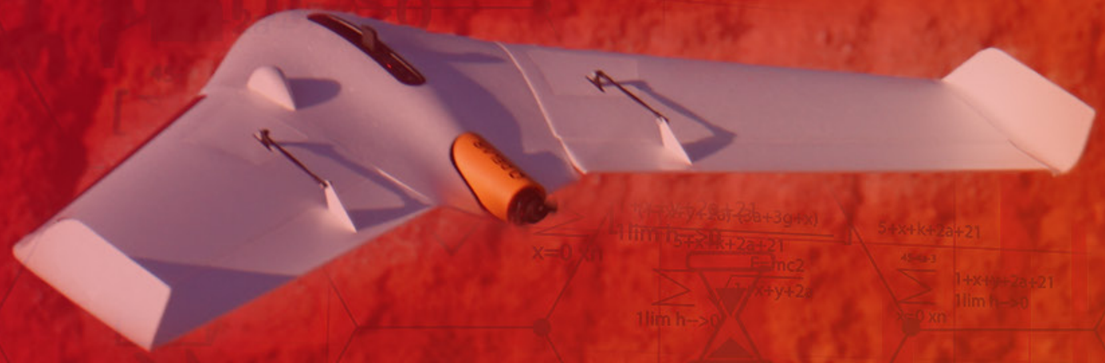


DELAIR

PRESS KIT 2018

“Drones allow us to create a virtual version of the real world which is both cost effective and highly efficient from a resource perspective. This digital twin makes it possible to better understand, manage and optimize the performance of an enterprise’s infrastructures and industrial assets.

In 2018, Delair is enabling a new level of efficiency for its clients' drone strategy, with a complete range of aircraft tailored to the needs of specific industries and turnkey software solutions for aerial data analysis. We are also working with technology leader Intel to offer the best cloud computing services in the market for managing and sharing data.” ***Michaël de Lagarde, President and co-founder of Delair.***

Leader in commercial drone solutions, World Economic Forum Technology Pioneer

Delair's solutions enable organizations to digitize and transform their activities through aerial intelligence. Delair drones are available in 70 countries, through a network of over 70 partners. In 2 years, this distribution network has enabled the company to record an 80% growth in its international sales. Delair also offers a software platform for processing and analyzing collected data based on artificial intelligence and machine learning techniques. Finally, Delair collaborates with clients in the integration of the technology into their business activities. Because of Delair’s value throughout over the entire drone value chain, the company has gained a unique level of experience in sectors as diverse as energy, transport, construction, agriculture and civil security.

With a proven reputation for reliability and long range autonomous operation, Delair drones became the world’s first professional drones to receive the necessary certification for out-of-sight flights *(BVLOS - Beyond visual line of sight)*. In 2017 and for the first time in France, Delair conducted an out-of-sight flight piloted using 3G technology, for a record distance of *50 km over RTE high voltage lines*.

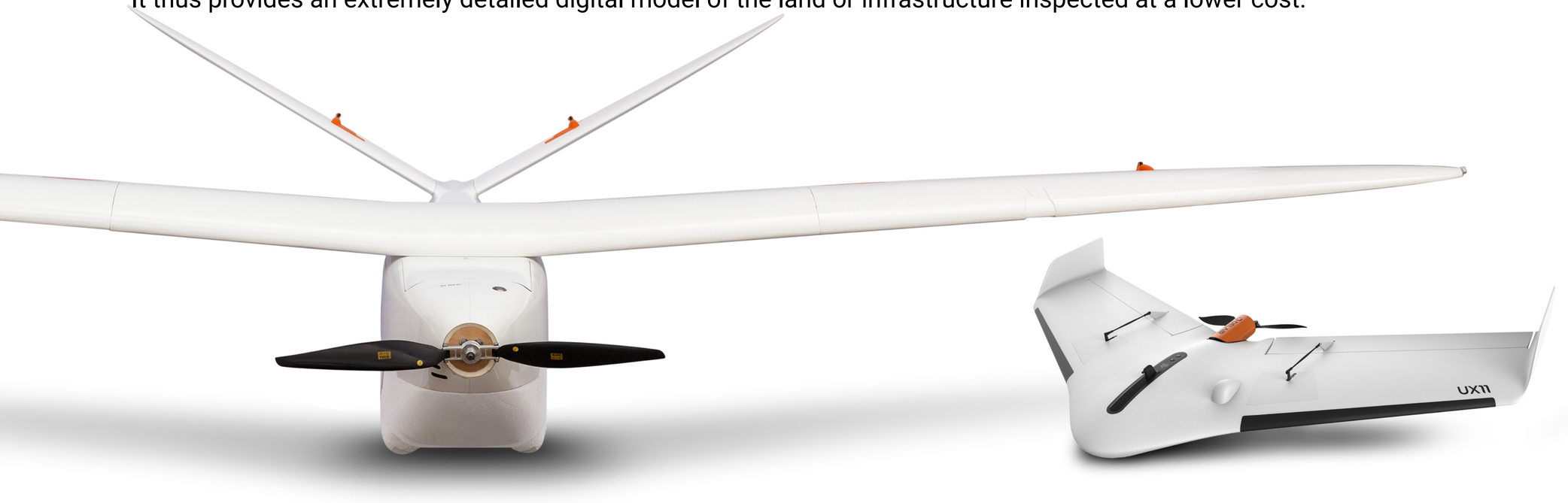
In June 2018, the World Economic Forum announced the world’s 61 most promising technology pioneers of 2018. These innovative companies were selected for their potential to "transform society and industry" and "shape the 4th industrial revolution". The only French company awarded in this year’s selection, *Delair is also the only provider of drone solutions in the selection*.

