Player Detection

Player Detection relies on the Agents detecting the Player within their FOV (field of view). Whenever they see the Player, they will update the Player's transform.position to the Global BlackBoard. These reported positions are added to a list of reported Player positions, and at intervals, the Global BlackBoard will get the latest reported Player Position from the list, and set that as the last known location of the Player, and clear the list. If the reporting Player position list is empty during an iteration check, ***then there are no Agents that can visibly see the Player***. This means that playerDetected is set to false, and the latestPlayerLocation is set to default Vector3 of (0, 0, 0).

This is a very similar case to the Extended FOV in which Agents will report to the Global BlackBoard their estimated Player Locations [Not really estimated as the Extended FOV just allows them to see through obstructions for a period of time if lost line of sight on the individual level]. Agents report to the Global Black Board, adding to the list of estimated Player Location and at intervals, it takes the latest reporting and sets it as the latest Estimated Location of the Player. Unlike the other reportings derived from Agent's FOVs, **this Estimated Location is NOT reset to default if there are No reportings**. Instead, in order for this to reset, the Agent's will have to navigate to that suspected area, and search for the Player.

As an example, let's say the Player travels behind a wall, while the Agent was looking directly at the Player initially and has then lost line of sight of the Player. The Agent not reacting to the fact that the Player went behind an obstruction displays a lack of intelligence and object permanence of the AI. To circumvent this dilemma, upon losing sight of the Player, an alternate vision of the Agent that ignores obstructions will activate for a period of time. This is the extended FOV. This will allow the Agent to know the Player's location behind obstructions.

Should last known player location and estimated player location be different? Aren't these parameters the exact same thing and serve the same functionality? If the Player is no longer seen, can't the lastKnownPlayer Location serve the same purpose?

New Iteration: There are still two different FOVs, but both update the last known Player Location, as if no Agents in the Game scene see the player, then logically check the last known player location. Agents will travel and stop at a distance from the Last Known Player Position, if the Agents Do not see the player, then they have no knowledge of the Player's location, and other Squad Behaviors will be warranted, such as searching. Or they could flank to Valid Cover Nodes if the last known player location is within radius of either of the Valid Cover Nodes, thus Behaviors like Advance Cover will be warranted.

If the Player rather than Agents losing sight due to obstruction, but they unnaturally lost sight due to the effects of slow motion, then the last known Agent to have seen the Player will

activate their extended FOV, but if they still see nothing, then the last Known Player Location will default to Empty, and this can also happen when Agents search a suspected area, but still do not find the Player.

Known issue with implementation, if slow motion is activated when behind an obstruction during the window the Extended FOV is active, then if we have it that the last Known Player Location will default to Vector3 (0, 0, 0) it wouldn't make sense.

Last Known Player Location should always be a last known value of player, never resetted, unless Agents search that location and do not find the Player at all. This would then warrant a Behavior for Agents to then search the entire arena for the Player:

Summary

Agents will report to the Global BlackBoard if they see the Player either through FOV or Extended FOV vision. If no Agent in the Game Scene were to see the Player, then they will act accordingly to what Behaviors will take Priority. For example, agents could navigate to the Last Known Player Location and stop from some distance. If they still hadn't seen the Player by then, they would have failed that searching behavior, and the Player would be **Reported Missing**. A missing Player may warrant other Squad Behaviors. Or if no Agents in a squad see the Player, and yet the last known player location is around Cover Nodes, then they will navigate to those COver Nodes, and this will complete Advance Cover Behavior.

The Squad Manager has updated to the Global BlackBoard all available squads and a dictionary of alive agents with their associated Squads. The Player Sensor, upon seeing the Player through regular FOV, can get their squad from the Global BlackBoard and state that their squad is engaged and set to true. This way the Field Report can Update what squads are engaged still, unless the last known player location is Vector3(0, 0, 0) which it will proceed to disengage every available squad.