



Understanding PeaceTech:

A think piece to support the
development of Peace Analytics

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PeaceRep
Peace and Conflict
Resolution Evidence
Platform

PEACEREP DATA SCOPING STUDY



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Peace Analytics Series

PeaceRep's Peace Analytics Series features the research methodology underlying the PeaceTech innovations of the PeaceRep programme.

The series includes: data scoping research; 'how to' discussions relating to particular challenges in the field of visualisations and geocoding; and other proof-of-concept tech-based innovations, such as the use of natural language processing. It is intended to present the methodologies and decisions behind our PeaceTech digital research, to make it transparent, and to contribute to establishing a new research digital infrastructure in the field of peace and conflict studies, by supporting others to reuse and repurpose our methodologies and findings.



Foreword

This 'think piece' by Andy Carl was first commissioned in 2016, when the [PeaceRep](#) team at Edinburgh Law School, then working through the Political Settlements Research Programme, began thinking about how its work on the [PA-X Peace Agreements Database](#) fit into what is now often termed 'the PeaceTech ecosystem'. More recently, this piece helped lay the ground for our thinking in the new PA-X Tracker, which tracks implementation of peace processes (see www.peaceagreements.org), and it continues to inform our work.

We publish it here within our Peace Analytics Series for ourselves and others to continue to use, as part of our commitment to ongoing documentation of the development of our peace analytics work, and our commitment to the spirit of the [FAIR Data Principles](#) (findable, accessible, interoperable, reusable) as applied to our data collection and usage, and the way we go about our peace analytics work more generally.

Christine Bell, Executive Director PeaceRep, 2024



1 Introduction

We live in an increasingly connected and technically enabled world. Half of the world's population are online, increasingly on mobile platforms, and 70% of them are under the age of 24, although those who are not online are "disproportionately poor, rural, older and female" (Ann Mei Chang). Changes in global information and communication technology (ICT) and in our connectivity are changing the ways conflicts are fought and the ways in which we are responding to them, including peacebuilding.

Mediators and peacebuilders, like all those trying to understand complex armed conflicts, have access to more information than they can process. In addition, the information received comes from different sources and is often contradictory. More listening does not necessarily lead to a better understanding. Twenty-first century connectivity can be overwhelming. The decisions that peacebuilders make on how and when to intervene are, by definition, founded in both sound knowledge and uncertainty. Can developing digital technologies expand the abilities and possibilities for those working to end and transform armed conflicts and enable them to make better sense of these constant information flows?

This short paper seeks to give some clarity to understanding peace technology in the context of peacebuilding generally. We begin by asking: what do we mean when we talk about building peace with new technologies? Who are the types of people and organisations who are using new technologies in their peacebuilding? The paper then explores the range of peacebuilding needs met by these rapidly developing new technologies and offers a simple framework for that enquiry. It then looks across the global field of actors and offers a sketch of innovative and best practice work, with some examples to illustrate the much deeper pool of global innovation. Finally, it offers a brief explanation of some of the opaque vocabulary used to describe work in this space, some final reflections on the challenges and opportunities that lie ahead, and further reading.

What is PeaceTech?

PeaceTech is an umbrella term for technologies (software and hardware) that are being developed and used in efforts to prevent or end cycles of violence in society, building and sustaining peace.¹ These technologies are not necessarily uniquely used in peacebuilding, though this deliberate use provides our focus.



Sheldon Himelfarb, CEO of the PeaceTech Lab and one of the pioneers of this sector, said that the emergence of these new digital technologies and their use in peacebuilding constitute “a reboot” for the field: “Conflict prevention and peacebuilding are getting a new cast of characters and an exciting new script” (Himelfarb 2015).

This paper focuses on the use of technology with the deliberate aim of ‘sustaining peace’ and not on the wider field of digital warfare, including using ICT for counter-insurgency, intelligence and peacekeeping operations. Nor does it focus on digital tools used in humanitarian relief programmes for crisis response. Of course, there are no firm boundaries for what does and does not fall within peacebuilding or the even wider catchment of sustaining peace that will include using ICT for human rights and democracy promotion and work for climate justice. This breadth can stretch the usefulness of the PeaceTech term. Also, in contexts where peace and reconciliation have lost all legitimacy thanks to the cynical behaviour of governments (as in Syria today) many people and organisations do not chose to self-identify as peacebuilders. This is perhaps why some have chosen to define PeaceTech so broadly as the “inverse of war technologies” or as “human-centric technology that increases people’s ability to be good to each other”. These broad definitions lead to hugely diverse examples of projects and initiatives. Others have chosen to focus specifically on the use of new technologies in mediation with the effect of excluding many other useful examples. This paper seeks to hold on to that clear, if unbounded, understanding of technologies used in efforts to build and sustain peace.

How Is PeaceTech Different from Other Similar “Techs”?

The use of digital technologies for the goal of sustaining peace is, of course, dwarfed in proportion and scale to those used in pursuit of interests driving conflicts and those that are neither driving violent nor peaceful change.

What sets PeaceTech apart from military, security, governance, humanitarian aid, and general research on communications technologies is its application towards the deliberate goal of ending armed violence and promoting peace, as well as the group of practitioners who are making using of technologies in this way. Peacebuilders are not a coherent sector but are more of a convergence of a diverse set of actors with shared interests and shared goals.



The users of these developing tools and resources are themselves a complex ecology of organisations and individuals that include the armed parties in organised conflicts (state and non-state) and locals and nationals interested in, affected by, and responding to conflicts, including third-parties engaged in various forms of peace and prevention work. It also includes those working transnationally (diplomats, UN agencies, funds and programmes, other IGOs and specialist mediation and peacebuilding INGOs) as well as donor agencies, researchers and relevant policy makers and those studying and informing the field in media and academia.

Importantly, the practice of PeaceTech is also characterised by the otherwise unusual collaborations between diverse technologists and diverse peacebuilders breaking down barriers and experimenting in creative workspaces now referred to as social labs. The mix of backgrounds is a key ingredient leading to new ways of thinking about old problems. In bringing together otherwise siloed disciplines in this way, many PeaceTech initiatives draw on the schools of innovation from the early part of the 20th century, like the Bauhaus in Germany in their effort to create “a new unity” (Gropius).

