

Make it fly.
Safe and easy.

Germandrones develops and produces unmanned aerial systems (UAS) and Droneintelligence software for professional purposes. Our team combines quality engineering, research and development with a passion for innovative technologies. We are striving to design products that prove themselves in the real world and help our customers to overcome current limitations.

Our flagship product Songbird combines the efficiency, speed and range of traditional airplanes with the vertical take-off and landing ability of modern multi-rotor drones. This combination does not only expand the scope of existing UAS use-cases but offers a completely new range of applications.

OUR MISSION

flexibility and safety
without compromises

We tested our products all over the world, including in harsh environments from deserts to snow.



Our projects

<p>2016</p> <p>Romania</p> <p>Photo inspection of solar fields</p>	<p>2017</p> <p>Sweden</p> <p>PoC to fly medical equipment and organs from hospital to hospital</p>	<p>2018</p> <p>Germany</p> <p>BVLOS for railway and power infrastructure (ADS-B and FLARM) Mapping of railway line, LIDAR scanning</p>	<p>2019</p> <p>Belgium</p> <p>BVLOS for railway security. Surveying to secure railway lines, Day and Night flight to prevent cable theft</p>	<p>2020</p> <p>Rwanda</p> <p>Lake Kivu Challenge at African Drone Forum</p> <p>Colombia</p> <p>flights at 3.000m ASL</p>	<p>2021</p> <p>Germany</p> <p>BVLOS operation in an Air traffic-controlled area. Power- and pipeline inspection up to 100km in one flight</p>	<p>2022</p> <p>Germany</p> <p>Birdbox - hangar for automated performance Software Module to generate an automated Specific Operational Risk Assessment (SORA)</p>
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Product development stages

<p>Proof of concept</p> <p>Songbird 500 & Songbird 1400</p>	<p>Songbird v3 for bigger payloads</p>	<p>4G-Datalink option</p>	<p>Droneintelligence © software</p>	<p>ISO 9001:2015 certification</p>	<p>Songbird in Berlin via LTE from Cairo (Egypt)</p>	<p>LiDAR integration</p>	<p>IMSI-catcher Cloud Solution Software</p>
<p>Prototype Songbird v2</p>	<p>Flight time record 2:04 h</p>	<p>Industrial production Songbird 60, 100 & 150</p>	<p>Songbird operation within manned air traffic (airport and traffic control zone)</p>	<p>Droneintelligence software modules for mapping and military surveillance</p>			

SEED PHASE

START-UP PHASE

GROWTH



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ABOUT SONGBIRD

Advanced aerodynamic design results in flight times of more than two hours and above 100km distance.

The Songbird is the result of years of testing, software development and optimization. It combines advantages of fixed-wing aircraft with multirotor drones by vertical take-off and landing (VTOL) via motor transition. It results are longer flight distances with the requirement of single parking place.

The Songbird carries payloads up to 4,4 kg (9.7lb), enabling operation with large battery capacity, dual cameras or highly specialized sensors such as LiDAR or other real-time mapping solutions.

Depending on the payload, up to 25 km² (10sq mi) can be covered per flight. The Songbird has been extensively tested in extremely challenging environments, from the windswept dust in the hot African desert, to the challenging terrain of the humid, South American rainforest.



TECHNICAL SPECIFICATIONS

	Songbird 60	Songbird 100	Songbird 150
Wingspan [m]		2,98/3,12	
MTOM [kg]	9,5	10,8	14,0
Maximum Payload [kg]	1,0	2,0	4,4
Airframe Material	Fiberglass/Carbon Composite	Fiberglass/Carbon Composite	Fiberglass/Carbon Composite
Cruise speed [m/s]	16-25	16-30	17-32
Maximum Flight time [min]			
- camera only	58	150	90
- max. payload	30	45	45
- typical	45	60	90
Range [km]	< 60	90	110
Altitude [m]			
- service ceiling	2.700	2.000	5.000
- max. take-off	2.200	1.500	4.000

	Songbird 60	Songbird 100	Songbird 150
Wind Tolerance			
- Start/Landing auto [m/s]	6	6	7
- Start/Landing man. [m/s]	8	10	11
- Fixed Wing Mode [m/s]	12	14	15
Rain Tolerance	light rain	light rain	moderate rain
Propulsion	4 tilting electric motors		
Radio Control	433 MHz/2,4 GHz		
Telemetry	868-900 MHz / 433 MHz LTE / 5G		
Safety Actions triggers	Low battery warning, Telemetry lost warning, RC connection lost warning, Geofence Breach		
Safety Actions	Return to launch / Position hold / Land immediately / Land at defined places		
Set Up time	<10min	<10min	<10min



DRONEINTELLIGENCE © GROUND CONTROL SOFTWARE

Advanced software for smart control.

