

UNITED NETWORKS

Can Technology Help the UN Meet the Challenges of the 21st Century?

Tom Fletcher
New York, September 2017



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We the peoples of the United Nations, determined to save succeeding generations from the scourge of war, which twice in our lifetime has brought untold sorrow to mankind, and to reaffirm faith in fundamental human rights, in the dignity and worth of the human person, in the equal rights of men and women and of nations large and small, and to establish conditions under which justice and respect for the obligations arising from treaties and other sources of international law can be maintained, and to promote social progress and better standards of life in larger freedom, and for these ends, to practice tolerance and live together in peace with one another as good neighbours, and to unite our strength to maintain international peace and security, and to ensure, by the acceptance of principles and the institution of methods, that armed force shall not be used, save in the common interest, and to employ international machinery for the promotion of the economic and social advancement of all peoples, have resolved to combine our efforts to accomplish these aims.

From the Preamble of the UN Charter of 26 June 1945

“We are not permitted to choose the frame of our destiny. But what we put into it is ours.”

Dag Hammarskjöld,
United Nations Secretary-General,
1953 – 1961

“Citizens are talking to their governments using 21st century technology. Governments are listening using 20th century institutions. And delivering 19th century responses”.

Madeleine Albright,
Former US Secretary of State,
2017

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FOREWORD

The United Nations emerged from devastating conflict as the best idea for global citizenship that mankind had yet had. If the UN did not exist, we would need to invent it. But the pace of technological change means that we now face extraordinary new challenges and opportunities. The UN must be better prepared to meet these head on.



We now face a century of change like no other in history. Technology will transform how we meet our needs for peace, dignity and community. This will shatter the global political equilibrium, and shift power away from governments towards individuals. States, ideas and industries will go out of business. Inequality could grow.

Already, the internet has changed the world faster than any previous technology. The smartphone has given a superpower to much of the world's population. For many, the web is no longer for our downtime, but for all our time. We have access not just to more information than we can process, but more than we can imagine. From self driving cars to artificial intelligence, as Nobel Prize winning geneticist Richard Smalley says - "when a scientist says something is possible, they're probably underestimating how long it will take. If they say it is impossible, they're probably wrong."

And we're only just getting going. The patterns show us - data, computer chip advancement, global temperatures, demography - that change is accelerating at a staggering rate. Sociologist Ian Morris predicts that in just a century we will go through the equivalent technological tsunami of the journey from cave paintings to nuclear weapons.

For the first time, technology gives the prospect of the world's population having an instant, global and unfiltered means of communicating, of consuming information, of forming opinions, preferences and communities. Digital technology empowers new sources of power, increasingly enabling the individual to take control of their lives. This connectivity could unleash an unprecedented empathetic force for global development. But it could also leave us feeling overwhelmed, unable to keep up, unequal, exploited by corporate algorithms, reduced to variables to be mined as big data, and our every networked action recorded by big-brother government surveillance.

How humans manage this paradigm shift is the greatest challenge of our time. Yet we are in danger of being overwhelmed by that change. At a time when we have the tools to react globally, we are failing to use them. We have not begun to truly adapt our institutions to the new realities. And we too often mistake demolition for disruption.

If we are in the foothills of a truly global, connected, civilisation, where but the UN can debates be led to protect our basic human needs in the Networked Age? But diplomacy is hard in periods of economic and political uncertainty. What the UN represents - a system based on states, hierarchies, and the status quo - is becoming weaker. The pace of technological change means that the internet has often been something that happens to the global architecture, not a force marshaled fully in support of our collective objectives.

So the UN must innovate with urgency, or face a slow slide into under resourced decline and irrelevance.

The generation now coming to positions of influence is the first to have spent their entire career networked and online. The ideas in this report are from young, connected global citizens who want and expect the UN to remain resourced, robust and influential. We don't have all the answers, but we offer what we believe to be the key questions for the new UNSG and his team to consider. We also hope that this report can be the start of a wide public debate on these issues - an opportunity for the UN to show it is ready to listen, and ready to lead. We consulted the public, online and offline, over several months: a chance to prove the wisdom of crowds at a global level.

How can the UN adapt its methods to the Networked Age without compromising its values? How can technology increase UN effectiveness and efficiency, build public trust, mobilise opinion and action, and weaponise compassion? How to make the sum of the parts more able to deliver on the goals set out so powerfully in the UN Charter seven decades ago?

The report concludes that we should be optimistic. As humans, we have navigated previous periods of tumultuous change. We have mastered new tools. From refugees and beneficiaries of UN help, to policy makers and curious global citizens, the UN has a more powerful constituency than it realises. They need the UN. And the UN needs them.

The UN in 2020 can deliver more for the global population it serves. It can take advantage of the huge opportunities of the Networked Age, in order to counter the growing threats of the Networked Age. We hope that this report can be part of the UN's fight back.

Tom Fletcher
New York, September 2017

SUMMARY OF RECOMMENDATIONS



01

Set out a simple, compelling case for UN as the spiritual home of global citizenship, coexistence and universal values.

06

Get all senior UN officials on social media in an authentic, engaging and purposeful way.

11

Create a Geneva Convention for Cyber Security.

16

Develop data modelling for migrant and refugee flows.

02

Appoint a DSG for The Future.

07

Overhaul the UN web presence, improving search functions, user experience, and rapid response; and allowing global citizens to join genuine policy debate and share content.

12

Redirect resource towards challenging online hate.

17

Lead work on how blockchain can help create a single digital identity, and allow every individual to see how entities access their data.

03

Create a UNSG-chaired Innovation Panel with leading technology companies, to fix problems together.

08

Equip peacekeeping missions with the right technology, including a cloud-based information platform and advanced mobile devices for peacekeepers on the ground.

13

Get the world online.

18

Produce a Universal Declaration of Digital Rights.

04

Publicly review all UN partnerships against tangible, practical results, and provide real time, online access to UN spending statistics.

09

Overhaul membership of the Internet Governance Forum.

14

Back an online Global Curriculum, and pioneer a global effort to back the next generation with the right skills for the Digital Age.

19

Establish a Data Science Partnership to help all UN operations deliver a faster and better service, increasingly driven by artificial intelligence.

05

Open up all top positions to public hearings, debates, and online Q&A.

10

Better protect the creative industries from digital counterfeiting.

15

Crowdfund compassion.

20

Lead a public debate on a UN Code of Practice on Artificial Intelligence.

1

SURVIVING THE 21st CENTURY

Disruption happens to organisations that don't understand their core purpose. So before we think about the mechanics of what the UN does, we need to focus on why the UN does it.



1.1 A Stronger Sense of Purpose: Why Are We Here?

Quite simply, the UN is the greatest force for good in the world. Across its ambitious range of functions, from peacekeeping to disaster relief to climate change, it is mandated by the world's nations to take on the tasks that they alone cannot.

At the core of this effort must remain the resilient and magnetic idealism that has the UN at its best. We need to marshal the best instincts of humanity against the worst. History tells us that after economic downturns nations turn inwards when they should look outwards. They are nationalist when they should be internationalist. At a time of massive prosperity, inequality continues to rise, unleashing the spasms of anger we are seeing at the ballot box and on our streets.

It is this extremism, in all its varieties, that is our biggest threat in 2017. Mankind's story is one of the gradual - albeit with bad years, and sometimes bad decades - evolution of reason over craziness, expertise over instinct, community over

tyranny, and honesty over lies. Yet it is getting harder to hold the territory that extremists of all nations and faiths attack, where individual rights are cherished and diverse communities interact. It is an imperfect space, work in progress. But it has been built by humanity with immense patience and sacrifice. The checks and balances created over centuries to protect it are being tested, maybe to destruction. The scaffolding built around the 20th century global order is fragile.

The threats to the post 1945 international order feed on each other: an economic crash; the nationalist promise of greatness, of bread and circuses; the gradual undermining of institutions; intimidation of the independent media; the building of a personality cults; challenges to truth and facts; and the systematic removal of checks and balances. At each of those moments, those aiming to undermine international rule of law hope that we stay silent, argue among ourselves, or become distracted.

So what can the UN do in response?

- The UN can build networks in a time of institutional failure; consensus in a time of arguments; and bridges in a time of walls.
- The UN can strive for expertise, patience, perspective and judgement in a time of fake news, sound bites and echo chambers.
- The UN can aspire to be courageously calm and tolerant in a time of outrage and intolerance.
- The UN can be internationalist in a time of nationalism, and open minded in a time of closed minds. A retreat from the world is the path to irrelevance, drift and uncertainty.
- The UN can build a role as trusted stewards of the global record in a time of post-truth politics and 'alternative facts'.

The great dividing line of the 21st century is between two basic human instincts – to fight for resource, or to negotiate for it. We need the UN more than ever because the implications of diplomatic failure are more catastrophic than ever.

RECOMMENDATION 1:

The UNSG should set out a simple, compelling case for the UN as the spiritual home of global citizenship, coexistence and universal values. And make it consistently and repeatedly.



1.2 A Hub for Global Innovation and Creativity

The Stone Age did not end because we ran out of stones.

