

01-Airfield vehicle depot

01-Airfield maintenance area
ALERT

Medium haul

26 Aircraft
 2 I176/78
 14 TU95
 9 TU160
 1 Medium haul



Press Conference

Thursday 8 October 2020

Engels Airbase 51°28'48" N 10°04'22" E
 RUNWAY LENGTH: 3.5 Km | RUNWAY WIDTH: 100 m | RWY: 04/22 - 04L/22R

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3. The Defence Site Monitoring solution
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Defence challenges

Continued investment in aerospace...



“In the last 10 years, **the aerospace landscape has changed**, growing from **30 to 85 billion dollars of investment**, the private sector represents 50%, military investments have doubled”

General Michel Friedling,
Le Figaro, 11/09/2020

...heavily focused on sensors.



“**95% of our investments are dedicated to sensors and only 5% on analysing the data gathered by these sensors**”

General Ferlet, Head of Military Intelligence,
Geolnt seminar at La Sorbonne, 29/09/2020

The main challenge

A lack of resources for analysing the growing quantity of data

Image data is analysed manually by defence analysts



Only an infinitesimal part of the data gathered can be used effectively.




“We would need 6 million analysts in order to measure all the data we receive”

R. Cardillo,
Former Director of the National Geointelligence Agency, 2018

“The number of available images will increase thirty-fold by 2020. We cannot increase our human resources by the same amount”

General C. Gomar,
Former Head of Military Intelligence,
France, 2018





Earthcube and Airbus
are joining forces to
meet this challenge



Our mission:
Harnessing game-changing technology
to empower analysts to take smarter
decisions for a safer world.

Key elements

Created in 2016

100% dedicated to the Defence and Intelligence sectors

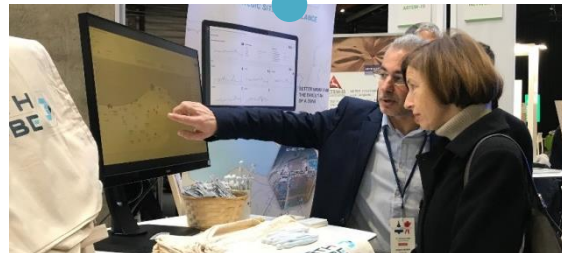
Turnover **quadrupled in 2019**

77 staff, mostly scientists, the largest AI team in this field in Europe

Recognised expertise in France...



Presentation of Earthcube solutions to the President of the Republic, Emmanuel Macron, by the DGA



Presenting Earthcube solutions to the Armed Forces Minister, Florence Parly

...and abroad



Workable solutions approved by the Defence and International Intelligence sectors

Airbus Group

Helicopters

Defence and
Space

Commercial
Aircraft

**Connected
Intelligence**

Space Systems

Intelligence

European leader and World No. 2 in
geospatial solutions

Largest industrial supplier to the DGA

Airbus geospatial activity in figures

2,000
clients



in **167**
countries



26 Reception
Stations



#1 European
supplier
of satellite imagery

2,000
employees
across **23** sites
and **10** countries

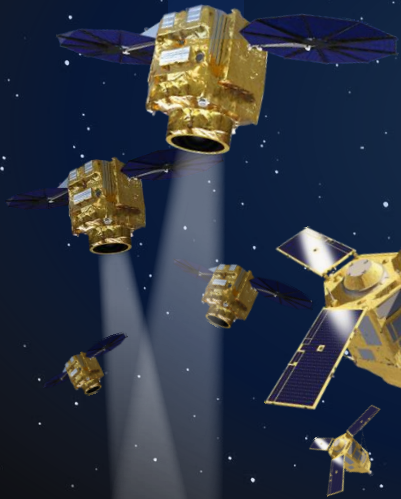
An unrivalled constellation of Earth observation satellites