We designed the Droneintelligence software to make our client's user experience easy and multifunctional at the same time. It has everything essential for a large variety of applications from surveillance to professional mapping. You will be able to control everything during the flight including online changes if needed. An opportunity to use SRTM (Shuttle Radar Topography Mission) model helps to choose the best flight parameters directly in the software. It is possible to use it either for terrain follow mode, to find the best take-off point based on the area's elevation profile or to avoid collisions.

DRONEINTELLIGENCE © GROUND CONTROL SOFTWARE

Variety of features for flight performance.

For the increasing demand in BVLOS-flights (beyond visual line of sight) we integrated and successfully tested the use of ADS-B/FLARM technology to operate in cooperation with manned air traffic including operations in controlled airspace at airports via our DroneIntelligence software. Ongoing development of our software in conjunction with our hard- and software maintenance concept allows our clients to use the extensive range of safety features, flight mission applications and payloads.

Usage of 4G and 5G technology widens the application of the Songbird solution. It erases the limitations of radio control when the connection reliability relatively depends on distance. And at the same time, this technology benefits video streaming to the Cloud platform which can be reached and analyzed from any point of the world.



Flight and Mission Planning



Live Camera Control



Click-on-POI Navigation



Telemetry and Flight Control



Mapping and Inspection Grids



Supports Data via Cell Phone Network



Ideal for VTOL Systems



Runs on Windows



Supports Data via IP Mesh

PAYLOAD OPTIONS

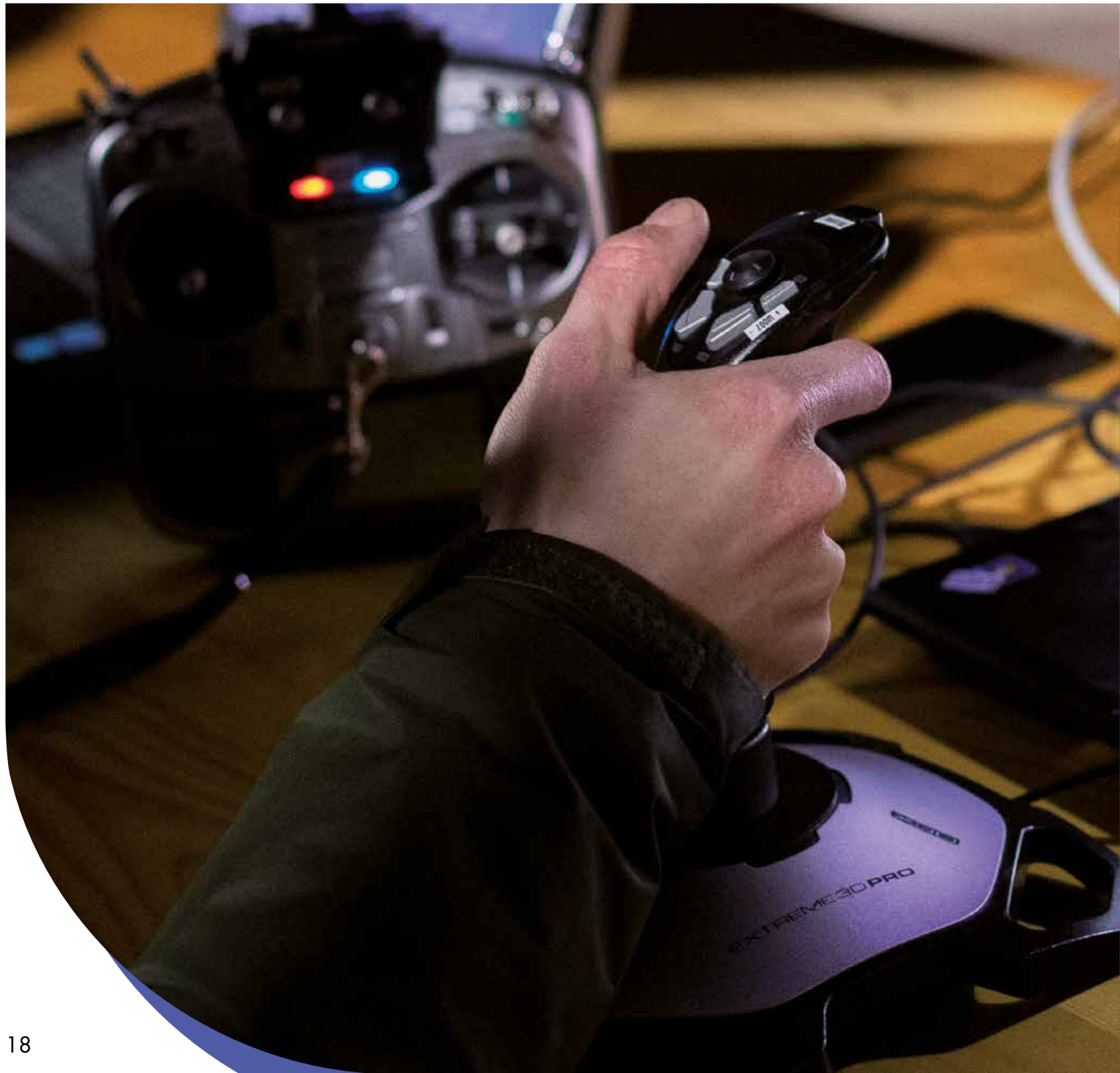
Versatility with easy to change payload options.

