Boarding Kiosk Problem Description

**Project Objective:**

A terminal application for an airport to perform an automated airplane boarding process without human assistance shall be realized.

The boarding kiosk shall fulfill the following requirements:

* The terminal shall scan the passenger boarding pass.
* Flight and passengers personal information shall be extracted from scanned boarding pass.
* The extracted flight and passengers personal information from the boarding pass shall be validated against the flight manifest and the boarding process shall be aborted, if the validation fails.
* The terminal shall scan the ID card of the passenger.
* The personal information shall be extracted from the scanned ID card.
* The extracted personal information from the ID card shall be validated against the extracted personal data from the boarding pass.
* The terminal shall capture a video of at least 10 seconds.
* The passengers face shall be extracted from the video.
* The extracted face fromt he video shall be validated against the extracted personal information from the ID card and the boarding process shall be aborted, if the validation fails.
* The terminal shall scan the passengers carry-on baggage.
* Probihibted items shall be identified in the scanned carry-on baggage and the boarding process shall be aborted, if probhibited items are found.
* The terminal shall print a positive message on the display and grant access to the plane when all validation steps were successful.
* The terminal shall print a negative message on the display and grant access to the plane when on of the validation steps failed.

**Data Sources:**

* Flight Manifest (flight database)
* Passenger Boarding pass images (boarding pass scanner)
* Passenger ID card images (ID card scanner)
* Passenger video (camera)
* Passenger Carry-on items images (baggage scanner)

**The Solution Strategy:**

* For extracting flight and passengers personal information from the scanned boarding passes, the **Azure Form Recognizer** service will be used. A new model will be trained to recognize the layout and fields of the *Udacity Airlines* boarding passes.
* The extracted flight and passanger information will matched and compared to a record in the flight manifest file.
* For extracting the passengers personal information from the scanned ID cards, the **Azure Form Recognition Digital ID** service shall be used.
* The extracted passengers first and last name from the ID card will be matched against the values extracted from the boarding pass.
* For extracting the face from the passengers camera video, the **Azure Video Indexer service** will be used.
* For validating the face extracted from the ID cards against the face extracted from the passengers camera video, the **Azure Face Recognition** service will be used.
* For identifing prohibited items (lighters) from the scanned carry-on items, the **Azure Custom Vision** service will be used. A new model will be trained to detect lighters in the image.
* If all validation steps succeed, a welcome message with all passengers relevant data will be printed to the screen and access will be granted.
* As soon as one validation step fails, a help message will be printed to the screen adn access will not be granted.