2021 Hype Cycles: Innovating Delivery Through Trust, Growth and Change

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Initiatives: Technology Innovation

Our 2021 Hype Cycles focus on innovation delivery in a world moving from pandemic response mode to learning to live with the endemic virus. Through 2022 and beyond, organizations must build on trust to sustain growth and expect that change will continue to disrupt.

Overview

Opportunities and Challenges

- The pandemic and associated economic, social and political volatility continue to have a radical effect on organizations worldwide.
- Old business and operating models must adapt quickly beyond digital transformation to meet the new economic and market realities for recovery.
- Not only must strategy be reset, but the strategy-setting process must also become adaptive to manage chaos and instill responsiveness into IT planning and innovation.
- Technology innovations offer many opportunities to facilitate adaptation and shape the business and operating models needed.

What You Need to Know

- Exploit your innovation process and teams and make innovation a core competency, enabling your business to recover and reach new horizons.
- Use the growth, trust and change themes outlined in this research to help shape and prioritize your approach to innovation delivery and assist long-term recovery.
- Plan for change by developing a strategy that helps you manage acceptable risk at a time when the need to change may be accelerating.
- Make our Hype Cycles a key input to your innovation process, and use the insights of Gartner analysts to build a strong foundation for it.

Insight From the Experts

Innovate Through Trust, Growth and Change

In 2021, your organization faces unprecedented challenges. Many organizations require significant digital transformation to survive; some are prospering by exploiting the opportunities created by economic disruption or competitors who couldn't adapt rapidly or radically enough.

The world won't become simpler in 2022. Through 2026, the leading organizations will be those that create a solid and resilient business foundation on which to build new opportunities against a background of continued economic and strategic uncertainty. Technology innovation will be a key tool in this endeavor. The winners will be those who:

- Understand and harness the potential of new technologies
- Exploit the power of combinatorial innovation
- Navigate a path through risks such as technology and vendor immaturity

It will be difficult enough to manage risk by identifying and managing change. But to thrive, organizations must also sculpt that change and use disruption for business advantage, helping to bring an order to chaos and sustain a route to recovery.

Make our Hype Cycles essential tools to help your organization become one of the winners. This year, our Hype Cycle special report features over 90 Hype Cycles covering a wide range of innovations, technologies, business trends and key vertical industries. See the full set on our 2021 Hype Cycle webpage, and use our Hype Cycle Builder tool to create a customized Hype Cycle for your organization (see Create Your Own Hype Cycle With Gartner's Hype Cycle Builder).

I wish you success in your technology planning.

Keep well,

Philip Dawson

Executive Overview

Innovation Delivery

The world has changed. The pandemic has changed how we live and where we work and is forcing us to reset to recover. Yet we have to continue to innovate and deliver. Innovations help us manage risk, bring order to chaos and allow for change.

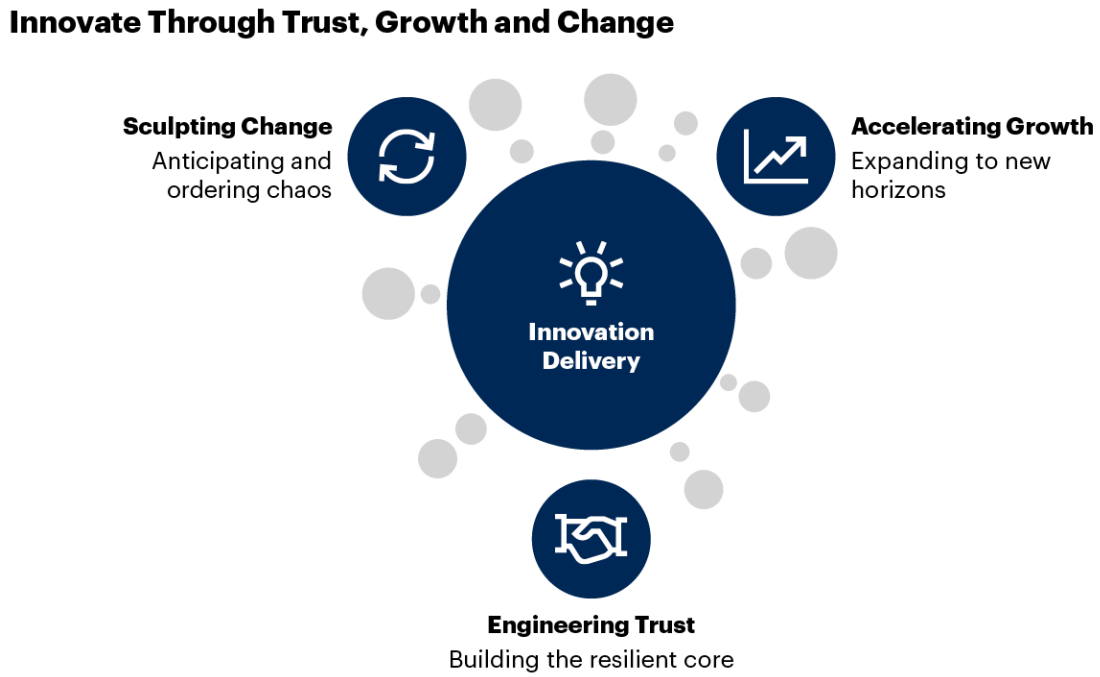
Business will not return to its pre-2020 state. Many workers will continue to work from home. Organizations are applying innovations to remote working locations and broadening reconfiguration of business processes. They have refocused on their customers *and* employees. They have redesigned their services and operating models around the "new normal" as it unfolds, stretching IT with cloud delivery and to the edge of operational technology and social integration.

