The Pineapple Report

Youth in Europe Face the Fourth Industrial Revolution: Tactics for Success

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The Pineapple Report surveys proposals for how young people in Europe can flourish in the emerging Fourth Industrial Revolution.[1]

In emoji, 🍍 means, "It's complicated." The icon evokes a reminder that certain opportunities, like this one, require a holistic rather than reductive plan of action.

Executive Summary

Since the term 'digital native' is true for only a select, privileged few, political leaders must reverse the debilitating impact of sustained political, economic, and social marginalisation. Austerity, the individualisation of work, predatory consumerism, and infantilisation must be replaced with access to education, progressive consumer, labour, and environmental protections, and respect.[2] In short, a holistic (🍍) change is needed.

Introduction

Blind tech-utopianism has proven itself an untrustworthy guide. The internet was once a political eden: no borders, nor political nor social control. Today, the founders' vision of an Internet, or 'network of networks,' has been subsumed by a Trinet, a 'network of three networks': Amazon, Facebook, and Google. The latter two now have direct influence over +70% of internet traffic and +60% of global advertising spend.[3] This level of centralised power puts a strain on democratic ideals.

For youth in Europe to flourish in the emerging Fourth Industrial Revolution - a term used to coin an economic trend that accelerates the digitalisation of society - new rights, laws, and consumer protections must guarantee that democratic norms, such as transparency and accountability, remain obligatory across the socio-digital landscape. Stakes are high. 2018 marked the 12th consecutive year of decline in freedom worldwide, including in France, Spain, Hungary and other European countries.[4] Approval ratings for democratic institutions globally have reached a near-record low.[5] Shifting demographics indicate that, in the words of the European Internet Forum, responsibility for the digital era, "will increasingly lie with our younger generations at a time of unprecedented aging of the European continent."[6]

Background

THE PINEAPPLE REPORT was commissioned by the European Youth Forum with funding support from Google Inc. to inform future policy work. The opinions expressed and policy recommendations made in this publication do not necessarily represent the views or positions of the European Youth Forum and its Member Organisations.

Since research suggests that the best predictor of a young person's behavior online is the quality of that person's life offline, this report situates technology policy within a larger view of young people's lives.[7] Our survey organises proposals into four categories, or 'Varieties of Intelligence,' in keeping with a framework developed by Klaus Schwab, who coined the term 'The Fourth Industrial Revolution' in 2016.[8] Schwab's framework, which we iterate on, takes diversity as bedrock to any society future worth having.[9]

[3] Tim Berners-Lee: I invented the web. Here are three things we need to change to save it, The Guardian; The web began dying in 2014 – here's how, Open Democracy; Google and Facebook Claim 60% of 2017 Digital Ad Spend, Search Engine People

[4] Freedom in the World 2018, Freedom House. Civil liberties hit setbacks in France, Spain, Hungary and other European countries Freedom in the World 2017, Freedom House

[5] The Prospects & Limits of Deliberative Democracy, Daedalus, pg. 6

[6] The Digital World in 2030 What place for Europe?, European Internet Forum

[7] A 2008 Harvard study concluded, "Not all youth are equally at risk online, those most vulnerable online are those most so offline, and a child's psychosocial makeup and home and school environments are better predictors of online risk than any technology they use."

The state of global youth, digitally speaking: Unicef's new report, Media Policy Project. Socioeconomic realities are a reliable predictor of one's digital literacy; youth from low-income households are usually less able to participate in digital life at the same level as youth from wealthier backgrounds. Thus, to narrow the digital divide, leaders in Europe must deliberate over how the digital economy enables certain groups over others.

[8] This structure melds existing frameworks put forward by in Digital Age Literacies - Findings and

Recommendations, Aspen Task Force on Learning and the Internet (Digital Literacy, Media literacy, Social-Emotional Literacy) and in The Fourth Industrial Revolution, Klaus Schwab (Contextual Intelligence, Emotional Intelligence, Inspired Intelligence, Physical Intelligence).

[9] Our framework leaves room available for additional varieties of intelligence, such as Linguistic, Naturalistic, Existential, and Musical. See more here: People's Guide to AI. pg 12-14.

Data: A Background

Data | ʻdadə, ʻdādə | noun
The term 'data' is the plural of 'datum,' which means a piece of information.[10]

Why Does Data Matter?

A hallmark of your digital life is that you increasingly rely on proxies to represent the value of something to you when you're judging it online. Example: TripAdvisor uses 'stars' to serve as a visual proxy for whether or not a travel destination is any good. Instagram uses 'Likes' as a proxy for social approval. As a result of these systems, your sense of something's quality is deeply beholden to algorithms designed by corporations who aim to make a profit.

Who protects you when things go wrong? Bots in the 2016 U.S. election and Facebook's Cambridge Analytica scandal awoke the public to the insidious harm that bad actors have online. **The politics of data have become the politics of everyday life. For democracy to survive, trust must define our digital channels of communication.**[11]

A Gold Rush?

Knowing all this, how would you describe 'data' to a friend at the pub? Some experts use words like 'oil' or 'gold'.[12] The trouble is, these words incentivise hoarding, since they suggest that whoever digs up the treasure, ought to own it forever. Other experts use words like 'air,' 'water,' or 'infrastructure.' These are the preconditions to survival and competition. The choice in metaphor is critical since there are some things that no one should own. You cannot "own" a human being, for instance. Perhaps you should not be able to "own" their personal data either.[13]

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[10] A dictionary definition of the term data is, "Facts and statistics collected together for reference or analysis." A working definition of a 'data-set' is, "A collection of data, published or curated by a single source, and available for access or download in one or more formats." Publisher's Guide to the Open Data Rights Statement Vocabulary, Open Data Institute..

[11] It is worth noting that 2018 marks the year that more than half of the world population will come online; Digital in 2018: World's Internet Users Pass the 4 Billion Mark, We Are Social, We are social.

[12] On the shadowy industry that benefits from this conception of data, see Personal Data Ecosystem, Virtual Capitalist

[13] We know from history that the assignment of rights and entitlements has been a more effective lever for correcting imbalance than the redistribution of assets has been.

Overview

The four capacities we propose to foster are:

1. Civic Intelligence

How do young people learn the value and responsibilities of citizenships? Bad actors undermine this value by using disinformation, scare-politics, and diminished workers' rights to sabotage social cohesion. **To affirm the value of citizenship in a digital democracy, we advocate for digital literacy and citizenship education training via proven modes of experiential learning.** We call this capacity, *Civic Intelligence.*

2. Emotional Intelligence

How do youth learn to be aware of, control, and express their emotions? We call this capacity Emotional Intelligence. Bad actors exploit emotional vulnerability through disinformation, harassment, and incitement towards radicalisation. In response, **we offer ten actionable tactics to address industrial-scale emotional manipulation channeled through emerging technologies.**

3. Physical Intelligence

What will the Fourth Industrial Revolution do to young people's health and wellness? Positive outcomes require that youth learn to assess the interconnected health and wellbeing of the planet, themselves, and their community. This awareness is one's *Physical Intelligence.* To reach such outcomes, **we call on lawmakers to strengthen consumer, labour and environmental protections to address the excesses that digital technologies have on young people's health and wellness.**

4. Creative Intelligence

Imagination, originality, and co-creation hold great power. These are elements of *Creative Intelligence.* Creative reflection on the status-quo is needed to subvert conformity, demystify technology, and adequately value diversity via intersectionality. **We call on leaders to recognise the value of the Artisan Economy, DIY movement, Basic Income and growth mindset.**
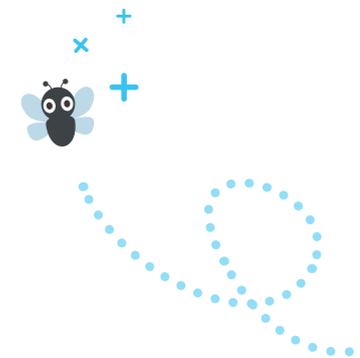
Civic Intelligence

Civic Intelligence

Civic Intelligence is one's capacity to understand the innate values and responsibilities that accompany responsible citizenship. Digital literacy and citizenship education training, which collectively illuminate the peculiar politics of the digital era, can be used together to hone this particular intellectual and emotional capacity. Digital literacy training improves one's ability to navigate and participate responsibly in modern information environments.[14] Citizenship education training, likewise, hones critical thinking, personal autonomy, and the ability to deconstruct social realities embedded in political discourse and power dynamics.[15] Both are learned effectively in experiential, hands-on environments.

This section takes on an economic tilt. In March 2018, the European Commission reported on the EU's preparedness for the Fourth Industrial Revolution. Measures of progress included Digital Innovation Hubs setup to help SMEs in all regions, new public-private investment opportunities, and a review of EU regulations.[16] Alongside this, the EU, Member States and industry agreed to a digital strategy that included €50 billion in support of digitising European industry between 2016-21.[17]

To build youth into this momentum, we recommend the following actions.

[14] *Civic Intelligence* is different than digital citizenship because it takes one's online/offline experiences as fundamentally intertwined.

[15] Citizenship education is a tool of emancipation rather than social-reproduction or social-closure. For a fun example of how this education can be transmitted, see Disco Sour by Giuseppe Porcaro.

[16] Digitising European Industry: 2 years after the launch of the initiative, European Commission

[17] Digital Single Market, European Commission; Digitising European Industry, European Commission

Recommendations

01 An International Convention on Digital Rights:

Data is not contained by borders—and so data rights and obligations should work across them, like human rights. A harmonious, international standard would be an important step towards justice, security, and prosperity. Such a convention would consider transparency, explainability, decentralisation, data-minimisation, privacy-by-design and seek controller accountability, as well as clearly established standards for data subject's access and control, and other desirable features of a progressive rights-based framework. It would create a space for recognition of national and cultural differences, whilst avoiding firms venue-shopping for the most permissive laws.[18]

Since many individuals lack the time, knowledge, and/or interest to defend their own rights, the burden of risk for the responsible governance of data cannot be placed on the individual user alone. Solutions should be managed collectively and automated when possible. Organisations should justify new proposals to society, for example, as it is done in land development. The Council of Europe's modernised Convention 108 might serve as a starting point, although decision-makers should be wary that it has limited protection for group and community harms, which are particularly salient in many parts of the world.[19] Digital rights may also be framed as a natural extension of human rights in the digital era, as in the work of 5Rights.[20]

[18] Credit for this portion, including some of what is written here, goes to Michael Veale, Salome Viljoen, Stephanie Hare, Keith Porcaro, and Ravi Naik. See CogX 2018 - Too Crazy to Fail? A Bold Vision for the Future of Data Governance.

[19] See: Convention 108 at: Convention for the Protection of Individuals with regard to Automatic Processing of Personal Data, Council of Europe

[20] 5Rights Website

Recommendations
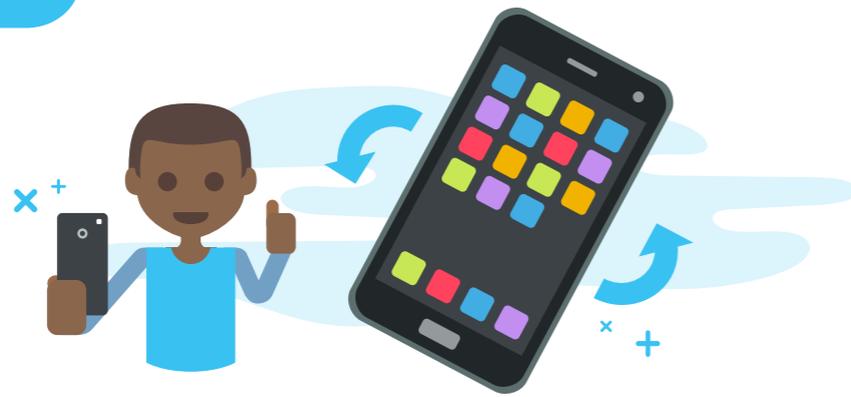
02 A Grand Project for Youth - The Co-Design of e-Government and Social Projection Systems:[21]

In 2017, the European Commission stated its desire to modernise social protection systems in Europe.[22] Government, in partnership with industry and civil society, should prioritise and fund the co-design and co-development – with youth – of local digital public services and social-protection systems (ex. a local voting registration app or text-message notification service for garbage-collection day). An ambitious multi-location project like this would give young people both a personal and communal stake in the future of their civic organisations, as well as the hands-on data-literacy and entrepreneurial training needed to flourish in the new knowledge economy. It would also help to rapidly modernise the sort of protections that demonstrate the value of citizenship in the first place, be they health coverage, garbage collection, policing, or education.

Since time-spent in youth organisations and other non-formal education (NFE) settings has been shown to provide citizenship education, youth organisations can be called upon as partners to facilitate this work. In this process, interoperability should be made a key goal so that youth can share and compare their work with peers elsewhere.[23] The use of modular, open-source, and interoperable design-specifications would ensure that contributions made at different scales across the continent would be portable between nations such that contributions compound over time. During the development process, the nature of each local digital-political system should be assessed critically.

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[21] In 2014, the Aspen Task Force on Learning and the Internet identified three essential literacies for the digital age: digital literacy, media literacy, and social-emotional literacy. This section expands on the first of these. Digital Age Literacies - Findings and Recommendations, Aspen Task Force on Learning and the Internet.

[22] In European Commission's 2017 White Paper on the Future of Europe, Jean-Claude Juncker called for European social protection systems to be "significantly modernised to remain affordable and to keep pace with new demographic and work-life realities," which blurred the lines between "workers and self-employed, goods and services, or consumers and producers." White Paper on the Future of Europe - Reflections and scenarios for the EU27 by 2025, European Commission.

