Flight procedure design and related validation

MA Gang

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- Tasks that APAC FPP can undertake in flight validation
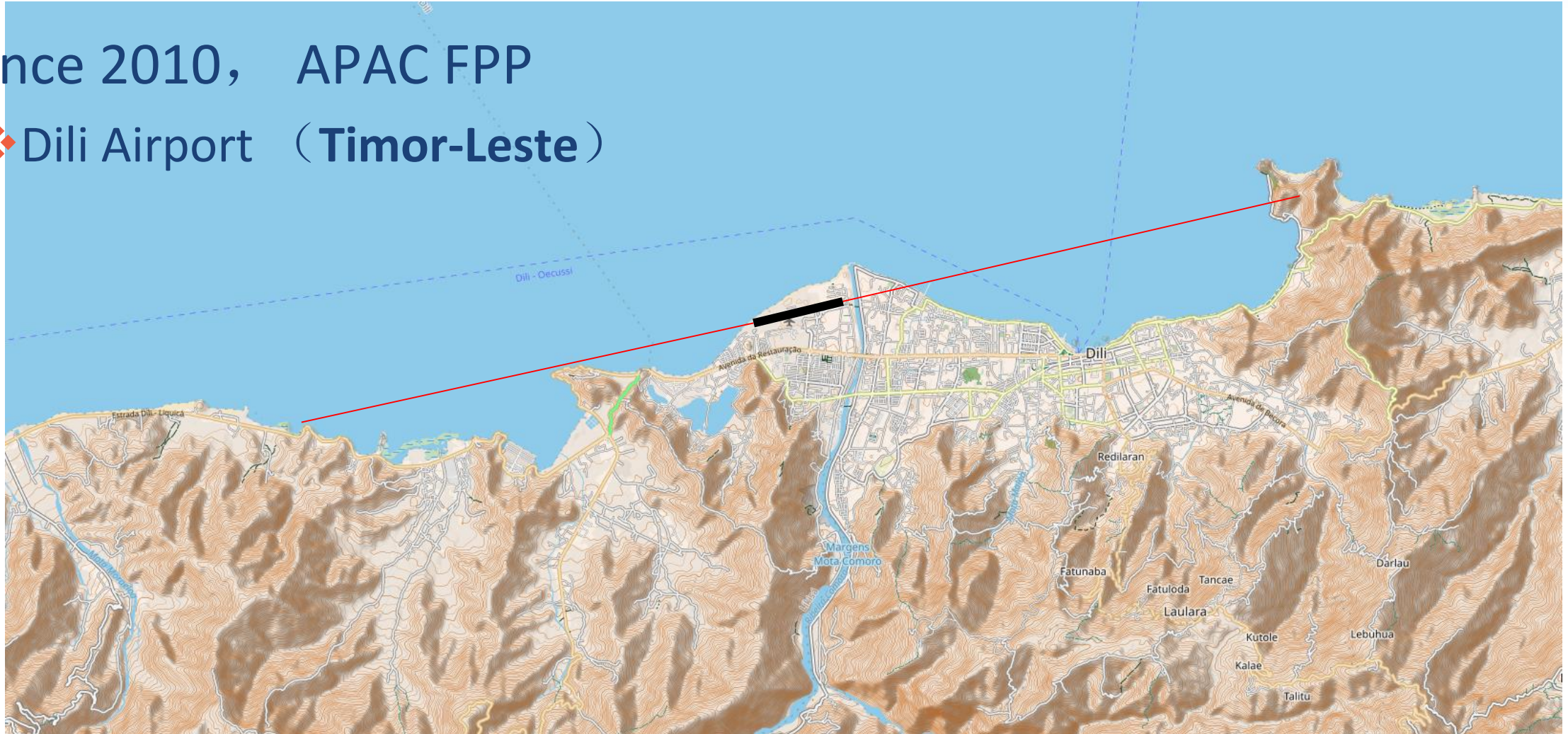
Experience review of APAC FPP in flight procedure design

