

real-time

Airport Solution

extend your view **4+**

T E R R A



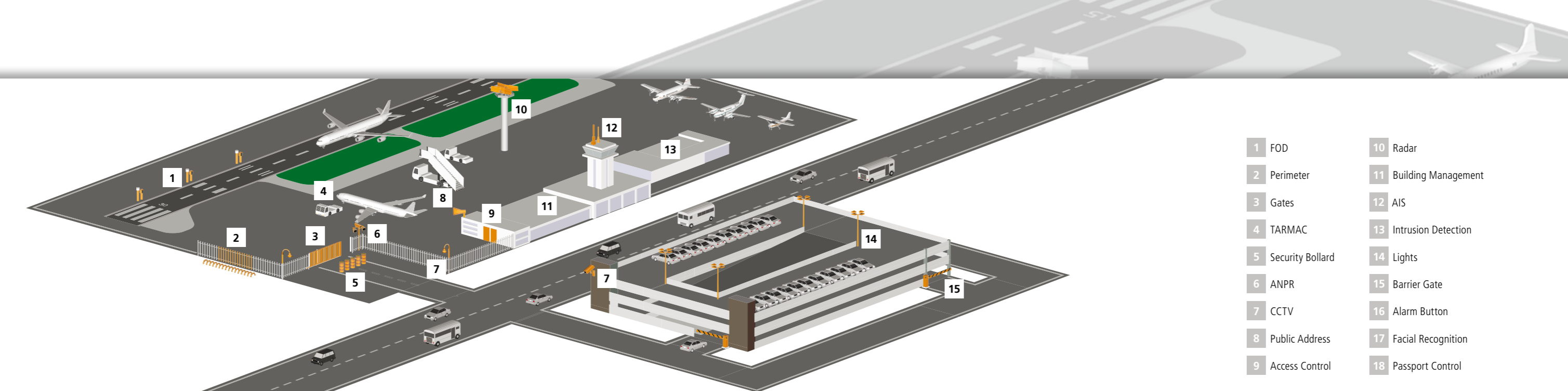


TERRA 4D – The innovative software platform which immediately takes you to the next dimension in security management. It solves any unanswered questions related to airport security and safety. Why settle for less?

TERRA 4D airport solutions offer advanced features that support security operators to assess and resolve incidents efficiently. Features like multiple camera object tracking, time machine, workflow and incident reporting, localization and dispatching 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.

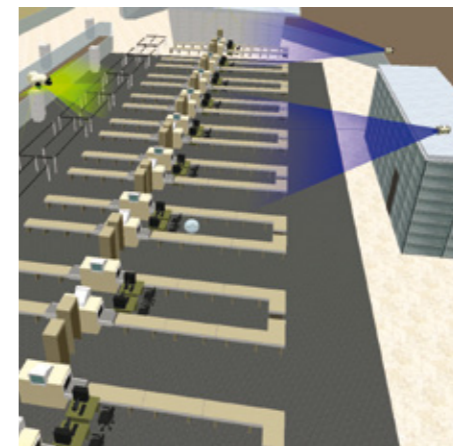
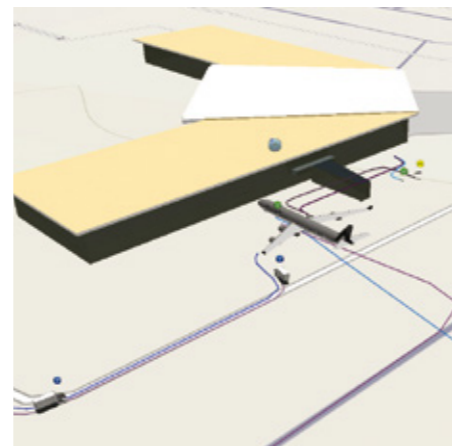
TERRA 4D platform links airport systems and sub-systems seamlessly together. This integration and unification of all subsystems enables acquisition and analysis of all information as one central entity to allow comprehensive and effective protection.

TERRA 4D Physical Security Information Management (PSIM) solution facilitates incident detection, security and safety related incidents, presenting the complex information in a simplified geographical context to operators, therefore offering them with superior situational awareness.



