The 1990s and 2000s saw the widespread adoption of mobile technologies. Mobile phones connected people to information and resources any place, any time. Most of organizational and geographic boundaries.

Three major kinds of organizations in the 21st century.

As a social species, we come together to create, invent, make, and exchange goods and services. And to us at the time. Around 300 years ago, the industrial revolution ushered in dramatic changes in our organizational landscape. People increasingly started to consider their time and labor as a commodity they could sell for money. We have seen the emergence of formal, hierarchical, and structured organizational forms as a dominant form of creating value and managing economic activities on a large scale. Today, we are witnessing the emergence of new organizational forms, new ways of doing things. Organizational forms are now fluid, porous, and distributed. They are often less stable and predictable than industrial era organizations. Enabled by a new set of technologies, these new ways of organizing are forcing us to rethink legacy management structures and approaches.

This map is the result of many hours of research, interviews, and workshops, and is presented in five sections:

1. Drivers of change — Three major emerging technologies enabling new ways of organizing.
2. Getting things done — Seven powerful affordances of these new organizational forms.
3. Future skill — Five disruptive forces that will need to thrive in future organizations.
4. Transformational shifts and early signals — What’s in the organizational works.
5. Scenarios — Four very different ways organizations in the year 2030.

Whether your role in an established organization or an entrepreneur starting from the ground up, this map is your guide to building a resilient 21st century organization.

START HERE:

this is your guide to building a resilient 21st century organization

Oligizations are a social technology—a means for getting things done, creating economic value, and maintaining social order and cohesion.

A larger publishing organization in the world. As a result of Wikipedia’s success, Encyclopedia Britannica stopped publishing its print edition in 2010, after a run of 244 years. Wikipedia, and many other efforts we reference in this map, are signals of networked, distributed, open organizational technologies that are rapidly overtaking and replacing the ones we’re relied on for the last half-century. Not only are the structures and flows of organizations being transformed in this way, the function and impact of people in and outside of these organizations is changing.

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As a social species, we come together to create, invent, make, and exchange goods and services. And to us at the time. Around 300 years ago, the industrial revolution ushered in dramatic changes in our organizational landscape. People increasingly started to consider their time and labor as a commodity they could sell for money. We have seen the emergence of formal, hierarchical, and structured organizational forms as a dominant form of creating value and managing economic activities on a large scale. Today, we are witnessing the emergence of new organizational forms, new ways of doing things. Organizational forms are now fluid, porous, and distributed. They are often less stable and predictable than industrial era organizations. Enabled by a new set of technologies, these new ways of organizing are forcing us to rethink legacy management structures and approaches.

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Organizations are a social technology—a means for getting things done, creating economic value, and maintaining social order and cohesion.

As a social species, we come together to create, invent, make, and exchange goods and services. And for thousands of years we’ve been inventing and re-inventing ways of doing so, using the tools available to us at the time. Around 300 years ago, the industrial revolution ushered in dramatic changes in our organizational landscape. People increasingly started to conceive of their time and labor as a commodity they can sell for money. We also saw the emergence of formal, hierarchical, scientifically managed organizations as a dominant form of creating value and managing economic activities on a large scale. Today, we are witnessing the emergence of new organizational forms, new ways of getting things done. These organizational forms are more fluid, porous, and distributed. They are often less stable and predictable than industrial era organizations. Enabled by a new set of technologies, these new ways of organizing are forcing us to re-think legacy management structures and approaches.

For example, Wikipedia, which has just a few hundred employees, uses open source project development practices to coordinate the efforts of millions of unpaid, often anonymous, contributors to publish 800 new articles a day. Wikipedia is now the largest publishing organization in the world. As a result of Wikipedia’s success, Encyclopaedia Britannica stopped publishing its print edition in 2012, after a run of 244 years.

Wikipedia, and many other efforts we reference in this map, are signals of networked, distributed, open organizational technologies that are rapidly overtaking and replacing the ones we’ve relied on for the last several centuries. Not only are the structures and flows of organizations being transformed in this new environment, their function and purpose are, too.

This map is the result of many hours of research, interviews, and workshops, and is presented in five sections:

1. Drivers of Change | Three major emerging technologies enabling new ways of organizing.

2. Getting Things Done | Seven powerful affordances of these new organizational functions.

3. Future Skills | Five capacities individuals will need to thrive in future organizations.

4. Transformational shifts and early signals | What’s in store for organizations.

5. Scenarios | Four very different kinds of organizations in the year 2028.

Whether you’re a leader in an established enterprise or an entrepreneur starting from the ground up, this map is your guide to building a resilient 21st century organization.
WHY NOW: drivers of change

What’s driving this shift towards distributed, fluid forms of organizing? While technology-driven disruption of work structures may feel sudden, it is actually a product of the combined impacts of three major waves of technological advancement, the first of which began in the 1980s:

ACCESS

During the 1980s and 1990s, we saw the Internet grow steadily and eventually connect people, organizations, and geographies on a scale and at speeds never seen before. By the late 1990s, the network effects from increased adoption of inexpensive email, instant messaging, and website creation and browsing resulted in novel types of collaborations and work patterns with people outside of organizational and geographic boundaries.

