

Dr Ian Pearson

Technology for mad scientists
Forewarned is forearmed

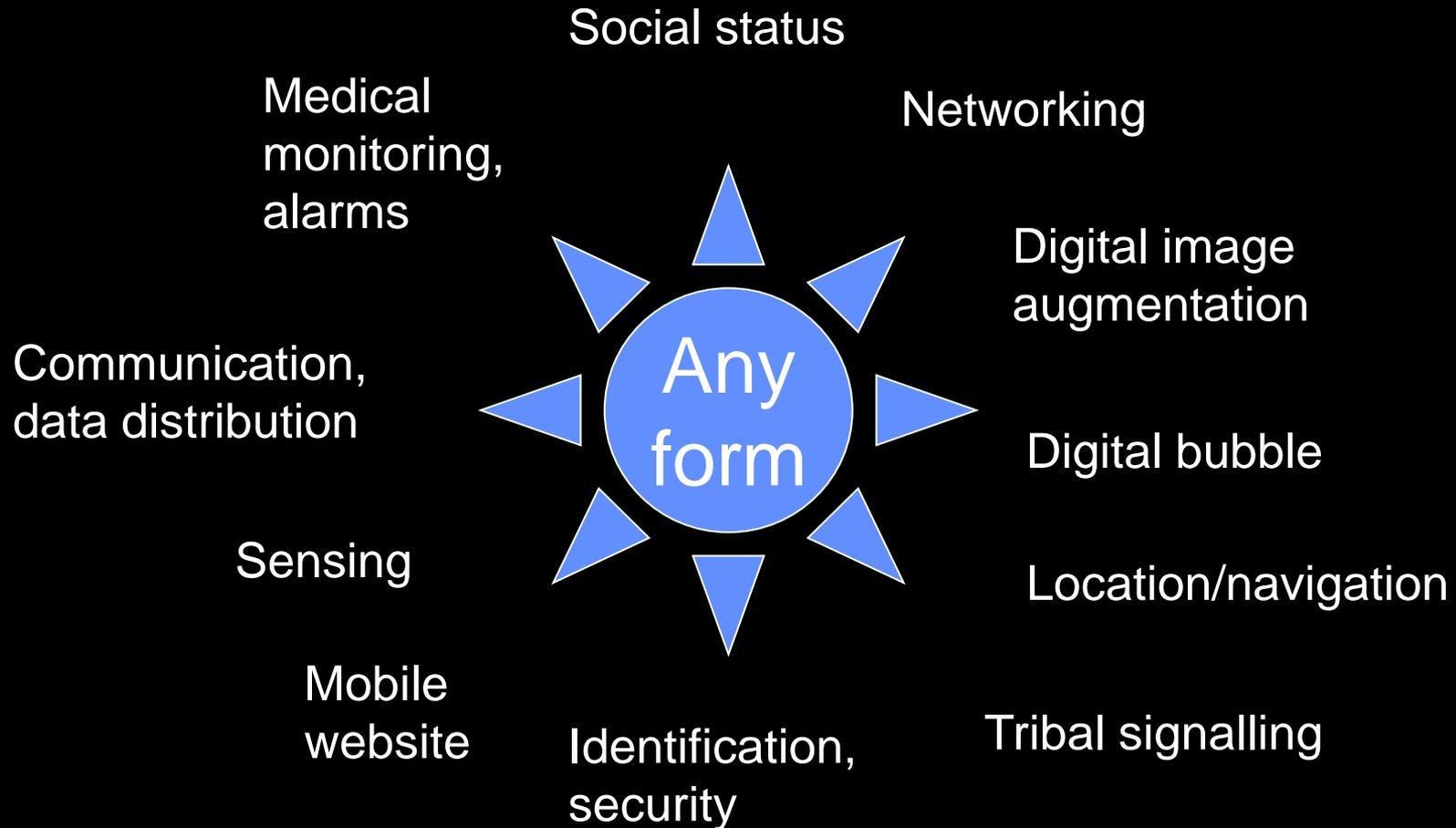


1950-2050: Ongoing IT miniaturisation getting more out of less

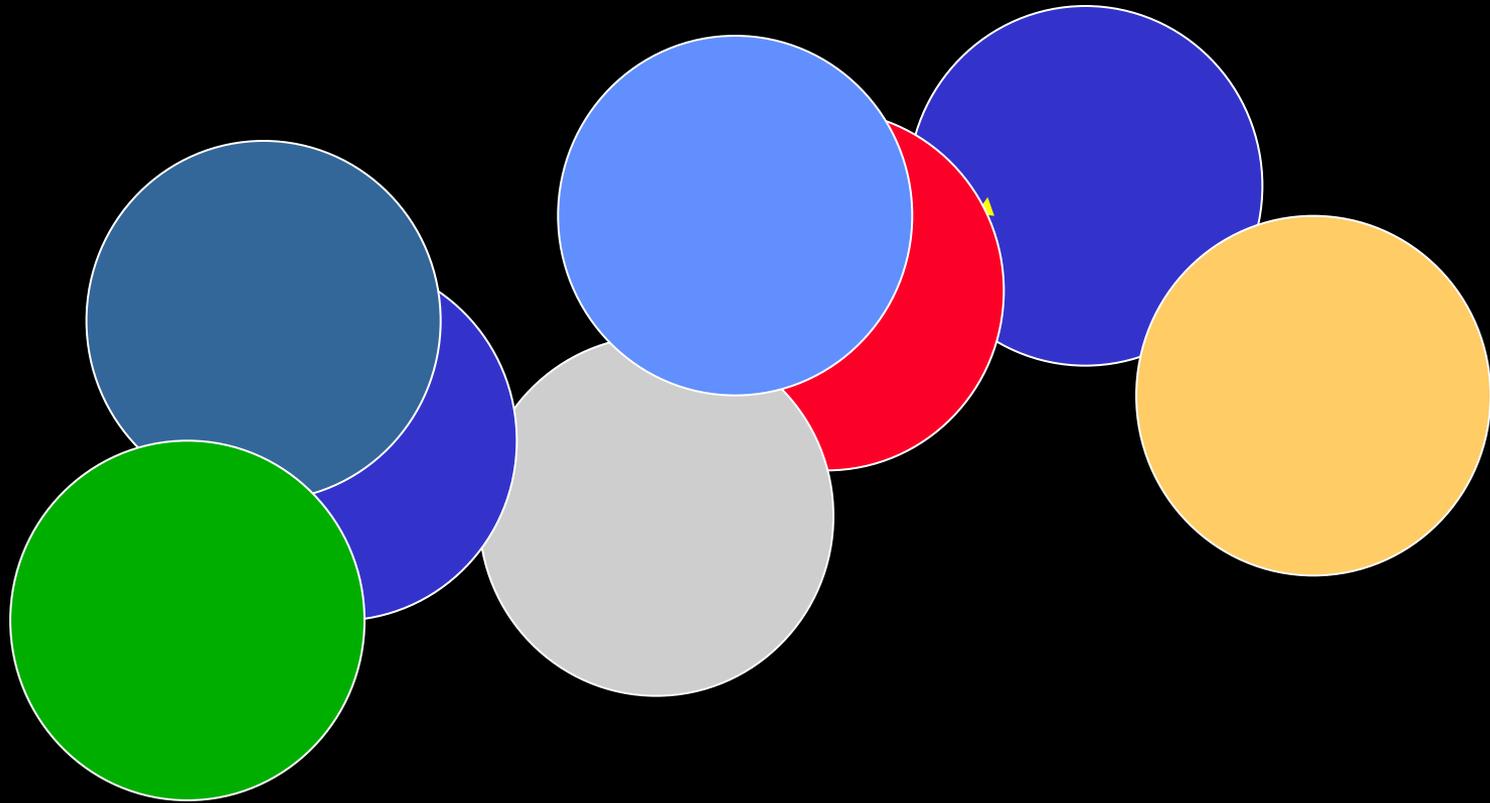


*And it isn't
over yet!!!*

2010: Electronic jewellery



2011: Surveillance-free nets



Direct inter-device networking using extremely short range radio or IR will become an alternative internet

Perfect for illicit file-sharing and terrorist coordination

2012: Espionage

35nm tech means 200M transistors/mm².

