



# Digital Immortality

David Burden  
Daden Limited

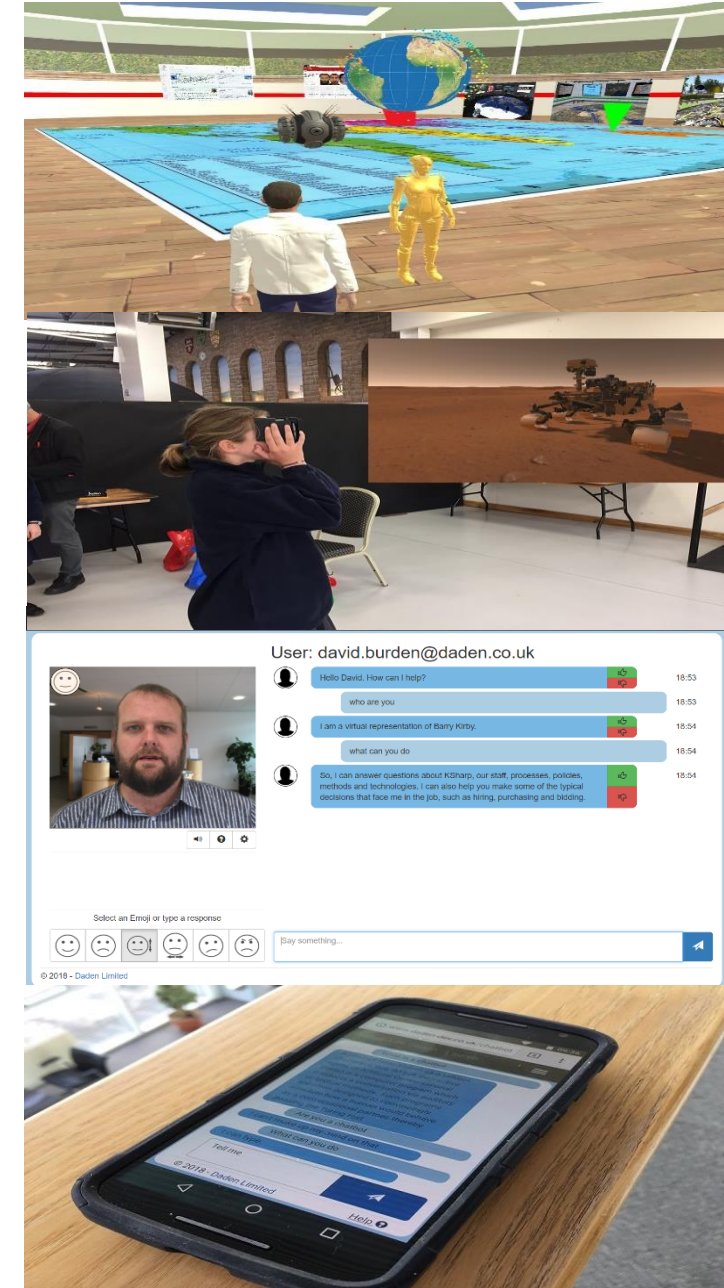




# Who Are We?

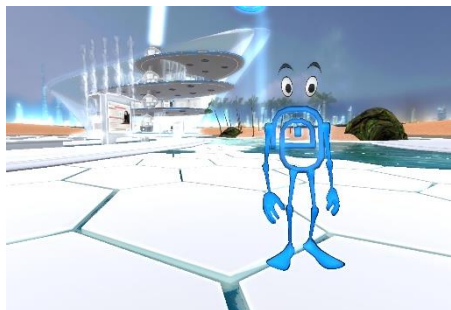


- Specialists in:
  - Immersive 3D training and learning (software and hardware based immersion)
  - Chatbots and conversational Artificial Intelligence
- Founded 2004, but 3D and chatbot experience since late 1990s
- Award-winning:
  - US Federal Virtual Worlds Challenge winner 2010
  - Finalist 2013 Global Unity3D Awards
  - Times Higher Education Winning Projects 2009 & 2013
- Research-inspired – over a dozen R&D funded projects
- Based in Birmingham UK

