

# Aeronautical Information Management improvements in support of runway safety

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# Content



- Aeronautical Information Management role as enabler of ATM safety
- AIM guidelines in EAPPRI v 3.0
- AIM improvements and developments

# Transition to AIM environment enables increased level of safety (ref. ICAO PANS-AIM Doc 10066)

## ***Aeronautical Information Management***

the dynamic and integrated management of aeronautical information through the **provision and exchange of quality-assured digital aeronautical data** in collaboration with all parties



Ensure information provision by accountable and qualified sources

Improved data quality

Digital data exchange and processing

Timely and accurate distribution

# AIM Recommendations in EAPPRI v 3.0

Ensure information provision by accountable and qualified sources

Improved data quality

Digital data exchange and processing

Timely and accurate distribution

Formal arrangements between aerodrome operators and AIS

Collection of post-flight information at aerodromes & feedback on data quality

Use of ICAO standards for AIS products

Quality assurance procedures

Improved readability and usability of aeronautical charts

Data driven AIS process

Interoperable exchange format

Digital data

AMDB

Up-to-date data

Relevant & optimized information

Agreements between AIS and DAT providers to ensure data quality

# EAPPRI v3.0 AIM Guidance subjects – Appendix H

- Managing Aerodrome Information
- NOTAM and AIP Supplement
- Data Quality Management
- Data Consistency and Completeness
- Single European Sky Regulation
- Post-Flight Information
- Publication of Hot Spots in States AIP
- Publication of Runway holding position in States AIP
- Digital AIM
- Interoperability from original Data Source to End User

# User friendliness on AIP charts

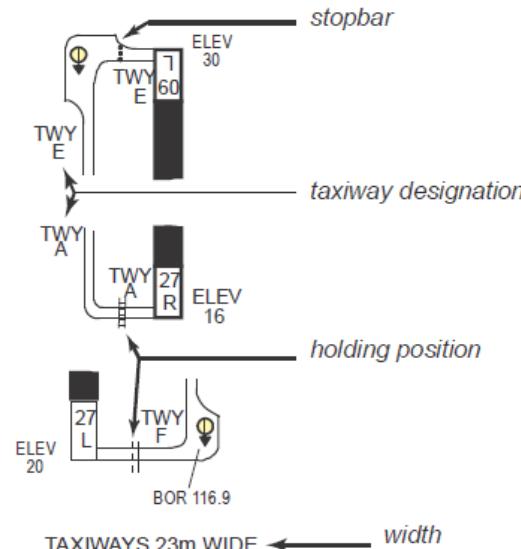
## EAPPRI Guidance:

- Aerodrome Operators to **designate** Hot Spots, State AIS to publish on relevant AIP charts.
- Publish in States AIP **coordinates of runway holding** positions.

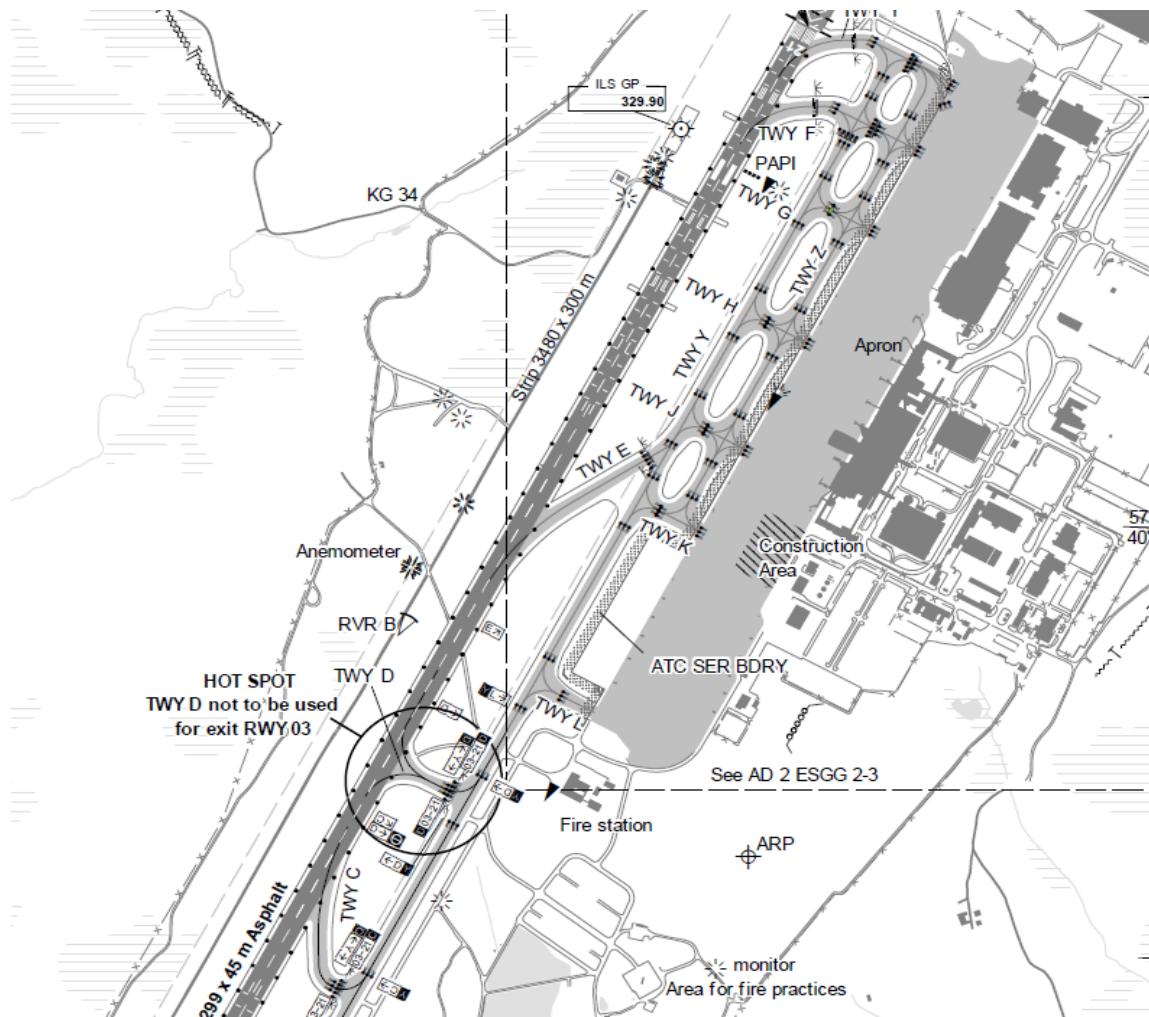
## ICAO Aeronautical Chart Manual (Doc 8697)

- d) taxiways with designations, width, bearing strength or aircraft type restrictions where applicable, lighting, markings, including runway-holding positions (and, where established, intermediate holding positions), stopbars and other visual guidance control aids;
- e) where established, hot spot locations with additional information properly annotated;

Additional information regarding hot spots may be shown in tabular form on the face or verso of the chart.



