



SUSTAINABILITY, BUSINESS, & IT

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AGENDA

1. SUSTAINABILITY

2. TECHNOLOGY

3. IT

4. Q&A





INNOVATION

We innovate across products, processes and business models

TECHNOLOGY

We fully exploit technology as a source for innovation and productivity improvement

DESIGN

We create product concepts and business propositions that are award winning

CONSULTING

We challenge convention to find solutions that really work - in practice, not just on paper

- Strategy
- Product Design and Engineering
- Business Design
- Agile
- IT Transformation
- Operational Excellence
- People and Talent
- Digital
- Programme and Portfolio Management
- Data Analytics and Business Intelligence

- Consumer and Retail
- Manufacturing
- Transport, Travel and Logistics
- Energy and Utilities
- Financial Services
- Government and Public Services
- Life Sciences
- Defence and Security

**Over 2800
People**

**€600+MM
Turnover**

**75 Years
Experience**

We collaborate with like-minded businesses through two key networks



**ELLEN
MACARTHUR
FOUNDATION**

The Ellen MacArthur Foundation

works with business, government and academia to build a framework for an economy that is restorative and regenerative by design.

PA is an active contributing member of the CE100 (joint retail report, circular business model design guide)



The UN Global Compact

is the largest corporate sustainability initiative in the world, with more than 9000 companies and 3000 non-business signatories globally.

PA is a partner to UNGC Project Breakthrough. PA is a signatory to UN Global and a specialist technical advisor.



SUSTAINABILITY HAS CHANGED

The business opportunity

\$1.8
HEALTH AND
WELLBEING

\$3.7
CITIES AND URBAN
MOBILITY

The Business and Sustainable
Development Commission,
forecast sustainability to be worth
at least **\$12 trillion a year in
revenue and savings by 2030**

\$12,000,000,000,000

FOOD AND
AGRICULTURE
\$2.3

ENERGY AND
MATERIALS
\$4.3

Consumer demands

89%

care personally about
protecting the planet

83%

would always pick the brand which
had a better **record of sustainability**

90%

feel that brands have a
responsibility to take care of
the **planet** and its **people**

70%

would be willing to **pay more** for
products and services if they
protect the environment or
don't infringe on human rights

Investor aspiration

Sustainable investments are achieving similar performance to traditional funds

e.g. MSCI ACWI Low Carbon Target Index (7.24%) vs MSCI ACWI Index (6.91%) – source MSCI at 31/3/17

Smart money is moving into sustainable investments

US assets invested sustainability have grown 135% in four years from \$3.7Tn to \$8.7 Tn – Global Sustainable Investment Alliance

Taking sustainability seriously is an indicator of strategic competence for investors

Laurence D. Fink, founder and chief executive of the investment firm BlackRock, is going to inform business leaders that their companies need to do more than make profits — they need to contribute to society as well if they want to receive the support of BlackRock.



THE FUTURE OF BUSINESS

The future of business is seeing sustainability and profitability as complementary – not a cost to business.

**THE POWER
OF A
SUSTAINABLE
BUSINESS**

- | | |
|---------------------------------|---|
| CAPTURING
VALUE | WINNING
AND RETAINING CUSTOMERS |
| CREATING
NEW PRODUCTS | GENERATING
POSITIVE IMPACT |
| REDUCING
RISK | ATTRACTING
INVESTMENT |
| ATTRACTING
TALENT | LEVERAGING
ECOSYSTEMS |