- Since 2010，APAC FPP
  - ❖ Dili Airport （**Timor-Leste**）
  - ❖ Macao Airport ILS CATII （Macao,China）
  - ❖ Gautam Buddha Airport（Nepal）
  - ▪ ZMMN & ZMUB RNP APCH (Mongolia)
  - ▪ Mumbai Airport (India)
  - ▪ Nadi airport and Nausori airport ILS (Fiji)
  - China,Korea,Macao,Vietnam, Thailand, Malaysia, Singapore, Indonesia , Sri Lanka , Myanmar ,Nepal

- ## Since 2010， APAC FPP
  - ❖ Dili Airport （**Timor-Leste**）

- Since 2010，APAC FPP
  - ❖ Macao Airport ILS CATII（Macao,China）

- Since 2010， APAC FPP

  ❖ Gautam Buddha Airport（Nepal）

- ## Since 2010， APAC FPP
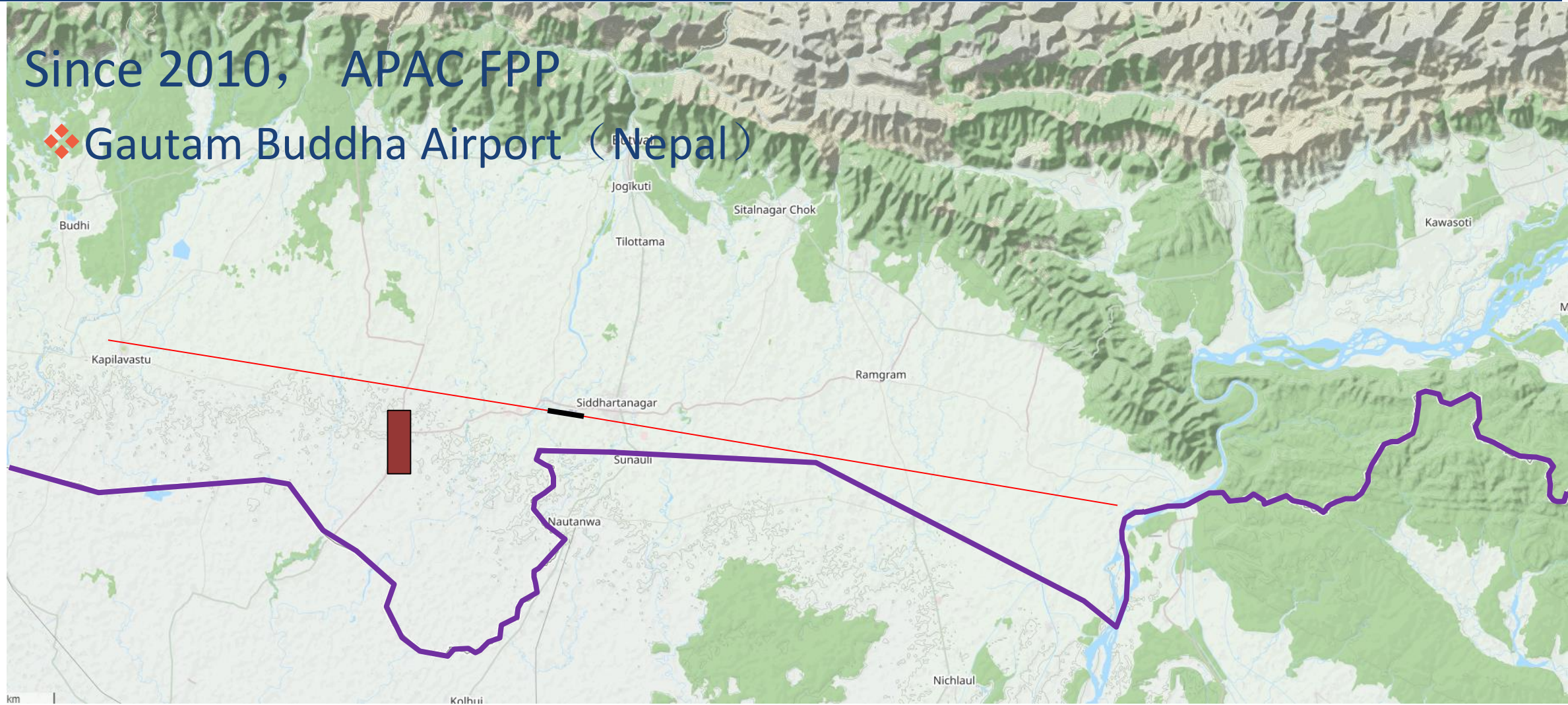
Offset MA for RNP APCH

