

Conversations with your toaster?



Time for a digital detox.
Duncan Stuart FRANZ





CONNIE TAYLOR SKETCH

↳ labs





PetBot 



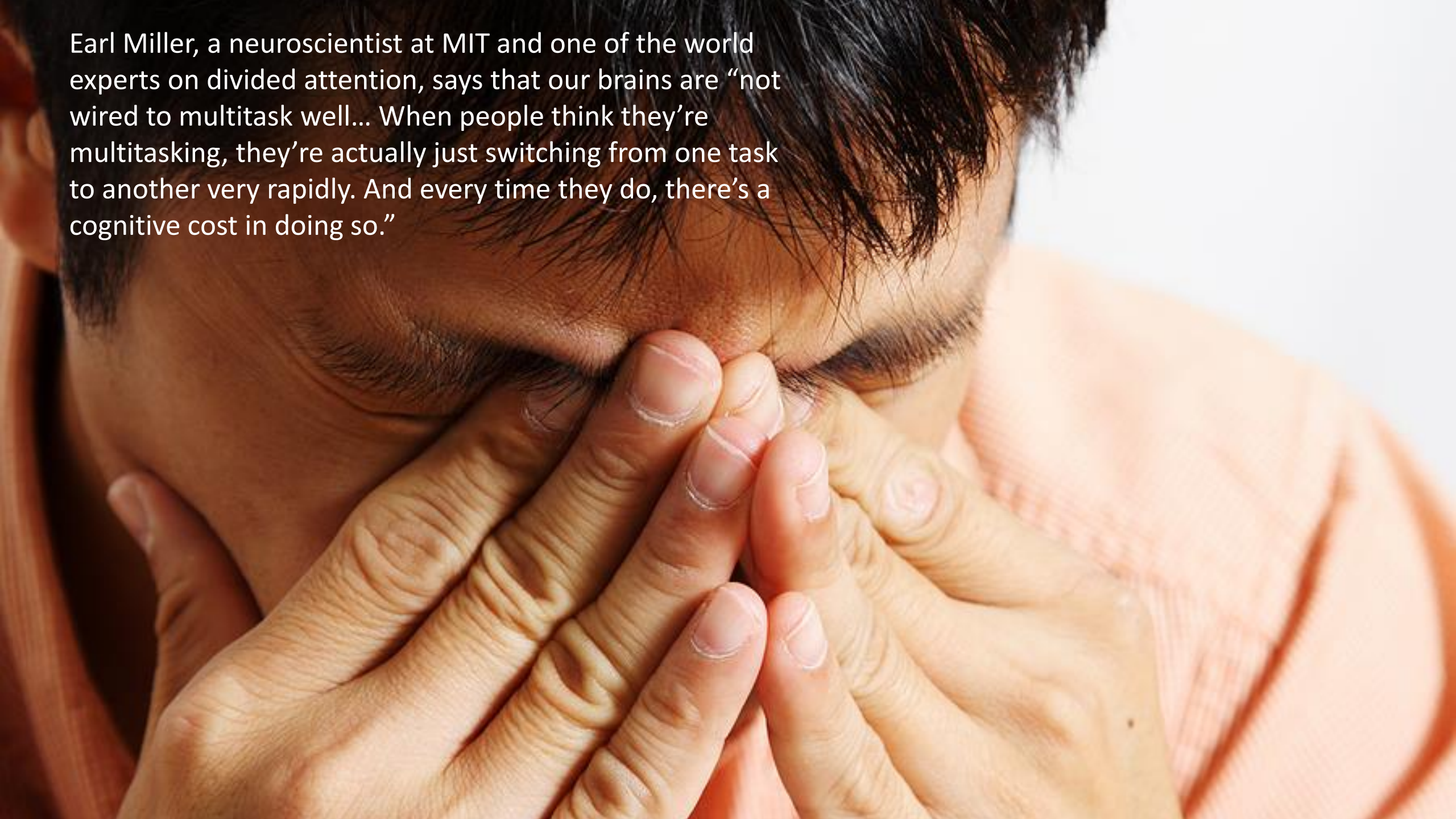


Within five years there will be over 50 billion smart connected devices in the world, all developed to collect, analyze and share data.

More data has been created in the past two years than in the entire previous history of the human race.

At the moment less than 0.5% of all data is ever analysed and used.



A close-up photograph of a person's face, showing their eyes closed and hands covering their mouth and nose, suggesting stress or cognitive overload. The person has dark hair and is wearing a light-colored, possibly orange or pink, shirt. The background is bright and out of focus.

Earl Miller, a neuroscientist at MIT and one of the world experts on divided attention, says that our brains are “not wired to multitask well... When people think they’re multitasking, they’re actually just switching from one task to another very rapidly. And every time they do, there’s a cognitive cost in doing so.”

There's a basic toxicity from too much information. We've reached saturation point. Time to simplify.



But there are hidden data toxins that I want to focus on.

The first is what I call Toxic Exposure.





First ever car-hacking?

Hackers managed to wrest control from the driver and send the Jeep over the bank.

HI 9:19 SE 3° out. HI

1 87.9 2 88.1 3 98.1 HOLD TO SET 5 105.1 6 107.9 >

Top 40

AM

map

97.5 ST

FM

ON

HD

COMING UP LOVE ME AGAIN by...

browse



tune



audio

Radio

Media

Controls

Climate

SE Nav

Phone

Settings

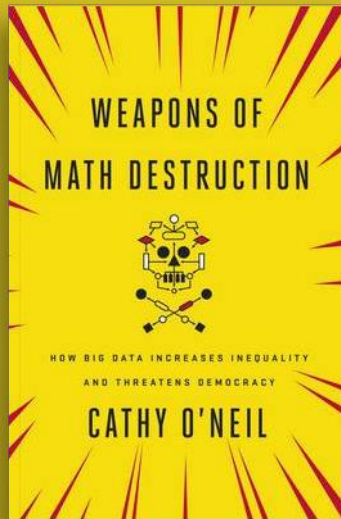


Sunrise Quickie Rhythm Power wheelchair

A low-angle photograph of a modern glass skyscraper. The Equifax logo is prominently displayed on a horizontal metal beam extending from the building. The logo consists of the word "EQUIFAX" in large, bold, red, three-dimensional block letters. The building's facade is composed of a grid of dark window frames and reflective glass panels. Some green foliage is visible on the right side of the frame.

