Unlocking Insights into the Global Air Transportation Network with Tableau

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1. INTRODUCTION

1.1 Over view

This Global Air Transportation Network dataset is a comprehensive collection of information on airports, airlines and their routes. It contains information such as names, cities, countries, codes (IATA and ICAO) longitudes, latitudes and altitudes of airports across the world with detailed time zone and daylight-saving time data. Air transport network is an example of transport networks and spatial networks. The nodes of the network are the airports and the links represent direct flight routes between two airports. Alternatively, cities can be considered as the nodes with links representing direct flight connection between them. Air transport networks can be defined worldwide as well as for one region or for one airline company; the scale of the network can be global or domestic. The worldwide air transportation network is represented by the database of International Air Transport Association (IATA). The worldwide air transportation network is a critical infrastructure with high impact on mobility, trade and economy.

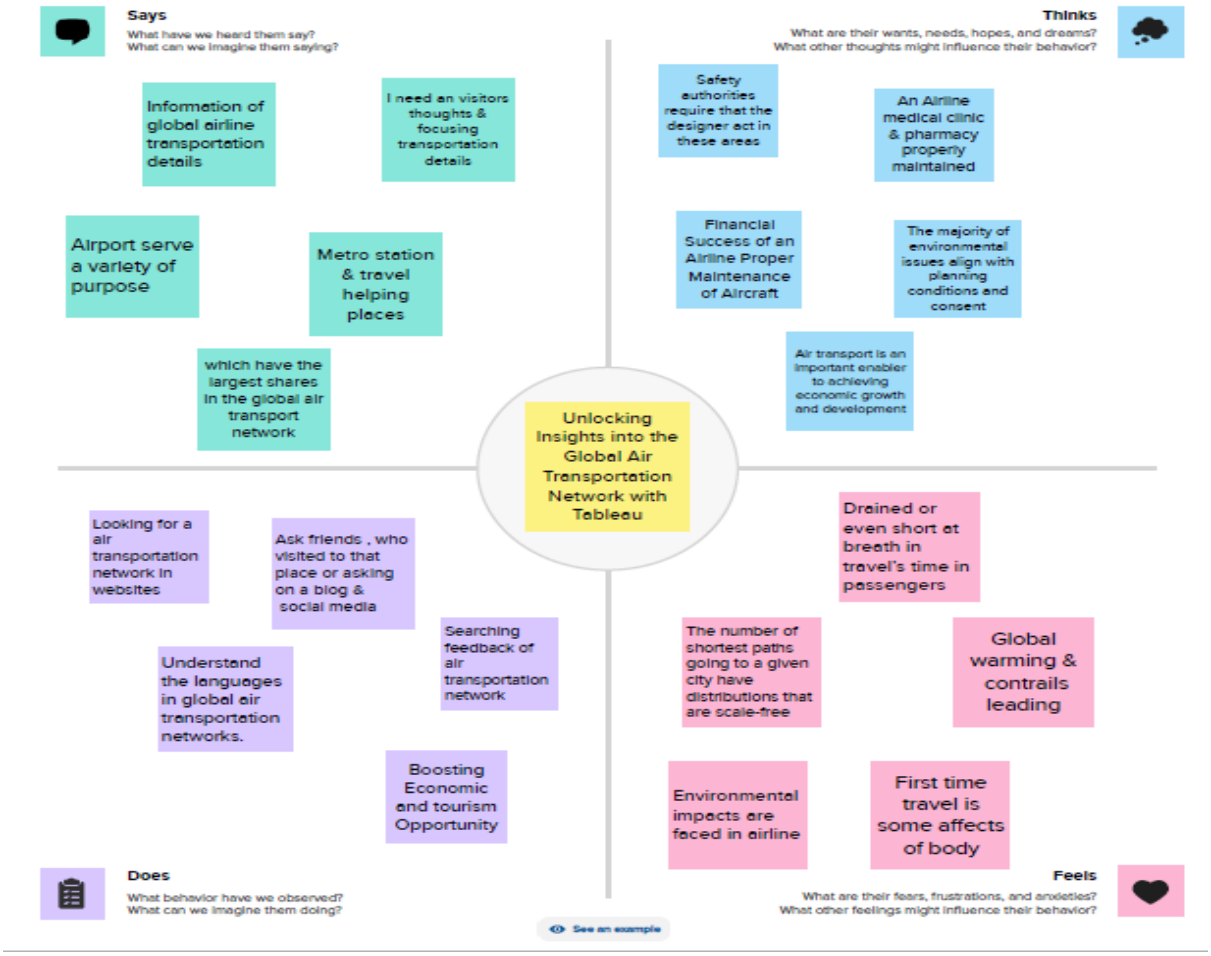
1.2 Purpose

The air transport network is a key infrastructure asset. It is the only worldwide passenger and cargo transportation network, providing an essential link between individual countries and the wider global economy. Air services create significant value for passenger and freight users.