A complete range of drones to meet industry needs

Delair drones are designed for the inspection and mapping of large surface areas or terrains and infrastructure where access is difficult. They can cover surfaces 10 times larger than a quadcopter drone.

- Launched in April 2018, the **Delair UX 11**, is the latest addition to Delair fixed-wing product line. Designed for surveyors, topographers and GIS experts, the UX 11 is an economical, lightweight and easy to operate solution. It has enough computing power on board to allow the operator to control the quality of the images collected in real time, thus speeding up the steps of the data processing and analysis process. Thanks to the experience gained by Delair, the UX11 is optimized for BVLOS flights.

- Among the expert models in the Delair range, the new **DT26X LiDAR** released in February 2018 is the first fixed-wing drone on the market that combines a LiDAR sensor with an RGB video camera, greatly increasing the accuracy, efficiency and cost-effectiveness of a 3D mapping mission. Particularly suitable for hard to access environments, hidden by dense vegetation, the DT26X LiDAR allows the acquisition of LiDAR data and photogrammetric data in a single flight. It thus provides an extremely detailed digital model of the land or infrastructure inspected at a lower cost.



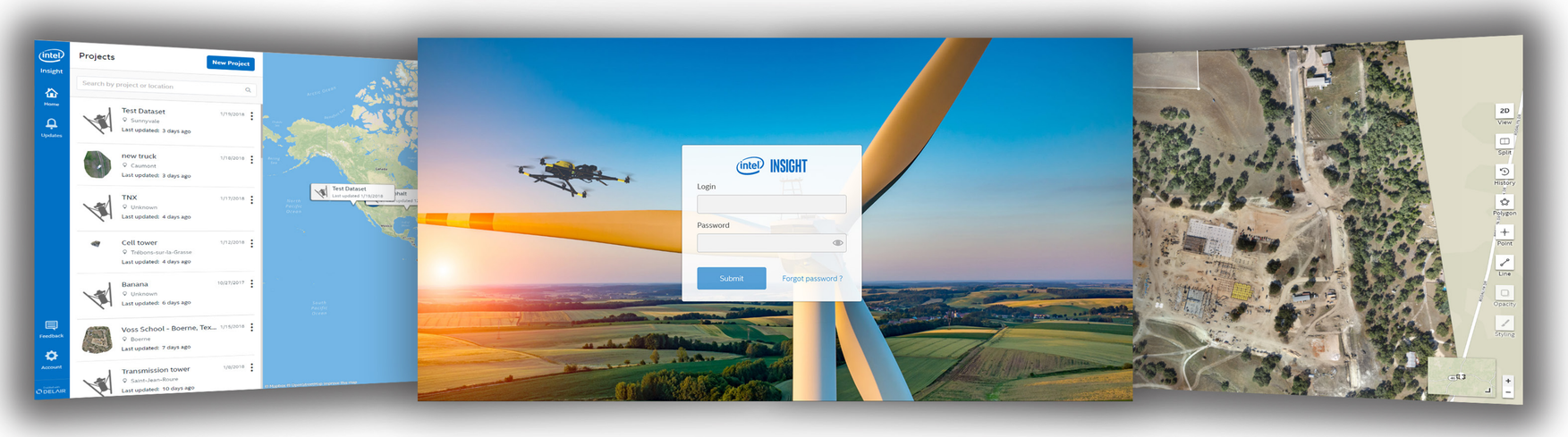
DT26X LiDAR and UX11 photography

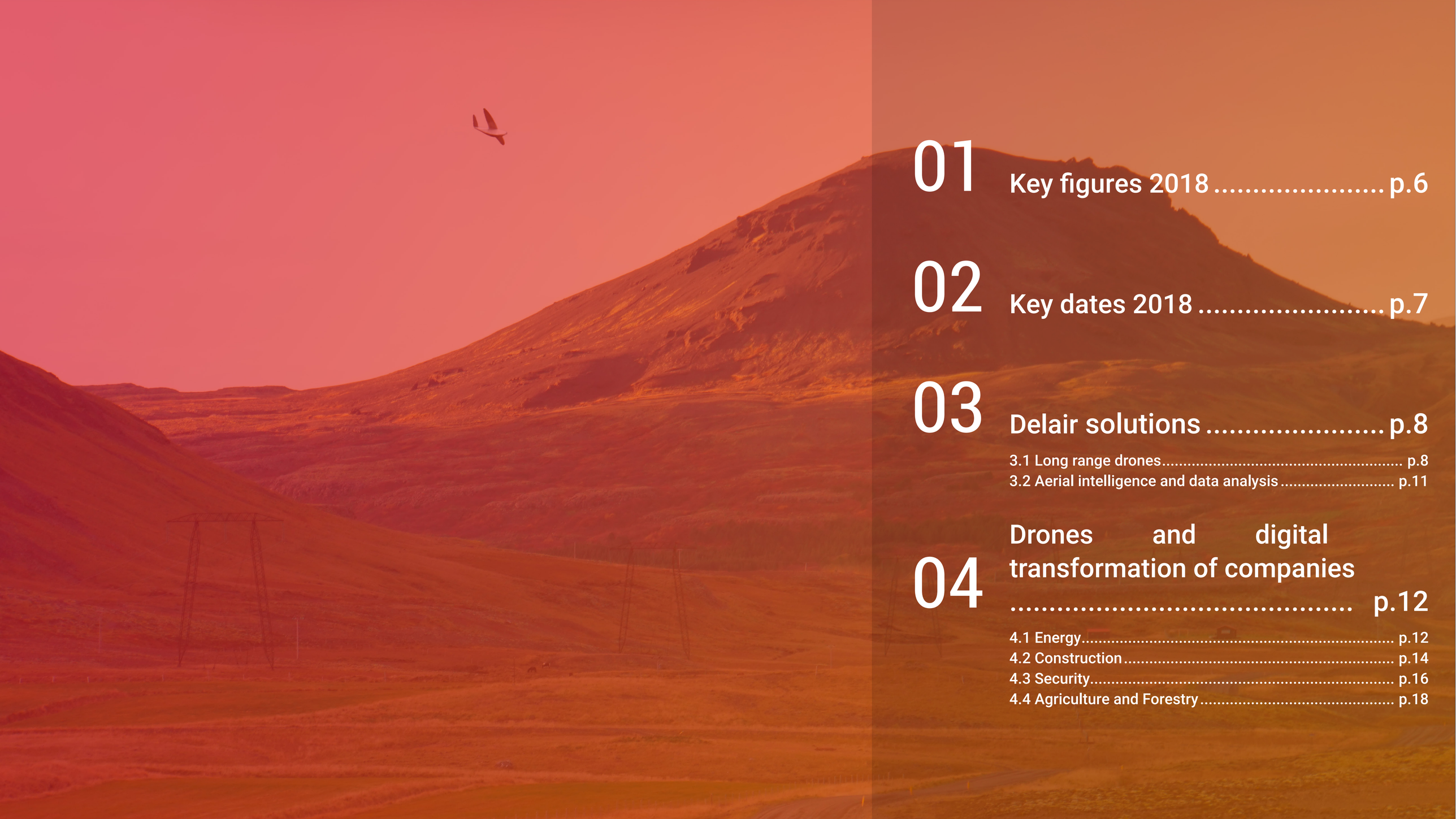
Drones and Big Data: Delair's drone expertise joins forces with the power of Intel's cloud technology

The amount of data collected by drones is growing exponentially and the challenge that companies face is to make this raw data usable and shareable. From day one, Delair has developed a software offering to enable companies to automatically process, analyze and integrate intelligence acquired by drones to provide actionable insights.

At the end of 2017, Delair signed a strategic partnership with the technology leader Intel to integrate the Delair software with the Intel Insight Platform. Commercially available from Intel since June 2018, the platform combines expertise in data science and artificial intelligence with Intel's cloud computing power. The goal: to make Intel Insight the reference solution for asset information modeling.