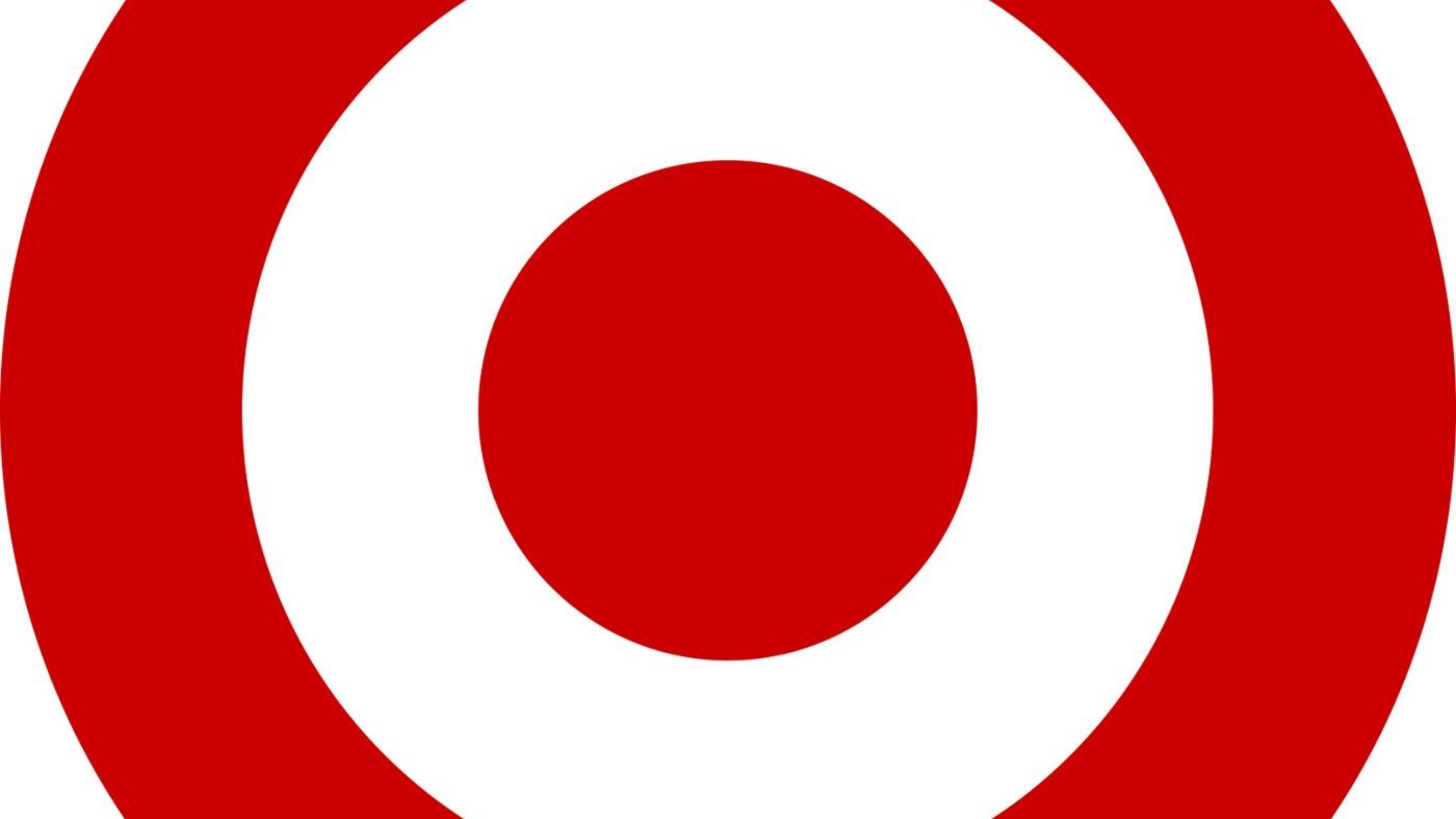
EQUIFAX

The second is Calculated Toxic Damage.



The tale of the supermarket letter.

