



2018

Commercial Drone Industry Trends

DroneDeploy | May 2018



7 CONTINENTS
180 COUNTRIES
30 MILLION ACRES

Legend

- One map created with DroneDeploy

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Introduction

DroneDeploy Delivers Actionable Insights to Customers Mapping 30 Million Acres in 180 Countries

The last year was an exciting time to be in the commercial drone industry. We've seen drone adoption skyrocket across sectors, game-changing technology hit the market, and new partnerships form.

It's also been a significant year for DroneDeploy. Our platform recently hit an important benchmark: 30 million acres mapped by users. In one year's time, our global presence has tripled.

Our customer base has grown substantially as well. This past year, thousands of companies and over 30,000 users put DroneDeploy to work, creating the world's largest drone data repository—now with over 400,000 maps of job sites, farms, and structures. Our growth is a testament to the growing community of commercial drone users. The momentum we've seen is showing no signs of slowing down. Drones are here to stay, and we're just beginning to see what's possible.

DroneDeploy is being used by the world's largest industries including construction, agriculture, mining, surveying, and real estate, bringing us closer than ever to our vision of a drone on every job site. And the applications are getting increasingly sophisticated—sometimes replacing entire workflows—making jobs safer, data more accurate, and increasing efficiency.

With 30 million acres of aerial data under our belts, I am excited to release our fourth Commercial Drone Industry Trends Report. As the world's leader in commercial drone software, we're in a unique position to share this data with the industry. Our cloud-based platform gives us a finger on the pulse of our customers. We're able to understand exactly how companies use drones, and identify the latest trends as they emerge.

So what does the data have to say? Drones have become an everyday tool, and as our industry matures, so has the use of drone data. The data speaks to the intelligence drones provide companies

as they use aerial insights daily to understand the way the world changes.

In this report, we'll take a closer look at the evolving industry, and share the trends we've discovered from analyzing almost 100 million aerial images collected by our customers including:

- DroneDeploy users have flown and processed data from more than 400,000 job sites
- The construction industry is the largest and fastest growing adopter of drone technology
- Enterprise drone use increased 5X in 2017
- Despite being released just 3 months ago, 10% of all maps made are Live Maps, as the need for real-time data grows

Read on to learn how the world's largest industries use drone technology, and what's to come as commercial drone software continues to help companies make smarter business decisions.

Mike Winn

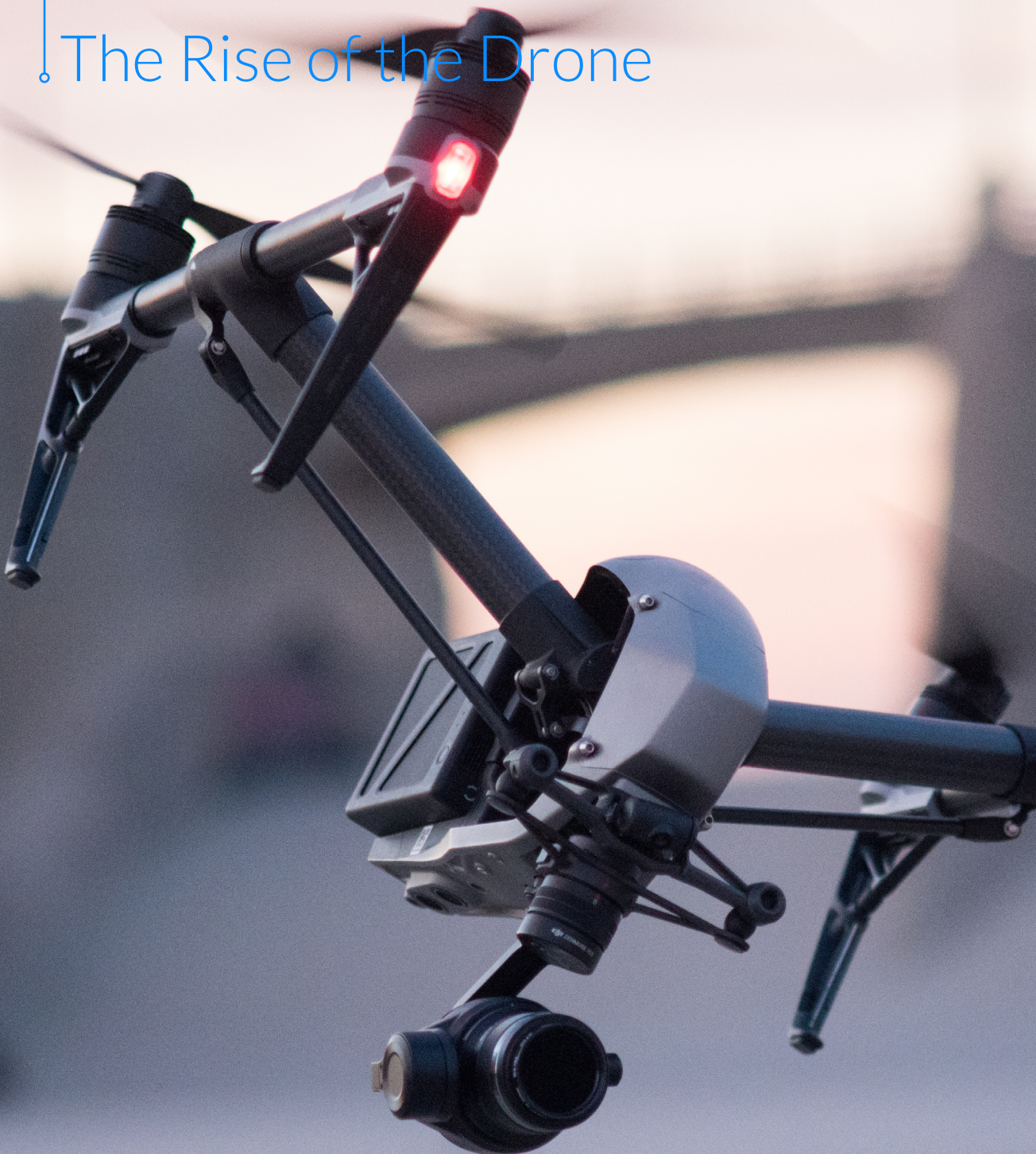
Mike Winn, CEO and Co-Founder of DroneDeploy



2017 was the year of the commercial drone. At DroneDeploy, we tripled our global presence and helped thousands of customers generate aerial insights with our platform.

Mike Winn, CEO at DroneDeploy

The Rise of the Drone



UAVs Become a Regular Part of Doing Business as Companies Collect Aerial Data on More Than 400,000 Job Sites

The Construction Industry Now Leads in Commercial Drone Adoption

While dozens of industries use drones, the fastest growing commercial adopters of aerial data come from the construction, agriculture, and mining industries. These companies use drone technology to collect real-time data about projects, understand what's happening on site, and identify potential issues before they become costly. Construction is currently the fastest growing sector—surging 239% in the last year—and is now the top industry using DroneDeploy.

DroneDeploy Customers Create 5 Maps a Week—But Seasonality Still Exists

Companies now rely on drones every day for data collection and analysis. On average, DroneDeploy customers create 5 maps a week. This resulted in 30,000-45,000 automated drone flights every month in 2017. Why such a range? Drone use is affected by seasonal changes in weather. Commercial users are most active in the spring and summer months when the weather is warm, and rain and snow are less common. July stood out as the most popular month for drone mapping.