RNP to ILS
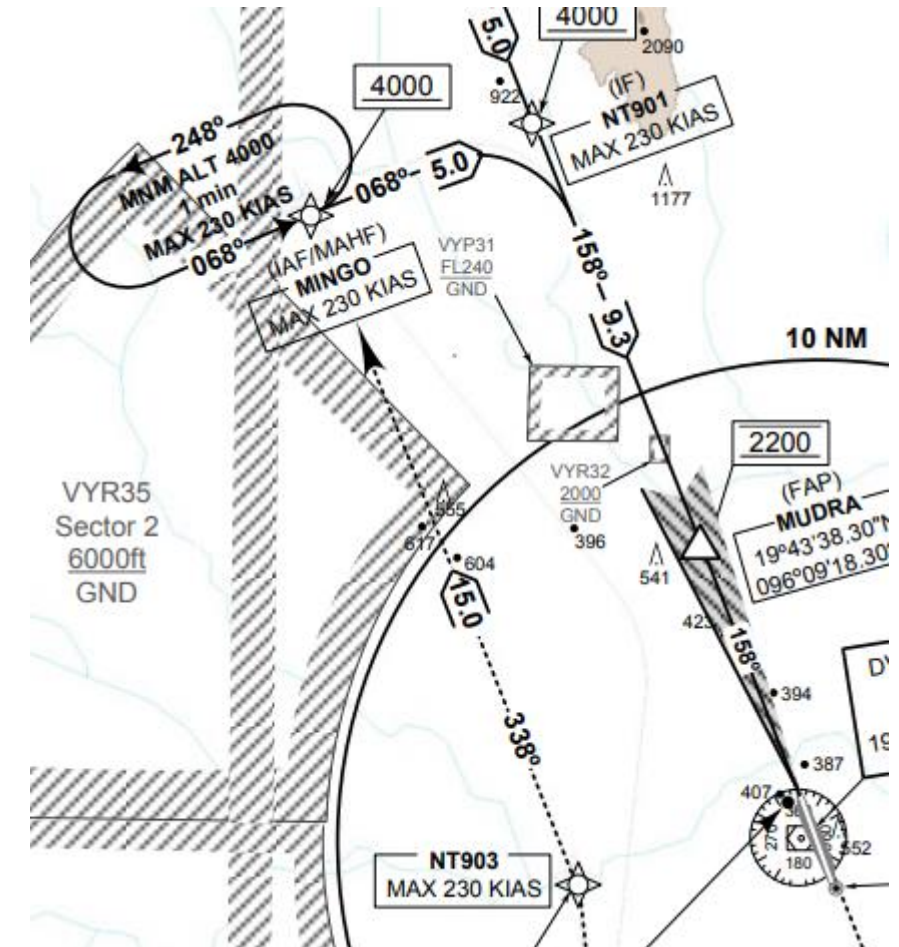
Experience review of APAC FPP in flight procedure design

- Mr. Arif (Pakistan)
- Mr. Joe (HK.CHN)
- Mr. Mike (HK.CHN)
- Mr. Roy (Singapore)
- Mr. Jiang Weian
- Ms. Guo Fei
- Ms. Ge Baijun
- Mr. Ren Jie
- Mr. Li Ang

