

Tulevaisuuden teknologiat – mitä on lupa odottaa

TAMK 3.9.2019



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Volkswagen: Autonvalmistus mullistuu – ohjelmistokoodien määrä puhelimeen verrattuna tuhatkertainen



ENTERTAINMENT

development

KASVU JATKUU: EN HERVANNASSA YT KOODIA SAKSAN TEOLLISUUTEEN

August 22, 2019 08:05 AM

Audi to join Daimler, BMW self-driving tech alliance



kansainvälistyminen

Kilpailun raati kiinnitti erityise

5.6.2019 20.30

te

LUPAAVIMMAT STARTUP-YRITYKSET

Unikie on tuloraho

8.3.2019 06:30

YRITTÄMINEN

AUTO

ÄLYLIKENNE

Vaativaan
tiukasti k
erityisest



2 Tulevaisuus kiinnostaa, innostaa ja pelottaa

TULEVAISUUS- BAROMETRI 2019

3 Megatrendit tunnetaan hyvin ja niissä nähdään enemmän uhkia kuin mahdollisuuksia

Millaisena suomalaiset näkevät tulevaisuuden?

3.1 Ilmastonmuutos ja luonnonvarojen ylikulutus on megatrendeistä tutuin ja se nähdään suurimpana uhkana

Yli puolet näkee kehityksessä myös mahdollisuuksia

3.2 Kansainvälisen politiikan jännitteet ja demokratian haasteet on megatrendeistä vähiten tuttu

3.3 Teknologian nopeaan kehitykseen ja työelämän muutokseen liitetään paljon mahdollisuuksia



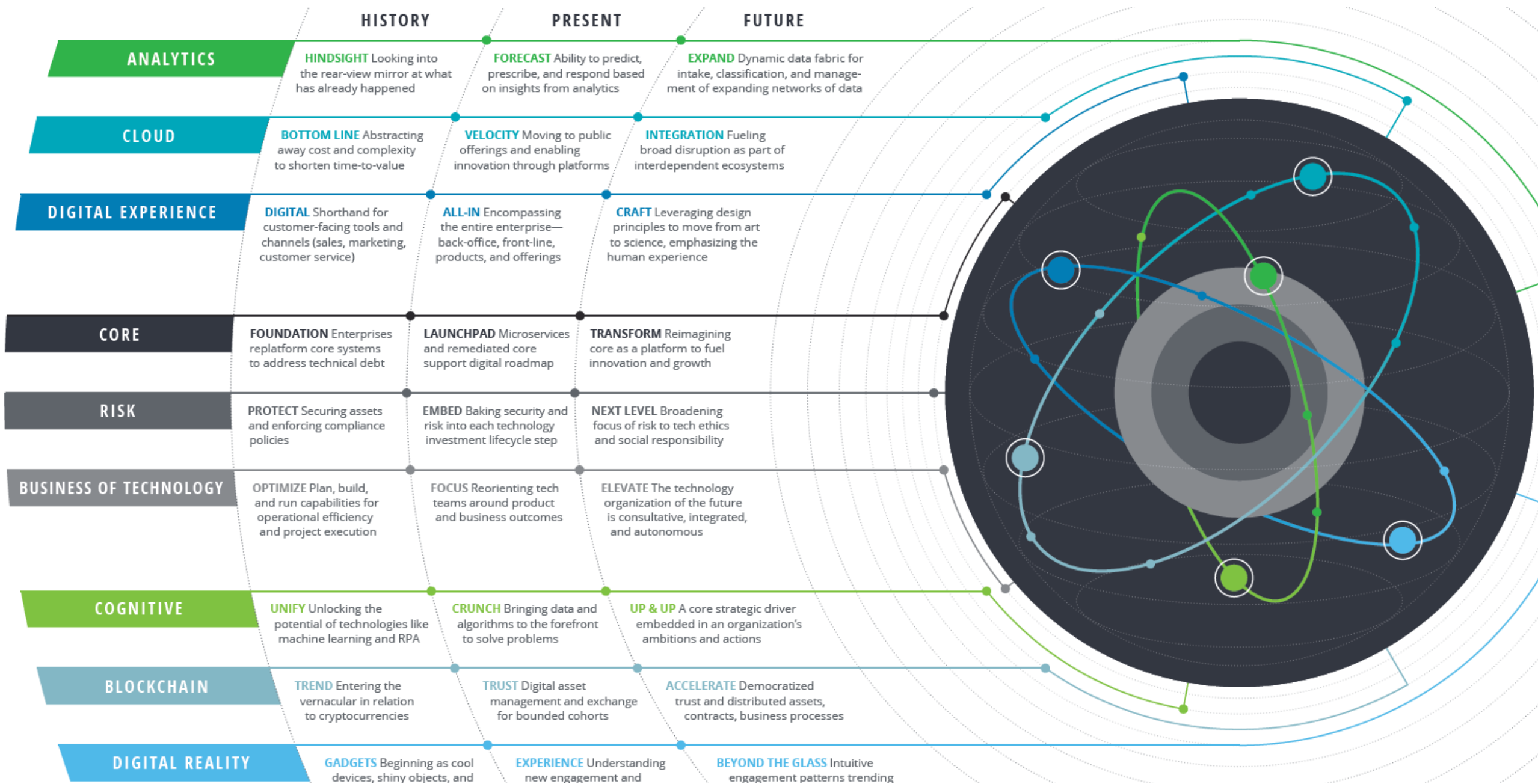
Tech Trends 2019

Beyond the digital frontier

Trends that only recently grabbed headlines as emerging topics have now assumed the mantle of macro force.

BOTTOM LINE

The nine macro forces are the enduring technology trends that will continue to shape strategies and dominate investment priorities. But importantly, the forces are not independent, isolated entities. And they're only partially compelling as stand-alone concerns. The calling of our time is to unlock what combination matters for any given line of business, function, agency, or country; to confidently chart a path beyond convention and organizational inertia; and to elevate the narrative from the *what* of the enabling technology into the *so what* of their combined effects—moving beyond trends, and beyond the digital frontier.



De Digital footprint eraser 91 DE	Ps Personal digital shields 92 DE	Ht Human head transplants 93 HA	Hc Human cloning & de-extinction 94 HA	Da Distributed autonomous corporations 95 DE	Sp Space solar power 96 SP	El Space elevators 97	Vr Fully immersive virtual reality (VR) 98	Co Artificial consciousness 99	Qt We can't talk about this one 100