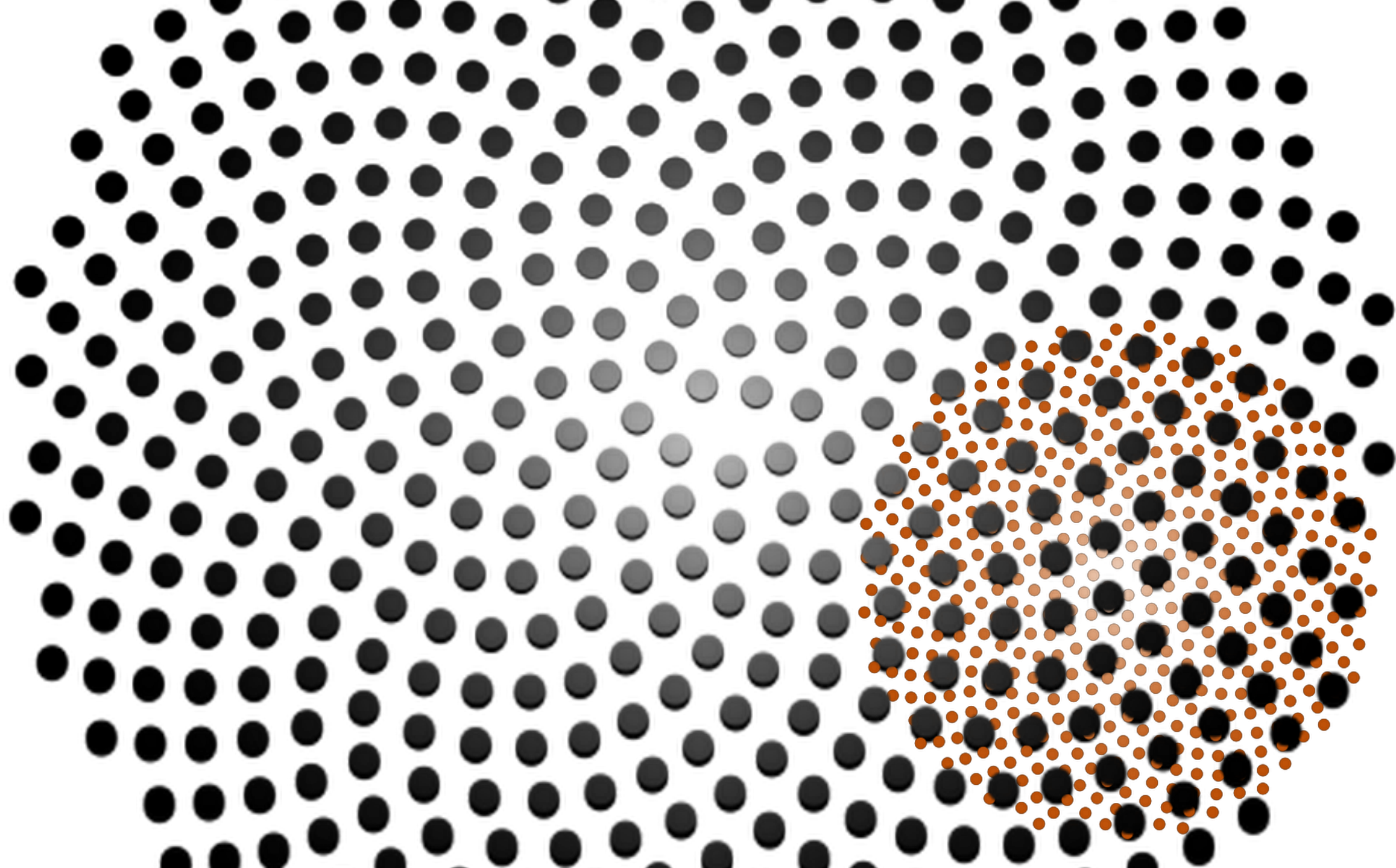












“It is a pleasure to visit a classroom in which the elements of sound teaching, motivated students and a positive learning environment are so effectively combined,” Assistant Principal Kennard Branch wrote in her May 2011 evaluation.

Ace teacher Sarah Wysocki

‘Creative ... motivating’ and fired

Ashley Seay – victim of a motor accident.

Less than a year later, her father received a promotional mailer from **OfficeMax** addressed to “Mike Seay/Daughter Killed in Car Crash/Or Current Business.”



So who is behind this?



Data brokers



Data Scientists



Coders



Marketers



Andrew Pole – Data Scientist



Can I interest you in car insurance?

Insurance company buys data from other agencies including credit agencies.

Adds \$255 to the premium if your credit rating is Good, but not Very Good.

Dials up the premium further if you've ever missed a credit card repayment.

And further again if you are behind on your mortgage.



Because rich people never crash their cars





“When someone is classed as “high risk”, they’re more likely to get a longer sentence and find it harder to find a job when they eventually do get out. That person is then more likely to commit another crime, and so the model looks like it got it right.”

Cathy O’Neil



“Models are opinions embedded in mathematics”

Cathy O’Neil

These are calculated failures

Calculated Toxic Damage. Due to...