- Mr. Lin Lanzhi
- Mr. Wang xuean
- Mr. Guo Yingying
- Ms. Sun Yinyin
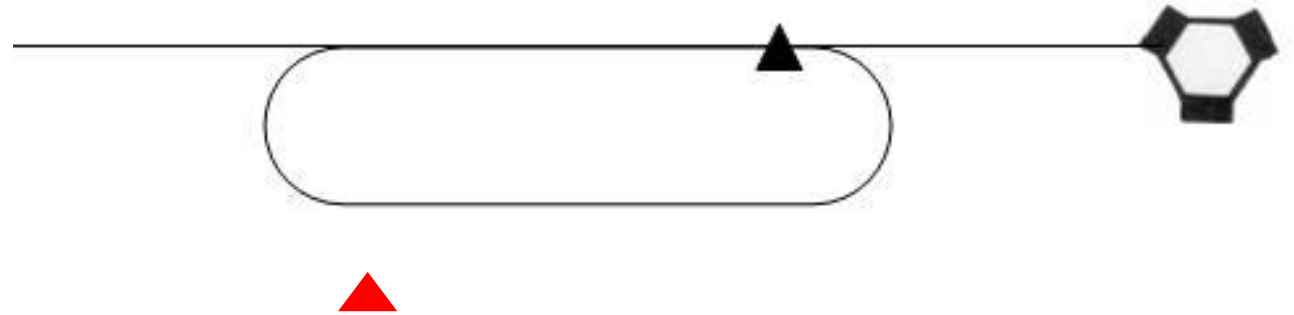
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Related validation for flight procedure design

Related validation for flight procedure design

- APAC FPP's support for Flight Validation
  - Pilot ≠ FV Pilot

  - FVP Course

Related validation for flight pro

- ## Verification

Are we designing the procedure right?

- ## Validation

Are we designing the right procedure?

Related validation for flight procedure design

Procedure Design Process

Design verification

Project requirements → Design inputs → Design process phases and reviews → Design outputs → Product
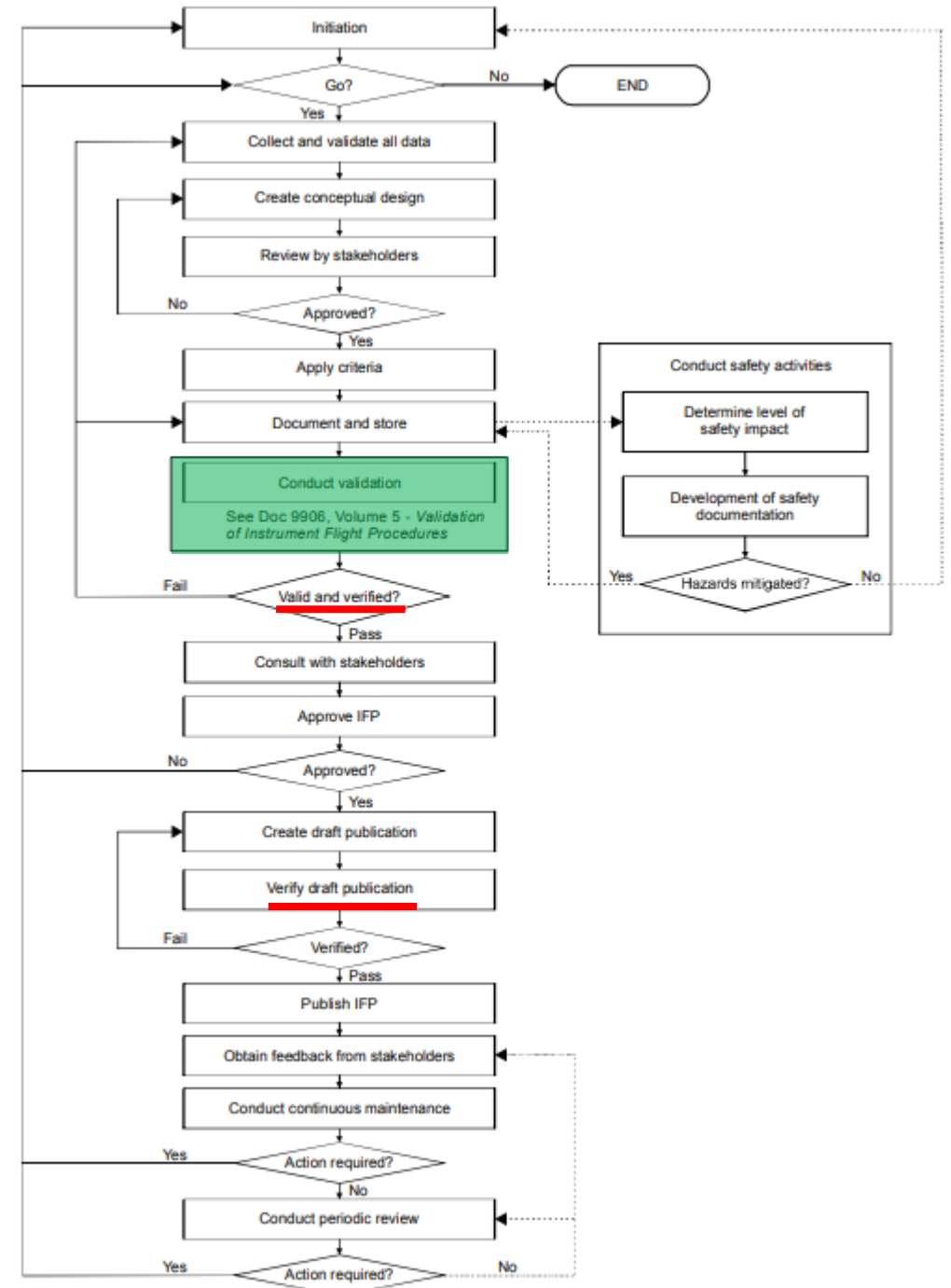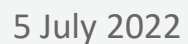
Design validation

