



18TH EAST ASIAN ACTUARIAL CONFERENCE

12-15 October 2014

Taipei International Convention Center in Taipei Taiwan

Use the Force

The future of insurance in the Digital Age

Gavin Maistry, Mike Kwan



What if the price of failure = the loss of your livelihood?



Source: picture alliance, dpa

Farrier, flycoachman, gelder, hay collector, hind, horse-capper, hostler, jagger...



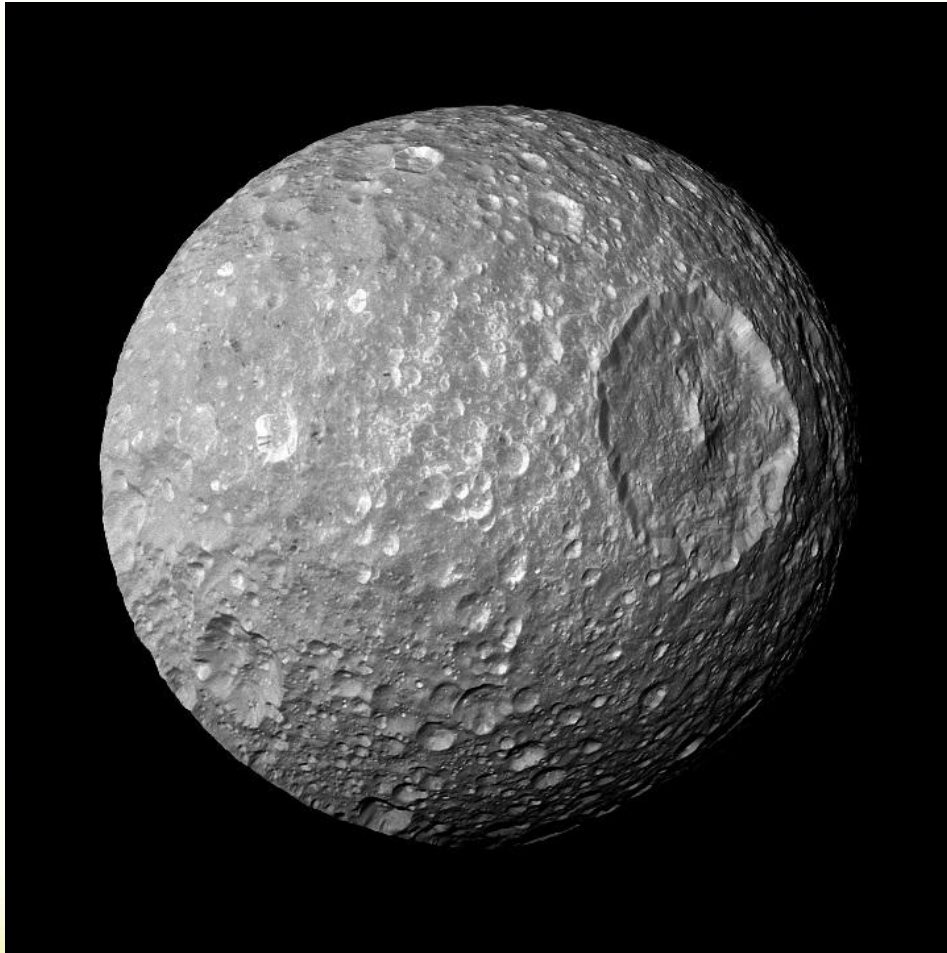
Every year... **1.24m** people die, **\$600bn** car insurance spent



Wheel, Ownership, Driving licence Accidents, Insurance



“A great disturbance in the Force, as if millions of voices suddenly cried out in terror and were suddenly silenced.”

