THALES

Safe and Smart Airport Solutions

Massimo Romairone
Engineering Director

Sommario

- ✓ Thales Group e Thales Italia
- ✓ Safe and Smart e Airport Solutions
- ✓ Thales Cybersecurity

Sommario

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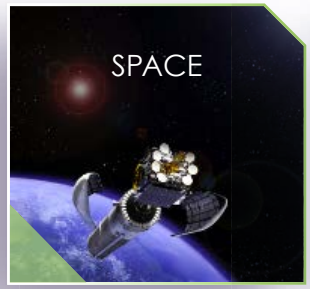
THALES GROUP



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

Mexico

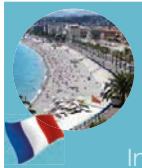
The world's most sophisticated urban security system

Crime rate reduced by 55%
Response times cut divided by 3

Dubaï smart city

Advanced multi-modal, multi-agency platform for transportation

3.5 billion journeys expected by 2020
25 million visitors in 2020

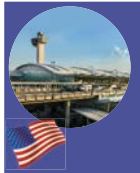


Nice & La Defense

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

Dubaï 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

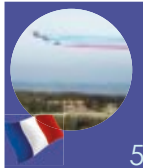
Complete security, telecom and crowd management system

2 million pilgrims

Doha port

High-performance, resilient, scalable security system

Over 6 million containers
19 km² secure area



Pass Def

Military bases protection programme

5 french military bases protected

Sommario

- ✓ Thales Group e Thales Italia
- ✓ **Safe and Smart e Airport Solutions**
- ✓ Thales Cybersecurity

ThalesBeyondDigitalTransformation.mov

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.

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

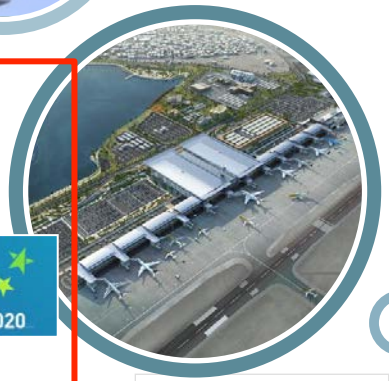
NextGEN

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

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

SESAR JOINT UNDERTAKING

SESAR JOINT UNDERTAKING 2020



COMMERCIAL AIRCRAFTS
Cockpit systems for Airbus, Boeing, Dassault, ATR

OPEN

Airport Terminal Solution – Area of intervention

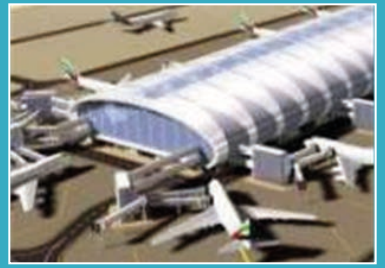
What we do

1	SPECIAL AIRPORT SYSTEM	Design & Build turnkey solution of wide integrated Special Airport Systems (SAS) package that includes Control Centers, Security Systems, ICT Systems, Telecom, Airport Operations Systems
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