Related validation for flight procedure design

- ## V-model in IFP process

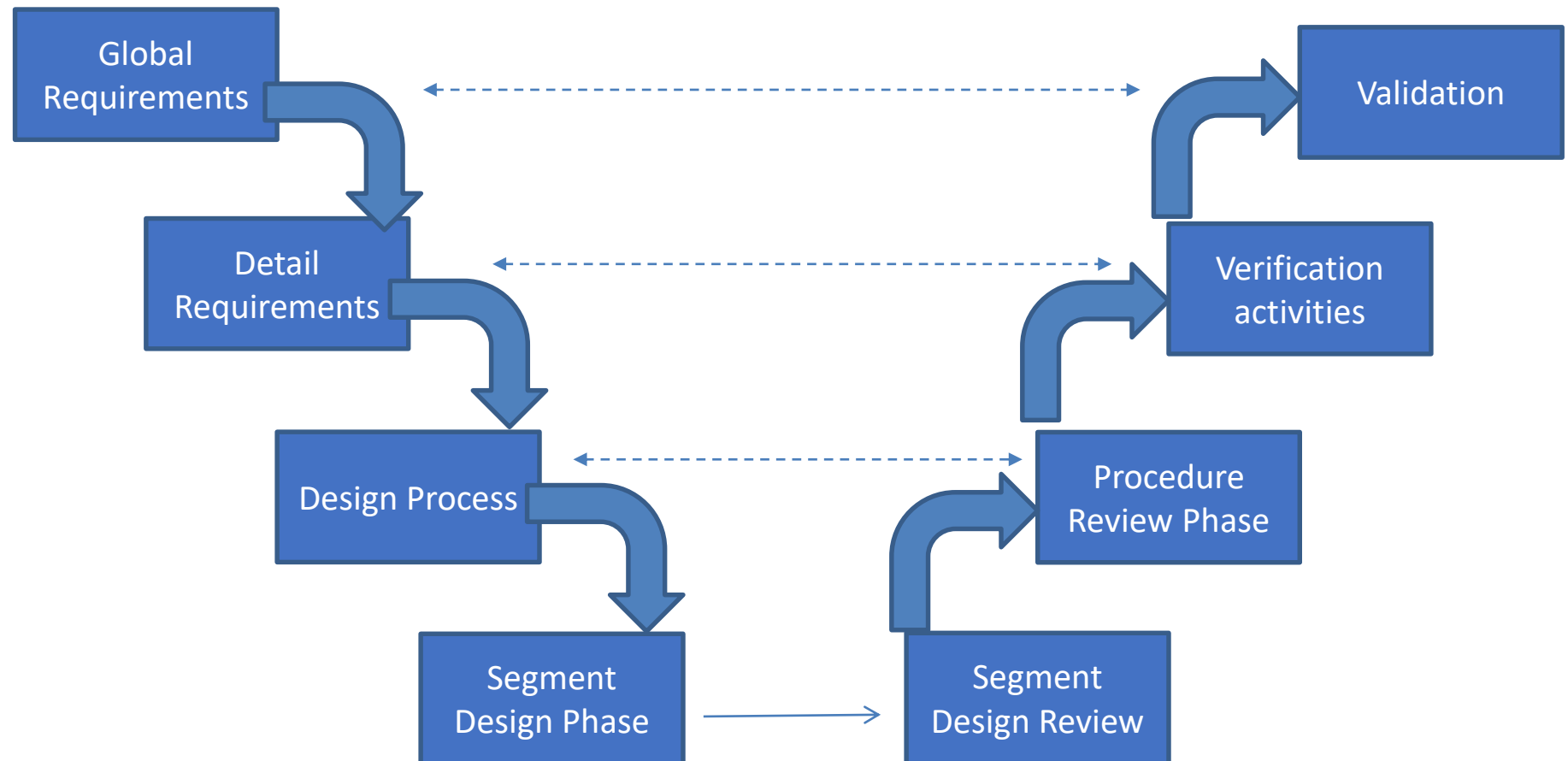# Related validation for flight procedure design