In practice, many PeaceTech technologies will also have other applications in peacekeeping and humanitarian crisis response as well as in digital diplomacy, digital democracy and what some are calling ‘govtech’ – and the reverse is also true. Although there are thousands of examples of such experiments in e-democracy, their application by governments, parties and parliaments to conflict prevention and resolution is still very new and underdeveloped (see a recent report from NESTA on how these are being used as “Tools for Transformation”). They all share a common challenge of how to help people, their organisations and governments to benefit from the global data revolution and ‘Big Data’. Whether it is for providing services or affecting and measuring social change, accessible data analytics are helping us to make sense of what these flows of data tell us, enabling those engaged in peacebuilding to see trends, measure change and draw lessons that will help improve their impacts.



The End of Peacebuilding as We Know It?

'My God, this is the end of diplomacy!' was the reported reaction of Lord Palmerston, British Prime Minister and Foreign Secretary, on receiving the first telegraph message in the 1850s. Like telegrams in their day, it is still true to say digital information communication technologies (ICTs), as revolutionary as they are, only form part of wider information systems. Despite the increasing prevalence of screen time, people still talk to each other face-to-face. Parties in conflict find ways to hold direct and unmediated talks, and there is plenty of low-tech peacebuilding in which some conflicts are transformed through dialogue (though probably not without the ubiquitous presence of new technologies).

The Economist published an article in 2017 entitled "The World's Most Valuable Resource is No Longer Oil, but [Data](#)". The piece argued that, as in a century ago with the then-new commodity of oil, the world is now seeing a new commodity (i.e. data) spawn "a lucrative, fast-growing industry of the giants (i.e. Google, Amazon, Apple, Facebook and Microsoft). Along with other forms of information and knowledge, data is an essential and largely under-used resource. In their daily work all peacebuilders (including diplomats) collect, analyse, and communicate data, information, and knowledge. The advent of new digital technologies has changed how peacebuilders work, what issues they work on, and the environment in which they work. It has created new forms of data, most notably big data, online data, satellite data, and crowd-sourced data, which provide opportunities that could make (and maybe already have made) peacebuilding more efficient, effective, and inclusive.

The recent significant stage in the development of peacebuilding as a specialist and global field of professionals and dedicated organisations coincided with the invention of the World Wide Web in 1989, the end of the Cold War and the spike in internal conflicts and the peace processes that helped to end them. This followed an earlier period of innovation and organisational flourishing that coincided with the invention of email in the early 1970s. This author recollects how these technologies made it possible to form close international collaborations and exchanges which were not previously feasible. Peacebuilding organisations were quick to make use of the emerging new technologies, including email listservs.² Peacebuilding NGOs were quick to publish and share information on peacebuilding efforts and datasets of agreements on their new websites and to make use of open source protocols like Really Simple Syndication (RSS) which allowed users and applications to easily access updates to websites in a standardized, computer-readable format.



Changes in digital technologies have redefined what is possible in peacebuilding – though the leading practitioner organisations have also been at times overwhelmed with their connectivity, and many have been reluctant and slow to embrace and invest in new digital technologies. For most organisations dedicated to peacebuilding, as it is the case for most organisations, achieving a meaningful digital transformation remains a work very much in progress.

Who Is Doing Important and Innovative PeaceTech Work?

A growing number of organisations have explicit competence in digital peace technologies. At the same time, the entire peacebuilding field continues to develop and experiment with these new technologies in different ways and to varying degrees. Here follows a short list of organisations that, together, give some sense of the talent and diversity leading this emerging sector.

Ten PeaceTech Innovators

Build Up[^] (Spain)

This is a dynamic and relatively young, Barcelona-based international organisation. Build Up is particularly well known for their "Build Peace" conferences on peacebuilding, technology and the creative arts and the many other projects they support. Their strapline is "we transform conflict in the digital age," which stands as a good working definition of PeaceTech as any. They describe their work in four areas:

- Supporting innovators who use digital technologies to build peace;
- Fostering a 'community of practice' that thinks critically about conflict in the digital age;
- Addressing digital conflict by addressing polarization on social and digital media; and
- Doing policy and research that explores opportunities and challenges from the use of digital technologies for peace.



Their projects have included support to Somali NGOs to find technology-based solutions to increase participation in their peacebuilding work; a global competition called PEACEapp promoting digital games as venues for conflict management and dialogue; a 'community communications system' that combines SMS, online mapping and radio to disseminate information in remote communities at risk of conflict in Sudan; a 'digital neighbourhood for civic engagement' developed by Cypriot civil society and innovators called Mahallae; and a project with International Alert to engage the general public to build a 'flock of robots' that shared messages of peace on Twitter. Some years ago they also produced a Google Fusion database of PeaceTech projects from around the world (at time of publication, Fusion had been discontinued).

[The PeaceTech Lab \(USA\)](#)

"A place where technologists and peacebuilders from conflict zones can work shoulder to shoulder every day creating new tools to reduce violence around the world."

Washington, D.C.-based [PeaceTech Lab](#) is an independent and non-profit organization that brings together engineers, activists, graduates, conflict experts, social and data scientists, and other innovators to develop effective peacebuilding solutions. PeaceTechLab was once part of the United States Institute of Peace until it was spun off as an independent group in early 2015 by founder and CEO, Sheldon Himelfarb. Through the [PeaceTech accelerator](#) collaboration, the lab supports startups focused on improving lives around the world through technology and has played a role in franchising PeaceTech in the Netherlands, Nigeria, South Africa and elsewhere.

[The Kindred Credit Union Centre for Peace Advancement \(Canada\)](#)

The Centre, which is part of Conrad Grebel University College, University of Waterloo has an approach that is based on collaborative, inter-disciplinary, and multi-sector approaches to the advancement of peace. It is home to a range of peace scholars from the University of Waterloo, as well as practitioners from local peace building organizations. Through research, training and community engagement the Centre is unusual for their focus on digital technologies and their ability to bring together local people with an experienced group of peace scholars and practitioners and has a very strong reputation for the standards of their work.



Peace Innovation Lab (USA)

"We believe that business can have the biggest impact in creating sustainable, mutually beneficial positive peace and societal stability in the world."

