

Government Arts College, Paramakudi

UG DEPARTMENT OF PHYSICS

PROJECT TITLE:

Unlocking Insights into the global Air Transportation Network

Submitted by:

TEAM MEMBERS NAME	UNIVERSITY REGISTER NUMBER	NAAN MUDHALVAN ID	TEAM ID
GUNA K	1421122024	10FB3F40B28972EAFCC4EE9E2BF19D25	NM2023TMID34851
MUTHU PRAKASH M	1421122026	D213C18D22480B2A21A4E5DA5351FCC1	
SURIYA MOORTHY S	1421122035	AF441D02E1E9EEB946849F61E3745D01	
MOHAN KUMAR M	1421122025	757FA9F01A3DDFBBCBC449C40B38C034	
RAJAGENGESWARAN S	1421122028	A87959FEC5428F481594C8A007968FCF	

1.INTRODUCTION

1.1.Overview

The right data, harnessed in the right way, can deliveractionable insights that are truly transformative for decision-making, efficiency and smooth passenger-focused delivery of services. Jim Peters, Chief Technology Officer at SITA, reveals how big data is beginning to deliver real value in the air transport industry.

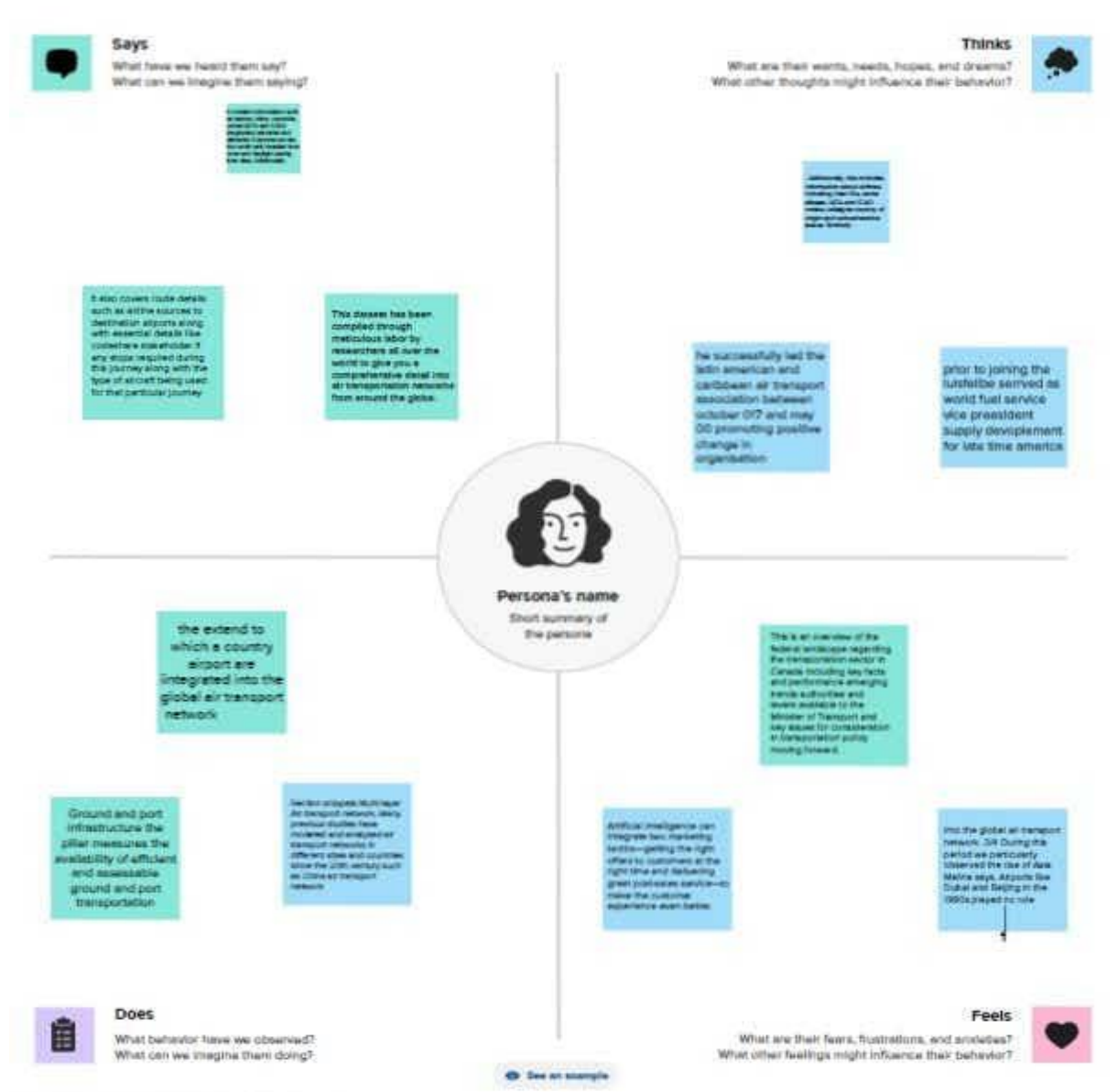
1.2. Purpose

As passenger volumes increase faster than new airports or terminals can be built, demand is placed onairport management for more complex and timely decisions.Costs must be controlled, productivity must be improved and security enhanced. And all of this must be done at thesame time as meeting the increased expectations of passengers for smooth and efficient services which ensure hassle-free

travel. BI tools – such as SITA's Day of Operations BI – are becoming central to that delivery.

