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Agenda

01 Introduction

02 Lido/Flight – Data and System Integration

03 Lido/Flight – Optimization and Automation

04 Summary

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Introduction

01

Managing an System Operations Control (SOC) …

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Flight planning relevant data and parameters…

MET Data	NAV Data	Constraints & Regulations	Optimization Settings	Basic Flight Data	Flight Connectivity	Aircraft Type Specification
Wind Condition	Fix/ Free Route	Traffic Rights	Fuel Policy	Flight Number	Connection Times	A/C Type
Air Pressure	Conditional Routes	RNAV Rules	Stat./ Dyn. Routes	City Pair	Airport Services	A/C Equipment
Air Temp.	DCT Connection	NOTAM	Opt. Criteria	Alternate ADES	Staff	A/C Envelope
Visibility	Airport Definition	TFR (e.g. RAD)	Cost Index	DOF/ STD		Payload - Range
		Terrain Clearance	Time Costs	Payload Quantity		Performance Correction
		Business Constraints	Business Targets	Payload Quality		MEL/ CDL

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More and more NOTAM are being published…

ICAO REGION	2000	2006	2007	2008	2009	2010	2011	2012	2013	2014	Increase 2000 - 2014
Europe (L+E+B)	117.560	200.384	232.105	255.959	284.972	305.851	298.312	286.987	298.367	298.876	254%
Pacific (A+N+Y)	16.919	27.642	31.462	38.897	39.405	42.058	45.462	41.129	42.310	42.200	249%
Asia (R+V+W+Z)	30.452	47.624	51.104	56.565	64.937	69.344	70.530	73.274	81.974	89.133	293%
Russia + Central Asia (U)	3.817	10.220	10.675	11.838	11.949	15.534	22.109	28.054	28.429	35.397	927%
Africa (D+F+G+H)	12.242	17.981	19.949	21.868	21.905	23.290	22.668	26.087	25.702	26.612	217%
Mid Asia (O)	5.571	12.998	12.973	13.353	14.376	13.800	14.598	13.140	13.404	14.008	251%
North America (C+K+P)	78.897	120.441	135.587	221.497	255.040	306.744	338.131	360.358	445.075	554.668	703%
South + Central America (M+S+T)	25.614	41.518	44.003	45.226	45.940	47.862	52.416	50.872	57.244	54.976	215%
TOTAL	291.072	478.808	537.858	665.203	738.524	824.483	864.226	879.901	992.505	1.115.870	383%

Source: ICAO | INFORMATION MANGEMENT PANEL (IMP) FIRST MEETING, Montreal, Canada, 26 to 30 January 2015
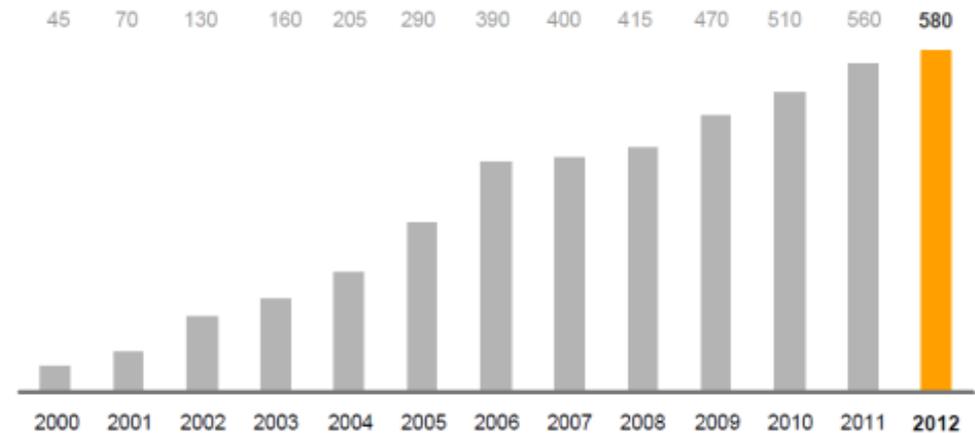
The 2014 analysis has been prepared by Jan-Ove Digernes, GroupEAD

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More restrictions have to be considered…

European Route Network Improvement Plan

PART 4
RAD Users Manual

European Network Operations Plan 2012 - 2014   Edition June 2012

Airway	From - To	Restriction
UL976	OBATO - RONAX	Not available for traffic 1. ARR LFPG/B 2. Via MMD Except Dest. ELLX, EBLG, EHBK, EDDR/FH/LN, ETAR/AD/SB, LFJL/SF 3. Via CHW With ARR EBBUFIR Except ARR EBLG, ELLX

Development **Number of Pages in the Route Availability Document**

| 45 | 70 | 130 | 160 | 205 | 290 | 390 | 400 | 415 | 470 | 510 | 560 | **580** |

| 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | **2012** |

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Traffic demand will continue to increase dramatically over the next few years

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Free Route Airspaces require airspace management instead of managing segment related restrictions

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Flight Planning 2020 - Assumptions

Airspaces & routes will be activated or deactivated more often and on short notice

Are you ready for flight planning 2020?   NASA Airline Operations Workshop

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Flow restrictions and flight planning rules will be used more tactically like the RAD via Eurocontrol B2B Services

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Flight Planning 2020 - Assumptions

Complexity and the number of restrictions will constantly grow…

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Severe weather scenarios will occur more often due to climate change on a global scale

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Flight Planning 2020 - Conclusions

SOC will have to focus more on irregularities and manage flights by exception

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Flight Planning 2020 - Conclusions