[23] In the spirit of this initiative, Finland have recently announced plans to revolutionise welfare services by opening up citizens' personal wellbeing records to approved professionals and researchers. Finns to share data in bid for state of permanent wellbeing, The Times.

Recommendations

03 **Update Educational Curricula to Place the Fourth Industrial Revolution in Historical Context:**

To shape the next wave of economic change entrepreneurially, socially, and politically, youth must be aware of the historical, political, and technological precedents behind the Fourth Industrial Revolution. This training can take place in formal educational settings (i.e. high school, university) as well as non-formal education (NFE) settings (i.e. youth organisations). The aim of the initiative would be to stimulate entrepreneurialism and progressive dissent by training young people to spot the contradictions and gaps in our evolving technosocial environment. Curricula could survey the ethics of data-governance, history and philosophy of technology, and a political histories of computer science. Given that only 6% of current tech CEOs globally were trained in Europe, compared to 60% in the U.S., this style of education would give tomorrow's leaders an advantageous, long-lens view of how digital technologies alter society.[24]

04 **Provide Access to Bandwidth and Interfaces via Digital Inclusion:**

In Europe, average data traffic per active smartphone is estimated to increase from between 3.8-4.1GB per month in 2017 to almost 20-28GB per month by 2023, with video and social media consumption as primary drivers.[25] As data-use has grown, so too have expectations in network performance, particularly among Millennials.[26] Access to connectivity remains a barrier to opportunity in Romania, Bulgaria, Greece, Italy and other European countries.[27]

For people with disabilities, and those who don't speak English, the lingua franca of the internet, language and interface design are also barriers.[28] Since web accessibility is already enshrined in Article 9 of the United Nations Convention on the Rights of Persons with Disabilities, precedents exist with which to overcome these barriers. Solutions include accessibility standards, ubiquitous 5G coverage, and free community Wi-Fi. Without this sort of digital inclusion, those with disabilities will not be able to compete in the global digital marketplace.

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[24] Verke, in Finland, cite the greatest challenge of Youth Work as, "The necessity to define who we are, what we do and why we do it." In relation to the future, they ask, "What kind of youth work services do young people need and want in the future?" We advocate for services that provide a basic introduction to the historical preconditions to the Fourth Industrial Revolution so that youth have context with which to judge their civic environment. The exercise would be valuable in a reflexive way given

that all Youth Work is now Digital Youth Work according to Verke. "It is... no longer appropriate to distinguish digital youth work from face-to-face activities, or treat it as a separate method or branch in youth work." See: Digital Youth Work - A Finnish Perspective, Verke, p.19, 28, 14.

[25] 3.8-20GB in Central and Eastern Europe, 5.1-28GB in Western Europe. See: Ericsson Mobility Report November 2017, Ericsson, p.35, 29

[26] Ericsson Mobility Report November 2017, Ericsson, p.26

[27] See: Digital Economy and Society Index (DESI).

[28] Universal Internet access is one of the United Nation's new Sustainable Development Goals. 52% of all websites are in English. See: Who is welcome online?, Internet Health Report, Mozilla; See: Web Accessibility, European Commission.

Recommendations

05 **Update Competition Doctrine to Break Up Platform Monopolies and Incentivise Young Entrepreneurs:**

A platform company is one that gains its value by facilitating transactions between consumers and producers in a particular exchange. YouTube is a content platform, PayPal a payment platform, and Facebook a social networking platform. Rather than own the means of production, platform companies create the means of connection. Owning the means of connection allows companies to influence the behavior of users on their network. A successful, for-profit platform is thus faced with a dilemma: keep the network that they've built, or steer it towards behaviour that makes the company more money? Facebook, for example, encourages users to view videos to keep them online longer, and sell ads against that behaviour.

The first-, second-, third-, fourth-, and sixth-most-valuable companies in the world in 2018 are Apple Inc., Alphabet Inc., Amazon.com Inc., Microsoft Corp. and Facebook Inc.[29] Each of these companies facilitates exchanges between people, such as with iTunes (Apple), Gmail (Google), and Twitch (Amazon). In each case, the company benefits from the 'network effect' of being the key exchange for a certain type of service.[30] The more people who join that exchange, the more value it is to everyone. A classic example of the network effect is the telephone; it is of most use once everyone has one.[31]

One negative result of the network effect is that it becomes difficult for competitors to displace established powers, since doing so would require that everyone move to a new network. This hinders healthy competition. In 2016, Amazon Inc., for instance, captured 46% of all online shopping in the U.S.[32] The company's network has become critical infrastructure for a significant portion of U.S. businesses. Under today's outdated competition doctrine, Amazon is rewarded for reinvesting profits to dominate this infrastructure. While prices remain low, customers do not notice. Yet, this peace may not last.

To incentivise youth in Europe to champion the Fourth Industrial Revolution, regulators must update competition doctrine to allow newcomers to compete against platform monopolies.

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[29] Per The 100 largest companies in the world by market value in 2018 (in billion U.S. dollars), Statistica. Alphabet is the parent company of Google. Other examples include Skype (Microsoft), and WhatsApp (Facebook).

[30] For more on the network effect, see: What Are Network Effects, Applico.

[31] This can be thought of as a positive feedback loop.

[32] Amazon's Stranglehold: How the Company's Tightening Grip Is Stifling Competition, Eroding Jobs, and Threatening Communities, LaVecchia and Mitchell. Pg.10. See also: European Union Competition Law.

Recommendations
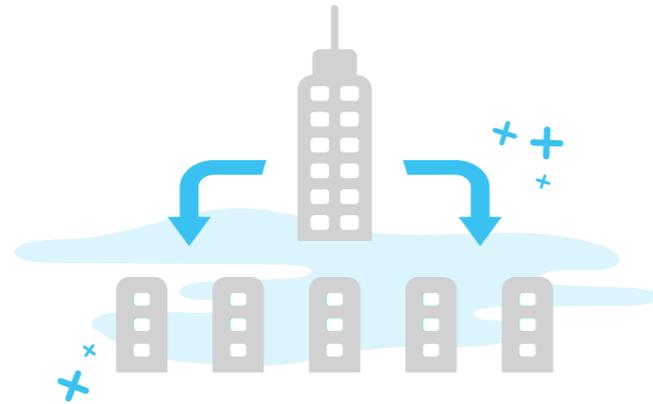
"We are living through a moment in which the forms of our legal institutions are being revealed to us as obsolete," said Professor of Law, Julie Cohen, about related U.S. competition law.[33] New scholarship, from contributors like Lina M. Khan, proposes alternative ways of thinking about fair levels of competition in the digital age.[34]

Other regulatory solutions exist. Companies deemed to be platform monopolies could, for instance, be broken up into smaller companies along existing fault lines (i.e. YouTube could be separated from Google, WhatsApp from Facebook, and AWS from Amazon). Alternatively, their business models could be more closely monitored to protect against predatory behaviour (i.e. Amazon could be prevented from over-privileging the sale of Amazon products). Non-profit alternatives to platform monopolies, such as platform cooperatives, could also be established.[35] Examples include MiData, a Swiss health data cooperative that returns the control and monetisation of personal data to those who generate it by hosting a secure data-exchange for member's medical records.

For entrepreneurialism to remain as a viable career choice for young people, the digital economy must remain competitive. Across the OECD, those between 16-24 years old are already two and a half times more likely to be unemployed than adults. In 2015, almost a third were at risk of poverty or social exclusion, making them the demographic most at risk.[36] Their economic outlook has deteriorated more than for any other age group over the last eight years. An inability to compete with platform monopolies due to market dominance and anti-competitive behavior will only compound the negative influence of low employment rates and greater job insecurity, which puts young people at risk of labour market and social exclusion, which erodes their competencies.[37]

Against this erosion, the world's most profitable companies report record growth.[38] Experts estimate that the richest 1% of the world will control two thirds of all wealth by 2030.[39] Facebook, Google, Amazon, and Uber (among numerous other non tech companies, it is worth noting) simultaneously face allegations of tax-avoidance.[40] This steep inequality between the responsibilities owed by entrenched powers and the fate of new entries must be re-examined by regulators.

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[33] WhatsApp and/or Instagram could be separated from Facebook and AWS from Amazon. How to Tame Google, Facebook, Amazon, and Apple, Bloomberg. At the extreme, Tim Wu, author of the 2016 book, The *Attention Merchants*, has proposed that Facebook be treated as a "public benefit corporations," funded via donations and volunteers a la Wikipedia, since it is the profit motive that enables bad behaviour. The Attention Merchants: The Epic Scramble to Get Inside Our Heads, Tim Wu.

[34] Amazon's Antitrust Paradox, Lina M. Khan. For past work on antitrust see The Microsoft Antitrust Case: A Case Study For MBA Students, Economides.

[35] Platform cooperativism, in which digital platforms are co-owned, provides an alternative solution to unsustainable or exploitative business models. For more on this see: Platform.coop. Examples of platform cooperativism can be found in Cotabo (Bologna, Italy), a ride-hail platform.

[36] 31.8% of women and 30.8% of men aged 18-24. 2017 Sustainable development in the European Union pg. 33

[37] In 2017, employment rates for those 20-24 were still more than 4 percentage points below their 2008 pre-economic crisis level of 54.8%. 2017 Sustainable development in the European Union pg. 171

[38] Apple becomes world's first trillion-dollar company,

The Guardian.

[39] Richest 1% on target to own two-thirds of all wealth by 2030, The Guardian.

[40] Questions repeatedly arise over whether Google, Amazon, and Facebook pay a 'fair' level of tax for past earnings. Facebook, Google and Amazon could pay 'fair' tax under EU plan, The Guardian. The EU plans to take on the tech giants with a massive new turnover tax, TNW. On the topic of good corporate citizenship,

Recommendations

1   **2**   **3**   **4**   **5**   **6**
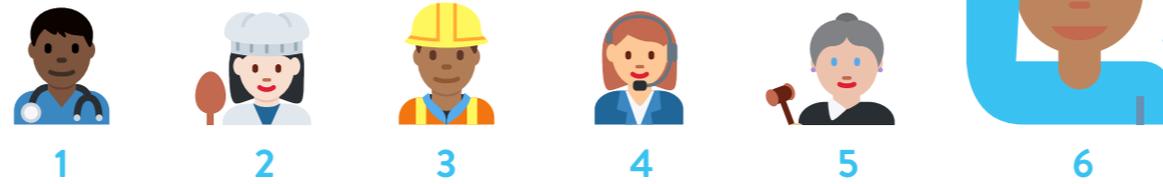
06 **Protect Labour Standards in the Gig Economy to Avoid a Looming Welfare Crisis:**

A gig economy is a labour market characterised by the prevalence of short-term contracts or freelance work as opposed to permanent jobs.[41] This is the type of labour market used by companies in various sectors such as driving (e.g., Uber, Lyft), delivery (e.g., Deliveroo, Foodora) and domestic work (e.g., TaskRabbit, Helpling). This style of employment is beneficial to those who seek flexibility in their work schedule and location, or if they want to avoid the interview process in order to start earning income.[42]

On the whole, crowd work is growing. In the UK, one out of every six workers is a gig worker.[43] The 'typical' gig worker there is 25 and male.[44] Of this group, just two percent have access to life insurance, income protection and critical illness insurance via their employer.[45] Hazardous issues include an indistinct boundary between work and private life, tedium, unpaid wages, and no minimum standards of remuneration nor training, working hours, health and safety or legal and social security.[46] It is often difficult for gig-economy workers to fight back against these cuts because they lack a common working place and, as such, may lack sufficient interpersonal contact with coworkers to identify shared problems or collectively work towards fixing them.
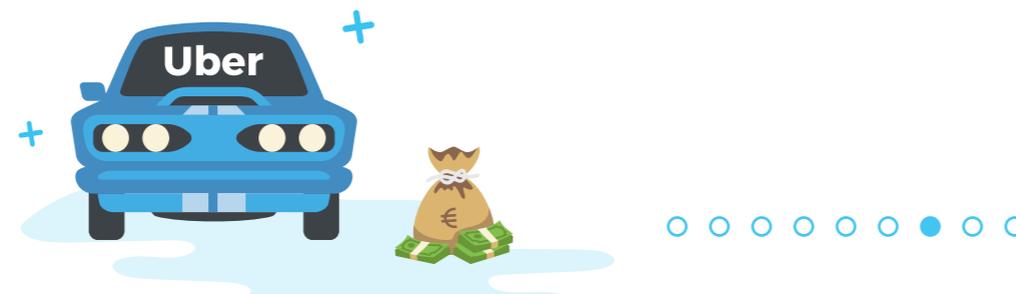
delegates at the 2017 Internet Governance Forum complained that Uber had yet to open an office in a handful of the European countries in which it operated, leaving customers in those countries with no local representative to appeal to in case of, say, maltreatment or abuse.

41 For FAQ on the gig economy/crowd work see: Fair Crowd Work - Shedding light on the real work of crowd-, platform-, and app-based work, Faircrowd.work

42 This convenience may be of particular use to those who are new-entries to the workforce, such as youth and immigrants.

43 This group is focused on as there is more information on their status than in other areas. Gig workers missing out on up to £75,000 in pension savings as auto-enrolment bypasses gig economy, Zurich.

44 Estimates taken in 2016 for those young workers aged

16-34 who earn at least half of their income in gig work range from approximately 710,000 (51% of 1.4 million, UK), 624,000 (48% of 1.3 million, Germany), 114,800 (40% of 280,000, Netherlands) and 116,000 (58% of 200,000, Sweden). Gig workers missing out on up to £75,000 in pension savings as auto-enrolment bypasses gig economy, Zurich.