Judgements

Errors

The nature of algorithms

Let's spend a second looking at errors

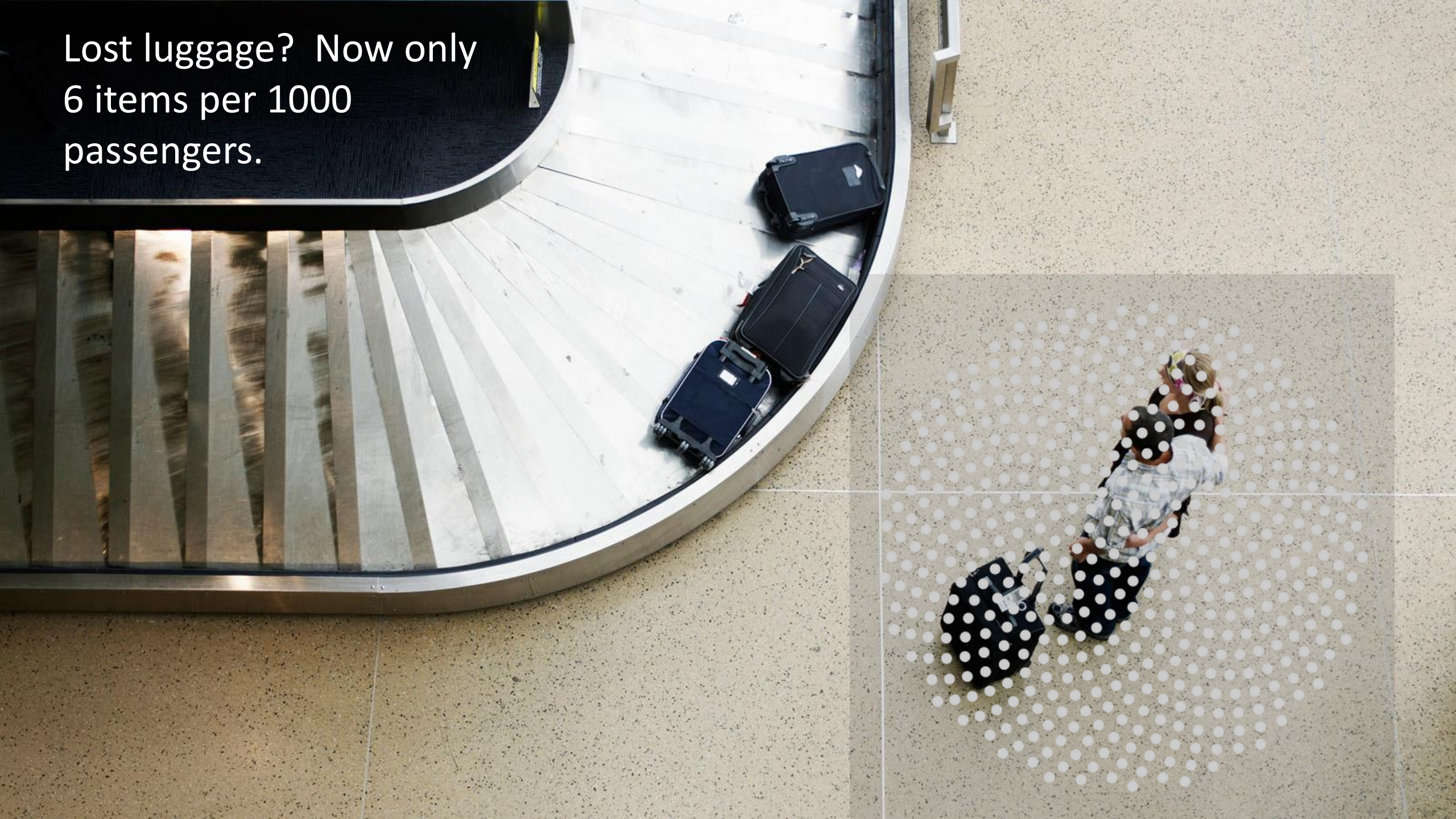
There are an estimated 15-50 errors per thousand lines of delivered computer code.

Microsoft have got this down to 10-20 defects per thousand lines.

Ahem. Windows has 22 million lines of code.

That translates as 22-44,000 probable bugs

Lost luggage? Now only
6 items per 1000
passengers.



Comforting to know that
big data is so reliable!

Russian Roulette



Then there is the nature of algorithms.

