



International Civil Aviation Organization
The Second Meeting of South China Sea Major Traffic Flow Review Group
(SCS-MTFRG/2)
 Haikou, China, 22-24 July 2015

Agenda Item 3: Review of the existing MTF route structures in SCS airspace and identifying priorities

TRAFFIC FLOWS IN WPAC/SCS AIRSPACE

(Presented by Monitoring Agency for Asia Region)

SUMMARY

This paper presents a visualization of traffic flows in the WPAC/SCS based on 2014 Traffic Sample Data (TSD) to assist SCS-MTFRG in reviewing the existing route structures in the SCS Airspace.

1. INTRODUCTION

1.1 As the Regional Monitoring Agency responsible for WPAC/SCS Airspace, MAAR has a mechanism to process and analyze the traffic in the WPAC/SCS region as part of the annual risk estimation. To assist SCS-MTFRG, MAAR, therefore, undertook a task in producing a visual presentation of traffic flows in the WPAC/SCS based on 2014 Traffic Sample Data (TSD). The presentation can also serve as a tool for MAAR to better verify the quality of TSD received from States.

2. DISCUSSION

Data Limitations

2.1 TSD from States can be retrieved from each ANSP's ATM system, prepared manually, generated from FPLs, or submitted in the form of raw FPLs. The data sometimes contains errors, does not exactly follow the template, and may not contain all RVSM traffic in the FIR.

2.2 As a result, TSD may be based on actual trajectories or planned trajectories depending on its source. Also, some data sets are missing significant points inside the FIR even though the template asks for these points to be filled in if the flight changes the route or flight level.

2.3 In order to produce a better picture of the traffic flows, MAAR added an additional processing step, which interpolates unreported significant points on the major international routes. However, data from some FIRs with unreported middle points on domestic routes has been left unchanged.

Generated Charts

2.4 **Attachment 1** shows a visual presentation of **traffic flows** in the region. Blue lines represent westbound movements while oranges lines represent eastbound movements. The thickness of the lines was calculated from the volume of traffic in December 2014.

2.5 **Attachment 2** shows the **traffic flows and the number of crossing pairs on adjacent flight levels** within a 15 minute window, which is a parameter normally used in RVSM airspace safety assessment. The number of crossing pair represents the bunching of traffic at crossing points.

For example, assuming there are the same numbers of flights on each route, if the flights are crossing at different times of day, the number will be lower than if the flights are crossing at same times of day.

2.6 The chart shows that the significant points in oceanic airspace with highest adjacent-level crossing pairs in December 2014 are MUMOT, MAVRA, AVMUP, AKOTA (crossing points between route N892, L625 and A583, A461) and TOKON (crossing point between A583, M646, and M767).

2.7 **Attachment 3** shows the **traffic flows and the number of Large Height Deviation (LHD) occurrences**. Typically, LHDs are operational errors that put an aircraft at a time and position unexpected by the controller. LHDs are the main driver of mid-air collision risk. The spots where most occurrences were reported in the year 2014 are NOMAN and SABNO (Manila – Hong Kong FIR boundary), OSANU (Manila – Kota Kinabalu FIR boundary), and DOTMI (Hong Kong – Guangzhou FIR boundary).

2.8 **Attachment 4 and 5** show the **traffic and the theoretical SSR and VHF coverage** in the region. However, the SSR and VHF locations and coverage information have not been verified by corresponding States and could be outdated.

Traffic Flow Categorization

2.9 **Figure 1** shows the average number of flights per day by flow. The red, blue, and green colors correspond to group I, II, and III respectively.

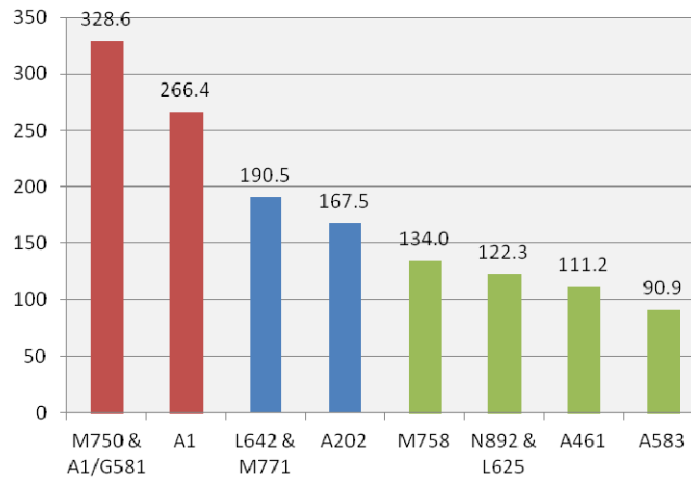


Figure 1: Average Number of Flights per Day by Flow

2.10 From **Attachment 1 chart and Figure 1**, it can be observed that the major traffic flows in WPAC/SCS could roughly be arranged into 3 groups.

