



PLANET AND EXOGENESIS HELP GOVERNMENTS MAKE SENSE OF A CHANGING WORLD



EXOGENESIS
Transforming Observations into Insight™

**Exogenesis-fueled automated change
detection speeds analysis of Planet
satellite imagery**

CHALLENGE

Dramatically scale and accelerate change detection to meet government satellite imaging information needs.

SOLUTION

Planet Monitoring for Defense and Intelligence
Exogenesis Mandala-EI

RESULTS

- Automation reduces change-detection processing time from months to less than three days for a very large region
- Scalable cloud-based technology transforms massive amounts of Earth observation data into actionable information
- High-frequency imaging helps ensure data is fresh and changes are caught early
- Sophisticated algorithms used with dense data sets eliminate “false positives” to improve change detection accuracy



“Planet’s very high revisit rate, coupled with our automated change detection, makes remote sensing much more valuable to any organization.”

Sean Anklam,

Co-founder and Executive Director, Exogenesis

When Planet won a government intelligence contract that called for rapid imaging and change analysis, the company was confident of delivering the remote sensing required. After all, Planet’s combination of high-frequency collection and huge archive of existing images is ideal for spotting change.

But to fulfill the contract, which involved a tight deadline and a large surface area, the process of detecting and analyzing changes revealed by the images had to take place at unprecedented speed and scale. By teaming up with Exogenesis, an Earth observation automation company based in Lafayette, Colorado, Planet successfully completed the project—and opened up new possibilities for a variety of industries to benefit from fast, economical change detection.

SOLVING THE CHALLENGES OF CHANGE

Historically, manual change detection has been necessary to achieve good results. *“In the old days, trained analysts looked at film on light tables, and now they look at digital images on computer monitors,”* says Sean Anklam, co-founder and executive director at Exogenesis. *“This manual processing is difficult to accelerate and expensive to scale.”*

Past industry attempts to speed the process through automated processing have hit roadblocks. *“The problem is the difference between human vision and what computers see,”* says Anklam. *“People are really good at recognizing patterns and immediately spotting meaningful changes, as opposed to changes between pixels that are real but not meaningful.”*

These non-meaningful changes can result when a satellite collects an image of the same place twice but from different angles or at different times of day. *“You might have the same building in both images, for example, but a change in angle can make the structure seem shorter or taller in the second view,”* says Anklam. *“The computer sees changed pixels, yet it’s still the same unchanged building. For automation to work, it must compensate for these and many other factors that can produce false positives.”*

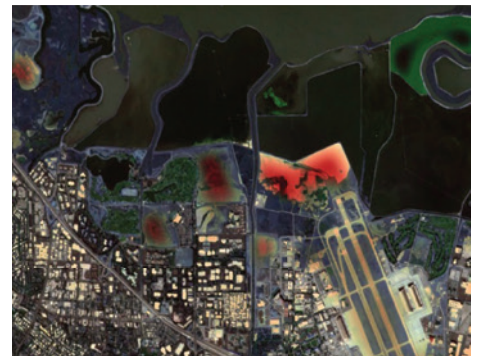


USING SOPHISTICATED ALGORITHMS AND CLOUD COMPUTING

To enable automated, accurate, and meaningful change detection, Planet turned to Exogenesis. *“We have developed a unique change detection tool called Mandala-EI that uses sophisticated algorithms to solve the false positives problem while providing full automation of the process,”* says Anklam. *“Other change detection providers either sell software that requires an analyst to interpret the results or they have a number of analysts that perform the process manually.”*

Working together, Planet and Exogenesis reduced the time it takes

to process a very large region—for example, 250,000 square kilometers—from many months manually to less than three days with automation. But they also needed to handle thousands of images at once and scale computation accordingly. *“That problem was solved by using the cloud,”* says Anklam. *“Planet is unique in sending continuous satellite data directly to the cloud where we can readily access it. We can also use the cloud to spin up more processing nodes, scale storage space, and increase data transfer rates on demand. There is no upper limit on computation.”*



Combining the capabilities of Planet and Exogenesis enables fast, automated change detection and display for everything from water and vegetation to runway activity.

EXCEEDING CUSTOMER EXPECTATIONS

Planet was able to meet and exceed customer expectations for the government project. *“From a business standpoint, there was a stringent time factor involved,”* says Anklam. *“We enabled Planet to perform the necessary analysis quickly and on a massive scale, and that helped them fulfill the requirements of the contract.”*

The potential of the joint Planet and Exogenesis solution is not limited to a single customer. *“Many industries consume remotely sensed imagery and have been looking for a way to perform change detection in a quick, cost-effective, and meaningful way,”* says Anklam.

Those industries range from agriculture to emergency response and insurance. *“For example, property insurance companies may have portfolios of millions of commercially significant properties they insure and need to monitor on a regular basis to manage risk,”* says Anklam. *“And for emergency personnel responding to a natural or man-made disaster, it is immensely helpful to have fresh imagery showing where the worst damage has occurred.”*

“Planet is deploying more and more global imaging satellites to deliver a constant stream of current information,” says Anklam. *“In fact, they are about to achieve daily coverage of the entire Earth. Planet’s very high revisit rate, coupled with our automated change detection, makes remote sensing much more valuable to any organization.”*



FOR MORE INFORMATION

- To learn more about Planet Monitoring for Defense and Intelligence, visit www.planet.com/markets/defense-and-intelligence
- For more about Exogenesis, go to www.exogenesis.earth



sales@planet.com

Planet San Francisco

Phone: +1 (415) 429-2194

Planet Berlin

Phone: +49 30 609 8300 555

Planet Lethbridge

Phone: +1 (403) 381-2800



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