PBN Application in Hong Kong FIR

ICAO Workshop for PBN implementation in ***en-route*** environment

Presented by Hong Kong Civil Aviation Department

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Content

- Historical Timeline of PBN application within Hong Kong FIR
- Application of PBN in airspace design
- Collaboration with adjacent ACCs in utilization of PBN.

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Historical Timeline

- PBN routes were first introduced in the South China Seas to enhance the capacity especially for traffic travelling between South Asia and East Asia

- RNP10 routes P901, L642 and M771 were implemented to the south of Hong Kong TMA.

- Around 2010 Hong Kong worked in collaboration with Sanya for shared use of surveillance data south of HKTMA, at this point the entire Hong Kong FIR came under surveillance coverage.

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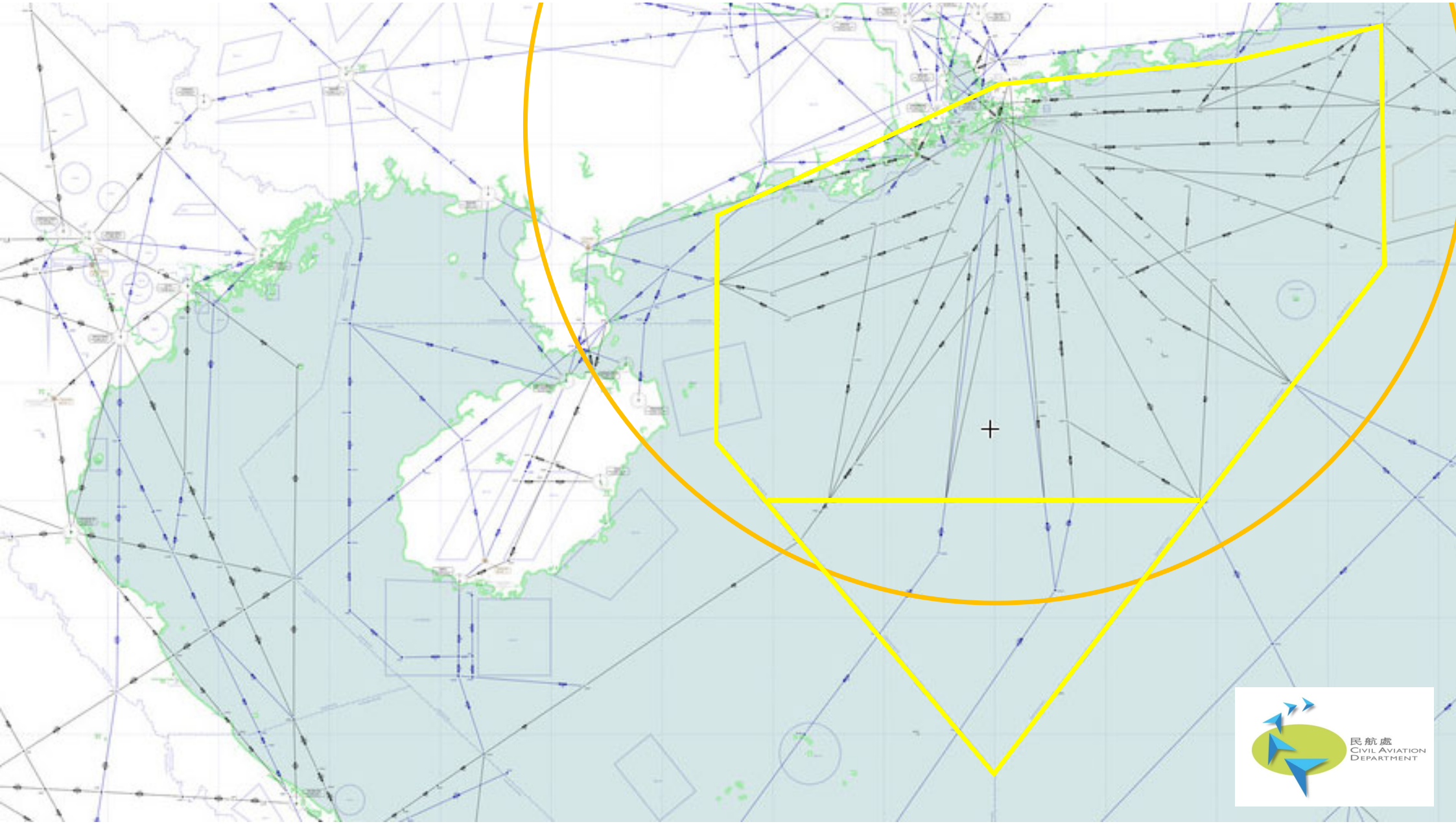
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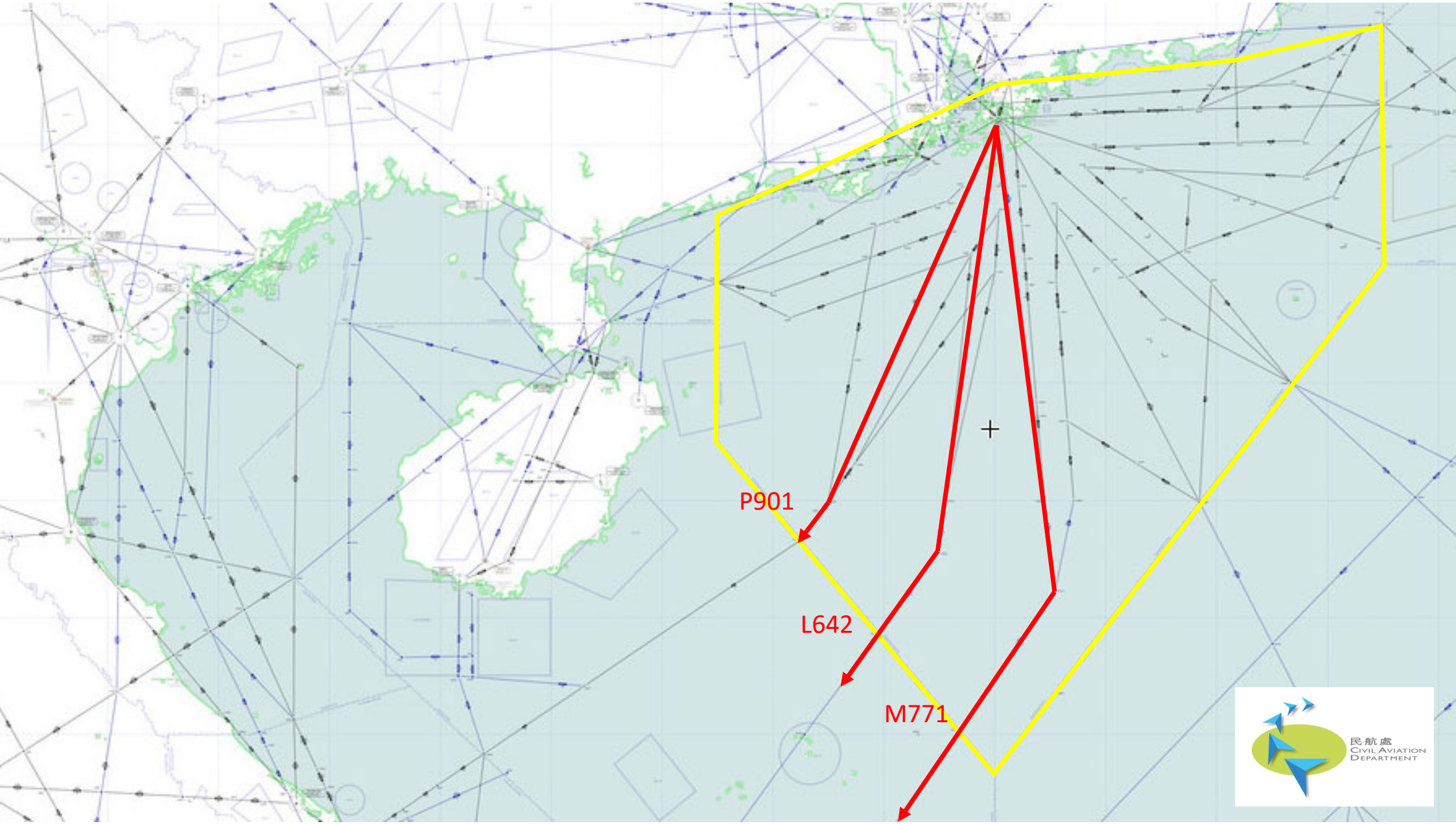
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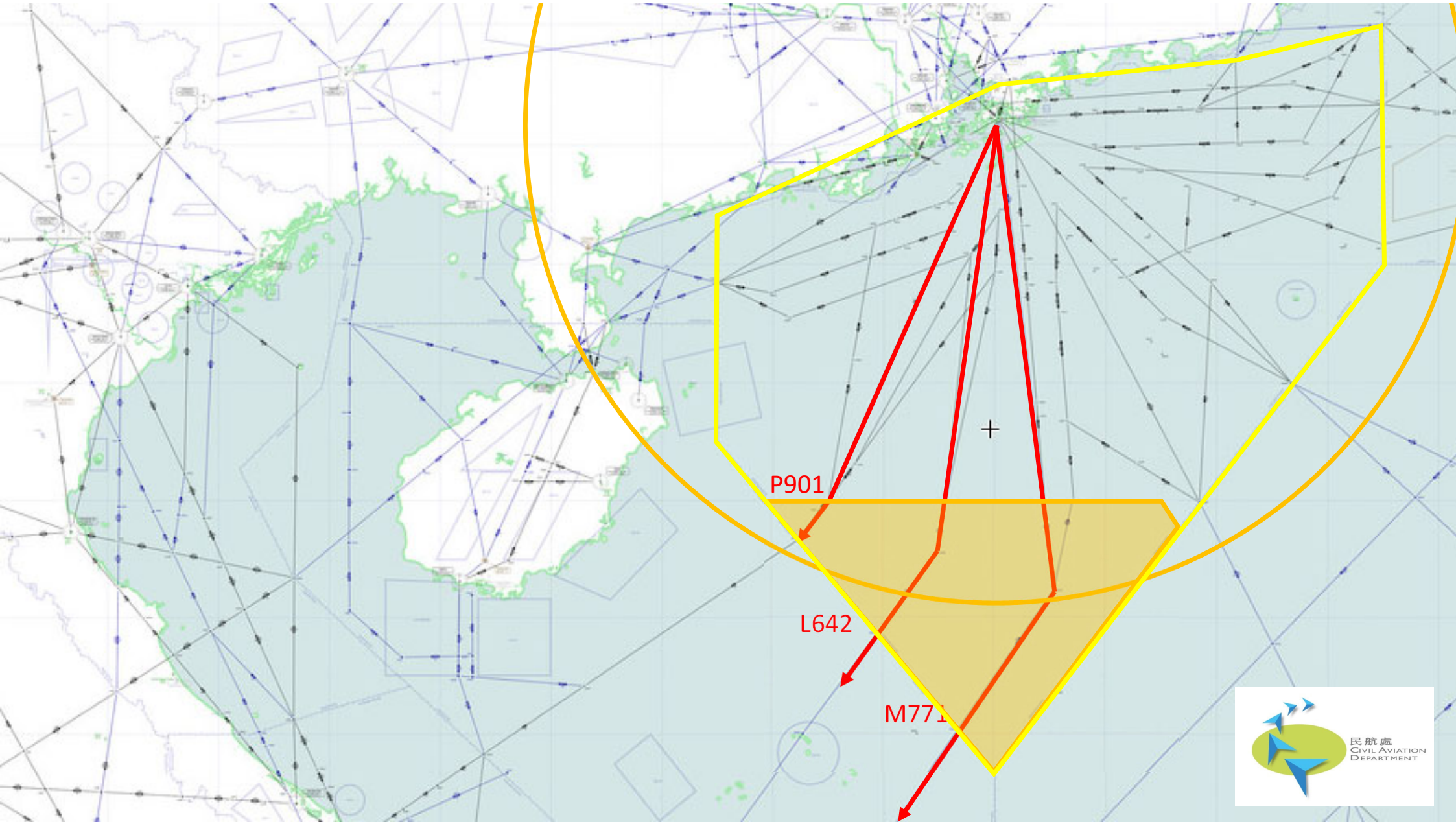
P901
L642
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Subsequent Airspace Designs