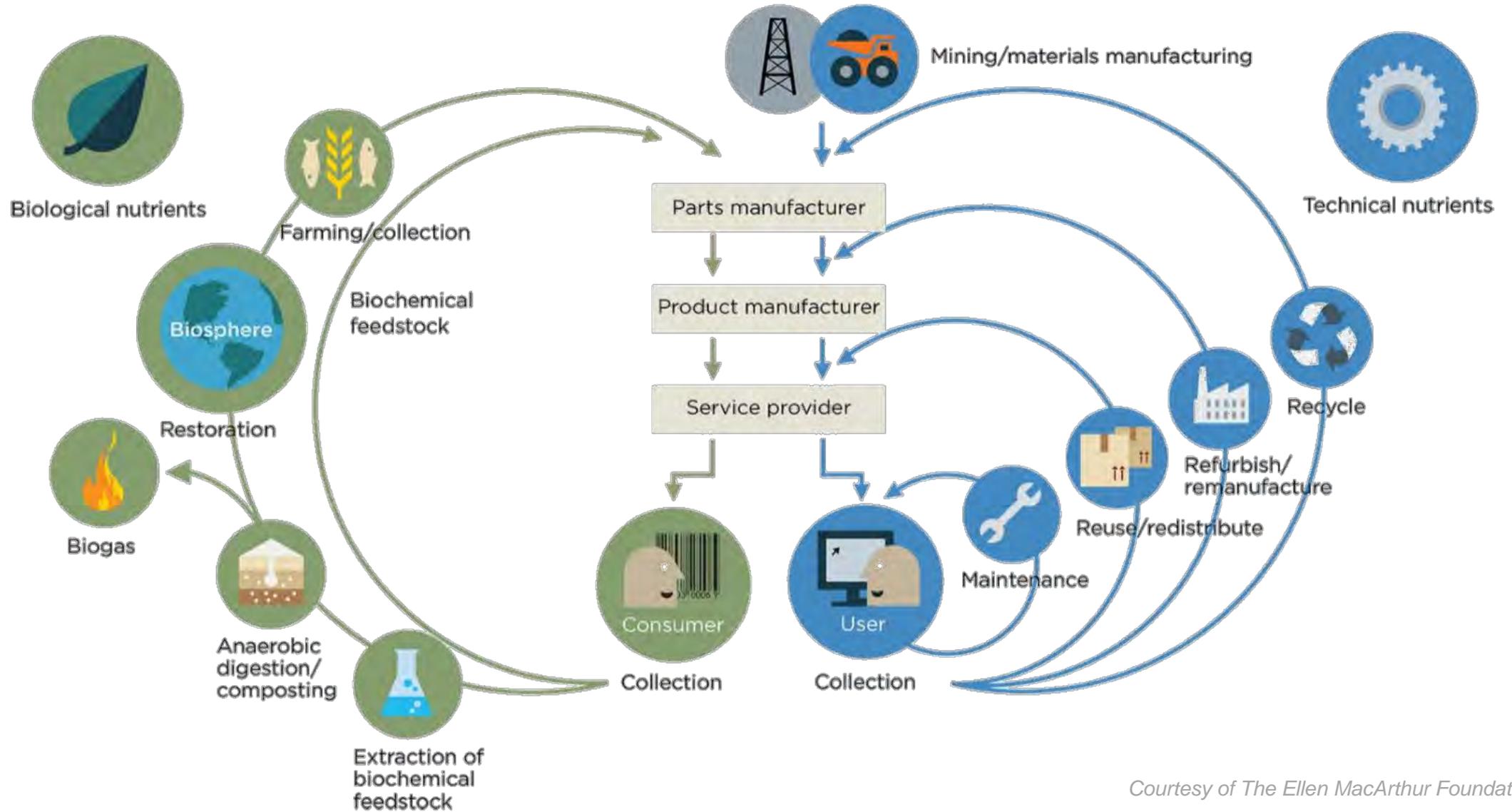


THINK DIFFERENTLY

Think sustainable development goals



Think circular



Five trends



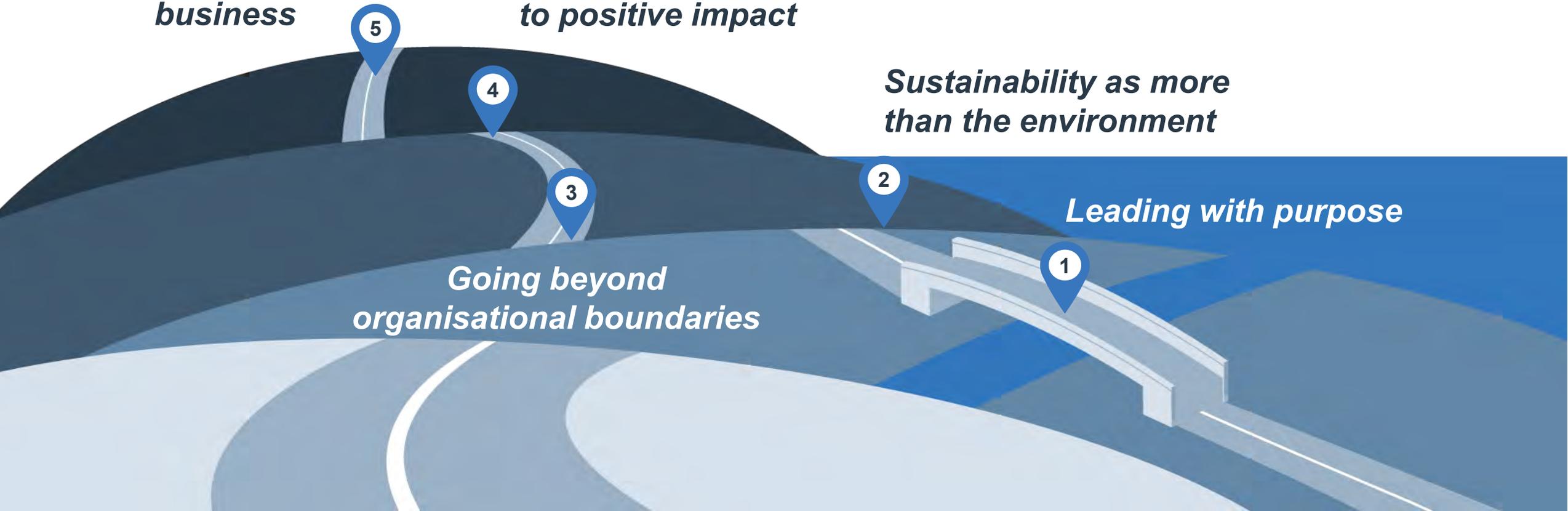
Embedding sustainability transformation into core business

From 'less harm' to positive impact

Sustainability as more than the environment

Leading with purpose

Going beyond organisational boundaries





CASE STORIES



Skipping Rocks Lab

Starting a revolution with a waste-free alternative to plastic bottles

London start-up Skipping Rocks Lab has come up with an alternative to plastic water bottles. It's a flexible container called Ooho, made from seaweed extract, that's 100 percent naturally biodegradable. When someone has finished drinking the water they can even eat the container.

We're helping the business develop the machine to manufacture the containers. Skipping Rocks Labs will lease the machine to businesses to use on their premises. The retailers will then be able to produce water or juice filled Oohos daily on-site, rather than taking up storage space with stock. The business ultimately aims to help stop up to one billion plastic bottles reaching the ocean every year, and stop the 300 million kg of carbon emissions that goes with them. As well as using 9 times less energy in the production process,

the material has the potential to be cost competitive with plastic.

We started working with the business after meeting their team at an event run by the Circular Economy 100 programme in late 2016, and our team of mechanical and process engineers has worked closely with the Skipping Rocks Lab team of scientists on developing and testing the machine since mid-2017.

The business hopes to have a small number of machines with clients by the end of 2018. In the meantime, they're testing Ooho at events like outdoor food markets and marathons.

The potential for Ooho doesn't stop at replacing water bottles. The material can be a substitute for many single use plastics, from ketchup sachets to miniature shampoo bottles.

Bringing Ingenuity to Life

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Ecoboosth

Finding new uses for old plastic and creating a sustainable business

Plastic is increasingly hitting the headlines as a global waste headache, whether it's clogging oceans or piling up in landfill.

Ecoboosth, a sustainable events company, wanted to reduce the huge amount of plastic waste produced by the events industry. It's estimated the events industry alone created 100,000 tonnes of waste in 2018 – equivalent to 1.4 billion plastic bottles. The industry needs a new approach, fast. We partnered with Ecoboosth to transform an innovative idea into a successful business.

Our technology experts researched, analysed and identified potential materials, manufacturing technologies and certification approaches. This included evaluating additive printing capabilities at our Global Innovation and Technology Centre, which allowed Ecoboosth to evaluate how the technology could reduce production

costs and reduce waste. We then helped link choices on certification, materials and technologies back to a deeper understanding of the customer value proposition.