In September 2018, Intel Capital invested in Delair, confirming its commitment to the company and to accelerate the development of the software solution and artificial intelligence services. To achieve its objectives, Delair will be doubling the size of its Software Engineering and Artificial Intelligence (AI) teams. Approximately thirty new personnel are expected by January 2019.





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70 DEALERSHIPS

70 COUNTRIES

74%

Activity outside Europe

135 employees

+60 over the coming year

8 Industries

- Surveying & Mapping
- Construction
- Mines & Quarries
- Oil & Gas
- Power & Utilities
- Transportation
- Agriculture & Forestry
- Security & Defence

Raised Capital

2013, Seed funding

$3.5M
€3 040 128 ***through Andromède et Parrot***

2016, Series A

$15M
€12 990 569 ***through Andromède et Galia***

2016, Merger-Acquisition

$10M
€8 603 536

2018, Series B

confidential
through Intel Capital

2,525 Drones delivered

40,000 Flights

800,000 Flight kilometres

3 Million Images analysed

SEED MONEY

Delair raised $3.5M through Andromède and Parrot

2013

ACQUISITIONS

Takeover of Gatewing from American company Trimble, and of Bordeaux company Eukréa Electromatique

2017

SERIES B

Intel Capital invests in Delair

2018

2011

CREATION OF DELAIR

Michael de Lagarde, Bastien Mancini, Benjamin Michel, and Benjamin Benharrosh create Delair

2016

SERIES A

Delair raises $15M through Andromède and Galia

2017

INTEL PARTNERSHIP

Signing of the strategic partnership with Intel and creation of Intel Insight from the Delair Analytics platform

3.1 Long range drones

A complete range for industry

Delair offers a wide range of professional drones, weighing between 2 and 17 kg, capable of carrying different types of payloads (cameras, multispectral sensors, video cameras, thermal sensors, LiDARs, etc.). They have the following features:

- **Long range and long endurance flight**, notably enabling BVLOS flights.
- **Industrial equipment and sensors**, data accuracy to the centimeter,
- **3G/4G connectivity and integrated computing power** for real-time data quality control
- **Proven field experience**: robust, reliable, easy to use tools.

