



Future Disrupted: 2021 technology trends

Employee experience

5 Key trends for 2021

Modernize workplaces and accelerate teamwork, create meaningful employee experiences and provide seamless collaboration across distributed teams

1 Distributed working scenarios will become the norm

We're moving into a period where most businesses will have three physical locations: home, the corporate office and remote/mobile settings



Around 30.0% of employees were working remotely prior to the pandemic, but this number has since risen dramatically to over 50.0% and these employees will continue to work remotely at least some of the time.*

Steps to take in 2021

Employee access to connectivity and tools such as IP backbones that guarantee performance and security, will be critical.

Access technologies like high-speed broadband, 4G, 5G and Wi-Fi 6, as well as secure virtual desktop cloud environments need to be thoughtfully considered and implemented.

2 Identity, data and workplace analytics become the foundations for enhancing employee experience

Data will increasingly become an essential tool to highlight trends in employee experience, be they from a productivity, sentiment, wellbeing or community perspective.



According to a recent Gartner survey**, 16.0% of organizations are passively tracking employees via methods such as virtual clocking in and out, tracking work computer usage and monitoring employee emails or internal communications/chat.

Steps to take in 2021

Ensure workplace analytics is positioned as something that provides value back to the employee, as opposed to something negative and dictatorial.

Also ensure employees are given the appropriate levels of training to use new technology; an often-seen mistake is to assume everyone will just consume a new service that's deployed, but many may require support.

3 Next-generation meeting spaces will inject more innovation into the way employees collaborate in the office

Organizations striving to become more agile and digitalized are recognizing the benefits of physical workspaces that encourage engagement, collaboration and creativity.



The use of video conferencing/video collaboration spaces is the most common way that organizations intend to reshape their physical office space (45.0% of organizations).

Creative/thinking spaces are second with 31.2%.*

Steps to take in 2021

Focus on ease of use and ensure a frictionless experience.

This will ensure that you enhance, rather than detract from, the value that's derived from in-office interactions.

4 Employee wellness will become a fundamental requirement of employee experience

People need confidence and assurance before they're comfortable to return to work to perform more collaborative tasks

Several Governments have already made it mandatory for businesses to report on the number of individuals that were physically in their office on any given day, per square meter.

Some 94.0% of organizations say governance, risk and compliance is important to their organization's workplace strategy.*

Steps to take in 2021

Leverage technologies that can integrate data from across IT, HR and facilities management to ensure you meet your 'duty of care' to your employees and your environmental and sustainability goals

Create an office environment that motivates people to return, knowing that their health and safety have been considered.

5 Digital twins: prepare to welcome a new level of insight and wellbeing into our workspaces

A digital twin becomes a central location where previously siloed data such as building management systems, maintenance platforms, space occupancy, energy consumption and health/wellbeing indicators can interconnect with productivity and HR platforms.



All the data gathered by these respective platforms may be aggregated into a single location where data modeling, with AI and machine learning can occur.

Steps to take in 2021

Evaluate the viability of investing in digital twin capabilities.

Such a move will provide you with insights to make more informed health, safety and sustainability decisions.

* NTT Ltd. Intelligent Workplace Report
** <https://www.gartner.com/smarterwithgartner/9-future-of-work-trends-post-covid-19/>



Future Disrupted: 2021 technology trends

Digital transformation

5 Key trends for 2021

Now, more than ever, IT needs to be willing and able to respond to what the business need.

1 Proactive and bold digital transformation is imperative, not a choice

In 2021, the link between business value and investment will become amplified



Almost 9 in ten (89.7%) organizations say that the competitive structure of their market is being disrupted by digital; with 22.0% reporting it as being 'highly' disruptive.*

Steps to take in 2021

Organizations that hope to successfully persuade their Boards and shareholders to approve new investments will need to demonstrate tangible business value immediately and iteratively by adopting public and private cloud platforms.

Also, bear in mind that 'home is the new branch office' and this requires careful thought regarding how to optimize and secure your connectivity.

2 The ability to leverage public and private clouds to be agile and responsive to changing market requirements, is now essential

In our reshaped reality, new products and services have to be 'ready tomorrow' and there's an expectation for time-to-market and time-to-value to be realized faster than ever



Workloads continue to shift to a combination of cloud platforms, with public cloud expected to grow 24.0% to 30.0% and private cloud in a service provider's data center from 19.0% to 23.0% over the next year.**

Steps to take in 2021

Consider adopting various combinations of public and private cloud to gain the agility you crave.

However, don't neglect on-premises solutions, which also have an important role to play.

3 Increasingly, automation will lie at the core of successfully transforming digital businesses

Automation of processes and tasks that currently rely on manual human intervention will be the common element underpinning the most successful digital transformation initiatives, in the year ahead



Consider automation in the realm of customer experience ... we foresee greater adoption of chatbots and AI-driven natural language processing bots.

Steps to take in 2021

Be mindful that automation can present its own challenges when it comes to effective deployment.

