

Solar System Mining: Due Date: April 10, 2018

As the 21st century speeds up like a bike going uphill with a rusty chain, we must all consider the challenges confronting job-seeking Earthlings. Many of these new jobs will be off-world, and many will be supporting our new extraterrestrial colonies on the Moon and Mars, as well as the burgeoning population of Earth, whose members hurtle toward the singularity.

You are an entrepreneur soliciting funds to mount a mining expedition in the solar system. Your assignment is to propose a business model for your mining businesses. Your proposal should include

- A minimum of 3 specific candidate targets (either asteroids or comets or planets)
 - A technique employed to survey target
 - A mineral/element/or gas to be mined.
- The locations or orbital profiles of the targets
- The properties of those candidates (mass, dimensions, chemical composition)
- The approximate value of those candidates (in terms of valuable minerals and their current costs¹) – remember, profit is how you attract venture capital. For example, if your mission costs \$10 billion, but you'll make \$11 billion, that's a billion dollars to spread around to investors, and anything beyond a 10% return on investment is better than the stock market.
- Your method of traveling to, securing, and retrieving the target object.
 - Estimate the time it would take to move the object to its destination (earth orbit, Moon, Mars, or LaGrange point)
 - Total mission time (estimate travel time to the object)

A one page typed up and write up will be submitted.

Hints:

- Consider existing missions to the asteroid belt (Hyabusa, NEAR, etc.) to get some idea of travel times.
- Consider the cost of sending humans to Mars as a baseline for a manned mission, then probably add half again in terms of cost to ballpark your mission costs.
- Prices for metals can be found on the internet; you can also consider current prices on the existing world commodities exchanges

¹ You may have to research the costs of moving materials to orbit to compare (How much would it cost to lift a ton of material X to orbit?)

	Beginning 1	Developing 2	Accomplished 3	Exemplary 4	Score
Knowledge	<i>Two of Targets, locations, techniques and costs, value and travel missing</i>	<i>One of Targets, locations, techniques and costs, value and travel missing</i>	<i>Targets, locations, techniques and costs, value and travel all described but have some errors</i>	<i>Targets, locations, techniques and costs, value and travel all described and correct</i>	/12
Thinking	<i>Evaluation of target and mineral incomplete</i>	<i>Evaluation of target incomplete</i>	<i>Evaluation or Justification incomplete</i>	<i>How Target, mineral and method are clearly evaluated and well justified</i>	/12
Communication	<i>Confusing expression and disorganized</i>	<i>Unclear expression, acceptable organization</i>	<i>Clear expression, but organization is a little vague</i>	<i>Clear expression, logical organization</i>	/12
Application	<i>Neither application of mining strategy to space environment clearly expressed nor likely to succeed</i>	<i>Application of mining strategies to space environment clearly expressed but not likely to succeed</i>	<i>Application of mining strategy to space environment not clearly expressed but proposal likely to succeed</i>	<i>Application of mining strategies to space environment clearly expressed. Proposed project likely to succeed.</i>	/12