Safe and Smart Airport Solutions

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Engineering Director
Sommario

✔ Thales Group e Thales Italia
✔ Safe and Smart e Airport Solutions
✔ Thales Cybersecurity
Sommario

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THALES GROUP

AEROSPACE

SPACE

GROUND TRANSPORTATION

DEFENCE

SECURITY

A TRUSTED PARTNER FOR A SAFER WORLD

80,000 employees

€19 billion 2018 revenues

€1 billion Self-funded R&D*

Global presence 68 countries

* Does not include externally financed R&D
THALES GROUP – ALCUNE REFERENZE

**Safe & smart cities**

- **Dubai smart city**
  - Advanced multi-modal, multi-agency platform for transportation
  - 3.5 billion journeys expected by 2020
  - 25 million visitors in 2020

- **Mexico**
  - The world’s most sophisticated urban security system
  - Crime rate reduced by 55%
  - Response times cut divided by 3

- **Nice & La Defense**
  - PIAVE - Collaboration security’s stakeholders
  - Integration & interoperability between +30 systems & solutions

**Airports**

- **JFK/ T4 airport**
  - Deployment of state-of-the-art security technology
  - 20 million+ passengers per year

- **Dubai airport**
  - Ultra-modern security and communication solution
  - 88 million+ passengers in 2017
  - 10,000+ access control points

- **Oman**
  - New exceptional airport infrastructures
  - 40 flights per hour with 86 check-in counters and 40 gates

**Critical infrastructures**

- **Hexagone Balard**
  - High-performance security and telecom system
  - 320,000 sq.m. to monitor & manage
  - 10,000+ personnel

- **Mali**
  - High protection of military camps, as a Service
  - 2 camps protected

- **Al Ula**
  - Ultra-modern protection of an archeological area
  - 1st archeological area protected by Thales

**Mecca**

- Complete security, telecom and crowd management system
  - 2 million pilgrims

- **Doha port**
  - High-performance, resilient, scalable security system
  - Over 6 million containers
  - 19 km² secure area

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Thales in the Aerospace domain

The wide competencies covering the different sides of operation with massive R&D investment promoting digitalization and innovation is the base to propose Smart Airport products and solutions addressing modern airport needs.

- **TERMINAL SOLUTIONS**
  Global references as a proven supplier of turnkey Security and Operational Terminal technology solutions.

- **ATM**
  World Wide Leader in Navigation Aids, Radar and Air Traffic Management Automation and Tower System Integration.

- **AVIOBOOK**
  Integration in a unique, user-friendly system, all the apps for flight optimization and maintenance.

- **APM**
  Automated airport people movers; rail signaling, safety and communications systems.

- **AIRLINES**
  In-flight Entertainment (IFE) and cabin systems for commercial aircraft.

- **COMMERCIAL AIRCRAFTS**
  Cockpit systems for Airbus, Boeing, Dassault, ATR.

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### Airport Terminal Solution – Area of intervention

#### What we do

1. **SPECIAL AIRPORT SYSTEM**

2. **MASTER SYSTEM INTEGRATOR**
   - Master System Integration (MSI) consultancy during the design phase, leadership of integration/interface management process during delivery of the overall technology in the terminal.

3. **CONTROL CENTER SOLUTIONS**
   - Full portfolio of products and solutions for Security Operation Center (SOC) and Operation Control Center (AOCC) providing through Total Airport Management (TAM) integrated platform the full situational awareness, real-time status and monitoring of the airport, alarm and CONOPs Management, A-CDM business processing and KPI management.

4. **INNOVATION AND DIGITALIZATION**
   - Dedicated Competence Center to develop knowledge of latest technology, innovation, regulations and standards (ICAO, IATA, Eurocontrol, EU 3, SESAR-2020). Promotion high value added solutions integrated with SME solutions approaching digitalization of technology (Data Analytics, BI, Cloud, …)
Airport Solution - Key References

Special Airport Systems (SAS) and Master System Integration (MSI) in major airports worldwide:

- New terminal Bahrain International Airport - Bahrain
- JFK Airport Terminal 4 New York - USA
- Muscat & Salalah International Airports - Oman
- New Islamabad International Airport - Pakistan
- Dubai Concourse B(T3C2) – UAE
- Dubai Concourse C (C3) – UAE
- New Doha International Airport – Qatar
- Durban King Shaka Intl. – South Africa
- Changi International Airport - Singapore
- CDG Paris Airport & Lyon S.Exupery – France
- Pisa & Florence Airports – Italy
- Geneva Airport - Switzerland

Main references as Integrator
Worldwide experience in major hubs and key airports
Focus on Smart, Smooth, Safe Operation Management

**Airport Systems Siloed Vision**
- Minimal information sharing between stakeholders
- Siloed functional organizations
- No Real time awareness
- Lack of punctuality and service
- Starting A-CDM for information sharing and milestone approach
- Some Airside – Landside collaboration
- Standalone subsystems