2. PROBLEM DEFINITION AND DESIGN THINKING

2.1. EMPATHY MAP:



2.2 IDEATION AND BRAINSTORMING MAP:

Brainstorm

Write down any ideas that come to mind that address your problem statement.

10 minutes

TIP

You can select a sticky note and hit the pencil [switch to sketch] icon to start drawing!

Person 1

Person 2

Person 3

Person 4

Person 5

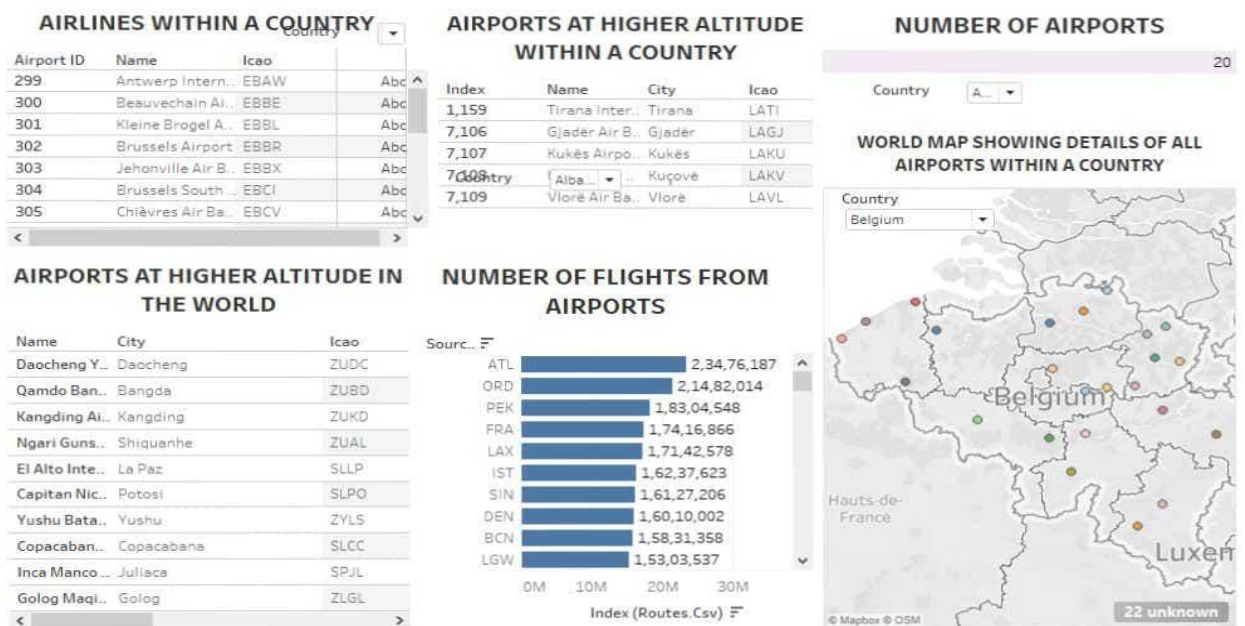
Person 6

Person 7

Person 8

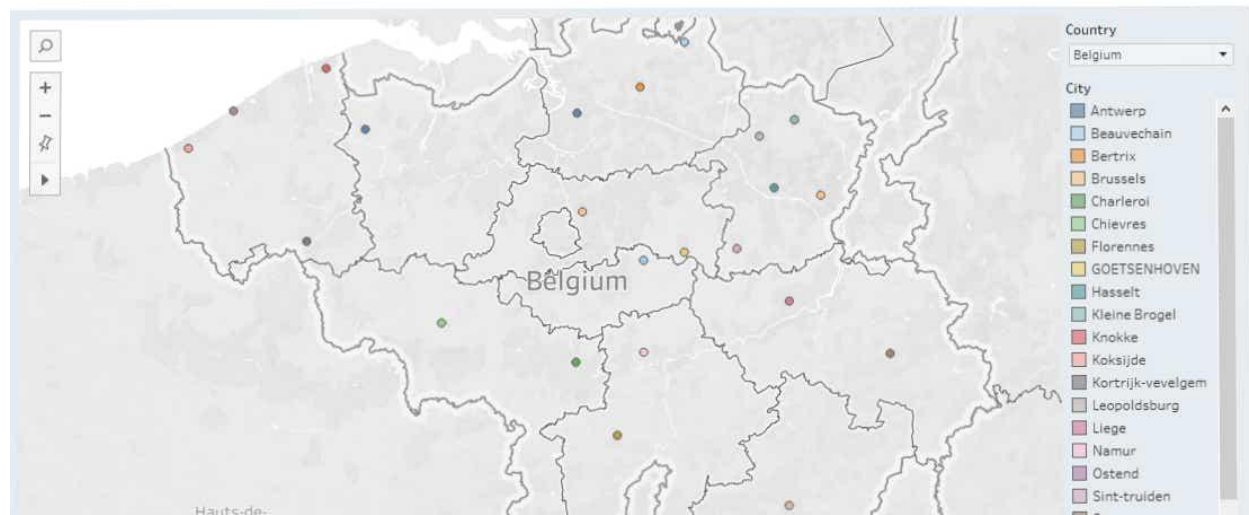
3. RESULT:

DASHBOARDS AND STORIES:



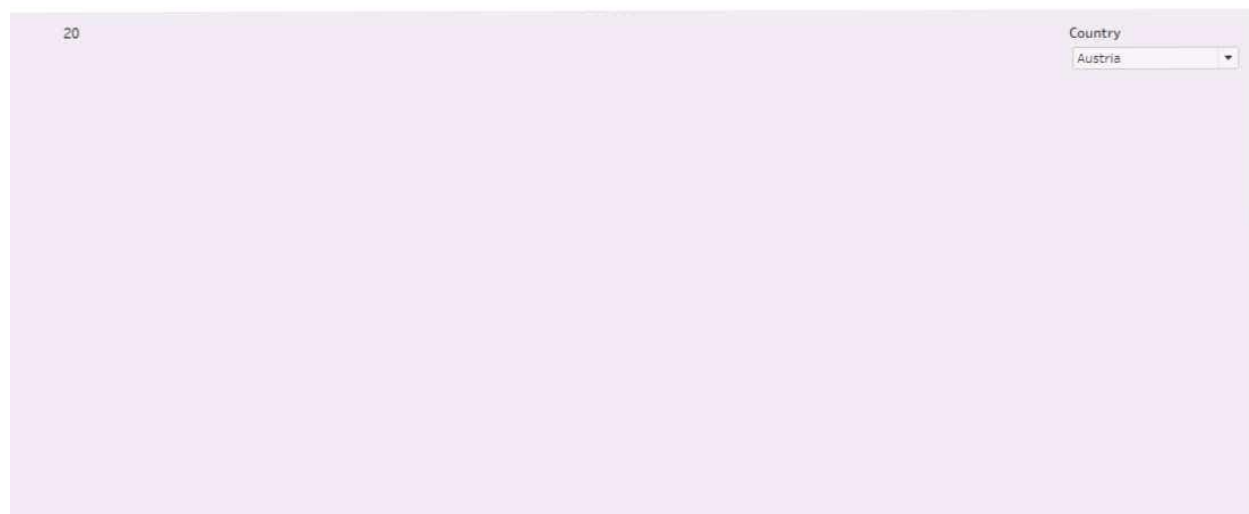
Story 1

- < We observe the belgium countries flight specific on the We focused the twenty flights on the austria country The albania countries specific flights are allotted in the sheet The whole flights are allotted in this picture by the diagram The whole airports and airbase airplanes are in the country of The diagram of the identifiers shows the whole flights on the >



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Index	Name	City	Icao	Country
1,159	Tirana International Airpo	Tirana	LATI	126
7,106	Gjader Air Base	Gjader	LADJ	29
7,107	Rukse Airport	Rukse	LAKU	1,120
7,108	Rugove Air Base	Rugove	LAKV	135
7,109	Vlore Air Base	Vlore	LAVL	9

4. ADVANTAGES AND DISADVANTAGES:

Advantages of Air Transportation:

Fast delivery times

Undoubtedly, one of the most advantageous features offered by air transport is its **speedy delivery times**.

There is no faster transport service than air transport. In addition, the frequency of flights makes delivery times very frequent and fast.

No Physical Limits

Air transport is the only means of transportation that **does not support physical limits**. Road transport, for example, must undergo different physical constraints that slow down delivery times.

It is one of the means of transportation that offers practically no interruption in its services, which is very attractive for companies.

Very reliable transportation

One of the great advantages of air transport for both passengers and goods is its great **reliability**.

Delays in delivery dates or loss of goods are options that can be very difficult to achieve with this means of transport.

Long Distances

No other means of transport in the logistics sector can **cover** such **long distances** as air transport. This is a **great advantage for international trade**, being able to cover long distances, impossible for road or sea transport.