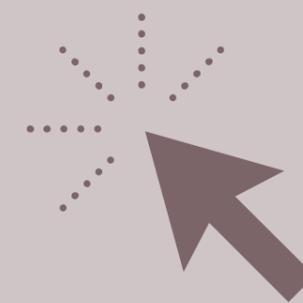
The impact of this next phase of innovation is going to destroy jobs more quickly than we can create them, with huge implications for politics. 47% of today's jobs in the US are at high risk¹, and 85% of those in the developing world².

Innovation can create new and better jobs. Nevertheless, the costs of technological change are always felt faster than the benefits. Few governments are prepared for the political and social impact of automation. Neither is the UN.

Human progress depends on how we collaborate and exchange ideas. Innovation thrives on the ability of smart people to create and compete together. By 2020, more than 50 billion gadgets will be exchanging information on a continuous basis. The internet now allows cutting edge innovators in Mumbai or Mombasa to connect the light bulbs like never before – a process of intercontinental and intergenerational creativity. Innovators in Brooklyn³ are using blockchain technology so that members of the community can buy and sell solar energy to each other. In Bangladesh⁴, residents are piloting a similar peer-to-peer energy plan through mobile wallets. How long before they join up?

RECOMMENDATION 2:

The UNSG should appoint a DSG for The Future. Their role will be to highlight where the best creativity and ideas are, and ensure that innovators have constant access to the tools and networks to build on them.

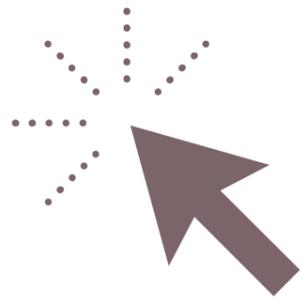


The institutions that will succeed in the Digital Century will also need an outlook of restless pioneers, an ability to innovate, explore and engage the world around them. Finland, for example, has an experimentation unit in the PM's office, and an online platform⁵ to fund ideas from citizens. Similar, in 2016, Dubai launched "the Mohammed Bin Rashid smart Majlis", a website where anyone can submit their innovative ideas for the city. In one year, it received 35000 ideas in all different fields. It is our creativity that sets us apart from computers, and we need to equip the next generation with it. A shift in UN culture and mindset on these challenges is as important as any other recommendation we can make.

The DSG should lead outreach to the technology industry, and make the UN a place for the next moonshots. They should promote and build a culture of innovation and horizon-scanning across the UN system, building on the best existing efforts.⁶ They should show how technology can drive internal efficiencies, tackle waste and mismanagement.

RECOMMENDATION 3:

The UNSG should chair an Innovation Panel with the leading technology companies, to discuss how they can help the UN deliver its mandate.



1.3 Unusual Coalitions: 'What Can We Fix Together?'

The UN is neither resourced nor equipped to deliver its mandate alone. It will need more effective partnerships with civil society, businesses and the public. Too often a conference or meeting with external groups is a substitute for genuine collaboration on problem solving.

Whether it is climate change, inequality, or automation, positive change requires a unique constellation of campaigning and cajoling, advocacy and arm twisting to shift the politics and policies in favour of progress. Yet we too often default to the same traditional ways of organising ourselves: coalitions that cannot move until everyone agrees, that do not allow for sufficient levels of innovation, that dilute efforts to the lowest common denominator and so sell short the people we are trying to serve.

Each challenge needs a tailored response. Rather than trying to get a mega-coalition of the usual voices to agree on a campaign message, it is now more effective to have complementary and unusual coalitions. Technology can join up these issue-based alliances, and help them reach new partners.

Such orchestration does not happen by accident: it needs a strategic convenor. In order for potential coalition members to put their trust in that convenor, that hub needs to be behind the scenes, avoiding any public profile for itself so that it serves impact, not its own institutional goals. There is experience from civil society campaigning on conflict for how to build this. Serving impact, not ego, it should demonstrate

humility to hear others' wisdom, audacity to rally coalitions to higher goals, and determination to propose the way forward that will achieve greatest progress.

The UN can set an example – ceding power to strategic convenors of specific campaigns – and lead the way for more effective coalition work and greater collective impact. One positive example is the partnership with Ant Financial, under which an innovative program was launched to stimulate digital technologies in green finance.⁷

Crisis Action; an international organisation that operates as a coordinating body for NGO's to protect civilians from armed conflicts, formulated four lessons in building coalitions⁸:

- Serve the cause, not the coalition and neither the institutional interests
- Listen, lead and be ambitious for the coalition goals
- Avoid the lowest common denominator by building opt-in coalitions
- Build a coalition of different voices as decision-makers listen to different sources

Richard Holbrooke used to say, "attack the problem from every angle, and bring in unusual people". Nowhere is this most evident than in confronting the global challenges that technology both amplifies and can help fix. Technology companies should not be convened once a year for a set of speeches. They need to be day to day partners for the UN effort.

REACT: Rapid Action Education Plan

One example/test case of a fresh approach is REACT – a Rapid Education Action plan developed by the Global Business Coalition for Education (GBC-Ed). When disaster hits, most of us watching feel impotent and powerless. We watch the news with horror and sadness. We maybe donate to an NGO, or lobby our government to help. But much of our compassion doesn't find a practical outlet.

Normally the result is that help does get through. Food, shelter, the immediate humanitarian supplies needed. But education is rarely prioritised. It is seen as too complicated, less urgent. And as a result, every year the number of children denied education rises.

Ingenious humans have already created some of the most extraordinary technology to allow people to find a date, contact people on the other side of the world, access content.

What if we took all that technology, and combined it with all that compassion. What if we were ready next time. And what if business led the way. Not with finance, but with practical help – supporting the education effort in the best ways it can.

The Rapid Education Action database creates for the first time that potential. Already over 50 companies have signed up to pledge time, creativity and practical ideas.

Communication providers are providing free access to their services, making it easier for communities hit by disaster to access educational content. Consultancies are already providing free advice to the Education Can't Wait fund on how to develop projects in Syria, Yemen and Chad. Companies have funded places at European universities for students and faculty to continue their education. Tech companies have created digital classrooms, provided free wifi or helped families find loved ones. In Jordan, engineering companies are working with USAID and the Jordanian government to build new schools. Money transfer companies have made it easier to send financial support to those who need it to continue their education. Others have distributed prepaid debit cards to thousands of refugees.

And UN agencies are sending REACT their specific requests for help. These include logistics networks to get essential education materials to children inside Yemen, Chad or Syria; IT support to help us match make businesses/individuals with global education challenges; places for displaced communities in apprenticeships and training schemes in Europe and the Middle East, engineering support for school building in Lebanon and Turkey.

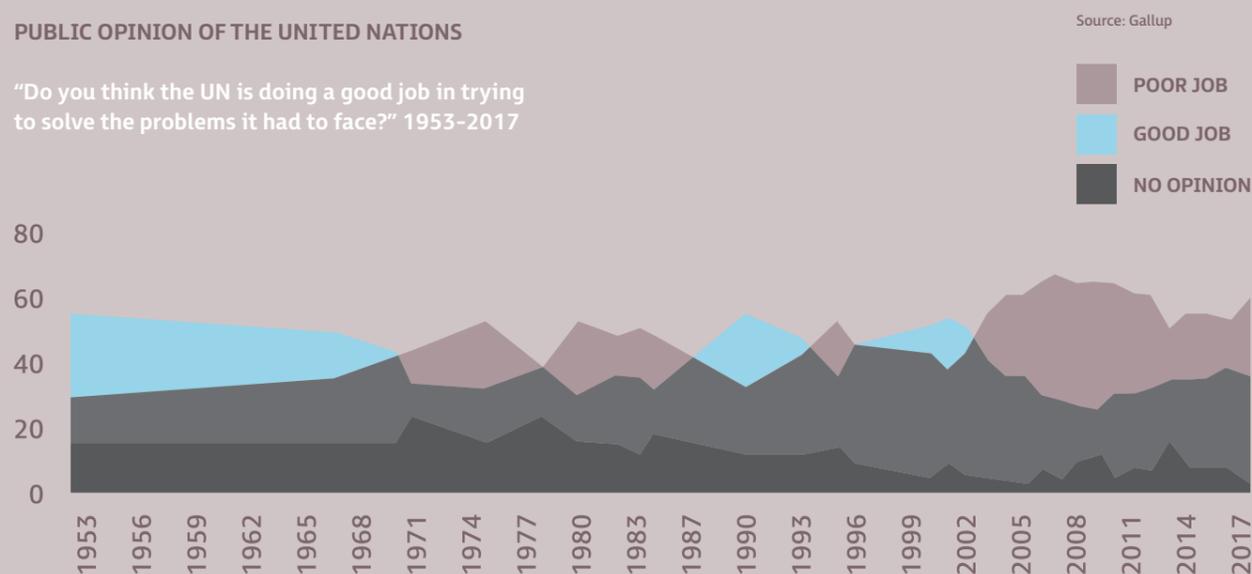
Business can now be on the frontline of the response, fast. And if business can do it, maybe the next phase is to make it easier for individual citizens to do more to help. We are then on the way to a 21st Century response to these challenges. And the next Gates, Einstein or Curie will go on to achieve their potential.

1.4 UN Legitimacy, Transparency and Restoring Trust

We are in an Age of Distrust. Public confidence is not just plummeting in politics, the media and the banks, but teachers, doctors and police. Like every institution or public body, the UN will have to fight harder to retain and build the trust it needs to do its job. We notice that the public lost trust in the UN at the beginning of the millennium but regained it gradually from 2009 onwards.

