

Functional Decomposition:

The functional decomposition is meant to decompose a system with a complex overall function into many simpler sub-functions. Breaking down the overall task in this way makes it easier to identify where different sub-systems interact and to come up with ways to implement the functions in the final design. By describing the system in this functional form, we avoid prescribing any specific physical solution and can instead focus on what the system is meant to accomplish.

Using the information given in the project brief and our mock sponsor meeting, further specification of the functions was developed. The three main functions developed for this project are onboarding, orienting, and storing the sample. The main functions were decomposed into sub-functions to accomplish the main tasks of the project, as seen in Table 1. It is expected that the functions and sub-functions of the project will increase and be more specified after the initial meeting with the sponsor. Figure 1 depicts the hierarchy of the functions needed to accomplish the goals of this project.

Table 1

<i>Function</i>	Onboard	Orient	Store
<i>Secure sample</i>	X		
<i>Locate sample</i>	X		
<i>Move sample</i>	X		X
<i>Position sample</i>	X		
<i>Import sample</i>		X	
<i>Rotate sample</i>		X	
<i>Stabilize sample</i>		X	X
<i>Contain sample</i>			X