Ci Conversational machine interfaces 81 MI	Le Life-expectancy algorithms 82 DE	Sa Stratospheric aerosols 83 SP	Br Battlefield robots 84 EA	Ad AI advisers & decision-making machines 85 DE	Ab AI board members & politicians 86 EA	Is Invisibility 87	Sd Smart dust 57 DE		HA
Ss Planetary-scale spectroscopy 71 SP	Ip Implantable phones 72 MI	He e-tagging of humans 73 DE	Mp Male pregnancy & artificial wombs 74 HA	Dn DNA data storage 75 DE	Gv Genomic vaccines 76 SP	Qs Quantum cryptography 77			Irve 78
Gh Predictive gene-based healthcare 61 DE	Ak Automated knowledge discovery 62 EA	Rs Autonomous robotic surgery 63 EA	Em Emotionally aware machines 64 MI	Xx Humanoid sex robots 65 MI	Bh Human bio-hacking 66 HA	Me Internet of 67	57 MOOG (US), Darpa (US)		DE
Md Mega-scale desalination 51 SP	Sw Self-writing software 52 EA	Mm Public mood monitoring 53 DE	Pb Programmable bacteria 54 SP	Et Peer-to-peer energy trading & transmission 55 DE	La Lifelong personal avatar assistants 56 MI	Sd Smart dust 57 DE			Low-cost space travel 58 HA
Mc Medical tricorders 41 DE	Sf Smart flooring & carpets 42 DE	Dt Diagnostic toilets 43 DE	Se Smart energy grids 44 SP	Bf Algal bio-fuels 45 SP	Op Human-organ printing 46 SP	Bs Artificial human blood substitute 47 SP	Nm New materials 48 SP	Fu Fusion power 49 SP	Mr Self-reconfiguring modular robots 50 SP
Dl Distributed ledgers 31 DE	Pa Precision agriculture 32 SP	Av Autonomous vehicles 33 EA	Id Intention decoding algorithms 34 MI	Df Drone freight delivery 35 EA	Ap Autonomous passenger aircraft 36 EA	Fp 3D-printing of food & pharmaceuticals 37 SP	Sr Swarm robotics 38 EA	Fd 4-dimensional materials 39 SP	Ze Zero-point energy 40 SP
Rc Robotic care companions 21 MI	Sc Smart controls and appliances 22 DE	Cm Cultured meat 23 SP	Ro Delivery robots & passenger drones 24 EA	As Autonomous ships & submarines 25 EA	Rg Resource gamification 26 SP	Wa Water harvesting from air 27	Meats (US), Super New Harvest (US) 28	Technologies (UK), Final, Piaggio (Italy) 29	30
Cr Cryptocurrencies 11 DE	So Concentrated solar power 12 SP	Pp Predictive policing 13 DE	Eh Micro-scale ambient energy harvesting 14 SP	Wt Airborne wind turbines 15 SP	Ac Avatar companions 16 MI	Mh Metallic hydrogen 17	31	32	33
Sn Smart nappies 1 DE	Dw Deep ocean wind farms 2 SP	Va Vertical agriculture 3 SP	We Wireless energy transfer 4 SP	Bi Balloon-powered internet 5 SP	Px Powered exoskeletons 6 HA	Cc Computer & clothing 7	34	35	36