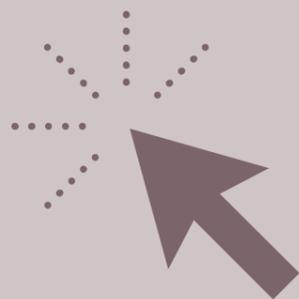
PUBLIC OPINION OF THE UNITED NATIONS

“Do you think the UN is doing a good job in trying to solve the problems it had to face?” 1953-2017



RECOMMENDATION 4:

The UNSG should commission a transparent, public online review of all UN partnerships, assessed against tangible, practical results, and provide online access to spending statistics.



As the guardian of the rules-based international system, the UN operates largely through soft power, drawing strength from consensus and coalition building, persuasion and positive attraction. Securing legitimacy rests on two key factors: the UN's values, and the extent to which it is genuinely representative. So the UN must find ways to show that it upholds the core values in its Charter. Reports of abuse and exploitation, financial mismanagement and bureaucracy harm the UN's reputation.

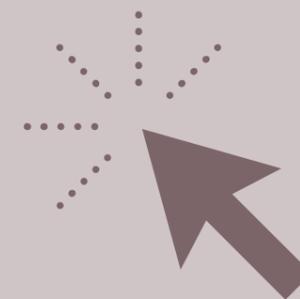
The new Secretary-General must also embed transparency in the organization's culture. The “digital-first” strategy should open up the UN to greater scrutiny. The more public process for the SG's selection helped set a more transparent tone. An example is the EU which holds Parliamentary hearings of candidate-Commissioners which are appreciated by parliamentarians and the wider audience.

This openness has to be shared throughout the organisation. UN actors and agencies on the ground should have more freedom to engage publicly with stakeholders, particularly through digital platforms. Such an approach would demonstrate the transition to greater transparency at all levels of the UN, not just at the top. The UN should strive to explain its work, significance, and impact to the public to show how it is an effective organization.

In 2012, former Secretary-General Ban Ki-Moon released a five-year action plan for enhancing partnerships. In this proposal, a United Nations partnership facility was proposed which would support the UN for agreements across different partners and increase the alignment of partnership practices. The online review of the partnerships would be a useful tool for the assessment of the United Nations facility.

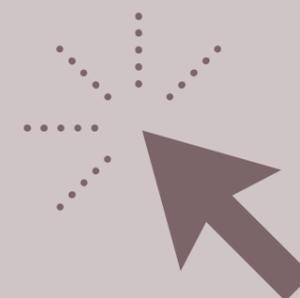
RECOMMENDATION 6:

All senior UN officials have social media accounts, and training on how to use them in an authentic, engaging and purposeful way. And all delivery programmes should have publicly declared objectives and feedback mechanisms.



RECOMMENDATION 5:

Candidates for all future senior positions should participate in a series of hearings, debates, and online Question & Answer sessions with the public. The process should make use of live events, traditional media, and digital platforms to engage the largest possible global audience.



1.5 Engaging the Public

“While the UN’s record of achievement, by any objective measure, is therefore reasonable, the UN has been spectacularly unsuccessful in effectively promoting these achievements to the international community.”⁹

The new hyper-connectivity reduces trust in traditional media elites, and empowers citizen commentators. We are using our devices to become creators and distributors. YouTube has more video content uploaded in a single month than the three main US channels broadcast in their first sixty years. More photos were taken in 2016 than in the rest of history. The digital generation beams out its triumphs and humiliations. As marketers have long realised, people trust the voices of their peers more than they trust elites. Increased access to information gives citizens more power than ever before, and therefore governments less.

The UN needs a strong public engagement strategy if it is to achieve its strategic goals. Combining a powerful existing brand with a dynamic communications approach will help engage new audiences and increase the UN’s legitimacy and relevance.

The most pressing challenges for UN communications stem from five digital trends:

- The rapid technological innovation described in the introduction;
- The move towards mobile devices. Our consumption is shifting from traditional media such as print and television towards smartphones and other mobile devices. Between 2011 and 2015, mobile media time for US adults increased 278%, whilst TV and print media time decreased 8% and 35% respectively¹⁰;
- Distraction. The Internet has produced an exponential increase in the amount of information now available. But as Nobel Prize winner Herbert Simon points out, “What information consumes is the attention of its recipients. Hence a wealth of information creates a poverty of attention.”¹¹ Consumers are increasingly and rapidly discarding content that fails to engage them;
- Proliferation of echo chambers. Social media has enabled people to select their own news, creating filter bubbles, where they expose themselves only to content that reinforces their existing viewpoints. Anyone with an iPad knows it can unlock extraordinary and exciting potential. But some of our greatest threats are now online banality, extremism, short attention spans, disorder and alienation;
- Shifts in marketing and communications techniques. Social media have redefined marketing strategy away from television and towards online and mobile platforms. Chinese advertisement spending on digital mobile surpassed TV for the first time in 2016.¹² The percentage of marketing budgets spent on social media is expected to double between 2015 and 2020.¹³

“Everything will be all right – you know when? When people, just people, stop thinking of the United Nations as a weird Picasso abstraction and see it as a drawing they made themselves.”

Dag Hammarskjöld,
United Nations Secretary-General,
1953 – 1961

That Dag Hammarskjöld mindset can now for the first time be allied with new technology to help crowdfund and even crowd source UN diplomacy. Crowd funding generated over \$2.6bn in 2012¹⁴, more than the budget of most foreign ministries. We can also crowd source solutions. Portugal has announced the world’s first nation level budget exercise, aimed at building trust between the government and citizens. In India, 1.3bn citizens are enrolled in the Aadhar biometric ID system.

So, in connecting with the global public, the UN will increasingly need to go where people are, finding new ways to create online spaces or public squares where we can engage and communicate. Political movements are doing this already. People are much more likely to be influenced positively by direct, people to people connections than by anything that smells of government. The UN needs to create those opportunities – for example for connecting school classrooms – and stand back. Chatbots can provide more interactive interfaces, directing users to more relevant content, collecting opinions, and providing information. The UN could partner with leading tech firms to create content with the newest formats like WebVR¹⁵ and Mixed Reality.¹⁶ This would allow the user to create their own bespoke UN content using UN photos, facts and statistics. They could share this new content on social media or download it for external use. This platform could amplify UN campaigns, educate users on UN issues, and direct traffic to relevant UN websites/campaigns.

RECOMMENDATION 7:

The UN should overhaul its web presence, improving search functions, user experience and rapid reaction. The UN should create an online platform for genuine policy debate, encouraging global citizens to help tackle the big global challenges, and to share content.

MAKING GLOBAL CITIZENS MORE SECURE

2

#HeForShe campaign and UN Women

The HeForShe campaign is an example of effective communications. It provoked dialogue across the globe. The campaign succeeded for several reasons that can inform future UN campaigns. First, the campaign is identifiable, accessible and uncomplicated. It has a clear aim that audiences can easily understand and support. It provides simple but tangible ways for people to participate. Second, it uses recognizable branding through a sleek but informative website. The website is logical, simple to navigate, and contains all content a user needs. Third, the campaign successfully employed celebrity endorsement to generate interest. Emma Watson's speech at the UN was a great way to launch it. She took ownership of the project and showed authentic, sustained involvement with the campaign.

In building its engagement with the public, the UN should avoid three traps:

- 01.** An increasing amount of hashtag diplomacy is failing to have an impact, and in some cases is a distraction. Social media have to be a way of marshalling action, not a replacement for it. Many online campaigns showing solidarity for countries in conflict are well meaning. But we don't want people just to like a site or watch a YouTube video. We want them to be moved by their anger to actually do something, to contribute financially to a charity on the frontline of the humanitarian response, or to lobby their government. We must avoid an era of armchair activism. A hashtag should not be a displacement activity in place of real action.
- 02.** Too much communication still falls into the trap of Sending Out Stuff, transmitting without listening. The trend in marketing is away from direct advertising towards telling brand stories in a more engaging way. It has to be a two-way street, and people want to talk to a person not an institution.
- 03.** Engagement is too often an afterthought, or insincere. Sometimes it is worse to be on social media but faking than not to be on it.

UN diplomats and others exploring social media should not get too hung up on which tools they use. In reality, it depends on the country they are working in, and personal preferences. Better to use the wrong tool authentically and effectively than the right tool insincerely and ineffectively. The message matters more than the mode of communication. Many of today's shiniest and newest ideas and tools will quickly seem dated. The biggest risk is not to engage.



RECOMMENDATION 8:

UN peacekeeping missions should be better equipped with the right technology, including a cloud-based information platform, and advanced mobile devices for peacekeepers on the ground.



2.1 Keeping the Peace Offline

Warfare has always driven technological change, as humans find more ingenious ways of killing each other. We need to give peacemaking and peacekeeping the same technological teeth.

Technology can enhance UN peacekeeping efforts. The UN should deploy Special Technological Missions (STM's) to analyze technical requirements and gather data for upcoming missions. A unified cloud communication and intelligence system for missions would offer technological backbone (mobile coverage, radio back-up) and a data integration platform to gather, analyze, and share information from field systems, open source data, and HQ, modeled on MINUSMA All Forces Information Fusion Unit. Peacekeepers, staff, and local policing forces should be equipped with and trained in the use of advanced mobile devices. From emergency-activated beaconing to telemedicine kits, technological solutions can provide high impact for troops on the ground.