- In 2014, as part of the regional initiative to further enhance the capacity of PBN routes L642 & M771, Hong Kong designated both routes as RNP4. However, since Hong Kong has full surveillance coverage in the area, surveillance separation is applied.

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- In 2020, during the redesign of part of the en-route airspace structure, Hong Kong took consideration of regional developments and ICAO recommendations, and implemented a pair of parallel routes connecting A1 with G86 within Hong Kong FIR, this is the busiest overflight route (route linking South-Asia to Japan/Korea) and the spacing was designed to fulfil RNAV2/RNP2 requirements.

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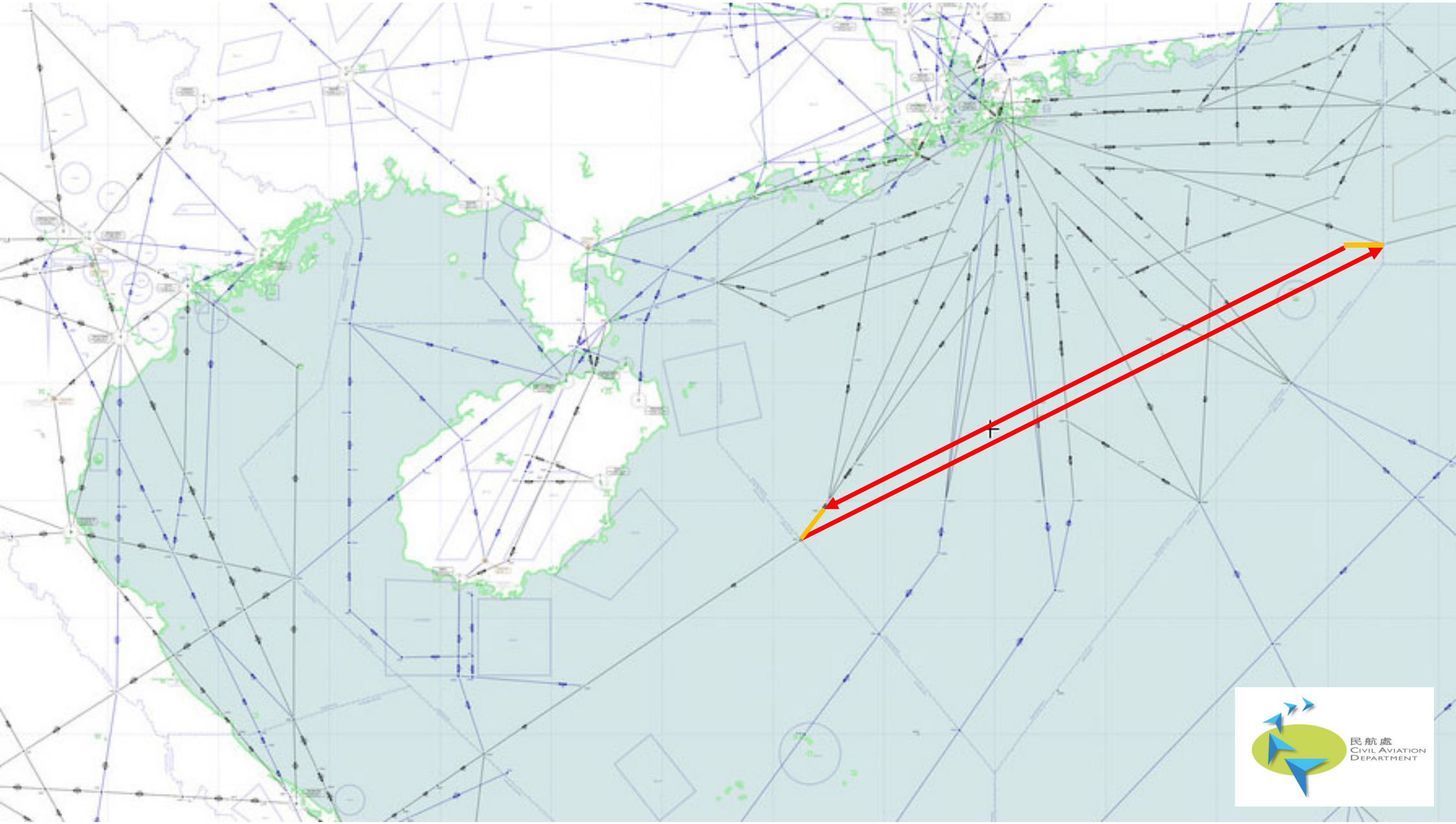
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Airspace Designer Training

- In order for our officers to become qualified in airspace design, they have to undertake a training process which includes the following:
  - Completion of an airspace design related course/programme
    - Example: ICAO Flight Procedure Design Course
  - Completion of a Safety Management related course/programme
  - Attachment to an airspace design project under the supervision of a qualified airspace designer
    - At least one year of working experience is required before qualification and approval to work as the airspace designer

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Controller Training

- Before the implementation of full surveillance services training was provided to allow controllers to obtain a procedural license.
- Currently controllers obtain a single license with training mainly focused on controlling based on surveillance.
- System enhancements to aid controllers in awareness of aircraft equipage and training in application of correct separation standards prior to use of PBN separation is also provided.