90% of Commercial Mapping Still Occurs on Drone Models that Cost \$1500 or Less

The commercial drone hardware space went through significant changes in the last year. But despite manufacturers such as Autel, Yuneec and Parrot introducing new drone platforms, DJI remains the leader in the industry with an estimated market share of up to 85%. However, the introduction of enterprise-focused drone models by DJI, Yuneec, and others have just started to make an impact on the mapping community. While there was an uptick in the use of enterprise platforms such as the DJI M200 series, 90% of commercial mapping still occurs on drone models that cost less than \$1500.

Mobile Hardware Advancements Help Customers Generate Hundreds of Real-time Maps Every Day

Recent advancements in cameras, edge computing, and mobile hardware processing unlocked new possibilities for drone technology. The ability to produce real-time time drone maps is now a reality with Live Map. [Live Map](#) stitches aerial imagery as the DJI drone flies, and 60% of real-time maps made are hard to differentiate from cloud-processed data sets.

Generating drone maps from a mobile device—without an internet or cell connection—is transformative because it makes instant in-field analysis and decision-making possible. And it has become extremely popular with customers across industry verticals. Despite being released just three months ago, 10% of all maps made with DroneDeploy are real-time Live Maps.

The future of data processing lies on the edge as drone technology moves to a real-time model that will support new use cases in areas such as public safety, disaster response, and emergency services, where time is of the essence.

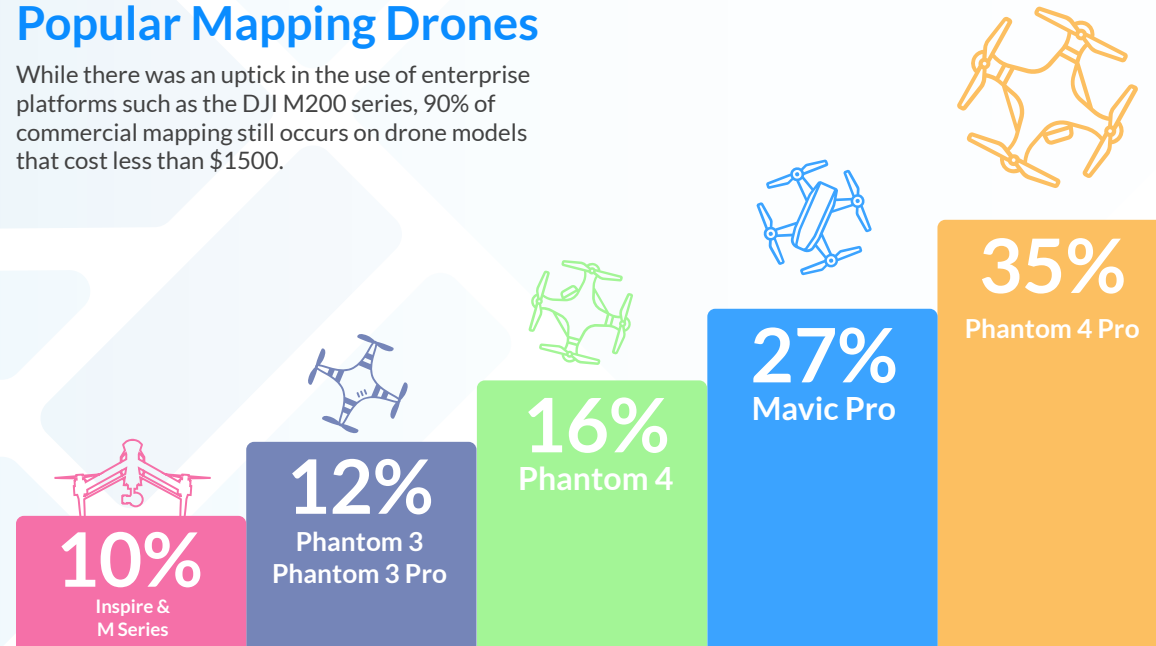
Artificial Intelligence and Machine Learning Help Analyze 100 Million Aerial Images

Companies now require machine learning and artificial intelligence solutions to help digest massive amounts of aerial information collected each day. Manual analysis isn't scalable. It is also tedious and can be error-prone. DroneDeploy is leveraging the world's largest drone data repository of almost 100 million aerial images to create software tools that automate site analysis through object identification and measurement. These solutions stem from actual data collected by customers implementing drones in the real world. One of the latest tools to leverage this data include automatic ground control point (GCP) processing, which was built using more than 150,000 images of GCP targets.

The Rise of the Drone

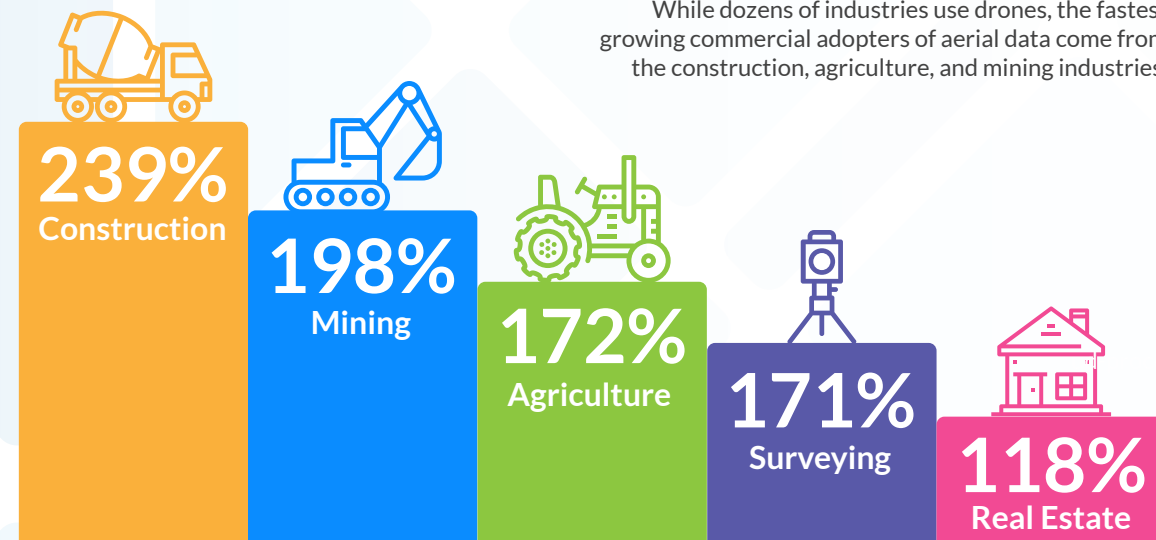
Popular Mapping Drones

While there was an uptick in the use of enterprise platforms such as the DJI M200 series, 90% of commercial mapping still occurs on drone models that cost less than \$1500.



Growth in Industry Adoption (YoY)

While dozens of industries use drones, the fastest growing commercial adopters of aerial data come from the construction, agriculture, and mining industries.



The Largest Drone Data Repository

DroneDeploy is leveraging the world's largest drone data repository of almost 100 million aerial images captured across key industries such as agriculture, construction, and surveying.