The UN can also enhance training through innovation. A positive example of this is the initiative by Leanne Kinsella, UNIFIL Conduct and Discipline Officer, to develop an app for training peacekeepers. The UN is already pioneering innovative use of drones in a humanitarian crisis for delivering cargo to hard-to-access locations and crisis mapping for disaster response.¹⁷

RECOMMENDATION 9:

Membership of the Internet Governance Forum should be overhauled.



RECOMMENDATION 10:

For global creativity to thrive, the UN should set clearer rules to protect the creative industries from counterfeiting.



2.2 Fighting Digital Crime

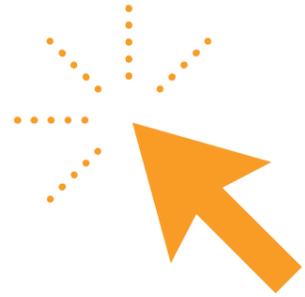
Digital technologies are reshaping our society for the better. 2014 is the most peaceful year since records began. We are now 200 times less likely to die violently than in the 20th century. But digital technology is a double-edged sword. From financial attacks to terrorism, many of the greatest threats to individuals and governments are now online. In the absence of any other institutions with the necessary legitimacy and authority, the UN needs to be a clearer part of the response.

Everyone has a right to live, trade, work, learn and travel safely. But the mechanisms to deliver these - at national and global level - are not delivering for most of the world. The United Nations Internet Governance Forum (IGF) can use its convening power to lead this effort. To improve the response, it should offer better representation to the internet service providers, academics, municipalities and business.

Chapter 1 made the case for the UN to provide a hub for global creativity and innovation. But for this to thrive, those at the cutting edge need to know that their ideas can be shared productively, rather than simply stolen. The internet has made piracy and theft of ideas easier. The global safeguards for the creative industries are insufficiently robust for the Digital Age.

RECOMMENDATION 11:

The UN should develop a new Geneva Convention for action by governments in cyberspace. What is acceptable and unacceptable behaviour? And what are the penalties for those who cross the line?



2.3 Fighting Digital Hate While Promoting Digital Freedom

Some national governments have so far proven to be better at encouraging online hate and incitement than preventing it. We urgently need clearer guidelines, as exist offline, on what is and what is not acceptable.

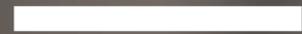
We also need to invest in online peacekeeping, just as we do in offline peacekeeping. As the main global defender of tolerance, the UN has to see itself as in a technological arms race with its opponents. One example is the project under discussion at the Diplomatic Innovation Lab (based at the Emirates Diplomatic Academy) to develop diplobots. These bots will identify and confront computer generated 'trolling', and highlight examples of tolerance and global citizenship. They can help reduce the oxygen for extremism, and share alternative, positive content.

The UN should not only push out content that exemplifies tolerance, but more systematically disrupt those who would use online hate speech as a driver and vector of mass atrocities: do we need a cyber peacekeeping unit to coordinate and catalyse nation states' cyber defence capabilities, and take on the provocateurs?

RECOMMENDATION 12:

UN agencies responsible for challenging incitement and intolerance should devote a greater proportion of their time and energy to confronting online hate.





RECOMMENDATION 13:

The UNSG should set out clearly the UN's aspiration to get the world online, and mandate the UN DSG for the Future to lead partnerships with governments and technology companies on this work.



3.1 Getting the Next 1bn Online

Smartphone penetration in Africa should reach 50% in leading countries and 30% overall by 2025.¹⁸ An extra 2-2.5 billion people are likely to gain access to mobile broadband in the same time period.¹⁹ Yet in most African and Southeast Asian countries Internet penetration remains below 20%.

Connectivity is going to be a great leveller. Deloitte studies show that expanding access to 4 billion people in developing countries would increase productivity by a quarter, GDP by almost three quarters, create 140 million jobs and lift 160 million out of poverty. Facebook estimate that for every ten people who come online, one is lifted out of poverty.

There are many great examples of emerging economies and citizens themselves harnessing new technology for the greater good. In Rio, digital mapping using cameras on kites tracks poor sanitation and disease, and a new app helps drivers find parking spaces. Big data is being used to track crime against children, murder and money laundering. In a scheme run by Nandan Nilekani, founder of Infosys, the Indian government are trying to assign every citizen a digital number and identity to better access state services.

The ITU aspires to get 55% of the global population online by 2020.

So the UN must pursue more vigorous partnerships with existing mobile access initiatives. Alphabet, for example, uses balloons in their Project Loon to bring mobile signals to remote areas. The 'Internet Organization' supports local entrepreneurial initiatives to provide wireless Internet connections and uses satellites to connect less-developed areas. The UN can create synergies between existing initiatives, and help those organizations get the necessary legal agreements with Member States more rapidly.



RECOMMENDATION 14:

The UN should back an online digital Global Curriculum. The more that we can agree on common aspirations, the easier it will be to provide quality education to the next generation of global citizens, especially communities on the move. The effort should ensure that the next generation has the right skills, either to use artificial intelligence effectively in their work or to move into areas where the value of particularly human skills—like empathy or creativity—is evident.



3.2 Global Curriculum

Internet penetration allows us to imagine for the first time that children throughout the world can access the highest quality educational resources. But available material varies hugely in quality, and is rarely connected to existing teaching structures, curricula and qualifications. And the content focuses to too great an extent on classic academic knowledge rather than a 21st Century skill-set. A refugee in Cyprus will not necessarily have transferable qualifications for when they return to rebuild Syria.

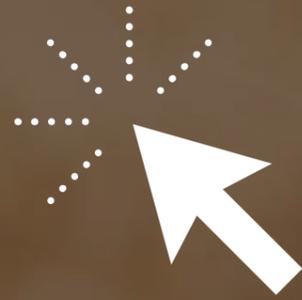
So we need to understand better what material exists, what has been tried so far, and the obstacles to a more coherent and collective approach. We can then start to build the coalitions necessary to advocate and support common standards and content. Ultimately this will create greater equality of opportunity and tackle some of the underlying causes of polarization and extremism. And it could better equip a generation with the skills they need to take on the challenges of the coming period.

We will also need to think harder about how we create citizen diplomats. How can we influence how pupils are taught in schools in order that they are more likely to think diplomatically? Can we teach them more about the costs of failure of diplomacy, i.e. wars? How can we teaching them creativity, character, and resilience? When teaching the next generation about peacebuilding, we should be thinking less about conflict, but how humanity has managed to find ways, throughout history, to coexist. The UN is the product of that legacy, and should be its loudest defender.

Automation will change jobs and their requisite skills, threatening many jobs.²⁰ Indeed, technology, coupled with trade, has already increased the proportion of high-skilled jobs and reduced that of lower-middle skilled jobs.²¹ Jobs that grow in the future are likely to be those that will complement technology (rather than be substituted by it)²². STEM and digital skills will be increasingly in demand.²³ Person-to-person services and occupations relying more on creativity and social skills have been less affected by automation.²⁴ Jobs most resistant to automation will require people to think, communicate, and decide.²⁵ Problem-solving and mental flexibility will be increasingly valuable.²⁶

RECOMMENDATION 15:

The UN commissions and supports an innovative approach to crowdfunding compassion.



3.3 Reaching Those Left Behind

The UN estimates that around \$40 billion will be needed every year to address the growing number of people in need of humanitarian assistance around the world due to conflicts and natural disasters. If current trends continue, more than \$50 billion will be needed by 2030. Despite the international community providing \$25 billion last year in humanitarian aid, 750,000 Syrian children could not afford an education. Lack of long term funds are compounded by weak coordination, competition among UN agencies and NGOs, lack of strategic planning and poor protection of humanitarian staff. Local people and organizations are too often excluded. Aid provided by donor governments is too often conditional. From Cameroon to Syria, humanitarian aid efforts cannot keep up. A top-down approach is not working.

So we need a new model, and digital technology allows us to imagine one. There has not been a quick, efficient, and user-friendly way for private individuals to donate to different causes and charities around the world. Mobile applications could now provide it.

New technology is already becoming an essential part of the current UN campaigns. The SDG Action Campaign used virtual reality technology to show the human story behind the development challenges to create awareness and increase fundraising.²⁷ Another innovative solution is the “Natakallam” platform. Many Syrians who received asylum abroad are restricted in their work opportunities. The platform, hosted by Columbia University, offers affordable, flexible and tailored Arabic classes taught by displaced Syrians worldwide over skype, for whom the classes are a valuable income source.²⁸

‘iGive’ (a model developed by NYUAD student, Dubai Abulhoul).

Almost every individual with a smartphone has the option of shopping through mobile applications or websites. But the technology has not yet been adapted for the purpose of contributions to humanitarian aid. Yes, a number of charities allow online donations, but there is not yet an accessible, widely used mobile application that makes the act of donating to charities around the world easy, efficient, and inclusive of different causes and missions. ‘iGive’ could change the world’s idea of donation and global relief efforts.

