

Proposal for GBAS/SBAS Procedure design in APAC **FPP**



Asia-Pacific **F**light **P**rocedure **P**rogramme

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OVERVIEW OF FPP

- **FPP OBJECTIVES**

“No Country Left Behind”

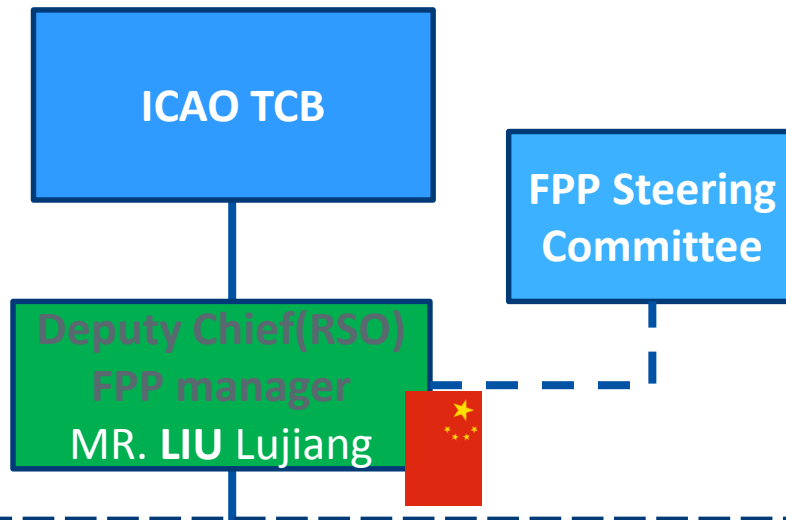
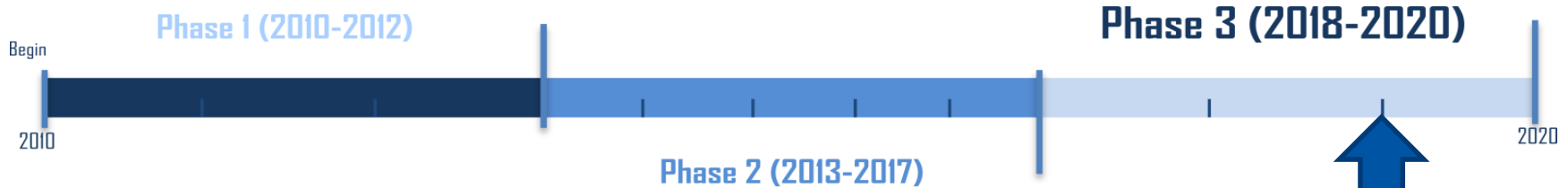
in the instrument flight procedure domain

- To develop **APAC States’** capabilities in IFP design

- **APAC FPP /AFI FPP/ MID FPP**



OVERVIEW OF FPP



MEMBERSHIP OF FPP

- **10 Active Members(SCM members)**
 - Funding By
Annual Contribution (\$20,000)



Australia



China



France



Hong Kong



Macau



Phillipines



Rep. of Korea



Singapore



Sri Lanka



Thailand

MEMBERSHIP OF FPP

- **10 User States**

- Through the Signature of Programme Document for **each** phase(3 years)

