BRIDGING THE GAP

Airport Application Design

Overview

- Problem Statement & Background
- Literature Review
- Interactions with Industry
- Methodology
- Safety Risk Assessment
- Technical Description
- Projected Impacts
- Conclusion

Problem Statement

- Improve the efficiency for passengers with maximum time to arrive at the gates.
- Improving priority security lanes and improving gate to gate transit.
- Incentives/Promotions/Costs for passenger arrivals.

Background

- Congestion Problems
- Demand and capacity imbalance
- Flight delays and missed flights

Literature Review

- **TSA efficiency and Gaps: Current Problems**

1. Long Queues and Delays

- Thousands of passengers miss flight every year(Aviation Security Advisory Committee).
- Increase Checkpoint Efficiency.
- Crowding makes these areas vulnerable targets for threats.

2. Repetitive Baggage Checking

- Time Consuming
- Extra Workload
- Aggregated Security Delays.

TSA Pre Check Program

- Separate lanes to reduce the amount of time spent waiting in queues.
- Quick screening procedures to decrease security delays (ASAC, 2017).
- Many passengers unaware of the program was not received by travelers as expected, since there are very few airlines, such as American airlines, who voluntarily participate in this program.
- Such programs are key to reducing congestion in airports and help to increase the flow of passengers,

Previous Research Areas

TSA Introduces Risk Based Approach

- Improve security procedures, which involves
- Identification of individuals who may pose harm within terminal checkpoints based on three categories.
- 1. Low-Risk passengers: A lot of information is known about the passengers, who are frequent flyers.
- 2. Ordinary passengers: Airline has minimal information regarding these passengers as they do not fly frequently.
- 3. High- Risk passengers: Airline does not have knowledge about such passengers, and this type of passengers tends to only have specific negative information about them (Poole & Carafano, 2006).

Methodology

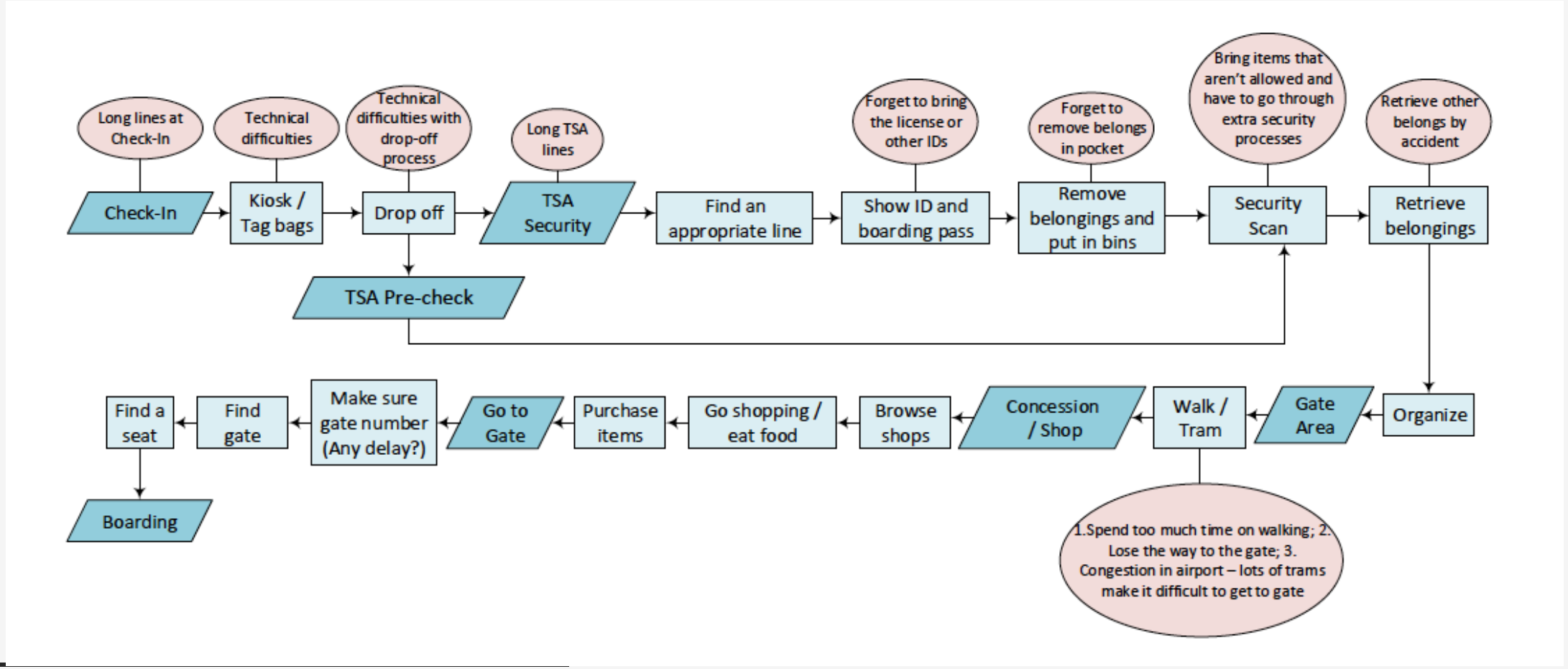
Problem Solving Approach to the design methodology

- Task Analysis
- Flow Chart
- Safety Risk Assessment
- Problem-Solving

Task Analysis

- Flow Chart of Current Operations of departure passengers in an airport terminal.
- Includes process and sub process
- Bottlenecks

Task Analysis (continued..)



