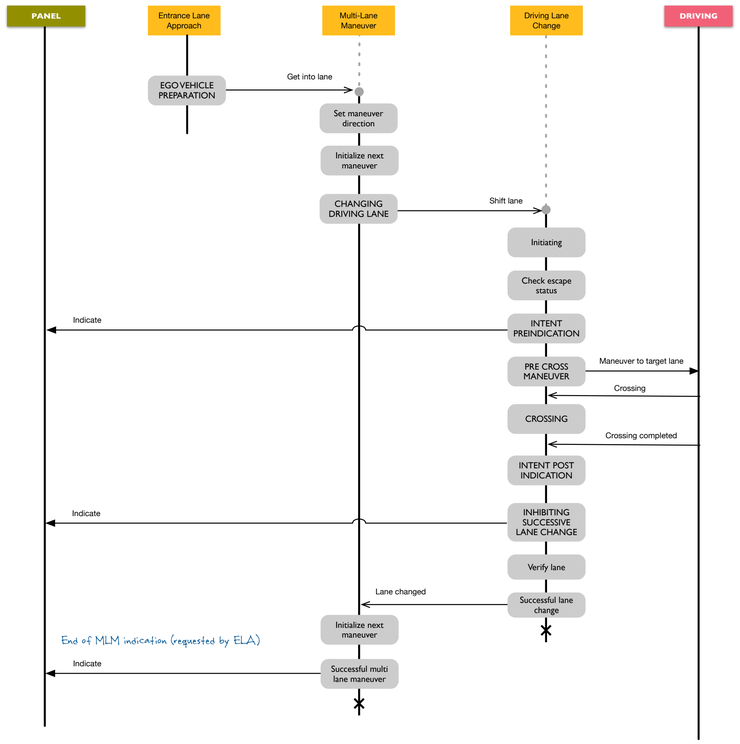
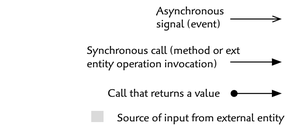
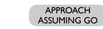
Scenario 1: Single Inside Lane Change success



Sequence Diagram Key

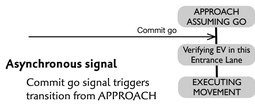
This sequence diagram illustrates the expected state changes and interactions of classes modeled in the Ego Vehicle subsystem of the Vehicle Guidance domain with proposed external entities for the given scenario





State of modeled class (see state machine diagram/table for yellow class at top of corresponding timeline)

(states waiting for external input are uppercase while states that generate their own input and automatically advance are all lowercase)



Asynchronous signal

Commit go signal triggers transition from APPROACH ASSUMING GO to next state in the class's state machine (vertical line)
That next state is in lower case so it executes its activity and then automatically advances to the EXECUTING MOVEMENT state at the bottom which waits for another signal before advancing

Creation interaction

Approaching signal creates new instance of Entry Lane Approach

Synchronous call

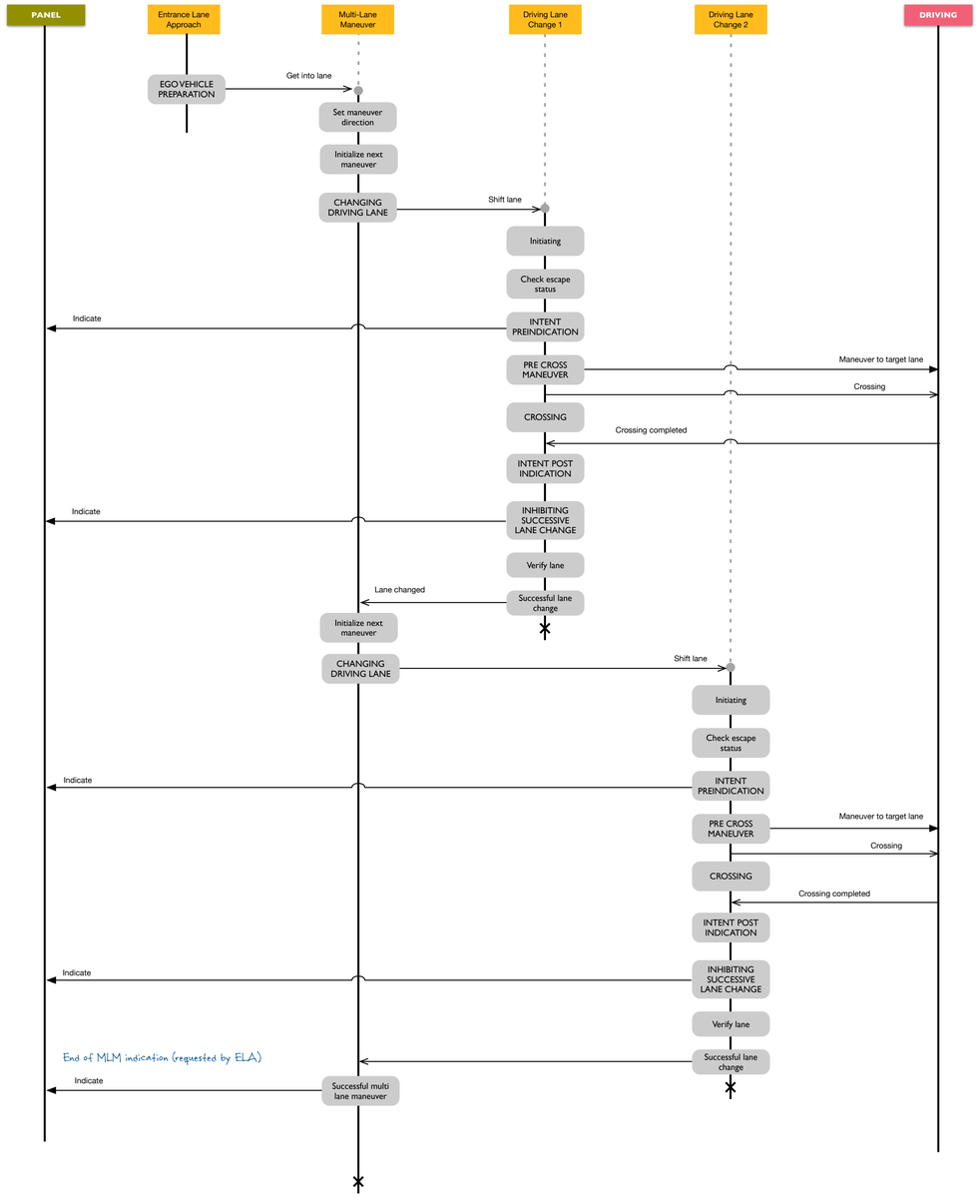
Activate method of Exit Xwalk class is invoked. There is no state machine on this class and hence there are no states on the timeline

