



# Google Cloud

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## Student Slides

Introduction to Digital  
Transformation with  
Google Cloud

01

Why Cloud Technology is  
Revolutionizing Business

02

Digital Transformation with  
Google Cloud

03

Scale the Innovation Mindset

## Modules



# Google Cloud

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## Module 1: Student Slides

### Why Cloud Technology is Revolutionizing Business

#### Topics covered

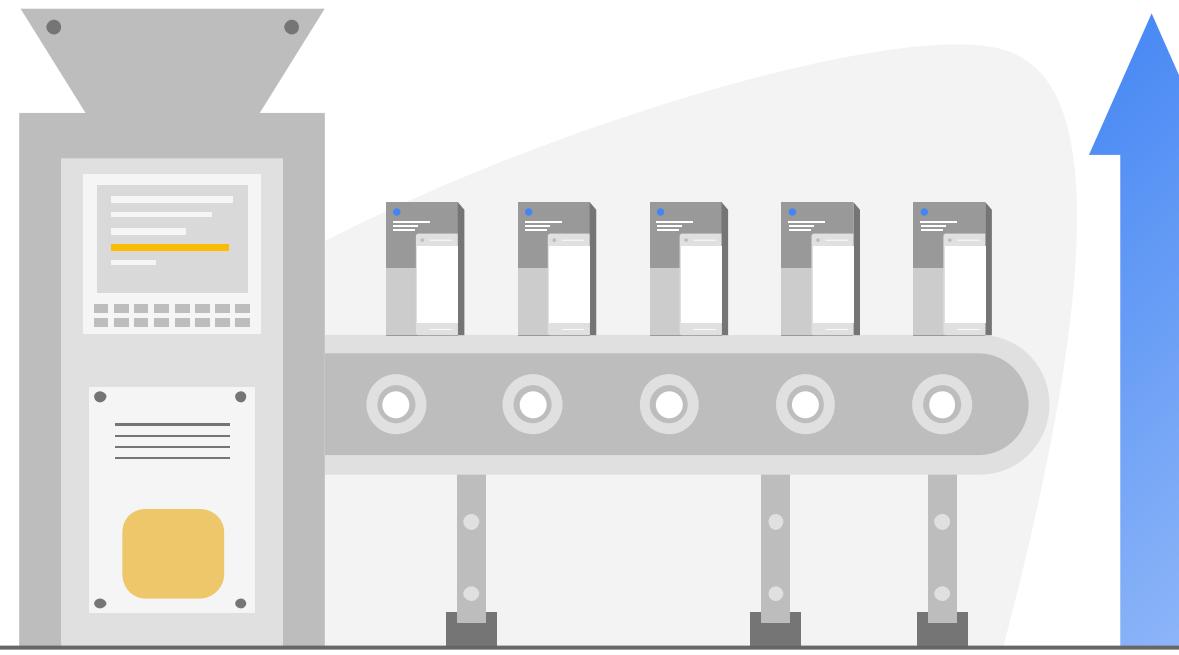
- Innovations throughout history and their impact
- Cloud technology and digital transformation
- Trends in compute power and data science
- How cloud creates exponential business value



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Inventions throughout history triggered thousands of innovations  
in what are called “Kondratiev waves” or “innovation waves.”

## Supply



## Demand

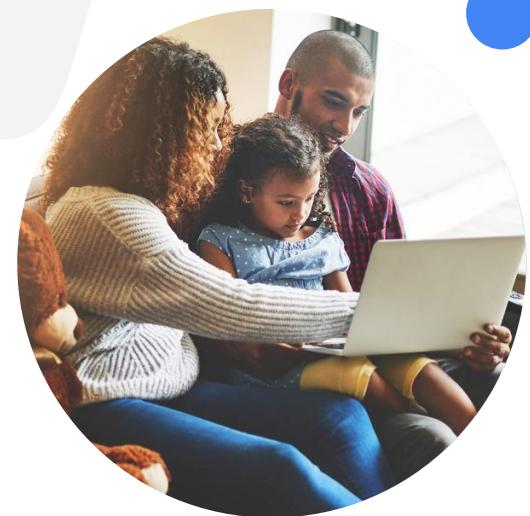
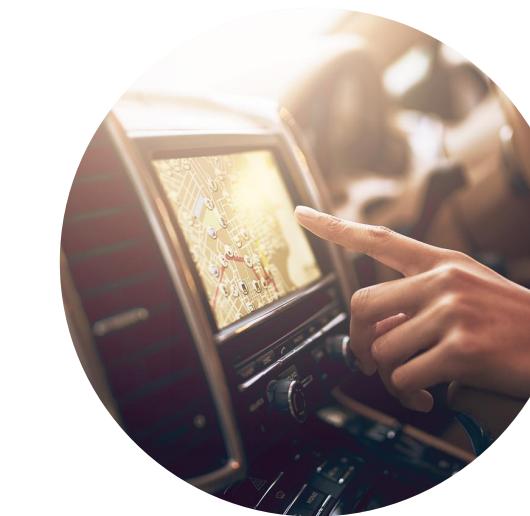


These waves all have one thing in common. They transform both the supply and the demand at the same time.



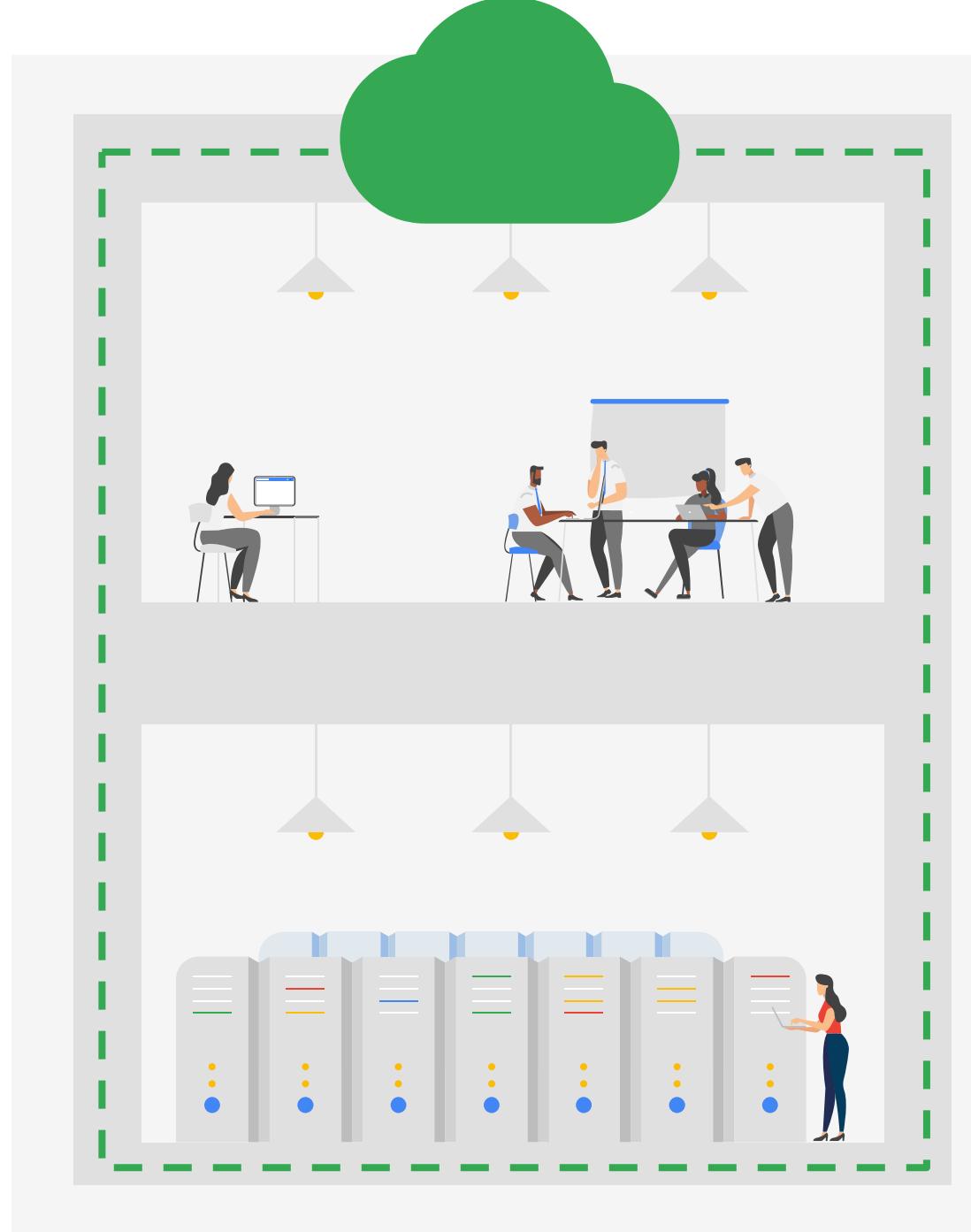
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What the printing press, the steam engine, and electricity all have in common is that they're all examples of a paradigm shift: a fundamental and irreversible change in the way that humans work and engage with the world.



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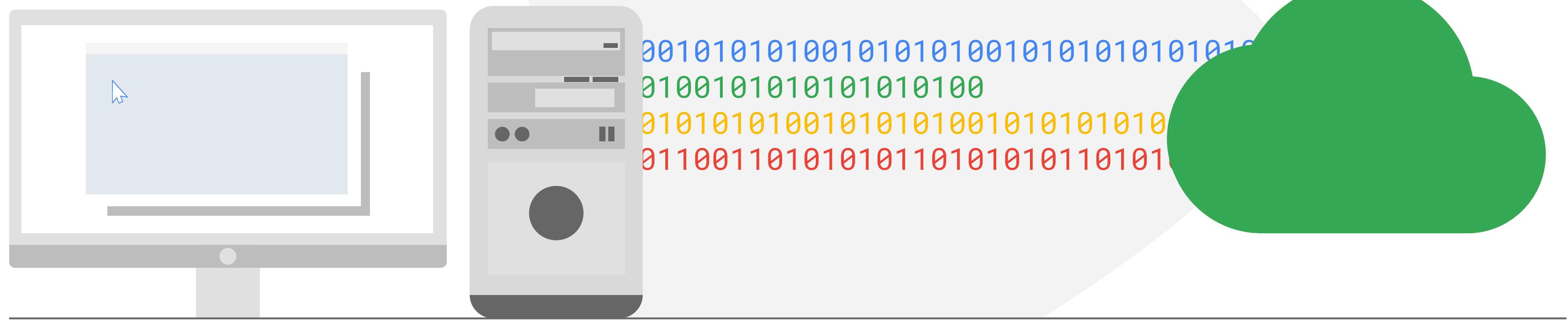
We're right in the middle of another paradigm shift. Cloud technology is transforming how businesses create value, how people work, and ultimately how people live.



## What is the cloud?

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The cloud is a metaphor for the network of data centers which store and compute information available through the internet.

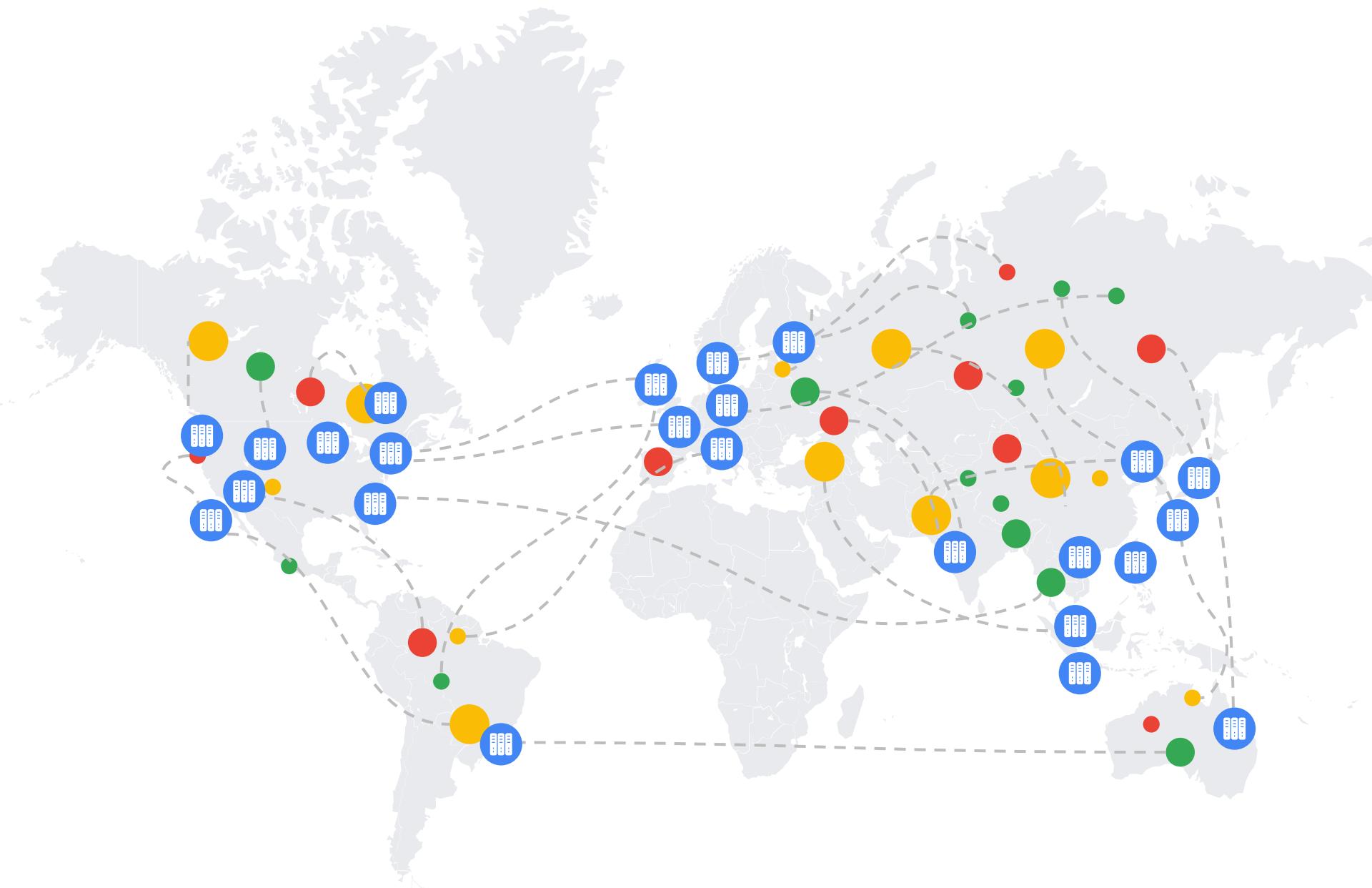


Cloud computing refers to the technology and processes needed to store, manage, and access data that is transferred over the “cloud”, rather than the data that remains on your computer's hard drive.



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Historically, organizations have had to spend a substantial amount of money upfront to set up the necessary infrastructure that would store and process their data.

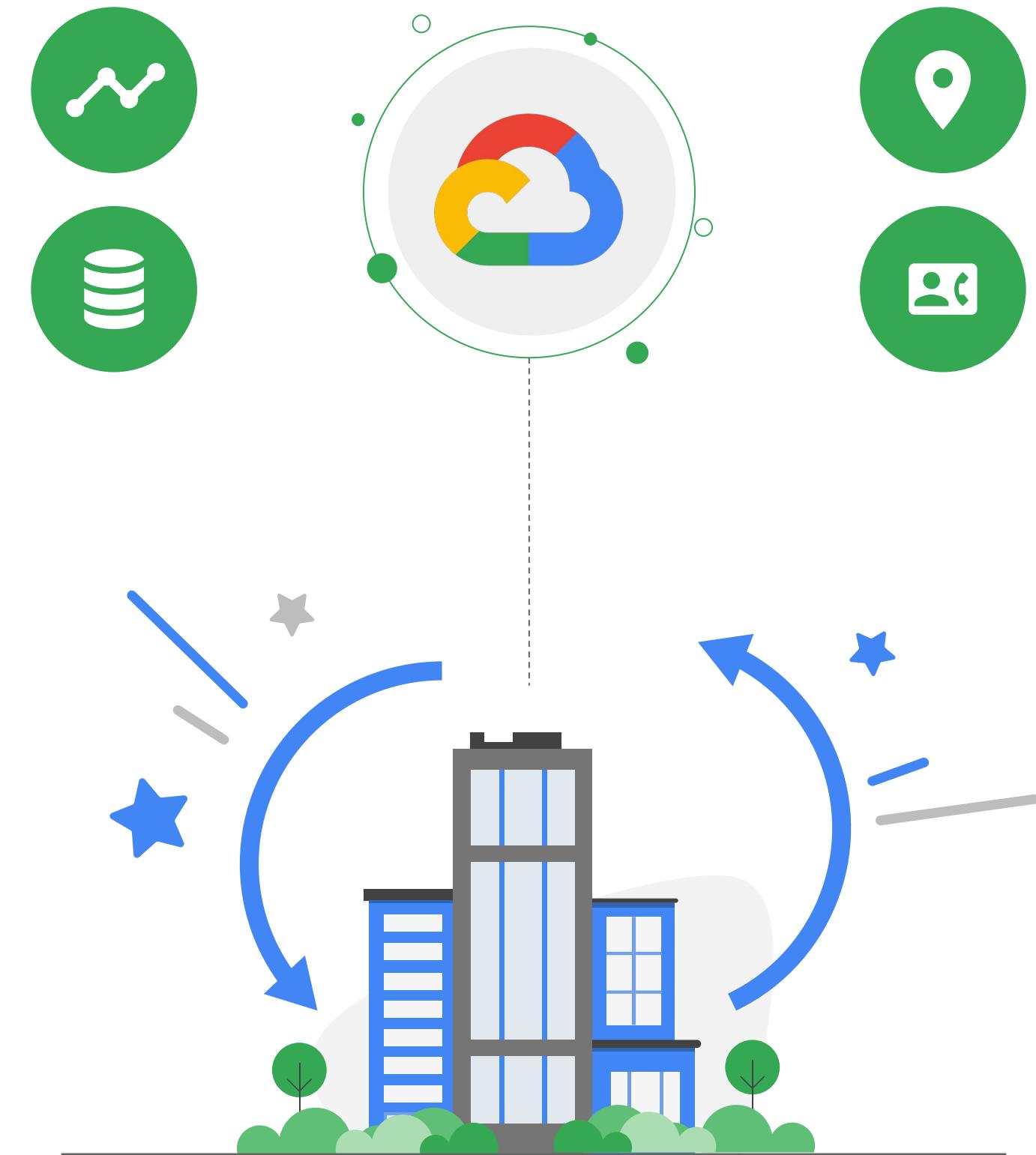


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Companies such as Google Cloud have invested heavily in their own IT infrastructure, and now, they're helping other organizations around the world by offering them the use of their digital platform to run their applications at scale.

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When an organization takes advantage of new technologies such as cloud to redesign and redefine relationships with their customers, employees, and partners the result is a company-wide digital transformation.





Collaborate



Perceive



Categorize



Predict

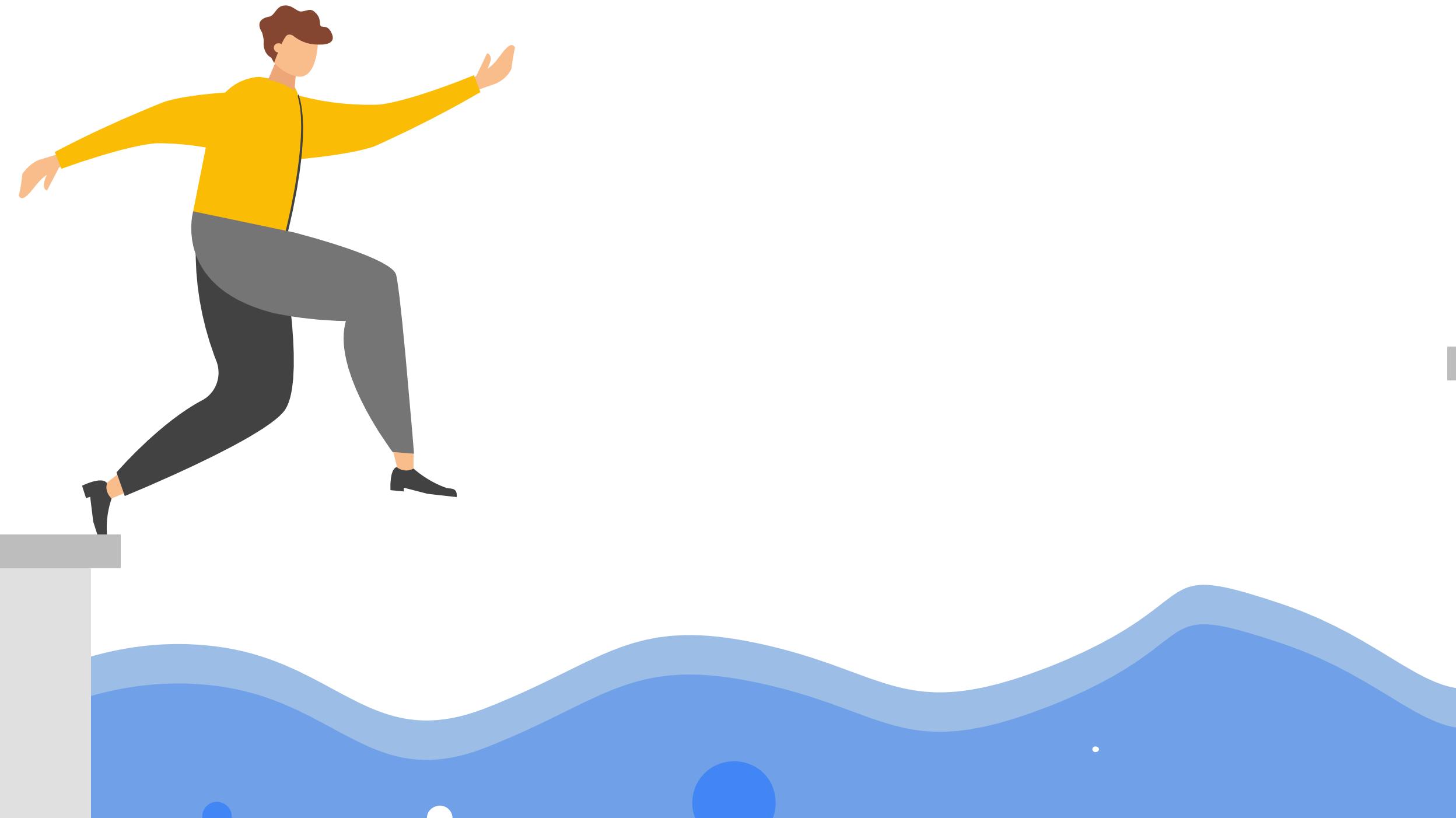


Recommend

Cloud enables each of the above in every industry and for every activity.

Abandoning old technology for a new one is commonly referred to as the “burning platform” effect. It requires organizations to take a leap of faith and to continually adapt as new technologies create new paradigm shifts.

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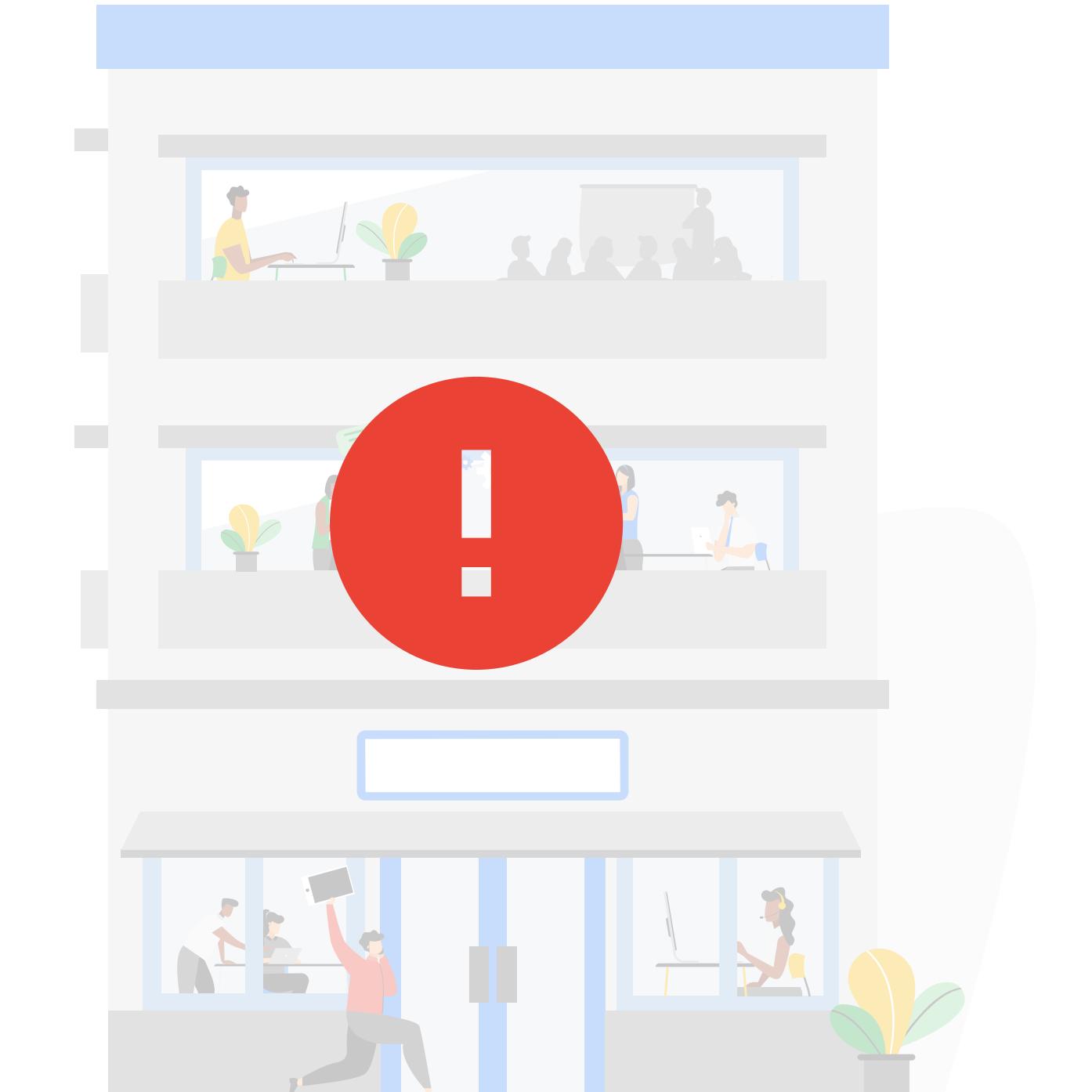
# WHY?



