

Is it easy to deploy ISOBlue 2.0 actually work?

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Abstract

Many farmers have been collecting data on their farms about water usage, input fertilizer and crop yields. The data helps farmers better managing their operations because they can make better decisions that are suited to their farms' specific needs. Farmers can identify efficiencies that lead to higher productivity and profitability and input cost and optimized fertilizer use. Understanding more about the farms help farmers avoid risks and volatility which benefits both the growers and suppliers. Isoblu 2.0 is OATS[1] group's development for collecting data as well as connecting agricultural machinery to the cloud.

Goal

Isoblu can be mainly distinguished into hardware and software. Since Isoblu is collecting the data and sending them to the cloud, we would like to intercept the data and cache them locally. The data can be interpreted on our own which can be send via cell or hotspot. Lastly, maintain the software on similar device. E.x Raspberry Pi

Building Software

We use Virtualbox to install as a linux operating system since the software has own its limitation.

Minimum requirements for Linux machine are:

- 60GB
- 4GB RAM
- Ubuntu 16.04 LTS

```
sudo dpkg --add-architecture i386
sudo apt-get update
sudo apt-get install -y g++-5-multilib
sudo apt-get install -y curl dosfstools gawk g++-multilib gcc-multilib lib32z1-dev \
libcrypto++9v5:i386 libcrypto++-dev:i386 liblz2-dev:i386 lzop libstdc++12-dev \
libstdc++-5-dev:i386 libusb-1.0-0:i386 libusb-1.0-0-dev:i386 uuid-dev:i386 \
texinfo chrpath diffstat
cd /usr/lib; sudo ln -s libcrypto++.so.9.0.0 libcryptopp.so.6
```

Figure1 : Representation of required libraries to be installed on Ubuntu machine to install IsoBlue software

Agricultural Data

Isoblu device collect the data for any kind of agricultural machinery. The data include every details of the machine and the environment of that machine used for. Isoblu sends the data into the cloud and store them which are raw and bulky. The data needs to be cleaned so that that data are human readable data. The data are then run under algorithms and data visualization to understand the data. This will interpret the structures of the farms and the farmers can make decisions according to their needs with the data provided.

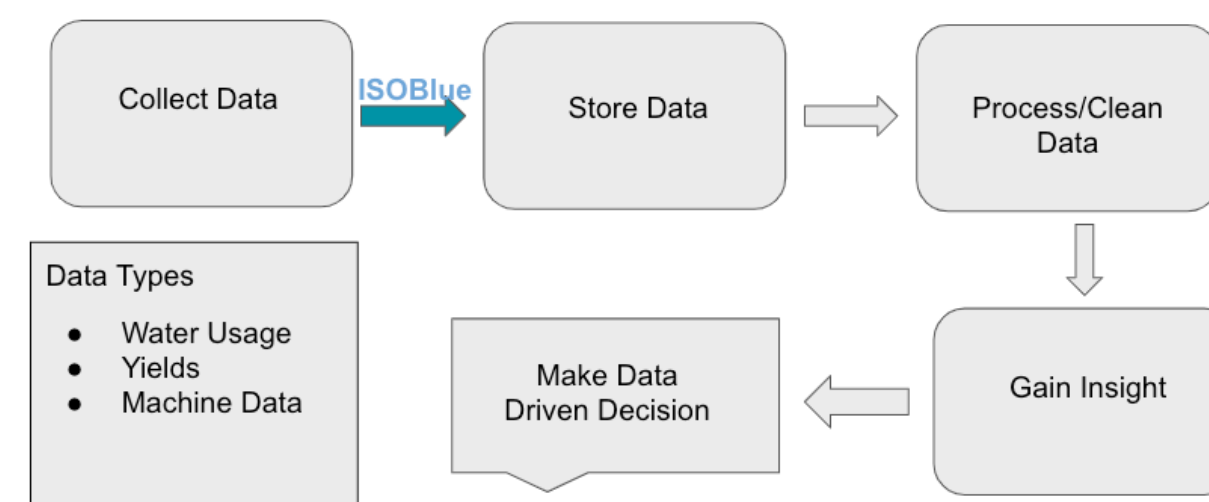


Figure2: Representation of Ag data cycle and important data types of collected data



Figure 3a. Ixora Carrier Board Frontside view [2]



Figure 3b. Ixora Carrier Board Backside view [2]



Figure 3c. Ixora Carrier Board In lab



Figure 3d. Components of Isoblu

Hardware BOM

Setting up the device can be followed by the sets of tutorials provided on IsoBlue documentation website.[1] The tutorials are step by step set up of how to build the device. For our project, we approach a bit different since we are testing the device if it is easy to build. If so, we are looking for an easier and cheaper way to build one. We bought the essential parts which are shown in Figure3c Ixora Carrier Board and Figure3d some components of Isoblu. Instead of the sim card with cellular plan, we choose to use Wi-Fi connection in order to send the data to the cloud. The chipping and crimping wires are easy to follow along with connecting the wires to the male and female connectors.

Conclusion

There is a hesitation to answer the question if it is easy to deploy IsoBlue work because we tend to give this device to the farmers who are not technically experienced. Installing and building software needs some knowledge of computers since it only runs on specific operating system and version. Installing required libraries can also be complex if you do not have background on programming. Although there are tutorials on building hardware, the parts are expensive. Moreover, we should also consider how to make the user accessible data and help them analyze to their own data.

References

- [1] "ISOBlue 2.0 · Freeing Ag Machinery Data." *ISOBlue 2.0*, www.isoblu.org/.
- [2] Toradex. 2020. *Embedded Computing | Our Products - Toradex*. [online] Available at: <https://www.toradex.com/products/?q=iMX6>.