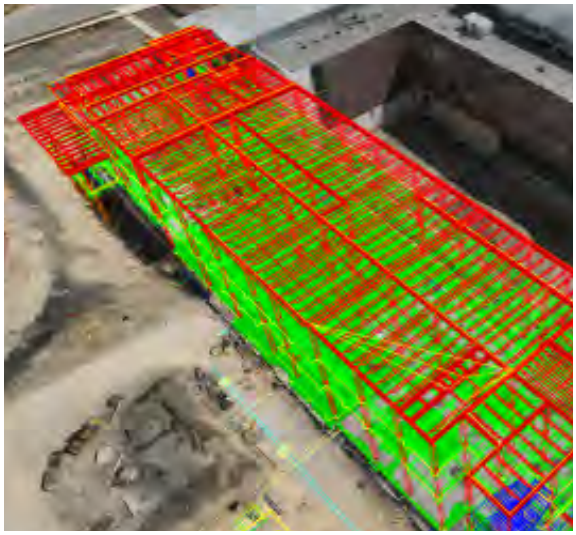
DroneDeploy

The State of Reality Capture Report | 2024

The State of Reality Capture

An in-depth look at how businesses are using reality capture tools – including drones, robots and 360 cameras – to better understand their projects, job sites and assets.



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by Mike Winn

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Welcome to the first-ever...

State of Reality Capture report

Reality capture software, hardware and you – the people who are driving our community forward – have grown by leaps and bounds in recent years.

Adoption is on the rise, investment and by extension returns on that investment are set to increase, and all of this is pegged to continued hardware innovation in the commercial drone, robotics and 360-degree camera space.

These changes are being driven by a global community of innovators who are pushing the envelope for what's possible with the breadth of technology available to document the physical world.

In the State of Reality Capture 2024 report – our industry's biggest global survey to date – we take an in-depth look at the tech, tools and trends as they stand today and what users have planned for tomorrow.

At a high level, what we're seeing is that tools like drones, robots and 360 cameras will no longer be viewed or used in isolation. They will work together on the jobsite, field or energy plant of the future. And the process of capturing data will be increasingly automated and intelligent; freeing up workers to focus on more strategic and satisfying tasks than taking photos, scans or measurements.

Why is reality capture so important? Because it's going to help us meet tomorrow's challenges. By 2050, our world will need to produce at least 60% more food to feed its growing population. We're also going to see the largest wave of building and infrastructure growth in human history. To cope with these rising demands, we need to harness real-time data effectively and make smarter decisions.

Our reality capture software is already powering some of the biggest projects in the world – including the TSMC Plant in Arizona, the Vegas Formula One Track and the HS2 rail network in the UK.

DroneDeploy customers have deployed over 300,000 residential solar installations, and used our platform to count billions of corn and soybean plants, helping to feed the world.

The goal of this survey was two-fold:

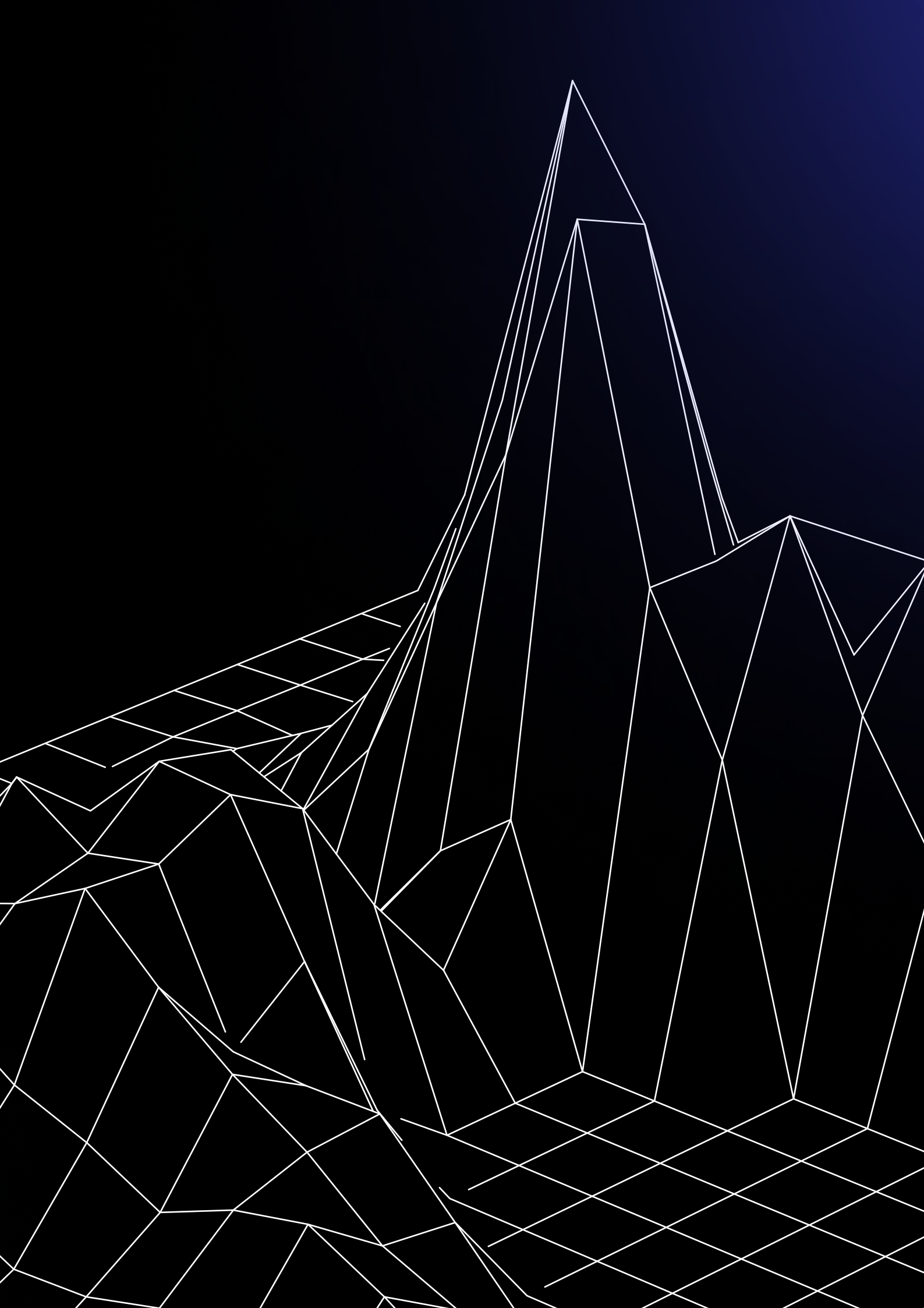
a) to help this important work continue and scale by ensuring our software meets the needs of our customers, and b) to better understand the reality capture industry as a whole.

The survey was our biggest yet; with 1,447 respondents from 119 countries. And there are some staggering statistics in this report about the benefits of reality capture technology and how fast the market is moving.

We hope you will find the insights in this report useful as you build your own reality capture roadmap for the future. And as always, we'd love to hear your feedback.

Best wishes,
Mike Winn, CEO | DroneDeploy

Adoption is
on the rise
especially for enterprise businesses



Adoption is on the rise...

The value of reality capture is increasingly well known, with most businesses either using or planning to use reality capture software. These figures rise with company size and sophistication.

60% of enterprise businesses are already using reality capture

In this year's survey, enterprise businesses are 33% more likely than those with fewer than 100 employees to use reality capture software – at 60%.

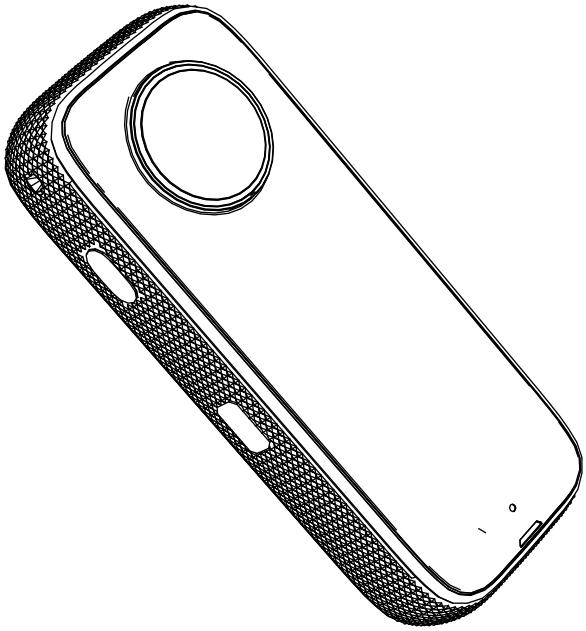
This figure rises to 79% for companies with more than 10,000 employees. Only 20% of companies with 100+ employees have no plans to use reality capture, with the remaining 20% actively planning to do so.

Larger businesses have better resources and budgets at their disposal. They've seen the value of reality capture technology, and they're investing early to get ahead.

Growing interest in reality capture is pegged to hardware innovations

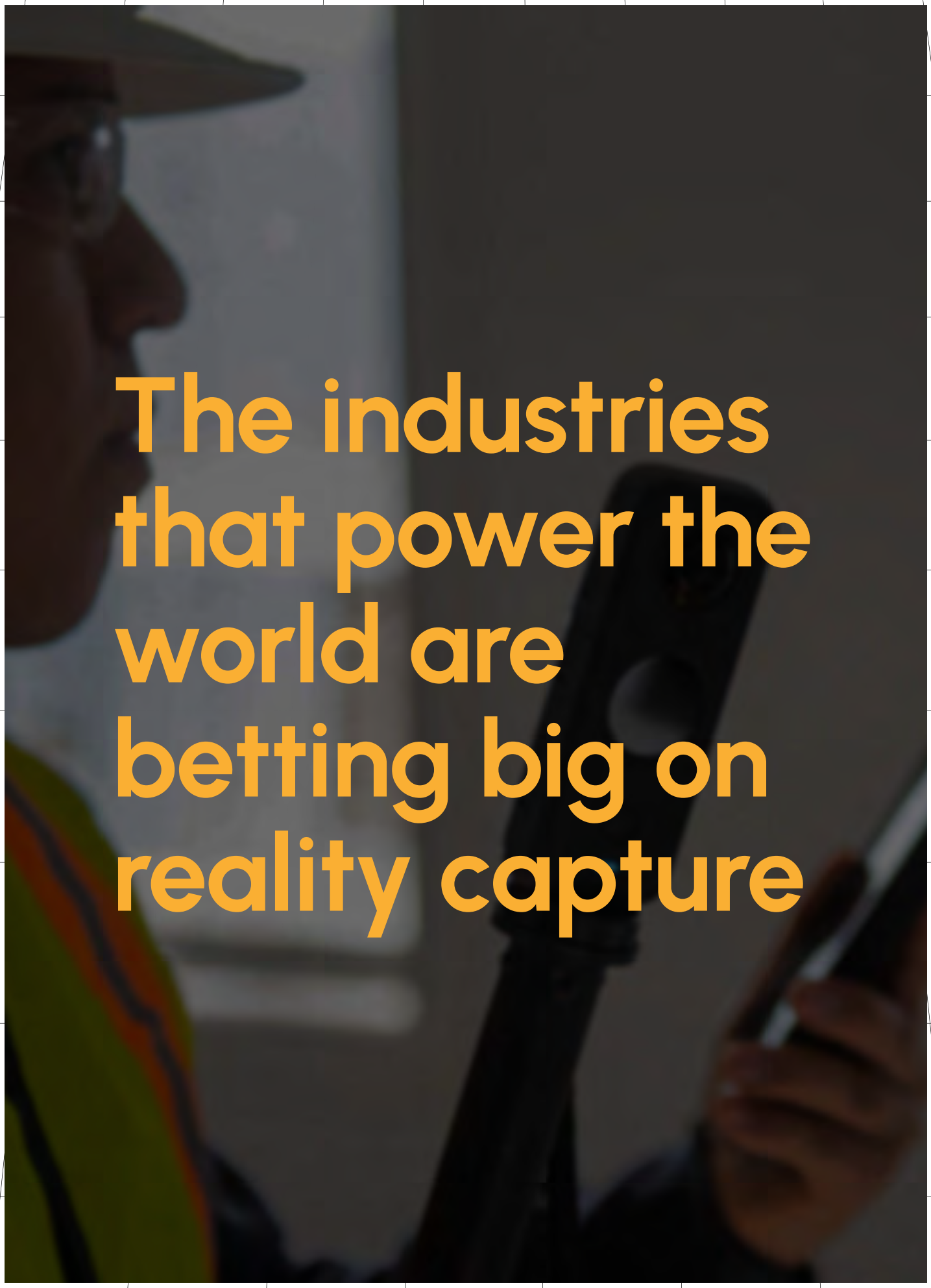
Just a decade ago, drones were a niche hobbyist toy – now they're a critical tool for businesses.

Docked drones and robots are also becoming more accessible. It's not surprising that interest in reality capture technology is growing.



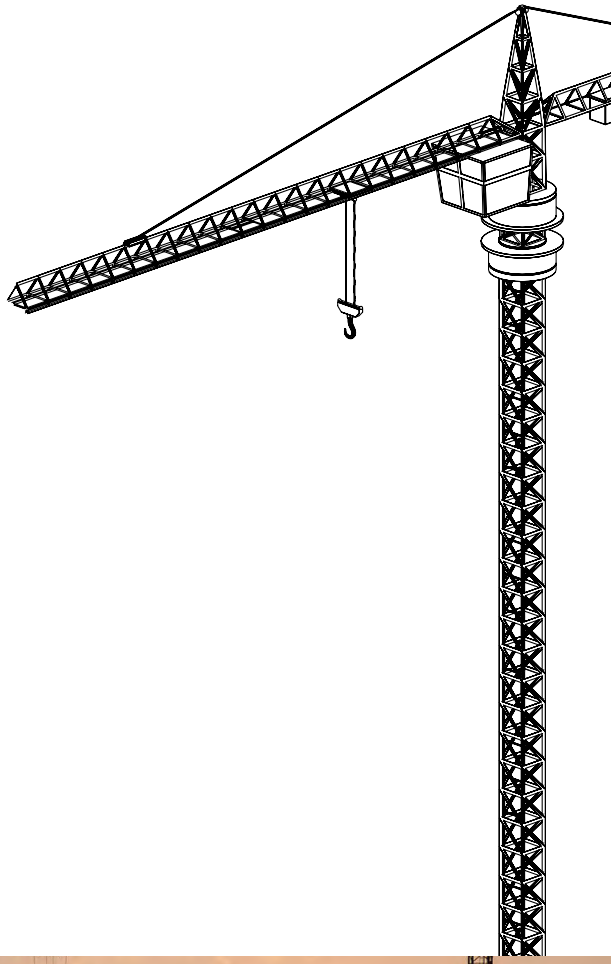
80%

of enterprise businesses are either using, or planning to use, reality capture.