COVID-19 infections, first reported in December 2019, spread quickly, with international travelers importing the virus to almost every country within a few months. Human and economic fallout followed. Fortunately, uncertain times inspire creative solutions, so innovation and new technologies are combining to provide a way through this disruption toward a new normal.

As always, the future remains uncertain. Change is coming quickly and from many directions, so an adaptive approach to strategy is most pragmatic. Rather than identifying a possible future state and navigating toward it, adaptive strategy focuses on the ability to accept and explore uncertainty and complexity.

Innovation delivery is about choosing the right vehicle for the journey. That journey is happening across three dimensions (see Figure 1). But the destination remains unknown.

Figure 1: Innovate Through Trust, Growth and Change



Source: Gartner
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Research Highlights

Engineering trust, *accelerating growth* and *sculpting change* are guiding principles that are helping to drive the rebound and recovery needed to manage the change we all face.

We're all making this journey. This collection of Hype Cycles and innovations will help in selecting the best vehicle and route to take. It won't be a smooth journey, but it's best to be on the way.

Engineering Trust

At a minimum, trust demands security and reliability. However, here the trust also extends to building innovations as a resilient core and foundation for IT to deliver business value. This foundation must consist of engineered, repeatable, trusted, proven, and scalable working practices and innovations. Risk, for business, must be minimized or managed so that IT can deliver. Resilience is key from both a business and technology perspective. Scalable repeatability helps build the resilient business core.

The chosen vehicle is being serviced and tuned. No one wants to embark on a journey without trust in the mode of transportation.

Related Research

Hype Cycle for Application Security, 2021: Security and risk management leaders need to adopt a system view of application security. They should focus on orchestrating multiple application security innovations to serve as a coherent defense, rather than relying on a set of stand-alone products.

Hype Cycle for Business Continuity Management and IT Resilience, 2021: The COVID-19 pandemic, along with regulations, cyberattacks and increasing dependency upon digital systems, are driving organizations to embrace IT and business continuity management. Use this Hype Cycle to identify solutions that fulfill resilience, availability and recovery needs.

Hype Cycle for Cloud Security, 2021: Through 2021, the majority of enterprise workloads will run in public cloud. Security leaders should use innovations and technologies detailed in this Hype Cycle to evolve protection strategies and improve the security of their public and hybrid cloud deployments.

Hype Cycle for Cyber and IT Risk Management, 2021: Organizations are responding to new cyber incidents and adapting to operational changes triggered by the pandemic as risks are escalating in certain new territories. Security and risk management leaders can use the risk management tools and principles highlighted in this year's research.

Hype Cycle for Data Security, 2021: Organizations are accelerating the deployment of sensitive data across multicloud architectures, which exposes data beyond traditional network boundaries. This is scaling up the exposure to data residency and privacy risks and a growth in ransomware and data breaches.

Hype Cycle for Network Security, 2021: Network infrastructure continues to get complex with cloud acceleration and changing network boundaries. External and internal attacks pose a threat that can lead to data loss, critical downtime and brand damage. SRM leaders should intensify their protection by deploying these security technologies.

Hype Cycle for Open-Source Software, 2021: Much of the world's software infrastructure is now based on open-source software. Application and software engineering leaders should use this Hype Cycle to track innovations that facilitate the use of, or are powered by, OSS.