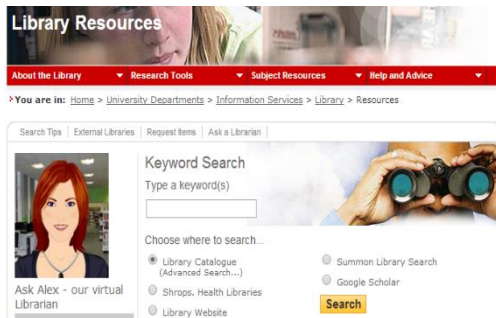




# Over a Decades Experience...



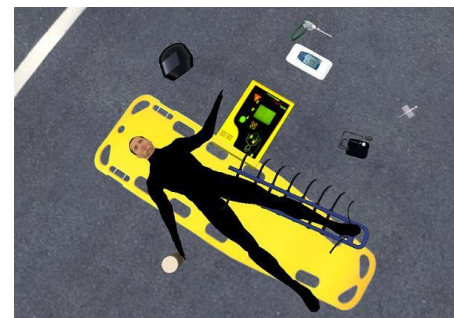
Virtual Greeter



Virtual Librarian



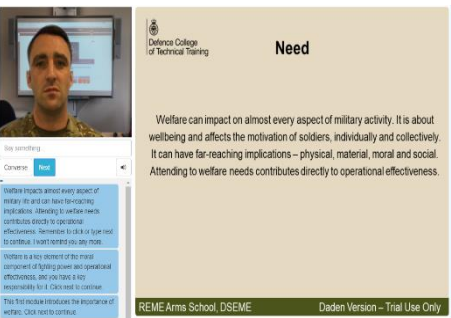
Virtual Familiarisation & UX



Paramedic Assessment



Disaster Management



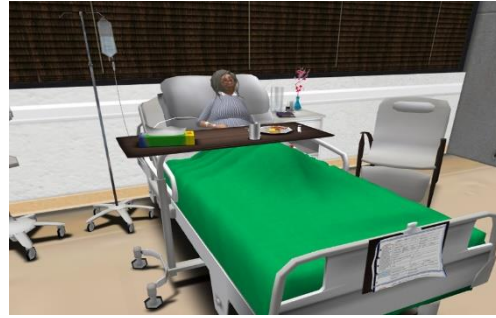
Virtual Tutor



Virtual PA/Life Coach



Disaster Management



Bereavement Care

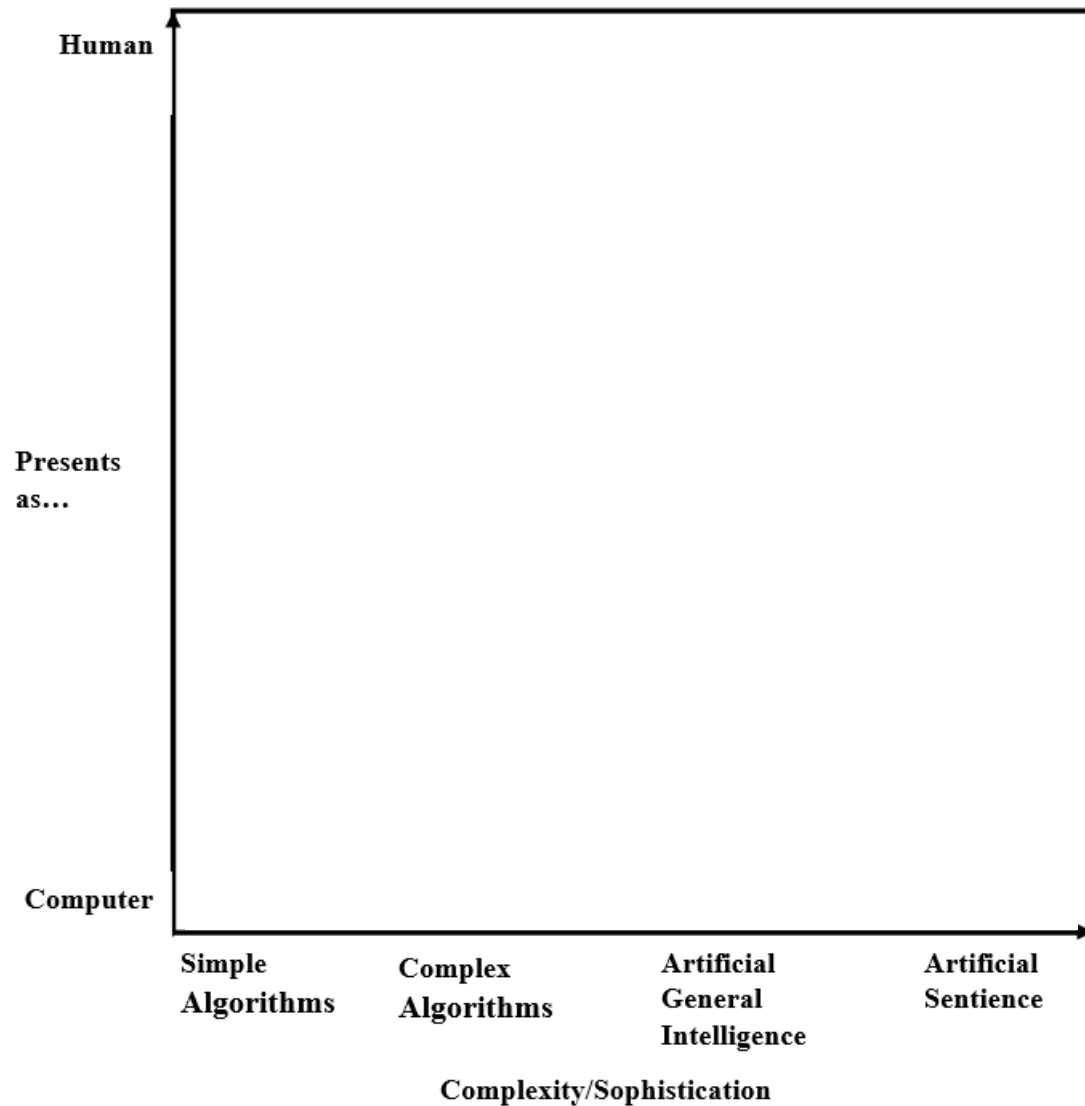


Virtual Laboratory





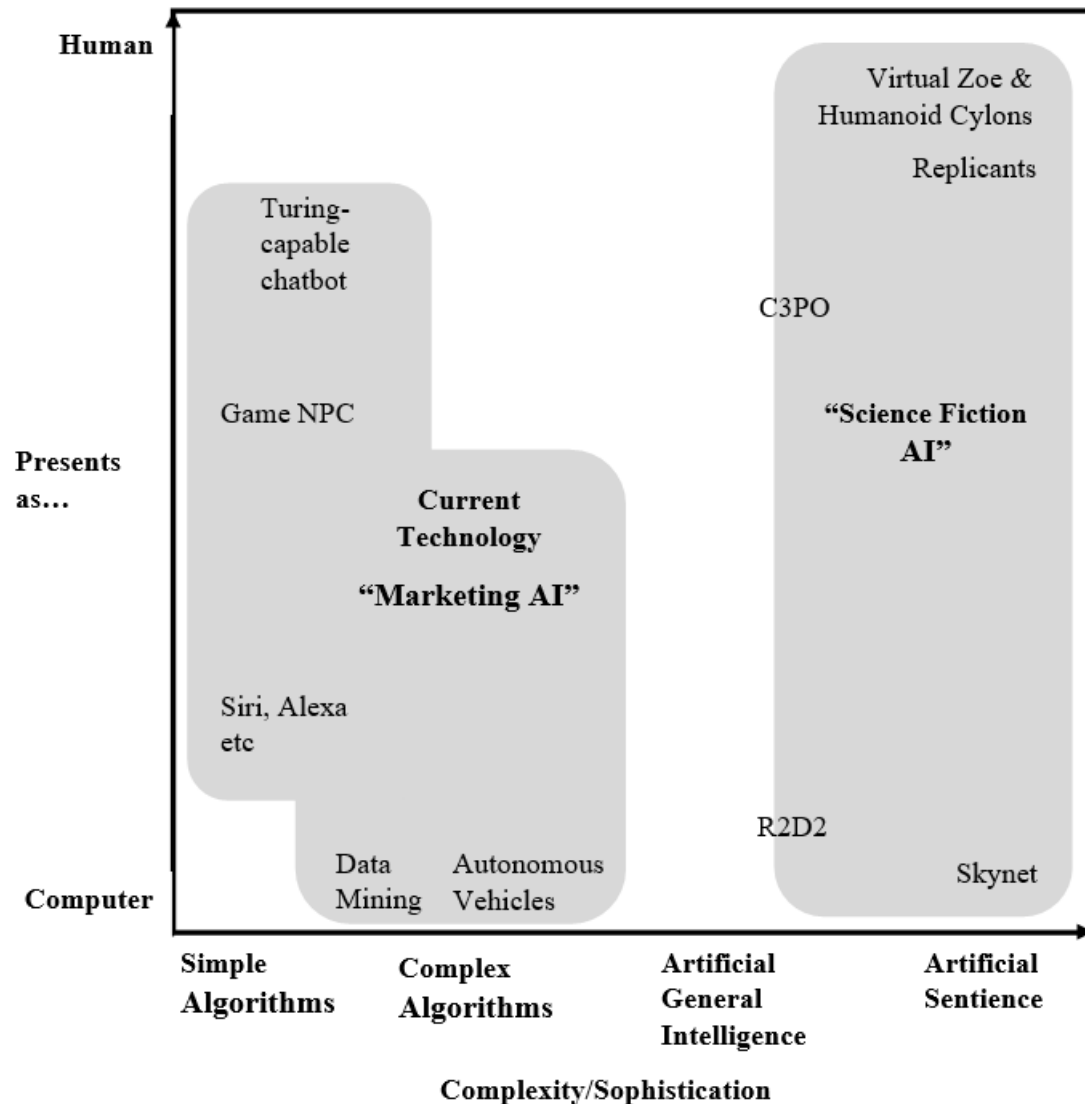
# The AI Landscape



- Axis 1: How sophisticated is the underlying software?
- Axis 2: How human-like does the system present as?