N E X T

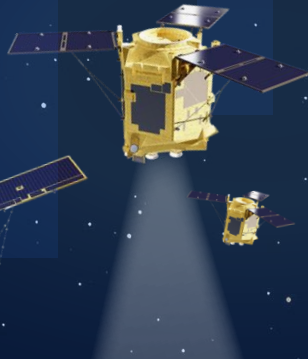


OPTICAL CONSTELLATION

Pléiades Neo (4)



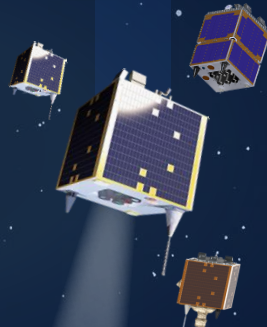
Pléiades (2)



SPOT (2)



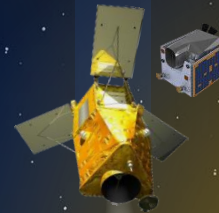
DMC Constellation (4)



Vision-1

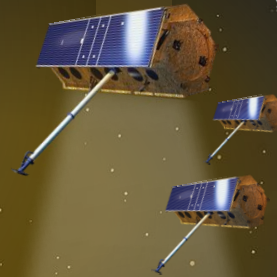


KazEOSat
(partner, 2)

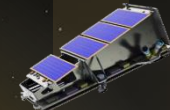


RADAR CONSTELLATION

TerraSAR-X
TanDEM-X
PAZ (partner)



NovaSAR

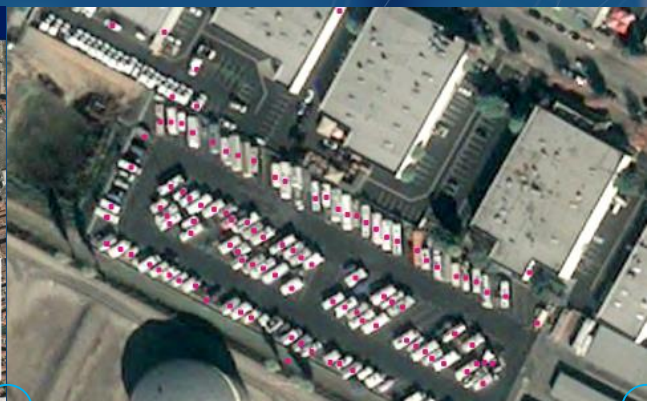
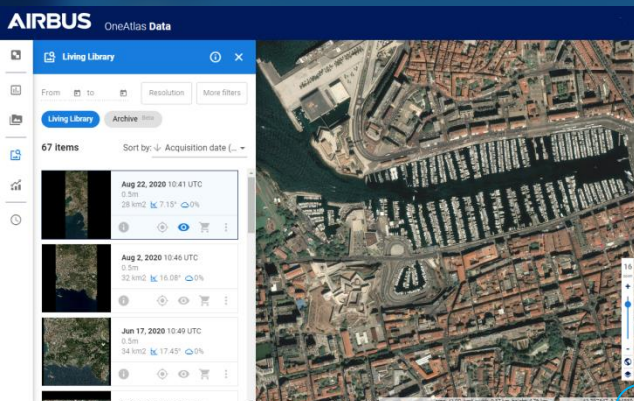


HawkEye360



Radio Frequency (partner)

OneAtlas, Airbus' geospatial platform



Easy and immediate access to a range of premium satellite images

- SPOT 6/7 (1.5m resolution)
- Pléiades (50 cm resolution)
- Pléiades Neo (30 cm from 2021)