Hype Cycle for Privacy, 2021: Security and risk management leaders managing technology, information and resilience risk consider privacy a top priority. This Hype Cycle describes the technologies that protect personal data and business value to build trust with individuals. Use this Hype Cycle to prioritize risk and investment.

Hype Cycle for Security Operations, 2021: Security operations technologies and services defend IT systems from attack by identifying threats and exposure to vulnerability — enabling effective response and remediation. The innovations included in this Hype Cycle aim to help security and risk management leaders strategize effectively and enhance their strategy.

Hype Cycle for Storage and Data Protection Technologies, 2021: This Hype Cycle evaluates storage and data protection technologies in terms of business impact, adoption rate and maturity level to help infrastructure and operations leaders build adaptable, scalable, and efficient storage and data protection platforms for changing business needs.

Accelerating Growth

Once the trusted core business is established, recovery and growth can happen. Growth targets should be achievable. Here, risk is manageable in incremental steps when managed against business needs. Technology risk is balanced with the appetite for business risk (using Hype Cycles), and near-term objectives are attainable. Once the innovation-led core is scaling, accelerated growth extends delivery and value. At this point, risk and agility enhance IT delivery toward more distant horizons.

Recovery and rebound take innovations to new places, with a core vehicle and journey that can adapt to new destinations.

Related Research

Hype Cycle for Artificial Intelligence, 2021: AI initiatives continue to accelerate as more enterprises are embracing digital transformation of their core operations. Data and analytics leaders must leverage this research to successfully navigate AI-specific innovations that are in various phases of maturation, adoption and hype.

Hype Cycle for Cloud Computing, 2021: Cloud computing is a mainstream computing model that has been validated as a dependable foundation for delivering IT capabilities. This Hype Cycle outlines the key cloud technologies in use today and the innovations that are emerging to support future needs.

Hype Cycle for Customer Experience Analytics, 2021: Customer experience has been transformed by the explosion of channels and digital interactions, as well as by the volume and connections of diverse data types. This Hype Cycle helps data and analytics leaders prioritize investments based on the maturity and potential benefits of the technologies.

Hype Cycle for Data Science and Machine Learning, 2021: Accelerated digitization is driving the urgency to productize experimental data science and machine learning initiatives. Data and analytics leaders must analyze the evolution of existing and emerging trends to orchestrate and productize DSML.

Hype Cycle for Frontline Worker Technologies, 2021: There has been an increased focus in the last 18 months on supporting frontline workers to ensure they're safe and productive. I&O leaders responsible for supporting frontline workers should evaluate the technologies in this Hype Cycle to optimize frontline environments and processes.

Hype Cycle for Infrastructure Strategies, 2021: Innovations and enhancements are critical to I&O leaders in the areas of infrastructure consumption models, automation/intelligence and architecture. For some, net zero data centers must be factored into an overall strategy. Containers and cloud delivery disrupt and provide opportunity, while software-defined innovations are mature.

Hype Cycle for Smart City Technologies and Solutions, 2021: A smart city is designed to achieve holistic objectives, achieving an intelligent urban ecosystem. This research helps local government and business CIOs, urban planners and strategists assess emerging technologies and solutions to deliver sustainable societal outcomes.

Hype Cycle for the Digital Workplace, 2021: The continuing effects of the pandemic highlight the criticality of the digital employee experience and how it shapes the future of work. Application leaders can use this Hype Cycle to promote workforce digital dexterity and align technology strategies with emerging talent and business needs.

Hype Cycle for the Future of Applications, 2021: Composable applications will require a combination of technologies to meet the demands of increasingly sophisticated users. Applications and software engineering leaders should use this Hype Cycle to identify and prioritize innovations and technologies key to delivering the future of applications.

Hype Cycle for the Internet of Things, 2021: The Internet of Things merges physical and cyber worlds, and enables digital initiatives that transform how we live and work. Applications and software engineering leaders must test their plans against the level of maturity and adoption of IoT building blocks in this Hype Cycle.

Sculpting Change

Change is traditionally disruptive and often tied to chaos, but organizations can use innovations to sculpt change and bring order to chaos. The art is to anticipate and auto-tune to the needs of change. Experience helps scale business drivers. Risk may help innovations adapt to sculpture change, but this risk must be manageable. So change can be sculpted, while delivery is being assessed.

Alternative vehicles are being considered for more varied journeys over new horizons.