# Example of Hot Spot on AIP Aerodrome Chart and additional information



TWY NR	WIDTH	Surface Bearing strength	Day marking		Taxiway lighting	
			Centerline Holding	Edge Centerline	RGL Stopbar	Centerline
A	23 m	ASPH PCN 70 F/B/X/T	CL HLDG	CL	Stopbar	
B	23 m	ASPH PCN 70 F/B/X/T	CL HLDG	CL	RGL Stopbar	
C	23 m	ASPH PCN 70 F/B/X/T	CL HLDG	CL	RGL Stopbar	
D	23 m	ASPH PCN 70 F/B/X/T	CL HLDG	CL	RGL Stopbar	
E	23 m	ASPH PCN 70 F/B/X/T	CL HLDG	CL	RGL Stopbar	
F	23 m	ASPH PCN 70 F/B/X/T	CL HLDG	CL	RGL Stopbar	
G	23 m	ASPH PCN 70 F/B/X/T	CL	CL		
H	23 m	ASPH PCN 70 F/B/X/T	CL	CL		
J	23 m	ASPH PCN 70 F/B/X/T	CL	CL		
K	23 m	ASPH PCN 70 F/B/X/T	CL	CL		
L	23 m	ASPH PCN 70 F/B/X/T	CL	CL		
Y	23 m	ASPH PCN 70 F/B/X/T	CL HLDG	CL	RGL Stopbar	
Z	23 m	ASPH PCN 70 F/B/X/T	CL HLDG	CL	Stopbar	

## REMARKS:

Apron TWY surface and bearing strength; ASPH, PCN 70 F/B/X/T

TWY B, C, D, E, F, Y: Centreline on exit TWY:s within ILS critical/sensitive areas and centreline within 150 m from RWY centreline -alternately green and yellow

# NOTAM and the power of digital data

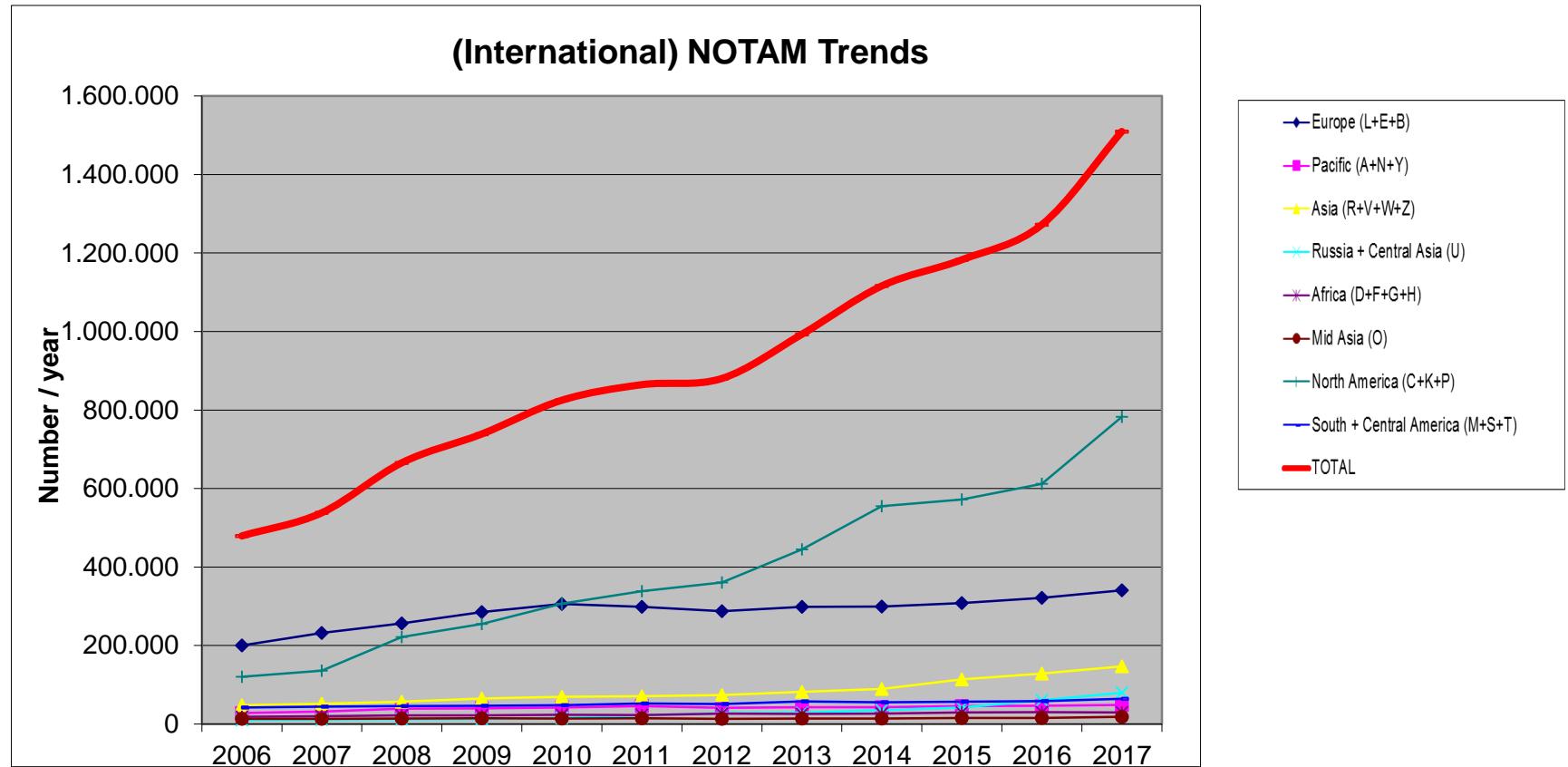
Identified safety related aspects linked to NOTAM:

