**South Dakota Engineering Accelerator Application**

Please try to answer each question in less than 150 words.

Upon the completion of the application please save as a Word document or PDF and email to Tom Eitreim at [tome@sdei.org](mailto:tome@sdei.org).

**Contact Information**

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**Business Concept Information**

Company/Concept Name: Minimal Infrastructure Indoor Localization

Website (if applicable): NA

**Please Describe your Company/Concept. What are you going to make?**  
 The product which will be developed uses minimal infrastructure inside a building to determine the device's location and orientation inside of the structure. The final product will be a small device to be used in prototyping other robotics devices which require a solution to determining the location and orientation inside a building.

**Why did you pick this idea to work on? Do you have domain expertise in this area?**   
This idea is an offshoot from the senior design work done by the team. It is rooted in the field of robotics and is intended to aid in development of other robotics applications which require precise indoor localization for proper functionality. The team has expertise in the area of robotics through work as Computer Science students and research for developing the prototype device.

**What is new or innovative about what you are making?**  
Previously developed systems have one of two downfalls. First, they may require extensive infrastructure to be implemented before the system may be used. Alternatively, systems may require a large amount of on-board hardware which draws excessive power and makes the device too bulky to use with other devices. This device will provide accurate localization without either of these downfalls.

**Have you started working on this already, if so what progress have you made so far?**  
Work began in September 2014 and is still active. Progress made thus far includes a prototype device which localizes inside a building but still requires some additional infrastructure prior to implementation. The device is also able to act on voice commands, route from one location in a building to another, and provide audio output to assist in navigation so a person with visual impairment may effectively navigate through an unfamiliar building

**Would you be developing any intellectual property or plan to in the future?**Intellectual property would be generated in the process of developing this product.

**How do you know people need what you're making? Who would be your first customer?**  
Extensive research in the area of Simultaneous Localization and Mapping algorithms is currently being done indicating the need for a technology like this and, in very restricted circumstances, devices similar to what we are developing are in use by robots for warehouse work. Localization is a common task for robotics and currently requires rebuilding the system from the ground up each time it is implemented.

Our first customer a robotics developer who needs precise position an orientation information for whatever system he or she is developing. Our device will save time and money, speeding up the development process to get the product to market faster giving the best chance of success for products which implement our system.

**What would your business model be? How will you make money? (Give your best estimates)**  
Money will initially be made by selling the device to developers requiring precise indoor position and orientation information to get their products to market quickly.

Once the device is complete the team's expertise in localization may be used to develop better systems or move into other markets entirely.

**Who are your competitors, and who might become competitors?**  
Competitors are other developers working with SLAM algorithms who are attempting to make their systems robust and easy to implement. Larger companies like Google may be competitors once the product has been shown to be valuable. However, this also opens the door to acquisition by Google or other robotics companies later.

**Any additional comments can be written here.**   
Click here to enter text.