The Peace Innovation Lab has been at Stanford since 2008, initially as a class, then a project within the Persuasive Technology Lab, and then as a formal lab. Their work sits at the intersection of behavioural psychology, technology, innovation, and business. They research how to design positive social change at scale using mediating technology, ultimately changing behaviours and working for peaceful outcomes. Co-directed by Mark Nelson and Margarita Quihuis, the Peace Innovation Lab's approach to peace is rooted in the idea that "positive behaviour changes can be designed through persuasive interventions, and these interventions can be technology driven. In other words, "machines can be designed to influence human beliefs and behaviours in a way that increases peace."

The Lab helped promote the spin-off [Peace Innovation Institute](#) in 2018 in collaboration with the city of The Hague. They describe their mission as to "catalyze a peace tech sector and industry" and "create new frameworks and curriculum for the ethical and safe deployment of emerging technologies and innovation". Like the Stanford Lab, they work on a very broad canvass without a particularly strong connection to peacebuilding.

ICT4Peace Foundation (Switzerland)

ICT4Peace is an international Foundation launched with the support of the Swiss government in 2004. Since 2004, the ICT4Peace Foundation has championed the strategic, sustainable and meaningful use of ICTs for crisis management, disaster risk reduction and peacebuilding. ICT4Peace works with government and inter-governmental bodies and with international and local activists and rights movements.

ICT4Peace have worked with the UN on crisis information management platforms, developing information exchange protocols, hosted information sharing and collaboration platforms, helped to create mission-specific wikis, and provided training on situational awareness and open source intelligence gathering including social media verification, strategizing the use of Big Data around peacekeeping and peacebuilding. They have convened conversations around the ethics, rights and use of Artificial Intelligence and related fields in peacebuilding. They are also actively contributing to the thinking and research around frontier technologies.



The #CyberMediation Initiative (Switzerland)

The UN Department of Political and Peacebuilding Affairs, DiploFoundation, the Geneva Internet Platform, Centre for Humanitarian Dialogue, swisspeace, and researchers from Harvard University have established the #Cybermediation consortium to explore how digital technology affects mediation in preventing and resolving violent conflicts. The initiative was launched in March 2018, in Geneva.

The objectives of the #Cybermediation initiative are to:

- Inform mediation practitioners about the impact of new information and communication technologies on mediation, including their benefits, challenges and risks in relation to peacemaking;
- Develop synergies between the mediation community and the tech sector;
- Identify areas of particular relevance and co-operation.
- The initiative focuses on four thematic areas in detail: (a) the impact of new technologies, (b) social media, (c) big data, and (d) artificial intelligence.

JustPeace Labs (USA)

JustPeace Lab is a US-based organization that advocates for and supports "the responsible use and deployment of emerging technologies in high-risk settings" with a focus on communities experiencing conflict, transitioning from conflict or enduring systematic human rights abuses. They promote ethical approaches to tech in complex and high-risk settings through advocacy, awareness raising and providing advisory services. They develop custom technological solutions and tools for organizations working on peace and human rights projects.

Some of their projects have included:

- Veritas: a comprehensive "trustless" approach for capturing, storing and preserving digital evidence. Veritas uses a peer-to-peer distributed cryptographic system for storing evidence metadata on the blockchain. Users can encrypt their evidence metadata on the blockchain using our app, bot or website. It's encrypted wherever it's stored – on a server, on the phone, on a thumb drive. The blockchain provides indisputable authentication and mathematical proof of chain of custody from the moment it is registered.



- EWER: a custom app for the Center for Diversity and National Harmony (CDNH) in Myanmar created to enable their local network of community monitors to report and verify rumours related to communal tensions. The app helps increase the number of early warning reports received by CDNH and improve communication with its local network while fostering stronger connections and a greater sense of ownership among them. In response to their reports, CDNH then verifies or debunks rumours and provides those updates back to the local networks, who can in turn disseminate accurate information among their communities.

[The UNU-CS Digital Peace Lab at the UN University Institute on Computing and Society \(Macau\)](#)

The United Nations University Institute on Computing and Society (UNU-CS) Digital Peace Lab is exploring, developing, and informing ways that information and communication technologies can serve as a tool towards supporting peacemaking efforts. It focuses on enhancing people's capacities to acquire reliable information; strengthening their abilities to cope with conflict; alerting parties when potential conflict flares; and developing tools and approaches to support processes of reconciliation, community building, and empowerment. The Digital Peace lab works through research and policy, innovations and partnerships, collaborations and public engagements.

The other UN innovation initiative in this space that is focussed more broadly on big data innovation for development and humanitarian action is [Global Pulse](#). It is an initiative of the Secretary-General that recognises "that digital data offers the opportunity to gain a better understanding of changes in human well-being, and to get real-time feedback on how well policy responses are working." Working in collaborative partnerships with public, private and civil society sectors, they have set up a network of 'Pulse Labs' to develop new digital analytical tools and approaches and to promote their usefulness across the UN system of agencies, funds and programmes.



The Phandeeyar Myanmar Innovation Lab (Myanmar)

Phandeeyar ("creation place") was an innovation lab that spearheaded the use of technology to accelerate change and development in Myanmar. Phandeeyar invested in local technology start-ups, trains new entrepreneurs and builds the pool of tech talent. Phandeeyar also helped civic and social entrepreneurs. Phandeeyar was initiated during the Code for Change Myanmar, a series of hackathons in 2014 that highlighted the potential of Myanmar's connectivity revolution.

In 2016, Phandeeyar launched [Open Development Myanmar](#), an open data platform. At time of publication, given the coup of January 2021, it has not proved possible to understand the impact on Phandeeyar, and while [OpenDevelopmentMyanmar.net](#) is still functional it does not appear updated politically.

MIT's MISTI PeaceTech Initiative

This programme offered MIT students and participants from around the world the opportunity to learn about entrepreneurship, science and technology and its capacity to support peacebuilding activities around the world. This programme:

- Trains students to be global leaders and supports MIT faculty to be collaborators, in the area of PeaceTech.
- Enables MIT students to do internships abroad in companies, NGOs and research labs that develop concrete tools to reduce conflict and promote reconciliation.
- Brings entrepreneurship, science and technology education to areas of and populations in conflict.
- Brings technological capacity to NGOs in the field of peacebuilding.
- Develops and funds start-ups in the field of PeaceTech.
- Takes part in research in this field.
- Teaches technology capacity building workshops to post-conflict and in-conflict population.