SOC system performance requirements will constantly increase too

Are you ready for flight planning 2020?   NASA Airline Operations Workshop

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Flight Planning 2020 - Conclusions
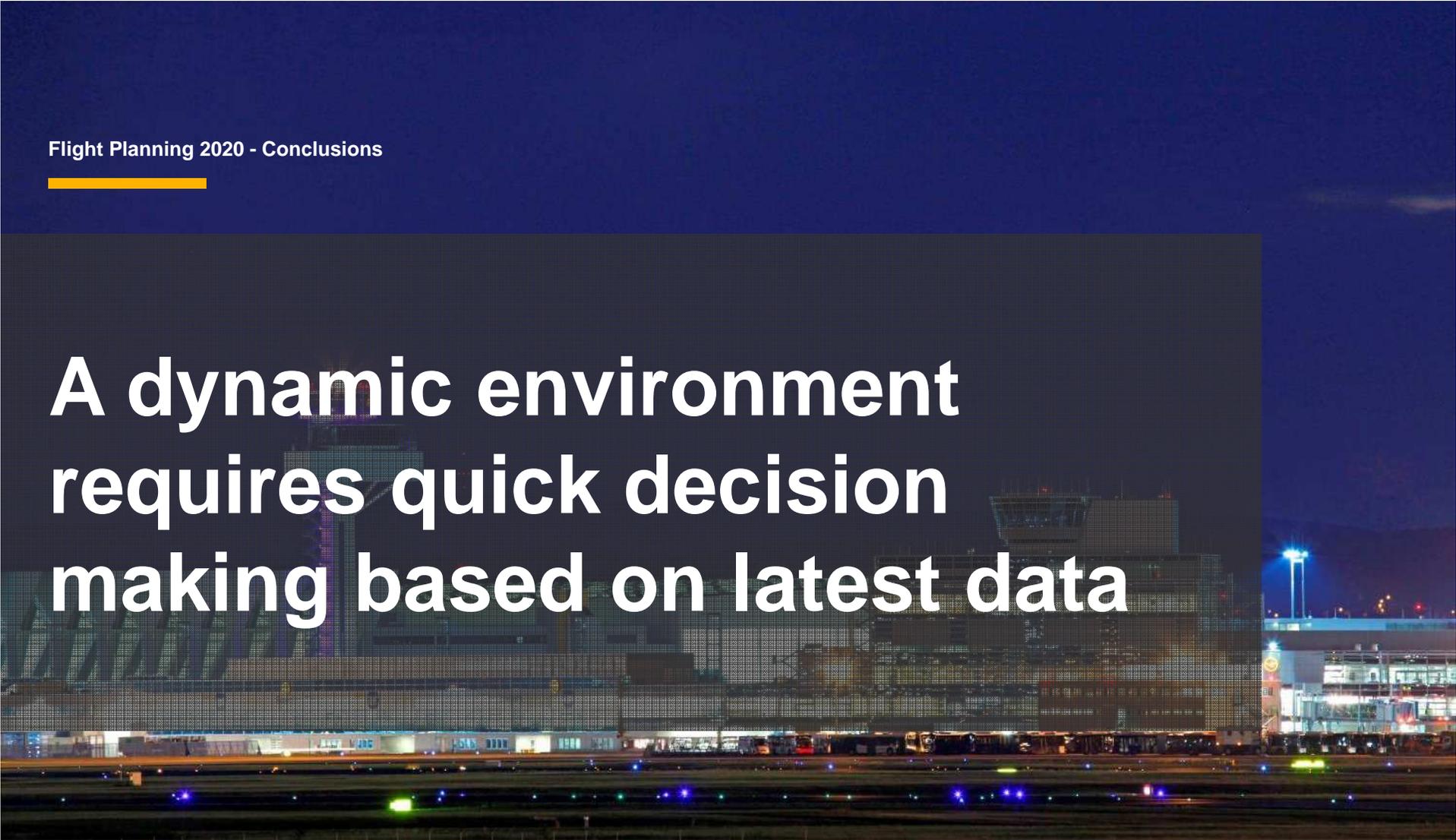
A dynamic environment requires quick decision making based on latest data

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Technology as a driver… Broadband communications, mobile devices, big data etc.

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No human being is able to observe all available options or restrictions anymore

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Integration of up to date information, automation and sophisticated functionalities are needed

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Lido/Flight – Data and System Integration

02

Lufthansa Systems provides all static and dynamic data required for worldwide flight operations
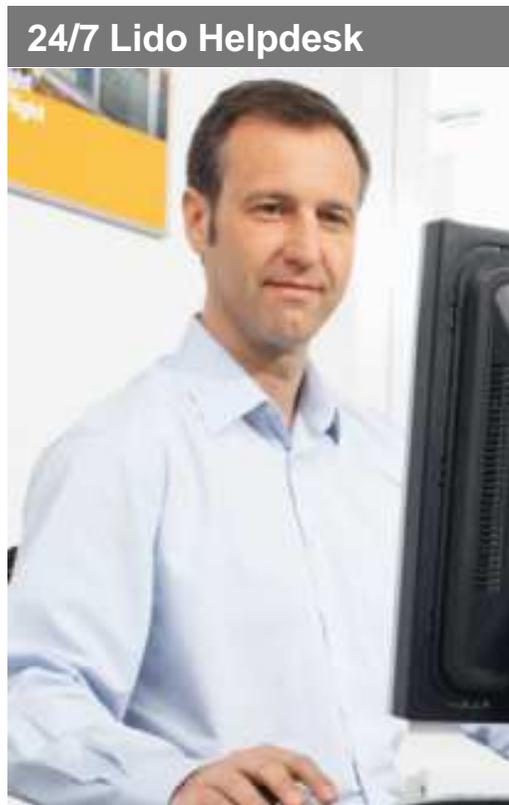
24/7 Lido Helpdesk
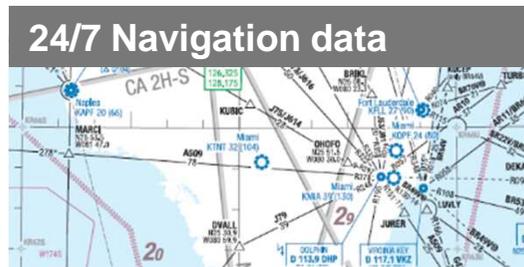
24/7 Navigation data
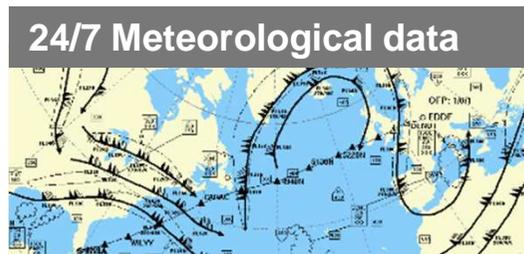
24/7 Meteorological data