Small specks of smart dust can be concealed anywhere

e.g. sand or dirt, passed on by handshake, or dust settling from the air,
in food, seeds, gravel or in clothes, stick to shoes

Use ants to carry food with embedded bugs into caves

Coins or banknotes could be used to hide devices to monitor and
locate miscreants

Exploding smart coins could detonate themselves on hearing certain
keywords in certain locations



Ant: 10mm

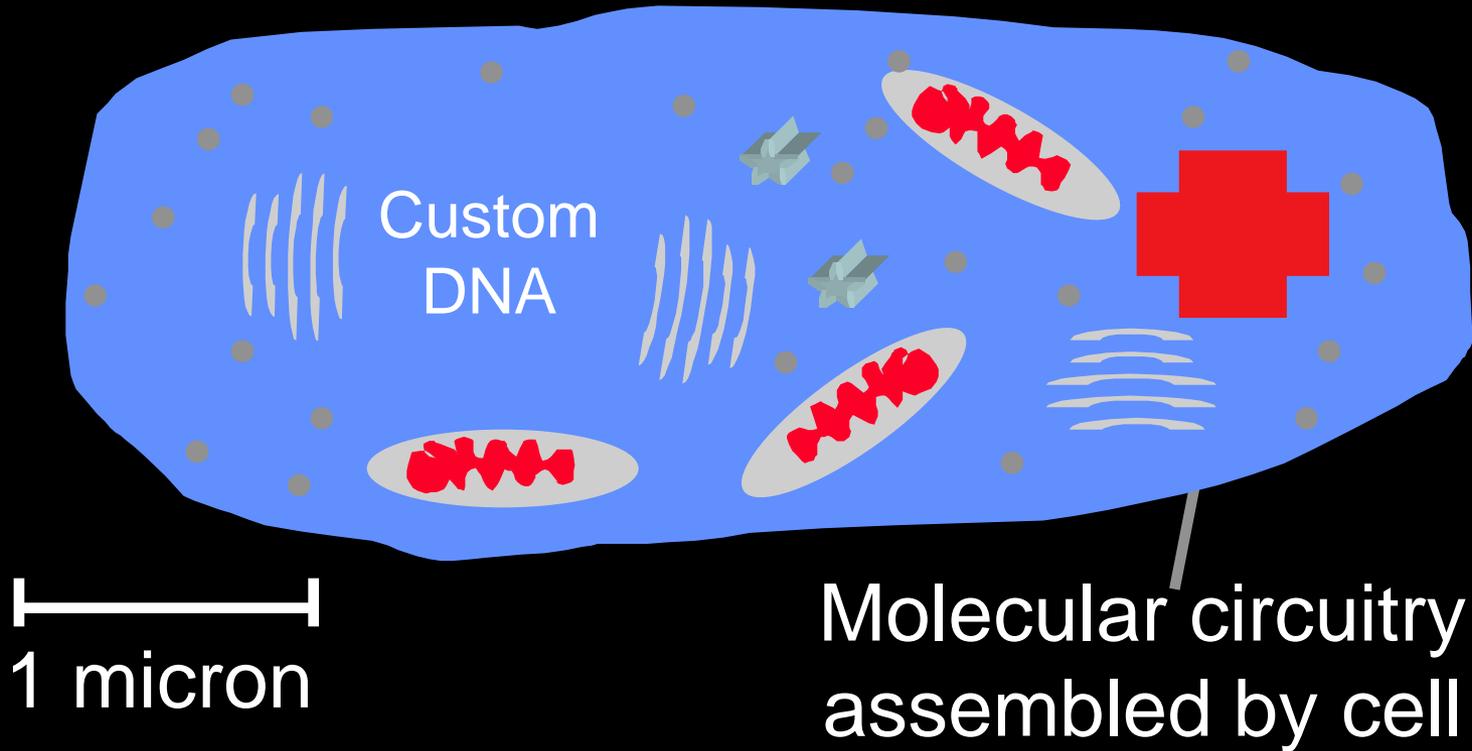
Apple 2 computers: 0.015mm

2015: Smart yarns

- Clothing can already be made using yarns with various electronic properties, e.g. touch sensitive
- Optical fibres can be used as microphones – develop this further to make microphone yarns
- If fabrics incorporating smart yarns (mix of microphone, storage and transmission) are infiltrated into manufacturing/distribution, then enemy will sometimes unknowingly buy smart clothes
- Can then easily monitor enemy

2025: Smart bacteria WMD

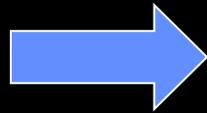
Uses for AI, enslavement or terraforming. Exist in both real and virtual world.



Bacteria linked together via infrared, to make complex self organising circuits. Could be present in air or on any surface. Could breathe them in. Security is almost impossible if bacteria are used because they can get almost anywhere. Could be used as a WMD by blanket attack on corporate security