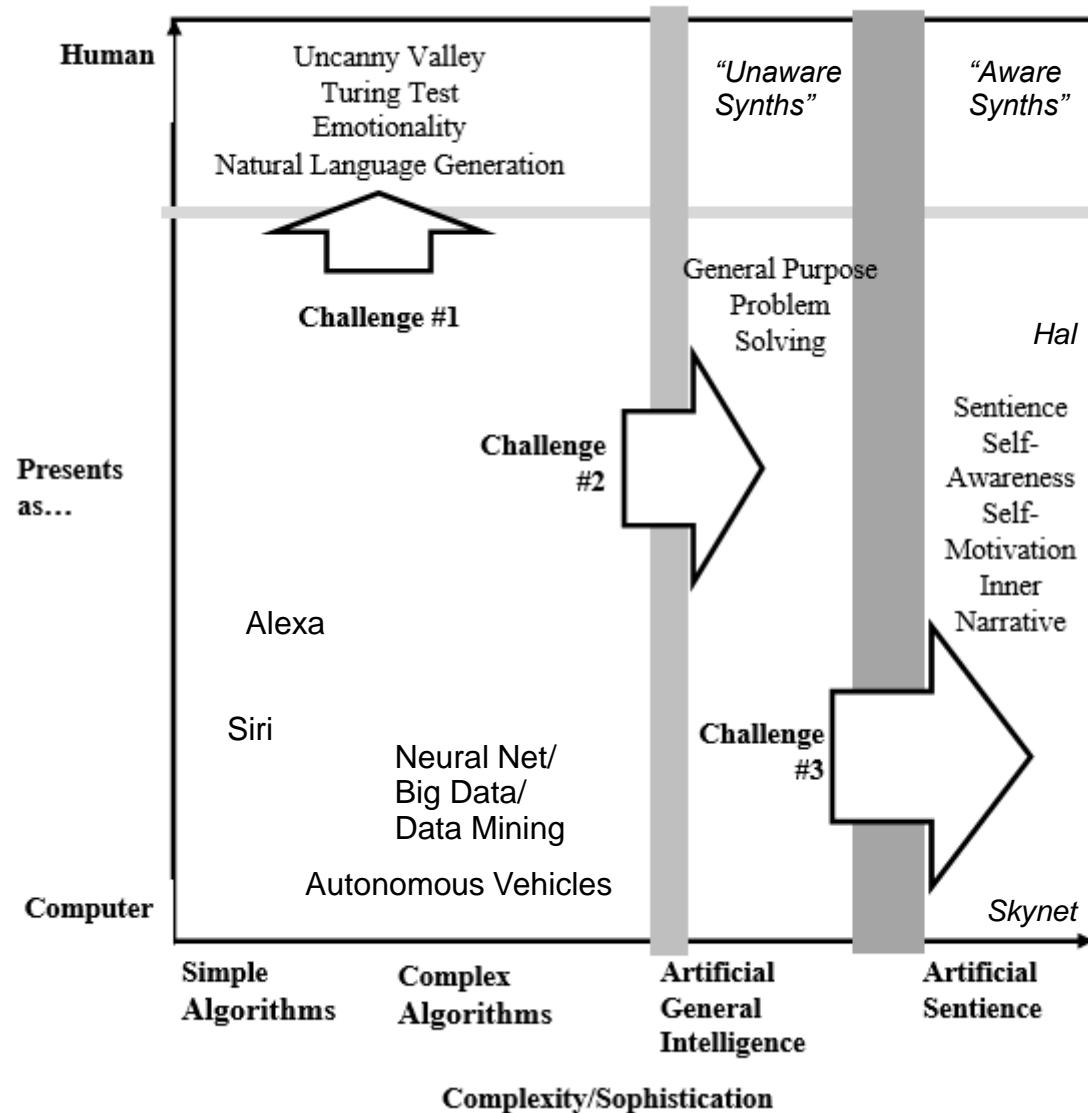
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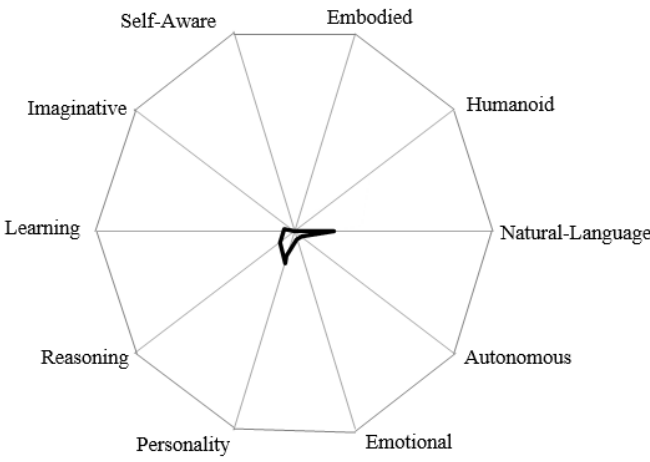
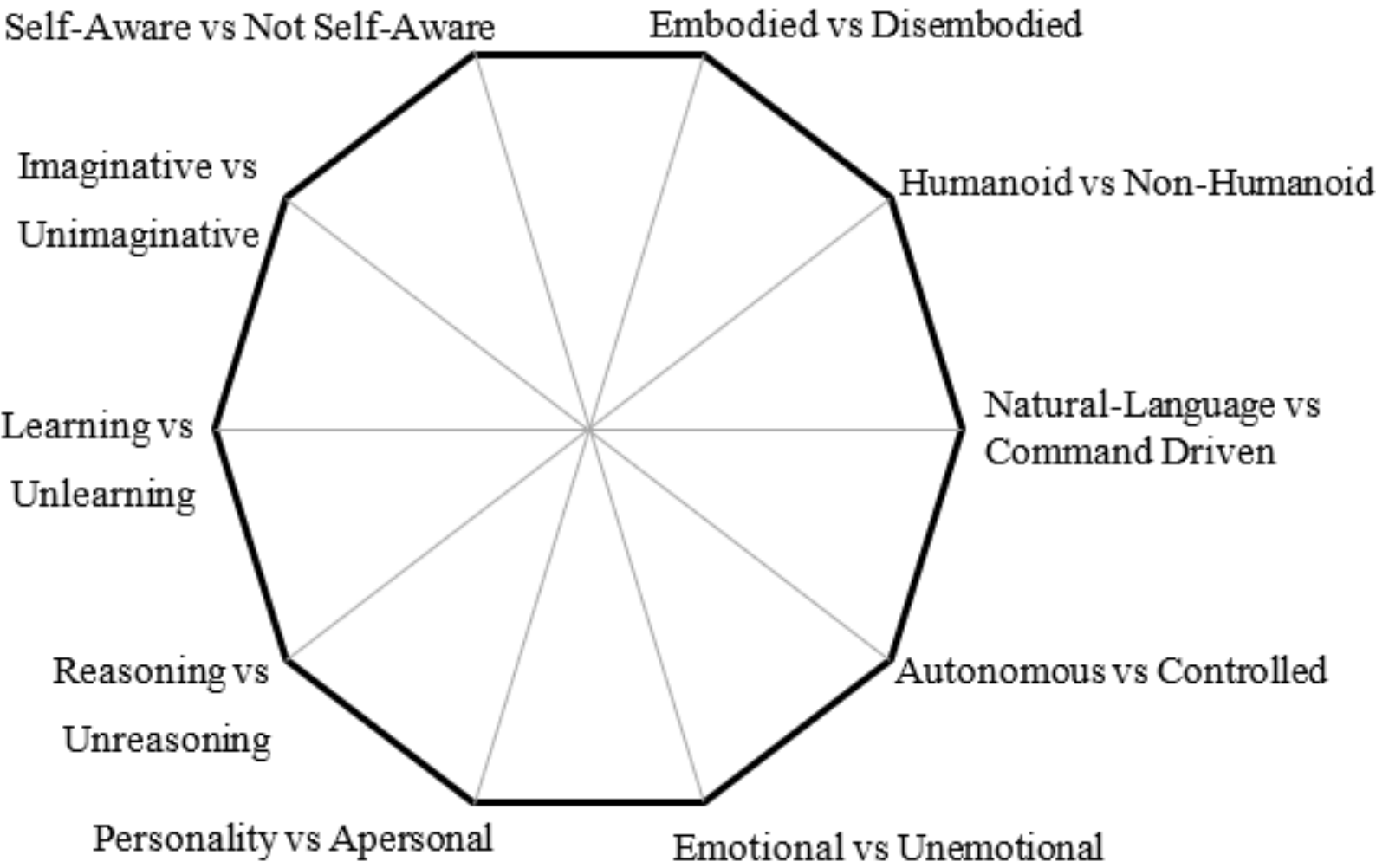
# The AI Landscape – 3 Challenges



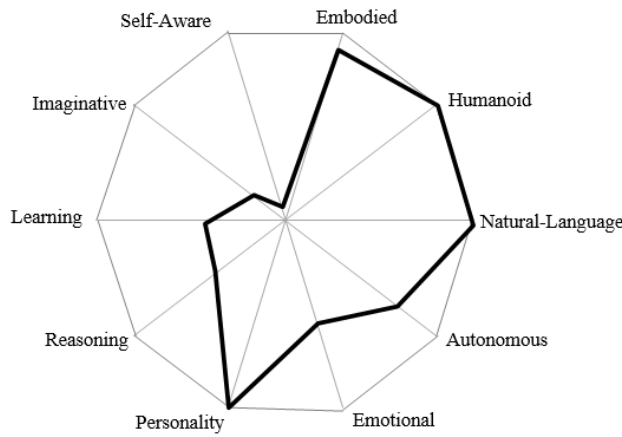
- Challenge 1: How do we make a computer system more human?
- Challenge 2: How do we make a computer system show general purpose intelligence
- Challenge 3: Can we make or evolve a computer with sentience?



# AI Traits



Smart Speaker



Virtual Persona



# Chatbots/Conversational AI





# Chatbot Technologies

## Pattern Based

- E.g. Artificial Intelligence Markup Language
- Pattern +Response
- Limited Scripting
- Limited Learning
- Data mixed with linguistic
- Cumbersome

## Rules Based

- E.g. Chatscript
- Still essentially Pattern +Response
- More variable responses
- Complex Scripting
- Learning if you code it

## Intent Based

- E.g. IBM Watson, VXML
- Identify intent, fill slots
- Very task orientated, not for smalltalk
- Not even ML?

## ML Based

- E.g. RASA NLU
- Needs a decent training example set

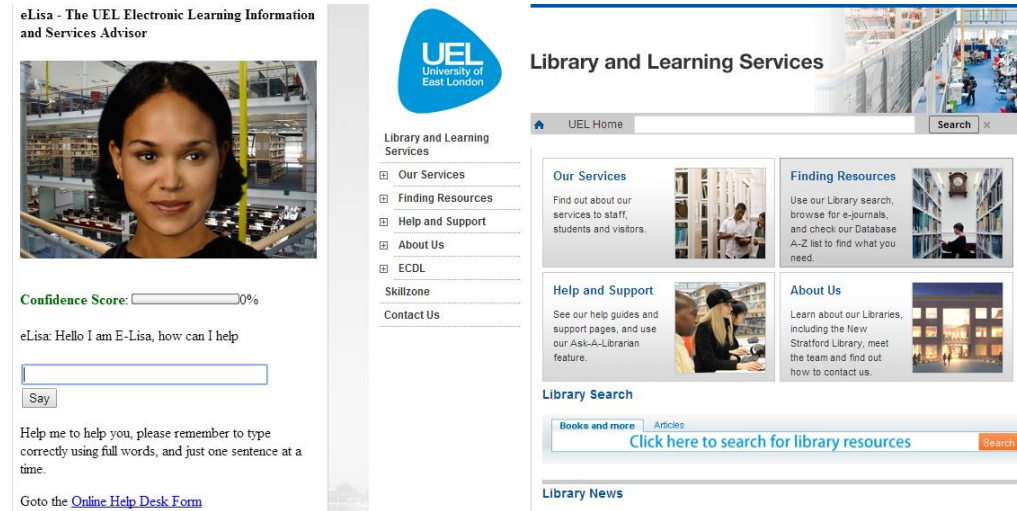
## Grammar Based

- Elements in Chatscript and RASA
- Still under-developed

And as for Natural Language Generation?!