45 Gig workers missing out on up to £75,000 in pension savings as auto-enrolment bypasses gig economy,

Zurich.

46 A survey by the International Labour Office (ILO) found that workers on two such platforms averaged 18 minutes looking for work for every hour spent working. They also found that 80% of American crowdworkers earned less than the federal minimum wage. Towards a Fairer Gig Economy, Oxford Internet Institute, p. 33-34

Recommendations

To push back against unethical employment practices in the digital domain, the Oxford Internet Institute has proposed the creation of a Fairwork Foundation to mirror the success of the Fairtrade Foundation, which highlights unethical practices in supply chains. The Party of European Socialists has argued that the gig economy amounts to a form of social dumping, in which employers either drastically minimise or altogether avoid making contributions to social protections.[47] These standards are now being decided in the courts.[48] New initiatives, like Project Alia, seek to build benefits coverage back into the cost of using the gig economy by charging users an additional fee.[49] Elsewhere, UNI Global Union has proposed ten Principles for Worker's Data Privacy and Protection to provide workers with agency over the workplace data they generate, which is often used by employers to decide how to structure their work day.

[47] Reviews of different companies' working standards has been made available at Faircrowd.Work. Buzzwords like 'favours', 'rides' and 'tasks' have been used to conceal the nature of the work, with the work depicted as being amateurishly carried out as a form of leisure, with no relation to a real job. Towards a Fairer Gig Economy, Oxford Internet Institute, p. 32.

[48] Uber, for instance, has argued that their business should be classified as a technology business whose main function is matching passengers with drivers rather than as a taxi service. By this interpretation, Uber drivers would rank as self-employed contractors rather than as proper Uber employees deserving of basic benefits (ex. minimum wage; paid vacation, parental leave, sick leave, or overtime; employer-supported health insurance; protection from unfair dismissal; or compensation in the event of work-related illness or injury). In December 2017, the Court of Justice of the European Union struck a blow to this interpretation when ruling that any platform like Uber operating in the transportation sector, "must be regarded as being inherently linked to transport service and, accordingly, must be classified as 'a service in the field of transport' within the meaning of EU law" rather than as a digital service. See: The service provided by Uber connecting individuals with non-professional drivers is covered by services in the field of transport, Court of Justice of the European Union; This finding will likely influence future decisions of how gig economy companies are regulated in the EU.

In the spring of 2017, Denmark pushed Uber out of the country after introducing new taxi laws; in September, Uber was banned from operating in the city of London due, in part, to a "lack of corporate responsibility". For more see: Europe's top court just said Uber isn't a tech company — it's a cab company, Vox. In November 2017, Deliveroo in the UK won a case at the Central Arbitration Committee (CAC), which ruled that the food delivery company's couriers be recognised as self-employed, rather than as Deliveroo employees. The CAC said it ➔

Recommendations

At stake in this debate is a potential welfare crisis for the state. If companies do not pay their social contributions, the state will be at risk of having to compensate for the loss. A 2017 study found that gig workers missed out on up to £75,000 in pension savings because they are not currently auto-enrolled into a pension scheme.[50] When asked how gig workers would protect themselves should they lose their regular income, 29% said they would rely on state benefits, while 16% would feel compelled to sell personal possessions.[51] This heavy reliance on state benefits is unsustainable in the long term.

made the decision because Deliveroo's riders have the right to subcontract their work. On the flip side, also in November 2017, it was announced by Uber Eats that all couriers across Europe would be offered an insurance package covering the costs of property damage, accidents, and injury. Deliveroo later opened their door to a similar scheme. See: Deliveroo opens door to benefits win for gig economy workers, BBC

[49] How an App Could Give Some Gig Workers a Safety Net, Wired

[50] In that country, auto-enrolment could be provided to the self-employed via the self-assessment tax return process. Zurich estimated that employee contributions could initially be set at 4%, increasing to 8% when appropriate to avoid triggering a mass 'opt-out'. Gig workers missing out on up to £75,000 in pension savings as auto-enrolment bypasses gig economy, Zurich.

[51] Gig workers missing out on up to £75,000 in pension savings as auto-enrolment bypasses gig economy, Zurich.

Emotional Intelligence

Emotional Intelligence

Emotional Intelligence is the capacity to be aware of, to control, and to express one's own emotions, and to handle interpersonal relationships judiciously and empathetically. This type of intelligence is uniquely valuable in an era of disruptive technosocial change. The ability to think critically about your relationship to yourself and to others helps one to navigate the otherwise disorienting influence of forces like computational propaganda, disinformation, harassment, and radicalisation.

The emergence of new forms of technological manipulation, such as MADCOMs (i.e. the integration of AI systems into machine-driven communications tools for use in computational propaganda), will test youth's Emotional Intelligence during the Fourth Industrial Revolution. This section focuses exclusively on tactical responses to that problem.[52] Disinformation is defined as, "All forms of false, inaccurate, or misleading information designed, presented and promoted to intentionally cause public harm or for profit."[53]

Today's disinformation campaigns differ from past equivalents because of the scale of manipulation that contemporary communication infrastructure allows, particularly when purposefully harnessed to produce, distribute, and amplify media at an industrial scale. Research has shown that one in five political messages in the 2016 U.S. election was generated by a bot.[54] Facebook estimated that as many as sixty million bots may be active on its platform, meaning a total of 3% of all Facebook users, while between 9% and 15% of active Twitter accounts are estimated to be bots.[55]

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[52] Existing research on social and emotional literacy is of obvious value to the larger question of how to build *Emotional Intelligence* generally, particular as it relates to changing employment norms.

[53] The MADCOM Future, The Atlantic. The quotation given is the European Commission's definition of disinformation. This term is prefered over 'Fake News' because the later has been co-opted by various political parties to discredit news they find disfavorable. Facebook opts for the term "false news": The science of fake news, Science. For this definition, see the March 2018 expert-report from the European Commission, Final report of the High Level Expert Group on Fake News and Online Disinformation. In an April 2017 report, the European Commission defined Fake News as, "deliberately fabricated stories posing as journalism with the aim of manipulating readers." April 2017, 'Fake news' and the

EU's response pg. 1

[54] As cited in: Do social media threaten democracy?, The Economist. Disinformation is produced by both state (i.e. U.S., Russia, etc.) and non-state political actors (i.e. Cambridge Analytica), as well as for-profit actors such as the media, and non-profit actors such as individual citizens or groups. See: The Russian "Firehose of Falsehood" Propaganda Model, RAND.

[55] Point-of-origin is not the only critical factor to evaluate. Another is subjective judgment, the nuances of which are irreconcilable. In his 2017 book *Everybody Lies*, Seth Stephens-Davidowitz found that on Facebook the most common terms associated with the phrase 'my husband is …' were 'the best', 'my best friend', 'amazing', 'the greatest' and 'so cute'. On Google, the top five were 'amazing', 'a jerk', 'annoying', 'gay' and 'mean'. *Everybody Lies* underlines the troubling grey area surrounding ➔

Since disinformation lacks a root-cause, it is unlikely that a silver-bullet will be found to "fix" it. The European Commission's March 2018 expert-report recommended that all stakeholders (a) collaborate to increase transparency, (b) share relevant data, and (c) assess and reassess responses.[56] They advised against simplistic solutions or those that proposed to fragment the internet, electing instead for a multi-dimensional approach.[57] (In other words, 🍍.)

Since experts agree that no silver bullet exists with which to tackle disinformation, policymakers should reorient themselves around a philosophy of evolving tactical solutions. These solutions can be tested and re-tested to remain relevant.

We list ten.

subjective judgement, which can be easily misaligned and exploited without actually crossing the threshold into illegal offensive content. See: The science of fake news, Science; Platform companies need greater transparency around cases that blur the line between decent and offensive content. In December 2017, for instance, Twitter suspended the account of Wael Abbas, a respected Egyptian journalist with a following of 350,000 people, without explanation. See: Twitter under fire

after suspending Egyptian journalist Wael Abbas, The Guardian. Since then, Twitter has been criticised for not suspending the account of Alex Jones, whose published content is alleged to be purposefully misleading and offensive. See: Twitter accused of hypocrisy over Alex Jones and Wael Abbas accounts, Middle East Eye.

[56] Tackling disinformation online: Expert Group advocates for more transparency among online platforms, European Commission

[57] Recommendations included (a) more transparency around online news, (b) media and information literacy, (c) tools that empower users and journalists to respond and foster positive engagements, (d) safeguards on the diversity and sustainability of the European news media

ecosystem, and (e) additional research on the disinformation landscape.

Recommendations

01 Inoculation Theory

Inoculation Theory borrows from the logic of vaccines; a small exposure to a weak form of a virus helps to build immunity to its stronger form. By analogy, explaining to youth the techniques used in a piece of disinformation, such as the embellishment of one finding in a genuine study, taken out of context, can serve to neutralise the effect of disinformation.[58]

02 Nudge Theory

Nudge Theory attempts to nudge users gently towards certain outcomes via simple conveniences like recommended media. The aim of this approach is to have users broaden their own opinions rather than accept what could be seen as an authoritarian measure to insist they change their minds.[59] In certain cases, a shortcoming of Nudge Theory is that it assumes that experts know the interests of ordinary people better than those people know themselves.[60]

03 Transparency of Media Ownership

The Council of Europe has recommended that transparency of media ownership be used to allow the public to question the incentive structures behind media outlets' editorial policies.[61] This system of accountability is arguably less contentious than reputation scores for media outlets, which could be used to censor free speech.[62]

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[58] If disinformation is shown alongside a set of facts such that you have two conflicting stories, for instance, the influence of that disinformation can be neutralised by explaining the technique that the source of that disinformation used to distort the facts (i.e. over-simplification, cherry picking, a false dichotomy, or red herring). Inoculation Theory is closely related to the Fact-Myth-Fallacy framework. For more see: Inoculation theory: Using misinformation to fight misinformation, The Conversation

[59] In December 2017, Facebook backed off plans to label something as a 'Disputed Post' if it was believed to be misinformative. The reasons they provided were that (a) such flags could backfire by entrenching user's beliefs, (b) critical information could became buried under "too many clicks" (c) it required more fact checking capacity than they could manage in some countries (d) decisions were not often black or white so one rating was insufficient. In place of this system they now offer "Related Articles" alongside misinformative posts labeled, in blue,

as having been seen by a "Fact Checker." Facebook did not immediately share statistics of what went into their decision to switch from 'Disputed Posts' to a nudge-driven approach. Designing Against Misinformation, Medium. YouTube attempted a similar initiative, which users fought back against out of a fear of 'mob rule.' YouTubers Fear Mob Rule With New YouTube Heroes Initiative, Forbes. This controversy inspired its own meme: YouTube Heroes Controversy, Know Your Meme

[60] This year's economics Nobel winner invented a tool that's both brilliant and undemocratic, Vox

[61] Recommendation CM/Rec(2018)1[1] of the Committee of Ministers to member States on media pluralism and transparency of media ownership, Council of Europe

[62] For a public debate on this topic see: Tweet - 23 May 2018, Elon Musk

Recommendations

04 Self-Regulation / Name and Shame

Journalists already critique each other when standards of journalistic accuracy are not met.[63] This manner of professional self-regulation and norm-setting can be used to respond to those who create and distribute disinformation. The global, distributed nature of disinformation-production limits the use of this tactic across language, cultural and political barriers. Transparency of media ownership and the regulation of social networks as publishers - a critical legal question that Facebook has recently flip-flopped on - could enable far more strict forms of self-regulation.[64]

05 Clarify Platforms' Role in Political Marketing

When partnered with political organisations, Facebook, Twitter, and Google have reportedly gone "beyond" simply promoting their services by facilitating advertising buys.[65] In practice, they actively shape campaign communication, particularly during election time. The ethics of this exchange should be made transparent to avoid the deliberate spread of disinformation.