Integrated systems

Delair drones solutions are designed and built in France (Toulouse-Labège) and Belgium (Ghent). They integrate the hardware and software components necessary for the processing and analysis of data acquired during flight.

New in 2018: Delair UX11

Connected next generation drone

The Delair R&D team has developed the UX11, next generation drone for surveyors, topographers, and GIS (Geographic Information System) experts . Launched in April 2018, it is more compact, faster and more economical. It has a flight duration of 59 minutes with the highest coverage and resolution in its class, at 120m above ground.

“The Delair UX11 is able to use its camera to implement enhanced security procedures and can even perform the initial calculations on board and in real time. This speeds up the steps of the data processing chain for an optimized workflow. With the UX11, everything is done to ensure a simple, clear and efficient user experience." ***Benjamin Michel, co-founder and product offer manager.***

CONFIGURATION ADVANTAGES

A complete solution: Compatible with industry-leading data processing software, it addresses a wide range of business applications. In particular, UX11 enables creation of:

- High resolution orthophotographs.
- Digital 3D models for volume calculations, elevation profiles, embankments/cuttings, contours, vegetation encroachment, anomaly detection, etc.

Small, handy, easy to use: The UX11 is lightweight and easy to operate, with manual take-off and very precise landing thanks to ground-distance measurement technology.

Designed for out-of-site (BVLOS) flights : Using the experience acquired by Delair since 2011, the UX11 has been optimized for BVLOS flights.
It benefits from proprietary radio technology and 3G/4G connectivity to provide communication between the drone and the ground control station.

Real-time data control: The UX11 has enough computing power to access, process and transmit images to the operator in real-time. The new mission planning software on Android, offers innovative features such as the control of live data and the no-fly system over certain areas.

Click the following link to see the video presentation of the UX11: UX11 video

Click on the following link to see the UX11 page on our website: UX11

New in 2018: Delair DT26X LiDAR

First fixed-wing drone combining LiDAR laser and RGB camera

The LiDAR DT26X is one of the most technologically advanced models in the Delair range. Its range and autonomy are unmatched. It carries a payload of up to 4kg, including a LiDAR sensor, a laser detection aerial mapping technology that notably allows the relief hidden under vegetation to be revealed. Released in February 2018, the new DT26X LiDAR is the first fixed-wing drone on the market that combines a LiDAR sensor with an RGB video camera, dramatically increasing the accuracy, efficiency and cost-effectiveness of a 3D mapping drone mission.

Focus on LiDAR technology

LiDAR - an abbreviation for "Light Detection And Ranging", is a technology developed in the 1970s for use in space exploration: its first application dates back to the Apollo 15 mission, to establish a cartography of the moon. Since then, LiDAR technology has been perfected and democratized. Today, it is an ultra-precise aerial mapping technique that allows 3D areas to be represented through a dense cloud of points, and in particular to reveal the relief hidden under vegetation.

CONFIGURATION ADVANTAGES

Cost reduction and high precision: the LiDAR DT26X allows the acquisition of LiDAR data and photogrammetric data in a single flight. It thus provides an extremely detailed digital model of the land or infrastructure inspected at a lower cost.

Next generation sensors: designed by the RIEGL equipment manufacturer, the LiDAR sensor is both compact and robust to preserve the autonomy of the drone. The intelligent RGB camera, designed by Delair, allows automation of the quality control of images collected in flight. The combination of these two technologies makes this drone a unique product on the market.

APPLICATIONS

- Mapping, 3D modeling, inspection of difficult to access terrain or infrastructure, in the presence of dense vegetation.
- Topographic studies: slope stability, volume calculations, profiles, embankments/cuttings, contours, catchment basins, etc.
- Construction or maintenance of power lines: detection or prevention of the encroachment of areas by vegetation
- Construction of road and rail infrastructure: needs evaluations for cuttings and embankments, analysis of surface stability, site monitoring
- Forest management: tree height measurement, forest inventory, vegetation classification

Click the following link to see the video presentation of the Delair DT26X LiDAR: DT26X video

Click on the following link to see the DT26X page on our website: Delair DT26X LiDAR

3.2 Aerial intelligence and data analysis

Intel Insight, la plateforme Cloud développée par Delair

At the end of 2017, Delair signed a strategic partnership with the technology leader Intel to make the Delair software platform available worldwide. Commercially available from Intel since June 2018 under the Intel Insight brand, the platform combines expertise in data science and artificial intelligence adapted to Delair drones with Intel's cloud computing power.