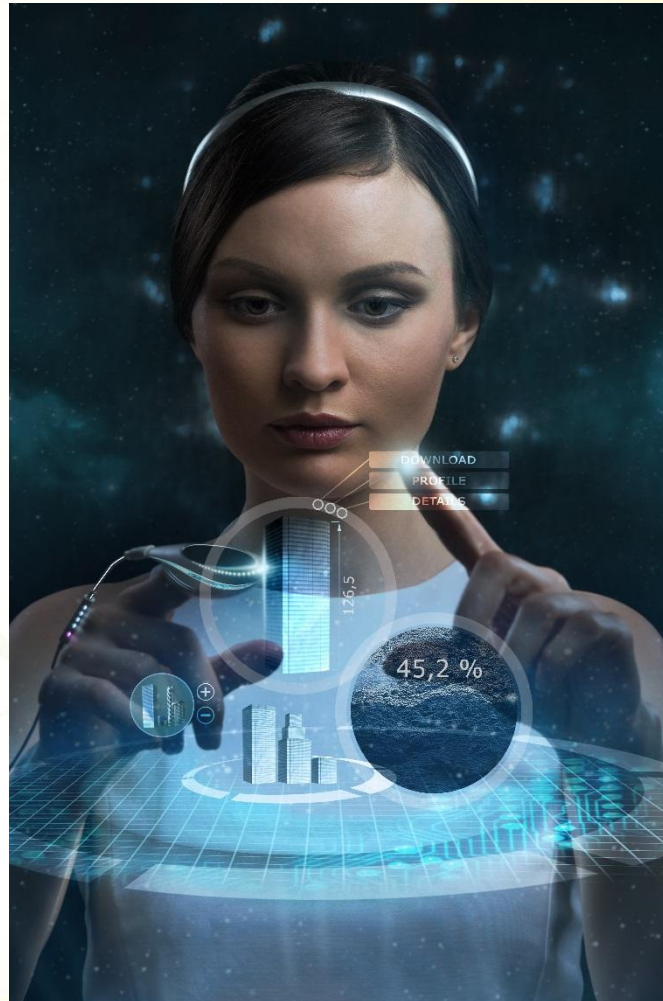


0.8 zettabyte data on earth in 2009

What is a zettabyte?

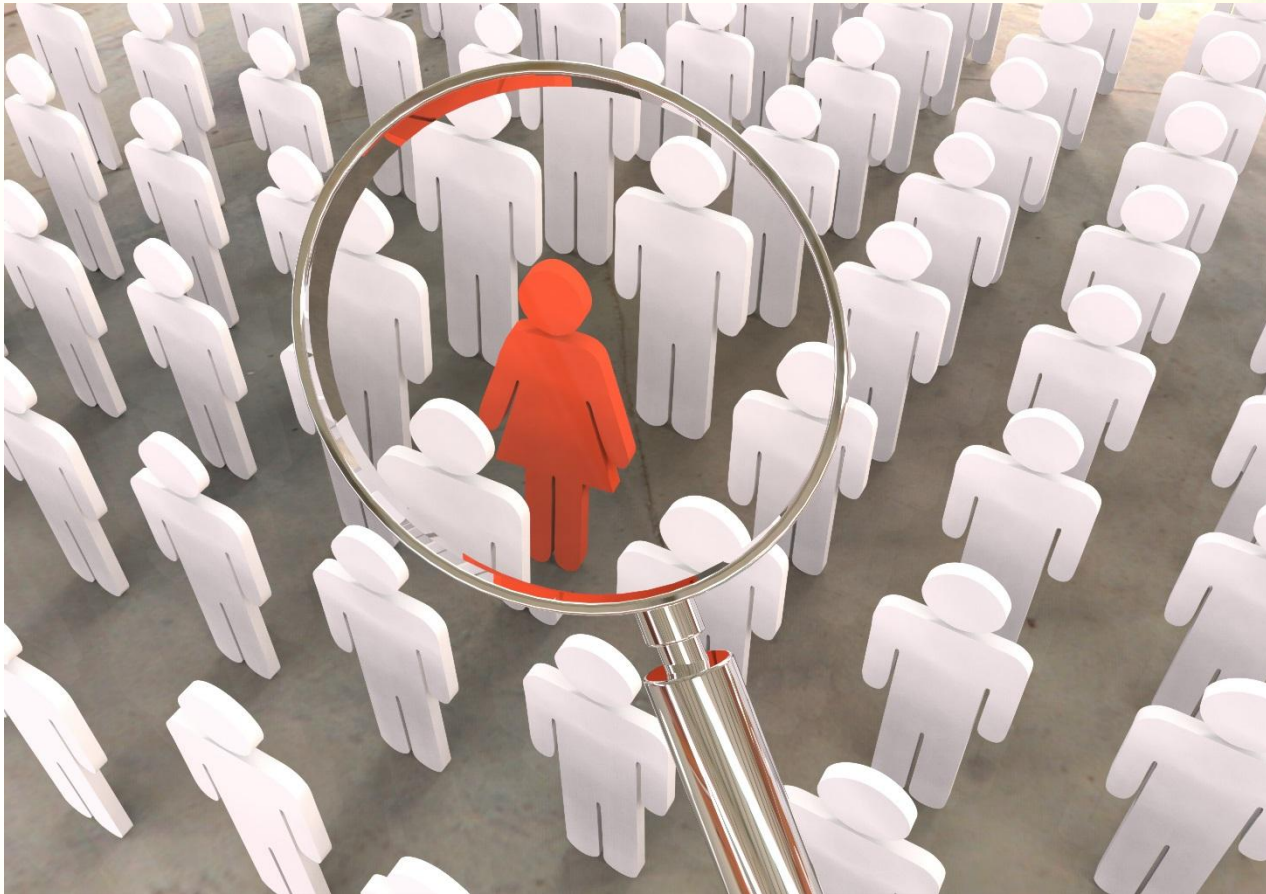
1,000,000,000,000	gigabytes
1,000,000,000	terabytes
1,000,000	petabytes
1,000	exabytes
1	zettabyte

