0. State your names. Only one of your needs to submit this.

Ray Vernon
Devin Helgeson

1. Present the problem statement. For example, an average homeowner designing a new house wants to play with options for installing solar panels.

A runner who is trying to plan a workout wants to map a new route and figure out how far the new route will go before running it or driving it the first time.

2. Explain who the intended user is. It can be you or a fictitious entity you will represent. For example, the user is a homeowner building a new house.

Athletes; runners, walkers, or maybe bicycle riders, who do so outdoors.

3. Describe why the user has this problem. For example, there are are decisions to make and many options, which are difficult to manage for the average user.

The runner doesn't want to come up with a new running route if they don't know the distance they're going to run.

4. Describe how a solution would benefit the user. For example, maximizing the solar generation while minimizing the cost saves the homeowner money. Stay within the scope of the problem; e.g., do not consider climate change because the connection is too indirect.

There would be a removal of guess work, or having to do the route before actually knowing how many miles/ elevation the route is. Current applications like google maps, google earth, all trails are limited to types of routes, and not able to do any route drawn on a map.

5. Describe the general flow for addressing the problem. The existing (or imagined) flow does not have to involve a computation solution. For example, the user defines the property and house layout and expected energy needs, then the system proposes solutions that best satisfy the criteria. This used to be done on paper by expensive expert contractors.

The user will draw out a map where they want to make a new route, and then the program will measure the distance and present other information such as elevation gain.

6. What is the general nature of the solution? For example, app, standalone program, website, plug-in.

App, smartphone primarily, maybe a desktop/web version as well.

7. List the general software components you envision playing a role. For example, web server, database, game engine.

Web server, database, smartphone APIs, map APIs

8. List the general hardware components you envision playing a role. For example, drone, VR headset, tablet. You are responsible for your own hardware, so be reasonable.

Computer or phone

9. Describe similar solutions, if any, and justify (or make up a justification) for why they are inadequate. For example, SolarBlaster 9000 does something similar, but its cost and complexity are prohibitive.
Do not get detailed with software engineering aspects. Requirements and specifications, for example, come later in the process, unless they are directly relevant to the proposal and have a justification. For example, an Android app because you have an Android device and want to become an app developer.

There are plenty of other maps that are typically used such as Google or Apple maps but don't offer this feature: the flexibility to free-hand draw any route on any terrain, from any start point to any destination.