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GW Cyber Security & Privacy Research Institute (CSPRI) Presents:

# Blockchain Capabilities for Disaster Risk Reduction Management

A CSPRI APPLIED RESEARCH DISCUSSION  
December 16, 2020 - 8:00 am EST

Cyber Security & Privacy  
Research Institute

SCHOOL OF ENGINEERING &  
APPLIED SCIENCE

THE GEORGE WASHINGTON UNIVERSITY  
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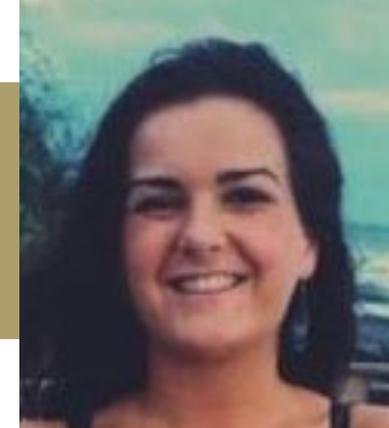
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Frontiers in Blockchain

# AGENDA



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Welcome and Introductions

About Frontiers

Jean-Fabrice Lebraty: Blockchain Realities

Neil Wasserman: Potential Strategies in Disaster Management

Costis Toregas: Process of Submissions and Future Opportunities

Q&A and Discussion

Conclusion



Research Topic

# Blockchain Capabilities for Disaster Risk Reduction Management

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# Blockchain challenges



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# Classic Ledger

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305	30/01/2021 10:00	Martin	Business School	xx	30/01/2021 15:00	xx	-



# Classic Ledger

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Blockchain is the solution



# Blockchain: many acceptances

- Permanent Distributed Transactional Ledger that can include contract programming possibility
- A new way to store transactional data
- A process to manage tokens lifecycle
- A generic term for a distributed P2P systems and its applications

# Main types of Blockchain

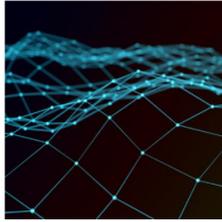
**Table 1. The main types of blockchain segmented by permission model**

			READ	WRITE	COMMIT	EXAMPLE
Blockchain types	OPEN	Public permissionless	Open to anyone	Anyone	Anyone	Bitcoin, Ethereum
		Public permissioned	Open to anyone	Authorised participants	All or subset of authorised participants	Supply Chain ledger for retail brand viewable by public
	CLOSED	Consortium	Restricted to an authorised set of participants	Authorised participants	All or subset of authorised participants	Multiple banks operating a shared ledger
		Private permissioned ("enterprise")	Fully private or restricted to limited set of authorised nodes	Network operator only	Network operator only	External bank ledger shared between parent company and subsidiaries

Source: Hileman and Rauchs, 2017

# Main challenges of blockchain for science as for practical management in a disaster context

- Restoring Trust
- Supporting Supply Chain
- Preventing cyber risks and their cascading impacts
- ICOs, STOs as a new way to fund a company in hard times



Research Topic

# Blockchain Capabilities for Disaster Risk Reduction Management



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## About this Research Topic

In a typical year, there are hundreds of natural disasters with 12,000+ deaths. Pandemics now dwarf that figure with global mortality now exceeding 1.22 (Nov. 5, 2020) million. Blockchain technology, developed and proven over the last decade, offers unique capabilities to support rapid response to natural disasters, whether the incidence is a flood or threat of contagious disease. Timelines and reach of response are always determinative in limiting negative impact. Blockchain offers a common widely accessible platform for transaction recording, immutable records, identity validation, permissioned data access, monetization, and trustful access to critical data across information systems and geographies. With these capabilities, blockchain can directly address critical challenges of disaster response such as coordination, rebuilding trust, or maintaining safety. All types of organizations are involved. Regarding NGOs, for example, blockchain may support the registration of volunteers, rewards to volunteers and other contributors, demand identification, and tracking the delivery of supplies, such as vaccines and food, and services in complex supply chains.

Blockchain can be considered a disruptive technology based on proven techniques. The application of blockchain goes far beyond the initial application to Bitcoin transactions and other cryptocurrencies. Indeed, blockchain has begun to transform many business sectors and practices. From supply chain to marketing, organizations benefit from taking this technology into account. Blockchain should be viewed as a complement to other disruptive technologies. Along with AI and IoT, for example, blockchain will generate synergies that transform business ecosystems in unanticipated ways.

Currently, the world faces an unprecedented health challenge. The covid\_19 outbreak may destabilize the basic viability of individual lives and livelihoods. For example, dining at restaurants has been replaced in a significant part by take-out business and food delivery services. Sectors like tourism and energy production have been profoundly impacted. Videoconferencing and online courses have become essential vehicles for education.

In this turbulent environment, blockchain will create both opportunities and challenges for disaster preparedness and recovery functions, services that will become increasingly essential given the expected impact of climate change, and threats to global health.

The proposed Research Topic aims to draw up expertise in risk management and other disciplines to connect blockchain capabilities to managing preparation and response to disaster challenges, especially those having a real and potential impact on COVID-19. How can the blockchain and related disruptive technologies enable resilience to mitigate the disruptive impact of pandemics and other natural disasters? We encourage papers that define theoretical frameworks to guide the application and evaluation of blockchain technologies to mitigation, preparation, response, and recovery for disaster events. We also seek articles that provide real-world case studies on uses of blockchain techniques that either directly address COVID-19 and related challenges or case studies that illustrate how blockchain applications can address these issues. For example, blockchain applications to patient-centered

## Topic Editors



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## Submission Deadlines

05 January 2021

Abstract

05 May 2021

Manuscript

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**THANKS FOR PARTICIPATING!**



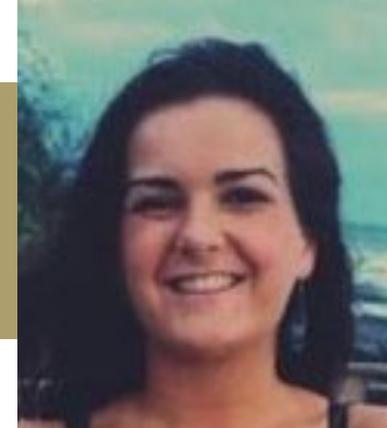
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