Pay As You Live™





Propensity to purchase trumps underwriting prediction



Select the right patient for the right health programme before the trend sets in



Automated detection of claims that need immediate attention



Optimised claims & Application processes

Fig. 1: Automated and manual underwriting in comparison

Underwriting stage	Days	Industry norm	Target with 4th generation URE*
1. Base questions	1	14%	60%
2. Further questions	-	-	
3. Manual underwriting	31	52%	30%
4. Tele-underwriting	-	-	
5. Medical evidence	82	34%	10%
Average duration (norm)	52	100%	
Average duration (target)	18		100%

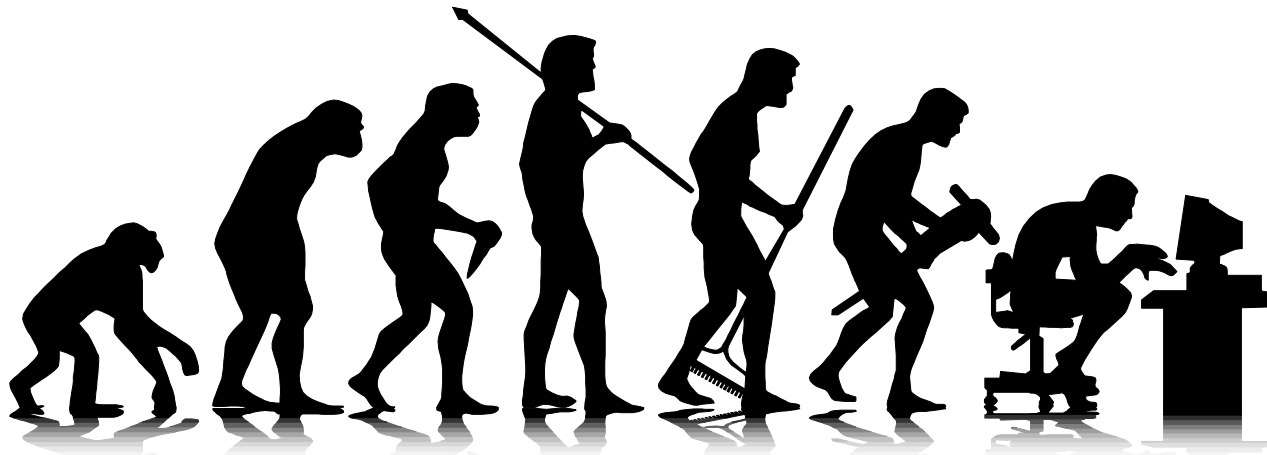
* Underwriting Rules Engine

The table illustrates how reducing the referral rate significantly accelerates average policy issuance time.

