



FOD Detection Systems

Supporting Runway Safety

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FOD - The Danger

- Major accidents
- Severe incidents
- Maintenance issues

FOD - The Treatment

- Routine visual inspections (proactive)
- Threat-based visual inspections
- Event-response visual inspections (reactive)

Regulatory mandated in UAE by GCAA CAR Part IX.



Visual Inspection Reliant Programs - Weaknesses

- Human element.
- Immediately obsoleted.
- Physical occupancy reduces runway capacity.



The OMDB Operating Environment

- Poised to become the world's busiest aerodrome.
 - Dual-runway operation.
 - Circa 1000 movements per day (peak ~52 per hour).
 - 5 routine runway inspections (min.) carried out per H24 by a dedicated team.
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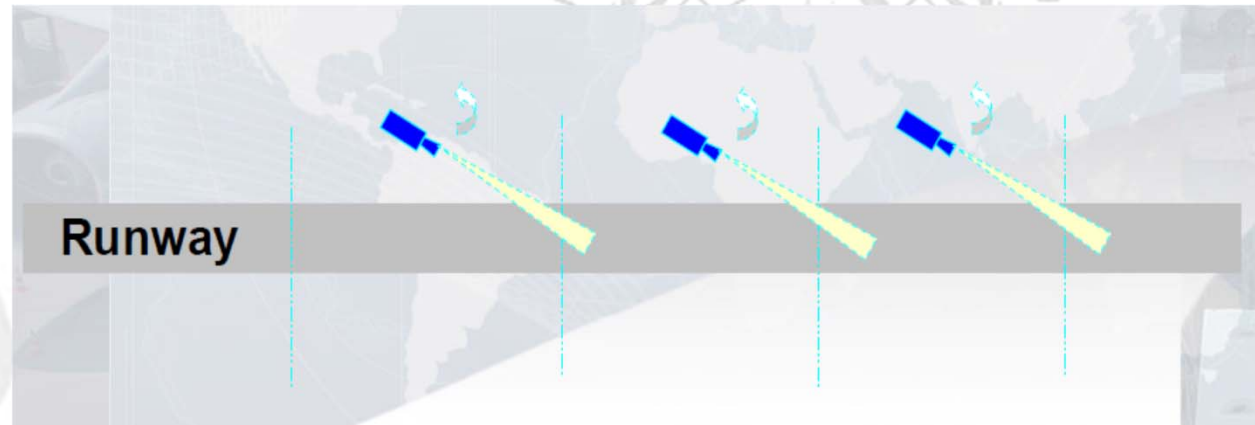
Dubai Airports' Approach – Technology Support

Dubai Airports Engineering Projects (DAEP), on behalf of Dubai Airports, has procured a 'Runway Debris Monitoring System' (RDMS) according to the following core operational stipulations:

- **Continuous:**
 - 24x7 operational surveillance in all environmental conditions.
 - Performance must meet or exceed US FAA Advisory Circular AC150/5220-24 in all light conditions.
- **Reliable and accurate:**
 - System alerts must be proven to collect at least 90% of valid events, but false alarms must be minimised.
- **Robust:**
 - Equipment and system architecture must operate with high 'Mean Time Between Failures' (MTBF), low downtime for maintenance and reasonable investment/life-cycle costs.
 - 100% redundancy in terms of power, communications and data recording (with 2-year retrieval).
- **Informative and Intelligent:**
 - The system must be able to detect AND identify items – providing sufficient information to operators to appropriately evaluate the scenario and act.
 - The system must facilitate a 'closed loop' of event management – from identification to resolution and data management (including facilitation of SMS interrogation).