# HOW?

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Successful companies  
consistently focus on “why” they  
exist, not “how” they operate.



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Any business leader who considers cloud technology as “not relevant” to them, or even worse—as a threat to the way they’ve always done business—risks disruption or ceasing to exist entirely.



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Many organizations are already realizing the benefits of secure and fast application development and deployment. These visionary companies are leveraging new technological capabilities to reshape their customers' lives across multiple industries.



## What is the Internet of Things?

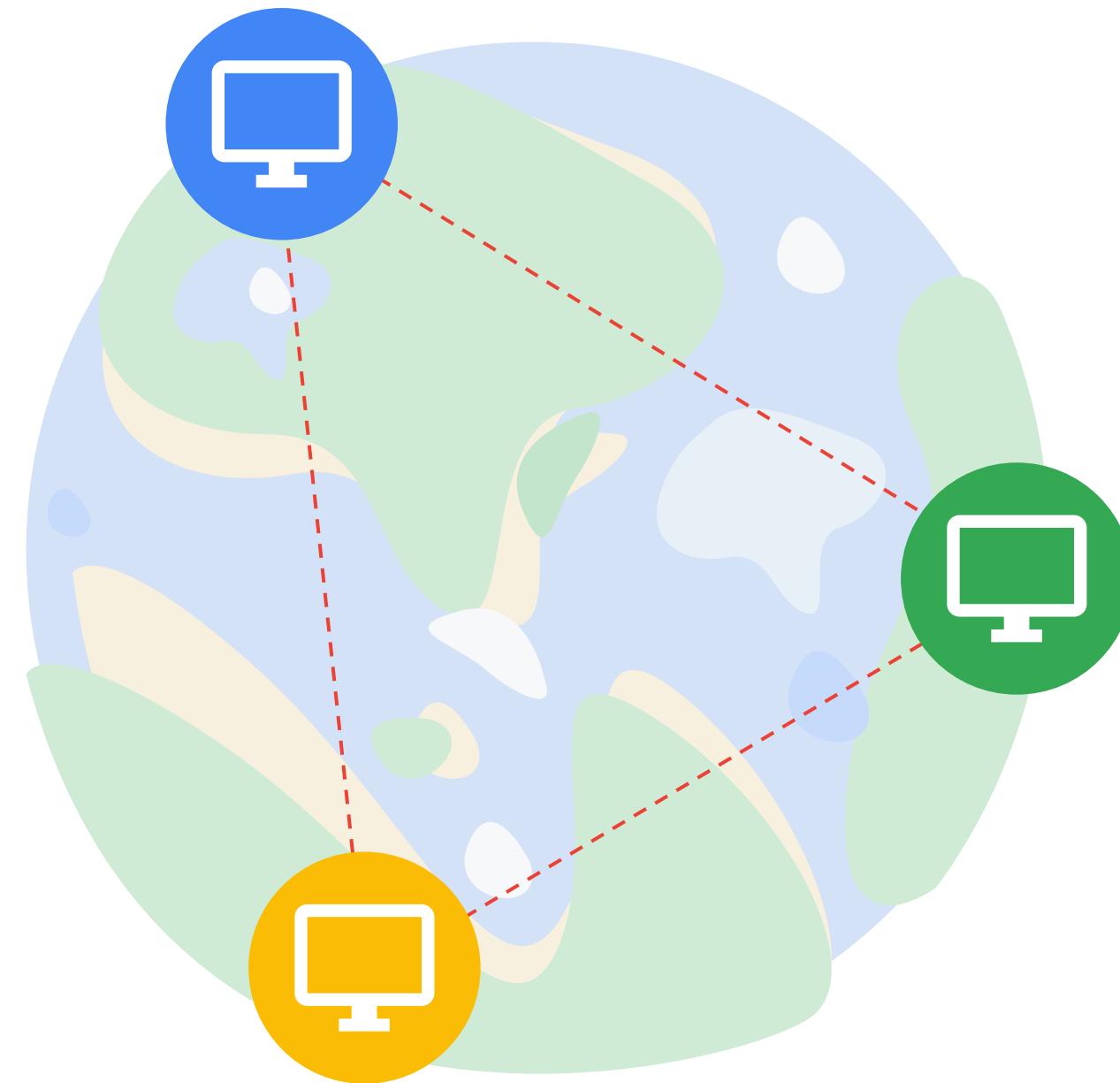
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The “Internet of Things,” or “IoT,” refers to everyday objects or devices that are connected to the internet and are able to send and receive data.



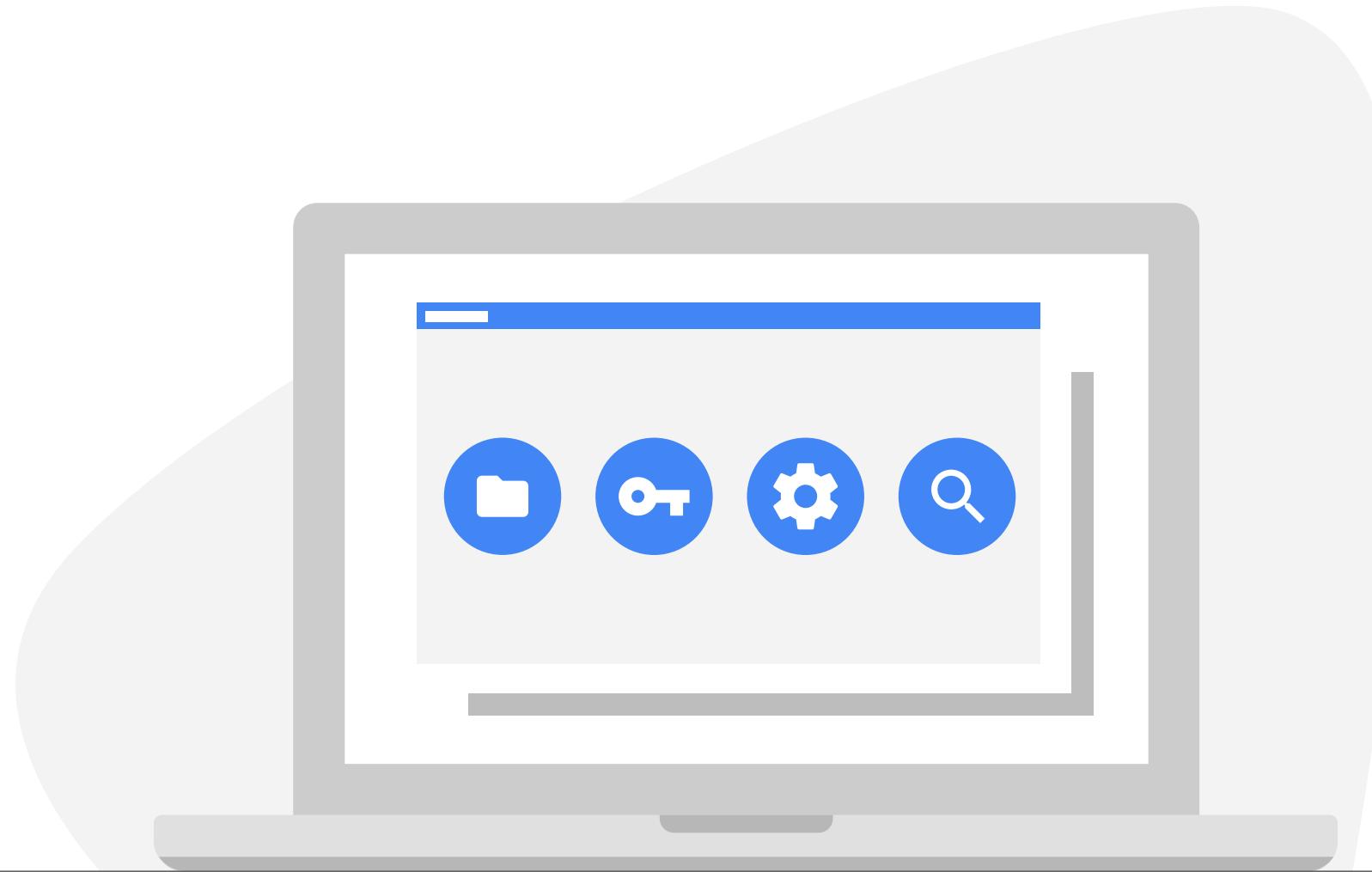
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Today we can build highly accurate statistical models to predict complex behaviors and use that information to anticipate intent.



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The power of cloud also changes the way we work by automating processes and enabling real-time collaboration between people globally.

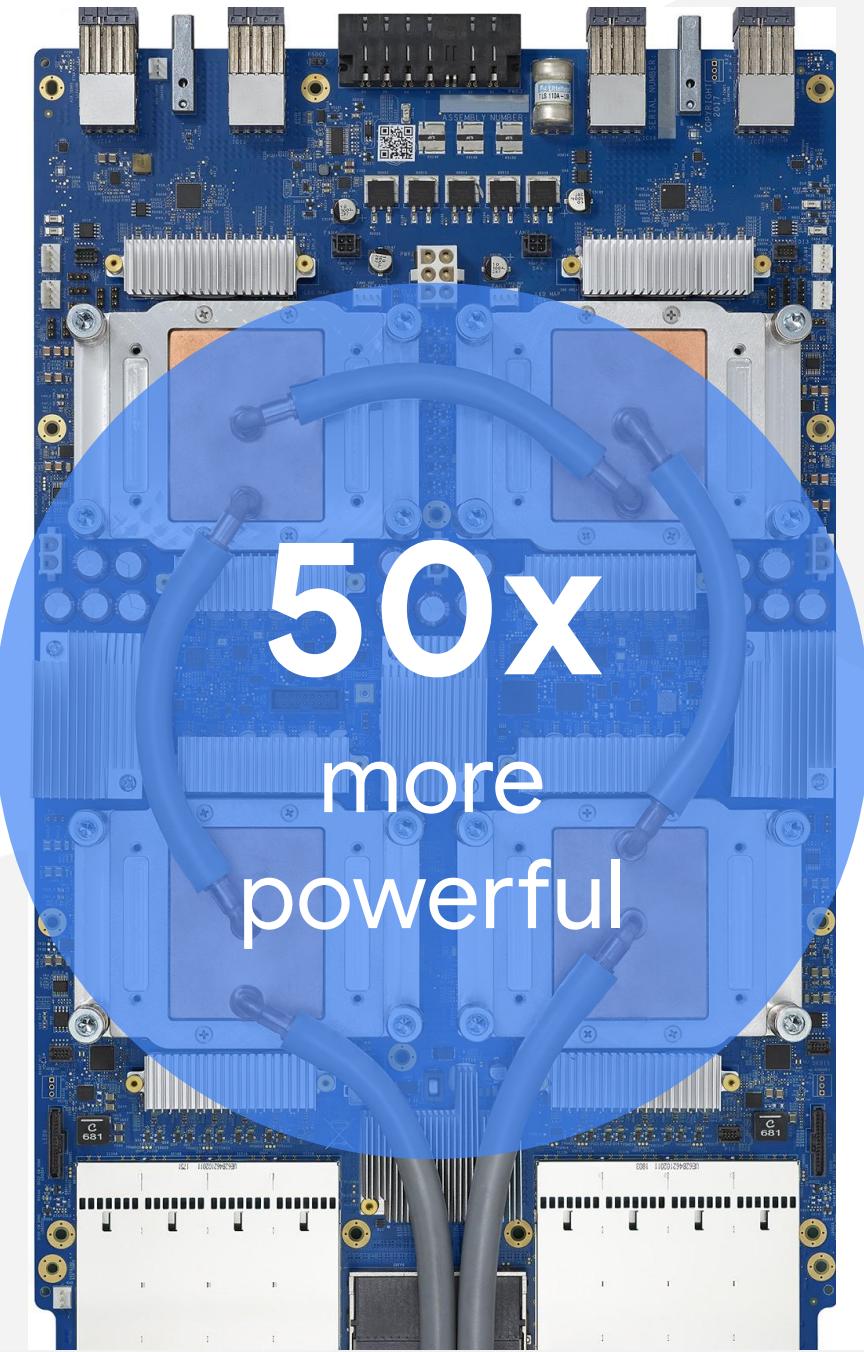
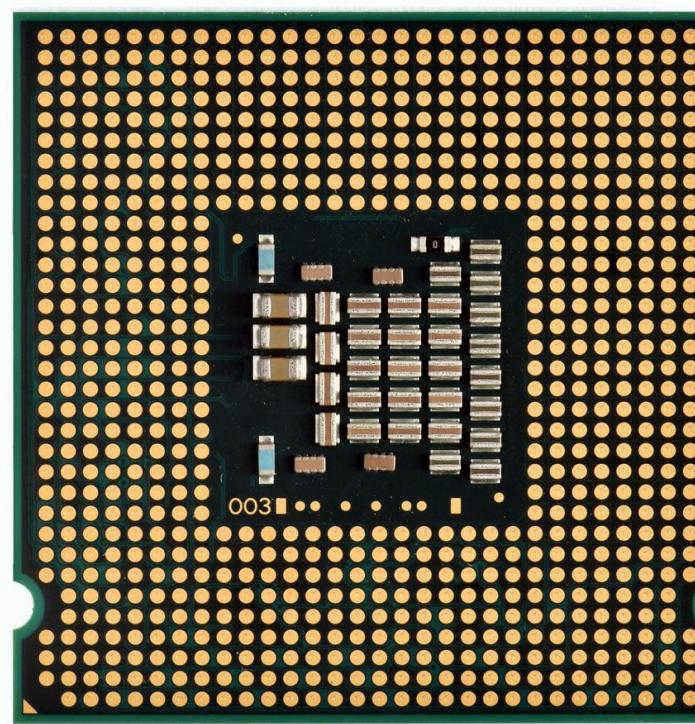


## What is computing?

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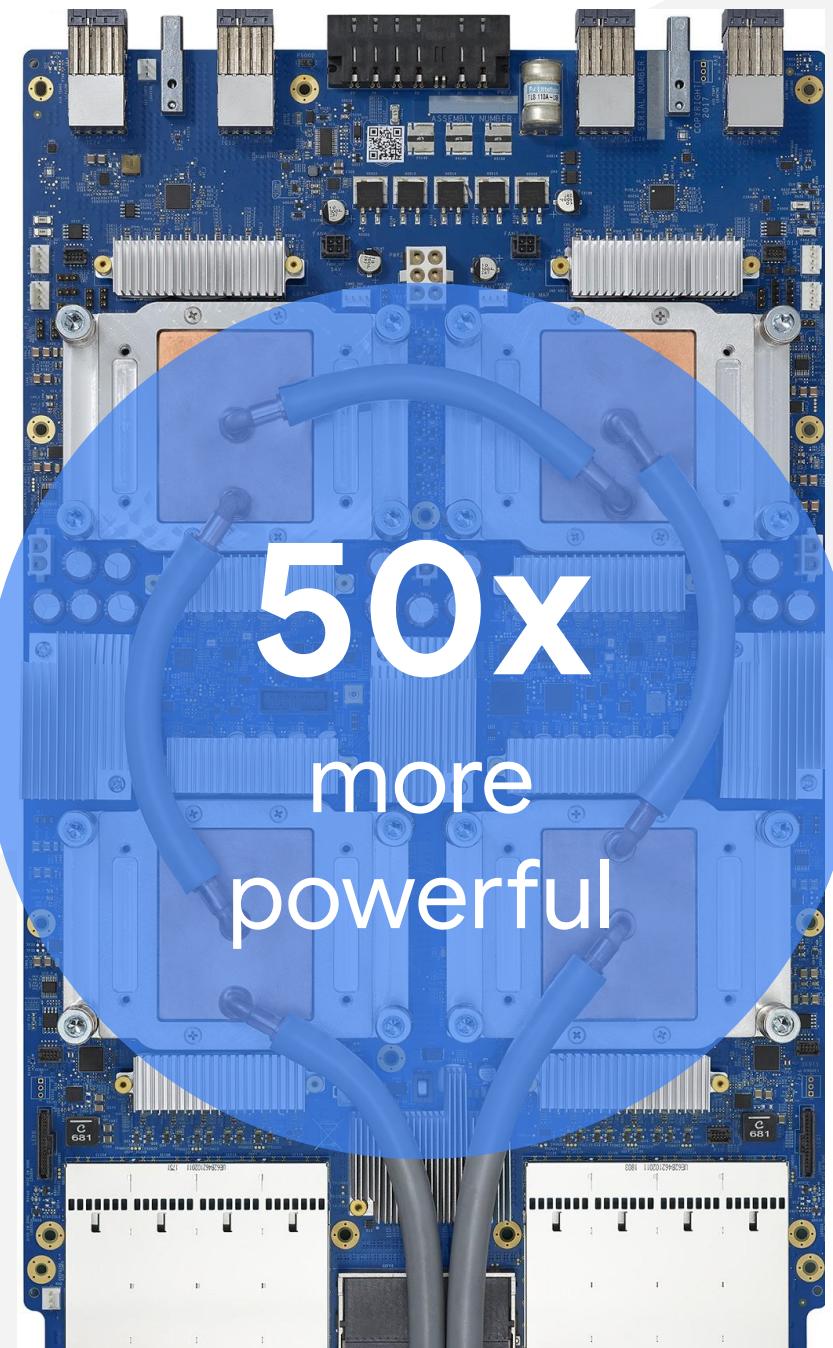
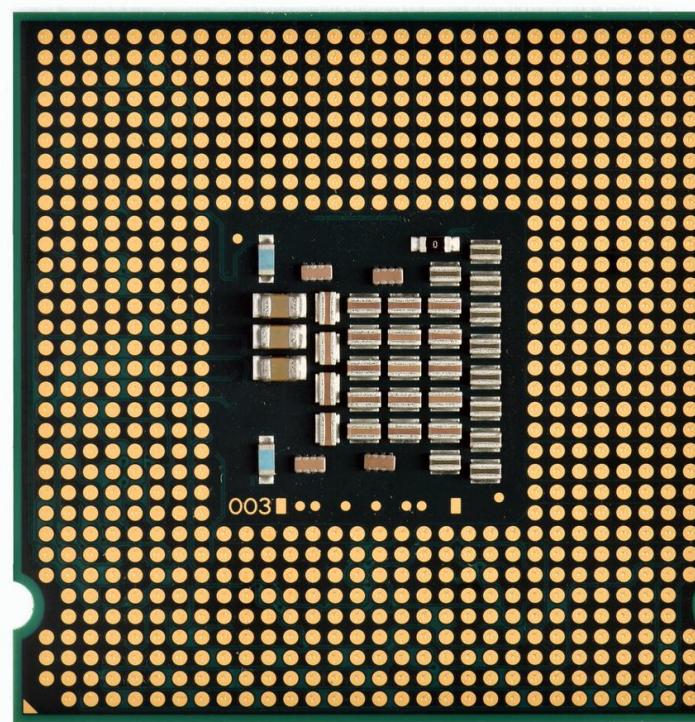
**Computing** is the ability to process information and automate tasks most often done by a computer program.

**Compute power**, refers to the speed at which a computer is able to process data.

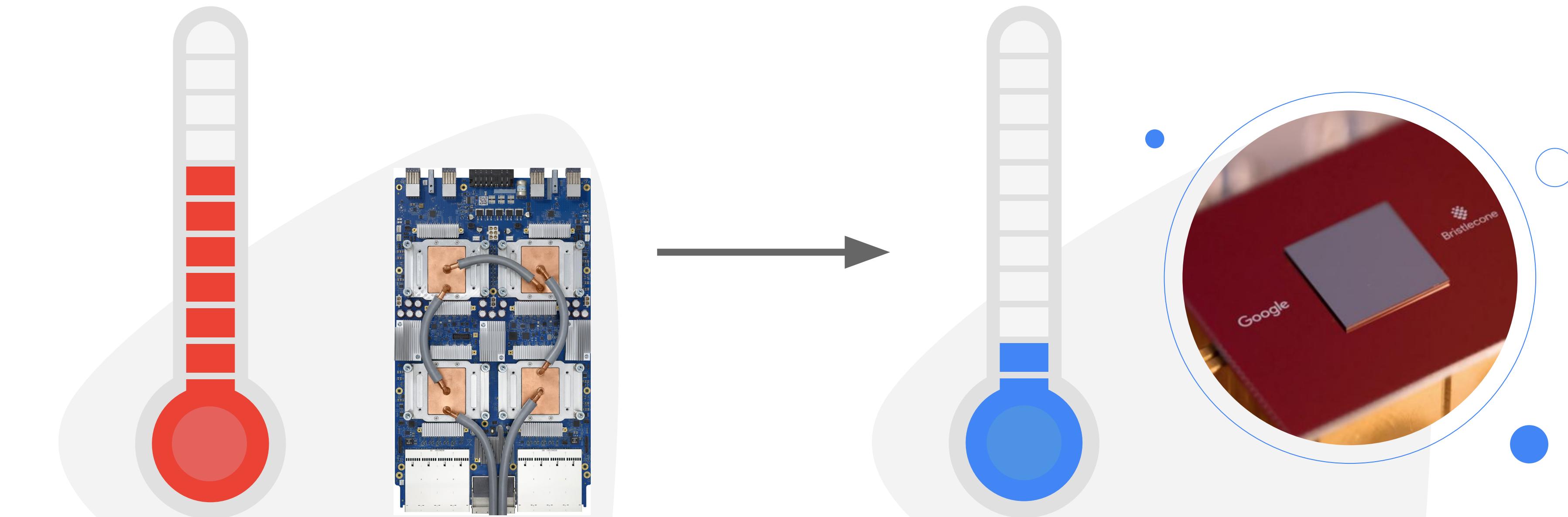


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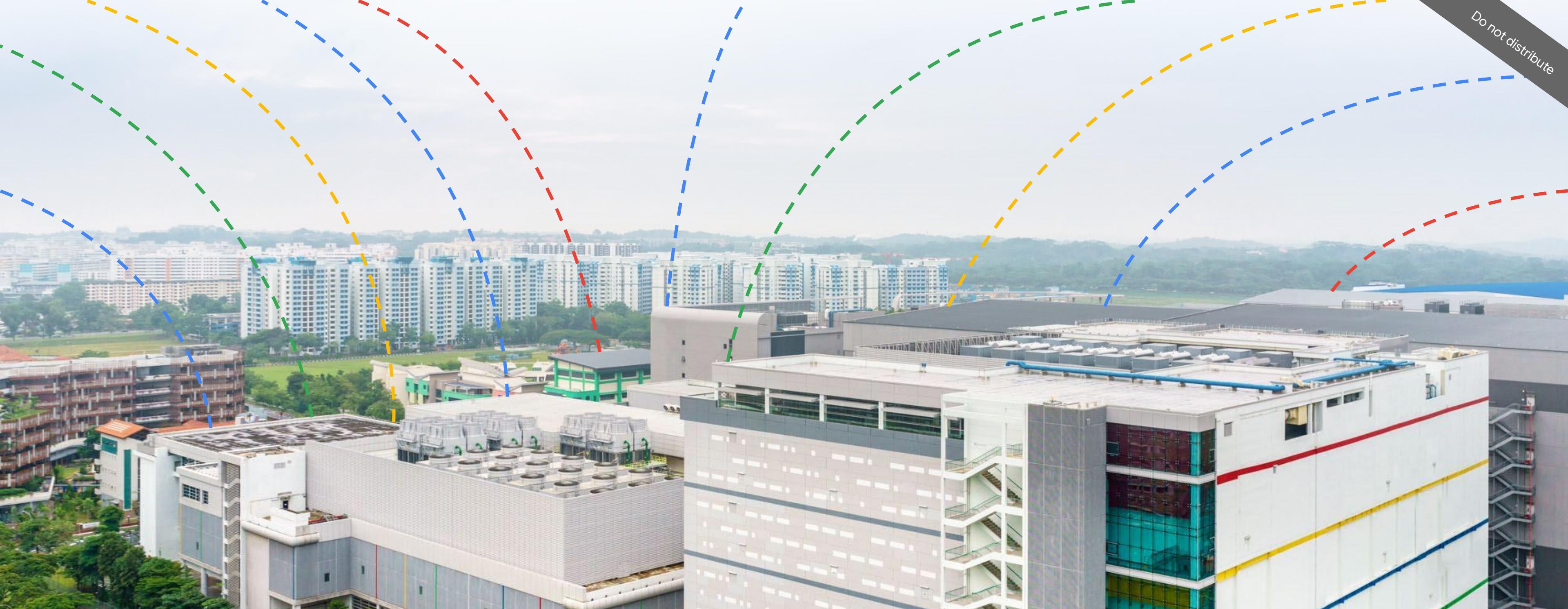
The first disruption comes from processors that are specifically meant for this type of application, and which we call TPUs, for **Tensorflow Processing Units**. They are 50 times more powerful than traditional chips!