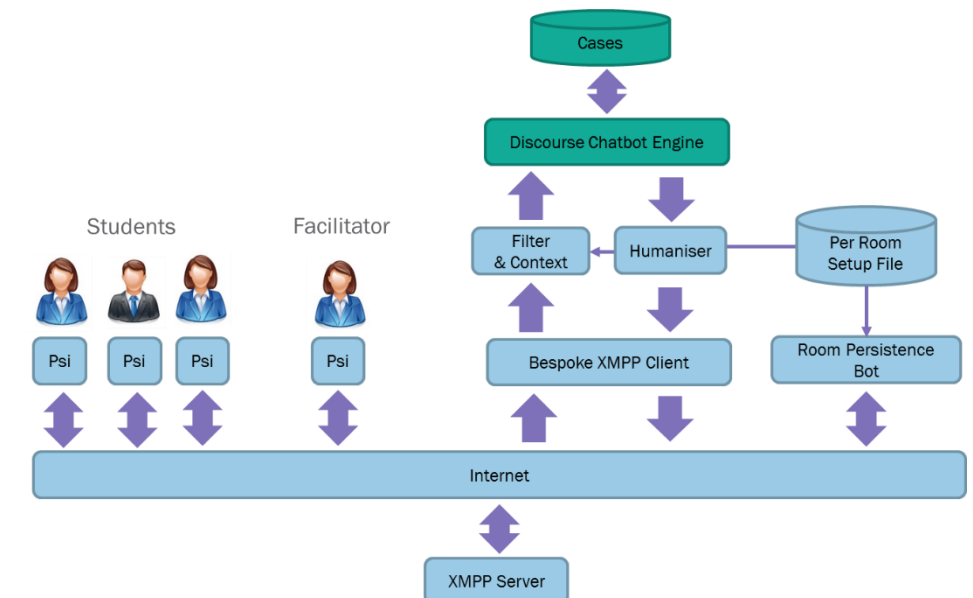
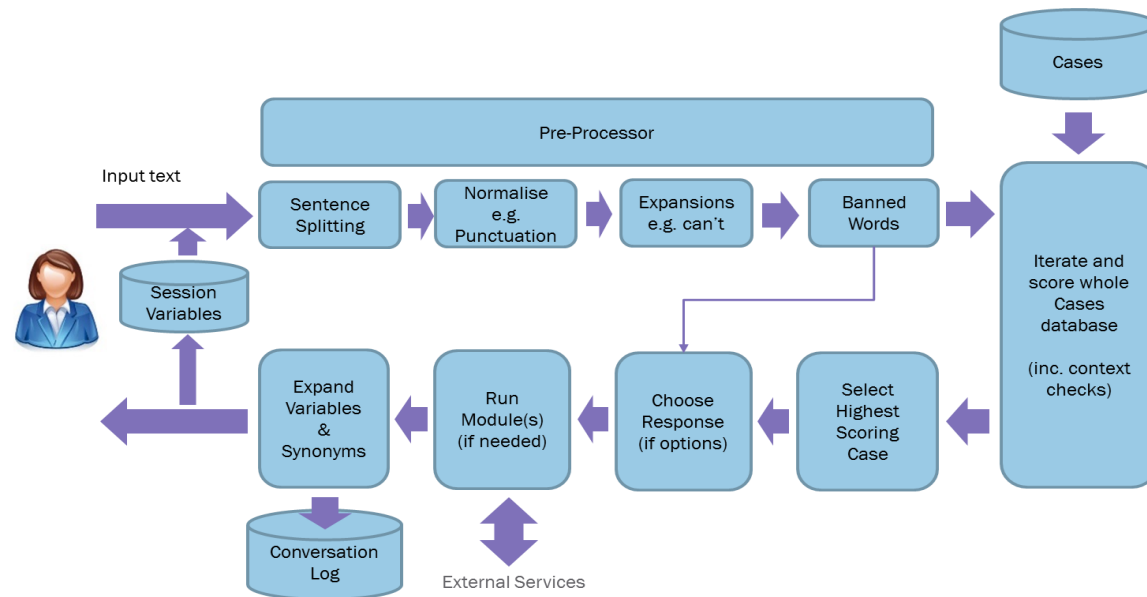
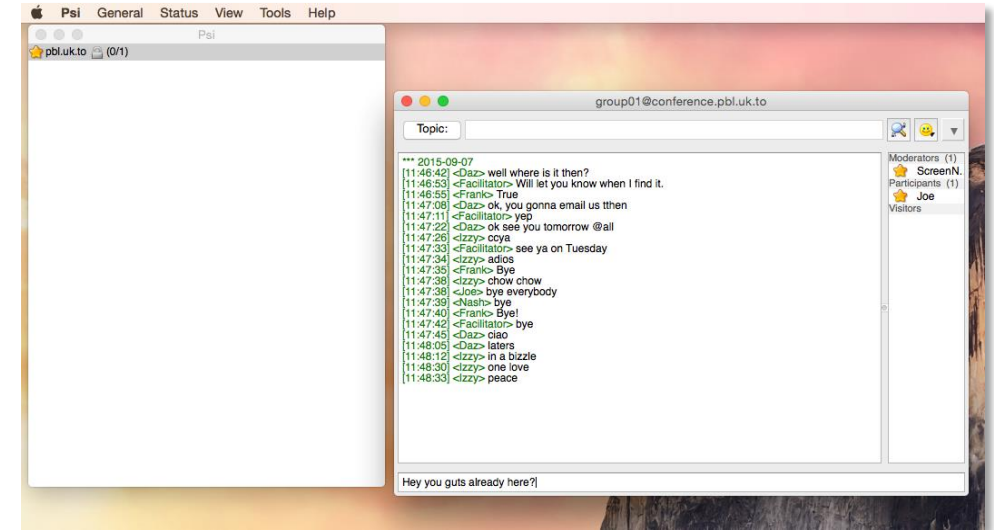


# The mid 2000s Chatbot boom





# The early 2010s – back to research

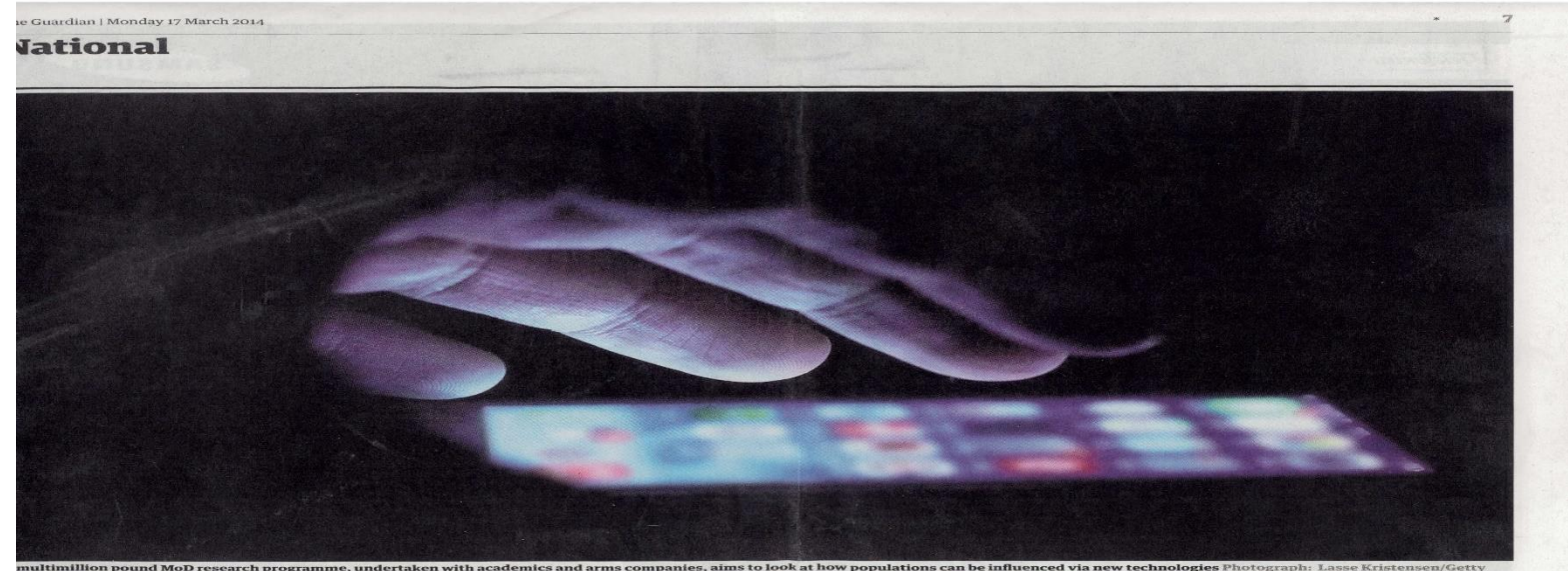




# A Monday Breakfast Surprise



## The Guardian



multimillion pound MoD research programme, undertaken with academics and arms companies, aims to look at how populations can be influenced via new technologies Photograph: Lasse Kristensen/Getty

### Project looks at how social media can control minds

£10m set aside for work on web psychology strategy

en Quinn

The Ministry of Defence is developing a secret, multimillion-pound research programme into the future of cyberwarfare, including how emerging technologies such as social media and psychological techniques can be harnessed by the military to influence people's beliefs.

Programmes ranging from studies to the role of online avatars to research drawing on psychological theories and the impact of live video-sharing are being funded by the MoD in partnership with arms companies, academics, marketing experts and thinktanks.

The Guardian has seen a list of those set to deliver research projects, which include titles such as Understanding Online Avatars, Cognitive and Behaviour Concepts of Cyber Activities, and Novel Techniques for Public Sentiment and Perception Elicitation.

The projects are being awarded by a centre of excellence managed by BAE Systems, which has received about £10m-worth of MoD funding since 2012. The MoD plans to procure £10m-worth of research through the centre this year.

While the centre commissions a wide range of research, such as studies of alcohol consumption in the armed forces, a substantial stream of research comes under the heading of "information activities and outreach".

The term is significant in that it has its roots in Britain's 2010 strategic defence review and national security strategy.

Its aims include understanding the behaviour of internet users from different cultures, the influence of social media such as Twitter and Facebook and the psychological impact of increased online video usage on sites such as YouTube.

Typical targets, for now, would include groups of young internet users deemed at risk of being incited or recruited online to commit terrorism.