**Stand-Alone Control Centers**

**Collaboration through AOCC (Airport Operation Control Center)**
- Master System Integration to ensure systems readiness
- **Security, Safety, Operations**, integrated in the same platform
- Mobile services and passenger management
- Performance oriented vision (KPI & Dashboard)
- Cyber Threats potentially impact the Terminal as a whole

**Smart Airport Operation Management**
- TAM - Total Airport Management
- MSI as Digital Transformation Partner
- Predictive Operations Management
- Landside and Airside Operations fully integrated
- Cyber Threats potentially impact the whole network
- Fully Integrated Passengers Management

**Integrated/Networked Control Center**

Timeline:
- 2006
- 2017
- 2020
- 2026
Thales Solutions for Airports Security and Operational Efficiency

- Integrated Security Management
- Real Time Event Management
- Advanced Analytics, Identity Management
- Investigation
- Cyber Security
- Counter UAV

Smart Security

Global Operation Platform
Thales AiRISE Airport Suite

Operation Efficiency

- Information sharing
- KPI & Dashboard
- ACDM Milestone Approach
- Resources Predictive application
- Scenarios Analysis (What-if)
- Meteo & ATM Integration

Passenger Experience

- Boarding Pass Control System
- Queue and Flow Management
- Real time monitoring and prediction

Thales Solutions for Airports Security and Operational Efficiency

Ref number- date
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Thales smart airport applications 1/2

- **Security Integrated Software platform**
  - Full integration of Security Systems
  - Situation Awareness of security
  - Embedded procedure CONOPS
  - Possiblity to manage integrated physical and logical security

- **Total Airport Management Software platform**
  - Full situation awareness of airport operation AOCC & APOC
  - Integrated with A-CDM
  - Performance based management of operation (APAMS)

- **Passenger Flow Management software platform**
  - Full integration of Security Systems
  - Situation Awareness
  - Embedded procedure CONOPS
Thales smart airport applications 2/2

- **Cyber Security Platform**
  - Real Time hacking detection integrated in the SOC
  - Cybels, Vormetrics, SIEM, Training
  - Trusted Partner, Cyber Treats Intelligence services

- **Airport Border Control ABC**
  - Biometric enrolment on kiosks or thought smartphones, recording, Live capture, matching algorithms
  - eGATE seamless end 2 end

- **Facial Recognition System (SafeLand + LFIS)**
  - Cutting-edge and extremely fast biometric face recognition engine
  - Processes videos, in real-time or replay, for identification of people
  - No operator intervention and in a non-intrusive way
AiRISE products suite

Common features to all the products
Thales AiRISE Suite

SMART SECURITY

... protect and secure

TOTAL AIRPORT MANAGEMENT

..... the VISION

PASSENGERS MANAGEMENT

..... new OPPORTUNITY
The Tactical Map is the core of the application. Available on the video wall as well as on Operators screen, and Manager Tablet.

- It gives the status of any resources having an impact on operations and business continuity, showing it on the map of the airport (both landside and airside).

- Able to show status for: Check-in, Security Check-point (waiting time, number of people in queue, open lanes, etc), Border counters, boarding gates, Stands (overlap, delays, equipment fault), Flights delays, in block/off block, ground handling status), avio-bridges, etc...

- Configurable and driven by business rules
Alarm Events Management

- An “Event” represents a georeferenced alarm event that needs a timely reaction by AOCC operators.
- Alarm Events have a position so they can be tracked on the map.
- Operators acknowledges an event to mark they are taking responsibility of reacting and managing it.
- Alarm Events can be:
  - Automatically acquired from external systems (e.g. ACS, FADS, IDS, etc.)
  - Manually opened by AOCC operators
  - Automatically raised up by the platform accord to Resources and KPI statuses.
AOCC operators are allowed to acknowledge alarms clicking on the related button on the widget.

After the acknowledgement of the event AOCC automatically provides to the operator the procedure(s) (composed by a set of tasks) to be managed in order to solve the alarm event.

AOCC focuses command and control capability on the tools for managing the Procedures and Tasks.
Safeland - Features: Mobile App smartphones

Android Mobile App

AOCC provides a mobile application running on Android Operative System that can be used to connect and interact with the system in mobility.

The mobile application offers a set of capabilities and access to data that is well suited for the limitations (screen dimension, battery consumption, network bandwidth, CPU and memory) of mobile devices:

- Main Dashboard & KPI
- Events (list, create)
- Procedures
- Tasks
Safeland - CCTV and Video Analytics Management

## Embedded Video Management

- AOCC displays Camera on airport maps with ergonomic icons
- Operators can navigate the airport indoor and outdoor maps and they can retrieve all the video flows from the cameras deployed in the field.
- Possibility to play live and recorded video streams.
- AOCC allows operators to change their own videowall layout.