The industries that power the world are betting big on reality capture

AEC is using reality capture more than other sectors

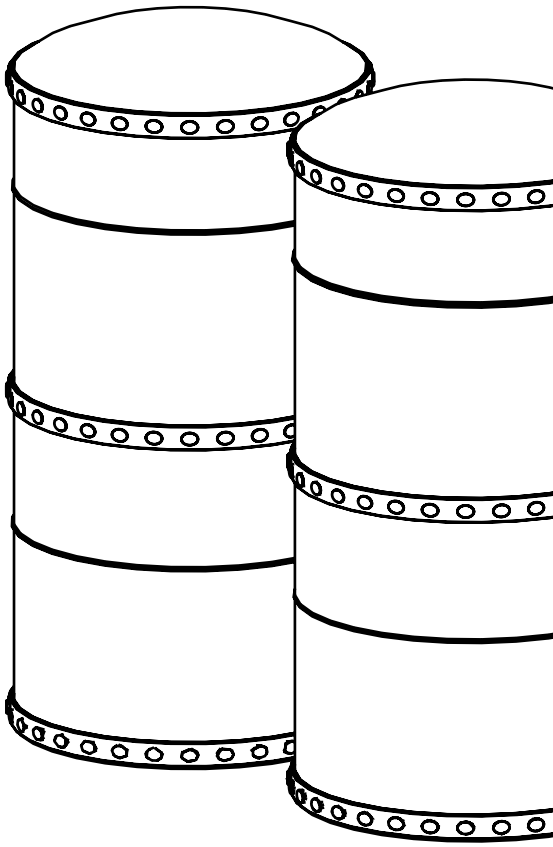


75% of enterprise architecture, engineering and construction (AEC) respondents said their business is using reality capture software, compared to 60% across all sectors.

21% of AEC companies aren't yet, but are planning to. Only 4% have no plans to use reality capture.

Big O&G companies are more likely to be using reality capture

Enterprise oil and gas (O&G) businesses are more likely to be using reality capture software. 60% said their business is using reality capture software, compared with 46% of O&G companies of all sizes. And the remaining 40% of enterprise O&G companies plan to, underlining the importance of reality capture to this critical sector.



Renewable energy industry adoption is on the rise

The renewable energy sector is adopting reality capture at a similar rate to other sectors. 45% of enterprise renewable energy companies said their business is using reality capture software, and 36% are planning to.

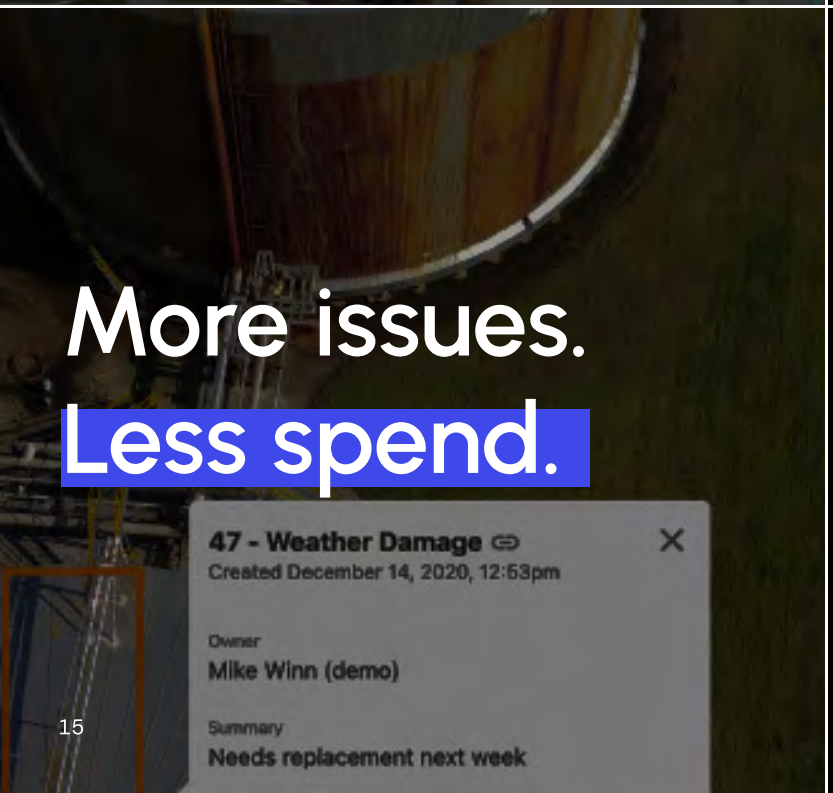
Only 18% have no plans to use reality capture.

What we're seeing in DroneDeploy year over year

Annotations are streamlining communications

7.1 million+
annotations

+60%



More issues. Less spend.

168,000+
issues made

+63%

More companies. Bigger projects.

312.6 million+ images

+40%

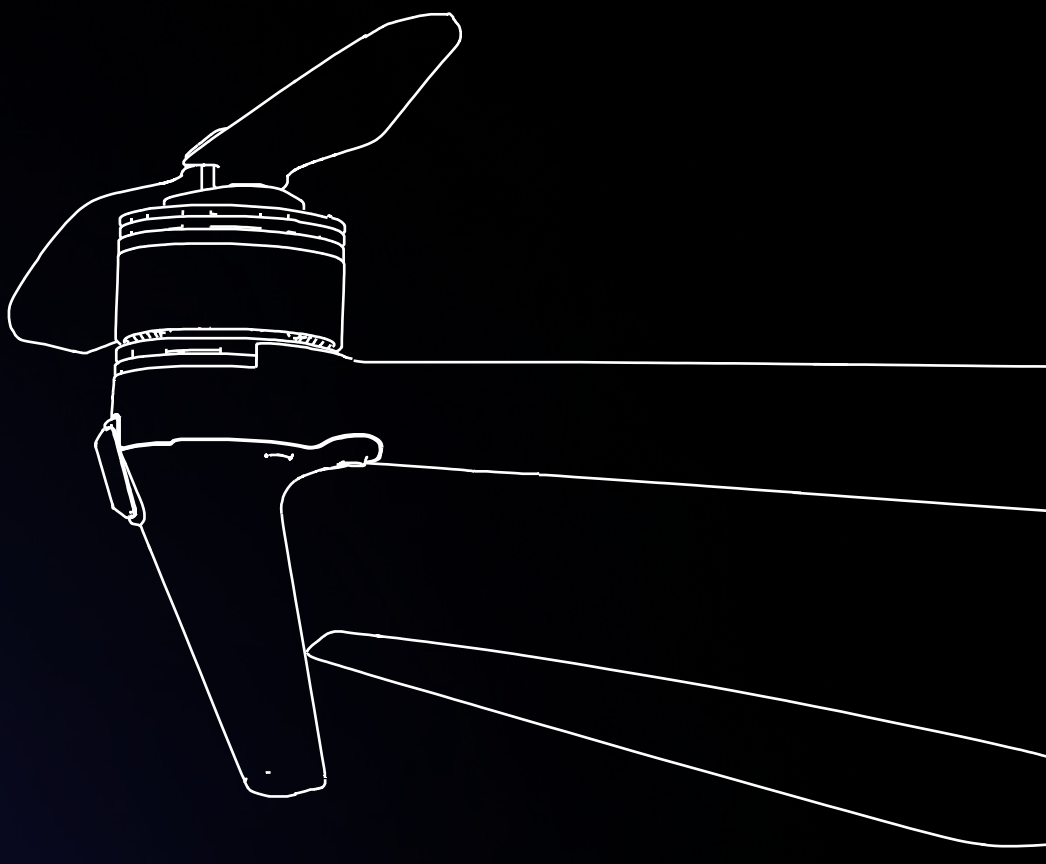
Project imagery usage is up considerably

68.9 million+ acres mapped

+78%

All figures represent full-year 2023 vs 2022

The benefits of using reality cap



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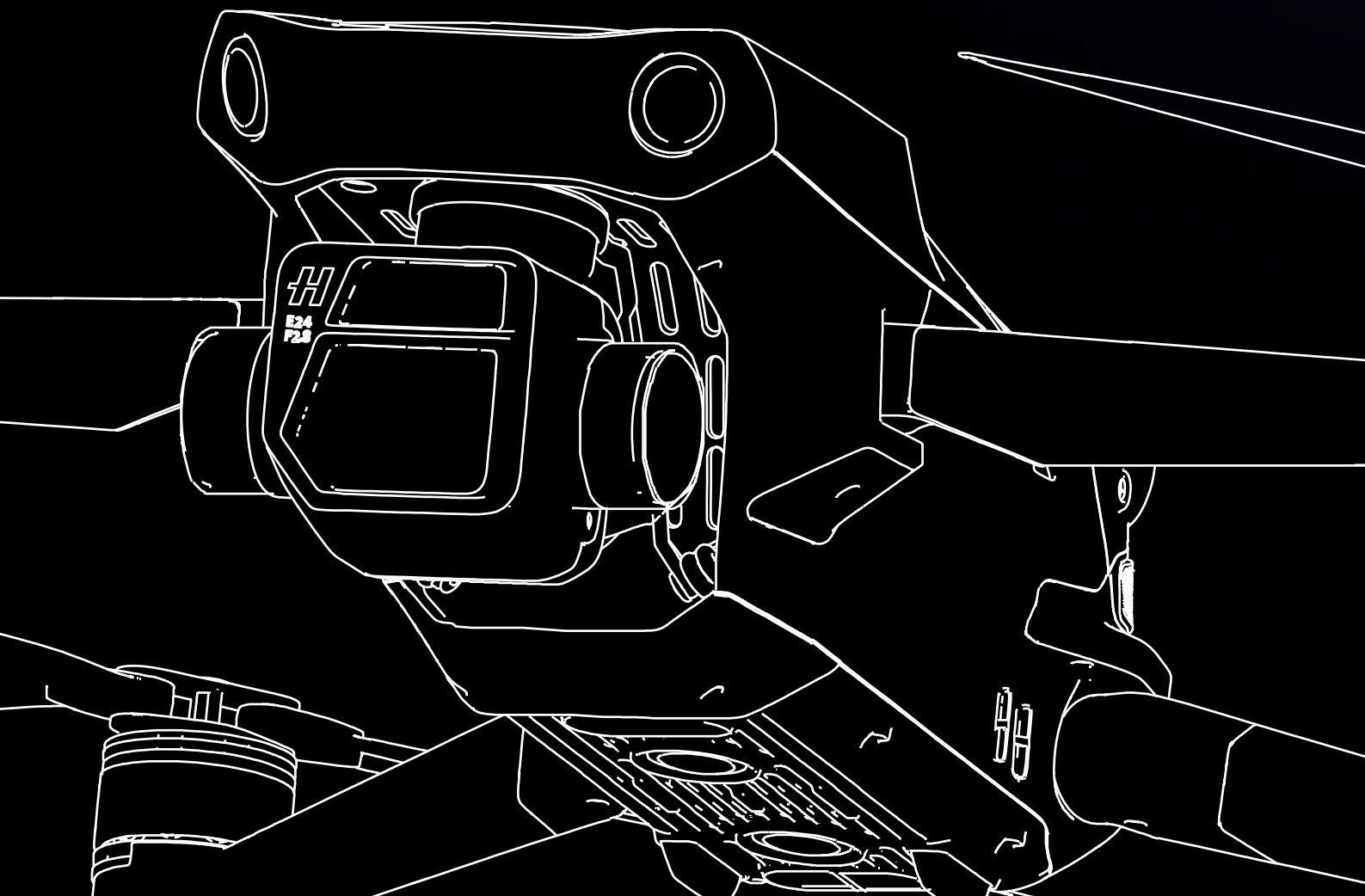


96% of companies are seeing ROI from reality capture

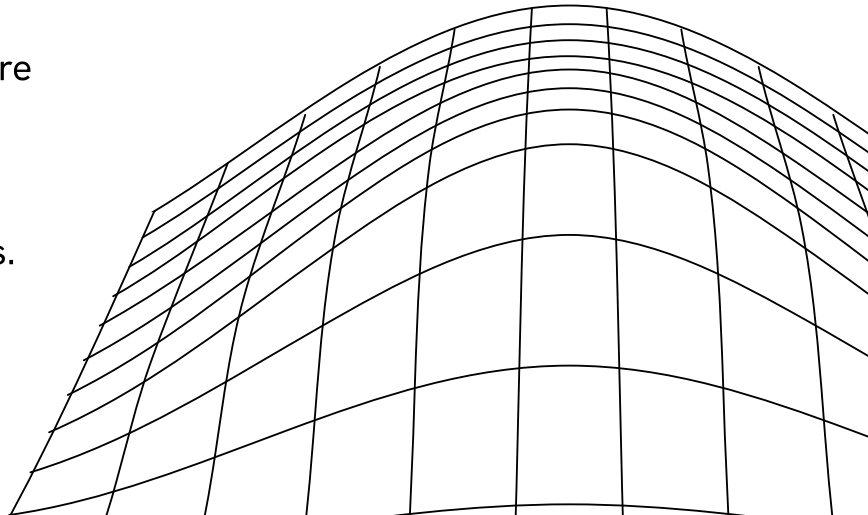
The investment in reality capture technology is paying off for the vast majority of businesses. They're seeing both operational and financial gains, with larger businesses seeing the biggest returns. Reality capture is providing companies with better visibility of complex projects, slashing operational time and costs, improving customer satisfaction and strengthening communication between project managers, teams and stakeholders.

Businesses are seeing measurable benefits

All forms of reality capture hardware and software require upfront and ongoing investments, such as subscription fees and training costs. But for almost every business, the investment is paying off.

Of the respondents we surveyed, the vast majority (96%) are already seeing returns or benefits from their investment in reality capture. Moreover, almost a third (29%) are seeing significant returns or benefits.

The top benefits cited by businesses using reality capture were: better visibility of projects (77%), saving time and costs (57%), greater customer satisfaction (56%) and improved communication with teams or stakeholders (50%).