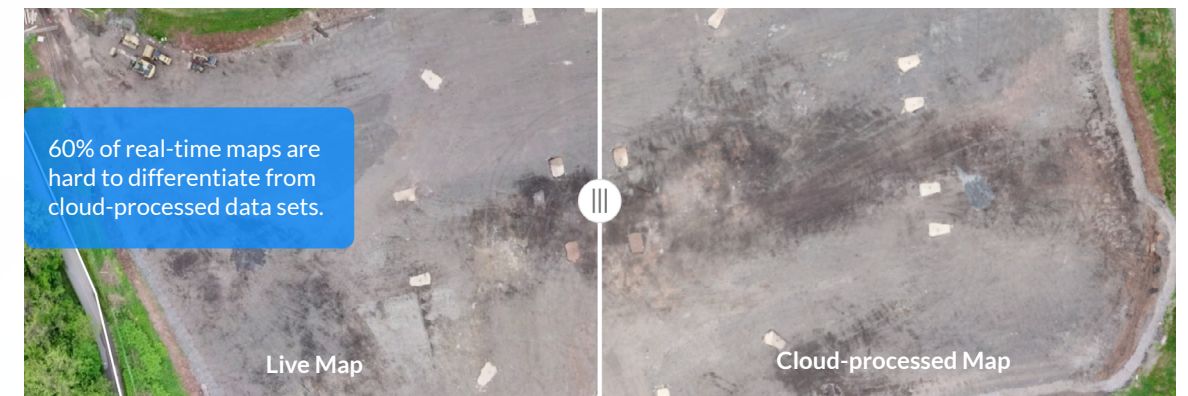
Live Map

Despite being launched just 3 months ago, more than 10% of all maps made are real-time Live Maps.



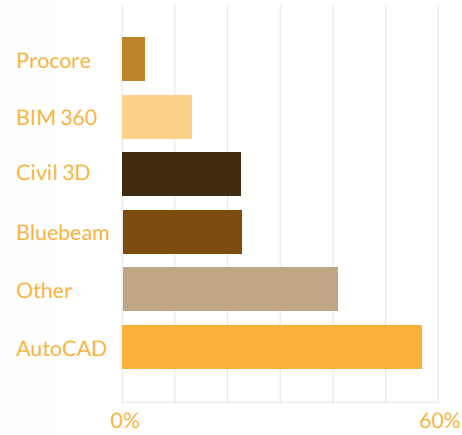
Hours of waiting for crop imagery are over. We can capture real-time data in seconds without an internet connection, and begin making smarter crop management decisions before the drone hits the ground.

Justin Metz, Technology Integration Specialist
Bowles Farming Company



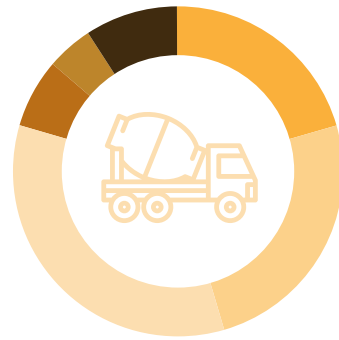
Drones in Construction

Tools



Roles

- Superintendent
- Technology Manager
- Project Manager
- Project Executive
- General Manager
- C-Level

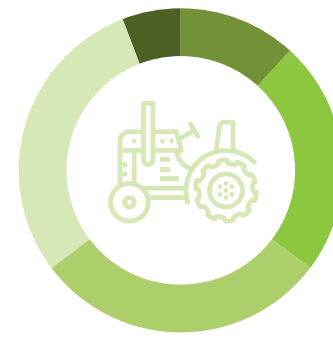


Primary use of Drones

Drones in Agriculture

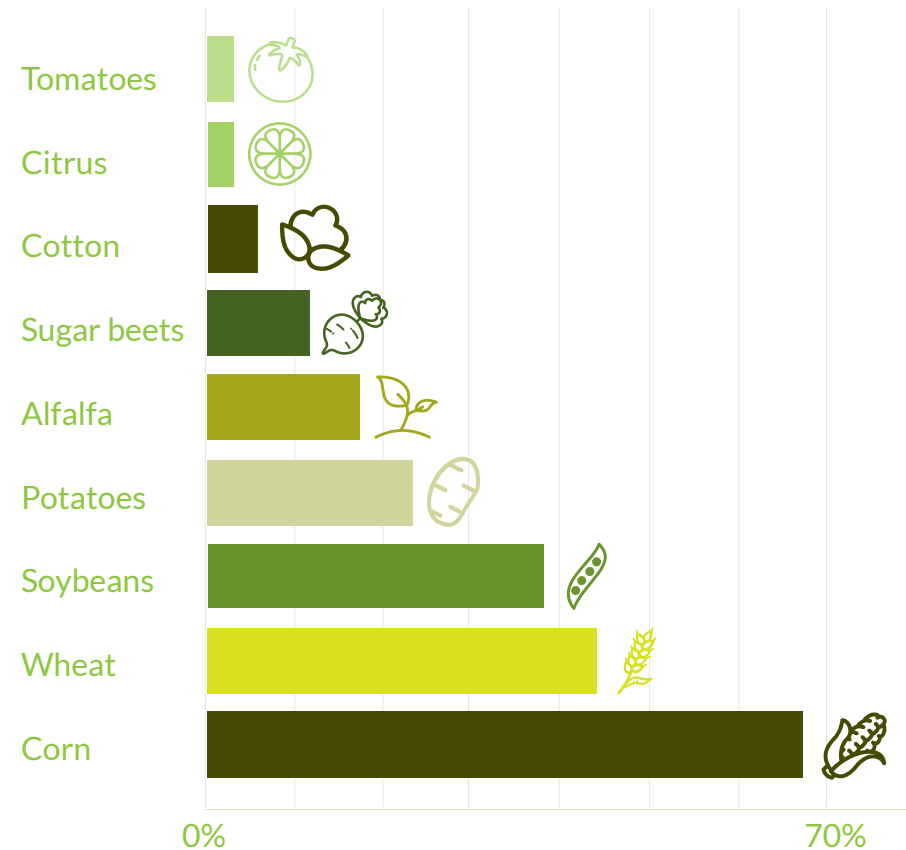
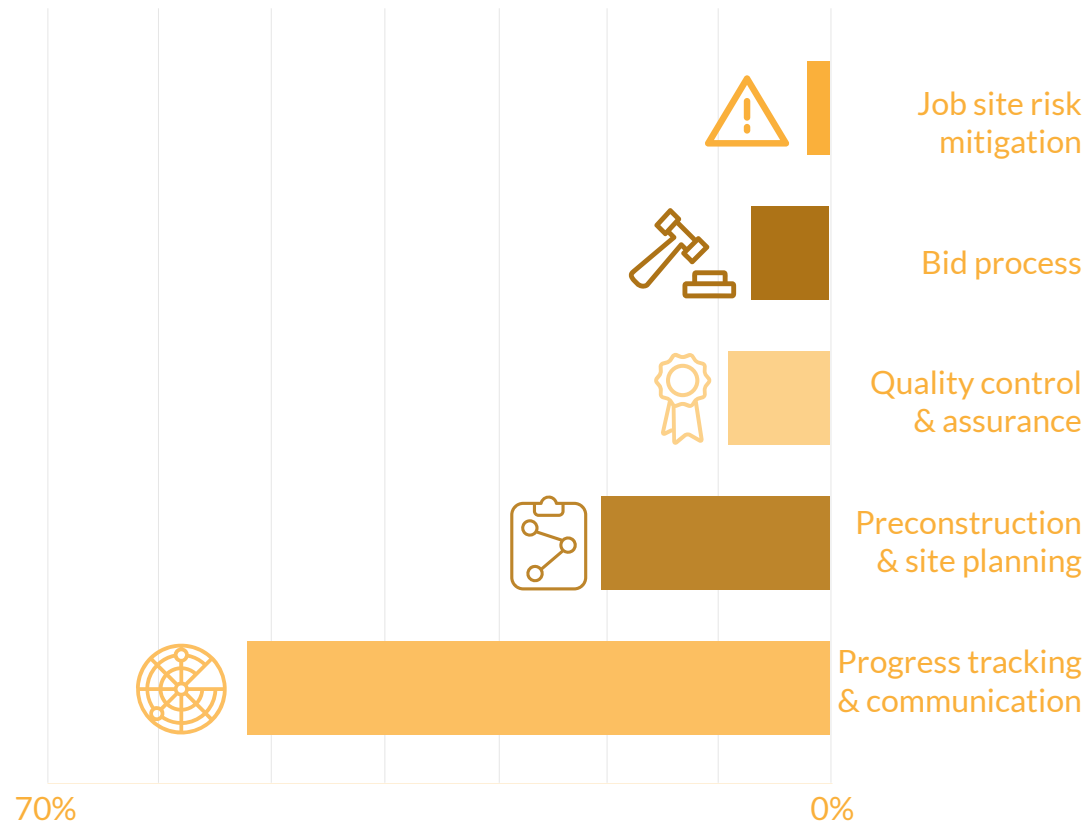
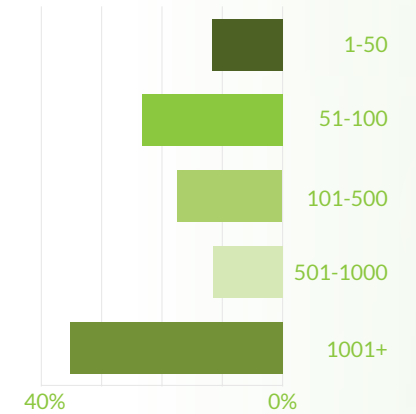
Roles