The goal: to make Intel Insight the world reference solution for asset information modeling.
Intel Insight is service independent and aggregates all sources of aerial data:

- The images acquired by all types of drones because the market is moving towards the management of mixed drone fleets - fixed wing and multirotors.
- The images acquired by satellites, planes, or helicopters.
- In the near future, Delair's ambition is to integrate data from terrestrial IoT sensors into Intel Insight, to provide businesses with a complete modeling of their infrastructures in the cloud.

The mission of Intel Insight: to become an "appstore" for professional drones, a marketplace that brings together the entire ecosystem in aerial imagery: hardware, software, professional services, experts in various sectors of activity, AI services and machine learning, etc.

4.1 Energy

Our clients in the Energy sector, who are very demanding in terms of security, are looking for efficient, cost-effective and safer alternatives to the traditional inspection and asset monitioring methods carried out by personnel in the field or by helicopter.

Analytics

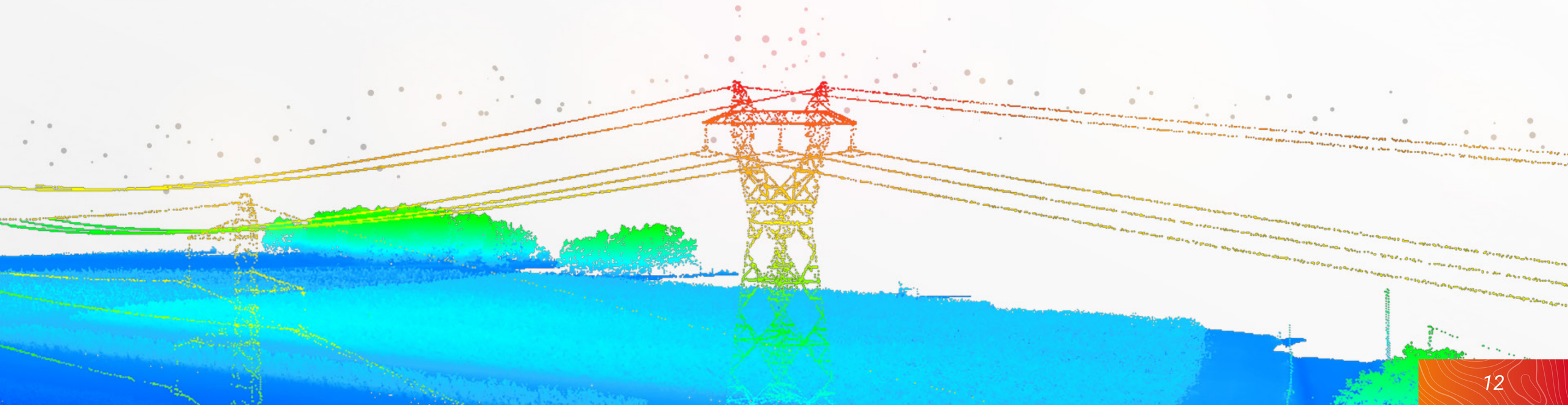
- Vegetation encroachment
- Digitization of pylons, poles and power lines
- Insulator verifications

Please visit our website to learn more about all of our analytical solutions for energy and utilities:

www.delair.aero

Added-value of Delair solutions

- Reduction of inspection costs
- Table of operations with accurate digital data management
- Prevention of power cuts during inspections
- Reduction in number of agents working on scaffolding
- Limitation of exposure to live circuits



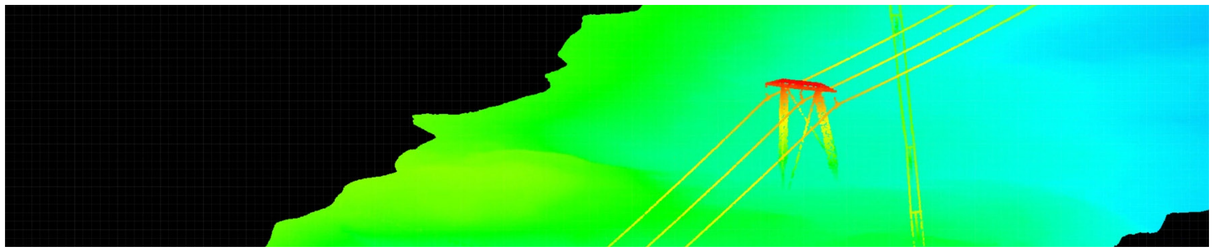
Case study

Mapping of power line corridors in Iceland with out-of-sight flights and LiDAR technology

LANDSNET Landsnet is the main electrical transmission system operator in Iceland. As part of a project to build a new power line corridor in the north of the island, between Akuyeri and Hosaland, Delair mapped and inspected more than 70 km of tundra. The objective: to study the existing infrastructure and optimize the layout of the new corridor to ensure the best possible transmission and stability of the system. Delair, in collaboration with the engineering company EFLA Consulting, flew its 2 most technologically advanced drones, the *DT18 HD PKK* and the *DT26X LiDAR*, to obtain the most accurate data possible by coupling RGCB images and clouds of LiDAR points. This was the first professional drone flight carrying LiDAR technology in Iceland.

