



Global Services

A faint, light gray world map is visible in the background of the slide. A thick blue horizontal bar is positioned above the main title.

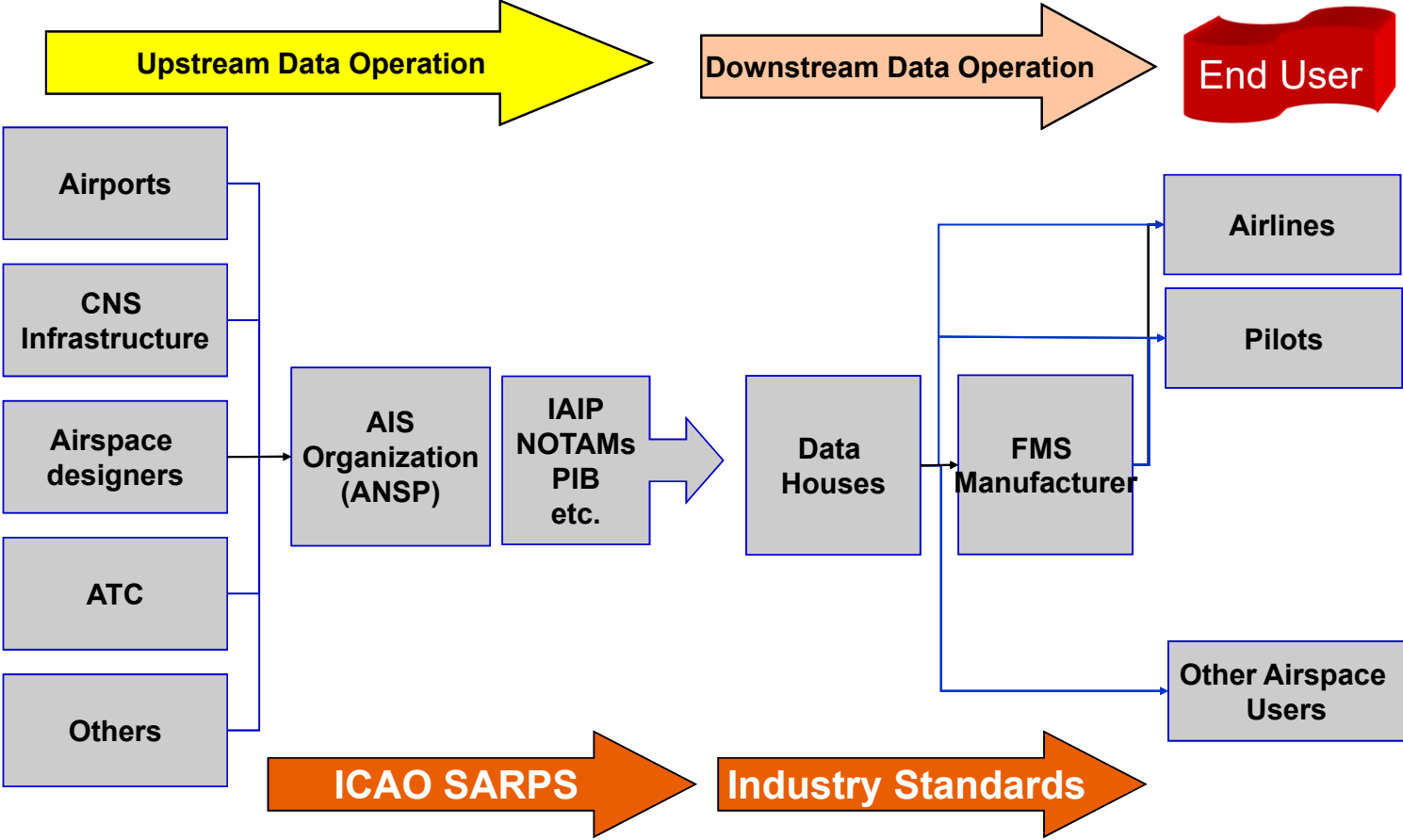
# Importance of QMS for the AIS/MAP Products and Services – a Data-House View