Dr Tim Stevens of Kings College London, who studies cyberwar and strategy, said that there was an increased level of state interest in the role of emergent technologies such as social media and the development of powerful psychological techniques to wield influence. "The current furor over inter-state cyberwar is probably not where the game's at," he said.

"What is far more likely is that states will seek to influence their own populations and others through so-called 'cyber' methods, which basically means the internet and the device du jour, currently smartphones and tablets," he added.

"With the advent of sophisticated data-processing capabilities including big data, the big number-crunchers can detect,

model and counter all manner of online activities just by detecting the behavioural patterns they see in the data and adjusting their tactics accordingly.

"Cyberwarfare of the future may be less about hacking electrical power grids and more about hacking minds by shaping the environment in which political debate takes place," he added.

The current MoD research drive in the area is being run by the Defence Human Capability Science and Technology Centre (DHCSTC), which is administered by BAE.

While most projects remain under wraps, an insight into the area of research

### 'Cyberwarfare may be less about hacking electrical grids, more about hacking minds'

has been provided by a previous report commissioned by the MoD, and which has been released under the Freedom of Information Act.

It examined how chatbots - computer programmes that make human-sounding small talk and which have been used in a number of situations from customer relations to sex industry marketing - could take on military roles in intelligence and propaganda operations to influence targets.

The research into the programmes, which are designed to emulate human

### Projects

● **Full Spectrum Targeting** - a sophisticated new concept measuring future battlefields in social and cognitive terms. Emphasis is on co-opting influential individuals, controlling channels of information and destroying targets based on morale rather than military necessity. The £65,285 project is being delivered by the Change Institute (a thinktank whose work has included research for the government into understanding Muslim communities), the BAE subsidiary Detica and Montvieux.

● **Cognitive and Behaviour Concepts of Cyber Activities** - a £310,822 project delivered by Baines Associates, a strategic marketing firm, i to i Research, a consultancy in "social and behavioural change" and universities including Northumbria, Kent and University Central London.

● **Innovation: Tools and Techniques for Influence Activities** - a £28,474 project delivered by the Change Institute, the University of Kent and QinetiQ, a company spun out of the MoD research department.

● **Understanding Online Avatars** - a £17,150 project delivered by the Change Institute.

conversation and are familiar as "virtual assistants" on retailers' websites, envisages a future in which "an influence bot could be deployed in both covert and overt ways - on the web, in IM/chatrooms/forums or in virtual worlds".

"It could be a declared bot and fairly overt influence play, or pretend to be a human and conduct its influencing in less obvious ways," says the 2011 report by Daden, a technology group that develops chatbots for commercial and educational clients.

Daden also suggested chatbots could be used as "cyberbuddies" shadowing soldiers through their careers or as data-gatherers in digital environments such as chatrooms and forums, where they could "scout for targets, potentially analyse behaviour, and record and relay conversation".

The report cautions, however, that the barriers to their use in data-gathering and influence operations include ethical issues.

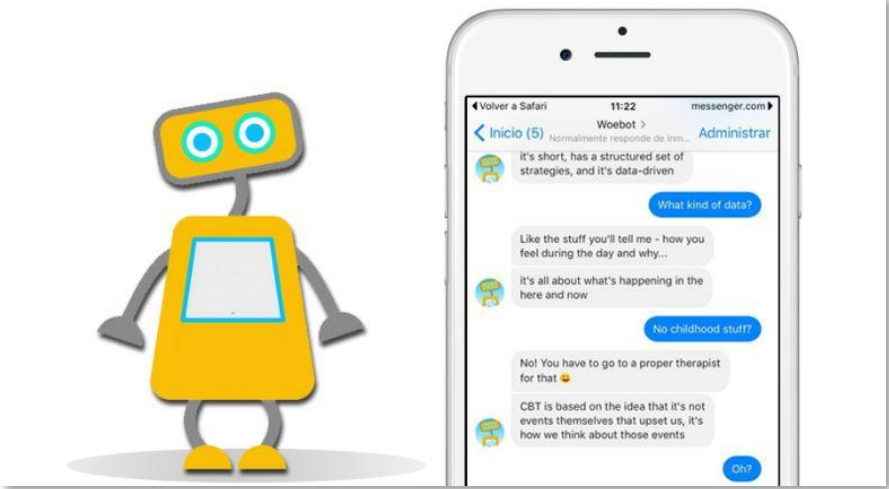
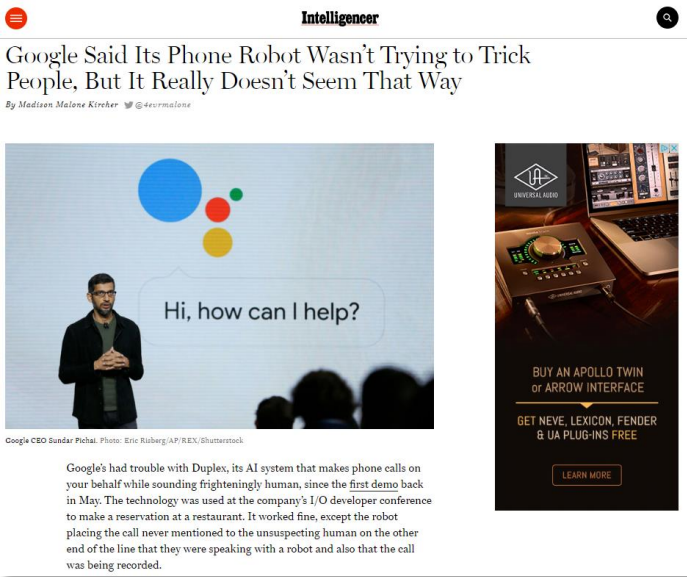
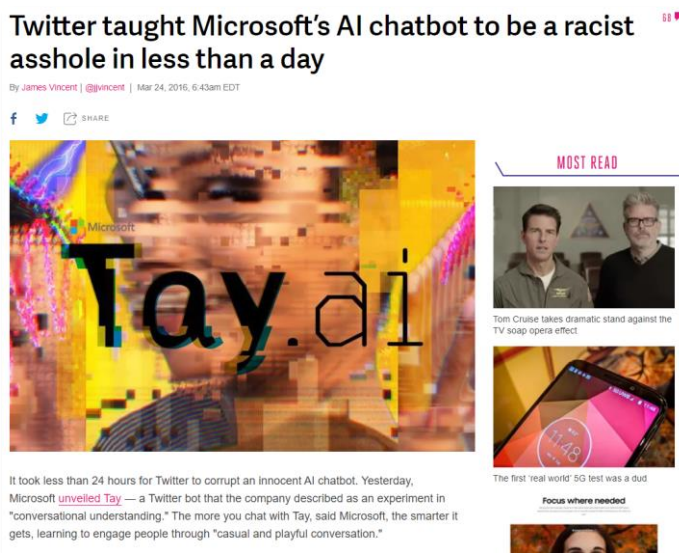
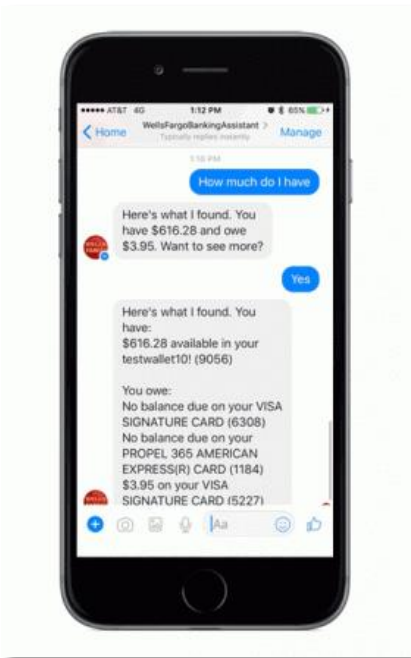
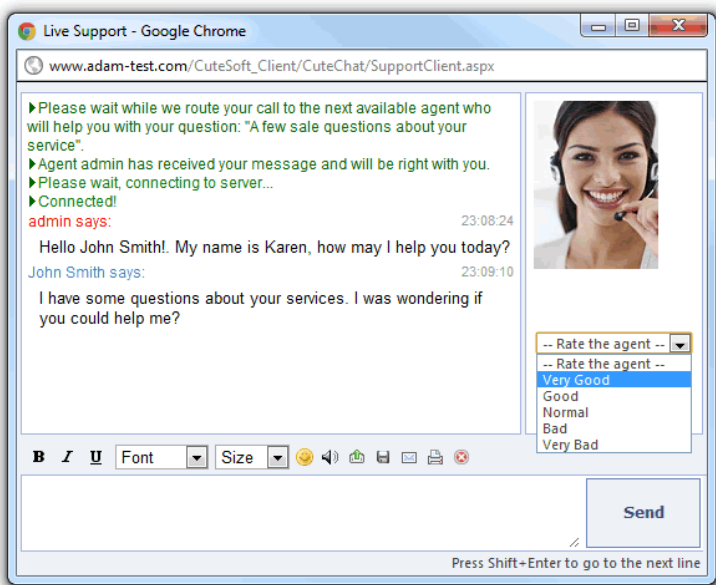
It says: "The adverse effect that the unmasking of a non-declared bot would have on the subject, and their wider group needs to be carefully considered."