By coupling the LiDAR and photogrammetric data obtained on Delair's software platform, EFLA Consulting was able to achieve in record time:

- A very precise digital surface model (DSM) showing the topography along the proposed corridor for new lines,
- 3D models of conductors, insulators and towers of the new lines



70 km
of lines

10 DT18HD PPK
flights

2 DT26X LiDAR
flights

75 LiDAR pts
per m²

For more details on this mission, a great video is available for viewing here:

DT26X LiDAR Iceland mission

4.2. Construction

Aerial data now plays a key role in the digitization strategy of shipyards, mines, quarries and terrains. Drones are now a part of an increasingly connected environment, where many sensors equip machines and tools. Aerial data merges with terrestrial data, and transforms into operational information that can be directly exploited by all participants in a construction project. Scanned in record time, terrains, quarries and structures are then modeled in 3D for more accurate, economical, and safer job monitoring.

Analytics

- Topography: contour lines, cross sections, altitude measurements
- Ortho-images & DSM
- Mining operations: monitoring, topographic surveys and volume calculations
- LiDAR points cloud

Please visit our website to learn more about our Construction dedicated Analytics: *www.delair.aero*

Added-value of Delair solutions

- Better quality: industrial cameras, combining GNSS & IMU technologies for more precise geolocation
- QA/QC of data in real time with complete control of the sensors during the flight
- Up to within 2 cm accuracy without any control point (GCP)
- Coverage of large areas with BVLOS drones
- Seamless integration into the client's workflow from flight planning to deliverables

Case study

Mapping of construction sites

In French Guyana, the rainy season lasts nearly eight months. Precipitation damages quarries, tracks and sites, and landslides damage construction works. The local subsidiary of Eiffage Infrastructure, specializing in roads, sanitation and civil engineering, equipped a *Delair DT18 HD PPK* drone to:

- Obtain precise and regular photography of the progress of the construction sites, in particular of the critical phase of earthworks,
- Analyze the condition of quarries and tracks to identify those that could slow down or damage machines.
- Provide a high degree of accuracy to ensure responsiveness and performance in all areas

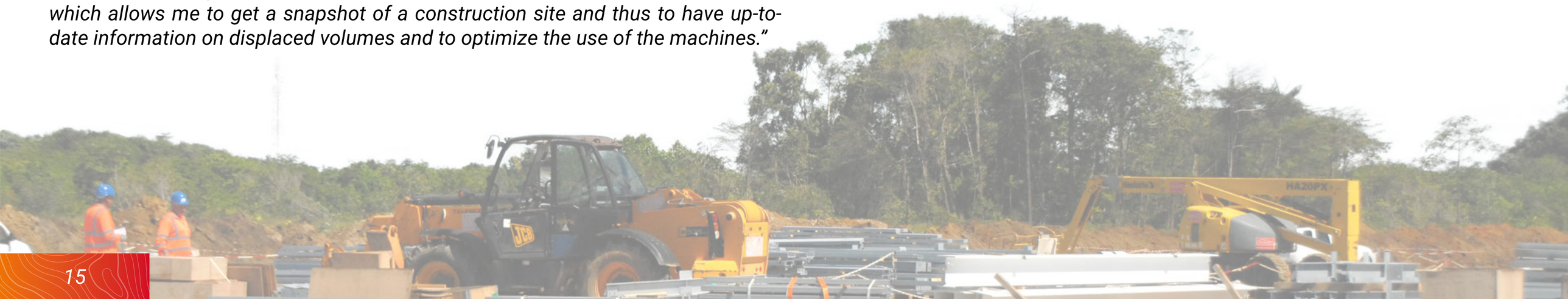
Jérémy Moreau, head of topography surveying at Eiffage Infrastructure Guyana: *"Our business is based on the acquisition, exploitation and analysis of field data. Terrain modeling and volume calculations are essential to our risk assessment and allow us to optimize earth movements. The drone is a non-invasive solution, which allows me to get a snapshot of a construction site and thus to have up-to-date information on displaced volumes and to optimize the use of the machines."*

The data acquired by the Delair DT18 HD PKK was analyzed and used for decision-making on the construction sites:

- **Ortho-images**: allow generation of a 2D map base with a spatial resolution of up to 2 cm / pixel thanks to the PPK integrated in the drone. The ortho-image is then integrated into the GIS tools to establish the layout plan of elements of the structure. After the passage of the first machines, the ortho-images make it possible to verify the conformity of the works compared to the project plan.

- **3D digital surface models:** they allow elevation profiles and cross sections to be obtained but also permit volume calculations in order to measure the slopes for the passage of the construction machines, calculate the volumes of embankments and cuttings or measure the level of material stored or to be moved.

The 3D models are then shared on a web platform and can be used by all the participants in a construction site. *"Today, data analysis and data sharing are strategic elements for winning a project"* concludes Jérémy.



4.3 Security

Drawing on company expertise, Delair has integrated its drones into civil security and surveillance operations: rescue operations and fire risk prevention, natural disaster management, infrastructure and industrial site monitoring.

