

"We are providing air transportation from point A to point B, we are small, and we have a higher cost structure than LCCs (low cost carriers). We need to be able to attract customers despite all these factors and the only way we can do it is by making them want to fly us."



Hi,
I am TRAPS. I will help you save your time.

The Traps

"Time and rush of authorities and public solved".

Pushing and shoving is often observed among public during check in and boarding creating chaotic situations for authorities & causing delays. Thus presenting a smart and reasonable queue management system to help Vistara authorities to make experience of flyers comfortable.

The main features of this system will be :

Easy booking and planning.
Recognizing your journey.
Displays route and time track.
Helps you choose the shortest queue.
Simpler boarding system.
Interesting features at one app.
TRAPS Chat bot for help

Problem & Solution Introduction





VISTARA

TRAPS

TRAPS SOLUTION

FOR TRAVELLERS/ PUBLIC



ONE STOP
SOLUTION



SMART QUEUE
MANAGEMENT



AUTHORITY ASSIST
/TRAPS CHATBOT



DYNAMIC
ADVERTISING

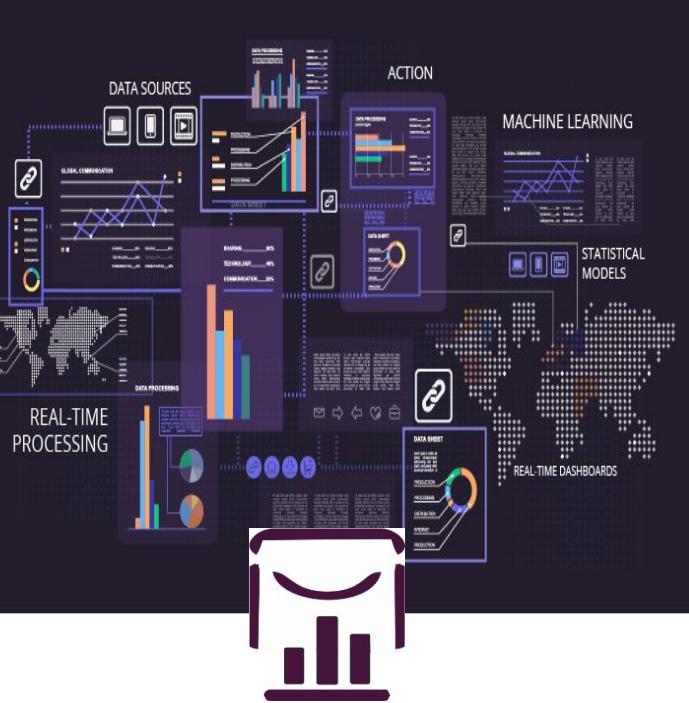


REAL TIME
ANALYTICS



PASSENGER FLOW
DISTRIBUTION

Creating time saving travel



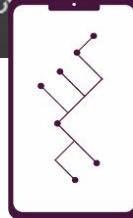
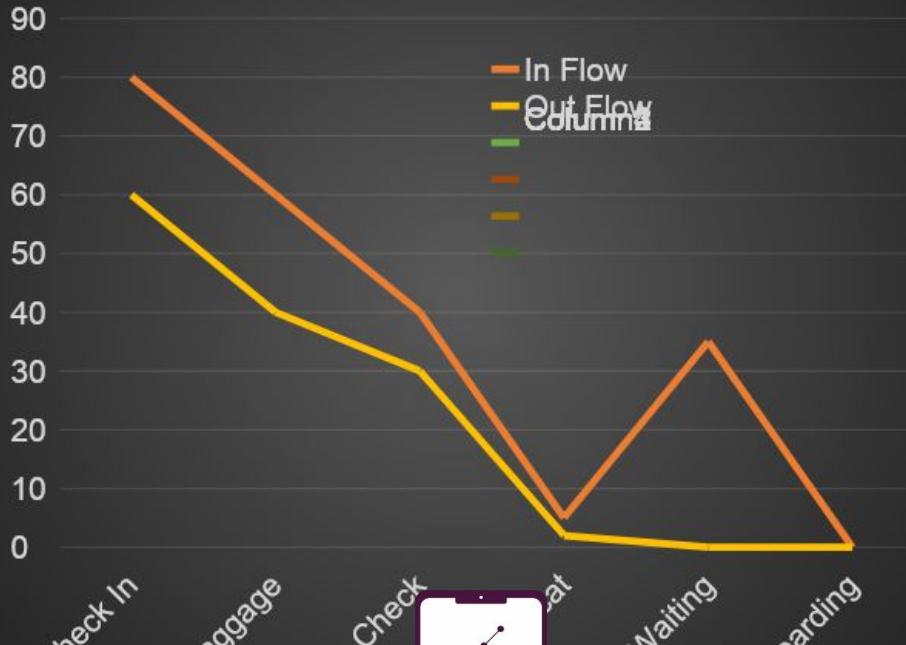
REAL TIME ANALYTICS

[* R10, R11, R15]

Helps develop Passenger Flow via Wi-Fi Technology and Hybrid People Counter.

