

451 Research's

2022 Research Agenda

Key topics, coverage and planned deliverables



451 Research

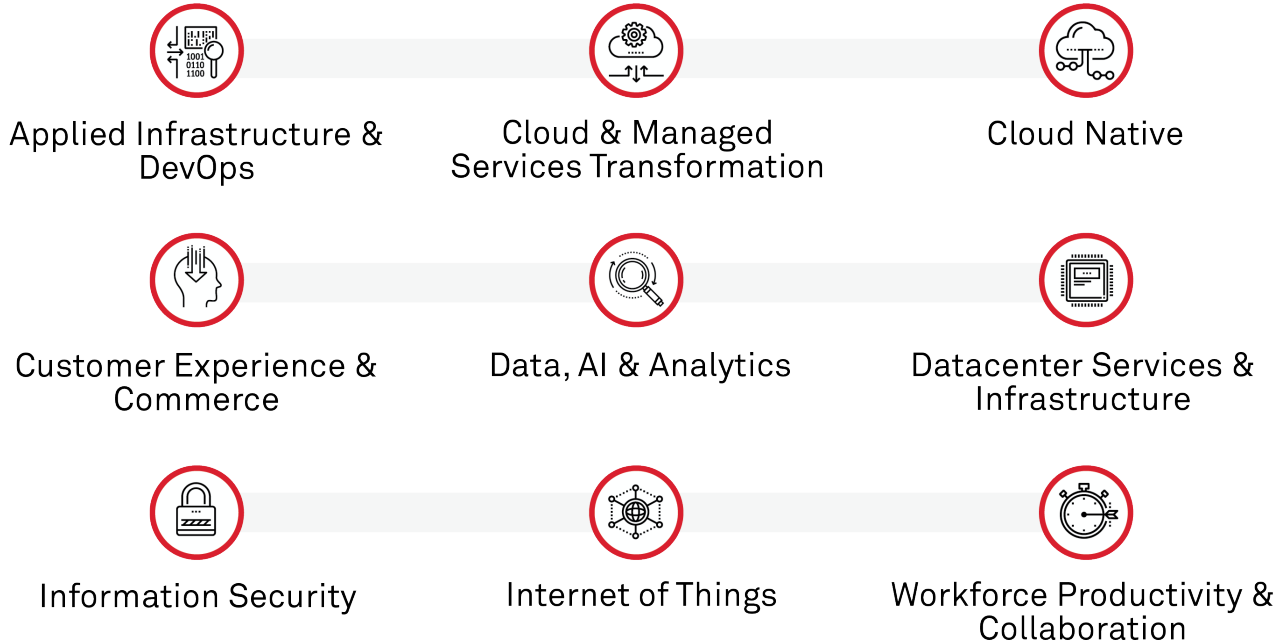
S&P Global

Market Intelligence

Your radar into market disruption, innovation and digital transformation in the IT space.

451 Research, a technology research group within S&P Global Market Intelligence, provides a holistic view of innovation across the entire enterprise IT landscape through a combination of expert analyst insight, backed by differentiated data. Our analysts interact with key industry decision-makers every day to deliver the essential intelligence necessary to understand the pivotal role that digital transformation is playing in reshaping our world.

Our research spans nine channels that align with the prevailing issues driving IT innovation, helping clients implement, invent and invest in digital transformation. The research agenda for each channel outlines key topics, analyst coverage and planned deliverables to support our clients' critical business decisions. The pace and extent of this transformation means that many trends span multiple channels; our research approach encourages analyst collaboration both within and between channels, allowing us to surface emerging trends before anyone else. Additionally, for a higher-level perspective on the key trends that will drive digital transformation in 2022 at a strategic level, please refer to our latest [Big Picture report](#).



Internet of Things

The Internet of Things (IoT) Channel focuses on the critical opportunity to virtualize the physical world into insightful, actionable digital representations created by connecting the data endpoints and analyzing the massive data flows captured from enterprise devices, machines and business processes. Enterprise IoT deployments encompass a range of infrastructure technologies including IoT sensors, edge compute, enterprise platforms, datacenters and the cloud, while serving as the launchpad for IT innovations including AR/VR visualization, AI and machine learning, private and public 5G networks, digital twins/digital threads, computer vision analytics, and autonomous robots and vehicles. But the ultimate goal of enterprise IoT isn't just on the data captured and managed, but also on the business-altering insights and use cases it can deliver. To that end, the IoT Channel is keenly focused on delivering a view into sector-specific digital transformation enabled by enterprise adoption of IoT technologies and solutions in industries including manufacturing, energy, transportation, healthcare, public sector, retail and more.



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Key Research Topics and Themes for 2022

As edge expands, what becomes of the IoT edge?

Now that the edge isn't just IoT, what is the IoT edge? An endpoint-out view of the massive data flows driven by IoT deployments and complementary technologies like 5G and edge compute – and their ongoing impact on enterprise infrastructure and digital transformation.