- ## Verification vs Validation

Verification	Validation
Design Outputs meet Design Inputs	Design meets user needs
Procedures，Segments and unit testing	Test focused at 'System' level
During Development	After Development
Can be performed by 'All Designer' team	Shall be performed on the aerodrome that the procedure will be used, or equivalent 'airport'(for FFS)
Performed against the requirements established by the Standards	Performed against the selected user needs

Related validation for flight procedure design

- Flight Validation
  - The obstacle environment where the procedure is located
  - The fly-ability of the procedure
  - The ARINC 424 coding of the procedure
  - The effects of different weather (wind and temperature) conditions
    - For different take-off loads and weather conditions
  - The different types of GPS augmentation
  - Other requirements from users, EOSID e.g.

Director Flight Procedure Design

- Mr. Arif (Pakistan)
- Mr. Joe (HK.CHN) — SOO
- Mr. Mike (HK.CHN) — SOO
- Mr. Roy (Singapore) — Designer
- Mr. Jiang Weian — Professor
- Ms. Guo Fei — Designer
- Ms. Ge Baijun — Designer
- Mr. Ren Jie — Professor
- Mr. Li Ang — Professor

- Mr. Lin Lanzhi — Professor
- Mr. Wang xuean — Professor
- Mr. Guo Yingying — Designer
- Ms. Sun Yinyin — Professor

- APAC FPP

  - Verification — **Are we designing the procedure right?**

  - Validation — **Are we designing the right procedure?**

Flow chart with stages: Initiation → Go? (No → END / Yes) → Collect and validate all data → Create conceptual design → Review by stakeholders → Approved? (No / Yes) → Apply criteria → Document and store → Conduct validation (See Doc 9906, Volume 5 - Validation of Instrument Flight Procedures) → Valid and verified? (Fail / Pass) → Consult with stakeholders → Approve IFP → Approved? (No / Yes) → Create draft publication → Verify draft publication → Verified? (Fail / Pass) → Publish IFP → Obtain feedback from stakeholders → Conduct continuous maintenance → Action required? (Yes / No) → Conduct periodic review → Action required? (Yes / No).

Side process: Conduct safety activities → Determine level of safety impact → Development of safety documentation → Hazards mitigated? (Yes / No).

- Flight validation result

- FVP training

- Verifications (by needs)

- Cooperate with validation suppliers

- Other Technical Assistances

Thank you

THE END.