Entrance Lane Approach

	External	Movement ready	Commit go	Commit stop	EL Open	Unsuccessful multi lane change	Approach from interface	Follow complete	Assume go	Assume stop	Ego is lead vehicle at interface	Movement abandoned	Multi lane change successful	Internal	Initially go	Initially stop	Proceed along	Wait for EL to open	Turn okay after stop	Lane change in progress
EGO VEHICLE PREPARATION		Monitor stop go	CH-1	CH-1	IGN-1	IGN-2	CH-2	CH-2	CH-1	CH-1	IGN-5	CH-8	IGN-6		CH-BSG	CH-BSG	CH-BSG	CH-BSG	CH-BSG	CH-BSG
APPROACHING ASSUMING GO		CH-3	Check for lane change in progress	CH-4	IGN-3	ABANDONING THIS APPROACH	CH-5	CH-5	IGN-4	APPROACHING ASSUMING STOP	IGN-5	CH-8	IGN-6		CH-BSG	CH-BSG	CH-BSG	CH-BSG	CH-BSG	CH-BSG
APPROACHING ASSUMING STOP		CH-3	CH-4	HOLDING BEHIND INTERFACE	IGN-3	ABANDONING THIS APPROACH	CH-5	CH-5	APPROACHING ASSUMING GO	IGN-4	IGN-5	CH-8	IGN-6		CH-BSG	CH-BSG	CH-BSG	CH-BSG	CH-BSG	CH-BSG
HOLDING BEHIND INTERFACE		CH-3	CH-6	CH-6	Monitor stop go	ABANDONING THIS APPROACH	CH-5	CH-5	CH-6	CH-6	Turn after stop permitted?	CH-8	IGN-6		CH-BSG	CH-BSG	CH-BSG	CH-BSG	CH-BSG	CH-BSG
EXECUTING MOVEMENT		CH-3	CH-6	CH-6	IGN-1	CH-7	Monitor stop go	Cleared intersection	CH-6	CH-6	IGN-5	Failed approach	CH-10		CH-BSG	CH-BSG	CH-BSG	CH-BSG	CH-BSG	CH-BSG
ABANDONING THIS APPROACH		CH-DEL	CH-6	CH-6	IGN-1	CH-7	CH-5	CH-5	CH-6	CH-6	IGN-5	Create new approach	CH-10		CH-BSG	CH-BSG	CH-BSG	CH-BSG	CH-BSG	CH-BSG
LANE CHANGE COMPLETING		CH-3	CH-6	CH-6	IGN-1	ABANDONING THIS APPROACH	CH-5	CH-5	CH-6	CH-7	IGN-5	CH-8	EXECUTING MOVEMENT		CH-BSG	CH-BSG	CH-BSG	CH-BSG	CH-BSG	CH-BSG
Monitor stop go		CH-BEE	CH-BEE	CH-BEE	CH-BEE	CH-BEE	CH-BEE	CH-BEE	CH-BEE	CH-BEE	CH-BEE	CH-BEE	CH-BEE		APPROACHING ASSUMING GO	APPROACHING ASSUMING STOP	CH-BSG	CH-BSG	CH-BSG	CH-BSG
Check for lane change in progress		CH-BEE	CH-BEE	CH-BEE	CH-BEE	CH-BEE	CH-BEE	CH-BEE	CH-BEE	CH-BEE	CH-BEE	CH-BEE	CH-BEE		CH-BSG	CH-BSG	EXECUTING MOVEMENT	CH-BSG	CH-BSG	LANE CHANGE COMPLETING
Turn after stop permitted?		CH-BEE	CH-BEE	CH-BEE	CH-BEE	CH-BEE	CH-BEE	CH-BEE	CH-BEE	CH-BEE	CH-BEE	CH-BEE	CH-BEE		CH-BSG	CH-BSG	CH-BSG	HOLDING BEHIND INTERFACE	Check for lane change in progress	CH-BSG
Create new approach		CH-DEL	CH-DEL	CH-DEL	CH-DEL	CH-DEL	CH-DEL	CH-DEL	CH-DEL	CH-DEL	CH-DEL	CH-DEL	CH-DEL		CH-BSG	CH-BSG	CH-BSG	CH-BSG	CH-BSG	CH-BSG
Cleared intersection		CH-DEL	CH-DEL	CH-DEL	CH-DEL	CH-DEL	CH-DEL	CH-DEL	CH-DEL	CH-DEL	CH-DEL	CH-DEL	CH-DEL		CH-BSG	CH-BSG	CH-BSG	CH-BSG	CH-BSG	CH-BSG
Failed approach		CH-DEL	CH-DEL	CH-DEL	CH-DEL	CH-DEL	CH-DEL	CH-DEL	CH-DEL	CH-DEL	CH-DEL	CH-DEL	CH-DEL		CH-BSG	CH-BSG	CH-BSG	CH-BSG	CH-BSG	CH-BSG

