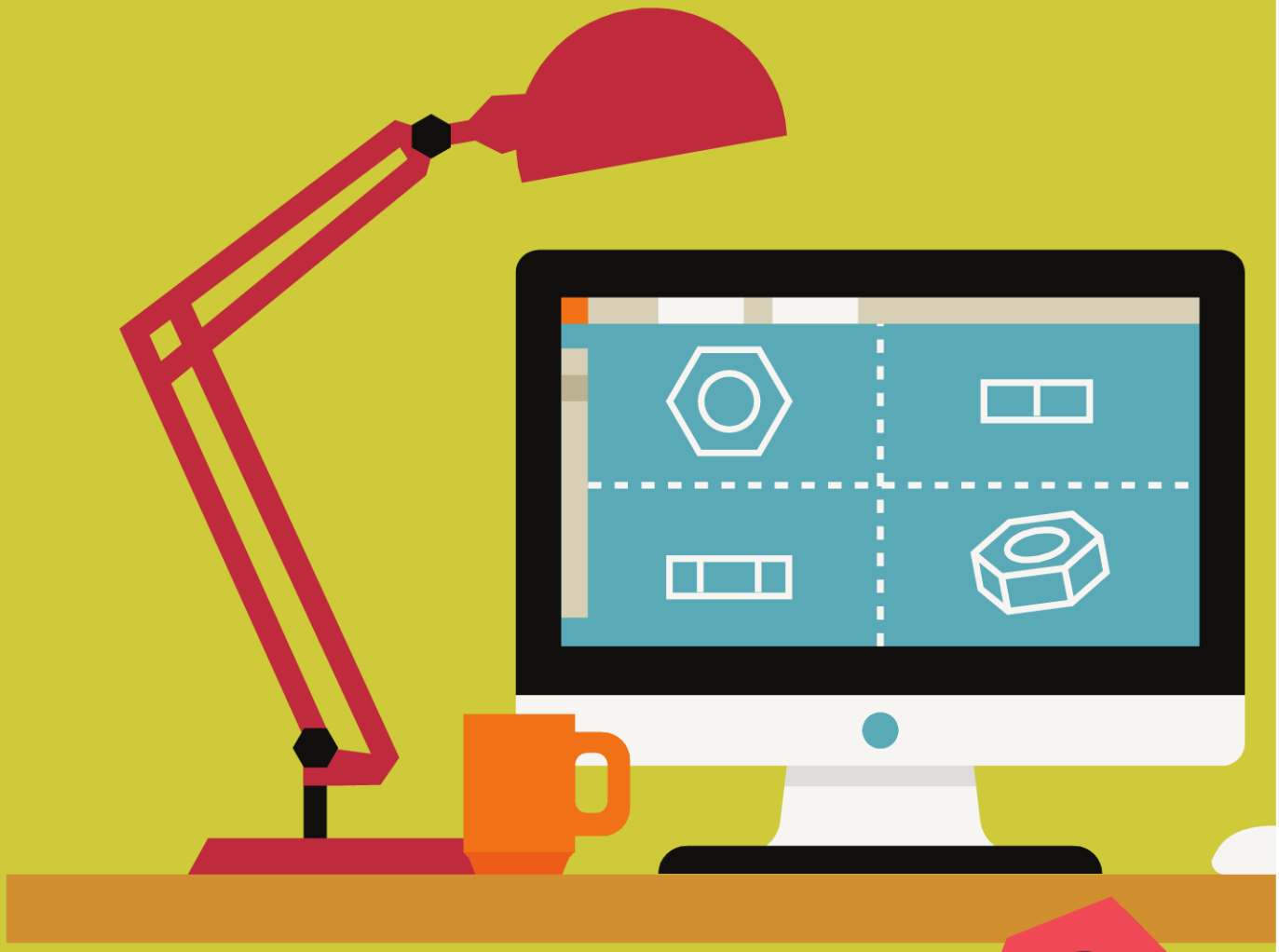


A RUBBISH INNOVATION

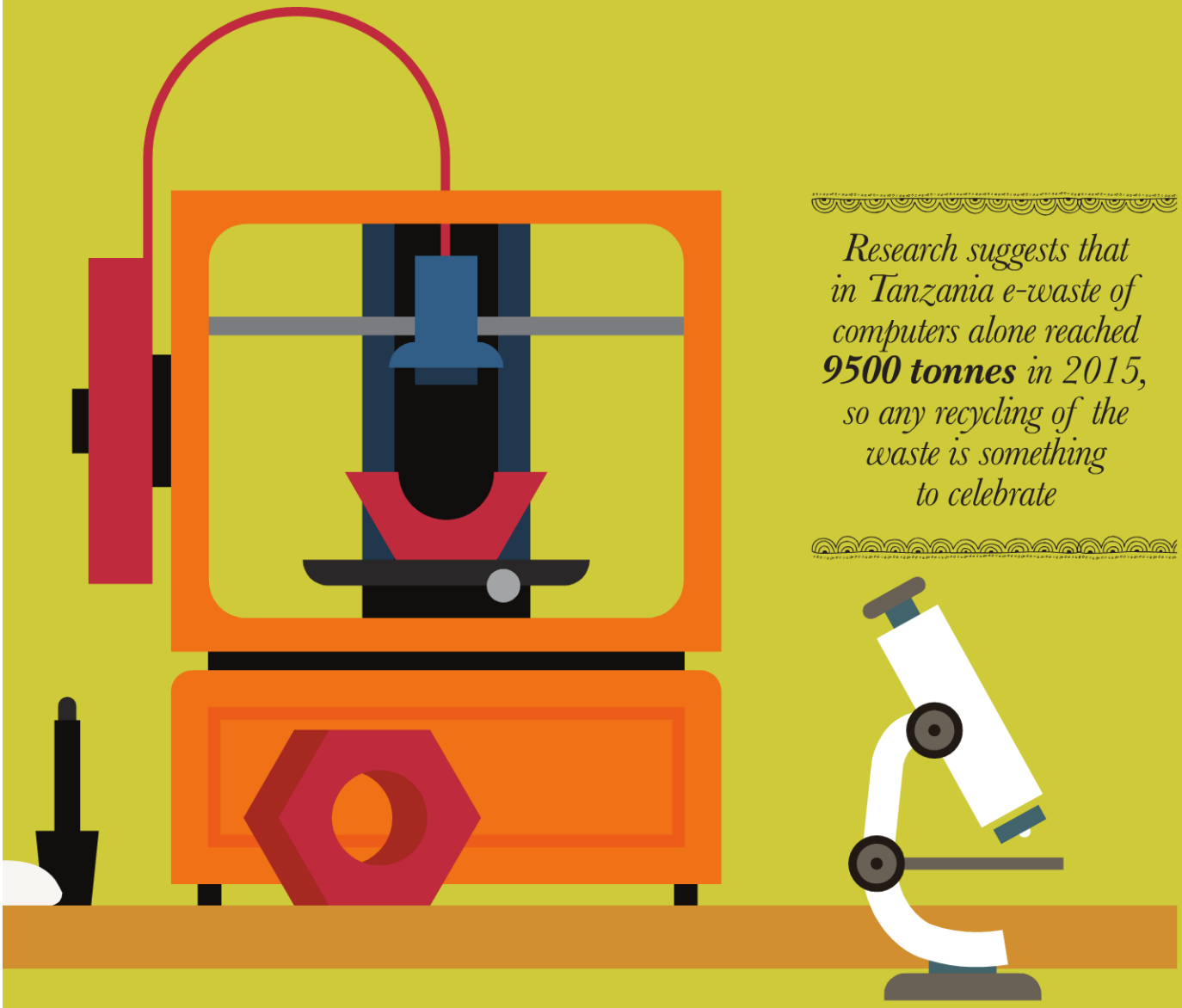
Will 3D printing change our lives?

Recently we heard a prediction that 3D printing could have as big an impact in Africa as the mobile phone. Surprised? So were we, so we asked ***Gabriella Mulligan and William Hoyle*** to find out more.

FIRST UP, WHAT IS 3D PRINTING?

3D printers can 'print' solid objects by laying down thousands of successive layers of material to gradually build up a 3D shape. The layers can be plastic or more complex materials such as titanium. The technology has captured the world's imagination, with everything from jet engine parts to artificial limbs being printed.

The technology is not as new as you might think. An



Research suggests that in Tanzania e-waste of computers alone reached ***9500 tonnes*** *in 2015, so any recycling of the waste is something to celebrate*

American called Charles 'Chuck' Hull obtained a patent for 3D printing back in 1984, but it has only become really popular in the last five years, helped by the growth of the Internet, and falling machine prices.

SO, 3D PRINTERS ARE CHEAP?

