

## System Requirements

- R000 A maximum of four [4] robots shall *cooperatively* mine ping-pong balls from a multiple chamber mine.
- R001 A supervisory station console shall monitor all robot activity, receive all robot failure alarms, and provide robot work assignments.
- R002 A sensor path beneath the robots shall provide primary navigation throughout the mine.
- R003 Bidirectional overhead infrared communication links shall support access to each robot at a minimum of two [2] times per second.
- R004 Communications shall be supported robot-robot and robot-console from all locations in the mine.
- R005 A maximum of thirty-two [32] of maximum ten [10] foot radius infrared networked communication zones shall support all communications.
- R006 One or more robots may exist in each communication zone.
- R007 The infrared communication zones shall provide secondary navigation.
- R008 Robots shall be implemented on a customer-provided robotic chassis comprised of a drive train and mining implements.
- R009 A mining mission shift shall be four [4] hours.
- R010 A single voltage rechargeable source shall be provided for each robot.
- R011 Given the mission criticality and environment, maintenance activities on robots shall be deferred to the end of the shift.
- R012 Robots shall safely interact with other robots, non-robots and their environment.
- R013 The design of the system shall be manufacturable.