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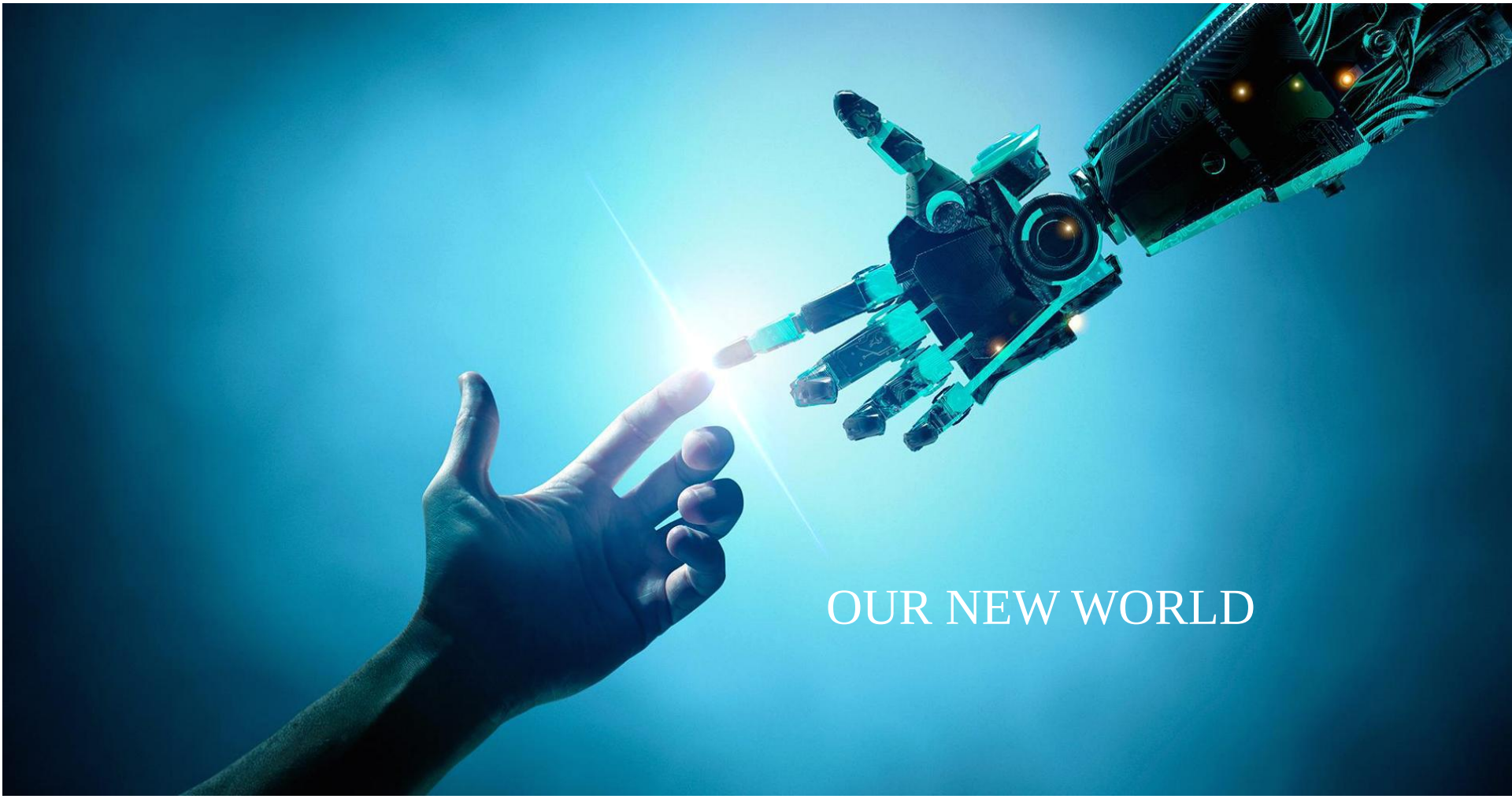