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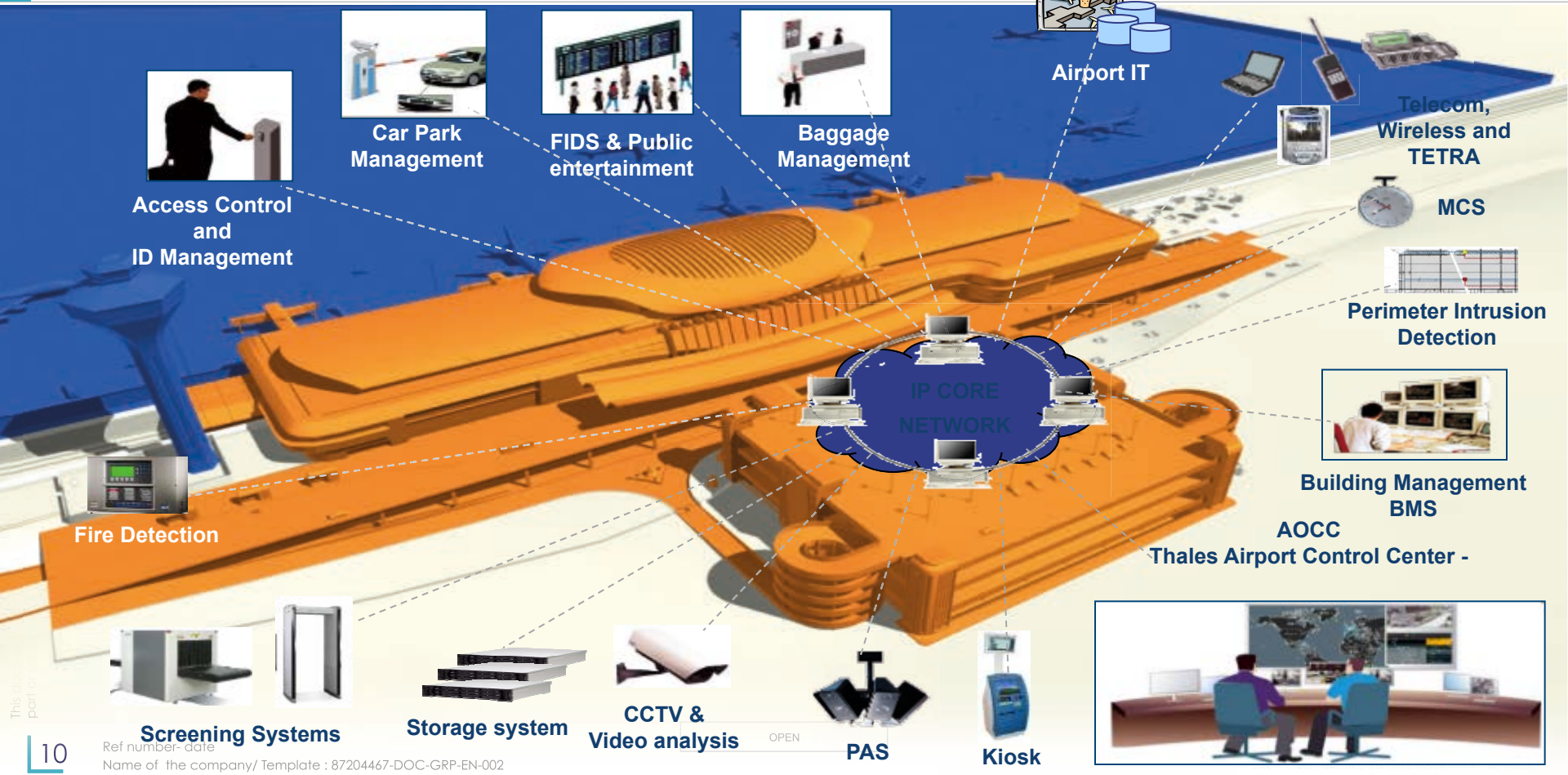
Thales Italia – Airport solutions Competence Centre



Focus on Smart, Smooth, Safe Operation Management

2006 — 2017 — 2020 — 2026

Airport Systems Silosed 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

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

Service Model on Cloud

Distributed Service Centers

Smart Airport Operation Management
TAM - Total Airport Management

MSI as **Digital Transformation Partner**

Predictive Operations Management

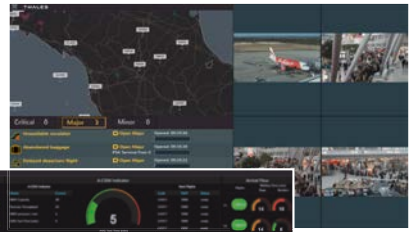
Landside and Airside Operations fully integrated

Cyber Threats potentially impact the **whole network**

Fully Integrated **Passengers Management**

Stand-Alone Control Centers → **Integrated/Networked Control Center**

Thales Solutions for Airports Security and Operational Efficiency



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

AiRISE SafeLand

Smart Security

Global Operation Platform
Thales AiRISE Airport Suite

Operation Efficiency

Passenger Experience

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

AiRISE InFlow

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

AiRISE ShareView

gemalto security to be free

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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

OPEN

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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

