

MSD Project Risk Assessment Template

ID	Risk Item	Effect	Cause	Likelihood	Severity	Importance	Action to Minimize Risk	Owner
	<i>Describe the risk briefly</i>	<i>What is the effect on any or all of the project deliverables if the cause actually happens?</i>	<i>What are the possible cause(s) of this risk?</i>			L*S	<i>What action(s) will you take (and by when) to prevent, reduce the impact of, or transfer the risk of this occurring?</i>	<i>Who is responsible for following through on mitigation?</i>
1	SSH does not respond or control	Customer need for remote control not met	Programming incomplete	1	2	2	Begin SSH testing early not later than week 6.	Sabine
2	GUI not user friendly	Customer need for ease of use not met	Feedback is not given by several different users	1	2	2	Allow different users who have no involvement in project operate device.	Sabine
3	Servo Motors do not respond to user input	Physical control not achieved	Programming/electronics incomplete	1	3	3	Test Servo response to ensure lag no greater than 100 ms. Insure proper wiring with organized bread board and no "birds nests"	Rob Brad L
4	Screw-Driven Syringe does not allow full limit of travel	Customer need not met	Improperly selected/ designed equipment	2	2	4	Purchase equipment that insures >1 cm travel. Design screw for >1 cm	Brad O/ Jaclyn
5	Diaphragm movement hard to predict	Unsteady control of fluid	Rubber acts nonlinearly. Spring constant	2	2	4	Purchase seal without spring/non linearity by communication with vendors to address specific concerns	Brad O/ Jaclyn
6	Air pockets develop in tubes	Lag in system	Seal leakage. Burp failure	3	1	3	Properly burp system until air bubbles are no longer visible or with a maximum of two pockets per tube. Replace torn seals	Rob H
7	Tolerances do not coincide	Sliders, hole locations, etc. do not line up	Poor Drafting Poor machining	2	2	4	Make sure tolerances stack well through Solidworks Take careful time machining	Brad O/ Jaclyn
8	Parts do not come in on time.	System cannot be assembled	Poor planning and ordering. Vendor error	3	3	9	Plan for long term parts and order by week 11. Keep constant communication with vendors at least twice per week on status of parts	All

9	Time run out	Project not completed in time	Poor planning. Tasks take longer than expected.	2	3	6	Consistently update project plan. Inform team if you fall behind on work and need assistance	All
10	Tubes develop leakage	Pressure not provided	Too much pressure applied. Accidental cuts during assembly	2	1	2	Make tubes easily replaceable by design.	Brad O Jaclyn
12	Actuator movement does not respond to Servo movement	System does not operate	Friction in syringe. Micro Screw hindered	2	3	6	Design actuator for smooth unhindered movement. Ensure servo provides enough torque	Brad O Jaclyn
13	Delay between commands and manipulator reaction	Lag and response experienced by user	Programming incompleting.	2	2	4	Delay in computer communication must be no more than 30 ms.	Sabine
14	Friction in syringe pump	System not smooth to operate	Too tight a tolerance. No Lubrication	2	2	4	Design tolerances properly Lube syringe with product that will not interfere if enters system.	Brad O Jaclyn
15	Parts don't fit properly	System cannot be assembled and does not work	Tolerances do not match	2	3	6	Design tolerances to be +/- .005 in. Use Solidworks to check part tolerances	
16	Parts cannot be machined at correct size (small screws, etc)	Desired scale cannot be achieved	Machines/vendors incapable of achieving size	2	2	4	CNC will most likely be used	Brad O Jaclyn
17	Joystick does not function with chosen software	Main CN not met	Invalid Joystick purchase	1	3	3	Research joystick. Test to ensure full range of motion	Sabine
18	Lead screw does not meet accuracy requirements	Resolution need not met	Calculation of distance of travel per turn incorrect.	3	3	9	Properly calculate distance per turn. Look at other areas to meet resolution i.e. area ratio, sliders on manipulator side	Brad L
19	Motor can't meet minimum angular displacement	Resolution need not met	Improper motor selected	2	2	4	Research several motors to find what will meet displacement	Rob H

Likelihood scale	Severity scale
1 - This cause is unlikely to happen	1 - The impact on the project is very minor. We will still meet deliverables on time and within budget, but it will cause extra work
2 - This cause could conceivably happen	2 - The impact on the project is noticeable. We will deliver reduced functionality, go over budget, or fail to meet some of our Engineering Specifications.
3 - This cause is very likely to happen	3 - The impact on the project is severe. We will not be able to deliver, or what we deliver will not meet the customer's needs.

<p>“Importance Score” (Likelihood x Severity) – use this to guide your preference for a risk management strategy</p>	
Prevent	Action will be taken to prevent the cause(s) from occurring in the first place.
Reduce	Action will be taken to reduce the likelihood of the cause and/or the severity of the effect on the project, should the cause occur
Transfer	Action will be taken to transfer the risk to something else. Insurance is an example of this. You purchase an insurance policy that contractually binds an insurance company to pay for your loss in the event of accident. This transfers the financial consequences of the accident to someone else. Your car is still a wreck, of course.
Accept	Low importance risks may not justify any action at all. If they happen, you simply accept the consequences.