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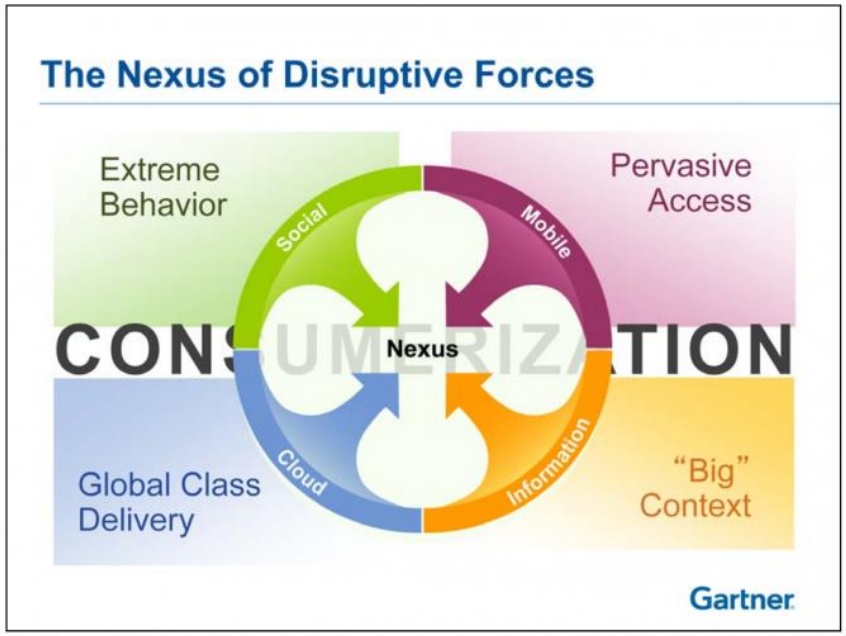
The Nexus of Disruptive Forces
Extreme Behavior
Pervasive Access
Social
Mobile
CONSUMERIZATION
Nexus
Cloud
Information
Global Class Delivery
"Big" Context
Gartner

Artificial Intelligence

- **Artificial Intelligence** is the broader concept of machines being able to carry out tasks in a way that we would consider “smart”.
- Divided into Applied and Generalised

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AI is:

- 1000 x smarter
- move at speed 1Mx faster than we think
- ingest 1Mx more data than we can

- Software that can rewrite itself, update itself, renew itself

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Machine Learning

A current application of AI based around the idea that we should really just be able to give machines access to data and let them learn for themselves.

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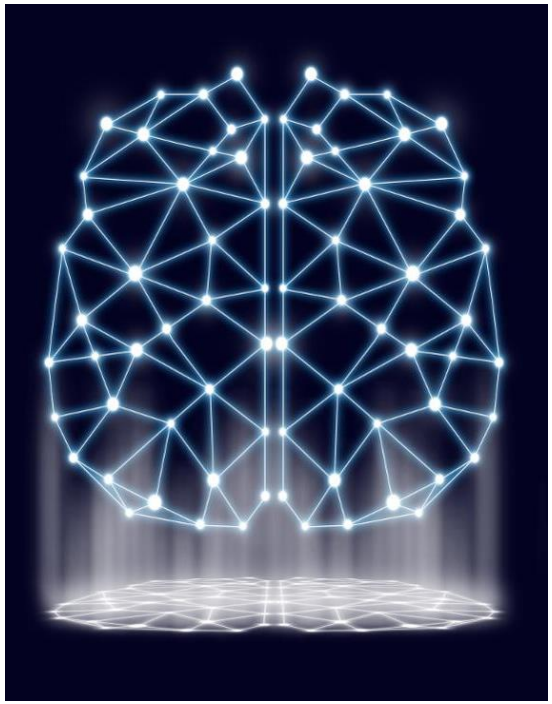
Neural Networks

A Neural Network is a computer system designed to work by classifying information in the same way a human brain does. It can be taught to recognize, for example, images, and classify them according to the elements they contain.



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Deep Learning

- Deep learning is an algorithm inspired by how the human brain works, and as a result it's an algorithm which has no theoretical limitations on what it can do. The more data you give it and the more computation time you give it, the better it gets.

- As time goes on and it gains more experience, can increase its probability of a correct classification, by “training” itself on the new data it receives. In other words it can learn from its mistakes -just like us.