Related Research

Hype Cycle for Analytics and Business Intelligence, 2021: This Hype Cycle will help data and analytics leaders evaluate the maturity of innovations across the analytics and BI space. Key trends include consumer-focused augmented analytics, composability of D&A ecosystems, and the governance and education required to execute a variety of analytics at scale.

Hype Cycle for Application Architecture and Integration, 2021: Composable, digital business is driving application architecture and integration to modernize and transform. Applications and software engineering leaders can leverage the technologies and practices in this Hype Cycle to meet the increasing demand for innovation, agility and scalability.

Hype Cycle for Data and Analytics Governance and Master Data Management, 2021: Data and analytics leaders must be able to evaluate and select the right decision and trust frameworks to enable organizational change and deliver digital business value. This report identifies the latest trends and innovations driving data and analytics governance and master data management.

Hype Cycle for Data Management, 2021: Innovations continue to enter the field of data management. Their potential benefits are numerous but challenging to understand and track. This Hype Cycle helps data and analytics leaders plan ahead and make informed decisions relative to emerging and maturing data management technologies.

Hype Cycle for Edge Computing, 2021: Early edge computing success in the retail and industrial sectors reflect OT acceptance of IoT and distributed computing, while IT-driven use cases are still developing. Some innovations in this Hype Cycle support these near-term implementations, while others pave the way for still-emerging, general-purpose edge applications.

Hype Cycle for Emerging Technologies, 2021: Our 2021 Hype Cycle highlights emerging technologies that will significantly affect business and society over the next two to 10 years. It includes technologies that accelerate growth, engineer trust and bring order to the chaos of a changing world by sculpting change.

Hype Cycle for Enterprise Architecture, 2021: Enterprise architecture responds to disruptive forces by identifying and analyzing desired business outcomes. Agile, digitization and the pandemic are forcing organizations to rethink the value that this discipline and its role provides to stakeholders.

Hype Cycle for Enterprise Networking, 2021: Driven by cloud, digitalization and the pandemic, enterprises are adopting new networking technologies faster than previous years. Multicloud networking and SASE are at peak hype and experiencing real-world adoption. I&O leaders can use this research to prioritize investment and time adoption.

Hype Cycle for Hybrid Infrastructure Services, 2021: Hybrid infrastructure services remain highly focused around cloud and IT services, with growing complexity and change. SPVM leaders should use this Hype Cycle to assess the maturity of emerging IT services and solutions to plan their hybrid infrastructure services strategy.

Hype Cycle for I&O Automation, 2021: I&O automation is the catalyst that drives quality and agility as organizations adopt cloud computing and DevOps practices and integrate AI capabilities. I&O leaders must leverage the technologies in this Hype Cycle to deliver faster value, improve efficiency and optimize costs.

Hype Cycle Top 10s

To engineer trust, let's revisit the most popular Hype Cycles and innovation profiles. The following table shows the top 10 Hype Cycles from 2018 through 2020. Our Hype Cycle for Emerging Technologies is a clear reader favorite once again, reflecting an interest in how innovative new technologies are evolving. Hype Cycle for Artificial Intelligence, Hype Cycle for Data Science and Machine Learning, and Hype Cycle for Analytics and Business Intelligence reflect the focus on unleashing the power of information to support data-driven decision making. The Hype Cycle for the Digital Workplace is linked to the new-ways-of-working theme. Related to that are the Hype Cycles for data management, identity and access management technologies, and cloud security.

Table 1: Top 10 Hype Cycles, 2018-2020

(Enlarged table in Appendix)

Number ↓	2018 ↓	2019 ↓	2020 ↓
1	Emerging Technologies	Emerging Technologies	Emerging Technologies
2	Artificial Intelligence	Artificial Intelligence	Artificial Intelligence
3	Data Science and Machine Learning	Digital Workplace	Analytics and Business Intelligence
4	Cloud Computing	Cloud Computing	Digital Workplace
5	Internet of Things	Analytics and Business Intelligence	Enterprise Architecture
6	Analytics and Business Intelligence	Internet of Things	Security Operations
7	Blockchain Business	Data Science and Machine Learning	Cloud Security
8	Digital Workplace	Data Management	Endpoint Security
9	Cloud Security	Cloud Security	Data Science and Machine Learning
10	Threat-Facing Technologies	Identity and Access Management Technologies	Cloud Computing

Source: Gartner (August 2021)

To accelerate growth, let's consider those innovation profiles that are most widely used — they appear on the most Hype Cycles. Digital twin is the most widely used innovation profile, reflecting the need for organizations to consider the impacts of their innovations. In second place is chatbots. The chatbot market has taken a new trajectory with the working from home, help desk, AI and automation wave. Innovations such as cloud delivery and security brokers are also expanding to the edge location.