Terrain data

24/7 NOTAM & Restrictions

ICAO	Quality	Status
EDDF	TKOF	Suitable 07C(TKOF) Unspecifi
EDDF	TKOF_DEST	Suitable 25C(CAT3B) Unspecif
KMIA	DEST	Suitable 30(RNAV (GPS)) (101

24/7 Organized Track data

Aircraft Performance data

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Lido/Flight – main inbound interfaces

Are you ready for flight planning 2020? | NASA Airline Operations Workshop

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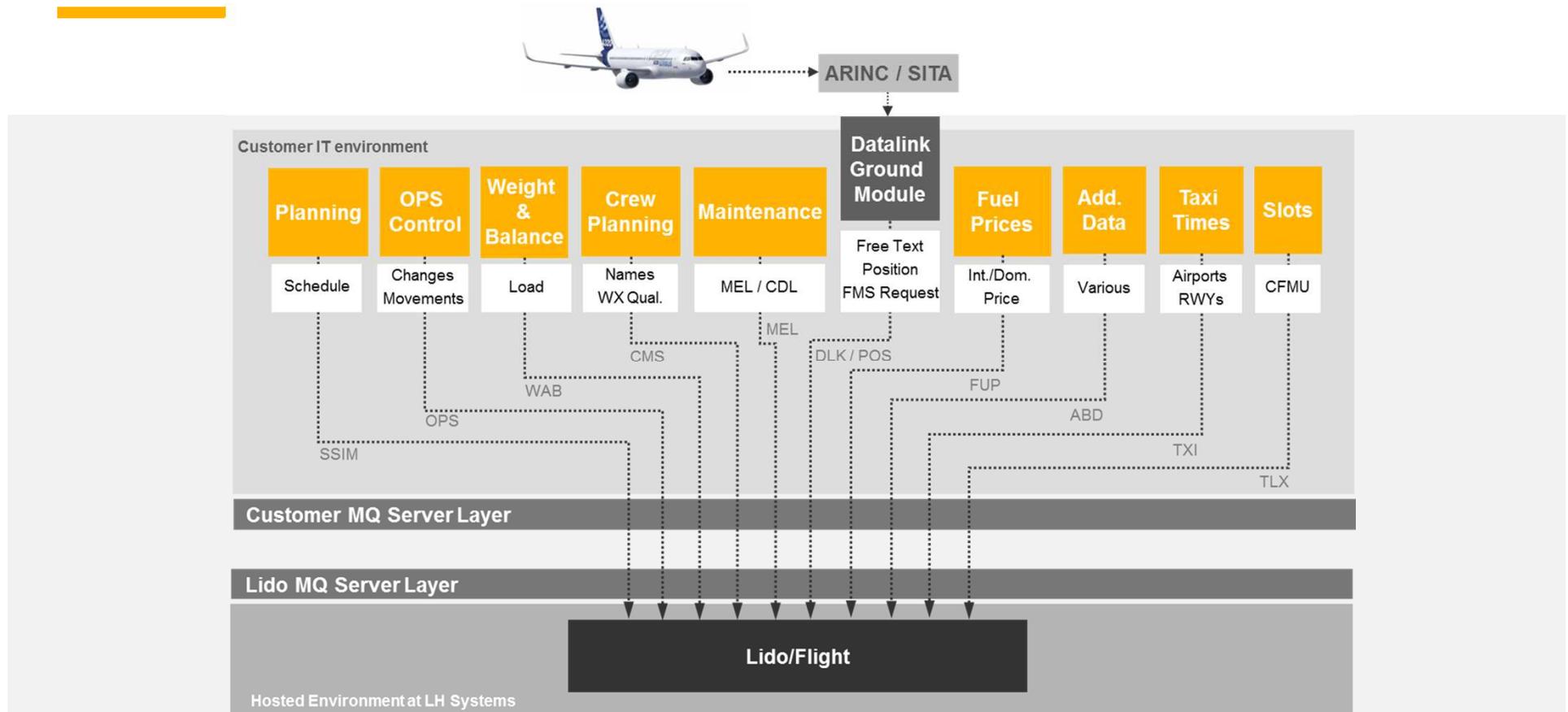
Lido/Flight – main outbound interfaces

