LOAD & UNLOAD PLATFORMS

IMMERSIVE AMUSEMENT PARK ATTRACTION
Thumbelina Thrill Ride - Group 2

INTRODUCTION

This poster will focus on two subsystems in the theme ride of Thumbelina: the loading platform where people get on, and the unloading platform where people get off.

To start in this system, 4 subsystems were identified: The system which opens the gates in the queue, the control which sends the carts to the next station, the control which opens and closes the doors to the ride and the control of the door to the exit.

For the system, requirements were formulated (see handout for the total list). To make clear what connections the systems had with other systems, a N2-diagram was made (see handout). From this, the eventual system was designed. On the right, the load platform is highlighted. The different subsystems are shown as well.

SUBSYSTEMS

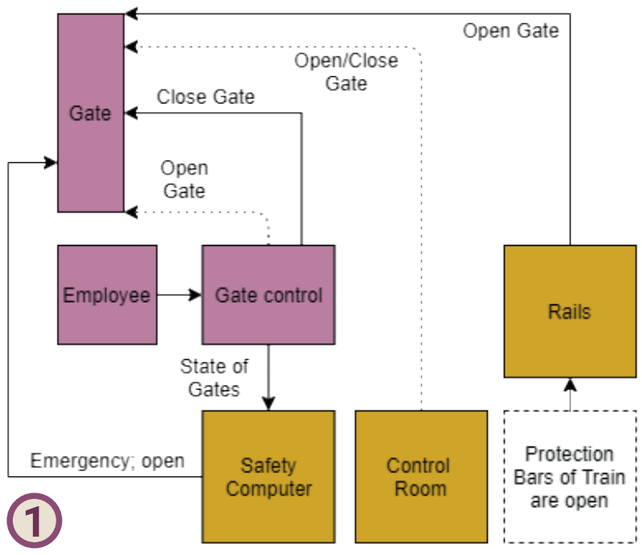
For the system in its totality it is important that the central control is informed about the status of the mechanics in the platforms due to the close integration of this system with the ride. For this a connection of each object with the central control and the safety computer is established.

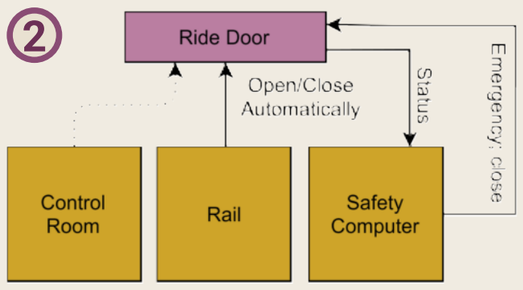
① Gates
To divide the visitors equally over the train and platform, we implemented gates that will open when the train has arrived and will close when enough visitors have gone through to fill up the train. Since the gates are an obstruction for the visitors' flow on the platform, it is important that they open in case of emergency to take away this obstruction.

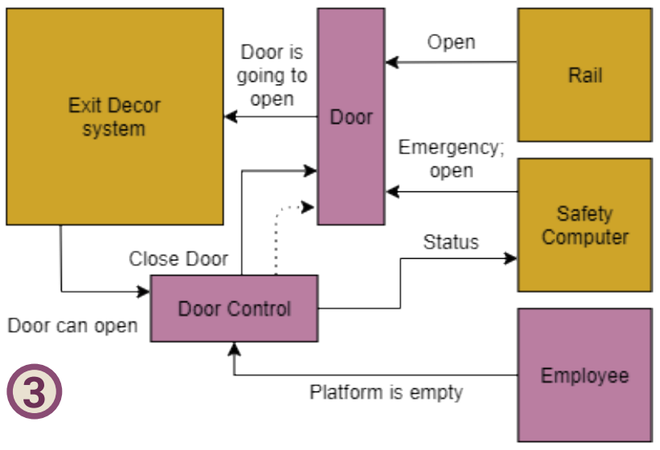
② Ride doors
It is important to shield the next section of the ride from the visitors, before they are allowed to see it, to enhance the overall experience.That is why we want to implement doors at these interfaces. However, it is also important that these doors are safe and therefore open and close at the right moment.

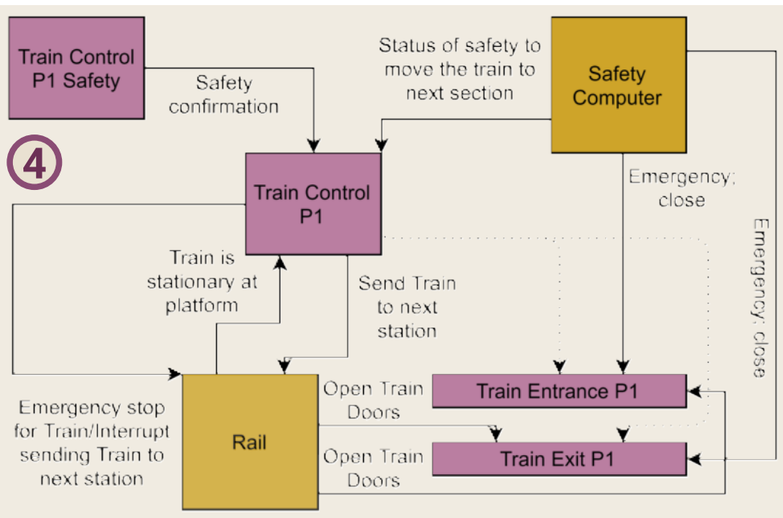
③ Train Control
One of the main functions of the platforms is to control the start of the ride and thus the initiation of the moving of the train. On the load platform the train will be filled with visitors (unlike on the unload platform) therefore we need to take extra safety measures in the form of an extra safety check. That is why the train can only be sent away when both interfaces are activated, in addition to a safety signal from the central computer.