- | | |
|--------------------|------------------------|
| 1 FOD | 10 Radar |
| 2 Perimeter | 11 Building Management |
| 3 Gates | 12 AIS |
| 4 TARMAC | 13 Intrusion Detection |
| 5 Security Bollard | 14 Lights |
| 6 ANPR | 15 Barrier Gate |
| 7 CCTV | 16 Alarm Button |
| 8 Public Address | 17 Facial Recognition |
| 9 Access Control | 18 Passport Control |

TERRA 4D translates unstructured sensor and system data into structured data and displays it in a geographical context, offering superior real-time situational awareness. Gathering enough data and patterns gives greater insight into content and allows content analytics to make a faster correlation, assisting safety officials in their decision making, identification of the correct protocol, availability of resources and when and where they should be deployed. Operators at Airport Security, Law Enforcement, Transportation or Emergency Agencies can fly through time and space having virtual "eyes-on-the-scene".



Screenshots TERRA 4D Interface

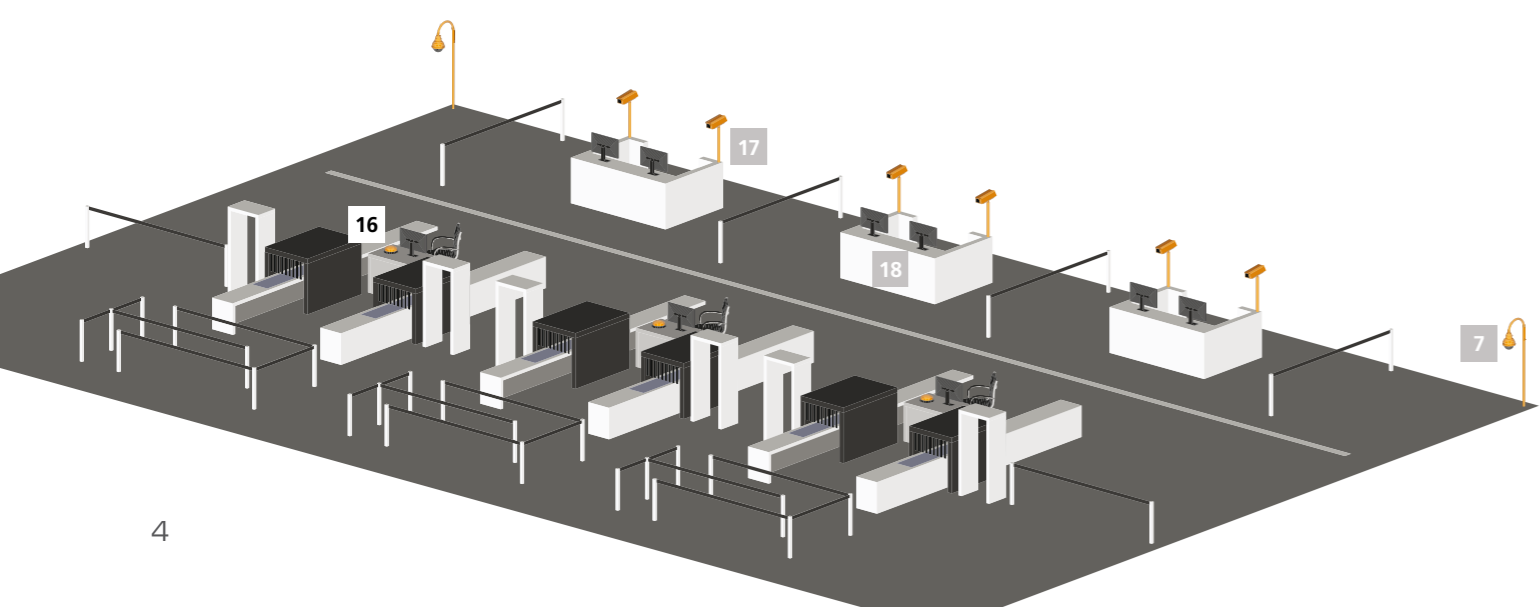
Today's airports face new challenges which have far-reaching consequences for all operators in every area of the airport, it is therefore essential to adapt appropriately. A knowledge based approach is required to achieve greater operational efficiency, improve environmental performance and address security vulnerabilities.

TERRA 4D PSIM solution is designed for airports that need to reduce the risk of disruption to their operations while providing an improved service to passengers.