Designed and built in France, the Delair DT26X Surveillance is one of the most technologically advanced models in the range. It is especially suitable for remote or night surveillance missions, thanks to its X10 optical zoom and infrared sensor. Equipped with an on-board stabilization system, it is also equipped with a human reconnaissance system (at more than 1.5 km away), day and night.

Proven in the most extreme conditions (desert, rocks, mountains, tropical forest, snow), able to land on any type of terrain, it is equipped with a resistant protection for the sensors.

Case study

Regular surveillance of railways environment & emergency surveillance

The SNCF has been equipped with Delair drones to inspect its network of more than 30,000 km of tracks, on a daily basis and in emergency situations: encroachment of vegetation, acts of vandalism, intrusions on the track, railway accidents.

More economical than helicopter flight, less dangerous and faster than sending technicians to survey the track, the drone is placed naturally in the chain of surveillance operations, in tandem with other tools.

Equipped with an X10 optical zoom and an infrared sensor, the DT26X Surveillance has been used day and night by SNCF teams. In liaison with law enforcement, these operations have enabled the SNCF to significantly reduce the direct and indirect costs related to vandalism on the tracks.

30 km
Transects

17,000
km of flights

330
flight hours

30,000
km of rail network

4.4 Agriculture and Forestry

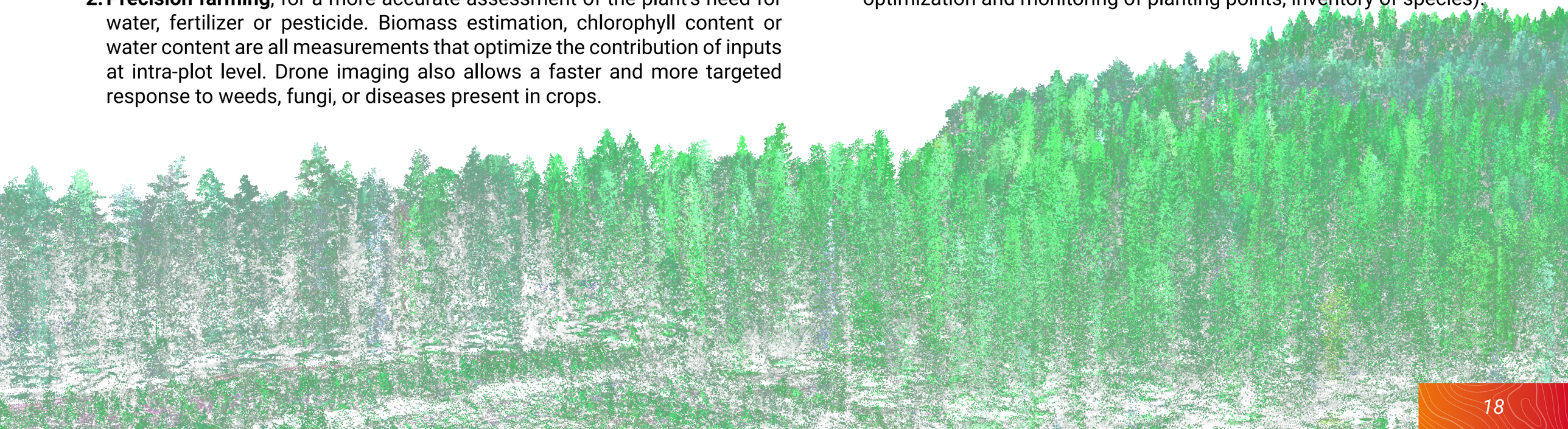
Drones and low altitude aerial imagery pave the way for new applications, significantly reducing the cost and efficiency of agribusiness activities. In the extensive family of professional drones, fixed-wing drones are distinguished by their endurance, their autonomy and their productivity. They are able to cover large areas in a single flight, up to 30 times more than a quadcopter drone, recording a multitude of information at plant level.
The collected raw data are analyzed and transformed into concrete recommendations in sectors as varied as plantation management, agricultural experimentation and seed production, crop monitoring, or product traceability.

1. **Phenotyping and characterization** of a plant in a **given environment**. The collected data make it possible to monitor the vigor and the yield of crop varieties. Counting, measures of the health and size of plants and reactions to water or heat stress are all indicators that can be used to select new varieties that are resistant to the effects of climate change, diseases or insects.

2. **Precision farming**, for a more accurate assessment of the plant's need for water, fertilizer or pesticide. Biomass estimation, chlorophyll content or water content are all measurements that optimize the contribution of inputs at intra-plot level. Drone imaging also allows a faster and more targeted response to weeds, fungi, or diseases present in crops.

3. **Agricultural plantations**: Drone observation also opens the way to new producer to consumer traceability tools. The data collected could notably be integrated into a certification process in the approved channels.

4. By providing a 3D mapping of the soil of the site as well as a description of the vegetation, observation by drones facilitates the **management of forestry and aids reforestation** (counting of trees, monitoring of plant growth, optimization and monitoring of planting points, inventory of species).



Case study

From drone to plate: precision farming and traceability of agricultural sectors

The SIAT group manages 42,000 hectares of oil palm plantations and 22,000 hectares of rubber tree plantations in Africa and Asia. For the past 5 years, the Group has been involved in a process of sustainable development and certification of its palm oil (RSPO - Round-table on Sustainable Palm Oil) and natural rubber production activities.