Example of organizations active in each area

- 1 Monit (South Korea), Abena Nova (Denmark), Siempre Secos (Spain)
- 2 Statoil (Norway), Siemens (Germany), Voltturn (US), UMaine (US)
- 3 Green Skies-Vertical Farms (US), Aero Farms (US), Neo Farms (Germany), Urban Crop Solutions (Belgium)
- 4 WiTricity (US), Powermat (Israel), Apple/Power By Proxi (US), Qualcomm (US), Mojo Mobility (US), Mopar (US), Fulton Innovation (US)
- 5 Google/Alphabet (US)
- 6 ReWalk (US), Rex Bionics (US), SuitX/US Bionics (US), Ekso Bionics (US), Lockheed Martin (US)
- 7 Google/Alphabet (US), Samsung (Korea), Hexoskin (Canada), Owllet (US), Komodo Tech (Canada), Shiftwear (US), Lechal (India), DM Signal (Canada)
- 8 The Boring Company/Elon Musk (US), China Aerospace Science and Industry Corporation (China)
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- 13 PredPol (US), ECM Universe (US)
- 14 Pavegen (UK), ECEEN (China)
- 15 Google/Alphabet (US), Joby Energy (US), Altaeros (US), Kitegen (Italy), Enerkite (Germany)
- 16 Pullstrim (US), Amazon (US), Alphabet/Google (US), Nintendo (Japan), Invisable Girlfriend/Boyfriend (US)
- 17 NASA (US)
- 18 Alphabet/Verily (US), Amazon (US), Vuzix (US), Everysight (Israel)
- 19 Elegant Embellishments (Germany), iNova (Spain), Studio Roosegaarde (Netherlands), Prosolve 370e (Germany)
- 20 Dat (UK), Boeing (US)
- 21 Softbank (Japan), AIST (Japan), Blue Frog Robotics (France), Care-o-bot (Germany), Riken/Sumitomo Riko (Japan)
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Themes
Each of the 100 technologies has been subjectively categorised according to five broad themes, which are:

- DE Data Ecosystems
- SP Smart Planet
- EA Extreme Automation
- HA Human Augmentation
- MI Human-Machine Interactions

Legend

- Ghost Technologies:** Fringe science & technology. Defined as highly improbable, but not actually impossible. Worth watching.
- Horizon 2:** Distant future 20 years+ (Explore).
- Horizon 3:** Near future 10-20 years hence (Experiment).
- Horizon 1:** Happening now (Execute).