WORKING MODEL FOR ANALYTICS

PASSENGER FLOW



PASSENGER
FLOW
DISTRIBUTION

[* R3, R6, R15]

RStudio www.BANDICAM.com Project: (None)

functions1.R x 68 ls x R Heatmap@traps.R* x heatmap x Addins x Go to file/function Addins Environment History Connections Tutorial

```
1 install.packages("gplots")
2 installed.packages()
3 library(gplots)
4 getwd()
5 y <- data.matrix(heatflow)
6 y
7 ?heatmap.2
8 |
```

(Top Level) R Script

Console Terminal x Jobs x

The following object is masked from 'package:stats':
lowess

```
> getwd()
[1] "C:/Users/Priyansh Khare/Documents"
> View(heatflow)
> y <- data.matrix(heatflow)
> y
   V1 V2
[1,] 1 8
[2,] 2 3
```

Type here to search

14:18 10-08-2020

Import Dataset Data Global Environment heatflow 10 obs. of 2 variables y int [1:10, 1:2] 1 2 3 4 5 6 7 8 9 1... Files Plots Packages Help Viewer R: Enhanced Heat Map Find in Topic heatmap.2 {gplots} R Documentation Enhanced Heat Map Description A heat map is a false color image (basically `image(t(x))`) with a dendrogram added to the left side and/or to the top. Typically, reordering of the rows and columns according to some set of values (row or column means) within the restrictions imposed by the dendrogram is carried out.

Easy staff allocation on need basis.

Analytics filtered by Check In, Baggage, Security Check, Waiting & Boarding.

Generate Live Passenger Flow using PPETA/ PPETD Model.

Live/ Expected Heat Maps generated using Passenger Flow.

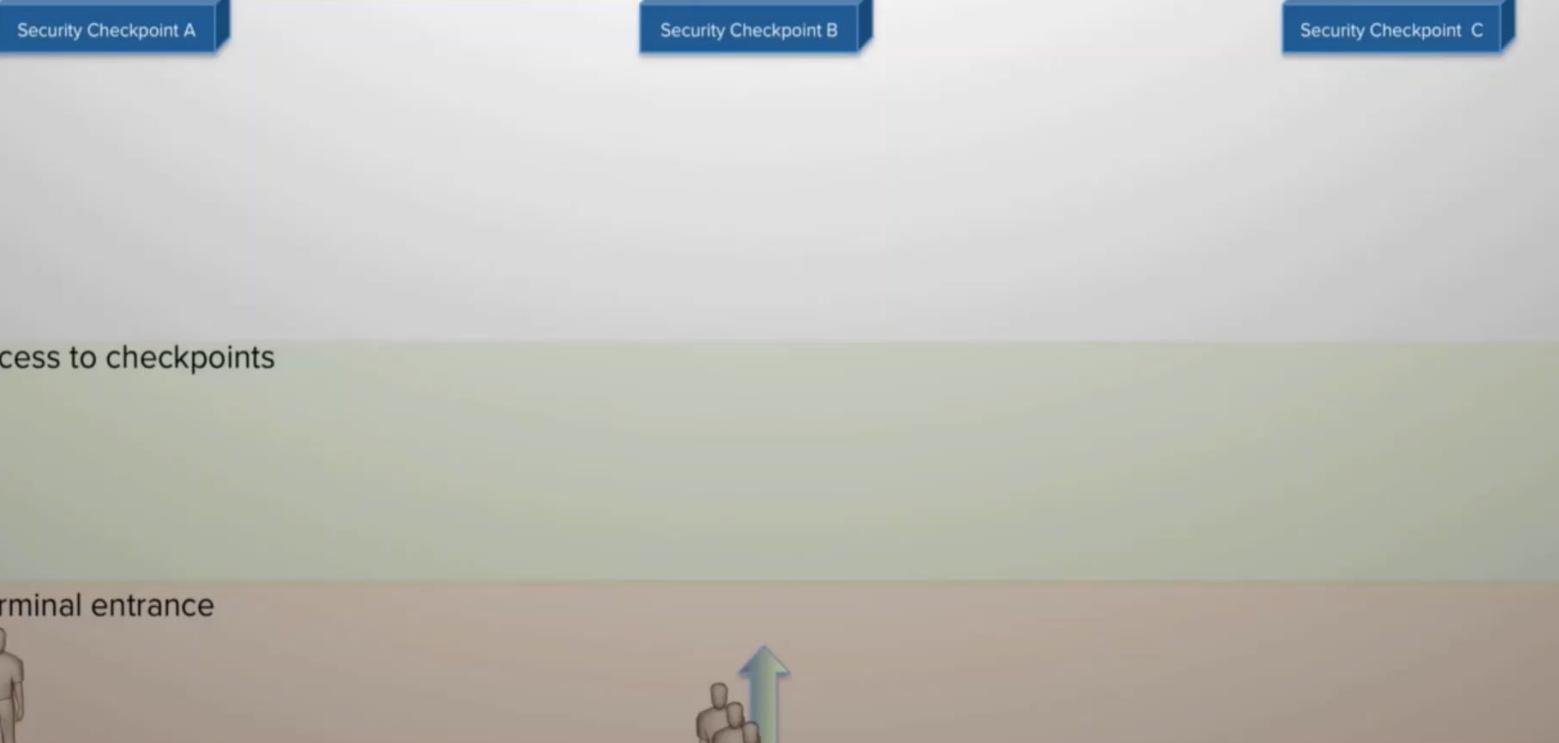
People Counter via Camera & Deep Learning. LED/ App tells shortest queue.