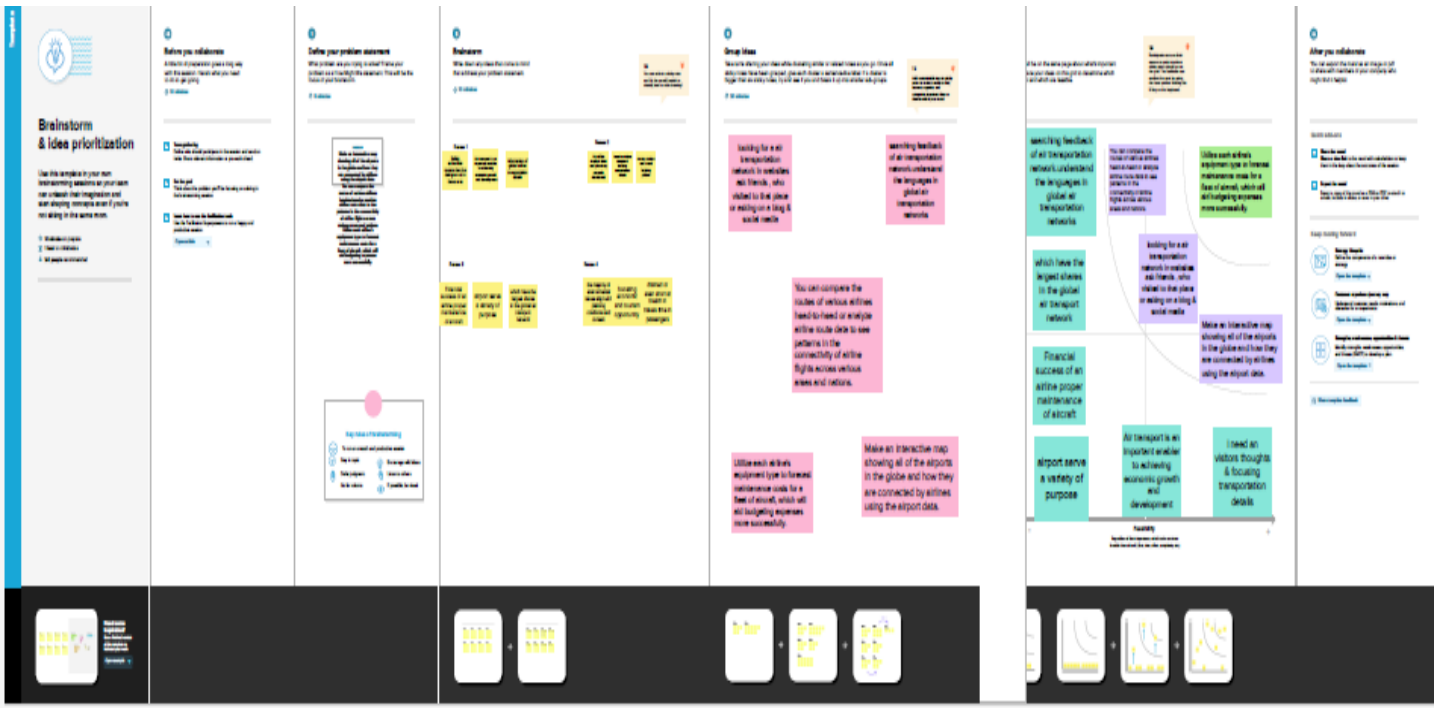
Air transport is one of the fastest modes of public transport which connects international boundaries. Air transport allows people from different countries to cross international boundaries and travel other countries for personal, business, medical, and tourism purposes. The International Air Transport Association (IATA) is the trade association for the world's airlines, representing some 300 airlines or 83% of total air traffic. We support many areas of aviation activity and help formulate industry policy on critical aviation issues.

