How blockchain can *possibly* improve humanitarian actions
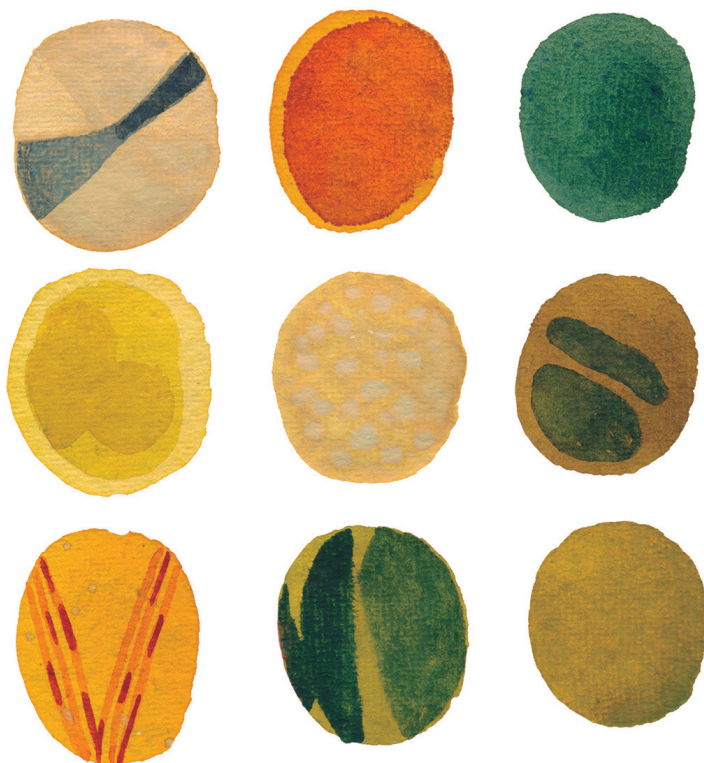
Community engagement, cash transfer & traceability

Red Social Innovation | red-social-innovation.com

Red Social Innovation is an international resource centre for social innovation founded by the French Red Cross and the Spanish Red Cross, and supported by the International Federation of Red Cross and Red Crescent (IFRC), the Solferino Academy, the International Committee of the Red Cross (ICRC), the United Nations Sustainable Development Solutions Network (SDSN), Ashoka and the Stanford Social Innovation Review. Its goal is to test, scale and highlight social innovations created and developed within the International Red Cross and Red Crescent Movement, and by other private or public actors.

Paris - Madrid - London, March 2023

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How blockchain can possibly improve humanitarian actions
Community engagement, cash transfer & traceability

1. Introduction

Since the creation of the Bitcoin by Satoshi Nakamoto in 2008 and the financial explosion of cryptocurrencies over the last few years, the extraordinary opportunities linked to blockchain are taking off in many sectors: finance, supply chain and retail industry, entertainment and gaming, humanitarian sector. Beyond the blurry legal framework, risks and speculation that come with any new technology, what are positive and impactful initiatives out there that can inspire the third sector? What charities or private sector companies have demonstrated a smart use of block chain technology since its inception?

The objective of this report is to explore the usages of blockchain related to the activities of the International Red Cross and Red Crescent Movement: community engagement, cash transfer and traceability. Our position is agnostic. We don't want to establish if blockchain is good or bad. Our goal is to better understand how blockchain works and how it can be implemented as a tool to improve the work we do as a humanitarian network. Finally, this report is an invitation to share the ideas, opportunities and challenges that the blockchain and decentralised technology present.

Welcome to the decentralised world

Welcome to the decentralised world where blockchain is the future of the internet, making the slow but inevitable switch from web2 to web3. But what does this really mean? The Internet and web2 rely on three main elements (hyperlinks, DNS and IP protocol), whereas blockchain and web3 work thanks to cryptography, the P2P and the digital signature.

Blockchain
A blockchain is essentially a digital ledger of online transactions linked and secured by cryptography, and stored on a peer-to-peer computer network. Updates occur in real-time—in blocks (or groups) of transactions— without interference from or control by a central authority. A blockchain doesn't allow users to change completed transactions, and all users can see the transaction[1].

Centralised structure
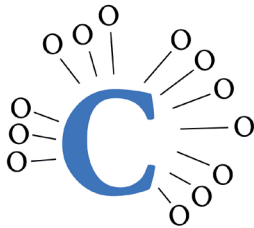
Centralised systems have a core authority that validates the data for all the participants of the network. Only some users or institutions can have access to the history of the transactionsor can confirm new operations.

Examples of centralised structures:
Tranditional banks
GAFA: Google, Apple, Facebook, Amazon

Decentralised structure
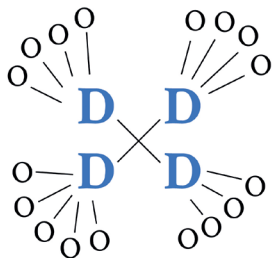
Decentralised systems have no core authority to determine the validation for the members of the network. Every participant in the network can access the history of the transactions or confirm new transactions.

Examples of decentralised structures:
Crypto-currencies
infrastructures, NFTs,
blockchain supply chains.

This paradigm shift reveals a deep change in the organisational structure of our society, moving from a centralised to a decentralised system; from centralised banks and vertical institutions to horizontal, distributed networks. Is this the beginning of a democratic revolution or the final battle of a neo-liberal philosophy?

1.
Stanford Social Innovation Review.
Digital Currencies and Blockchain
in the Social Sector
January, 2018

What is blockchain?

Blockchains are a technological tool allowing data to be stored and exchanged on the internet without a centralised intermediary. For instance, the data we are talking about can be photos, figures, signatures, contracts or amounts of cryptocurrencies… Actually, blockchain is the digital structure that cryptocurrency and decentralised financial networks are based on. A blockchain is a database that contains the history of all exchanges made between its users since its creation. This database is secure and distributed: it is shared by its various users, without intermediaries, which allows everyone to check the validity of the chain. A blockchain can be considered as a public accounting ledger, anonymous and unfalsifiable. The mathematician Jean-Paul Delahaye describes it as "a very large notebook, which everyone can read freely and for free, on which everyone can write, but which is impossible to erase and is indestructible".

