

Driving Innovation in Times of Crisis

CASE STUDY

9/11 Attacks

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Introduction

Societies continue to grapple in a world filled with crises, ranging from climate change and extreme weather events to high inflation and rising cost of living, energy and food insecurity, as well as armed conflicts and critical infrastructure cyber-attacks. In sum, crises have become a constant, and learning to navigate turbulence is a highly valued competitive differentiator.

In 2022, the GFCC and its member, the Japan Science and Technology Agency (JST), started a new initiative called **Driving Innovation in Times of Crisis (DITC)** to deepen the understanding of crises and facilitate innovation and prosperity in adversity.

Through a series of activities and research products, the DITC aims to develop actionable recommendations to empower businesses, governments, and organizations to thrive in instability and unlock new opportunities for innovation and prosperity.

In April 2022, during an exclusive meeting, our members and fellows chose three case studies that were relevant to our community and needed in-depth analysis. Those were the 9/11 terrorist attacks, the COVID-19 pandemic, and the ongoing Ukraine armed conflict. We are proud to present in this document the responses and innovations arising from the 9/11 terrorist attacks as part of our effort to unveil the concepts and ideas that permeated this crisis and their implications.

We thank our research fellow, John Katsos, Ph.D. candidate at Queens University Belfast, for conducting research for this document and all the experts in our community who made themselves available for interviews: Bray Barnes, Jerry Hultin, David Bray, Chad Holliday, Rogerio Studart, and Christopher Geiger. Finally, we thank our esteemed member JST for the inspiration, support, partnership, and funding throughout the initiative.

We are proud to present this case study in the 9/11 attacks useful.

Crisis and Innovation: The 9/11 Attacks¹

The terrorist attacks on September 11, 2001, were a series of coordinated attacks carried out by the Islamic extremist group al-Qaeda.² The attacks targeted landmarks in the United States, including the World Trade Center in New York City and the Pentagon in Washington D.C. Though only the United States was attacked, the 9/11 attacks marked the beginning of a two-decade long crisis against Islamic extremism and the use of terrorist attacks against civilian targets.

The 9/11 attacks involved the hijacking of four commercial airplanes by al-Qaeda terrorists, who then targeted two civilian targets (the two World Trade Center towers), one military target (the Pentagon), and one government building.³ In total, 2,977 victims lost their lives, almost all civilians, while over 25,000 were injured, many because of exposure to the debris from the collapse of the World Trade Center.

Recognition is a crucial element of crisis. Based on our interviews, recognition occurred at 9:03am when the second of the two World Trade Center towers were hit by a plane. There was a recognition of the crisis when the second tower was hit at that time. In the very short term, the danger of additional planes having been hijacked—AA Flight 77 which eventually hit

the Pentagon has already been hijacked and US Flight 93 was hijacked by 9:29am—and other related attacks were the most obvious concerns. Yet US government officials at the time also noted in interviews that there were less obvious concerns related to chemical and bioterrorism—were there chemical or biological agents on the planes?—and the personal safety of government officials such as the President and Congress that were less public but recognized almost immediately.

The period of increased danger for the crisis varied. In interviews with contemporary government officials, the sense of danger from more terrorist attacks seemed to dissipate dramatically at the decade mark in 2011 which saw three events converge to mark the end of the crisis: the Arab Spring, the emergence of ISIS, and the death of Osama bin Laden. Responses to the latter two events in particular heavily relied on the innovations outlined in the “Focus on” examples below.

The most obvious responses—the US-led wars in Afghanistan and Iraq—were among the least innovative, while the most innovative, such as the global coordination efforts in air travel, finance, and national security and the creation of the Department of Homeland Security, have been far less obvious. Yet the most innovative responses also provide the best lessons for future crisis response.

¹ This case was researched and written by John E. Katsos, Research Fellow at GFCC. Research included interviews with company executives, government officials, and global policymakers who were directly responsible for responses to the crisis, archival footage, and desk research.

² The crisis associated with the 9/11 attacks was selected as a highlight case as part of the DITC project funded by the Japan Science and Technology Agency and administered by the GFCC because of consultations with GFCC members in which it was listed as the third most-impactful crisis of the past twenty years (after the Covid-19 pandemic and the Russian invasion of Ukraine).

³ The eventual target of the fourth plane remains unknown other than that it was meant to be a government building in the Washington DC area, likely the White House or the US Capitol building. The passengers on the fourth plane, United Airlines Flight 93, were able to contact relatives and friends on the ground through their cell phones and attempted to take back control of the plane by force from the hijackers. After a six-minute struggle, the hijackers intentionally grounded the plane, killing the 44 passengers on board, but saving unknown lives in the Washington DC area.