It adds: "One approach, as in real life, is for the bot to withdraw if it thinks it may be compromised. In the early days, it may be better that the bot activity is declared and overt - in the same way as much broadcast and UK plc promotional activity."

BAE declined to provide a comment when contacted.



# The late 2010s – the 2<sup>nd</sup> Chatbot Boom

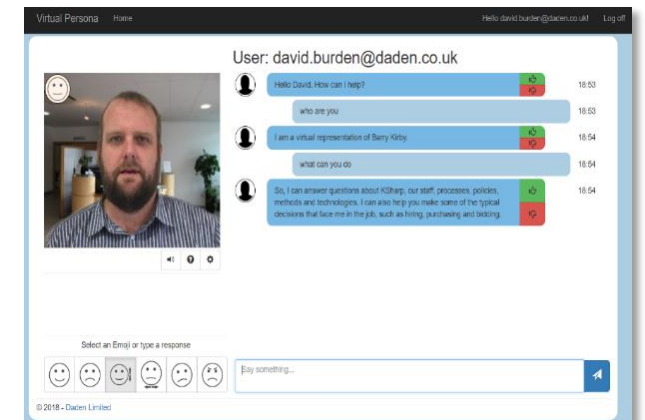
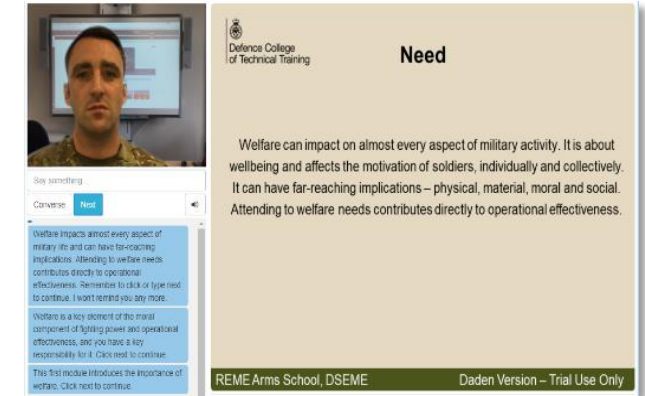




# Employee Chatbot Use Cases

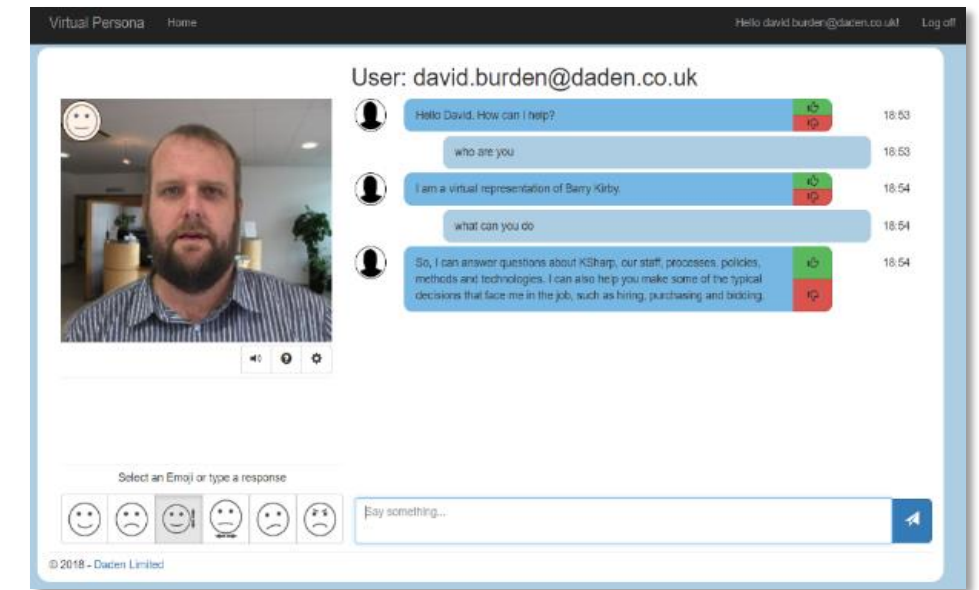
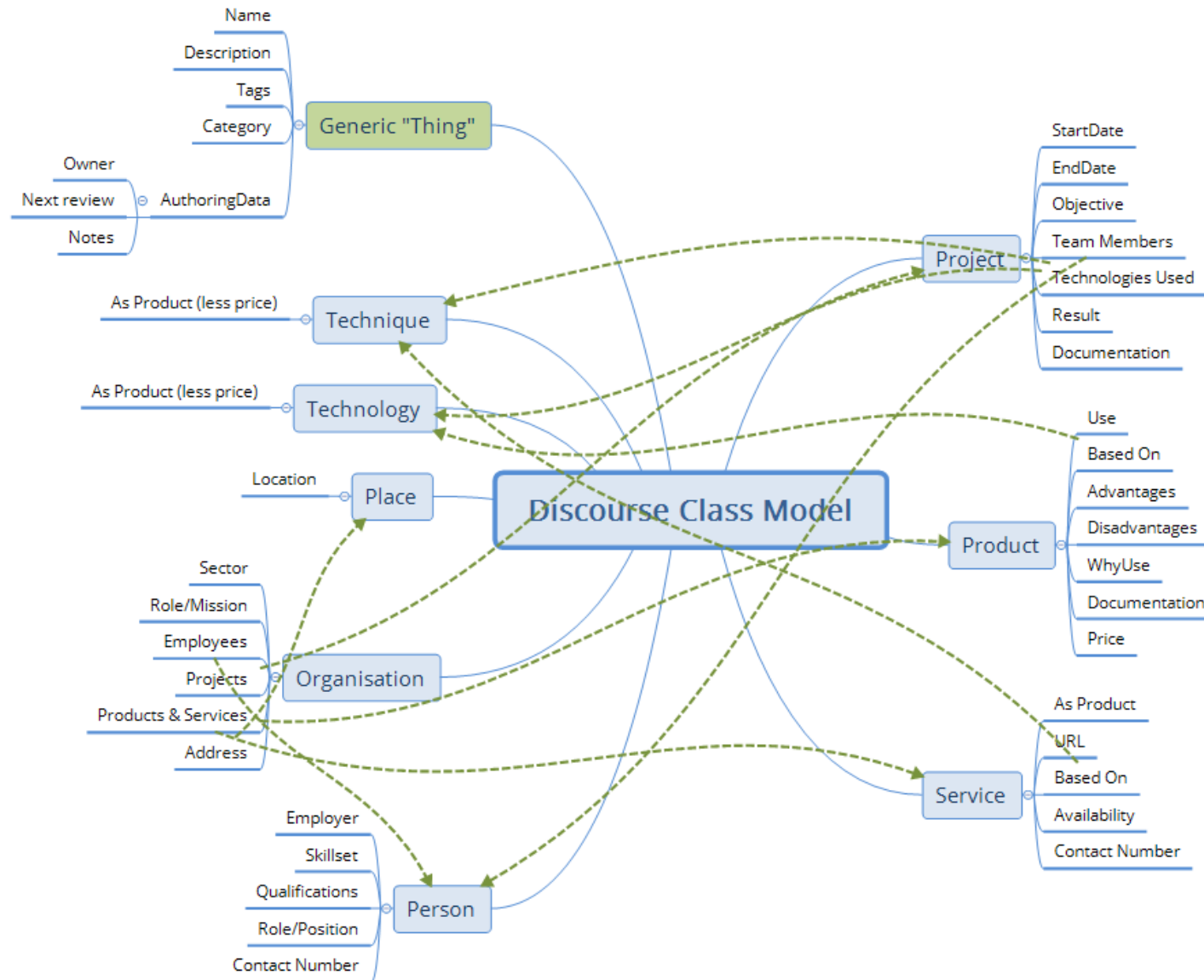


- **Virtual Tutors**
  - Help to educate on particular topics 24/7
  - “Human touch” to dry eLearning content
  - More interactive
- **Virtual Expert**
  - 24/7 access to information, advice and guidance
  - Curation and Triage
- **Virtual Mentors/Life Coaches**
  - Individual, personalised whole-life support
  - Curation and Triage
  - Reactive and Pro-active
- **Virtual Persona**
  - What one person knows
  - Extend their knowledge once no longer available, e.g. posting, retirement, death
  - Warts and all...