Distributed ledger technology
All network participants have access to the distributed ledger and its immutable record of transactions. With this shared ledger, transactions are recorded only once, eliminating the duplication of effort that's typical of traditional business networks[2].

Public or private blockchain

Two kinds of blockchains exist. In order to understand the difference between public and private blockchain, we can use the comparison between the internet and the intranet. Like the internet, a public blockchain is open to everyone. It can be consulted by everyone and allows everyone to participate in the network. Conversely, a private blockchain, like an intranet, is only accessible to a certain number of actors defined upstream.

2.
Senat.fr
Hearings of the 4th of April 2018
Jean-Paul Delahaye
Professor of Computer Science
at the University of Lille

How does blockchain work?

Any public blockchain works with a programmable money or token (such as Bitcoin). Transactions and exchanges between users of the network are grouped into blocks.

A new block in the chain

— 1
A user send a request to the network to create a new block in the chain.

— 2
The block is sent to every node in the network.

MINER

— 3
The request is received by a miner (a user) who validates with every node within the network using a cryptographic algorithm. This action is called a *proof of work*.

— 4
Once the network validates the request, a new block is added to the chain in a permanent and unalterable way. The blockchain can be called as a *distributed ledger*.
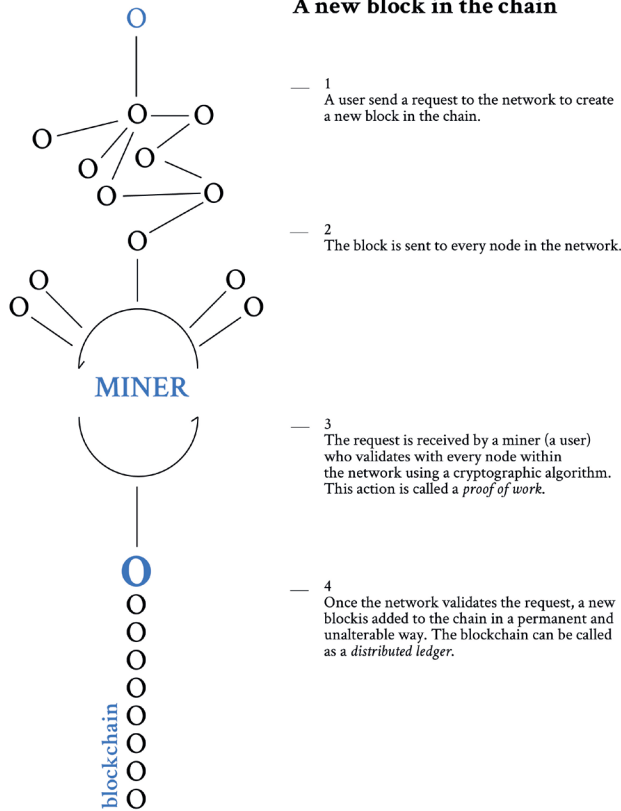
blockchain

Each block is validated by network nodes called *miner*, using techniques that depend on the type of blockchain. Once the block is validated, it is time-stamped and added to the blockchain. The transaction is then visible to the receiver and the whole network. This process takes some time depending on the blockchain (about ten minutes for Bitcoin, 15 seconds for Ethereum).

3.
IBM.com
What is blockchain technology?

NFTs are NOT cryptocurrencies

Both cryptocurrency and NFTs rely on blockchain technology in order to validate their authenticity and record their ownership. In most cases, you need crypto to purchase NFTs. The big difference between NFTs and cryptocurrencies is that the value of cryptocurrency is purely economic! Its value comes from its utility as a currency or an investment. NFTs exist both with economic and non-economic value. Artists, for example, can use NFTs to distribute, monetise and even autograph their work — which some investor or collector might then buy using cryptocurrencies[5].

How can you buy art via NFTs?

euros

— 1
The user opens an account on a crypto-wallet and converts into crypto-currencies, like Bitcoin or Ethereum.

— 2
This operation needs to be validated within a decentralised structure, hence by the different members of the network.

₿ ₿ ₿

— 3
The user buys a digital unique and immutable object, a non-fungible token (NTF) of an digital art-work available on marketplace (like Ocean Drop) and pays a fee for the operation.

— 4
The user owns the digital art via a NFT.

NFT

(non fungible token)

NFTs can also be generated following an action in real life without a financial dimension. For instance, NFTs can be offered to people achieving a training, attending an event, or following a nomination.

4.
nftnow.com
NFT Dictionary: All the Terms and Definitions You Need to Know

5.
nasdaq.com
NFT vs. Crypto: What Is the Difference?

NFTs & gamification

What do scouts, NFTs and game culture have in common? The passion for collecting badges and skills. NFTs can be used to generate a certified, unique and secure *stamp* to record and store the attendance to an event - a general assembly or the 100th first aid posts of a volunteer, a first aid degree or a new job title. These NFTs can then be added to a virtual minting wallet and shared within the community or externally.