2. PROBLEM DEFINITION & DESIGN THINKING

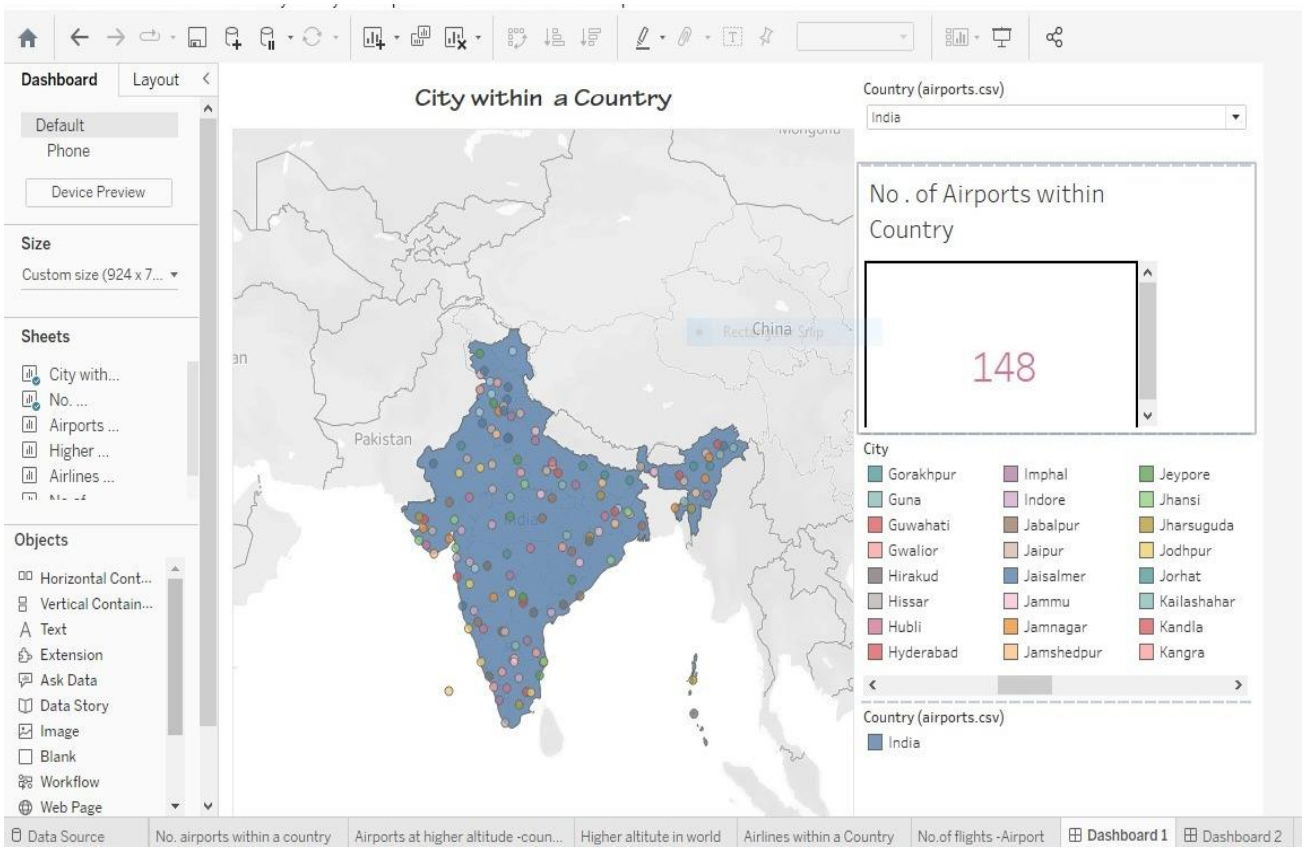
2.1 Empathy Map



2.2 BRAIN STORMING MAP



