WELCOME TO SMARTBRIDGE

UNLOCKING INSIGHTS INTO THE GLOBAL AIR TRANSPORTATION NETWORK

B.SC PHYSICS

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CONTENT OF THE THESIS

❖ INTRODUCTION

❖ PROBLEM DEFINITION & DESIGN THINKING

❖ RESULT

❖ ADVANTAGES & DISADVANTAGES

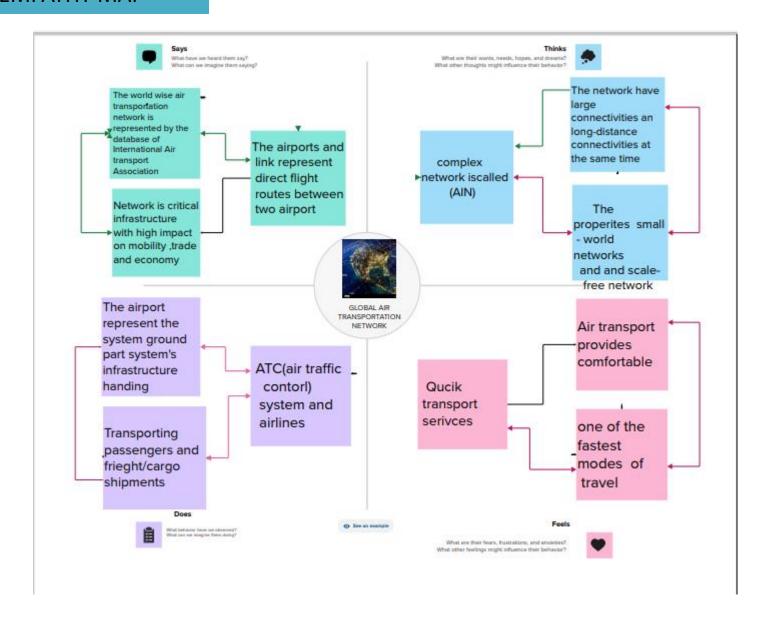❖ APPLICATIONS

❖ CONCLUSION

❖ FUTURE SCOPE

❖ INTRODUCTION

1.1 OVERVIEW

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. Additionally, this includes information about airlines including their IDs, name aliases, IATA and ICAO codes, country of origin and active/inactive status. Similarly, it also covers route details such as airline sources to destination airports along with essential details like codeshare stakeholder if any stops required during this journey along with the type of aircraft being used for that particular journey. This dataset has been compiled through meticulous labor by researchers all over the world to give you a comprehensive detail into air transportation networks from around the globe.

1.2 PURPOSE

Air transport allows people from different countries to cross international boundaries and travel other countries for personal, business, medical, and tourism purposes.

❖ PROBLEM DEFINITION & DESIGN THINKING

2.1 EMPATHY MAP

Says
What have we heard them say?
What can we imagine them saying?

The world wise air transportation network is represented by the database of International Air transport Association

Network is critical infrastructure with high impact on mobility ,trade and economy

The airports and link represent direct flight routes between two airport

Thinks
What are their wants, needs, hopes, and dreams?
What other thoughts might influence their behavior?

The network have large connectivities an long-distance connectivities at the same time

complex network iscalled (AIN)

The properites small - world networks and and scale-free network

GLOBAL AIR TRANSPORTATION NETWORK

The airport represent the system ground part system's infrastructure handing

ATC(air traffic contorl) system and airlines

Transporting passengers and frieght/cargo shipments

Air transport provides comfortable

Qucik transport serivces

one of the fastest modes of travel

Does
What behavior have we observed?
What can we imagine them doing?

⊙ See an example

Feels
What are their fears, frustrations, and anxieties?
What other feelings might influence their behavior?

Tableau - GLOBAL AIR TRANSPORTATION NETWORK

File   Data   Worksheet   Dashboard   Story   Analysis   Format   Server   Window   Help

GOLBAL AIR TRANSPORTATION NETWORK

| World map showing countries with details of Airports | Table showing Airports Which are at Higher Altitude in the world | Table showing List of ALL Airlines within the country | Bar graphs showing countries with No of flights from airports |

Sheet 1

Country (airports.csv)

India

NUMBER OF AIRPORTS

148

City
- ■ Null
- ■ Adampur
- ■ Agartala
- ■ Agatti Island
- ■ Agra
- ■ Ahmedabad
- ■ Aizwal
- ■ Ajmer
- ■ Akola
- ■ Allahabad
- ■ Along
- ■ Amritsar

Data Source | Sheet 1 | NO OF AIRPORTS | Sheet 3 | Sheet 4 | Sheet 5 | Sheet 6 | ⊞ Dashboard 1 | ⊞ Dashboard 2 | ⊞ Dashboard 3 | ⊞ Dashboard 4 | 📖 Story 1

