the background

Research shows that roughly one third of food produced globally for human consumption is lost or wasted every year. For a hard hitting figure, that totals to a huge 1.3 billion tons of wasted food annually. That being said, this is not an isolated issue. Not only does that result in a ginormous loss of edible food but also a loss of the water used to produce it, and the packaging (often plastic!) used to keep it fresh.

Research further shows that consumers in Western countries waste between 95 - 115kg of food per person each year, and that the majority of food waste occurs at the consumption stage, as opposed to during production. Researchers at Clemson University in South Carolina are currently developing intelligent packaging which incorporates biological sensors that can detect food spoilage. This is a move forwards from the current methods on the market which include labels or materials which change colour when food spoilage is detected, often signalling when it is no longer useful.

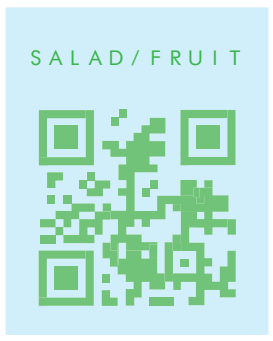
While the research being carried out at Clemson University is an advancement on current methods, I can foresee a few issues which would prevent the proposed packaging from having a significant impact on the issues the world is facing today. Firstly, developing intelligent packaging will most likely require the production of more plastic products in order for the innovation to be viable. On top of this research shows that fruit and vegetables are the food group most likely to be wasted. The packaging developed by Clemson University would either ignore this category or would require packaging to be produced for items which we already buy loose. Furthermore, this packaging would then have to be bought into by large corporations whose business structure is based on the current rate at which food is being purchased - will they realistically buy into a type of packaging which will allow their consumers to spend less money with them? Without the support of these large corporations, the production of intelligent packaging will be costly as it will not become a standardised method of packaging, thus pushing prices of consumables up and therefore making the packaging unobtainable for smaller companies also.

I would like to use science to propose a product which cuts out the middle man and eliminates the need for support from corporate giants by delivering the technology directly to the consumer in an accessible, engaging and sustainable format.

the concept

Reusable stickers embedded with biosensors which detect food spoilage. Each sticker has a unique QR code which can be scanned into a smart phone app, allowing consumers to carry a portable inventory of produce they have at home. The app will then show consumers a live feed of 'use by' dates generated by date collected by the biosensors. The inventory can then be used to generate smart shopping lists or recipes based on foods which will spoil soonest.

the sensor



Alongside categorised stickers, generic stickers would also be developed intended for use with batch cooking which transcends different food groups. This addresses the issue of preparing too much food, as the leftovers can be monitored for spoilage and be used confidently at a later date.

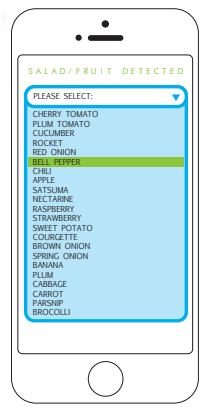
step-by-step

1

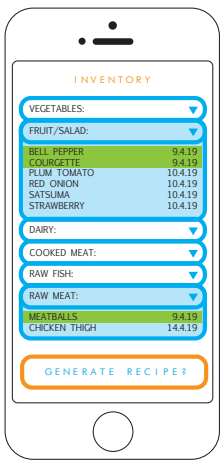
Attach biosensor sticker to corresponding food type.

2

Open the app to scan the unique QR code. Then use the drop down menus to register the food as part of your portable inventory.



3



Within the app you now have a live feed of accurate 'use by' dates based on the current condition of your food.

Use at home - View your ingredients in order of 'use by' date and get great recipe suggestions via the app based on foods which will go out of date the soonest!

Use on the go - create smart shopping lists based on items you already have at home, reducing food and financial waste caused by buying items you already have at home!

4

Once the food is consumed neutralise the Biosensor sticker by removing any chemicals caused by the process of food spoilage. Then re-apply and re-use again and again!