## Solution 2

### Description

Solution 2 consists of the use of an Oracle database server with the use of some of the programming languages that are compatible with the Oracle system, which are Java, C, and C++. The SDAT development team decided to explore the use of the Oracle system because today it is one of the more popular and widely used database servers. The Oracle database is a relational database, a relational database is a database in which the different fields have a relationship with one another. The data is stored in tables usually with a unique identifier for each row. Relational databases work on the principle that each table has a key field that uniquely identifies each row, and these key fields can be used to connect one table to another. The Oracle X3-2 database appliance is an integrated system of software, servers, storage, and networking. The X3-2 appliance is capable of holding up to 18 terabytes of data, which is ideal since the data being processed on a daily basis could range in the terabytes. Since we don’t know how much data will be processed on a daily basis or even a weekly basis it is difficult to assess how much storage space is needed for regular operation. The monetary cost of this piece of hardware is unknown because the Oracle Company would need to gain a better understanding of what the client needs out of the database server.

This solution will utilize Java, C, and C++ because these are some of the languages that are compatible with the Oracle database server. As mentioned in the above considerations section, the ANSI C and C++ languages are very similar to one another, and both languages once they are compiled into machine code can work very closely to the lower levels of the computer system. This is good, because since the system doesn’t need to interpret the instructions for the program, the program can then execute and perform at the near real time rate that Dr. Salamah mentioned in the interview with him. Because of this if care is not taken when developing the program, it has the possibility of failing catastrophically and potentially harming the computer system. Since the SDAT team does not have much experience with programing in C or C++ the Java language will be used as intermediary, where some code will be produced in but will then be translated into C.

### Resources Needed

The incurred cost for the general programming is nothing since there is no software or development environment needed start the implementation of the proposed system, the main cost to be incurred would be on time as the development team would need about two to three weeks to gain a deeper understanding of the C/C++ language and become familiar enough with it to become confident programmers in the language.

### Limitations

The total cost of this solution will include the monetary cost of the Oracle hardware, and the time it will take the software team to learn the language of C and C++ and implement the proposed system. This will be in addition to the costs of time and money if the client requests an optional mobile app solution.

### Solution Summary

Here is a summary of the solution described above to the proposed system in terms of cost, resources needed, limitations, and system portability

1. **Cost**

As mentioned above there is no software needed as most computers have the compilers needed to develop the proposed system and development environments can be obtained with no needed cost, however to have the Oracle database system a quote is needed from the Oracle company to the client in order to put a specific monetary value on the system needed for a database system. To round out the cost of the system in general there will need to be a two to three week timeframe needed for the development team to gain a deeper knowledge of the C and C++ languages in order to become more proficient in write code in those languages.

1. **Resources Needed**

The resources that are needed in order to build the proposed system though this proposed solution are, an Oracle database system, (insert graphic application here) to be able to present data from the data files in a graphical form, (insert mapping application here) to be able to display the data collection location on a map for the user.

1. **Limitations**
2. **System Portability**

Since most computers today have the necessary software to run C and C++ programs, and because of Oracle’s wide availability this solution is compatible with Linux, Windows, and Apple computers, thus satisfying Dr. Pennington’s request of having the proposed system be available across many if not all computing platforms.