While no longer operating at time of publication, [MIT Solve](#) works to drive innovation to solve world challenges, by bringing social innovators together and supporting them, and remains engaged with PeaceTech as an area.



This list of organisations is not in any way comprehensive nor fully representative but was intended to offer an impression of the range and diversity of PeaceTech specialist organisations. There are a number of other important university-based centres that have been established to support and look into the uses of ICT in conflict prevention and peacebuilding, including the Innovation Peace Lab ([InPeaceLab](#)) at the University of Ulster (at time of publication continuing some work under a different name), and the new [PeaceTech work at the University of Edinburgh](#).



2 A Framework for Understanding PeaceTech

As the PeaceTech field brings together people with very different skillsets and backgrounds, there is so much creativity and entrepreneurialism that it can risk being seen as very supply-side driven. But innovations also create ways of working that may have not been imagined before, and practice and organisational habits follow. This applies to the scales of time, speed, distance, scale, and complexity of peacebuilding programming. The availability of hand-held devices and connectivity and accompanying hardware and software developments have made it possible and even normal to exchange information and to respond in real-time, making quicker organised responses possible. Collaborations that bridge political, security and physical divides (like Line of Control in Jammu and Kashmir and the Greenline in Cyprus) that were previously not imagined are now almost commonplace. The PeaceTech initiatives that have been developed are fantastically creative and diverse. Giving the speed with which digital technologies are changing, it may be useful to try to make sense of the many emerging tools, technologies and resources through considering them as the specific and practical peacebuilding needs, they seek to meet (rather than kinds of tools they offer).

Below is a such a functional framework (rather than a typological one) which is offered as a work in progress and is intended to complement earlier framing developed by Larrauri and Kahl (2013) which focussed on groups of ICT offers to the peacebuilding field. Following on from that are a series of illustrations of PeaceTech projects to give a sense of the creativity and diversity of work being done in this space.



PeaceTech: Meeting Practical Peacebuilding Needs, Demands & Interests

Understanding (analysis and sense-making)

- Conflict and situation analysis to inform peace and conflict prevention and management response strategies
- Understanding and seeing trends and patterns
- Media monitoring and news aggregating
- Public perceptions, views and opinions analysis
- Early warning and conflict and security risk monitoring (including maps and satellite image analysis)
- Processing and translating big data
- New data generation

Learning (knowledge and skills-building)

- Informing stakeholders' peace process strategies, tactics and decisions
- Conflict and peace-related data sets and analysis
- Comparative learning
- Knowledge sharing
- Informing the strategic learning needs of primary parties in negotiations

Communicating, sharing and connecting (with conflict parties, conflict affected groups and other third parties)

- Encrypted channels of communication
- Public communications on peace processes and agreements

Mobilising

- Early warning
- Digital campaigning



Influencing and educating

- Influencing behaviour and personal choices
- Promoting ideas, values, attitudes and behaviours
- Mobilising
- Countering abusive and coercive and militarised uses of digital technologies
- Immersive environments
- Pro-peace and pro-settlement (positive) communications
- Resourcing (encouraging business community to value and invest)
- Collecting data and countering hate speech and rumours

Enabling inclusion: opportunities for public participation in mediation and peace processes

- Alternative and safe (virtual) space(s)
- (Online) digital dialogues
- Platforms for engagement
- Enabling collaboration through existing or bespoke online tools

Trauma healing

- Online advice, counselling and resources

Countering cyber-attacks, rumours and disinformation

Managing (and organising)

- Project planning
- Evaluating peacebuilding

Meeting other needs

- Supporting development of entrepreneurship in the peacebuilding sector
- Tracking behaviour change and different forms of evidence to evaluate different peace interventions and map progress



Snapshots of Innovation

Understanding Complex Conflicts and Global Trends

All peace and mediation initiatives depend upon good analysis of the complexities of a conflict, and as with all things complex there is a vast amount of often confusing and contradictory information. Digital technologies can give people the information and analysis they require to make sense of this information to inform more effective peacebuilding. ICTs are changing how conflict analysis is conducted, providing peacebuilders with real-time information that allows them to draw on larger sets of information and to see patterns and trends that were not previously visible. Some are useful for predictive analysis. Others involve "participatory analysis" involving different actors in the process of data collection and sources, which enables a more nuanced understanding and analysis that includes the views of multiple conflict stakeholders. Some projects include media monitoring, social media analytics, and customized news aggregators. Some also include Geographic Information Systems (GIS) designed to capture, store, manipulate, analyse, manage, and present spatial or geographic data (sometimes drawn from crowd-sourcing, sometimes from multiple datasets). One of the most dynamic programmes and organisations documenting trends and drawing on multiple sources of data is Vision for Humanity and their [Global Peace Index](#).

The Carter Center Syria Conflict Mapping Project

This project by the Carter Center began in 2012 with the analysis of open-source information (social media posts and YouTube videos) related to the Syrian conflict, with the explicit goal of assisting mediators and conflict responders. Using these publicly available resources, as well as information from regular consultations with stakeholders, the Center has documented and mapped over 100,000 conflict events in Syria (including clashes, aerial bombardments, and artillery shelling) and the changing relations between thousands of armed groups.

This information allows The Carter Center to provide mediators and other conflict responders with up-to-date, detailed analysis of developments throughout Syria. Additionally, the Center maintains updated maps of areas of control throughout Syria, publishes regular conflict updates, and releases periodic in-depth reports on conflict developments. All of this information is analysed and shared directly with mediators and humanitarian organizations through a software tool provided by [Palantir Technologies](#).



Ukraine: Peacelogs (MediatEUR & UNDP)

Peacelogs are a tool for peace mapping launched by mediatEUR and first piloted in Ukraine in 2015-2016. No longer live at the time of publication, Peacelogs provides a system for actors involved in a peace process to log the progress of their work and represent it in geographic and visual concept maps, allowing for targeted reporting and for the identification of key areas of conflict. Peacelogs maps highlights the work of dialogue actors, think-tanks, and analysts working on different issues in different regions. At the same time, Peacelogs assists policy actors in targeted response to challenges.