The second disruption comes from **quantum computing**, which is a hundred million times more powerful.

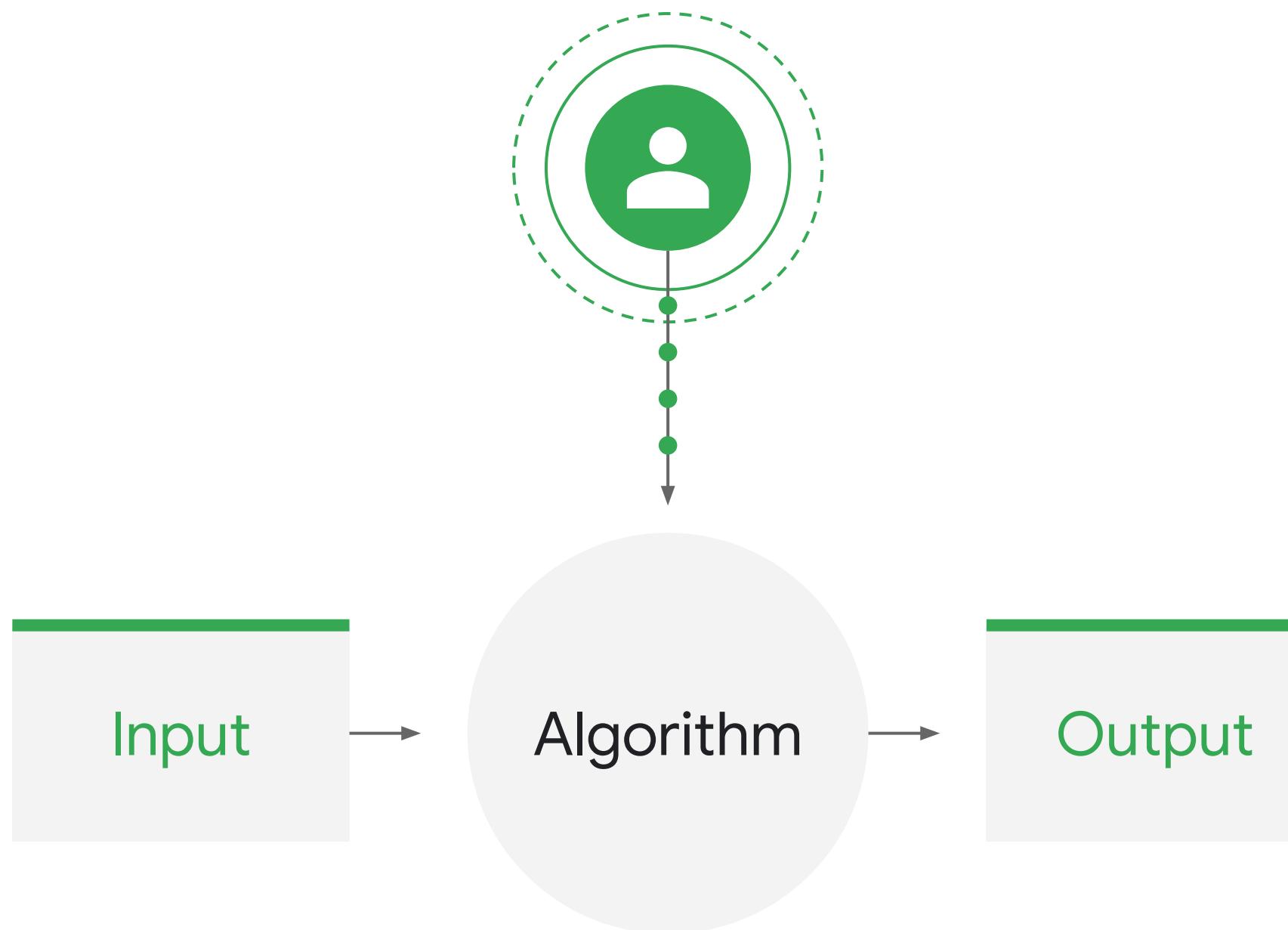


Right now, the requirements for these new processors can only be met in large industrial environments.

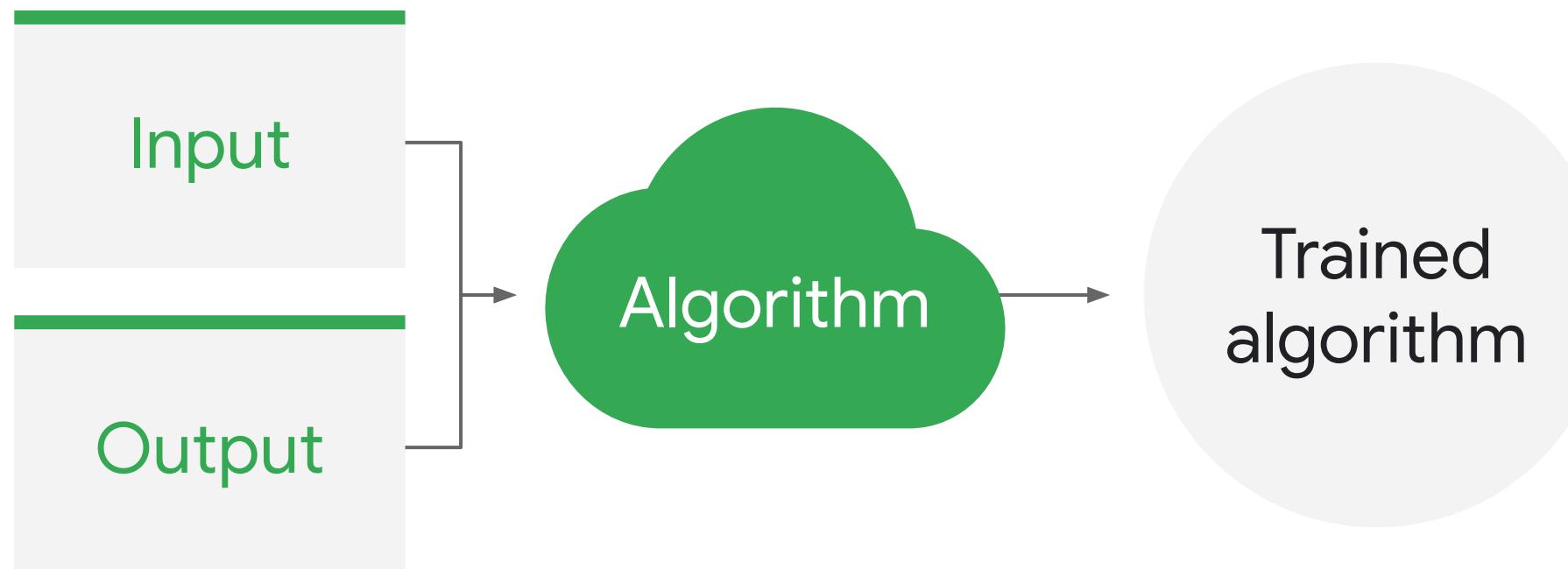


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Computing will mainly be generated in plants, which are the data centers, and accessed through a grid, which is the internet.



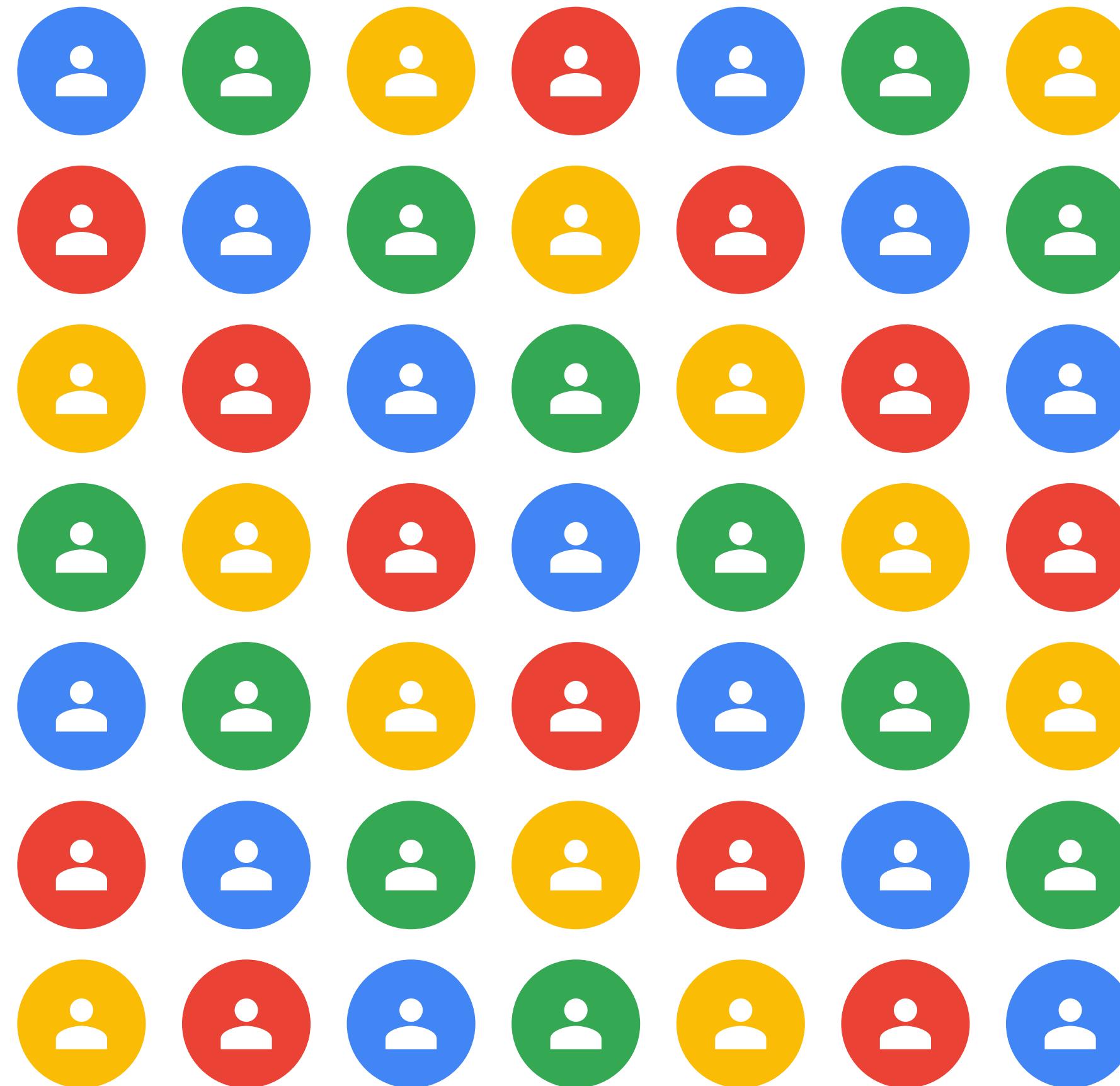
Traditional computing is about taking a piece of information—an *input*—through an algorithm in order to get an output.



With cloud computing, you can provide both the input and output data side by side and generate a trained *algorithm*.



Many apps use machine learning to learn about user preferences and intent.



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The accuracy and performance of the algorithm is also based on the millions of users that that algorithm is constantly learning from.



# Google Cloud

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## Module 2: Student Slides

### Digital Transformation with Google Cloud

### Topics covered

- Adopting new ways of working
- Traditional versus modern IT infrastructures
- Modern approach to application development
- The importance of data in digital transformation
- Security considerations for cloud adoption
- Google Cloud solutions



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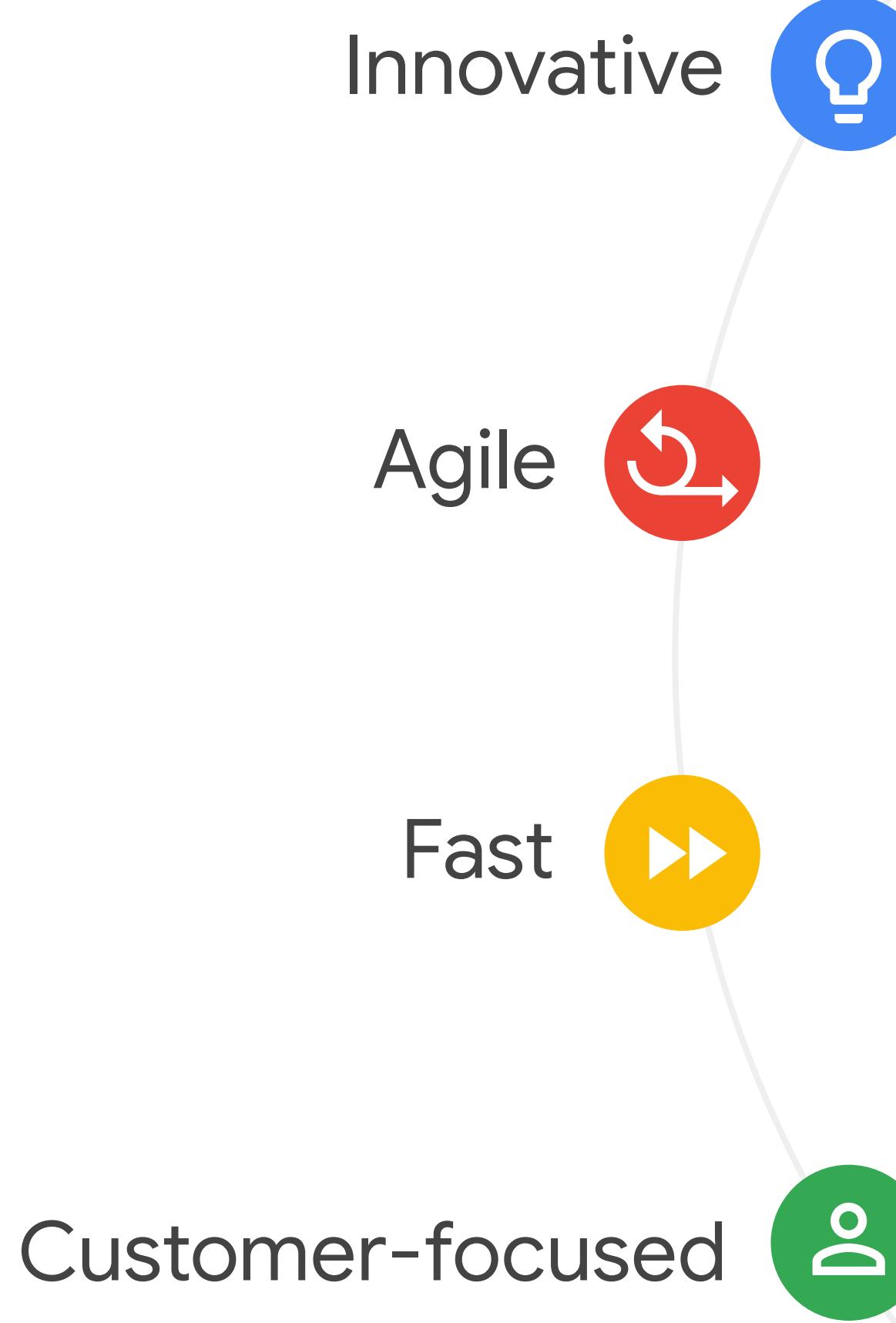
As consumer expectations change, business models must adapt to remain relevant. The traditional advantages of size and scale are no longer as differentiating as they used to be.

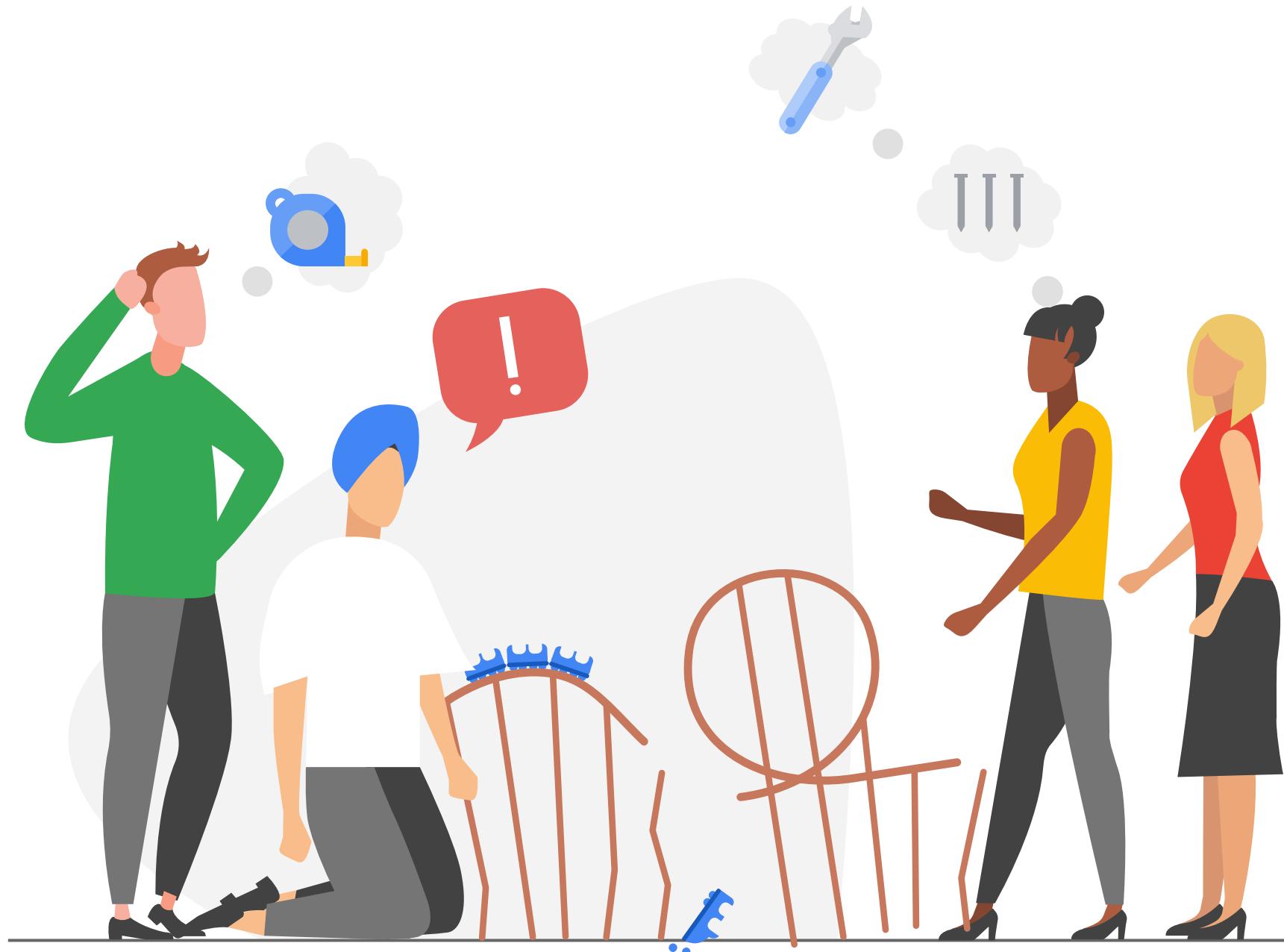


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The universal availability of cloud technology gives large and small companies equal opportunity for success.

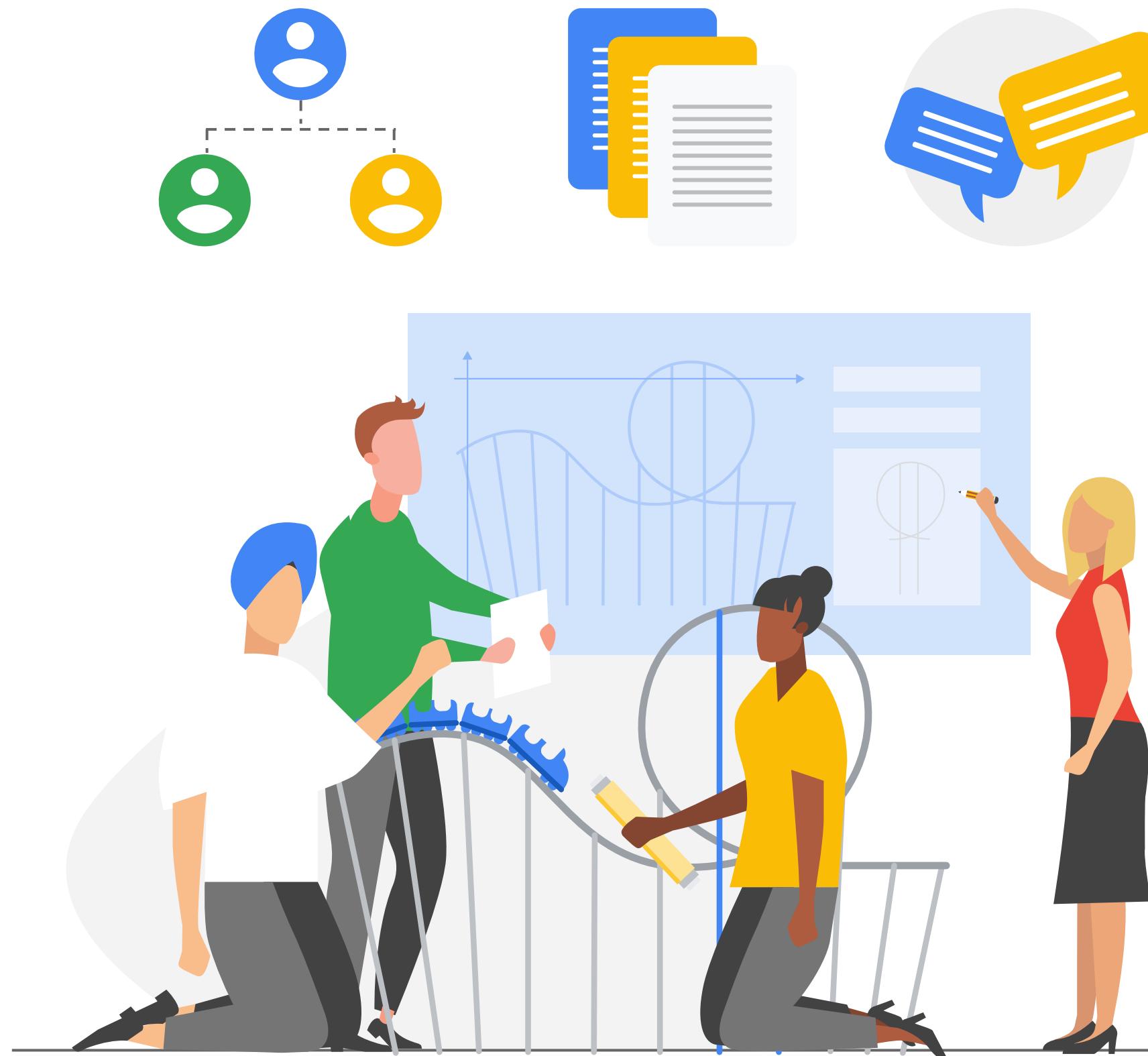
Organizations now need to be...





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The culture of an organization has a direct impact on employees' willingness to innovate. Innovation relies on people being able to try things and failing without judgement.



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How teams are structured, how content is managed, and how communication flows across an organization are all elements that impact innovation.