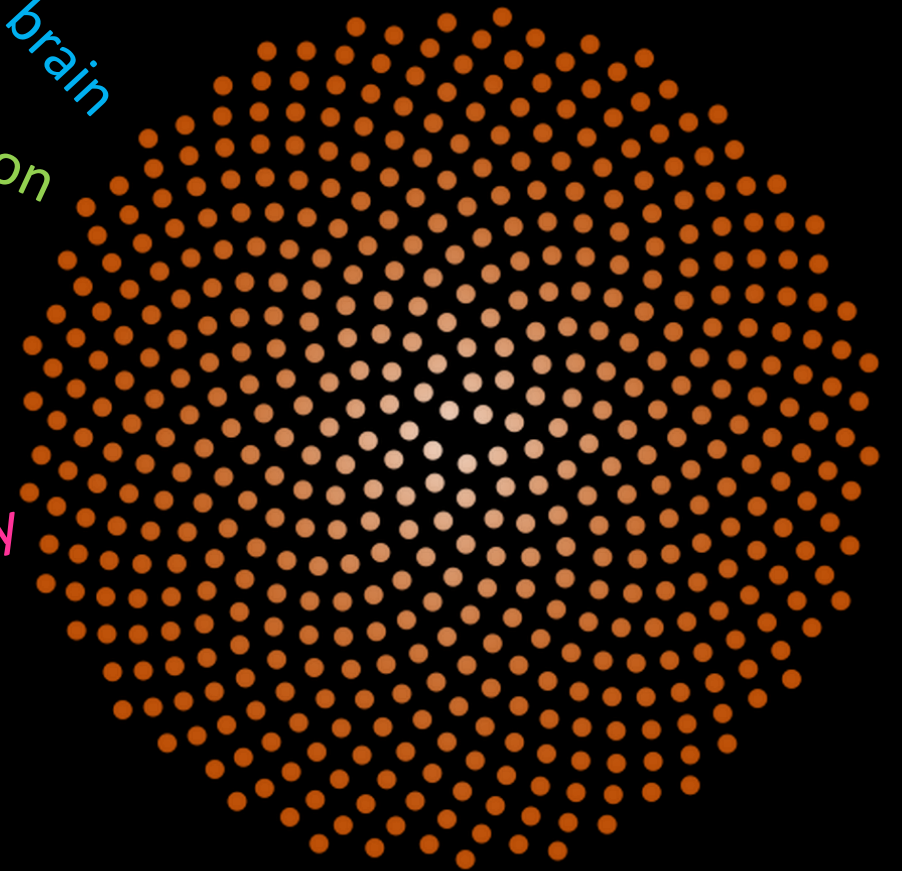
Emulate the brain

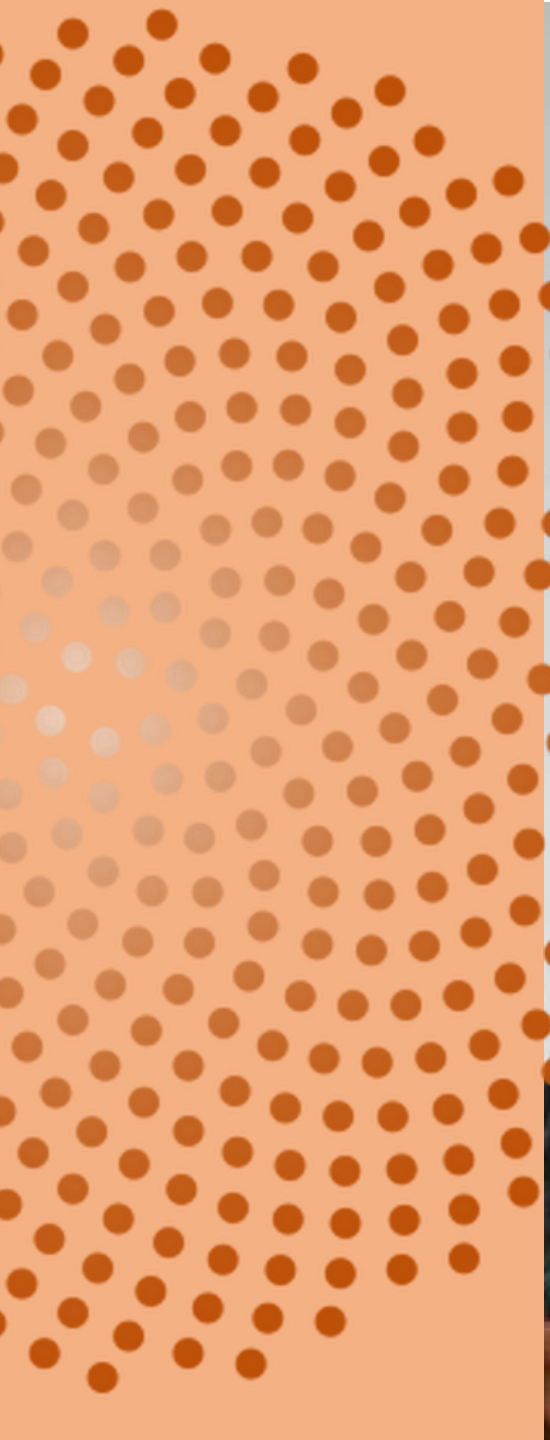
Simulate evolution

Fill in gaps in existing knowledge

Look for similarities between old and new

Systematically reduce uncertainty





"PEDRO DOMINGOS DEMYSTIFIES MACHINE LEARNING AND SHOWS HOW WONDEROUS
AND EXCITING THE FUTURE WILL BE." —WALTER ISAACSON

THE MASTER ALGORITHM

HOW THE QUEST FOR
THE ULTIMATE
LEARNING MACHINE WILL
REMAKE OUR WORLD

PEDRO DOMINGOS



Symbolist using inverse deduction – decision trees


Connectionist – neural networks

Evolutionary – genetic algorithms

Bayesian – probabilistic. e.g. Spam filters.

Analogisers – looking for near neighbours. Netflix.

All are a compromise of speed, accuracy, computing power and simplicity.
For machine learning they are generally used in combinations – they're getting better, but they're open to criticism. Aren't they?



Machine learning takes us to a new ethical frontier.

“The technologies sound very dangerous and scary on the surface, but if used properly or ethically, they can really improve our existence.”

Michal Kosinski

3 Questions for my smart toaster

How accurate is good enough?

How many lost luggage moments are acceptable?

Do we really want parts of our society systematically written out of the script?



How my toaster replied...