Group	Flows
I	A1/G581 (from ELATO) & M750 (to ENVAR) A1
II	L642 & M771, A202
III	M758, N892 & L625, A641, A583

2.11 Please note that the categorization is subjective and can be adjusted according to the view of the meeting.

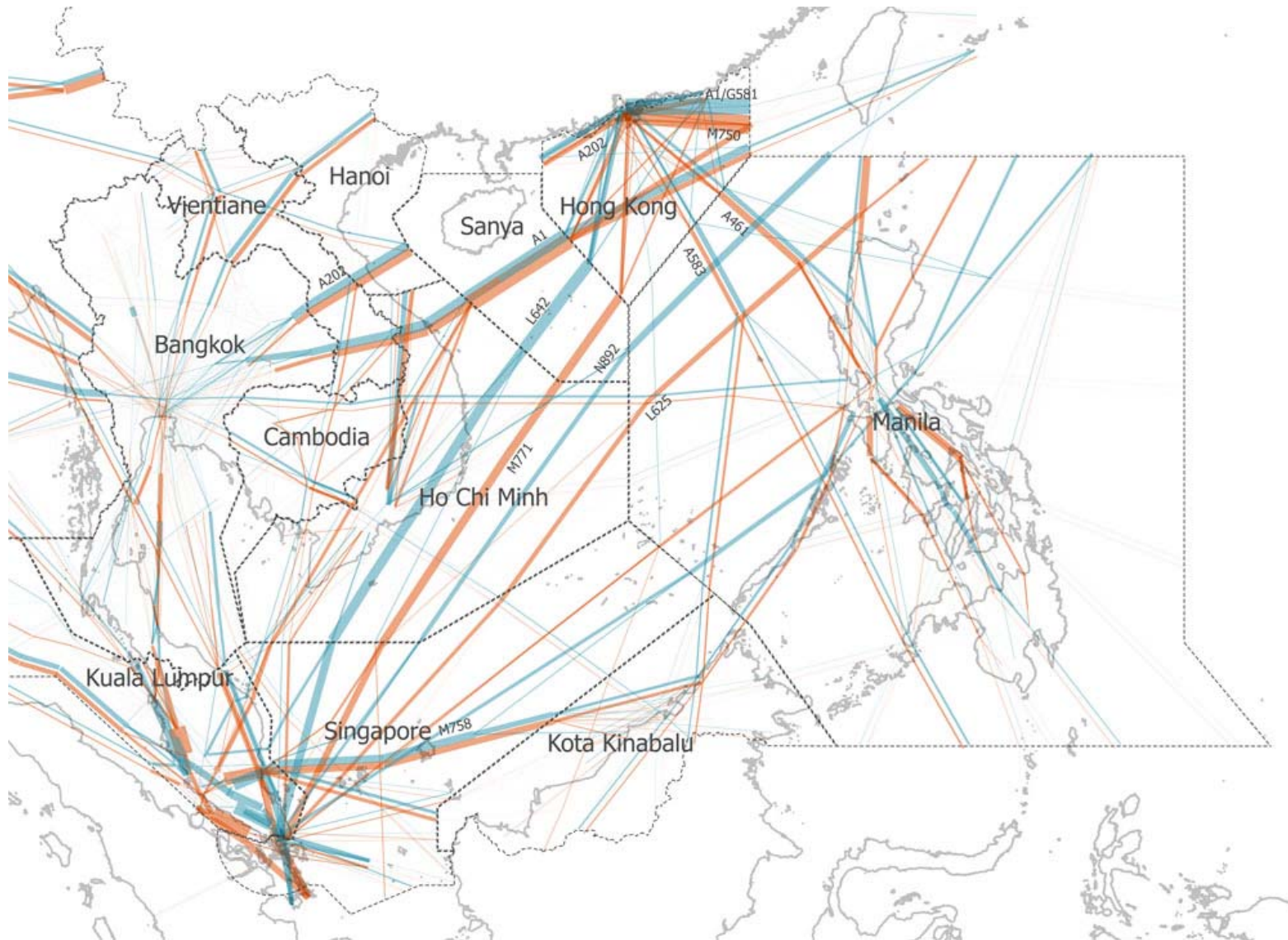
3. ACTION BY THE MEETING