ICAO MID AIM/QMS Webinar

Volker Meyer – Manager International Relations

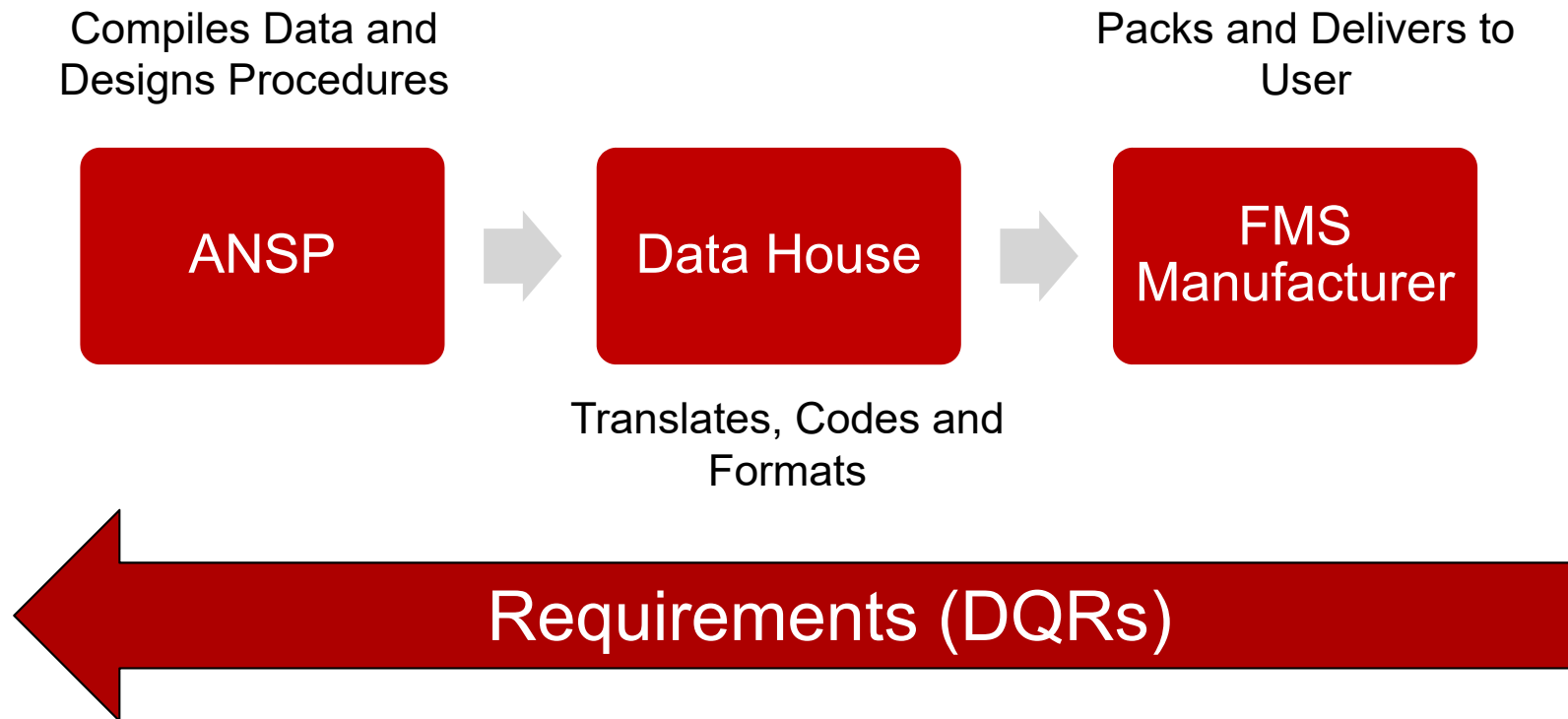
29 April 2021

# Upstream and Downstream Actors in the Aeronautical Data Supply Chain



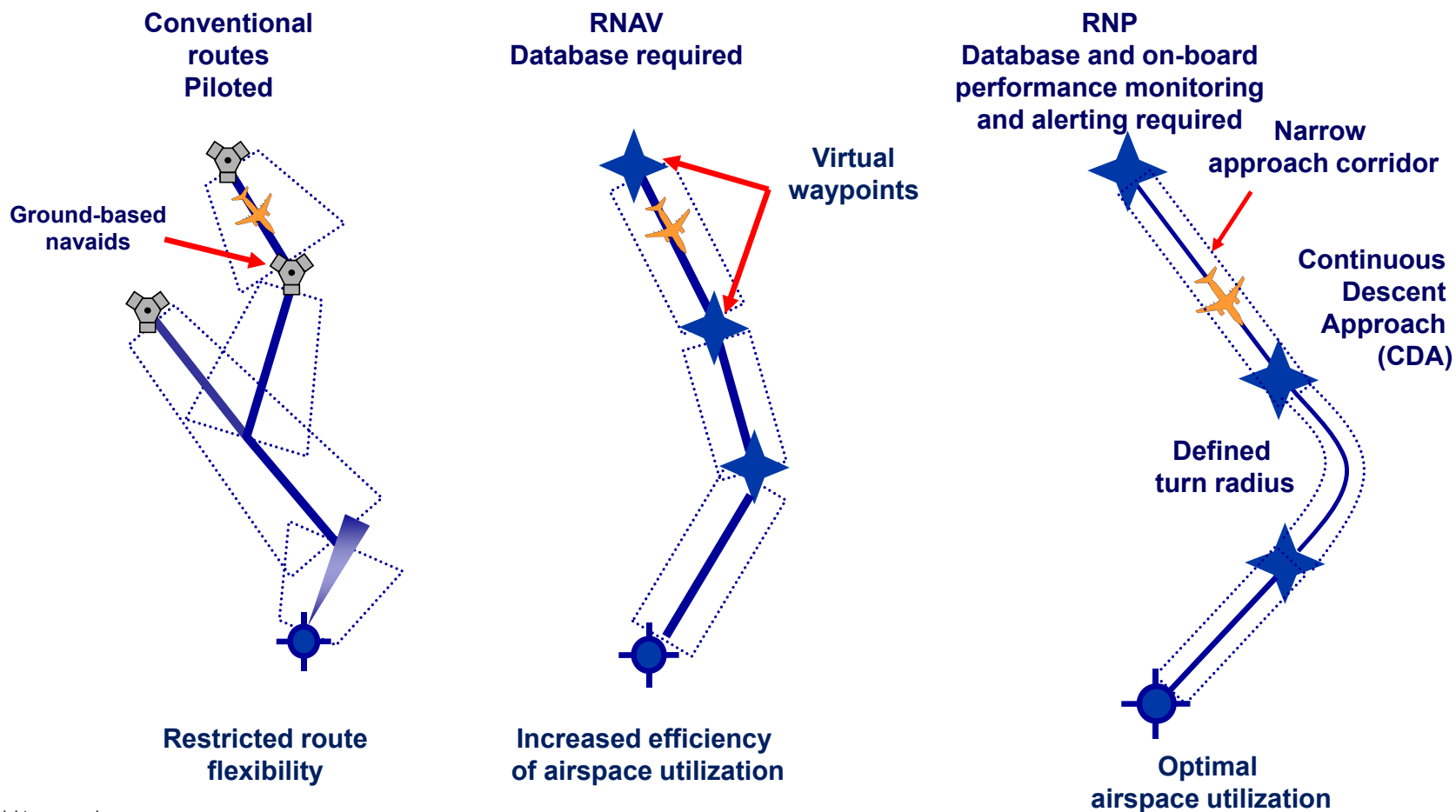
# Data Flow

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# New Navigation Procedures – Performance-Based Navigation (PBN) Applications

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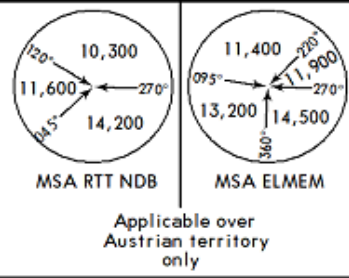
**LOWI/INN  
INNSBRUCK**