④ Exit Door
The door to the exit is our main connection to the exit system, it shields the exit's story from the visitors when they arrive at the platform. Therefore, the door needed to open when the train had arrived and close when the visitors had all left the platform, as stated in our requirements.

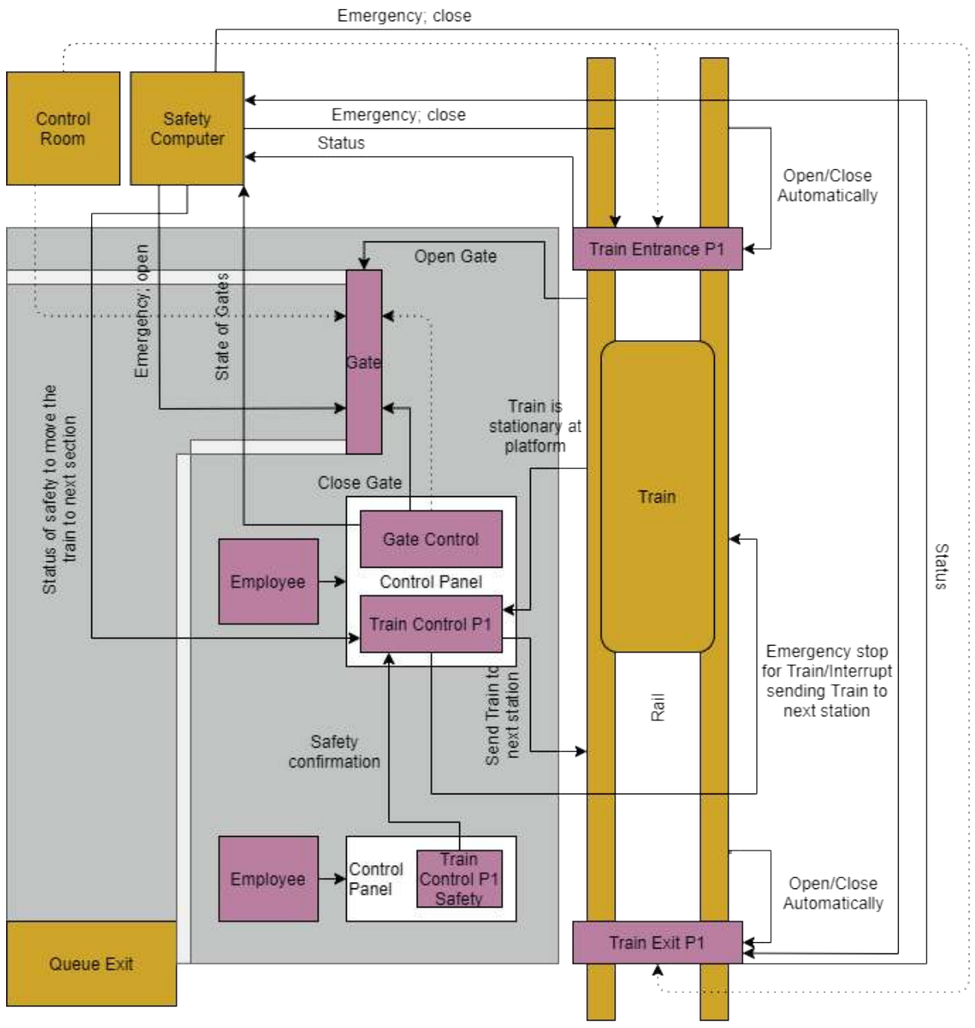








LOAD PLATFORM



LEGEND

- Elements within our system
- Situation
- Signal
- Extra manual control
- Elements of connected systems
- Hints to the floor plan