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AiRISE products suite

Common features to all the products

Thales AiRISE Suite

AiRISE SafeLand

SMART SECURITY

… protect and secure

AiRISE ShareView

TOTAL AIRPORT MANAGEMENT

….. the VISION

AiRISE InFlow

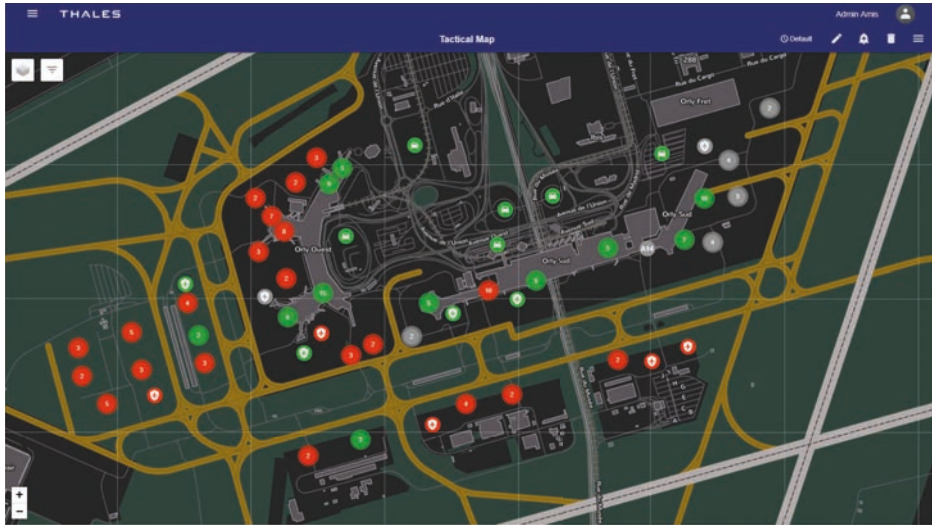
PASSENGERS MANAGEMENT

….. new OPPORTUNITY

Safeland - Tactical Map: Common Situational Awareness

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

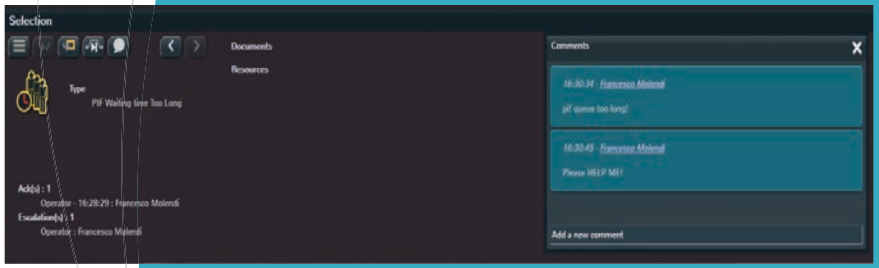
- It gives the status of any resources having an impact on operations and business continuity, showing it on the map of the airport (both landside and airside).
- Able to show status for: Check-in, Security Check-point (waiting time, number of people in queue, open lanes, etc), Border counters, boarding gates, Stands (overlap, delays, equipment fault), Flights delays, in block/off block, ground handling status), avio-bridges, etc…
- Configurable and driven by business rules