CONTEXT

The 1990s and 2000s saw the widespread adoption of mobile technologies. Mobile phones connected people to information and resources any place, any time. Most importantly, however, successive generations of mobile technologies came equipped with location and other sensors, giving users increasingly context-rich information about people’s location and surroundings. Having detailed information allows us to offer information and services that are highly personalized and responsive to individual needs and conditions.

INTELLIGENCE

In recent years, abundant data and machine intelligence (increasingly available as on-demand utilities) made it possible to enlist non-human workers to inexpensively and quickly perform algorithmic matchmaking, analysis, delegation, prediction, coordination, optimization, and response tasks, which greatly increased the possibilities for emerging organizational structures.
**GETTING THINGS DONE:**
forecasts of transformation in organizational functions

How can we apply the social technology of organizations for specific purposes? Where will it be most effective? What will be the second and third order effects from its application be? To help us answer these questions, let’s look at how the functions of emerging 21st century organizations differ from traditional ones.

- **Resource Allocation from managers to processes**

  Management’s primary function in most organizations is to efficiently allocate resources and coordinate activities consisting of thousands of tasks and staff members. Increasingly, however, we are building software that serves this function, identifying who needs what and where and seamlessly connecting those who have such resources and those who need them in real-time. Already, ridesharing platforms have replaced human dispatchers for software that automatically routes drivers to the people who need them. Going forward, this will spread to a much wider range of industries, and we will see algorithms take on many of the more menial tasks of management, delegating people to making decisions that require more nuanced judgement.

- **Synchronization from co-located to distributed**

  Bringing people together in one physical location during the same work hours in factories, offices, and retail environments to coordinate production has long been an essential function of organizations. Increasingly, digital platforms allow people to collaborate asynchronously, across time zones and geographies. Organizations’ options for synchronization will only expand in the next decade. Remote communication will run the gamut from simple instant messaging and text to fully immersive virtual reality collaborative experiences. Asynchronous communication will know from simple email and voice to personal butlers, assistants and avatars that can act as intermediaries and answer basic questions on workers’ behalf. As our physical infrastructure comes online, even tasks that require hardware, such as R&D testing and lab experiments, will be run by people collaborating from thousands of miles away.

- **Compensation from money to portfolios of incentives**

  To engage wide networks of contributors, organizations will need to carefully navigate portfolios of incentives to reward people for their contributions and to maintain their interest. In some cases, and particularly with employees, monetary incentives will continue to play an important role. But as organizations become more distributed, networked, and open, monetary incentives may no longer be viable or sufficient. Contributors might want to engage because they can build reputations in a particular domain, achieve social status, or simply be a part of something that has particular meaning to them. Carefully managing and balancing different types of incentives that satisfy the needs of diverse contributors is becoming a core competency in the new organizational environment.

- **Planning from periodic strategic plans to continuous feedback loops**

  In the past, planning was an episodic process in which, at regular intervals, outcomes and performance were reviewed, then strategy was adjusted. Today, ubiquitous Internet connectivity is making feedback loops much faster and more continuous across industries and domains, from sales and marketing to logistics, allowing for more frequent iterations and adjustments. Going forward, sensors embedded in objects and the environment will accelerate this process even further, providing organizations with constant streams of granular information to continuously monitor their operations, while advances in artificial intelligence will process the feedback automatically and manage it as a just-in-time, continuous, and, in some cases, fully automated fashion.

- **Recruitment from resumes to reputations**

  The conventional way for a person to capture their qualification for a job is in the form of a resume—a list of degrees they have obtained and positions they have held. However, we’re seeing organizations look to new signals as evidence of candidates’ skills and capabilities that make them suitable for specific kinds of work. Organizations are increasingly looking at people’s online presence and reputations—consisting of reviews of their work, feedback from peers and customers and even performance in games—when recruiting workers. As more work and learning moves online, these reputations will become more precise and, as analytics reveal new, more specific, and sometimes counter-intuitive, predictors of task or job performance, they will come to include more diverse metrics and evidence of qualifications.
FUTURE SKILLS: thriving in the organizations of the future

As part of our future of learning research, IFTF identified the set of skills that will be important for workers and learners in a world where organizations have become less centralized and more fluid. For each of these skills, we pose a question to help organizations start thinking about how they can empower their contributors to thrive in the coming decade.

**Make yourself known: your data, your brand**

In the future, a person’s entire life, digitally documented and accessible by anyone online, will serve as their entry to work and other opportunities. People will have to be skilled at building a reputation and finding ways to communicate it across contexts and cultures.