**JEPPESSEN**  
12 JUL 19 (11-3) Eff 18 Jul

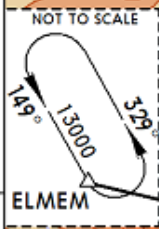
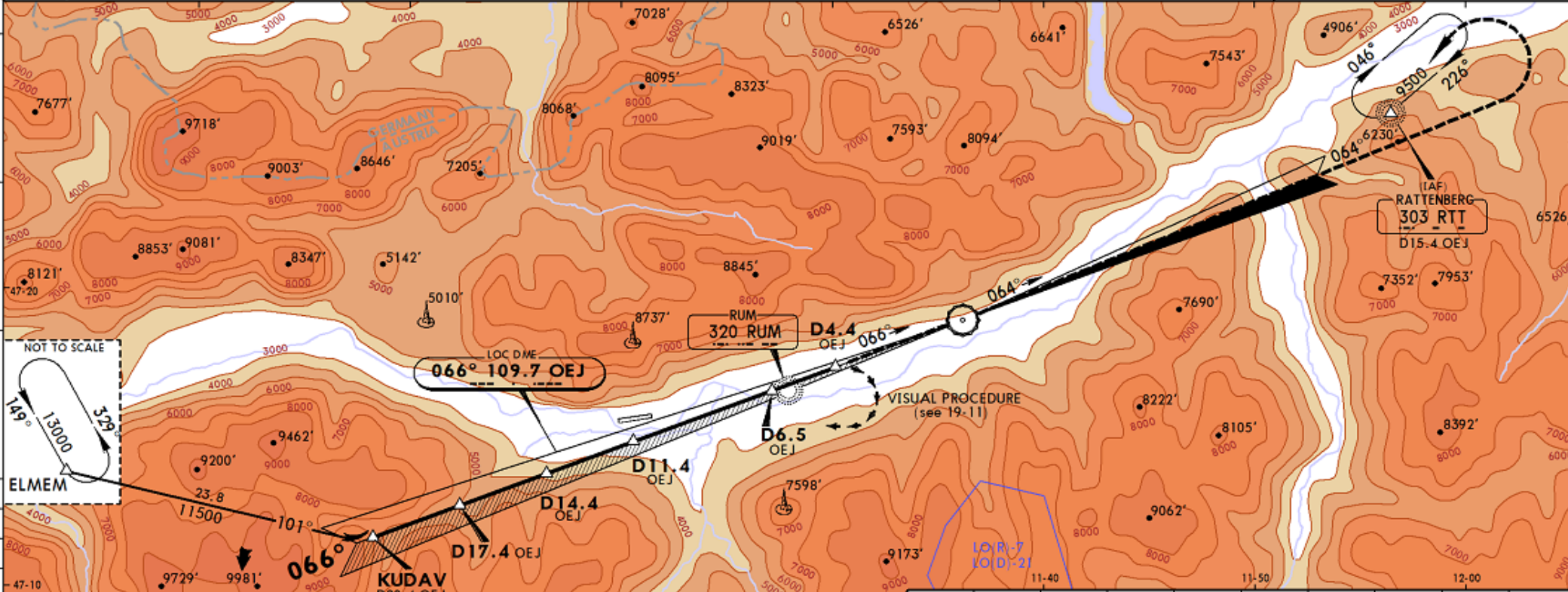
**INNSBRUCK, AUSTRIA  
LOC DME WEST**

FOLLOWED BY  
VISUAL APPROACH

D-ATIS <b>126.030</b>		*INNSBRUCK Radar (APP) <b>119.275</b>		*INNSBRUCK Tower <b>120.1</b>	
LOC OEJ <b>109.7</b>	Final Apch Crs <b>066°</b>	Minimum Alt <b>KUDAV</b> <b>11500'</b> (9593')	MDA(H) <b>5000'</b> (3093')	Apt Elev <b>1907'</b>	
<b>MISSED APCH:</b> Climb on LOC crs (066°) with max gradient. Upon passing LOC station proceed outbound LOC back crs on 064° and continue climb with max gradient to 9500', then turn LEFT to RTT NDB and hold. Due to erroneous LOC indications from D2.0 OEJ before until D2.0 OEJ after LOC DME station, use RUM Lctr for additional guidance.					
Alt Set: hPa		Apt Elev: 68 hPa		Trans level: By ATC	
<b>DME required.</b>				Trans alt: By ATC	



PILOTS USING THIS CHART MUST REFER TO 10-1P PAGES.