How to read entries

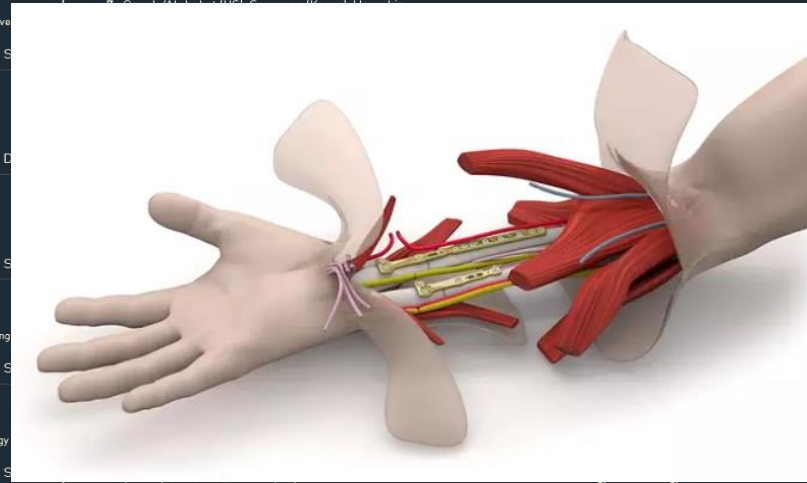
- Sn** - Abbreviation of technology
- Smart nappies - Description of technology
- 1 DE - Theme (See next right)
- Examples (See right hand panel)

prediction and provocation intended to stimulate... assessing potential impact... regulatory landscape... If you'd like to contact us to congratulate us, criticise us or buy us lunch our address is techforesight@imperial.ac.uk... Version 1 (Beta). London, January 2018.

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Helsingissä valmistellaan Pohjoismaiden ensimmäistä kädensiirtoa – Kolmen vaativan leikkauksen jälkeen potilas voi saada raajan, jonka avulla pystyy kirjoittamaan ja ajamaan pyörällä

De Digital footprint eraser 91 DE	Ps Personal digital shields 92 DE	Ht Human head transplants 93 HA	Hc Human cloning & de-extinction 94 HA	Da Distributed autonomous corporations 95 DE	Sp Space solar power 96 SP	El Space elevators 97 SP	Vr Fully immersive virtual reality (VR) 98 DE	Co Artificial consciousness 99
Ci Conversational machine interfaces 81 MI	Le Life-expectancy algorithms 82 DE	Sa Stratospheric aerosols 83 SF	Ht Human head transplants 93		Members 84 EA	Is Invisibility shields 87 SP	Ph Factory photosynthesis 88 SP	Th Transhuman technologies 89
Ss Planetary-scale spectroscopy 71 SP	Ip Implantable phones 72 MI	He e-tagging of humans 73 DE	Ht Human head transplants 93		Vaccines 74 EA	Qs Quantum safe cryptography 77 DE	Cp Cognitive prosthetics 78 HA	Ud Data uploading to the brain 79 HA
Gh Predictive gene-based healthcare 61 DE	Ak Automated knowledge discovery 62 EA	Rs Autonomous robotic surgery 63 EA	Ht Human head transplants 93		bio-hacking 64 EA	Me Internet of DNA 67 DE	Tc Thought control-machine interfaces 68 MI	Dr Dream reading & recording 69 HA
Md Mega-scale desalination 51 SP	93 Turin Advanced Neuromodulation Group (Italy)							
Mc Medical tricorders 41 DE	Sf Smart flooring & carpets 42 DE	Dt Diagnostic toilets 43 DE	Se Smart energy grids 44 SP	Bf Algal bio-fuels 45 SP	Op Human-organ printing 46 SP	Bs Artificial human blood substitute 47 SP	Nm New materials 48 SP	Fu Fusion power 49 SP
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Rc Robotic care companions 21 MI	Sc Smart controls and appliances 22 DE	Cm Cultured meat 23 SP	Ro Delivery robots & passenger drones 24 EA	As Autonomous ships & submarines 25 EA	Rg Resource gamification 26 SP	Wa Water harvesting from air 27 SP	Eb Broadcasting of electricity 28 SP	Bp Bio-plastics 29 SP



Maailmassa on tehty yhteensä 244 kehonosasiirtoa. Käsi tai yläraaja on ollut kohteena 107 kertaa.

