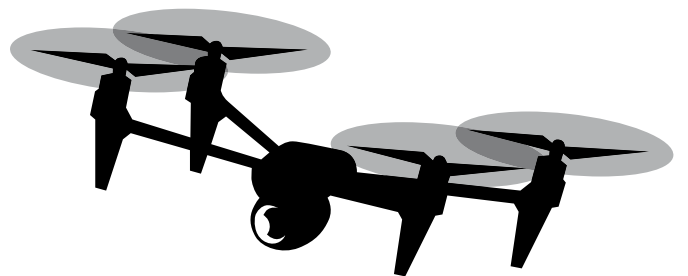


TERRA 4D and UAVs

Advanced Drone Module



extend your view



TERRA

TERRA 4D – The innovative software platform containing a fully integrated Drone Module.

The Drone Module in TERRA 4D offers solutions for drone control and detection.

Control

Untethered and tethered drones are fully integrated in TERRA 4D to become a highly flexible sensor platform for sophisticated security and surveillance projects. Drones and sensors (e.g. PTZ camera or thermal camera, like CM100 dual sensor gimbal by UAV Vision) are managed via TERRA 4D and critical information is delivered in real-time:

- Visualization of current drone position and historical positions
- Recording of drone positions on ground
- Send drone to target coordinates
- Report drone status (state of health)
- Live video transmission from the drone, video recording on ground
- Visualization of field of view of the camera
- PTZ control via target coordinate (e.g. track radar object)
- Determine object location (lon., lat. elev.), speed, direction and size from video image
- Get address by clicking in the video

Detection

TERRA 4D provides an Integration Platform for automatic drone detection solutions that aggregate and correlate various subsystems to visualize drone threads and helps operators to automatically release actions:

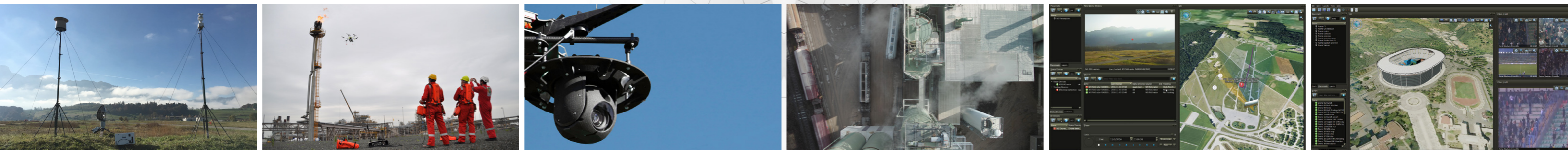
- All-embracing system solution that unites individual components and manages them using user-friendly software
- Modular system easily extendable with additional sensors to monitor the airspace 24/7
- Simple configuration and correlation with other subsystems
- Maximum alarm response and notifications in real-time
- Precise identification of causes
- Guided intervention and incident reporting
- Time-synchronized recordings for later playback
- Superior situational awareness through the TERRA 4D GIS based GUI

The Drone Module in TERRA 4D offers state-of-the-art features that support advanced drone applications within any kind of safety and surveillance projects. Security operators receive critical information in real-time and are able to assess and resolve incidents efficiently. Features like drone control, sending drones automatically to target coordinates, multiple object tracking, time machine, workflow and incident reporting, localization and virtual visualization are a few of many helping operators to react immediately and efficiently on security incidents. Thanks to the 3D GIS model the intuitive and field-approved user interface provides superior situational awareness in all circumstances.

The TERRA 4D platform links drones and subsystems seamlessly together. This integration and unification of all subsystems enables acquisition and analysis of all information as one central entity to allow comprehensive and effective protection of critical assets.

**Better safe than sorry.
Always and everywhere.
Protection of your airspace 24/7.**

- Border Protection
- Army Camps
- Intelligence and Law Enforcement / ISTAR
- Industry
- Construction Sites
- Transportation Networks and Infrastructure
- Utilities and Critical Infrastructure
- Airport
- Tracking
- Smart City
- Prisons
- Stadiums



UAV Control

Visualization of position	Visualization of current drone position and historical positions.
Recording of positions	Recording of drone positions on ground.
Send UAV	Send drone to target coordinates.
Status	Monitor and report drone status (state of health) on ground.
Video transmission	Live video transmission from the drone and video recording on ground.
Geo-referenced video	Determine object location (latitude, longitude, height), speed, direction and size directly from video image.
Field of view	Visualization of field of view of the airborne camera.
PTZ control	PTZ control manual (click on target) or via target coordinate (e.g. tracking of radar objects).
Get address by clicking in the video	Get address by clicking in the video.
Meta data recording	PTZ head data are recorded.

UAV Detection

Integrated solution	All-embracing system solution that unites individual components and manages them using user-friendly software.
Modular system	Modular system that can easily be extended with additional sensors to monitor the airspace 24/7.
Recording	Time-synchronized recordings for later playback/evidence
Manage response	Maximum alarm response and notifications in real-time.
Intervention and incident reporting	Guided intervention and incident reporting.

3D Visualization

Multi Layer GIS with real-time rendering engine	Digital Terrain Model (DTM), Ortho imagery (aerial or satellite images), Street map, 3D buildings.
Object track visualization	Trace object's movement including historical track in 3D GIS model.
Video wall	Live or playback video is "projected" on virtual video walls in 3D GIS model. Camera orientation and view area is shown.
Avatar	Represents a detected object and its class in the 3D space.

Command and Control

Video wall	Support of video walls and multiple screens per desk.
Time machine	Navigate through space and time and see all recorded data (video, tracked objects, PTZ positions,...) time-synchronized.
Flexible GUI layouts	GUI layouts changing automatically or driven by operator. User and situation specific layouts are possible.
Chat messenger	Operators exchange information quick and simple.

Event and Alarm Management

Workflow automation	Intuitive workflows remove operator randomness and reduce stress.
Escalation and delegation	Escalate alarms to super visor user groups or delegate alarms to other operators for work balancing.
Procedure enforcement	Workflows enforce company's or legal compliance guidelines.
Operator alarm	Operator can select alarm templates and fire alarms at specific locations on the map or directly in the video.

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