[63] The U.S. Media Suffered Its Most Humiliating Debacle in Ages and Now Refuses All Transparency Over What Happened, The Intercept

[64] Is Facebook a Publisher? In Public it says No, but in Court it Says Yes, The Guardian

[65] An Oct 2017 study found that campaign communications had been shaped by these organisations through employees close collaboration with political staffers. "These firms serve as quasi-digital consultants to campaigns, shaping digital strategy, content, and execution." See: Technology Firms Shape Political Communication: The Work of Microsoft, Facebook, Twitter, and Google With Campaigns During the 2016 U.S. Presidential Cycle, Kreiss and McGregor

Recommendations

06 Address the Economics of Manipulation

Disinformation spreads in part because it is cheap to produce lies and expensive to produce the truth. Taxes and fines could be used to manage this incentive structure.[66] Crowdsourced citizen journalism and fact-checking organisations such as Snopes.com (U.S.) and StopFake.org (Ukraine) present alternative economies.[67] The 2018 Alex Jones - a famous right wing conspiracy theorist in the U.S. - controversy, which resulted in a ban on high-profile media across various platforms, illustrated some corporations' awareness of the public pressure on them to resolve this problem.[68]

07 Citizenship Education in Formal and Non-Formal Educational Settings

Existing critical literacy education programmes in formal and non-formal educational settings could be meaningfully extended to illuminate how disinformation spreads.[69] In 2017, for instance, the OECD called on schools to teach children how to spot fake news.[70] Such a system is now in place in parts of Italy.[71] According to the European Youth Forum, citizenship education, if the aim is developing critical thinking and media literacy, requires a participatory and learner-centred methodology, a learning-by-doing approach, as found and provided by youth organisations and other non-formal education settings.[72]

[66] In Germany, platform company executives can be fined 5 million euros for publishing hate-speech. Is Germany Overstepping With Its Online Hate Speech Law?, The New Republic

[67] A co-creator of Wikipedia has setup WikiTribune, a for-profit, volunteer-driven, fact-checking community news service. Critics of the citizen journalism approach claim that content is haphazard and lacks accountability. (See: Citizen Journalists and the Evolution of Political

Media, Diana Owen) Deep investigatory work requires stable pay, which citizens who volunteer their time may not be able to provide consistently. Some economic models, when paired with large-scale philanthropy, have been shown to work, such as The Intercept.
[68] Does the banning of Alex Jones signal a new era of big tech responsibility?, The Guardian

[69] A Microsoft-funded report on Digital Civility recommended that, in addition to teaching citizenship skills
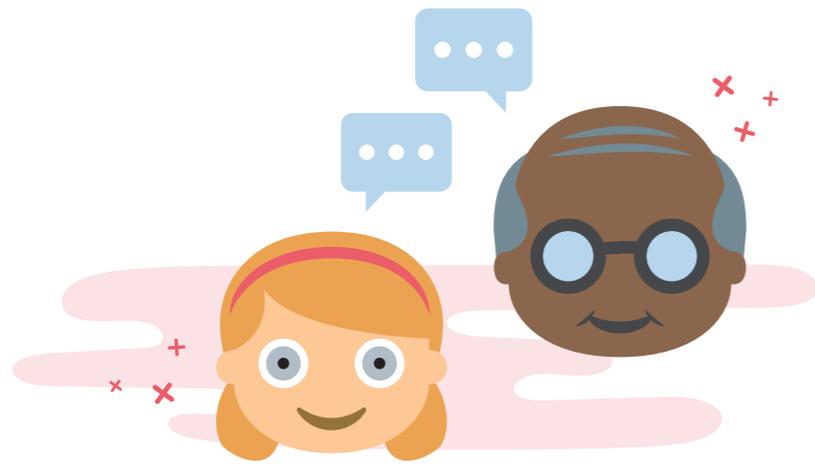
and lessons about life online into traditional scholastic curricula, core competencies should include self-awareness, self-management and responsible decision-making. See: Promote Digital Civility, Microsoft. Incidentally, outside of the digital domain, these skills help to reduce social isolation, aggressive behavior and emotional stress. We call for training in HELP (history, emotional literacy, philosophy) to be offered alongside training in STEM (science, technology, engineering, mathematics), since both competencies are needed in the digital era.

[70] Teach schoolchildren how to spot fake news, says OECD, The Guardian

[71] In Italian Schools, Reading, Writing and Recognizing Fake News, New York Times

[72] Inspiring! Youth Organisations' Contribution to Citizenship Education. European Youth Forum.
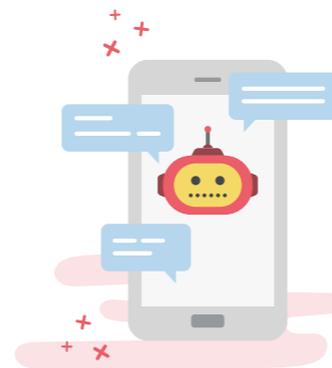
Recommendations

09 Digital Speed Bumps

Asking users to answer a brief question about the content of an article before they leave a comment ensures that commenters have actually read the piece. Norwegian developers have created an open source Wordpress plugin, Know2Comment, that enables that process.[74]

08 Intergenerational Dialogues

Disinformation spreads in part because it is emotionally pleasing; it presents (false) evidence that supports a person's worldview. Broadening young people's emotional experiences may therefore help to interrupt this phenomenon. Evidence suggests that intergenerational dialogue serves to reduce behavioral and psychiatric problems in youth because older people are skilled in creating close relationships, which fosters *Emotional Intelligence*.[73]

10 An Anthropomorphisation Tax

The next wave of artificial intelligence powered products designed to appear human, such as chatbots and MADCOMs, will be persuasive in unprecedented new ways.[75] A tax on products that use anthropomorphisation purposefully could raise funds to study this phenomenon, which could in-turn serve to remedy the harmful consequences that stem from this emerging techno-political reality.[76]

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[73] We recommend that new educational programmes be piloted to facilitate dialogue between Millennials, Post Millennials, and older generations. For example, in-school mentorship programmes that allow youth to share knowledge about technology for advice from senior citizens about something they love or about self-actualisation more generally. Contributors. Intergenerational Programs - Not Just Nice Necessary, Twin Cities PBS (TCP). This type of relationship has been characterised as a "reverse-mentorship" by community-organisers in the UK because of the positive benefits it has been shown to provide adult

[74] See: nrkbetaquiz on GitHub. While it is time consuming to setup a test-question for every article, Know2Comment has proven effective for the development team when used in outlier instances such as on provocative articles.

[75] Such as via hyper-targeted manipulation, intimidation, and distraction.

[76] Young people, given their relative lack of life-experience, may be especially vulnerable to exploitation. Although humans are prone to anthropomorphise many of the things they interact with, such as cell-phones, animals, and cars, the growing sophistication of AI will allow for new levels of sophistication. See, for example, Microsoft's Mandarin-language AI chatbot "Xiaoice" in The MADCOM Future, The Atlantic Council, p.12

Physical Intelligence

Physical Intelligence

Physical Intelligence involves an awareness of how to preserve the interwoven health and wellbeing of the planet, oneself, and one's community. As global warming accelerates and mental health overtakes physical health as "the greatest disease burden of our times," bold steps are needed to respond with effective measures that do not cripple public services.[77]

Physical Intelligence crosses multiple levels. At the level of one's individual health, a growing body of evidence suggests that certain aspects of the digital ecosystem, such as prolonged exposure to digital displays (i.e. on smartphones, laptops, or televisions), have had a negative impact on sleep and attention patterns in youth.[78] At the level of community

and planetary systems, concerns mount over the environmental toll of digital tools and services such as smartphones, cloud-computing, and cryptocurrencies, which could overtake the entire aviation industry as a primary driver of global warming.[79]

Past interventions by government and non-government actors have established protections for young people in relation to the harms caused by other products, such as cigarettes, sugar, and smog. Today, lawmakers must consider whether new social protections are or will be needed to counteract the harms caused by the production and use of digital technologies.
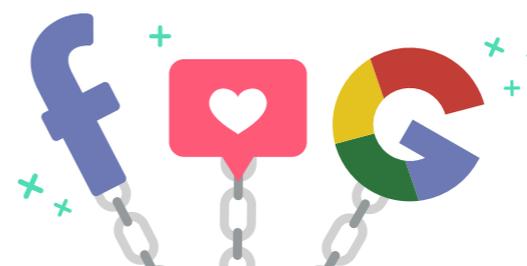
[77] The World's a Mess - Go Back to Bed, The Royal Society

[78] While it is beyond the scope of this report to suggest that the following list of evidence is scientifically valid in relation to young people in the EU, we provide the work of various researchers worldwide as an offering for lawmakers to use fodder to initiate their own in-depth inquiries. The majority of work in this area concerns the

health of children rather than youth. Section 5 of the Council of Europe's Strategy for the Rights of the Child (2016-2021), Council of Europe, for example, articulated the "Rights of the Child in the Digital Environment," placed emphasis on the need to protect children from harms that emerge from content accessed on a cell phone such as sexualised imagery, discrimination, and online harassment. This strategy did not directly address harms that emerge from non-content related issues,

such as overuse of a digital display. Section 5 continues, "Smartphone and tablet applications and other communication tools will be created and disseminated to empower children, parents and educators in making full and safe use of the potential of ICT and digital media." Safe is suggestive of health and wellbeing. Directive (EU) 2016/2102 of the European Parliament and of the Council of 26 October 2016 on the Accessibility of the Websites and Mobile Applications of Public Sector

Bodies, European Commission, addressed accessibility but did not directly confront use-cases related to the hazardous use of digital technologies.

[79] Our Phones and Gadgets are Now Endangering the Planet, The Guardian

Recommendations

01 Invest in Research on the Impact of Digital Technologies on Youth Health and Wellness:

Millenials have been called the first "Always On" generation.[80] Indeed, smartphone and social-media usage in Europe has sky-rocketed since 2011.[81] Research conducted globally suggests that mass-adoption has taken its toll on aspects of young people's health and wellness. Since evidence is scattered across both demographic bounds (i.e. children rather than youth) and geographical bounds (i.e. U.S. rather than Europe),additional funding for research on the status of youth in Europe could improve our understanding of how digital technologies impact:

5h /day
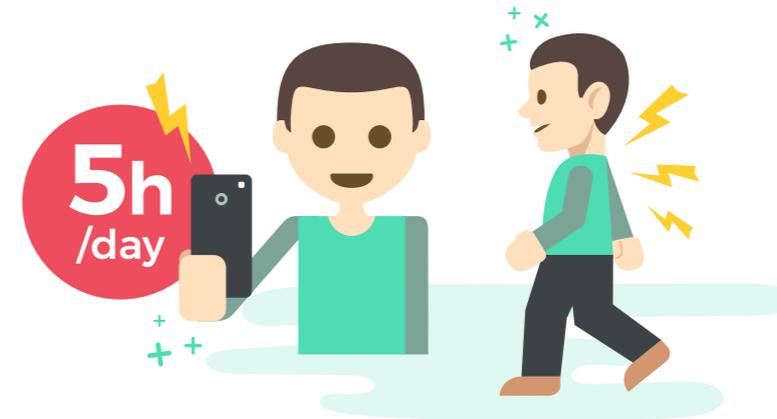
a. **Neck and Spinal Damage:**

The term "Text Neck" describes the increased strain that mobile handheld devices put on the human neck due to the position of one's eyes and hands. Smartphone use of between two to four hours a day can result in 700-1,400 hrs/year of excess stresses on the cervical spine.[82] In the UK, Millennials spend on average 5.2 hrs/day on their smartphone (Post-Millennials, 5.9 hours).[83] Similar health risks surround sitting "as the new smoking."[84]

[80] UK Millenial's Report, Inkling

[81] Western Europe has grown from 22% to 67% between 2011-18. In Central & Eastern Europe, per capita grew use grew from 13% to 58% between 2011-17. Focus is placed on smartphones because, as a portal to software products and the internet, smartphone-use enables the rapid take-up of other new services. Smartphone user penetration as percentage of total population in Western Europe from 2011 to 2018, Statistica

Percentage of total population. As of 2017, there were 370 million monthly active users on Facebook in Europe. See: Facebook's monthly active users (MAU) in Europe from 4th quarter 2012 to 2nd quarter 2018 (in million MAU), Statistica. In 2015, a study of ICT use amongst young people in Austria, Denmark, Finland, Northern Ireland and the Republic of Ireland found that 82% of participants in Finland were using WhatsApp only two years after the corresponding figure had been 8%.
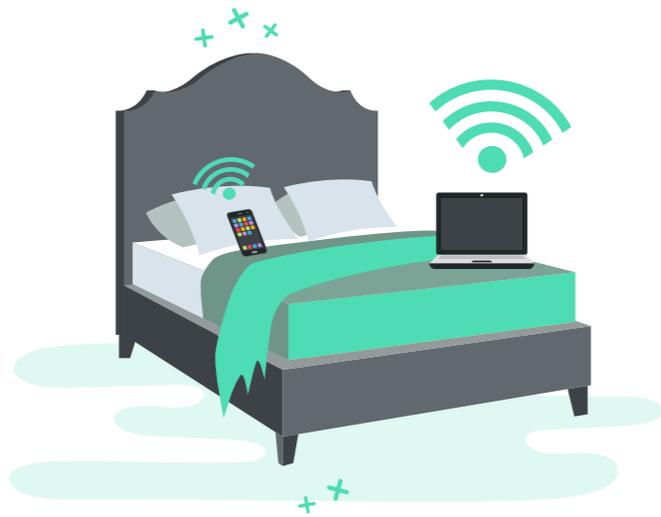
[82] Assessment of stresses in the cervical spine caused by posture and position of the head, Dr. Kenneth Hansraj

[83] Gen Z engaging with 10 hours of online content a day, Marketing Tech

[84] Sitting is the new smoking: where do we stand?, Baddeley

Recommendations

c. Mental Health:

New digital services, such as WoeBot, reduce the cost of services like therapy.[89] The novel interventions are badly needed as experts have called links between increased smartphone use and increased rates of depression and suicide for those born 1995-2005, "The worst mental-health crisis in decades."[90] Additional research is needed to test this correlation for citizens 15-35 in Europe.
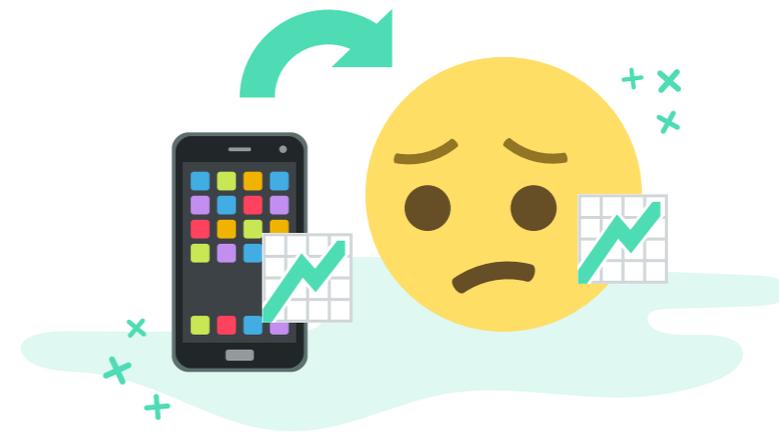
b. Sleep:

Shorter sleep patterns predicts a shorter life. Sleep enables our ability to learn, memorise, and make logical decisions. The negative effect that industrialisation has had on sleep patterns has been called, "The Greatest Public Health Challenge of the Twenty First Century."[85] In relation to youth and technology, initial research suggests, "Electronic devices in the bedroom are broadly linked with poor sleep in adolescents."[86] Teens in the U.S. were identified to be 57% more sleep deprived in 2015 than in 1991.[87] On a positive note, Millennials sleep on average 25 minutes longer than other generations.[88]

[85] RSA Minimate: Sleep or Die | Matthew Walker, Royal Society

[86] Adolescent Sleep Patterns and Night-Time Technology Use: Results of the Australian Broadcasting Corporation's Big Sleep Survey

[87] Twenge identified that, "Significant effects on both mental health and sleep time appear after two or more hours a day on electronic devices." See: iGen:

Why Today's Super-Connected Kids Are Growing Up Less Rebellious, More Tolerant, Less Happy--and Completely Unprepared for Adulthood--and What That Means for the Rest of Us, Jean Twenge p.114 and Have Smartphones Destroyed a Generation?, The Atlantic

[88] Millennial Sleeping Habits Are Changing The Modern Workplace: Here's How, Forbes.