Estimated queue time notified. Flyer given Wi-fi access details.

Passenger directed to waiting area after security check.

Boarding queue number printed on boarding pass based on our boarding system.

Cameras recheck order. Flyers directed to aprons via TRAPS boarding model.



SMART QUEUE MANAGEMENT SYSTEM

[* R2, R3, R9, R11, R15]

THE BOARDING SYSTEM

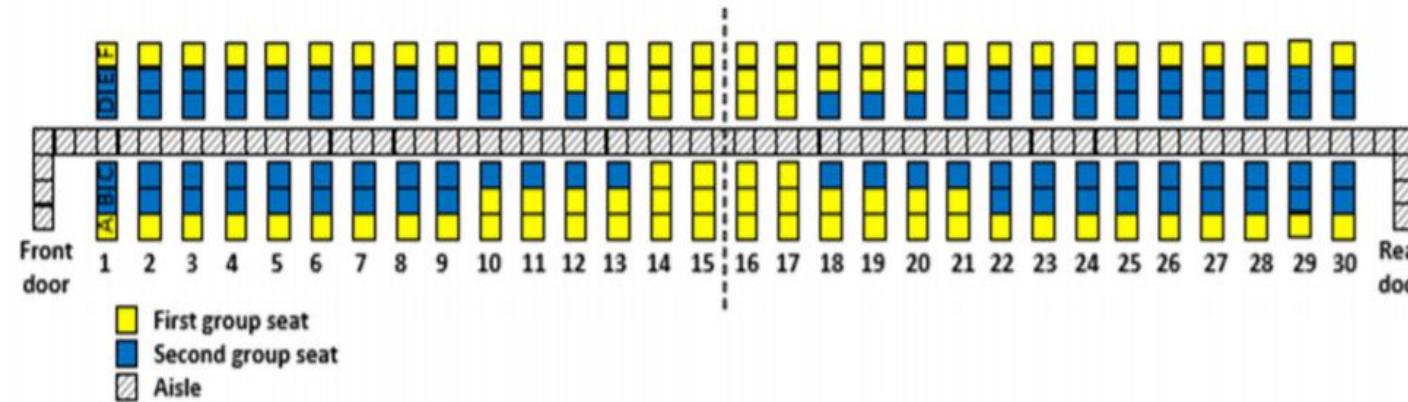
[* R1, R4, R6, R7, R11]



Based on Mixed WilMA + RP-C Model out of 15 other simulations.

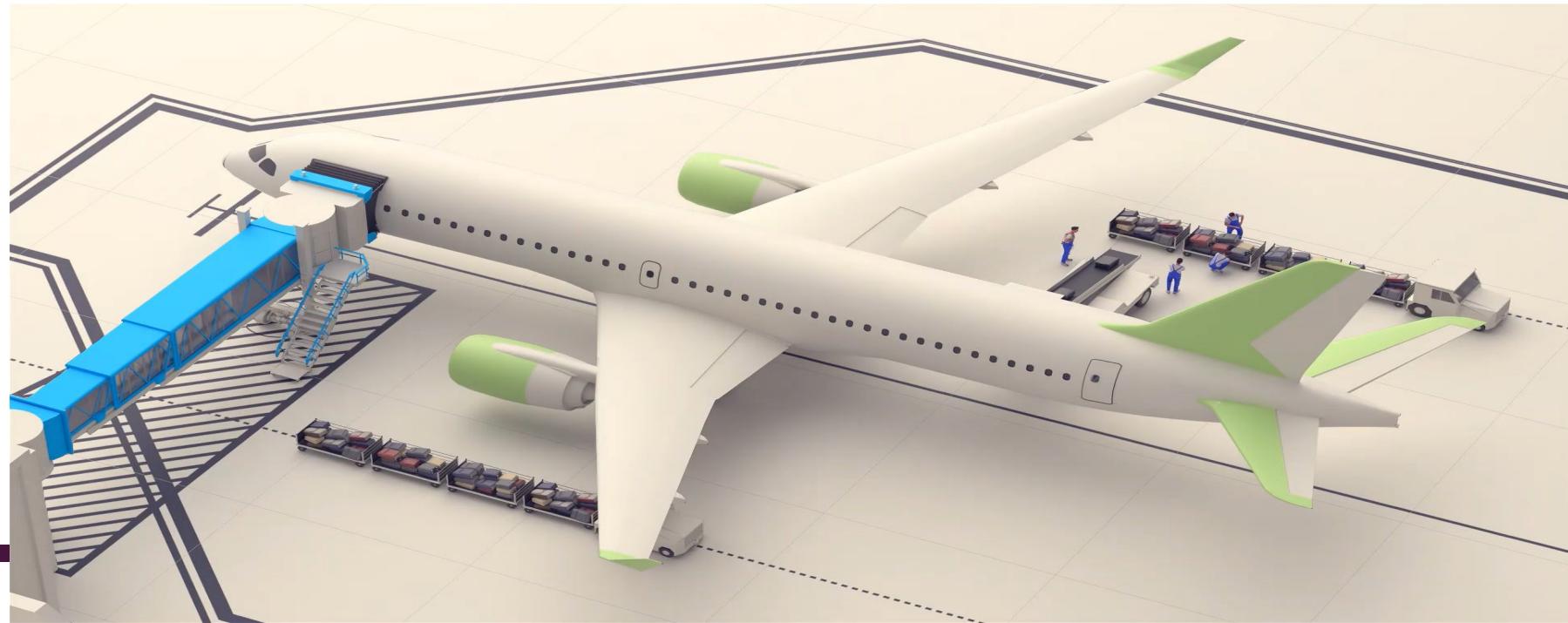
WilMA : Window – Middle – Aisle Boarding RP-C : Reverse Pyramid ; C denotes Pyramid's shape (Yellow)