State Activities

Name	What's going on in this state	Informal action taken
EGO VEHICLE PREPARATION	The Ego Vehicle is approaching an Intersection and preparations begin	Upon creation, we receive target exit lane inside division and road segment We Tell the Entrance Lane to start monitoring its traffic signal We select the connector that will lead us to the target lane and we find its associated Movement If we are not currently in our target Entrance Lane, we set our Lane change pending status for reference when it is time to enter the Intersection Create an instance of Planned Movement by linking to our selected Movement instance. Link this newly created Planned Movement to the target connector we selected. Place a hold on the Intersection Interface to prevent EV from crossing it If we need to change lanes, initiate a Multi Lane Change and specify the terminating turn indication, otherwise just signal in the direction of our turn (if any) through the intersection
Monitor stop go	Begin evaluating the stop-go decision and make an initial assumption	Find all of our possible exit lanes given our Planned Movement and then activate the MOTION stop go monitor. This monitor will return an initial assumption of go or stop. Transition out based on that assumption.
APPROACHING ASSUMING GO	Ego Vehicle drives as if it will traverse across the interface without stopping, pedestrians and crosswalk notwithstanding	Notify the Ego Vehicle that it will likely pass through the intersection without having to stop for any signal
Check for lane change in progress	We have commited to entering the Intersection barring any unexpected sudden obstacles or pedestrians. We verify our target vs. actual Entrance Lane at this point and then proceed to execute the appropriate Planned Movement Also, since we got here on a Commit Go, we know that the Monitor has stopped monitoring the Entrance Lane (It always stops after issuing a Commit)	If our Lane change pending attribute is not set, then we know for certain that no lane change is in progress and that, if there was one, it must have succeeded putting us in the intended entrance lane. So we can traverse without any changes. If, on the other hand, the attribute is set, we know that there must be a lane change in progress since the lane change is reponsible for clearing (unsetting) this attribute. In this case we must move on and figure out how to proceed (or not proceed!)
LANE CHANGE COMPLETING	We are waiting for the pending lane change to complete or abort.	We select the MLM (multi lane maneuver) in progress. It is possible that it won't be found in which case it was finished or finishing up when we checked in the previous state. If so, we do nothing and just wait for the success/fail resolution event. Assuming we do find it, we request an abort since time is up. We then proceed on a success or fail. Success can occur if the final lane change in the maneuver was close enough to complete when we requested the abort and it put us in the desired Entrance Lane.
APPROACHING ASSUMING STOP	Ego Vehicle drives as if it will likely stop for a signal at the interface	Notify the Ego Vehicle that it will likely stop for a signal
HOLDING BEHIND INTERFACE	Ego Vehicle has fully commited to stopping before the Interface	We check to see if the Ego Vehicle is in the lead position. If so, we'll evaluate the go after stop on signal condition
EXECUTING MOVEMENT	The EV is ready to proceed into the Intersection from some point behind the stop line or Entry Crosswalk. It may or may not be the lead vehicle.	The previously prepared Planned Movement is signaled to track the EV's progress through the Intersection.
Turn after stop permitted?	While holding behind the Interface, the Ego Vehicle has advanced to the lead vehicle position	If the Ego Vehicle is in an Entrance Lane that supports a Turn Movement where it is okay to turn after stop on a stop signal, we can proceed to follow the Connector Traversal. Otherwise, the lead vehicle status doesn't matter and the vehicle must wait until the EL opens
Cleared intersection	The Ego Vehicle crossed the exit Interface, so our traversal has completed successfully	If the traversal was associated with a Turn Movement, cancel the turn indication Stop watching the traffic signal for the Entrance Lane.
ABANDONING THIS APPROACH	Since the Ego Vehicle didn't make it into the desired Entrance Lane, this Entrance Lane Approach is invalid and must be terminated. It will be swapped in with a new instance of Entrance Lane Approach that will match the Entrance Lane where the Ego Vehicle ended up.	We need to delete the Planned Movement and ensure that it is gone before doing anything else We need to remember the resolved EL inside division so that we can create a new ELA with it. To save this value we will pass it along to the Planned Movement which will pass it back on deletion
Create new approach	Upon deletion, we stop all monitoring of the approach and signal for the missed target Entrance Lane and we create a new Entrance Lane Approach for the EV's current EL where we are actually ending up entering the Intersection	A new Entrance Lane Approach is signaled for creation for the Ego Vehicle's current Driving Lane. The MOTION external entity is told to stop monitoring the stop-go decision for the attempted Entrance Lane. We need to stop it since we may not have ever received a commit go or stop prior to entering this state. The initially attempted Signalized Entrance Lane is told to stop monitoring the traffic signal.