Now, Ecoboosth combines shredding, compounding and extrusion with pressing, moulding and vacuum technologies to develop its products.

Not only did we provide diverse expertise, we were Ecoboosth's very first customer. We asked Ecoboosth to create a stand we could reuse at a number of events. The Ecoboosth team designed us a stand using a variety of recycled materials, including toothbrushes, plastic bottles and traffic cones.

In less than a year, the business has transformed from an idea to a fully-operational organisation.

Bringing Ingenuity to Life

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<https://www.youtube.com/watch?v=r9PgJ8cq7ow>

Putting the circular economy into practice

Remanufacturing



RENAULT

By-product valorisation



 **BRITISH SUGAR**

Light as a service



PHILIPS

Nike GRIND



Milkman model



Loop

DUNNET BAY DISTILLERS

Developing lightweight
recyclable packaging for a craft
spirits company

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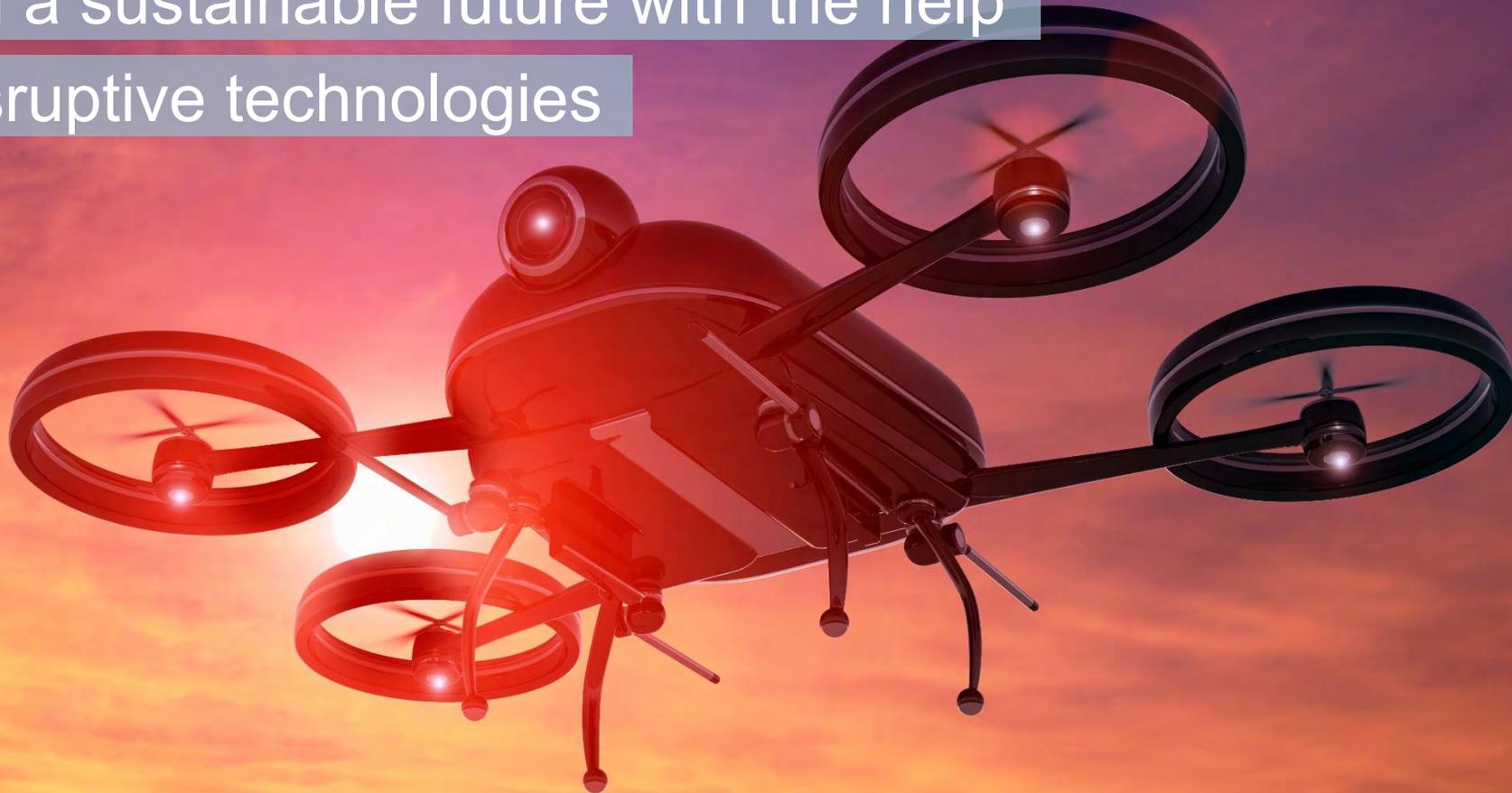