Why

- Today, typical enterprise ICT ecosystems comprise a variety of products and technologies from different vendors.
- The modernization of ICT and the associated automation of previously manual processes requires a mindset and skills shift.

4 Infrastructure will become the leading generator of data

In years gone by, data was something you used for intelligence purposes and the infrastructure carried the data; infrastructure is now a major generator of data



In both business and consumer environments, every time an individual connects and disconnects to a network, that information is captured, stored and ultimately acted upon to optimize or improve employee or customer experience.

Steps to take in 2021

Look at ways to intelligently blend network data engineering and science, together with AI and machine learning.

This will put you in a position to push the boundaries of what it's possible to do with data, in ways never before imagined.

5 Recognition of cybersecurity's role in a business' digital enablement will intensify

It's important to be clear about what you need to do from a cybersecurity standpoint to enable your digital transformation.

Steps to take in 2021

Success lies in achieving the best end-user experience in this increasingly SaaS- and software-defined network paradigm, while maintaining adequate security.

Our advice is to start with the foundations and then work up the stack.

*NTT Ltd. 2019 Digital Means Business Benchmarking Report

** Look out for more on this topic in our soon-to-be-published NTT Ltd. 2021 Hybrid Cloud Report, which will uncover more about the acceleration of those trends



Future Disrupted: 2021 technology trends

Disruptive technologies

5 Key trends for 2021

A look at new and emerging technologies that have the potential to disrupt existing business models and help us realize safety and security, support sustainable growth and reduce environmental loads in the future.

1 All-photonics networks (APNs) will power global communications

A next-generation communications platform that supports a smart, sustainable and energy-efficient society

Using optical and hybrid cabling, APNs enable end-to-end information transmission between the terminal and the server.

APNs can transfer large volumes of traffic, while keeping quality high and latency low.

Transmission capacity could be increased to the extent that you could download 10,000 2-hour movies, in a fraction of a second.

Steps to take in 2021

Consider how APNs could contribute to your organization's sustainability goals as they allow you to operate an ultra-low power communications system, using just 1/100th of the power consumption required by today's networks.

While this may sound complex, these networks will be intuitive to use, allowing people to connect from any location or environment.

2 Cognitive Foundation (CF) technology will connect and control everything

Centralized management and agile allocation of ICT resources

CF creates an information processing platform capable of analysis and forecasting that isn't constrained by the format of systems or data.

CF has already been implemented in a smart city project in Las Vegas, that began in 2019, utilizing orchestration capabilities to analyze video, voice and other sensor information for incident response and prediction.

[Read more](#)

Steps to take in 2021

Consider the benefits to your operations of using CF to link virtualized ICT resources and integrating them with diverse systems and networks.

CF provides orchestration capabilities that allow you to integrate various interfaces, whether they be voice, video or other kinds of sensor information that support the Internet of Things initiatives.

3 Digital twin computing (DTC) will enable predictive analytics by integrating the real and virtual worlds

The ability to test different environments through previously impossible real-world-scale reproductions

Digital twins are virtual representations of real-world environments, products or assets.

We foresee DTC making it possible to integrate people's minds, thinking, habits and attitudes into their digital twins.

Allowing a person's digital twin to perform certain tasks and make decisions in cyberspace in place of the actual person.

Steps to take in 2021

Consider how prediction systems can benefit your organizational ecosystem, from traffic congestion to disease control. Remember to balance innovation with the matter of ethics and social responsibility.

Organizations like NTT are collaborating proactively with an ecosystem of academic research institutions to ensure adequate and responsible governance.

4 The evolution of the 'citizen developer' and robotic process automation will reshape businesses

Business users create new business applications using no-code or low-code development platforms to build process applications to accomplish their automation goals

The 'citizen developer' approach increasingly utilizes robotic process automation (RPA) which enables businesses to automate certain tasks and processes.

In the coming years, RPA has the potential to transform the future of work, which is why so many organizations are researching how to integrate it into their workflows and systems.

Steps to take in 2021

Understand your business subject matter experts, more than programmers, understand challenges being faced and how to solve them.

Establish the correct data strategy with flexible intelligent infrastructure and open systems to make this breakthrough accessible and safe for all parties.

5 Quantum and edge computing will usher in a new era of computing

The rise of powerful processing capability as well as enabling processing at or near the source of data

Quantum computers can solve problems that are computationally too difficult for a traditional computer to do via special algorithms making them more powerful than anything built to date.

Edge computing, which is closer to becoming mainstream than quantum computing, allows for computational work to be done locally, without the latency of cloud communication, especially for mission-critical applications.

Steps to take in 2021

Be mindful that edge computing will be the foundation for additional technology areas especially when it comes to near real-time applications and artificial intelligence at the edge.

Within the next decade, there could be as many as 50 billion devices online generating enormous amounts of data. Edge computing is closely tied to the Internet of Things and 5G connectivity.



Future Disrupted: 2021 technology trends

Customer experience

5 Key trends for 2021

In the last year, a harsh light has been shone on 'dead-end' design and siloed thinking that leaves customers exasperated. In 2021, the race to provide an effective, digitally focused customer experience (CX) will accelerate.