Are you ready for flight planning 2020? | NASA Airline Operations Workshop

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Lufthansa Systems
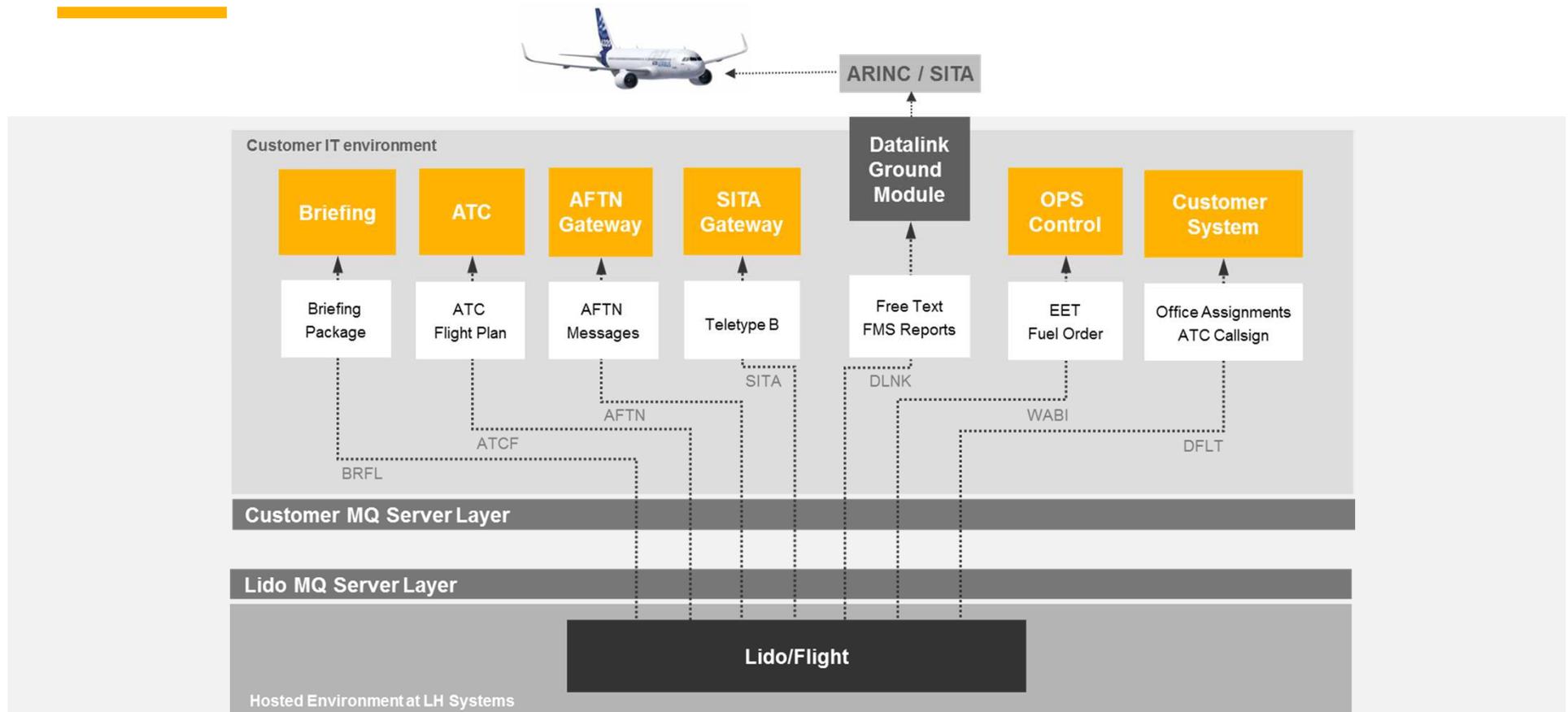
Lido/Flight – Optimization and Automation

03

Lido/Flight optimizes from runway to runway
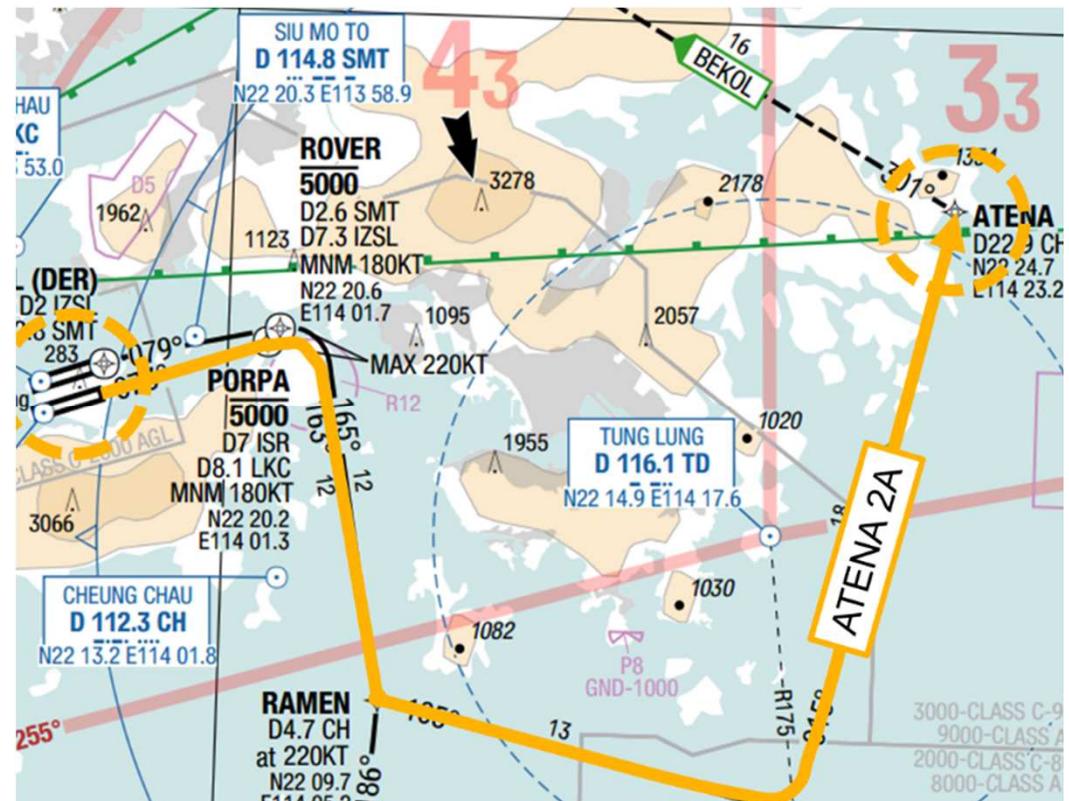
Consideration of published procedures:

- SIDs

- STARs

Consideration of published restrictions:

- Altitude

- Restricted airspaces (PRDs)

Consideration of environmental conditions:

- Wind and RWY in use

- Temperature

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Lido/Flight Airport Suitability Check (ASC)

Automated runway specific check based on:

