

Table #	PT246	Issue Name	Dimension - Lower	Dimension - Upper	Dimension - Center	Dimension - Right	Dimension - Left	
Date	1/15/2017	Doc Owner	James Conant/Chris Conant, Josh Simpson					
Revision #	1	Doc Name						
ID	Risk Rank	Effect	Cause	Likelihood	Severity	Importance	Action to Mitigate Risk	Owner
1	Attachment Fails to Perform desired function - Technical Risk	Delay to timeline, due to necessary redesign	Product is not acceptable for use	0	6	0	Reduce the risk of design failure by designing with this concern in mind and making sure each concept performs all required functions. (Phase 3) Risk and severity of SC motor reduced our reliance of concept selection. Since attachment functions are defined and we successfully passed all testing required to send proposal to AC. (Likelihood 0 was 1) (MS2 Phase 4).	Jason
2	Budget - Resource Risk	Insufficient Funds for Project	Ordering the wrong parts, contributing to expensive items	0	3	0	Carefully outlining purchasing requirements, reviewing BOM's (Phase 2), No Change. (Phase 3) We have made orders to be able to quantify the cost of the system now that detailed design has begun. We have ordered every part required to demonstrate the functionality of the motor attachment, having requirements parts, we are done buying new parts for the core to the score reported. (Likelihood 0 was 1) (MS2 Phase 3).	Chris
3	Time - Resource Risk	Project doesn't get done, milestones aren't met, incomplete demonstration	Poor time management, lack of communication	0	3	0	Follow Gantt chart and personnel plans (Phase 3). Phase 3 SC motor has been reduced by using thoughtful criteria on the concept selection phase of system level design. We have reached the points where we are confident that we will have enough time to test the full system as planned in an achievable, most of that assembly has been completed. (Severity 3 was 6) (MS2 Phase 3). Priority to reassign up to 2000 small tasks are required for optimized performance and we are not back to have our poster and paper finished with plenty of time. (Likelihood 0 was 1) (MS2 Phase 4).	Chris
4	Liability Issues preventing milestones with children - Resource Risk	Missing a specific, but important CE	Not jumping through the bureaucratic hoops properly or score enough	0	6	0	Make sure to get the balls rolling as early as possible, and work with OCE team if creative process and to get better questions (Phase 2), such as working with The Director Upper Executive (OCE) team to make sure this process will be moving as quickly as possible. (Phase 3) Each has been making progress and we are teaming up to progress in the CE team. We are currently to test on ourselves and AC, in going to perform all of our formal testing for us, so there is no chance of any more liability issues for our (Likelihood 0 was 1) (MS2 Phase 3).	Josh
6	Manufacturing Issues - Time Risk	Project goals are not met, delay in schedule	Not adequate communication with Supplier, about lead times and expected delays	0	3	0	(Phase 3 - New Risk) Reported from (D). Stay in touch with Supplier about lead times and updates. (Phase 3) Almost every part is ordered and received by team. (Likelihood 0 was 2) (MS2 Phase 3), all resources but the square frame material is ordered and received. (Likelihood 0 was 1) (MS2 Phase 2).	Chris
8	MSD Team has only three members - Resource Risk	More work for each team member	Could cause delay in scheduling compared to MSD schedule when failing to complete all customer requirements	0	6	0	Assign responsibility to individuals and be sure to establish good team norms (Phase 2). We have gotten help from the OCE team to help us when needed, but more importantly, we have been able to take the fact that we only have 3 members seriously, we have more familiar with each other and know how to effectively work together. We assigned 2 new Mechanical Engineers, so there is not more work to be done. (Likelihood 0 was 3) (MS2 Phase 3).	Chris
9	Slotted Cylinder Propulsion System - Technical Risk	Attachment will not function	Concept is only current design path	0	9	0	(Phase 3 - New Risk) Determine required DC motor to perform the starting action in short period of time. That is to say if powering the motor will be adequate motor selection if a new motor needs to be designed (Phase 3). Slotted cylinder and other systems to be manufactured and moved as intended. (Likelihood 0 was 2) (MS2 Phase 2). The slotted cylinder system is functioning up to what we expected with current hardware. Implementation of microswitch and fitting out the holes for the mounting of the back plate, will back to its location and allow normal function. (Likelihood 0 was 1) (MS2 Phase 4).	Josh