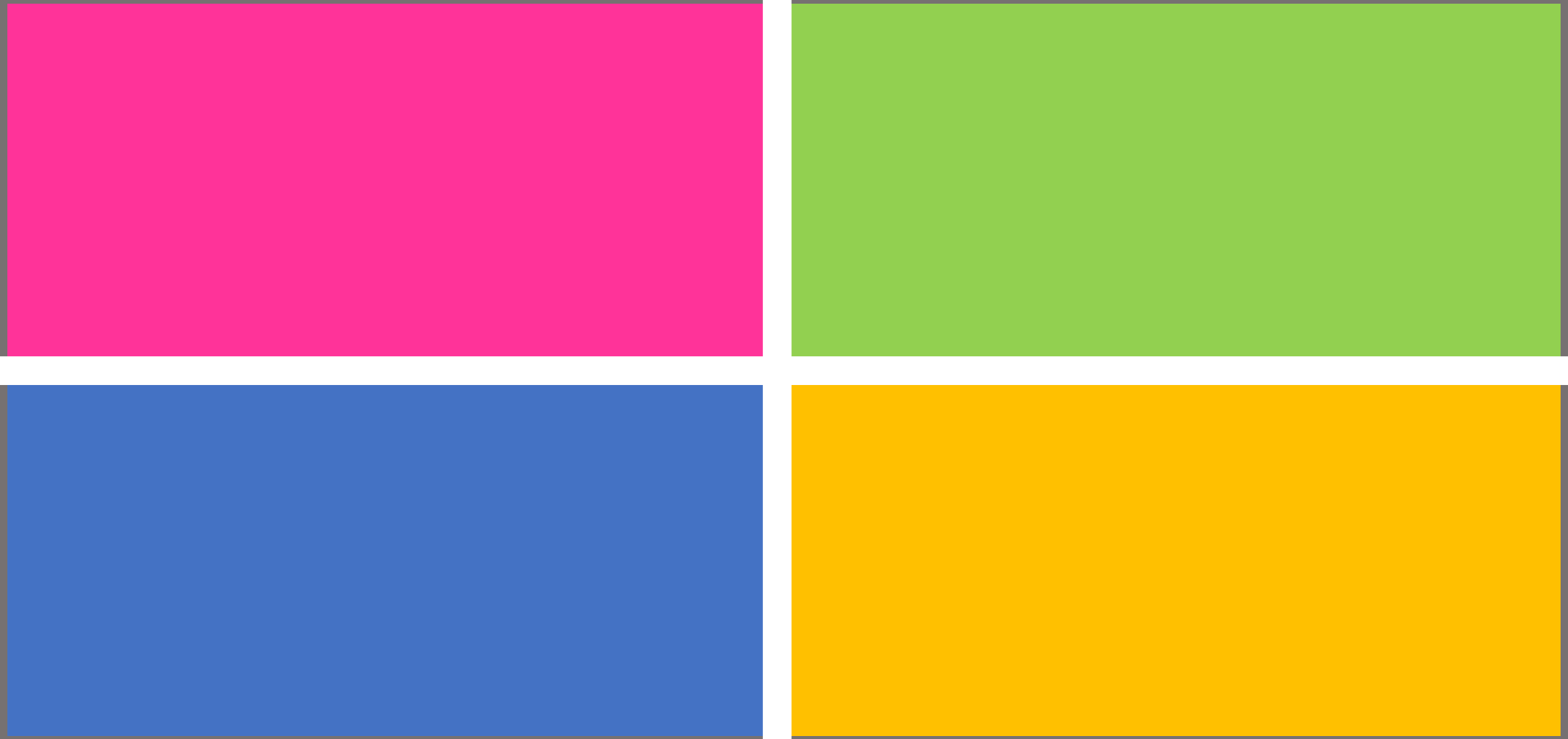


MARKET DRIVEN

DATA DRIVEN

BIG PICTURE

OPERATIONS



BIG PICTURE

Imaginative Subject
Matter Experts
HOLISTIC. NOT JUST
ABOUT MONEY

Technical gurus and
problem solvers
RESPONSIBLE
ENGINEERS

Data Scientists
CORPORATE FOCUS

Data Geeks
ETHICALLY AGNOSTIC

MARKET DRIVEN

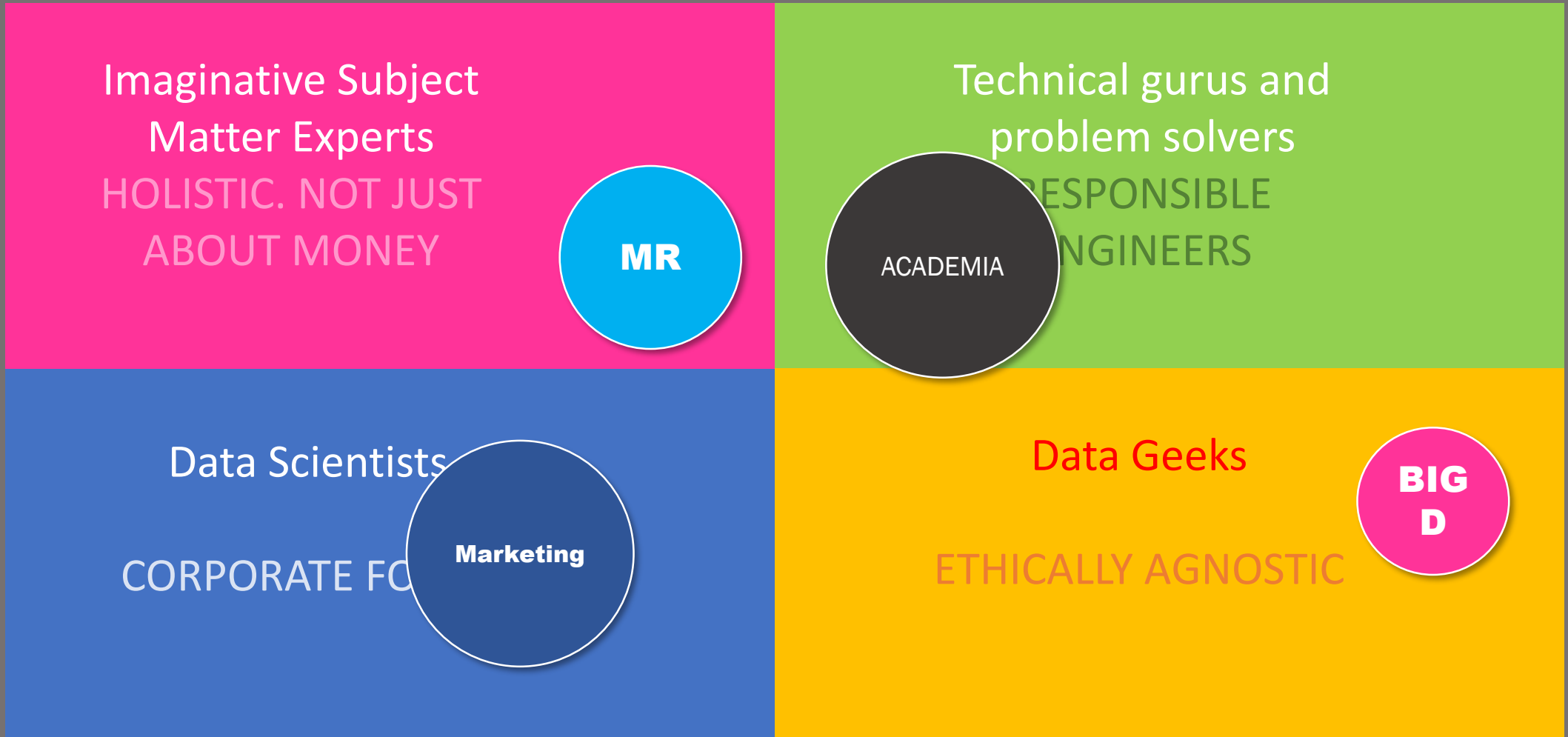