3.1 The meeting is invited to:

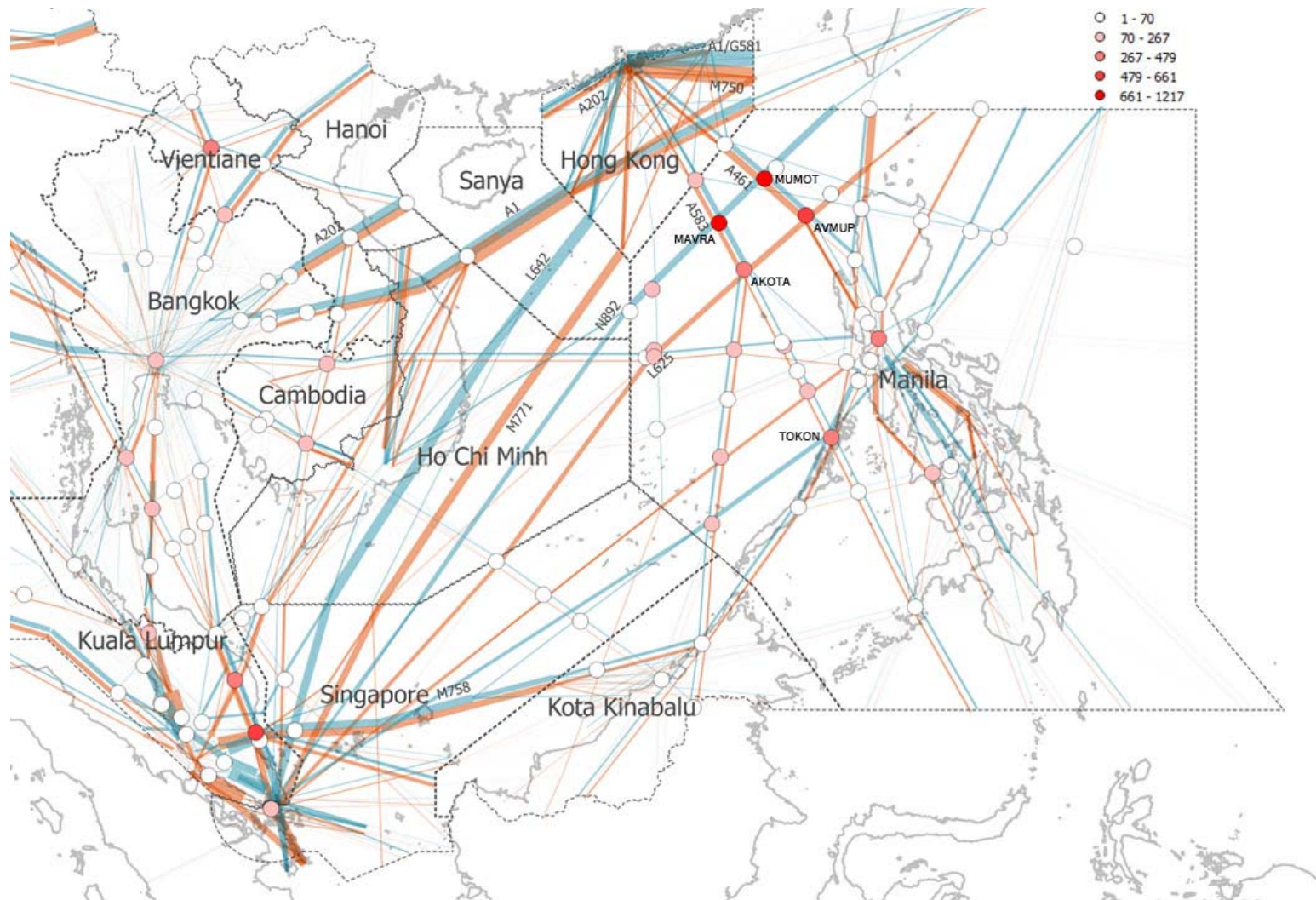
- a) note the information contained in this paper;
- b) discuss any relevant matters as appropriate; and
- c) utilize the materials contained in this paper for the tasks assigned to the SCS MTF/RG