Safeland - Alarms management

Alarm Events Management

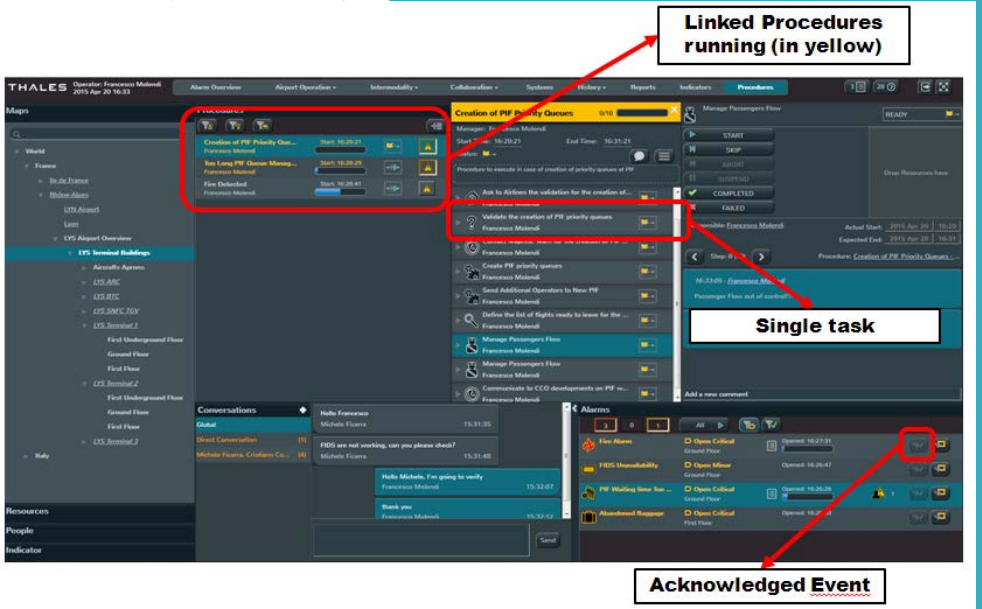
- An "Event" represents a georeferenced alarm event that needs a timely reaction by AOCC operators.
- Alarm Events have a position so they can be tracked on the map.
- Operators acknowledges an event to mark they are taking responsibility of reacting and managing it.
- Alarm Events can be:
  - Automatically 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.



Safeland - CONOPS Management

Standard Operating Procedures (SOP)

- 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

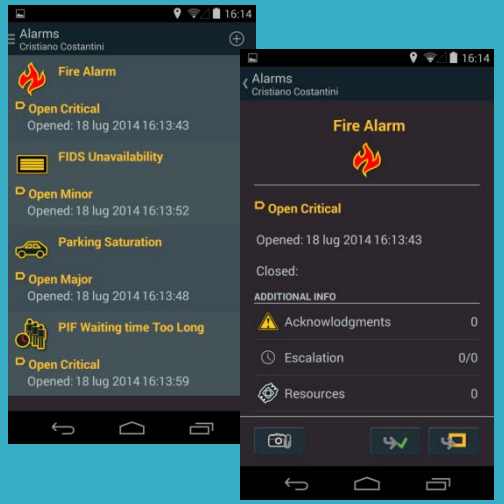


Safeland - Features: Mobile App smartphones

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

Smartphones for the staff
Mobile sensors and media uploading



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

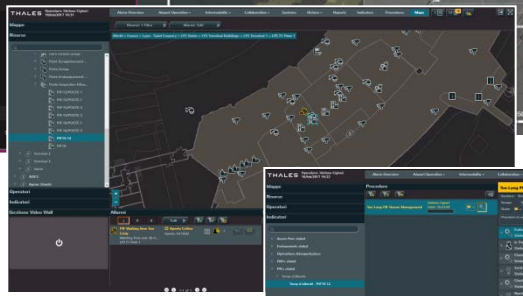
- AOCC provides capabilities for dynamically change the videowall layout.
- Play of videos is allowed through a simple and ergonomic operation of drag and drop