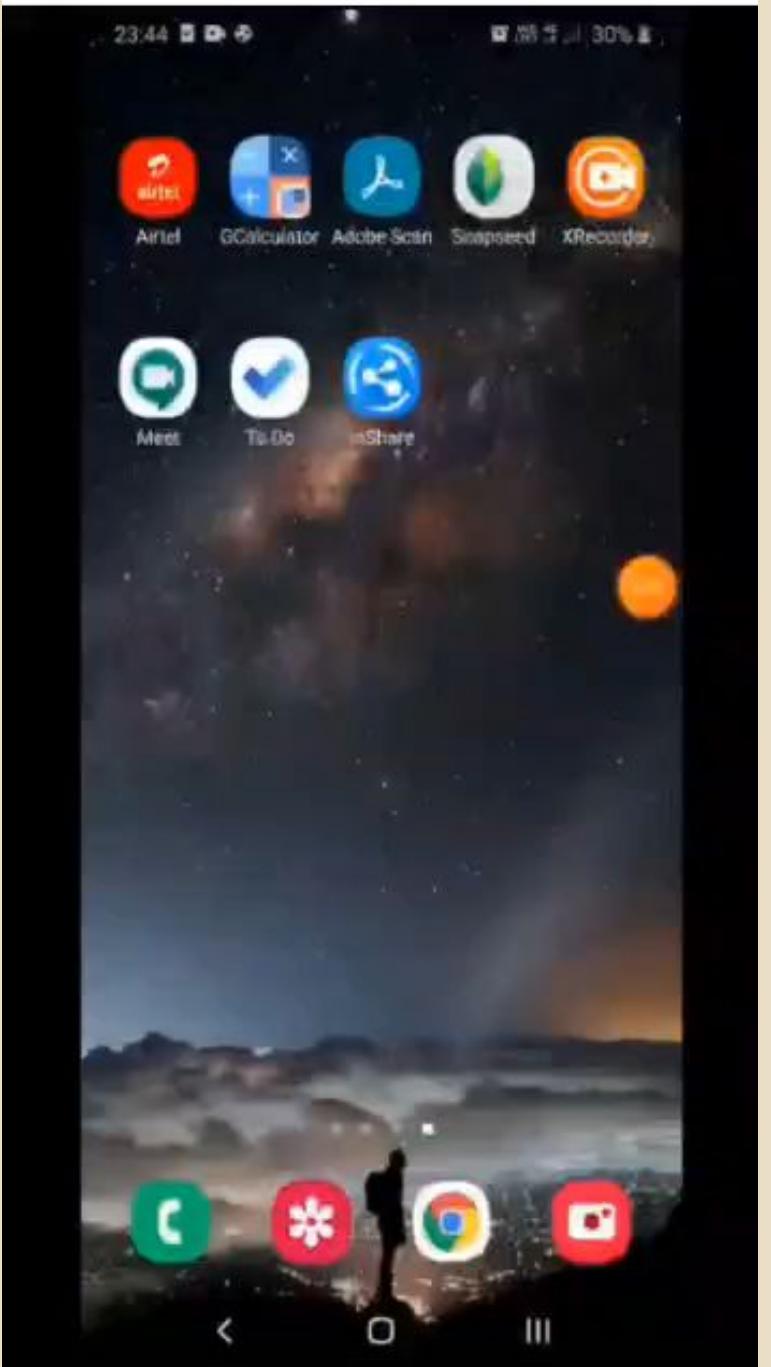
Saves 39.2% average time & additional approximately 700 INR / person.



**Mixed WilMA
RP – C Model**

Source: IEEE
Paper (Digital
Object Identifier
10.1109/ACCESS
.2019.2941532)





All Vistara Services

Simplified Journey by;

- Easy and timely planned booking
- Find my e-ticket
(Automated and easy to use)
- My bookings
- Club Vistara
- Vistara World

TRAPS Model

- Web/ App Check In scheme
- Cab booking
- Baggage drop
- Queue management
- Proactive notifications
- TRAPS to assist.