Minting

Minting is the act of adding, validating, and recording an NFT to the blockchain. Once minted, the NFT is available for public consumption and can be viewed, bought, and traded on the open marketplace. That said, NFTs don't have to be made public and can be kept private[6].

degree *or* **event** *or* **new job**
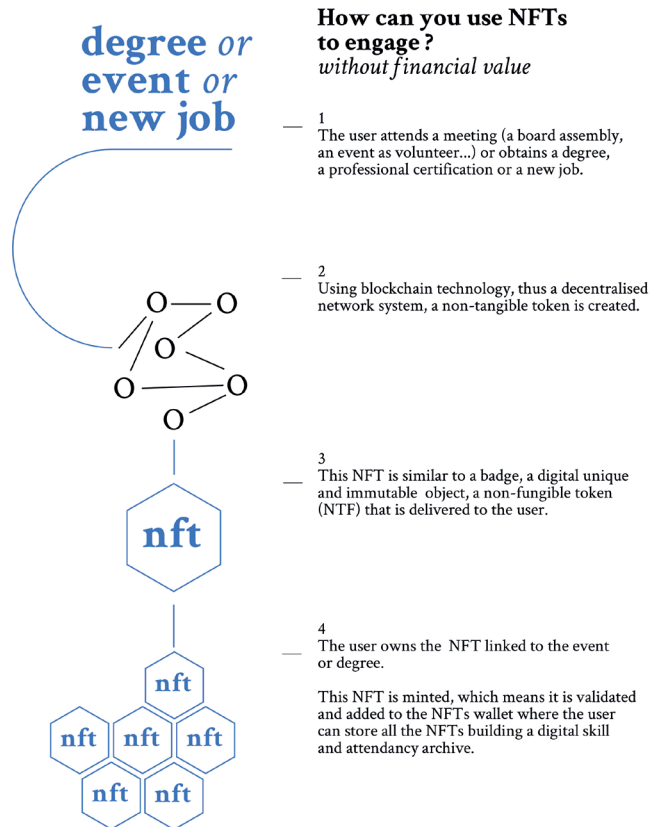
How can you use NFTs to engage ?
without financial value

— 1
The user attends a meeting (a board assembly, an event as volunteer...) or obtains a degree, a professional certification or a new job.

— 2
Using blockchain technology, thus a decentralised network system, a non-tangible token is created.

nft

— 3
This NFT is similar to a badge, a digital unique and immutable object, a non-fungible token (NTF) that is delivered to the user.

— 4
The user owns the NFT linked to the event or degree.

This NFT is minted, which means it is validated and added to the NFTs wallet where the user can store all the NFTs building a digital skill and attendancy archive.

nft

nft **nft** **nft**

nft **nft**

6.
nftnow.com
NFT Dictionary: All the Terms and Definitions You Need to Know

2.
Interviews

When blockchain appears in the media, few people understand the nature of this highly technical, often obscure subject.

We met academic and humanitarian experts of innovation in order to get different, sometimes opposed, views on critical questions such as, the sustainability and the environmental impact, the philosophical concept of decentralisation or the risks of implementing this technology in the humanitarian sector. Rather than having an ideological or binary approach to a new and far reaching topic, we invite you to have a humble and open minded approach to the following interviews, which simply seek to present the disparate pieces of a complex puzzle.

MASSACHUSSETS INSTITUTE OF TECHNOLOGY

2. 1 Environment & sustainability

Christian Stoll is a research affiliate at the Center for Energy Markets of the Technical University of Munich and at the Center for Energy and Environmental Policy Research of the Massachusetts Institute of Technology. He co-founded CCRI and works as a management consultant. His research focuses on the intersection of sustainability and cryptocurrencies.

Why is the blockchain greatly contributing to carbon emissions?

Christian Stoll | The critical need to limit global warming has triggered a heated debate about the quantity and the sources of electricity used to mine some blockchains. Mining is the process of adding new blocks to the blockchain to validate transactions. In the case of Bitcoin for instance, it involves a process of trial-and-error that resembles a competitive numeric guessing game in which a correct "guess" completes a block and only the winner obtains rewards in the form of both newly minted Bitcoins and transaction fees.

Some blockchains - like Bitcoin - use a so-called Proof-of-Work protocol, which incentivises miners to invest in hardware and electricity in order to validate transitions and ownership. And miners' demand may cause emissions from electricity generation. In May 2021, approximately 2.9 million specialised hardware devices worldwide competed in this game, generating 160 quintillion guesses per second and consuming approximately 13 gigawatts (GW) of electricity.

Ethereum, the second largest cryptocurrency, is aiming to drastically reduce its carbon emissions through a software upgrade known as "The Merge". What is it and can it make the blockchain more environmentally friendly?

Christian Stoll | The Merge was the event when Ethereum switched from Proof-of-Work to a Proof-of Stake protocol. Proof-of-Work and Proof-of Stake are

different protocols that define how transactions and ownership are validated. In PoW, miners run specialised hardware to add new blocks to the chain. This energy-intensive mining process is not required in PoS. The Merge was successful and has reduced Ethereum's electricity consumption and associated carbon emissions by over 99%.

Last September, WWF UK created Tokens for Nature . On Twitter, many donors threatened to cancel their subscriptions, accusing the charity of greenwashing. Is there a risk for humanitarian organisations going down this route?

Christian Stoll | I think it is important for humanitarian organisations to understand and consider the environmental impact blockchain technology may have. The WWF initiative came at a time where many people were looking at the electricity consumption associated with NFTs - and Ethereum was still using a Proof-of-Work protocol at that time.

Can the blockchain actually contribute to climate actions?

Christian Stoll | There are several examples of how blockchain can contribute to mitigating climate change. Blockchain may bring efficiency gains in carbon markets and accounting, for instance, by providing higher transparency, accessibility, and trust.

But this should not prevent the blockchain sector from accelerating efforts to decarbonize the industry, through renewable electricity sources, or to think about other environmental issues such as electronic waste. In the case of Bitcoin, a rapid solution to reduce its carbon footprint is not within sight. While other blockchain systems rely on more energy-efficient consensus mechanisms, the likelihood of changing the proof of work mechanism in Bitcoin is negligible due to its enormous complexity.

2.2 Security & Data

Vincent Graf Narbel is currently working as Head of the TechHub at the ICRC Data Protection Office. He focuses on the adoption of new technology in the humanitarian sector with a strong emphasis on privacy, security and ethics in general. Vincent holds a Masters in Mathematics from the EPFL.

From a security and data protection point of view, can we consider blockchain as mature technology? If not, which are the pain points to be regulated or improved?