DISRUPTIVE TECHNOLOGY

UN GLOBAL COMPACT



Creating a sustainable future with the help
of 12 disruptive technologies



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<https://www.paconsulting.com/insights/2017/united-nations-global-compact/>

<http://breakthrough.unglobalcompact.org/#disruptive-technologies>

Project Breakthrough

Disruptive technologies for sustainability



Unmanned Air Systems



Next Generation Robotics



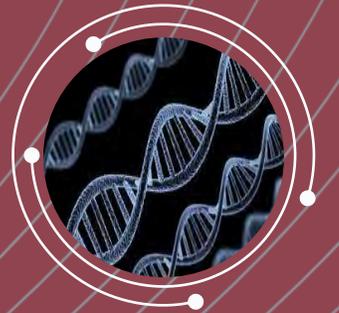
Internet of Things



Artificial Intelligence



Digital Agriculture



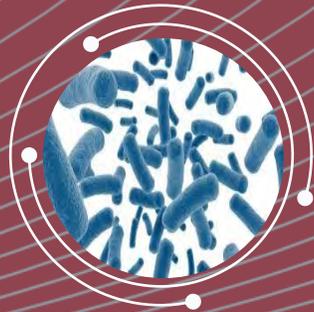
Gene Editing



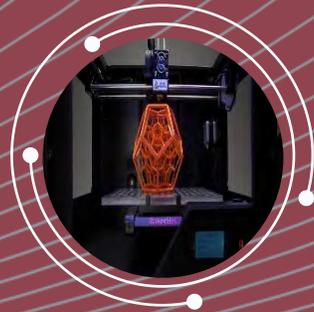
New Realities



Blockchain



The Microbiome



Additive Manufacturing



Autonomous Vehicles



Big Data



United Nations
Global Compact



<http://breakthrough.unglobalcompact.org/#disruptive-technologies>

ADDITIVE MANUFACTURING

Example applications

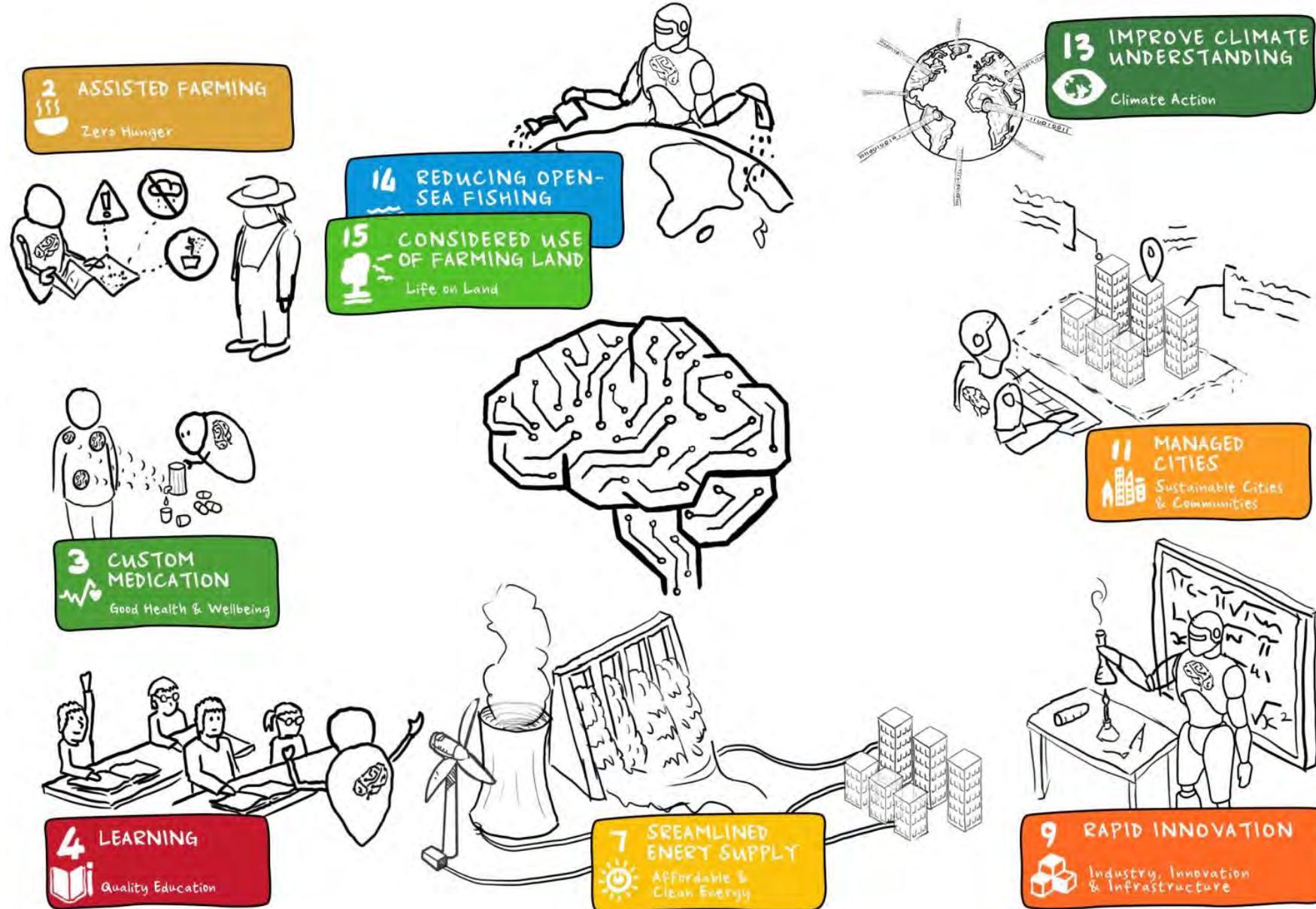
- Medical implants
- Automotive components
- Bioprinting
- Closed loop plastic feedstock
- The 3D printed home