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There are three core focus areas for modernization:

## Modernization focus areas

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Infrastructure



Business platforms

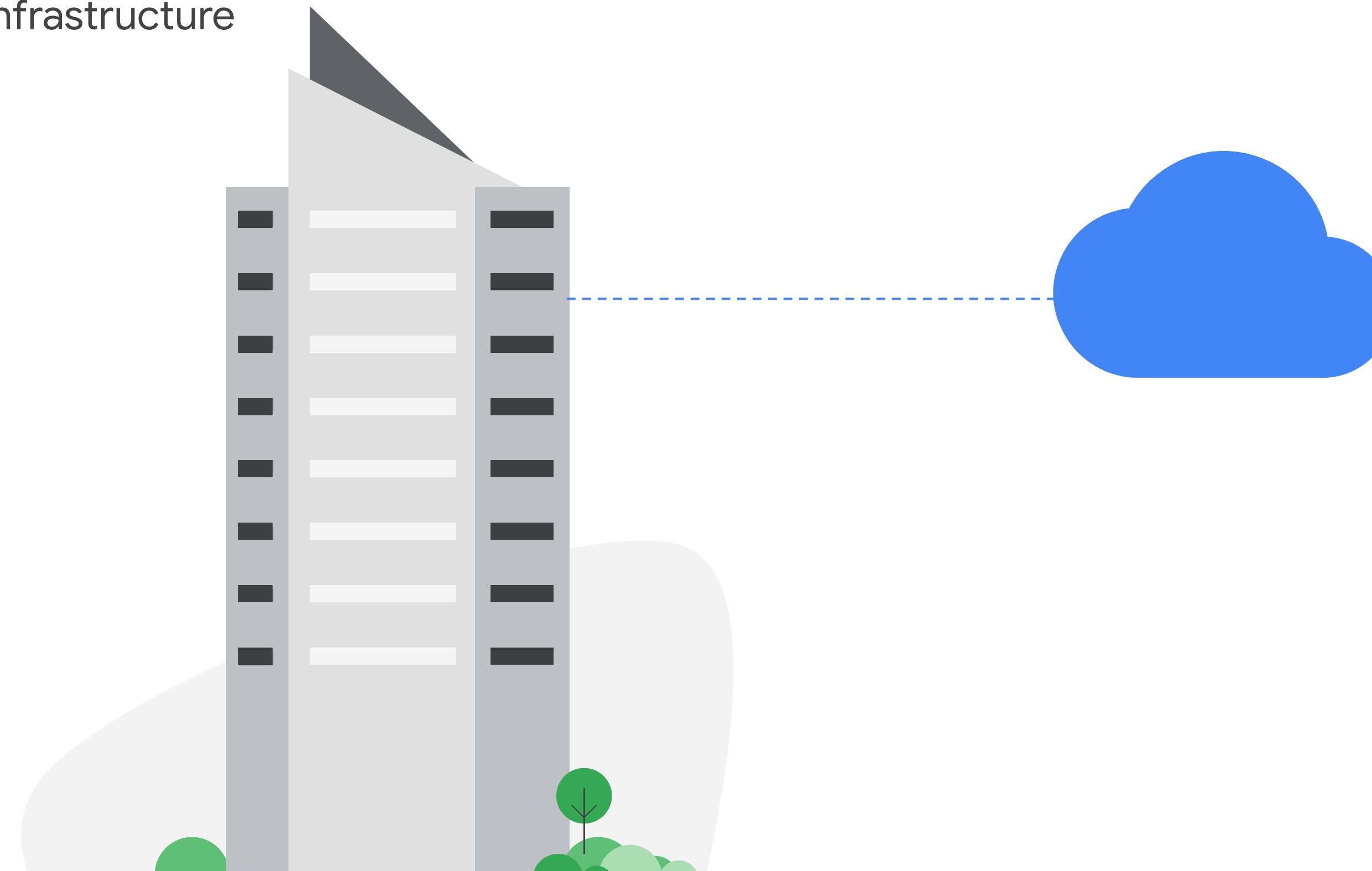


Applications

**'Infrastructure modernization'** is a common term used to describe the process of replacing legacy hardware and systems and consolidating them in the cloud.



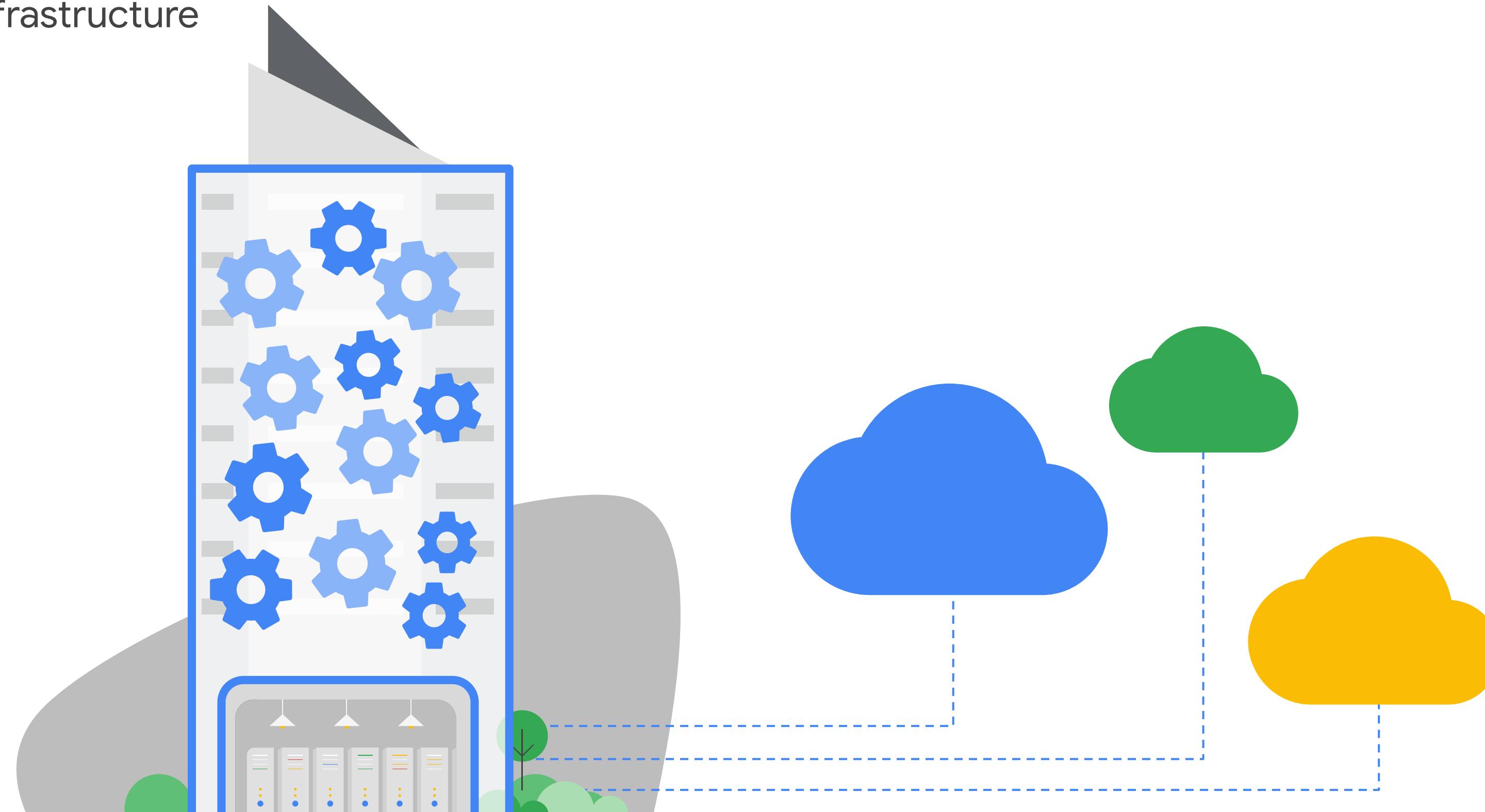
Infrastructure



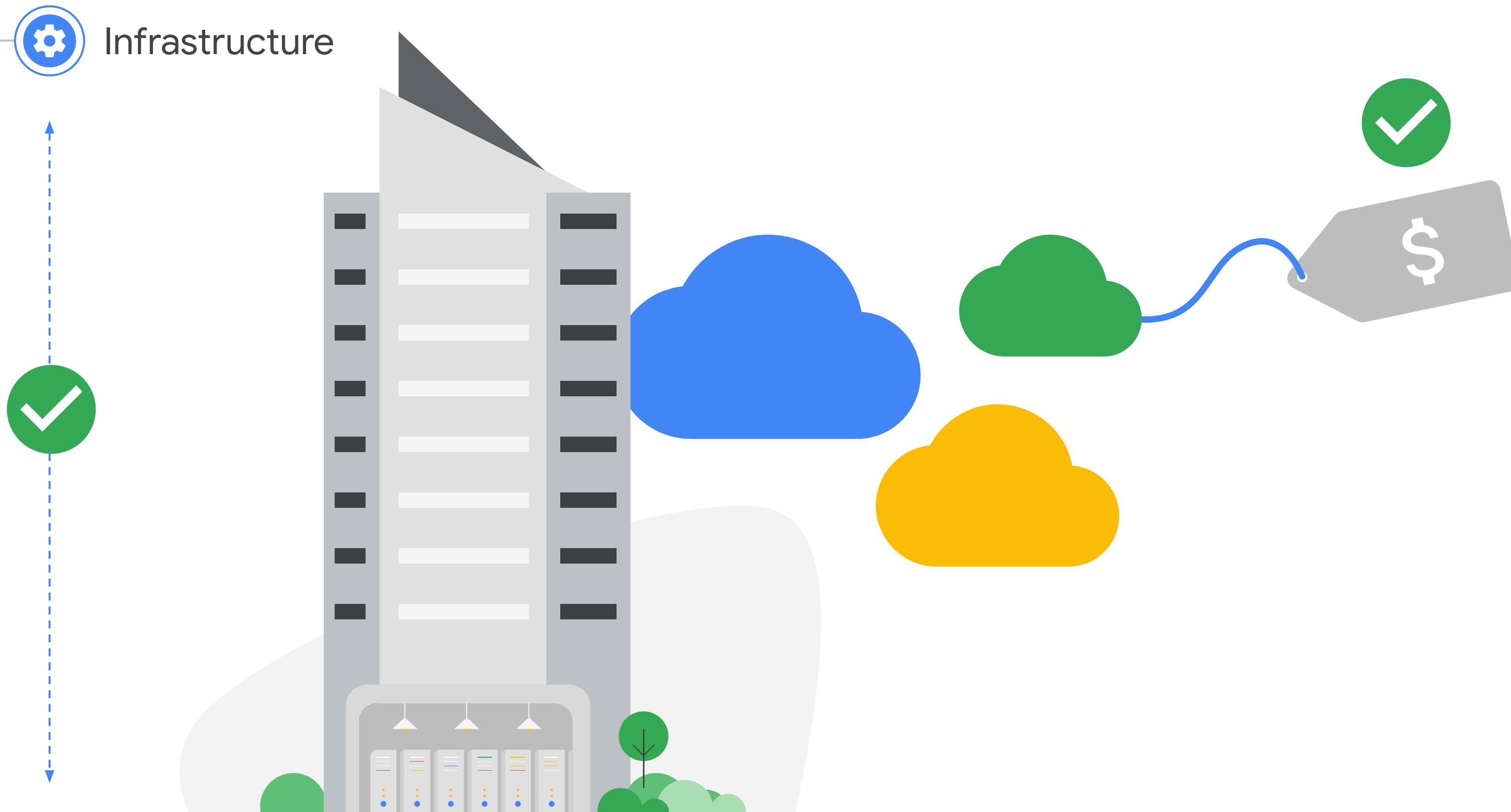
Most organizations want to operate a hybrid model. This means operating across multiple cloud providers or one cloud provider combined with some on premises solutions.

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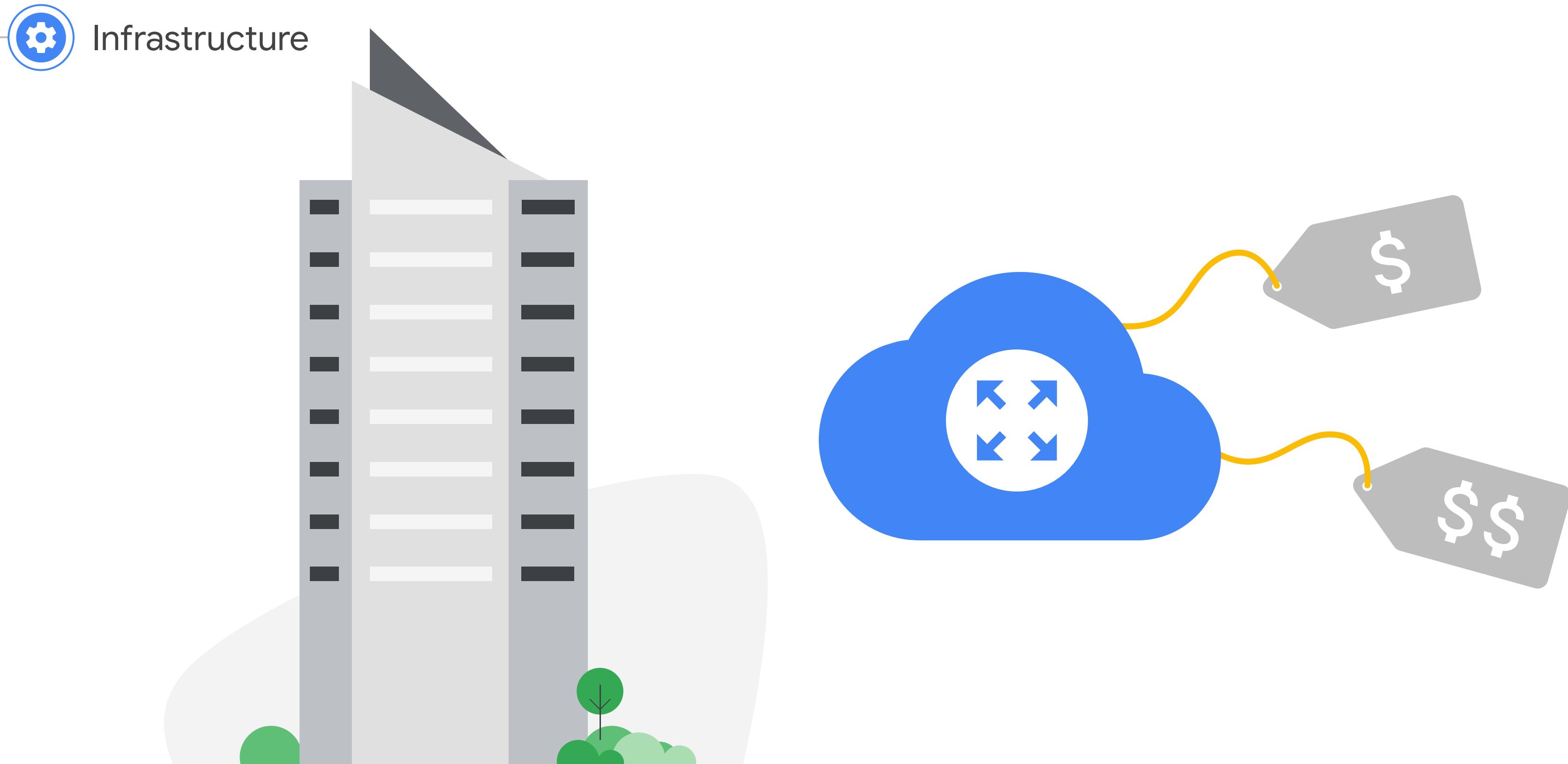
 Infrastructure



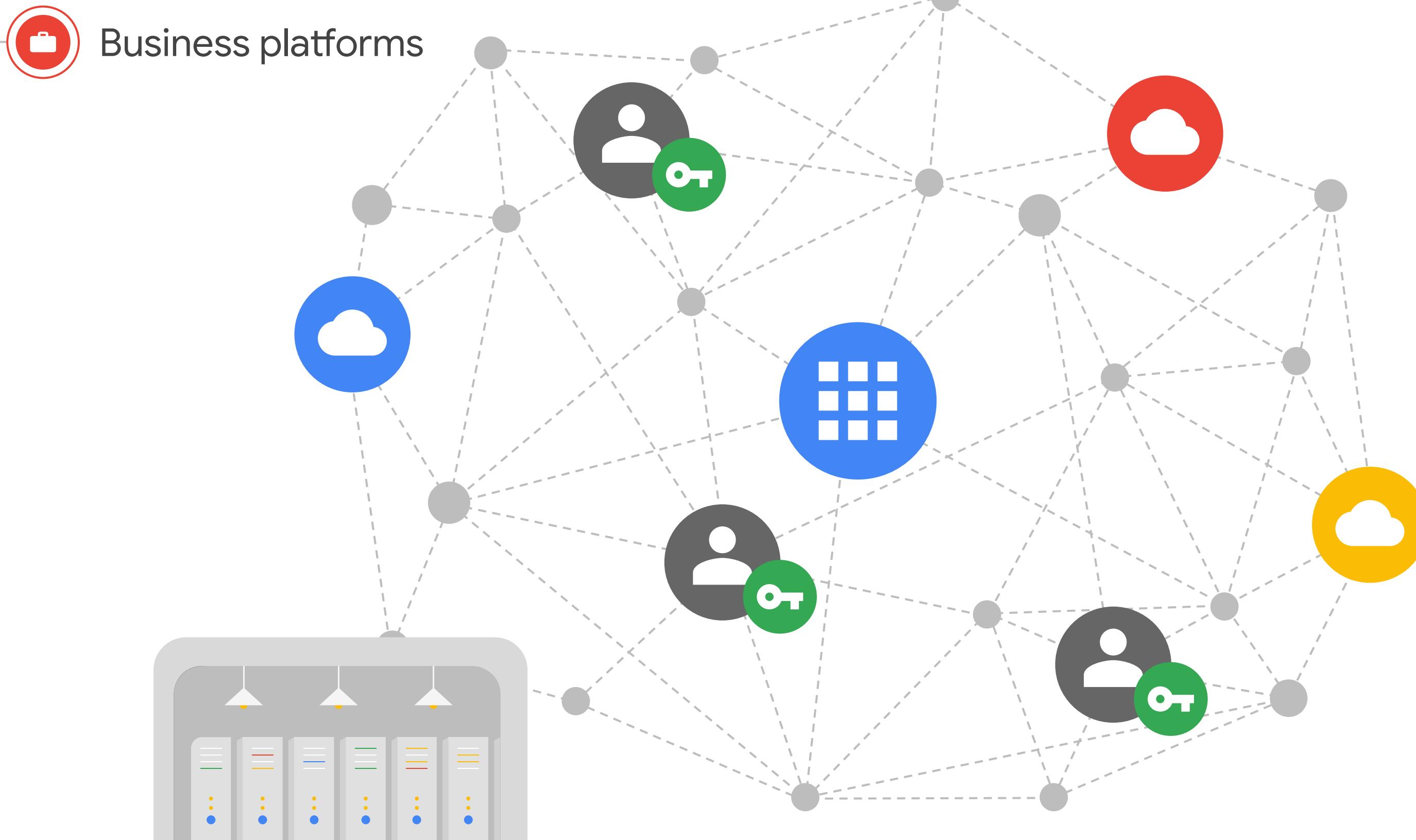
Businesses can take advantage of high performance computing in a cost effective and scalable way.



With cloud computing, businesses can scale in the cloud and pay for what they use, when they use it.

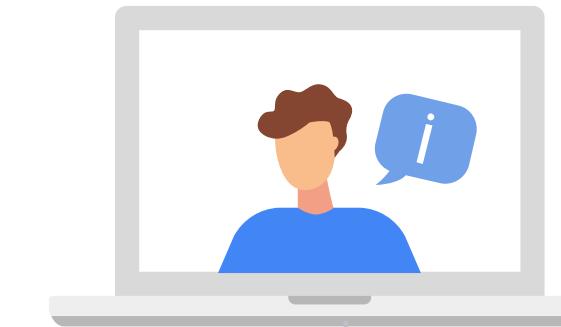
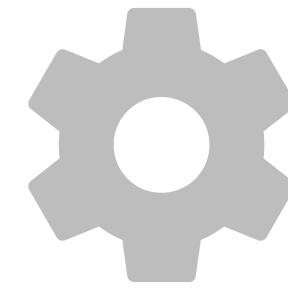
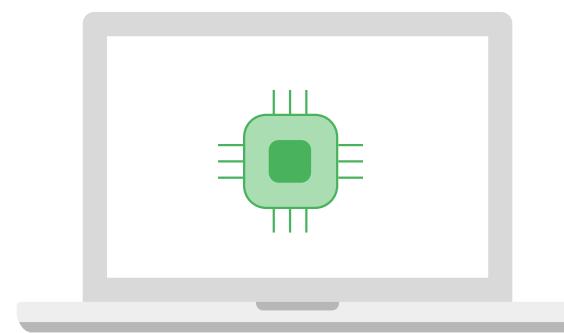


**Business application platforms** enable integration between systems and granting users the correct access privileges in an organization and beyond.





## Business platforms



API

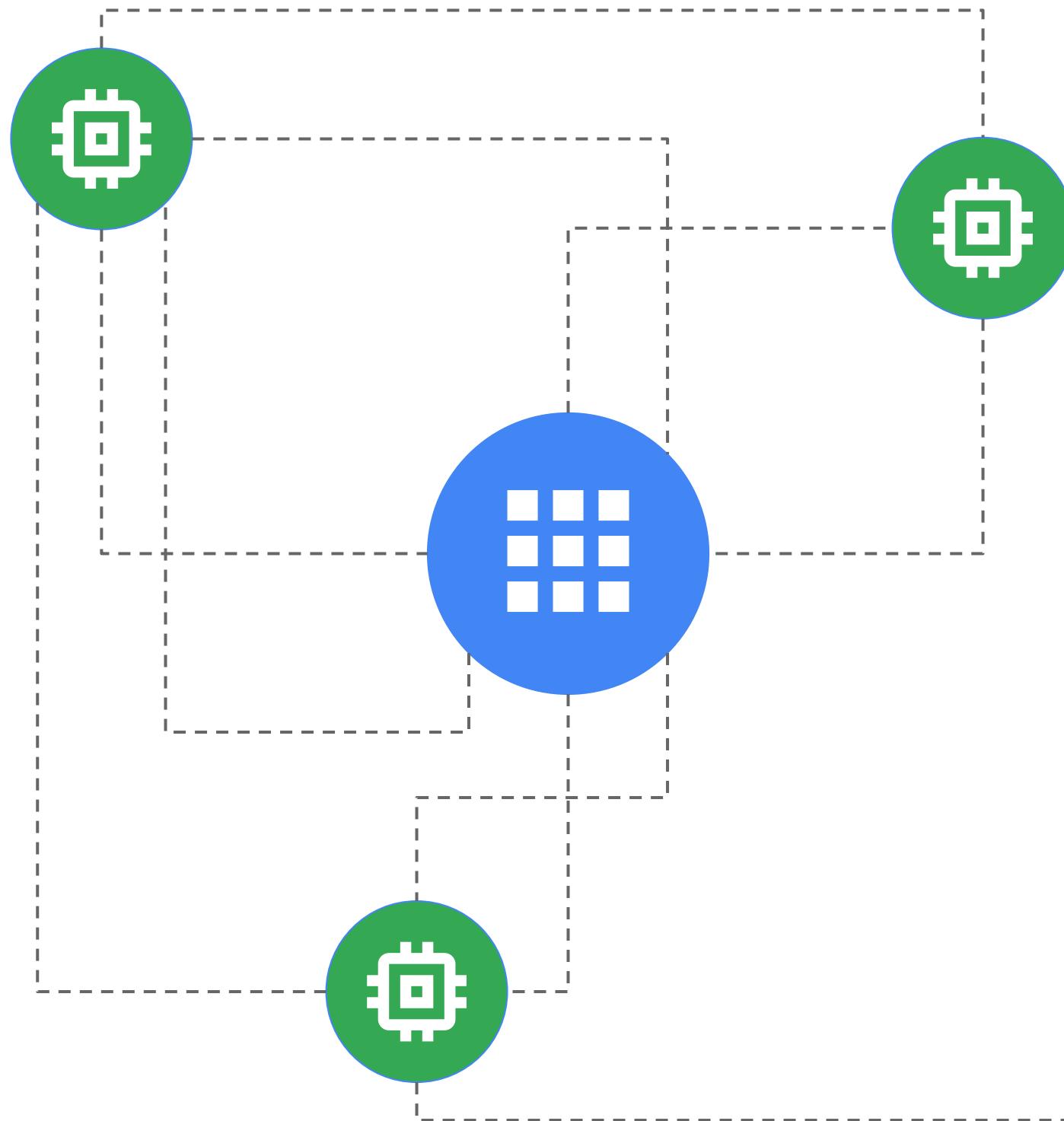
## What is an API?

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Application processing interfaces, commonly known as APIs, are technical tools that enable integration between applications.