Vincent Graf Narbel | There are many different implementations of blockchain available on the market and the question cannot be answered directly. What we observed in the last 3-4 years is an acknowledgement of the risks and a push back toward a techno-solutionism approach. Nowadays, it is no more disputed that personal data should not be stored on a blockchain.
In this sense, we can say that the technology is getting more mature. At the same time, more complex designs are proposed, for instance with layer two chains, and the analysis is also getting more resource intensive.

When we start working with blockchain technology as a non-profit organisation, which are the main three security issues that we have to deal with?

Vincent Graf Narbel | The people we serve in our humanitarian sector are amongst the most vulnerable in the world. This means that the risks brought by technology are exacerbated and blockchain is not immune to this. For instance, the loss of the secret keys. In areas of conflict, infrastructures are often not available steadily and being able to recover the keys may be essential. The fixed nature of blockchain is also a double-edge sword in our context. It is not very clear why humanitarian

assistance transactions have to be permanently stored for instance. The notion of who owns the blockchain is a challenge as the really decentralised solutions are not the cheapest (Tx costs) and there is a risk to go for less mature architecture where the network is not really robust.

Is there a way to use crypto-currencies in a safe way providing a good traceability of the funds and their origin?

Vincent Graf Narbel | This is an interesting question which calls clarification on what is meant by *traceability*. There are companies selling services to trace bitcoin transactions for instance which can potentially lead to re-identification of the wallet holders. There are also ways to hide fiat money origins. So it really is a balance that requires technical measures as well as organisational measures and a clear understanding of the requirements.

Is blockchain GDPR compliant?

Vincent Graf Narbel | Piggy backing on question 1, there are too many ways to implement a blockchain to have a definitive answer. In other words, the answer is «no». However, there are certain use cases and certain designs that can be GDPR compliant, yes I believe so.

What is the best initiative you would like to share supported by blockchain technology in the humanitarian sector?

Vincent Graf Narbel | A few years ago we have been involved with a project called Whiteflag. The idea was to develop a messaging platform to notify vulnerable parties of impending conflict before it happened to prevent loss of life. As these messages would have to be independent from any controlled system and because users, neutral or combative, would clearly not trust each other, the use of a blockchain to store the messages is very elegant. The project brings many other challenges but technically, it is one of the few cases where a public blockchain really makes sense.

In terms of regulation and security, which are the most urgents steps to be taken by public authorities?

Vincent Graf Narbel | The recent FTX meltdown indicated a clear need for regulation to prevent such huge losses. So regulation in the layer that is used by people to interact with blockchain (e.g. wallets, exchange platform). I would also be interested to see more standardisation to enable secure custodian key recovery mechanisms.

VIRGINIA COMMONWEALTH UNIVERSITY

2.3 Decentralisaton: democratic or neo-liberal shift?

David Golumbia teaches in the English Department at Virginia Commonwealth University. He is the author of "The Politics of Bitcoin: Software as Right-Wing Extremism", University of Minnesota Press, 2016, and The Cultural Logic of Computation. Cambridge: Harvard UP, 2009. Read more on his personal blog uncomputing.org.

Is blockchain - without cryptocurrencies - a sustainable and secure technology?

David Golumbia | No. At least the answer is certainly no for public, permissionless blockchains, which is what most people mean by «blockchain.» There might be some small uses for private/permissioned blockchains, but even there the evidence keeps suggesting that other tech is almost always better for any given purpose.

Can you share one initiative supported by blockchain that is a good case study for humanitarian action?

David Golumbia | Myself and my colleagues who work in the area have looked hard for an example of any blockchain application that (a) actually does

what it promises to do; and (b) works better than other, far more widely-adopted technological solutions to the same problem. We have found no examples of either (a) or (b), let alone both of them put together.

Unfortunately the humanitarian sector has been targeted by blockchain promoters for a long time. They use the same techniques of intimidation, hard sales, and spreading falsehoods to try to force nonprofits to adopt their technology. Some blockchain promoters even work inside some of these organisations. This is partly to offset the reputation blockchain rightfully has of being an anti-government, antidemocratic project. It is also because nonprofits and governments are always good targets for funding technology projects. The Minderoo Centre for Technology and Democracy (Cambridge University) is only the latest of many independent academic projects to examine some of these claims, and find them not merely of very little use to humanitarian projects, but actually intended to harm the vulnerable populations that they claim to want to help.

Decentralisation is at the core of the blockchain technology structure. Is it a democratic or a neo-liberal model? Or both?

David Golumbia | Decentralisation is an abstract term. It can mean almost anything. I have long argued that once we get beyond very specific maps of networks of various types, decentralisation is not a helpful term. For example, most democratic governments have both national-level institutions as well as local ones. We could easily and more-or-less accurately describe such systems as centralized or decentralised, depending on our needs and preferences. The same can be said of many forms of corporation and social movements. Unfortunately, the political right has a long history of attacking democratic governance, and «decentralisation» is one of the core terms they use in that effort. They portray all governance as *centralized*, and all non-governmental power as *decentralised.* This is pure metaphor.

It means virtually nothing unless one already thinks that governmental power

is unique only because it is uniquely capable of evil, which is a familiar conspiratorial trope from the far right. In this sense, although it may well be properly true in the academic sense that decentralisation is part of neoliberal governance, it is legibly part of something even farther to the right than that. Crypto critic David Gerard often says that decentralisation in the context of cryptocurrencies means *can't sue me* (because the decentralised nature of blockchain-based organizations supposedly means that no specific agents are responsible for the actions that happen on them). Gerard is right, but as he points out, in fact it appears quite possible to sue bad actors even so.

Could centralisation be a good way of structuring finance?