The need for comprehensive solutions to assure quality, security and safety is addressed by TERRA 4D Airport:

- Integrating operation applications into a single platform to manage complexity
- Improve situation response times and minimize risk

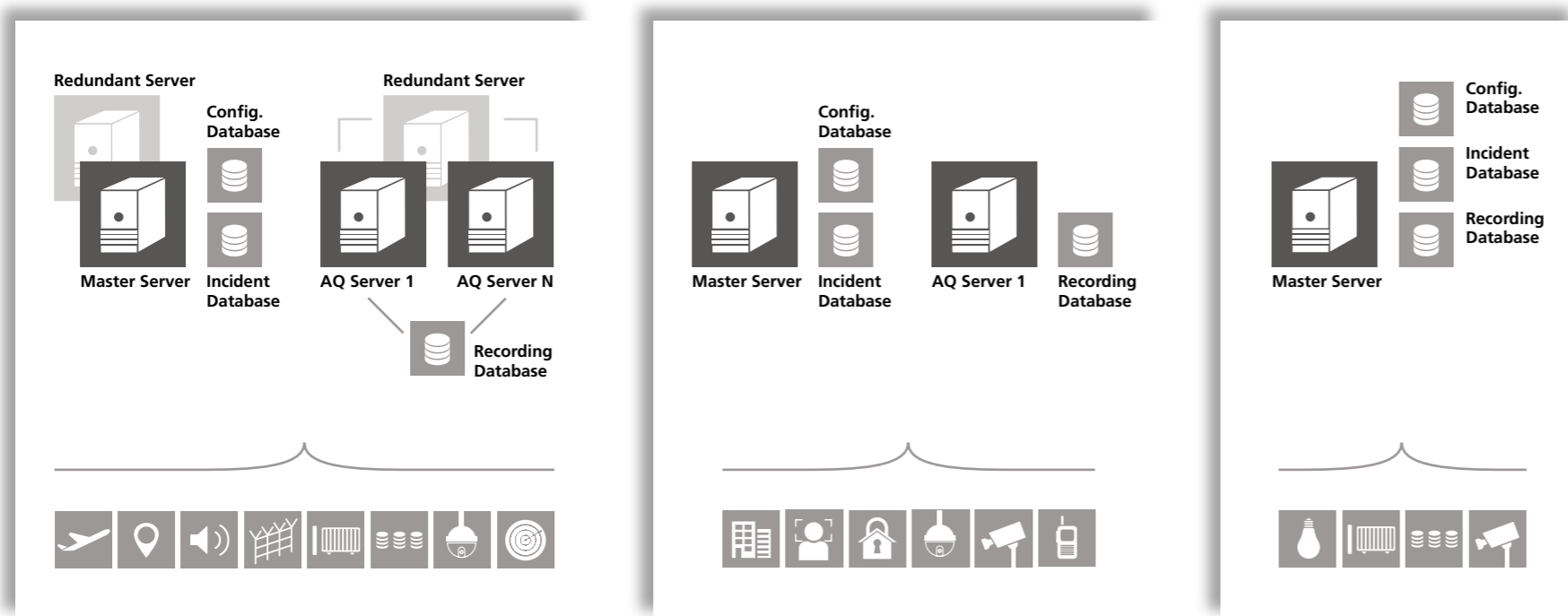
- Improve over-all efficiency and passenger experience
- Common operating picture to enable rapid situation awareness, management and real-time resolution
- Geo-reference and correlate data from multiple security and safety subsystems and other systems to resolve a situation
- Integrate multiple video solutions seamless on one operator platform
- Collection, collaboration and sharing of information
- Intuitive workflows remove operator randomness, reduce stress for the user during an incident and enforce company's compliance guidelines



Clients



Servers



Subsystems

Site 1
Landing Field & Outside

Site 2
Baggage & Passport

Site 3
Parking

The graphic shows an example configuration. The system architecture of TERRA 4D allows adaption for almost every solution requirements:

- Scalable from compact to large sites
- Support of multiple site operations
- Autonomous site operation
- Redundancy to avoid single point of failure
- Designed for multiple agencies usage
- Reliable and secure architecture
- Centralized user access management
- Cross client chatting
- Selective data exchange

Situational Awareness

With Terra 4D users interact with the software through a graphical 3 dimensional model of their site upon which object icons are plotted in real time providing immediate situational awareness.