20 Japan, Mayfield Robotics (US)	21 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	22 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	23 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	24 Wing/Alphabet (US), Starship Technologies (UK), Volocopter (Germany), eHang (China), Piaggio (Italy)	25 Leidos (US), Boeing (US), Rolls Royce (UK)	26 Joulebug (US), Waterpebble (UK)	27 Permalution (US), Sun to Water (US)	28 Powercast (US)	29 NatureWorks (US), Gruppo MAIP (Italy), Genomatica (US), Green Dot Bioplastics (US)	30 NASA (US)	31 Everledger (UK), Stampery (Spain), Brickblock (Germany), Stock.it (Germany)	32 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	33 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	34 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	35 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	36 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	37 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	38 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	39 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	40 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	41 Kite Pharma/Gilead Sciences (US), 23andMe (US), Phenogen Sciences (US), Regeneron (US), Veritas Genetics (US)	42 IBM (US)	43 Kite Pharma/Gilead Sciences (US), 23andMe (US), Phenogen Sciences (US), Regeneron (US), Veritas Genetics (US)	44 IBM (US), Toyota (Japan), Mimosa (Japan), Persado (US), Joy AI (US)	45 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	46 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	47 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	48 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	49 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	50 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	51 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	52 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	53 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	54 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	55 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	56 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	57 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	58 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	59 Space X (US), UAE Mars Mission (UAE), NASA (US)	60 Intel (US)	61 Kite Pharma/Gilead Sciences (US), 23andMe (US), Phenogen Sciences (US), Regeneron (US), Veritas Genetics (US)	62 IBM (US)	63 Intuitive Surgical (US), Verb Surgical/Alphabet/Johnson & Johnson (US), Da Vinci Surgery (US)	64 IBM (US), Toyota (Japan), Mimosa (Japan), Persado (US), Joy AI (US)	65 Realbotix (US), True Companion (US)	66 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	67 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	68 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	69 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	70 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	71 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	72 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	73 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	74 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	75 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	76 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	77 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	78 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	79 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	80 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	81 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	82 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	83 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	84 Lockheed Martin (US), QinetiQ (UK), Boston Dynamics/Softbank (US/Japan)	85 Woebot (US), Pefin (US), LV (UK)	86 Deep Knowledge Ventures (Hong Kong), Tieto (Finland)	87 BAE Systems (UK), Toyota (Japan), NB, Big difference between optical camouflage and bending light to make things disappear	88 Breakthrough Energy (US), RIPE (US), Joint Centre for Artificial Photosynthesis (US)	89 SFNS Research Foundation (US), Methuselah	90 Amazon (US), Google (Alphabet) (US), Philips (Netherlands)	91 Suicide Machine (Netherlands), Just Delete Me (US)	92 No example found	93 Turin Advanced Neuromodulation Group (Italy)	94 Soomoo (South Korea), Revive and Restore (US)	95 No example found	96 Rebeam (US), Solaren Corp (US)	97 Thoth Technology (Canada)	98 Impossible (UK), HelloVR (US), Magic Leap (US), Microsoft (US), See also Mind Maze (US), Facebook (US) and possibly Apple (US)	99 Possibly Alphabet/Google (US)	100 As it says, we can't say
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TM AUTOT TEKNOLOGIA TIEDE DIGILEHDET ARKISTO TESTIT

TIEDE LÄÄKETIEDE | 17.11.2017 15:58

"Frankensteinin tohtori" teki ensimmäisen onnistuneen päänsiirron – potilas oli tosin jo valmiiksi kuollut

Horizon 1: Happening now (Execute). (See right hand panel) MI Human-Machine Interactions

Small Print
 This table was created by Richard Watson and Anne Dupani at Tech Foresight. Thanks are due to Baby Lee, Simon, Thomas Heinis, Stephen Green, Peter Childs, Maria, Nik Pishavadi, Roberto Trotta, Aifric Campbell, Peter Hiley, Tom O'Leaver, Guido Dupani, Gerard Gorman, John Lawrence Whitley, Sebastian Melcher and the Communication students at Imperial College London for invaluable assistance and enthusiasm.
 The purpose of this publication is to make individuals and institutions future ready. Also, to make people think, at least periodically.
 This is a mixture of prediction and provocation intended to stimulate debate, but be aware that other elements should always be considered when assessing potential impact, especially the wider psychological and regulatory landscape in which technologies exist. Most importantly, the technologies highlighted on this table appear without any discussion of moral or ethical factors. Generally speaking, no technology should be used unless it improves the human condition and with potentially disruptive technologies always remember that "with great power comes great responsibility". (There are various attributions for this quote ranging from Spiderman, Dr Spock, Yoda, Churchill, Roosevelt and possibly the French Revolution.)
 Examples are purely illustrative and do not constitute any form of recommendation, validation or investment advice. Also note that with smaller companies and start-ups in particular the landscape is continually changing so treat examples with caution. There will also undoubtedly be errors and misjudgments, so please use a bit of common sense. If you'd like to contact us to congratulate us, criticise us or buy us lunch our address is techforesight@imperial.ac.uk. You can also reach Richard via richard@nowandnext.com.
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COMMITTED TO
IMPROVING THE STATE
OF THE WORLD