Determinant Value

For classes without state machines, we may track certain variables, often boolean, which are examined by collaborating instances.

Scenario 2: Double Lane Change success

To see the overall behavior pattern we refer to DLC 1 and 2 abstractly. For simulation purposes, the four instance lifelines will be distinguished by their identifier attribute values for a given street/lane-division scenario.



Sequence Diagram Key

This sequence diagram illustrates the expected state changes and interactions of classes modeled in the Ego Vehicle subsystem of the Vehicle Guidance domain with proposed external entities for the given scenario

Asynchronous signal (event)

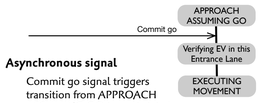
Synchronous call (method or ext entity operation invocation)

Call that returns a value

Source of input from external entity

APPROACH ASSUMING GO — State of modeled class (see state machine diagram/table for yellow class at top of corresponding timeline)

(states waiting for external input are uppercase while states that generate their own input and automatically advance are all lowercase)



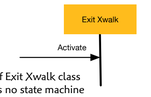
Asynchronous signal

Commit go signal triggers transition from APPROACH ASSUMING GO to next state in the class's state machine (vertical line)
That next state is in lower case so it executes its activity and then automatically advances to the EXECUTING MOVEMENT state at the bottom which waits for another signal before advancing