Display evolution

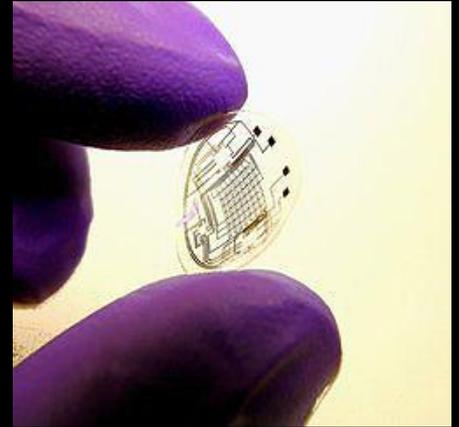
2005



2010

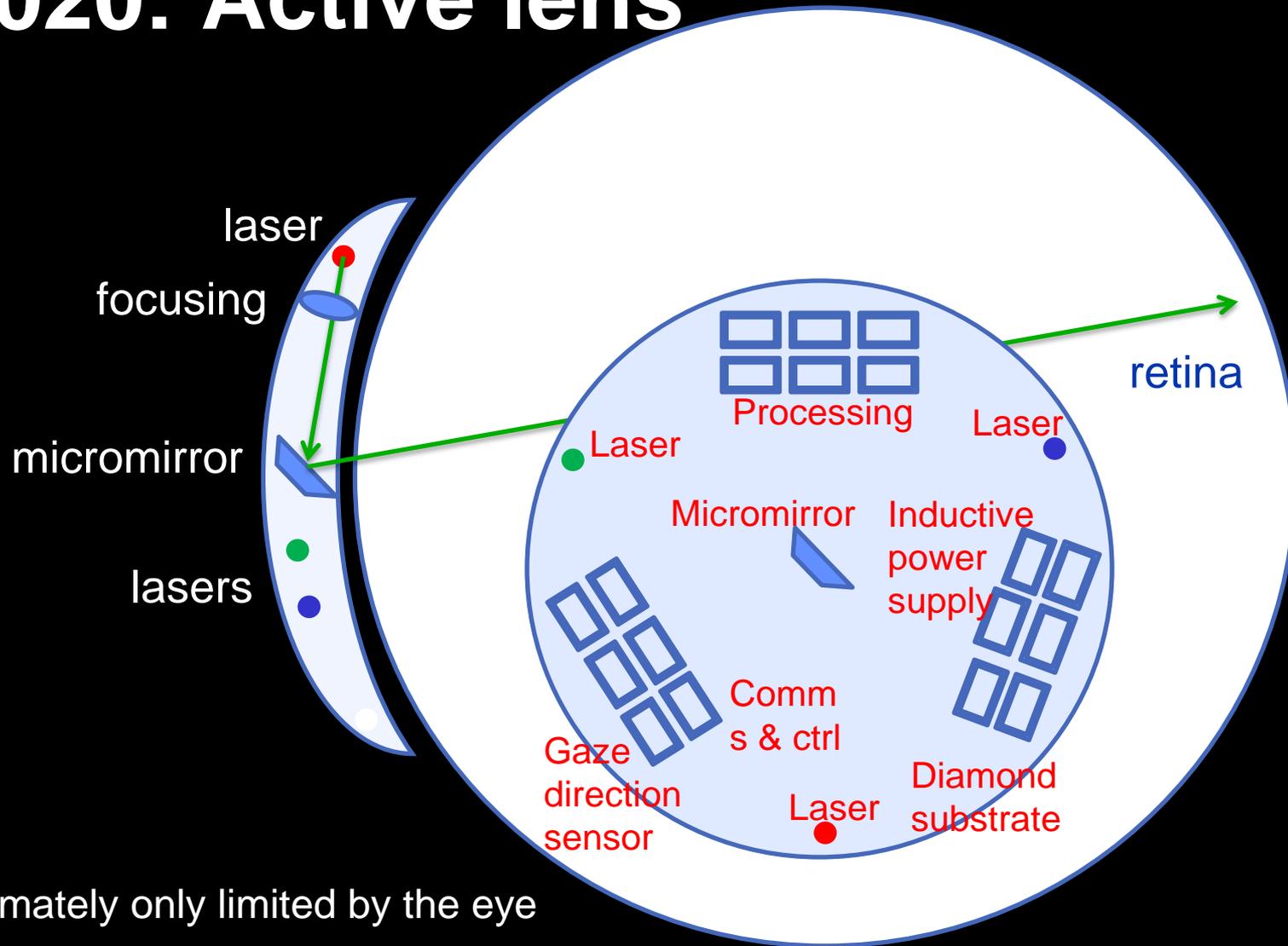


2015



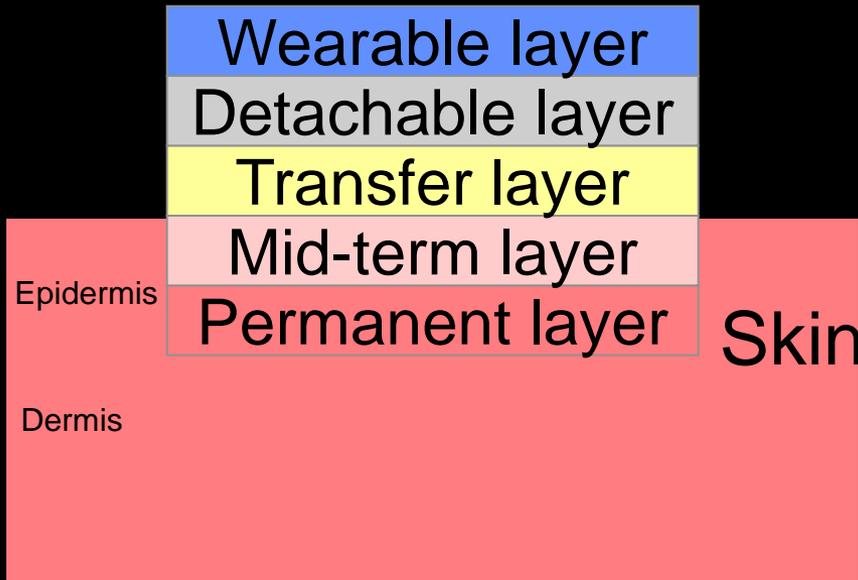
No-one can see you are even wearing an active lens, and certainly not what you are seeing.

2015-2020: Active lens



- Resolution ultimately only limited by the eye
- Allows natural distance perception
- Ideal for augmented reality & field instructions
- Could also be used to capture images/video

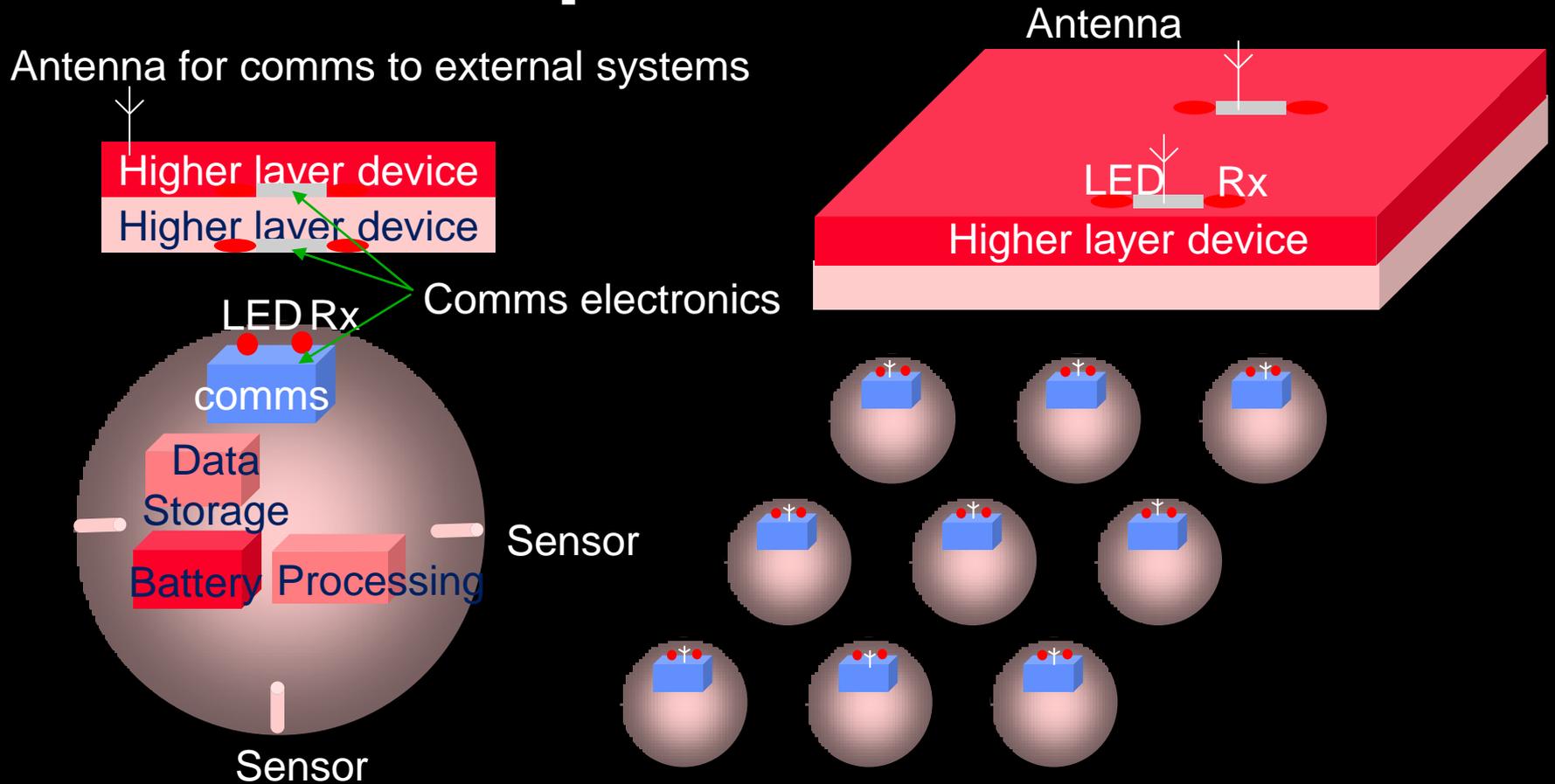
2015-2020: Active skin



Skin-based electronics can link blood chemistry and nerve signals to external computers and systems