The Payload integration kits are designed to make our customer experience as simple as possible. Changing payloads requires only a few minutes in field conditions.

Songbird users will be ready to conduct operations in different industries using different sensors: high-resolution RGB cameras, Thermal, Multispectral, LIDAR etc. with only one UAV.

Multiple sensors are already integrated to in Droneintelligence © GCS, so the customer can choose the appropriate sensor in the software and every image will be received with perfect parameters for further data post processing.





SECURITY AND SURVEILLANCE

Eye in the sky.

The Songbird equipped with stabilized video gimbal with a remotely transmitted high-definition live stream enables you to observe high-risk areas from a safe distance and over extended periods of time. Whether it is an accident zone where you need frequent updates on the situation or a no-trespassing area, live video in the optical and/or thermal spectrum gives you the ability to make informed decisions. It is possible to monitor large factory sites, airports, railways, pipelines, borders, coasts or powerlines continuously due to the long flight time of up to two hours.

At the same time the Songbird provides reliable connection for video transmission up to 20 km. The 4G and 5G option Provides flexibility to operate the Songbird from any part of the world.

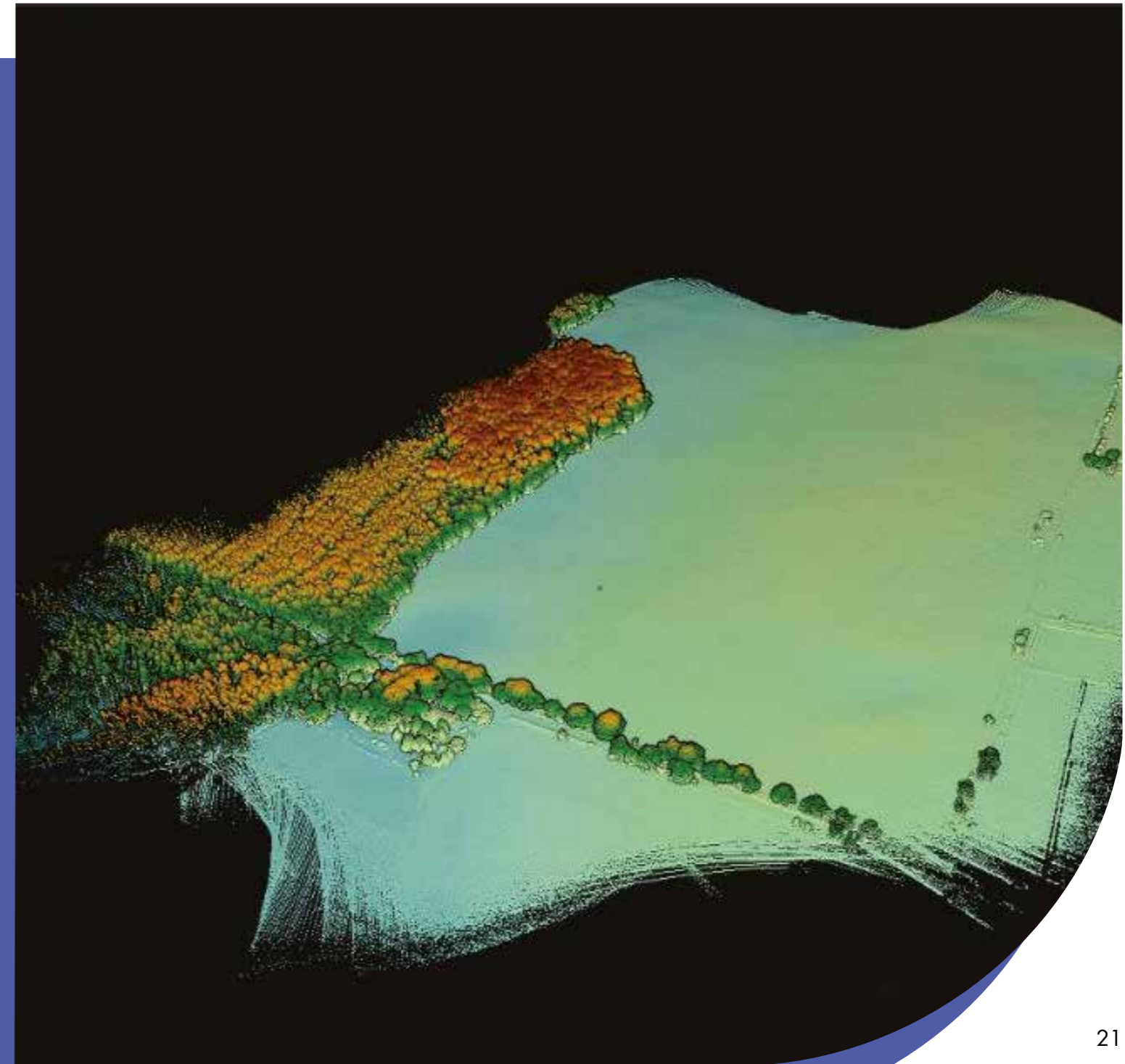
SURVEYING AND MAPPING

Precise solution for large territories.

The Songbird can be equipped with high-resolution cameras and high precision GNSS and IMU which makes it the premier solution for surveying, mapping and documentation tasks. The resulting imagery and 3D models meet industrial requirements.

