Need	SubNeed	Attribute	Engineering Specificaiton	Explanation for Specification
Functions	Lifts elderly person from a fallen position	Lifting Mechanism	Lifts up to 300 lbs	Most walkers have a maximum weight capacity of 300lbs, but we want to leave room for extra force that may be induced during the lifting procedure.
	User can stand from final lifted position	Lifting Mechanism	Lifts user to at least 21" off the ground	21" is a standard seat height for products made for elderly users such as the air cushion lift and walkers with seats.
Safe	Stable through lifting process	Stability	Center of mass remains within the frame of the walker	Preventing a moment around the frame of the walker will ensure rotational stability
		Locking Mechanism	Locking mechanisms withstands up to 42 in-lbs of torque	42 in-lbs is the amount of torque the locking mechanism will handle when a 270lbs person sitting on the walker begins to slide given a coefficient of static friction at 2/9. If it begins to slide, the lock will have to handle less torque (i.e. from kinetic friction).
	Operates at a safe speed	Speed	Target speed TBD	Lifting at too fast a speed may scare users
	Structure remains durable	Material Strength	Product can withstand 840 lbs of static force over 1 second	
	Lifts user in a position that does not cause physical injury	Lifting Mechanism	Product lifts user from the buttocks	Francis Tacardon: "I feel like the best place to pick them up would from the buttocks."
	Usage is intuitive and incorrect usage is unlikely	Design	Test subjects can figure out how to use product to lift themselves up under 3 minutes.	Market research shows that a smilar product can lift a person in 3 minutes. We want to beat this standard.
	Functions when operated by a second individual	Triggering Mechanism, Design	Triggering mechanism is located out of reach of fallen individual.	
	User is in a proper position when lifting	Lifting Mechanism	Pre-lifting safety check	Some ideas we had in mind: -Seatbelt (feedback or controller dependent on seatbelt). - Spotter
Portable	Product is easily transportable	Weight	Product weighs approximately 30lbs	Market research shown that the most versatile 4-wheel walker weigh approximately 30lbs. This number will change once we test it through a focus group.
	User can transport product	Size	Product width is less than 22"	
Easy to Use	Accessible lifting mechanism	Structural Design	95% of targeted users can get into the seat.	We want the majority of potential users to be able to fit inside the lifting device.
			User should be able to get into necessary position to be lifted in under 30 seconds	If users cannot get into the right position in a reasonable amount of time, another method will be used
			Seat thickness is shorter than 3"	Francis Tacardon: "I feel that past 3" thickness, people will not be able to scoot into the seat."
	Intuitive	Design	Test subjects can figure out how to use product to lift themselves up under 3 minutes.	3 minutes is the window of time before which a caretaker would likely chose to just lift the preosn themselves
	Can be used repeatedly over a day	Lifting Mechanism Recharging Device	Lifts 300 lbs fully up and down 6 times.	In nursing home, one person falls 7 times a month, which amounts to, at most, once a day. We want to allow for two accidental misfires per day, making the total number of required uses 3. We are doulbing this number to account for the fact that people who are more likely to fall will be purchasing our product.