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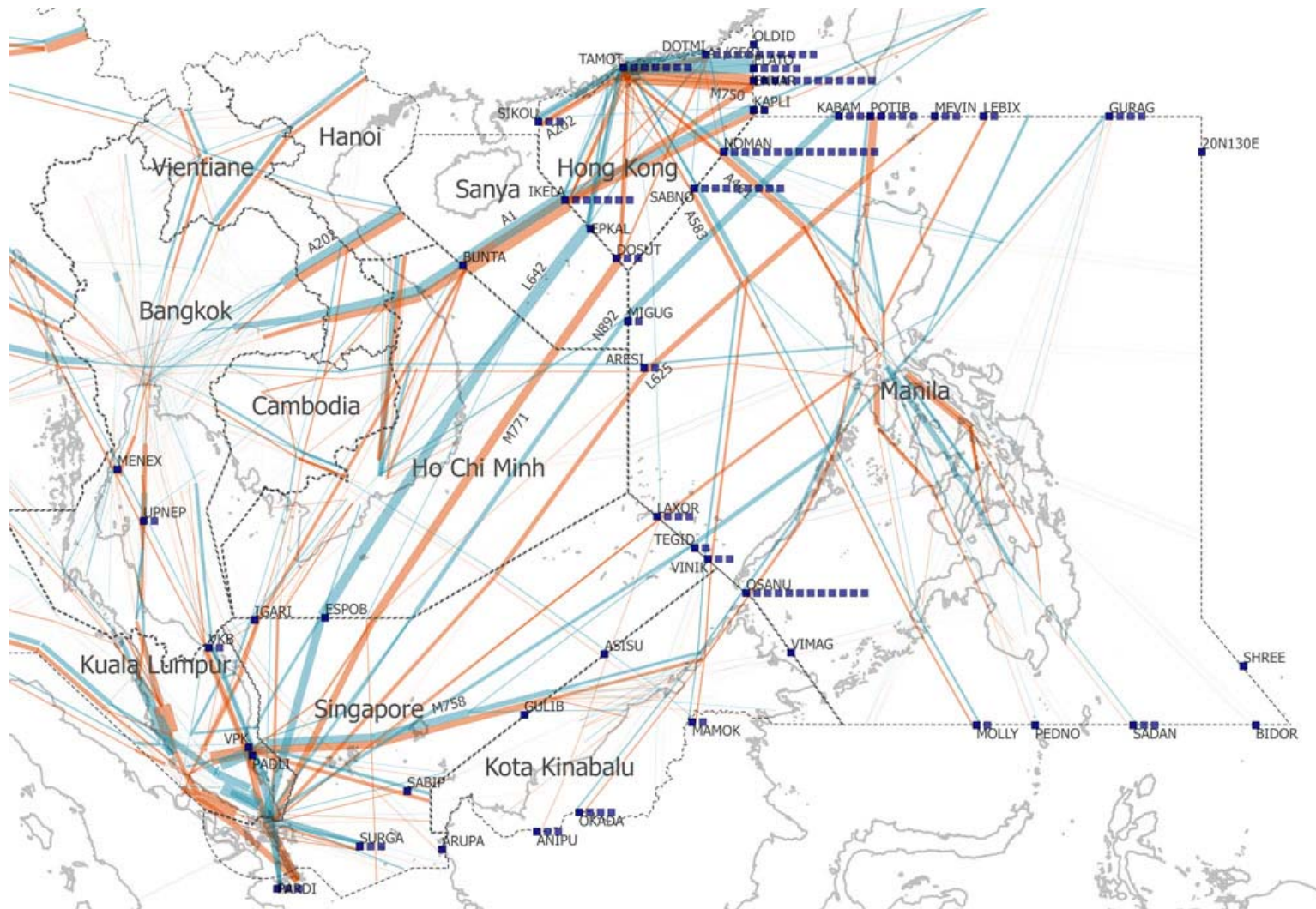
Attachment 1: Traffic Flows in WPAC/SCS