The company has ambitious stated goals in terms of yields and production quality. In order to carry out a complete diagnosis of its plantations, while reducing the cost of its operations, SIAT acquired 2 Delair fixed-wing drones.

Arnaud Leidgens, head of drone activities at SIAT: *"With 2 drone flights per day, we analyzed 1400 ha per day. Only 50 days of flight are required to analyze a total of 75,000 ha. After only 6 months of use, we halved our operational costs and noted a first return on investment (ROI). "*
"Moreover, the resolution of the images and the flexibility of the drone solution make it more interesting than traditional aerial imaging solutions. "

The *DT18 AG* is a fixed-wing drone specially designed to aid agricultural decision-making. It is equipped with a RedEdge multi spectral sensor, able to analyze the vigor and the health of plants. The DT18 was the world's first fixed-wing drone certified for operations out-of-sight of the pilot. In fact it can fly 10 km beyond the pilot, with an autonomy of up to 120 minutes, and is therefore particularly suitable for mapping large areas.

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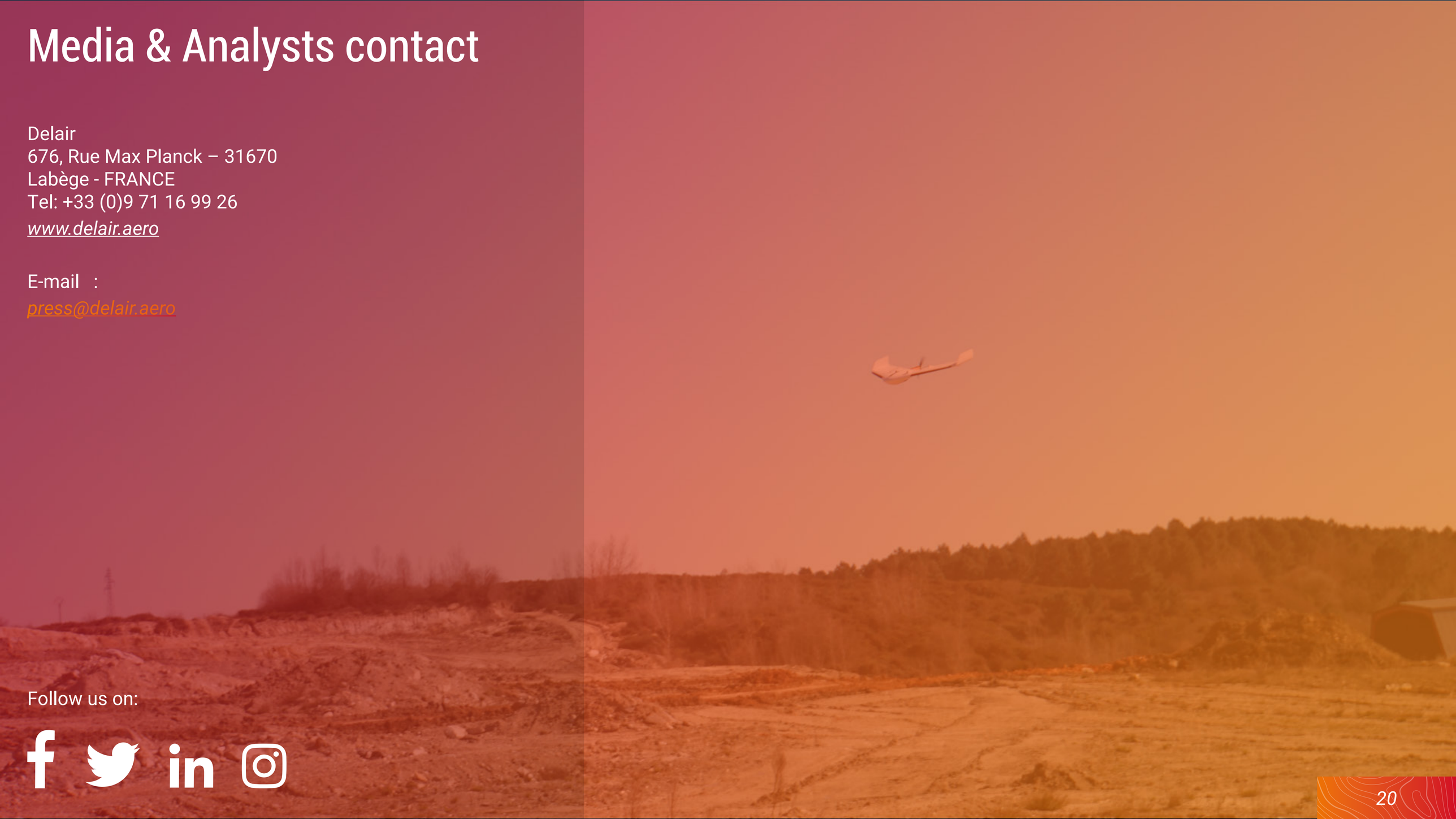
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