- Specialist
- Manager
- Senior Manager
- C-Level
- Operator



Crop Analyses With Drones Data

Average Farm (Acres)



Drones Find a Home in the Enterprise

2017 was a big year for the commercial drone industry, where businesses implemented multiple proofs of concepts that demonstrated the benefits of drones. Moving into 2018 we are seeing enterprises make the big jump from proof of concept to rolling out a drone program across a majority of their sites.

Jan Gasparic,
Head of Enterprise Partnerships at DJI



Enterprise Adoption Grows 5X as Large Companies Generate Actionable Insights at Scale

In August 2016, the FAA passed the Part 107 rule for remote pilots, creating a clear path for commercial drone adoption in the enterprise. Since then, large companies have launched and scaled in-house drone programs. DroneDeploy has seen a 5X increase in enterprise customer growth since the Part 107 Rule was introduced.

Enterprise Adoption Increases 20% Every Month

From construction to insurance, entire teams of drone pilots have emerged as companies take in-house programs to scale. And this is just the beginning. The number of enterprise companies signing up for DroneDeploy is now increasing more than 20% every month.

Enterprise adoption is driving the growth of drone teams as well. According to DroneDeploy customer data, the average size of a drone team has grown to 5 pilots. This change is largely due to the expansion of proof of concept projects that began in the last year. Drone data is proving its value to big companies, leading to increased internal demand for aerial analysis on more projects.

Growing Teams Drive 2.5X Increase in the Number of Commercial Drones

The growth of drone teams has translated into larger drone deployments across companies as UAVs become the go-to tool for aerial data collection. There are currently more than 110,000 drones registered with the FAA—representing 2.5X growth from 2016. More than 600,000 drones are expected to be registered by 2022. Commercial drone photography and mapping will play a significant role in this growth as programs continue to expand.

Customers Make 1M Annotations as Maps Become a Collaborative Tool to Improve Communications

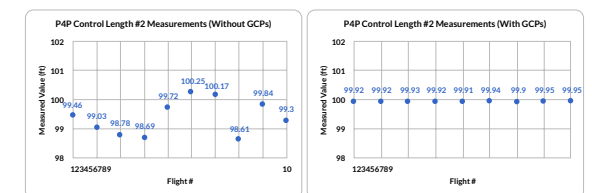
Drone photos, maps, and models improve communication across large teams and help drive smarter decisions. To date, DroneDeploy customer maps have been annotated more than 1,000,000 times, and shared with more than 17,000 internal collaborators. With numbers like this, it's imperative

that drone software provide administrative tools to simplify sharing, manage users, and track company activity every step of the way. To keep up with these trends, we released several new enterprise admin tools to help companies manage growing teams.

Enterprise Customers Demand Higher Accuracy as Use of Ground Control Points Grows 5X

As larger companies turn to drones for aerial data collection, we've seen a rise in the demand for higher data accuracy. Today, companies are using ground control points (GCPs)—ground markers measured with GPS to calculate absolute global positioning—more than ever before with DroneDeploy. The number of maps processed with GCPs grew 5X in 2017, and is currently increasing at a rate of 20% each month. In March, customers processed more than 3,700 GCP markers alone.

Measurements are also more common. 28% of all DroneDeploy customers use our built-in measurement and annotation tools to accurately calculate area, volume, and distance. Exactly how accurate are drone measurements? Using GCPs, customers achieve 99% accuracy. You can learn more in our recent white paper, [Linear Measurement Accuracy of DJI Drone Platforms and Photogrammetry](#).



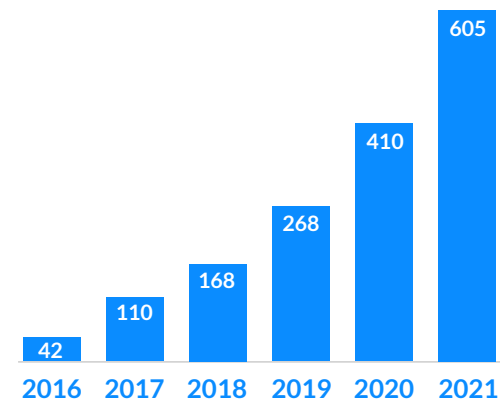
Phantom 4 Pro map measurement variance with and without the use of ground control points (GCPs).

What are companies measuring? Stockpiles are some of the most common things measured with drones on the job site. In 2017, DroneDeploy users measured more than 300,000 stockpiles to track volume changes over time. Today, customers average 12 measurement annotations per session.