## Applications

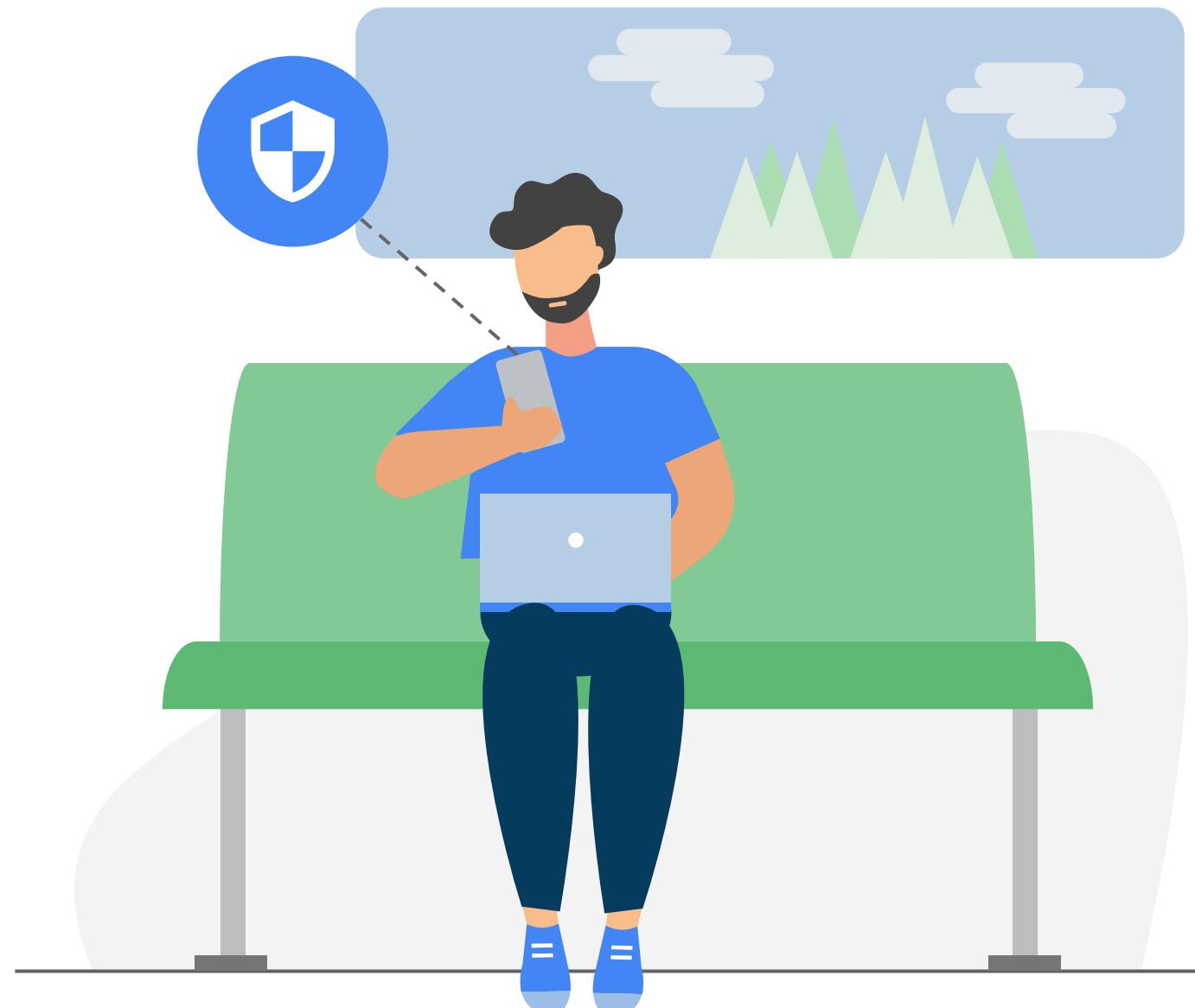


### What is an application?

The term ‘application’ is widely used to refer to programs and software that enable people to perform various digital tasks.



## Applications

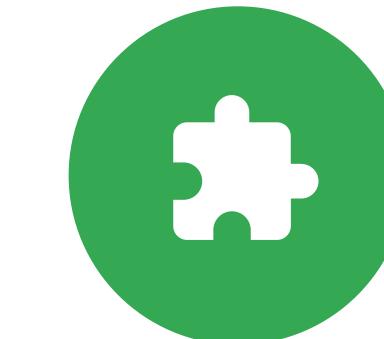
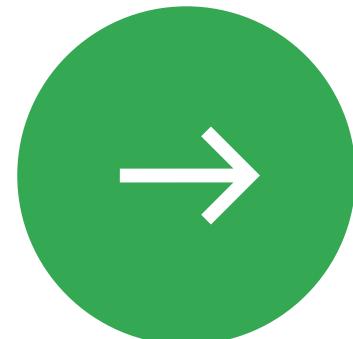


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Today's customers expect instant access to services wherever they are. An organization's ability to develop and launch applications is central to their success in today's competitive market.



## Applications



## What is DevOps?

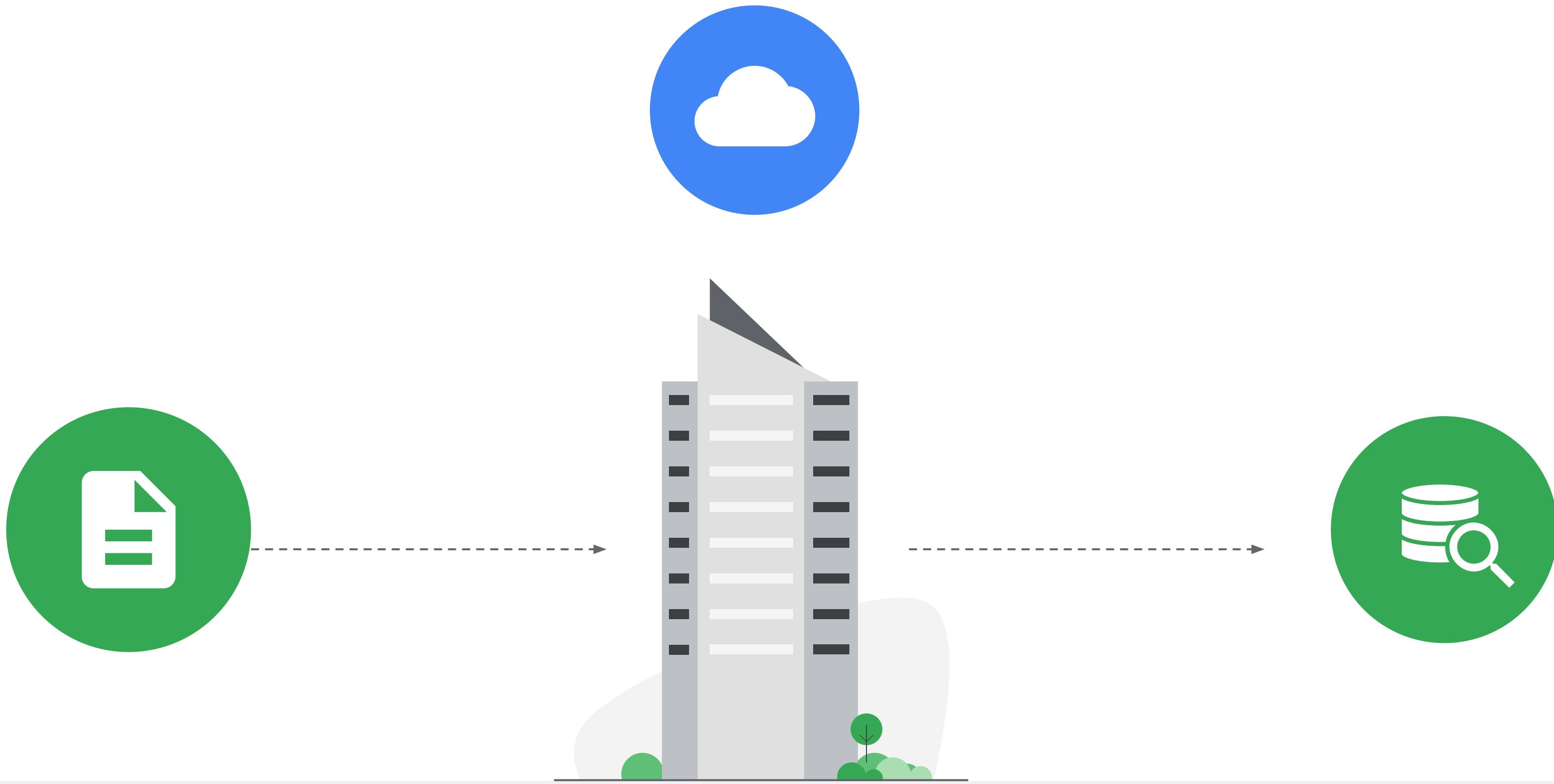
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DevOps, or Developer Relations, is a set of practices that aim to increase software delivery velocity, improve service reliability, and build shared ownership among software stakeholders.



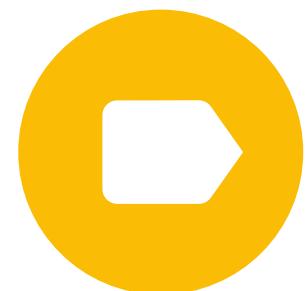
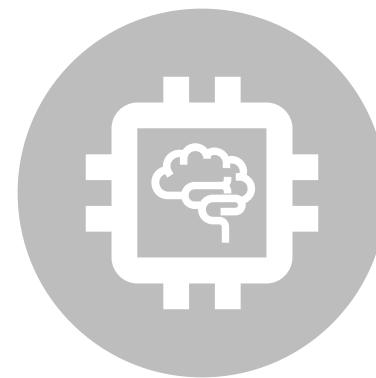
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Data is no longer about only retrospective insight; rather, real-time insight, smart predictions, and intelligent action.



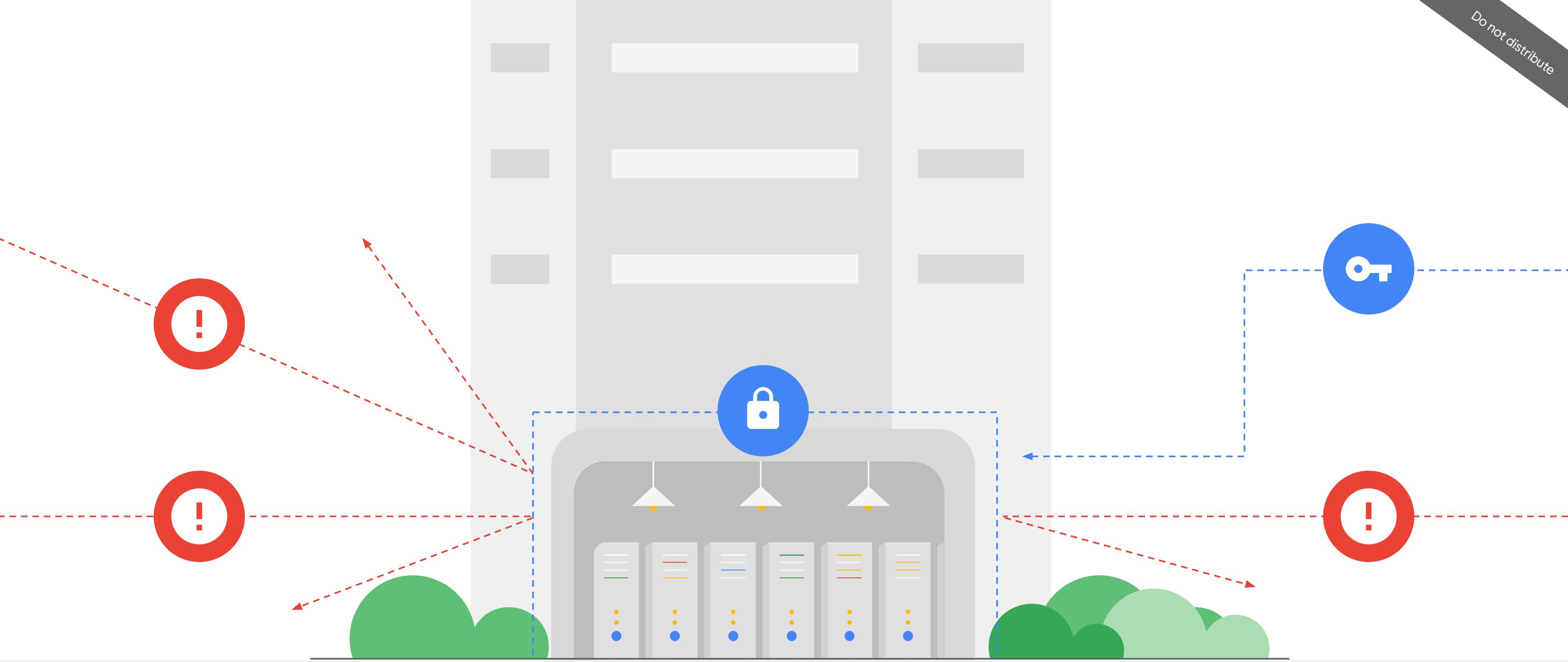
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With the right platform, organizations can generate instant insights from data at any scale.

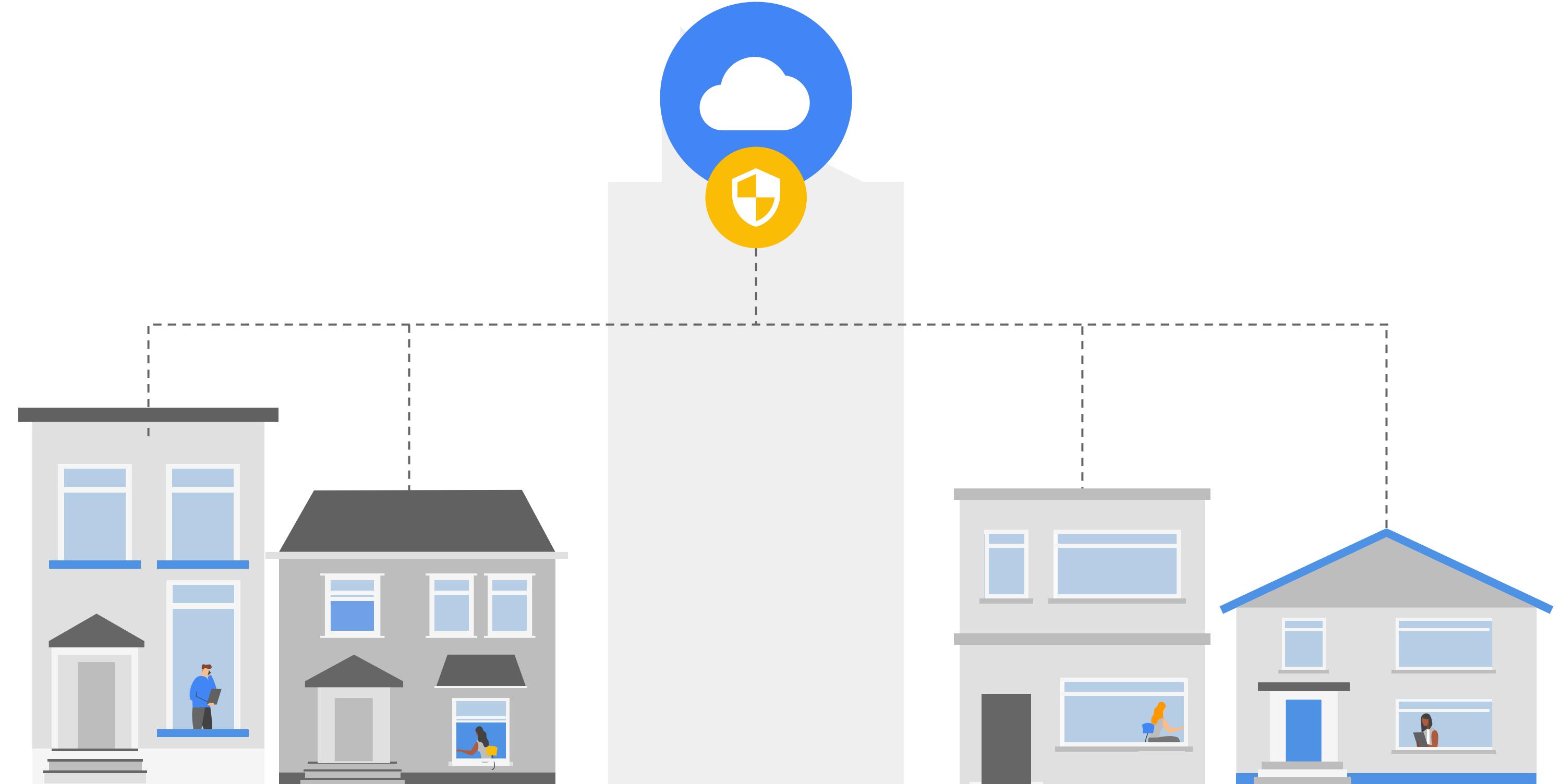


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Machine Learning and Artificial Intelligence, or ML and AI, mean you can generate insights from data, both past and present, and you can also perceive, predict, recommend, and categorize data in new ways.

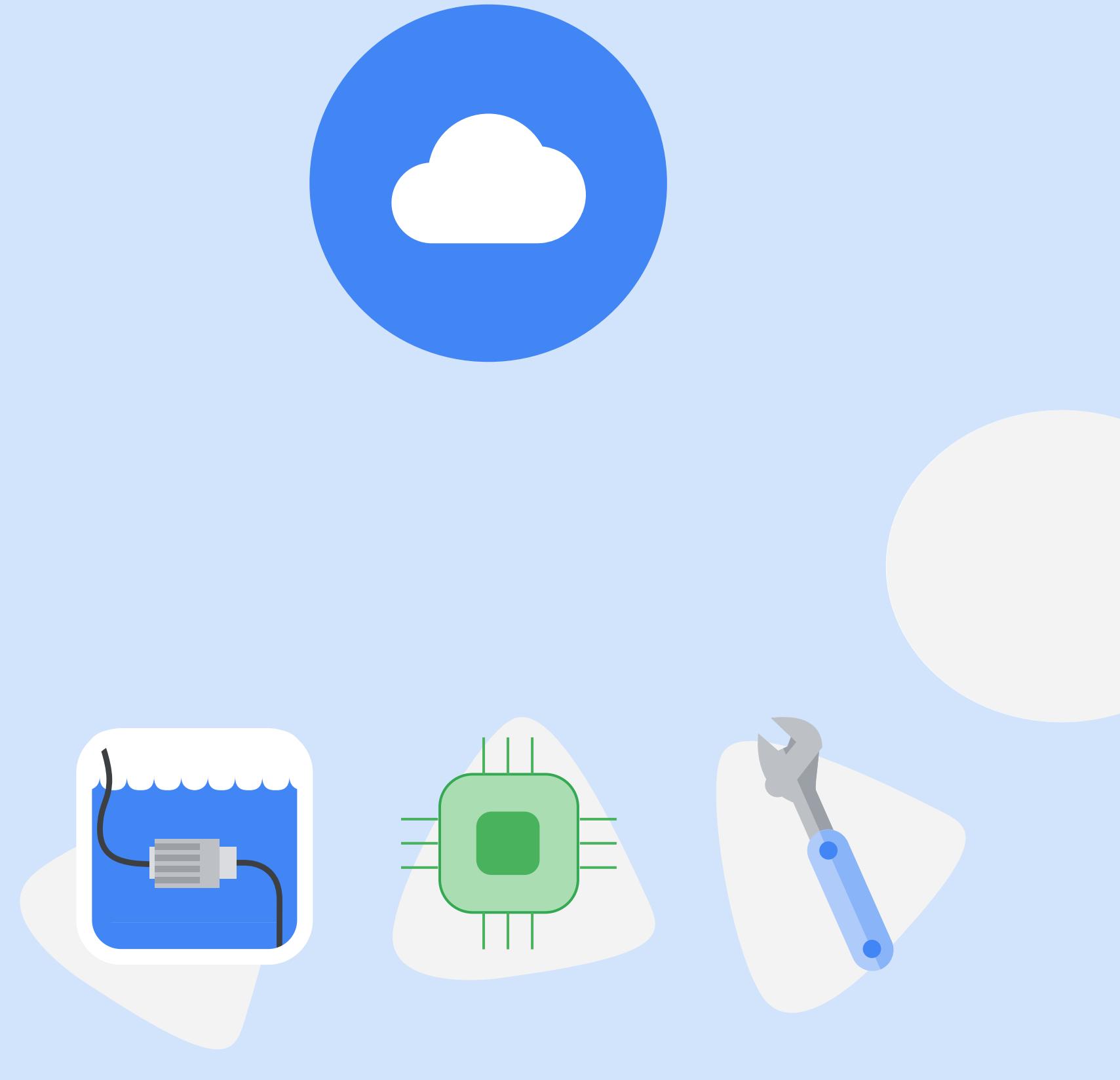


Traditionally, IT security models focused on keeping threats out. They built an on-premises perimeter that individuals required access to in order to gain entry. That model worked when all hardware and systems were controlled and managed centrally.

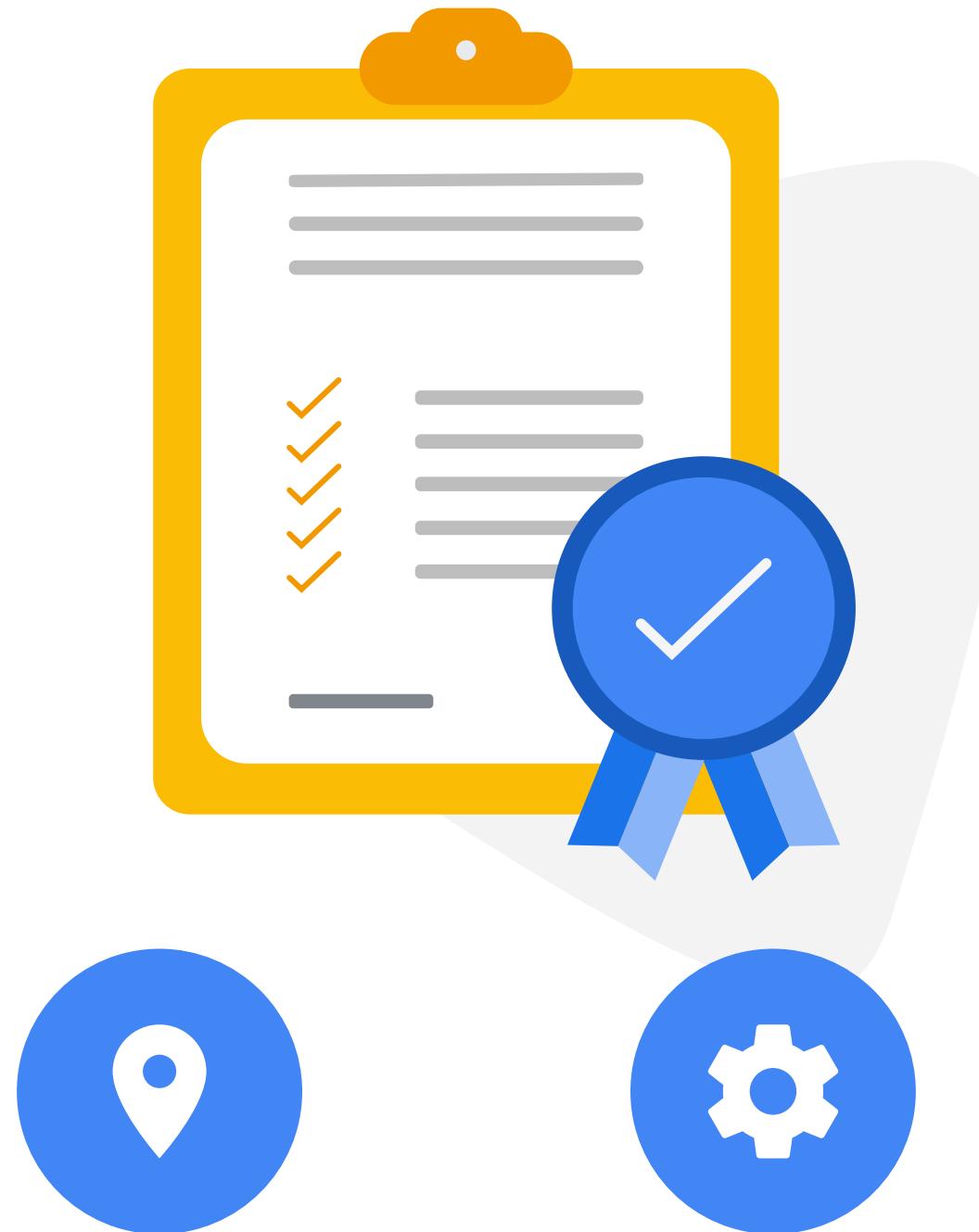


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Now, employees want to create, share and access information virtually. In an increasingly global workforce, businesses need to grant access to applications and relevant data with a high degree of security.



In the cloud, the best practice for security is called a ‘shared responsibility security model.’ The cloud provider is responsible for the physical infrastructure, while businesses are responsible for access.