- Actual and forecasted weather
  validated against all defined minima

- All relevant NOTAM restrictions

- Aircraft equipment restrictions

- Company specific restrictions or policies

- Integrated RAIM Prediction data

- Rescue and Fire Fighting Categories

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Automated restriction check
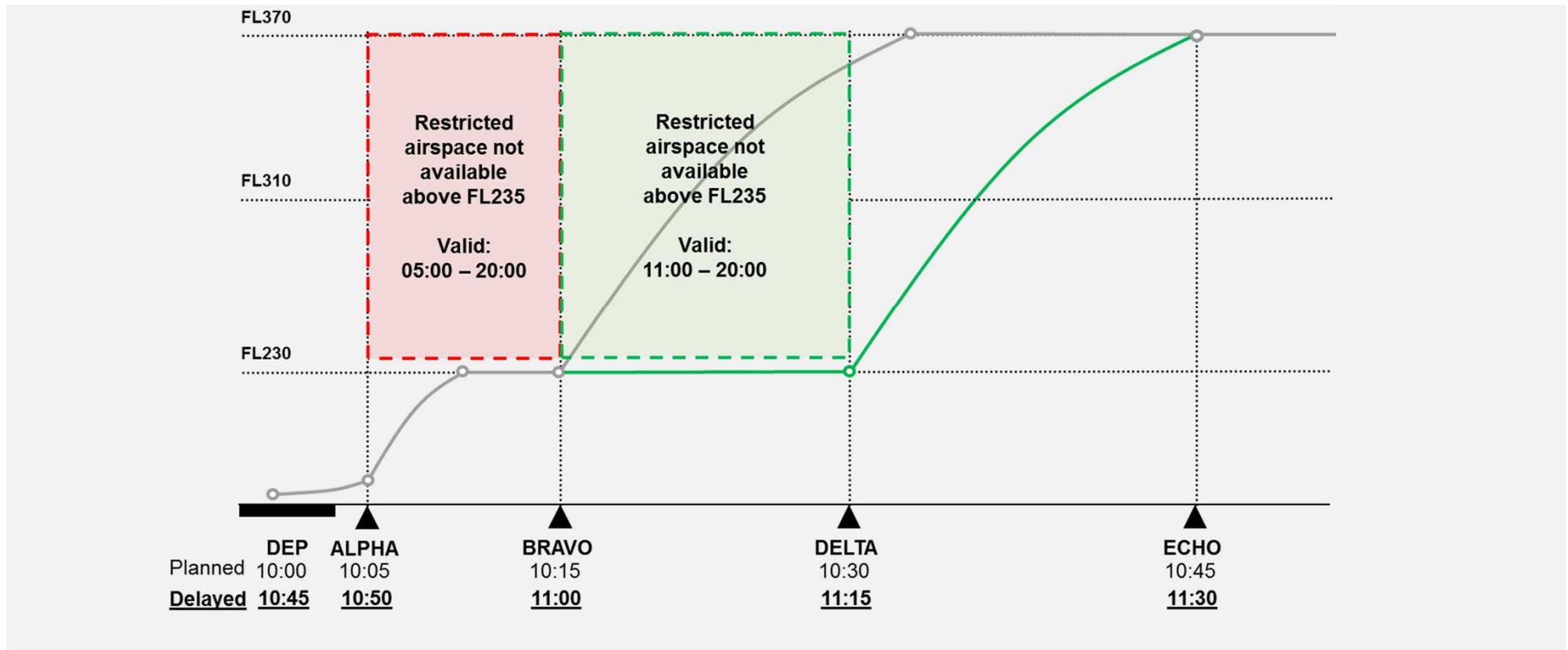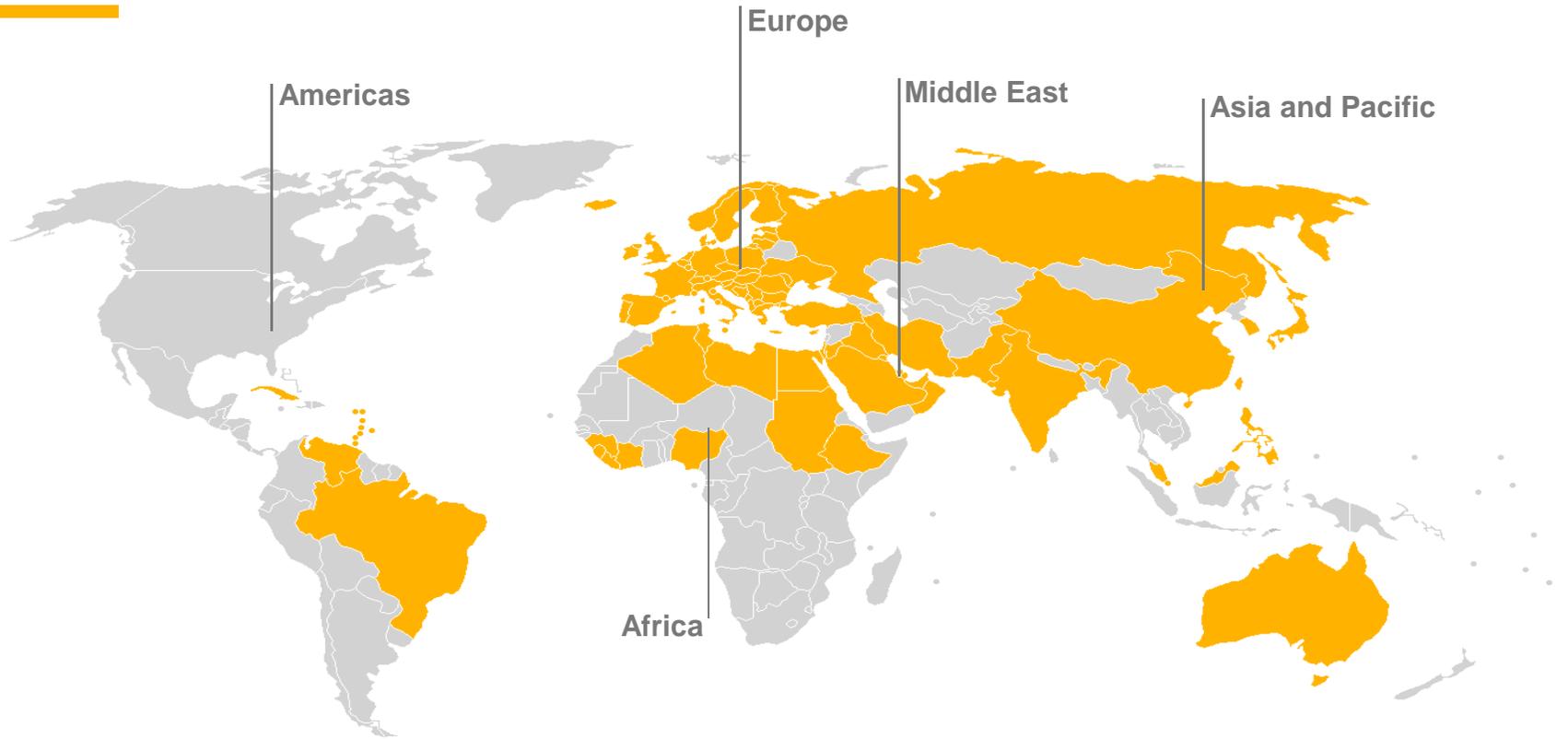
Multiple ETOPS areas