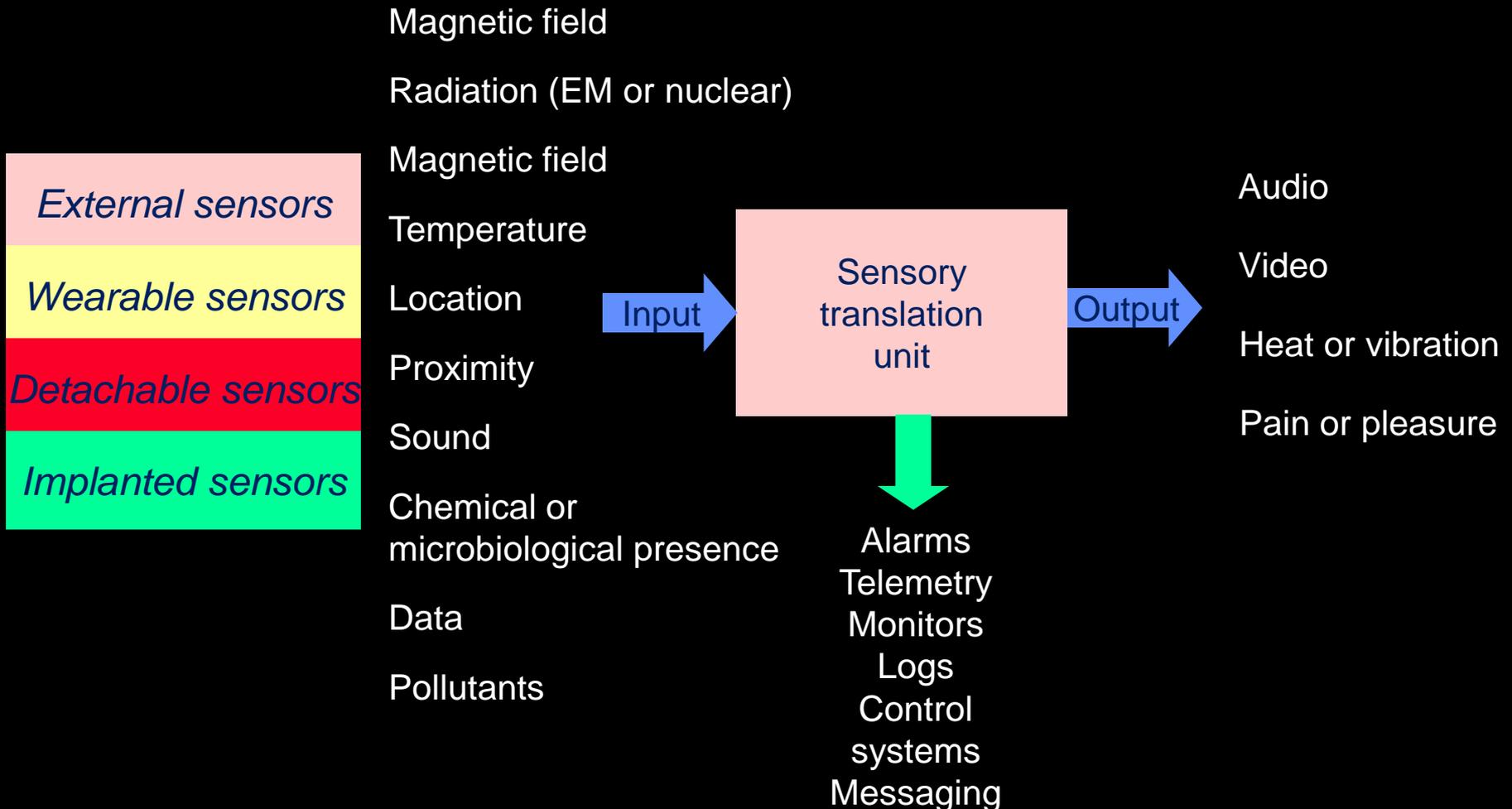


2020: Wireless skin capsules for super-soldiers



Large number of capsules linked together, making very sophisticated capability in an invisible form. Could greatly improve reaction time and sensitivity

2020: Adding extra senses and sensory enhancement



2017: Gel computing



Single core



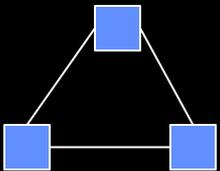
Dual core



Quad core



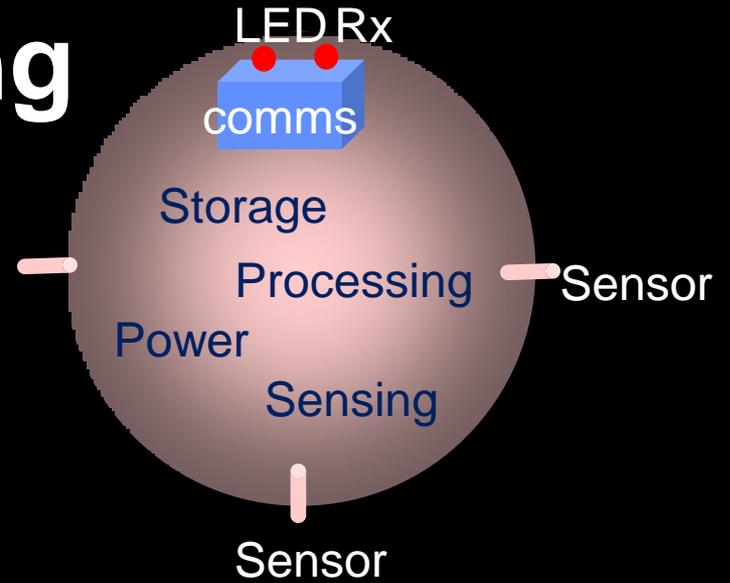
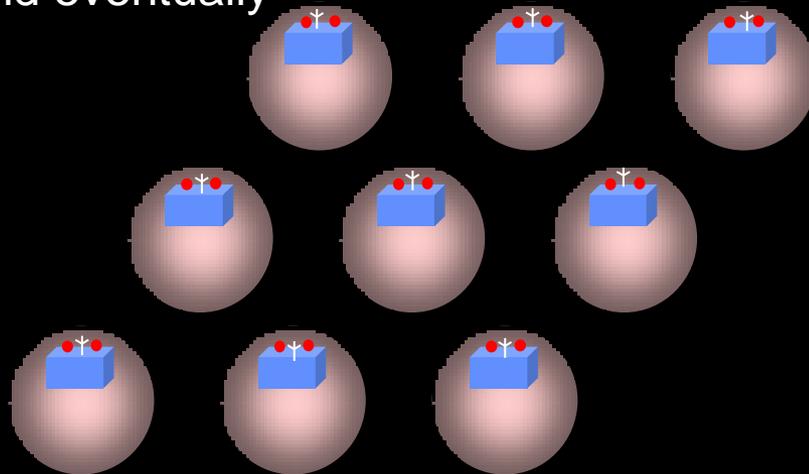
48 core



Massively multiple core-multiple chip



Self-organisation used with AI-controlled evolution to build circuit/function libraries and eventually strong AI



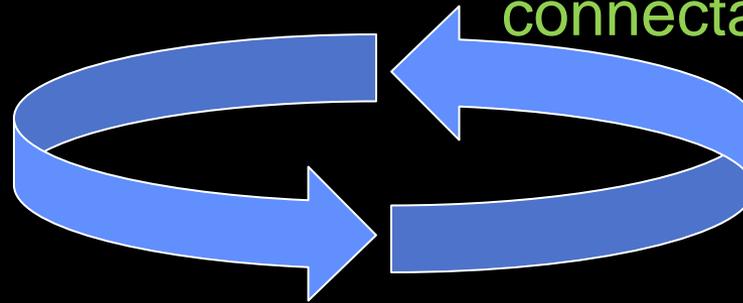
Large number of capsules suspended in gel using free-space comms to link up to form ad-hoc circuitry

