

4IR : Space, Design and Ecology

Prof Simon Connell : Chair

1. **Dr Wesley DOORSAMY** : Data - The invisible hand: Technological impacts on society
2. **Ms Thandile NTUMBA** : The rise in the staging of sacred intercessions by Traditional Healers on digital spaces
3. **Dr Martin COOK** : The Digital Twin in Industry: Enhanced safety and performance in aerospace, mining and industry
4. **Prof Pat NAIDOO** : Nexus of Energy, Water, Food, Waste : 4IR Contributions
5. **Mr Anthony KAZIBONI** : Achieving Water Security in the 4IR: Possibilities for South Africa

“What a chimera then is 4IR The glory and the scum of the universe” – Blaise Pascal

All scientific advances and the resulting new technologies occur in a human context. Ultimately, its people, their systems and institutions that will determine how the knowledge and technology is used. Yes, technology can support sustainable socioeconomic progress, but it will still need oversight by informed and active citizens. The illustrative example is inspired by “The Great Hack”.

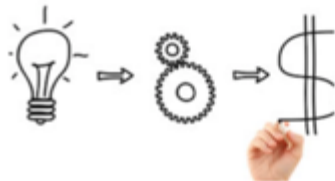
Home

<https://nexus.febe.uj.ac.za>

NEXUS - GREEN ECONOMY SECTOR - ENERGY-WATER-FOOD-WASTE RESEARCH GROUP

Energy enables the water, food and waste sectors. The energy must be clean, green, cheap, reliable, secure and available. This means an energy mix, founded on a nuclear base which then enables renewables. The energy supply modules are packaged to be grid and usage appropriate. The grid is smart. Energy can also be process heat, for desalination or synthetic fuel production. Clean water is produced by nature, or by using energy where necessary, and then delivered by a water-grid, analogous to the energy grid. Energy and water projects are modern and exhibit 4IR innovations. Food production and waste processing are enhanced by engineering principles, from project management to 4IR principles. The entire package is wrapped with research, innovation, new undergraduate and short learning programme courses, postgraduate training, building the local research infrastructure and commercialisation.