- NOTAM not issued
- Inaccurate NOTAM
- NOTAM missing from Pre-flight Briefing
- Expired NOTAM
- High volume of different safety criticality information to be processed by flight crew

EAPPRI Guidance:

- ✓ NOTAM shall be straight to the point
- ✓ Available without unnecessary delay
- ✓ Allow a graphic view of the event
- ✓ Allow sorting and filtering of lists of NOTAM

# NOTAM Trends



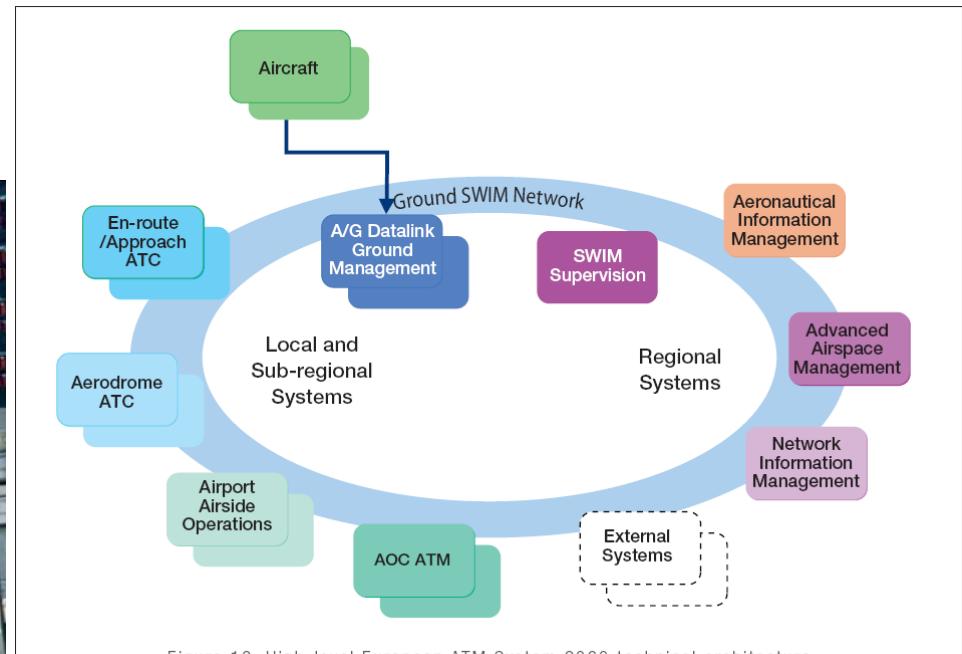
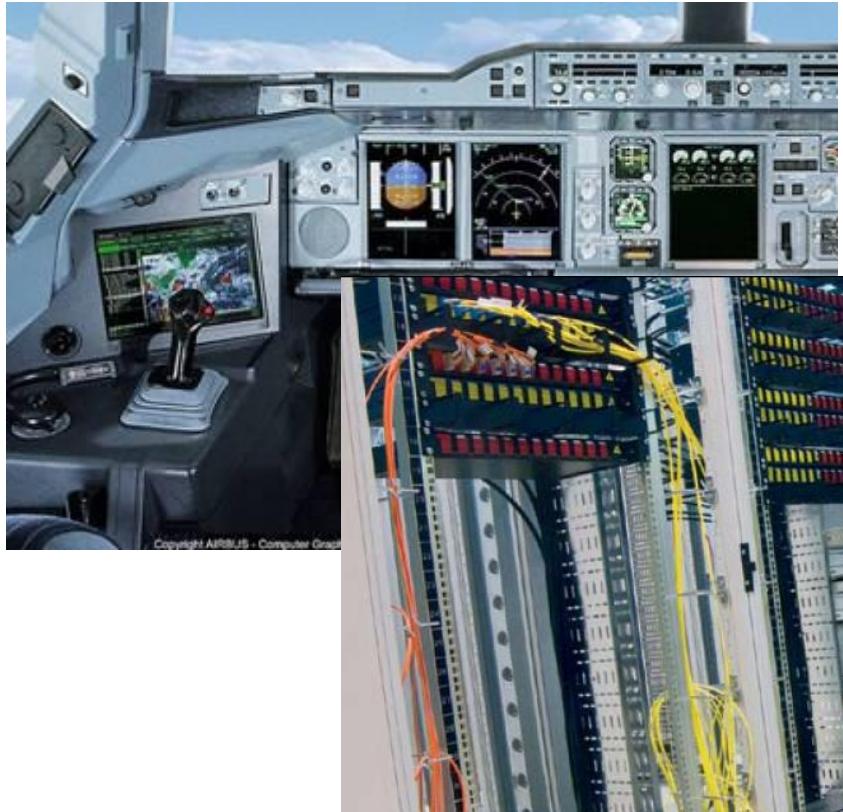
(Source EAD)

Without digital processing, the situation might soon become unmanageable...

Developments to improve quality & reducing the amount

# The problem with NOTAM

*NOTAM increasingly inadequate for a system reliant on computers at every level!*



