MSD Project Risk Assessment Template

ID	Risk Item	Effect	Cause	Likelihood	Severity	Importance	Action to Minimize Risk	Owner
	Describe the risk briefly	*What is the effect on any or all of the project deliverables if the cause actually happens?*	*What are the possible cause(s) of this risk?*			*L*S*	*What action(s) will you take (and by when) to prevent, reduce the impact of, or transfer the risk of this occurring?*	*Who is responsible for following through on mitigation?*
1	Hardware requirements change towards the end of design finalization	Redesign hardware layout and possible change of UI coding	Parts not available, unforeseen design complications	1	3	3	Do not choose parts that are available on a limited basis. Ensure compatibility among parts. Proper engineering analysis and design.	Team
2	Component becomes warm during operation	Reduced Performance	Long time functioning	2	1	2	Introduce a small cooling fan into the enclosure.	Jason/Tim/Ahmed
3	Image processing algorithms are too slow	The program will take a long time to analyze the images	Other algorithms need to be used	1	3	3	Prevent: Use ImageJ plugins for processing	Mike
4	The two programming steps (image capture, image analysis) cannot be linked into one program	The user would not be able to click one button to analyze a sample	A new camera requires new image capture software to be used which doesn't sync well with Java	3	1	3	Accept: The user would have to use two programs	Mike
5	Different color LEDs have different light intensity	Saturation/F-stop adjustment will vary	Switching between colors while operation	1	3	3	Introduce calibration charts for all three colors for the F-stop	Tim, Jason, Ahmed

6	Having an unfocused image when changing the sample	Image will be blurry and result in inaccurate data.	Changing the sample	1	3	3	Image has to be focused every time a different sample is placed	Tim, Jason, Ahmed
7	Sample does not stay tight on roller	Sample runs out of shape, resulting in inaccurate data.	Improper planning and design of paper roller.	1	3	3	Proper design and planning. Preliminary design tests before final prototype build.	Tim, Jason
8	Images are not saved in the correct format (assuming separate image capture program)	The algorithm may not be able to process them	The camera software does not format the images properly	1	3	3	Transfer: The user would have to convert the images separately before giving them as inputs to the program	Mike
9	Light source interference	Wrong measurements	External/ambient light	1	2	2	Shielding the device from the inside	Tim, Jason, Ahmed
10	Short circuit	Not-operating device/Damaged Parts	Wiring problem	1	3	3	Check and test the wiring before operating the device	Ahmed

11	Cannot correlate micrometer to correlate with f-stop	Unable to collect accurate data	F-stop adjustment tolerances to large, or error in correlation development	1	3	3	Work closely with customer to develop correlation	**Mike**, Tim
12	Device is too sensitive to vibration	Damage or hardware misalignment occurs causing inaccuracies during data collection.	Insufficient vibration dampening or neglect of device during use.	1	3	3	Perform vibration testing to ensure there will be no effect on data collection	Team
13	Insufficient operational procedures	Failure to provided enough instruction	Uneducated user cannot operate device properly	1	3	3	Continue to develop procedures as needed and possibly bring in outside tester to use device.	Tim, Team
14	Cannot collect appropriate image captures due to over saturation issue	Data cannot be analyzed correctly/lost data	Wrong exposure adjustments	2	1	2	Check the generated look up table for right F-stop adjustment value	Ahmed, Mike
15	Cannot debug plugin because of issues with ImageJ	Buggy program	Restrictions imposed by ImageJ setup	2	3	6	Prevent: Setup up development environment that allows for easier debugging	Mike

16	F-stop adjustment does not cover a wide enough range of values	Less control over image exposure	Micrometer limitations, rod setup problems	2	2	4	Reduce: Test f-stop adjustment to ensure it can cover a wide enough range Accept: Make note of problems in operations manual	Tim, **Jason**
17	Sample gets stuck while loading	Unable to see sample with camera	Paper runs into clamps at the wrong angle	2	3	6	Reduce: Test multiple samples to ensure that this becomes unlikely	Jason
18	There are errors in the original algorithm	Incorrect processing	Incorrect math, lack of testing	2	3	6	Reduce: Test original code	Mike (Jon)
19	The lid does not close tightly	Light interference	Piston pushing on the lid, incorrect measurements	3	2	6	Reduce: Check math, add reinforcement where piston contacts lid, add skirts to cover up cracks	Jason

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.

“Importance Score” (Likelihood x Severity) – use this to guide your preference for a risk management strategy	
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.