Automated check for:

- Adequate and Suitable Airports (ASC)

- Certification of aircraft type (rule time)

- Single engine speed in still air

- Airline defined preferential airports

- Standard Operations and EDTO

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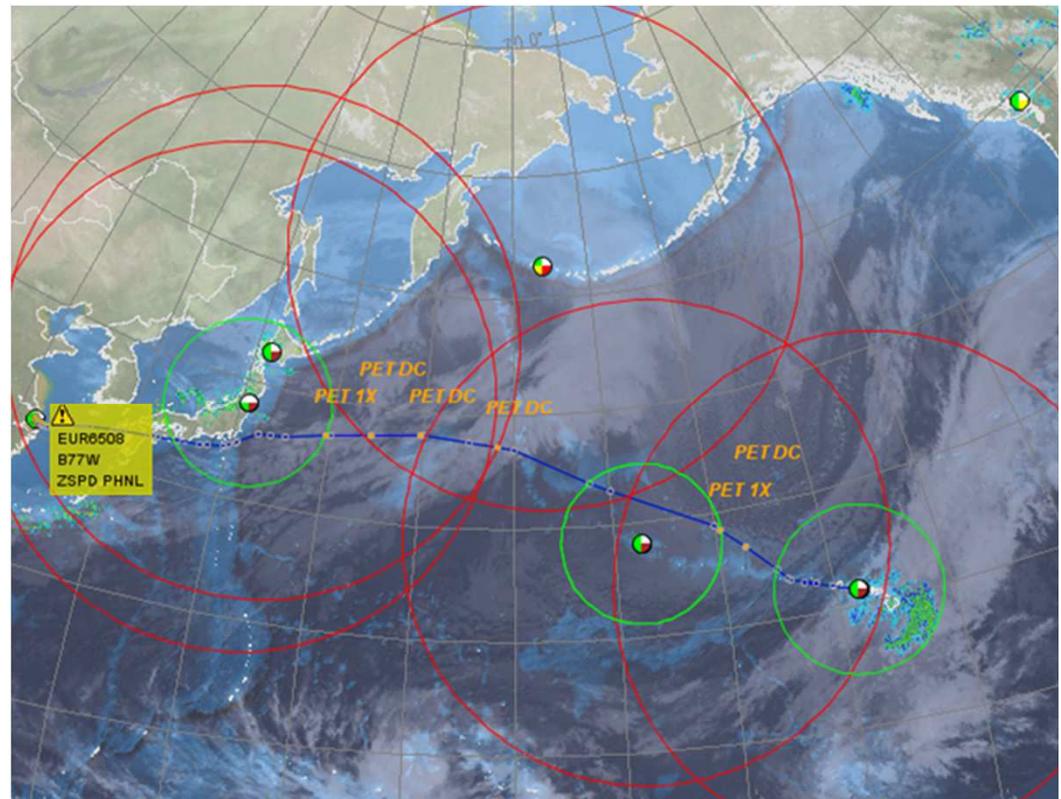
TFR facilitates free and fully automated optimization

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Lido/Flight TFR data coverage