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Examples of Deep learning

- Self driving cars
- Recolouring black and white images
- Predicting outcome of legal proceedings
- Precision medicine
- Automated analysis
- Game Playing

Shopping
Banking
Online Media Services
Online Gaming Services
Smartphones
Bluetooth
Hi Speed Internet
Wifi
Social Networking Sites

Changes In Last 5 Years

- globalization, digitalization, climate change and resource scarcity shaped our lives?

Opportunities

- Geno-editing
- Cure of diseases like Alzheimers ,
- Cure paralysis
- Cancer detection
- Freedom of thought
- Biological aging
- Understand economic systems
- Improve climate science

“Is it redefining what it means to be human, to be in this world?”

Impact on Social and Economic |Structures

How will we adjust our social and economic structures in a world where computers can do the things that humans spend most of their time doing?

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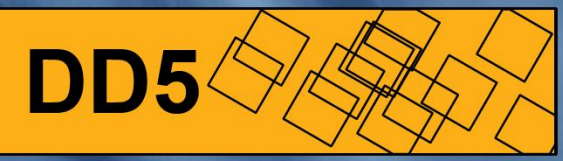
Consider This …

Secondary effects will be more disruptive than the initial digital change



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Digital Disrupter Scale

		Secondary Effects
DD5 1,000,000s	Autonomous AI	Urban Design, Insurance, Laws, Car Ownership
DD4 100,000s	3D Printing	Organs, Manufacturing, End Chinese Dominance?
DD3 1,000s	Conversational UX and Bots	Teaching, Literacy, Social Engagement
DD2 100s	Remote Drones	Delivery, Surveillance, Inspection
DD1 10s	Augmented Gaming	More Games

Gartner

Relevance and application in Africa

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WE'RE IN AFRICA…

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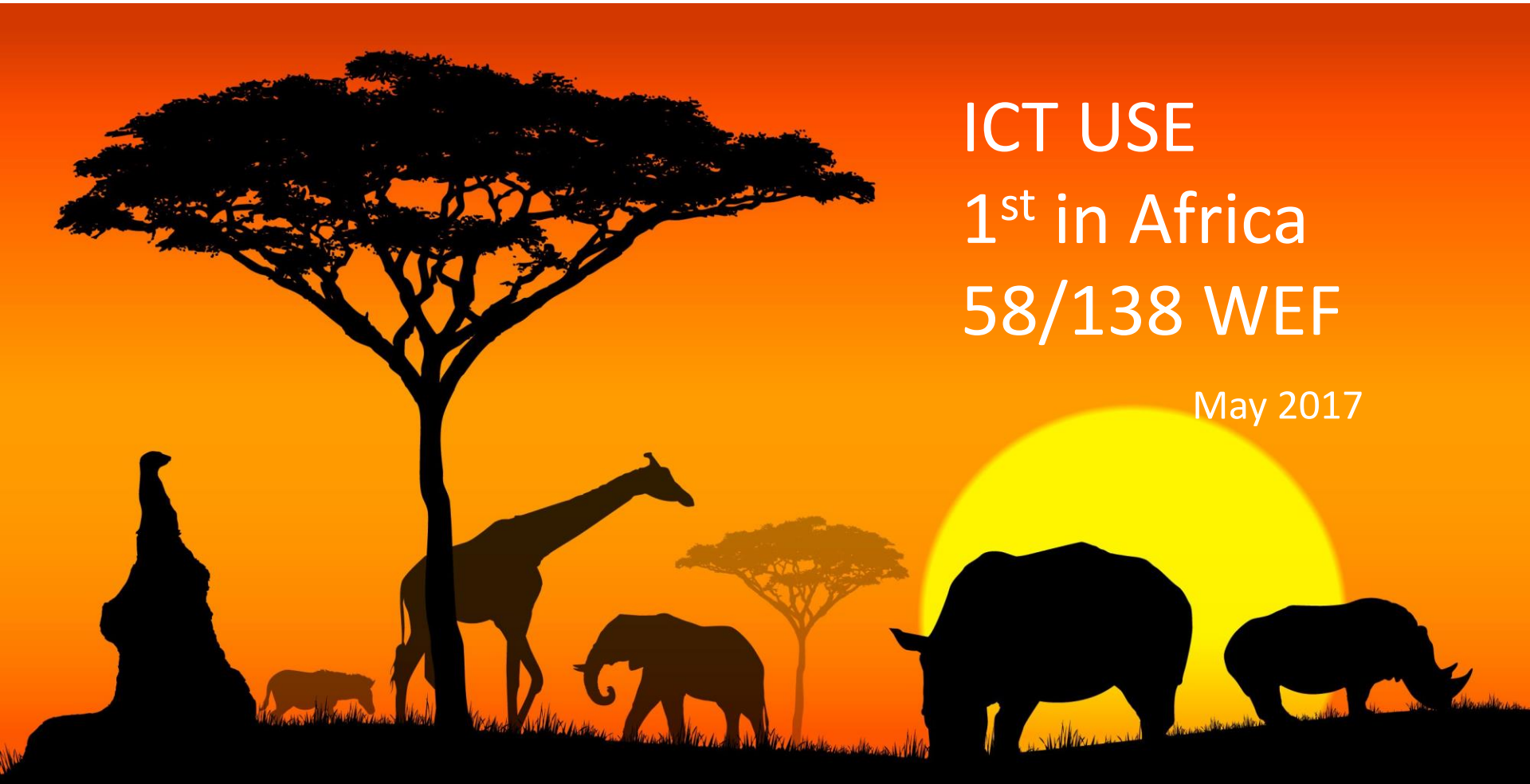