Focus on: Airline Industry

Crisis Recognition:

The terror attacks of September 11, 2001, served as a painful reminder of the vulnerabilities within the global air travel sector. Immediate stakeholders including airlines, airports, and international bodies such as the International Air Travel Association (IATA) and the International Civil Aviation Organization (ICAO), alongside national governments, acknowledged the crisis. The implications were not restricted to human loss but also extended to a looming economic crisis in the airline industry.

The Crisis and its Dangers:

The crisis began with the shocking attacks on the World Trade Center towers and the Pentagon on 9/11. Although the immediate crisis faded within months as security measures were reinforced, the constant evolution and refinement of these protocols indicate the continual impact of the crisis. Ignoring the crisis risked repeated terrorist attacks, jeopardizing global air travel safety, and engendering a loss of confidence in air travel. This anxiety was more than psychological, threatening drastic economic outcomes across the tourism sector and related industries.

Hazards of Inadequate Response:

With safety remotely compromised and trust in air travel hanging precariously, effective, and swift innovations were desperately needed to rejuvenate the sector. Stakeholders braced themselves to compensate for a potential long-term decline in air travel demand (extending the short-term impacts caused by flight groundings in the immediate aftermath of the attacks), which could trigger significant financial losses, unemployment, and widespread business bankruptcies.

Response and Innovations:

Travel-related businesses, alongside IATA, ICAO, and respective governments, responded by developing and introducing new security measures for air travel. Comprehensive enhancements ranging from thorough passenger screening and luggage checks, biometric and facial recognition technologies for speedier and accurate identification, to fortified cockpit doors and sophisticated fire suppression systems, were introduced. These measures were underpinned by new standards and recommended practices for aviation security developed by the ICAO in wake of 9/11. Most of these standards were adopted by international agencies within a year, first as recommendations (unless flying to or from the US), then as requirements, enabling rapid coordination and dissemination of new measures as fresh threats surfaced.

While these innovations complicated and increased the cost of air travel, they were crucial in restoring faith in the safety of air travel and overall passenger security. The industry's commitment to these enhancements has over time managed to ease the safety concerns of travelers, settling the turbulence caused by the 9/11 attacks.

Focus on: Financial Regulations and Sanctions

Crisis Recognition:

The deadly terrorist attacks on September 11, 2001, ignited a significant crisis concerning the use of the global financial system for funding terrorist activities. This crisis was promptly recognized by various governments, intergovernmental agencies, and private financial institutions around the globe.

The Crisis and its Dangers:

The crisis materialized in the aftermath of the 9/11 attacks. This instant crisis unveiled threats of enduring nature to world security and financial stability wherein terrorist groups could exploit the global financial system. While the immediate crisis response commenced in 2001, the evolving nature of terrorist financing tactics means it continues to present a challenge that requires ongoing attention and innovation.

Hazards of Inadequate Response:

If this crisis had not been adequately addressed, the global financial system risked being continually exploited for terror financing. Such a situation could facilitate money laundering, finance terror activities, and instigate related crimes, thereby posing a significant threat to international peace, security, and financial equilibrium.

Response and Innovations:

Innovation was crucial in this context to protect the integrity of the global financial system and prevent its abuse by nefarious elements. The potential damage to financial systems, economies, and societal harmony necessitated creating effective countermeasures. Stakes included the credibility of financial institutions, nations' reputation in commitment to global security, and the need to upgrade detection and reporting systems to safeguard customers' assets and maintain a secure global financial system.

Entities worldwide responded by adopting a cohesive strategy: tighter financial regulation, enhancing international cooperation, and enforcing robust global sanctions. The Financial Action Task Force (FATF)⁴ expanded its mandate to combating terrorist finance and issued specialized recommendations. Compliance with these recommendations became a prerequisite to participate in the global financial system. The UN Security Council further reinforced these systems by passing resolutions to freeze assets linked to terrorist activities.

Simultaneously, the U.S.'s PATRIOT Act necessitated substantial compliance requirements for banks. Businesses strengthened their Know Your Customer (KYC) and Anti-Money Laundering (AML) processes and adopted advanced technologies to detect and report suspicious financial activity. These collective efforts have consequently fortified the global financial system against abuse by terrorist organizations, ultimately manifesting a major innovative step towards better, safer, and resilient financial regulation.

Focus on: Global Coordination of National Security

Crisis Recognition:

Countries across the globe recognized the unprecedented crisis that arose from the terrorist attacks on September 11, 2001. International organizations such as the United Nations (UN) and NATO, as well as governments, intelligence agencies, and law enforcement bodies, came to the consensus that the heinous act of terrorism signaled a grave threat to international security and human life.

The Crisis and its Dangers:

The crisis, originating from the devastating 9/11 attacks, spanned much longer than the day itself. Although the immediate crisis lasted until the necessary measures were put in place to mitigate the immediate danger, the fallout from the crisis continues to shape national and international security strategies. Failure to adequately address the crisis could have led to recurrent terror attacks, untold loss of lives, large-scale infrastructural damage, and a global state of fear and insecurity. The lack of coordination and cooperation in intelligence and national security could have resulted in the unchecked operation of international terror networks, escalating conflicts, and destabilized nations.