Users would answer a short questionnaire that identifies their areas of interest in humanitarian aid. Options could include gender equality, girls’ education, climate change, clean water, clean energy, and poverty. Understanding a user’s interests is key to the next step of the mobile application. After successfully creating an account, users will then be directed to a page with two options to choose from: the world’s donation map, and the user’s profile page. The world map highlights countries in need of humanitarian relief. Different colours on the map will express a country’s level of need.

The mobile application’s world map also has a number of features. With a simple touch on the screen, users can click on the country they want to help. After choosing a country, users have options to allocate their donations. For example, if a user wants to donate a certain amount of money to Syria, he or she would click on the country’s name on the world map. After choosing Syria, the user will then be given a list of different refugee camps within the country. Upon choosing the specific camp, users will be given different sections of the refugee camp to donate to. Options could include food, toys, clothes, and school supplies.

‘iGive’ aims to create a customized donation experience that incentivizes users to keep contributing to causes they care about. Once, for example, a user pays for a child’s education in Syria, he or she will have the option to stay directly in touch with that child through social media, or even the app itself.

3.4 Preparing for the Age of Migration

Over 65 million people were forcibly displaced in 2015. We face the highest number of refugees since the Second World War. We were all migrants once, and the 21st century might make us migrants again. Our response should be driven by compassion. But we should also be smart enough to recognise the economic potential of migrants and refugees from Albert Einstein to Steve Jobs. And to prepare for the political shockwaves that migration on this scale will cause.

Technology can help host states vulnerable to large migrant inflows, and – through better data – help take on intolerance of divisive politics. For example, Togo has developed forecast based financing to release funds in advance to areas where natural disasters are expected.²⁹

IBM has also identified ways to use advanced machine learning, optimization and statistics to predict potential migration crises. These models can track the number of arrivals, refugees' intended destinations and routes, and the factors pushing or pulling them to those pathways. Their predictive analytics rely on aggregating data from weather, news, social media, country statistics, and migrant registration on a scale out of reach of human analysts.³⁰

This model offers the UN the opportunity to plan for emergency flows before they happen, and allocate resource more smartly. It could help efforts to tackle human trafficking and migrant smuggling. Better information on migrants' age and origin would help efforts to find employment and education. Data can also help hold governments and civil society more accountable for their response, and correct negative public perceptions of migrant numbers and impact.

RECOMMENDATION 16:

UNHCR should work with technology companies to develop more comprehensive data modelling for migrant and refugee flows, and use this as the basis for a compelling public information campaign, that tackles misconceptions.



PROTECTING THE RIGHTS OF THE GLOBAL CITIZEN

4



RECOMMENDATION 17:

The UN should lead work on a single digital identity, and drive discussion on interoperability between social networks.



4.1 Building Internet Citizenship

The average European now spends over 20 hours a week online (a trebling in a decade) and 70% of adults feel comfortable giving away personal information³¹. Assuming these trends continue, our online identities will become as important as our offline identities. Yet individuals face an increasing amount of confusing and overlapping digital and national identity processes. Recently founded companies are responding to consumers' desire to aggregate their data in a single platform and control the access of different entities. Digi.me for example allows users to download their social media data from different platforms into a single library and track access rights.

The UN is the only global institution qualified to develop a single digital identity for global citizens. This would make it easier for citizens to travel, trade and live securely, and connect to different services. It would help citizens to authenticate themselves easily in services like e-payment and e-government. Furthermore, it improves the international effort to tackle cross-border crime and terrorism.

The UN can also drive interoperability between services such as social networks, clouds and government services. The UN could create a portal providing online identity management. This would aggregate data shared by consumers, and show how specific service providers employ user data. Emails are already universally shared among different email providers. The same principle should apply to social networks, cloud storages and other online storage. Opening up existing barriers will lead to greater competition, efficiency, innovation, and choice.

E-government can reduce administrative costs substantially. A World Bank report on Estonia found that its electronic identification system, X-Road, saves 2.8 million hours of work per year, equivalent to two hours for every citizen. The possible savings in larger countries and with the application of advanced e-government systems are immense. A single identity as the backbone of e-government would increase the use of such platforms by citizens and boost the acceptability of electronic identification in transactions with international companies, security checks, and interactions with foreign entities. Blockchain provides a new way to draw together these debates on identity.

Trust is essential for e-government, and familiarity, ease of use, website quality, and perceived usefulness are all key factors driving trust in e-government.³² The UN can share best practices, and establish an expert panel to identify security, data privacy, and compatibility guidelines.

4.2 Protecting Digital Rights

The Internet can feel anarchic. In some ways, this was the way it was designed, with the emphasis on the liberty of the individual user. Nonetheless, now that so much of our lives are online, the UN needs to establish the same guidelines and protections that exist offline. Social media will transform the way that governments engage with citizens. But while the internet defies boundaries, most governments find it hard to escape the confines of national responses.³³

We, therefore, need to consider how to apply existing human rights and values to the Internet, across national boundaries. Again, only the UN can do this, ideally through the Office of the High Commissioner on Human Rights.

RECOMMENDATION 18:

UNOHCHR should produce a Universal Declaration of Digital Rights.



5

HARNESSING DATA AND ARTIFICIAL INTELLIGENCE

Artificial intelligence is more than the simple automation of existing processes: it involves setting an outcome and letting technology find its own way there. It is this creative capacity that gives artificial intelligence its power. But it also challenges our assumptions about the role of computers and our relationship to technology. Artificial Intelligence is therefore, the greatest opportunity and the greatest threat to the UN's objectives. It is essential that the UN, from the top, has a strong sense of how it must respond to both the threats and the opportunities.



5.1 Realising the Potential of Artificial Intelligence

Commercially, AI is already: making services such as Netflix and Amazon more intuitive; sorting data, finding patterns and making predictions such as translation and speech recognition services that learn from language online; and providing more accurate predictions on legal or medical outcomes than humans. Machine learning will take the process a step further, allowing the computer the autonomy to set and define its own approach. 'Deep learning', a supervised learning technique combining layers of neural networks to automatically identify the features of a data set that are relevant to decision-making, is a powerful addition to the machine learning repertoire, with systems learning continuously without human input. DeepMind, a world leader in this technique, has helped advise this chapter.

So AI can do the same thing as humans but at a volume or complexity that is beyond our analytical capability. It can work alongside us, and even teach us, as shown by Lee Sedol's unbroken string of victories since playing AlphaGo.³⁴ This offers new opportunities for creativity and innovation. Perhaps showing us new ways to think is the real gain from artificial intelligence.

The potential is driving a rapid adoption of artificial intelligence.³⁵ In the words of technology pundit Kevin Kelly: "the business plans of the next 10,000 startups are easy to forecast: Take X and add AI."³⁶ The global market in 'robots and artificial intelligence-based systems could grow from \$58bn in 2014 to \$153bn in 2020³⁷. Companies expect it to increase revenues by 23% and productivity by 26%.³⁸

Artificial intelligence and better use of data also hold massive potential for the UN. For example, the UN could use AI and big data to:

- Enable entirely new approaches to old problems. In healthcare, the WHO could use data from smartphones and fitness trackers to improve management of chronic conditions, as well as to predict and prevent acute episodes of illness. Existing UN services – such as health, social care, emergency services – could be made more efficient by anticipating demand and tailoring services more exactly, enabling resources to be deployed to greatest effect;
- Allow routine administrative and operational roles to be learned by software agents ('bots'), which can prioritize tasks, manage routine interactions with colleagues (or other bots), and plan schedules. Newsrooms increasingly use machine learning to write sports reports and draft articles: in the office, similar technology can produce financial reports and executive briefings;
- Reduce the burden of searching large sets of data. In the legal sector, groups like ROSS, Lex Machina and CaseText use artificial intelligence to sift court documents and legal records for case-relevant information. Platforms such as IBM's Watson can help answer factual natural language questions;
- Improve storage and distribution networks, plan routes for delivery, and optimally allocate of warehouse capacity – all vital for disaster relief;
- Make it easier for UN officials to use more data to inform decisions (through quickly accessing relevant information) and to reduce fraud and error;
- Help tackle fake news. Fake news is a real problem when it comes to learning about the sentiment of the masses. Harnessing the power of artificial intelligence is key to determine data veracity. Tools such as Hoaxy, Spike, CrowdTangle and Google Trends can all help identify the veracity of user-generated online content and by tagging fake websites through careful search monitoring. Taking this process a step further is the development of AI news writing bots which produce unbiased, objective news content, currently being developed by Northcote Global and Cruncher.
- Make UN decisions more transparent (perhaps through capturing digital records of the process behind them, or by visualizing the data that underpins a decision); Another option can be the mandatory transparency register, currently being operated by the EU institutions, for all interest groups with information about who they are representing and the budget
- Better store, search and filter reports and analysis from the field;

- Monitor news and public opinion on a dramatically different scale. We have means to look for patterns about how people think in huge amounts of data. The task may seem too overwhelming. Even so the tools, including sentiment mining, are becoming more efficient³⁷. The app 'Ushahidi' shows the potential. It originally used volunteers to map post election violence in Kenya in 2008 through monitoring open source material. Now it can process Twitter content in real time to help humanitarian organisations and NGOs to respond to crises – locating those with greatest needs. Of course, big data does not have all the answers. Internet users are not yet representative of the overall population, especially in Asia and Africa. But as more people get online, it will become more representative of society and those answers will be easier to identify;
- Get better at discovering and delivering what people want from it. McKinsey⁴⁰ assess that better use of big data by the US healthcare sector alone could save 300bn USD/year. In 2009, Google developed a system to track – by crunching search terms – the spread of influenza through the US without a single medical check up and faster than the Centre for Disease Control and Prevention;
- Maybe even predict the future. In Brazil, a pilot is using machine learning to analyse crowd sourced pictures of food items to predict food prices in rural areas – it is already 25 days faster than the existing system. This can be applied to international relations. Kalev Leetaru⁴¹ used *culturonomics*⁴² to retroactively predict the Arab Spring and pinpoint Bin Laden to within 200km of his Abbottabad hideout, using big data analysis of media reporting. We will be able to predict where conflict is likeliest, to measure trends in human society, and even to show the likely consequences of policy decisions. Effectively, this crowd-sourced foreign policy trends. So, for example, when the UN talks of 'rising sectarianism' or other changes, it can now do so with genuine authority.