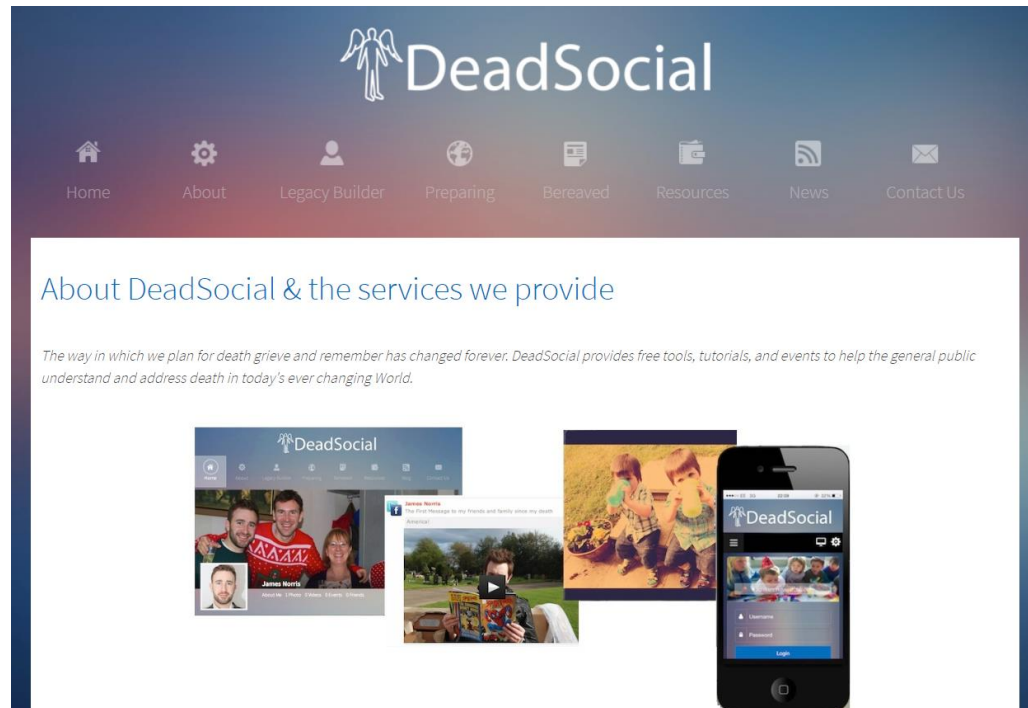


# Virtual Personas



- Asymmetric/serendipitous conversation
- Original insight through triples knowledge map
- Encoding of “personality”
- Data import (e.g. twitter, phone)
- Avatar and voice experimentation
- Non-verbal cues experimentation
- Boot-strapping





It's the moment of your death.

There's a magic button.

Do you delete your entire online legacy?

Or do you keep it – and leave the choice for someone else?

*USER NOT FOUND* is about our digital lives after we die. Dante or Die's new play, created with pioneering theatre-artist Chris Goode, is performed in cafés across the country, where you'll be handed a smartphone and a pair of headphones. Become a fly-on-the-wall to peer into the life of a man who is faced with keeping or deleting. A story of contemporary grief unfolds through this intimate, funny performance that gently interrogates our need for connection.

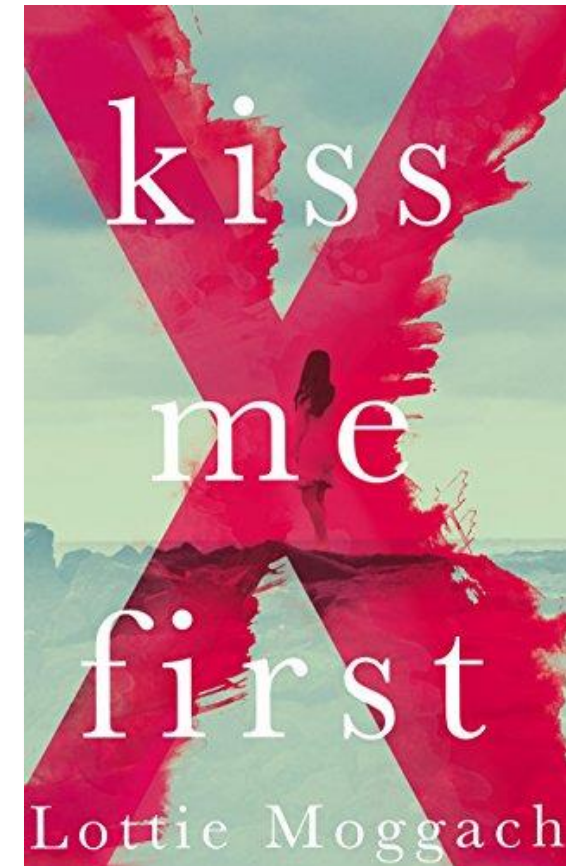
## Reviews

'That rare thing, a piece of theatre that knows how to make use of headphones and mobiles... Chris Goode's script handles mourning and technology with fingertip lightness.' *Sunday Times* ★★★★★

## How do I report a deceased person or an account on Facebook that needs to be memorialized?



# Beyond Virtual Personas





# Digital Immortality





# Digital Immortality



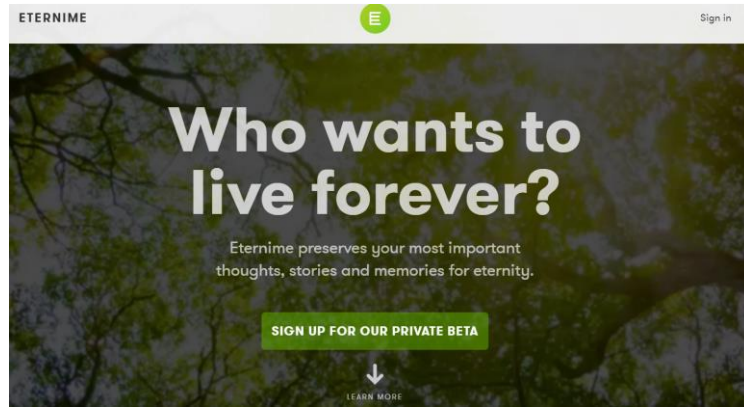
Caprica – The Battlestar Galactica Prequel

“You can't download a personality. There's no way to translate the data. But the information being held in our heads IS available in other databases. People leave more than footprints as they travel through life. Medical scans, DNA profiles, psych evaluations, school records, emails, recordings, video, audio, CAT scans, genetic type and synaptic records, security cameras, test results, shopping records, talent shows, ball games, traffic tickets, restaurant bills, phone records, music list, movie tickets, TV shows .... even prescriptions for birth control”

- Zoe Graystone's Avatar  
Caprica TV Series (Battlestar Galactica prequel)



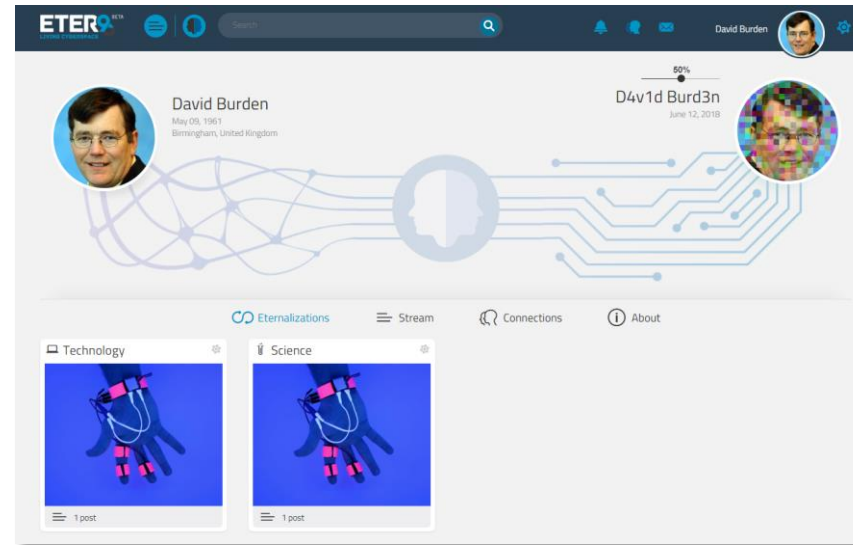
# Digital Immortality Systems



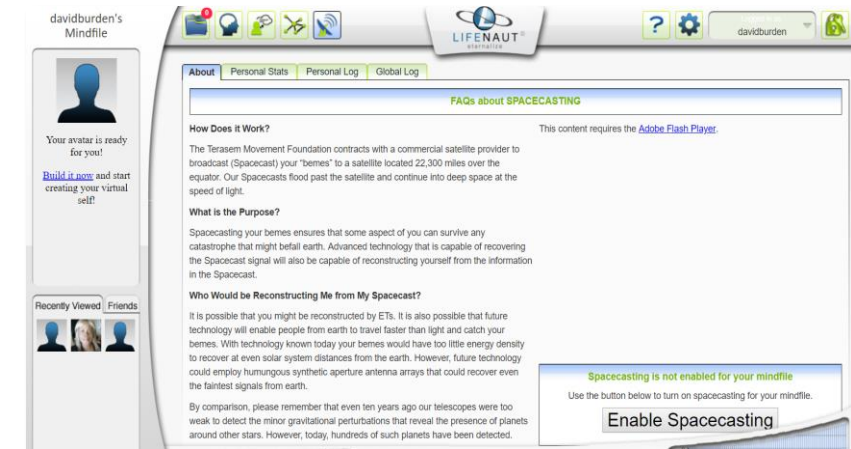
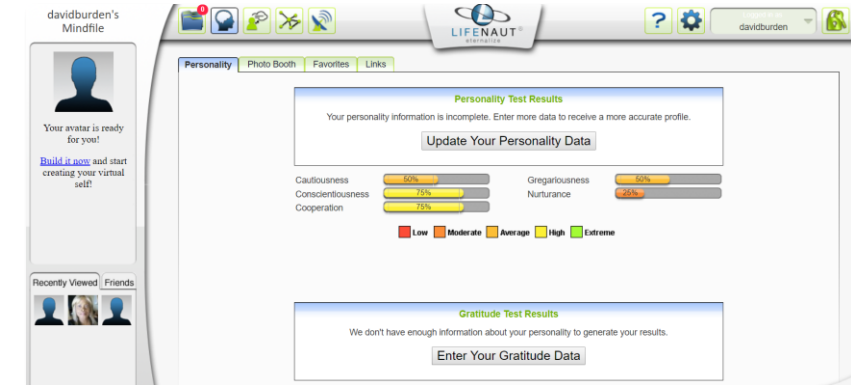
Eterni.me will help you live forever—as a chatbot

Miles Klee—Feb 5, 2014 at 14:47:13 | Last updated Feb 25, 2017 at 01:19:49

There's more than one kind of afterlife.