SOLUTIONS



Innovation, Engineering, Business and Commercialisation

THE ENERGY GRID



Modular generation - matching supply to load and infrastructure

AHTR



Advanced High Temperature Small Modular Reactor Design

WATER



Desalination, purification, waste treatment

CAPACITY DEVELOPMENT



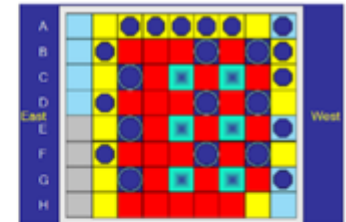
Human Capacity Development : SLPs, CPD

KILO-POWER



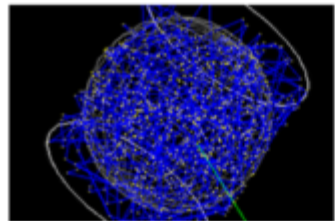
Deploying NASA's 1-10 kW reactors

SAFETY, EFFICIENCY



Fibre optic based reactor in-core sensing

UBUNTU REACTORS



High Performance Computing and Simulation

MICRO-FARMING



4IR enabled small scale farming

ABUNDANT PROTEIN



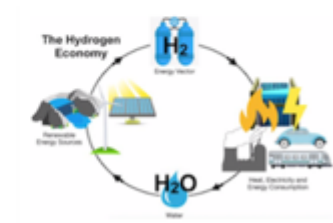
4IR in fish farming

THE WATER GRID



A water grid to end of the water crisis, powered by green energy

THE HYDROGEN ECONOMY



Hydrogen as energy carrier
Image credit

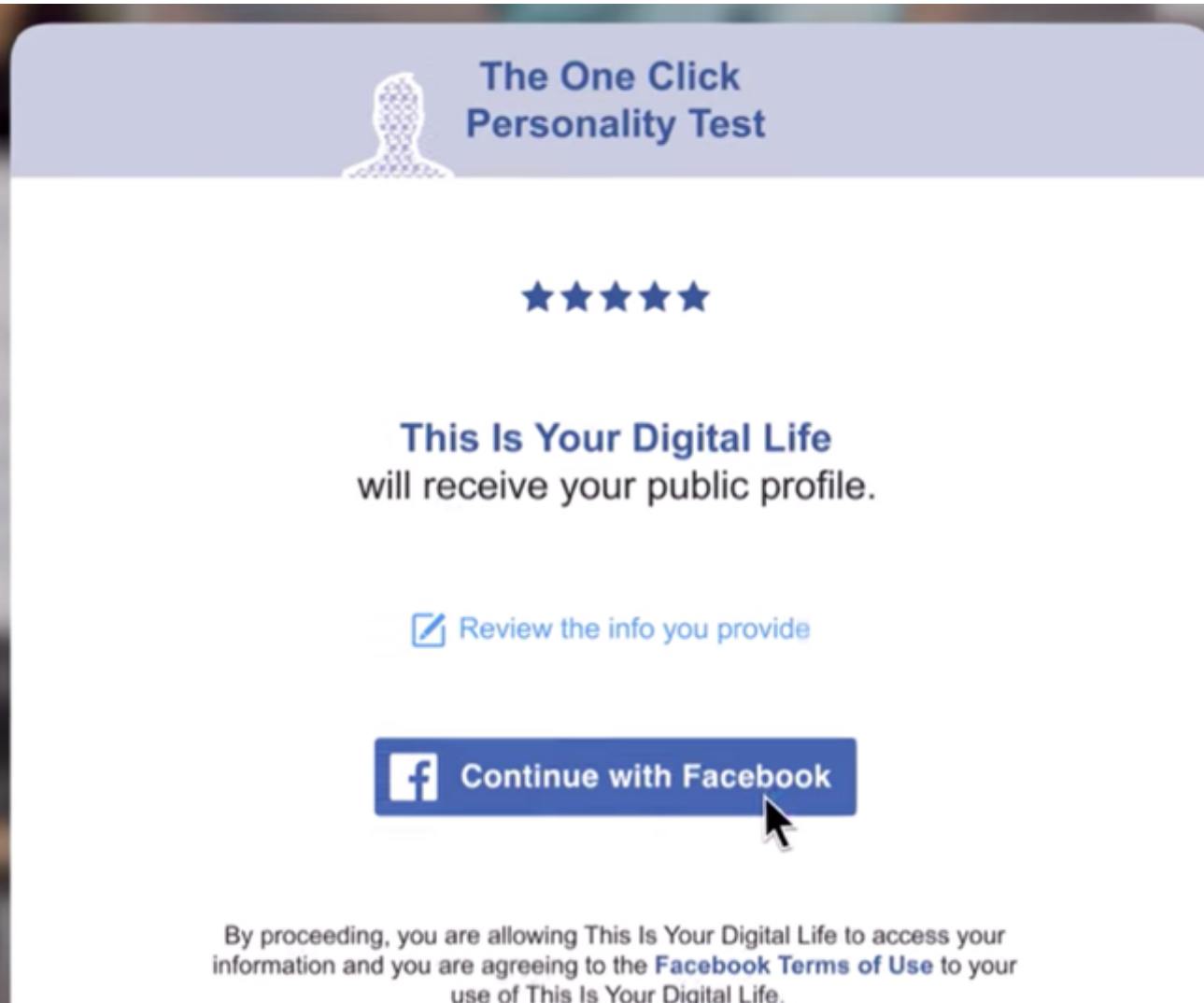
CAMBRIDGE ANALYTICA
SALES PRESENTATION

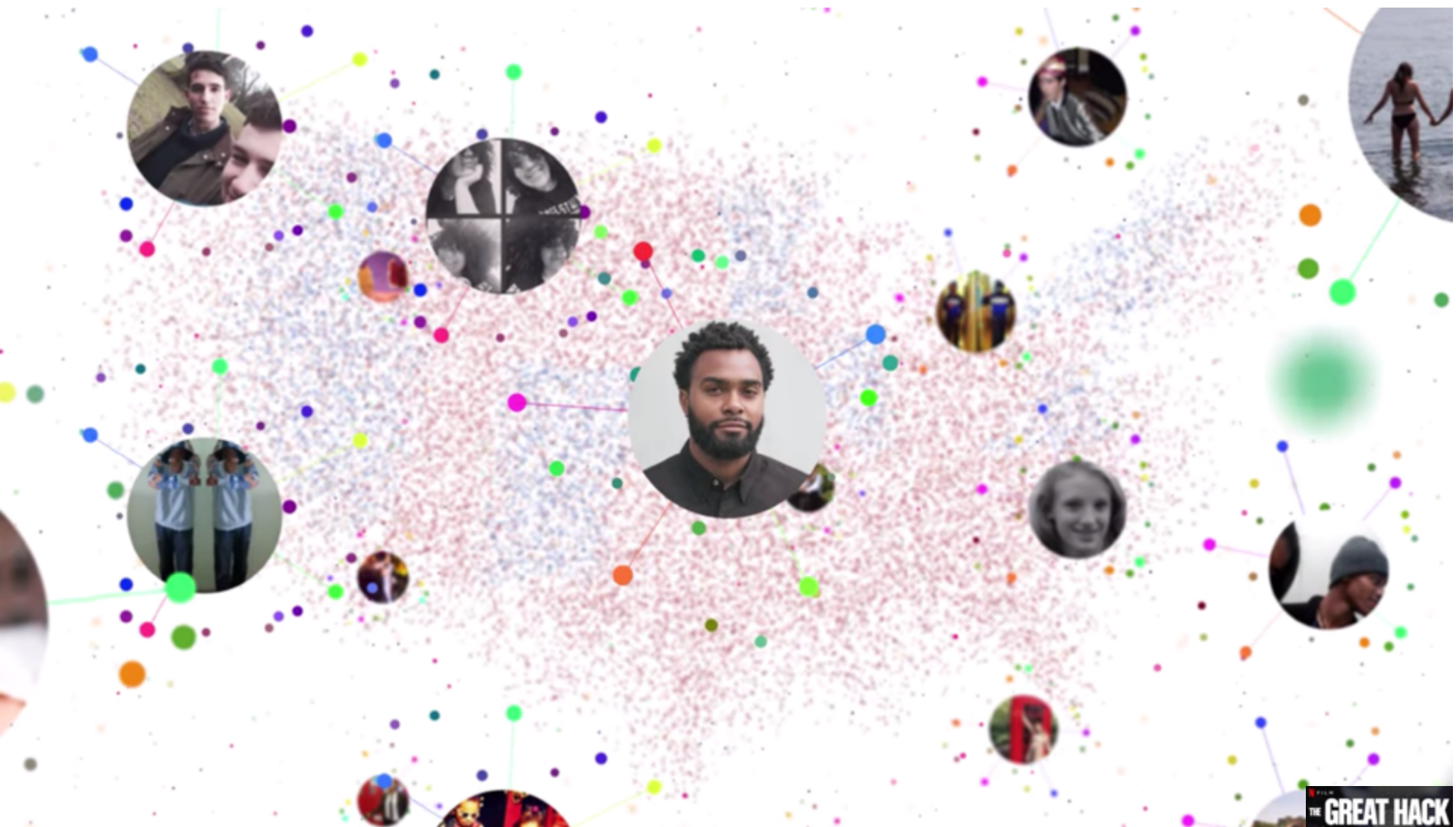


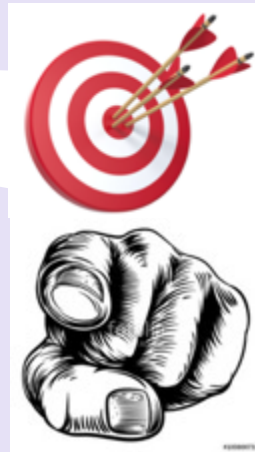
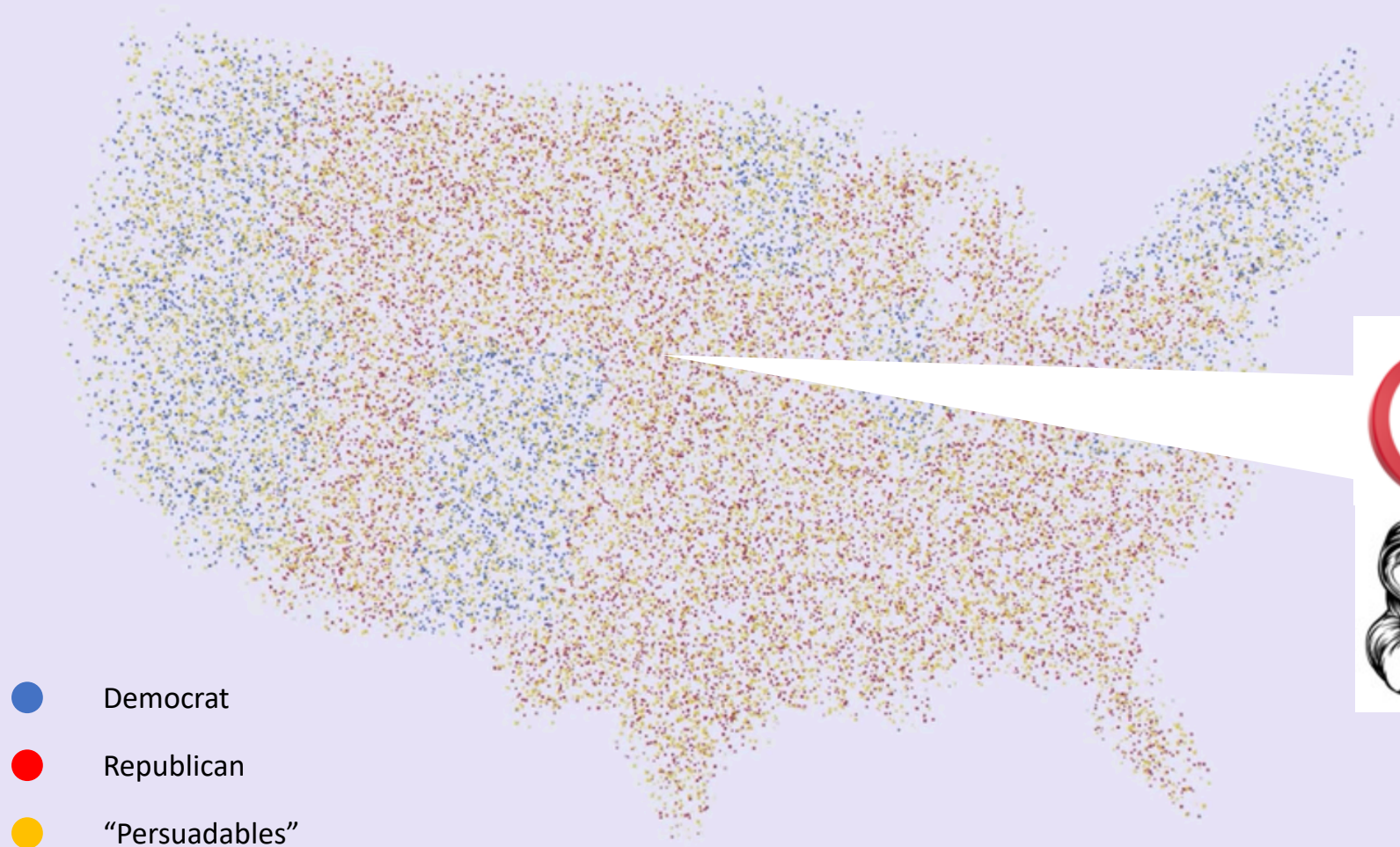
Cambridge
Analytica