ARTIFICIAL INTELLIGENCE

Example applications

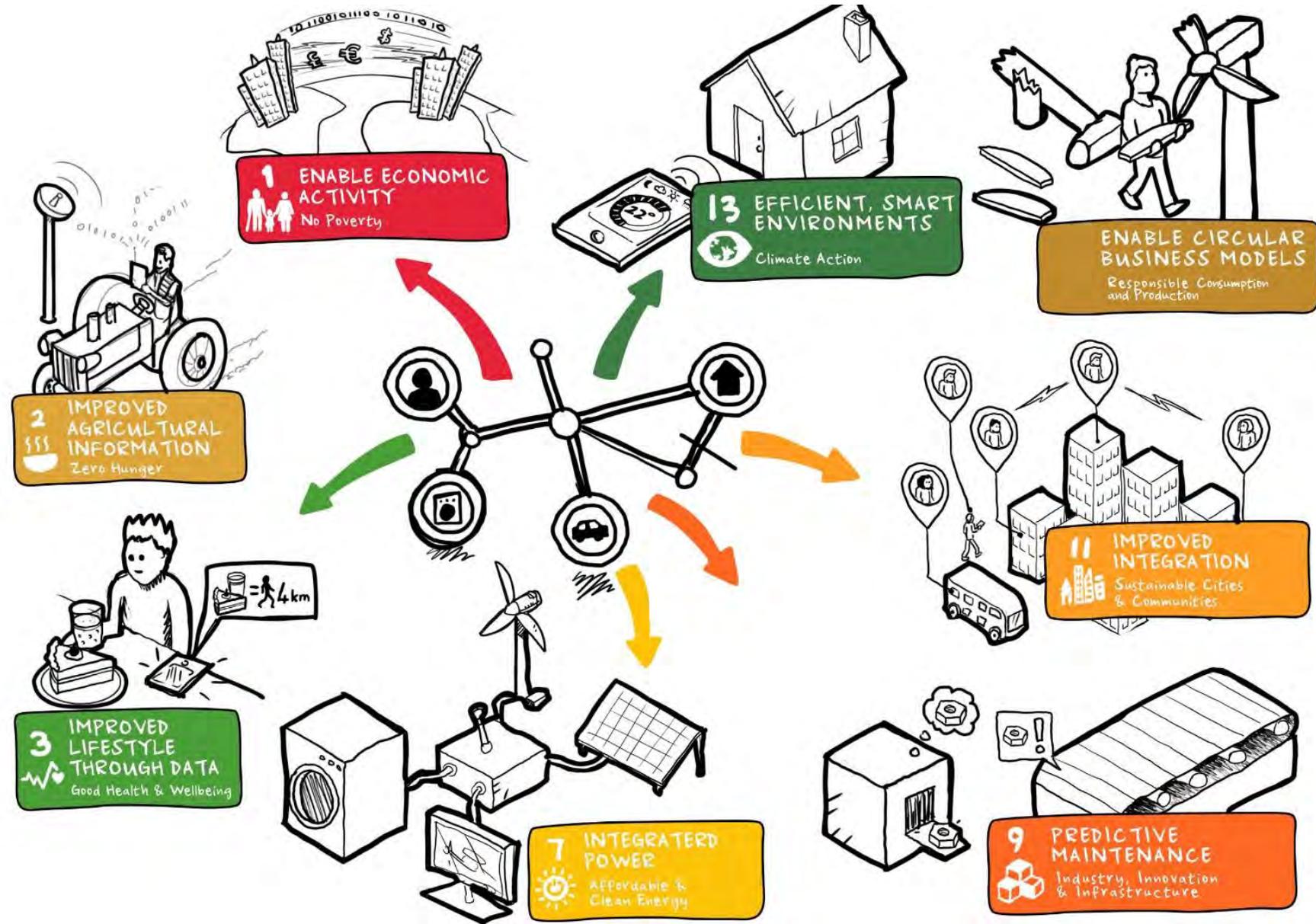
- Identifying poverty hotspots from satellite images
- Just-in-time water management
- Cognitive revolution for healthcare



INTERNET OF THINGS

Example applications

- Making cities smarter
- Air quality
- Accessible healthcare
- Connected construction