# Unsatisfied need (PIB)

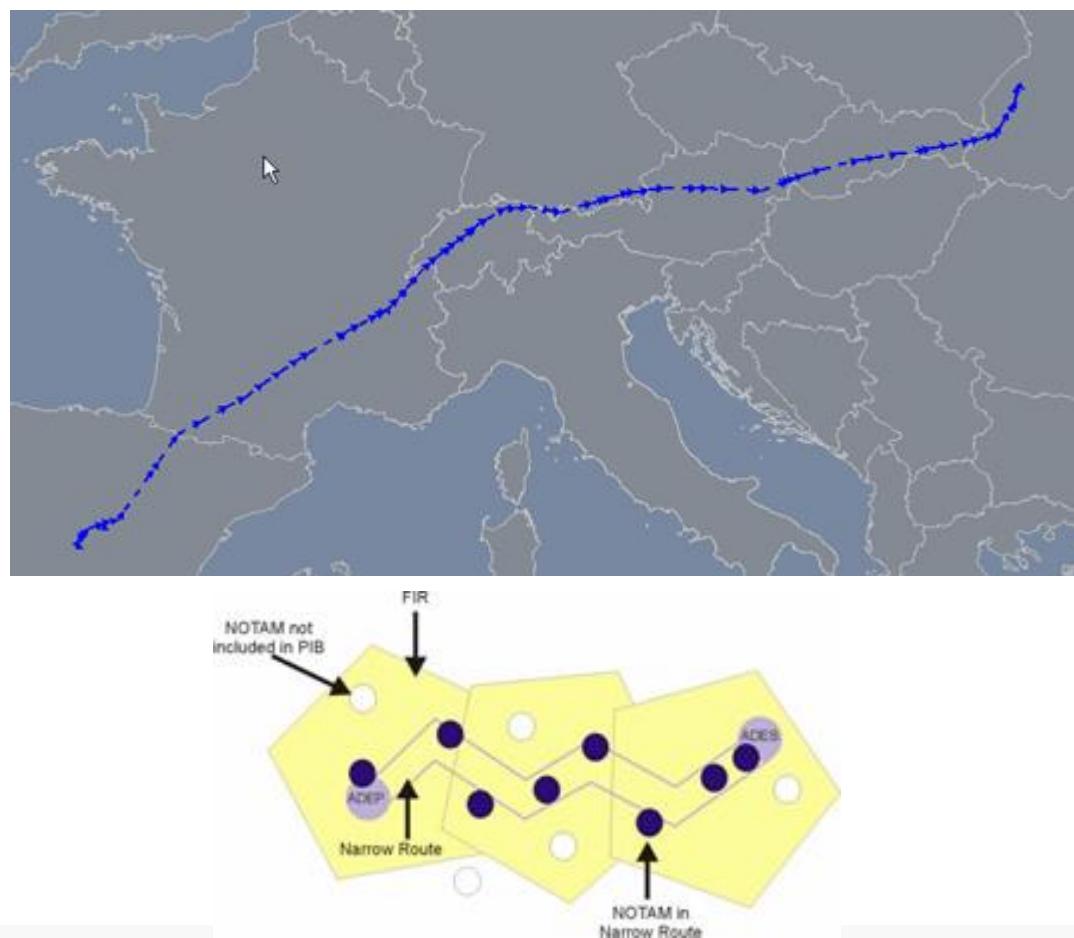
- Madrid/Spain (LEMD) to LVIV/Ukraine (UKLL)

## Basic PIB

- ADEP, FIRs, ADES, ALTN
- ❖ **33 pages, 223 NOTAM**

## Advanced PIB

- narrow route
  - based on NOTAM centre + radius
  - *not using real feature geometry and not using real impact!*
- ❖ **20 pages, 121 NOTAM**



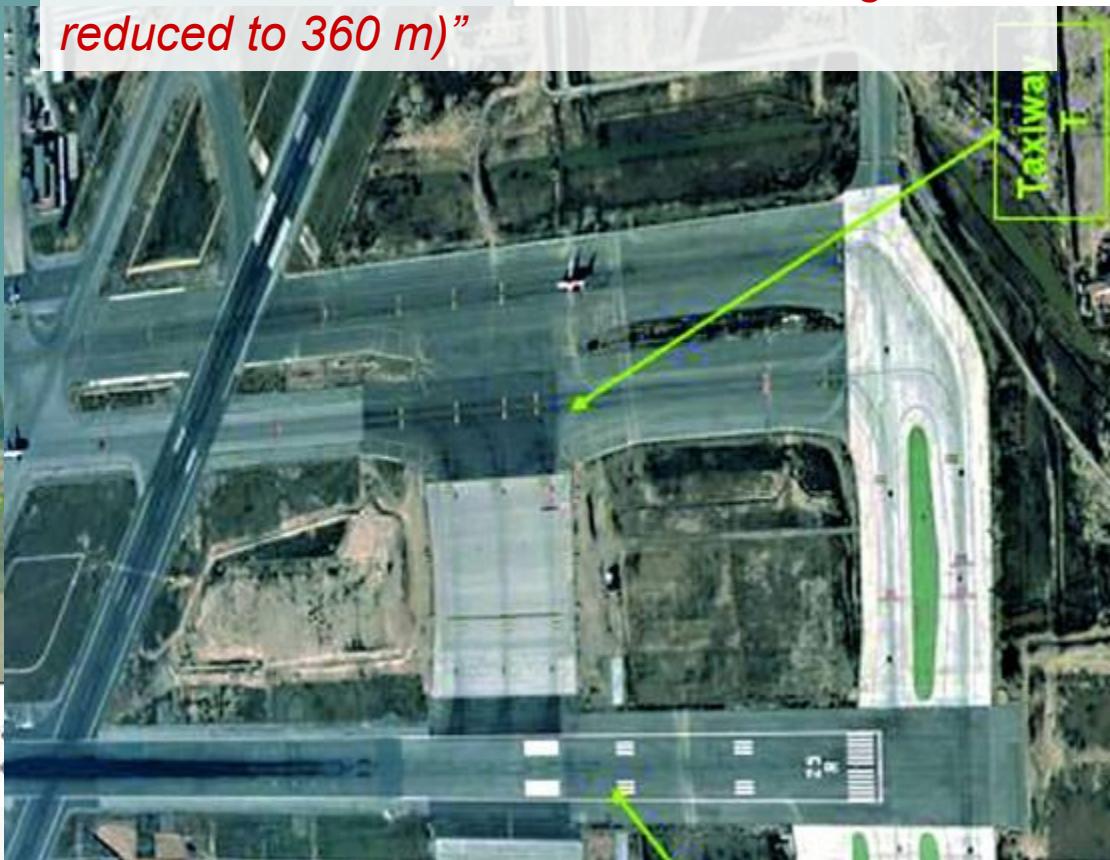
# The risk of information overload

## Incident report:

*“crew unaware of the actual scenario at the Barcelona airport (construction works, ILS and PAPI out of service, approach lights reduced to 690 m, touch down zone lights reduced to 360 m)”*