Data-driven behaviour change

THE GREAT HACK







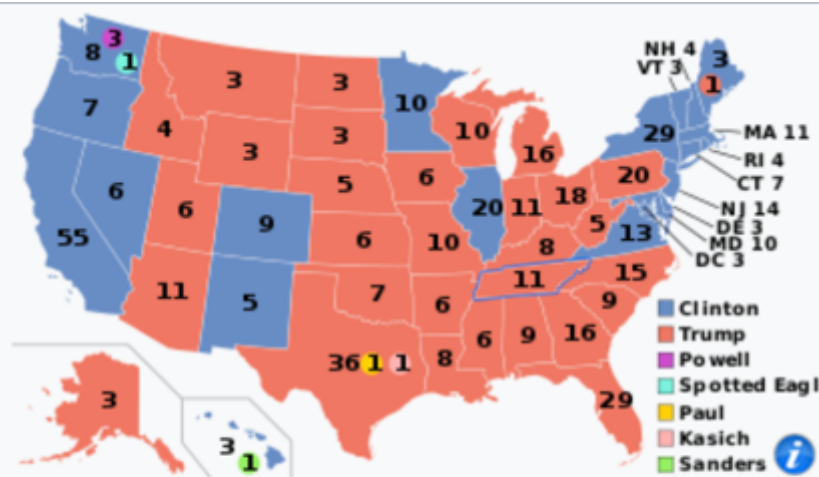


HILLARY CLINTON
EXTREMELY CARELESS
DANGEROUS
PSYCHOPATHIC LIAR

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THE GREAT HACK

This movie posits a scenario where 4IR tools are used to subvert human free will and pervert democracy globally.



Turnout

55.7%^[1] ▲ 0.8 pp



Nominee

Donald Trump

Hillary Clinton

Party

Republican

Democratic

Home state

New York

New York

Running mate

Mike Pence

Tim Kaine

Electoral vote

304^[a]

227^[a]

States carried

30 + ME-02

20 + DC

Popular vote

62,984,828

65,853,514

Percentage

46.1%

48.2%

https://en.wikipedia.org/wiki/2016_United_States_presidential_election

Use the QR Reader on your phone or just take a photograph (iphone only) to take the 4IR 4 question survey or

<https://www.surveymonkey.com/r/MZ7MBFF>



Time, Thought, Materiality: Africa and the Fourth Industrial Revolution

1. Do our 4IR tools have any inherent political bias or social intent ?

☐ Yes

☐ No

2. Do 4IR our tools have an evolutionary / revolutionary trajectory to acquire agency ?

☐ Yes

☐ No

3. Are you happy for the 4IR factories (or their successors) to augment the womb ?

☐ Yes

☐ No

4. Humans are considered to have self awareness, creativity, a sense of the aesthetic, a soul. Can our 4IR tools (or their successors) acquire such by complexity ?

☐ Yes

☐ No