

!standard mode:off

!list exceptions:

{NETWORK_EXCEPTION::NetworkUnreachable}

Use Case: Use407ETR

Scope: ETRSystem407

Level: SUMMARY

Intention: "The user intends to use the 407 ETR system."

Multiplicity: "Many users can use the 407 ETR system at the same time."

Primary Actor: HUMAN::Driver::1..*

Main Success Scenario:

"The Driver enters the highway."

[ProcessVehicleEntry] "The system processes the vehicle entry."

"The Driver exits the highway."

[ProcessVehicleExit] "The system processes the vehicle exit."

[GenerateInvoice] "The system generates an invoice for the Driver."

Use case ends in: SUCCESS

Extensions:

Alternative for 1:

1a. "The Driver enters the highway without a transponder."

1a.1. [ProcessUnregisteredVehicleEntry] "The system processes the unregistered vehicle entry."

Use case continues at step: 3

Exception for (1-5):

(1-5)a.^ timeout:60s "Network fails to send confirmation."

(1-5)a.1. {NETWORK_EXCEPTION::NetworkUnreachable} "Network unreachable."

Use case ends in: FAILURE

Use Case: ProcessVehicleEntry

Scope: ETRSystem407

Level: USER_GOAL

Intention: "To process the entry of a vehicle into the highway."

Multiplicity: "Many vehicles can enter the highway at the same time."

Primary Actor: SENSOR::Gantry::1..*

Secondary Actor: TAG::Transponder::1..1

Main Success Scenario:

"The Gantry detects the vehicle."

"The Gantry reads the Transponder."

"The system records the entry point, time, and date."

"The system classifies the vehicle using laser scanners."

"The system verifies the vehicle class with the registered class."

Use case ends in: SUCCESS

Extensions:

Exception for 2:

2a. {HARDWARE_EXCEPTION::TransponderNotDetected} "Transponder not detected."

Use case continues at Step: 4

Exception for 4:

4a. {SOFTWARE_EXCEPTION::ClassificationError} "Vehicle classification error."

Use case ends in: FAILURE

Use Case: ProcessVehicleExit

Scope: ETRSystem407

Level: USER_GOAL

Intention: "To process the exit of a vehicle from the highway."

Multiplicity: "Many vehicles can exit the highway at the same time."

Primary Actor: SENSOR::Gantry::1..*

Secondary Actor: TAG::Transponder::1..1

Main Success Scenario:

"The Gantry detects the vehicle."

"The Gantry reads the Transponder."

"The system records the exit point, time, and date."

"The system matches the entry and exit data."

"The system debits the transponder account holder."

"The Transponder gives a green signal followed by four short beeps."

Use case ends in: SUCCESS

Extensions:

Exception for 2:

2a. {HARDWARE_EXCEPTION::TransponderNotDetected} "Transponder not detected."

Use case continues at Step: 4

Exception for 4:

4a. {SOFTWARE_EXCEPTION::DataMismatch} "Entry and exit data mismatch."

Use case ends in: FAILURE

Use Case: GenerateInvoice

Scope: ETRSystem407

Level: USER_GOAL

Intention: "To generate an invoice for the registered account holder."

Multiplicity: "Many invoices can be generated at the same time."

Primary Actor: SOFTWARE::BillingSystem::1..*

Main Success Scenario:

"The BillingSystem retrieves trip data for the account."

"The BillingSystem calculates the trip cost based on time of day and distance."

"The BillingSystem adds any additional charges (e.g., video toll charge)."

"The BillingSystem generates the invoice."

"The BillingSystem sends the invoice to the account holder."

Use case ends in: SUCCESS

Extensions:

Exception for 1:

1a. {SOFTWARE_EXCEPTION::DataRetrievalError} "Error retrieving trip data."

Use case ends in: FAILURE

Use Case: ProcessUnregisteredVehicleEntry

Scope: ETRSystem407

Level: SUB_FUNCTION

Intention: "To process the entry of an unregistered vehicle."

Multiplicity: "Many unregistered vehicles can enter the highway at the same time."

Primary Actor: SENSOR::Gantry::1..*

Secondary Actor: CAMERA::DigitalCamera::1..*

Main Success Scenario:

"The Gantry detects the vehicle."

"The DigitalCamera takes pictures of the rear number plate."

"The system classifies the vehicle using laser scanners."

"The system identifies the vehicle owner via government records."

Use case ends in: SUCCESS

Extensions:

Exception for 2:

2a. {HARDWARE_EXCEPTION::CameraFailure} "Camera failure."

Use case ends in: FAILURE

Handler Use Case: ReconnectNetwork

Scope: ETRSystem407

Level: USER_GOAL

Intention: "To reconnect to the network when the network is unreachable."

Primary Actor: None

Contexts and Exceptions: Use407ETR {NETWORK_EXCEPTION::NetworkUnreachable}

Main Success Scenario:

"Step 1 can be repeated as many times as necessary."

"The system attempts to reconnect to the network."

"The system connects to the network."

Use case ends in: SUCCESS

Extensions:

Alternative for 1:

1a. {timeout:30s} "The system is unable to connect to the network."

Use case continues at step: 1