

Jemima Hsu, Year 3, MEng Biomedical Engineering

The Charity:

[InAGlobe](#) is an organisation founded by three Imperial students in 2017. It is a partnership-building social project seeking to build a higher-education experience around social innovation.

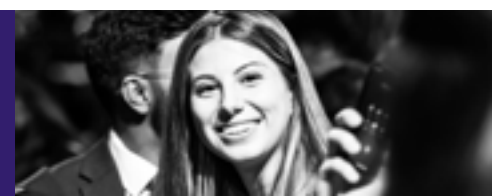
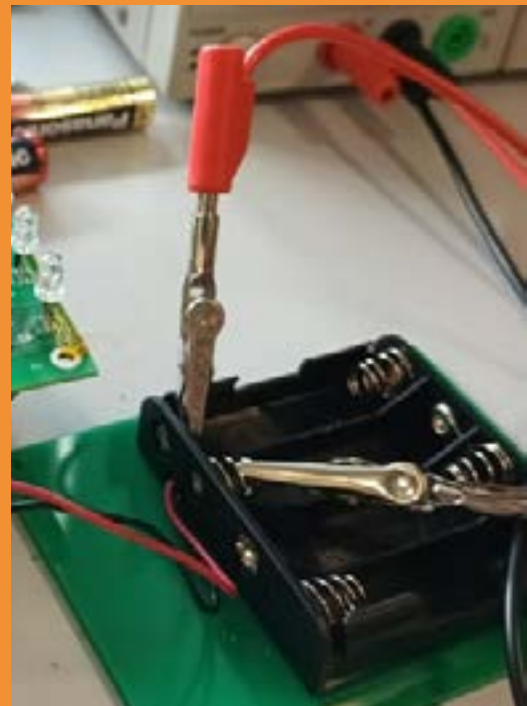
The Project:

InAGlobe's Smart Pillbox project was requested by carer workers of an orphanage in Mozambique called Casa do Gaiato. The children have chronic diseases such as AIDS and Hepatitis C, requiring strict and timely ongoing treatment. Nurses and carers currently track the medication intake of thirty or more children using a paper-based method, taking up a significant part of their work time and limiting their availability for other essential activities.

A testable prototype had already been produced, but it was not yet ready for deployment. My task was to create a plan for making the design robust, scalable, and cost-effective. My new box design has greatly improved compactness and significantly decreased manufacturing time by reducing the volume and amount of 3D printing required. One pillbox can now be produced in a single working day. There are also new mechanisms to ensure the electronics and bottom lid are secure without rattling as before.

Apart from making the design more robust and compact, I also considered how to make it suitable for small-scale production, and the cost implications. Additionally, I highlighted shortcomings in the electronics design and suggested areas for future research and development in the PCB, power supply and consumption, and data flow.

One takeaway was that it's definitely a good idea to plan some contingency time into the project schedule – even for a placement as short as this one.



Highlights:

- Successful testing of new snap fit feature to allow the pill tray to detach from the main box so that different pill tray designs can be inserted, and significantly reducing
- manufacturing time
- Evaluating progress in product design against various specifications, improving the design week on week by identifying and resolving shortcomings
- Drawing together all the aspects of the project together into a final recommendation report
- Building on other people's previous work - sorting through records of their work, asking for clarifications, finding and making improvements
- Bouncing off ideas with the Hackspace team and my project supervisor

