

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 have 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 should be able to navigate using walls as reference	LARIS should not come too close to the walls [cm]	LARIS should remain at least 1 [cm] clear of the walls	LARIS should remain at least 1.5 [cm] clear of the walls

Customer Need	Technical Need	Technical Requirement	Target Value
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 and infrared (IR) sources.	LARIS should not come within a given radius of magnetic and (IR) sources [cm]	LARIS should not come within a 10 [cm] radius of magnetic and (IR) sources	LARIS should not come within a 12 [cm] radius of the magnetic and (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]
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]

Customer Need	Technical Need	Technical Requirement	Target Value
Demonstrate LARIS ability to build a map of an unknown area.	LARIS generates an accurate portrayal of its surroundings [% accuracy]	90 [%] of the data points printed out to the map are accurate	95 [%] of the data points printed out to the map are accurate
Demonstrate LARIS ability to build a map of an unknown area.	LARIS navigates to the exit of the structure successfully [% frequency]	LARIS navigates to the exit of the structure successfully 90 [%] of the time	LARIS navigates to the exit of the structure successfully 95 [%] of the time
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