Other benefits cited by respondents

- “Ability to complete workflows in the office, rather than the field.”
- “Higher profit margins and increased inspection intervals.”
- “Storytelling from a different perspective.”
- “More efficient 3D design process.”
- “Improved what-if modeling and analysis.”
- “Breaks us into different markets.”
- “More accurate volumetric measurements.”

Reality capture is a no-brainer for big industries

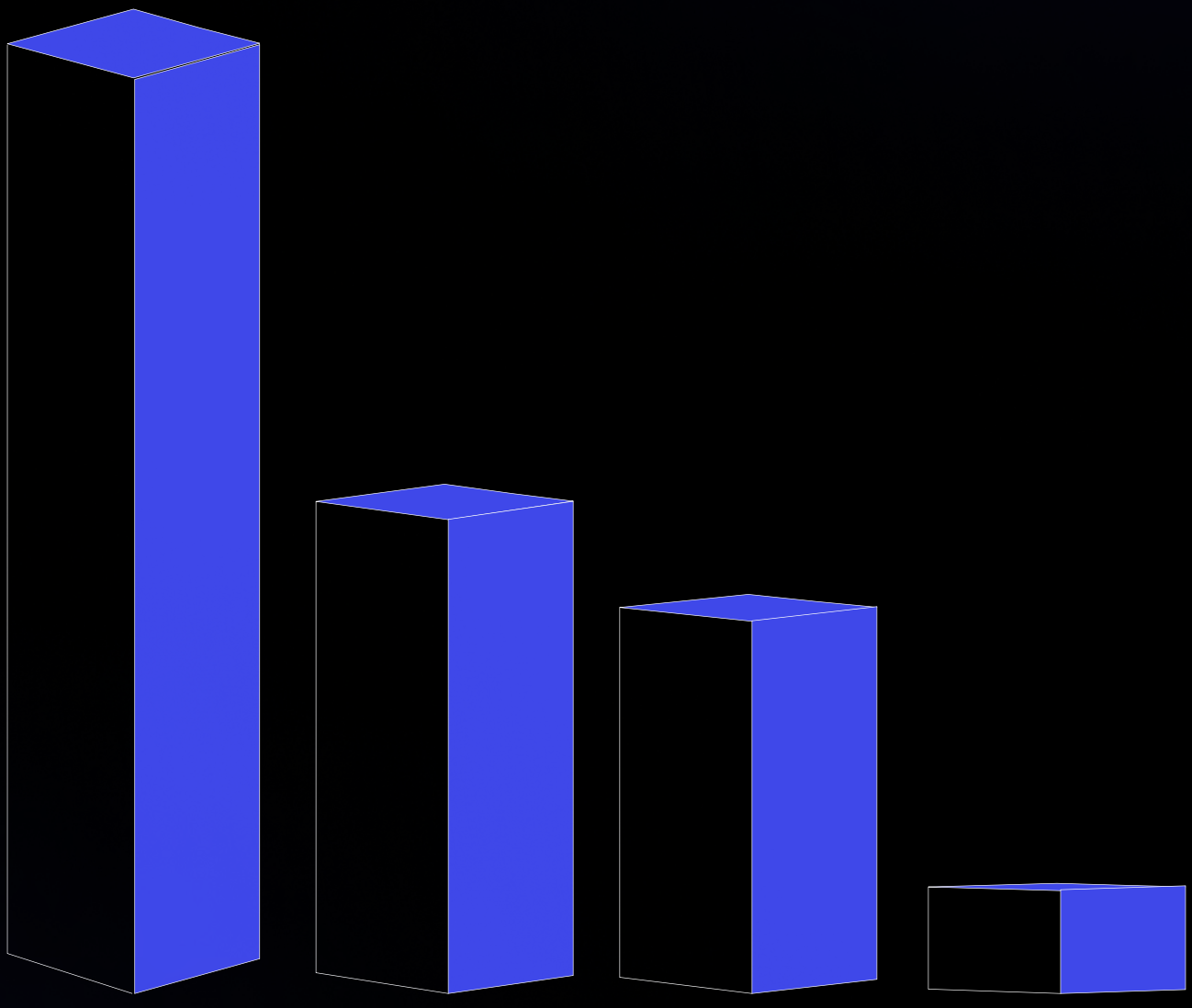
Half of big companies saved at least $50k with reality capture

86% of enterprise respondents estimated that in the past 12 months alone, **reality capture has saved their company at least $5k.** In the same time frame, 49% had saved 50k or more and a quarter (25%) saw savings of more than $100k.

Almost half (46%) of companies with 100 employees or more had saved between $10k and $100k.

96% of businesses are seeing returns from their investment in reality capture.

What returns have you seen from your investment in reality capture?



46%	29%	22%	4%
Measurable returns or benefits	Significant returns or benefits	Minor returns or benefits	No returns or benefits

What benefits are you seeing from reality capture?

77%	57%	56%	50%	46%	41%	33%	25%	12%
Better visibility of projects	Saving time and costs	Greater customer satisfaction	Improved stakeholder comms	Greater operational efficiency	Fewer manual inspections	Improved safety	Projects on time and budget	Reduced carbon footprint

Fragmented reality capture tech stacks are causing major pain

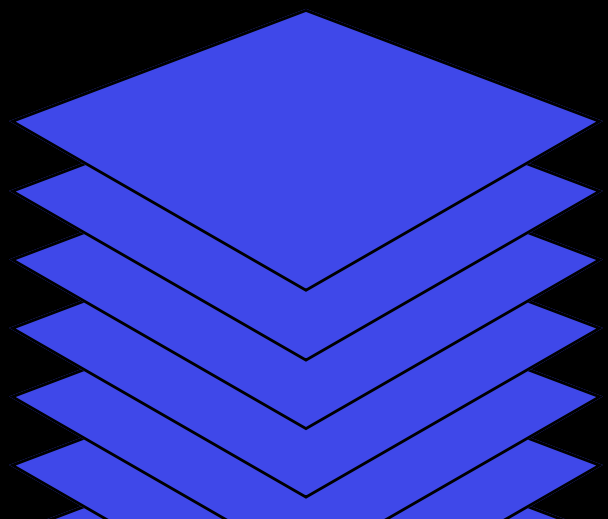
To achieve their goals through reality capture, businesses are looking for software that is accurate, automated and compatible with a range of hardware types. And having one reality capture platform is seen as vastly preferable to using multiple disparate systems.

Having a single reality capture platform is preferable

76% of enterprise businesses are using multiple point solutions for reality capture. But this is causing multiple headaches. These businesses complained of the following challenges:

- time spent switching between solutions (55%)
- the time or cost of training (41%)
- and being stuck with disparate or siloed data (38%).

They also commented on the cost per user adding up across multiple systems, struggles with account management, and differences in the quality of walkthrough data compared with drone flight data. It's clear that using one unified platform is preferable.



More tools, More problems.

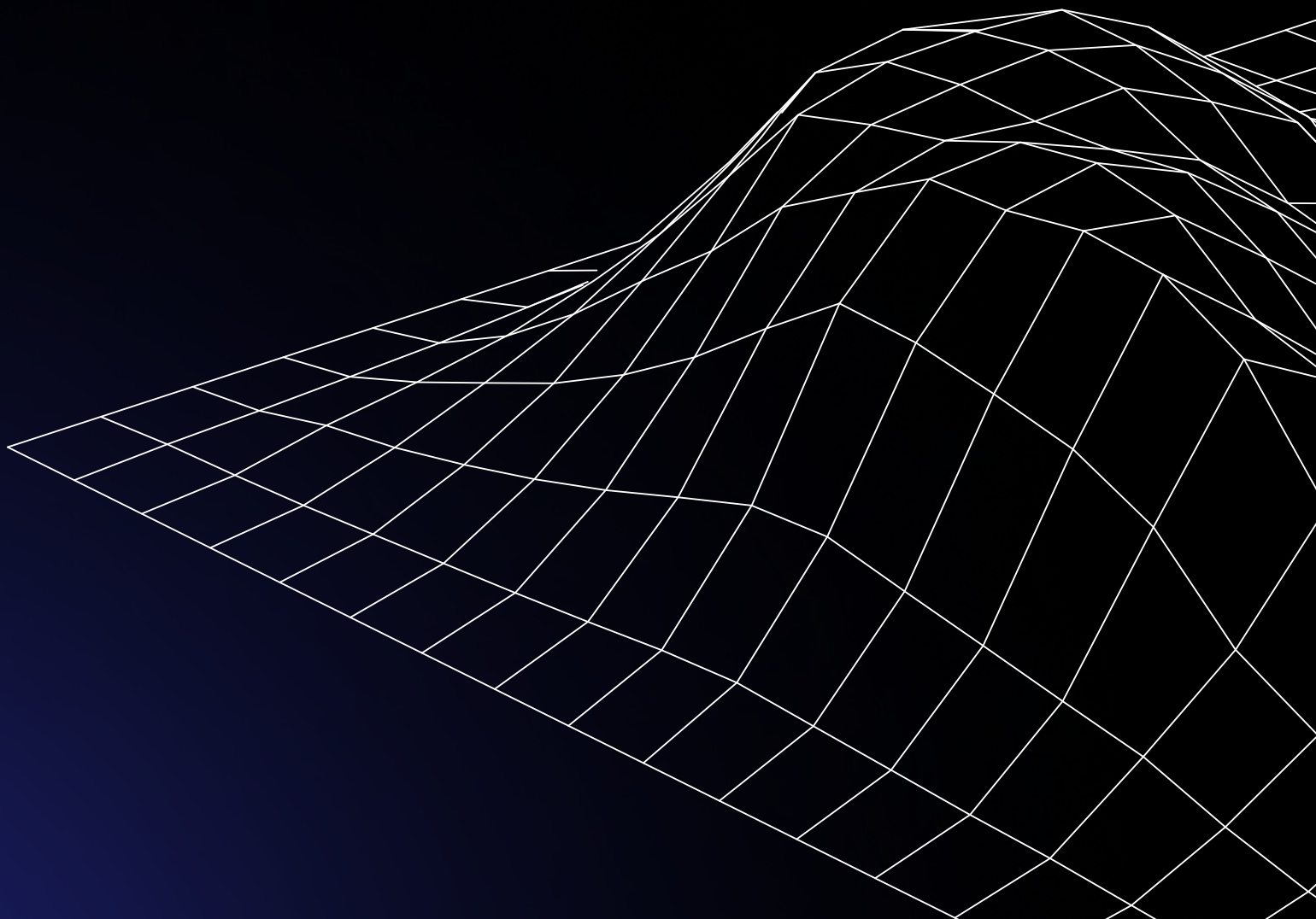
The true cost of reality capture point solutions

(and how to overcome them)

Download the guide ↗

Unsure of where to start

Here's how busin
are (actually) usi
reality capture



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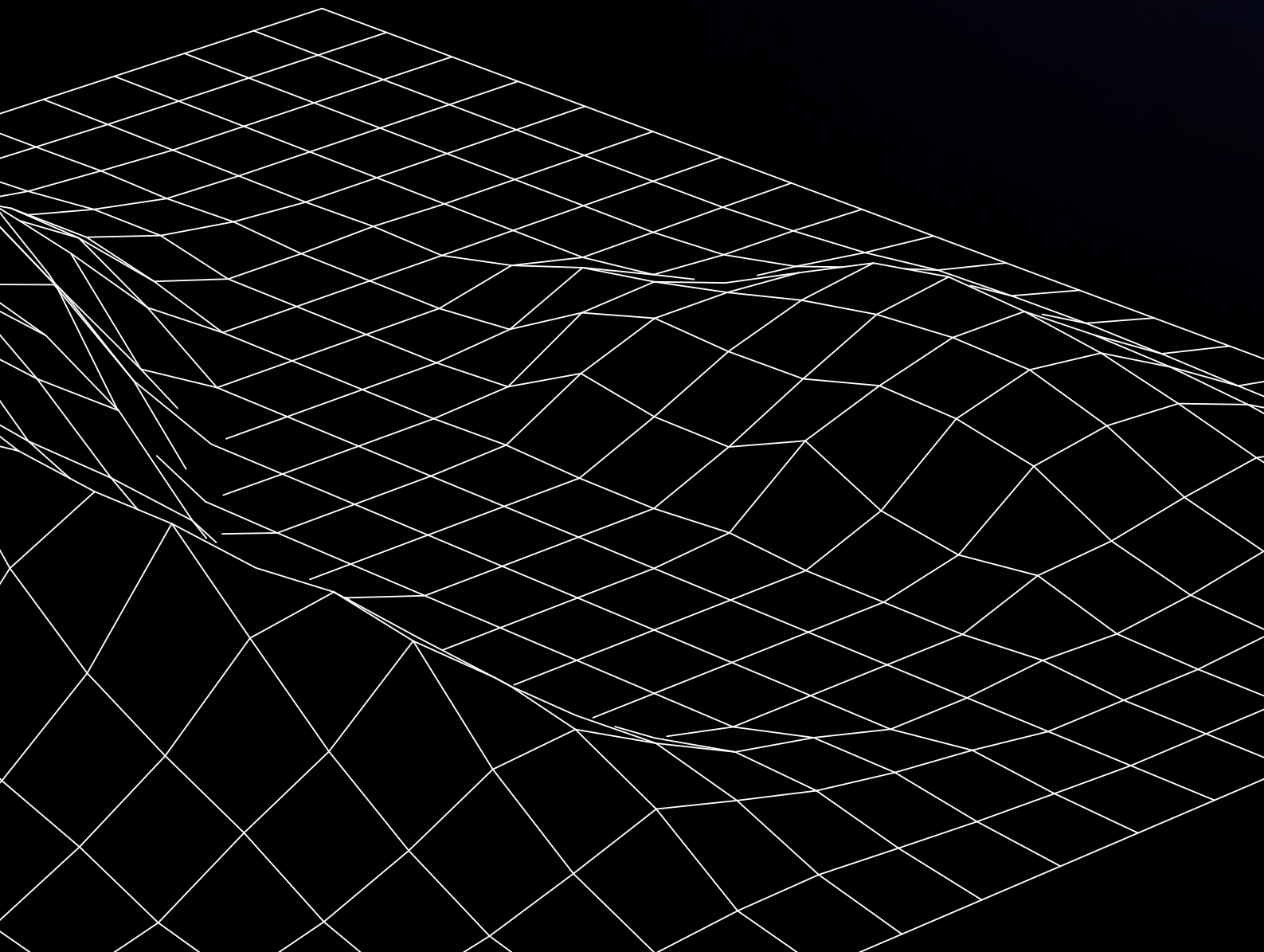


Top use cases for reality capture

From inspecting electrical equipment to measuring earthworks volumes, the uses for reality capture are diverse.