WAITING
FOR YOU



Lao



Malaysia



Mongolia



Myanmar



Pakistan



Vietnam



Cambodia



Nepal



Timor-Leste



Maldives

KEY TASKS OF FPP



1

Training



2

Procedure
Design

3

Participations in
International
Forum

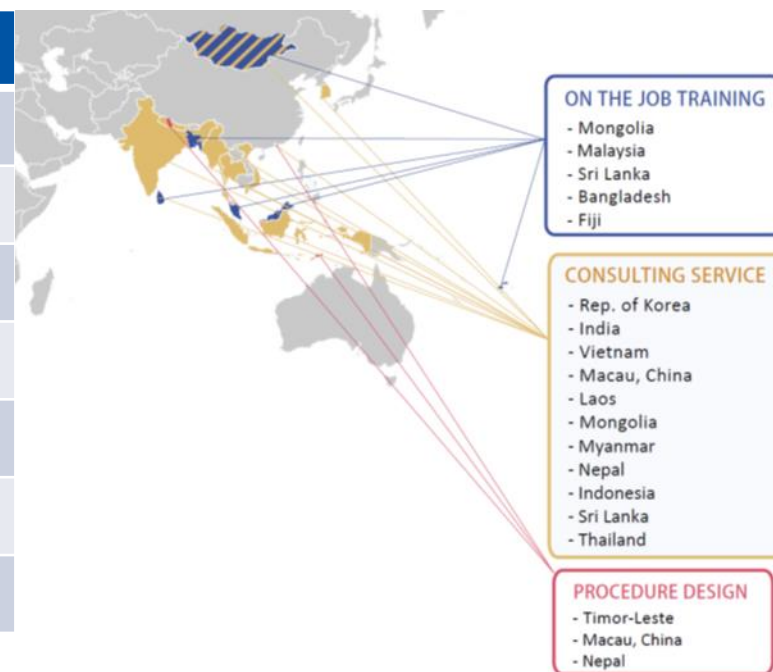
4

Ground
Validation

FPP Achievements

AS OF END 2018

COURSE/WORKSHOP	PERSON-Time
PANs-Ops Course	256
PBN Course	255
PD Refresh Course	56
Quality Assurance Course	48
RNP AR Workshop	47
Flight Validation Course	22
OJT	10



FPP Achievements

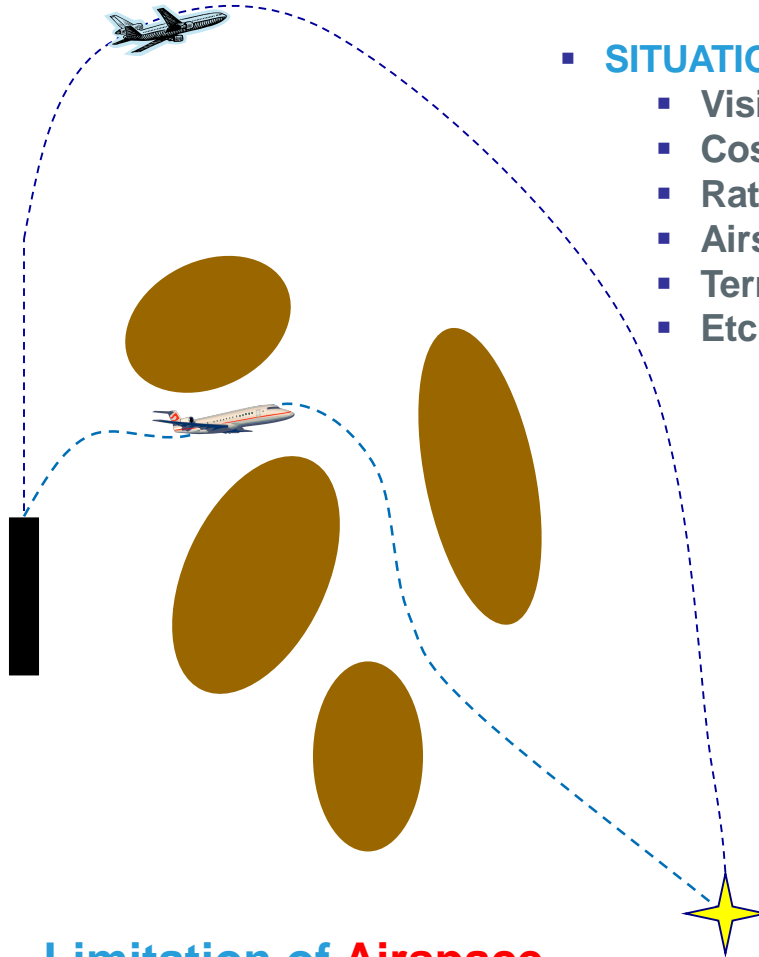
• IN 2019

PROJECT : FPP have **completed** PD design/ground validation/consulting in **6** States/Administrations (**7** airports) in Bangladesh, East-Timor, Macao China, Nepal, Thailand and Sri Lanka.