[89] How digital technology is transforming health and

social care, Deloitte; Digital technology for treating and preventing mental disorders in low-income and middle-income countries: a narrative review of the literature

[90] See: iGen: Why Today's Super-Connected Kids Are Growing Up Less Rebellious, More Tolerant, Less Happy--and Completely Unprepared for Adulthood-- and What That Means for the Rest of Us, Jean Twenge p.14; Generation Me - Revised and Updated: Why

Today's Young Americans Are More Confident, Assertive, Entitled--and More Miserable Than Ever Before, Jean Twenge; Other factors could include cyberbullying, unprecedented access to disheartening global news, and feeling of self-consciousness in relation to one's peers. Twenge writes, "The more time teens spend looking at screens, the more likely they are to report symptoms of depression." Have Smartphones Destroyed a Generation?, The Atlantic. See: The Mental Health Crisis is upon the Internet Generation,

Recommendations

02 **Boost Consumer and Labour Protections for Digital Products and Services - Regulate Persuasive Design and 'Dark Patterns':**

Evidence suggests that sustained internet usage can lead to novel changes in brain chemistry, biasing some skills, like multi-tasking, complex reasoning and decision-making, over others, like 'people' skills and emotional aptitudes like empathy.[91] This, on its own, is not problematic. Regulatory standards on certain media, however, may be needed to protect vulnerable consumers, like youth, from areas of use that lead to excess, such as video-streaming and social-media.[92]

Psychology Today[91] Research shows that Internet is rewiring our brains, UCLA. It is difficult to identify what effect different type of use have had on young people's ability to remain attentive. Researchers who identified young people who appeared "physically present but mentally absent" also readily acknowledged that digital technology is commonly used as a social activity, which complicates arguments that suggest it negatively influences social behavior. See: Screenagers - An

international report on the use of ICT, digital and social media in youth work, National Youth Council of Ireland, p.26

[92] "The areas of Internet use that students reporting having the most trouble controlling were video streaming (55.8%), social networking (47.9%) and instant-messaging (28.5%)." See: Mental health in the smartphone era, Roger Collier; In December 2017, the World Health

Organization included "Gaming Disorder" as a recognised mental health disorder in a draft of its upcoming 11th International Classification of Diseases. Gaming Disorder, World Health Organization. A 2009 study in the journal Psychological Science reported that as high as 8.5% of youth in the United States between ages 8-18 showed "problematic" signs of behavioral addiction to video games. Are Internet use and video-game-playing addictive behaviors? Biological, clinical and public

health implications for youths and adults, Yvonne H. C. Yau et al. Recent developments in artificial intelligence may exacerbate these problem areas by allowing designers more sophisticated techniques to capture and control young people's attention.

Recommendations

Recent campaigns such as 'Digital Dieting' misrepresent the onus of responsibility in this area by over-emphasising the duty of the end-user to manage outcomes.[93] Product designers must also be held accountable. Various former employees of major tech companies assert this position. Sean Parker, the first president of Facebook, described the platform's notification system as, "Exploiting a vulnerability in human psychology."[94] Chamath Palihapitiya, former VP of User Growth, described Facebook's design as, "Short-term, dopamine-driven feedback loops" that, he speculated, "Are destroying how society works. No civil discourse, no cooperation, misinformation, mistruth."[95]

Since the advertising business models used by platform companies such as Google and Facebook optimise for time-spent-on-platform, each are powerfully incentivised to ensure 'user lock-in', meaning design decisions that make users dependent on a single platform or service. Tristan Harris, a former Design Ethicist for Google, argues that Snapchat, Instagram, Facebook, and YouTube "Are part of a system designed to addict us."[96] In Disrupted Childhood: The Cost of Persuasive Design, researchers highlight how automated technology in 2018 both leverage and reinforce habits and behaviours that take significant intervention to change when introduced during one's youth.[97]

Various measures can be used to reduce harm in this area. First, in regards to competition doctrine, Europe's General Data Privacy Regulation (GDPR), which came into effect on May 25, 2018, identifies data portability as a basic right for all citizens. Competition doctrine is relevant here because it provides users with the agency needed to change service-providers, which puts pressure on platforms to improve, rather than neglect, health design standards as judged by public scrutiny. A critical limit to The Data Transfer Project, which took a step in this direction by allowing users to move (some) data between Facebook, Twitter, and other services, is that corporations defined what would be made portable. If regulators set these standards, citizens would likely enjoy more genuine portability. EFF describes this portability as, "Anti-Monopoly Medicine."[98]

[93] The PwC report outlined how to 'spend time away from connected electronic devices, like your smartphone… to set boundaries for when and how you use devices, so you can balance their use with other aspects of your life.' Solutions included: (a) Control the amount of time you spend on your smartphone (b) Enable 'Do Not Disturb' mode when you're busy (c) Use a cabled headset to make long calls, or a landline, if available (d) Switch your phone to 'Night Shift' mode in the evening (e) Turn your phone onto 'Airplane Mode' at night (f) Go 'off the grid' during your time off. Digital dieting, PwC

[94] Sean Parker unloads on Facebook: "God only knows what it's doing to our children's brains", Axios. For additional examples of how these feedback loops can be exploited, see Binky Rocks and Cow Clicker

[95] We have not yet found research to corroborate this

link between addictive media use and a breakdown civic discourse. Former Facebook executive: social media is ripping society apart, The Guardian

[96] Former Facebook and Google employees fight tech 'addiction', BBC

[97] Disrupted Childhood: The Cost of Persuasive Design, Baroness Kidron

[98] Facing Facebook: Data Portability and Interoperability Are Anti-Monopoly Medicine, Electronic Frontier Foundation

Recommendations

Second, regulation on the design of digital products and services should be fit to the needs of a given context.[99] Lawmakers should set standards and collaborate with technology companies to enable citizens to monitor their usage and take steps to remedy excesses.[100] Transparency around product design is a simple starting point. Psychological mechanisms used to make gambling compulsive, such as "intermittent variable rewards"

are now in use across various social media platforms including Facebook.[101] To manage this landscape, experts in the U.S. call for a new government agency equivalent to the Food and Drug Administration but for the design of technology.[102] This group could enforce the removal of so-called Dark Patterns, which are "Tricks used in websites and apps that make you buy or sign up for things that you didn't mean to."[103]

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[99] Daily Internet use outside of work is lower in France (2.5 hours), for example, than in the UK (4+ hours), which could require different solutions. See: Do social media threaten democracy?, The Economist

[100] Platform companies have begun work on this area. See: Google Wellbeing and Apple and Google are taking responsibility about Smartphone overuse, should app developers do the same?, Medium

[101] Intermittent variable rewards are the key ingredient in the experience of using a slot machine. They leverage the possibility of a new event to exploit users' attention. Platform companies currently borrow from research on addiction, performative magic, social engineering, persuasive design, and behavioral economics. See: Tristan Harris and 'Our minds can be hijacked': the tech insiders who fear a smartphone dystopia, The Guardian. According to The Center for Humane Technology, a few of the "thousands" of techniques designers use to

maintain a user's attention include: social approval (i.e. manipulating how many likes you receive and for which services), social reciprocity (i.e. exploiting humans' propensity to reciprocate; I-followed-you-so-you-follow-me), Fear of Missing Out on Something Important (FOMOSI, i.e. the next swipe on Tinder might be 'the one'), bottomless scrolling and video autoplay, and instant interruptions (i.e. letting you know that someone has read a message you sent and not giving you the choice to turn this feature off). How Technology Hijacks People's

Minds—from a Magician and Google's Design Ethicist, Tristan Harris. On EU regulations concerning Free to Play (F2P) video games, see Free to Play Laws - Can We Stop Predatory Practices? - Extra Credits

[102] How Technology Hijacks People's Minds—from a Magician and Google's Design Ethicist, Tristan Harris

[103] Dark Patterns; WTF is dark pattern design?, TechCrunch

Recommendations

New labour protections may be needed to mirror the type of consumer protections outlined above. Labour reform in France, Italy, and Luxembourg have, for instance, introduced into law a 'Right to Disconnect,' which protects a workers' human right not to have to engage in work-related electronic communications outside of working hours.[104] Daimler, the automobile company, developed software to allows employees to delete incoming emails automatically while they were on vacation.[105] Policymakers have begun to question their responsibilities to the public in this area.[106]

[104] French workers get 'right to disconnect' from emails out of hours, BBC

[105] Here's a Radical Way to End Vacation Email Overload, TIME

[106] See: The right to disconnect: The new laws banning after-hours work emails, NewAtlas; The Internet Governance - Council of Europe Strategy 2016-2019 - Democracy, human rights and the rule of law in the digital world, Council of Europe, noted a strategic objective to 'encourage citizens to develop a healthy and balanced relationship with the Internet based on the ability to connect but also to disconnect.

Recommendations

### 03 Regulation on Environmental Impact of Digital Technologies:

The energy footprint of the information technology sector is chronically underestimated by the public. Currently, it already consumes approximately seven percent of global electricity.[107] This figure will rise as an additional billion users come online and Internet-usage triples by 2020.[108] Cloud computing currently produces 840 million tons of carbon/year.[109] Bitcoin, at its peak, was set to produce carbon dioxide per annum equal to 1 million transatlantic flights.[110] Today, 70 percent of the world's Internet traffic passes through Loudoun County, Northern Virginia, a data-center meca that Greenpeace speculate is 99 percent powered by "dirty" means of energy production.[111]

Greater pressure can be put on platforms to be responsible in this area. Twitter, Spotify, and Netflix currently rate lowest on the sustainability of their infrastructure.[112] Since video streaming has been found to be a particularly heavy driver of data demand, with 63% of global internet traffic in 2015 (projected to reach 81% by 2021), Netflix in particular must take action to remedy this position.[113] Since experts already fear that climate change reform is not being addressed quickly enough, pressure is needed from government to sector wide improvements, such as by mandating transparency reports that detail annual electricity consumption and corporate carbon footprint.[114]

Critiques about individual health, such as those outlined above, do not capture this community-level and planetary-level environmental toll of digital technologies. At time of writing, Harris's Center for Humane Technology, for example, did not take into account the exploited workers assembling digital technologies nor, "the poisoned villagers who live next door to the e-waste dumps created by planned obsolescence" in their estimation of how technology could be made more "humane."[115] Stricter regulation would be an effective means to prohibit planned obsolescence in the tech sector.
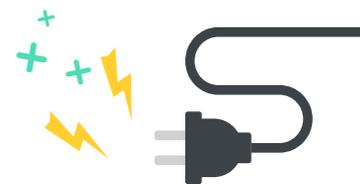
[107] Click Clean 2017, Greenpeace, p.4

[108] Click Clean 2017, Greenpeace, p.5

[109] Colin Garvey, Twitter

[110] Our phones and gadgets are now endangering the planet, The Guardian.

[111] Northern Virginia, center of the (data) world, Washington Post

[112] #Click Clean - International Version, Greenpeace

[113] Cisco Visual Networking Index: Forecast and Methodology, 2016–2021, Consumer internet traffic, 2016–2021, Table 8, Cisco

[114] Taking Back Control of our Climate with Caroline Lucas, Royal Society

[115] Be Wary of Silicon Valley's Guilty Conscience: on The Center for Humane Technology, Librarian Shipwreck

Creative Intelligence

Creative Intelligence

Creative Intelligence is one's capacity for imagination and originality. To develop *Creative Intelligence* in Europe, lawmakers must recognise, legitimise, and invest in systems that encourage alternative ways of knowing the world, such as through the arts, humanities, intersectional community, and DIY community. Given that European civilisation and humanism have been celebrated as among the continent's key strengths in the global digital marketplace, investment in *Creative Intelligence* provides youth with a competitive edge in the Fourth Industrial Revolution.[116]

This section focuses on intersectionality, the Artisan Economy, a growth mindset, and Universal Basic Income.

[116] See: The Digital World in 2030 What place for Europe?, European Internet Forum, p.29; The Internet Governance – Council of Europe Strategy 2016-2019, Council of Europe, p.10, similarly, prioritised the strengthening of European creation, access and management of digital culture, including "the digitisation of culture, to promote citizen engagement, access to culture, openness, inclusion and tolerance in democratic societies."

Recommendations

01 Embrace Intersectionality:

We all have different identities that intersect to make us who we are. Intersectionality considers the power dynamics that are interwoven into those different identities through class, race, sexual orientation, age, disability and/or gender. A black woman, for example, faces a different experience day-to-day than a black man because she may suffer both from gender discrimination and racial discrimination simultaneously.[117] Intersectionality helps provide language with which to understand these dimensions of power. This language illuminates how to change the institutions that help and harm us.