Businesses are using drones equipped with laser scanners, high-res cameras, thermal cameras and more to collect the information they need.

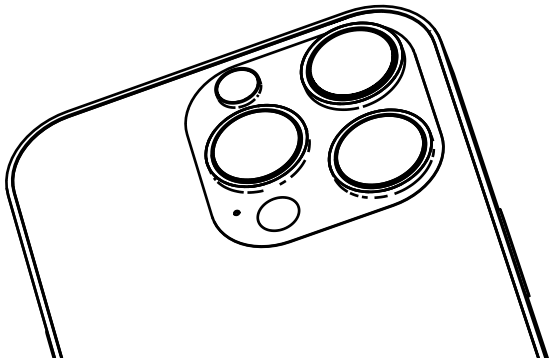
They're viewing this data in a range of formats including 3D models, photos, videos and orthomosaics, while also feeding it to internal systems and databases.

Respondents are using reality capture software for a wide range of purposes: most commonly to document sites (73%), track changes (58%), improve designs and planning (54%) and automate inspections (46%).

This reflects what we've heard from customers in our key industries. On construction sites, drones, robots and 360 cameras are being used for site documentation – achieving project tracking efficiency that could never be reached with handheld scanners or cameras.

In the oil and gas sector, robots and drones are being used for a wide range of use cases.

For example, some companies are using robots to automate regulatory inspections of assets and equipment, often in hazardous areas – improving worker safety and compliance.



Hard(ware) facts

Businesses are using a range of sensors and hardware to capture.

Top tools for capture

The vast majority of respondents (96%) are using drones to carry their cameras or sensors and capture data.

This is followed by mobile or handheld carrying (50%), tripods (32%) and fixed site cameras or sensors (19%)

Most popular sensors

The most popular tools for data capture include high-resolution cameras (100%), 360 cameras (56%), LiDAR / laser scanners (56%), RGB or PTZ cameras (50%) and thermal cameras (42%).

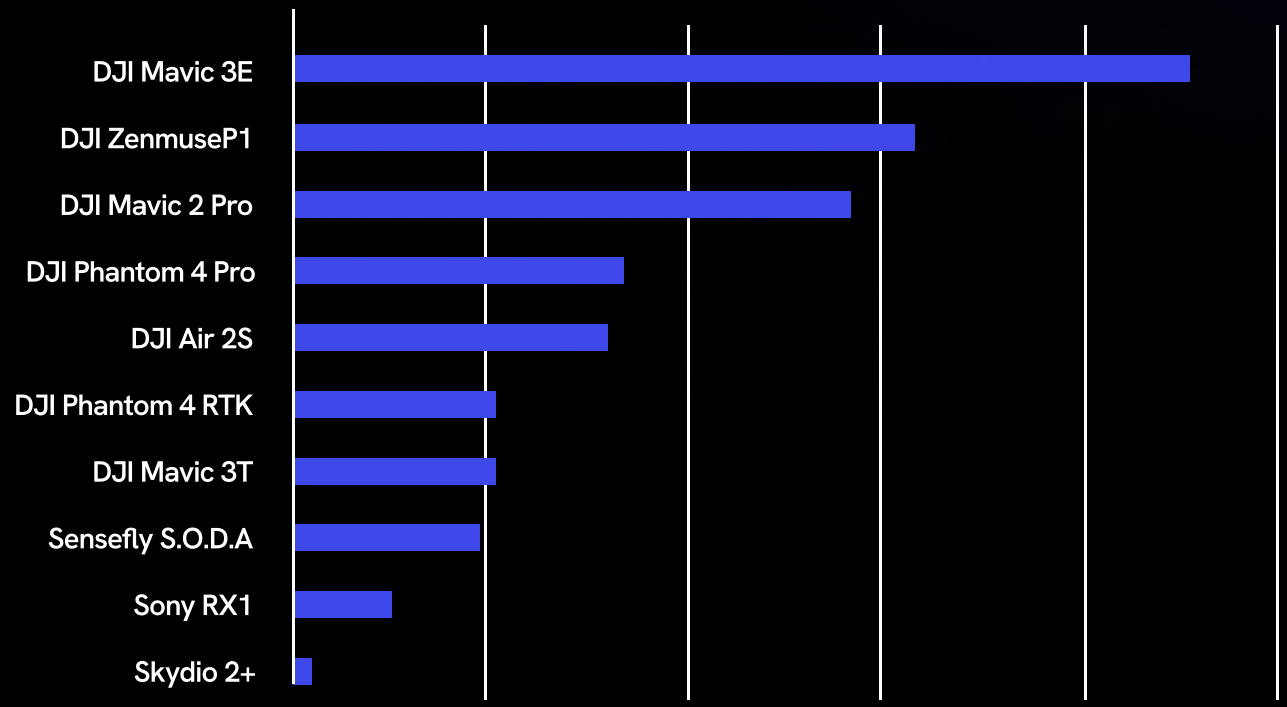
Who's doing the capturing?

While 69% of respondents are capturing data themselves, 14% are utilizing external service providers (e.g. outsourced drone flights or robots-as-a-service). 17% are using a hybrid model of in-house and third-party providers.

What we're seeing in DroneDeploy

Your most used hardware

Most popular drones and sensors



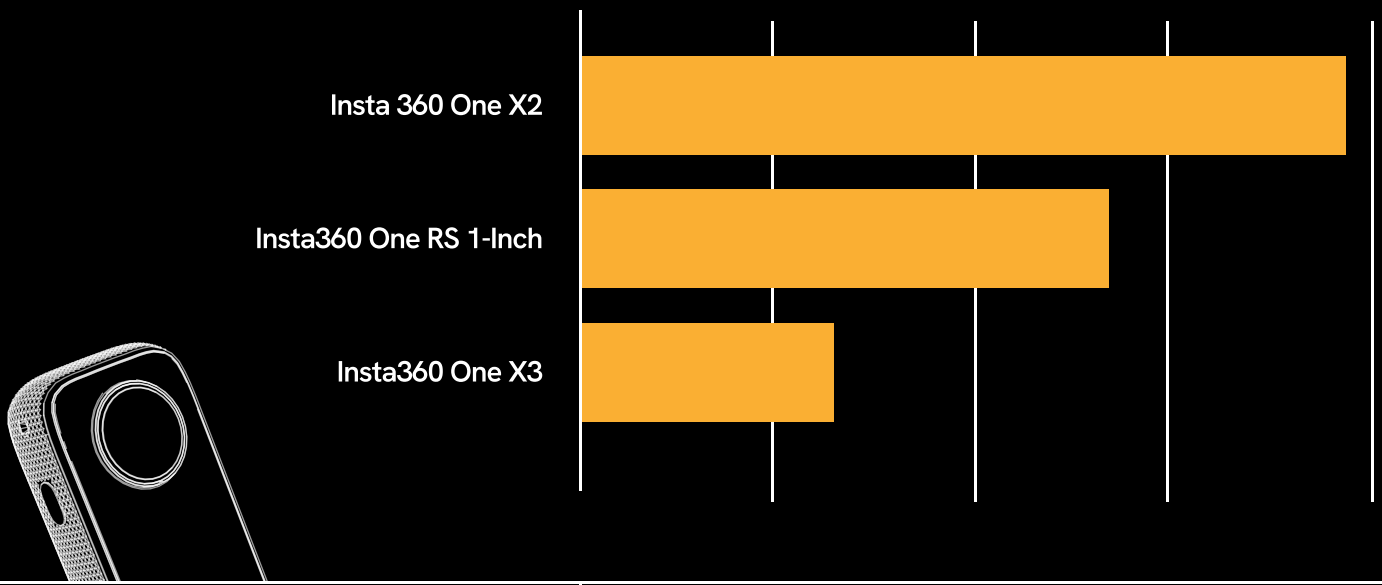
No drone? No problem.

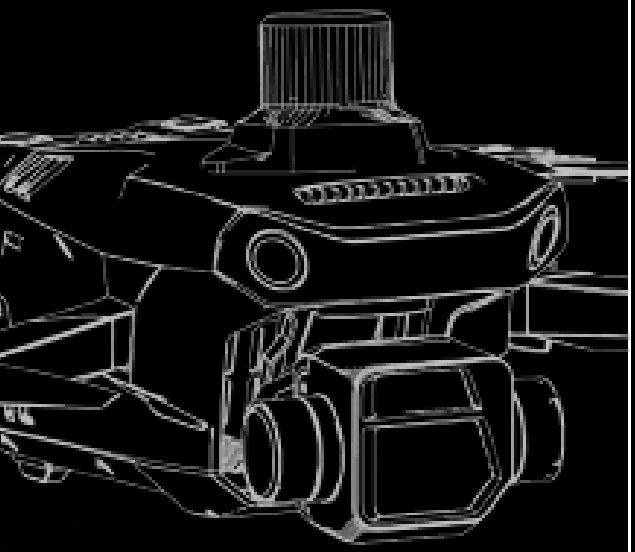
Don't worry about licenses, buying hardware or training pilots, our Professional Services team provides high accuracy without the hassle.

Get RTK data on demand.

Order a flight ↗

Most popular 360 cameras





3x high-accuracy flights

- We're seeing an increase in high-accuracy maps being processed in DroneDeploy.
- DroneDeploy's 0-step PPK workflow is empowering more users to tap into high-accuracy mapping.

BUT 56% of M3E RTK users aren't using the RTK module

Only 46% of M3E RTK users are using their RTK module and taking advantage of DroneDeploy's 0-step PPK workflow.

Start mapping with RTK ↗

Where the data goes... and how it's analyzed

It's not just important how you capture data, but what you do with it. To achieve their strategic goals, businesses are feeding reality capture to a range of important internal workflows and systems, including project management systems (67%), document management (38%), takeoff or estimating (35%) and BIM coordination (33%).

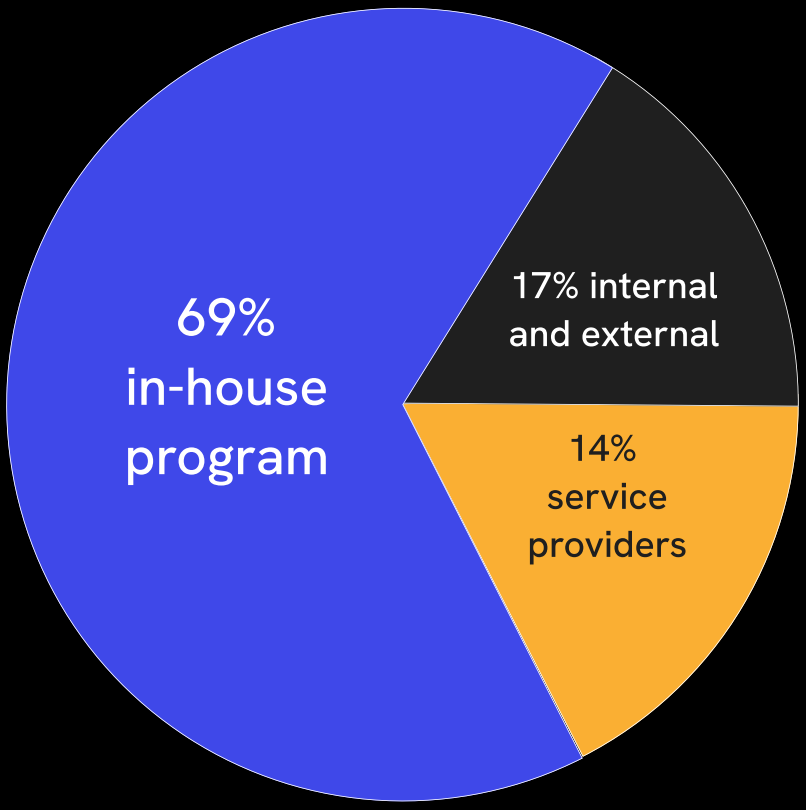
To analyze their business environments, respondents are also viewing reality capture data in a range of different types and formats, including:

- **3D models** (87%)
- **photos** (74%)
- **2D orthomosaics** (72%)
- **videos** (53%).

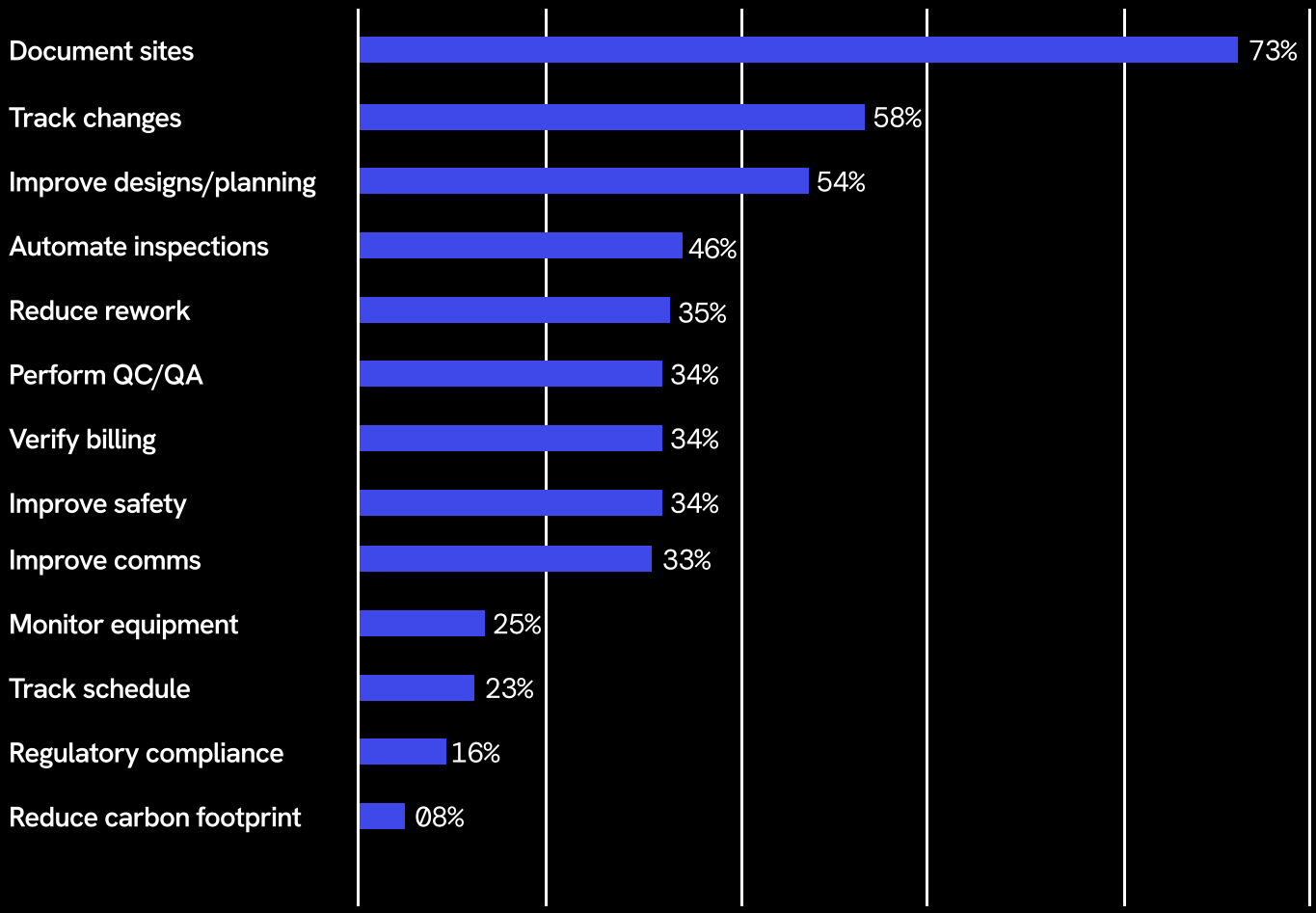
All of these data types can be generated, viewed and analyzed in the DroneDeploy platform.