1

COVID-19 has made customer behaviours across all demographics more digitally focused

People of all generations – not just 'digital natives' – have become more confident and comfortable with online engagements and transactions



Some 81.6% of businesses acknowledge that customer experience offers a competitive edge and 58.0% consider it a primary differentiator.*

Steps to take in 2021

Over the next year, the organizations that will win will be those able to interact with customers virtually ... but this should not negate the value of the power of the 'human touch', which is still a fundamental part of the marketing, sales and service mix that builds successful CX.

With this in mind, creating and managing customer journeys to create a personalized experience, are critical.

2

Rich and personalized content will be king

Instead of merely mapping a customer's transactional and interaction flow, businesses will now have to work on becoming a part of the customer's life: the true customer journey map



Many organizations still have a way to go, however: 40.9% of businesses struggle to optimize customer journeys due to a lack of expertise in-house.*

Steps to take in 2021

You need an enterprise-wide integrated mindset and an experience, design-led approach to product and service delivery.

When successful, such integrated delivery teams bring cohesive creative, content, design, technology and analytics capabilities together to create a differentiated experience.

3

A move towards a CX environment that balances virtual and physical presence

A virtual environment that balances human intelligence and artificial or machine intelligence, but also creates an equilibrium between physical presence at the appropriate points in time



Organizations 'highly satisfied' with their CX capability are receiving unparalleled CX advocacy scores and set the benchmark others should aspire to achieve.*

Steps to take in 2021

Reflect the appropriate mix within your operating model so you can harmonize the customer experience while also adhering to the correct standards.

If you can seamlessly and proactively combine the power of their digital capability with 'hand in glove' advisory human capability, you'll reap the rewards of providing a concierge capability and retain and grow the value of their relationships.

4

Core CX competence will hinge on having a data-driven and well-documented strategy

Instead of merely mapping a customer's transactional and interaction flow, businesses will now have to work on becoming a part of the customer's life: the true customer journey map



Some 77.2% of businesses say that the need for data scientists/analysts will increase in the coming 2 years.*

Steps to take in 2021

Have clear data policies, strategies and management capabilities in place, and ensure they're comprehensively documented.

Recognize that moving certain CX workloads to the cloud will provide you with the ability to scale.

5

Ongoing performance management of infrastructure to meet customers' expectations, will become critical

The ability to constantly monitor, tweak and manage the performance of your digital infrastructure to ensure your customers are getting an adequate experience, is essential



Just 12.1% of organizations say customers rate their CX at a promoter level; the percentage of 'detractors' is actually worsening – now at 42.9% versus 27.2% a year ago.*

Steps to take in 2021

Established managed data center, cloud and networking experts can help you pinpoint the business processes you perhaps need to change.

They may advise and assist you to migrate certain applications to a public or, private cloud environment to further mitigate the risk of poor online customer experiences.



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Technology services

4 Key trends for 2021

Create efficiencies and optimize IT for better business outcomes

1 Cloud-based, on-demand platforms supporting remote working & client demand will need to be deployed – fast

Cloud adoption has increased significantly since the pandemic started... and it won't stop



Some **91.6%** of organizations say cloud-based IT is one of the top five most important technologies for enabling a digital strategy.*

★ Steps to take in 2021

As organizations increasingly rely on cloud-based platforms and other advanced technologies, augmented reality, AI and 5G will also become more viable propositions.

Collaborate with service providers to reimagine what cloud-enabled digital transformation now really means.

2 Increasing need for automation, process integration and optimization due to resource gaps

Compensate for a lack of human resources and specialist skills, reduce cost and improve the availability and overall quality of service delivery... and, most importantly, security



Skills shortages persist:

43.0% of organizations say they do not have adequate resources/skills in-house to cope with the number of security threats.*

★ Steps to take in 2021

Smart-source, don't outsource

Work with a trusted partner, rather than a transactional supplier. Among other initiatives, a seasoned services provider will help you harness the power of automation, reduce the amount of time spent on everyday tasks, and increase operational and cost efficiencies across your secure IT estate.

3 Surge in virtual, remote services and digital reality

Businesses will need to establish and entrench new ways to operate efficiently and effectively now that clients are looking to do everything virtually and workforces are predominantly virtual



AI and ML tools and resources are becoming **less expensive, and more available to businesses around the globe.**

★ Steps to take in 2021

Engage with service providers who offer deeper insights for clients through their own platforms, with AI and ML tools embedded.

Through highly personalized dashboards, you'll be able to better spot connections and insights normally missed by manual human analysis.

4 Ongoing performance management of infrastructure to meet customers' expectations, will become critical



Areas of particular concern will include cloud security and governance – given the way in which the pandemic has changed our traditional notion of how we address security. **Application modernization and 'going serverless' will usher in new application security considerations.**

★ Steps to take in 2021

Prepare to deal with the additional complexity associated with distributed applications and data through cloud-delivered security and threat detection.

Find ways to gain increased visibility of service performance and ensure compliance with service level requirements.