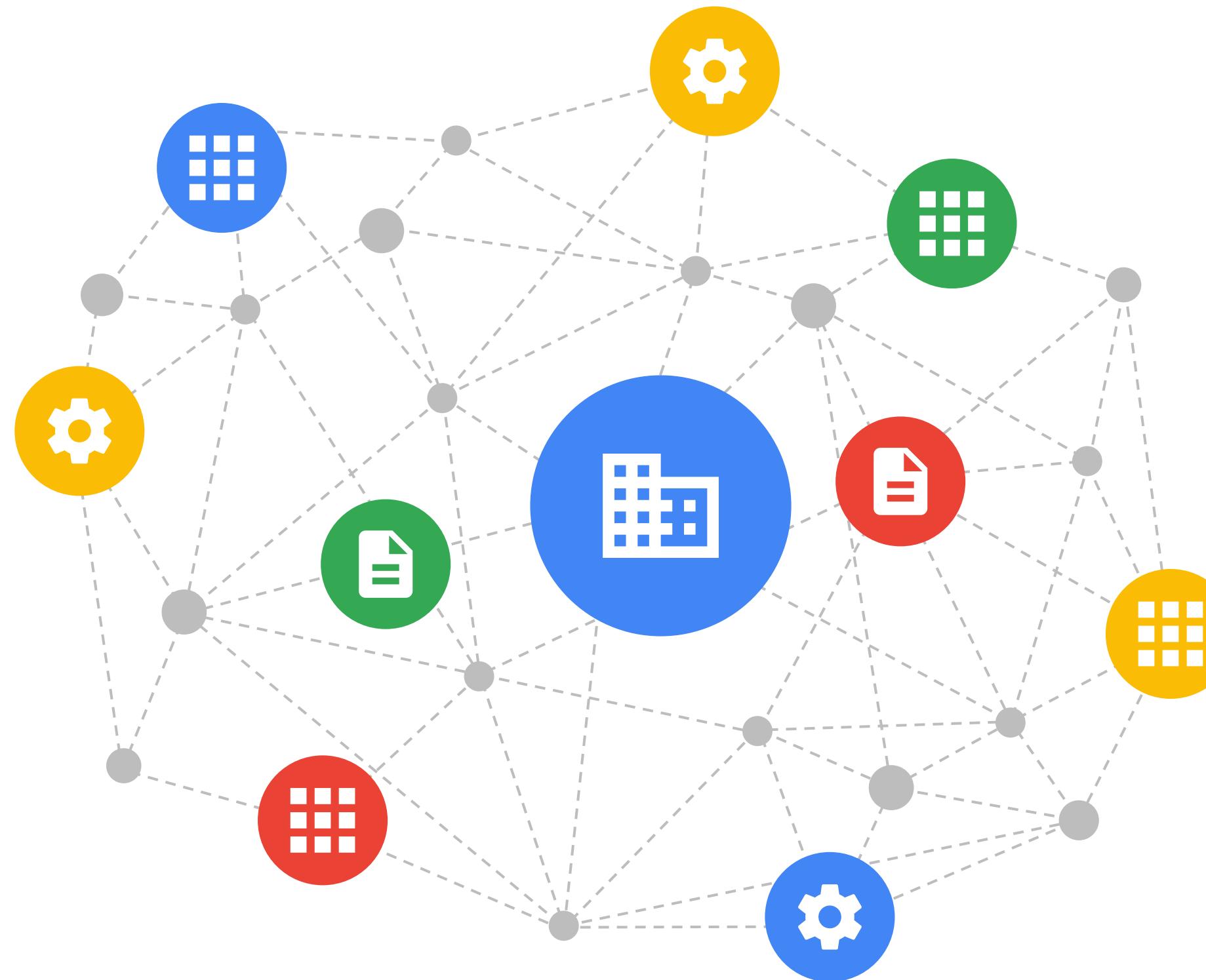
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Compliance with regional regulations is also part of security and governance. These regulations govern where data is stored and how it is managed.



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Google takes what it has learned from serving billions of users and creates Google Cloud products and solutions available to organizations around the world.



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Now, customers can build their own applications and manage their own workloads on that same infrastructure to achieve their mission and serve their users.

The Google Cloud Solution Pillars are:



Infrastructure  
modernization



Business applications  
platform portfolio



Application  
modernization



Database and  
storage solutions



Smart  
analytics



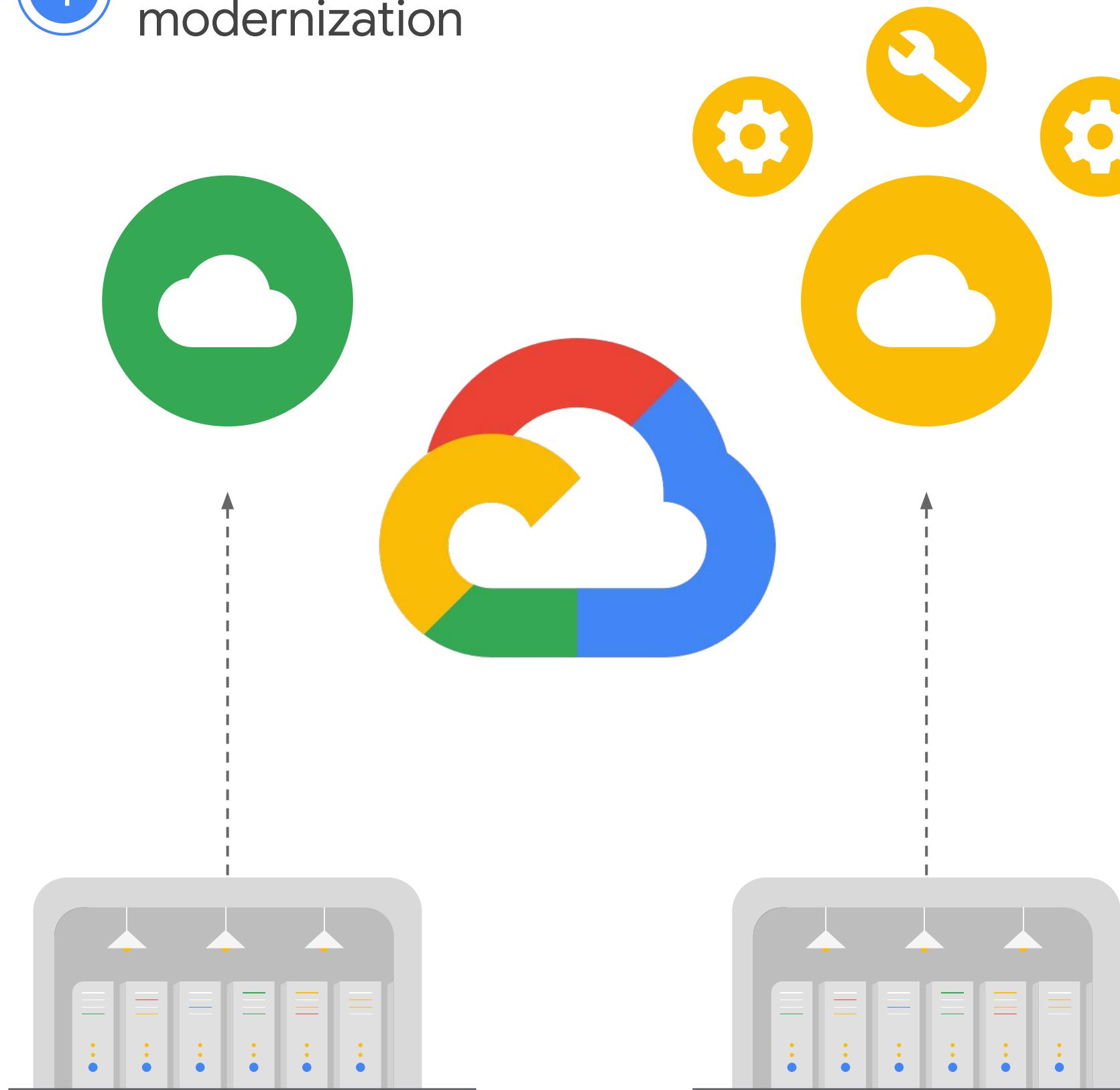
Artificial  
intelligence



Security



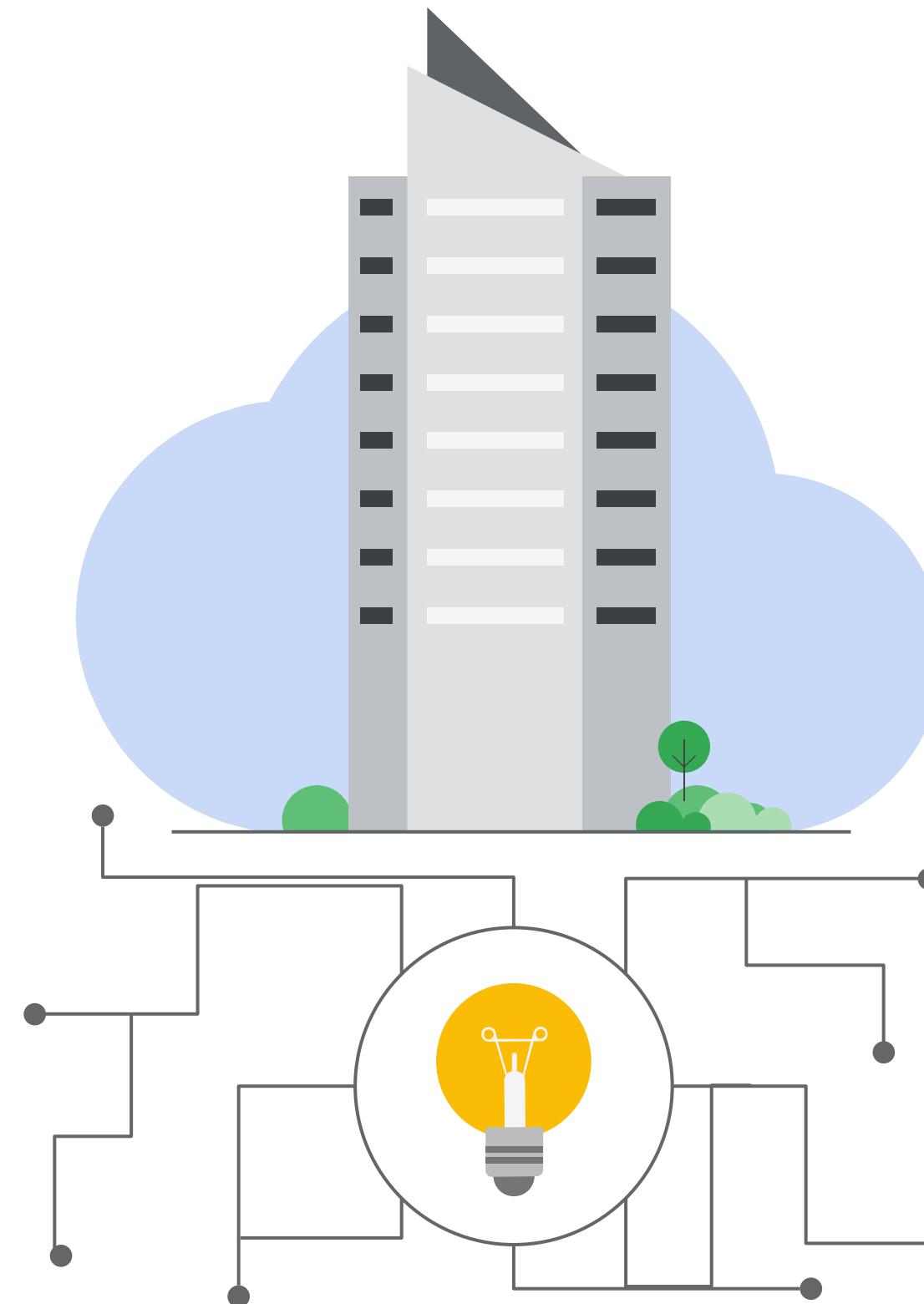
## Infrastructure modernization



Google Cloud and its partners offer flexible **infrastructure modernization** approaches from rehosting customer's existing IT to replatforming.

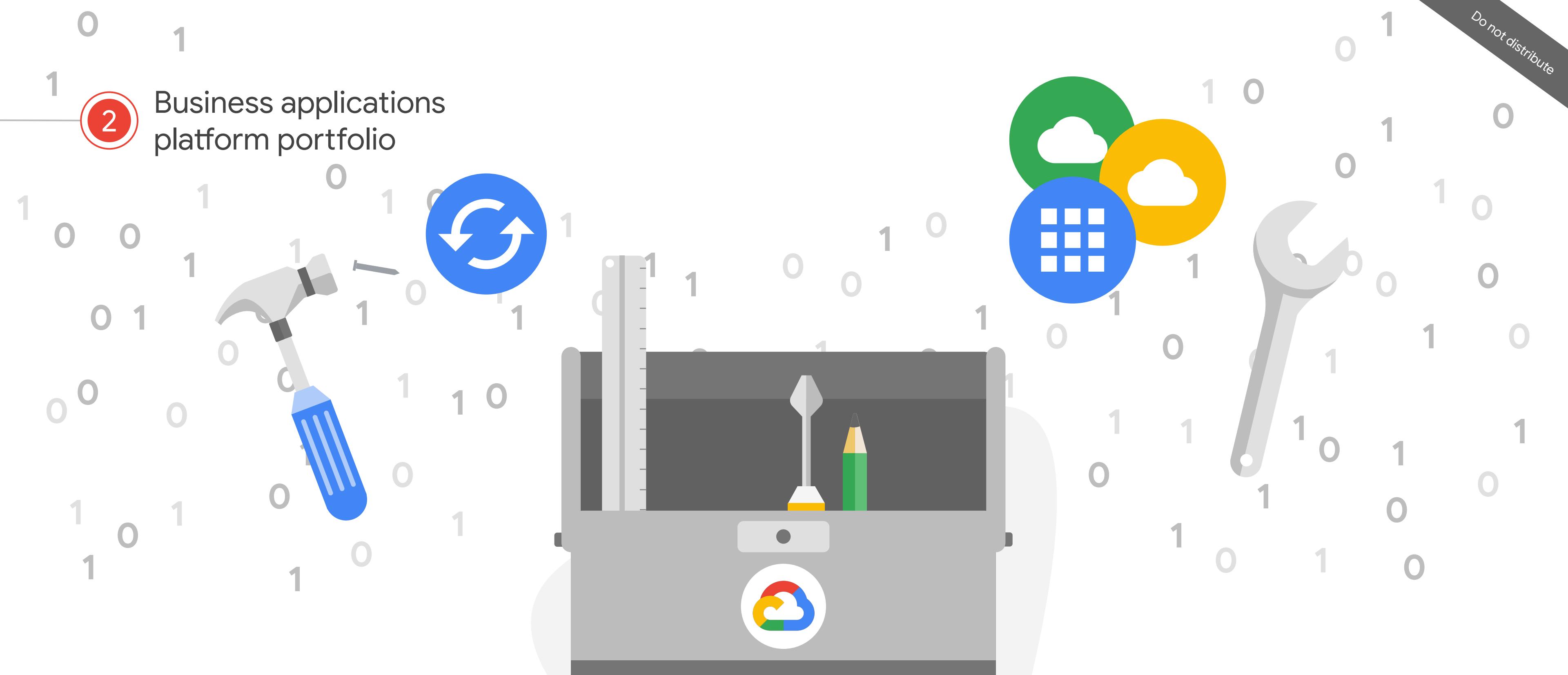


## Infrastructure modernization



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Once companies have modernized their infrastructure with Google Cloud, they can then leverage the innovation built into Google Cloud's technology to create new business value.



With Google Cloud's **business application platforms portfolio**, businesses can securely unlock their data with APIs, automating processes and creating applications across clouds and on-premises without coding.

### 3 Application modernization

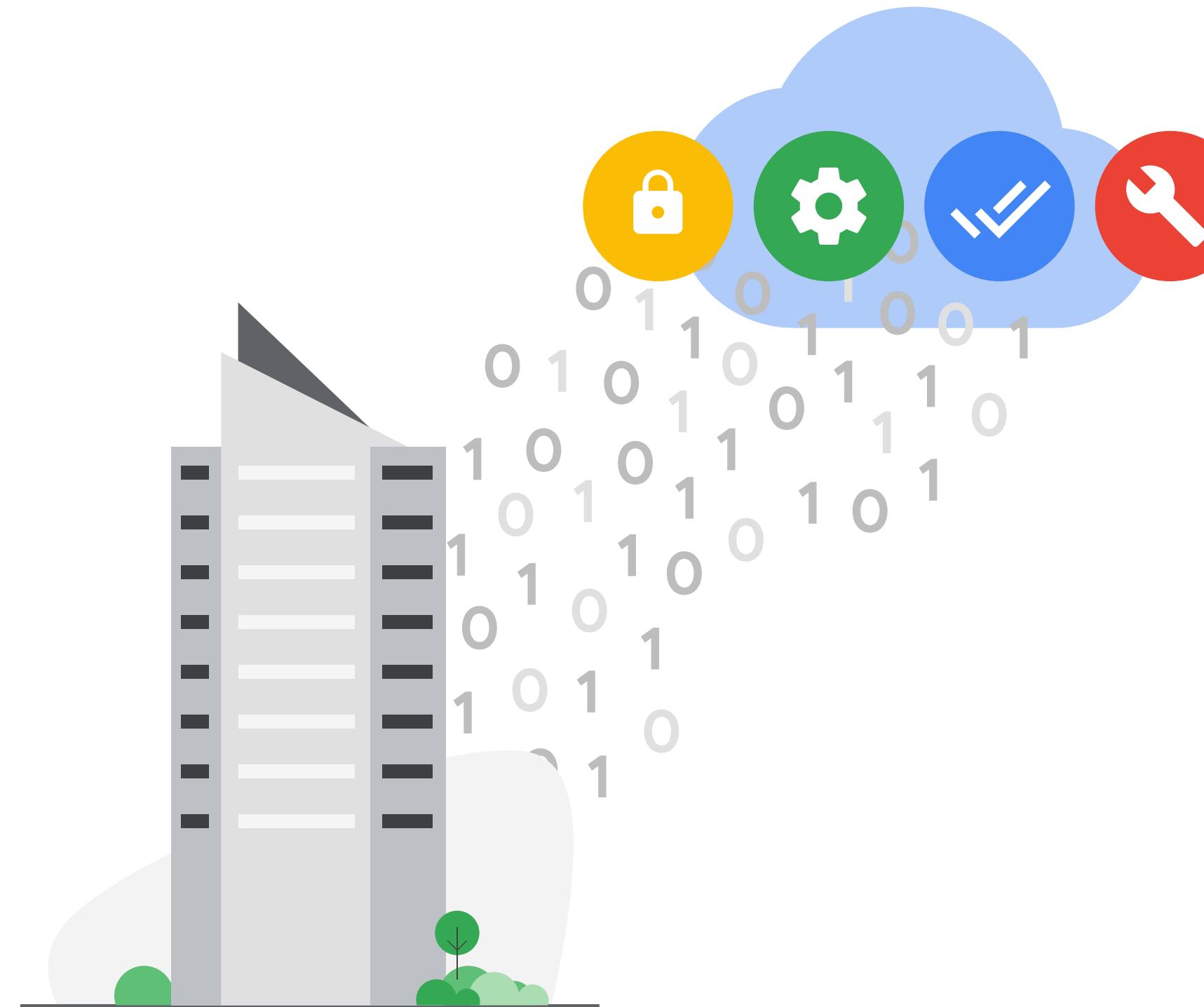


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Businesses can better serve their users through **application modernization**. The tools within this pillar help businesses develop and run applications anywhere.

# 4

## Database and storage solutions

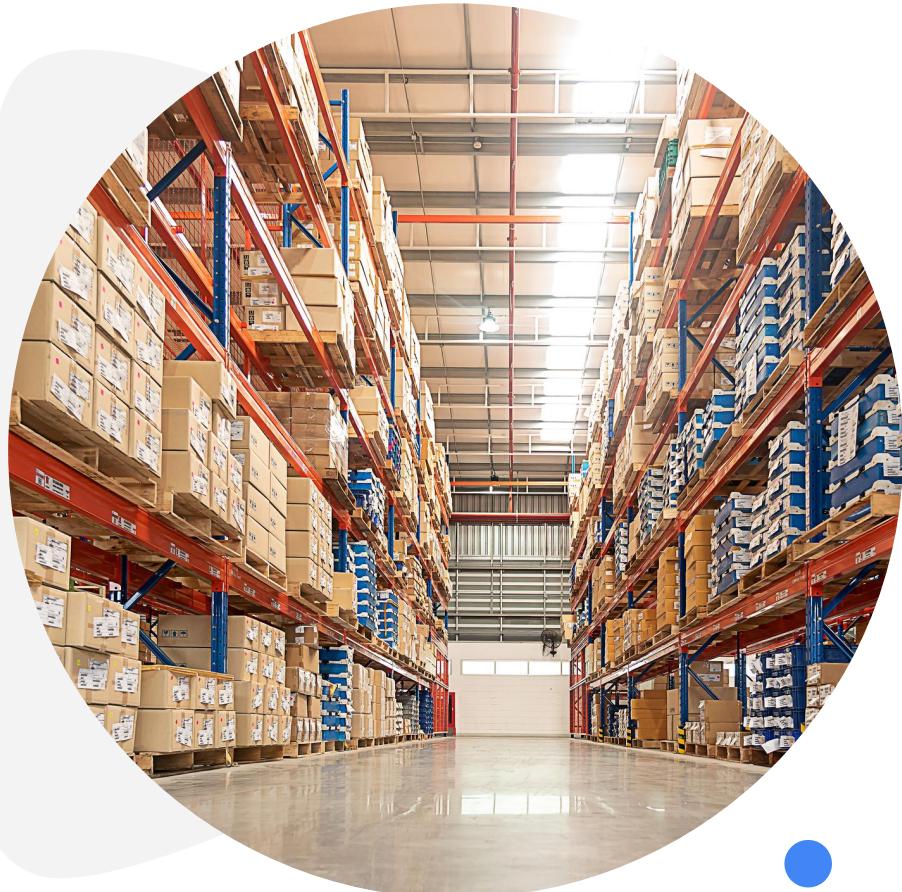


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Google Cloud's **database and storage solutions** include tools that help businesses migrate and manage enterprise data with security, reliability, high availability, and fully managed data services.

# 5

## Smart analytics



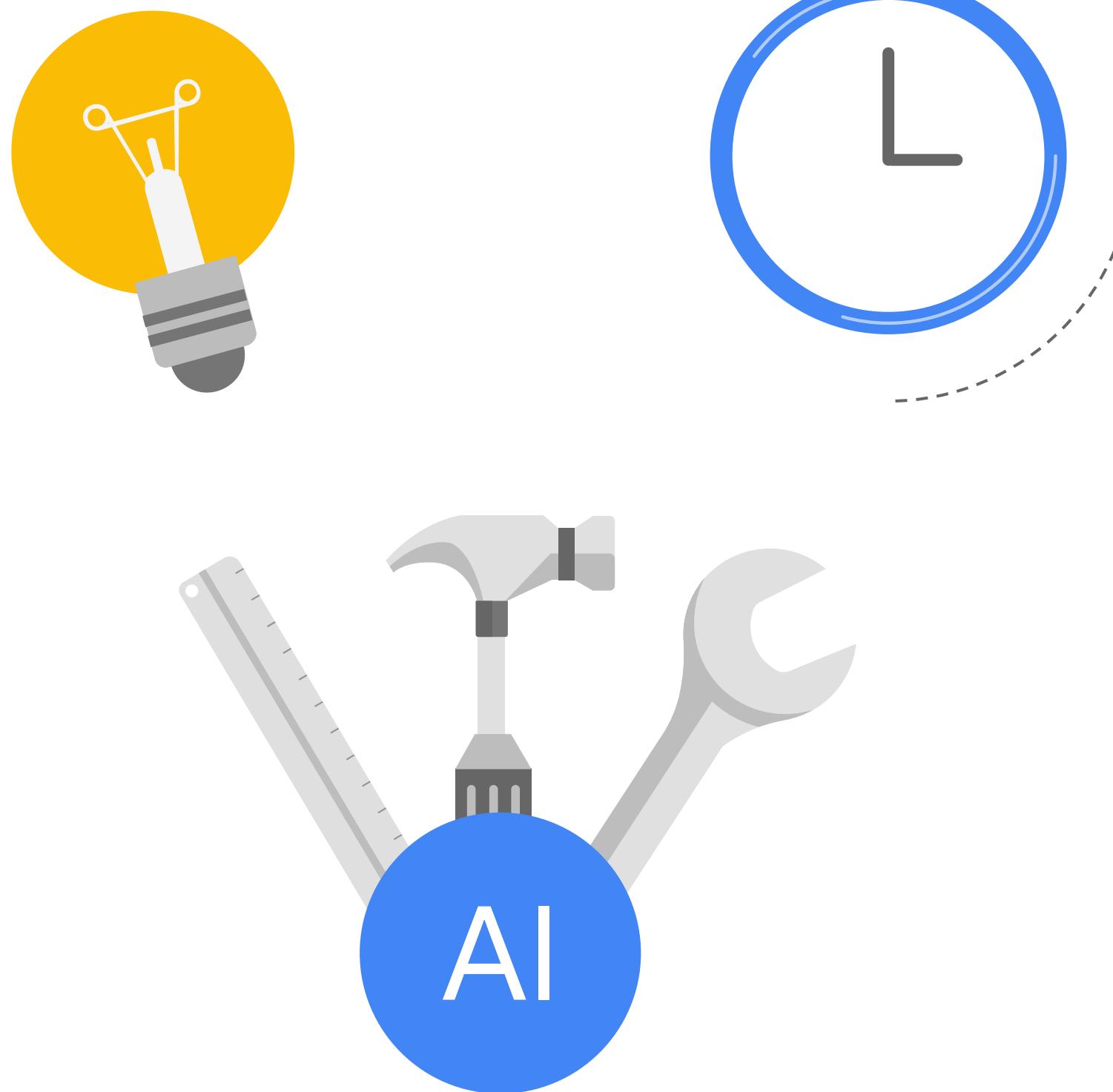
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The **smart analytics portfolio** helps businesses generate instant insights from data at any scale with a serverless, fully managed analytics platform.