10	System Electrical Requirements (power and voltage) - Technical Risk	Attachment will not function for acceptable amount of time	System too heavy, not enough power for intended use of system	0	3	0	(Phase 3 - New Risk) Determine what different voltages are required for the system DC motor. If they are not the same, then a driver circuit with a secondary power supply or a modular power supply will be required. The capacity of motor is also an important concern, because if you can only run the motor once and the DC motor to drive cars, that that is not acceptable. We have tested and received a battery that will work properly with system (Severity 3 was 6) (MS2 Phase 3). After extensive testing, we have determined that the battery is plenty large enough for the required functions and as long as it's charged that every year, it will not cause a failure. (Likelihood 0 was 1) (MS2 Phase 4).	Jason
11	System Electrical Requirements writing for manufacturability - Technical Risk	Attachment will be easy to manufacture	Wiring of components is not simple and clean.	0	3	0	(Phase 3 - New Risk) Reduce the likelihood that this will become an issue, by keeping the location of the relevant components and what they need to be wired to, in mind. Wiring capabilities are now increased in the design and new holes will be added next frame to all easier wiring. (Severity 3 was 6) (MS2 Phase 3). Wiring is almost completed, and is received early on frame. (Likelihood 0 was 1) (MS2 Phase 4).	Jason
14	Not able to fabricate curatures - Resource Risk	Project doesn't get done, milestones aren't met,	Lack of acquiring information from our fabrication shop	0	3	0	(Phase 4 - New Risk) Most Completed parts will be fabricated first to allow time to troubleshoot and re-manufacture. We have a complete forward manufacturing path that will yield a properly fabricated frame with welded square tube. (Likelihood 0 was 2) (MS2 Phase 2). We have manufactured all required parts for the system to the shop, except the attachment system. This system assembly will not be a concern because we have learned the fit and do of working with PVC, and the part to match the size from the other frame. (Likelihood 0 was 1) (MS2 Phase 3). Almost all fabrication is completed and installed on prototype. (Likelihood 0 was 1) (MS2 Phase 4).	Josh
5	Manufacturing Issues - Technical Risk	Project is not Manufacturable	Poor design decisions, poor communication with supplier, supplier is not capable as they claimed	0	6	0	Follow the MSD process and be sure to make thoughtful choices when it comes to concept selection (Phase 3). Stay in touch with proposed supplier to make sure we are designing within their means of production (Phase 2). Just will be meeting with the "recommended" supplier after the design review on Thursday, to help us determine the capability of the company (Phase 3). No longer a risk. (Likelihood 0 was 1) (MS2 Phase 3).	Chris
7	Attachment - Safety Risk	Users get hurt	Bad design, weak testing criteria, bad benchmarking, poor testing procedure	0	6	0	Make a detailed and ongoing project plan (Phase 3). Phase 3 SC motor has been reduced by using thoughtful criteria on the concept selection phase of system level design. (Likelihood 0 was 1) (MS2 Phase 4).	Josh
12	Drawings are uncompleted - Time Risk	Project doesn't get done, milestones aren't met, incomplete demonstration	Poor time management, lack of communication	0	3	0	(Phase 4 - New Risk) Drawings will be completed before the final semester meeting with. Almost all major attachment specific parts are now drawn and ready to be made. Not meeting system still designed, so it has not drawings will be changed. (MS2 Phase 3), all drawings finished. (Likelihood 0 was 1) (MS2 Phase 3).	Jason
13	Attachment to chair mounting system not completed - Technical Risk	Project doesn't get done, milestones aren't met, incomplete demonstration	Lack of work resources	0	9	0	(New Risk) (MS2 Phase 1) Use our own resources to our advantage to develop functional mounting system (Phase 3). System attaches to chair when (Phase 3 was 3) (MS2 Phase 4). System mounts to most wheelchairs and users. (Likelihood 0 was 1) (MS2 Phase 3).	Chris

MSD 2 Phase 3 Total:	0
MSD 2 Phase 4 Total:	24
MSD 2 Phase 5 Total:	30
MSD 2 Phase 6 Total:	36
Phase 4 Total:	84
Phase 5 Total:	90
Phase 6 Total:	96

Likelihood scale	Severity scale	"Importance Score" (Likelihood x Severity)
1 - This cause is unlikely to happen	1 - The impact on the project is very minor - we will meet all deliverables on time and within budget. Our work will cause minor work	Prevent Action will be taken to prevent the cause(s) from occurring in the first place.
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 Objectives.	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.
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.	Transfer Action will be taken to transfer the risk to something else. Insurance is an example of this. This purpose is insurance policy that contractually makes a resource company to pay for their loss in the event of an event. This involves the financial consequences of the accident to someone else. Your loss is their work of course.
		Accept Low importance risks may not justify any action at all, if they happen, you simply accept the consequences.