TRAINING : FPP also have provided PD training to APAC FPP Member States in 2019. **3** training courses (Quality Assurance Course, Pans-Ops PD **Initial** Course ,PD **Refresher** Course)with **55** participants from **14** States/Administrations have been delivered.

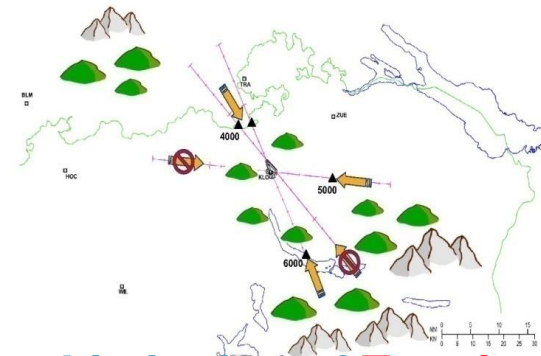
	Date	Activities	Location	Participants
1	14- 18 Jan	PD Quality Assurance Course	Beijing	FPP
2	25 Mar -19 Apr	Pans-Ops PD Initial Course	Beijing	FPP
3	20 -24 May	PD Refresher Course 2019 (including all new amendments 8 th in Doc8168)	Beijing	FPP
4	09-26 Jul	PBN Procedure Design Course	Beijing	FPP
5	16 -20 Sep	PD seminar	Singapore	FPP
6	28Oct-1Nov	RNP AR workshop	Beijing	FPP
7	12-15Nov	Helicopter PinS Workshop	Beijing	FPP

PROPOSAL FOR GBAS PD(why)

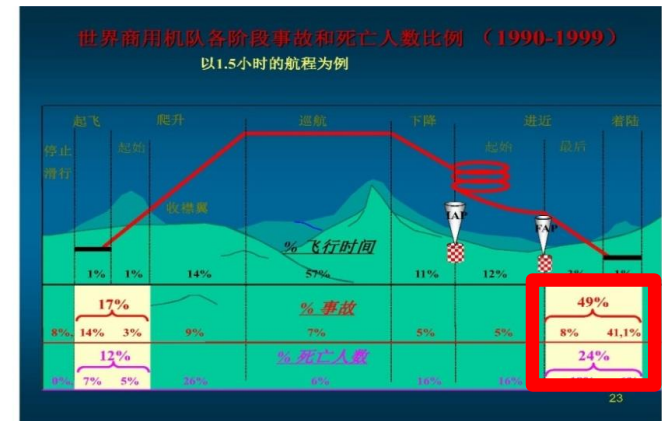


- **SITUATION:**
 - Visibility
 - Cost
 - Rate
 - Airspace
 - Terrain
 - Etc.

Constraints: Terrain



Limitation of **Terrain**



Frequent incident stage of flight

PROPOSAL FOR GBAS PD(why)

Real cases show

- NAV Aids Reducing
- OPS Minima lowering
- Flexible placement of approach path
- Distance saving
- Airspace Saving
- Noise reducing

Noise Level (dBA)