Artificial Intelligence tools

Automatic extraction of information

Applications by field



DEFENCE & SECURITY



MARITIME



VITAL INFRASTRUCTURES



ENVIRONMENT

Instantly accessible to thousands of clients around the world



The solution: Defence Site Monitoring

Defence Site Monitoring

François

A unique partnership combining European imagery with cutting-edge technology

1. Mission

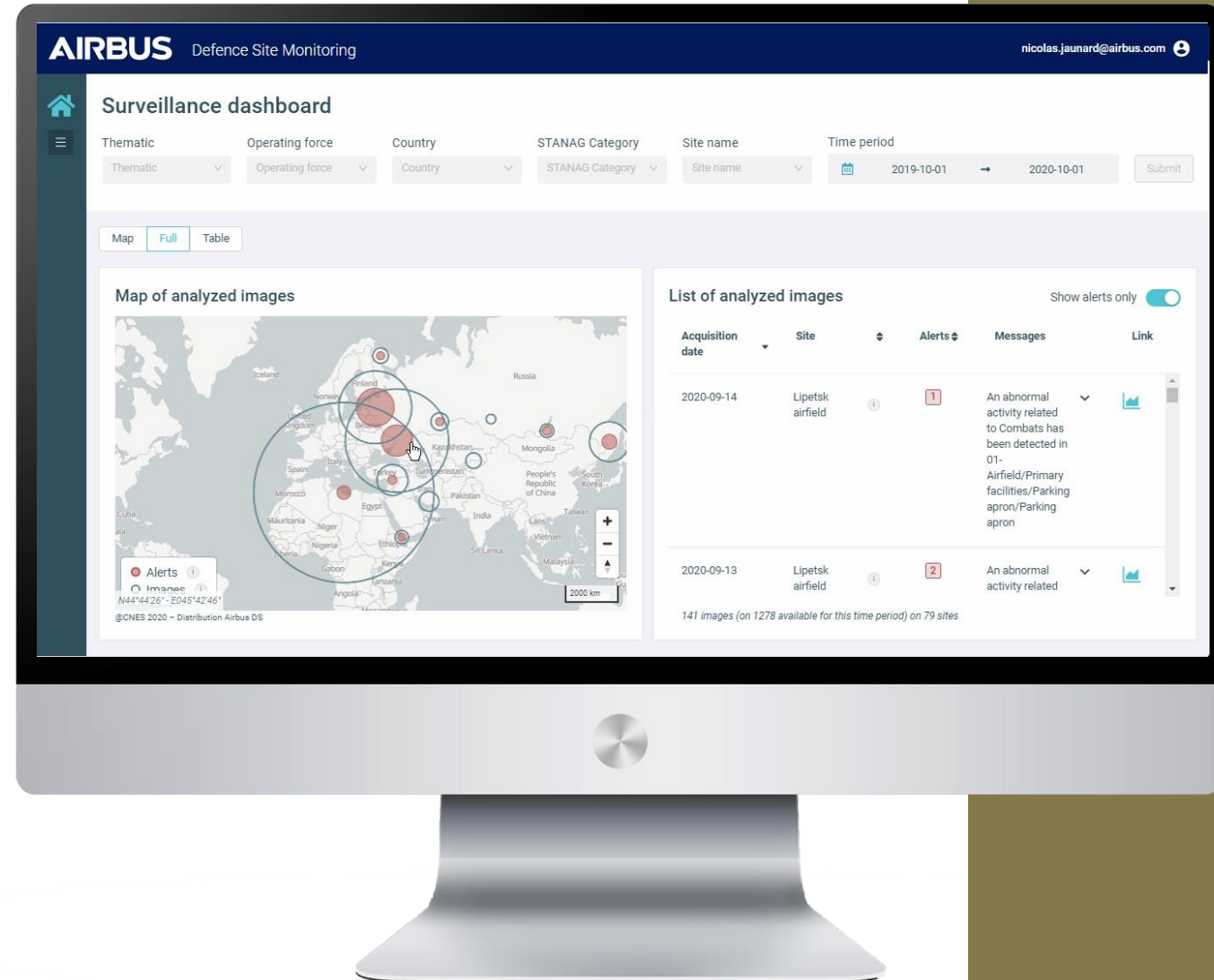
Supply **image intelligence agents** with an **analytical tool** allowing them to process **100% of data received**

2. Capacities

Combine object identification **algorithms** with **very high-resolution satellite images**