David Golumbia | As I said, I think centralisation and decentralisation are metaphors when it comes to complex social organizations. Some parts of finance are nominally centralised, such as «central banking,» and my own reading suggests that the practices of contemporary central banks are largely helpful, although they frequently make what may well be mistakes, particularly through imposing austerity through lending practices. I'll flip the question around a bit: blockchain and crypto promoters often say the virtue of their supposedly decentralised systems is they eliminate the need for *middlemen. Middlemen* in this context appears to mean anyone who actually provides financial services. I think the absolute disasters we see every week in crypto show that, contrary to these assertions, responsible and legally accountable middlemen - including not just large institutions but smaller, community-focused ones like credit unions--serve important functions.

Cryptocurrencies are not regulated, or not regulated yet… their regulation will put an end to their speculation. Would that phase make them more structured and secured?

David Golumbia | This is a hot topic for debate. My view, which is certainly a minority view, is that strong regulation of the crypto industry is a great idea.

Crypto should play by the same rules as do the providers of other financial products.

Maybe a few crypto providers can actually do this. My guess is that almost the entire crypto industry actually depends on the lack of regulation to make profits, and so that having to play by the same rules as others will effectively put it out of business. Separately, countries including the EU are working toward, and some have implemented, regulations regarding the climate impact of proof of work mining, which absolutely should be put in place as quickly as possible.

Blockchain technology seems to be the most miraculous progress in IT. Are we looking at the finger or the moon? If so, where is the moon?
David Golumbia | Technology that advertises itself as too good to be true almost always is just that. Rather than to the moon, when we evaluate new technologies we should be looking right here on the ground.

MINDEROO CENTRE FOR TECHNOLOGY AND DEMOCRACY
2.4 Web3 & Communities at risk

Dr Margie Cheesman is a digital anthropologist. She is a Postdoctoral Fellow at the Department of War Studies, KCL, and Affiliate at the Minderoo Centre for Technology and Democracy. Margie works with communities using and making digitalisation projects. Her doctoral thesis was the first ethnography of blockchain technology in the humanitarian aid sector, based on research with refugees and United Nations agencies in Jordan.

In 2022, you wrote a report on web3 and communities at risk, highlighting concrete initiatives from different organisations. What were the most common applications of blockchain in the humanitarian sphere?
Dr Margie Cheesman | In the report, I build on my ethnographic fieldwork in Jordan and Kenya to map and survey evidence about real-life web3 projects. The key kinds of initiatives that require critical attention relate to (i) payment (ii) currency (iii) identification.

Through the different interviews you conducted at that time, what were the lessons learnt and feedback you received from the different actors?
Dr Margie Cheesman | The research highlighted, firstly, how proponents suggest blockchain will democratise payment, facilitating direct, cheap, and borderless digital transactions—but that there are significant concerns around the for-profit motives, surveillance, and recourse issues when blockchain infrastructure replaces established payment systems.

Secondly, while proponents of crypto and other alternative currencies suggest they provide a lifeline to people without reliable access to stable currency or liquidity, the report demonstrates how they lack stability, usefulness, and accessibility. Thirdly, the research examines decentralised identity schemes, which seek to facilitate forms of power and agency for technology users, e.g., by allowing users to

selectively disclose and minimise sensitive data sharing. However, not all do, and this puts the onus on users to manage personal data.

What would be your advice to NGOs and associations willing to launch a blockchain project?

Dr Margie Cheesman | The report urges organisations, especially humanitarian agencies, to follow three key recommendations. Firstly, web3 solutions, especially untested cryptocurrencies, should not be imposed experimentally on marginalised communities. Companies and institutions are targeting refugees, aid beneficiaries, low-income groups, and other marginalised communities for web3 experiments in contexts of limited accountability, safeguards, and regulation. In case studies discussed in the report, users are missing out on choice or alternatives or are not in position to turn down the incentives start-ups provide. It is concerning that marginalised groups (that lack everything from a choice of alternatives to resources, political economic rights, safety nets, recourse, and protections) should be the first to absorb the risks of these untrialled systems. Secondly, public institutions need to coordinate around vetting private web3 companies. Web3 initiatives rely on non-traditional public-private partnerships. Aid organisations are referring to new private companies as experts and intermediaries in Web3 projects. Organisations could do more to build internal capacities around finance, data, and technology, share learnings from Web3 initiatives, and critically analyse and vet blockchain/crypto vendors and advocates based on a comparative evidence base. Lastly, we need better research on the design, maintenance, and use of Web3 technologies. Understanding how Web3 innovations are being made, used, and playing out in practice is needed to help organisations and policymakers make better choices. Close-up research reveals unintended consequences, frictions and barriers, workarounds, and resistances to new tech. We need to understand more about how users navigate blockchain and cryptocurrency ecosystems and technologies in conjunction with their existing rituals and devices (e.g., with fiat cash, identity systems, payment platforms, currency exchange groups on WhatsApp, or

mobile phones). In-depth research on case studies is lacking, especially qualitative studies at the intersection of these technologies and people's values, cultures, and experiences. Such research could illuminate how to develop appropriate recourse and support mechanisms, or indeed when an initiative is inappropriate for use entirely.

2.5 Best practices of the British Red Cross

Celia Scruby is Product Development Manager in the Fundraising Innovation team at British Red Cross. She has been leading the initiative within the British Red Cross to explore accepting donations in crypto currency.

What advice would you give to other National Societies interested in the subject, especially in terms of due diligence? My advice relates, specifically, to fundraising and accepting donations in cryptocurrency, rather than using blockchain operationally to distribute aid.

An important point to make up-front…if a National Society is considering accepting donations in cryptocurrency be clear on why. It is not a decision to be taken lightly. The reputational risks are high, the crypto market is volatile and the due diligence involved is considerable. Extensive market research should be done and legal counsel should be sought before engaging with crypto donation platforms. That said, whilst crypto fundraising is a high risk venture, it can also yield high rewards and has been a highly successful donation feature for many charities. My advice for the National Societies, interested in crypto fundraising, is to understand the risks involved in accepting crypto donations and be prepared to take responsibility should the worst happen. If that is something a National Society is comfortable with then the following points may help navigate the trickier due diligence hurdles involved in accepting crypto donations.