Global Agenda Council on the Future of Software & Society

Deep Shift

Technology Tipping Points and Societal Impact

The Six Megatrends

As a foundation to its work, the council sought to identify the software and services megatrends which are shaping society, and their associated opportunities and risks.

People and the internet

How people connect with others, information and the world around them is being transformed through a combination of technologies. Wearable and implantable technologies will enhance people's "digital presence", allowing them to interact with objects and one another in new ways.

Computing, communications and storage everywhere

The continued rapid decline in the size and cost of computing and connectivity technologies is driving an exponential growth in the potential to access and leverage the internet. This will lead to ubiquitous computing power being available, where everyone has access to a supercomputer in their pocket, with nearly unlimited storage capacity.

The Internet of Things

Smaller, cheaper and smarter sensors are being introduced – in homes, clothes and accessories, cities, transport and energy networks, as well as manufacturing processes.

Artificial intelligence (AI) and big data

Exponential digitization creates exponentially more data – about everything and everyone. In parallel, the sophistication of the problems software can address, and the ability for software to learn and evolve itself, is advancing rapidly. This is built on the rise of big data for decision-making, and the influence that AI and robotics are starting to have on decision-making and jobs.

The sharing economy and distributed trust

The internet is driving a shift towards networks and platform-based social and economic models. Assets can be shared, creating not just new efficiencies but also whole new business models and opportunities for social self-organization. The blockchain, an emerging technology, replaces the need for third-party institutions to provide trust for financial, contract and voting activities.