3. Objectives

- **Automatically analyse** multiples sites
- **Alert** analysts to any abnormal activity
- Put **the human being at the centre** of the analysis



Optimising the analysts' working time



Defence Site Monitoring

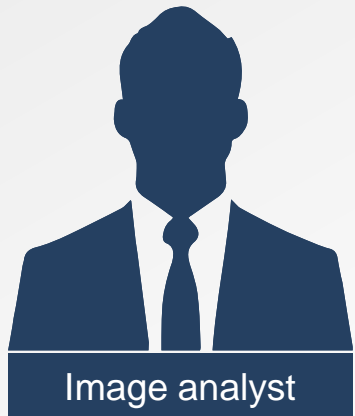


Image analyst

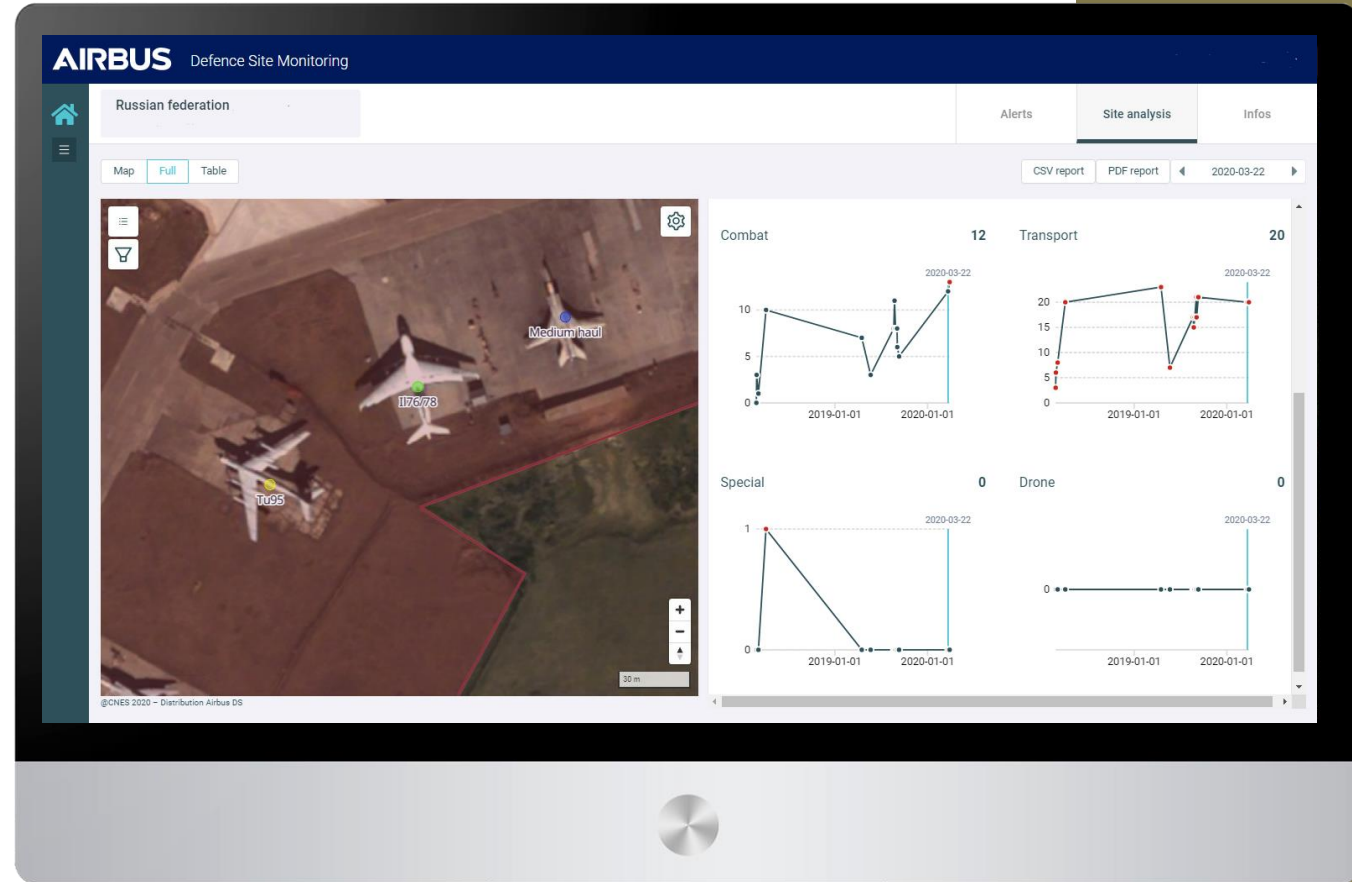


Surveillance, analysis and automatic reporting on multiple sites of strategic interest

Defence Site Monitoring

Guaranteed surveillance

- ✓ **2 categories of sites of military interest** analysed according to the **NATO STANAG 3596** standard
 - ✓ Airports
 - ✓ Ports
 - ✓ Terrestrial bases (soon)
- ✓ **Very high-resolution images** Pléiades (50 cm) and Pléiades Neo (soon)
- ✓ **Around 40 observations guaranteed* per year** for each site of interest
- ✓ **Access to 2 years of archives** for all zones of interest



*Subject to a feasibility study

Defence Site Monitoring

Cutting-edge algorithms

6 categories:
Bombardier,
Civil,
Transport,
Special,
Combat,
Drone



60 airplane models
(e.g.:Tu-16, an-22, Su-24...)

7 categories
Launch
Warship
Submarine
Aircraft carrier
Civil
Merchant
Support vessel



+95%
detection
performance

Defence Site Monitoring

Surveillance dashboard combining a map view and a list of alerts

AIRBUS Defence Site Monitoring clement.pradelles@airbus.eu

Surveillance dashboard

Thematic: [dropdown] Operating force: [dropdown] Country: [dropdown] STANAG Category: [dropdown] Site name: [dropdown] Time period: 2019-09-25 to 2020-09-25 [Submit]

Map | Full | Table

Map of analyzed images

Legend: Alerts (red circle), Images (blue circle)