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Cooperation with Adjacent ACC

- The area outside Hong Kong FIR on A583 which connects Hong Kong FIR with Manila FIR is Oceanic airspace without surveillance coverage, Hong Kong has been working closely with Manila ACC in order to enhance the spacing on this route. Beginning with implementation of RNP10 separation and last March progressing to trial operations of RNP4 separation.

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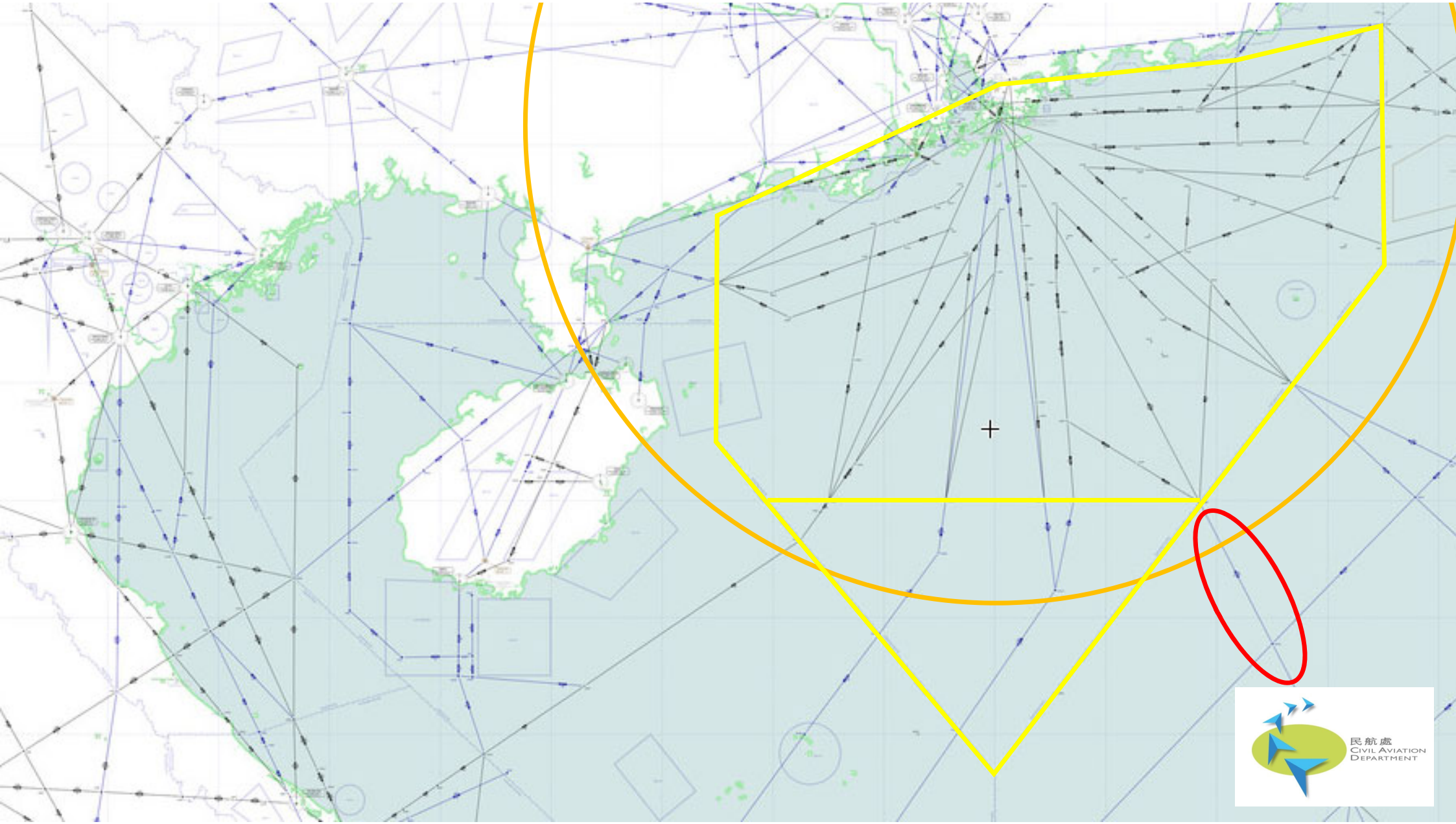
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Difficulties encountered

- Different expectations and phases of implementation across the region
- Approval process for Operators
- Training for controllers

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Benefits

- Reduced separation requirements leading to more flexibility when dealing with deviation requests
- Reduced separation requirements leading to greater capacity, particularly at the FIR boundaries, allowing aircraft to operate closer to their optimum levels.
- Reduced track spacing requirements allowing more efficient designs of airspace route structure
- Support to controllers concerning confidence in aircraft performance
- Possible alternative separation requirement relieving the load on controllers.