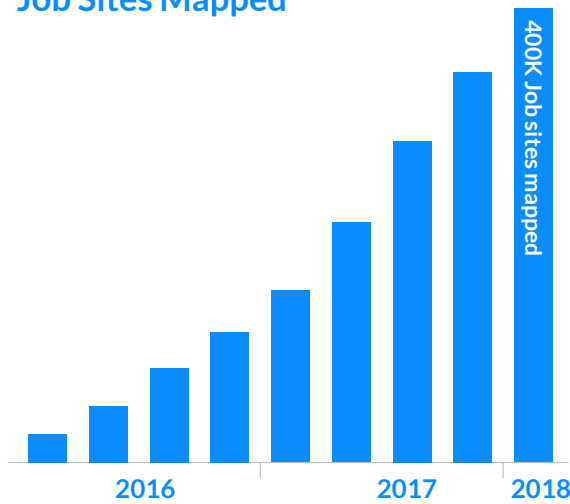
Enterprise Growth

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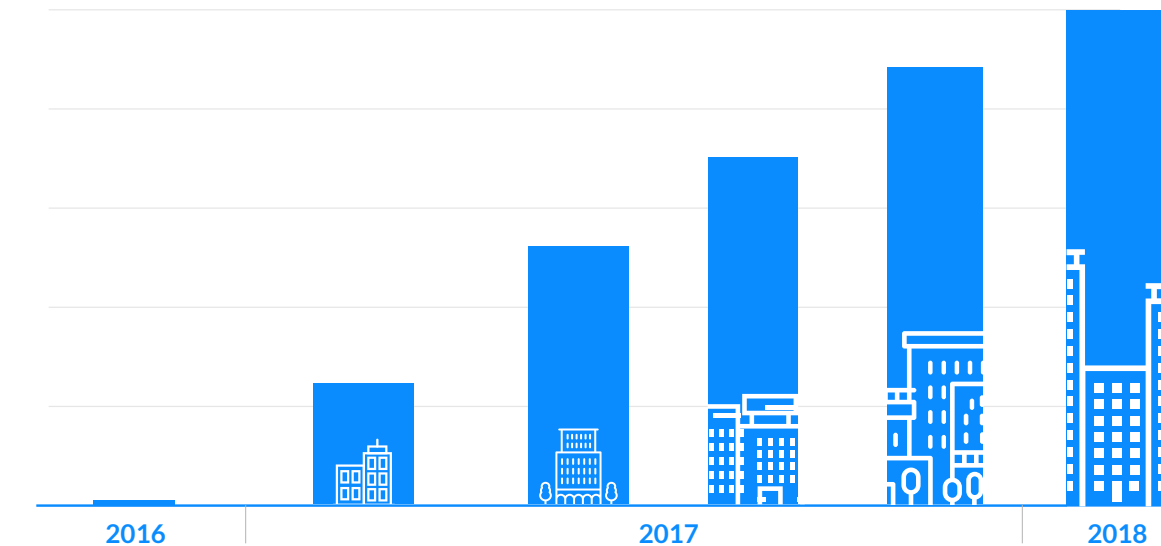
Commercial Drones ('000s)



Job Sites Mapped



DroneDeploy Enterprise Customer Growth Over Time



Accuracy and Measurements

17,000

Map Collaborators

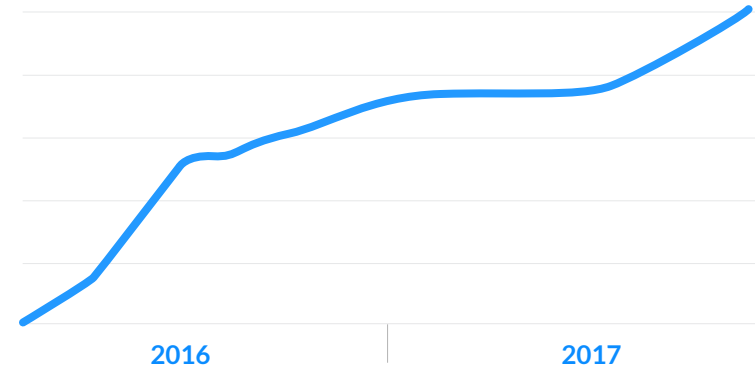
300K

Stockpiles Measured

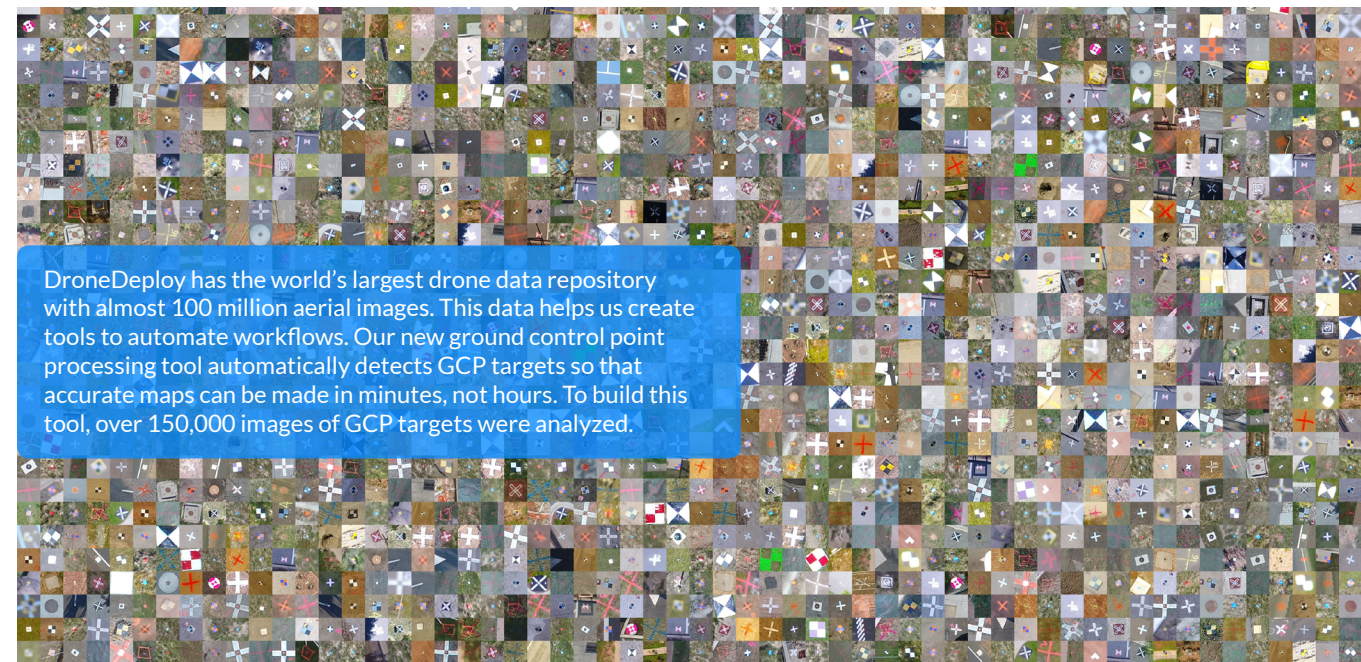
1M

Map Annotations Made

Rise in Customers Using Ground Control Points



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DroneDeploy has the world's largest drone data repository with almost 100 million aerial images. This data helps us create tools to automate workflows. Our new ground control point processing tool automatically detects GCP targets so that accurate maps can be made in minutes, not hours. To build this tool, over 150,000 images of GCP targets were analyzed.