## Ergonomic Videowall Management

- AOCC provides capabilities for dynamically change the videowall layout.
- Play of videos is allowed through a simple and ergonomic operation of drag and drop.
Total Airport Management

- Create Common Situational Awareness
- A-CDM
- Improve Predictability of landside and airside operation
- Anticipate resources and capacity shortage reducing disruptive events impact
- Enable quantitative decision making and performance based management
- Improve formal collaboration through stakeholders
Total Airport Management - Create Common Situational Awareness

- Common Global Situational Awareness
- Full A-CDM capabilities
- Demand & Capacity Balancing
- Operation optimization and real time monitoring
- Mobile services
Improve **Predictability** of landside and airside operation

- **Real Time KPI**
  - Real Time KPI and drill down

- **Predictive Model**
  - Forecast and Predictive Model for passengers flow.
  - Forecast and Predictive model for capacity and flights management
  - Better planning more capacity
  - Change from flat fees to higher fee during peaks

- **Enhanced TOBT**
  - Based also on passengers behavior.
  - 1 minute delay less save 67€ between stakeholders
  - Accurate TOBT (+/- 5 minutes) help reduce delays
  - Reduce noise and pollution
Anticipate resources and capacity shortage reducing disruptive events impact

- Multiple and configurable threshold
  - Threshold anticipating critical situation

- Anticipation of resources shortage
  - 3-6 hours analysis of resources allocation and related alarms

- Anticipation of capacity shortage
  - Advanced Meteo information
  - 3-6 hours analysis of capacity and related alarms

- What if
  - Real Time Analysis to reduce disruption
  - Scenarios KPI vs current KPI

- SOP
  - Integrated Standard Operating Procedure
## Thales AiRISE InFlow challenges and benefit

Passengers are the key asset for modern airport since non aero revenues are the new treasure

Reputation of Airports still depends on managing stressless and punctual operations

### Operational Efficiency

- Save staff costs keeping high level of security
- Control sub contractor's and customer's SLA
- Avoid Flights Delay through correlation pax-flights

### New Revenues Streams

- Maximize retail time reducing queues
- Allow new services development

### Pax Experience

- Improve Passengers Experience and general reputation of the Airport
Thales AiRISE InFLow (Security Check Point)

Check in + Security + Police Border + Retail + Boarding

- Anticipate impacted flights
- Cost saving costs and penalties
- Optimize Resource Allocation
InFlow Security Check Point: Live View

**LIVE VIEW**
Forecasts for a day of operation based on our prediction
- Predicted pax
- Actual pax
- Actual lanes
- Waiting time

**DAILY FLIGHT SCHEDULE**
Related to the selected day for each flight. Info provided:
- flight number, destination, #pax expected
- Realtime update from AODB

**CLUSTERS**
Flights information and the possibility to check their weight on the pax presentation. Available everywhere in the platform

**WARNIMG & ALERTS**
NEW PREDICTED TOBT for flights impacted by waiting time for the day of operation

**UPDATED PREDICTIONS**
- Recalculated during the day
InFlow Security Check Point: WHAT-IF scenario

Realtime simulations on pax/flight behaviour

ADJUST SETUP
- Change staff allocation at lanes
- Modify throughput
- Obtain a suggested setup

SIMULATE FLIGHTS DISRUPTION
- Canceled Flight
- Delayed Flight

COMPARE and DOWNLOAD
- Side by Syde view
- Download a CSV and share it

Costs and impacts
- Total spent and saved in €
- Check Point performance (SLA respected)
- Agents summary
Sommario

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Rischi nelle Infrastrutture Critiche

Complexity and interdependencies
• Highly interconnected -> increased dependencies -> increased vulnerabilities
• Complex detection

Heterogeneous
• Different protocols and adapted to business needs

Remote access required for maintenance
• Could be a risk

Not evolving
• Once deployed they are rarely updated

Built on standards without security mechanisms
• Operating system not patched
• Protocols (ModBUS, TCP, DNP3, OPC …)

Industrial systems are not designed with cyber risks in mind

Business processes do not integrate this dimension
• Quality procedures (zero default)
• Safety procedures
• Maintenance procedures

Personnel is not trained neither informed
Thales Italia Cybersecurity: ambiti operativi

- Critical Infrastructure:
  - Power Plant, Nuclear Plant
  - Transportation (Metro, Tranvie, Treni)
  - Airport
- Defence
- Finance /Bank
- Industry
- Business Company
Thales Cybersecurity

DIAGNOSING
• 1. Cyber Consulting
• 2. CSOC
• 3. Cybela Sensor

MONITORING

INTELLIGENCE
• 4. CERT IST

NETWORK SECURITY
• 5. Network encryptors
• 6. XO Mail
• 7. ELIPS SD (Data Diode)

TRAINING
• 8. Cyber Range

DATA SECURITY
• 9. HSM
• 10. Vormetric

MOBILE SECURITY
• 11. TEO XC

LAWFUL INTERCEPTION
• 12. LIST/ Spyder/ ULIS
Capability group – Thales Italia Experiences

**Functional audit & Governance**
- Audits ISO 2700x
- GDPR
- Crisis management

**Infrastructures & Applications Architectures**
- Design Secure architectures
- Architecture audit
- Security governance
- Security accreditation processes

**Forensic, Reverse & Penetration testing**
- Incidents response
- Reverse Engineering
- Penetration testing
- Vulnerability assessment
- Technical audits
- Source code audits

**Safety & Security Evaluation**
- Hardware labs
- Software labs
- Multiple Banking certifications
End of presentation