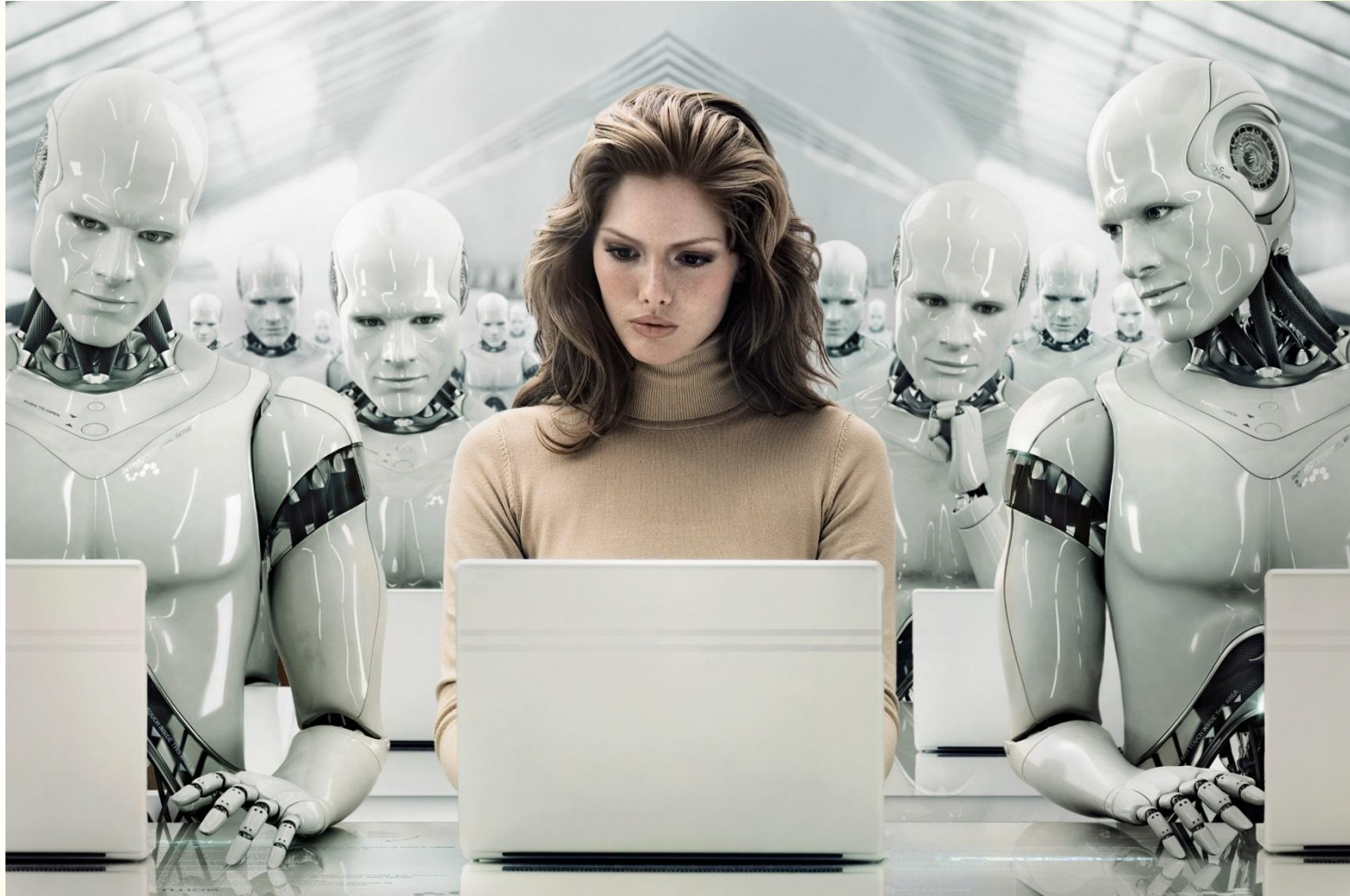
Fig. 2: New business leakage

Underwriting decision (in weeks)	Not-taken-up rate (in %)
1	9
2	12
3	12
4	16
5	24
6	23
7	25
8	27
9	31
10	36

To the future and beyond: The 5th generation Actuary



Save the Actuary!

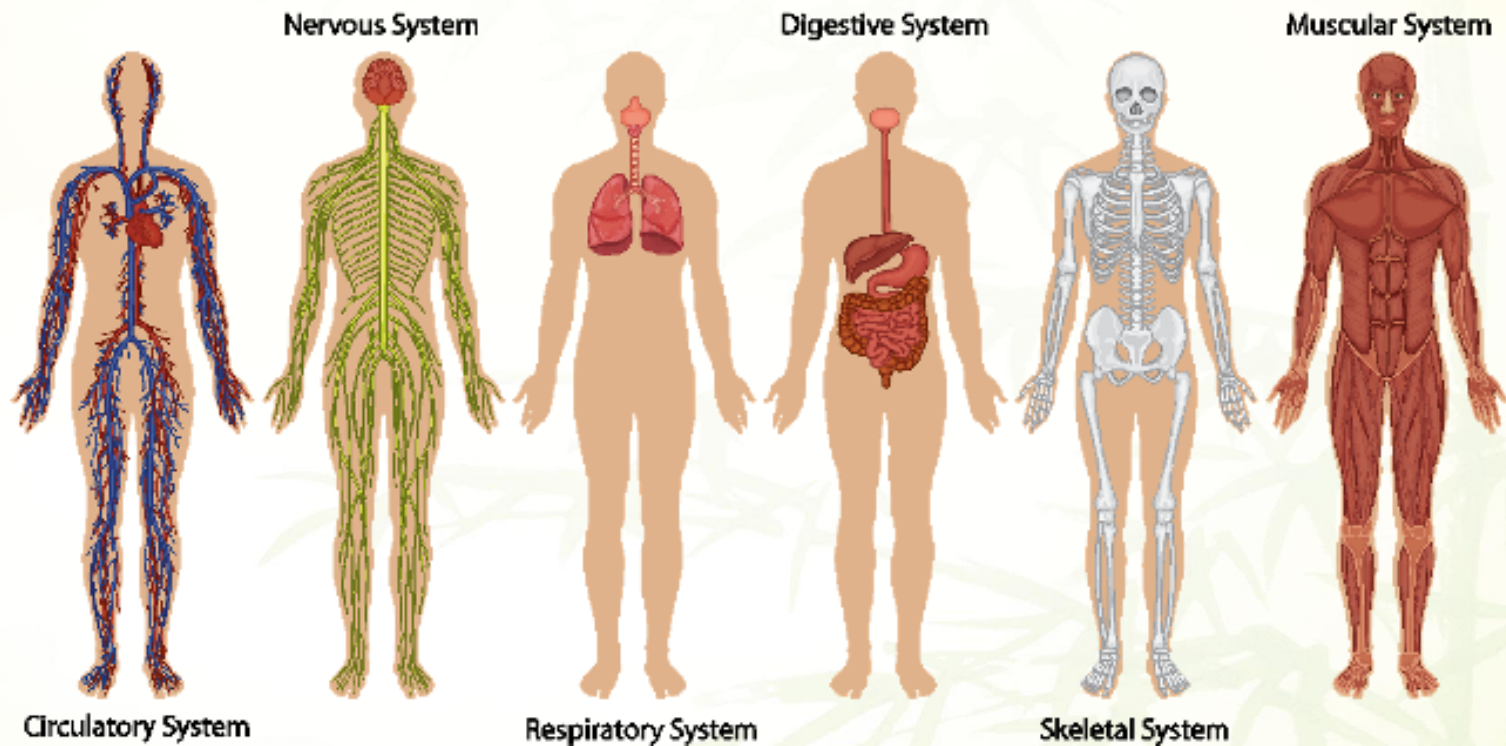


Exponential technologies: “Faster, smaller, cheaper”