Table 2: Most Widely Used Innovation Profiles

(Enlarged table in Appendix)

Number	Innovation Profile
1	Digital Twin
2	Chatbots
3	CASBs
4	Edge Computing
5	SASE
6	Emotion AI
7	Machine Customers
8	5G
9	Edge AI
10	Event Stream Processing

Source: Gartner (August 2021)

To help sculpt change, let's look at the fastest-moving innovation profiles. Usually the fastest-moving innovation profiles are earlier in their life or are the focus of intense interest and adoption. This year's top 10 reflects that mix.

Table 3: Fastest-Moving Innovation Profiles

(Enlarged table in Appendix)

Number	Innovation Profile
1	Virtual Events
2	Decentralized Applications
3	Blockchain PaaS
4	Consensus Mechanisms
5	Edge Asset Life Cycle Management
6	Contact Tracing Apps
7	Data Classification
8	Patient Self-Scheduling
9	Self-Service Data and Analytics
10	Wi-Fi 6

Source: Gartner (August 2021)

Related Research

Understanding Gartner's Hype Cycles details how Hype Cycles and Priority Matrices offer a snapshot of the relative market promotion and perceived value of innovations. They highlight overhyped areas, estimate when innovations and trends will reach maturity, and provide actionable advice to help organizations decide when to adopt.

Create Your Own Hype Cycle With Gartner's Hype Cycle Builder enables you to search and filter the more than 1,600 entries in Gartner's Hype Cycle innovation database. Use it to generate custom Hype Cycles.

Gartner Associates Supporting This Trend

Brian Burke

Melissa Davis

Philip Dawson

David Groombridge

Keith Guttridge

Nick Jones

Frances Karamouzis

Alex Linden

Katell Thielemann

Related Resources

Peer Insights

Gartner Peer Insights is a free peer review and ratings platform designed for enterprise software and services decision makers. Reviews go through a strict validation and moderation process to ensure they are authentic. Choose enterprise IT software and services with confidence. Read verified reviews from the IT community.

Browse Vendors

Browse Markets

Write a Review

Peer Connect

Peer Connect is a private community in which Gartner clients can exchange insight and advice on their mission-critical priorities.

Join the discussions in the IT Community Forum to ask questions and share answers on key initiatives.

Join the Gartner Research Circle. In this exclusive online community, business leaders participate in a two-way dialogue on mission-critical topics, key initiatives and industry developments with our Research and Advisory analysts and experts across numerous disciplines.

Note 1: 2021 Hype Cycle Refinements

Gartner Hype Cycles produced in 2021 feature a number of refinements to the Hype Cycle methodology and presentation designed to make the Hype Cycle more accessible and useful. These refinements include:

- Hype Cycle graphic: The Hype Cycle graphic has been updated to provide increased clarity and differentiation between the various phases.
- Interactive Hype Cycle: The Interactive Hype Cycle can be filtered to show results by time to plateau.
- Priority Matrix: The Priority Matrix is now interactive. It can be used to navigate to various Innovation Profiles both within the Interactive Hype Cycle and the full document.
- Innovation Profiles:
- The structure of the Innovation Profiles has been revised to provide a more consistent experience.
- Innovation Profile status data has been moved to the beginning of each profile.
- New or revised sections (Why This Is Important, Drivers, Obstacles) provide clearer, more focused analysis.

Document Revision History

2020 Hype Cycle Special Report: Innovation as Strategy - 11 September 2020

2019 Hype Cycles: 5 Priorities Shape the Further Evolution of Digital Innovation: A Gartner Trend Insight Report - 9 August 2019

2018 Hype Cycles: Riding the Innovation Wave, A Gartner Trend Insight Report - 13 August 2018

2017 Hype Cycles Highlight Enterprise and Ecosystem Digital Disruptions: A Gartner Trend Insight Report - 11 August 2017

Recommended by the Author

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

Understanding Gartner's Hype Cycles

Executing on Innovation: Design the Process From Idea to Value

Jump-Start Your Innovation Journey With a Customizable Innovation Framework

Better Digital Business by Design With the Business Architecture Landscape

2021-2023 Emerging Technology Roadmap for Large Enterprises

Digital Workplace Investment Benchmarks: Accelerating the Shift to Hybrid Work

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