The UN's work on using data to help deliver the SDGs (<http://www.data4sdgs.org/>) is a great example of how the UN can apply these approaches. But it is the tip of the iceberg.

RECOMMENDATION 19:

The UN should introduce sophisticated digital tools for data mining, review all operations to see how data can deliver a faster and better service, and task the UNSG's Innovation Panel (Recommendation 2) with identifying quick wins. Through a Data Science Partnership, the UN can explore the massive potential of AI and data to support its work.

Hala Systems to the rescue?

Hala systems is an enterprise which develops effective, technology-driver solutions for humanitarian challenges. At the core of this technology is the Crisis Response System (CRS). CRS is a net-centric, service-oriented architecture for information sharing and management. It enables civilians, responders, and other stakeholders to increase situational awareness and enhance collaboration by information sharing gathered from numerous sources. These sources include remote sensors, databases, social media, and a variety of mobile apps.

Hala systems is developing the following four applications derived from the CRS:

- Monitoring areas of risk of violence: A technology that combines real-time feeds from networks of sensors, monitors open-source data channels, and validates first-hand reporting to map violent acts to hasten and improve local response.
- Early Warning: A technology that warns civilians before attacks happen so that they can take life-saving action.
- Responder Coordinator system: Disaster response system that helps responders to coordinate resources and efforts and collaborate in response and recovering making use of real-time data and compartmentalised spaces for teams to collaborate with chats, maps and whiteboards.
- Unexploded Ordnance Mitigation (UXO): A mobile application allowing organisations in conflict areas to locate, identify, tag, and track UXO by utilising computer-aid vision, image processing and machine learning.

5.2 Managing the Challenges of Artificial Intelligence

But the use of big data and AI also presents challenges. Data is not sufficiently shared and regulation struggles to keep pace.⁴³ Governments have not yet tackled the big questions on the balance between privacy and transparency, or found the right formula to nurture innovation. Global citizens are uninformed about the collection, storage, and usage of their data. Countries with weak data privacy laws do not require companies to inform consumers about the usage of tools like Cookies, previous searches, and other tracking tools. The lack of standardized data privacy laws, different general terms and conditions between companies, and the obligation of individuals to have multiple accounts on various websites, makes it unlikely that everyday users will understand how their data is collected and whether this collection infringes upon their rights. The UN could develop a single data management platform that would allow every individual to see how entities access their data. This would provide an overview for each internet user of the firms collecting their personal data, based on each of their online service accounts. Users should be able to view an analysis of the data collected about them, detailed by company or company network. This would require cooperation with technology firms to create an international standard of data transparency; and analyze how personal data is used and how it impacts users. The EU system provides a model.

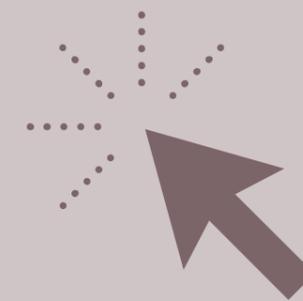
Autonomous decision-making also raises questions about accountability and trust. This is particularly true for its use by government. There is generally an agreement among experts and policy-makers that important decisions must involve a 'human in the loop,' but the nature of their role, or their degree of influence, will likely evolve as the technology develops. There are special responsibilities for a government

that follow from its use of artificial intelligence and big data. Public trust is a vital condition for artificial intelligence to be used productively. Only effective oversight and public dialogue will build that trust, and the UN can lead that debate. So the UN should convene the debate on AI. It will need to explore:

- The impact on individual freedoms, and privacy and consent, arising from the combination of machine learning approaches to the creation of ever-increasing amounts of personal data;
- How can we mitigate the risks of conscious or unconscious data biases?;
- Certification for creators of algorithms (perhaps following the model of chartered professions);
- A code of conduct covering the use of artificial intelligence;
- Clarity on liability for harm resulting from artificial intelligence;
- Citizen challenges to organizations using machine learning;
- Ethical review boards capable of assessing the potential harms and benefits to society of particular applications and combinations of artificial intelligence⁴⁴;
- Auditing processes that involve machine learning;
- International safeguards;

RECOMMENDATION 20:

The UN should lead a public debate and develop a code of practice on the use of Artificial Intelligence.



As with any adviser, the influence of these systems on decision-makers will be questioned, and the UN will need to be transparent about the role played by artificial intelligence in their decisions. The UN can also draw from existing national and regional guidelines such as the UK Data Protection Act (1998) and the EU General Data Protection Regulation (2016). These laws govern the use of citizens' data by government analysts, protect rights to privacy, and ensure equal treatment for all. Teams using artificial learning approaches need to understand the practical contexts of these existing frameworks. For example, if deep learning is used to infer personal details that were not intentionally shared, it may not be clear whether consent has been obtained.

6

10 QUESTIONS FOR THE UN SECRETARY GENERAL

We believe that this report throws up some big questions for the new UNSG. They are also ripe for public debate and consultation:



01

JFK asked the man cleaning the NASA steps why he was there. 'Putting a man on the moon'. Why is the UN there, and can the security guard at the mission in Kinshasa explain it?

02

Is the UN ready for the Digital Age? What does it do well, and what can it do better? How has it marshaled new digital technology so far?

03

Where can the UN seek support and partnership as it tackles the big 21st century challenges. Who are the key allies beyond the world of traditional diplomacy? How can it build the right coalitions to deliver its objectives? What can it learn from others about innovation, creativity and disruption?

04

How can the UN use new digital media to connect and communicate with the global community in a meaningful and influential way?

05

How can the UN establish a clearer framework on internet governance, and respond to new threats (including new weapons)? How can we strike the right balance between liberty and security online? Who sets the rules? How do we ensure that big tech companies are part of the solution, not part of the problem? How can non-proliferation guidelines evolve in response to new methods of destruction?

06

How can the UN can become more democratic, inclusive and transparent? How can individuals be placed at the heart of what it delivers? How do we break down apathy and distrust towards the organisation? And how can we use openness to allow people to better hold the UN to account?

07

What reforms of the UN architecture can make it more fleet footed and effective? Are current structures coherent and fit for purpose? How can the UN spend less time competing within itself and more time tackling the key global challenges?

08

Can new technology tackle key humanitarian challenges, including disaster relief, peacekeeping, conflict resolution and education? Can advances in robotics, AI and big data give us the means to transform the UN approach?

09

How can the UN can best prepare its people for the challenges ahead? What skills and training will they need?

10

What global fora are needed to manage the necessary debates on AI and use of data?

7 CONCLUSION: THE CASE FOR OPTIMISM

*“Never let the future disturb you. You will meet it, if you have to, with the same weapons of reason which today arm you against the present.”
(Roman Emperor Marcus Aurelius Antoninus).*

*“Every great age is marked by innovation and daring – by the ability to meet unprecedented problems with intelligent solutions.”
(President John F Kennedy, 2 March 1962).*



Global pessimism is spreading. We are no longer taking for granted that our children's lives will inevitably be better than those of our parents. Early in 2014, 16,000 young adults from every continent were asked⁴⁵ “To what extent, if at all, do you feel that today's youth will have had a better or worse life than their parent's generation?” 42% said life would be worse, and 34% said life would be better.

Pessimists worry that we are creating new risks too fast. That technology will do to 21st century weaponry what it did to the musket, bayonet and pikestaff. In 100 years time, we will have cities of 140 million people, and an average energy consumption of 1.3 million kilocalories per person per day. On conservative judgements the North Pole will melt by 2100. Harvests will decline in the least stable parts of the world, with the numbers facing shortages will rise from 600 million to 1.4 billion⁴⁶. Tens of millions of the angriest, hungriest people will migrate. The World Health Organisation predicts another pandemic. Niall Ferguson fears “a new Dark Age of waning empires and religious fanaticism; of endemic rapine in the world's no-go zones; of economic stagnation and a retreat by civilization into a few fortified enclaves.” Roger Cohen⁴⁷ describes “the great unravelling”, a time of aggression, breakup, weakness and disorientation. British Astronomer Royal Sir Martin Rees argues that the probability of humanity's extinction before 2100 is 50%.

