IN-CARRIAGE MULTI-USER CONTROL SYSTEM

INTRODUCTION

IN-CARRIAGE MULTI-USER CONTROL SYSTEM is a functional design for train manufacturers and facilitates multiple users to monitor and control in-carriage devices. The system is deployed on trains and is visible by using matched smart phone application, as well as supporting two types of modes according to different account identities, including TRAIN STAFF and PASSENGERS.

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PERSONAS-CONDUCTOR

Oren
- age 54
- train conductor with more than 25 years exp
- familar with various services
- hard of moving fast
- hard of hearing clearly

Scenarios

One day, oren was informed by driver that there was a door not closed when the train was already to depart. He started to find the target door immidiately, but it still cost several minutes for him to check the doors one by one. A short delay happened because of the emergency.

PERSONAS-PASSENGER

Amy
- age 30
- investment manager
- often errand by train
- disabled
- wheelchair is necessary

Scenarios

Amy ofen need to takes a train to meet the client of her company in person. "It is a chanllenge for me to press the control button on a high position." Amy said, "So I always follow other passengers. However, sometimes I have to ask for help when I am the only one to get off the train, which is not convenient."
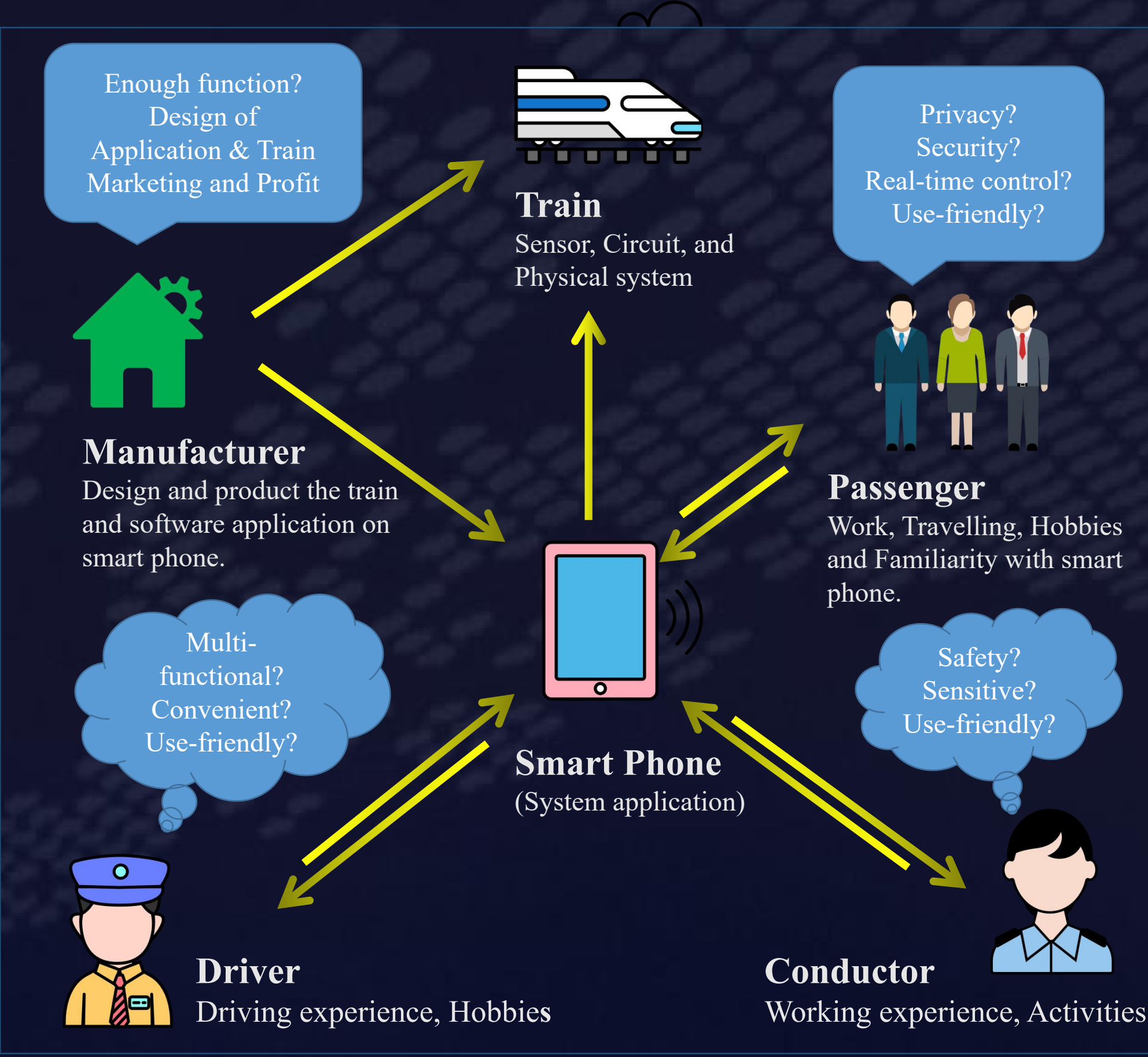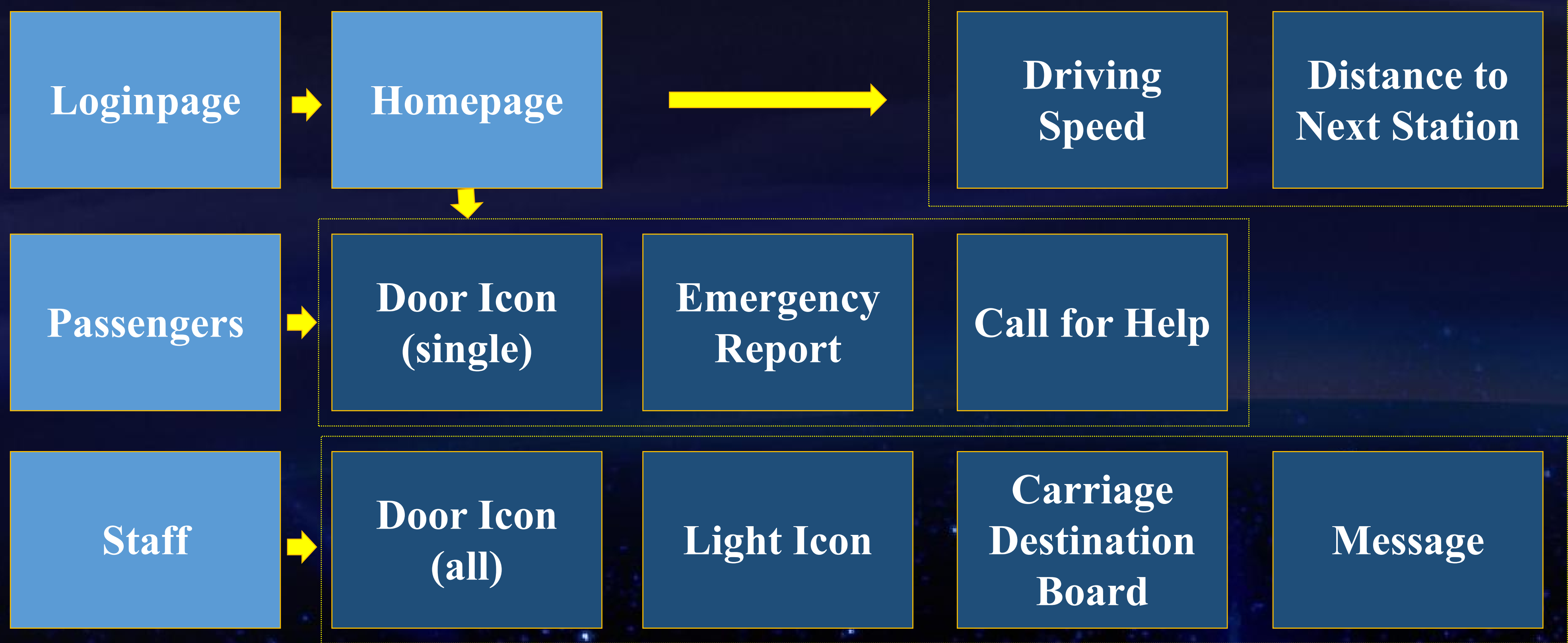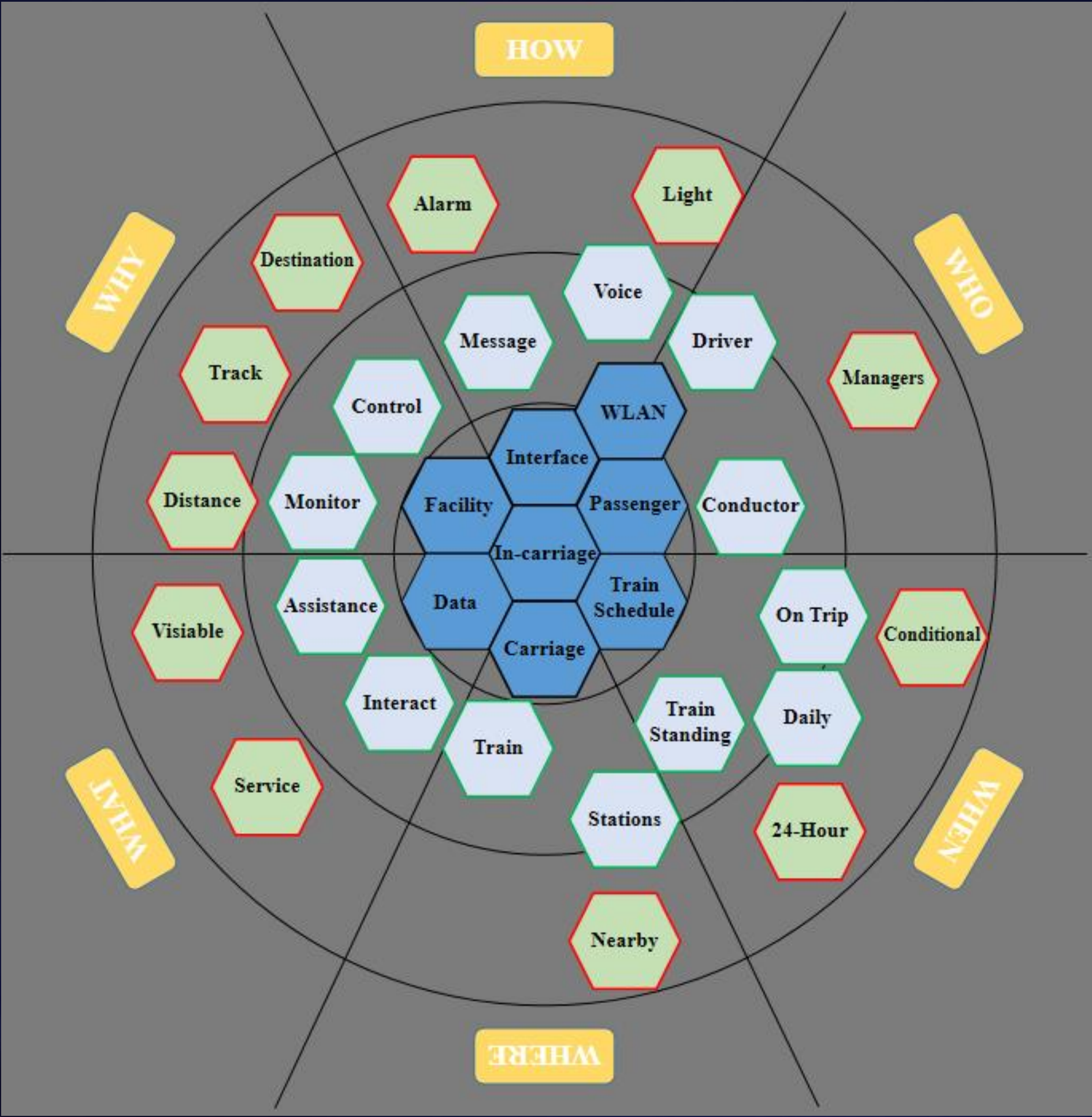
RICH PICTURE