Dubai RDMS Solution - *iFerret*

Stratch of Singapore, supported by Bayanat, have been commissioned to provide a customised vision-based system:



- 28 hi-res cameras (12 per runway, 4 taxiway crossings).
- Located 130 (+/-) from runway centreline – facilitating access for installation and service without restriction to normal runway operations.
- 45 second scan rate in daytime, 90 seconds at night.
- Visual ranges overlap – in the event of failure adjacent units automatically compensate.
- Combined imagery provides a real-time panoramic view of the runway.

iFerret – Concept of Operation and Workflow



GREEN

Ops normal

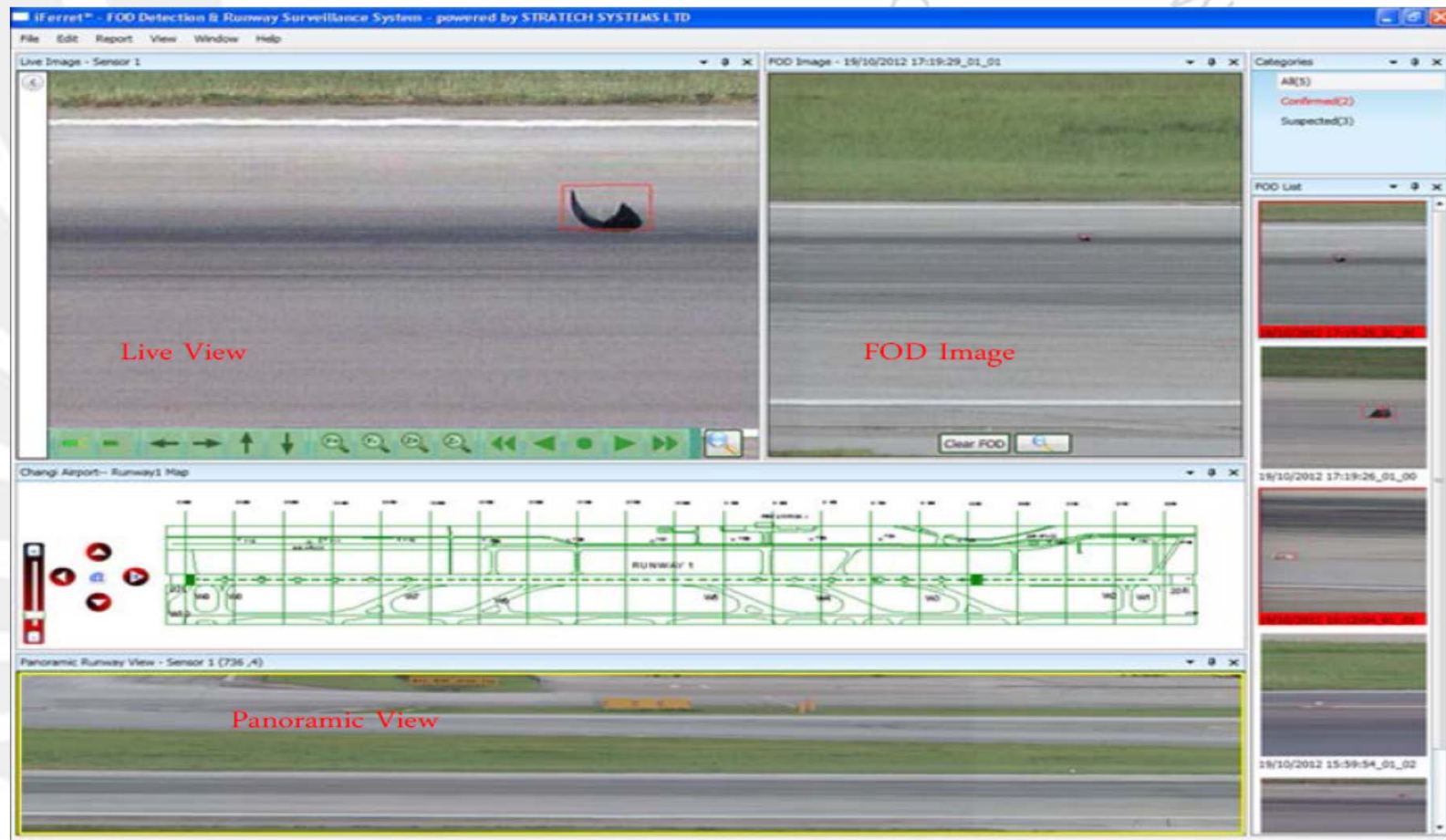
AMBER

FOD detected, no immediate threat
(remove as soon as practicable)

