetration (as Percentage of Target Audience)	V
Entering the Plateau	Early mainstreamMature mainstream	■ Less than two years	20% to 50%More than 50%	

Source: Gartner (July 2023)