UNLOAD PLATFORM

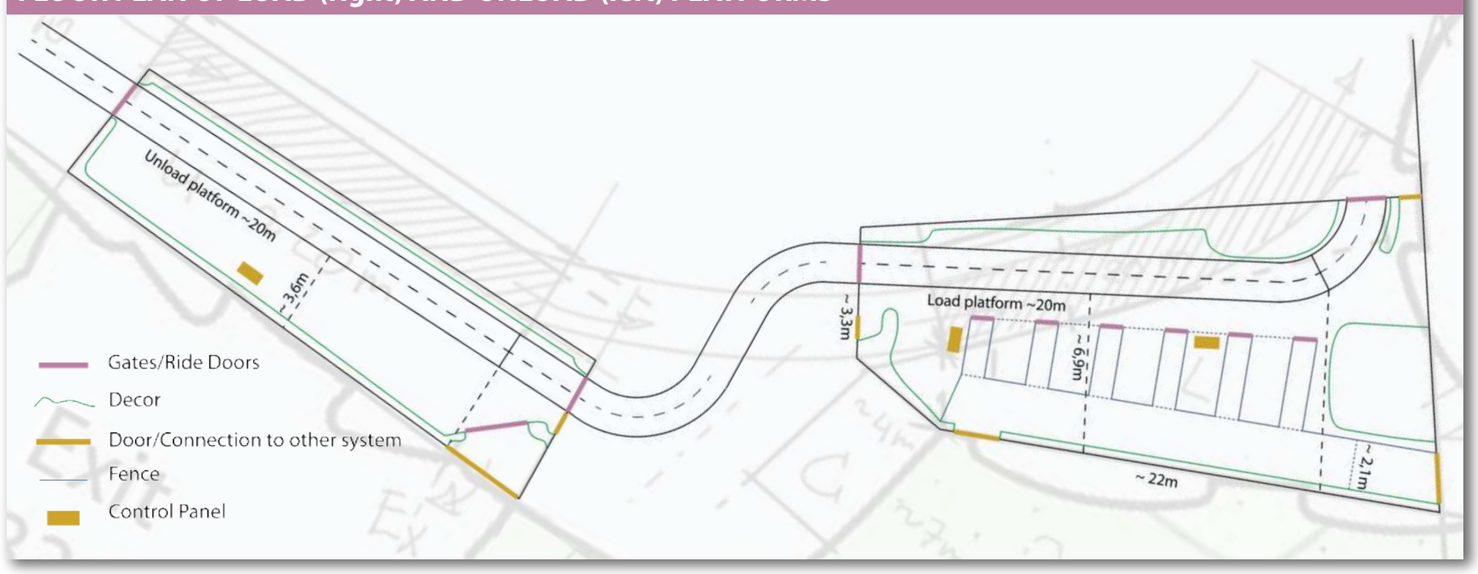
Above, the system is shown for the load platform, with all subsystems incorporated. It is important to mention that there is also a system for the unload platform which stands seperately from the load platform. The unload platform has similar subsystems as the load platform, with the Exit Door subsystem replacing the Gate subsystem and the Train Control not having an extra control panel.

DECOR

One of our general requirements is that the system fits into the theme of the ride and attributes to the immersiveness of the experience. The immersiveness of the experience is often enhanced with the help of the decor. That is why the decor of each platform was planned out roughly in the floor plan.

However, the decor is not the most important aspect in this system which is why only rough concepts were created to create an idea of the atmospere of the room.

FLOOR PLAN OF LOAD (right) AND UNLOAD (left) PLATFORMS



FLOOR PLAN

The system described above would also have to fit inside the building of the attraction and it would have to connect to the other systems in terms of location. This is why a floor plan of the platforms in the building was created. In the floorplan, locations of the elements of our subsystems were also determined.

TEST PLAN

GATES SYSTEM

Verification
Simulate the flow of people on the platform.
Test the open/closing of the gates.

Testing
Are visitors divided over the train equally?

Can employees maneuver on the platform?

Do the gates open when the signal from the Rail is given?

Do the gates close when the manual signal is given?

Do the gates not close with too much power such that people can get hurt?

Does the manual open and closing override the automatic system?

Do the gates open when there is an emergency?

Is the state of the gates sensed correctly?

Rejected: Redesign platform for optimal flow.
Realign signals with the Ride system.
Approved: Interface meets the requirements, move to next stage.

RIDE DOOR SYSTEM

Verification
Simulate the opening and closing sequences of the doors.

Testing
Are the doors able to open in the time needed from activation of the sequence to the Train arriving at the doors?

Are the doors able to close fully between Trains?

Is the state of the doors sensed correctly?

Does the manual open and closing override the automatic system?

Do the doors close when there is an emergency?

Rejected: Realign signals with Ride system.
Approved: Interface meets the requirements, move to next stage.

EXIT DOOR CONTROL

Verification
Test open/closing of Door
Simulate the ride exit sequence. (Getting out of the train, through the door, into the exit)

Testing
Does the door open when the signal from the rail is received?

Does the door close when the manual signal is given?

Does the manual open and closing override the automatic system?

Is the state of the door sensed correctly?

Does the door open when there is an emergency?

Is there enough time between Trains to experience the story room behind the Door.

Do people have enough time to get out of the ride and through the door before the story of the exit starts?

Rejected: Realign signals with Ride system.
Redesign exit timing with Exit system and Ride system.
Approved: Interface meets the requirements, move to next stage.

TRAIN CONTROL SYSTEM

Verification
Simulate the moving the Train to next station sequence

Testing
Does the ride only start when the safety check signals from the Safety Computer and the TP1 Safety are given?

Is there an indication that the safety check button on the other panel is pressed?

Does the Train stop when an emergency signal is given?

Rejected: Realign signals with Ride system.

Approved: System ready for integration.

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