DASHBOARD 1



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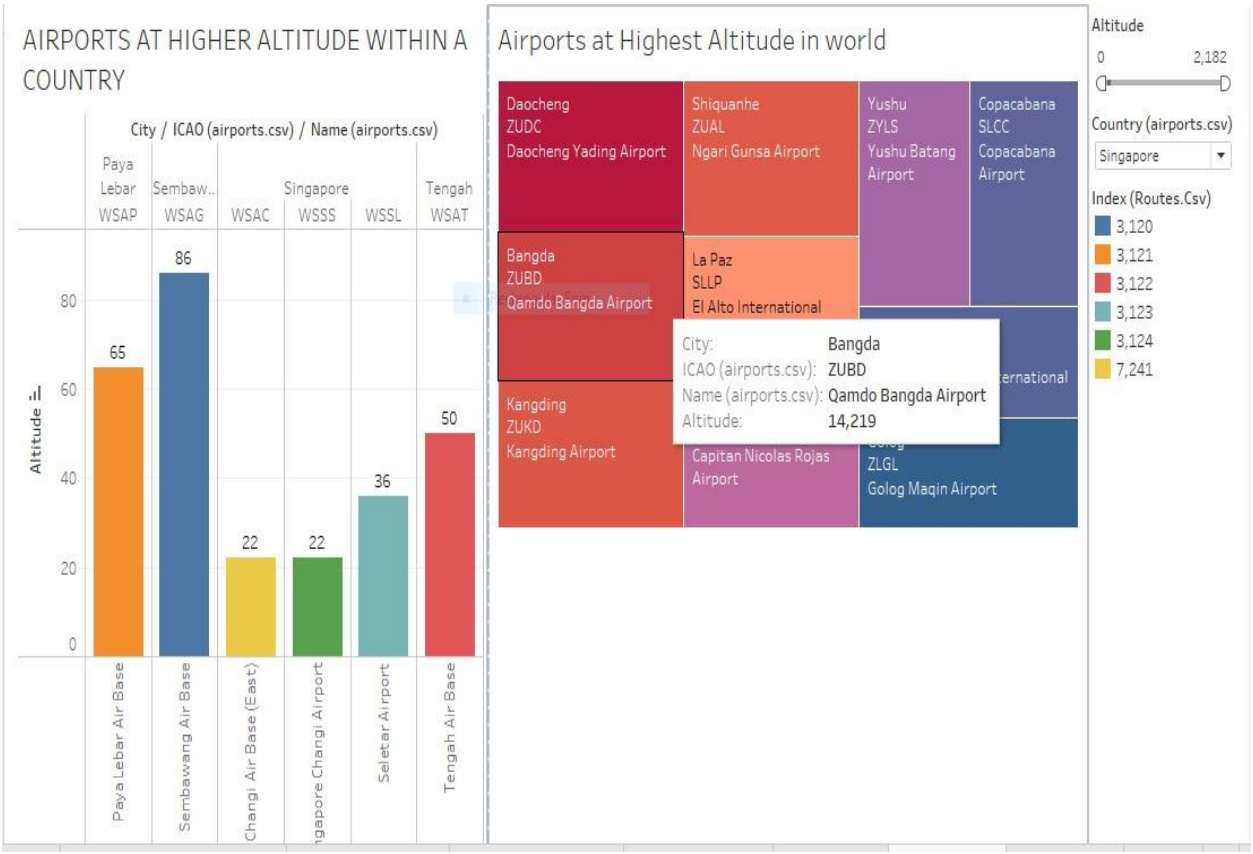