## 6

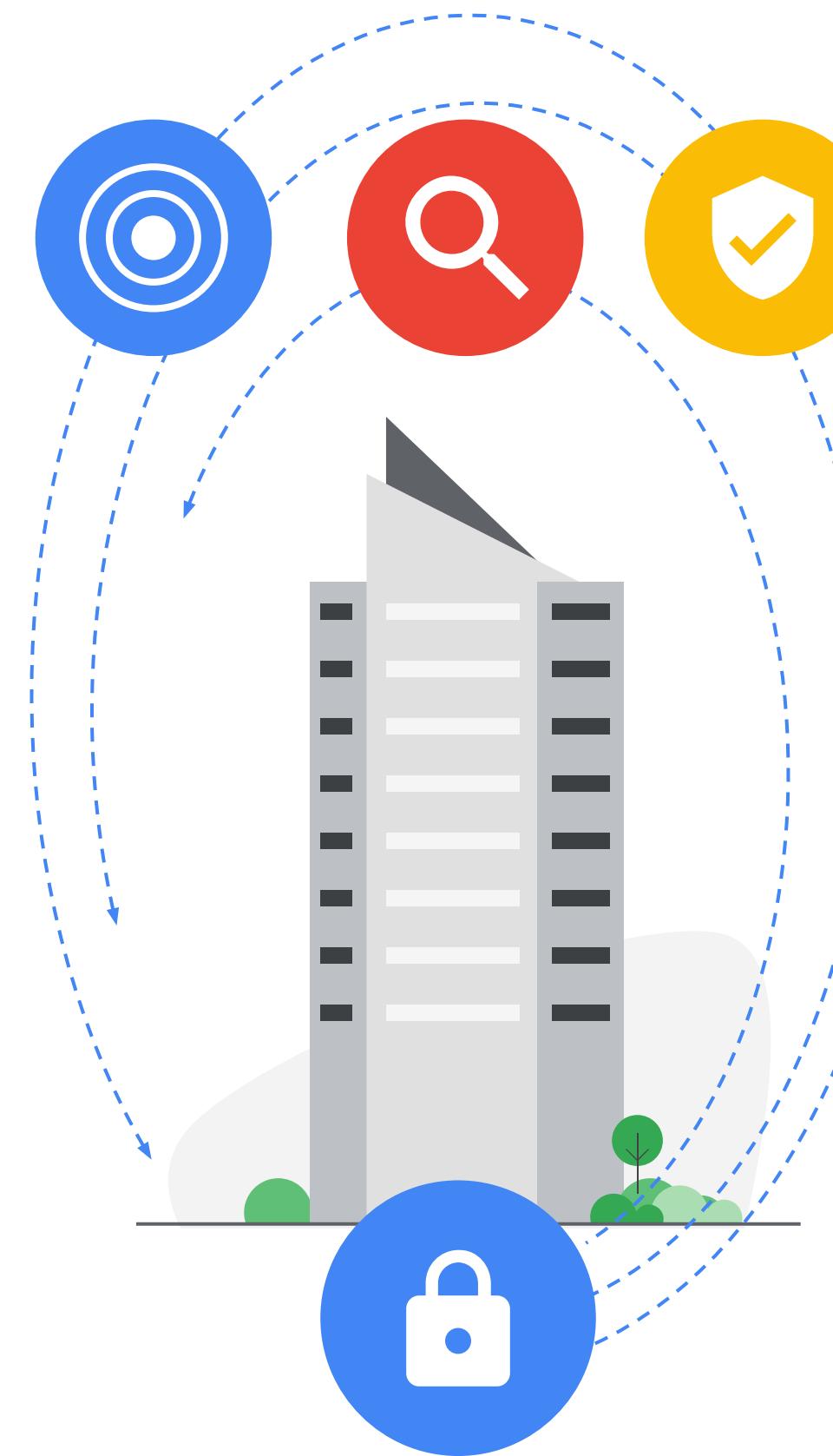
## Artificial intelligence



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Google Cloud's **artificial intelligence** tools are built to enhance innovation and improve productivity, by integrating seamlessly into a company's existing workflow and products.

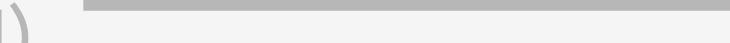
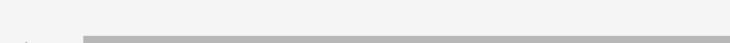
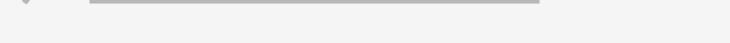
## 7 Security



Google Cloud's comprehensive **security** solutions cover all aspects of protecting your business in this digital era. Businesses are able to detect, investigate, and protect themselves against online threats before attacks result in damage or loss.

## Google Cloud Adoption Framework



- 1) 
- 2) 
- 3) 
- 4) 

[cloud.google.com/adoption-framework](https://cloud.google.com/adoption-framework)

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To help organizations optimize their cloud adoption, Google developed the **Google Cloud Adoption Framework**. This best practice guide provides a framework to assess where an organization is in its journey and what they need to do next.



# Google Cloud

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## Module 3: Student Slides

### Scale the Innovation Mindset

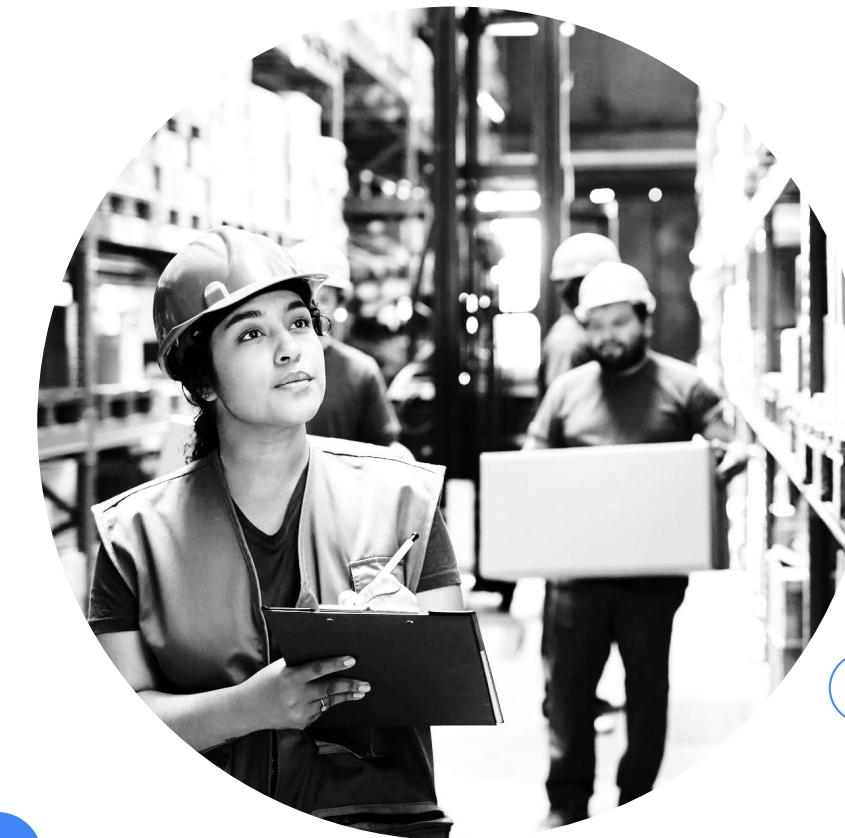
#### Topics covered

- Six focus areas for transforming culture
- Three rules to scale an innovation mindset
- Example from the banking industry
- How to adopt an innovative mindset



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When you see cloud as a tool to do things the way you've always done them, you risk vanishing into irrelevance. Using cloud to do new, transformative things means embracing wholesale change.

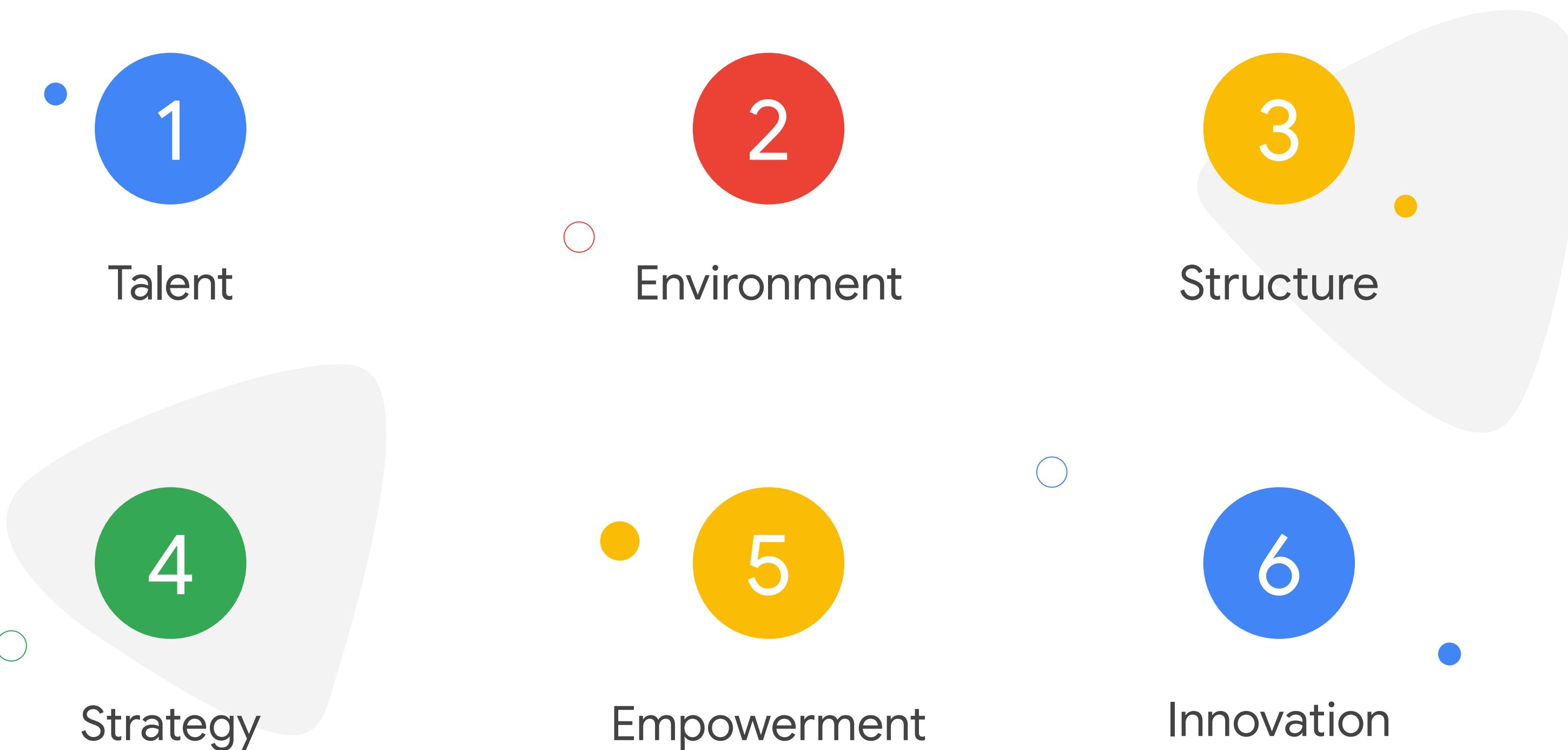


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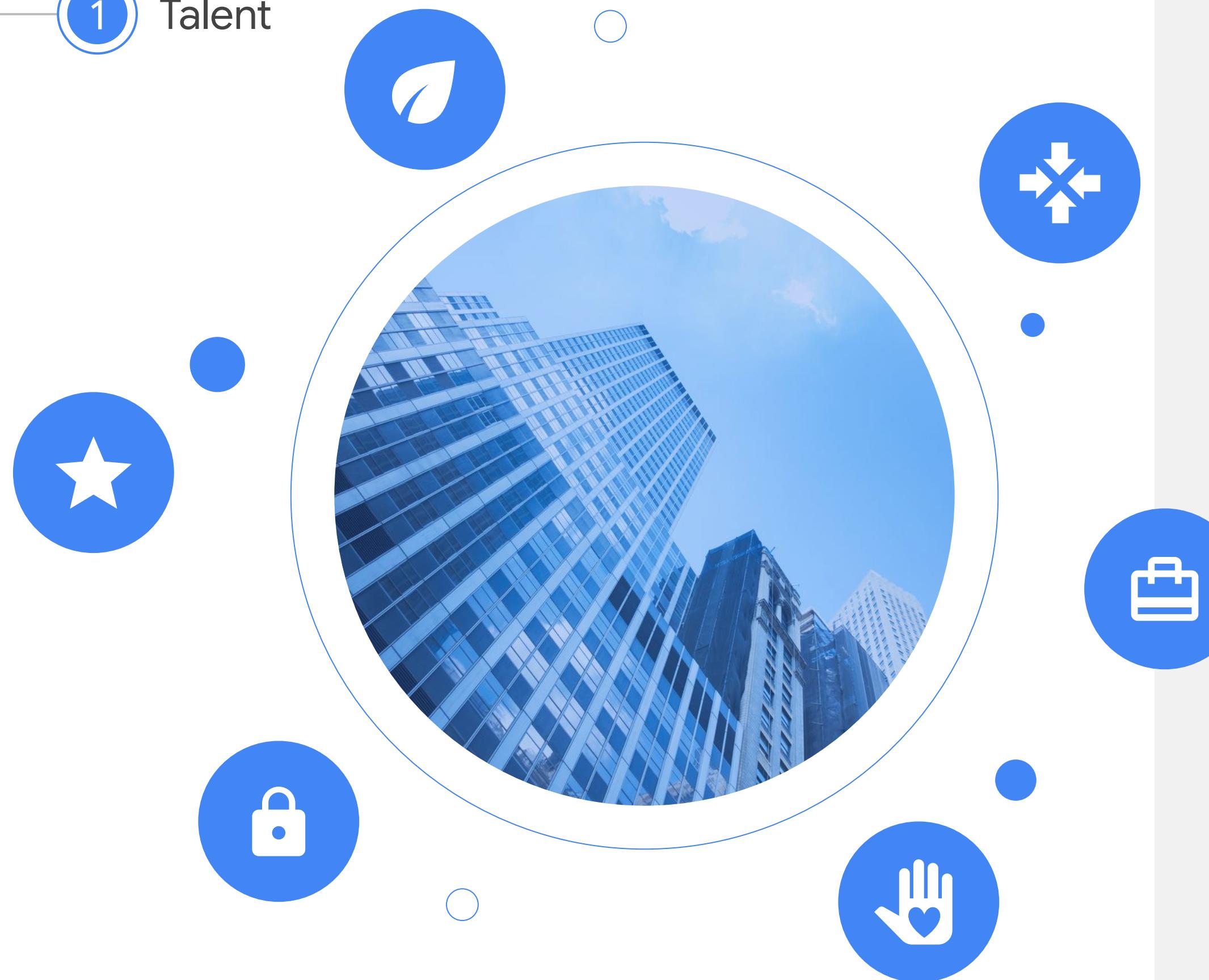
This change may involve radically rethinking business practices, structures, and even business models so you can better serve your customers globally.

Here are six core tenets that we have developed based on that learning. They are foundational to creating a fast-moving, customer-centric and future-proof business that optimizes its use of cloud technology.

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# 1 Talent



**Talent** refers to a “holistic view” of the people that make up an organization. It covers the entire lifecycle from attracting, to hiring, to nurturing, to retaining, to celebrating, and growing the talent.

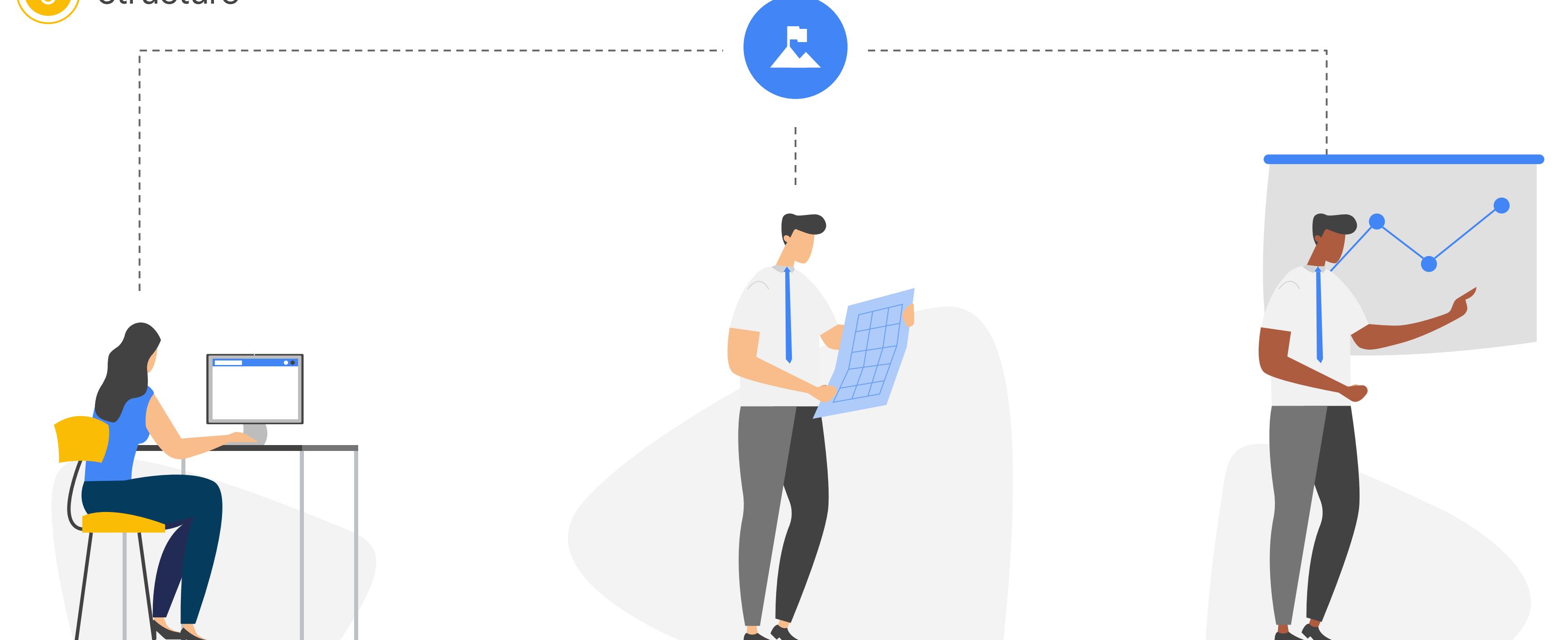
**2**

## Environment



The ability of people to thrive in an organization—especially during major changes—is connected to their work **environment**.

### 3 Structure



**Structure** is a blueprint for how certain programs and tasks are grouped and how the people managing them are led toward a common goal.

4

## Strategy



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**Strategy** is how you align people to your organization's purpose or mission.

## 5

## Empowerment



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**Empowerment** means enabling employees by giving them access to relevant information and encouraging them to use it to take initiative to solve problems and improve the business.

# 6

## Innovation

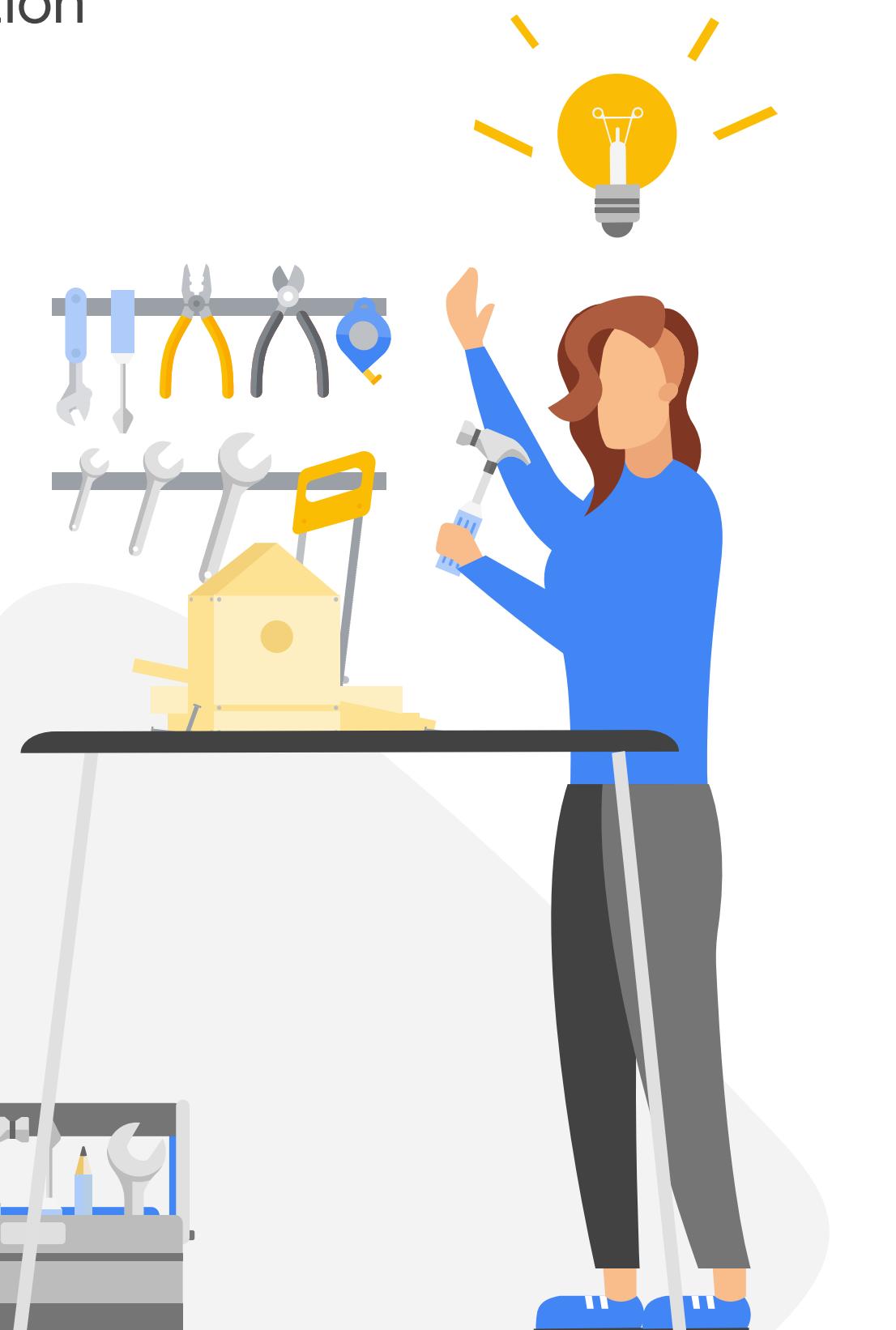


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**Innovation** is central to embracing new technology. Innovation is about doing something in a surprisingly new way, or discovering something entirely new that adds value.

# 6

## Innovation



Innovation, can't be owned or ordained. But you can create the environment and right conditions for innovation to evolve organically.

## Focus on the user



## Think 10X



## Launch and iterate



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Google has established three simple rules that govern its day-to-day business practice and help to nurture and scale a culture of innovation.