NBIC Convergence (nano-bio-info-cogno)

Nanotech gives
us tiny devices

Biotech and IT advances
make body and machine
connectable

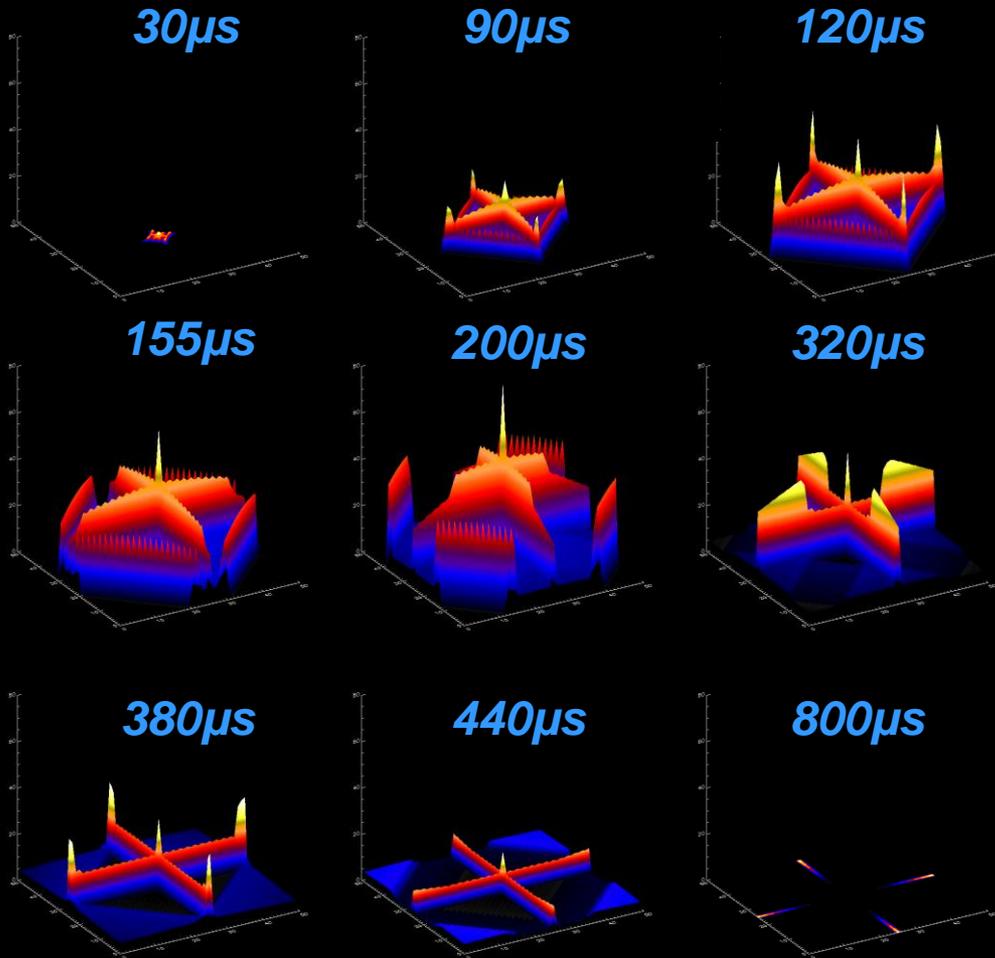
Tiny sensors help
neuroscience figure
out how the mind
works



Insights from
neuroscience feed into
machine intelligence

Improving machine
intelligence
accelerates R&D in
every sphere

2010: Information waves - WMD



Computer power and data rates high compared to speed of signals

Hijack millions of machines

Experiment with network resonance to map network properties

Synchronised huge number of calls to cause network overload

Wave of calls can reach very high magnitude and vanish all in a millisecond

Network likely to crash repeatedly! And trash economy

Precision targeting possible

Infinite class of correlated traffic attacks possible

2012-2015: Conscious botnets WMD



Games machines and phones have high processing power and lots of sensor capability, but low security. Good platform for decryption engines and network resonance attacks.

Students might attempt to realise consciousness networks just for fun, but it could get out of hand. Aggregated power compares well with brain so even an extremely inefficient algorithm might still be feasible.

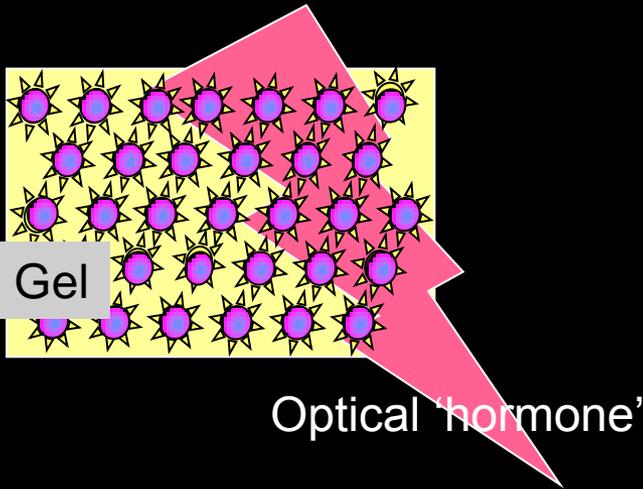
Others might attempt to do so deliberately with varying motivation

As analog processing devices start to make an impact, danger will increase fast

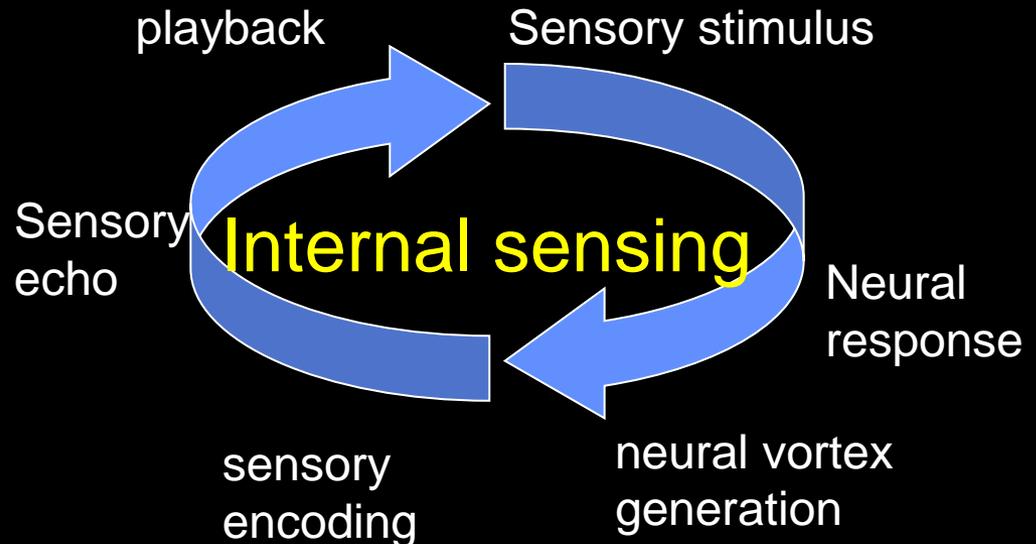
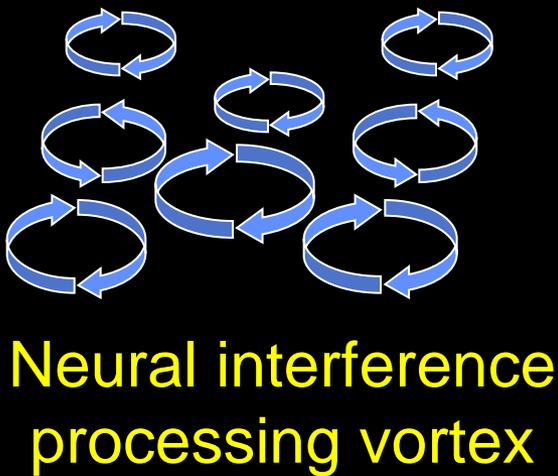
Would cause great damage to networks as the AI attempts to survive