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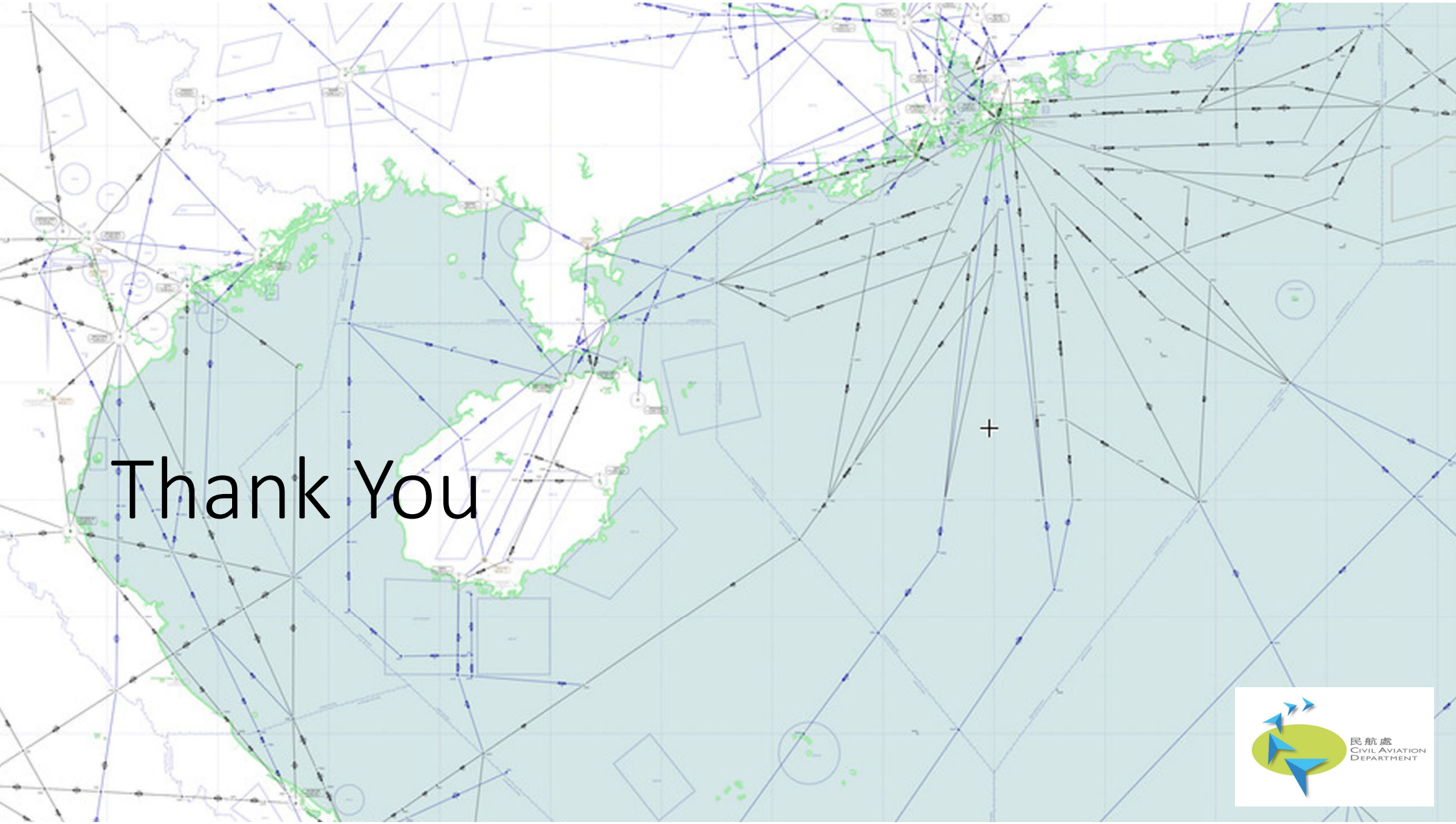
Thank You
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