List of analyzed images

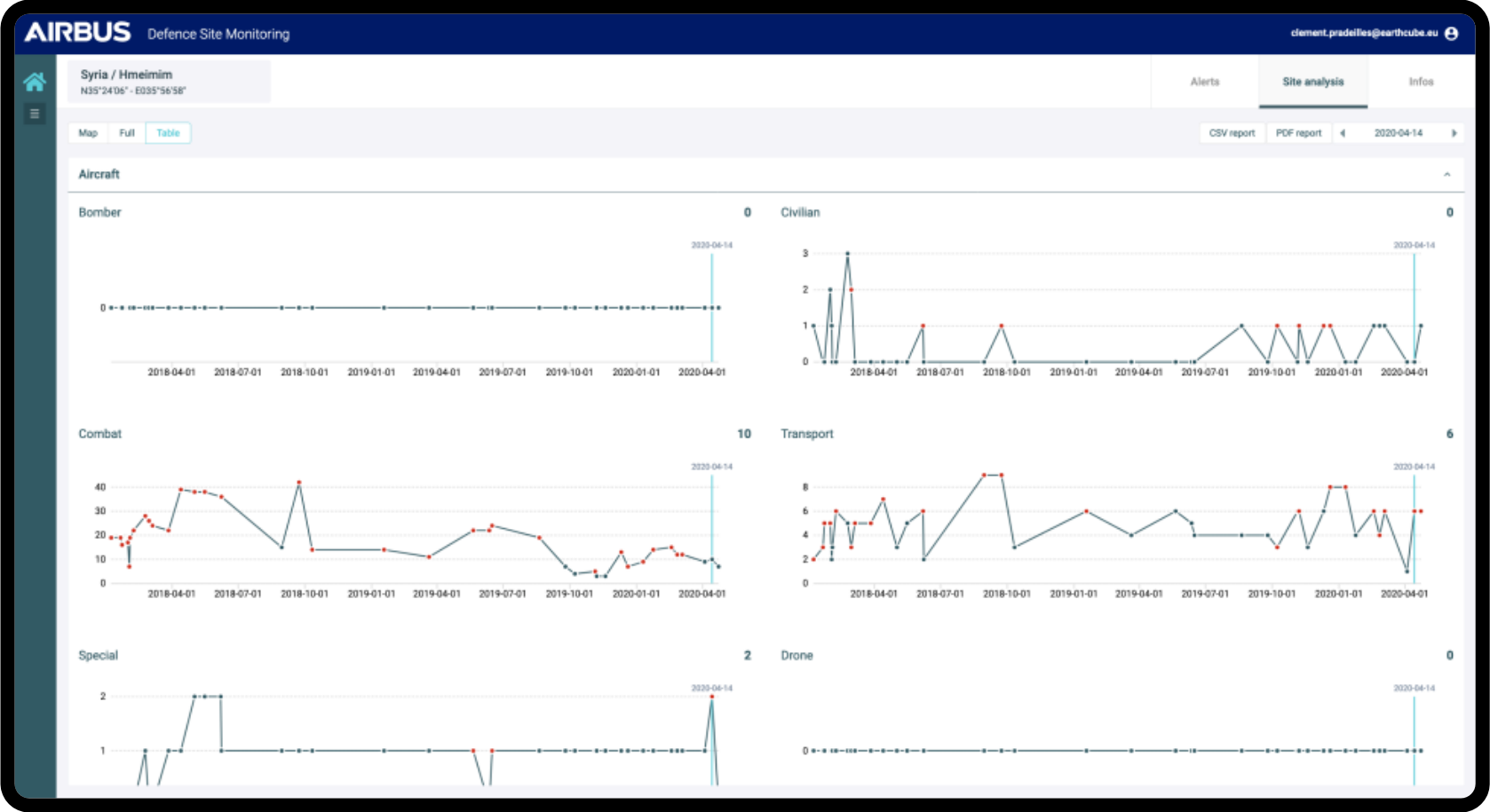
Show alerts only:

Acquisition date	Site	Alerts	Messages	Link
2020-07-17	Ostrov airfield	1	An abnormal activity related to Bombers has been detected in 01-Airfield/Primary facilities/Parking apron/Dispersal area	Link
2020-06-23	Olesgorsk airfield	1	An abnormal activity related to Bombers has been detected in 01-Airfield/Primary facilities/Taxiway and runway/Runway	Link
2020-06-21	Borisoglebovye airfield	3	An abnormal activity related to Transports has been detected in 01-Airfield/Primary facilities/Parking apron/Parking apron	Link
2020-06-14	Borisoglebovye airfield	3	An abnormal activity related to Transports has been detected in 01-Airfield/Primary facilities/Parking apron/Parking apron	Link
2020-06-09	Levashovo airfield	1	An abnormal activity related to Civilians has been detected in 01-Airfield/Primary facilities/Taxiway and runway/Taxiway	Link
2020-06-09	Ostrov airfield	1	An abnormal activity related to Bombers has been detected in 01-Airfield/Primary facilities/Parking apron/Dispersal area	Link
2020-06-09	Ostrov airfield	1	An abnormal activity related to Bombers has been detected in 01-Airfield/Primary facilities/Parking apron/Dispersal area	Link

48 images (on 862 available for this time period) on 78 sites

Defence Site Monitoring

Detailed graphic view showing trends



Defence Site Monitoring

Clear visualisation of zones or objects subject to an alert

The screenshot displays the Airbus Defence Site Monitoring interface. The top header shows the Airbus logo and the title 'Defence Site Monitoring'. The user's email 'clement.pradellas@earthcube.eu' is visible in the top right. The interface is divided into several sections:

- Location:** Syria / Hmeimim, with coordinates N35°24'06" - E035°56'36".
- Map:** A satellite view of an airfield with red boundary lines. A tooltip indicates 'Transport detected in this subarea'. Various aircraft are labeled with IDs like A50, I182038, I176, I17573, An242632, and An242632.
- Alerts:** A section titled 'Alert status' with two messages: 'An abnormal activity related to Transports has been detected in 01-Airfield/Primary facilities/Parking apron/Parking apron' and 'An abnormal activity related to Specials has been detected in 01-Airfield/Undefined'. Below this is a 'Detailed overview over time' table.