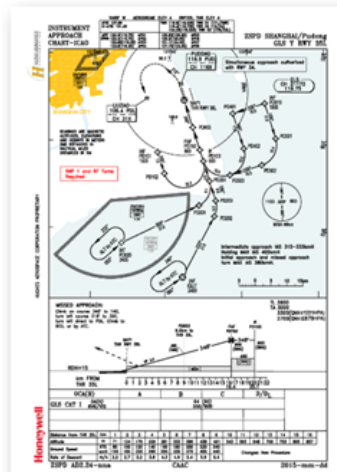
55
60
65
70
75
80
85

SFO GLS R RWY 19R
Estimated Population: 47,300

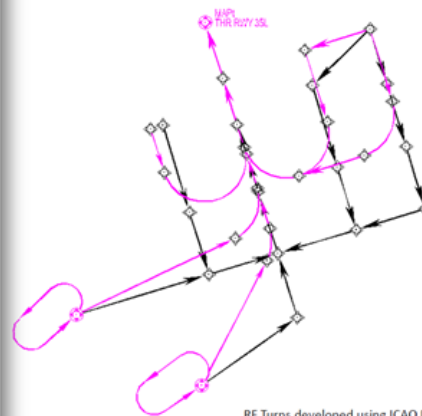
Typical Short Vector Route
Estimated Population: 329,600

Typical Long Vector Route
Estimated Population: 296,500


RWY 35L GLS CURVED PATH (RF) DEVELOPMENT



GLS Z vs GLS Y RWY 35L



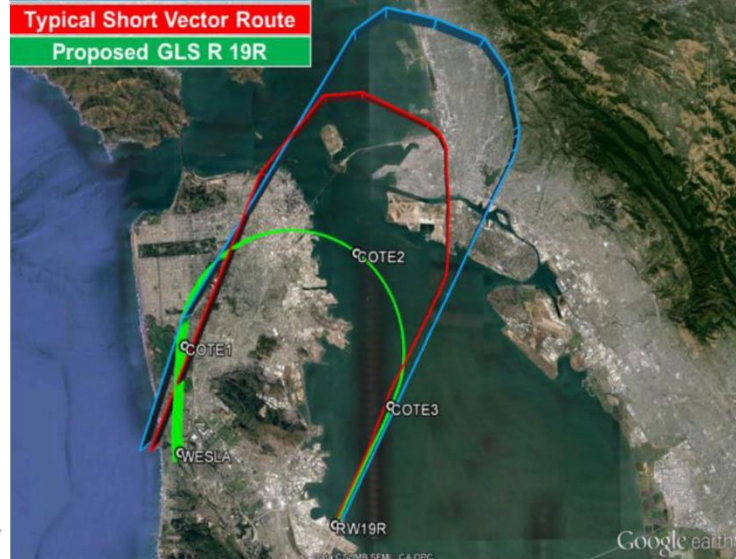
RF Turns developed using ICAO Doc 8168, Vol II, Part III, Section 2, Chapter 2, Article 2.4, RF Turn Method.

HONEYWELL/HUGHES PROPRIETARY

Typical Long Vector Route

Typical Short Vector Route

Proposed GLS R 19R



PROPOSAL FOR GBAS PD(**how**)

■ Vision:

- Using the GLS to realize the **saving** of NAV Aids and the **Lowering** minimum operating standards for Multi runway airport.
- Using the accuracy and flexibility of the RNP-AR's RF leg to **reduce the impact** of airspace restrictions and terrain restrictions.

■ Measure

- The GBAS/SBAS PD will be given priority to take into **PD Seminar or Refresher course** as a new area of FPP training in next couple years.
- You will see more INFO





ICAO

UNITING AVIATION



Asia-Pacific
Flight Procedure Programme



ICAO

North American
Central American
and Caribbean
(NACC) Office
Mexico City

South American
(SAM) Office
Lima

ICAO
Headquarters
Montréal

Western and
Central African
(WACAF) Office
Dakar

European and
North Atlantic
(EUR/NAT) Office
Paris

Middle East
(MID) Office
Cairo

Eastern and
Southern African
(ESAF) Office
Nairobi

Asia and Pacific
(APAC) Sub-office
Beijing

Asia and Pacific
(APAC) Office
Bangkok

Welcome to Join APAC **FPP**

Let's **FIND/PLAN/PLAY** Together

THANK YOU