## Focus on the user has two dimensions:

- 01 Who they are—paying customers, those outside the business and employees.
- 02 What they expect

To help you narrow down the scope of your user's expectations,  
consider the following focus areas:

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1

Access



2

Engagement



3

Customization



4

Communication

# 1

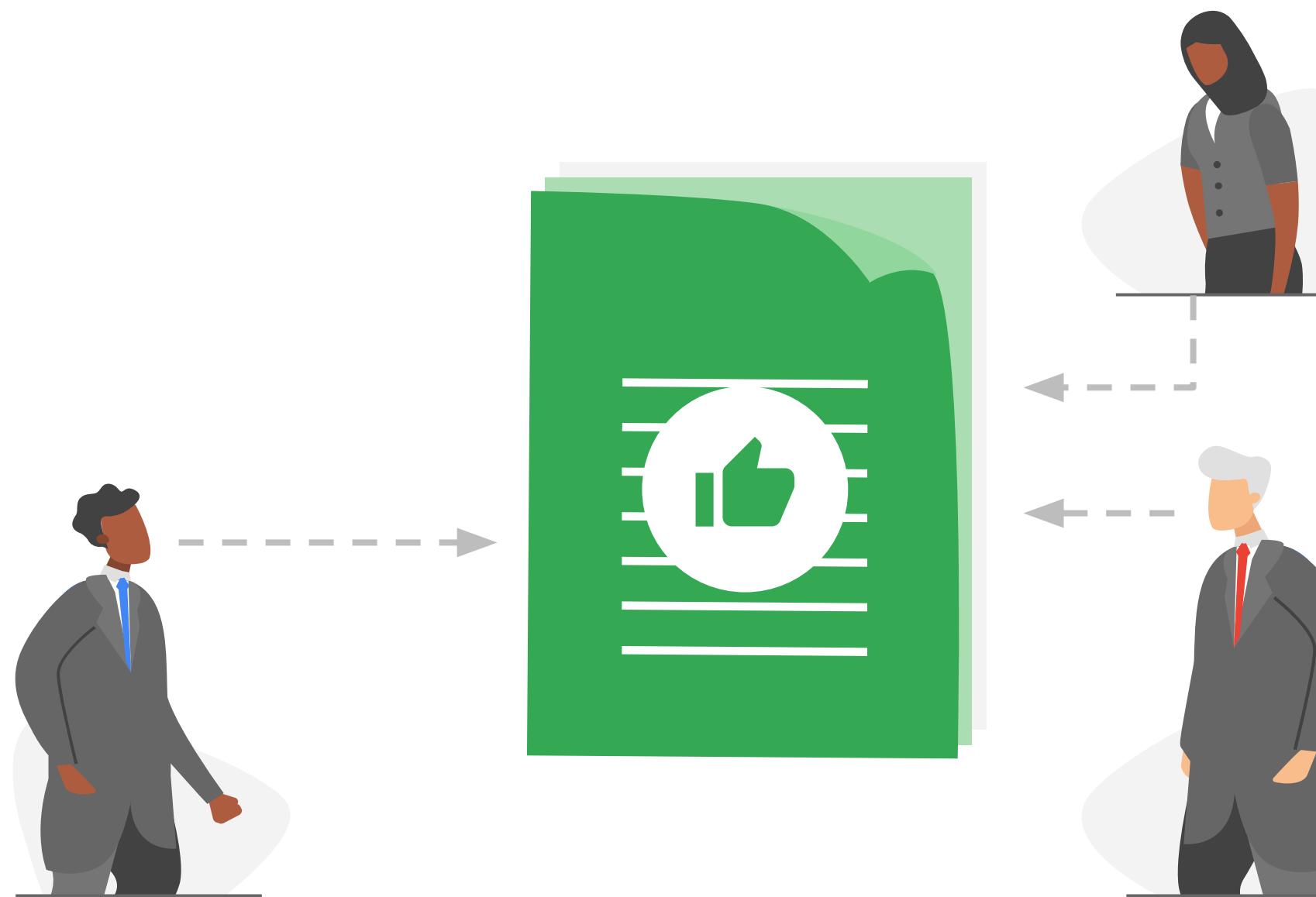
## Access



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When it comes to **access**, users expect faster and easier services, with ‘always-on’ capabilities, that can be accessed anywhere.

## 2 Engagement



In terms of **engagement**, users are looking for sources of valued content. They expect up-to-date, reliable content from multiple fields of expertise.

## 3 Customization



When it comes to **customization**, users expect that a product or service seamlessly adapts to their individual needs and preferences.

## 4

## Communication



Users expect to be able to **communicate** with service providers through a two-way feedback channel—this means that the company also engages in conversation.

1

Access

?

2

Engagement

3

Customization

4

Communication



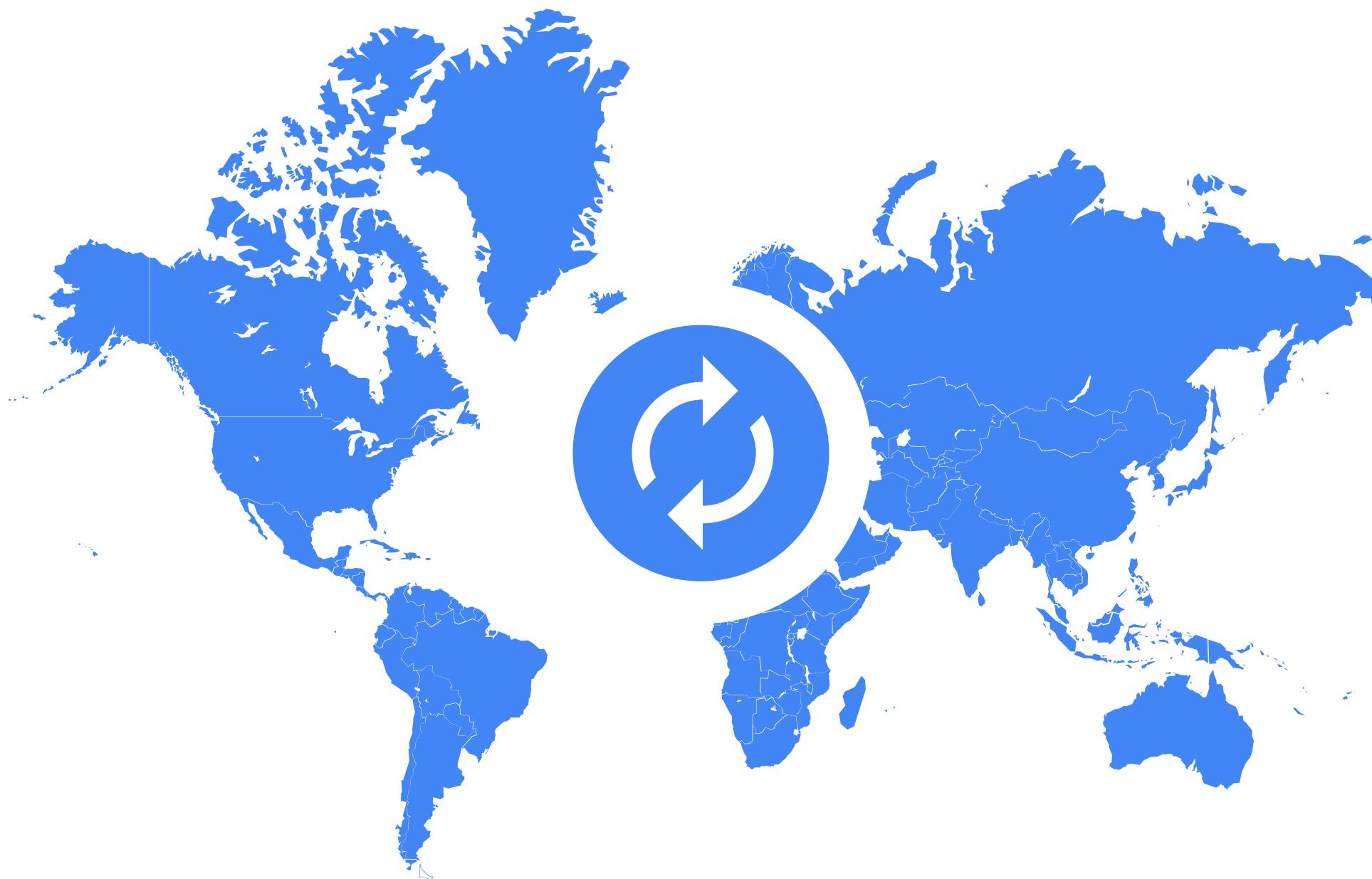
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Who is your user? With innovation in mind, is there room to drastically improve or re-invent your products or services by examining your user's expectations?



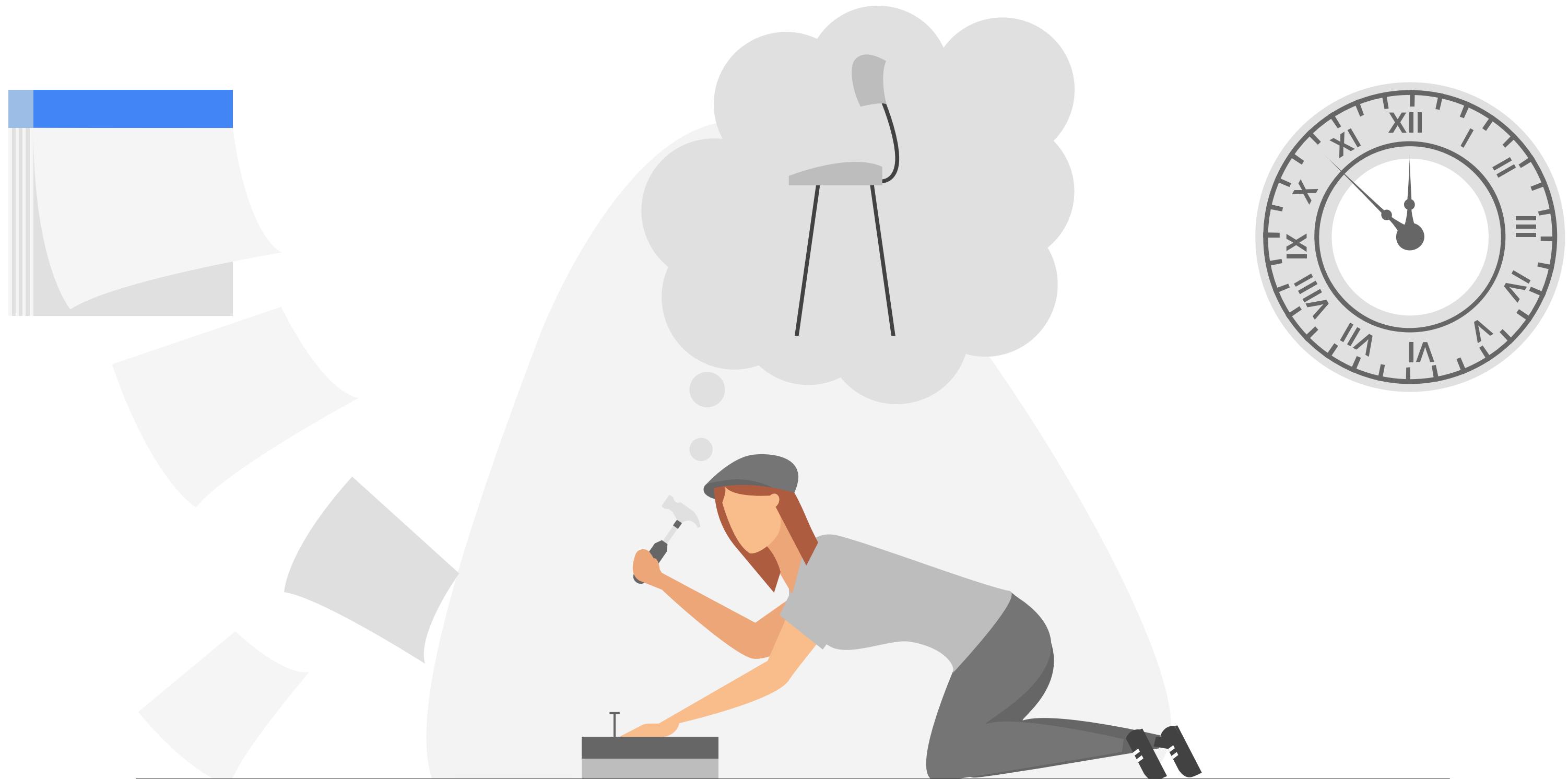
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10X thinking is about generating big ideas. It's about transformation over improvement and using technology to achieve that transformation. Improvement projects help make things better by perhaps 10%.



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10X thinking leads to solutions that are simple, empowering, and deeply transformative. Just like focusing on the user, thinking 10x helps organizations achieve their mission in new ways and to differentiate their offering from competitors.



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Launch and iterate is often referred to as 'continuous learning'.



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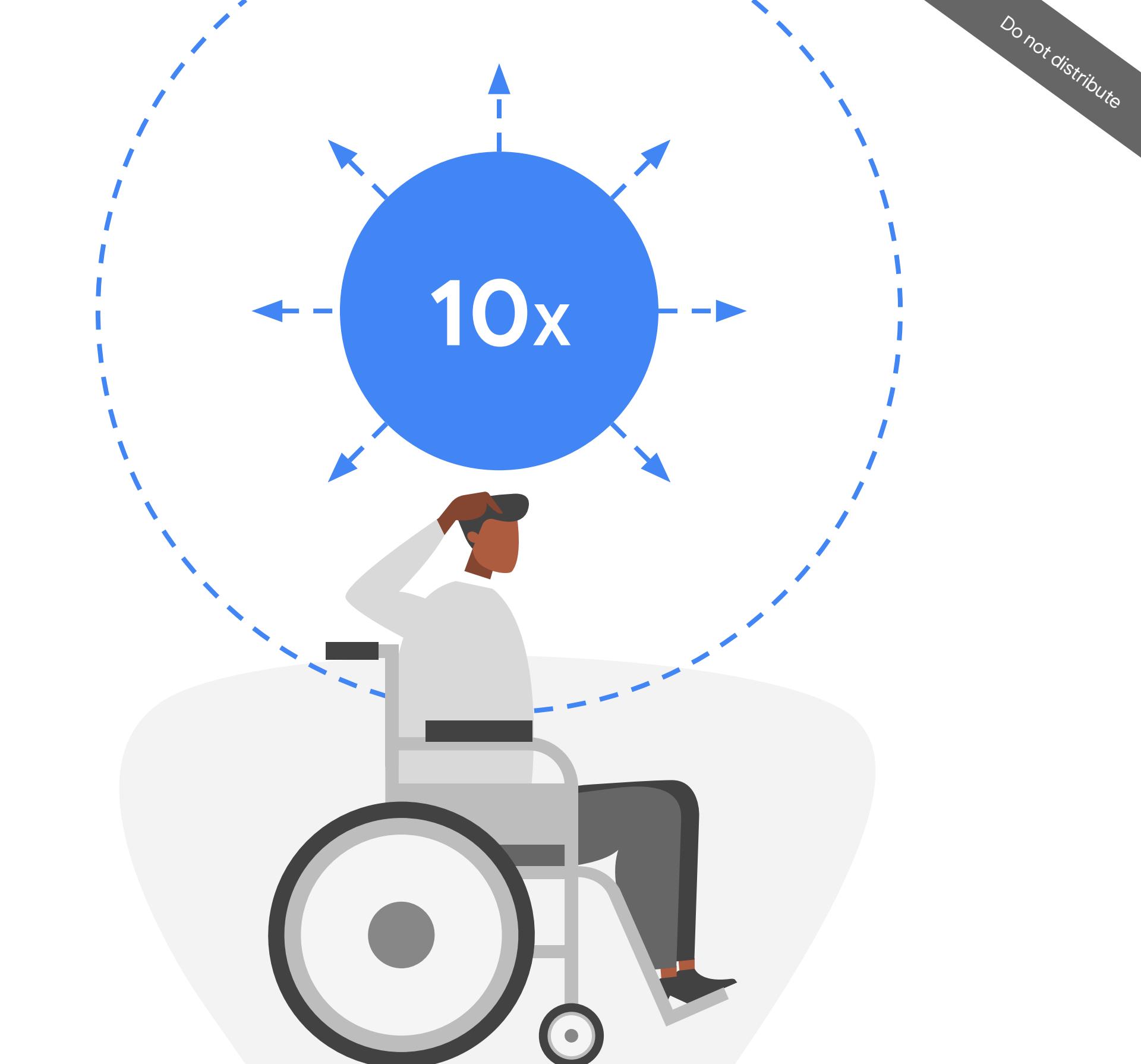
Launch and iterate is both a mindset and a practice where, instead of starting off with a perfect solution, you figure it out through experimentations.

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You can apply the launch and iterate rule to your own work by asking yourself:

Does my project or initiative support my WHY?

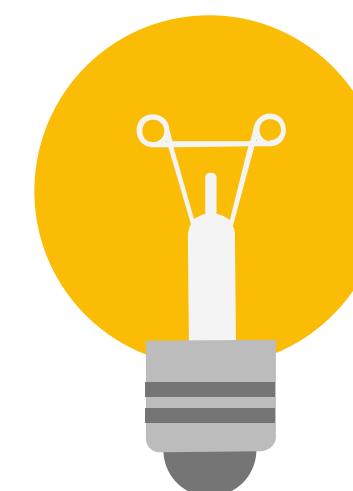
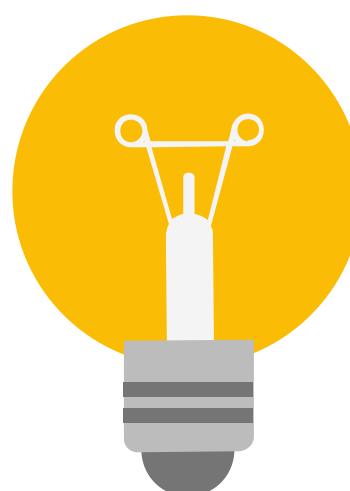
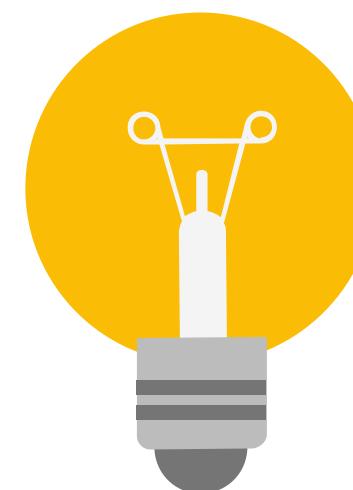
Am I applying 10X thinking?  
How might I use technology to reframe the problem or find a transformative solution, instead of a minor improvement?



“  
A shared belief held by  
members of a team  
that the team is safe for  
interpersonal risk taking

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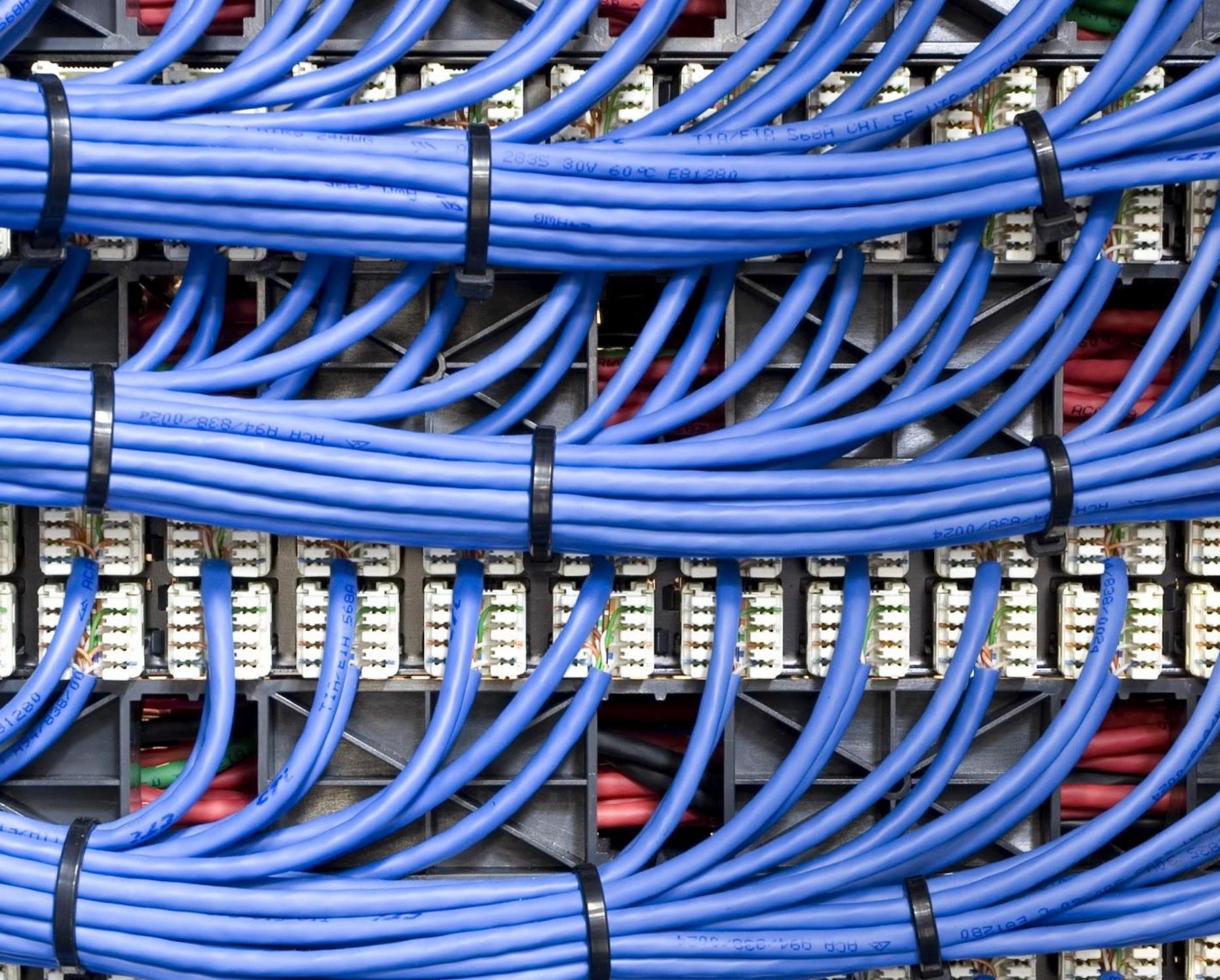
Organizational behavioral  
scientist Amy Edmondson of  
Harvard first introduced the  
construct of “team  
**psychological safety**”.



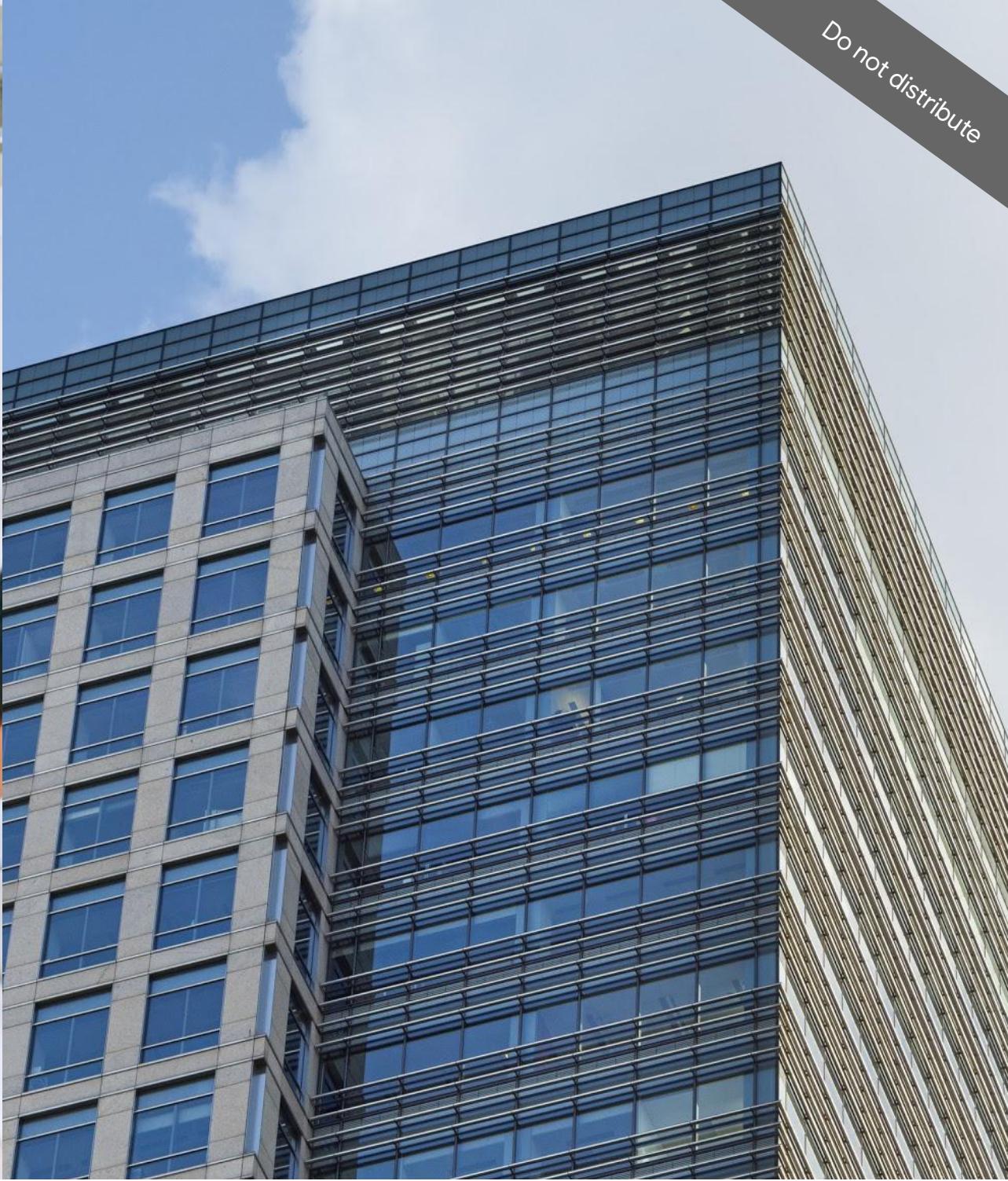
## What is psychological safety?

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When people feel psychological safety and begin applying the launch and iterate rule into their day-to-day work the result is the prototyping effect. The more ideas you try, the more you learn, and the more you eventually succeed.



Ideas don't have to be limited to hardware or service products. This way of thinking can also be used for any employee-customer or employee-employee interaction.



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Embracing cloud technology and cultivating an innovative mindset are not limited to elite data scientists or company leaders. You can cultivate this mindset in your role, in your team, and across your organization, no matter where you are.

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**Try it yourself:** Write down your thoughts on the following 4 questions:

**Q1**

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What is your WHY?

**Q2**

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How are you meeting user expectations?

**Q3**

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How can you use technology to serve users 10x better?

**Q4**

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How can you launch and iterate ideas more often?