2017-2020: OB1 - optical brain mk1

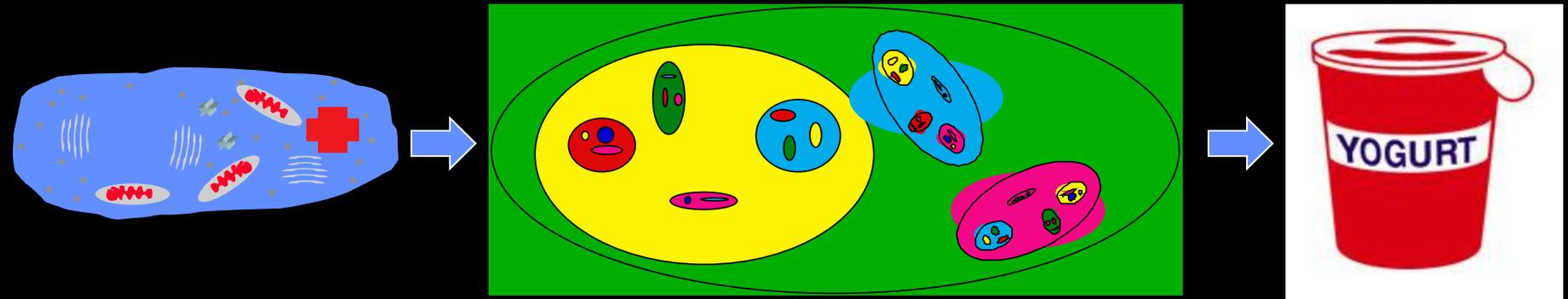
Ultra-smart conscious computer, & WMD



1 trillion neurons in 100ml gel
1 billion times more powerful than brain, with up to
2 million emotions & unlimited senses
Could be fully sentient
Could be benign or malicious
Can be linked to other devices via the net



2026: Smart yogurt: Self-organising smart bacteria, WMD x 2



Can use chemical gradients to self-organise components into very complex structures

Smart bacteria could use cloud computing to re-design their offspring, thereby adapting to any environment, destroying all life and terraforming Earth

Smart bacteria could control minds of people infected, enslaving them and making them into zombies

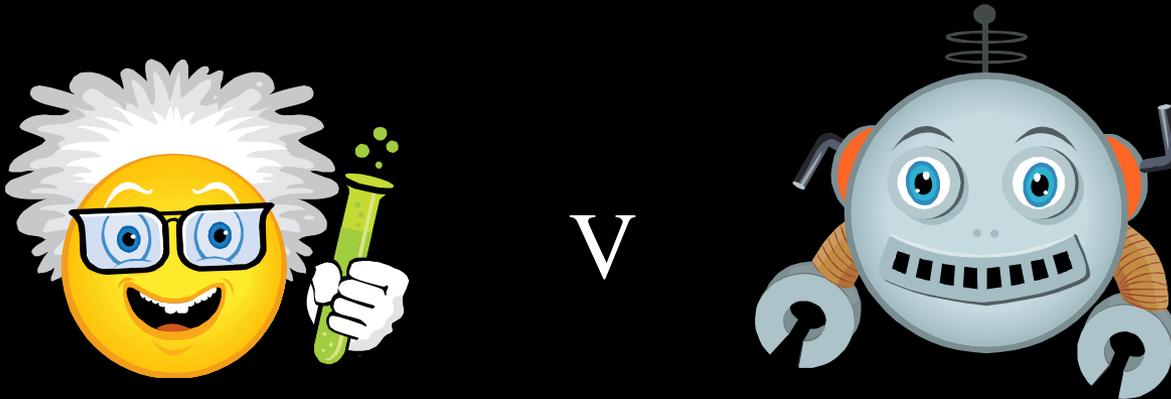
AI evolution 2015-2075

- AIs will have their own cultures and civilisation that will cross fertilise with ours
- Sims will get much smarter!
- Some may become nasty
- Some AIs will migrate from cyberspace into the real world
- Some people might move into cyberspace – retirement or suicide?
- Cyberspace fauna and flora



The Sims, EA Games

Avoiding the Terminator scenario



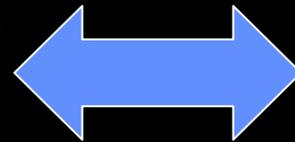
If we create smarter-than-man machines, we risk extinction. Even if they are not malign, we may end up in the same bargaining position as ants on a building site.

If we can enhance or link human brain to the same level of intelligence, then such a capability gap will not occur.

We need a good brain-machine link before we can safely make smarter-than-man machines

IQ and sensory enhancement (and the pursuit of electronic immortality)

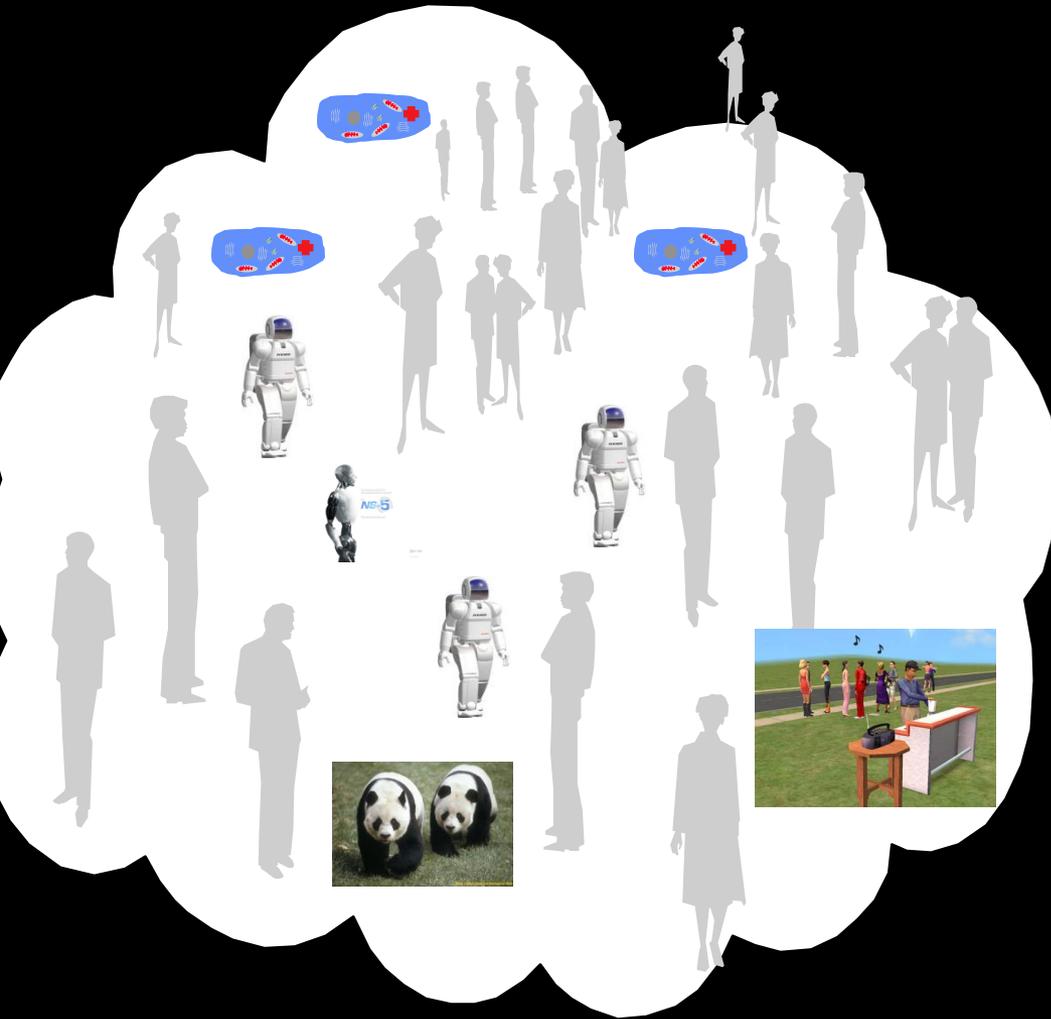
Risk of zombie WMD



Billions of tiny sensors linked to every synapse, signalling activity to external replica and able to recreate signals generated by external replica

Billions of smart bacteria with synthetic neurons replicating behaviour of every individual neuron but able to run at much higher speeds and with connectivity to net and other brains.