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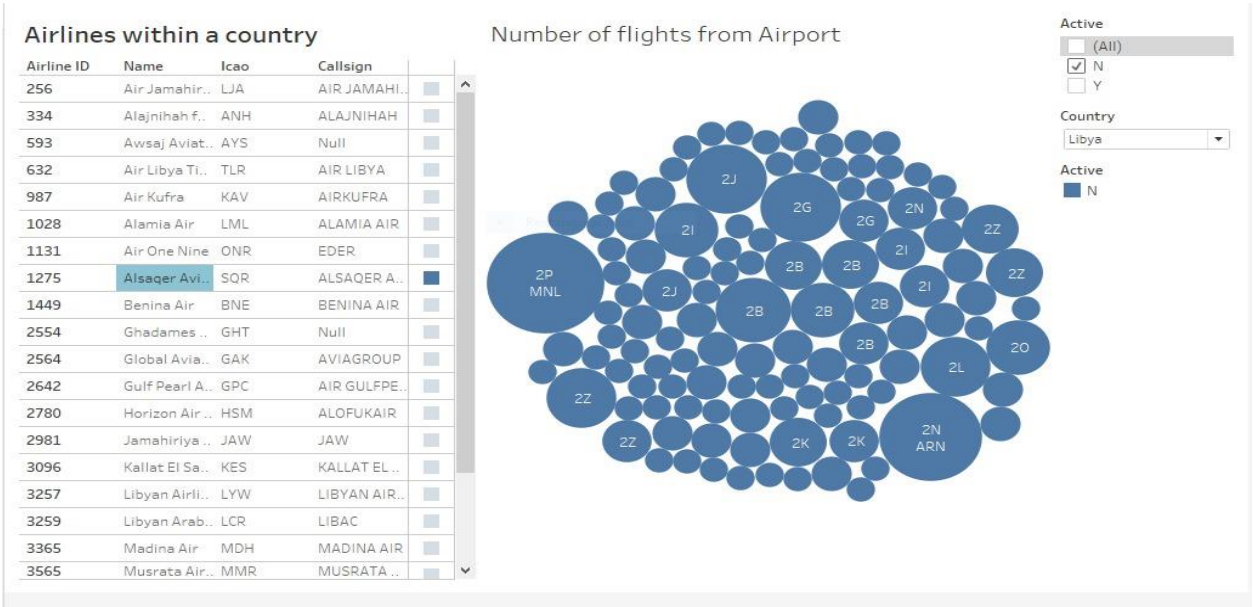
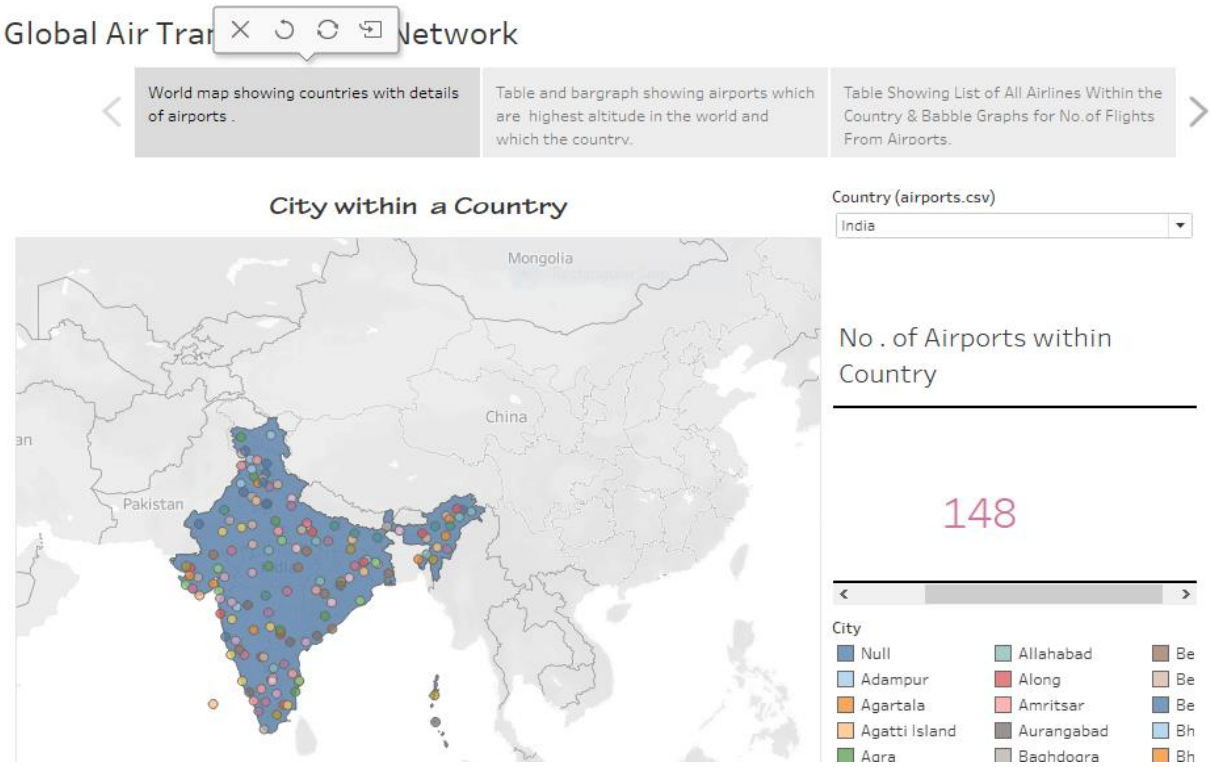


STORY



4. ADVANTAGES & DISADVANTAGES

Advantages Of **Unlocking Insights into The Global Air Transportation Network with Tableau**

(i). Speed and Efficiency:

Airplanes can cover long distances in a matter of hours, enabling businesses to deliver goods quickly, especially for time-sensitive orders.

