Objective:
To use hexagonal cell based modeling as an optimisation technique for airspace sectorisation.

Approach
- This proposal utilises Mixed Integer Linear Programming (MILP) to analyse a hexagonal cell-based model introduced by Yousefi.
- Yousefi’s Model uses clustering algorithms to group hexagonal cells together into sectors.
- An airspace was selected and a single day operation was studied to test the workload distribution of each cell.
- The workload is computed by summing the number of aircrafts in each hexagonal cell at a given time.

Results and Discussion
Tested baseline model with the length of the hexagonal edge as the only variable.
- Delay was transferred from the TMA to the en route segment.
- Using MILP, a chosen airspace with a day’s worth of flight data was subjected to the simulation.
- Results showed a decreasing trend in variation of workload distribution as hexagonal resolution increases.

Conclusion:
- Employing the baseline model from Yousefi, the application of hexagonal cell based modeling was seen to effectively allocate hexagonal cells to their sectors.
- The overall result prove that Yousefi’s model is effective, although strict satisfaction of the constraints was not possible.