Use Case: Process Registered Vehicle Entry

Scope: 407 ETR System

Level: User Goal

Intention in Context: The intention of the System is to process the entry of a registered vehicle.

Multiplicity: Many vehicles can enter the highway simultaneously.

Primary Actor: Registered Vehicle

Secondary Actors: Gantry, Transponder, Laser Scanner

Main Success Scenario:

Registered Vehicle passes under the entry gantry.

Gantry's locator antennae detect the transponder.

Gantry's read/write antennae read the account number from the transponder.

System records the point of entry, time, and date.

Laser Scanner measures the vehicle's dimensions.

System verifies the vehicle class against the registered class.

System logs the entry data.

Extensions:

2a. Transponder is not detected.

2a.1. System triggers the process for unregistered vehicles. Use case ends.

Use Case: Process Registered Vehicle Exit

Scope: 407 ETR System

Level: User Goal

Intention in Context: The intention of the System is to process the exit of a registered vehicle.

Multiplicity: Many vehicles can exit the highway simultaneously.

Primary Actor: Registered Vehicle

Secondary Actors: Gantry, Transponder, Laser Scanner

Main Success Scenario:

Registered Vehicle passes under the exit gantry.

Gantry's locator antennae detect the transponder.

Gantry's read/write antennae read the account number from the transponder.

System records the point of exit, time, and date.

Laser Scanner measures the vehicle's dimensions.

System verifies the vehicle class against the registered class.

System matches the entry and exit data.

System debits the transponder account holder.

Transponder gives a green signal followed by four short beeps.

Extensions:

2a. Transponder is not detected.

2a.1. System triggers the process for unregistered vehicles. Use case ends.

Use Case: Process Unregistered Vehicle Entry

Scope: 407 ETR System

Level: User Goal

Intention in Context: The intention of the System is to process the entry of an unregistered vehicle.

Multiplicity: Many vehicles can enter the highway simultaneously.

Primary Actor: Unregistered Vehicle

Secondary Actors: Gantry, Digital Cameras, Laser Scanner

Main Success Scenario:

Unregistered Vehicle passes under the entry gantry.

System triggers digital cameras to take pictures of the rear number plate.

System adjusts lights to ensure optimal image quality.

Laser Scanner measures the vehicle's dimensions.

System classifies the vehicle.

System logs the entry data.

Extensions:

2a. Image quality is insufficient.

2a.1. System retries taking pictures. Use case continues at step 2.

Use Case: Process Unregistered Vehicle Exit

Scope: 407 ETR System

Level: User Goal

Intention in Context: The intention of the System is to process the exit of an unregistered vehicle.

Multiplicity: Many vehicles can exit the highway simultaneously.

Primary Actor: Unregistered Vehicle

Secondary Actors: Gantry, Digital Cameras, Laser Scanner

Main Success Scenario:

Unregistered Vehicle passes under the exit gantry.

System triggers digital cameras to take pictures of the rear number plate.

System adjusts lights to ensure optimal image quality.

Laser Scanner measures the vehicle's dimensions.

System classifies the vehicle.

System matches the entry and exit data.

System identifies the vehicle owner via government records.

System calculates the toll and additional video toll charge.

System sends an invoice to the vehicle owner.

Extensions:

2a. Image quality is insufficient.

2a.1. System retries taking pictures. Use case continues at step 2.

Use Case: Create Account

Scope: 407 ETR System

Level: User Goal

Intention in Context: The intention of the User is to create an account with the 407 ETR system.

Multiplicity: Many users can create accounts simultaneously.

Primary Actor: User

Secondary Actors: Online System

Main Success Scenario:

User accesses the 407 ETR website.

User selects the option to create a new account.

User provides personal or company billing information.

System validates the provided information.

System creates the account.

System sends a confirmation to the User.

Extensions:

4a. Provided information is invalid.

4a.1. System informs User of the invalid information. Use case ends in failure.

Use Case: Register Vehicle

Scope: 407 ETR System

Level: User Goal

Intention in Context: The intention of the User is to register a vehicle with their 407 ETR account.

Multiplicity: Many users can register vehicles simultaneously.

Primary Actor: User

Secondary Actors: Online System

Main Success Scenario:

User accesses their 407 ETR account online.

User selects the option to register a new vehicle.

User provides vehicle details.

System validates the vehicle details.

System associates the vehicle with the User's account.

System sends a confirmation to the User.

Extensions:

4a. Provided vehicle details are invalid.

4a.1. System informs User of the invalid details. Use case ends in failure.

Use Case: Generate Invoice

Scope: 407 ETR System

Level: User Goal

Intention in Context: The intention of the System is to generate an invoice for registered and unregistered vehicles.

Multiplicity: The system generates invoices for multiple accounts simultaneously.

Primary Actor: None

Secondary Actors: Billing System

Main Success Scenario:

System compiles trip data for all vehicles.

System calculates the toll for each trip based on time of day and distance traveled.

System applies additional video toll charges for unregistered vehicles.

System generates invoices for each account.

System sends invoices to registered car owners, registered companies, and unregistered vehicle owners.

Extensions:

3a. System fails to apply video toll charges.

3a.1. System logs the error and continues generating invoices.