Pessimists also worry about the impact of technology on our society. They predict that the digital economy will increase rather than decrease inequality⁴⁸, that human society does not know how to fight back. Some fear⁴⁹ the internet will limit

rather than advance democracy. We will have a world in which we prioritise a simple consumer experience over jobs, wages, dignity and rights, with victims yet unseen⁵⁰. Technology could even destroy our humanity and creativity, what Neil Postman calls⁵¹ “the submission of all forms of cultural life to the sovereignty of technique and technology.” We become addicted and enslaved⁵². The cult of the amateur prevails, culture is dumbed down of culture and trust in authority evaporates. Imagination, idealism and creativity are replaced by economic calculation and consumerism.⁵³ Nicholas Carr assesses⁵⁴ that our ability to think is decayed rather than built by the way in which we interact with the Internet.

However, it turns out that an optimist is a pessimist armed with facts. The average human lives twice as long as our great, great grandparents. We have access to a life that they could never have imagined. Extreme poverty has halved in the last 15 years. We are becoming collectively richer, living longer, understanding the world better, and dying less of disease, poverty or violence. Sadly, barbarism is all too visible in a 24/7 news cycle that surrounds us with a sense of doom, terror and violence. But in fact it is receding. If the war death rates common in hunter-gatherer societies still prevailed, 2 billion would have been killed this century. Before states emerged, battles killed more than 500 out of every 100,000 people. In the 20th century, including wars/genocides, it fell to 60. Today it is 0.3. So we are 200 times less likely to die in war than a century ago. The number of wars has increased by 25%, but they have been smaller⁵⁵. Death tolls have fallen from 38,000 per conflict in the 1950s to just over 600 in the 21st century.

As 19th century English historian Thomas Macaulay, seeing pessimism spreading among his peers wondered, “on what principle is it, that when we see nothing but improvement behind us, we are to expect nothing but deterioration before us?” This is little consolation to a civilian in Syria, Gaza or Chad, but it is remarkable. We’re becoming smarter and more literate. We are living in the most peaceful year since records began.

The post 1945 international system, with the UN at its heart, must take some credit for this. Technology can reinvigorate it. The internet brings us greater diversity, choice and opportunities for engagement. We can use new technology to bring more people into the political process and to build social cohesion. The more that people are able to determine their own fate, the more peaceful they become⁵⁶. Resilience is in our DNA.

But the UN needs to be in the vanguard of the case for engaging and caring about the big global issues. Technology can help more people become Roosevelt’s “man in the arena”, not just Roosevelt’s “critic”. The reality is that we do not have to know everything about everything. We do not need to have an emotional reaction to everything. But, with the world getting smaller, we do need to care.

Why? Because the people in the news are also human. We cannot allow ourselves to be removed from a sense of community with the poorest or most oppressed, just because they happen to have a different passport⁵⁷. It should not just be the world’s billionaires who commit a proportion of their income to humanitarian causes. History suggests that walls and checkpoints don’t last long.

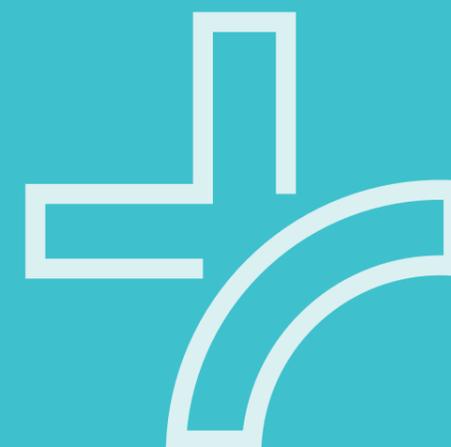
We also need to care because it is pragmatic. We have got to find creative and ingenious ways to fix the 21st century’s

mounting challenges if we are to thrive as a species. As a global civilisation emerges, our survival will depend to a greater extent on our ability to innovate across traditional boundaries. The threats no longer take the form that they did in the 19th and 20th centuries. Neither therefore must our responses.

And we need to care because history hasn’t finished. War has shown itself exceptionally resilient⁵⁸, and able to survive technological innovation and globalisation. Technology is not just empowering the good guy: look at the selfies of beheadings by the self-declared ‘Islamic State’.

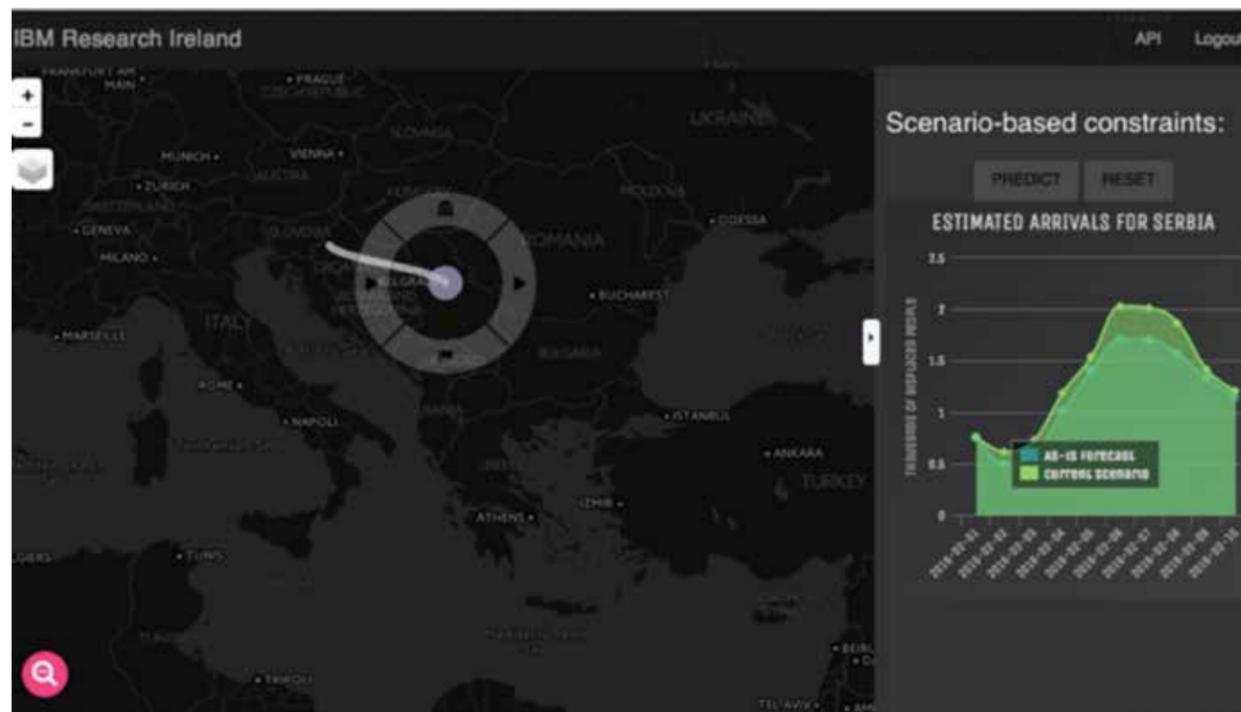
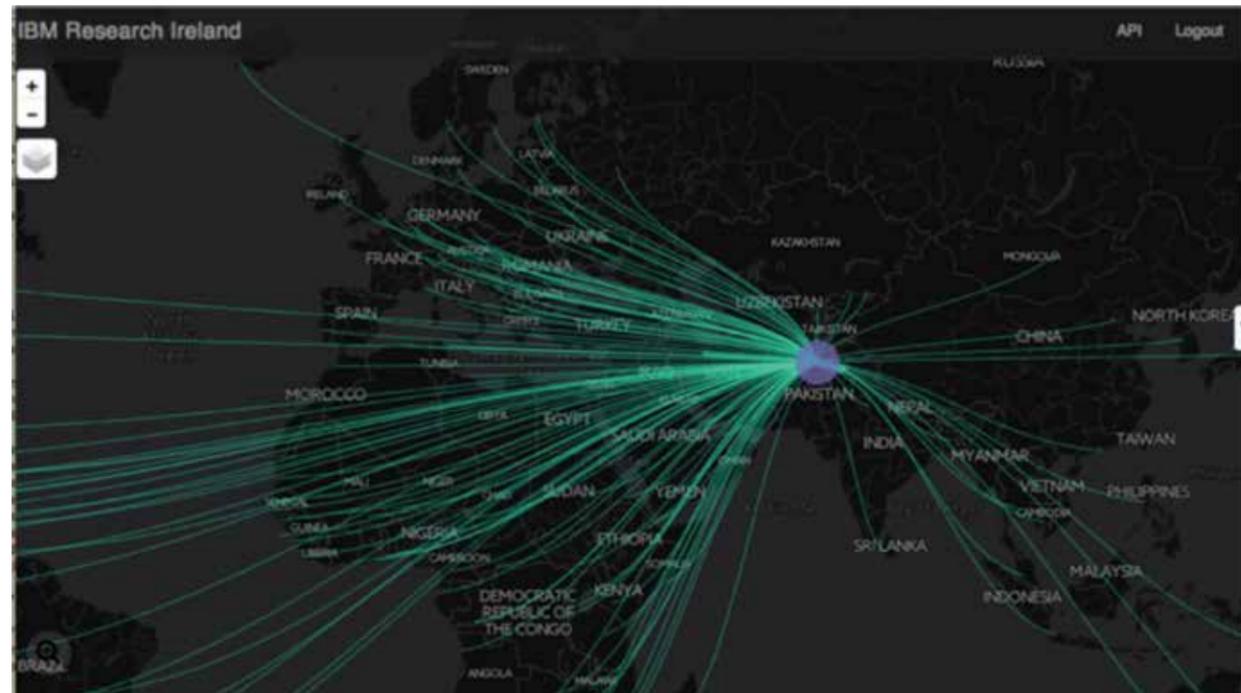
Of course, technology will change us, and we will change technology, as we always have. It won’t always be empowering and enlightening. The changes we wonder at today won’t seem wonderful for long. The predictions we think are crazy today won’t seem crazy for long. At moments in 2016, it appeared that technology had disrupted democracy. But used properly it still gives us the means to tackle inequality, improve cyber and economic security, ensure that artificial intelligence helps not harms us, outsmart the extremists, and make it easier for citizens to run their lives. If digital information is the 21st century’s most precious resource, the battle for it will be as contested as the battles for fire, axes, iron or steel. Between libertarians and control freaks. Between people who want to share ideas and those who want to exploit them. Between those who want more transparency, including many individuals, companies, and governments. And those who want more secrecy. Between old and new sources of power.