The UN's Situational Awareness Geospatial Enterprise (SAGE)

SAGE is a database of events designed to facilitate machine learning to detect patterns and predict conflict. Run by the United Nations Department of Field Services (UNDFS), SAGE is an incident reporting and situational awareness tool that is [powered by Ushahidi](#) (see below) and used to manage day-to-day activities across five countries where the UN blue hats are deployed in Mali, Haiti, South Sudan, Lebanon, and the DRC. In Darfur, a Joint Mission Analysis Centre JMAC database was able to track the patterns of incidents of livestock thefts and use them as a predictive tool (Duursma and Karlsrud, 2019).

Learning (knowledge exchange and skills-building)

Everyone engaged in conflict prevention and peacebuilding, wherever they are working in the political, social and economic system, is looking to learn more to inform their strategies, tactics and decision-making. In every conflict context there is an interest in learning practical skills and learning from past and comparative experiences and finding relevant comparative information that meets their specific learning needs. Whether they are parties in negotiations or donor agencies making decisions on how to support successful process and outcomes, many PeaceTech initiatives offer a value proposition to meet these kinds of need



The Peace Agreement Database (PA-X) at the University of Edinburgh

The Peace Agreement Access (PA-X) Database is a searchable repository of peace agreements reached since 1990 enabling both quantitative and qualitative research. It was designed to provide easy access to peace agreement texts and to allow users to explore patterns of agreements over time. It currently contains a dataset of 1789 agreements in over 140 peace processes and has coding of provisions for 230 substantive categories such as power-sharing, women, and transitional justice. It enables search permutations which can disaggregate the data by country, entity, region, conflict type, and stage of agreement; and allows examination of different combinations of issues addressed.

Kept up to date through release of new versions every six months, PA-X search subcategories include fields on political parties, development, transitional justice. It has also incorporated new codes from the [Uppsala Conflict Data Programme](#) to enable data-linking. It has also developed new visualisation tools based on work done at Northwestern University's [KnightLab](#).

The South Sudan Peace Portal

The South Sudan Peace Portal (at time of publication no longer operating in this form) was a web-based resource that helped to inform and enhance the theory and practice of conflict transformation in South Sudan. It provided a public source of in-depth information that knowledge and experience on peacebuilding more easily accessible bringing together diverse voices and perspectives.

International and domestic peace and security programming now recognises the need for a deeper understanding of context including local politics and culture, and the connection between local and national conflict. There is more recognition of the roles of locally led or grassroots reconciliation, trauma healing, people-to-people dialogue, alongside more technocratic state-building approaches. The South Sudan Peace Portal is a digital resource that addresses this gap by providing examples of theory and practice sharing past and diverse experience in South Sudan, which offer opportunities to apply more effective approaches to conflict transformation and peacebuilding.



Communicating and connecting (with conflict parties, conflict affected groups and other third parties)

While email and instant messaging have become ubiquitous, a wider range of digital tools are used in peacebuilding depending on cultures, habits and connectivity. Most conflict and third parties operate under a working assumption that their electronic communications are monitored, so for many playing mediation and third-party roles there is a preference for encrypted email providers: Proton, Tutanota.

Social media tools (online platforms, app-based groups) are now integral to most peacebuilding initiatives: Facebook and Twitter, as is the use of Instant Messaging: WhatsApp, Telegram, Line, Signal, Viber. Increasingly those working on sensitive peacebuilding issues are more careful with their browsers, using Virtual Private Networks (VPN) and programmes like [Tor](#) or [F-Secure Freedome](#) in efforts to have confidence in communications. Of course, Video Conferencing Services (VOIP) like Skype, Zoom, Microsoft Teams, Webex, and JoinMe are now integral to most peacebuilding where some conflict parties use their vernacular language or agreed terms to codify exchanges. Certain digital technologies offer the promise of "virtual negotiation rooms" offering the conflict parties opportunities to work on specific topics in confidence. These possibilities are particularly important when personal face-to-face meetings are legally, politically or logistically hard or impossible.

Then there are the needs and challenges of finding effective means for communicating with the public on peace processes and the agreements reached. We have seen important examples of online sites (recently in Colombia and the Philippines) which helped to maintain certain levels of transparency on the ongoing peace processes. This remains a frontier for digital developments.



Fiji: 2012 Constitutional Review Process

In a transition from military to civilian rule, an international and national commission was formed led by Prof Yash Ghai with a Secretariat established and run by Conciliation Resources employing staff seconded from local democracy and human rights organisations. While the review had a mixed outcome, the process was successful and innovative in many ways. It sought to consult with all Fijians, including groups historically marginalised from mainstream politics such as women and people living in rural communities. The commission relied on an active social media campaign and maintained a website throughout the process. To alert communities to forthcoming opportunities to make submissions and meet with commissioners, the Secretariat purchased and placed SMS messages. Women's organisations took the initiative to train their members and constituencies, raise their political and constitutional literacy and advocate for their active participation using their digital tools including Facebook, websites and email listservs. Over 7,000 formal submissions were received by post, email and Facebook and these were carefully studied and coded in a database managed by the secretariat with detailed and custom reports generated for the commissioners. Submissions were also made available online. The final text of the Commission's draft Constitution reflected these inputs, and though it was rejected by the military regime at the time, their content was carried forward in what is Fiji's current constitution.

Mobilising

Though the degree to which early warning systems have influenced and informed nonviolent peacebuilding strategies and interventions is not clear, they represent a popular policy response to the problem of organised violence, and one that has involved a significant degree of hard- and software development. Early warning systems have been enabled drawing on digital mapping technologies monitoring live and near-time information of developments "on the ground", including violent incidents, troop movements, and population movement. Social media analytics can provide advance information on destabilising events including rumours, disinformation, and hate-speech.



Ushahidi

One of the better-known platforms designed to collect crowd sourced data from local populations is [Ushahidi](#) (which means 'evidence' in Swahili). This is an open source software used for collecting reports from local observers through SMS and emails and expressing them visually on interactive maps. It was originally created by a group of programmers, journalists and lawyers to collect eye-witness reports of violence following the disputed Kenyan elections in 2017. Ushahidi gets its data from social media sources including Facebook, Twitter, and SMS messages. It works in collaboration with CSOs. It has since been expanded and used in monitoring elections in India and Mexico, collecting eyewitness reports of violence in Gaza and the DRC, and assisting in humanitarian rescue operations in the Haiti earthquake and floods in Thailand. In each of these cases local people were able to have their voices heard by responders, contributing to a better understanding of complex contexts. They have saved lives and sparked a global interest in crowd sourcing and mapping violence, changing how communities tell their stories to the world.