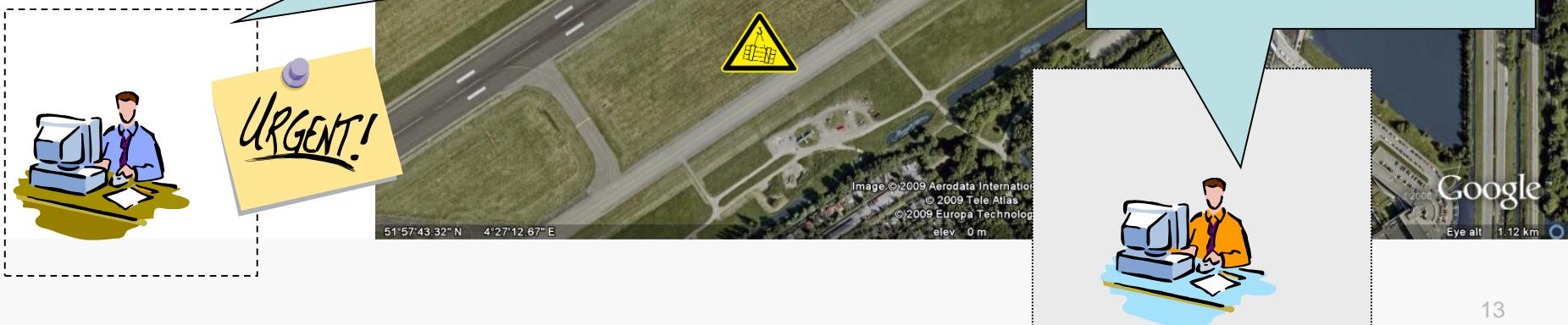


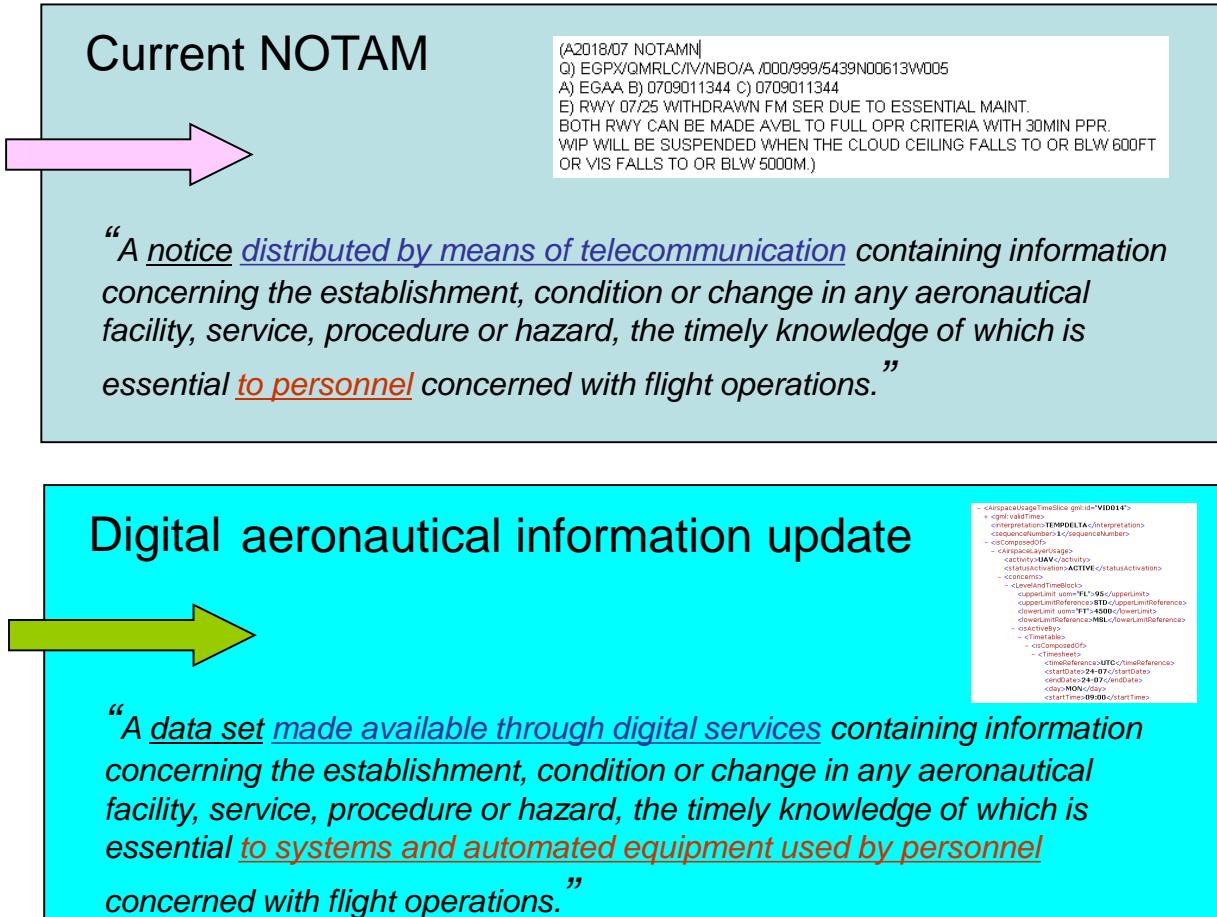
Photo 1. Aircraft approaching to taxiway T at the time a D



# Poor efficiency (try to plot...)

CRANE ERECTED AT PSN 520M IN FRONT OF THR 24 AND 120M/394FT LEFT OF EXTENDED RWY CENTRELINE, HGT 48FT AGL, ICAO DAY/NIGHT-MARKED.