**How can you give employees and contributors the ability to capture data about their accomplishments to build their reputations?**

**Befriend the machines: AI IQ**

Success in the future will depend on how well a person works with various types of automated, algorithm-driven systems. People will need digital fluency, an ability to move from one algorithmic platform to another, and the critical faculty to know when to trust and when to test these digital platforms.

**How can algorithmic reasoning be made transparent and adjustable for non-technical people who depend on them?**

**Build your tribe: pop-up communities**

In loosely connected, distributed, and shape-shifting organizations, it is important for people and groups to have the ability to quickly scan the environment, identify necessary resources wherever they are, and tap into and organize them to achieve desired outcomes.

**What platforms, tools, and skills does your organization need to build or give employees to enable flash organizing?**

**Keep it going: shared risks/assets**

In a task-based environment, it is easy to lose track of not only the ultimate purpose of the activity, but also the social, environmental, economic, and political effects. Ignoring this larger context can ultimately make the organization unsustainable.

**How might processes that match people to tasks optimize for values and passion alignment, not just skills and availability?**

**Make sense: big stories**

With an over-abundance of data, it is more important than ever to be able to separate what is important from what isn’t, and translate the salient signals into stories that can be clearly communicated to others.

**How might your organization’s technology teams lead the way in disseminating data literacy and analytics tools more widely?**
In some cases, these companies formed partnerships with existing makerspaces, and by 2028, this trend had been adopted by companies wishing to optimize for creativity. Grassroots incubators and development labs, where people with similar interests and complementary skills to collaborate on complex technology projects. While tools, equipment, and working space. Providing access to 3D printers, laser cutters, and CNC mills was tremendously beneficial to makers, but everyone knew the most lucrative skills. Makers and entrepreneurs at work. It’s a complete record of everything you’ve ever learned, everyone you’ve learned from, and everyone who’s learned from you. The Ledger not only tracks what you know—it also tracks all of the projects, jobs, gigs, and challenges you’ve undertaken. As a public blockchain, the Ledger forms the base of a teaching/mentor marketplace. It’s a complete record of everything you’ve ever learned, everyone you’ve learned from, everyone who’s learned from you. The Ledger not only tracks what you know—it also tracks all of the projects, jobs, gigs, and challenges you’ve undertaken. As a public blockchain, the Ledger forms the base of a teaching/mentor marketplace. As a public blockchain, the Ledger forms the base of a teaching/mentor marketplace.

In the early 2000s, scientists collected ocean floor samples and measurements in selected places and at specific times. Illustrations and projections were based on the spatial information. In 2028, scientists collected ocean floor samples from numerous locations using autonomous oceanic vehicles. Scientists can quickly scan the environment. The Ledger not only tracks what you know—it also tracks all of the projects, jobs, gigs, and challenges you’ve undertaken. As a public blockchain, the Ledger forms the base of a teaching/mentor marketplace. As a public blockchain, the Ledger forms the base of a teaching/mentor marketplace.
HOW TO USE THIS MAP

This map is more than a quick overview of the future of organizations and their functions. It’s a tool for matching new opportunities to the challenges your organization faces, for developing strategies that will lead to a thriving and sustainable operating environment, and for building future skills that will enable your organization to make optimal use of these new technologies.

Identify opportunities for your organization

Start by getting the big picture of how organizations are moving from stable, predictable, and hierarchical structures to more fluid, porous, and distributed models for getting things done. The poster side of this map gives you an at-a-glance view of transformations in 7 organizational functions—planning, recruitment, resource allocation, synchronization, scaling, defining boundaries, and compensating—illustrated by 12 signals of change that exist today.

These transformations are the new ways to organize and achieve outcomes—but what they’ll look like in practice depends on how they’re applied. This map includes four scenarios to provoke your imagination about the kinds of organizations you might build. Once you understand how these pieces will fit together in the coming decade, flip the map over and take a deeper dive into the forecasts.

Forge new strategies

Transformations of organizations’ functions will demand new strategies. First, choose one of the 7 organizational functions, such as resource allocation or synchronization, and think about the way your organization does this today. What about your competitors and peers? Next, ask yourself: how will my role, my team, my organization change if this forecast happens in the next 10 years? Then, conduct a SWOT analysis to understand how well prepared your organization is for this transformation. What are your strengths, weaknesses, opportunities, and threats as this future unfolds?

Build future skills needed to thrive

In a world where organizations have become less centralized and more fluid, people will need new skills to thrive. Explore the 5 questions in the Future Skills section to start thinking about how you can prepare yourself and empower others to thrive in the coming decade.

About this research

Google Cloud commissioned Institute for the Future, the world’s leading non-profit strategic futures organization, to take a holistic and systematic view of the impact of emerging technologies on the future of work, organizations, and IT leadership. This map is a part of a series of research findings that explore the ways in which new models of work will change the pace of business and innovation, empowering organizations to be more diverse, dynamic, and distributed.