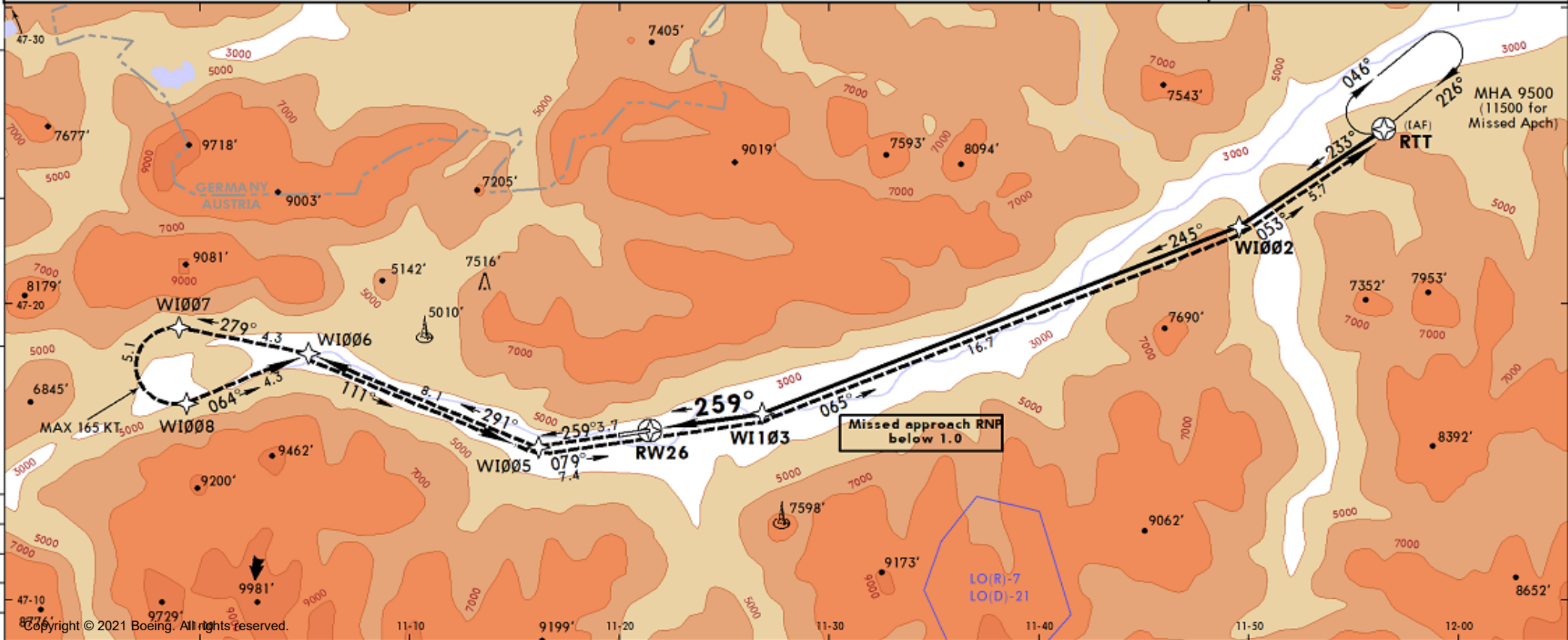
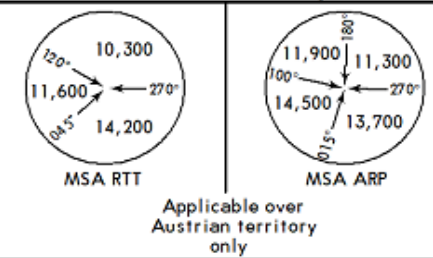
OEJ DME	16.0	15.0	14.0	13.0	12.0	11.0	10.0	9.0	8.0
ALTITUDE	9810'	9310'	8810'	8310'	7810'	7310'	6810'	6310'	5810'