Comments

Comment	Description
IGN-1	*We are monitoring the signal, so it can occur, but we don't take any action on it in this context*
IGN-2	*Highly unlikely, but possible. Still, we ignore this event since no action is taken until committing to go. Very important though to verify that we are in the correct EL at that later point*
IGN-3	*We're letting the Monitor EE do the heavy lifting here. It will take into account the state of the traffic signal in its stop-go decision.*
IGN-4	*We're already assuming go, so there is nothing new to do. In fact, Monitor EE shouldn't send the event at this point, but no big deal*
IGN-5	*Lead vehicle status is irrelevant to this state (we'll save the status with a method and check the status when we get to a state where we do care)*
IGN-6	*MLM will unset our Lane Change Pending boolean attribute, so we can safely ignore this event until we care about it in a future state*
CH-1	*The Monitor external entity hasn't been activated yet and there is no path to this state, for this instance, after it is activated*
CH-2	*Synchronization: Planned movement sends this event after another event which causes an exit from the current state*
CH-3	*Synchronization prevents this. Planned Movement sends this event to us only once and definitely before we reach this state.*
CH-4	*We need to ensure that the Monitor EE is configured to send us the assume-commit signals in sequence. But it can send both arbitrarily close together in time.*
CH-5	*Synchronization prevents this. Planned Movement can't send this until it receives the Follow signal which we don't send until a later state.*
CH-6	*The Monitor EE issues a commit stop/go to signal its final conclusion where it ceases monitoring. So, we can't get any more input from it after the commit is received unless we re-initiate the monitor*
CH-7	*Synchronization prevents this. We had to resolve and terminate the conduit translation maneuver before reaching this state. So it can't exist at this point.*
CH-8	*Synchronization: Planned Movement cannot send this signal until after we've told it that the approach has changed*
CH-9	*Synchronization: The EL has been resolved, so there is no reason to abandon the EL. We're committed to the Movement*
CH-10	*Synchronization: We must have gotten this event to arrive in this state, and since we don't initiate another MLM, we shouldn't get this event again*
CH-BSG	*Can't happen (Blind to Self Generated event from other state) Self generated event in other state cannot be seen here.*
CH-DEL	*Can't happen, the instance is deleted in this state as soon as the state's activity has completed*
CH-BEE	*Blind to External Events. This transient state reacts to its own self generated event only. So it should never see a non-self generated event.*