The UN needs to be in those arguments. More than any other organisation, the UN sees the worst of humanity. But it also sees the best. Onwards.



A: Prototype of IBM's Global Flow Model

The User Interface illustrates predicted arrivals of migrants in multiple nodes of the network.



B: US DARPA

Defense Advanced Research Projects Agency (DARPA)		
Organisational structures	Objective/mission	"To make the pivotal early technology investments that create or prevent strategic surprise for US national security."
	Governing principles	Flexibility. Radical transformative innovation. Quick decision-making.
	Strategic aims	<ol style="list-style-type: none"> 1. Rethink Complex Military Systems 2. Master the Information Explosion 3. Harness biology as a technology 4. Extend the technological frontier
	Strategy content	<ul style="list-style-type: none"> • Fostering high-risk, high pay-off research • Fostering interdisciplinary research
Capital	Type of research funded	Military-relevant science and technology. Early-stage research and development.
	Type of organization funded	Academia, industry or national research institutions.
	System for funding allocation	Prize challenges Small Business Innovation Research (SBIR Programme) Calls for proposals
	Mechanism for decision	Source selection panels' composed of government employees. Evaluation of the proposals based on the one most likely to achieve the programme goals. Selection criteria set by the programme managers.
	Governance of research priorities	Bottom-up approach; research priorities decided by the programme managers.
Governance structures	Key features	Programme managers have the autonomy to decide and manage the research programme from start to finish.
	Organisational model	Flat and non-bureaucratic. 220 employees spread in six offices.
	Organisational governance	Programme managers have large decision-making autonomy. They report to DARPA's office directors and their deputies, who are responsible for charting their offices' technical directions, hiring program managers and overseeing program execution.
	Leadership	One Director and Deputy Director. Each office has its own director and deputy director.
	Key features	Cross-functional collaboration and interdisciplinary research are embedded within the agency's ethos.

Source: RAND Europe Analysis

C: A Framework for Innovation

Invention, innovation and diffusion.⁵⁹ Invention is the initial conception of an idea that might lead to advances in knowledge and the generation of new products or processes. Innovation, according to Schumpeter, is the application of those ideas into practice as engineering, design and demand factors shape its development. Through diffusion, the innovation spreads across the market where it is adopted and potentially further adapted.

Drivers are motivations that spur innovation and vary by sector; for example, defense drivers include enhancing military capability, whereas for companies the key driver is profit.

Input resources are the primary components required for innovation, which include knowledge assets, talent and capital. Knowledge is required to produce and apply the new ideas. Talent refers to the technical expertise necessary to support innovation processes. Capital is required to fund the creation of ideas and deliver this knowledge as an innovation.

Enabling resources like infrastructure and networks allow an organization to bolster knowledge assets, talent and capital through engagement with other actors. Infrastructure includes facilities that provide spaces for innovation, such as universities and test facilities. Networks encourage the exchange of knowledge, the mingling of talented individuals and the connection of suppliers to end-users.

Culture and structure are highly interdependent. Innovation thrives in organizations with a culture that is open, and conducive to risk-taking and learning from failure rather than avoiding it. As for structure, bureaucracy and protocol may constrain innovation by restricting knowledge exchange or productive partnerships.

The United States Defense Advanced Research Projects Agency (DARPA) provides lessons for creating effective innovation organizations and processes in other settings and contexts. The DARPA mission includes “fostering and implementing radically new technology concepts recognized as transformational.”⁶¹ It supports unconventional higher-risk research projects through organizational flexibility and minimal barriers to collaboration. DARPA recruits managers from diverse disciplines and is not internally organized by discipline.⁶²

This flexibility creates a program of interdisciplinary research teams. DARPA has no “entitled constituencies”⁶³ or restrictions on whom it funds. It provides funding to academics, industry and national laboratories, while encouraging collaboration. Its budget accounts for one quarter of the DoD’s science and technology budget (approximately US\$3 billion). DARPA does not have research facilities; it contracts research to organizations with the necessary infrastructure. The agency funds research that links fundamental discoveries to military requirements, so it often sponsors early-stage research.⁶⁴ Thus, it can be seen that DARPA’s structure addresses each of the factors identified in RAND Europe’s innovation framework.

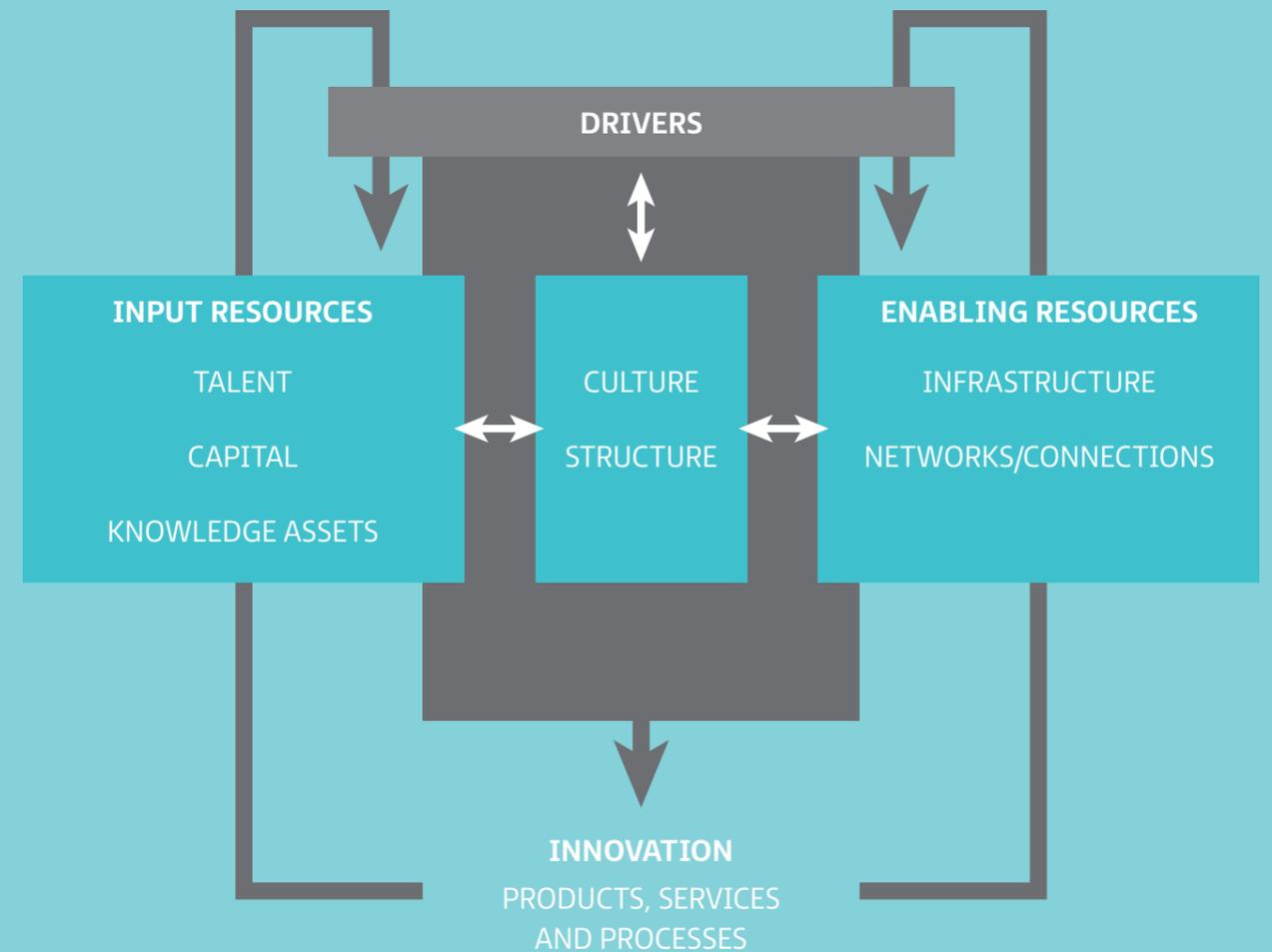


Figure 1: A framework for conceptualizing the key factors for innovation⁶⁰

Source: RAND Europe

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