ICT USE
1st in Africa
58/138 WEF

May 2017

Is SA Geared up for the 4IR?
What do we need to do to change this?

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- “South Africa is also uniquely positioned for entrepreneurs developing bot services. Overseas there’s an obsession with cognitive computing and total digitization. What’s interesting in South Africa is applying those principles to an industrial economy which still requires the human touch.”

Education

- Is our educational system geared for the challenges of AI?
- Are our Enterprise development programs geared for the challenges of the 4IR?

Ethical and Moral Questions

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Twitter
Samsung Apps
Your Video
Family Story
Fitness
Kids
YOUR YOGA
YOUR SITUP
Skype
AccuWeather
WSJ Live
Web Browser
Picasa
TIME
TIME TV
USA TODAY
This Day in History
Viewster
vTuner
SmartTV@samsung.com
A Logout
B WallPaper
C Account Manager
Tools
Return

[Self driving Truck]

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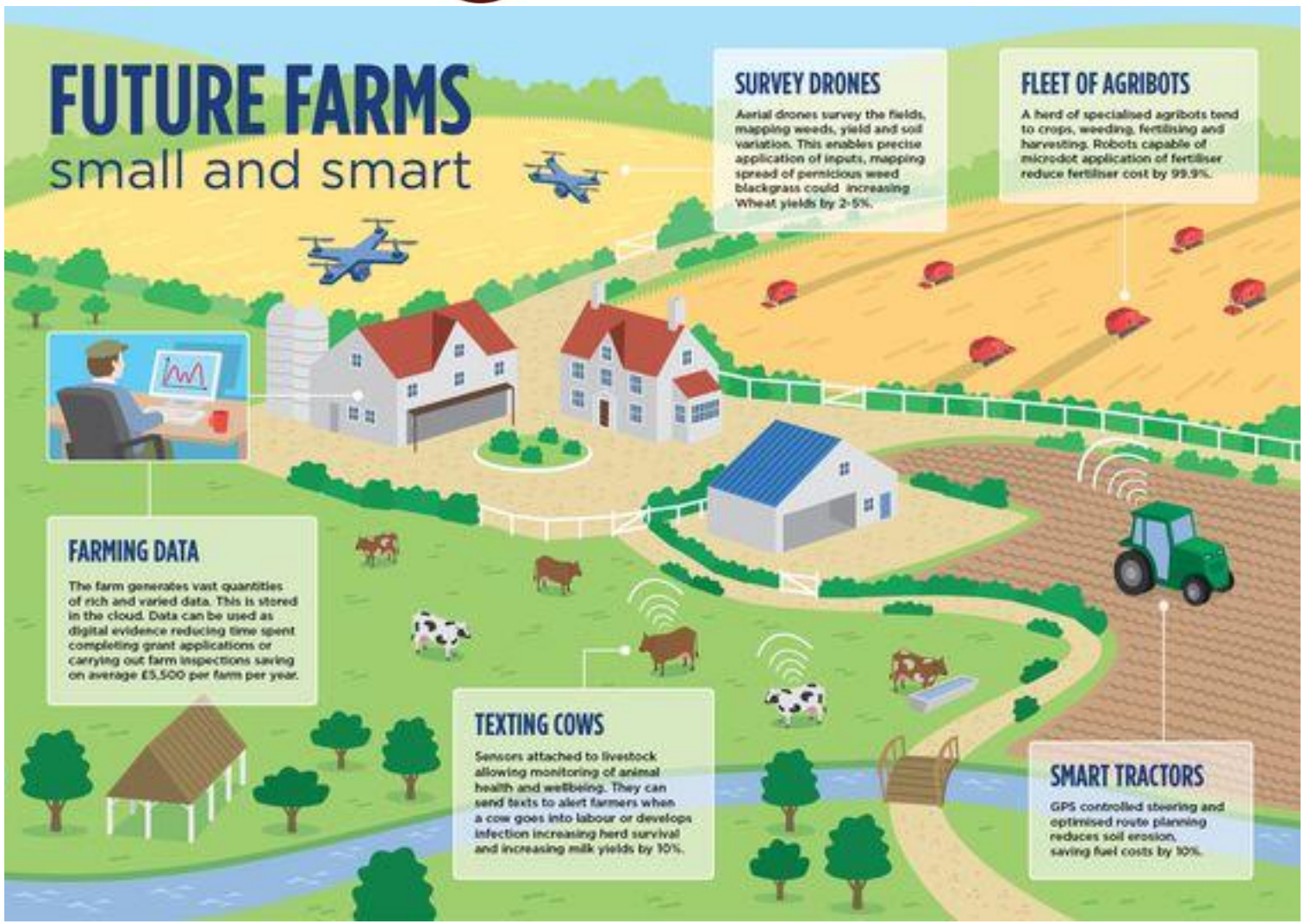
FUTURE FARMS
small and smart
SURVEY DRONES
Aerial drones survey the fields, mapping weeds, yield and soil variation. This enables precise application of inputs, mapping spread of pernicious weed blackgrass could increasing Wheat yields by 2-5%.
FLEET OF AGRIBOTS
A herd of specialised agribots tend to crops, weeding, fertilising and harvesting. Robots capable of microdot application of fertiliser reduce fertiliser cost by 99.9%.
FARMING DATA
The farm generates vast quantities of rich and varied data. This is stored in the cloud. Data can be used as digital evidence reducing time spent completing grant applications or carrying out farm inspections saving on average £5,500 per farm per year.
TEXTING COWS
Sensors attached to livestock allowing monitoring of animal health and wellbeing. They can send texts to alert farmers when a cow goes into labour or develops infection increasing herd survival and increasing milk yields by 10%.
SMART TRACTORS
GPS controlled steering and optimised route planning reduces soil erosion, saving fuel costs by 10%.