# Digital NOTAM: Information and Format

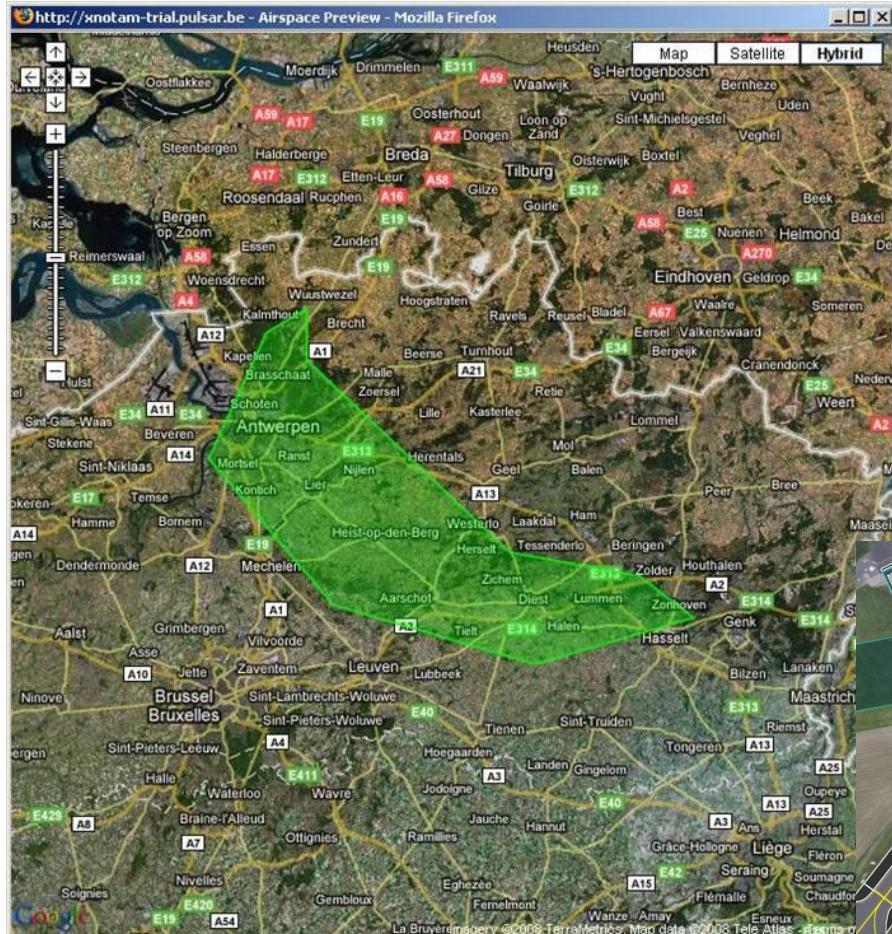


```
<aixm:featureLifetime>
  <gml:TimePeriod gml:id="VID000004">
    <gml:beginPosition>2008-04-25T11:20:00</gml:beginPosition>
    <gml:endPosition>2008-07-25T17:00:00</gml:endPosition>
  </gml:TimePeriod>
</aixm:featureLifetime>
<aixm:type>CRANE</aixm:type>
<aixm:isMadeOf>
  <aixm:VerticalStructurePart>
    <aixm:hasPointShape>
      <aixm:ElevatedPoint gml:id="VID000006" srsName="urn:x-ogc:def:crs:OGC:1.3:CRS84" srsDimension="2">
        <gml:coordinates>-8.89311111111111, 52.70994444444444 </gml:coordinates>
        <aixm:elevation uom="FT">183</aixm:elevation>
      </aixm:ElevatedPoint>
    </aixm:hasPointShape>
  </aixm:VerticalStructurePart>
</aixm:isMadeOf>
```

## Synergy: standardised text in NOTAM item E

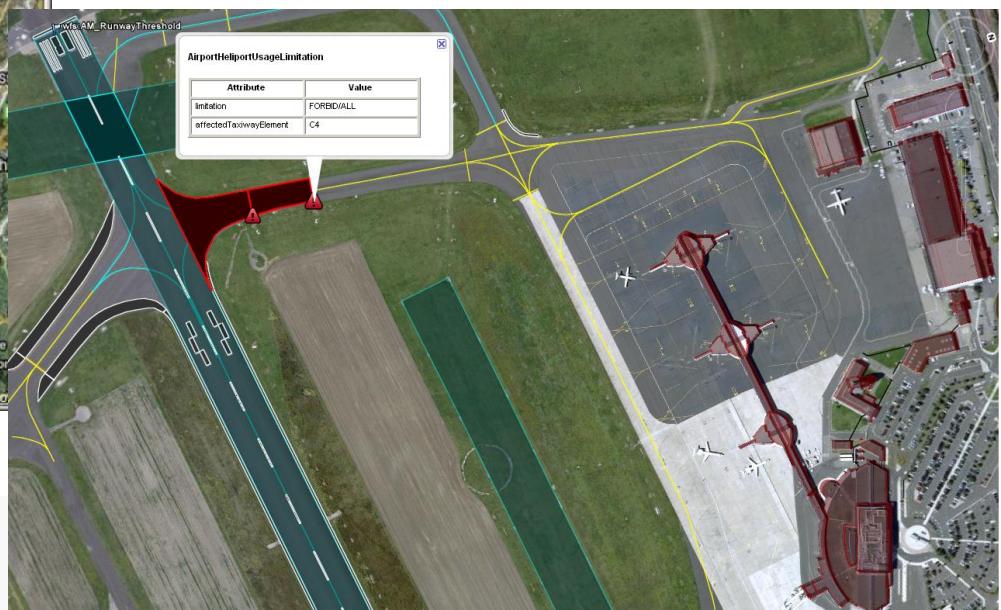
- E) TWY N CLOSED BTN ACFT STAND 116 AND ACFT STAND 120.
- E) TWY C1 AND TWY V1 PROHIBITED FOR ACFT WITH WINGSPAN EQUAL TO OR SMALLER THAN 36M.
- E) OBSTACLE LIGHTS UNSERVICEABLE ON TOWER LOCATED AT ANSPACH. 295652N 0953214W ELEVATION 220FT AMSL (HEIGHT 183FT AGL).

# Benefits – improved data quality



## Digital data:

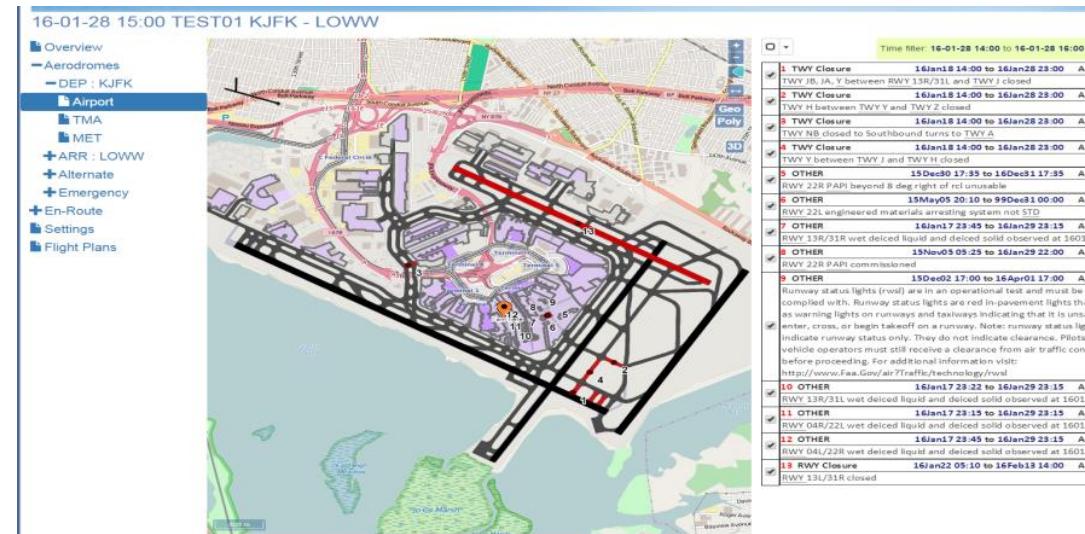
- ✓ clearer/more precise than free text
- ✓ enables validation
- ✓ automatic by the system
- ✓ visually by the operator