Unlocking TRAPS

- Unlock all the specific features **8 hours** before your **domestic flights** and **24 hours** before your **international flight**
- *Check in at standard time.*



TRAPS APP

UNIQUE FEATURES OF THE APP

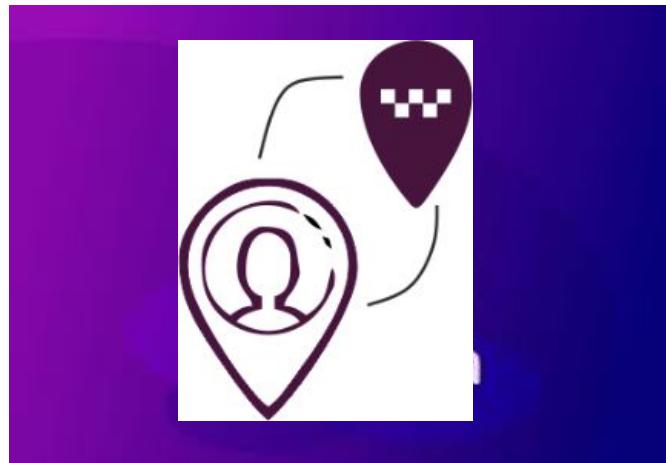
- All Vistara services in one app.
- Easy and efficient baggage TAG, DROP & TRACK facility.
- Position detection and time prediction.
- An interactive AI assistant always present for the user.
- Reward policies
- Scalable app

[* R5, R12]

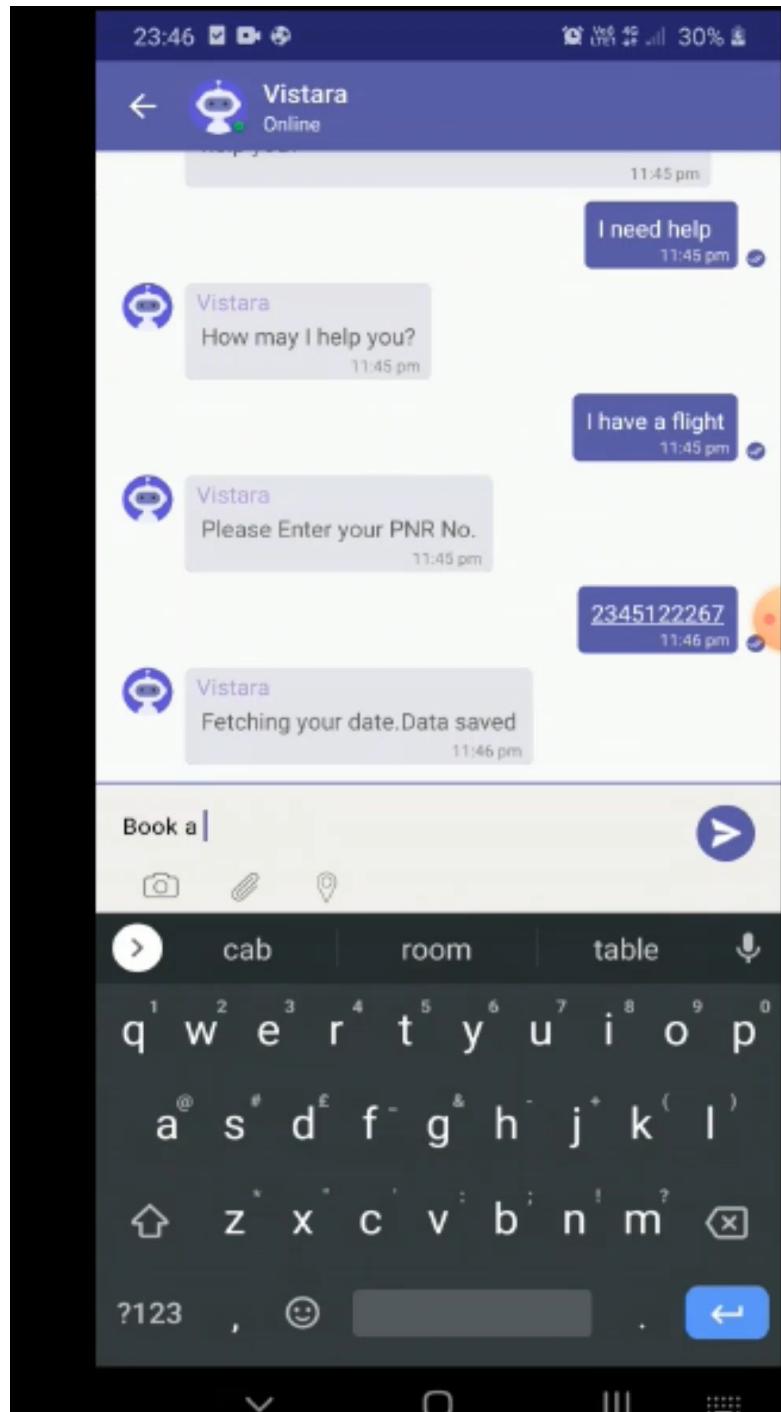
AI based Chat bot TRAPS as a new assistant.