Disadvantages of Air Transportation:

Although the advantages of air transport are very attractive and define a totally unbeatable type of service, it is also possible to define a series of disadvantages that should be analyzed to determine whether air transport is appropriate or whether it is preferable to consider other types of transport, such as **sea transport**.

Higher Cost

There is no doubt that air transport is the least economical means of transportation compared to other types of transport.

The cost of infrastructure, fuel... makes air transport economically superior to other alternatives. It is important to know how to analyze and calculate the economic and logistical performance to know if it is the ideal option to be used.

Less storage capacity

Storage capacity is lower than land and sea transport. This is a clear disadvantage, air transport is ideal for medium or low loads, but is not so attractive for large volumes of goods.

Restrictions on goods

Air transport, due to its specific characteristics, cannot carry certain products or goods. It suffers from certain restrictions, especially in liquid products such as petroleum, oils, etc...

5.APPLICATIONS:

Air transport is currently used in almost all industrial sectors and distribution chains. Most companies use air transport to market goods and products internationally or to deliver samples and documents related to foreign trade operations.

Air transport today

Currently, all countries have different airports. With the tourism boom and the search for new experiences, this sector found a niche in which to grow. In fact, it is one of the means of transport most used by passengers during their vacation periods and to go to business appointments.

However, as a consequence of the agility and speed it generates, it is also being used more and more as a means of transporting goods. It has even become the preferred means of transport for sending specific, high-cost or urgently received products.

Air transport in logistics

Air logistics has become an almost indispensable element of foreign trade both due to the high value of some goods and the immediacy of delivery demanded by end customers.

The use of this type of transport works best for perishable or very high value products, which require a quick replenishment and those whose buyers demand an urgent delivery.

In recent years, the rise of e-commerce has increased the demand for air service as consumers have become demanding with delivery times and security, and their satisfaction has become an element of competitiveness for companies.

Types of air transport

Many types of classifications can be established around air transport, from the most general ones that can distinguish, for example, the different means of air transport (helicopter, plane, airship, hot air balloon, plane, etc.) to more specific ones, which classify types of air transport according to the type of cargo moved. In this case, three large groups are distinguished:

- Mixed aircraft: carry passengers in the cabin and goods in the hold. The best known are those built by Airbus and Boeing.
- Cargo planes: transport exclusively goods.
- Super transports: aircraft designed to transport large goods.

6. CONCLUSION:

The importance of air transport lies in its ability as an economic engine to generate and support jobs, strengthen trade and connectivity between people and countries, promote tourism, and connect remote communities.

The undoubted economic and social benefits of aviation are clear, with the growth of the sector being important for all countries, developed and developing. However, these benefits also come at an environmental cost. For aviation to grow sustainably, it is vital that the industry balance the benefits of air travel growth with the responsibility to take action on climate change.

Air connectivity also enables social connection and inclusion and the promotion of the exchange of knowledge and ideas. In the same way, it encourages increased productivity, improved efficiency and favors innovation.

It is estimated that the commercial aviation sector is responsible for 2% of the greenhouse gases generated by human activity that are released into the atmosphere and 3% if other polluting gases are included.

This impact will increase over the years. According to Airbus forecasts, the number of passenger aircraft in 2034 will double that of 2014, reaching 35,749 units (of which more than 31,000 have not yet been built).

7.FUTURE SCOPE:

Mobility and its pillars of transport (air, inland and maritime) are at the very center of our socio-economic fabric. They underpin social connections and facilitate access to goods and services, including trade, jobs, health care and education. In today's world, mobility by air, road and water is all about efficiencies, speed, interconnectivity and accessibility by all. However, this raises the issue about sustainability. The UN predicts that by 2050 two thirds of the world population will live in cities¹. How can we adapt and enhance today's already-stretched mobility system for it to respond to our expectations and increased demands? How can mobility be reinvigorated for it to be sustainable and support the 2030 Agenda of Sustainable Development and its 17 Sustainable Development Goals (SDGs)?

For a start, mobility actors should come together in a shared vision. This is where the World Bank-led Sustainable Mobility for All (SuM4All) steps in. For the first time ever, the SuM4All provides the transport sector and its modes of transport with the opportunity to speak with one voice and jointly unpack a Roadmap of Actions that is tailored to countries and cities to implement on a voluntary basis. The SuM4All includes all modes of transport, including aviation.

We also see that the aviation is becoming more accessible to the global population. This figure shows for each country, what percentage of the population lives within 100 km of an airport.

World wide – 51% of the population lives within 100 km of an International Airport – and 74% live within 100 km of any kind of airport.

So airspace is quickly becoming congested and air traffic is slated to double over the next two decades.

In addition to air space – we have to consider airports themselves. Airports are already built up around population centres and are already operating at high capacity.