Proposal for Design project

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**Executive Summary**

Today we are in the early stages of developing a mod called “Kerbal Rocket Konstructor” for the game “Kerbal Space Program.” The mod will refine the assembly line within the game, calculate the thrust required to be extracted from the booster to get the delivery stage into low orbit, geosynchronous orbit or escape velocity required to reach other planets within the solar system that is in place within the game. The physics of the game are already fairly well refined, our mod will simply act on these existing physics and create a criteria for a spaceship and provide recommendations to the user from singular components all the way to entire pre existing assemblies. This mod can be applied to real life situations and in the future may prove useful to space exploration by assessing the situation, the payload and the range of a spaceship and could potentially provide actual assemblies to meet the requirements.

**Gap in the Market**

After looking for similar constructors on several forums, we have found that something that is identical to this does not currently exist in the market for the videogame itself. For later on use it is also not been extensively developed by space agencies yet as there is not a large need for this specific method of assembling spacecraft just yet. However as our technology evolves over the next decade, this could become a useful option while sending many small payloads into Low Earth Orbit as more and more countries and companies will have a higher frequency of satellite mission.

**Meeting the Market's Needs**

**Implementation**

**Management**

KRK will be maintained by its creators

**Development**

KRK will be developed using C# and the Unity engine

**Marketing and Distribution**

The mod will be published on curseforge, where players will be able to download the mod. We can get a YouTuber or streamer to try it out. We can also hype it up on Reddit some, and put it in some comments of YouTube videos to sort of advertize it some.

**Monetization**

We’ll have a donate button on the mod page that gets split between us so that we have some passive revenue throughout college.

**The Problem and Our Solution**

You ever just assemble a rocket, and mid-flight, you make an unplanned stop to have a rapid, unscheduled disassembly? Maybe, you forgot to check your staging, or you didn’t realize that your rocket was 300 m/s delta-v short. What our program will do is suggest stages for you to select from with the delat-v’s displayed, alongside the thrust-to-weight-ratio of the stage, so you don’t have to compute it yourself, ensuring that the only rapid, unscheduled disassemblies will be due to pilot error.

**Industry Need for Our Technology**

KRK will try to make rocket construction simple enough for a kid to build a rocket that’s capable of going anywhere, given that the payload can generate power and has either a signal with the tracking station or is manned.

**Market Analysis / Primary Market / Secondary Market**

Since there isn’t any mod that fills a similar role, our main competition while come from mods that incompatible with ours. We will need to incorporate compatibility updates to work with other existing mods in order to minimize any inconvenience caused by using KRK. We will also want to incorporate a simple, streamlined method of installing our mod.

Our goal is to make building rockets an easier process for new players who are not overly familiar with the game; Therefore, they will be our primary market. Our secondary market will be anyone looking to simplify the process of building rockets.

**Marketing Strategies**

**Overview**

Our marketing strategy will be to upload our mod to popular sites for KSP mods such as Curseforge, the KSP subreddit, and also to discord servers for friends who want to use it.

**Core competency**

The core competency of KRK is to streamline certain aspects of the game by suggesting a rocket design based on what the player wants to accomplish

**~~Sales Strategy~~**

**Competition**

There are 2 mods that give statistics of your rocket and stages, but they do not suggest parts or stages to use.

**Development Strategy**

Base mod and incremental updates to incorporate with other mods and physics enhancements.

**Barriers**

Old age of the game means many people who used to play, probably no longer play; however, there are new players playing as well. Also, there is a sequel coming soon, drawing away some of the player base when it comes out.

**Critical Risks**

One risk will be the compatibility of our mod. If players cannot use it alongside other, more popular, mods they won’t want to install it. For this reason, we intend to minimize compatibility issues.

**Interviews**

**Name:**

Scott Tarson

Nolan Shelton

Basil Holloway

Andrew Chapman

Don Nguyen

James Kester

Michael Sheppard

Leon Anonymousname

Alex Walker

Elizabeth Dao

**How much experience do you have with Kerbal Space Program?**

3 years

High

3 months of playing

little to none

1 month

62 hours

Very little

Like, a lot. 100+ hours

ive played a few hours

Only a couple hours

**What are current features of Kerbal Space Program's rocket construction that you like and would keep?**

I like the realism

The simple modular construction

Grouping and decoupling

auto snapping/symmetry for ease of rocket building

I enjoy the fact that it has different gauges when you launch your space ship.With it, you can see how far it is up in the air, amount of fuel, location in space, and etc. Alos, you can pull up quick stats about your spacecraft, and some orbit info.

I like the precision control features and the toggleable overlays.

Realism

Modular parts, idk most of it. A few mods to give you better information on your rocket is all you really need, but that already exists.

I like building different types of rockets for different missions

The whole construction system is pretty solid

**Which features of Kerbal Space Program's rocket construction that you wish to see be changed or removed?**

The weird auto snapping

Change the tree system to allow multiple points of connection

Recursive symmetry would be nice: ie: having a parallel piece have it's own symmetry circle

Presentation of info about rockets could be displayed in a more user friendly way

its tedious and explodey

It's pretty hectic making asparagus staging with the fuel lines that have to be different. Sometimes you have to make 3 sets of 2 boosters and fuel tanks to quickly assemble the rocket, but for a more even assembly, you can do 6 with radial symmetry to 6, and do the fuel lines individually, but it's slower.

N/A

Annoying way of saving substructures. Need a better way of storing and deploying rovers (this would be a parts mod I think). Ability to change fuel continuously rather than in fixed increments. Tell you when a hatch is obstructed ahead of time. If a craft has a heat shield make sure it has parachutes and vice versa. Tell range you can get with current antennas and base station. Ability to keep multiple tooltips open at once for easy comparison.

None

The learning curve for new players is rather steep. You can spend hours on something you believe will fly just to have it blowup mid flight

**Would you be interested in our mod, allowing for streamlined rocket construction?**

Yeah

Yes

Probably not, as I have not played much Kerbal Space Program

Yes

Sure

Yes

Yes

Yes, although haven't played ksp in a while.

Yes

Indifferent