Assess impact of regenerative medicine on future mortality

Human Body Systems



To move from Sickcare to Healthcare

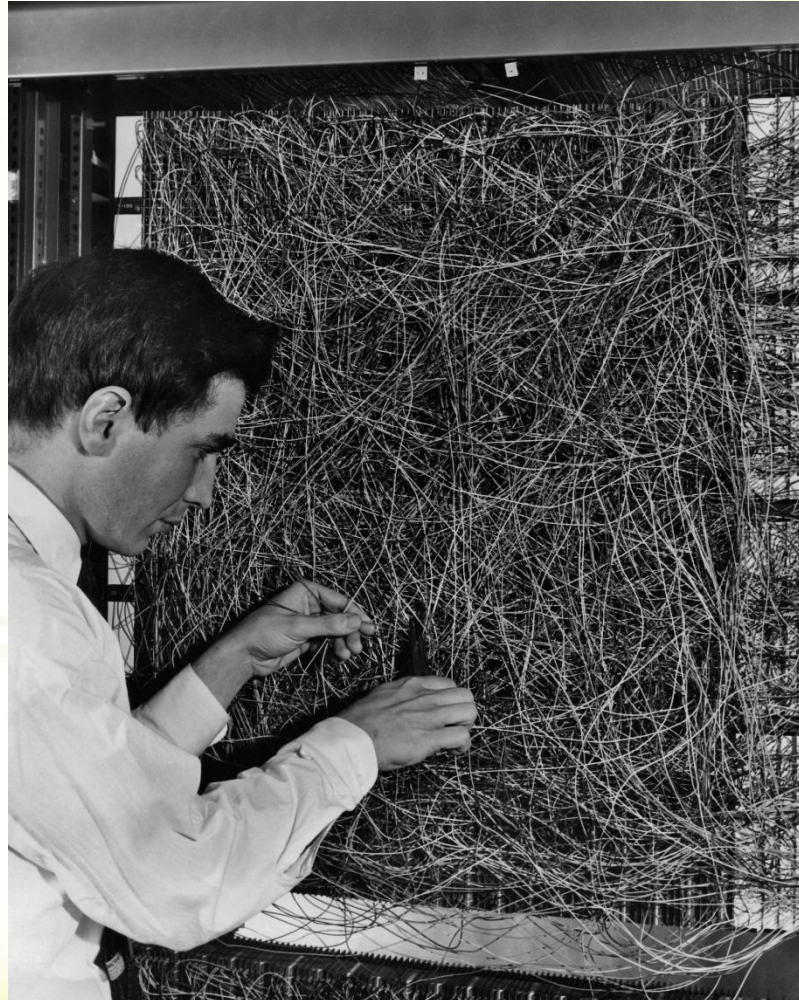


The Healthspan Imperative

A film about America's next great priority

NARRATED BY MARTHA STEWART

Deep learning: Feed enough data into networked computers & they will eventually learn to make sense of it

