AIRBUS GROUP

Airbus Group Challenge:

How can we better understand and predict the growth of route networks within the Air Transport System in the future?

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Background

The Air Transport System (ATS) is one of the key infrastructures of today's global economy [1]. Airlines worldwide carry around 3.3 billion passengers per year. In order to do this they collectively operate more than 50,000 routes with approximately 25,000 aircraft, employing around 4 million staff and improving the mobility of world citizens [2]. It is evident that transport systems are fundamental elements of both our economies and societies [3].

The role of Airbus is to design and manufacture aircraft that best meet the future needs of the ATS. Predictive models provide a means of understanding likely future scenarios, which can then be used for simulation purposes. However, any meaningful simulation requires accurate and reliable models to be created. An important question in this context is in understanding how ATS route networks evolve.

The Problem

The proposed challenge is to develop and validate a predictive growth model to forecast how the ATS networks will evolve up to 2030. Important factors to consider include Gross Domestic Product (GDP), population, airport capacities, connectivity, socio-political issues, etc.

Data

- **Flight Data** - Bureau of Transportation Statistics (USA) - http://www.transtats.bts.gov/DL_SelectFields.asp?Table_ID=236&DB_Short_Name=On-Time
- **Aircraft Data** – e.g. https://www.seatguru.com/ & http://www.airfleets.net

Guidelines

- Please list all assumptions made throughout
- Consider aggregating other relevant publically available data

REFERENCES

[1] O. Lordan, J. Salan und P. Simo, "Study of the topology and robustness of airline route networks from the complex network approach: a survey and research agenda", *Journal of Transport Geography,* pp. 112-120, 2014.

[2] IATA, "ATA: Annual review 2014", International Air Transport Association, Montreal, Canada, 2015.

[3] M. Zanin und F. Lillo, "Modelling the Air Transport with Complex Networks: a short review", *European Physical Journal Special Topics ,* pp. 5-21, 2013.