Measuring the Success of Drone Programs



DroneDeploy Customers See Success, Reporting 3-5X ROI on Their Drone Investments

Driving Productivity 5-20X with Drone Data

From growers on the farm to project managers on the construction site, drones continually drive worker productivity. UAVs have quickly replaced traditional forms of data collection ranging from satellite and manned aircraft imagery, to manual inspection and measurement. By using drones and DroneDeploy, companies report 5-20X time savings when collecting, measuring, and reporting site data. With results like this, it's easy to see why so many companies put drones to work.

Reducing Costs up to 5X and Boosting Bottom Lines with Drone Insights

By improving productivity, drones help companies maintain a lean operation. At the simplest levels, less time collecting and analyzing data reduces the hours required to complete work. If you dig deeper, drone data can uncover issues before they become costly. From making faster in-field decisions to getting access to trends otherwise unavailable in the past, drones provide unparalleled insights that deliver up to 5X cost savings for our customers.

By replacing ground-based surveys with bi-annual aerial surveys, Nelson Aggregates saved a total of 228 man hours and \$28,500 across six quarry sites.

[READ THE CASE STUDY](#)

By catching an aphid infestation early, one farmer prevented nearly \$60,000 in lost revenue over 185 acres of sugar beet crop.

[READ THE CASE STUDY](#)

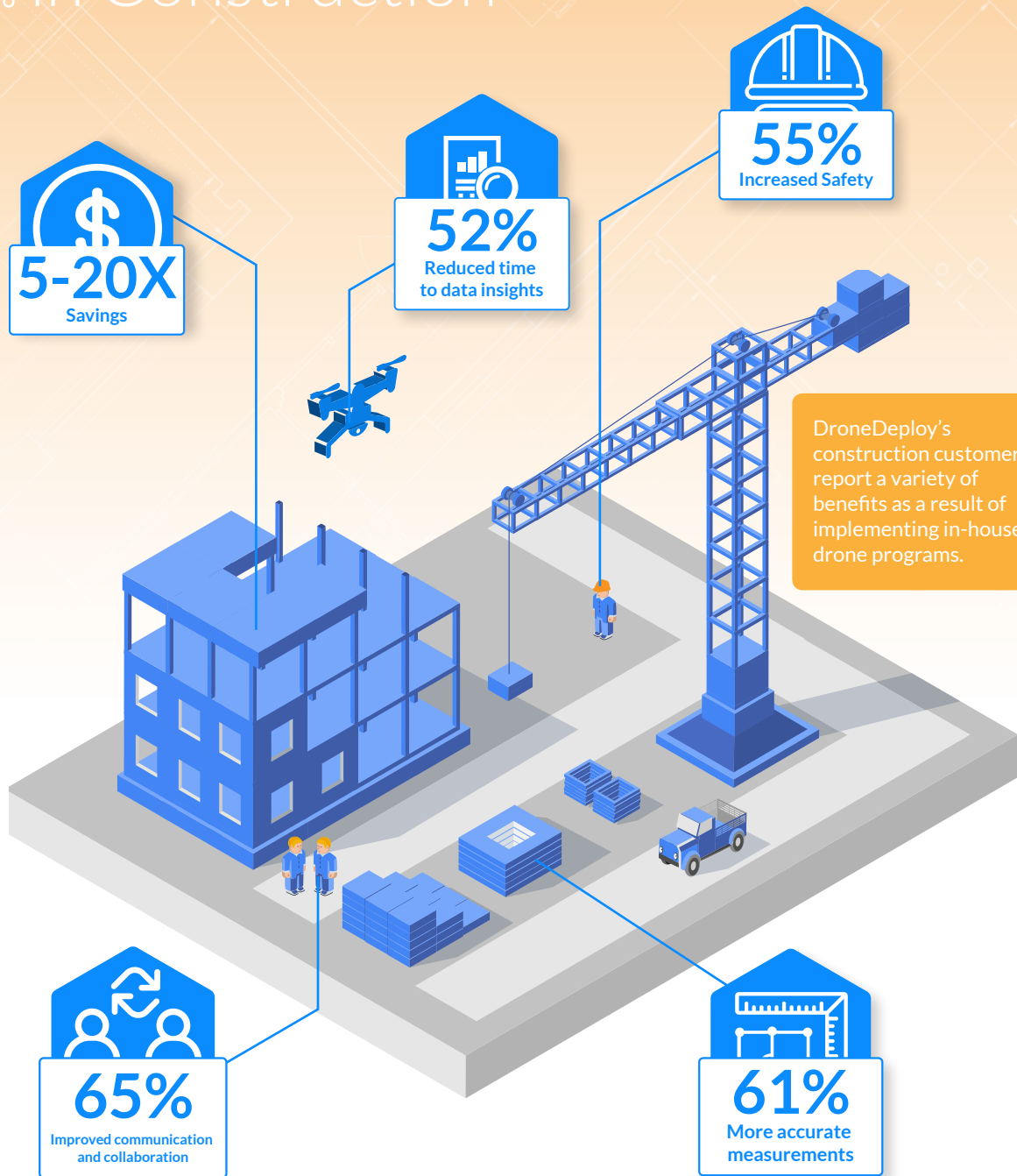
Improving Site Safety and Managing Risk with Drone Imagery

In industries such as construction, roofing, and mining, it is not uncommon for workers to face serious injury—or even death—daily. Seeking better ways to gather data and inspect job sites, companies increasingly turn to drones to improve overall safety for their workers. Drones minimize the time spent inspecting dangerous areas such as roofs or construction sites, eliminating the need to put people at risk. Aerial maps also help identify potential safety concerns and enable managers to contain environmental hazards before they become dangerous. 55% of DroneDeploy customers report increased safety as a result of implementing drones. This continues to be a leading reason for introducing drone programs at companies of all sizes.

“Everything’s about safety in our industry. Introducing drones increases safety in the workforce by giving our customers the tools to perform inspections in a safer manner.”

Chris Bartlett, The Sequel Group

The Benefits of Drones in Construction



DroneDeploy's construction customers report a variety of benefits as a result of implementing in-house drone programs.



“Drones change the game in communication. A [drone] photo is worth a thousand words, and potentially millions of dollars.

Ryan Moret, Field Solutions Manager
McCarthy Building Companies Inc.



WATCH WEBINAR

The Drone Data Ecosystem Goes Mainstream

The Drone Data Ecosystem Grows to 2,000+ Developers Building Software Solutions for 10 Industries

As the demand for drone data increases, so to has the need for software integrations. That's why DroneDeploy launched the first drone app market in 2016. Since then, it has grown to become the world's largest drone data marketplace.

DroneDeploy's App Market Grows to 80 Apps Serving 10 Commercial Industries

The DroneDeploy App Market extends the power of drone data—making it possible to connect drone photos, maps, and models with the tools professionals already know and love. It now has more than 80 apps and integrations with leading tools across 10 different industries.

These integrations accelerate adoption by removing the need for additional budget on training and software, while also reducing downtime. The most common software programs our customers use in combination with drone data include Esri, Procore, AutoCAD, BIM360, John Deere Operations Center, and ArcGIS. Explore the [App Market](#).