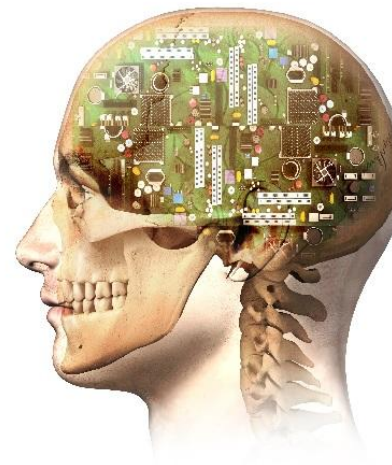


Source: Frederic Lewis, Getty Images

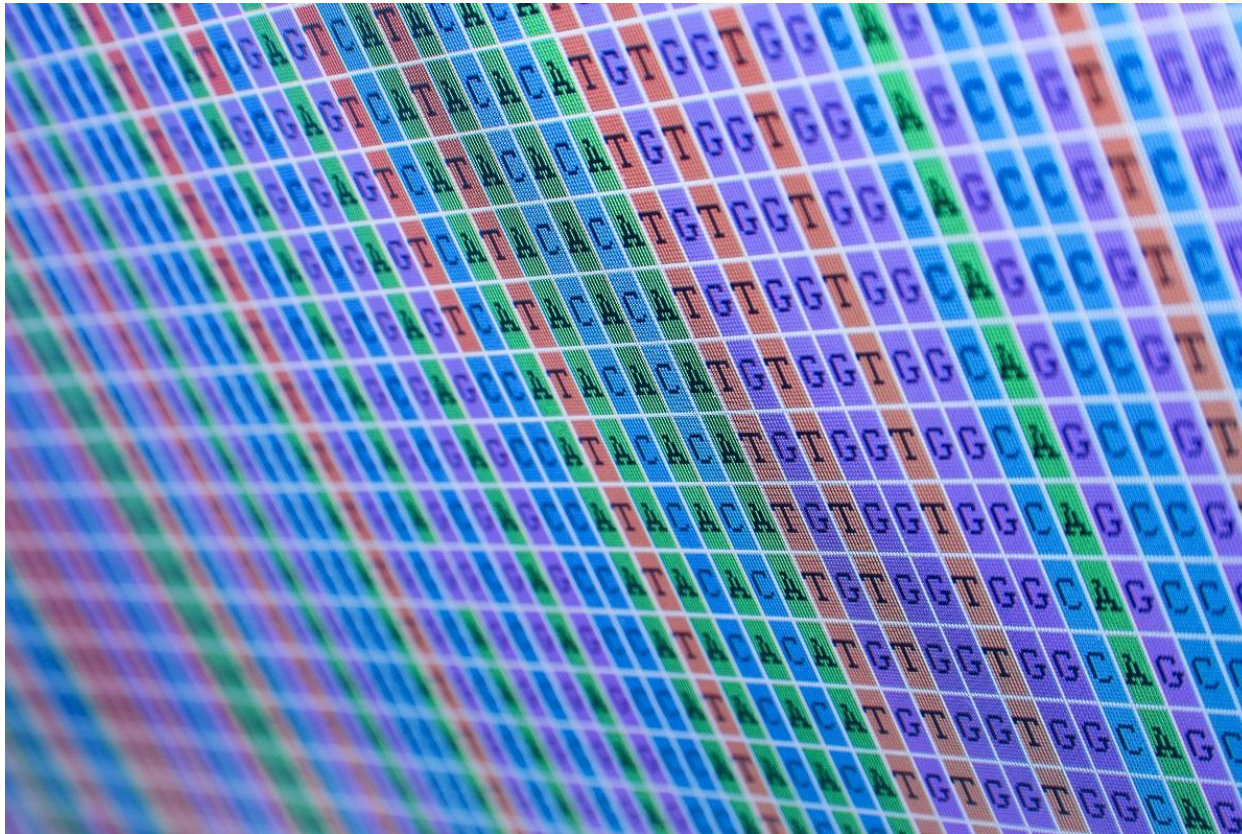
Must-have: actuarial Intelligence Amplification (IA) tools



**Cheating scandal – Borislav Ivanov
speaks out**

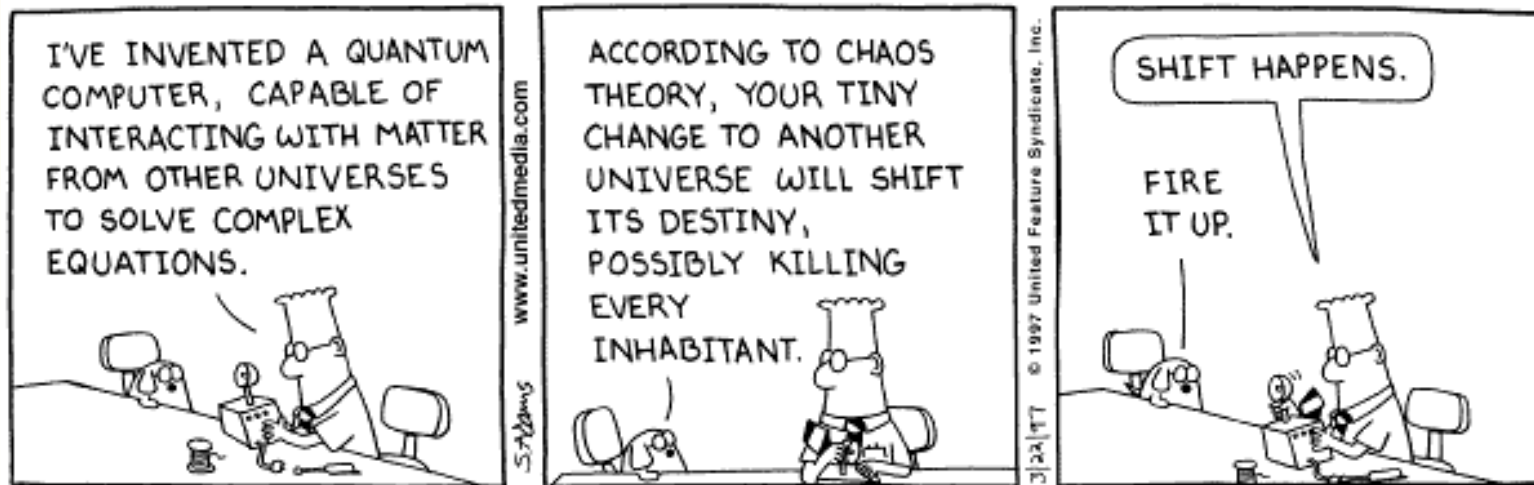


Can Google solve...Death?