Find a trusted partner | Finding a third-party platform that can not only deliver a donation solution but can also provide support and advice on navigating the crypto market safely, is key.

Whether that's offering marketing and strategy support, expert consultation and data dashboards or, creating a bespoke payment widget and turning off anonymous donations; find a partner that understands and can flex their offering to your society's specific needs.

The British Red Cross chose to partner with The Giving Block, a crypto donation solution, after going through an official procurement process and rigorous due diligence with extensive legal support.

Anonymous donations | Whilst crypto payments can be made anonymously, many crypto payment platforms can turn anonymous donations 'off', so organisations can identify donors and screen them accordingly. Consider this feature when searching for a suitable payment solution.

Screening donations | On fiat (government issued currency) donations, there will likely be a threshold amount at which National Societies carry out due diligence on donor, to adhere to fundraising and ethical policies. When it comes to crypto donations, it is important to consider how and when to screen donations and donors. Crypto donations may be much higher than the average fiat donation and the crypto donor and their source of funds may not be as traceable. National Societies may want to review their current due diligence process to see if it's suitable for this kind of high-risk initiative, or not.

Refunds | National Societies will also need to consider their position on refunding crypto donations, including the information it provides to its donors. Some organisations will not refund crypto donations unless in very specific circumstances and, if this were to arise, they would normally be considered in line with their own internal procedures or policies. There are operational, financial and legal considerations around refunds of crypto assets and so this all requires careful consideration and consultation with your society's legal and financial teams.

WORLD FOOD PROGRAM

2.6 Transparency in international operations

Houman Haddad is the Head of Emerging Technologies at the United Nations World Food Program (WFP) and the founder of WFP's "Building Blocks" (BB) project.

Blockchain has many applications in the humanitarian sector, from donations traceability to volunteers' engagement. The World Food Programme launched the Building Blocks initiative in 2017. How does it work?

Houman Haddad | Building Blocks is the world's largest application of the blockchain technology for cash transfer in humanitarian assistance, currently serving 1 million refugees in Bangladesh and Jordan. In humanitarian contexts, the same beneficiaries are targeted by multiple organisations, for food, health, education or shelter. The humanitarian aid - which is increasingly done through cash transfer - is suffering from a lack of common visibility, which leads to duplicated and unequal assistance. Building Blocks is a blockchain-based humanitarian network which puts the beneficiaries at the centre of a common interagency platform to further empower the people being served. In an environment where organisations all share the same donors, the philosophy behind Building Blocks is to overcome the existing political barriers, by offering a common and neutral system designed for the humanitarian sector. The objective is to make humanitarian organisations collaborate more, facilitating transparency about who is helping who, with the beneficiaries at the centre. Building Blocks is looking for new external partnerships as well as internal expansion.

Would you say that blockchain technology is mature enough for the humanitarian sector? How to make sure that blockchain-based solutions are not imposed on marginalised communities?

Houman Haddad | I think the technology is much more advanced than the mindset. But I would say that there are four unsolved technical things yet: 1. The connectivity, we need internet connectivity to use the blockchain 2. The private key on the blockchain is like your password and it makes you the owner of everything. But if you lose it there is no way to get it back. 3. The issue of digital literacy. 4. The last one is the access to the devices. But again, more than the technology, I think that the political reluctance of humanitarian organisations to collaborate and share data is the major issue here.

What advice would you give to other humanitarian organisations interested in the subject, especially in terms of due diligence?

Houman Haddad | My first advice is not to reinvent the wheel. Whether we are talking about digital identity or money transfer, think about how to collaborate with other humanitarian organisations. Of course it would be depending on the use case you want to do and in any case, the 'do not harm' principle must be the priority. Beyond the traditional due diligence in terms of finance risk management, there are two things to have in mind when launching a blockchain humanitarian project. First, as you cannot delete anything and as the public blockchain is visible to everybody, you have to make sure it will not harm the beneficiaries in the long term. Second, the legal framework which varies a lot from one country to another. Specifically for the cryptocurrencies, you have to take it into account if something goes wrong.

3.
How to foster community engagement via distributed ledgers

Case study _ 01

How the French press agency created a new community of collectors (raising 200,000 euros in 10 days)

[AFP | France]

Since the earliest times, participants to a public event or travelers reaching a remote location have always been rewarded by offering or buying an object, a strong symbol of that precise moment: a coin, a card, a signature, a stamp, a goodie… The emotional value of this object is proportionally direct to the uniqueness and singularity of the moment they lived. For instance, Orthodox Copts visiting Jerusalem wanted to remember their pilgrimage with a tattoo. A personal, unique and immutable sign. This tradition continues after centuries and the Razzouk family still offers its services tattooing all the pilgrims wishing to remember their journey forever, being a part of a restricted community.

In the digital era, blockchain can offer this kind of service via a technology providing a unique and immutable "object" which will last forever, making you a part of a community which share the same passion or engagement. You can call this object an NFT, a "non fungible token". You can find below three case studies exploring the concept of NFT in three different industries : journalism & art, entertainment and NGOs.

The national French press agency AFP launched in November 2022 an initiative putting up for sale its photos using NFT. The funds raised by AFP will go towards the preservation and restoration of its photographic collection. The initiative raised nearly 200,000 euros, including nearly 15,000 euros for the first three NFTs offered by the press agency. In total, 90% of the photos offered went to the auction on Saturday, which brought together more than 500 participants, either remotely connected or present at the Ellia Art Gallery in Paris. From the cannons of the 1870 war to the Liberation, from Zidane's headbutt to Notre-Dame on fire, Agence France-Presse offered 200 photos from its archives, at the end of an exhibition that attracted more than 5,000 visitors over ten days. AFP sold its first three NFTs (digital photos authenticated by a certificate deemed to be unfalsifiable), with particular success for the image of American politician Bernie Sanders with his mittens, the subject of countless hijackings on social networks, and sold for 7,500 euros. "This sale of art prints now puts us on the map of collections and brings us closer to the general public, which is a double success", said Marielle Eudes, director of special photo projects at Agence France-Presse, with some of the images going to private or institutional collections.