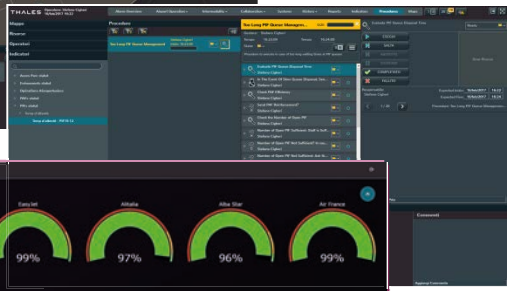
Total Airport Management

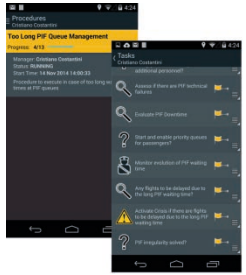
AiRISE ShareView

- 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

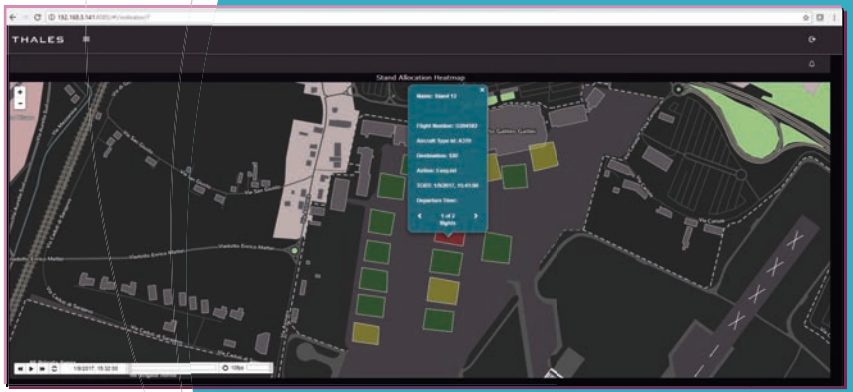
- Advanced Meteo information
- 3-6 hours analysis of capacity and related alarms

What if

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

SOP

- Integrated Standard Operating Procedure



Thales AiRISE InFlow challenges and benefit

AiRISE InFlow

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 puctual operations

Operational Efficiency	New Revenues Streams	Pax Experience
Save staff costs keeping high level of security Control sub contractor's and customer's SLA Avoid Flights Delay through correlation pax-flights	Maximize retail time reducing queues Allow new services development	Improve Passengers Experience and general reputation of the Airport

Thales AiRISE InFLow (Security Check Point)

Anticipate impacted flights	Cost saving costs and penalties	Optimize Resource Allocation

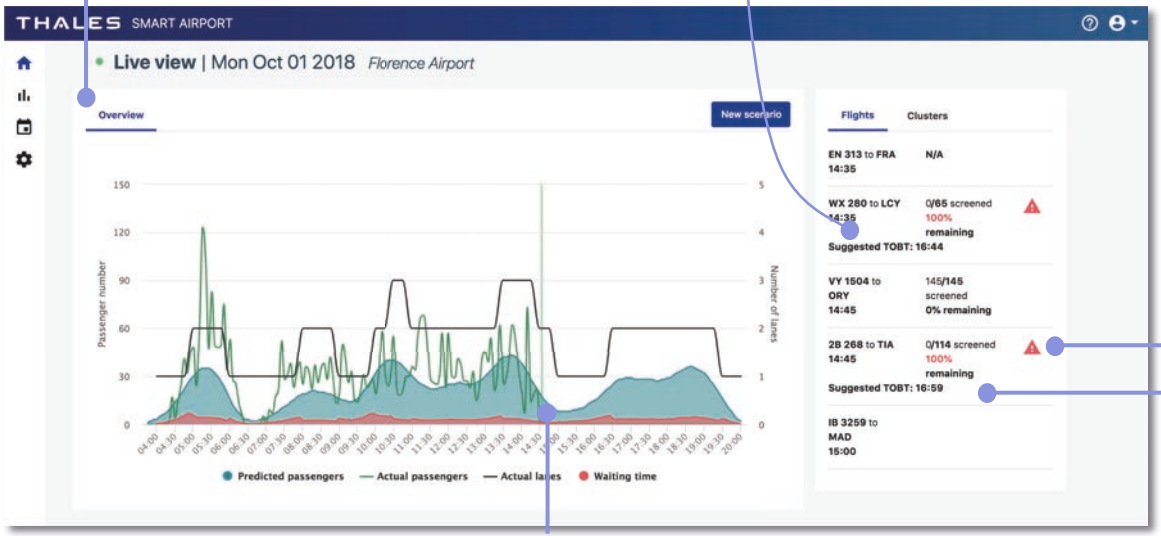
InFlow Security Check Point: Live View

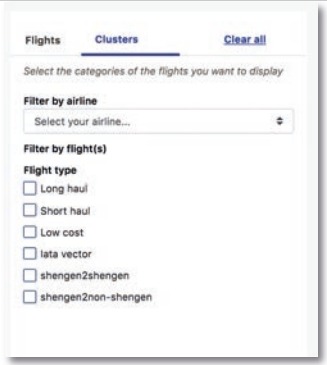
LIVE VIEW
Forecasts for a day of opeartion based on our prediction