Americas

Europe

Middle East

Asia and Pacific

Africa

Are you ready for flight planning 2020? | NASA Airline Operations Workshop

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Automated flight planning
Includes briefing package generation and flight plan filing. Considers weather, NOTAM and traffic flow restrictions, ETOPS, DD/DP scenarios, reclearance, etc.
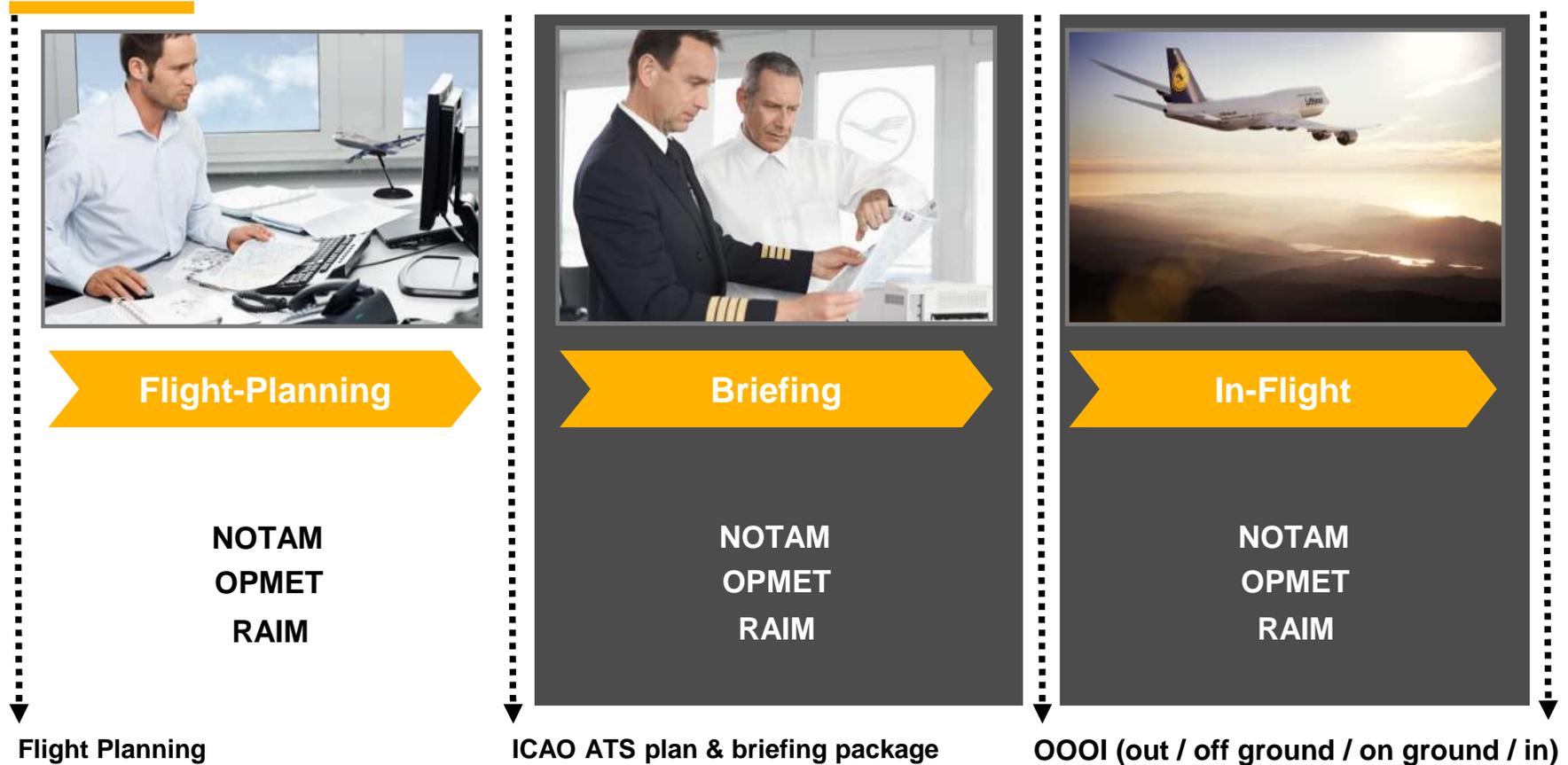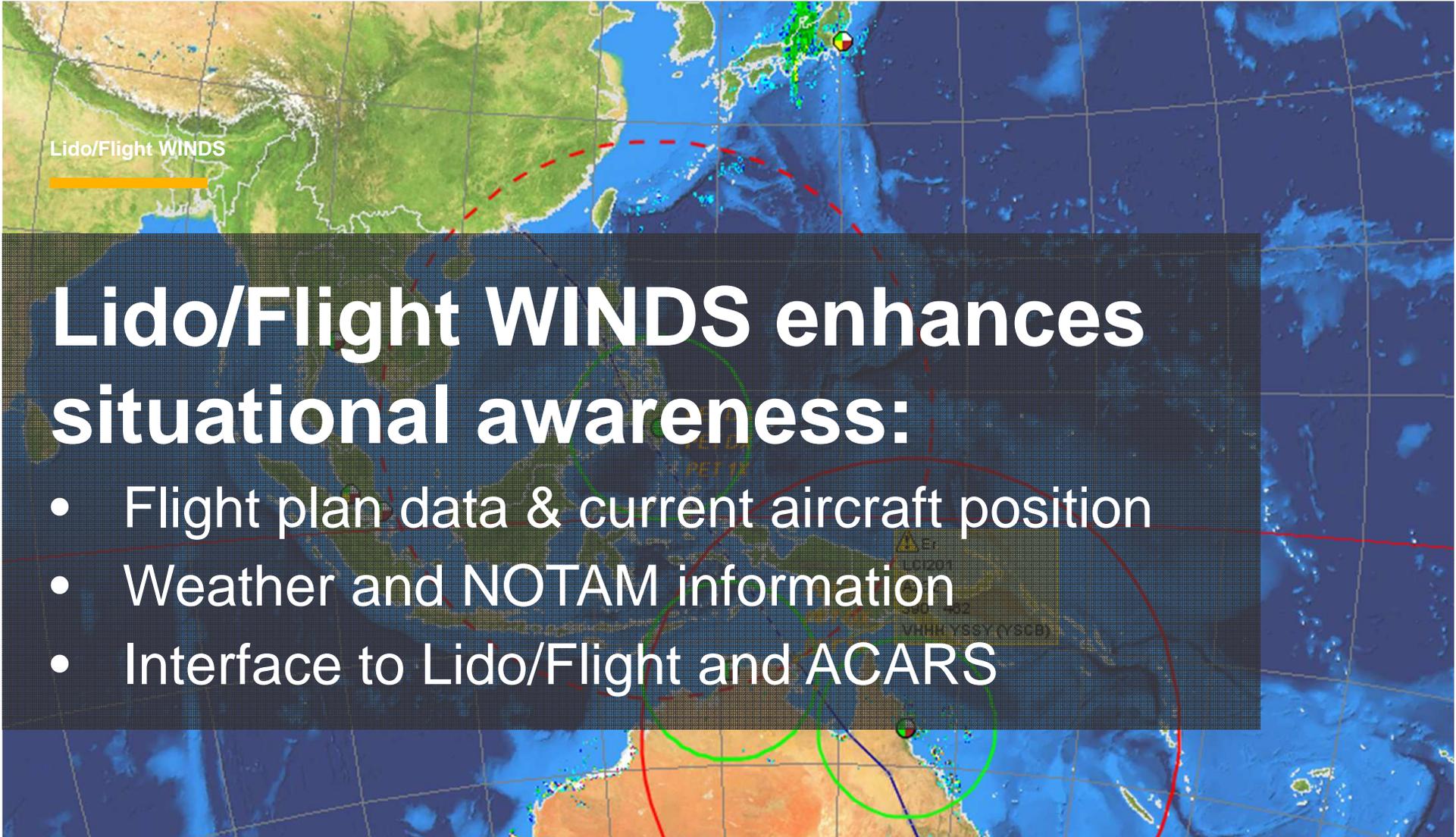
Avoid environmental hazards:

- Volcanic ash clouds
- Tropical cyclones
- Extremely low temperatures

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Lido/Flight Inflight Monitor (IFM)

Continuous en-route and airport suitability check

Real time updates and alerts on actual weather, NOTAM and RAIM status to SOC and/or crew via ACARS

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Lido/Flight Inflight Monitor (IFM)

Flight-Planning	Briefing	In-Flight
NOTAM	NOTAM	NOTAM
OPMET	OPMET	OPMET
RAIM	RAIM	RAIM

Flight Planning   **ICAO ATS plan & briefing package**   **OOOI (out / off ground / on ground / in)**

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Lido/Flight WINDS enhances situational awareness:

- Flight plan data & current aircraft position
- Weather and NOTAM information
- Interface to Lido/Flight and ACARS

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Lido/Flight WINDS

- Significantly improved situational awareness

- Enables SOC key decision makers to proactively manage flights in complex operational situations

- SOC based inflight support helps pilots to concentrate on flying the aircraft in critical situations which enhances flight safety

- Reduces the impact of an event to a minimum
  - contributes to on time performance
  - less diversions
  - better passenger comfort
  - better customer experience overall
  - significant cost saving potential
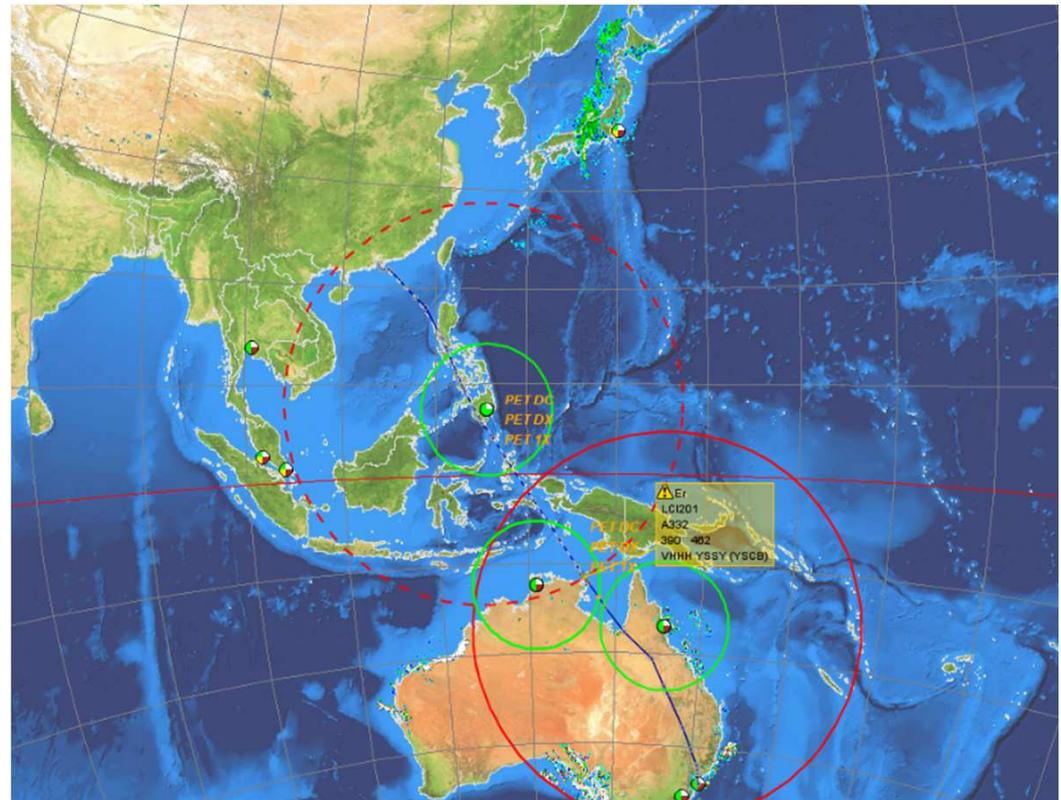
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Lido/Flight Briefing

Customize the content of the briefing packages according to your mission requirements

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Summary

04

Automation to assist dispatchers

- Integration of state published restrictions, Traffic Flow Restrictions or others.

- Airlines are able to add additional restrictions such as Company NOTAM, MEL/CDL restrictions or other limitations.

- Airlines are able to use their defined Company Minima in finding suitable airports for the daily operation.

- Reducing the time for flight planning, increasing the time for flight monitoring.

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Crew confidence in SOC services

- Situational awareness is still very limited from a flight deck perspective

- Flight crews require confidence in the planning

- Pilots need assurance to get support during inflight whenever necessary

- Catering the right amount of fuel for a given scenario (Weather/ATC/Airport) is key to success (OTP, Costs, Safety, PAX)

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Lido/Flight in a nutshell…

Data coverage, integration & automation is key to success!

Lido/Flight provides
- superior data and system integration on a 24/7 basis
- sopisticated optimization capabilities observing restrictions
- high level of automation (data, interfaces and functionality)
- stable operations and 24/7 support by aviation experts
- business continuity and disaster recovery concepts & services

Flight crews require confidence in the planning!
Pro-active inflight assistance enhances crew confidence!

Reliable planning and situational awareness leads to
flight efficency, flight safety and operational excellence!

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Ralph Möhlenbrock, Manager Lido/Flight Training & Consulting

Thank you for your attention!

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