Influencing

There is a great deal of peacebuilding programming with the deliberate goal of influencing behaviour and personal choices including anti-violence, pro-peace and pro-settlement digital (online).

Hate speech and rumours are seen as drivers of conflict enabled by digital technologies, and a number of platforms have been developed to counter this. The most frequently cited examples are in Kenya in the 2018 election and post-election violence. The most well-known is perhaps Ushahidi (see above). It is perhaps less well known that many other platforms were developed and used at the same time, including Uchaguzi (where users reported incidents of violence through SMS messages to a toll-free number), and a similar network called the Uwiano Peace Platform launched by the government, the UNDP and PeaceNet Kenya. Other similar programmes included Umati (2013), Election IWitness Kenya (2013) and Sisi na Amani (2013). [Una Hakika](#) ("Are You Sure?") was established in 2017 as a mobile phone-based information service to check, verify and dispel rumours. In an ALNAP [ALNAP](#) evaluation of Uchaguzi, while they considered it to have been successful, they noted some of the challenges with crowd-sourced information and the need for independent verification. The success of such initiatives may be thanks, in part, to pre-existing networks and relationships of trust.



Another dynamic area of PeachTech has been gaming to promote peaceful behaviours and choice. Internationally, over 2.2 billion people play video games, with 42% of these on mobile devices. The use of gaming to promote peace is premised on the theory that exposure to 'prosocial video games' encourages subsequent positive social behaviour and that a video game use can significantly produce changes in empathy.

A notable example is [Junub Games](#), which has developed high and low-tech games with the explicit aim of "building bridges between communities and enhance peaceful behaviour" and to "help divert youth from destructive activities". Junub Games has developed playing cards, video and board games. The games are translated into local languages, and distributed across the country, including to IDPs and to refugees living in neighbouring countries. Junub Games states, "In the last ten years, we have seen how it is easier for a young person to be connected to a mobile device rather than a harmful device."

Other examples include [Games for Peace](#); [Butterfly Works](#), the social innovation study in the Netherlands; and [Arabia Felix Games](#) for their innovative game design work with and for Yemeni youth.

Enabling Participation

There are many examples of the ways in which more inclusive peace processes and outcomes now depend largely on access to the internet. These tools are used in "Track I" negotiations, national dialogues and consultations and local level dialogues. They can be used to elicit priorities, proposals, aspirations and views from large numbers of people. However "the method risks a sampling bias in favour of the younger and more affluent citizens likely to have online access. Such an approach also risks a 'superficial form of inclusion' (HD 2109). Furthermore, it has been noted that "ICTs do not iron out power imbalances" (Tellidis and Kapler 2016).



Ukraine: The Donbas Dialogue: A Digital Dialogue Platform

[The Donbas Dialogue](#) draws on the experience of the Nansen Dialogue project that first started in Norway in 1994 and developed a network of Dialogue Centres in Croatia, Bosnia Herzegovina, Serbia, Montenegro, Kosovo and Macedonia. This "gathers politicians, journalists, teachers, parents, and pupils for dialogue about their own conflict, exploring potential solutions and opening possibilities for institutional change ...with a view to joint understanding that benefit all." The Donbas Dialogue is a virtual platform, created by three people displaced from Donetsk city (outside the government-controlled areas) now living in government-controlled eastern Ukraine. The aim of the platform is to reconnect members of the divided community by using a crowd-sourcing methodology to identify issues for a shared agenda for dialogue. These are then explored in an offline, weeklong facilitated exchange that takes place twice a year. Participants include community representatives, IDPs and 'experts'. "The offline dialogue is conducted using a peer-to-peer technology called [WebRTC](#) which allows for anonymous connections and thus creates a safe space for all dialogue participants". The Donbas Dialogue now includes over 400 people in its "virtual community" (UNDPPA 2019).

Libya: 2018 National Conference Website (UNSMIL and HD)

This online mechanism was designed to accompany and inform the UN-sponsored 'National Conference' (NCP) and to enable Libyans to contribute to the process online over a four-month period. The Swiss Centre for Humanitarian Dialogue (HD) designed and operated a website (in Arabic) with the aim of making the preparatory process more transparent, inclusive and legitimate. It included information about the national conference process, including dates and locations of meetings, reports of past meetings, and information on how Libyans could organise their own events. It also provided a questionnaire on the agenda for the NCP through which Libyans could provide their views and feedback. The website provided an opportunity for those living in areas considered too dangerous to organise consultations a channel to make inputs. A total of 1,700 questionnaires were completed which made up 30% of the overall contributions to the consultative phase of the NCP (UNDPPA 2019).



3 Challenging Issues for PeaceTech

Inequalities of access: One of the challenges repeated in the literature on PeaceTech is that many of those living in communities most heavily affected by organised armed conflict can have fewer computers, less connectivity and poorer access to the internet and more difficulties with access to power networks. Access to broadband in rural areas is a challenge the world over, so all peace technologies need to pay attention to the digital divide and how to overcome the exclusion that goes with it. With increasing use of digital technology comes increasing dependence and vulnerability. Often the internet is owned and policed in partisan ways. India's decision to shut down telecommunications access in Jammu and Kashmir is an example of how these vulnerabilities are exploited in conflicts. In Yemen, internet provision is partitioned between YemenNet in the Houthi-controlled areas and AdenNet in areas controlled by the Saudi-backed Yemeni government.

Women and girls often have less access to technology and the internet, compared to boys and men. In countries suffering the economic impacts of war, girls and women can struggle to afford technology and internet access. Safe and equal access to technologies, training, and the internet can be a great enabler for girls and young women, both generally speaking and for playing roles in peacebuilding in particular.

Of course, a multiplicity of other forms of exclusion influence PeaceTech, including the costs of access to new technologies and – increasingly – to basic information and news.

Digital literacy: Different population groups have different levels of technological capability and literacy. This means there is a global need to develop basic ICT skills and develop an awareness of critical online resources and how to access them, as well as understanding digital technologies used by conflict parties.