Every traveller's **personal notification + guide system** to choose queues & navigate places.

Multi- Lingual | Customer Friendly | Builds Proactive Notification System
Smart Customer Allotment | Contributes majorly to PPETA/ PPETD Model.



AUTHORITY ASSIST/ TRAPS CHATBOT



UNDERSTANDING THE



PEOPLE COUNTER

- Python
- Open CV
- Machine Learning (ML)
- Deep Learning
- Convolutional Neural Networks (CNNs)
- Single Shot Detector
- MobileNETs
- Trained on COCO Dataset

TRAPS APP

- Java
- XML
- Android Studio
- Firebase

REAL TIME ANALYTICS

- Python
- Firebase
- Tableau

- Object detection up to 90% accuracy.
- Deep Learning model with

- One app for all purposes.
- Simple, fast and flexible app

KEY FEATURES

- Optimize crew & staff planning.
- Scalable model.

TRAPS CHATBOT

- Python
- Artificial Intelligence (AI)
- Machine Learning (ML)
- Natural Language Processing (NLP)
- DialogFlow
- Cloud & Google APIs
- Firebase
- Kommunicate

- Multi lingual and easy to understand Chatbot.
- Automated TRAPS Chatbot.

- Highly accurate object detection method.
- Less computational burden.
- Less cost.
- Combination of **Mobile Nets** and **SSD**.
- Deep learning based object detection, fine tuned on **PASCAL VOC**.

WHY

- **Trilateral Notification System:**
 1. Via TRAPS Bot
 2. Via LED TVs
 3. Via Authority (if needed)
- **Trilateral Use:**
 1. To share information.
 2. For advertisement/ Indirect revenue.
 3. Pre-casting alerts in case of huge expected density at a time; easy for authority/ ground- staff.

HYBRID
PEOPLE
COUNTER

SMART
CUSTOMER
ASSIGNMENT

PROACTIVE
NOTIFICATION
SYSTEM

PPETA
PPETD
MODEL

- Places customers in best queue according to factors like;
 1. Queue length
 2. Approximate time
 3. Tested Queue Model (Boarding)
- **Loyalty benefits** to our premium travelers.
- Authority Assist using Real time analytics and **TRAPS Chatbot!**

TRAPS

- Precise predictable estimated time of arrival/ departure because of our TRAPS model.
- **Queue Quotient** for analysis.
- Serves additional benefits such as avoiding last minute unexpected delays.
- Reduces risk of hassle.



Further More

Awareness and Adaptability

- TRAPS Chatbot
- Technology Cast
- E-coins/ Vistara Points

Indoor Positioning System

- Accurate Indoor Positioning within the terminal.
- Store locator
- Counter locator

[* R6, R13, R14, R15]

App Case

- **Responsive design features.**
- **Intuitive UI/UX- Flow**
- **Appealing Interface**
- **Simplified app navigation.**
- **One for all**

Strengths

- Saves Time
- No infrastructural change needed.
- Minor installations.
- One solution for all.
- Efficient and cheap.
- Handy App.

Weakness

- Enhanced Indoor Positioning System needed.
- More accurate ML Model.
- To increase model mAP (72.7% right now).

SWOT

Opportunity

- Outwit other airlines.
- Revolutionize
- Smarter System

Threats

- Access to the technology.
- Adaptability to the technology.
- Risk of change.

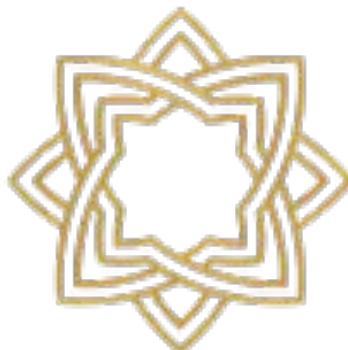
THE BUSINESS IMPACTS

NON AVIATION EARNING

Convert process time to commercial time at various stages and help in non – aviation earning.

LOCATION BASED SERVICES

Great for wayfinding recommended services, adds, and alerts to our customers.



RETAIL & AD SPACE

Dynamic Advertising allows Vistara to have indirect revenue.

ATTRACT OTHER FLYERS

TRAPS Model calculates and optimises travel time to a greater extent by its real time analytics.