Case study _ 02

How the Thai Red Cross uses art to support its Disaster Relief Emergency Fund

[Thai Red Cross | Thailand]

Art and philanthropy have always worked closely together. The Thai Red Cross Society launched Digital Arts NFT: Re-dCross x KX, a digital art exhibition to showcase the artworks of Her Royal Highness Princess Maha Chakri Sirindhorn, also vice-president of the association. This is the first time in Thai art history that art pieces will be presented in the form of non-fungible tokens (NFTs) on Coral – an NFT marketplace platform. The resources generated by the sales of the artworks will be offered to the Disaster Relief Emergency Fund (DREF) of the Thai Red Cross Society.
The event is aimed at exhibiting Her Royal Highness's exceptional art to the general public and receiving donations on the Coral Platform, an e-marketplace platform for artists to buy and sell NFTs created by the company KX in the form of NFTs (non-fungible tokens).

Case study _ 03

How Ed Sheeran fights ticket trading and black market using blockchain

[Ed Sheeran | France]

The British pop singer Ed Sheeran used blockchain technology to sell tickets for his concert in France. For the first time, the ticket office of a show has exploited this system to avoid fraud and resale on the black market. During his concert at the Stade de France, performed on 29 July 2022, Ed Sheeran used a new ticketing system based on blockchain technology. The 75,000 tickets, priced between €40 and €80, were sold out. This is a first in the use of blockchain as a security system on this scale. Ed Sheeran took advantage of his European tour, specifically in France, to test this method for the first time to fight against fraud and resale of tickets on the black market. During the Champions League final at the Stade de France thousands of counterfeit tickets were circulated at the event, creating a scandal. For Ed Sheeran the solution was to use blockchain: once you have: once you have paid for a ticket, you receive proof of the transaction with your name, email address and phone number. The ticket is only released a few days before the concert. Users need to download the SecuTix app on their smartphone, owned by a leading Swiss IT services group, SecuTix app generates an encrypted and traceable QR code on your smartphone. Hosting the tickets on SecuTix makes them forgery-proof and non resalable. Screen captures were also impossible and taking a photo is no longer necessary thanks to a dynamic QR code.

Case study _ 04

How WWF is aiming to protect endangered species through NFTs

[WWF | United Kingdom]

In February 2022, the World Wildlife Foundation (WWF) in the UK launched an initiative called Non fungible animals offering the WWF community to buy NFTs of different virtual animals to raise awareness and funds for the conservation of ten endangered species.

More than 220,000 euros were collected, WWF received some backlash on social media and in the media outlets (Digicominist and The Verge) arguing that a charity protecting the environment launched an initiative using a technology consuming an enormous amount of energy. To face these accusations, the WWF reminds on its website that their Non fungible animals (NFAs) are supported by Polygon, an Ethereum sidechain considered as a "greener" crypto-currency: "Unlike proof-of-work, Polygon uses proof-of-stake validation, which ensures very low power consumption. The Polygon ecosystem is optimised for environmentally friendly NFTs and its energy consumption is constantly being improved. Environmental protection is of course also our top priority when it comes to NFTs".

Case study _ 05

How a local chapter of the Italian Red Cross raised 12 K in 24 hours

[Italian Red Cross | Italy]

During the escalation of the Covid-19 emergency, the exponential increase of infections in the population put pressure on public health facilities. In March 2020, the Colli Albani local chapter of the Italian Red Cross (in the upskills of Rome) decided to launch a fundraising campaign to finance the setting up of a first-aid mobile structure dedicated to pre-triage.

The campaign was hosted on for-profit Blockchain platform, allowing users to open a project by associating a related wallet and a security device with three keys only owned by a part of the members of the local chapter. Within a single day, the goal of 12,000 euros (the equivalent of 2 bitcoins) was reached. This amount corresponds to the budget needed to purchase all the equipments for the set-up (self-supporting tent, 7 hospital beds, etc.). Directly from the platform, it was possible to quickly convert the cryptocurrency into euros, purchase the material and set up the tent in record time. The fees charged by cryptocurrencies - especially Bitcoin, the most popular and widespread cryptocurrency - are very low (0.55%). However, the costs of managing the digital infrastructure to handle transactions and ensure transparency are high, even if outsourced, in this case by Helperbit. The Bitcoin against Covid campaign was successful, probably facilitated by the affordable target (12K) but also by the particular emergency phase in which it was launched.

4.
How to facilitate the transparency of data

According to the World Bank, funds lost to corruption in economically developing countries are estimated to be ten times the amount of the overall Official Development Assistance. By removing the need for a single entity to control the data, blockchain technology can be very helpful in the aid sector to establish a clear traceability of cross-border cash transfers or sensitive information. In the case of cash transfers, blockchain can be a way for vulnerable communities to easily access money through vouchers, mobile applications or digital platforms. For donors, blockchain is a way to track their donations and find out how exactly their money has been used - bringing greater transparency and accountability to the process. In the case of sensitive data, blockchain can also be an opportunity to facilitate the access to secured information. But transparency should not be the only goal of blockchain technology. In order to respond to the needs of the targeted populations, humanitarian actors need to think carefully about the design of the selected solutions. Here are three examples from the humanitarian sector around the use of blockchain for cash transfers.

Case study _ 01

Sarafu, the blockchain-based community currency

[Danish & Kenya Red Cross | Kenya]

Crisis such as the Covid-19 pandemic often affect the availability of a national currency in marginalised communities. Banks are indeed more reluctant to grant loans while people are more tempted to save money. This lack of liquidity cripples local economies, preventing local communities from growth opportunities.