App Use Skyrockets as DroneDeploy's App Market Grows 150% in 2017

In the last year, the App Market has more than doubled in size as developers have brought more than 50 new tools to the DroneDeploy platform. It has also gotten the attention of the wider developer community. So far, more than 2,000 developers have signed up with DroneDeploy. This surge in interest and has led to greater app adoption among our customers. To date, more than 120,000 app installs have occurred—representing a 445% growth in the last year.

These tools are so powerful, we've now packaged them with our core vertical offerings. For example, Agremo crop insights now come as part of our [Precision Agriculture Package](#).

Computer Vision, AI, and Machine Learning Drive Workflow Automation

Many of the apps in the App Market employ the latest advancements in computer vision, AI, and machine learning. These technologies help companies reduce error by consistently producing highly-accurate analyses in record time, and largely automate complex workflows. As drone software and hardware continues to advance, we expect these workflows to become totally autonomous in the not-to-distant future.

Apps and Instant Airspace Authorization Increase Efficiency as LAANC Becomes Enabled in 560 Cities

Drones streamline operations and provide real-time data, but there is nothing fast about a 90-day wait period to fly near an airport. That's why the FAA launched the Low Altitude Authorization and Notification Capability (LAANC) program in early 2018. To date, LAANC is enabled at 125 airports across 560 cities (that the FAA UAS Facility Maps overlap), accounting for a total of 16,377 sq miles of airspace that are now open for business via automated or manual authorization—through apps like AirMap, which is available on the DroneDeploy App Market. This capability is set to roll out nationwide by the end of the year, and marks huge step forward for the industry—and greater drone automation.

“Thanks to LAANC, more airspace is open for business, and commercial drones have more opportunities to contribute to our economy and benefit our daily lives.”

Ben Marcus, Co-founder & Chairman of AirMap

A Growing Drone Data Ecosystem

The DroneDeploy App Market extends the power of drone data—making it possible to connect drone photos, maps, and models with the tools professionals already know and love. It now has more than 80 apps and integrations with leading tools across 10 different industries.

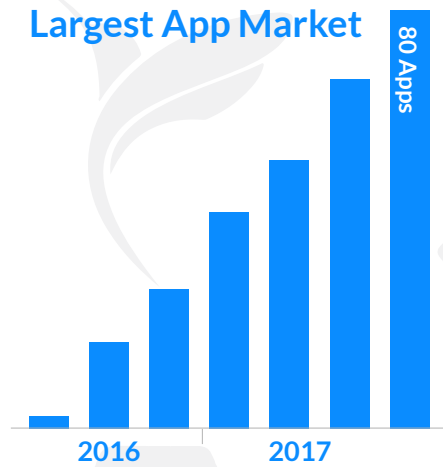


150%
Growth in the App Market

80
Apps

120K
Apps installed

10
Industries



Many of the apps in the App Market employ the latest advancements in computer vision, AI, and machine learning. These technologies help companies reduce error by consistently producing highly-accurate analyses in record time, and largely automate complex workflows.

2X
The number of Roof Reports double each month

Roof Report helps professionals in the roofing, solar, and insurance sectors generate accurate roof measurements with computer vision and machine learning. The number of roof reports generated doubles every month as drone adoption continues to rise.

439,978,289
Plants Counted

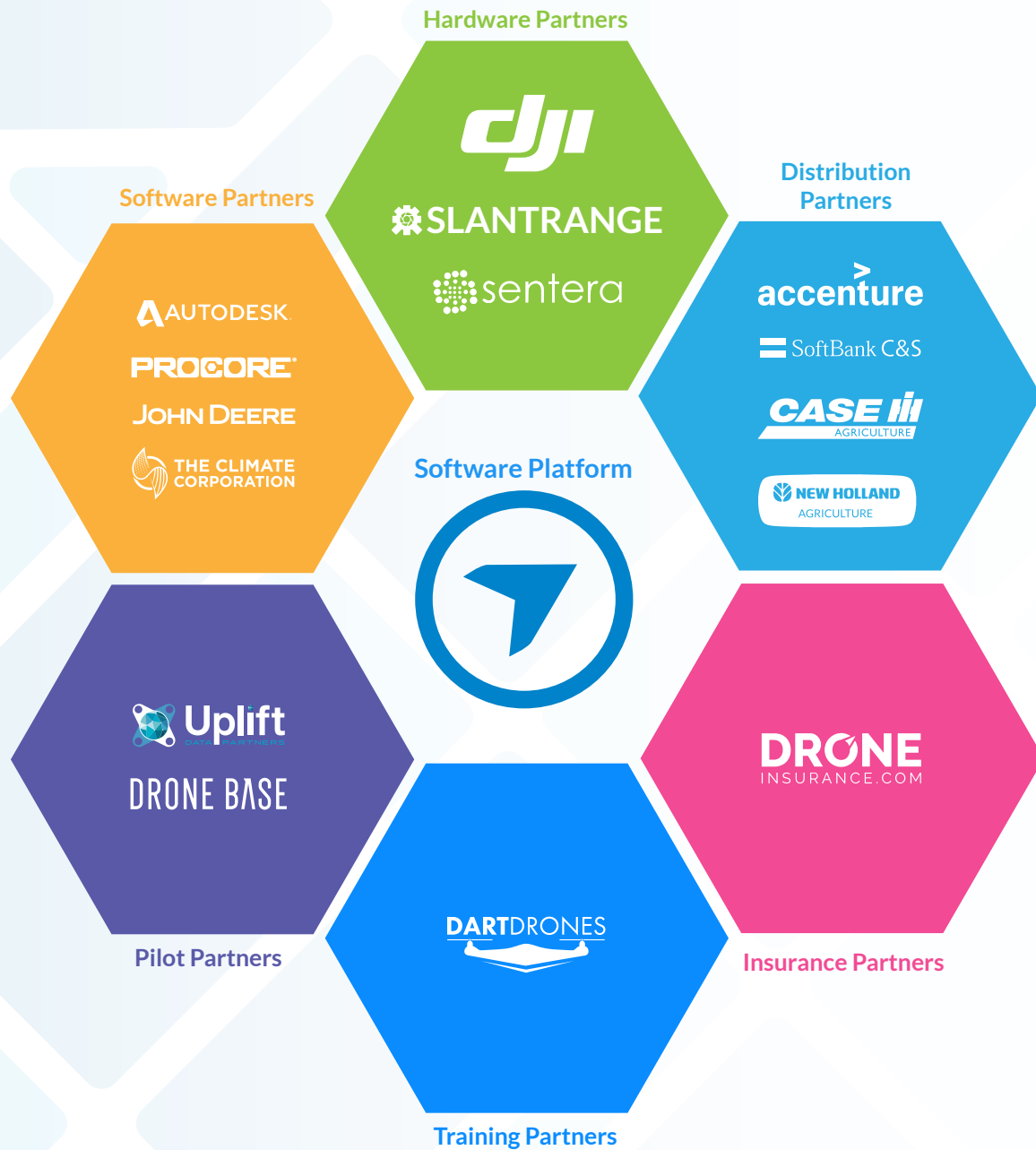
Agremo helps growers quickly count plants and generate accurate crop insights with the help of machine learning & artificial intelligence. In 2017, customers counted 439,978,289 plants with the help of Agremo's app.