In the Fourth Industrial Revolution, shifting economic forces will stress existing social-dynamics. Changes to labour norms, as well as demographic and socio-economic change, for example, stand to have a disproportionately negative impact on women rather than men.[118] Today, women in the European Union already earn 16% less than men.[119] Since women are also underrepresented at all levels in the ICT sector, especially in decision-making positions, growth in this sector will lead to further marginalisation.[120]

Since youth also carry a disproportionate level of risk in the transition to a more automated society (due to the fact that entry-level jobs are more easily automated), young women will face further challenges from that dimension of their identity as well.[121] In a study of 18-24 year olds, 64% of young women stated that the greatest struggle for their generation would be to find any kind of well-paid, permanent job.[122]

To account for the structural inequalities facing youth, women, and other marginalised groups, lawmakers must formally endorse intersectionality by incorporating the expertise of a diverse set of stakeholders into all levels of operations. One superficial yet productive example of how to do this would be to introduce operational guidelines within government that prevent all-male panels and expert groups, since these groups would lack expertise in issues outside of both their own lived experience and the lived experience of half of their constituency.

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[117] Intersectionality 101, Teaching Tolerance

[118] One reason for this is that women are proportionally under-represented in Computing, Mathematics, Architecture, and Engineering, each sector of which is expected to grow rapidly over the next five years. See: Women in the Firing Line of Fourth Industrial Revolution, World Economic Forum

[119] 2018 Report on equality between women and men in the EU, European Commission, p.5

[120] Increase in gender gap in the digital sector - Study on Women in the Digital Age, European Commission

[121] One estimate found that for young people aged 16-24 in the OECD, the risk of having your job automated is between 20-40%. See: 2017 PwC Young Workers Index,

PwC; Similarly, while robotics may not destroy existing manufacturing jobs, evidence suggest they will induce firms to create fewer new jobs for young people. The rise of robots in the German labour market, VoxEU. Civil society organisations such as the Sisterhood Movement in the UK exist to counteract this type of trend.

[122] 56% of men aged 18-24 said the same. See: Vodafone study: The State of iGen, YouGov.

Recommendations

02 Don't Just Educate, Inspire:

In what psychologists call a "growth mindset," challenges are seen as things to be overcome, or as future successes to be enjoyed, rather than as burdens to be welcomed begrudgingly. In the latter view, challenges are seen negatively such that change seems prohibitive. A growth mindset encourages young people to feel invested in the otherwise daunting changes of adapting to an entirely new economic and political landscape under the Fourth Industrial Revolution. Neuropsychological studies bear out the benefits of the growth-mindset.[123]

To promote a growth mindset amongst youth, lawmakers should inspire rather than simply educate youth. How? To begin: ask rather than tell. What do young people want from digital technology in their future? "When given the opportunity to reflect on the role of digital technology in their everyday lives, children are overwhelmingly positive about the possibilities it affords them," found a 2017 Unicef report, "They identify connection, communication and sharing as key benefits of engaging with digital technology."[124]

In fact, adults' attempts to represent what they think youth want can be prohibitive. "The ways children talk about their concerns often echo mainstream media narratives and the adult-centric concerns of online safety initiatives, limiting their ability to imagine the opportunities digital media afford. It is critical that children be given space and encouraged to develop their own languages and ideas about the opportunities digital technology afford."[125]

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[123] Researchers have found, "Experiencing positive emotional states, such as joy, fun and happiness, increases the production of dopamine in the brain. Dopamine not only make us feel great, it also opens up the learning centres of the brain, which enables and sustains more neural connections. As a result, we become more flexible and creative in our thinking, and better at solving problems. It also boosts our working memory." Funny people are also more intelligent, according to new research, World Economic Forum

[124] Young and Online: Children's perspectives on life in the digital age, Unicef, p.39, 92

[125] Young and Online: Children's perspectives on life in the digital age, Unicef

Recommendations

03 Embrace Creative Tools for Digital-Participatory Democracy:

The digitisation of society gives lawmakers new tools with which to query regular citizens about change, such as social-media. Additional tools, such as digital field hearings, citizen juries, personal government account managers, online voter registration, postal voting, and notification systems for how to get to polling stations, can be used to welcome citizens into the political process in a way that feels convenient.[126] In the UK, citizen juries have already been used to develop policy on ethical artificial intelligence.[127]
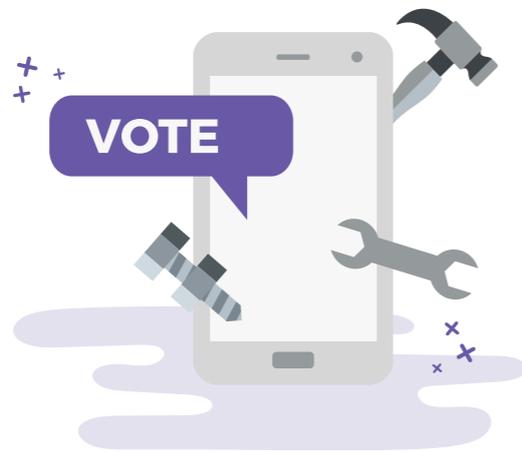
04 Stimulate the Artisan Economy:

In 2016, creative industries in Europe added €550 billion in value to the GDP and provided 8.3 million full-time jobs.[128] The so-called Artisan Economy, which employs painters, hairdressers, interior designers, butchers, and other craft workers, is set to grow larger. Harvard economist Larry Katz predicts that future "good" middle-class jobs will arise from the re-emergence of highly skilled artisans in various field.[129] As an example, Katz referenced a contractor who installs beautiful kitchens. A liberal arts degree (i.e. art history) would provide this person with an advantage in the marketplace by helping them develop their craft. This would be advantageous in the new, knowledge-based economy since more value is derived from knowledge and ideas than from material goods.

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[126] A personal account manager would improve the user interface and user experience for citizens dealing with government. "Just as the staff in many retail stores use the same digital platform as customers that are buying online, these account managers would be expert in navigating government websites and getting things done on behalf of the citizens they serve – anything from registering a child for school or arranging care for an elderly relative, through to accessing help to find a job or applying for a council tax discount." See: Technology for

the Many: A Public Policy Platform for a Better, Fairer Future, Chris Yiu. For more on young people's views, see The Internet on our own Terms: How Children and Young People Deliberated About Their Digital Rights, Coleman et. al.

[127] The Role of Citizens in Developing Ethical AI, Royal Society. Citizens' Economic Council; Royal Society. For more on digital methods of direct and participatory democracy, see the work of Lorelei Kelly. Our 'modern'

Congress doesn't understand 21st century technology, Lorelei Kelly, Robert Bjarnason

[128] Totaling 3.8% of Europe's workforce. Open letter: Status of online platforms in the EU as regards copyright and the need for legislation, Intergroup Culutral and Creative Industries; Dawanda.com, for example, which is the largest handmade marketplace in Europe, now hosts the work of over 360,000 designers, the majority of which are based on the European continent.

Dawanda launched in 2006. Dawanda, LinkedIn; Etsy, in comparison (launched in 2005), has 1.75 million active sellers. Etsy, Statistica

[129] The Return of Artisanal Employment, The Economist. Technology-journalist William Skidelsky has speculated, "The entire edifice of office-based, nine-to-five employment that has defined our working lives for at least a century… [today] makes little sense." A Job for Life: The 'New economy' and the Rise of the Artisan Career, ➔

Recommendations

For the Artisan Economy to thrive, fair pay and intellectual property protections are badly needed. This is an issue that youth activists have been vocal on.[130] In 2016, Jean-Claude Juncker, along with 58 MEPs, signed an open letter calling for "legal certainty" that the value from creative industries would not disappear in the hands of "digital intermediaries."[131] As an example of the opposite, 725 of Facebook's top 1,000 most viewed videos in 2015 were stolen from other creators.[132] The European Commission later passed a directive on copyright that streamlined protections for publishers in the digital era.[133]

The Financial Times; In place of this, will be barbering, butchery, bartending, distilling, coffee roasting, brewing, carpentry, upholstery and ceramics, a transition which the sociologist Richard Ocejo explores in his 2017 book *Masters of Craft Old Jobs in the New Urban Economy*, Richard E. Ocejo. See also: *Down and Out in the New Economy*, Ilana Gershon; *The Amateur*, Andy Merrifield

[130] In 2017, young people from eighteen European countries met in Tallinn for the annual European Dialogue

on Internet Governance. The result, a position paper on Modern Copyright Reform, called on lawmakers to harmonise national copyright frameworks, ban geo-blocking in the EU, as well as to improve fair use protections. Reforms of this type are still are discussion DIGital Futures: Promises and Pitfalls, EuroDig;

[131] Open letter: Status of online platforms in the EU as regards copyright and the need for legislation, Intergroup Culutral and Creative Industries

[132] How Facebook is Stealing Billions of Views, Kurzgesagt – In a Nutshell; You Are the Product, John Lanchester; In 2016, Trent Reznor of the band Nine Inch Nails criticised YouTube for profiting off of intellectual property that had not been paid for. "I find YouTube's business to be very disingenuous. It is built on the backs of free, stolen content and that's how they got that big," Reznor told Billboard in 2016. Apple's Brain Trust -- Iovine, Reznor, Cue and Kondrk -- on Streaming's New World Order and Why 'We All Should Be' Worried,

Billboard. YouTube is built on the back of stolen content says Trent Reznor, The Guardian; In 2016, 180+ major artists, including Paul McCartney and Taylor Swift, signed a petition calling for the alteration of the United States' Digital Millennium Copyright Act of 1998, which grants "safe harbor" to YouTube by freeing them from liability for videos posted on their platform. YouTube's Safe Harbor, Michael Kostaras

[133] Proposal for a DIRECTIVE OF THE EUROPEAN

The Artisan Economy provides a dynamic and flexible area of economic growth.[134] Take, for instance, the do-it-yourself (DIY) and Makerspace movements. Makerspaces provide users with access to hi-tech equipment like 3d-printers and laser cutters to build up their digital skills in formal and non-formal education (NFE) settings via learning-by-doing. Venues for these type of DIY activities enable self-support and entrepreneurship. In 2016, there were at least 826 makerspaces across the 28 EU countries, with France, Germany and Italy having the most (in absolute terms) and Cyprus, Lithuania and Malta having the fewest.[135] This area of the economy could also be called upon to combat the environmental toll of 'planned obsolescence.' The DIY and Makerspace movements could help to refurbish used goods and bring them back to use.

PARLIAMENT AND OF THE COUNCIL on copyright in the Digital Single Market, European Commission

[134] Small and medium sized businesses of this type in France, Spain, and Italy proved resilient after the 2008 financial crisis. Italian Artisans' Revival After Economic Crisis Reflects Resilience of Small Industry, The New York Times

[135] Although Malta has the second most per one million people. Digital fabrication, programming and electronics are the top three thematic interests of users in these spaces. In July 2017, via funding from Erasmus+, the Luxembourgish youth service Service National de la Jeunesse (SNJ) worked with 20 youth work professionals from 13 European countries to explore how Makerspaces could be used to improve digital youth work. 92% of all makerspaces are located in EU15 member states. The average monthly fee to use such a space is around €20.00. Overview of the Maker Movement in the European Union p. 11, 18.

Recommendations

05 A Basic Income for All Citizens:

Basic Income is a contentious but increasingly topical idea amidst narratives about massive technological disruption. This system offers, "Periodic cash payment unconditionally delivered to all on an individual basis, without means test or work requirement."[136] Three common justifications for a Universal Basic Income are:

- It is a modern continuation of traditional social rights that accepts the current reality in which full employment is still not achievable nor necessarily a worthy goal, considering that full-employment may not be necessary in an economy in which automation can adequately substitute for human labour.

- It offers a new distributive model of justice in which, since some resources (like clean air or, perhaps, data) do not belong to anyone in particular, they or the benefits derived from them should belong to everyone. This model could allow, in relation to data-governance, for centralised players like Facebook to continue operating as a natural monopoly.

- UBI disconnects income from work, which is a form of emancipation.

Depending on the context and length of implementation, monthly payments could sit at approximately €600.00 according to Unconditional Basic Income Europe (UBIE), a group who provide ongoing analysis of how such a model could be implemented.[137] UBI could be financed via a combination of tax-reform and the replacement of social policies such as minimum income, family benefits, and children allowances. Critics respond that this attempt at grouping would hollow-out hard-earned social protections using the veneer of change. Others label UBI as prohibitively expensive.

UBIE back partial steps to UBI, such as a European Youth Emancipation Income, in the form of €200.00 for people aged 18-25. This step could help address youth unemployment, which is high in Europe, as well social exclusion. UBI could also be used to justify the continued existence of low-paid and exploitative jobs. In France, advocates include organisations representing entrepreneurs, and trade unions. Numerous political constraints exist, including that many Member States would not want to share their resources with the rest of the EU.

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[136] Basic Income, Simon Birnbaum

[137] Unconditional Basic Income Europe

Conclusion

In their lauded 2015 book *Inventing the Future*, Nick Srnicek and Alex Williams argued that politics today have become nonlinear.[138] In the past, folk wisdom suggested that if you put sufficient pressure on political issue "A," then political outcome "B" would follow. If you organised enough protests, for instance, then change would come on that issue.

Srnicek and Williams reason that while this may still be true at a local level, no such linear dynamic holds when facing the global technopolitics of, say, late-stage capitalism. No amount of protesting has yet put capitalism to rest. Complex political dynamics require multiple small interventions, only a few of which might snowball into significant change.[139] To alter this type of nonlinear system, different strategies are needed. The shorthand we use convey this situation is: 🍍.