REQUIREMENTS

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Train Staff (driver/conductor)	• Staff should be able to monitor and control doors (both single and all). • Staff should be able to monitor and control the carriage lights. • Staff should be able to locate the passenger when they receive a service request. • Staff should be able to activate the carriage destination board.
Passengers	• Passengers should be identified with their seat numbers. • Passengers should be able to open/close the door of their carriage when the train arrives. • Passengers should be able to call train staff for help. • Passengers should be able to apply for stopping train in an emergency.

ECOLOGY MAP

NAVIGATION MAP

- Loginpage → Homepage → Driving Speed | Distance to Next Station
- Passengers → Door Icon (single) | Emergency Report | Call for Help
- Staff → Door Icon (all) | Light Icon | Carriage Destination Board | Message

REFERENCES

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2. Brodsky, J. (2021, November 13). Why It Pays To Train And Hire People With Disabilities. Forbes. https://www.forbes.com/sites/juliabrodsky/2021/11/13/why-it-pays-to-train-and-hire-people-with-disabilities/?sh=2230f7cf7900
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MOCK UP – PASSENGER MODEL
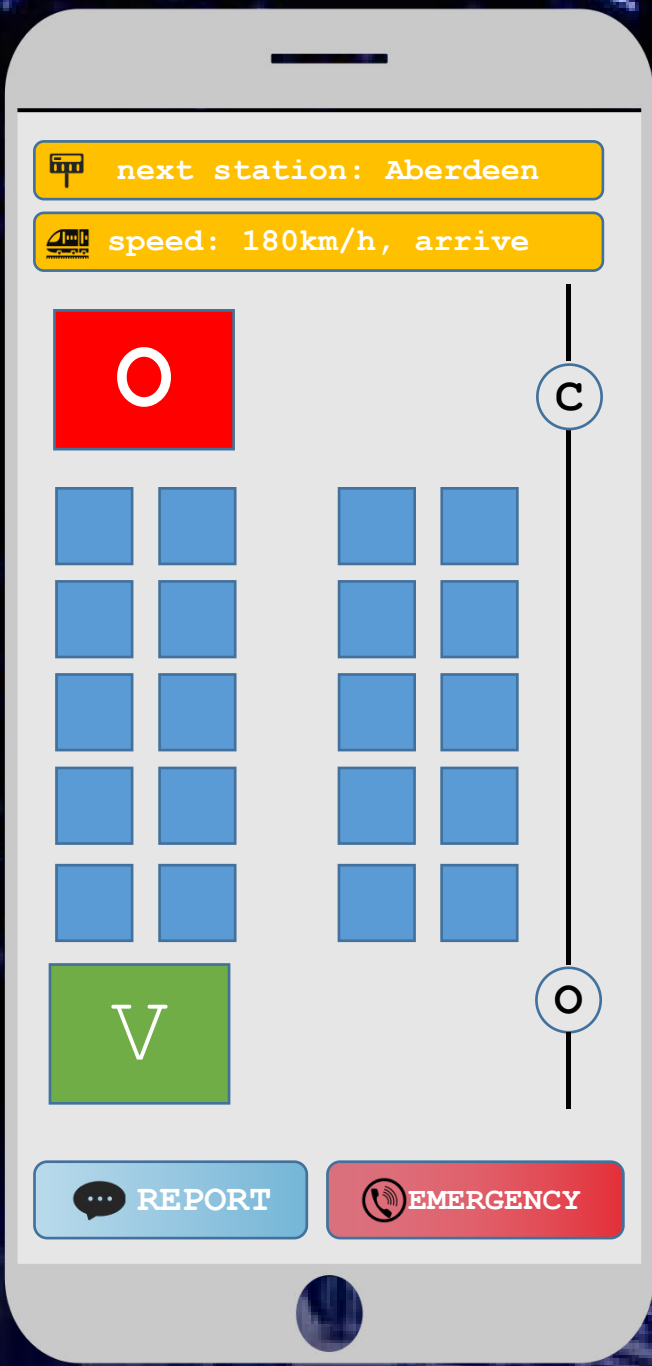
① **Rolling bar - next station**
Connecting with destination board
② **Rolling bar - train speed and estimated time to next station**
Example: [speed: 180km/h, arrive in 25 mins.]
③ **Doors: OPEN/CLOSE (Button)**
Passengers are able to switch the state of door between open and close when it is safe.
Safe: When the train is standing on a station, and a same door is not allowed to operate too frequently.
④ **Toilet: Occupied/Vacant**
Switch automatically.
⑤ **Report (Button)**
Allows passengers to send train staff (conductors) message when they need help. (eg:facility trouble, ordering goods)
⑥ **Emergency (Button)**
Allows passengers to call train staff (conductors and even driver) immediately when there is an emergency.
Even allows passengers to stop the train when it is necessary in the emergency.

MOCK UP – STAFF MODEL

① **Rolling bar - next station (Button)**
Staff could change the content of rolling bar (destination board)
② **Lights: OPEN/CLOSE (Button)**
Staff could control every light in every coach, as well as control them together.
③ **Doors: OPEN/CLOSE (Button)**
Staff could monitor each door, and could switch each door's state respective or totally.
Generally, after the train arrives at a station and stops down, driver could open all doors together.
④ **Carriage number:**
Distingush each carriage as well as display the device situation in each carriage.
⑤ **Message (Button)**
When passengers need help, they will send a report, and staff could receive the message, as well as locating the sender's seat.
⑥ **Emergency (Button)**
When passengers are in emergency, staff could receive alarm, which is a phone call in fact.