73% of businesses using reality capture software are using it to document sites.

How is your business obtaining reality capture data?

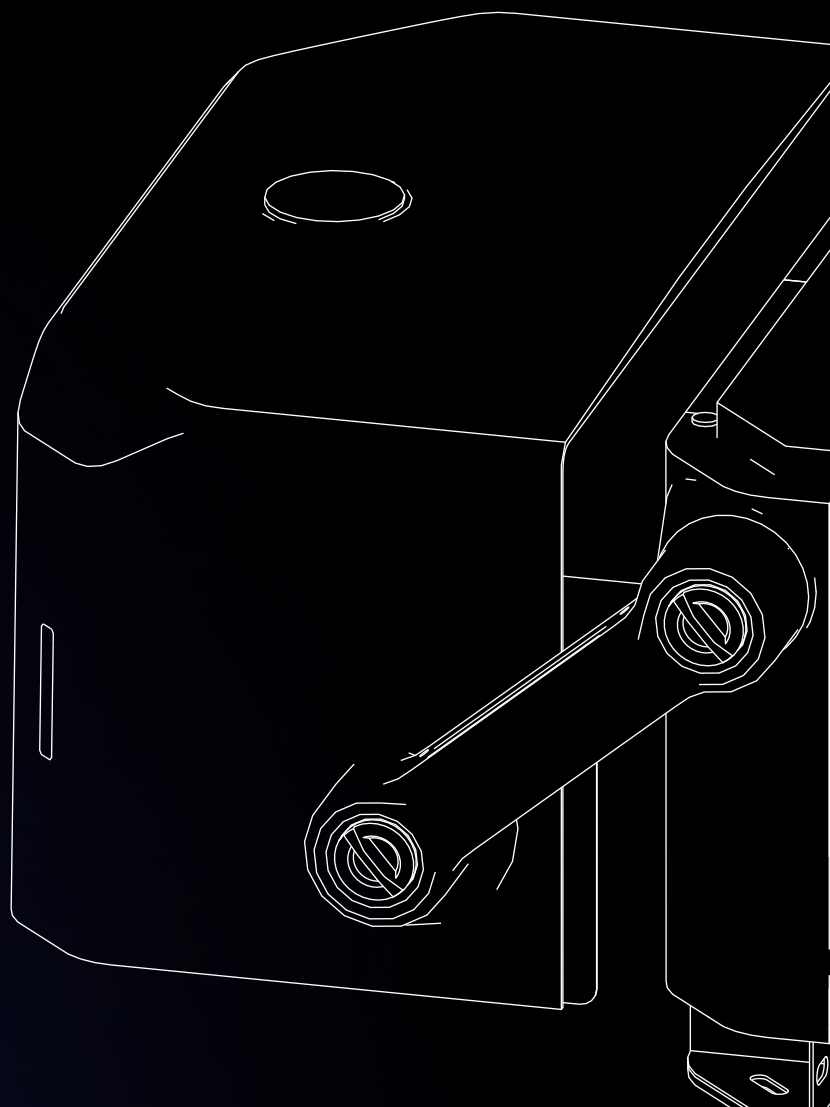


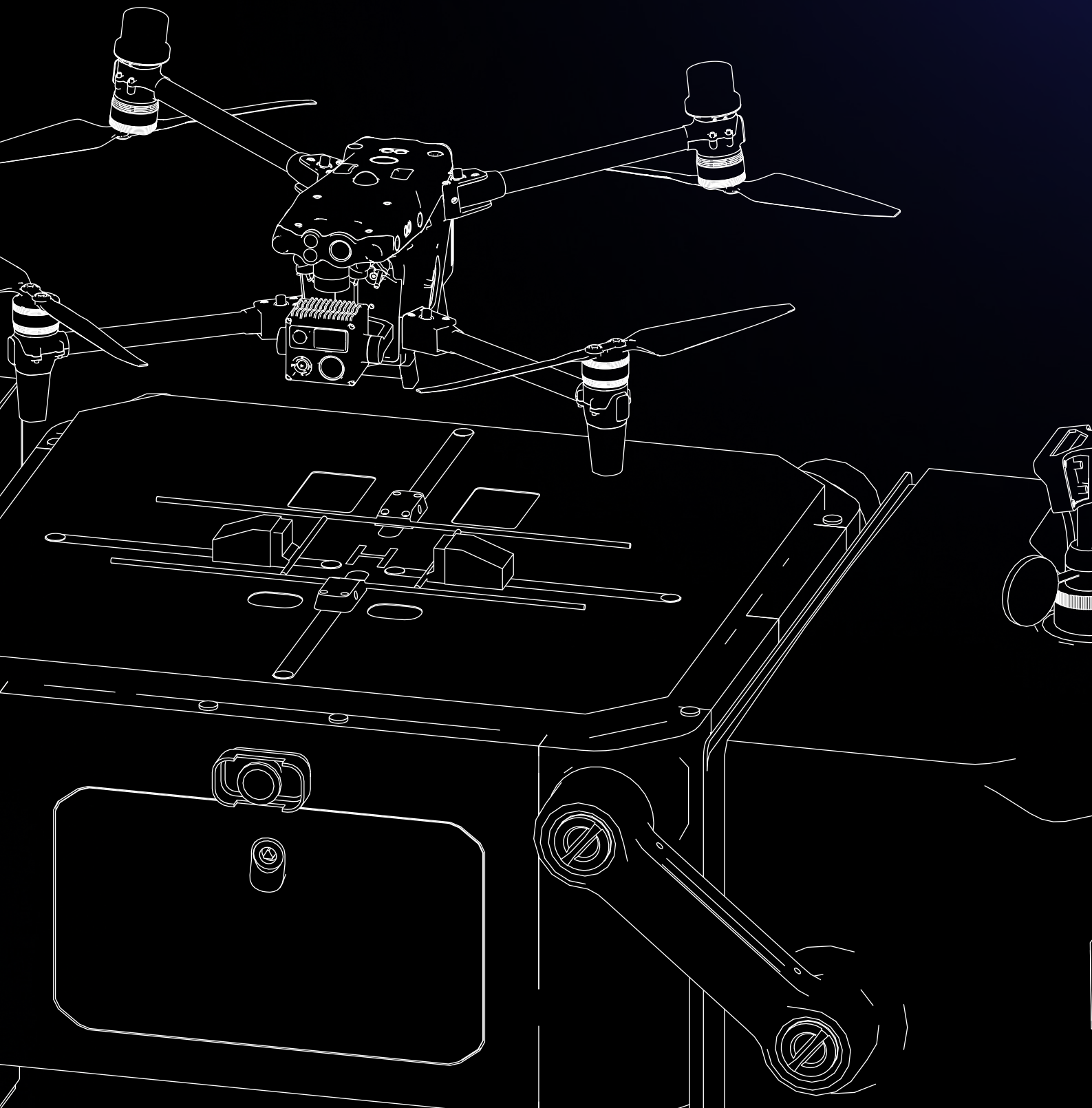
My business is using reality capture to:



What's next?

The future of reality capture



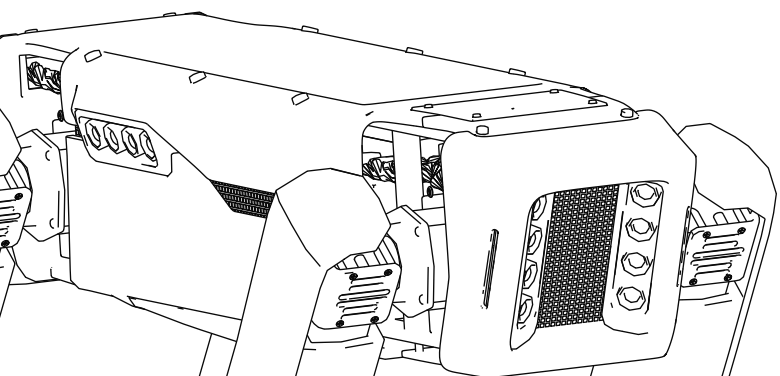


Businesses are optimistic about the future of reality capture

The majority of businesses are planning to increase their reality capture spending. Many think that reality capture software will become mission-critical to companies in their industry within the next five years, along with closely related technologies such as drones, LiDAR, artificial intelligence and machine learning.

Investment in reality capture will rise

Some 62% of businesses plan to spend more on reality capture in 2024. And 34% expect to continue their current spend. Only 4% expect their spending on reality capture to decrease in 2024.



Robots are on everyone's radars (and sites)

Robots are becoming sophisticated and reliable tools for conducting automated inspections. Models like Spot from Boston Dynamics can be equipped with heavy payloads and used to document building interiors and large sites from a ground perspective, or to inspect assets.

The technology is still relatively new, and only 8% of enterprise businesses surveyed are currently using robots for reality capture. However, 30% of businesses are planning to within the next five years, and 10% plan to in the next 12 months. The hardware is getting more reliable and accessible every year, and we expect these figures to rise in subsequent reports.

31%

of businesses plan to use robots in the next 5 years

Many are planning to use docked drones

Docked drones are also poised to shape the future of reality capture. They offer all the benefits of normal drones with increased automation capabilities.

They can be left on site to charge themselves – there's no need for manually swapping batteries or SD cards. And they enable operators to monitor multiple flights and sites simultaneously.

With the recent drops in hardware prices, barriers to entry are quickly breaking down. In 2020, some docked drone solutions cost $250,000, but you can now buy a DJI Dock for around $30,000.

This was reflected in our survey. 16% of businesses surveyed are currently using or trialing docked drones. And over half are planning to – 16% will in the next year, and 42% plan to within the next five years.

Looking ahead two years...

Some 92% of businesses think that reality capture technology will be in more widespread use than it is today. 16% think it will be ubiquitous, or present everywhere.

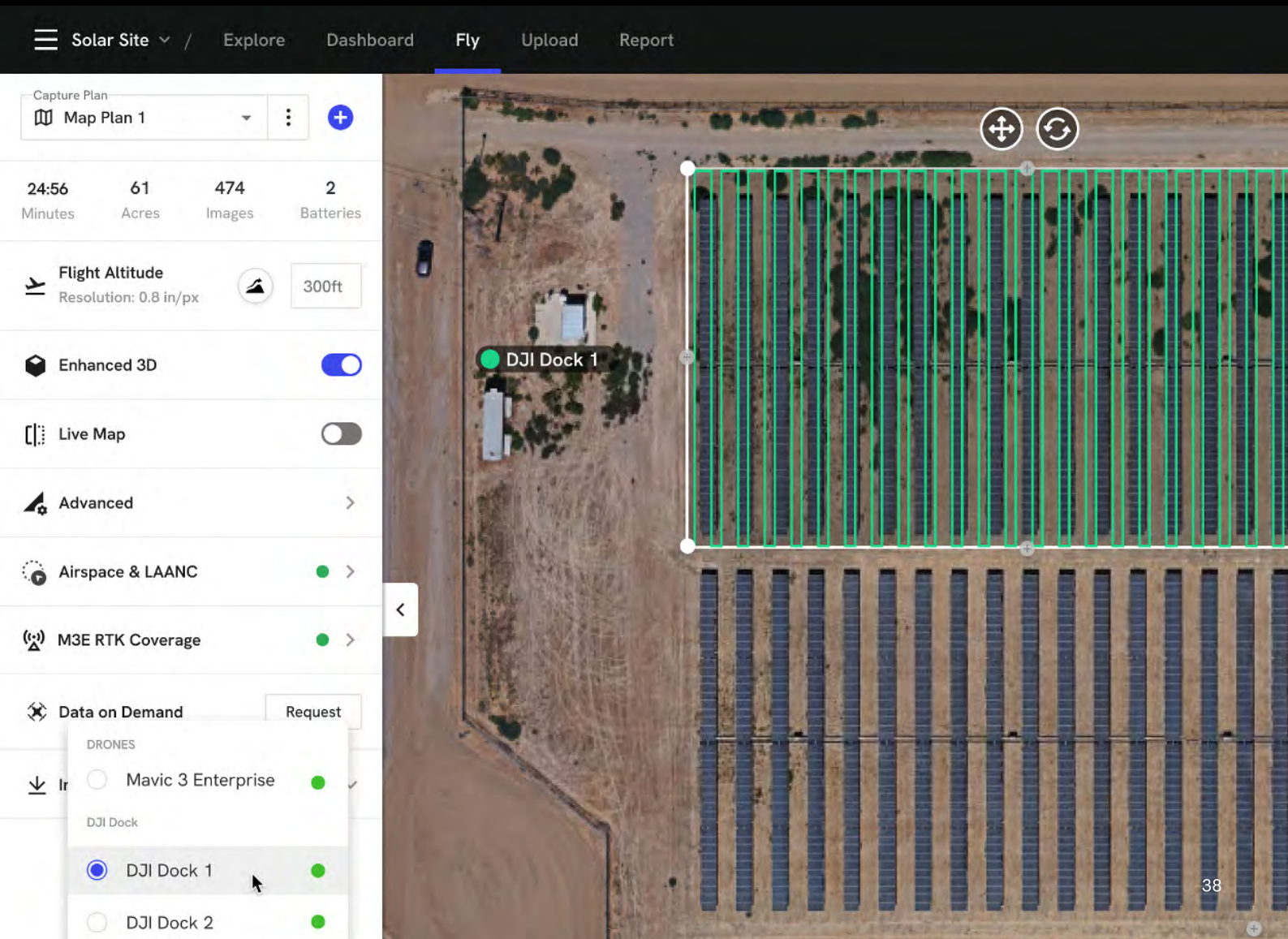
Larger companies are even more optimistic

21% with over 100 employees think it will be ubiquitous in two years.