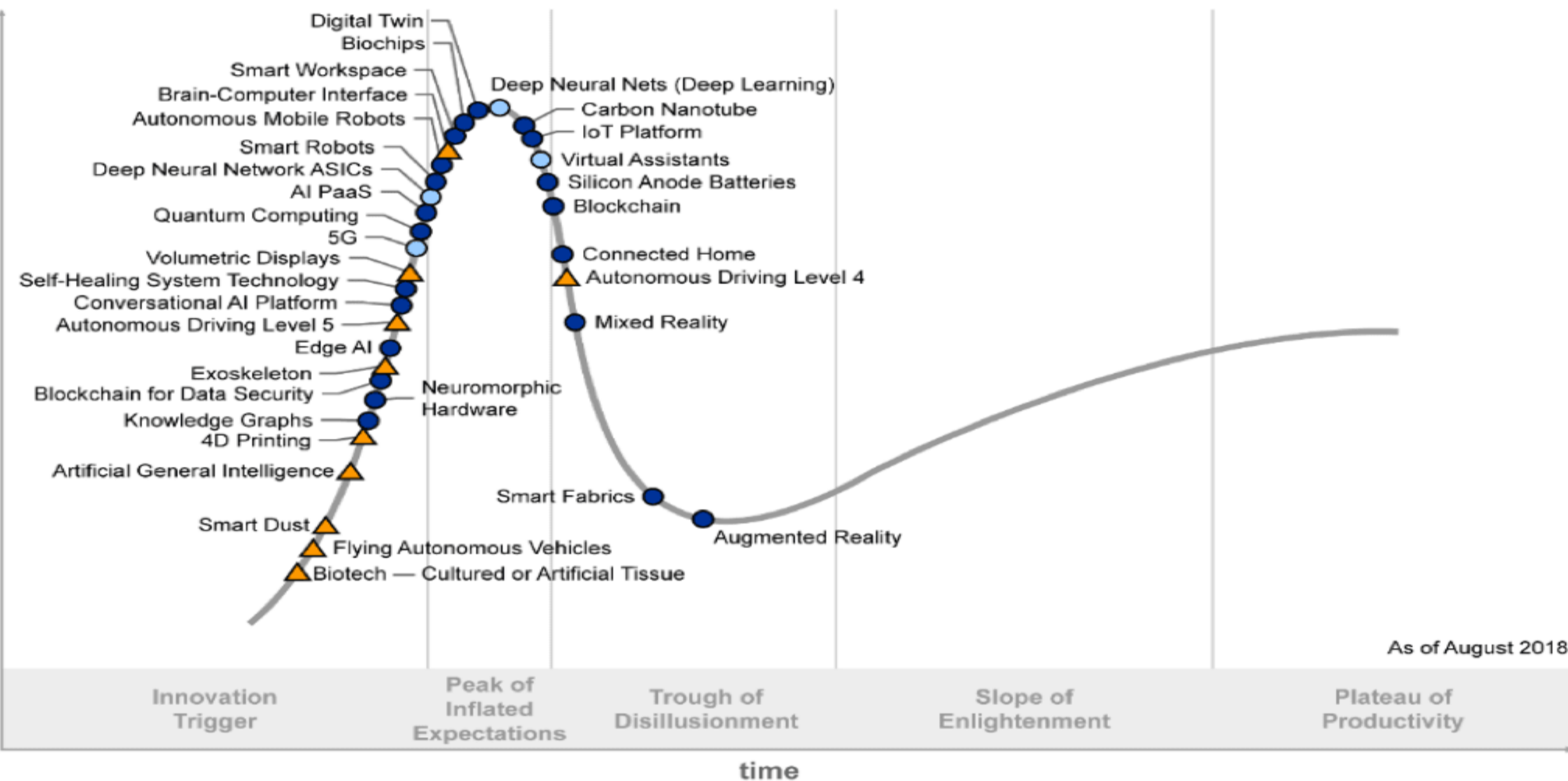
The digitization of matter

Physical objects are "printed" from raw materials via additive, or 3D, printing, a process that transforms industrial manufacturing, allows for printing products at home and creates a whole set of human health opportunities.

Table: Tipping Points Expected to Occur by 2025

	%
10% of people wearing clothes connected to the internet	91.2
90% of people having unlimited and free (advertising-supported) storage	91.0
1 trillion sensors connected to the internet	89.2
The first robotic pharmacist in the US	86.5
10% of reading glasses connected to the internet	85.5
80% of people with a digital presence on the internet	84.4
The first 3D-printed car in production	84.1
The first government to replace its census with big-data sources	82.9
The first implantable mobile phone available commercially	81.7
5% of consumer products printed in 3D	81.1
90% of the population using smartphones	80.7
90% of the population with regular access to the internet	78.8
Driverless cars equalling 10% of all cars on US roads	78.2
The first transplant of a 3D-printed liver	76.4
30% of corporate audits performed by AI	75.4
Tax collected for the first time by a government via a blockchain	73.1
Over 50% of internet traffic to homes for appliances and devices	69.9
Globally more trips/journeys via car sharing than in private cars	67.2
The first city with more than 50,000 people and no traffic lights	63.7
10% of global gross domestic product stored on blockchain technology	57.9
The first AI machine on a corporate board of directors	45.2

expectations



Plateau will be reached:

- less than 2 years
- 2 to 5 years
- 5 to 10 years
- ▲ more than 10 years
- ⊗ obsolete before plateau



Developer Survey Results 2019

90 000 softakehittäjää kertoi mielipiteensä: näihin teknologioihin oikeasti uskotaan, yksi nousee selvästi esiin

9.6.2019 09:44

Optimismi lohkoketjua kohtaan, varovaisuus kontituksen suuntaan ja syvä kiintymys avoimeen koodiin. Näin pohtivat lähes 90 000 ohjelmistokehittäjää suhtautumistaan eri teknologioihin.