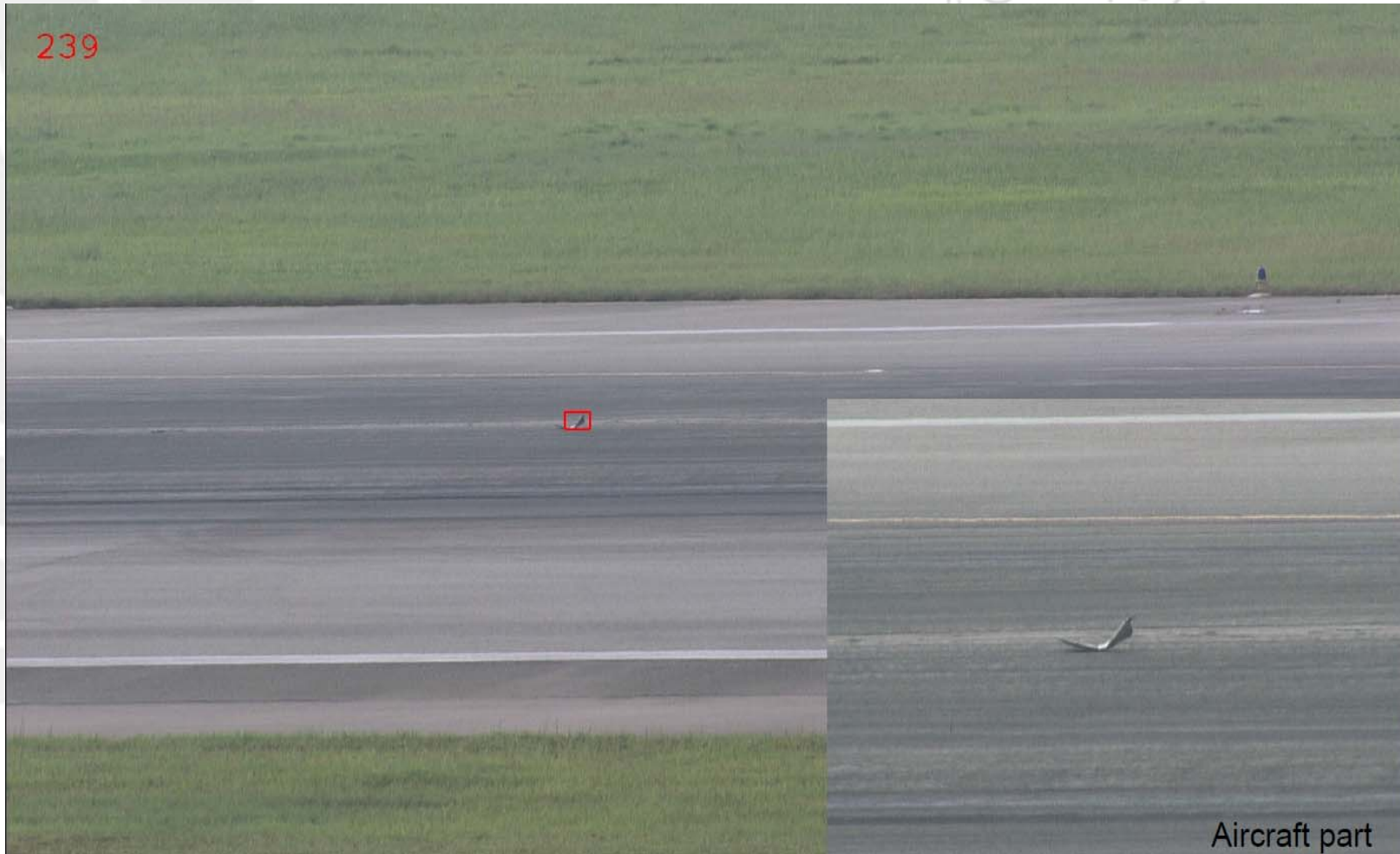
RED

FOD detected, close runway at
earliest safe opportunity to address

iFerret - Operator Console



iFerret – Imagery Capability



iFerret – Imagery Capability



Airfield at Night under natural light conditions



Airfield at Night with iFerret™ Sensor

Thank you