ALTERNATIVE REALITIES

Example applications

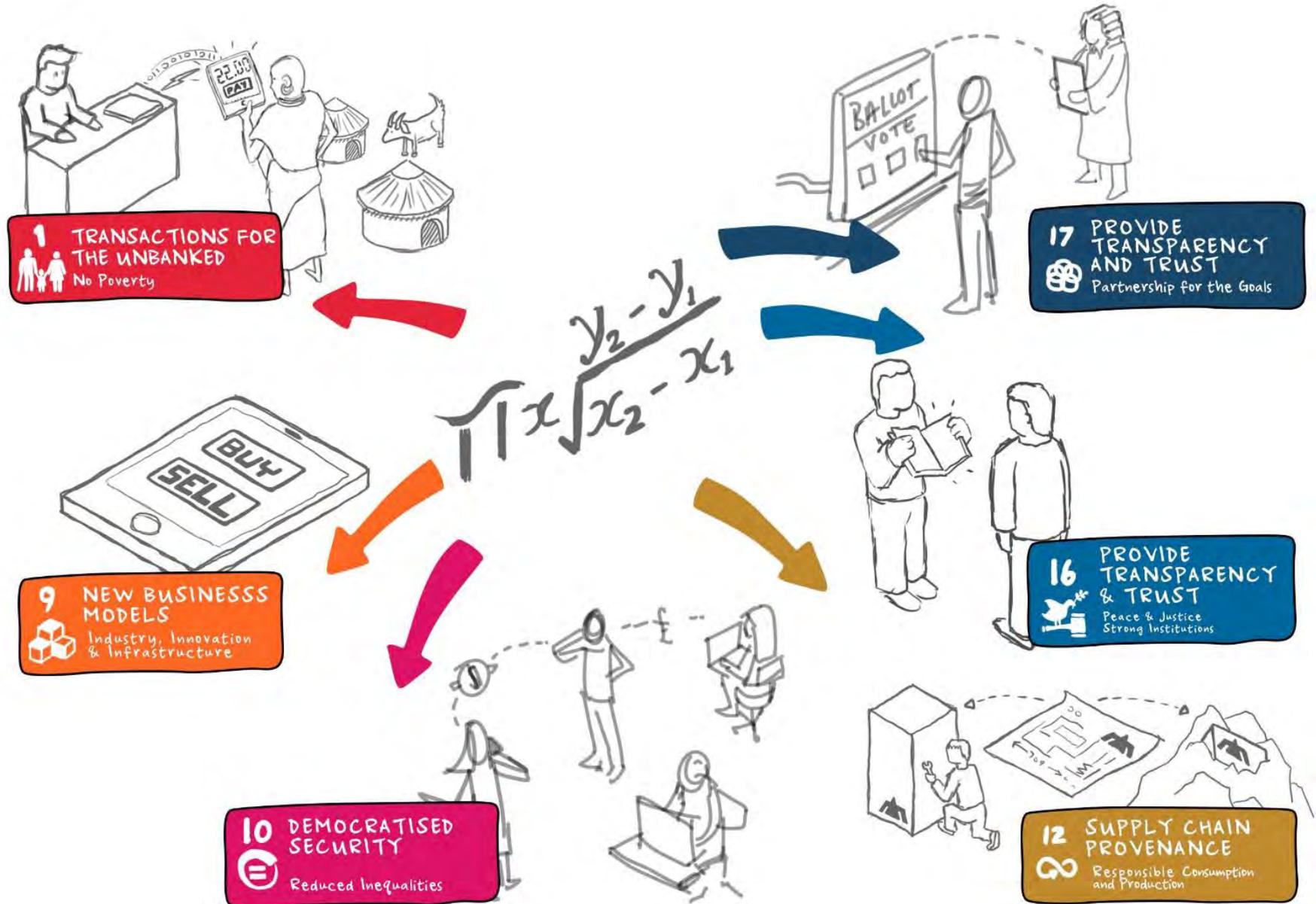
- AR in medicine
- AR in maintenance and engineering
- AR for workers with intellectual disabilities



BLOCKCHAIN

Example applications

- Managing the land registry
- Identity management for refugees
- International money transfers in Africa
- Supply chain transparency





IT CASE STORIES

Google: reducing energy consumption



HP and Apple: increasing circularity of devices



Flowminder: using data for good

Case Study

Haiti Earthquake 2010

Read More →



Case Study

Dynamic Population Mapping Using Mobile Phone Data

Read More →



Case Study

Mobile Phone Data to Understand Climate Change and Migration Patterns in Bangladesh

Read More →



FLOWMINDER.ORG

PRACTICE AREAS

- **Disaster Response**

We pioneered the use of de-identified data from mobile operators to follow population displacement. With this data we support relief agencies in delivering the right supplies to the right people at the right time.
- **Socioeconomic Analysis**

Traditional surveys in low- and middle-income countries produce estimates only for large areas. Using new statistical methods, satellite and mobile data we produce estimates of poverty and key social indicators at a resolution of 1km².
- **Precision Epidemiology**

Most infectious diseases spread through human movements. We integrate large numbers of data sources, including data from mobile phone operators to model and predict spread of infectious diseases.

Publication

FlowKit: Unlocking the power of mobile data for humanitarian and development purposes

Flowminder, Flowminder-DIAL White Paper

Read More →





**even your old sneakers have
value**

Stuffstr: enabling the circular economy



About PA.

An innovation and transformation consultancy, we believe in the power of ingenuity to build a positive human future in a technology-driven world.

As strategies, technologies and innovation collide, we turn complexity into opportunity.

Our diverse teams of experts combine innovative thinking and breakthrough technologies to progress further, faster. Our clients adapt and transform, and together we achieve enduring results.

We are over 2,600 specialists in consumer, defence and security, energy and utilities, financial services, government, healthcare, life sciences, manufacturing, and transport, travel and logistics. And we operate globally from offices across the Americas, Europe, the Nordics and the Gulf.

PA. Bringing Ingenuity to Life.

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