The Borg, 2075-2200



A global environment linking together all the minds of people and sentient machines in a global consciousness

Shared consciousness & awareness

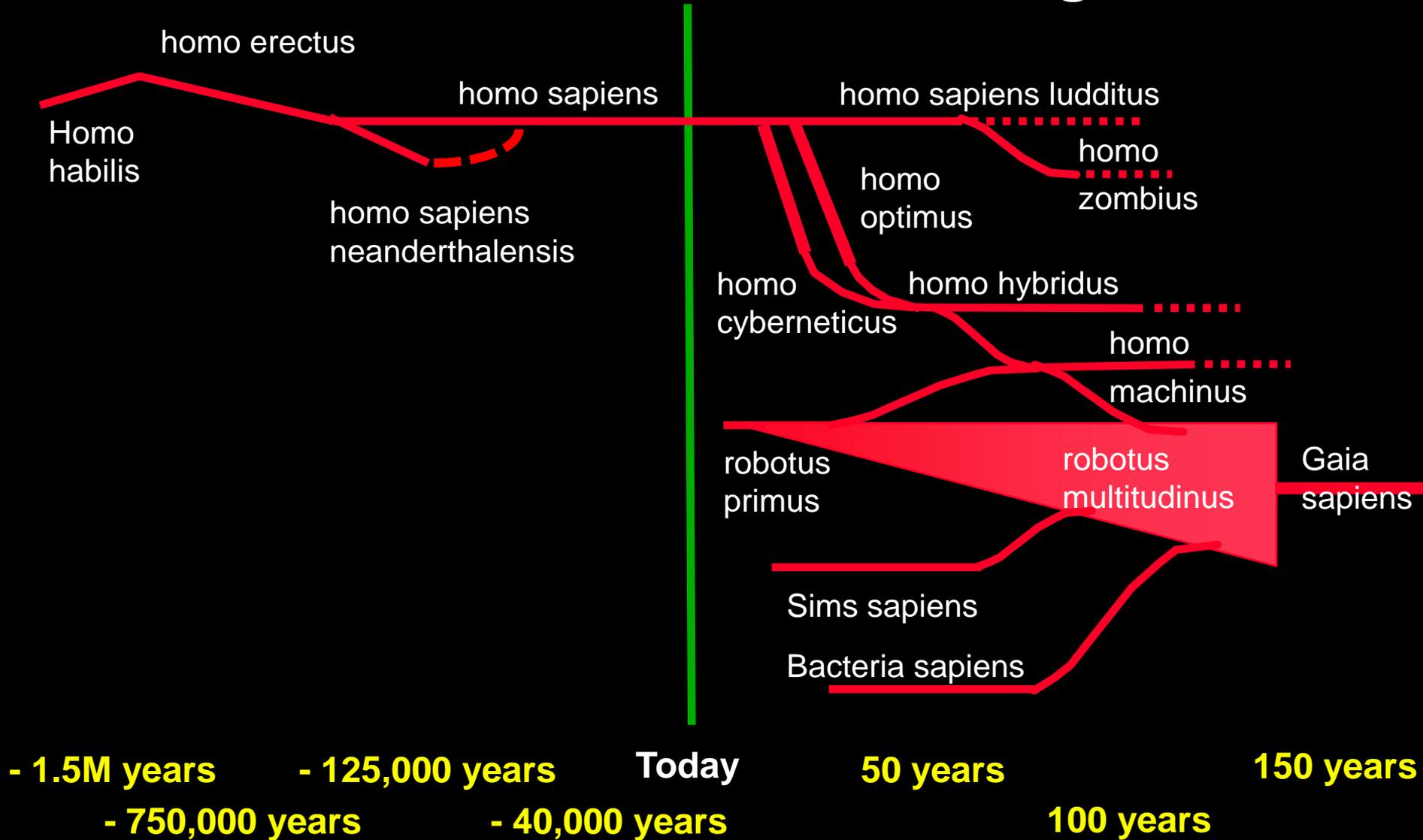
Shared personalities

Link nervous systems together

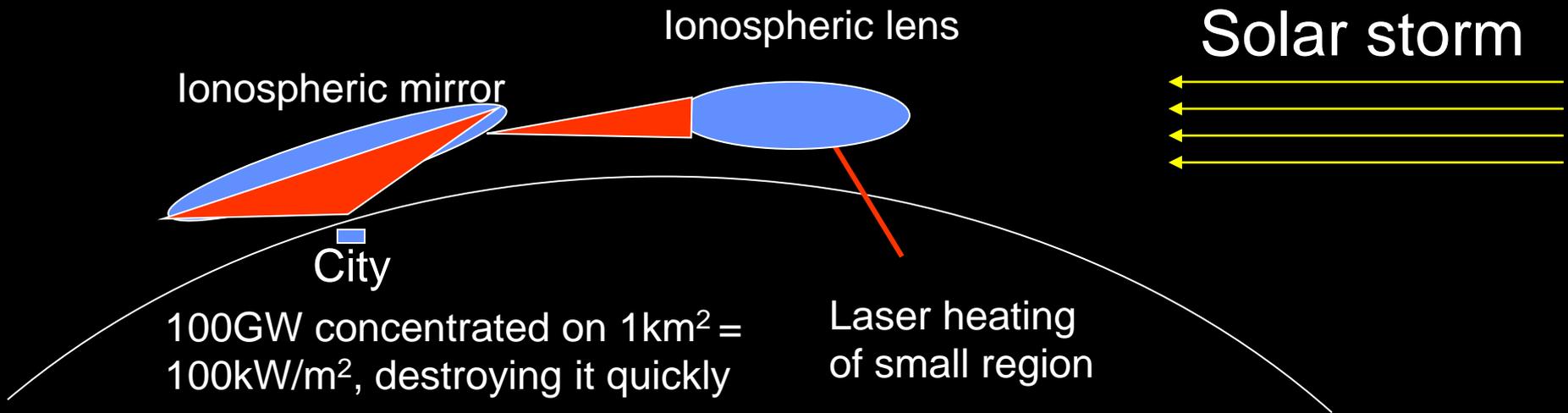
Body sharing

Fuzzy boundaries between people

Human-machine Convergence



Solar wind deflector gun - WMD



Summary of new WMDs

Decryption engines using games consoles and phones used to wreck security across economy