(ii)**. Global Reach**

Air transport provides extensive global coverage, connecting businesses to various destinations around the world.

(iii)**. Reliable Timelines**

Air transport operates on fixed schedules, ensuring reliable timelines for delivery.

(iv). Reduced Inventory Holding Costs:

` * The fast transit times offered by air transport help reduce inventory holding costs.

(v). Enhanced Security

Airports have stringent security protocols in place to ensure the safety of cargo, including thorough screening processes and restricted access.

DISADVANTAGES OF Unlocking Insights into the Global Air Transportation Network with Tableau.

i. HIGHER COST:

One of the significant drawbacks of air transport is its higher cost compared to other modes, such as sea or land transport. Air freight charges are generally higher due to factors like fuel costs, infrastructure investments, and handling fees.

ii. LIMITED CAPACITY:

Airplanes have limited cargo space compared to ships or trains. This limited capacity can pose challenges for businesses dealing with bulky or oversized shipments.

iii. RESTRICTIONS ON HAZARDOUS GOODS:

Air transport has strict regulations regarding the transportation of hazardous goods. Certain hazardous materials or substances may be prohibited from being transported by air due to safety concerns.

5. APPLICATIONS

The applications of Unlocking Insights into The Global Air Transportation Network with Tableau

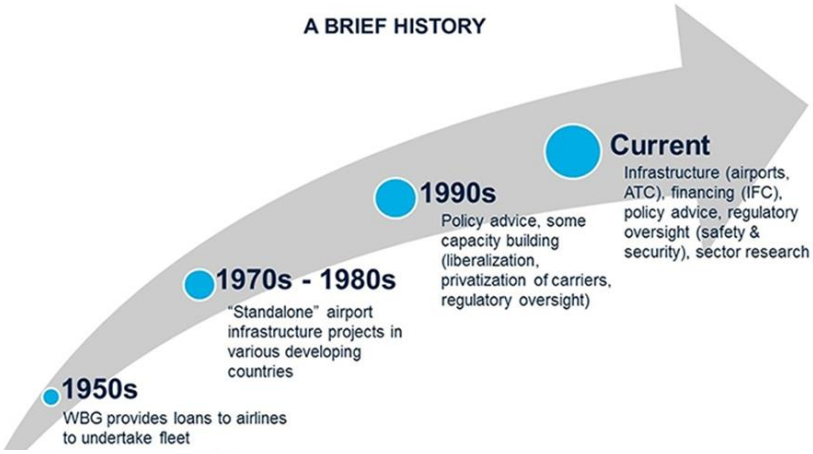
The Global Air Transport Networks aims Airline companies to organize their routes in a cost-efficient way and therefore maximize their profits. Air transport network models are also the tool to investigate system robustness.

They help to determine weaknesses of the system in case of various kinds of disruptions. Once weaknesses are determined, a substitute node which can support all or part of the traffic load can be identified through the alternative strength for the pair.

6. CONCLUSION

We analyze the global structure of the worldwide air transportation network, a critical infrastructure with an enormous impact on local, national, and international economies. We find that the worldwide air transportation network is a scale-free small-world network. In contrast to the prediction of scale-free network models, however, we find that the most connected cities are not necessarily the most central, resulting in anomalous values of the centrality. We demonstrate that these anomalies arise because of the multi community structure of the network. We identify the communities in the air transportation network and show that the community structure cannot be explained solely based on geographical constraints and that geopolitical considerations have to be taken into account. We identify each city's global role based on its pattern of intercommunity and intracommunity connections, which enables us to obtain scale-specific representations of the network.

7. FUTURE SCOPE



Airways provide direct flight connections to major global hubs in North America, Europe, Asia, and the Middle East. This network of air routes enables swift and efficient travel for business, tourism, and diplomatic purposes, fostering stronger global ties. The industry has a number of domestic and international airlines, as well as a large network of airports. The future of the aviation industry is likely to see continued growth and expansion, driven by factors such as a growing middle class, increased tourism, and government policies supporting the

industry. Emerging technologies are reshaping with robotics, artificial intelligence, the internet of things, unmanned aircraft systems and the push for hybrid and electric airplanes.