Managing digital risks informed by the “do no harm” principle: In the first instance, and like any interventions in a vulnerable conflict affected contexts, the introduction of new technologies carries with it its own set of specific risks for stakeholders in the conflict. This could range from offering false certainties to the unintentional circulation of ‘fake news’ to a multitude of other risks. Responsible practice suggests that these should be anticipated and prevented with risk-management strategies. Also, as all technologies are fungible, it is important to consider whether and how there might be risk of a destructive and coercive application of the peace technology (including the unintentional targeting of individuals and communities for attack, which may be a risk with some of the initiatives designed to follow the movements of armed actors).



Digital security and ethics: Another running challenge is in applying privacy, data storage, and information security protections through digital resilience tactics. Given the risks of repression that many engaged in peacebuilding face, this is particularly important. A related ethical issue is around the ownership of data, and how and whether conflict-affected populations are (or are not) given access to their own data.

Managing and mitigating risks and building digital resilience

The scale, connectivity, and digitalisation of information technologies means ICT opens up new and specific risks and vulnerabilities of both people affected by conflict, protecting confidentiality and the integrity and accessibility of information collected. Some technologies carry their own vulnerabilities which means using them comes with significant risks. These vulnerabilities can become acute in conflict contexts. It is essential for those seeking to use digital technologies in these contexts to assess and understand these risks and have policies and practices in place to respond to them. Of course, most of these will be specific to particular on-the-ground contexts.

The UN Secretariat has developed guidelines on digital safety and personal use of social media. If the concern is digital attacks, the [Electronic Frontier Foundation \(EFF\)](#) have developed methods for modelling digital risks. Some INGOs and companies have developed specific "digital safety" training modules and "digital assistance clinics" for vulnerable civil society groups (e.g. SecDev) including emergency, rapid response assistance (for example, the [Digital Security Helpline](#)).



Requisite resources: Accessing and keeping up with new technologies requires peacebuilding organisations to embrace adapting, planning, and budgeting to enable full use of digital technologies and to meet the costs of safety and security. This means ensuring that staff and consultants have the necessary skills and capacities, and these costs can be challenging to meet in austere funding environments.

Marketplace dominated by competition: This inhibits data sharing and open access to information. One area witnessed by this author is the challenge of maintaining free access to information and the related challenge of accessing information and data from multiple sources. Because many of the non-media online publishers of online information operate in a competitive financial climate, many grant-funded organisations have been encouraged to drive web traffic to their websites (thereby showing an output measure to their managers and donors) instead of finding ways that peacebuilding users can find their materials and online resources as part of collective and integrated offers. This means that access to information across the web is increasingly determined by the global companies like Google and Facebook. New solutions need to build on early responses that anticipated these challenges, like those which offer users and applications open access to independently published information and data in standardised and computer-readable formats, like Really Simple Syndication (RSS) which many organisations no longer use. This enabled users to set up easy and automatic and free access to multiple sources of information and published resources.

Increasingly, there is an emphasis on selling rather than sharing news and information, and for NGOs there has been an imperative to drive as much traffic as they can to their organisational websites, to show their donors of evidence of their output and impact. This can pose a particular challenge to those engaged in peacebuilding looking for the right PeaceTech tool only to find an overwhelming and dispersed number of (sometimes costly) options, or resources (like databases) which do not relate to one another other than competitively.



Starting up and staying in business: While PeaceTech is an arena of innovation and ideas, it is also an area of development and production. It is no accident that it brings together professionals who might not otherwise have worked together, and this includes the private and not-for-profit sectors. It is one of the most exciting aspects of this area of work that it transcends sectoral silos for a living. Local, national and international nongovernmental peacebuilding organisations have shown an ability to make use of new technologies and to play a part in their innovation and development and sometime to develop their own project-scale initiatives. But it seems that the most successful initiatives have either been designed to meet a short-term need or to found a sustainable business model, often in close cooperation with the private sector, which has enabled them to move beyond a start-up phase to maintain and develop their initiative. The path of PeaceTech development is littered with now defunct projects and broken links as well as the resilient success stories.



4 Conclusion

PeaceTech has much to offer. Thanks to their vision, creativity and hard work, the leadership of this field have brought us decades of innovation and new tools, resources and ways of working. Looking across this wide range of practice it seems that we are entering a second age of PeaceTech. Developments are not slowing down. On the contrary they are burgeoning. But a foundation of language, ideas, and practice has been laid down, and practice is now grappling with new challenges. Global trends of violent conflict and its human consequences show that even with the innovations of new peace technologies, we have yet to learn how to realise global potential to meet our urgent priority to prevent and end armed conflicts. Future PeaceTech will help us to imagine and find new and unimagined ways to meet these intractable challenges.

With its diversity and its constant dynamism, PeaceTech is challenging to confidently see at a glance. At best we can hold a picture of what it is has been, and we can only imagine how it might develop and what it might become.

PeaceTech built a bridge between people and sectors and generations who had not previously worked together. Digital and communication technologists, peace and conflict researchers, and peacebuilding responders worked in collaboration with interested investors. This bridge and these collaborations and the recognition of the importance of diverse and inter-professional cooperation for peacebuilding are here to stay.

With PeaceTech's development comes the expectation that it will play a role in meeting the 21st century peacebuilding challenges of overcoming systemic barriers to realising and unlocking the potential in our innovation ecosystem in the following ways:

- Empowering and safeguarding local people and their organisations building peace;
- Working across conflict systems, transcending silos and turf;
- Achieving a critical mass of implemented innovations;
- Lowering barriers to participation and access to resources and opportunities;
- Adopting, scaling and building momentum for change;
- Strengthening equal access to knowledge, information, experience and big data.



The organisations and projects cited in this paper are evidence that PeaceTech has the leadership to meet these challenges. Their work shows a deep understanding of the power and possibility of creative collaborations and an ability and commitment to understand, experiment, learn, and adapt. It's a young and youth-led area of collaboration and experimentation that is showing an ability to work creatively on urgent global issues, unafraid to engage art and science, to work politically and locally, building peace with and without technology. PeaceTech has a bright future.



Endnotes

¹ This refers to the definition of sustaining peace set out in General Assembly and Security Council Resolutions A/RES/70/262 and S/RES/2282, namely:

Sustaining peace ... should be broadly understood as both a goal and a process ... which encompasses activities aimed at preventing the outbreak, escalation, continuation and recurrence of conflict, addressing root causes, assisting parties to conflict to end hostilities, ensuring national reconciliation, and moving towards recovery, reconstruction and development....