Looking ahead five years...

Businesses that still aren't using reality capture will be on the back foot. 92% think that in five years, reality capture will be key to staying competitive in their industry.

Specific tools are also going to become increasingly important. 81% think that in five years, drones will have become a mission-critical tool in their industry. Over half think the same about LiDAR (55%) and AI or machine learning (54%).



92%

of companies predict reality capture tech will be key to staying competitive in their industry

The future of reality capture is automated

Demand for automated reality capture is growing thanks to aerial and ground robots' ability to collect data conveniently and safely on a predictable schedule.

But all this data is useless if it has to be processed by human eyes alone. Which is why businesses in the world's biggest industries are increasingly looking to artificial intelligence and machine learning to help them process and make sense of the data they have collected.

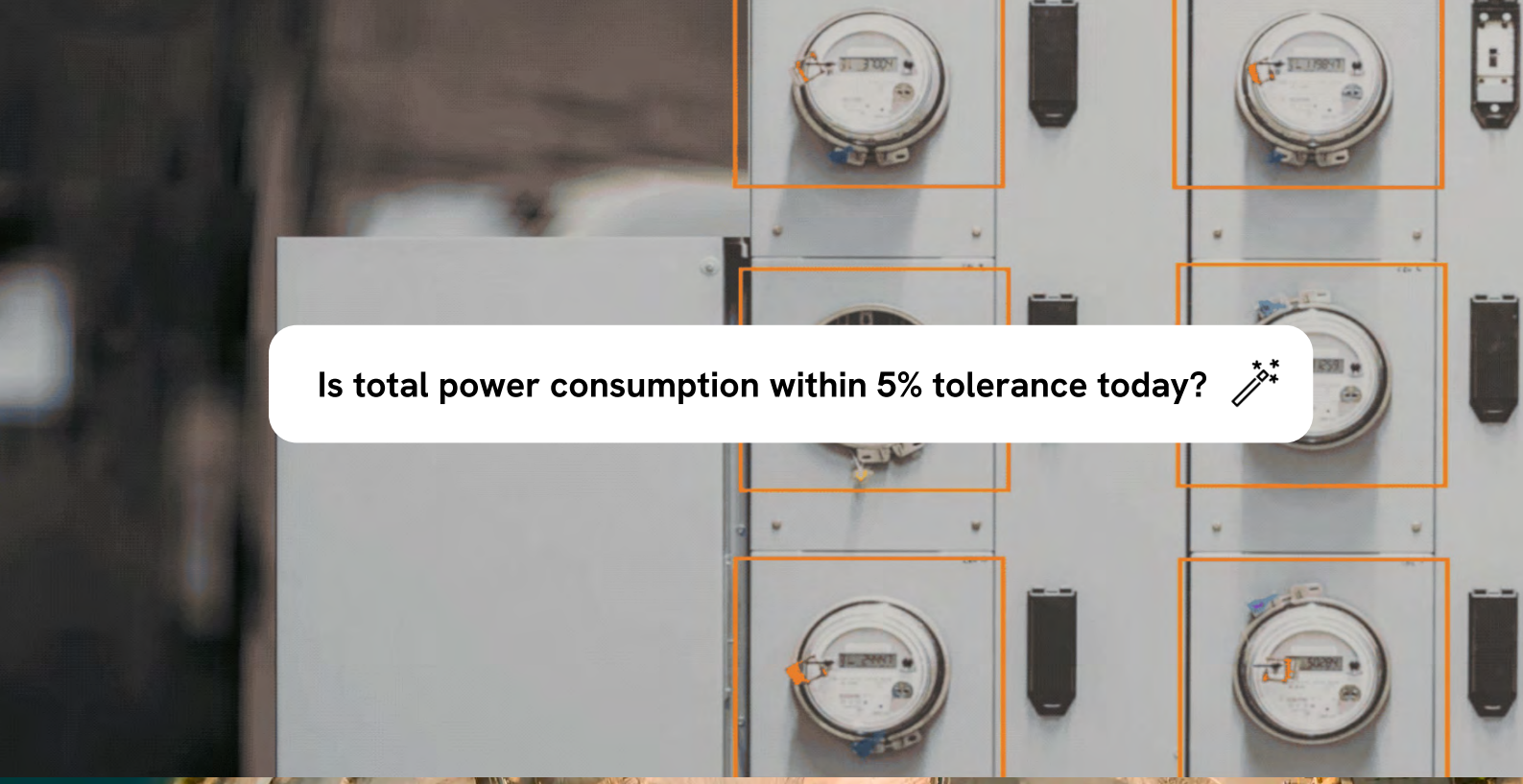
The DroneDeploy vision

Reality capture will become increasingly more:

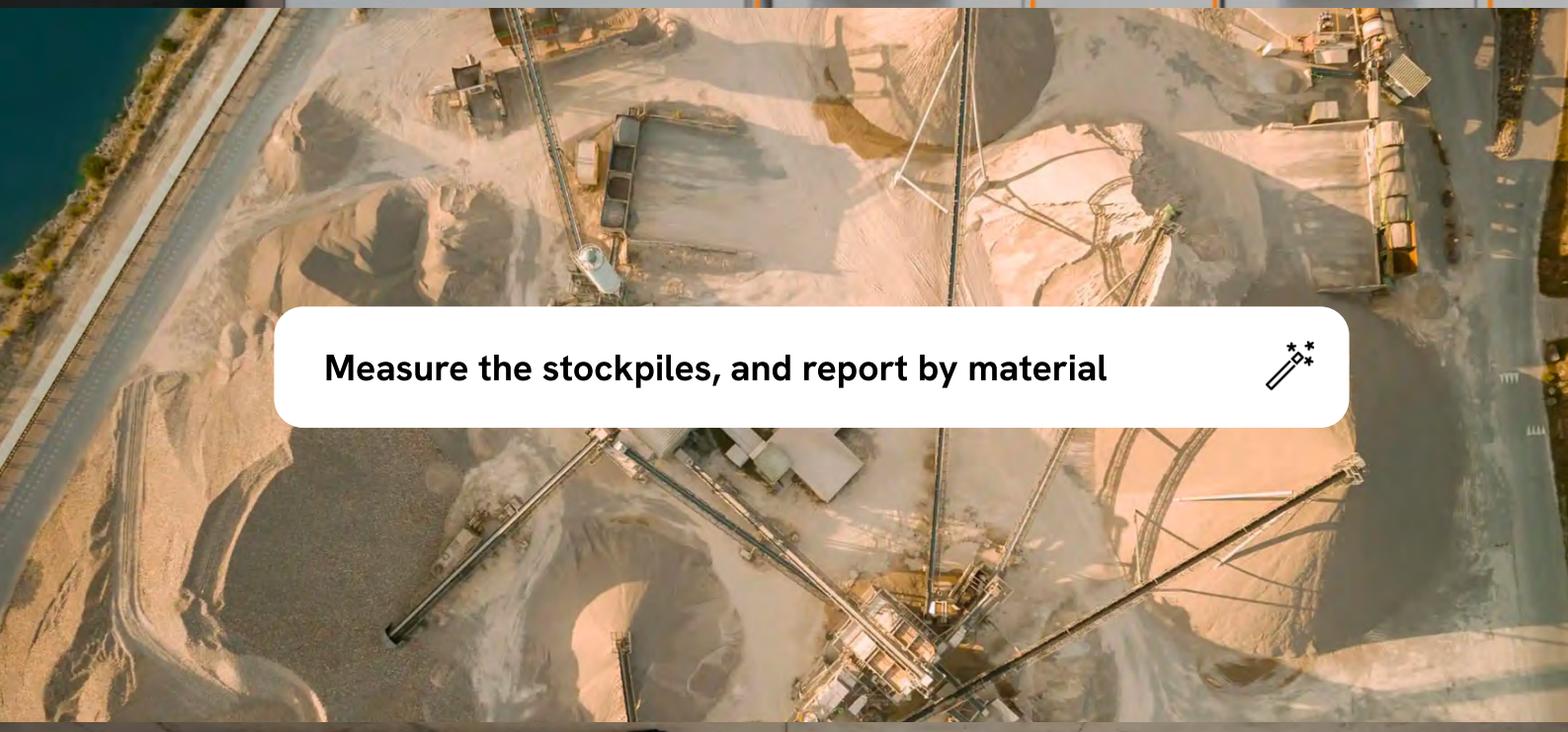
- **Unified:** All data – from drones, robots, 360 cameras or smartphones – will be managed in a single platform.
- **Automated:** Robots and docked drones will collect this data autonomously and push it to where it needs to be.
- **Intelligent:** AI will be used to analyze this data and drive smarter business decision making.

54%

predict AI will become increasingly important in reality capture



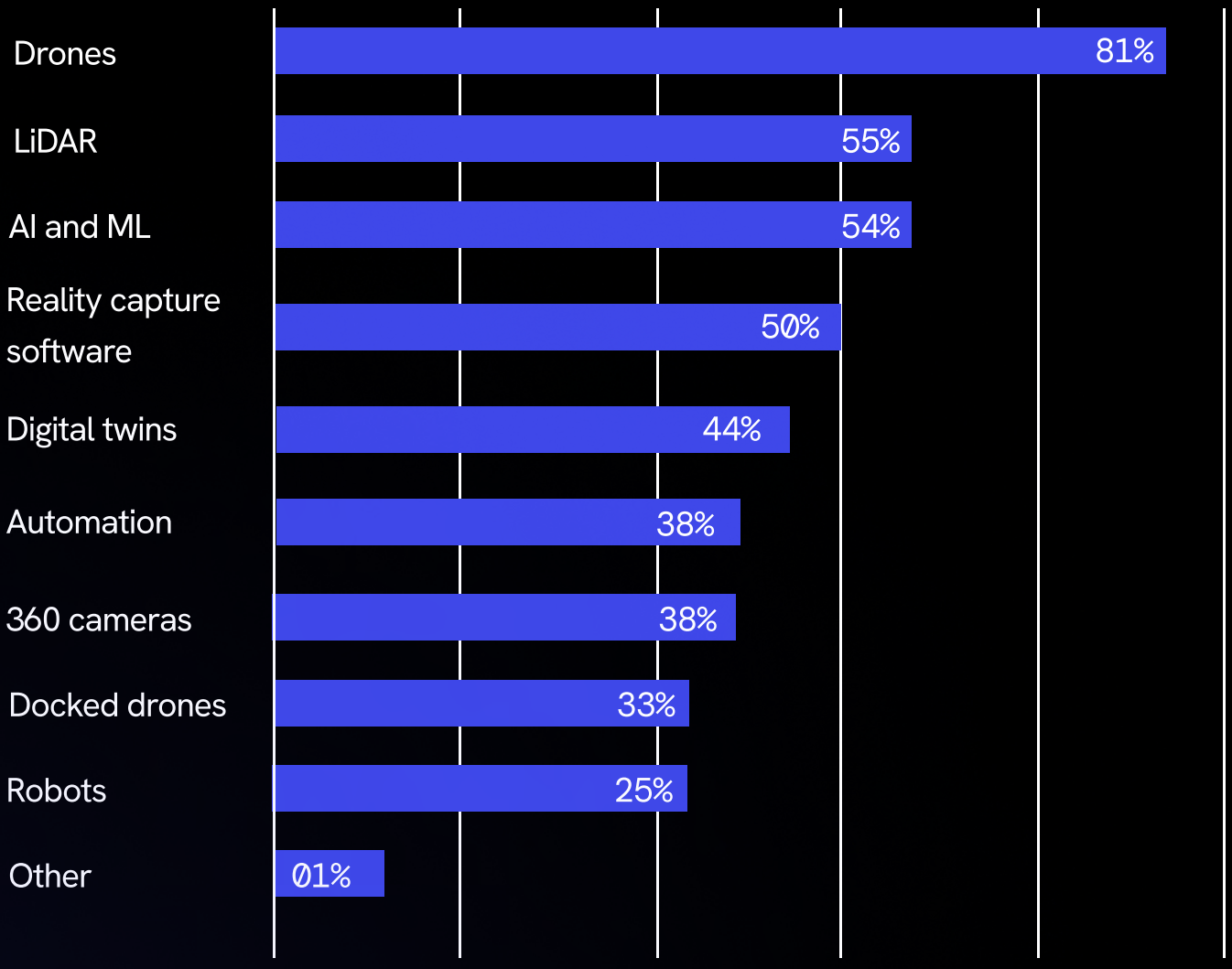
Is total power consumption within 5% tolerance today?