**LOWI/INN  
INNSBRUCK**

**JEPPESEN**  
1 NOV 19  
Eff 7 Nov **(12-21)**

**INNSBRUCK, AUSTRIA  
RNP Z Rwy 26 (AR)**

D-ATIS <b>126.030</b>		*INNSBRUCK Radar (APP) <b>119.275</b>		*INNSBRUCK Tower <b>120.1</b>	
RNAV	Final Apch Crs <b>259°</b>	Minimum Alt <b>WI002</b> <b>9500'</b> (7606')	RNP 0.15 DA(H) <b>2500'</b> (606')	Apt Elev 1907'	Rwy 1894'
<b>MISSED APCH: Climb to 11500' via RNAV missed approach track to RTT and hold.</b> Missed apch procedure based on RNP 0.30.					
RNP AR Apch	Alt Set: hPa	Rwy Elev: 67 hPa	Trans level: By ATC	Trans alt: By ATC	
1. <b>SPECIAL AIRCREW &amp; AIRCRAFT AUTHORIZATION REQUIRED</b> (refer to AIRPORT BRIEFING 10-IP pages). 2. Dual GNSS and at least one Inertial Reference Unit or equivalent required (DME/DME, LOC and VOR/DME updating not authorized). 3. For uncompensated Baro-VNAV systems, procedure NA below airport temperature -7°C.					



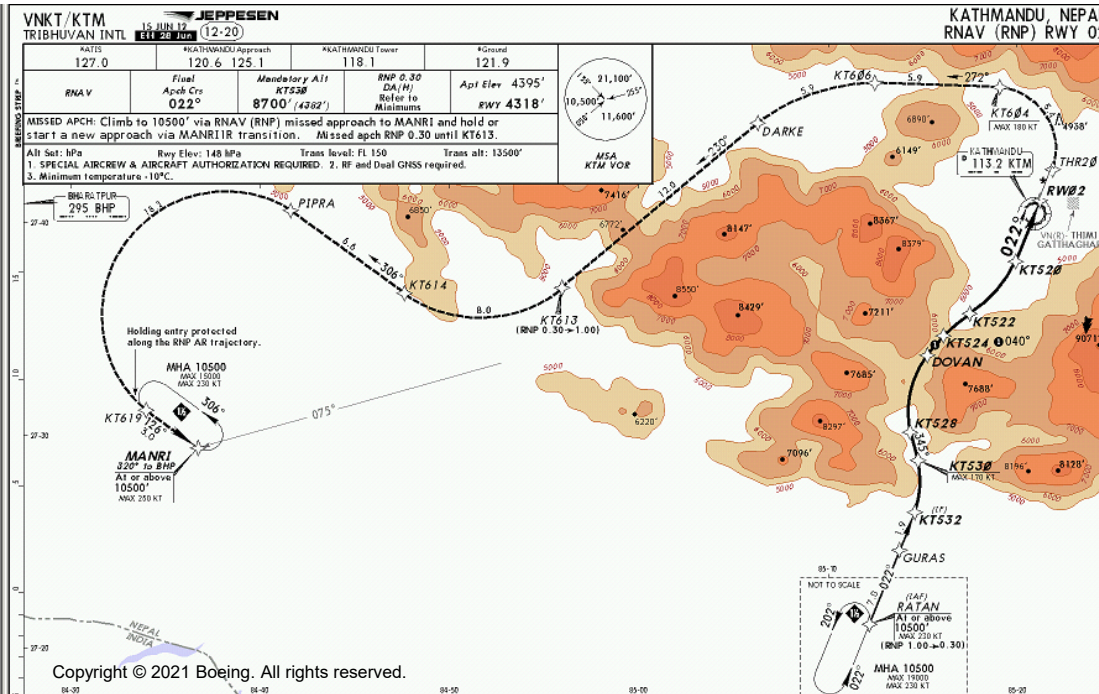
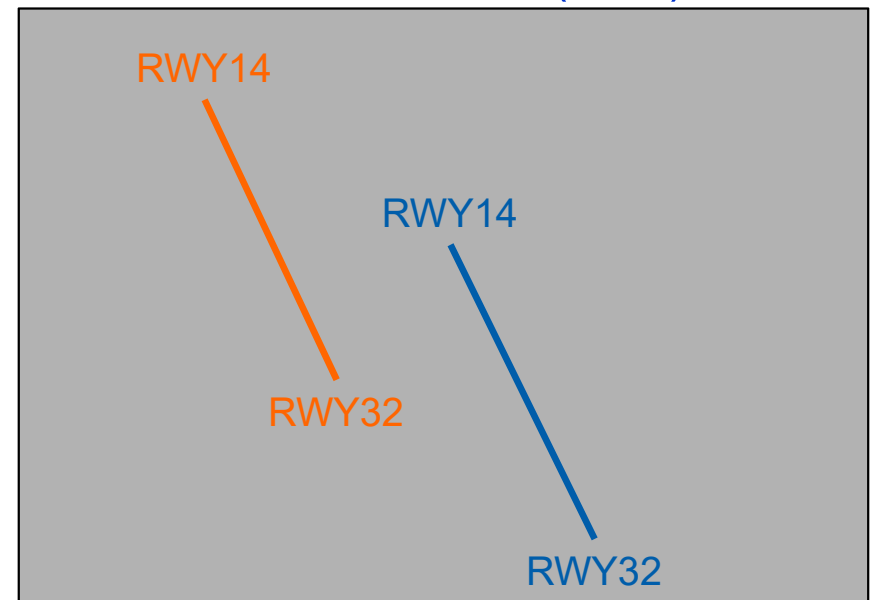