In this report, we have explored various complementary proposals for how young people in Europe can peacefully reclaim political agency after the debilitating influence of forces such as austerity, predatory consumerism, and infantilisation. Now, the opportunity exists for young people to make lasting change during the Fourth Industrial Revolution, a moment of significant economic and demographic transformation.

The proposals we've surveyed in **THE PINEAPPLE REPORT** compliment each other like health advice. Just as a change in diet, exercise, and leisure (ex. quitting smoking) can be used—as individual parts or together—to improve one's life-expectancy, the proposals that fall under Civic Intelligence, Emotional Intelligence, Physical Intelligence and Creative Intelligence can be used— individually or together—to empower young people in the Fourth Industrial Revolution.

[138] Inventing the Future: Postcapitalism and a World Without Work, Nick Srnicek and Alex Williams.

[139] For more on this perspective, see: The Systems Bible: The Beginner's Guide to Systems Large and Small, John Gall; Making Things Work: Solving Complex Problems in a Complex World, Yaneer Bar-Yam

The Fourth Industrial Revolution

(A Simplified) Glossary of Terms[140]

ALGORITHM: A series of steps (or set of rules) for solving or performing a task.

ARTIFICIAL INTELLIGENCE: The theory and development of computer systems able to perform tasks that normally require human intelligence.

BIG DATA: Extremely large data sets that may be analysed computationally to reveal patterns, trends, and associations, especially relating to human behavior and interactions.

BLOCKCHAIN: An immutable digital ledger.

CIRCULAR ECONOMY: An economy in which resources are kept in use for as long as possible, with the maximum value extracted from them whilst in use, followed by a process in which materials are recovered and regenerated.[141] An alternative to a traditional linear economy (i.e. one that follows the model: make, use, dispose).

DATA SUBJECT: An individual who is the subject of personal data; the individual whom particular personal data is about.[142]

DIGITISATION: The conversion of text, pictures, sound or other media into a digital form that can be processed by a computer. Services can also be digitised.

INFORMATION AND COMMUNICATIONS TECHNOLOGY (ICT): Technologies that provide access to information through telecommunications.

INTERNET OF THINGS (IoT): The interconnection via the internet of computing devices embedded in everyday objects, enabling them to send and receive data.

INTEROPERABILITY: A characteristic of a product or system to work with other products or systems, present or future, in either implementation or access, without restrictions.[143]

OUTCOME ECONOMY: An economic model by which companies shift from competing through selling products and services, to competing on delivering measurable results important to the customer. It is the digital age that makes the outcome economy possible.[144]

PRIVACY BY DEFAULT: Privacy protections built into the design and implementation of a product and service.[145] No manual change to the privacy settings should be required on the part of the user.

PRIVACY BY DESIGN: Privacy protections left to the controllers of data (companies, public bodies, etc.) to secure throughout the whole life cycle of the system.

Appendix: Youth, Europe, and Emerging Tech

In this Appendix, a handful of key technologies in the Fourth Industrial Revolution are characterised in relation to the risks and opportunities they present to Millenials and Post Millenials in Europe.

The development of a robust digital ecosystem is a key priority for the EU. More than 40% of businesses in Europe looking for ICT specialists say they have difficulty finding the right people. This picture is similar around the globe, which means that Europe will need to compete in the global marketplace for these human resources. It is estimated that there will be 756,000 unfilled vacancies in the European ICT sector by 2020.[146] The Commission's 2012 e-Skills Manifesto described this gap as, "A problem of epic proportion."[147]

Young people hold a natural role within this development. Recognising this, the Commission's Digital Opportunity Traineeship Programme gives "Up to 6,000 students hands-on experience in fields such as cybersecurity, data analytics, quantum or artificial intelligence as well as programming and software development."[148] In related areas, the EU's Cloud Computing Strategy aspires to create 2.5 million new jobs in the cloud sector.[149] By 2020, according to the EU eGovernment Action Plan 2016-2020, public administrations and public institutions will be made "Open, efficient and inclusive, providing borderless, personalised, user-friendly, end-to-end digital public services to all citizens and businesses in the EU."[150] Young people should be taught to interact with and build on these services.[151]

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146 ICT stands for Information and Communications Technology

147 e-Skills Manifesto, European Commission

148 Digital Opportunity traineeships: boosting digital skills on the job, European Commission. This pilot project will be financed by Horizon 2020 and implemented through Erasmus+. In Hungary, as a case study, one aspect of the Economic Development and Innovation Operational Programme is funding of EUR 78 million

to digitally upskill disadvantaged adults in employment age (16-65) through training and motivating them to use IT tools and IT facilities. By August 2017, some 76,923 adults had received from the training and facilities. The objective is to reach 260,000 people altogether between July 2017 and October 2020.

149 The Digital World in 2030 What place for Europe?, European Internet Forum

150 http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52016DC0179 Other examples of the digitalisation of public services include: the EU Open Data Portal, which publishes all open-data from the Commission; the European e-Justice Portal, a search engine of all judicial decisions assigned with a European Case Law Identifier (5M total; launched in 2016); the EURES European Job Mobility portal, which advertises 1,4M job vacancies to facilitate the mobility of job seekers in the EU.

151 So far, Estonia, Finland, and the Netherlands lead in offering digital public services, while Romania, Hungary, and Croatia lag behind. See 5. Digital Public Services in The Digital Economy and Society Index (DESI) The EU's goal remains to provide "faster, cheaper, more user-oriented digital public Services" across the union. EU eGovernment Action Plan 2016-2020 Accelerating the digital transformation of government, pg 1. The EU should also invest in free and engaging digital literacy training for civil society groups so that they can contribute to this process.

To ensure that these opportunities do not disproportionately favour those young workers who have already been more highly-educated, vocational qualifications and training should come outside of formal education and should not require a university educational path.[152] Local businesses and job centres should be encouraged to offer pathways into full-time employment, either via a broad and engaging variety of market-relevant qualifications, courses, paid internships, and apprenticeships. These must be updated frequently to ensure alignment with market needs. Governments can also invest in the creation of new jobs via university research centres, science parks, or tax incentives for startups.[153] These new career pathways, and the qualifications needed to undertake them, can be promoted during school years. The Party of European Socialists has advocated for a right to paid educational leave for all workers, as well as incentives for business to invest in on-the-job training.[154]

[152] 2017 PwC Young Workers Index, PwC, p. 23.

[153] 2017 PwC Young Workers Index, PwC, p. 23.

[154] Unfortunately, data remains relatively sparse on whether retraining programmes for older youth are as effective as earlier interventions. It is known that marginalised groups such as seniors, women, migrants, rural dwellers, and those with disabilities, as well young people and those young people that also fall into these categories, could require particular attention to meet the need for skilled labour and ensure their participation in the labour force. Targeting Workforce Development Programs: Who Should Receive What Services? And How Much?, Carolyn J. Heinrich, p.19. See also: The Trend is the Cycle: Job Polarization and Jobless Recoveries, Nir Jaimovich, Henry E. Siu; The Job Training Charade (Collection on Technology and Work, Gordon Lafe

The Internet of Things (IoT): Overview
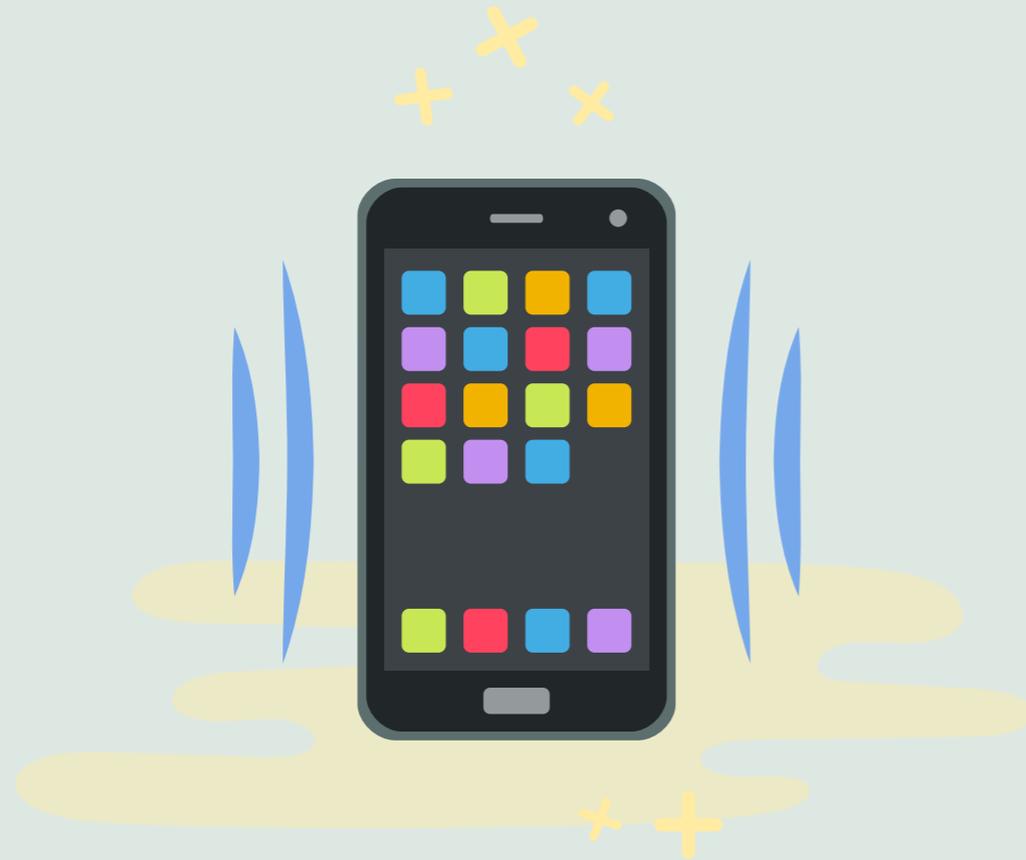
The wide-scale adoption of smartphones sharply reduced the cost of everything from cameras to batteries to gyroscopes. This makes possible the emerging Internet of Things (IoT): a network of embedded, uniquely identifiable electronic sensors which connect and exchange data between physical devices. Oral B, for example, offer a toothbrush that records which teeth you brushed and for how long, data that can then be transmitted to a dentist via an app. Volvo offer a set of tires equipped with sensors that can detect black ice and transmit that data to other drivers via the cloud.

The European Commission stated in 2014, "IoT is not another technology hype. It is dynamic but is here to stay.".[155] Current estimates hold that six billion devices will be connected in Europe by 2020, ten times more than in 2016. Europe currently has an almost 40% share of the IoT market worldwide, yet this share is not divided up evenly between members states.[157] Six countries (UK, Germany, France, Italy, Spain, and the Netherlands) make up more than 75% of the European IoT market. [158]

[155] Definition of a Research and Innovation Policy Leveraging Cloud Computing and IoT Combination, European Commission. The Commission's policy priorities for IoT specifically are based on three pillars: a single market for IoT (addressed earlier in relation to a Digital Single Market for Europe), a thriving IoT ecosystem (with emphasis on open platforms and innovation), and a human-centred IoT approach (avoiding a digital divide and ensuring trust through accreditation and the labeling of products).

[156] Tallinn Digital Summit Completing the Digital Single Market State of Play, European Commission

[157] A European Commission study gauged the market value of the IoT in the EU to exceed one trillion euros by 2020. See: Definition of a Research and Innovation Policy Leveraging Cloud Computing and IoT Combination, European Commission

[158] The Internet of Things in Europe, CBI Ministry of Foreign Affairs

IoT & Young People in Europe: Opportunities

IoT presents various risks and opportunities for young people in Europe. On the opportunity side, wearable technologies can in principle be used to lower workplace injuries, accidents, and illnesses by identifying root causes, such as fatigue, and accident prone groups or areas, all now with higher accuracy. Data collection could be used reveal when tools and equipment on a construction site in, Budapest, for example, are due for maintenance. Regulators in Hungary could then work with industry to develop new safety systems and sustainable workplace culture.

For young entrepreneurs, this is an fertile area for economic development. A key short-term recommendation in the European Commission's report on "IoT and Cloud Research and Innovation Strategy for Europe" is that the EC should promote the "Development of e-leadership skills for IoT, by analysing the main skills requirements for the current and future adoption of IoT, assessing potential supply gaps, and collaborating with education and training actors to develop appropriate curricua."[159]

This curricula should be crafted so that young people are trained as thought leaders. The European Commission's 2016 e-book on IoT makes a similar recommendation.[160]

Since there is a risk that a lack of skills may become a bottleneck for the development of the IoT ecosystem, an IoT skills agenda should be created with a focus on identifying the specific skills needs that young people can provide. [161]
In this process, young people could participate in shaping the outcome they want from the adoption of this technology. A recent report projects that 4.5 million developers will be needed by 2020, up from 300,000 developers worldwide today. [162]
These are jobs that young people could be trained to complete.

[159] Definition of a Research and Innovation Policy Leveraging Cloud Computing and IoT Combination, European Commission, p.13.

[160] Digitising the Internet Industry of Things Connecting the Physical, Digital and Virtual Worlds, Rivers Publishers, p.157. "New IoT-driven business models, supporting service-sharing-circular-economy, have been developed with success with the aim to compensate the loss of jobs derived from factory automation. For all the stages, it is necessary to proceed with the formation of new competencies and curricula centered on IoT and its related digital technologies, in order to attract young talents to Manufacturing and to up-re-skill existing workforce (blue and white collar workers)."