DATA DRIVEN

OPERATIONS

BIG PICTURE

MARKET DRIVEN

DATA DRIVEN

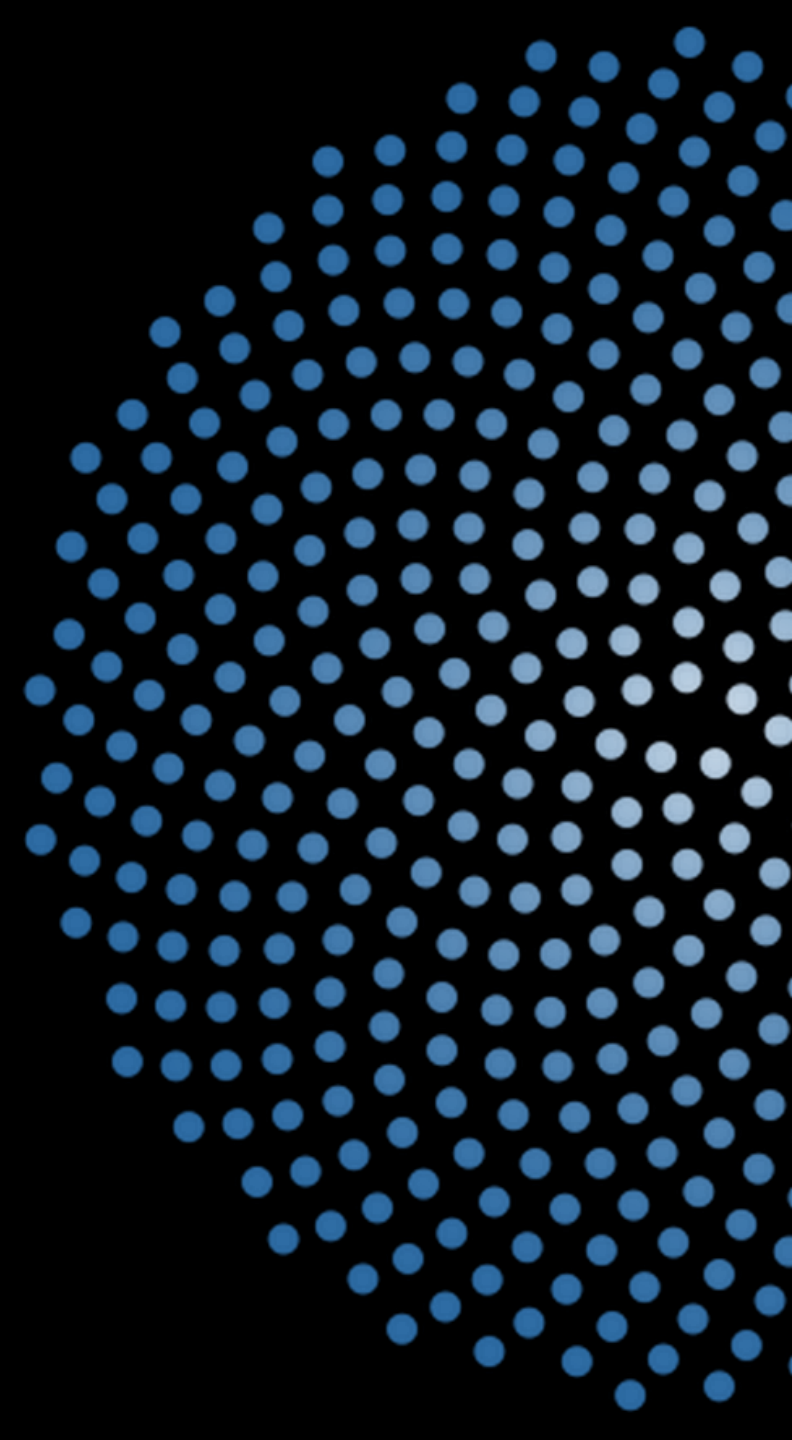


OPERATIONS

Our digitised world may serve people better,
but disempowers us too.

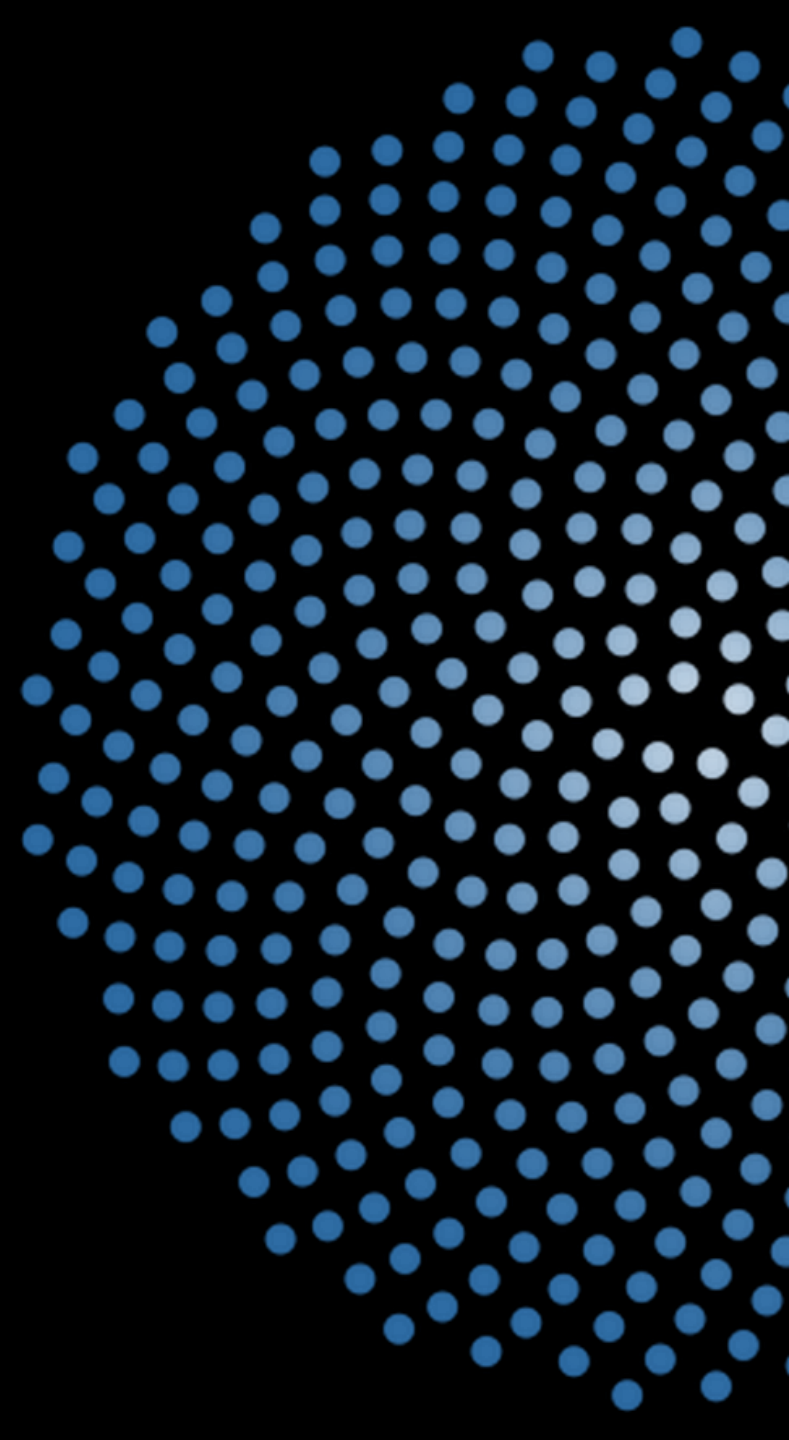
The question is: who is going to protect
society from the potentially toxic side of big
data and machine learning?