3.Wind
2.Hail
1.Wildlife

SKYCLAIM
SkyClaim helps agriculture pros and insurance companies detect crop damage and determine loss estimates using computer vision and AI. DroneDeploy customers have analyzed more than 100,000 acres and 75 different crop types using the SkyClaim app.



Creating a Global Partnership Network



Partnerships Between Key Hardware, Software, and Service Providers Emerge

A multitude of software, service and hardware firms have risen to help enterprises incorporate and see value from drones. To compete, leading firms have found ways to integrate and foster partnerships that integrate at the product level.

Jan Gasparic,
Head of Enterprise Partnerships at DJI

make it easier to sync drone-generated data with the tools professionals rely on every day.

Turnkey data capture services like DroneBase and Uplift Data Partners have also invested in software integrations. In April, we launched [Drone on Demand](#) to simplify data collection for enterprise customers. Through the DroneBase and Uplift pilot apps available in our App Market, customers can hire professional pilots and scale operations nationwide with the click of a button.

Enterprise Distribution Partnerships Emerge as Large Companies Seek Out Drone Data

Hardware Manufacturers Team Up to Compete Across Industries

Dozens of drone hardware manufacturers have risen up over the years to help companies extract value from drone data. But recently, fewer new companies have emerged. Instead, industry leaders have partnered to provide integrated hardware products. This is a new trend, and one that we expect to continue as leading firms work together to compete with best-in-class solutions. A recent example of this trend is the DJI Payload SDK, which opens up its M200 platform to non-DJI cameras—such as FLIR and SLANTRANGE—offering integrated sensor solutions on a single hardware platform for multiple industries.

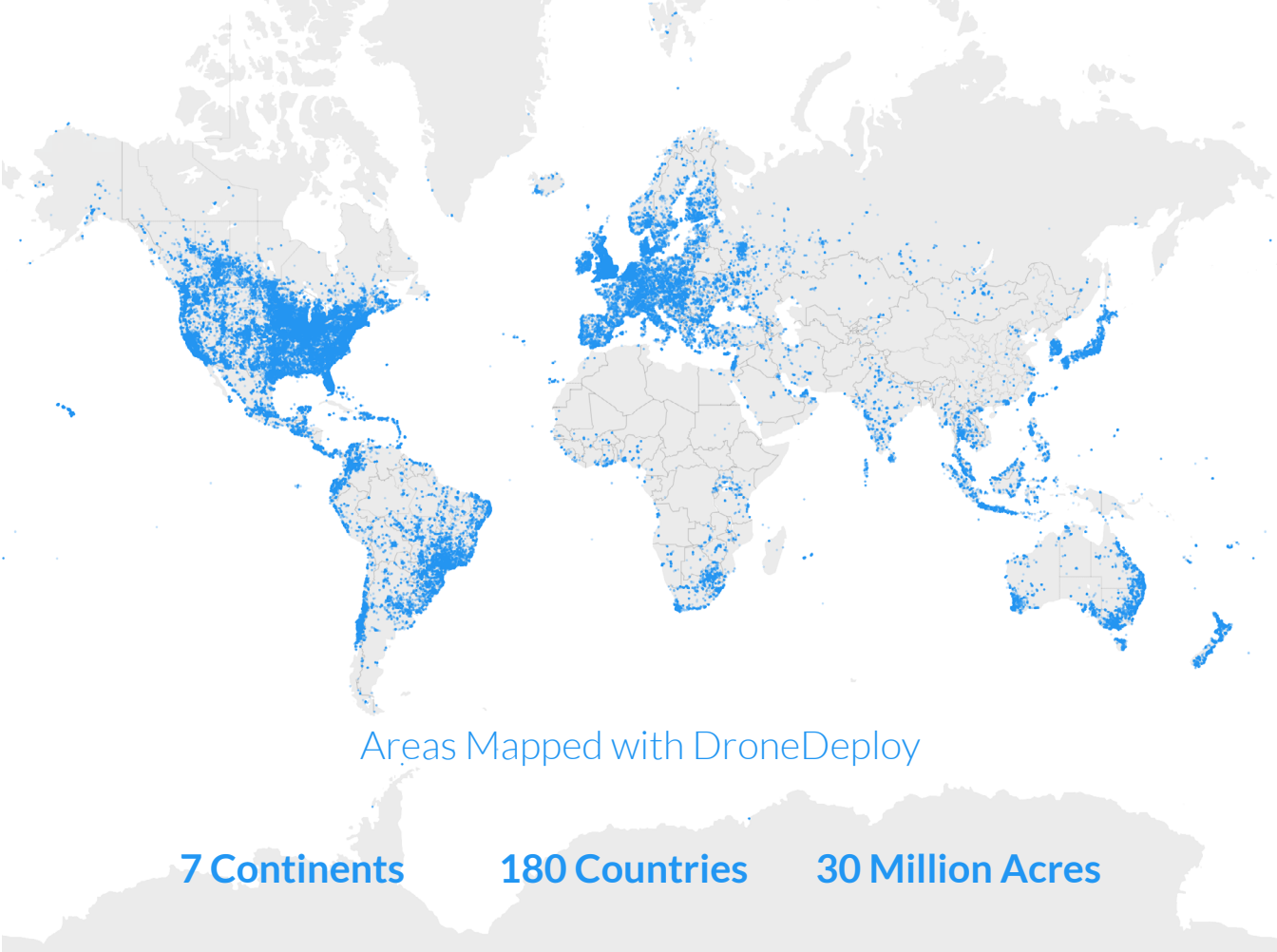
The rise in enterprise drone use has brought leading consulting and services companies to the table. SoftBank, Accenture, and CNH Global now offer consulting along with hardware and software distribution services through partnerships with drone industry leaders, such as DroneDeploy and DJI. These global partners help the world's largest companies strategically integrate drones into their operations. As the US, Europe, and Asia begin to adopt drones at an even faster pace in the coming year, these partners will be critical to the success of the commercial drone sales in mature enterprise markets.

Software and Service Providers Invest in Integrations to Streamline Workflows

The popularity of drones has thousands of companies looking to integrate drone-generated data into existing software workflows. To meet demand, software companies such as Procore, The Climate Corporation, and John Deere have invested in deeper integrations with DroneDeploy's platform. These integrations

We're proud to partner with DroneDeploy to allow a wider range of construction organizations to unlock the power of drone insights regardless whether they are just starting or looking to scale their drone operations.

Suzanne El-Moursi
President of Uplift Data Partners



About DroneDeploy

DroneDeploy is the leading cloud software platform for commercial drones, and is making the power of aerial data accessible and productive for everyone.

Trusted by leading brands globally, DroneDeploy is transforming the way businesses leverage drones and aerial data across industries, including agriculture, construction, mining, inspection and surveying. Simple by design, DroneDeploy enables professional-grade imagery and analysis, 3D modeling and more from any drone on any device.

DroneDeploy is located in the heart of San Francisco.
To learn more visit us online and join the conversation on Twitter.



 www.dronedeploy.com  [@DroneDeploy](https://twitter.com/DroneDeploy)