# Quality in a PBN World

- Truth is the database.
- The airplane flies to the waypoint in the database, right or wrong.
- Dependent on accurate data.
- Data is mission-critical.

Actual Runway Location (orange)

Official AIP Location (blue)



## 3.6 Quality management system

3.6.1 Quality management systems shall be implemented and maintained encompassing all functions of an AIS ...

3.6.2 **Recommendation.**— *Quality management should be applicable to the whole aeronautical data chain from data origination to distribution to the next intended user ...*

*Note.*— *Guidance material is contained in the Manual on the Quality Management System for Aeronautical Information Services (Doc 9839) (planned for development by November 2019).*

3.6.3 **Recommendation.**— *The quality management system established in accordance with 3.6.1 should follow the ISO 9000 series of quality assurance standards and be certified by an accredited certification body.*



## CHAPTER 2. AERONAUTICAL INFORMATION MANAGEMENT

...

### 2.1.2 Processing

...

*Note 3. —Supporting data quality material in respect of data accuracy, publication resolution, and integrity of aeronautical data, together with guidance material in respect to the rounding convention for aeronautical data, is contained in Radio Technical Commission for Aeronautics (RTCA) Document DO-201A and European Organization for Civil Aviation Equipment (EUROCAE) Document ED-77 — Standards for Aeronautical Information (or equivalent).*

## CHAPTER 2. AERONAUTICAL INFORMATION MANAGEMENT

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### 2.2 Data integrity monitoring and assurance

...

*Note.— Guidance material in respect to the processing of aeronautical data and aeronautical information is contained in **RTCA Document DO-200B** and **European Organization for Civil Aviation Equipment (EUROCAE) Document ED-76A — Standards for Processing Aeronautical Data.***

## 2.1 State Responsibilities

2.1.4 Each Contracting State **shall** ensure that the aeronautical data and aeronautical information provided are complete, timely and of required quality in accordance with 3.2

## 3.2 Data quality specifications

- 3.2.1 Data Accuracy
- 3.2.2 Data Resolution
- 3.2.3 Data Integrity
- 3.2.4 Data **Traceability**
- 3.2.5 Data **Timeliness**
- 3.2.6 Data **Completeness**
- 3.2.7 Data **Format**