GOLBAL AIR TRANSPORTATION NETWORK

Airports at higher altitude within a country

index no	Airport Na..	City	Icao	
1	Zell Am See ..	Zell am See	UFS	2,470
	Wiener Neu..	Wiener Neusta..	VLX	896
	Wels Airport	Wels	VOL	1,043
	Vöslau Airp..	Bad Voeslau	TXC	765
	Vienna Inte..	Vienna	XMS	600
	Stockerau ..	Stockerau	Null	686
	St. Johann I..	St. Johann in Ti..	Null	2,198
	Salzburg Ai..	Salzburg	XDA	1,411
	Nötsch Im ..	Notsch Im Gailt..	Null	1,801
	Niederoebl..	Niederoeblarn	TXA	2,142
	Mauterndo..	Mauterndorf	Null	3,642
	Linz Hörsch..	Linz	XBO	980
	Krems Airp..	Krems	UTT	1,017
	Klagenfurt ..	Klagenfurt	PVL	1,472
	Innsbruck A..	Innsbruck	WTN	1,907
	Hohenems-..	Hohenems	UTM	1,352
	Hinterstois..	Zeltweg	ZBA	2,264

Airports at higher altitude in the world

Airport Name	City	ICAO CODE
Daocheng Yading Airport	Daocheng	ZUDC
Qamdo Bangda Airport	Bangda	ZUBD
Kangding Airport	Kangding	ZUKD
Ngari Gunsa Airport	Shiquanhe	ZUAL
El Alto International Airport	La Paz	SLLP
Capitan Nicolas Rojas		

Country (airports.csv)

Austria

GOLBAL AIR TRANSPORTATION NETWORK

| World map showing countries with details of Airports | Table showing Airports Which are at Higher Altitude in the world | Table showing List of ALL Airlines within the country | Bar graphs showing countries with No of flights from airports |

Airlines within a country

Airline ID	Name	Icao	Callsign	
218	Air India Limited	AIC	AIRINDIA	🟧
241	Air Sahara	RSH	SAHARA	🟧
569	Air India Express	AXB	EXPRESS INDIA	🟧
1026	Alliance Air	LLR	ALLIED	🟦
1370	Blue Dart Aviation	BDA	BLUE DART	🟦
2001	Deccan Aviation	DKN	DECCAN	🟦
2575	Go Air	GOW	GOAIR	🟧
2634	Gujarat Airways	GUJ	GUJARATAIR	🟦
2850	IndiGo Airlines	IGO	IFLY	🟧
2851	India International Airways	IIL	INDIA INTER	🟦
2852	Indian Air Force	IFC	INDIAN AIRFORCE	🟦
2853	Indian Airlines	IAC	INDAIR	🟧
3000	Jet Airways	JAI	JET AIRWAYS	🟧
3142	Kingfisher Airlines	KFR	KINGFISHER	🟧
3907	Paramount Airways	PMW	PARAWAY	🟧
3918	Pawan Hans	PHE	PAWAN HANS	🟦
4375	Spicejet	SEJ	SPICEJET	🟧
13105	Air India Regional	\N	ALLIED	🟧
13106	MDLR Airlines	\N	MDLR	🟧

Active
(All)

Country
India

Active
🟦 N
🟧 Y

Data Source   Sheet 1   NO OF AIRPORTS   Sheet 3   Sheet 4   Sheet 5   Sheet 6   Dashboard 1   Dashboard 2   Dashboard 3   Dashboard 4   Story 1

File   Data   Worksheet   Dashboard   Story   Analysis   Format   Server   Window   Help

GOLBAL AIR TRANSPORTATION NETWORK

Story

Layout

| World map showing countries with details of Airports | Table showing Airports Which are at Higher Altitude in the world | Table showing List of ALL Airlines within the country | Bar graphs showing countries with No of flights from airports |

Number of flights from aiport

Source airp..

ATL
ORD
PEK
LHR
CDG
FRA
LAX
DFW
JFK
AMS
PVG
SIN
BCN
ICN
MUC
MIA
DEN
IST
LGW

❖ ADVANTAGES & DISADVANTAGES

➤ ADVANTAGES AIR TRANSPORTATION

- ✓ High Speed. Air is the type of freight capable of traveling long distances in short periods of time.

- ✓ Fast Service.

- ✓ Send almost everywhere your freight.

- ✓ High Standard of Security.

➤ DISAVANTAGES AIR TRANSPORTATION

- ✓ High Cost. This is significantly more costly for its services than land, rail, and water transportation.

- ✓ Air Pollution: Transportation is a major contributor to air pollution. ...

- ✓ there is the risk of goods being damaged, especially over long distances.

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.

- ✓ Air transport facilitates integration into the global economy and provides vital connectivity on a national, regional, and international scale

- ✓ It helps generate trade, promote tourism, and create employment opportunities.

- ✓ Airways are one of the most comfortable and fastest modes of transportation

FUTURE SCOPE

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

- integration of new technologies will enable airports to deliver passengers customized, on-demand services to improve their airport experience

- The ICN vision covers three areas: operations, infrastructure, and integrated safety management.

- The ICN intends to incorporate innovative technologies into a fully integrated information environment for all types of operations, from the smallest drone to the largest spacecraft.

THANK YOU