Customer Need	**Technical Need**	**Technical Requirement**	**Target Value**
The LARIS should be able to accurately make point turns	LARIS center point must not move too far from the origin point in any turning maneuver, [cm]	LARIS center point should not move more than 5 [cm] away from origin for any turn angle	LARIS center point should move less than 3 [cm] in any turning maneuver
The LARIS should be able to accurately make point turns	LARIS should be able to turn accurately within a given [degree] accuracy	LARIS must be able to turn accurately within a 10 [degrees] for every 90 [degrees] of turn	LARIS turns accurately within 5 [degrees] for every 90 [degrees] of rotation
LARIS should be able to navigate using walls as reference	LARIS should navigate to end destination accurately using walls within a given linear distance [cm]	When using walls to navigate, the LARIS should arrive at its destination within 5 [cm] of desired end location	LARIS should be able to navigate within 2 [cm] of desired end location when using walls
LARIS should be able to navigate using walls as reference	LARIS should a minimum range in [m] for most emergency responders' needs	LARIS should have a minimum range of 100 [m]	LARIS should have a minimum range of 150 [m]
LARIS should be able to navigate using walls as reference	LARIS should be able to identify an intersection (in any direction) when within a given distance [cm]	LARIS should locate intersections within 10 [cm]	LARIS should locate intersections within 15 [cm]
LARIS can traverse course accurately within a given radius	LARIS can travel a given distance accurately [m]	LARIS can reach a destination accurately within a 10 [m] radius around it	LARIS can reach a destination accurately within a 12 [m] radius around it

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LARIS should be able to navigate using walls as reference	Distance of closest point of LARIS perimeter to wall, [cm]	When the LARIS is within 7 [cm] of a wall, it should engage appropriate avoidance maneuver	When the LARIS is within 5 [cm] of a wall, it should engage appropriate avoidance maneuver
LARIS should be able to choose a given path at an intersection	LARIS should choose desired path at an intersection based on sensor inputs [success rate]	LARIS should choose desired path at an intersection 80% of the time	LARIS should choose desired path at an intersection 90% of the time
Demonstrate LARIS ability to navigate using magnetic sources.	LARIS should not come within a given radius of magnetic sources [cm]	LARIS should not come within a 10 [cm] radius of magnetic sources	LARIS should not come within a 12 [cm] radius of the magnetic sources
Demonstrate LARIS ability to navigate using infrared (IR) sources.	LARIS should not come within a given radius of IR sources [cm]	LARIS should not come within a 10 [cm] radius of IR sources	LARIS should not come within a 12 [cm] radius of the IR sources
Demonstrate LARIS ability to navigate using magnetic and infrared (IR) sources	LARIS successfully navigates to desired endpoint within a given radius [cm]	LARIS navigates to within 5 [cm] of the target	LARIS navigates within 3 [cm] of the target
Demonstrate LARIS ability to perform point-to-point navigation in a grid.	LARIS is able to come within a given radius of each of the four specified points [cm]	LARIS is able to come within 4 [cm] of each of the specified points	LARIS is able to come within 2 [cm] of each of the specified points
Demonstrate LARIS ability to perform point-to-point navigation in a grid.	LARIS pauses for a certain amount of time [seconds] after reaching the specified point so the accuracy can be measured	LARIS pauses for 10 [seconds]	LARIS pauses for 15 [seconds]

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Demonstrate LARIS ability to build a map of an unknown area.	LARIS gathers data points about the walls surrounding it each time it travels a given distance	LARIS gathers 3 data points (left, forward, right) about the walls around it each time it travels 10 [cm]	LARIS gathers 3 data points (left, forward, right) about the walls around it each time it travels 5 [cm]
Demonstrate LARIS ability to build a map of an unknown area.	LARIS generates an accurate portrayal of its surroundings [PASS/FAIL]	LARIS generates an accurate portrayal of its surroundings as data points printed out to a map	PASS
Demonstrate LARIS ability to build a map of an unknown area.	LARIS is able to identify up to n-way intersection [number of paths]	LARIS is able to identify up to a four way intersection	LARIS is able to identify up to a four way intersection
Demonstrate LARIS ability to identify and differentiate between unknown resources	LARIS is able to detect green vs blue [PASS/FAIL]	LARIS is able to determine color of object accurately to determine substance	PASS
LARIS is able to identify and differentiate between unknown resources	LARIS is able to analyze resources of a given volume [cm^3]	LARIS can identify unknowns of dimension up to 6x6x10 [cm]	LARIS can identify unknowns of dimension up to 7x7x11 [cm]
LARIS is able to identify and differentiate between unknown resources	LARIS is able to analyze resources of a given weight [g]	LARIS can identify unknowns of weights up to 128 [g]	LARIS can identify unknowns of weights up to 150 [g]