No, not really, just cheaper than they were twenty years ago. Most machines start at about US$1120, well beyond the reach of small businesses and entrepreneurs in TZ. However it is possible to build your own printer out of recycled e-waste, and Buni Hub in Dar has just done exactly that.

WOW, IMPRESSIVE. TELL ME MORE.

Buni Hub is an innovation space that aims to support ICT entrepreneurs. The managers seized on the idea of a 3D printer as one that would help a number of its entrepreneurs. They teamed up with Techfortrade – a UK-based organisation that focuses on promoting the adoption of emerging technologies.

Initially Techfortrade provided Buni Hub with a ready-made printer, which ignited the first sparks on interest among entrepreneurs. Together Buni Hub and Techfortrade found an open source design for a 3D printer – a design that is not patented and so can be freely copied. This design allowed most of the components of a 3D printer to sourced from locally recovered electronic 'e-waste', or printed using the existing 3D printer at Buni Hub.

SOUNDS CLEVER, BUT WHAT EXACTLY IS E-WASTE?

E-waste is simply discarded electronic goods such as computers, phones, printers scanners, photocopiers and faxes that have been thrown away. What to do with e-waste is a headache around the globe. Incorrect disposal of e-waste can result in toxic chemicals leaching into soil, risking damage to the environment and human health.