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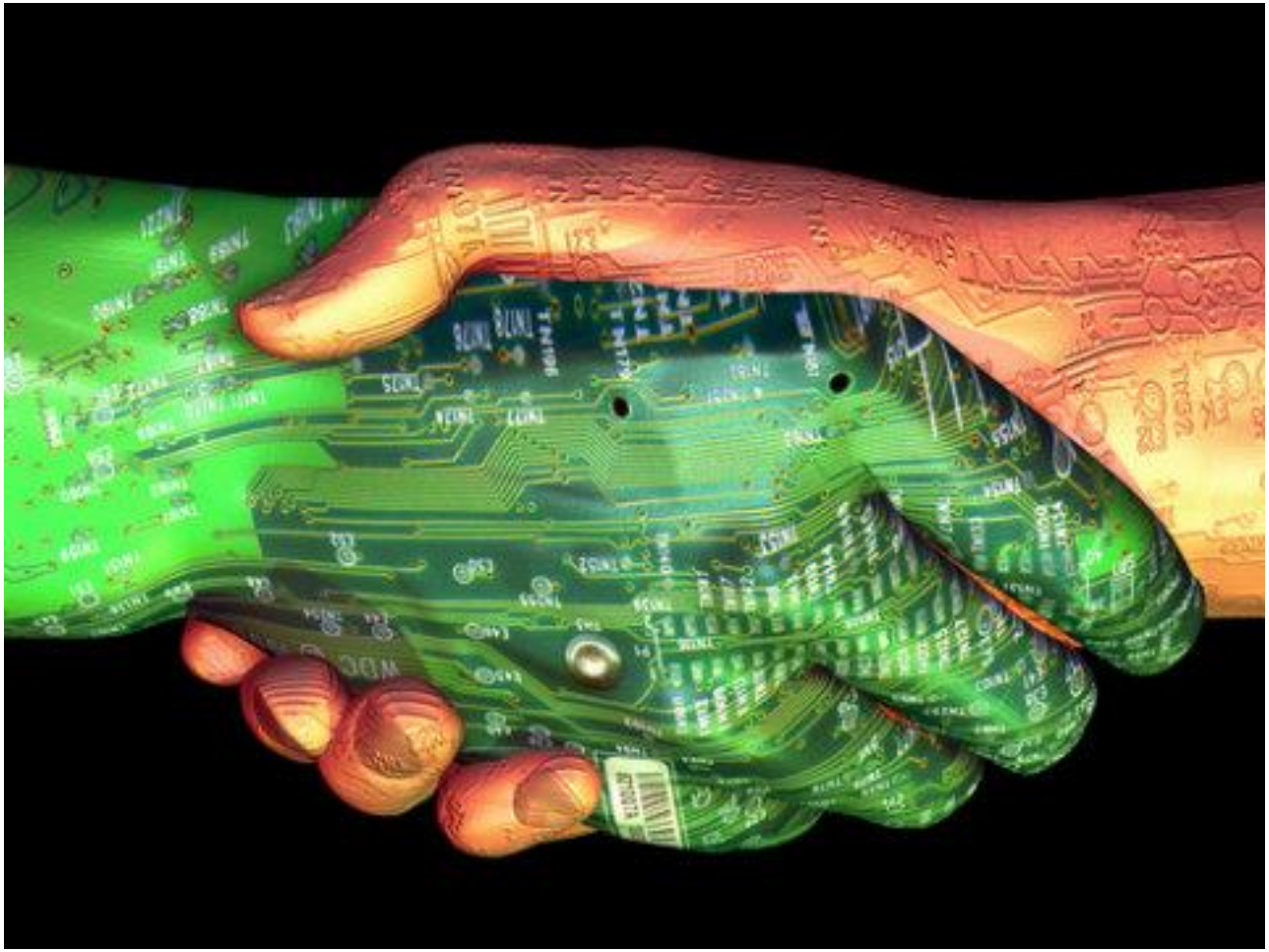

Impact Work force and Job Market

- WEF impact of jobs displacement as result of 4IR between 2015 and 2020 = 7.1M aro redundancy, automation or disintermediation
- +2.1M new jobs (computer & mathematical, architecture and engineering)
- Creativity, innovation, problem solvers, leadership, agility
- What will be the future of work? How will we define work? How will we share wealth?

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Deep AI – a blessing or a Curse

> **Disruption certainly. Deep AI is the real risk, though, not automation.**
>
> **— Elon Musk (@elonmusk) June 9, 2017**

Disruption may cause us discomfort, but it's not a threat in and of itself. However, Musk and others do see the potential for deep AI to be world-shattering, at least for humans.

Blessing or curse?

- Super-intelligent AI with average intelligence..

  means….

- Electronic circuits function 1M x faster than biochemical ones
- Therefore thinks 1M x faster than human
- If running for 1 week, it will perform 20 000 years of human-level intellectual work.
- Questions to follow:

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Questions to Ponder

- How do we understand, much less constrain, a mind making this sort of progress?
- If we build machines so much more competent than we are, could the slightest divergence between their goals an our own potentially destroy us?

The moment we admit that information processing is the source of intelligence, that some appropriate computational system is what the basis of intelligence is, and we admit that we will improve these systems continuously, and we admit that the horizon of cognition very likely far exceeds what we currently know, then we have to admit that we are in the process of building some sort of god. Now would be a good time to make sure it's a god we can live with.