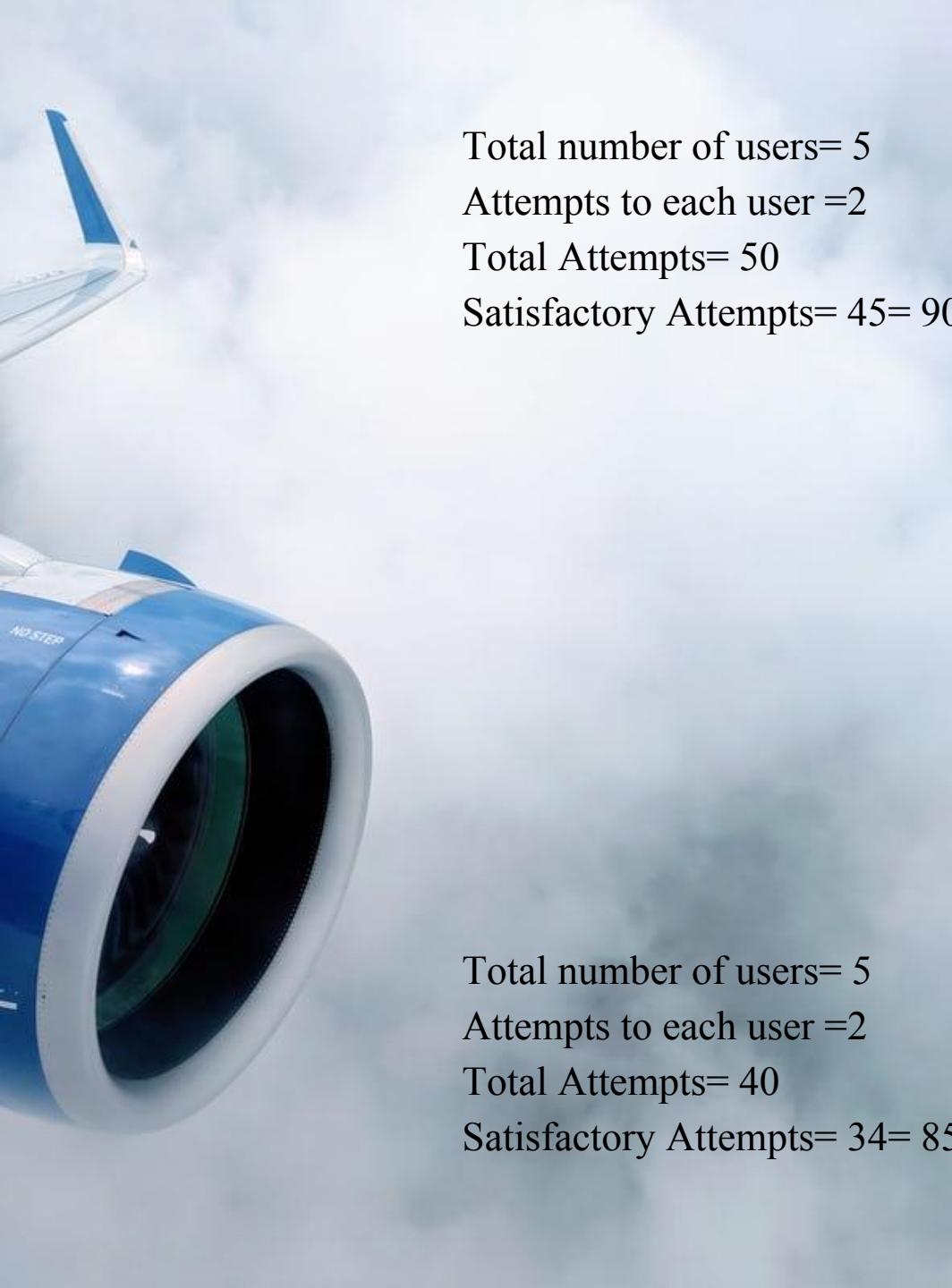
TRAPS can be the “Differentiation” that Vistara needs in order to battle commoditization and hit the blues by being the part of the cluttered airlines space of India.

	A	B	C	D	E	F	G	H	I	J
1	Total Domestic Airports			31						
2	Busy Airports			14						
3	Non Busy Airports			17						
4	Net Total Amount			Rs. 1,32,79,500						
5										
6										
7										
8										
9										
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11										
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23	NOTE - Assuming there are No LEDs, KIOSKs and CCTVs.									



TRAPS PROPOSED REVENUE SCHEME (Expected Capital Investment)

[* R2, R5, R13, R14]



Total number of users= 5

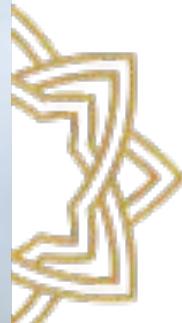
Attempts to each user =2

Total Attempts= 50

Satisfactory Attempts= 45= 90%

DATA	CORRECT	NO RESPONSE	NOTES
PNR	8	2	-
Boarding Location	9	1	Fast internet connectivity is required
No. Of Bags	10	0	-
No. Of Passengers	9	1	-
Drop Location	9	1	-

Users performs a set number of filling data attempts



App Usability Testing Data

DATA	CORRECT	NO RESPONSE	NOTES
Generate QR	9	1	Save to Gallery Option
Tap to Check In	10	0	Smooth Functioning
Offers	7	3	Too many offers
Book Tickets	8	2	-