Research suggests that Tanzanian e-waste of computers alone reached 9500 tonnes in 2015, so any recycling of the waste is something to celebrate.

AND THE PRINTER THEY MADE THEMSELVES WAS A SUCCESS?

Absolutely, and more have been built since. Microscopes that would normally cost thousands of dollars are now being locally made on 3D printers in Dar es Salaam for around US$100.

Jacque Dismas, the Buni Hub FabLab manager, was one of the first users of Buni's 3D printer. Inspired, she trained lecturers, students and local entrepreneurs to use the equipment, primarily to show them its potential. On a personal level, she also used the printer on a couple of her own projects. She made an incubation system for mushroom cultivation, using the printer to build some of the temperature and moisture controls and their casings. The printer made customised components that it would have been almost impossible to source elsewhere.

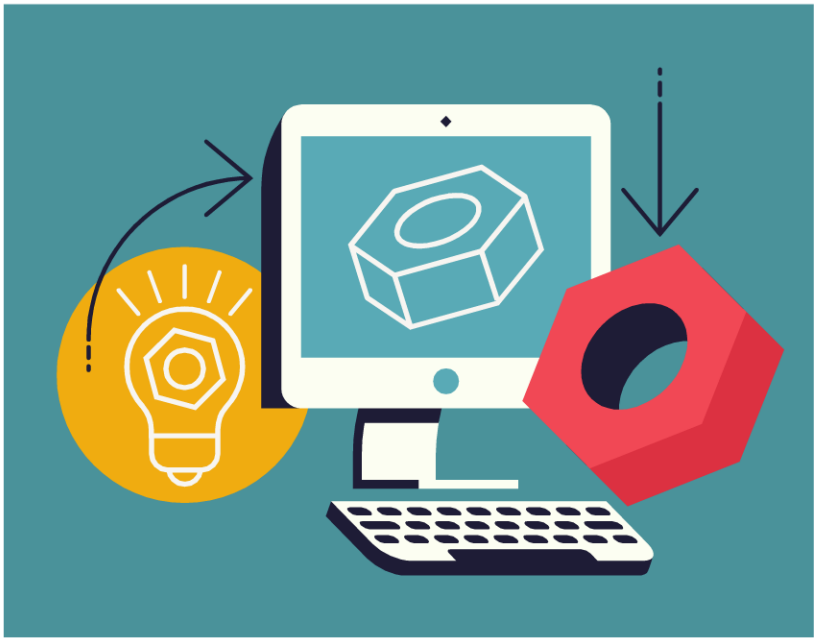
ANY LOCAL BUSINESS TAKING UP THE IDEA?

Absolutely. In particular there are two – one manufacturing the printers themselves, another offering a 3D printing service.

The startup specialising in 3D printing is Dar-based Prinpo. With support from Buni Hub, Prinpo is piloting the production of 3D printed visual teaching aids for a local secondary school in Kijitonyama. If this pilot is successful then Prinpo will roll out its materials to more schools across Tanzania.

Across the City, and close to Dar's international airport, the second of the businesses is on the verge of perhaps the biggest breakthrough in localised use of the technology in Africa. STIC Lab, whose strapline is the 'House of Innovation', proudly claims to be the first manufacturer of 3D printers in Tanzania.

Through an introduction facilitated by Techfortrade, STIC Lab has formed a partnership with the medical research charity TReND. Building on designs for 3D printable scientific lab equipment, created by TreND and designed to introduce the possibilities of Open Source Hardware for local scientific empowerment, the collaboration opens up vast possibilities to bring advanced lab equipment to researchers in Tanzania and across Africa. One of the first products to be made locally will be the FlyPi, a fluorescence microscope that would normally cost thousands of dollars. This microscope can now be 3D printed in Dar for around US$100.



TELL ME A LITTLE MORE ABOUT BUNI HUB. IT SOUNDS LIKE AN AMAZING RESOURCE FOR TZ-BASED ICT ENTREPRENEURS.

It is. At Buni Hub new ideas are generated and helped to grow. It focuses on long-term development projects with the potential to establish a thriving community of technology entrepreneurs, who in turn will build successful Tanzanian businesses. Buni Hub's Brian Paul Mnyampi said: "Our success stories have been, first of all, in coming up with programmes that are all tailored at helping to develop ideas and moving them from their inception to the market." It turns out that 3D Printing is now one of these fundamental developments that is already showing real potential.

Microscopes that would normally cost thousands of dollars are now being locally made on 3D printers in Dar es Salaam for around ***US$100!***

A LAST WORD?

Perhaps that should go to Brian Paul Mnyampi. "Tanzanian entrepreneurs can and are making a difference. We believe this difference will happen through the dedication of the entrepreneurs themselves to solving social problems – Tanzanian entrepreneurs are moving forward, and we will soon produce tools for the whole world to use."

OPPOSITE:
THE TEAM AT TREND, STIC AND TECHFORTRADE THAT IS WORKING TOGETHER ON THE MICROSCOPE PRINTING

BUNI HUB'S 3D PRINTER PRINTING GEAR PARTS