² For this author, listservs were a central platform in the preparation for peace talks in Sierra Leone in the early 1990s, where diaspora and diplomats were in regular contact with rebels, government and the private military company. There was a similar list in Uganda called Acholinet which enabled a constant exchange between Luo speakers including on the agenda of ending the war.



Appendix A: A PeaceTech Ontology

(A common vocabulary for those who need to understand and share information on digital peacebuilding technologies)

"We cannot solve our problems with the same thinking we used when we created them." (Albert Einstein)

Digital literacy, combined with developing basic ICT skills and having an awareness of critical online resources as well as understanding of the digital technologies used by the conflict parties, are now essential for all peacebuilders. The technology comes with its own opaque jargon. Here is some of the vocabulary used in the literature (not all is particular to PeaceTech):

A

- **Accelerator:** Businesses and programmes that give developing companies access to mentorship, investors, and other support that helps them become stable and self-sufficient so they can realise their potential.
- **Aggregators:** A website or programme that collects and filters related items of content from multiple sources and displays them or links to them (e.g. [Peace Talks](#) on Factr).
- **Artificial intelligence:** Automated learning based on a set of examples used to make decisions and solve problems (e.g. self-driving cars, chess-playing computers).

B

- **Basic cyber hygiene:** Digital data storage and privacy practices that pay attention to the vulnerabilities and risks associated with certain applications and platforms.
- **Big data:** Extremely large data sets that may be analysed computationally to reveal patterns, trends, and associations, especially relating to human behaviour and interactions. These may include making information available online and worldwide from text messages, social media content to online survey responses (e.g. [ACLED's](#) database on political violence and protests).
- **Bots:** Autonomous computer programmes that interact with other computers or behave like other human users on a network (e.g. Build-Up's [Peacebots](#)).
- **Blockchain:** A digital, public ledger that records online, time-stamped transactions that are validated and bound to each other using cryptographic principles (i.e. a 'chain'). This is managed by a peer-to-peer network of computers who permanently maintain the 'blocks' of data and ensure the system is tamper-proof. It is the core technology for cryptocurrencies like bitcoin.
- **Cloud:** Data that is stored on servers and not on desktops.
- **Crowdsourcing:** The practice of outsourcing of specific tasks to a public or 'crowd'.
- **Cryptography:** The encryption process of converting information into unintelligible text called cyphertext.

D

- **Dashboard:** a presentation tool that organises and presents information (data analytics) in a way that is easy to understand.
- **Data firehose:** A steady stream of publicly available data from a source in real time (e.g. Twitter firehose).
- **Data mining:** The process of sifting through large quantities of data and identifying patterns and trends.
- **Data sprints:** Research and coding workshops convening participants from different backgrounds (academic and non-academic) to work together on a set of data and research questions.
- **Deep learning:** Type of machine learning that is focussed on complex problems (e.g. measuring parliamentary polarization).
- **Digital diplomacy:** Methods and modes of conducting diplomacy with the help of the Internet and information communication technologies, also described as Digiplomacy and e-Diplomacy.



- **Digital divide:** The gap between those with and without access to the internet and information communication technologies.
- **Digital participation platforms (DPPs):** Online applications which enable participation, dialogues and coproduction, including on public policy issues.

E

- **E-governance:** The use of information and communication technology in delivering government services and communications.
- **E-mediation / online mediation:** Online dispute resolution facilitated by trained mediators, primarily through e-mail and telephone and video conferencing (often used in private and family disputes).

G

- **Geographic Information Systems (GIS):** Systems designed to capture, store, manipulate, analyse, manage, and present spatial or geographic data.
- **Geotags:** Location data assigned to certain data points (e.g. location details linked to tweets on ongoing conflicts).

I

- **Incubator:** A company or organisation that helps new and start-up organisations to develop by providing services such as management coaching, training, or office space.
- **Informatics:** The digital representation, processing, and communication of information.
- **Information and communication technology (ICT):** Hardware or software for digitally processing, storing, or transferring information.
- **Information management systems:** Systematic gathering, organising, and retrieving of data.
- **Internet of things:** Network of diverse interlinked physical objects that communicate with each other by means of embedded Internet-enabled electronics (e.g. smartphone to fridge).

M

- **MOOC / Massive Open Online Course:** Distance-learning courses run online by many universities worldwide. There are an increasing number relevant to mediation and peacebuilding.
- **Mediation technology:** "Augmenting people's possibilities to engage with each other across boundaries at a level or episodically that couldn't have happened without technology and changing human interactions by design". Also referred to as peace engineering (Stanford Peace Innovation Lab).

O

- **Online dispute resolution (ODR):** Settling and resolving disputes in cyberspace, the online equivalent of alternative dispute resolution (ADR), also referred to as e-negotiation, e-mediation and e-arbitration.
- **Online mapping / crisis mapping:** Collecting, analysing and communicating data linked to a specific geographic area and tracking movement across different locations over time. This allows tracking data from on-the-ground witnesses of the spread of conflict, monitoring elections, and coordinating responses to natural disasters (e.g. [Crisis Tracker](#)).

P

- **Practice interface:** In this context, where the realms of research, policy, and technology meet and interact with applied peacebuilding and mediation work.



S

- **The Semantic Web:** An extension of the World Wide Web through the development and promotion of common data formats and exchange protocols that make data machine-processable.

T

- **Text mining:** The process of combing through text to get information. It requires sophisticated analytical tools that process text in order to glean specific keywords or key data points.



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About Us

PeaceRep: The Peace and Conflict Resolution Evidence Platform is a research consortium based at Edinburgh Law School. Our research is rethinking peace and transition processes in the light of changing conflict dynamics, changing demands of inclusion, and changes in patterns of global intervention in conflict and peace/mediation/transition management processes.

Consortium members include: Conciliation Resources, Centre for Trust, Peace and Social Relations (CTPSR) at Coventry University, Dialectiq, Edinburgh Law School, International IDEA, LSE Conflict and Civiness Research Group, LSE Middle East Centre, Queens University Belfast, University of St Andrews, University of Stirling, and the World Peace Foundation at Tufts University.

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