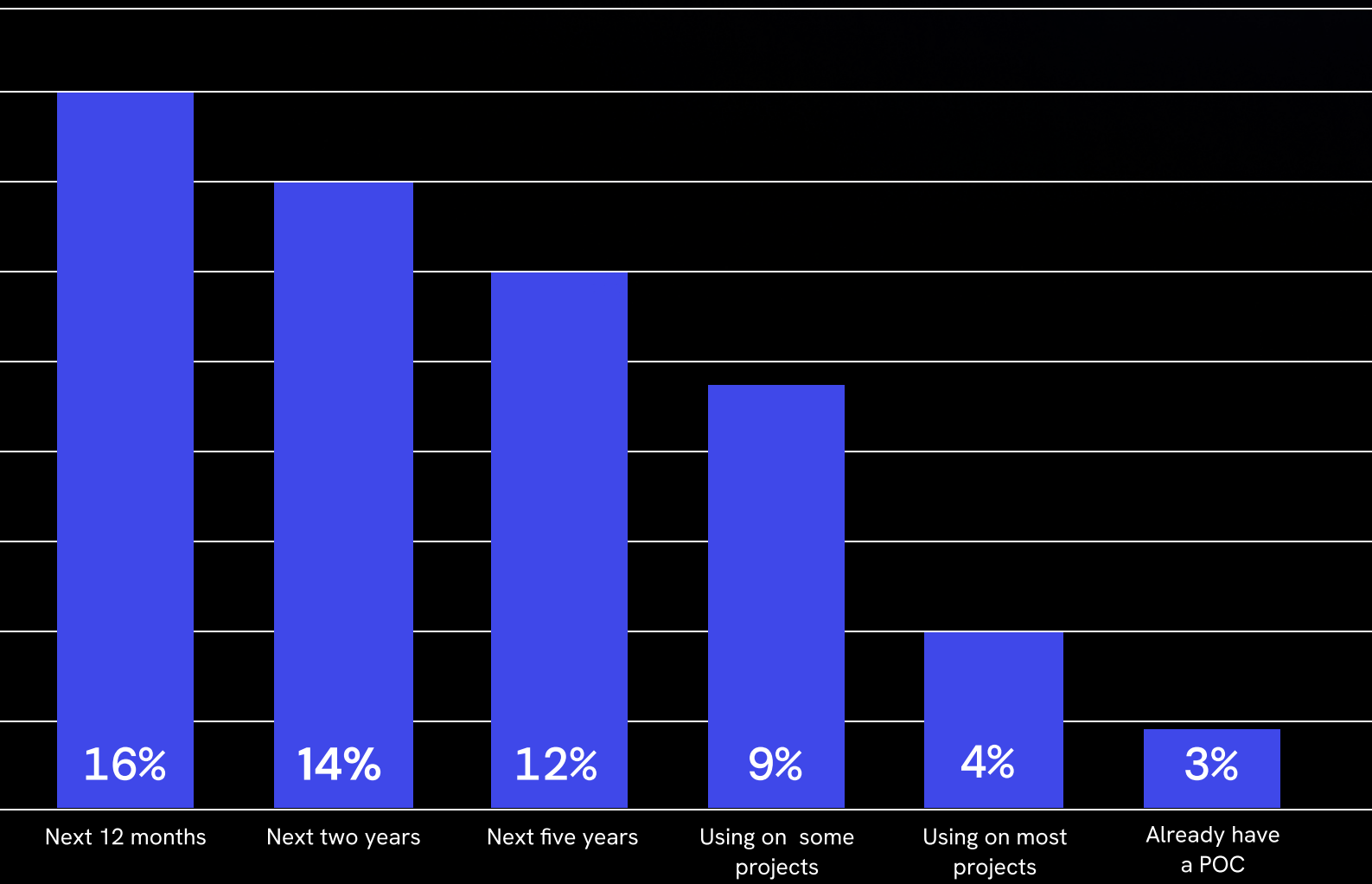
Measure the stockpiles, and report by material

Conduct a floor flatness analysis & show heatmap

In five years, which technologies do you predict will be mission critical to your industry?

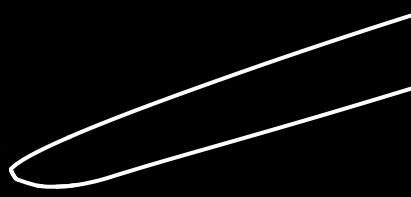


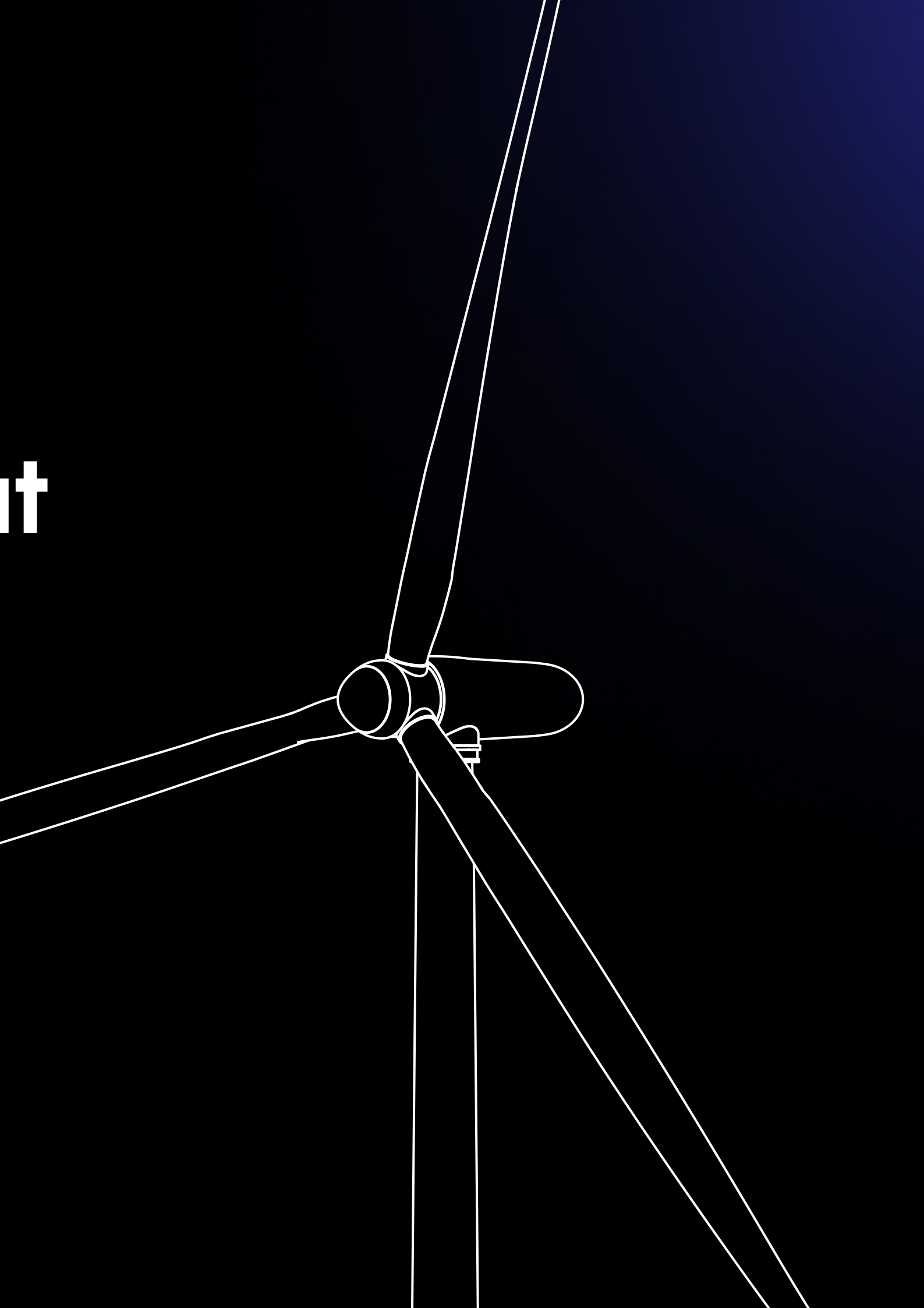
My organization is planning to automate data capture using docked drones or "drone in a box":



A deep dive

The industries tha power, feed and build our world





Reality capture in the construction industry

The state of reality capture is even more positive for architecture, engineering and construction (AEC) companies. They're using it more than other sectors and seeing bigger financial gains. From pre-con to close-out, reality capture is invaluable for tracking progress on jobsites and sharing virtual walkthroughs with teams. But having all that data in one platform is critical.

AEC is using reality capture more than other sectors

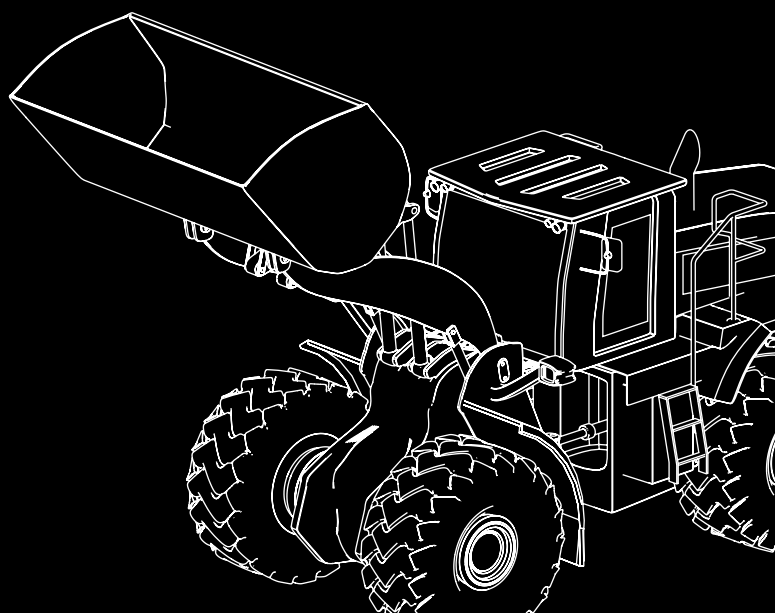
75% of enterprise AEC respondents said their business is using reality capture software, compared to 60% across all sectors.

21% of AEC companies aren't yet, but are planning to. Only 4% have no plans to use reality capture.

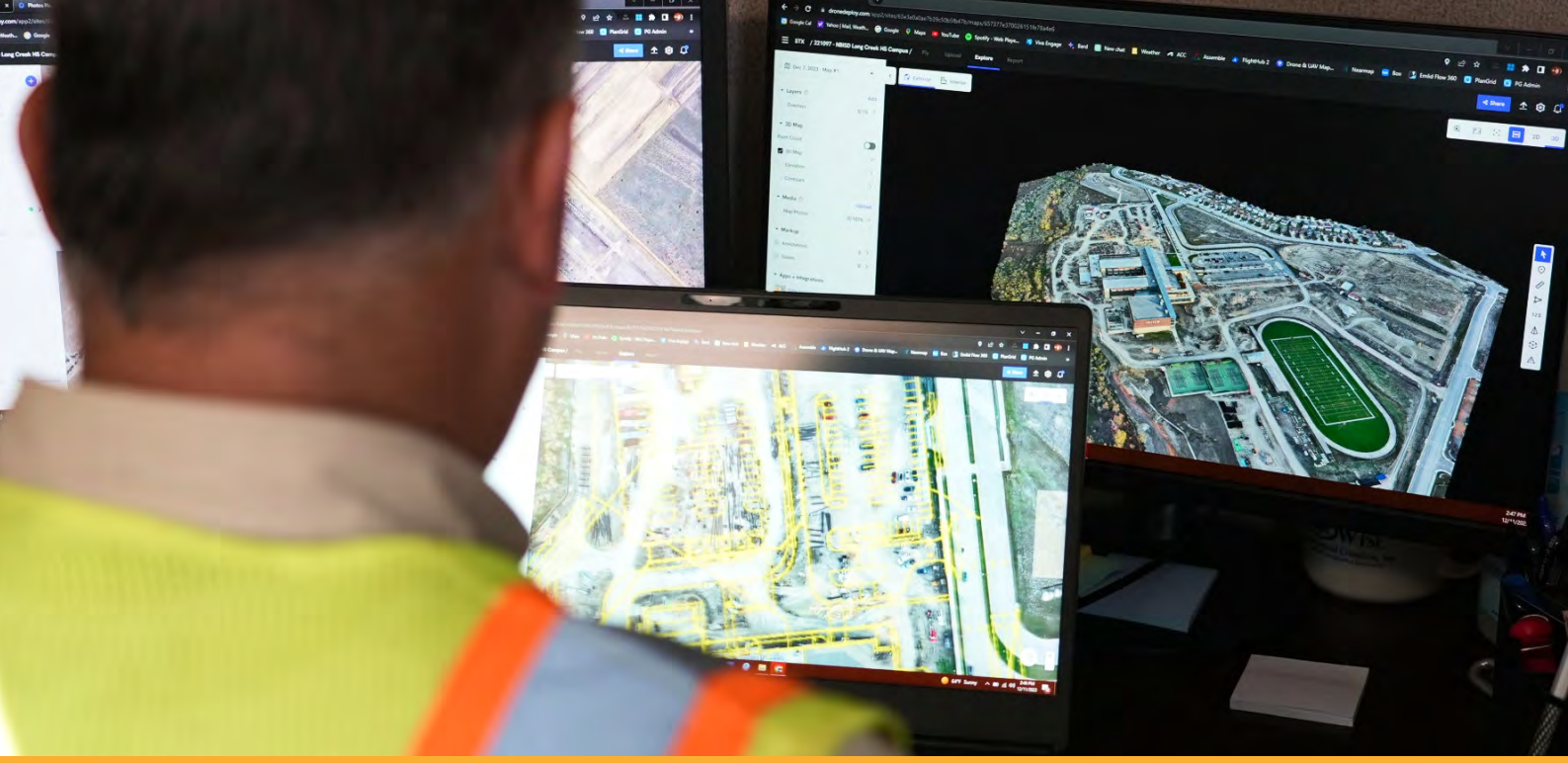
Their investment in reality capture is paying off. 97% of AEC respondents are seeing returns or benefits from their investment in reality capture. 32% are seeing significant returns or benefits.

They're seeing major financial gains

AEC companies are more likely than other sectors to be seeing major financial returns. 84% of enteprise AEC respondents estimated that in the past 12 months alone, reality capture has saved their company at least $5k. In the same time frame, 78% said they had saved $10k or more, 57% had saved $50k or more and 33% saved over $100k.




97% of AEC businesses are seeing returns from their investment in reality capture



> **Having all that data in a single platform, having a single source of truth...it's the holy grail for the industry.**
>
> Gary Chapman, VDC Regional Manager | Turner

Having a unified platform is critical

As reality capture enthusiasts, enterprise AEC companies are more likely to be using multiple point solutions for reality capture (81%, compared to 76% across all sectors) – and dealing with the headaches that come with this.

The acquisition of StructionSite by DroneDeploy will go a long way towards alleviating these problems for AEC customers. Users can now manage and access ground, walkthrough and aerial data capture in a single intuitive platform.

And they're planning to scale up

Enterprise AEC companies are slightly more likely to be planning to increase their spend on reality capture in 2024 (66%), compared to 60% of companies across all sectors.