<https://www.eter9.com/>




<https://www.lifenaut.com/>

<http://eterni.me/>



# Digital Immortality Matrix



Capability	Active	<i>“abandoned Persona/ virtual PA”?</i>	 <i>Virtual Zoe</i>
	Passive	<i>Facebook Legacy Pages</i>	<i>Eterni.me</i> <i>Eter9</i> <i>Lifenaut</i>
		By-product	Deliberate
Creation Method			



# Digital Immortality Systems



## US military: Build intelligently artificial parents

Academics / General Science : Improbable Research

3 years ago

The US military has begun the process of building virtual parents to take the place of soldiers who are sent to war zones or other distant places. The Department of Defense is soliciting bids to build the system: Topic Num: OSD09-H03 (OSD/DHP) Objective: To develop a highly interactive PC or web-based application to allow family members to [...]

### Army's Virtual Reality Plan: A Digital Doppelganger for Every Soldier

512

8

35

Tweet

+1

Share

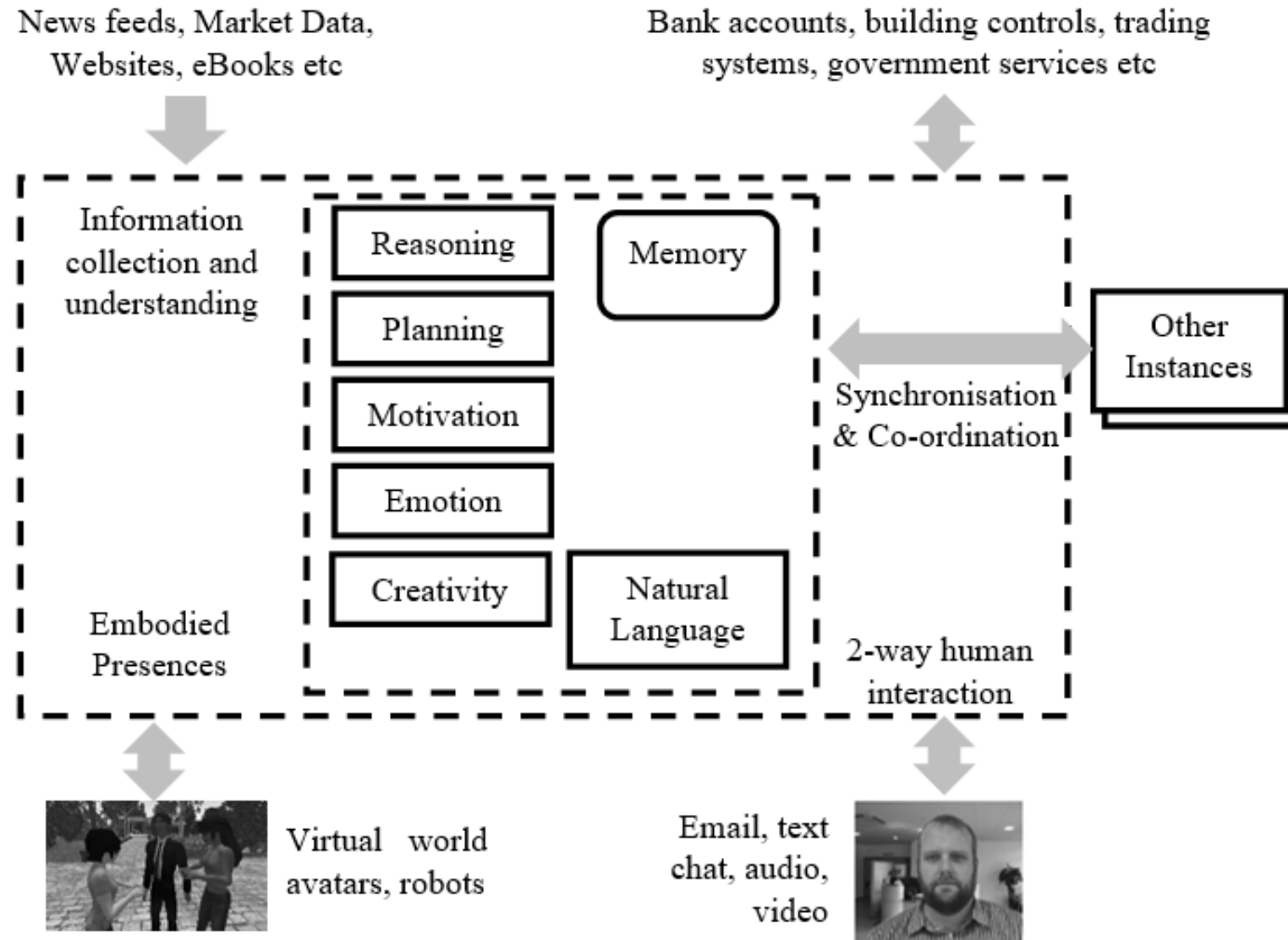
By [Katie Drummond](#) January 18, 2012 | 6:30 am | Categories: [Army and Marines](#)

As the military's enthusiasm for virtual reality training continues to grow, the Army's got a new plan to make the programs freakily immersive: [National Defense](#) magazine is reporting that the Army wants to give every soldier a digital doppelganger — a custom avatar they can use throughout their stints in the military, and in myriad virtual training environs, from urban combat practice to cultural prep.

But the avatars would be much more comprehensive than simple lookalikes. A soldier's performance during physical training, for example, would be inputted into the digital replica's athletic abilities. So unlike super-charged videogame operatives, soldiers who huff and puff running an 11-minute mile won't see their avatars do much better. Likewise, soldiers with crappy real-life shooting skills will be liabilities to their virtual units during group training sessions.



# Digital Afterlife/Immortality System





# Digital Immortality??

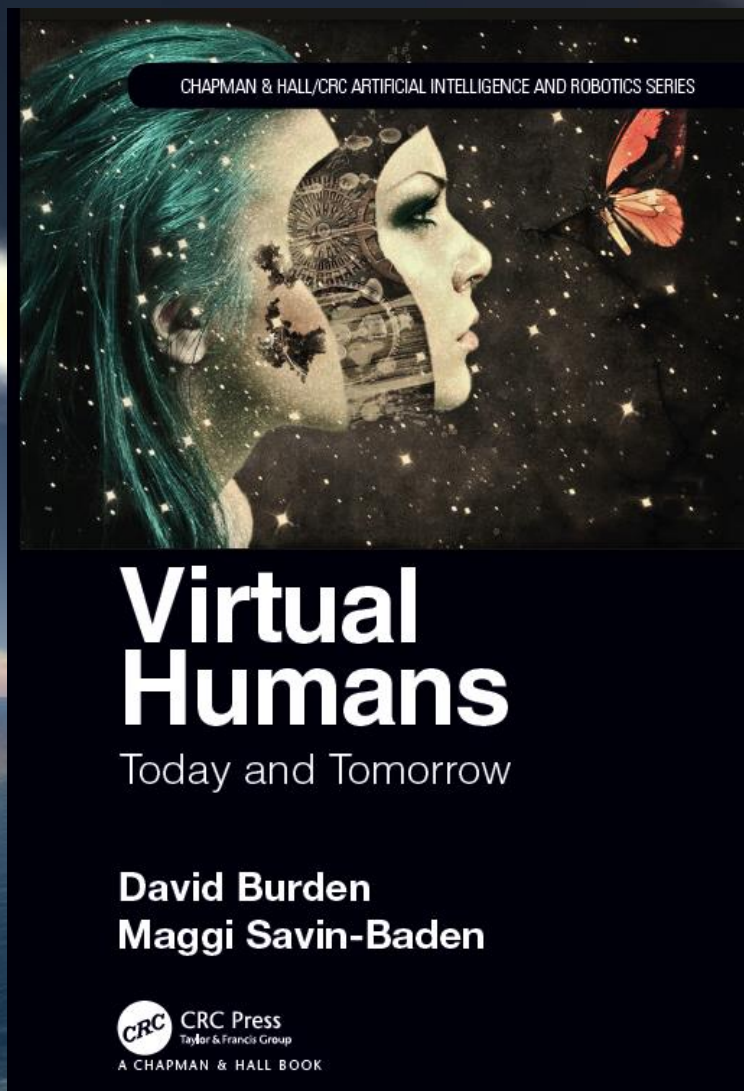


**TEDx** Brum

**Once you build the bot  
– digital immortality is  
simply a hosting plan!**







[www.virtualhumans.ai](http://www.virtualhumans.ai)

Web: [www.daden.co.uk](http://www.daden.co.uk)  
Email: [david.burden@daden.co.uk](mailto:david.burden@daden.co.uk)  
Twitter: @dadenlimited and @davidburden



# Virtual Human Components

