Feasibility Report

Team ler, amazon Alexa O&M Skill

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**1. Product**

The American Printing House for the Blind (APH) is the world’s largest company devoted to manufacturing, researching, and developing products for people who are blind or visually impaired. APH designs and manufacture textbooks and magazines in braille, large print, and digital formats, as well as other educational, recreational, and daily living products, one of which we have been tasked to develop. APH has requested our services to develop a skill for Amazon’s Alexa voice interface platform.

This skill will consist of a trivia game in which the subject of Orientation and mobility (O&M) will be the focus. The O&M trivia game will be used in concurrence with the training, and education provided to the visually impaired through all stages of life. Blindness or visual impairment can happen to an individual through different stages of their life, from birth to old age, and learning through engagement will solidify the skills they will need to survive in a visual based world, which this Alexa skill will provide.

**2. Technical Feasibility**

The required specifications provided to us by APH are as follows:

1. Must be able to change difficulty of the questions (Beginner, Intermediate, Advanced)
2. Possibly provide a multiplayer mode, would like but not required.
3. Some questions will include sound files
4. Questions must be able to be formatted as multiple choice, and true/false.
5. Question set will be provided to us by APH, but they must be updatable by APH at any time.
6. Only need to use audio aspects, compatibility with echo show is not required.

Technologies and formats used to accomplish this task will be NodeJS, NPM, JSON files, Alexa Skills Kit (ASK), Amazon Web Services (AWS) Lambda functions, and voice user interface design.

**3. Social Feasibility**

The proposed O&M trivia skill for Alexa, will prove to be acceptable by the people in which its introduction will directly affect. With the ease of use and setup of the Amazon Echo product, there will be little to no new training needed for those who will be setting these devices up for use. Once the skill is launched it will be handed off to the development team employed by APH, all of whom we spoke to, were familiar with the technologies which will be needed to add new questions in future updates as well as general maintenance. There will be no need for workforce relocation, due to the nature of this project, once the source code has been transferred to APH, all future development will be able to be done in house.

The impact on the consumers of this product will also be positive. Since the Alexa platform is a vocal user interface, visual impairment will not hinder the users experience in any way. With instructions on use being audible, the visually impaired user will be given everything they need to use this Alexa skill successfully. Use of this Alexa skill will also help move the visually impaired users toward independence, with the knowledge that will be reinforced through its use.

**4. Economic Feasibility**

The direct cost to APH will be minimal, if any. All cost of development will be the man hours put in by our group which are being provided on a voluntary basis. There will be no cost in the initial deployment of the Alexa skill, as well as no cost for future updates and deployment of the Alexa skill, since Amazon does not charge to post skills to the Amazon Skill Finder.

Since this skill will be used for educational purposes, when in use in the class room it will assist the teacher in the reinforcement of O&M skills, giving that teacher more time to prepare future lessons, as well as spend more time with students who may need more one on one instruction. Use of this Alexa skill will help the community economically, by preparing a section of the population who may have been overlooked due to their disabilities, and inability to navigate. With the skills learned, and reinforced through this Alexa skill may be able to contribute more than they would have been able to before.

**5. Market Research**

Market research for this project was provided by APH. Through their research and surveys with instructors from the Kentucky school for the blind as well as student currently attending the school. Due to the newness of the Alexa platform, there aren’t any skills now that provide the service ours will. With this knowledge, we have concluded our product will benefit the visually impaired, with little to no competition due to the lack of current offerings.

**6. Alternative solutions**

Alternative solutions which were considered were a mobile and a web application. Both alternatives could use a voice interface, but navigation to the actual app would present a challenge, whereas the Amazon Echo is accessible using voice only. This made the Amazon Echo, which uses Alexa, the top choice due to the ease of use for those with a visual impairment. The ASK and AWS also offer an easier way for future upkeep of this skill to take place, after it has been handed over to APH.

**7. Project Risks**

Possible risks we have assessed for this project are the APH suddenly losing federal funding, Alexa going obsolete, due to the newness of this platform the learning curve may be steep, and Amazon putting the development of skills on lock down. APH relies heavily on federal funding, it makes up approximately 60% of their annual budget. If for some reason this funding were pulled the support of this skill would be lost. The Amazon Echo and Alexa are fairly new technologies, with this there is always the risk of these types of technologies falling out of favor. If this happens to Alexa there will be no platform for this skill to run. With the newness of this technology, comes the possibility of little documentation, or no examples of how to build a skill for Alexa. This could pose a challenge to our team due to a steep learning curve we may not be able to overcome. The biggest risk of all is Amazon deciding not to allow outside developers to create skills for their products. If Amazon decides to make all development proprietary, this would shut our project down.

**8. Conclusion**

At this point, all the planning (personnel and time frame) for the project has been done and the feasibility study has shown that the project is likely to succeed within its constraints, the only remainder is for us to start the requirements analysis and thus proceed with the project.