# Benefits - improved Pre-flight briefing - digitally enhanced PIB

- SESAR 1 Project

*Positive impact on safety.  
Improved situational awareness for pilots.*



# Digitally enhanced briefing (ePIB)



Integrated Digital Briefing x 10.16.86.200:8082/BriefingHMI/#/main

DuckDuckGo Chrome Extensions: ... Pyotr Ilyich Tchaikov... YouTube News SESAR WJ Fatca Relief Coming... TV Miscellaneous Wien-Donaustadt - ... METGIFS

Welcome dbriefing logout | Generate ePIB Documents

**FREQUENTIS Integrated Digital Briefing**

16-01-28 15:00 TEST01 KJFK - LOWW

Overview Aerodromes DEP : KJFK Airport TMA MET ARR : LOWW Alternate Emergency En-Route Settings Flight Plans

Time filter: 16-01-28 14:00 to 16-01-28 16:00 Edit

**Map of KJFK (JFK) Airport and surrounding area:**

The map shows the airport layout with runways 13L, 13R, 31L, 31R, 4L, 22R, and 22L. The surrounding area includes the East River, Rockaway Boulevard, and various local streets. A red line highlights a closure on the 13R/31L runway. A legend on the right identifies runway numbers and colors: 13L (red), 13R (red), 31L (red), 31R (red), 4L (red), 22R (red), and 22L (black).

**Runway Closures and Other Events:**

<input checked="" type="checkbox"/> 1 TWY Closure	16Jan18 14:00 to 16Jan28 23:00	A0296/16
	TWY JB, JA, Y between RWY 13R/31L and TWY J closed	
<input checked="" type="checkbox"/> 2 TWY Closure	16Jan18 14:00 to 16Jan28 23:00	A0296/16
	TWY H between TWY Y and TWY Z closed	
<input checked="" type="checkbox"/> 3 TWY Closure	16Jan18 14:00 to 16Jan28 23:00	A0296/16
	TWY NB closed to Southbound turns to TWY A	
<input checked="" type="checkbox"/> 4 TWY Closure	16Jan18 14:00 to 16Jan28 23:00	A0294/16
	TWY Y between TWY J and TWY H closed	
<input checked="" type="checkbox"/> 5 OTHER	15Dec30 17:35 to 16Dec31 17:35	A9408/14
	RWY 22R PAPI beyond 8 deg right of rcl unusable	
<input checked="" type="checkbox"/> 6 OTHER	15May05 20:10 to 99Dec31 00:00	A4415/14
	RWY 22L engineered materials arresting system not STD	
<input checked="" type="checkbox"/> 7 OTHER	16Jan17 23:45 to 16Jan29 23:15	A0286/14
	RWY 13R/31R wet deiced liquid and deiced solid observed at 1601172149	
<input checked="" type="checkbox"/> 8 OTHER	15Nov05 05:25 to 16Jan29 22:00	A8166/14
	RWY 22R PAPI commissioned	
<input checked="" type="checkbox"/> 9 OTHER	15Dec02 17:00 to 16Apr01 17:00	A8773/14
	Runway status lights (rwsl) are in an operational test and must be complied with. Runway status lights are red in-pavement lights that serve as warning lights on runways and taxiways indicating that it is unsafe to enter, cross, or begin takeoff on a runway. Note: runway status lights indicate runway status only. They do not indicate clearance. Pilots and vehicle operators must still receive a clearance from air traffic control before proceeding. For additional information visit: <a href="http://www.Faa.Gov/air?Traffic/technology/rwsl">http://www.Faa.Gov/air?Traffic/technology/rwsl</a>	
<input checked="" type="checkbox"/> 10 OTHER	16Jan17 23:22 to 16Jan29 23:15	A0281/14
	RWY 13R/31L wet deiced liquid and deiced solid observed at 1601172122.	
<input checked="" type="checkbox"/> 11 OTHER	16Jan17 23:15 to 16Jan29 23:15	A0280/14
	RWY 04R/22L wet deiced liquid and deiced solid observed at 1601172115.	
<input checked="" type="checkbox"/> 12 OTHER	16Jan17 23:45 to 16Jan29 23:15	A0284/14
	RWY 04L/22R wet deiced liquid and deiced solid observed at 1601172145	
<input checked="" type="checkbox"/> 13 RWY Closure	16Jan22 05:10 to 16Feb13 14:00	A1388/16
	RWY 13L/31R closed	

# Digitally enhanced briefing (ePIB)



Integrated Digital Briefing x 10.16.86.200:8082/BriefingHMI/#/main

DuckDuckGo Chrome Extensions: ... Pyotr Ilyich Tchaikov... YouTube News SESAR WJ Fatca Relief Coming... TV Misceleanous Wien-Donaustadt - ... METGIFS

**FREQUENTIS Integrated Digital Briefing**

Welcome dbriefing logout Generate ePIB Documents

16-01-28 15:00 TEST01 KJFK - LOWW

Overview Aerodromes DEP : KJFK ARR : LOWW Alternate LOWI Airport TMA MET LZIB Emergency En-Route Settings Flight Plans

Map of Innsbruck, Austria, showing aerodromes KJFK and LOWW, and various obstacles marked with red triangles and numbered (149, 150, 151, 152, 153, 154, 155, 156). The map includes labels for Innsbruck, Hötting, and surrounding areas. A legend in the top right corner indicates obstacle types: 149 OTHER, 150 New Obstacle, 151 New Obstacle, 152 New Obstacle, 153 New Obstacle, 154 New Obstacle, 155 New Obstacle, and 156 New Obstacle.