# The Aeronautical Data Catalogue

(Appendix 1 of PANS-AIM)

Table A1-2 Airspace data

Subject	Property	Sub-Property	Type	Description	Note	Accuracy	Integrity	Orig Type	Pub. Res.
ATS Airspace				Airspaces of defined dimensions, alphabetically designated, within which specific types of flights may operate and for which air traffic services and rules of operation are specified.					
	Type		Text	Type of ATS airspace according to ICAO Annex 11.					
	Name		Text	The designator given to an airspace by a responsible authority					
	Lateral limits		Polygon	The surface defining the horizontal shape of the Airspace		see Note 1)			
	Vertical limits								
		Upper limit	Altitude	The upper limit of the airspace					
		Lower limit	Altitude	The lower limit of the airspace		50 m	routine	calculated	50 m or 100 ft
	Class of airspace		Code list	A categorisation of airspace which determines the operating rules, flight requirements, and services provided, as indicated in Annex 11, Section 2.6 and Appendix 4					
	Transition altitude		Altitude	The altitude at or below which the vertical position of an aircraft is controlled by reference to altitudes.					
	Hours of applicability		Schedule	The hours of applicability of the airspace					

*The Data Catalogue is a general description of the AIM data scope and consolidates all data that can be collected and maintained by the aeronautical information service. It provides a reference for aeronautical data origination and publication requirements*

## 3.2.3 Data Integrity

3.2.3.1 The integrity of aeronautical data shall be maintained throughout the data process from origination to distribution to the next intended user.

*Note.— Specifications concerning the integrity classification related to aeronautical data are contained in the PANS-AIM (Doc 10066), Appendix 1.*

3.2.3.2 Based on the applicable integrity classification, procedures shall be put in place in order to:

- a) for routine data: avoid corruption throughout the processing of the data;
- b) for essential data: assure corruption does not occur at any stage of the entire process and include additional processes as needed to address potential risks in the overall system architecture to further assure data integrity at this level; and
- c) for critical data: assure corruption does not occur at any stage of the entire process and include additional integrity assurance processes to fully mitigate the effects of faults identified by thorough analysis of the overall system architecture as potential data integrity risks.

## 3.2.1 Data Accuracy

The order of accuracy for aeronautical data shall be in accordance with its intended use.

## 3.2.2 Data Resolution

The order of resolution for aeronautical data shall be commensurate with the actual data accuracy.

## 3.2.4 Data Traceability

3.2.4.1 Traceability of aeronautical data shall be ensured and retained as long as the data is in use.

## 3.2.5 Data Timeliness

3.2.5.1 Timeliness shall be ensured by including limits on the effective period of the data elements.

## 3.2.6 Data Completeness

3.2.6.1 Completeness of the aeronautical data shall be ensured in order to support the intended use.

## 3.2.7 Data Format

3.2.7.1 The format of delivered data shall be adequate to ensure that the data is interpreted in a manner that is consistent with its intended use.



# Aeronautical Data Quality Problems

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- Conflicting data within an AIP
- Inconsistent data across State boundaries
- No source
- Late source
- Late postponement
- Conflicting information in AIP, SUP, NOTAM
- Changes on website without notification
- No publication of changes
- Uncertain clarification channels
- No replies to clarifications

# Aeronautical Data Quality Problems

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## Just one example:

- Construction work at an airport had been published by two AIP Supplements.
- Jeppesen revised the charts.
- Both AIP Supplements were cancelled.
- The old AIP airport charts became the only available State source again.
- Jeppesen had to go back to the old airport chart.
- Based on satellite imagery, the new and extended movement areas from the cancelled AIP Supplements are permanent and in use already.

- **Whatever you do, never forget about:**
  - the whole Aeronautical data supply chain;
  - the actors coming after you in the chain (next intended user);
  - the end users depending on the chain;
  - maintaining data quality throughout the chain;
  - not losing data throughout the chain;
  - sending out precise and clear messages.

# Questions?

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