The Songbird, equipped with optical and multi-spectral cameras, helps to enhance crop yield through a variety of ways. Determining plant health, pest infestation or overall biomass can help you to optimize pesticide usage. Another application is the optimization of irrigation equipment which is especially relevant in areas struck with frequent droughts. Modern plant analysis software can be employed to gain the best insight into the status of your crops and can be used to predict growth over the seasons. You can survey areas of up to 25 km² in a single flight, making it possible to quickly gather precise information of very large areas.

The Songbird can be taken into the field by a single operator. It is transported in a sturdy aluminum box, Hard-shell suitcase or backpack and is assembled and ready to fly in less than 10 minutes.





TRANSPORTATION

Access to hard-to-reach territories without limits.

The Songbird was designed to fly large distances with a heavy payload which makes it a perfect solution for the delivery purpose. So we launched the project "DRONES4LIFE ©", which aims to deliver urgent laboratory samples from hospitals and mobile ambulances to analysis facilities, thereby saving vital time compared to road transport. Thanks to the flexible use of UAVs, it is conceivable that samples can be sent directly from the scene of the accident – when the patient arrives at the hospital, the results are already available and treatment can begin more quickly.

The core of the payload is the external transport container, which is filled with medical samples or similar and hung under the fuselage with just one movement. At the destination, it is electronically unlocked again so that the personnel on site can remove the goods.

Our transportation solution includes but is not limited to medical goods transportation only. Our engineering teams are able to adopt the payload for any tasks until it has a weight of up to 4,4 kg.



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