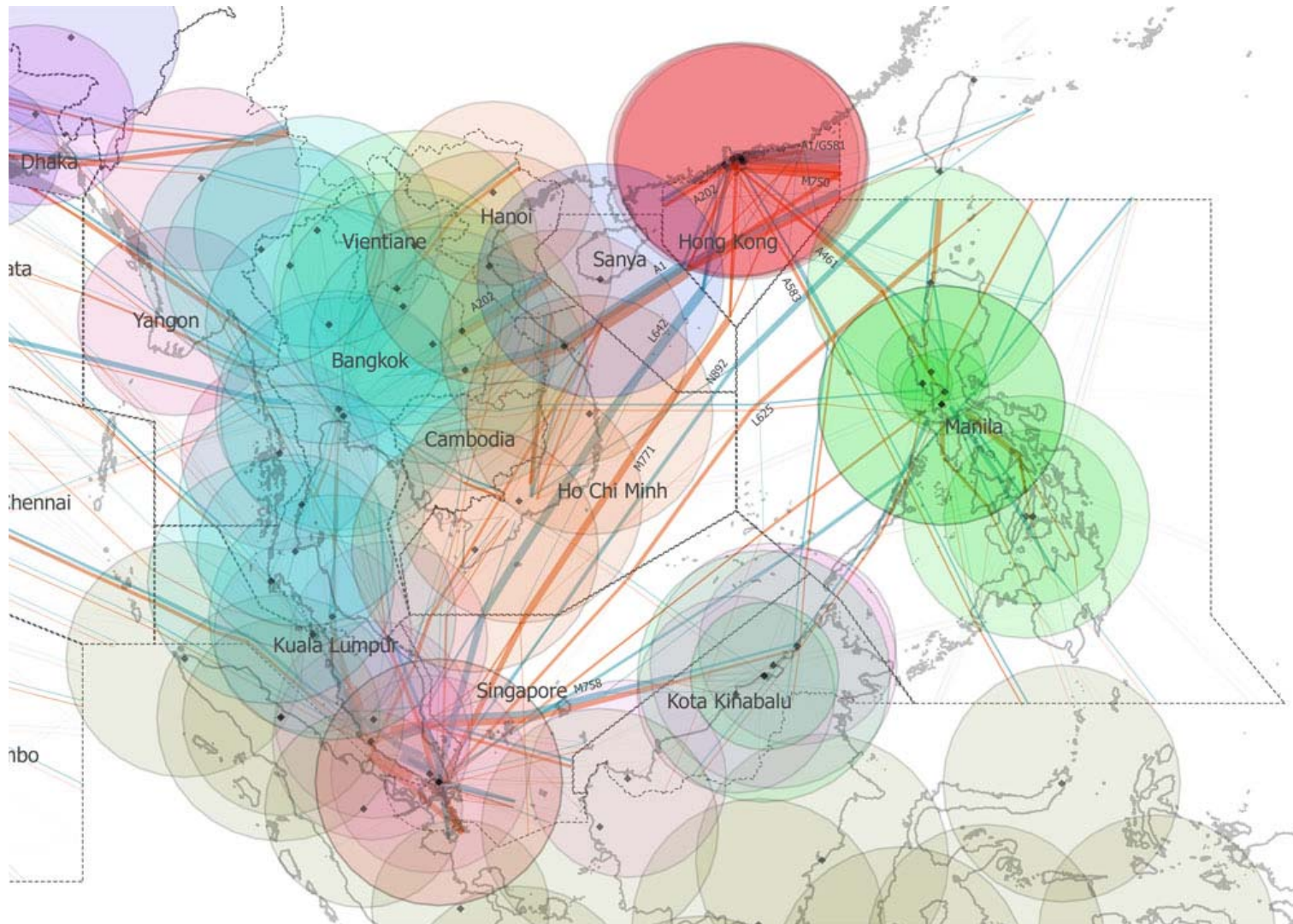
Attachment 2: Traffic Flows and the Number of Crossing Pairs on Adjacent Flight Levels



Attachment 3: Traffic Flows and the Number of LHD Occurrences



Attachment 4: Traffic Flows and the Theoretical SSR Coverage (not including ADS-B)



Attachment 5: Traffic Flows and the Theoretical VHF Coverage