Source: taraki, shutterstock.com

Complex computational problems solved with Quantum Computing



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Interpersonal skills and the single Actuary

Dr Kent Minson

SIXTEEN years ago, (reformed) told a columnist about where to put nuclear waste dumps. The columnist asked that about 10 years from now, when they had a good idea of where they would accept a dump for their communities. People thought that such things might have a bit of their health or depend on the value of their properties. And a surprisingly high 10 per cent of those who were asked they would accept a nuclear waste dump in their communities. People (reformed) told the columnist.

But when people were asked if they would accept a nuclear waste dump if there were paid a substantial sum each year – roughly about the value of their own wage – a remarkable thing happened. Only about 10 per cent of the respondents agreed to have the dump. The effect of cash undermined the desire to be a good citizen.

Similar observations have been made in other settings. When citizens are paid to go to school, attendance falls. When a fine is imposed on parents who pick up their children late from childcare, most parents turn up late and just pay the fine. It is as if when people are paid to do the right thing, they forget it.

These findings are crucial in the face of conventional economics. Conventional neo-classical economics holds that most people are rational. This means they pass the means test. They respond to incentives. There are benefits and costs. They maximize their utility by making self-interested choices within a budget constraint. These assumptions are intuitive and remarkable only for economists, who in which most people make decisions.

Of course, few economists would say that all of us make rational decisions all the time. But as long as most people behave rationally most of the time the failures and errors of those who do not are not out of the question. These assumptions have been independently validated and form the basis of many public policies.

But the assumption of rational utility-maximizing behaviour are too narrow to be true.

People do not have as much as they themselves think they should.

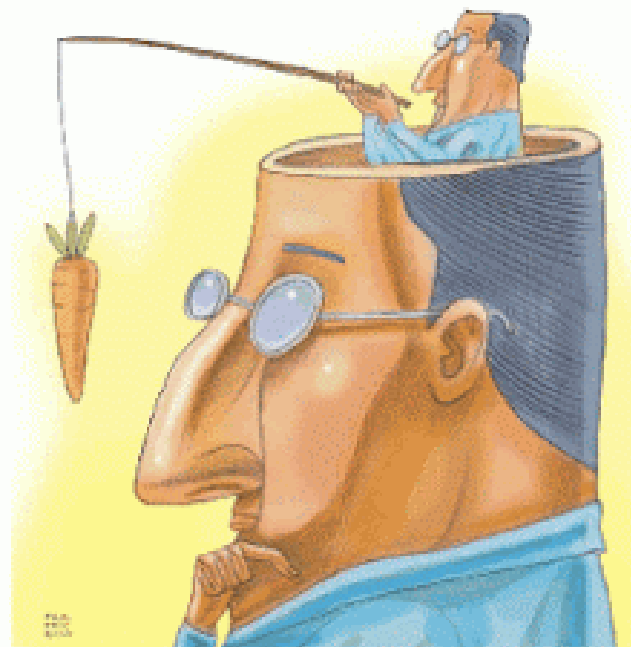
People believe in a fairly world even though the probability of winning is much less than the odds against them.

People do not opt out of default options, but do opt out when there are some options are presented without default.

The assumptions of neo-classical economics (which is useful) lead to failures when people make choices. But there is clearly a need to have a more realistic understanding of human psychology and behaviour. And it is time to see why such an understanding is critical for public policy. Because all public policies are based on some assumptions – explicit or implicit – about how people will respond to those policies.

Behavioural economics is an attempt to blend the insights from psychology

How Singapore uses behavioural economics



showing a person, though whether such a thing can be said to be a public policy, is another matter.

Most of them are not entirely understood. One reason the confusion stems of economic probabilities and predicting gains and losses. They are highest when maximizing if their structure is well-

known. It is not as if they are not understood. It is not as if they are not understood. It is not as if they are not understood.

The reason for this is that we have not of the rational utility-maximizing of neo-classical economics. There is substantial empirical evidence that we often maximize, but we do not maximize.

When it comes to public policy, we need to see what we are trying to do. We need to see what we are trying to do. We need to see what we are trying to do. We need to see what we are trying to do.

model. But there is a lot of evidence that public policy is not as simple as it seems. It is not as simple as it seems. It is not as simple as it seems.

But what is the evidence that public policy is not as simple as it seems? It is not as simple as it seems. It is not as simple as it seems. It is not as simple as it seems. It is not as simple as it seems.

Taking advantage of cognitive biases.

It is not as if we have no cognitive biases. It is not as if we have no cognitive biases. It is not as if we have no cognitive biases. It is not as if we have no cognitive biases.