CCTV/Multiple Sensors

By combining multiple sensors into one intuitive enterprise view, operators can identify and track objects and events while maintaining a global view of their entire site, rather than watching video screens from any single camera. Operators have selective access to live video from a multitude of CCTV cameras, giving operators "eyes-on-the-scene" in the vicinity of an incident.

Live/Recorded/Contraband

Live and recorded video, access control, fire alarm and intruder detection systems data can be accessed and correlated with passenger lists, aircraft positions (ADS-B) and more. Terra 4D offers "classified" applications using geo-spatial analytics to detect and intercept incidents before they turn into a threat. This data supports investigations in immigration crime and human rights violations, trafficking of weapons and narcotics, human smuggling and other types of contraband, financial crimes and export enforcement issues.

All documented/Sensors

Terra 4D monitors and documents all activities at check-in, passenger screening, security check-points and baggage inspection. It supervises TSA officers during their internal and external inspection rounds throughout the airport buildings and even tracks their movements via 'up close' video footage. All information is represented in the 3D GIS model.

Immediate Access

In case of an incident, the system selects the closest cameras to be displayed in the salvo and may even control PTZ cameras to capture the scene.

Landing Field/Outside

Based on ADS-B and/or ground radar Terra 4D Airport knows the position of all equipped vehicles on the tarmac. It is capable to track vehicles on ground and even in flight by PTZ cameras. Temporary blocked areas are defined in the 3D model. Any violation will lead to CCTV auto-tracking and will set off an alarm at ground control. If a mode-s receiver detects emergency, radio failure or high-jacked status, the system initiates CCTV auto-tracking documenting the landing and taxiing phase until standstill. All meta data and videos are available for time synchronized playback.

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.

Geospatial Data Management

Geospatial rules engine	Define rules and methods to auto-respond to incidents.
Geospatial data correlation	Any sensor can be used to control other sensors. Alarm verification utilizing multiple sensors.
Geo fencing	Define geographical alarm or warning zones to receive alarms when tracked objects enter or leave such zones.

Event and Alarm Management

Workflow automation	Intuitive workflows remove operator randomness and reduce stress.
Incident reporting	Support of interactive incident forms. Videos, map views and resources can be linked. Customized design supported via HTML forms.
Escalation and delegation	Escalate alarms to supervisor user groups or delegate alarms to other operators for work balancing.
Procedure enforcement	Workflows enforce company's or legal compliance guidelines.
Audit trail	Logging of all user actions for every workflow step for later analysis
Alarm notifications	Sends alarm notifications to remote systems via SMS or Email
Operator alarm	Operator can select alarm templates and fire alarms at specific locations on the map or directly in the video

3D Visualization

Multi Layer GIS with real-time rendering engine	Digital Terrain Model (DTM), Ortho imagery (aerial or satellite images), Street map, 3D buildings.
Geocoder	Address search, Forward: type address and GIS shows location, Backward: show address for any clicked location in GIS model.
Indoor visualization	3D indoor building structures with floors and rooms. 2D CAD floor plans can be imported to visualize indoor environments in 3D.
Geospatial document library	Organization of the document library (document is placed at geographical location) and access according to user privileges.
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.
AIS, ADS-B, GPS meta data	Shows meta data attached to an Avatar.

Video

Video unification platform	Seamless integrated video streams from one or many different video sub-systems (live and playback).
Supported cameras	Analog (with encoder), IP, fixed, PTZ, 360, mobile or airborne.
Position dependent salvo	Shows closest cameras to a static or dynamic object location.
Direct PTZ control	Video latency compensating method to control any PTZ camera.
PTZ auto presets	Automatic configuration of all interesting locations in PTZ camera's field of view as PTZ preset positions.
Geo-referenced video	Determine object location (latitude, longitude, height), speed, direction and size directly from video image.
Meta data recording	PTZ head data are recorded.
Multi camera tracking	Follow a moving object even in crowded environments using one or more fix or PTZ cameras simultaneously.
Augmented reality	Augmented reality layer on top of video image display including context sensitive interactions.

Mobile Unit Dispatching

Android and iOS app	GPS tracker and target intervention application. Target waypoint navigation, instant messaging and alarm handling.
Dispatching	Get current positions of all units in the field, send units to target coordinates, keep track of ongoing interventions.

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