Date	Sub area	Observable	Count	Message
2020-04-23	01-Airfield/Primary facilities/Parking apron/Parking apron	Transport	6	An abnormal activity related to Transports has been detected in 01-Airfield/Primary facilities/Parking apron/Parking apron
2020-04-14	01-Airfield/Primary facilities/Parking apron/Parking apron	Transport	6	An abnormal activity related to Transports has been detected in 01-Airfield/Primary facilities/Parking apron/Parking apron
2020-04-14	01-Airfield/Undefined	Special	1	An abnormal activity related to Specials has been detected in 01-Airfield/Undefined
2020-03-04	01-Airfield/Primary facilities/Taxiway and runway/Taxiway	Combat	2	An abnormal activity related to Combats has been detected in 01-Airfield/Primary facilities/Taxiway and runway/Taxiway
2020-03-04	01-Airfield/Primary facilities/Taxiway and runway/Runway	Transport	3	An abnormal activity related to Transports has been detected in 01-Airfield/Primary facilities/Taxiway and runway/Runway
2020-02-25	01-Airfield/Primary facilities/Taxiway and runway/Taxiway	Combat	2	An abnormal activity related to Combats has been detected in 01-Airfield/Primary facilities/Taxiway and runway/Taxiway
2020-02-26	01-Airfield/Primary facilities/Taxiway and runway/Runway	Transport	1	An abnormal activity related to Transports has been detected in 01-Airfield/Primary facilities/Taxiway and runway/Runway
2020-02-18	01-Airfield/Primary facilities/Parking apron/Parking apron	Transport	6	An abnormal activity related to Transports has been detected in 01-Airfield/Primary facilities/Parking apron/Parking apron
2020-02-18	01-Airfield/Primary	Combat	1	An abnormal activity related to Combats has been detected

Defence Site Monitoring

An innovative defence solution

Unrivalled performances

The algorithms achieve performances of +95% on the detection of aircraft and vessels

Infrastructure designed with respect for the confidentiality requirements of the sector

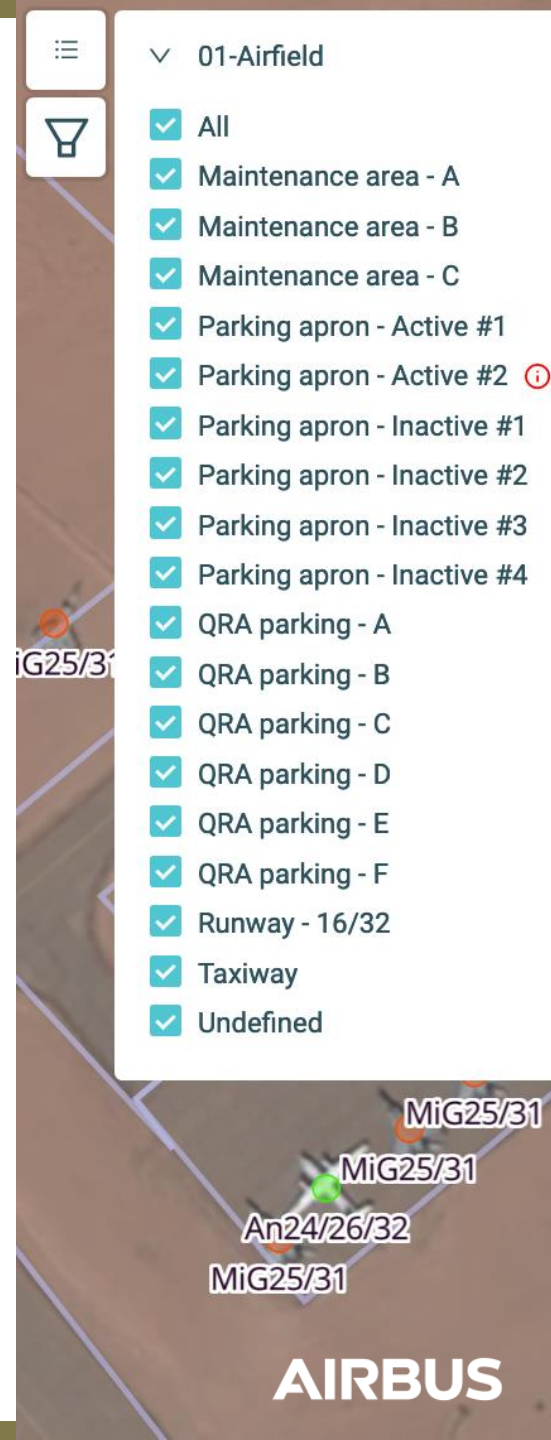
Regular updating of the algorithms for continued improvement of operational performance