Users performs a set number of Press Buttons attempts

Total number of users= 5

Attempts to each user =2

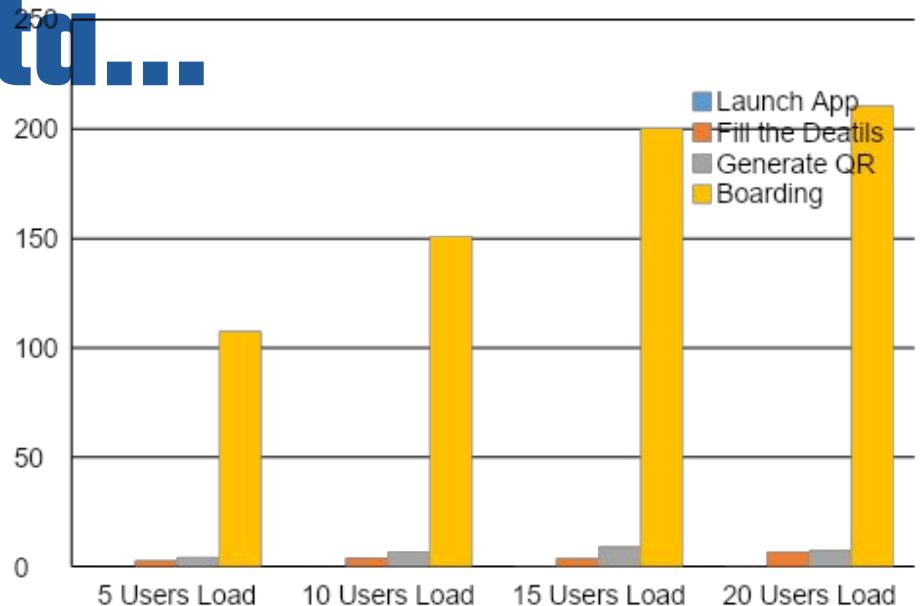
Total Attempts= 40

Satisfactory Attempts= 34= 85%

Usability Testing

Performance Analysis

Data....



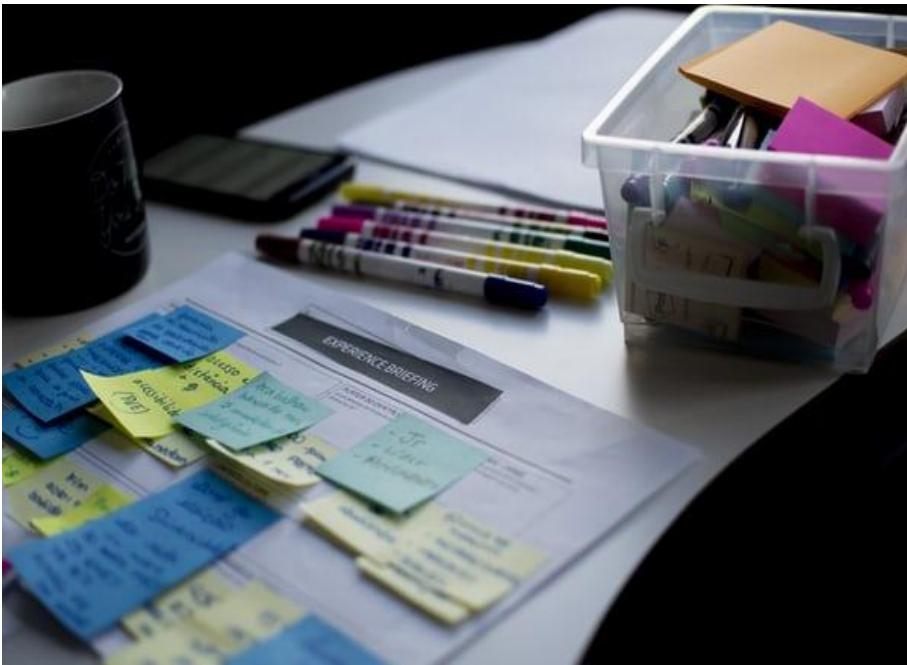
Scenarios	90th Percentile (seconds)			
	5 Users Load	10 Users Load	15 Users Load	20 Users Load
Launch App	0.04	0.043	0.296	0.232
Fill the Details	2.787	4.007	3.773	6.691
Generate QR	4.254	6.803	9.108	7.439
Boarding	107.58	150.96	200.34	210.69

The TRAPS web-app adds to the good genes of the Tata – Singapore Airlines and would prove to be a clear differentiator for Vistara.

- Aditya Singh
(Web/App Reviewer)

USABILITY ANALYST

Mr. Aditya Singh
Alumni NIT Patna



REFERENCES

* : All references cited with 'R' notation.

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14. Understanding aviation model and process by fico blogs.
15. Wavetec solutions

Time and rush of authorities and
public solved

THANKYOU



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- Usability Testing Analyst
- Research and Planning

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- Alumni – NIT Patna

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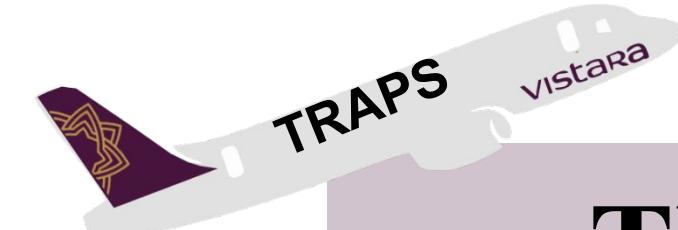
- Web/ App Developer
- ML Enthusiast
- UI/ UX Developer
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- Graphics Designer
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- Winner of various hackathons.

SAKET SRIVASTAVA

- Open CV / ML Enthusiast
- Chat bot developer
- Winner of various college hackathons.



THE TEAM