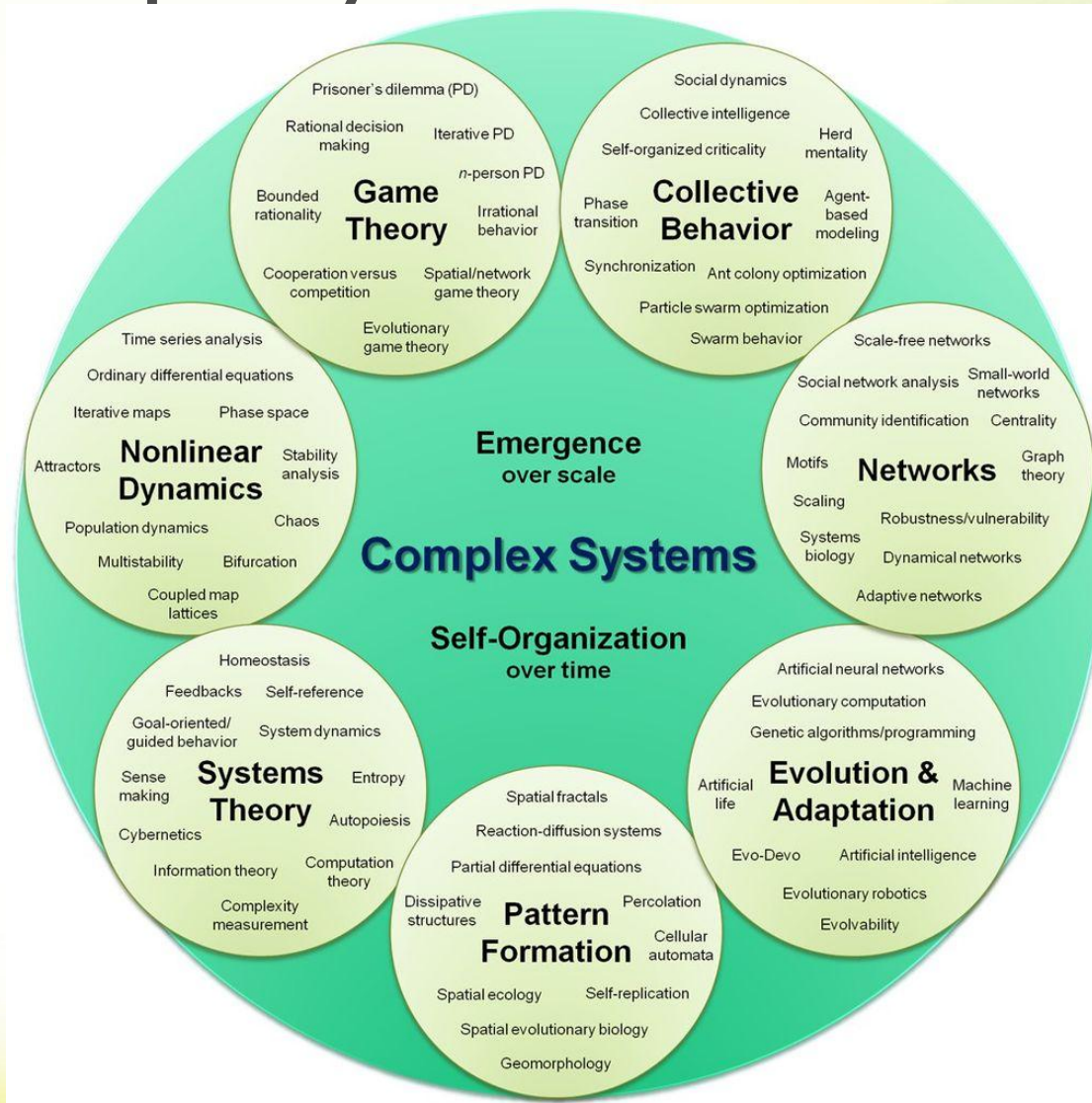
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The idea of a default option is to make the choice of a default option. It is not as if we have no cognitive biases. It is not as if we have no cognitive biases. It is not as if we have no cognitive biases.

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Using default options.

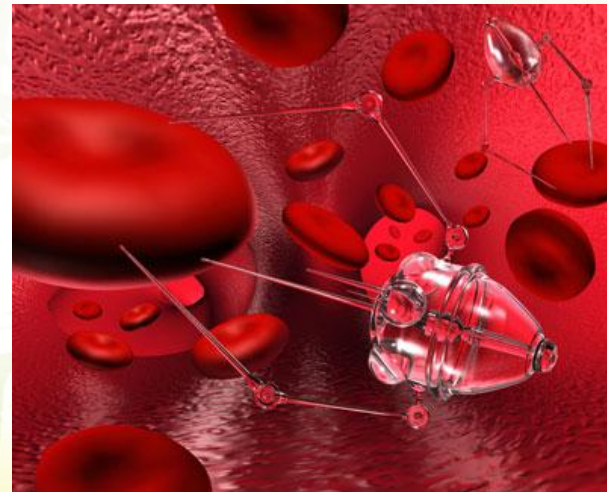
Insurance markets are complex systems ripe for complexity science



Evolutionary theory applied to finance



The death of Cancer (Insurance)



The engineering bottlenecks to automation

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**“Yes, I think I have good people skills.
What kind of idiot question is that?”**

Who drives the Life company of the future?



Can actuaries survive the Digital Age?