A unique approach

For each site, observables are localised in sub-zones established by a primo-analysis.

Primo-analysis and alert settings are established by Defence experts

Information on abnormal behaviours per localisation (e.g.: runway), or by type of observable (e.g.: combat aircraft)



Example of use

Engels Airbase, Russia

Example of abnormal behaviour

- Importance of primo-analysis based on STANAG 3596

The screenshot displays the Earth Cube web application interface. On the left is a dark sidebar with a 'Home' button and a search bar. Below the search bar is a list of site categories, including 'Black sea', 'Central asia', 'Chinese air force', 'Iranian air defense', 'Libyan crisis', 'North Korean air force', 'Persian gulf', 'Red sea', 'Russian air force', 'Russian ALRA', 'Russian military deployment', 'Russian north fleet', and 'Syrian crisis'. The main content area features a map of Russia with a red circle highlighting Engels Airbase. Above the map are filter controls for 'Country', 'STANAG Category', 'Site name', and 'Time period'. Below the map is a 'List of analyzed images' table with columns for 'Acquisition date', 'Site', 'Alerts', 'Messages', and 'Link'. The table shows three entries for Lipetsk airfield on 2020-09-14, 2020-09-13, and 2020-09-12, each with one alert and a message indicating abnormal activity related to combats. A 'Show alerts only' toggle is visible in the top right of the table. At the bottom of the table, it states '216 images (on 1275 available for this time period) on 79 sites'.

Acquisition date	Site	Alerts	Messages	Link
2020-09-14	Lipetsk airfield	1	An abnormal activity related to Combats has been detected in 01-Airfield/Primary facilities/Parking apron/Parking apron	
2020-09-13	Lipetsk airfield	2	An abnormal activity related to Combats has been detected in 01-Airfield/Primary facilities/Parking apron/Parking apron	
2020-09-12	Lipetsk airfield	3	An abnormal activity related to Combats has been detected in 01-Airfield/Primary facilities/Parking	

A proposition with unique value

- A new capacity for **automatic surveillance and anticipation on a wide scale**, responding to the major problem of data analysis
- **An unrivalled capacity for capturing** very high-resolution images (Pléiades and Pléiades Neo)
- **Extremely reliable and unique** Artificial Intelligence (>95% precision)
- A **solution successfully tested** by the intelligence community

An aerial photograph of an airport terminal and runways in a desert landscape. The terminal is a large, rectangular building with a grid-like structure. The runways are long, straight paths that intersect at various points. The surrounding area is mostly flat and sandy, with some sparse vegetation and small structures scattered around. The overall color palette is dominated by earthy tones like tan, brown, and grey.

Thank you