Revision #: 6 Scale (1=must have, 2=nice to have, 3=preference only)

Engr. Spec. #	Importance	Source	Specification (description)	Unit of Measure	Marginal Value	Ideal Value	Comments/Status
ES1	1	CN7	Arm is capable of incorporating the hand	boolean		TRUE	
ES2	3	CN12	Human interface can be understood quickly	Minutes	20	5	Measuring learning curve for operation
ES3	1	CN1	Wrist has same number of degrees of freedom as the human hand	degrees of freedom	2	2	
ES4	1	CN2	Forearm has same number of degrees of freedom as the human hand	degrees of freedom	1	1	
ES5	1	CN3	Elbow has same number of degrees of freedom as the human hand	degrees of freedom	1	1	
ES6	2	CN7	Provides enough power to be able to maneuver previous hand	lbf	(arm's own weight)	(weight of arm and hand)	
ES7	1	CN8, CN9, CN10	SolidWorks CAD model of every part	boolean		TRUE	
ES8	3	CN4, CN5, CN6	Average length of a arm, shoulder to fingertips[1]	inches	20-40	31	
ES9	3	CN4	Average hand length, wrist to fingertips[1]	inches	5-15	7	
ES10	3	CN6	Average bicep lenth[1]	inches	10-15	12	
ES11	3	CN5	Average forearm length[1]	inches	9-17	12	
ES12	2	CN7	Maximum Manageable Weight	lbs	200	100	
ES13	2	CN4	Wrist Sagittal Flexion replicates human motion (Wrist Down)	degrees	60	80	
ES14	2	CN4	Position Tolerance	degrees	±8	±1	
ES15	2	CN4	Wrist Sagittal Extension replicates human motion (Wrist Up)	degrees	55	70	
ES16	2	CN4	Position Tolerance	degrees	±7	±1	
ES17	2	CN4	Wrist Radial Deviation replicates human motion (Wrist Left)	degrees	15	20	
ES18	2	CN4	Position Tolerance	degrees	±2	±1	
ES19	2	CN4	Wrist Ulnar Deviation replicates human motion (Wrist Right)	degrees	20	30	
ES20	2	CN4	Position Tolerance	degrees	±2	±1.5	
ES21	2	CN5	Forearm Pronation (thumb in) resembles human motion (Rotate CCW)	degrees		80	
ES22	2	CN5	Position Tolerance	degrees	±8	±1	
ES23	2	CN5	Forearm Supination (thumb out) resembles human motion (Rotate CW)	degrees		80	
ES24	2	CN5	Position Tolerance	degrees	±8	±1	
ES25	2	CN6	Elbow Flexion resembles human motion (Elbow)	degrees	135	150	
ES26	2	CN6	Position Tolerance	degrees	±15	±1	