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5G as a critical enterprise IoT enabler

The ROI of 5G and edge have a critical dependency on enterprises using the platform to support digital transformation. With billions spent on 5G spectrum and infrastructure the next 5 years will be critical for 5G stakeholders to develop new value chain positions and business models that take advantage of cloud-native 5G.

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IoT platform market update

Just a few years ago, IoT platforms sat at the center of the IoT market as the most critical piece of enabling technology – with hundreds of vendors vying for enterprise attention. Much has changed – how has the IoT platform market evolved with it?

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The IT/OT impact of digital engineering

By ensuring that there is no border between IT and OT technologies, digital engineering will transform the way hardware-intensive systems are built and acquired by applying digital twins along a digital thread life cycle. This is an emerging space where the full disruptive market implications are only being glimpsed. The extent to which it will be dominated by the traditional OT service players such as GE, Phillips, Schneider Electric and Siemens on the one hand, or challenged by IT service system integrators on the other, partly depends on control of product data.

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Reaching the mid-market for IoT services

Smaller enterprises (those with 500 to 1,000 employees) are often priced out of implementing IoT enabled services, an opportunity that many vendors have spotted and hope to address with their portfolios.

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Industrial/manufacturing: The industrial metaverse

The metaverse has significant industrial use cases powered by industrial IoT instrumentation enabling full digital twins. This digital evolution sits on top of IIoT, AI, edge and cloud developments still ongoing across industrial digital transformation. This research looks at the spectrum from the most basic instrumentation to a fully realized digital twin in the metaverse for areas such as the manufacturing industry.

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Transportation: Vehicle electrification

With environmental sustainability becoming a priority for consumers and enterprises alike, the popularity of electric vehicles is expected to grow rapidly. We will provide an overview of the demand among consumers and commercial transportation companies for EVs, explain technology enabling the move to electrification, and track hurdles to adoption.

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Auto sector: The software-defined vehicle

Examining the momentum, drivers and players behind the software-defined vehicle, including the abstraction of hardware and software layers, bringing the concept of CI/CD to vehicles, and how IoT and vehicle electrification can help that concept become reality.

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● **Transportation and logistics: Comprehensive supply chain visibility**

Shippers and carriers seek comprehensive supply chain visibility to keep track of vehicles, drivers and cargo at all times. With technology deployment and integration a top inhibitor to IoT adoption in commercial transportation, vendors must combine their own offerings with voluminous partnerships to get enterprises closer to that full view.

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● **Energy: Digital wind**

Wind energy plays an important role in the energy transition, but wind turbines also generate vast amounts of data. In the spotlight, we look at the impact this has on datacenter capacity and connectivity.

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● **Energy: Digital decarbonization**

The industry narrative is changing from using IoT and AI/ML for predictive maintenance to reducing carbon emissions. What should the priorities be for the industry?

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● **Smart city: Resilient infrastructure and climate adaptation**

Cities are aiming to add a connected layer to their critical infrastructure in the face of extreme weather events. Public Wi-Fi, infrastructure integrity sensors and 5G network availability each contribute to resilience in the face of climate change.

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● **Smart building: Sensor-equipped buildings and the new world of work**

As companies plan return-to-work strategies, smart building technologies such as sensors offer a safe option for people-counting and space management. Intelligent building operations platforms and management systems will play a central role in the future of work and in the strategies companies use to optimize employee experience and safety. What accommodations can companies and property managers make to ensure the safety of those who return to the office?

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● **Retail: The arrival of the connected store**

E-commerce, smartphones and mobile apps have disrupted traditional retail – and with it, consumer demands and requirements. But for IoT- and digital-savvy retailers, something much better lies ahead: new opportunities and a renewed digital lease on life.

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● **Healthcare: Big tech players join the fray**

2020 US healthcare spending was over \$4 trillion. Large, fast-growing tech companies have been seeking success in this market, which has accelerated over the last two to three years.

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● **Healthcare: Securing medical patient data**

The growth of IoT is driving more connected devices within the healthcare system, while COVID-19 is driving the growth of remote patient monitoring outside it. This increasing number of IoT devices in multiple locations is exposing healthcare to security vulnerabilities.

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● **Healthcare: Wearables vs. medical devices**

The healthcare market is witnessing two parallel trends: 1) Medical device makers are turning to services. As IoT and services take a bigger role in the healthcare system and the home, traditional medical device manufacturers transition to service provision, opening these companies to new competition from startups, system integrators and consultants. 2) Consumer medical wearables are proliferating in the home. Fitness trackers, smartwatches and dedicated medical wearables are becoming more prominent devices in the home, driven by existing trends and by the COVID-19 pandemic.

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Analysis of new developments in a market sector or technology area that builds on previously published analysis to provide context and real-time updates on innovation and disruption as it happens.

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Concise research notes that highlight and contextualize a recent market or vendor development.

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