TIVIA-BLOGI: OHJELMISTOJEN ROOLI TALOUSKASVUSSA

Eurooppa ja Suomi ohjelmistotalouden heittopussina

Euroopalla ja Suomella on selvästi haasteita ymmärtää ohjelmistopohjaisen uuden luovan talouden kehittymisen logiikkaa ja toimintamalleja. Olemme tukeneet lähinnä vanhojen toimialojen kehittymistä, kun yhteiskunnan olisi pitänyt käynnistää uuden teollisen toiminnan kehittämisen ja laajentumisen osaamishankkeita. Alustatalousyrityksen pelkäävät kilpailua ja yrittävät kaikin keinoin välttää kilpailun syntymistä, koska ohjelmistojen mahdollistamassa luovassa talouden uudelleen järjestelyssä innovaatiot voivat helposti murtaa uusien hallitsevien toimijoiden valta-aseman. Kansantalouksille ja talousalueille, jotka eivät kykene kilpailemaan ohjelmistojen taloudessa tulee käymään surkeasti, sillä niiden kansalaisilta viedään talouden pohja hyvinvointiin, koulutukseen ja hyvään elämään talouden ulkoistuessa yhä kiihtyvällä vauhdilla. Ohjelmistojen luovaan uuteen innovatiiviseen talouteen siirtyminen on vaativa tehtävä valtion ja yritysten johdolta – toivottavasti meillä on todellista osaamista taloutemme uudistamiseksi myös Suomessa.

HENKILÖSTÖ

Suomen it-alan kasvulle ei näy loppua

Suvi Korhonen 11.12.2017 11:18 DIGITALOUS

IT-ALAN TYÖNTEKIJÄMÄÄRÄ SUOMESSA 1975–2017



Nämä neljä taitoa nostavat arvoaan tulevaisuudessa - Mitä minun pitäisi oppia?



AVAINSANAT OSAAMINEN AMMATTITAITO OPPIMINEN AJANKÄYTTÖ
ASiantuntijuus

1. Planetaarisen elämän taito

Sähkö tulee töpselistä ja raha seinästä ovat toki useimmille sarkastisia heittoja, mutta eivät kaikille. Yhä useampi on autuaan tietämätön, miten fyysinen maailma toimii kaupungin ulkopuolella. Meidän pitäisi palauttaa ymmärrys, miten kukat ja eläimet kasvavat. Miten meille elintärkeät happi ja puhdas vesi syntyvät ja katoavat? Eikä pelkästään lähimetsikössä, mikä on toki jo hyvä alku, vaan mahdollisimman laajasti koko maapallon ekosysteemi huomioiden.

2. Kompleksisuustaito

Maailma muuttuu nopeammin kuin koskaan aikaisemmin. Muutos ei tule enää koskaan olemaan niin hidasta kuin se on tällä hetkellä. Informaation määrä kasvaa vauhdilla, joka tuntuu olevan hallitsematon. Tieto on yhä useamman saavutettavissa yhdellä googlauksella. Tietoa tärkeämpää onkin ymmärtää, mikä tieto on juuri sinulle relevanttia konteksti huomioon ottaen. Käytettävissä oleva aika pitäisi pystyä mahdollisimman tehokkaasti suuntaamaan oleellisiin asioihin, perehtymiseen ympäröivästä hälystä huolimatta.

3. Luovuustaidot

Helpot asiat alkavat olla jo tehtyinä ja olennaiset ongelmat ratkaistu. Ainakin kertaalleen. Nyt onkin aika etsiä ja löytää uusia näkökulmia jo tunnistettuihin ja ratkaistuihin haasteisiin. Ajattelulta vaaditaan joustavuutta ja uusia väyliä. Luovuus ei ole pelkästään synnynnäistä, vaan mieltä voi harjoittaa lateraaliseen ajatteluun.

4. Empatiataidot

Empatia tarkoittaa kykyä ymmärtää, mitä toinen ihminen kokee hänen näkökulmastaan. Empatiataitojen merkitys korostuu, kun ihmiset sekä tieto liikkuvat vapaammin ja altistuminen erilaiselle ajattelulle on siksi väistämätöntä. Sujuvan yhteiselon edellytys on kyky oivaltaa, että vaikka toinen on kanssasi eri mieltä, hän voi silti olla oikeassa. Eikä tämä poista sitä mahdollisuutta, että myös sinä itse voit olla oikeassa.

Ei ole tarkoitukseni sanoa, etteikö substanssitaidoilla olisi mitään merkitystä. On niillä toki. Mutta yksittäisten ja siiloutuneiden taitojen avulla saadaan aikaan erillisiä ja siilomaisia ratkaisuita. Niillä ei enää riittävässä määrin ratkaista niitä ongelmia, joiden parissa tulevaisuudessa painimme.

Kiitos!