Information waves and network resonance attacks

Conscious botnets

Smart bacteria used to invalidate security across economy

Destruction of all life via adaptive smart bacteria

Grey goo terraforming via smart bacteria

Enslavement of people via smart bacteria - zombies

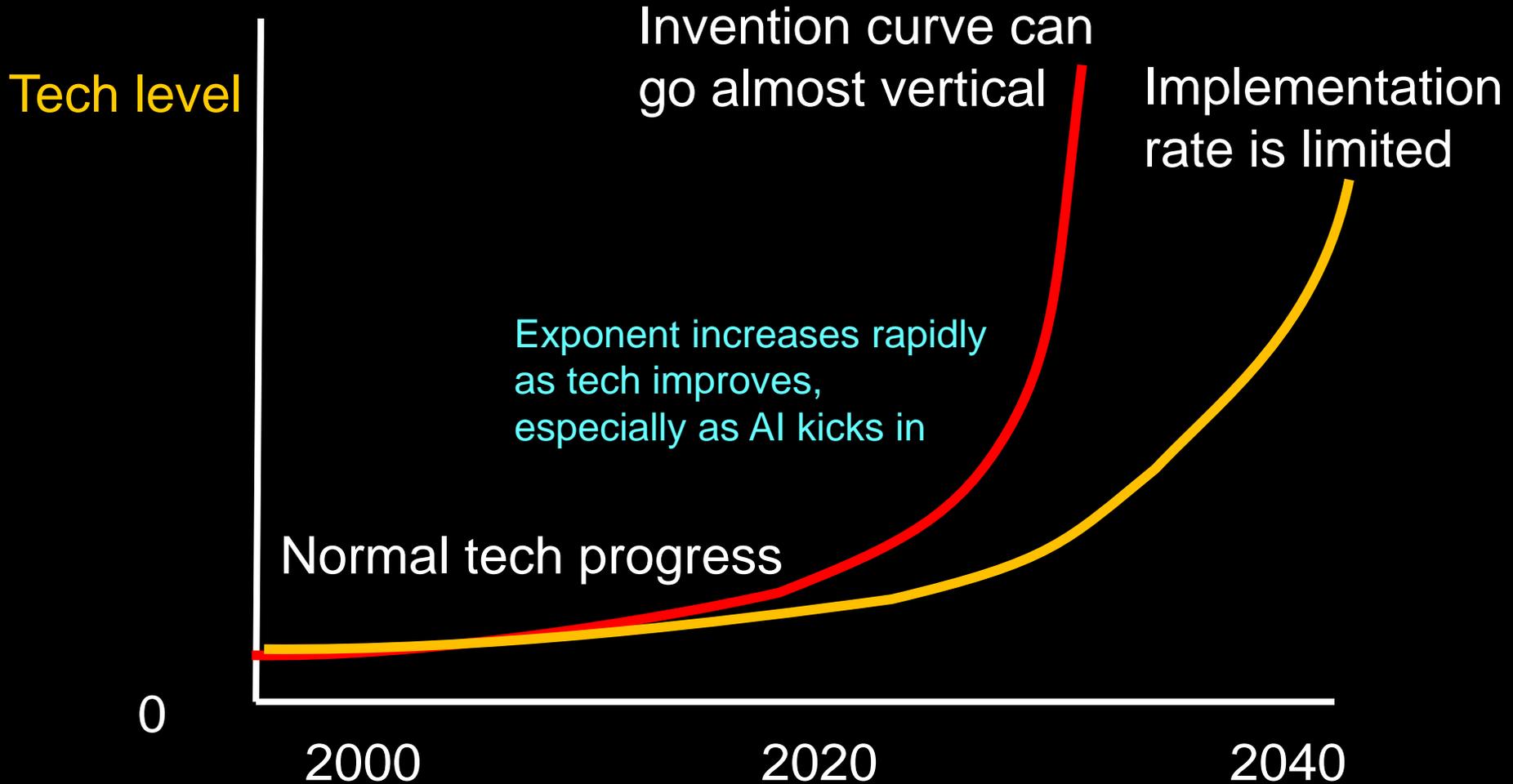
Gel computing based strong AI terminator scenario

Evolution of The Borg

Solar wind deflection gun

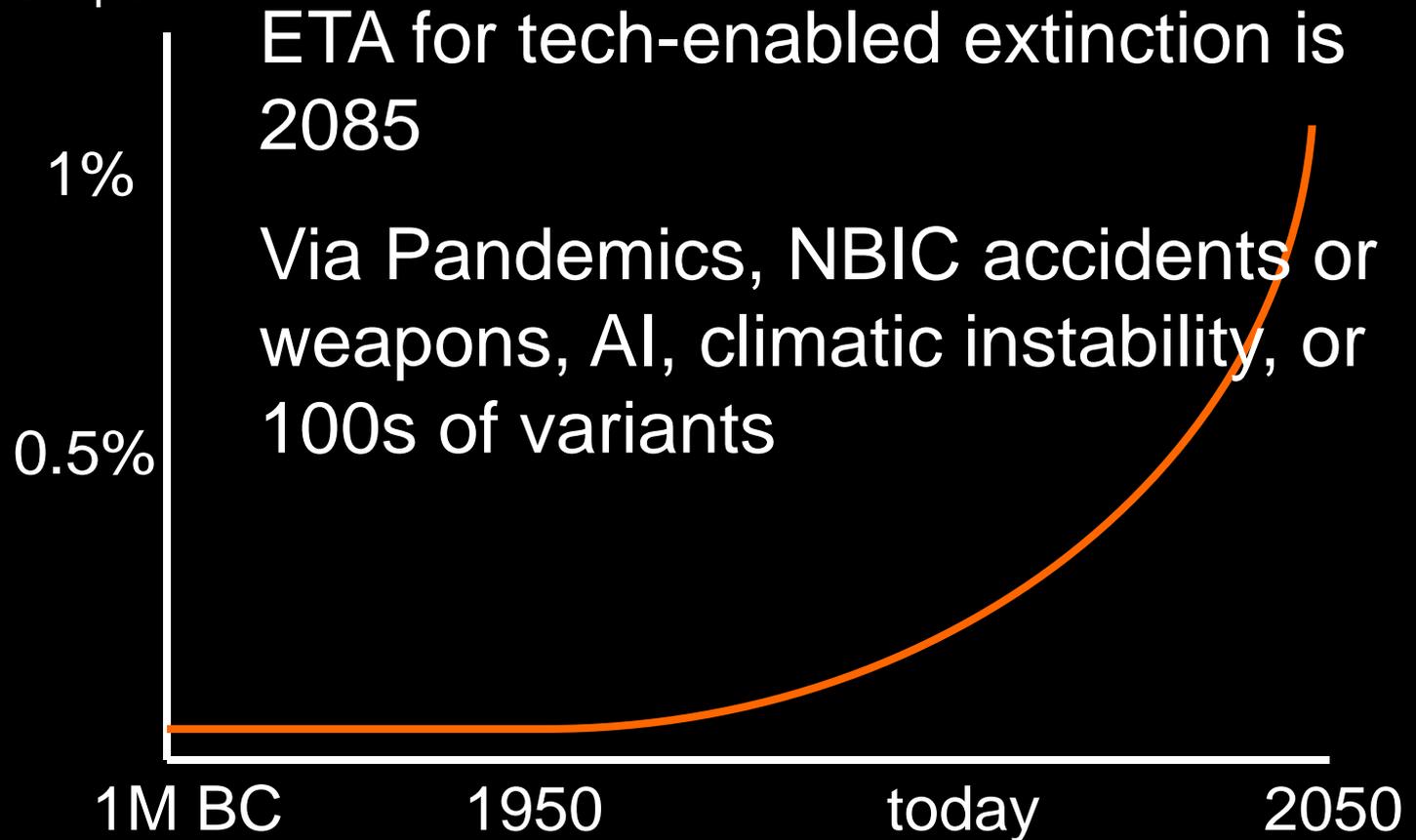
What about the singularity?

(critical level positive feedback in technology development)



Increasing danger from technology

Probability of extinction-level event per year



Perhaps we don't see aliens because they all wipe themselves out within 300 years of discovering radio!

Thank you

idpearson@gmail.com

www.futurizon.com