[161] Digitising the Internet Industry of Things Connecting the Physical, Digital and Virtual Worlds, Rivers Publishers, p.79. Young People should also be invited to take part in the Alliance for Internet of Things Innovation (AIOTI), perhaps as paid apprentices.

[162] Commission Staff Working Document Advancing the Internet of Things in Europe, European Commission

IoT & Young People in Europe: Risks

If unregulated, IoT data could also be used to cause insidious harm. Humanyze, a U.S. based startup, has created an "employee badge" containing an accelerometer, microphone, and bluetooth connection to track employee's daily social interactions and movements. This data is then correlated to company goals to inform the operating company's decisions about things like workplace culture, such as whether employees should be allowed to eat lunch together or whether their break should be set separately. While Humanyze may intended to do no harm, and have taken steps to prevent it, the capture of this data, as well as its data exhaust (i.e. the trail of data left by your daily activity) could have adverse and unintended consequences.[163] This sort of tracking raises questions about what can be done with these data (can it be used to fire or coerce employees?) and who should own the data that is generated, since workplace data would of course be quite valuable.

Given that IoT is primarily an industrial movement at present, labour unions have emerged as thought-leaders for progressive ideas in this space. UNI Global Union, which represents more than 20 million workers worldwide, have called for additional measures to be taken, including a blanket-policy for employees to have access to and influence over the data collected on them, be it from their CV, fingerprints, iris scans, or social interactions. Their report reads:

Without said provisions, the balance of power in companies will forever be tipped into the hands of data-informed unilateral managerial decisions… Given the relative ease of combining data from many sources, without a say and influence over what data is used, and how, workers will be extremely disadvantaged… Indeed, workers' data rights and protection can be claimed to be the next frontier for unions as the digital economy takes form. [164]

[163] Humanyze seeks to mitigate this risk using data privacy policies to protect employees' personally identifiable information (PII), and private confidential information (PCI).

[164] Top 10 Principles for Worker's Data Privacy and Protection, UNI Global. UNI are now collaborating with the IEEE, a global professional association, to create a global standard for transparent employer governance of employee data.

Artificial Intelligence: Overview

Modern artificial intelligence (AI) technologies have existed for over sixty years. Since the 1990s, real-world applications of AI have accelerated due to the increased affordability and availability of data storage and networked computing power. AI is now integrated into familiar technologies such as smartphones, where it is used to make predictions that help to personalise experiences and advertise products.

This same ability is now being perfected in transportation (i.e. self-driving cars), retail (i.e. automated check-out counters), and other industries. The implications of this technology will be far reaching.[165] While AI is not "magic," it is primarily a set of techniques used for identifying patterns via computer processing rather than human ingenuity.

[165] Says Eric Horvitz of Microsoft Research, "AI is not really any single thing – it is a set of rich sub-disciplines and methods, vision, perception, speech and dialogue, decisions and planning, robotics and so on." AI for Good Global Summit - 2017 Report, ITU

AI & Young People in Europe: Opportunities

There is consensus among experts in the AI community that humans and machines have different strengths.[166] Prof. Francesca Rossi of IBM Watson has argued that machines are good at pattern detection, statistical reasoning, and large-scale mathematical reasoning, while humans are good at common-sense reasoning, and value judgments. Given this dichotomy, many believe that AI will be used to augment rather than replace human workers.[167] In this vein, future employment may arise around the subject of ethical AI, a field which seeks to align automated outcomes with human values. AI Now, a leading research group on the societal impact of AI, predict that this human capacity to make value judgements will be of considerable need in the years to come.[168]

As automated decision-making becomes a more regular part of life for young people in Europe, be it in automated supermarket checkouts, automated job application portals, or at-use in automated vehicles, the value of new rights and protections will become more clear to consumers and citizens. In May 2018, the GDPR introduced the basis of what some have called a Right to Explanation, which is not a formal right but one that is roughly proposed through the language of the legislation. This explanation would be given to clarify the actions that follow from an automated decision making process. In effect, GDPR secures a data subject's entitlement to access a sufficiently degree of information about an automated system that they could then make an informed decision to opt out, if desired.[169]

The reason that a Right to Explanation is considered a pivotal feature of the digital rights landscape is that it places responsibility in the hands of companies to ensure that the automated systems they use are properly aligned with cultural values in Europe. Given that it can be extraordinarily difficult to explain how a single decision was reached in a machine learning system, this language is contentious.[170] To give an example of how this right could be called upon, a consumer might want to know why they were offered one mobile service plan and not another. Under GDPR rules, the explanation, "That's just what the model says" would no longer be sufficient.[171] As an example of how such systems can bias against certain parties, in May 2015, it was discovered that Google's photo categorisation algorithm was mistakenly tagging photos of dark skinned people as gorillas.[172] In 2017, controversy erupted over a Stanford study that claimed to a machine learning algorithm could identify whether or not someone was gay based only on a picture of their face.[173] These examples demonstrate how misaligned or contentious automated systems can become in relation to cultural norms. When young people apply for a job, mortgage or for benefits through a AI-powered portal, a right to explanation ensures that they are entitled to some understanding of how their request was processed.[174]

As the the right to explanation shows, the politics of classification will become a hotbed of debate as automated decision making systems become more widespread.

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[166] AI for Good Global Summit - 2017 Report, ITU, p.33

[167] AI for Good Global Summit - 2017 Report, ITU, p.56

[168] AI Now 2017 Report, AI Now

[169] The basis for this right comes in Articles 13-15, which state that a data-subject (someone who is the subject of personal data) has a right to understand how their data is used. In Article 21, a data subject is said to have the right to object to the processing of her or his data in cases when automated decision making is the sole decision making factor. Section 2, which examines a data subject's right to access data, reads "The data subject shall have the right to obtain from the controller… meaningful information about the logic involved, as well as the significance and the envisaged consequences of such processing for the data subject." Section 4, which examines a data subject's right to object to and opt out of automated decision-making, reads "The data subject shall have the right not to be subject to a decision based solely on automated processing, including profiling, which produces legal effects concerning him or her or similarly significantly affects him or her."

[170] For more on this see: Is there a 'right to explanation' for machine learning in the GDPR?, IAPP

[171] GDPR and Other Regulations Demand Explainable AI, FICO

[172] Google Mistakenly Tags Black People as 'Gorillas,' Showing Limits of Algorithms, Wall Street Journal

[173] LGBT groups denounce 'dangerous' AI that uses your face to guess sexuality, The Guardian

[174] See, for example: Beware AI programs recruiting staff in their own image, Financial Times

Artificial Intelligence: Overview

Within this landscape, so-called "black box" systems, the internal logic of which is obfuscated either by technological complexity, proprietary knowledge, or both, will become contentious. The AI Now Institute at New York University, a leading research organisation, recommended in 2017 that "Core public agencies, such as those responsible for criminal justice, healthcare, welfare, and education (e.g "high stakes" domains) should no longer use "black box" AI and algorithmic systems" [175]

At time of writing, Europe is home to the largest share of the top 100 AI research institutions worldwide.[176] Since the public is unlikely to benefit from high-value applications of AI in civil society and government, such as technology that would monitor tax evasion, identify human-rights abuses, and manage sophisticated migration flows, without a commitment from all member states to invest in basic research, it is worth deliberating over how AI can be better used to serve the public interest. It is in this spirit that some argue for a "CERN for AI."[177] In June 2018, the Commissioned appointed a 52-member High-Level Expert Group on Artificial Intelligence to study the AI landscape as a whole.[178]

AI & Young People in Europe: Risks

Although AI presents many exciting possibilities, the changes it makes possible also present a risk to young people's quality of life. Young workers in OECD countries tend to be employed within the retail, accommodation, and food service industries, industries that are at greater risks of automation by the early 2030s.[179] In Italy, almost 45% of the young workforce is employed in manufacturing or wholesale/retail trade, two sectors at considerable risk of automation.[180] Within these sectors, workers tend to be relatively less skilled, with lower educational attainment and qualifications. This could limit their ability to move flexibly between industries and into new jobs in response to the growth of automation.[181] In OECD countries, this is especially true for uneducated young men, whose jobs have up to a 50% chance of being automated, compared to 10% for educated men.[182] A 2017 OECD report suggests that only 13% of adults worldwide are currently above the skill level in literacy and numeracy that AI is close to reproducing.[183]

[175] AI Now 2017 Report, AI Now

[176] Europe has 32 Artifical Intelligence (AI) research institutions in the global top 100 compared to 30 from the US and 15 from China. See: Europe is home to the world's leading AI research community, State of European Tech

[177] Opinion Piece: Why we need a CERN for AI, Steven Hill

[178] High-Level Expert Group on Artificial Intelligence, European Commission

[179] 2017 PwC Young Workers Index, PwC, p. 20.

[180] 2017 PwC Young Workers Index, PwC, p. 19.

[181] 2017 PwC Young Workers Index, PwC, p. 20.

[182] 2017 PwC Young Workers Index, PwC, p. 22.

[183] This figure is taken from research by Stuart Elliot, from the US National Academies of Sciences, Engineering and Medicine. Elliot "tried to estimate the extent to which current technologies can answer the literacy and numeracy questions of the OECD Survey of Adult Skills (PIAAC). Although he found that there are things which AI cannot yet do, he also stressed that many individuals cannot do them either." See: Artificial Intelligence and the labour market: Should we be worried or excited?, OECD

Blockchain - Overview

The function of a blockchain can be summarised in three words - immutable public ledger. Most people are familiar with the idea of a ledger through land titles; the family that owned the home next door to you, for example, may have sold the property to another person, who would then hold the title. In many countries, this record or ledger of ownership is managed by a centralised authority whose responsibility it is to keep the records true and up to date. What blockchain offers is that same idea without the centralised authority.

Rather than rely on one centralised body to maintain trust by policing against wrongdoing, blockchain distributes the ledger to everyone with an item on record. Each transaction is noted on every person's copy of the ledger, which remains true even as the community grows. In principle, this decentralised structure makes the record immutable, since an act of forgery would require a bad actor to change every record in every member's copy of the ledger.[184]

[184] Not all blockchains are immutable. The reason for this is more complicated than would suit this report.

Blockchain & Young People in Europe: Opportunities

When will blockchain become a part of daily life for young people in Europe? Experts speculate that we are likely two years away from the first mass-market blockchain applications.[185] Cryptocurrencies like Bitcoin, which are built on blockchain technology, have received the lion's share of attention so far in the popular press. Etherium, which enables developers to build decentralised applications, smart-contracts (i.e. to pay rent once all parties have submit their share, or fine whoever doesn't), and autonomous companies (i.e. a company that resembles the autonomy of a driverless car insofar as it it is designed to respond to certain inputs/rules), is another better known example.[186] In 2017, the team behind Democracy.earth launched Sovereign, a secure direct-voting system based on blockchain technology. Blockchain voting has also been used by a South Korean community government in a local budget ballot.[187] Many now speculate on how blockchain technology could be used by the public to hold politicians accountable for their actions. Using such a system, for example, "Authorities cannot withdraw or forge evidence, nor seize or shut down blockchain-based institutions."[188]

Blockchain & Young People in Europe: Risks

Blockchain technologies are still in their infancy. Much remains to be seen about how they will mature. One open question that is likely to prove fateful is whether or not the promise of decentralised services will have the democratic influence that is expected of them by some current evangelists. As mentioned in the Executive Summary of this report, the internet, in its infancy, provoked similar visions of a techno-utopia. Over time, that vision has been replaced by large-scale interference by corporations and governments, an outcome of which has been introduced in various ways in this report. Similar forces will likely weigh on blockchain applications as they develop. Recent multi-million dollar thefts of cryptocurrencies such as Bitcoin suggest that the blockchain ecosystem will not be free of manipulation either, although adequate protections may develop over time. Another problem-area still left to be resolved is the environmental toll that blockchain technologies can inflict. Cryptocurrency mining, for example, already uses up the same amount of energy as all of Ireland.

[185] Of course, no one knows when exactly this will happen. See: Some thoughts on cryptocurrencies, Fabrice Grinda

[186] See the Ethereum white paper here: Welcome to the Ethereum Wiki, GitHub

[187] The environment needs cryptogovernance, Nature, Guillaume Chapron

[188] Governance in Blockchain Technologies & Social Contract Theories, Reijers, O'Brolcháin, & Haynes

The European Youth Forum is the leading organisation advocating for the rights of young people in Europe. It is a platform of 100+ youth organisations; independent, democratic and youth-led, including National Youth Councils and International Youth Organisations from across the continent. Its mission is to empower young people to participate actively in society to improve their own lives and to represent and advocate their needs and interests (and those of their organisations) to institutions such as the European Union, United Nations, and the Council of Europe.

This report examines the impact of digitalisation on young people in Europe; their politics, their media, their work, and their education. The primary objective of this report is to assist European youth and those policymakers who represent them, by providing a survey of current trends in this area, and recommendations for future action. Illustrative examples are used when possible to personalise the types of changes we are concerned with. The opinions expressed and policy recommendations made in this publication do not necessarily represent the views or positions of the European Youth Forum and its Member Organisations.

This research was paid for by a grant made by Google. During the research phase, members of the European Youth Forum were invited to participate in various events put on by Google. No Google representatives were consulted for comment on the content of this report at any time.

Limitations: This report is not meant to be exhaustive. Given the scope of the issues involved in the digitisation of society, certain topics, such as monopoly culture, disinformation, and wellness, have received attention at the expense of others, such as privacy, surveillance, cybersecurity, energy, and warfare. Additional, unexplored dimensions of the Fourth Industrial Revolutions, such as the nuances of biotech, robotics, and algorithmic justice, also merit further exploration.