Assignment 3: Final Goal/Obstacle Diagrams

As a note, I focused solely on the goal "Ride Successful", which doesn't encompass the payment of the ride through the payment system, and the configurations of the profiles of either the driver and the passenger.

The goal diagram is partitioned in separate sub goal diagrams in order to make the whole diagram less complex and easier to read. Ella made the remark that it would take only 7 to 9 blocks for the whole diagram, but in order to get to requirements and expectation I ran quickly into the situation where I had too many intermediate sub goals and requirements and expectations that would fit into one diagram. Perhaps I refined too much, anyway, I would like to see a solution that was made as a reference implementation.

Another issue I ran into was the fact that in some occasions it seemed that I had an expectation that was under the responsibility of more than one agent. For example the goal "Achieve[Agreement Reached When Presences Match]" in the diagram "SUB — Ride Matched and Accepted". This expectation must be refined in two separate expectations in order to have only one agent to be responsible. From a modeling point of perspective, this makes sense, but it doesn't make the diagram clearer.

I extensively used the unmonitorability-driven refinement pattern in situations where the GPS device of both the driver and the passenger were used in order to deduce locations and build conditions on top of this. The Carpool Software is not in control of these agents and therefore cannot take direct "actions". The category of the expectations that were involved in unmonitorability-driven refinement patterns I classified as "Accuracy", because I found that more appropriate than simply stating them as "Satisfaction", but I am not sure about this.

In order to tackle the issue of GPS inaccuracy, I introduced some domain properties in the diagrams that involve agents that are related with GPS locations signals and I flagged those as "issues", as SMEs need to provide clarity on the topic of GPS accuracy problems.

In the diagram "SUB — Ride Setup Completed" I used an OR-refinement in order to circumvent the safety issue related with the Non interactive mode. When car is driving, the driver is not allowed to offer rides or to add stops to the current ride, an in this case a voice-controlled requirement would be needed (not described in the use-case though). The detection of whether the car is moving or not is specified in the diagram "SUB — Ride Progress Managed" where the condition "NonInteractiveMode" is set according to the changes in the GPS location of the driver. An alternative would have been to use an obstacle in the diagram "SUB — Ride Setup Completed". The Satisfaction goal would be Achieved[Ride Offered] and the obstacle to this goal would be "Driver in NoninteractiveMode". This obstacle would be of category "Dissatisfaction" and the resolution would be the goal "Achieve[Voice-Controlled Ride Offered]. The resolution type would be "Strong Mitigation" because the parent goal of the obstructed goal is satisfied eventually, in spite of the obstructed goal.

I made a remark in the diagram "SUB — Ride Progress Managed" regarding the usage of the condition "NonInteractiveMode". This condition is set in this diagram, but used in another goal/diagram. I was wondering if it is clear this way and if there are any recommendations/guidelines regarding this issue.

I used the Guard-introduction refinement pattern in the diagram "SUB — Authentication Accomplished" to refine the goals "Achieve[PassengerAuthenticated When DriverAuthenticated]" and "Achieve[DriverAuthenticated When Passenger Near To Car]". In order for a person to be authenticated (target condition), a person must be requested to enter the PIN code (current condition that must always hold) where the guard "PIN{Driver|Passenger}Validated" serves as a guard.