- 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

WARNING & ALERTS

NEW PREDICTED TOBT
for flights impacted by waiting time for the day of operation

UPDATED PREDICTIONS

- Recalculated during the day

THALES

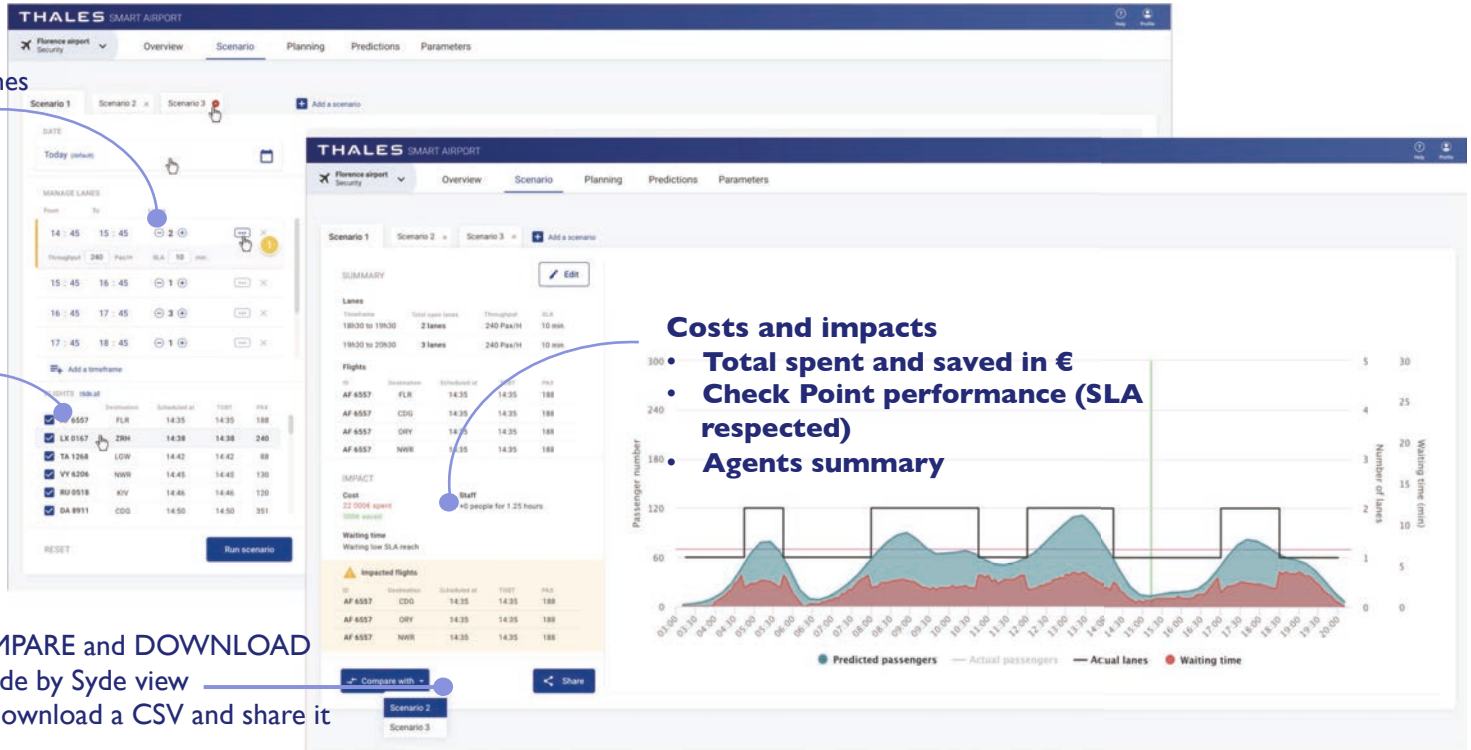
InFlow Security Check Point: WHAT-IF scenario

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



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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**
- **Difence**
- **Finance /Bank**
- **Industry**
- **Business Company**

Thales Cybersecurity

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