The Reality Capture Playbook:

Construction Edition

A free resource that walks you through critical milestones to capture the project lifecycle. Learn how DroneDeploy is used to document each phase of construction using the latest drones, 360 and robotic hardware. Find out how our customers have built unique workflows for their projects involving scheduling, change management, QA/QC and more.

Get the playbook ↗

Reality capture for oil and gas

Oil and gas (O&G) companies are the most likely of all sectors to be reaping major financial returns from their investment. They're using reality capture for tasks such as improving planning and monitoring equipment and asset integrity. Automation is a big priority for O&G, and they're actively exploring the potential of ground robots and docked drones to speed up and streamline the inspections of sites and equipment.

O&G companies are reaping the biggest financial benefits

100% of O&G respondents are seeing returns or benefits from their investment in reality capture, compared to 96% of respondents across all sectors. 30% of O&G respondents are seeing significant returns or benefits.

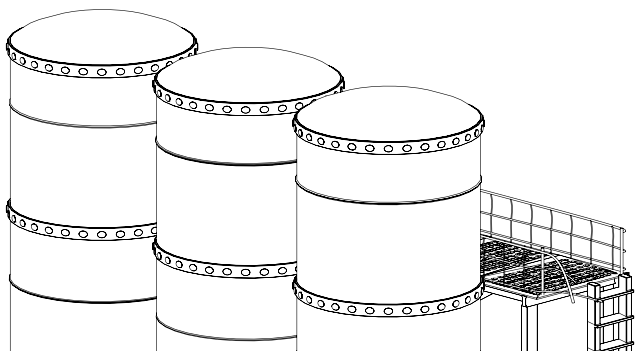
Of all sectors, O&G businesses were the most likely to be seeing major financial returns. 100% of enterprise O&G respondents estimated that in the past 12 months, reality capture saved their company $5k or more, compared to 76% across all sectors.

In the same time frame, 88% of O&G companies said they had saved $50k or more. 22% of O&G companies had saved over $1m in just one year.

Big O&G companies are more likely to be using reality capture

Enterprise O&G businesses are more likely to be using reality capture software. 60% said their business is using reality capture software, compared to 46% of O&G companies of all sizes. And the remaining 40% of enterprise O&G companies plan to, underlining the importance of reality capture to this critical sector.

The top three uses for reality capture in the O&G sector were to: document sites (80%), improve designs and/or planning (65%) and monitor equipment or asset integrity (60%).



Automation is a top priority for oil and gas

The potential impact of ground robots and docked drones is significant in the O&G sector. These tools are invaluable for inspecting hazardous areas, monitoring asset integrity, improving visibility of remote sites and keeping human workers out of harm's way.

At present, 5% of O&G companies are already using or trialing ground robots. However, 53% plan to within the next five years (compared with 31% across all sectors). 7% plan to use ground robots within the next 12 months.

Compared to other sectors, O&G companies are moving significantly faster towards docked drone solutions. 21% are already using or trialing docked drones (compared to 16% across all sectors). 51% of O&G businesses plan to use docked drones within the next five years, and 19% plan to within the next year (compared to 42% and 16% respectively across all sectors).

67% of O&G businesses said that in the past year alone, reality capture had saved their company $50K or more

They're optimistic about the future

72% of O&G companies expect their spending on reality capture to increase in 2024, compared to 60% across all sectors.

The majority of O&G companies (91%) think that in five years, reality capture technology will be key to staying competitive in their industry.

Woodside amplifies asset inspections with robotics

Discover how Australia's largest O&G company collaborated with DroneDeploy to utilize robots to transform the way they perform asset inspections.

Find out more ↗

The Reality Capture Playbook:

Oil and Gas Edition

A free resource that explains how DroneDeploy can be used to inform operations at every stage of the oil and gas lifecycle – from exploration, construction and O&M through to asset succession planning, conservation and reclamation. You'll also learn how to harness docked drones and robotics to automate inspections, saving time and maintenance costs.

Get the playbook ↗

Reality capture for renewable energy

Renewable energy companies are using reality capture to improve the design and planning of projects like utility-scale solar sites, improve site documentation and automate inspections of solar assets. They're more likely to experience moderate annual returns than other sectors. And they're actively exploring the potential of ground robotics to enable further automation and improve visibility of remote sites.

Adoption is similar to all sectors

The renewable energy sector is adopting reality capture at a similar rate to other sectors. 45% of enterprise renewable energy companies said their business is using reality capture software, and 36% are planning to. Only 18% have no plans to use reality capture.

They're more likely to experience moderate returns

95% of renewable energy respondents are seeing returns or benefits from their investment in reality capture. 33% are seeing significant returns or benefits.

Renewable energy companies were more likely than most sectors to report minor to medium financial returns from reality capture, and less likely to report major financial returns – suggesting that projects are smaller in scale.

86% of renewable energy companies estimated that in the past 12 months, reality capture saved their company $5k or more, compared to 72% across all sectors. In the same time frame, 57% of renewable energy companies said they had saved $10k or more (compared to 53% across all sectors), and 29% had saved $50k or more (compared to 32% across all sectors). In terms of spending, over half (56%) of renewable energy companies plan to maintain their current spending on reality capture. 45% are planning to increase their spending.


95% of
renewable
energy
companies are
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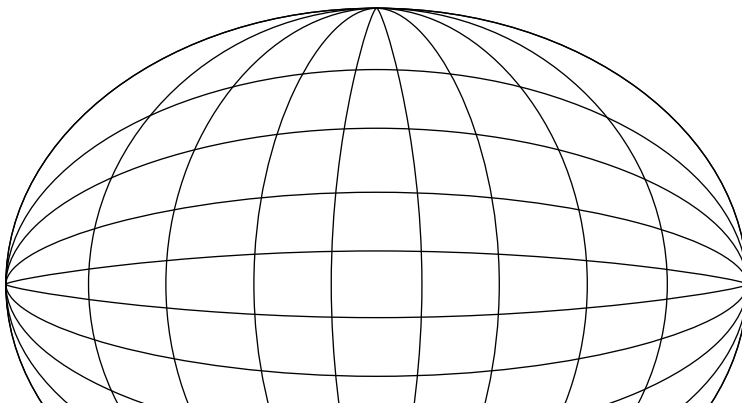
in reality capture.

They’re moving faster on robotics

Renewable energy companies are exploring the potential of ground robots and docked drones somewhat more actively than other sectors.

7% of renewable energy companies say they’re already using or trialing ground robots, compared to 4% across all sectors. And 14% of renewable energy companies plan to use robots in the next 12 months, compared to 10% across all sectors.

The potential gains from ground robots in renewable energy are huge, as the remoteness of sites and harsh weather conditions amplify the benefits of automation. Robots can be left on-site to perform inspections, reducing the need for travel and boots on the ground.

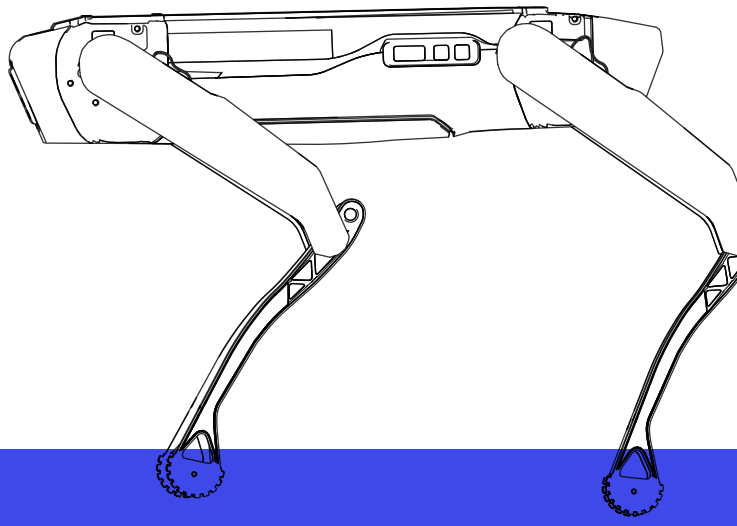


Building and monitoring solar farms

Renewable energy companies are primarily using reality capture technology to: improve designs and planning (64%), automate inspections (59%) and document sites (55%).

This reflects what we've heard from DroneDeploy customers in the solar industry. The construction of utility-scale solar farms is a major undertaking, involving extremely large and remote sites. Drones are invaluable in tracking progress and reducing the risk of rework.

Once solar sites are built, robots can be used to quickly scan solar barcodes and map the placement of assets, and then to perform ongoing and automated inspections of assets – reducing the risk of operational downtime.



Automating solar inspections

Onsight Technology is a provider of solar industry technology. They recently partnered with DroneDeploy to create an automated solar construction and maintenance ground robotics solution, speeding up tasks like barcode scanning and regular inspections.

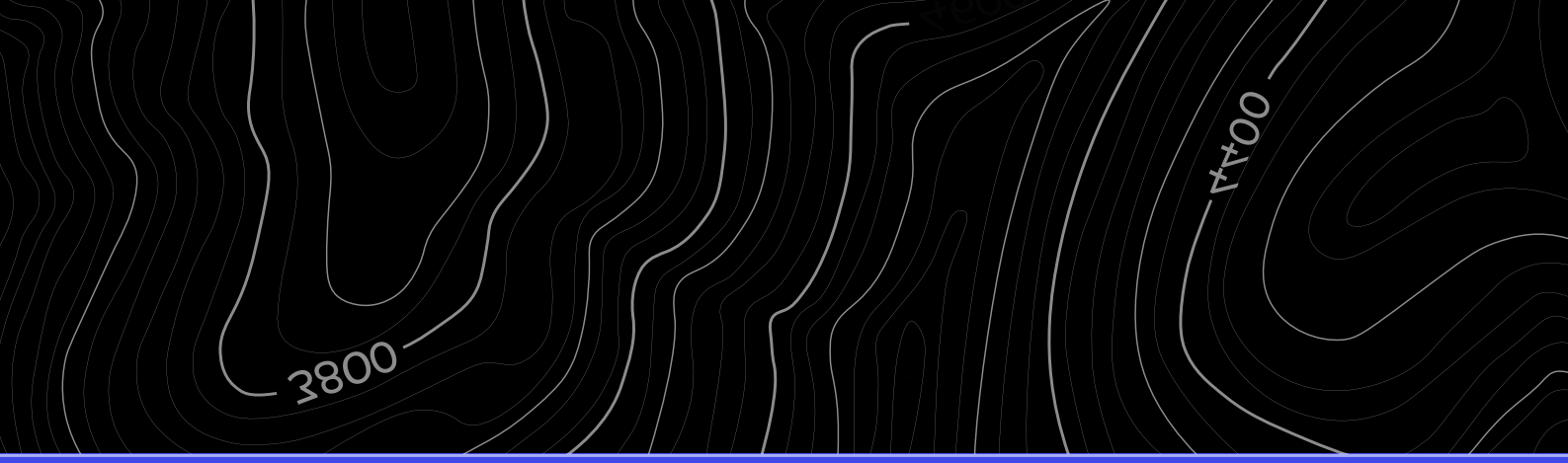
Find out more ↗

About the survey

The reality capture community's biggest survey to date

This was our industry's largest survey ever: 1,447 respondents from 119 countries and 13 industries. It was also our first survey looking at the state of reality capture as a whole, rather than only the drone industry.

The survey was conducted in mid-2023 with results collated at the end of the year. Here is a breakdown of anonymized information about the respondents.



Countries

The majority of survey respondents were from the United States of America (48%), followed by Australia (5%), Canada (5%), Brazil (4%), the United Kingdom (3%) and New Zealand (2%). The spread of respondents was extremely diverse, with responses from 199 different countries.

Industries

The top industries represented were construction general contractors (13%), agriculture / forestry (11%), architecture / engineering design (9%) and civil / heavy engineering (8%). The energy sector accounted for 9% of respondents but was split into the subcategories of oil and gas, renewables, and utilities.

Job titles

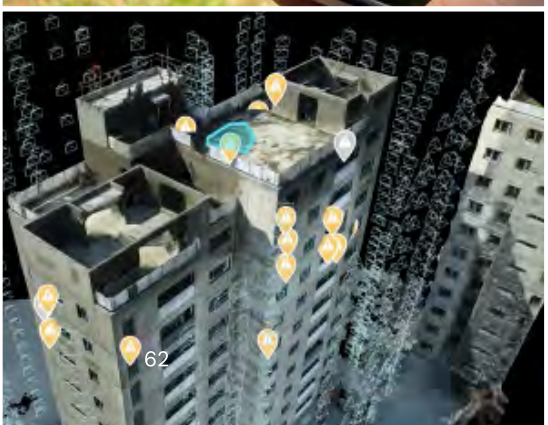
22% of respondents were top-level management roles (C-Suite, Company Director or President). Other roles represented included Owners (24%), Engineers (11%), Project Managers (10%), Superintendents / Site Managers (3%) and BIM / VDC Managers (3%).

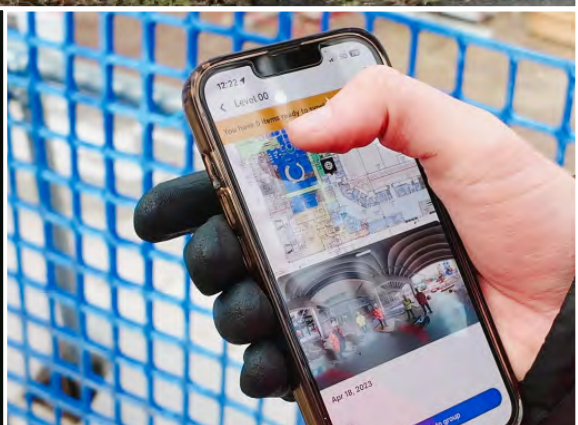
Company size

69% of respondents were from companies with up to 99 employees. 31% were from companies with 100 or more employees, 17% were from companies with 500 or more employees, and 12% were from companies with 1,000 or more employees.

About DroneDeploy

Build with certainty, operate with confidence. That's why thousands of construction, oil and gas and renewable energy companies use DroneDeploy on a daily basis. We help them automate reality capture using drones, robots and 360 cameras – combining this data in one platform for AI-powered analysis. From aerial and ground views of construction progress to automated gauge readings and methane leak detection, **DroneDeploy is shaping the future of reality capture**.





Want to discuss how to get started?

Contact us today. We'll connect you with a DroneDeploy team member with expertise in your industry who has helped similar companies implement and drive success from their reality capture programs.

Get in touch ↗