# Requirements Document

Functional requirements describe something the system must do. They are measurable and should also be provable by means of an agreed set of tests.

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| **Description** | **Requirement** | **Comments** |
| System needs to operate with a level of autonomy. | Advised | Autonomy will provide higher marks. |
| System needs to provide status updates to the master system. | Advised | To be demonstrated. |
| System needs to have a manual override mode. | Advised | To be demonstrated. |
| System needs to be able to make use of visual markers to navigate through a narrow canyon. | Mandatory | To be demonstrated. |
| System needs to be able to manipulate a control panel. | Mandatory | To be demonstrated. |
| System needs to be able to navigate a narrow canyon and avoid all obstacles. | Mandatory | To be demonstrated. |
| System needs to avoid hazardous zones marked with a target. | Mandatory | To be demonstrated. |
| System needs to map the recorded data of the hazard areas and best route. | Optional | To be demonstrated. |
| System needs to be able to locate a black box using acoustic methods. | Mandatory | To be demonstrated. |
| System needs to pick up the black box. | Mandatory | To be demonstrated. |
| System needs to transport the black box to the pickup point. | Mandatory | To be demonstrated. |
| System needs to not tip the black box more than 20o. | Advised | To be demonstrated. |
| System vehicles need to be able to move in and out of an airlock. | Mandatory | To be demonstrated. |
| System needs to manipulate a valve to a +/-5bar tolerance. | Mandatory | To be demonstrated. |
| System needs to use a laser to map the area and locate the hazard areas. | Optional | To be demonstrated. |
| System needs to have robust communication. | Mandatory | To be demonstrated. |
| System needs to work above and below water. | Mandatory | For demonstration purposes we can assume it's not underwater. |

Non-functional requirements describe how the system implements the solution designed by the respective design teams. In other words these requirements describe how the system should behave.

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| **Description** | **Requirement** | **Comments** |
| System shall be under 0.5m in width | Mandatory |  |
| System shall be under 0.5 in length | Mandatory |  |
| System shall be under 0.5 in height | Mandatory |  |
| System shall be able to operate in low light conditions | Mandatory |  |
| System shall be created within budget | Mandatory |  |
| System shall be under allow base kit to be returned | Mandatory |  |
| System shall have a clear and single UI | Mandatory |  |
| System shall comprise of at least two vehicles. | Mandatory |  |

Operational requirements are to identify the essential capabilities.

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| **Description** | **Requirement** | **Comments** |
| System must avoid all hazardous obstacles. | Mandatory |  |
| System must be able to operate a valve. | Mandatory |  |
| System must retrieve black box. | Mandatory |  |
| System must be able to deal with failure of communications | Mandatory |  |