The Community Inclusion Currencies (CICs) project is a blockchain based initiative launched by the Kenyan Red Cross in partnership with the Danish Red Cross and The Grassroots economic foundation to strengthen the resilience of marginalised communities by reducing liquidity shortages.

Blockchain-based tokens (Sarafus) aim to serve as substitutes for classical liquidities - that are not accessible to vulnerable households - and serve as a quick stimulus to ensure an inclusive sustainable development. In that regard, CICs work to develop a source of local credit through a complementary monetary system that fosters consumption within the community by supporting both consumers (to cope with basic needs) and small enterprises facing lack of demand.

Due to the distributed nature and integrated cryptography of blockchain models, community currency transaction records are immutable and secure. Fraud attempts or saving excessive amounts of tokens are prevented by a holding-fee tool as well as regulations ensuring tokens circulate only within the community. Bonuses are also awarded to frequent traders to encourage token circulation.

Case study _ 02

Building blocks, a blockchain network for humanitarian assistance

[WFP | United Nations]

Launched in January 2017, Building Blocks is a collection of blockchain nodes which are computer servers independently operated by each participating organisation. Together, they connect to form a humanitarian blockchain network that provides a neutral space to collaborate, transact and securely share information in a real-time. The network is neutral without a hierarchy of ownership: all member organisations are 100 percent equal co-owners, co-operators, and co-governors of the network and all members play an equal role in its upkeep.

WFP has developed a robust application on the Building Blocks network that enables tracking, coordination, and delivery of multiple types of assistance, including cash, food, WASH (water, sanitation and hygiene), medicine and more. The technical blockchain infrastructure to operate the network is based on an open-source software and is freely accessible to participating organisations. The system uses anonymous identifiers to ensure the privacy and security of people served.

Building Blocks started as a 100-person pilot in Pakistan, with support from the WFP Innovation Accelerator. Since 2017, Building Blocks has been scaled to provide US$ 325 million worth of cash transfers to 1 million refugees in Bangladesh and Jordan, making it the world's largest implementation of blockchain technology for humanitarian assistance.

Case study _ 03

Traverse, the blockchain-based digital identity platform

[Australian Red Cross | Australia]

There is a long-standing challenge within the humanitarian sector – the slow process of onboarding and managing staff and volunteers for rapid deployment during a crisis. The Australian Red Cross led an effort to solve this by establishing a verifiable digital credentials solution in order to remove some of the structural barriers and administrative burdens to onboarding. The solution, Traverse, intended to offer a verified identity platform for the humanitarian sector that would address a gap in the market for an ethical, user-centric, portable, and secure platform. This decentralised, self-sovereign approach was selected because it was seen as a way to give users ownership over their own data and control over how credentials are shared, while making it easier for participating organisations to onboard staff and volunteers. Despite producing a blockchain and verified credential-based web and mobile application, Australian Red Cross closed Traverse in 2021 when it encountered a number of critical challenges. Traverse highlighted that the resources required to develop and maintain blockchain technology are too high for many humanitarian actors, such as Red Cross, however humanitarian organisations might address this challenge by focusing on partnerships with companies that already have technological capabilities and utilise their expertise. To make the most of such partnerships, humanitarian organisations must build their knowledge and capabilities to be an informed procurer of technology partners, technology

products and services. This would enable innovative technological applications to safely and ethically support humanitarian work to meet the needs of the people and communities being served. Although Traverse was shut down, it provides important lessons for Red Cross and the wider humanitarian sector on the use of blockchain and verifiable credential technologies, and how the sector may approach developing and adopting innovative technologies more broadly.

French Red Cross | The French Red Cross is a recognised public utility organisation which prevents and alleviates all human suffering without any discrimination since more than 150 years. With its history, its roots in all the departments of Metropolitan France and overseas, its involvement in the largest humanitarian and social movement in the world, it is the leading social organisation in France. The Association relies daily on the commitment of 59,000 volunteers in 1,000 local units and 17,000 employees working in 664 health, social and medico-social and training establishments. The French Red Cross operates mainly in the following areas: training in health, social and medico-social professions, social action, international action, emergency relief, and first aid operations.

Spanish Red Cross | As a volunteer-based humanitarian organisation and strongly rooted in society, the Spanish Red Cross provides comprehensive responses to vulnerable groups from a human and community development perspective, reinforcing their individual capacities in their social context. The organisation consists of professionals and volunteers geographically distributed through 665 local delegations, covering different contexts (both urban and rural). The entity's programs and activities are aimed at vulnerable groups in society including the elderly, immigrants and refugees, children in social difficulty, victims of gender violence, and unemployed. Spanish Red Cross' missions are organised under Knowledge Areas, the main ones being: relief, social inclusion, employment, health, and environmental education. This is made possible by the support of 231,053 volunteers and 13,342 multidisciplinary professionals: social workers, doctors, psychologists, therapists, nurses, psychologists, engineers, etc. In 2019, 2,849,827 people have received assistance through the Spanish Red Cross services, and 11,589,787 have benefitted from national, international and awareness programs.

21, Social Innovation Accelerator of the French Red Cross | 21 is a 1000 m² space dedicated to social innovation located at the French Red Cross headquarters in Montrouge, Paris. Composed of a coworking space open to social enterprises, 21 runs different programs of incubation and acceleration for internal and external projects with social impact.

TECSOS Foundation | The Social Technologies Foundation, TECSOS, is a non-profit foundation created in 2002 through the joint promotion of the Spanish Red Cross and the Vodafone Spain Foundation. In the TECSOS Foundation, the social experience and technological excellence of each of the entities come together with the aim of addressing social needs. TECSOS relies on technological innovation and Information & Communication Technologies to respond to social needs in a responsible manner, contributing to skill development and paying special attention to the most vulnerable.

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Because the ones who are crazy enough to think that they can change the world, are the ones who do!

Henry Dunant

Red Social
Innovation
by french + spanish red-cross