Creation interaction

Approaching signal creates new instance of Entry Lane Approach

Synchronous call

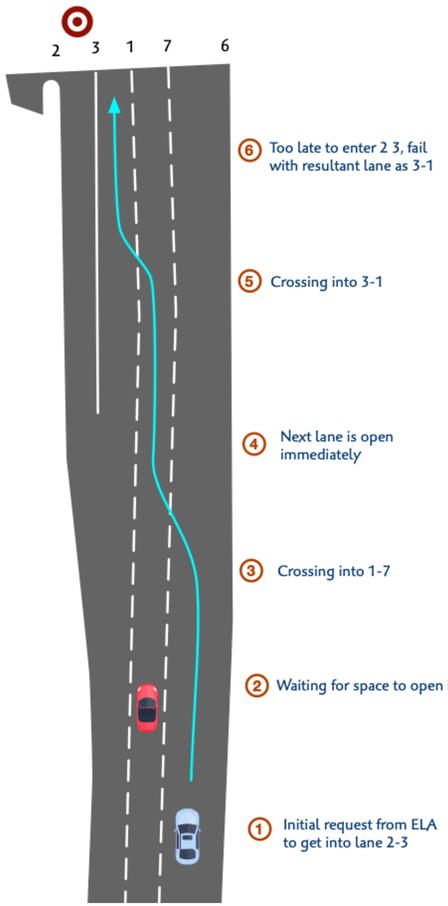


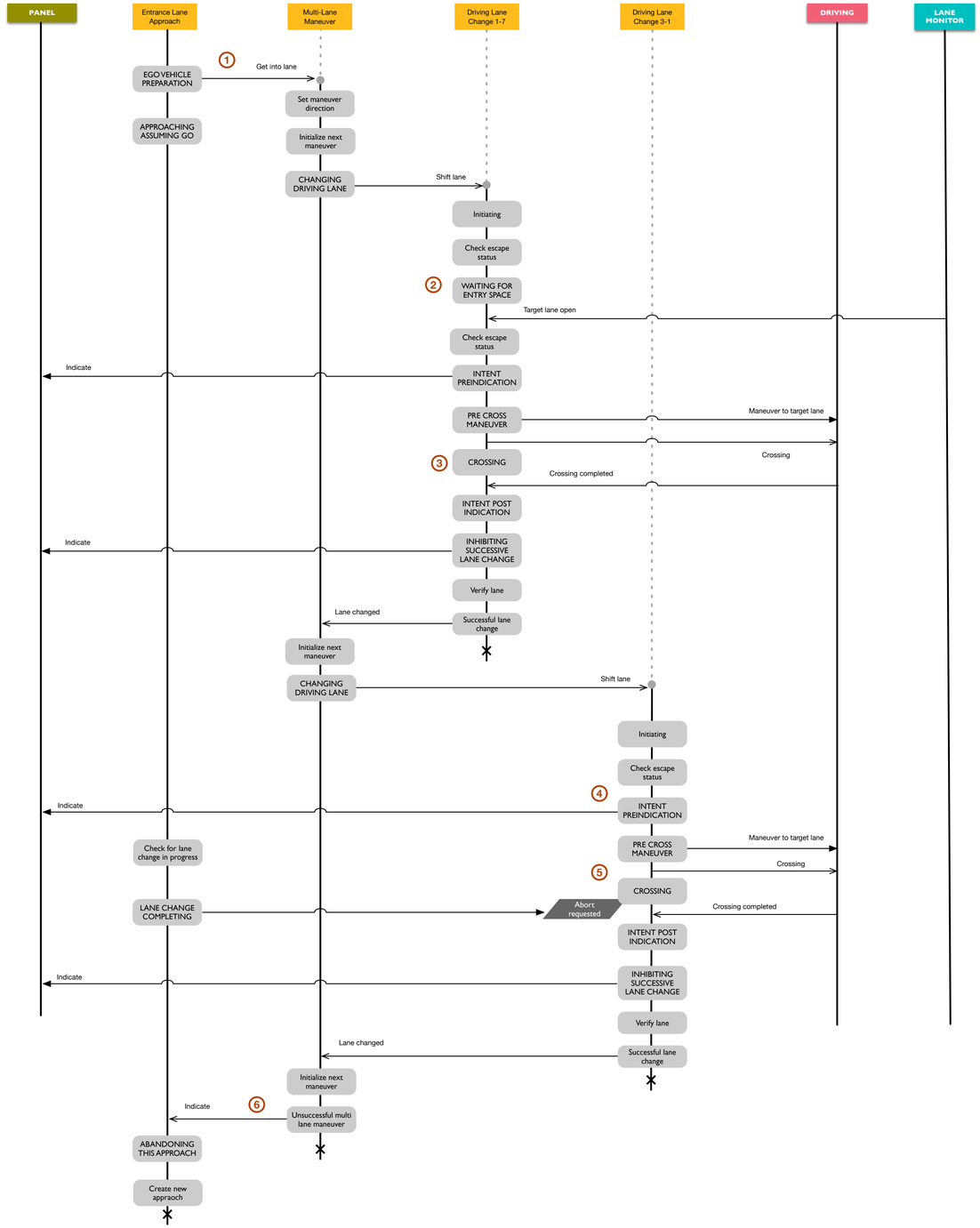
Activate method of Exit Xwalk class is invoked. There is no state machine on this class and hence there are no states on the timeline

Determinant Value

For classes without state machines, we may track certain variables, often boolean, which are examined by collaborating instances.

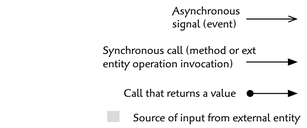
Scenario 3: 3 lane change failure

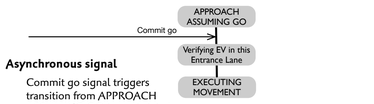




Sequence Diagram Key

This sequence diagram illustrates the expected state changes and interactions of classes modeled in the Ego Vehicle subsystem of the Vehicle Guidance domain with proposed external entities for the given scenario





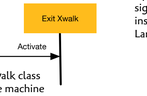
Asynchronous signal

Commit go signal triggers transition from APPROACH ASSUMING GO to next state in the class's state machine (vertical line)
That next state is in lower case so it executes its activity and then automatically advances to the EXECUTING MOVEMENT state at the bottom which waits for another signal before advancing

Creation interaction

Approaching signal creates new instance of Entry Lane Approach

Synchronous call



Activate method of Exit Xwalk class is invoked. There is no state machine on this class and hence there are no states on the timeline

Determinant Value

For classes with or without state machines, we may track certain variables, often boolean, which are examined by collaborating instances.

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