Safety Risk Assessment

Step1: Hazard Identification associated with TSA operations

Step 2: Determining the Risks associated with the identifies hazards.

Step3: Analyzing & Assessing the risks using Risk Assessment Matrix.

For this project we focused on the hazards associated with Congestion, checkpoints and Terminal Vehicles which are high in severity and more frequent .

Safety Risk Assessment(Continued..)

Hazards	Risks	Mitigating Strategy	Severity	Likelihood
1. Congestion & Checkpoints				
1.a. Congested Security Lanes due to overlapping flight schedules, late arriving passengers, and unprepared passengers	TSA inefficient TSA operations, passenger delays, and stressed passengers who are unprepared	**Use app and TSA signage to help prep passengers for the security screening process and to promote early arrival**	High	Frequent
1.b. Larger Crowds & Crowd Control due to late passenger arrivals.	Larger Crowds can lead to Disputes Verbal/ Physical and may cause security breaches	**Usage of app will provide the passengers with TSA pre Check options to expedite regular screening procedures**	Moderate	Probable
1.c. Late Passenger Arrivals & Long Wait times due to variations in passenger behaviors	Can alter the smooth functions of TSA operations and increase passenger delays, flight misses.	**App will help passengers to know the wait times at the security lanes and help them to come to the airport to the earliest.**	High	Frequent
1.d. Terrorism & Inefficient Screening	Can lead to potential Hijacking	**Usage of app will prevent passenger's from long wait times and they can avoid large crowds apparently helping the screening procedures and mitigating the risk of potential hijacking.**	Moderate	Probable
2. Terminal Vehicles				
2.a. Accident in Crowded Areas	Potential to hit people at Crowded terminal points	Not addressed with proposed design	Low	Occasional
2.b. Poor Driver Attitudes towards Safety	Rash driving by the vehicle drivers can cause catastrophic accidents	Not addressed with proposed design	Low	Occasional
2.c. No Notifications for Tram Vehicles	Absence of notifications for tram vehicles door open and close can lead to serious accidents.	Not addressed with proposed design	Low	Remote
3. Transfer Passengers				
3.a. Passenger Delays	Can lead to Financial losses	Not addressed with proposed design	Medium	Occasional
3.b. Repeated Security Checks	Can increase the flight delays	Not addressed with proposed design	Low	Occasional

Technical Description

- To further educate passengers about TSA rules and procedures and to prepare them for traveling using an interactive platform
- To give a snapshot to passengers about the current state of the airport (wait times, passenger volume, delays, etc.) to promote awareness and timeliness in arriving at the terminal.
- To allow passengers to plan ahead by presenting “airport busyness” trend data.
- To create incentives that will encourage passengers to arrive to airports on time and to produce revenue for the airport.
- To create a standardized app for all airports to increase familiarity, usability, and frequency of app usage

Technical Description-Prototype

Projected Impacts

Implementation Process:

In three parts.

1. Connecting each airport in U.S. with the app development company.
2. Developing the App.
3. Marketing the app through social media and through signage in every airport.

Projected Impacts

Cost Benefit Analysis:

- Costs for Research and Development.
- The prototype Design.
- Full app development.

Projected Impacts

Financial Analysis For Proposed Design:

Item	Rate	Quantity	Subtotal	Total	Remarks
Labor - University Design Competition					
Student Efforts	$15/hr	220	$3,300	**$3,300**	4 students - 55 hours ea
Production: Labor (Annual Costs)					
Senior Application Developer	1 year	-	$85,000	**$413,000**	App development
Assistant Application Developer	1 year	-	$45,000		Assist in app development
Project Manager	1 year	-	$80,000		Oversee project - liasion between airports and app developer
Assistant Project Manager	1 year	-	$70,000		
Project Marketing Manager	1 year	-	$80,000		Produce app marketing materials for airports
Social Media Manager	1 year	-	$53,000		Promote app on social media platforms
Production: Labor & Materials (Per Airport)					
Airport App Content Manager	1 year	-	$65,000	**$113,000**	Gather content for app updates
Airport Marketing & Signage Coordinator	1 year	-	$48,000		Hang app and TSA signage, app marketing strategies for airport, and send social media marketing material to airport social media manager
App Marketing Signage					
3'x 8' banners	$80	15	$1,200	**$2,800**	Banners and posters for terminal area - before and after security
22" x 28" posters	$20	50	$1,000		
Feather Flag	$80	5	$400		
Shipping	-	-	$200		
TSA signage					
Floor Standing Sign Holder - 14x22"	$37/ea	30	$1,110	**$1,578**	Stands and signs for TSA lines
Shipping for stands	-	-	$155		
14 x 22" signs	$10/ea	30	$300		
Shipping for signs	-	-	$13		

Projected Impacts

Intangible Benefits:

- Improve the efficiency and travel experiences for the passengers, airport employees, baggage and TSA officials.
- Early passenger Arrivals provides benefit of time saved during check-in and during the screening process.
- Has potential to increase the performance of TSA officals.