A lot of big data is used judiciously – but
where is the voice of our society being heard?

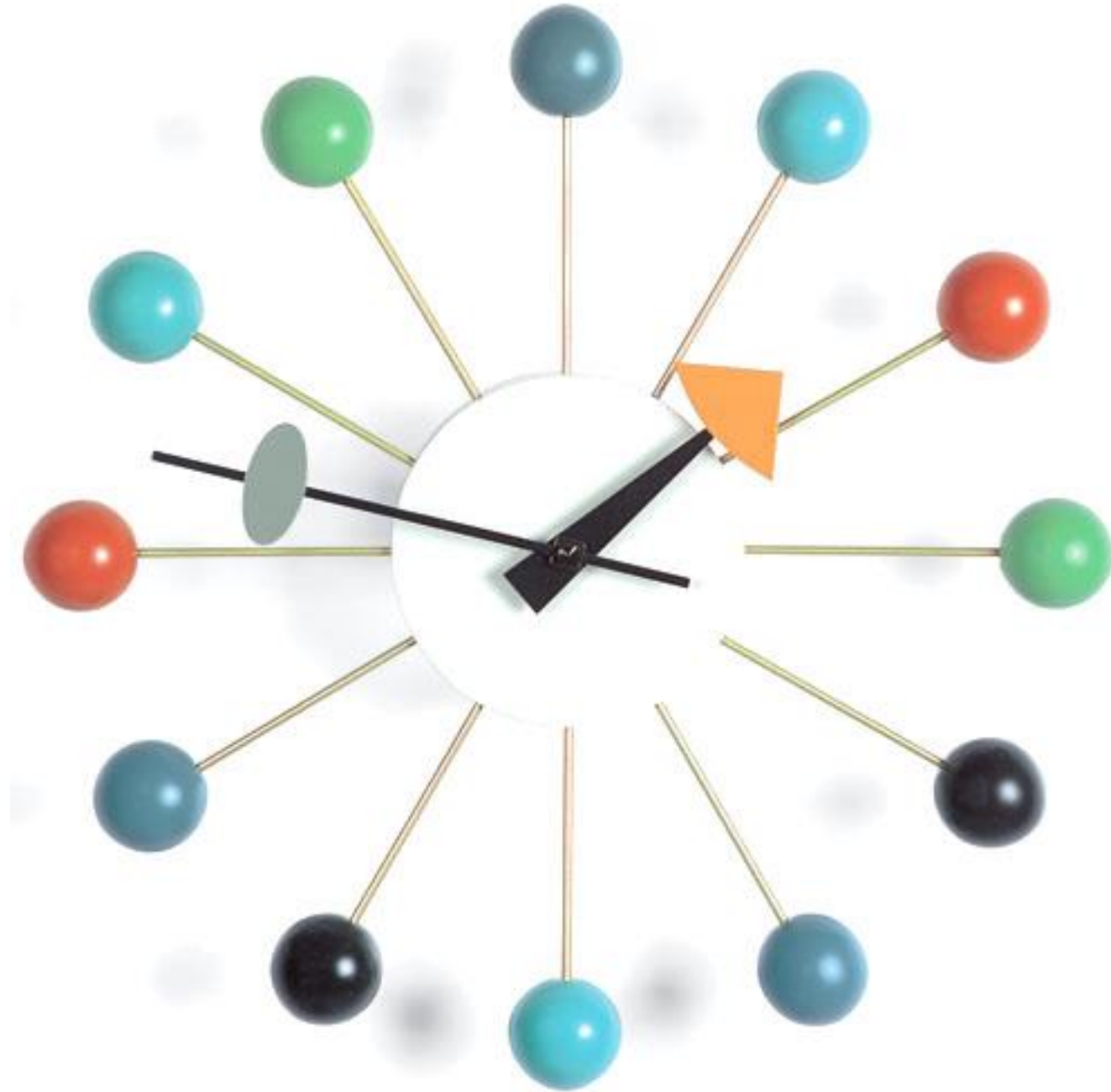


Market Researchers work in close proximity to these issues.

Dare I say it – we have an ethical basis as professionals to have a role in helping form a data-led society that serves the need for privacy, fairness and social justice as well.



Thank you



Duncan Stuart