Time filter: 16-01-28 21:11 to 16-01-28 23:11 Edit

Obstacle Type	Start Date	End Date	Identifier
149 OTHER	16Jan19 12:00	16Jan19 15:00	A0086/14
150 New Obstacle	15Jan09 02:00	16Feb18 02:00	A2616/
151 New Obstacle	15Jan09 02:00	16Feb18 02:00	A2616/
152 New Obstacle	15Dec28 02:00	16Mar25 02:00	A2647/
153 New Obstacle	15Dec28 02:00	16Mar25 02:00	A2648/
154 New Obstacle	15Dec28 02:00	16Mar25 02:00	A2646/
155 New Obstacle	16Jan26 23:00	16Feb02 02:00	A2599/
156 New Obstacle	15Dec21 02:00	16Feb02 02:00	A2599/

# Integration MET information (ePIB)

Integrated Digital Briefing x

10.16.86.200:8082/BriefingHMI/#/main

Welcome dbriefing logout  
Generate ePIB

# FREQUENTIS Integrated Digital Briefing

UAL 234 KJFK - ESSA 15-07-29 12:06

Overview

Aerodromes

DEP : KJFK

Airport

TMA

MET

ARR : ESSA

ALT : ESSB

Emergency

En-Route

FIR: KZBW

Config

MET

FIR: CZQM

FIR: CZUL

FIR: CZQX

Config

MET

FIR: EGGX

FIR: BIRD

FIR: ENOR

Config

MET

FIR: ESAA

Config

MET

Settings

Flight Plans

Disable FIR

110W PIE-120SS ELM WST ISSUANCES POSS. REFER TO MOST RECENT ACUS01

KWNS FROM STORM PREDICTION CENTER FOR SYNOPSIS AND METEOROLOGICAL DETAILS. AREA 2...FROM EKN-40SW CSN-50SW CRG-80SW CTY-CEW-50NNNE MSL-VXV-EKN WST ISSUANCES POSS. REFER TO MOST RECENT ACUS01 KWNS FROM STORM PREDICTION CENTER FOR SYNOPSIS AND METEOROLOGICAL DETAILS.

**SIGMET:** WAUS42 KKCI 290245 MIAT WA 290245 AIRMET TANGO FOR TURB VALID UNTIL 290900 AIRMET TURB...NC ME NH VT MA RI CT NY LO NJ PA WV MD

DC DE VA AND CSTL WTRS FROM YSC TO BGR TO 110SE BGR TO 200SE ACK TO 160SE SIE TO 190E ECG TO 20NE ILM TO 20S JST TO 70NE YYZ TO YOW TO YSC MOD TURB BTN FL270 AND FL400. CONDS CONTG BYD 09Z ENDG 09-12Z.

**SIGMET:** WAUS41 KKCI 290245 BOST WA 290245 AIRMET TANGO FOR TURB VALID UNTIL 290900 AIRMET TURB...ME NH VT MA RI CT NY LO NJ PA WV MD DC

DC VA NC AND CSTL WTRS FROM YSC TO BGR TO 110SE BGR TO 200SE ACK TO 160SE SIE TO 190E ECG TO 20NE ILM TO 20S JST TO 70NE YYZ TO YOW TO YSC MOD TURB BTN FL270 AND FL400. CONDS CONTG BYD 09Z ENDG 09-12Z.

**SIGMET:** WAUS41 KKCI 290245 BOSS WA 290245 AIRMET SIERRA FOR IFR AND MTN OBSCN VALID UNTIL 290900 AIRMET IFR...NH VT MA NY FROM 305E YSC TO 30W BOS TO 40W SW ALB TO 30E MSS TO 30E YSC CIG BLW 010/VIS BLW 35M BR/FG. CONDS DVLPG 06-09Z. CONDS CONTG BYD 09Z ENDG 12-15Z.

**SIGMET:** WAUS41 KKCI 290245 BOSS WA 290245 AIRMET SIERRA FOR IFR AND MTN OBSCN VALID UNTIL 290900 AIRMET IFR...ME NH MA RI AND CSTL WTRS

FROM 30ESE HUL TO 140E ACK TO 60ESE ACK TO 50SSE PVD TO 20W SW BGR TO 30ESE HUL CIG BLW 010/VIS BLW 35M BR/FG. CONDS CONTG BYD 09Z THRU 15Z.

**SIGMET:** WAUS41 KKCI 290845 BOSS WA 290845 AIRMET SIERRA UPDT 1 FOR IFR AND MTN OBSCN VALID UNTIL 291500 AIRMET IFR...ME NH VT MA RI CT NY AND

CSTL WTRS FROM 50SE HUL TO 160ESE ACK TO 70S ACK TO 30W BDL TO 50L BR TO YSC TO 20W BGR TO 50SE HUL CIG BLW 010/VIS BLW 35M BR/FG. CONDS CONTG BYD 15Z THRU 21Z.

**SIGMET:** WAUS41 KKCI 290845 BOST WA 290845 AIRMET TANGO UPDT 1 FOR TURB VALID UNTIL 291500 AIRMET TURB...ME NH MA RI CT NY NJ MD DE VA AND CSTL WTRS FROM 70NW PQI TO 60NE PQI TO 200SE ACK TO 160SE SIE TO 70E ORF

TO 30S PVD TO 40SE YQB TO 70NW PQI MOD TURB BTN FL280 AND FL420. CONDS CONTG BYD 15Z ENDG 15-18Z. OTL VALID 1500-2100Z...TURB OH LE BOUNDED BY 20NW YYZ-40NW AIR-CVG-FWA-30E ECK-20NW YYZ MOD TURB BTN FL340 AND FL400. CONDS ENDG 18-21Z.

**SIGMET:** WAUS41 KKCI 290845 BOSS WA 290845 AIRMET SIERRA UPDT 1 FOR IFR AND MTN OBSCN VALID UNTIL 291500 AIRMET MTN OBSCN...ME NH VT NY FROM

50E YQB TO 20NW BGR TO 20S MPV TO 30E MSS TO YSC TO 50E YQB MTNS OBSC BY CLDS/BR. CONDS ENDG 12-15Z.

# Conclusion

Ensure information provision by accountable and qualified sources

## Improved data quality

Digital data exchange and processing

Timely and accurate distribution

### EAPPRI Guidance:

*“The aspiration to present aerodrome NOTAM information in a digitised, interoperable exchange format (i.e. graphical display) should be continued.”*

### ICAO PANS-AIM (Doc 10066):

*Aerodrome mapping data include aerodrome geographic information that supports applications which improve the user’s situational awareness or supplements surface navigation, thereby increasing safety margins and operational efficiency.*

Thank you for your attention!

Now go digital.....