Functional Decomposition

The customer needs and project scope were utilized to determine the necessary functions that the device needs to accomplish. The functions that were deemed necessary were then broke down by means of functional decomposition. This functional decomposition allowed the necessary complex functions of the device to be broken down all the way to the basic physics of the needed functions. The functional decomposition break-down can be seen in Figure 1.0 and Table 2.0.

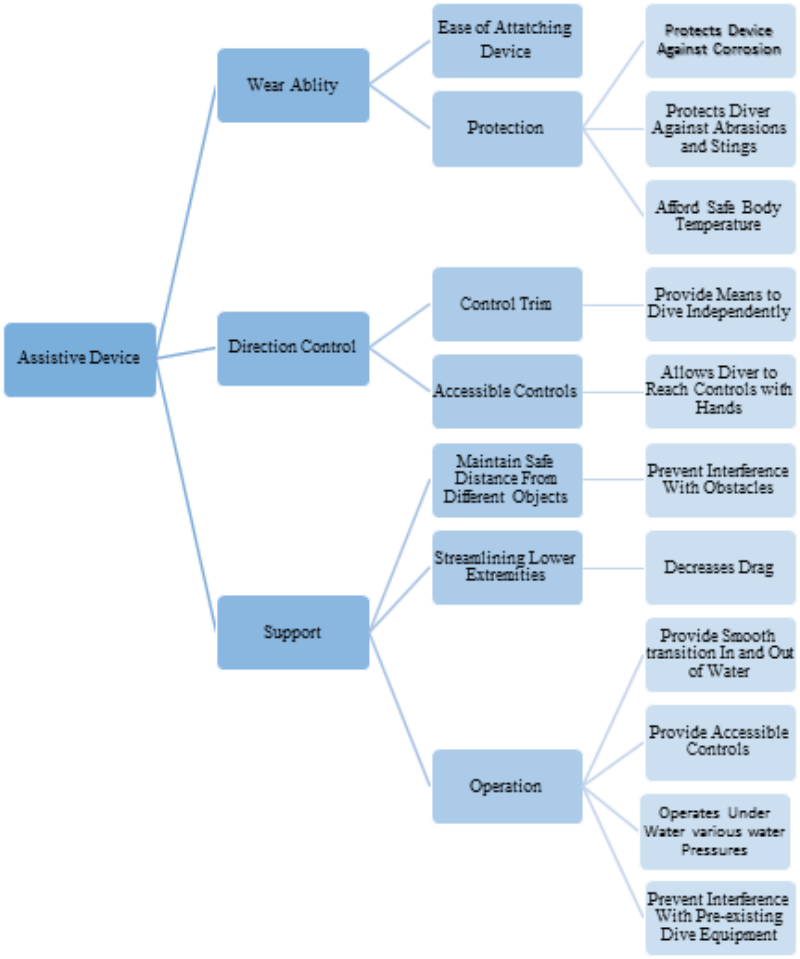

Figure 1.0: Functional Decomposition Flow Diagram

Table 2.0: Functional Decomposition Matrix

		Major Functions			
		Wear Ability	Direction Control	Support	Corresponding Customer Need Number
Minor Functions	**Ease of Attaching Device**	X			9, 11
	Protection	X			1, 2, 4, 7, 13
	Protects Device Against Corrosion	X			1, 4
	Protects Diver Against Abrasions and Stings	X			2, 13
	Afford Safe Body Temperature	X			7, 10
	Control Trim		X		7, 8, 11
	Provide Means to Dive Independently		X		7, 8, 11
	Accessible Controls		X		5, 6, 7, 9
	Allows Diver to Reach Controls with Hands		X		5, 6, 7
	Maintain Safe Distance from Different Objects		X		5, 9, 13
	Prevent Interference with Obstacles		X		5, 9, 13
	Streamlining Lower Extremities		X		9, 13
	Decreases Drag		X		9, 13
	Operation			X	5, 7, 8, 11, 13
	Provide Smooth Transition in and Out of the Water			X	5, 11
	Provide Accessible Controls			X	5, 8

	Operates Under Various Water Pressures			X	3
	Prevent Interference with Pre-existing Dive Equipment			X	5, 6, 8

Figure 1.0 and Table 2.0 provide different visuals of the same functional decomposition. In order to ensure all of the customer's needs were represented in our functional decomposition, the numbers corresponding to the customer need in Table 1.0 were matched to the functional decomposition in Table 2.0. After confirming all the different customer needs were represented at least once in Table 2.0, it was determined all of the different functions were broken down enough to proceed to determining the different targets for each functional decomposition.