Hazards of Inadequate Response:

In the face of this crisis, it became evident that innovative responses were needed to preempt future terror attacks, ensure the protection of citizens, preserve national stability, maintain global peace, and fundamentally, change the approach to international terrorism. At stake was the need to enhance predictive capabilities, improve data analysis, increase surveillance, align terrorism-related policies across borders, and execute effective joint counter-terrorism operations. Additionally, fostering fruitful partnerships between security-focused businesses and governments, inclusive of hardware and software components of national defense, was also imperative.

Response and Innovations:

In an unparalleled show of international collaboration, countries worldwide teamed up with different intelligence and law enforcement agencies. The UN catalyzed this collaboration through resolutions such as UNSCR 1373, aimed at global counterterrorism efforts. It also saw alliances like NATO and the European Union's Europol enhancing cooperation in intelligence sharing, policy synchronization, and joint counter-terrorism operations.

Furthermore, countries realized the importance of inter-agency coordination, and this was well exemplified by the United States' creation of fusion centers. These centers integrated intelligence from local, state, federal, and private sector entities, enhancing the country's ability to identify and mitigate threats.

Private sector entities leveraged technology to develop advanced predictive capabilities, data analysis, and surveillance capacities, contributing to more robust defense strategies. This innovation underscored the shifting paradigm of terrorism, transforming it from an isolated national issue to a shared global crisis.

The efforts after 9/11 led to the expansion of intelligence-sharing partnerships, such as the Five Eyes and the Counter-Terrorism Group. The cooperation and coordination developed also stretched into dealing with other international security threats like cyberattacks and transboundary organized crime.

The endeavor to innovate and collaborate in the wake of the 9/11 crisis has drastically improved global capabilities to track and neutralize terroristic threats. It is a testament to how innovation born out of crisis can prepare nations better for future threats and uphold the security of the global community.

⁴ For additional information on FATF, please see: <https://www.fatf-gafi.org/content/dam/fatf-gafi/recommendations/FATF%20Recommendations%202012.pdf.coredownload.inline.pdf>; <https://www.tni.org/files/download/fatf-exec-summary.pdf>; and, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3362167.

Focus on: Creation of DHS

The creation and expansion of the United States Department of Homeland Security (DHS), established in November 2002, stands as a monumental example of innovation in the realm of national security. The DHS brought together 22 different federal departments and agencies under one roof,⁵ aiming to improve the efficiency and effectiveness of national security operations. The coordination among the US agencies was mirrored by similar groups in other countries, though many did not fully integrate the changes until suffering attacks of their own such as in the UK and France. It also facilitated better integration with other international security agencies, encouraging the sharing of intelligence and best practices.

Crisis Recognition:

The terrorist attacks of September 11, 2001, were a critical point in American history that exposed the country's susceptibility to international terrorism. The crisis was recognized by the U.S. government, its allies, and the general public. During interviews, officials described the point of recognition as "the moment the second plane struck", with government resources mobilized immediately. The first moment of crisis recognition leading to action was largely attributed to the grounding of flights by the Federal Aviation Administration (FAA) which happened after the third and fourth hijackings had occurred, but provided information to passengers on board Flight 93 (the fourth hijacked plane) that led to them storming the cockpit and stopping the progress of the flight to its intended target in Washington, DC.

The Crisis and its Dangers:

The crisis at hand was a matter of national security and public safety. Failing to adequately address it harbored the risk of recurrent attacks and mass casualties, the destabilization of democratic societies, and an ongoing climate of fear and insecurity. The raised risk level threatened not just the U.S. but global societies at large given the interconnectedness of today's world.

Hazards of Inadequate Response:

In the aftermath of the crisis, a critical decision-making process took place regarding how best to prevent such an event from happening again. The need for innovation was evident and sizeable, as simple cosmetic changes would not suffice. The stakes for innovation incorporated increasing the effectiveness and resilience of national security operations, improving intelligence sharing and homeland protection, safeguarding the public, and re-engendering a sense of security among the global populace. The immediate response to the hijackings made it clear to those involved, according to interviews, that government silos were one of the core roadblocks to better crisis response.

Response and Innovations:

In response to the 9/11 crisis, the U.S. government initiated the Homeland Security Act of 2002, creating the Department of Homeland Security (DHS). This innovation stemmed from the need to reimagine and reorganize the U.S.'s national security architecture, in particular to overcome government silos that were seen as the major roadblocks to quick responses to domestic threats and attacks. This initiative amalgamated 22 separate federal departments and agencies under a singular entity, improving inter-agency coordination and effectiveness and led to the creation within DHS of the Federal Emergency Management Agency (FEMA) to help coordinate the entity and its communication specifically during disaster responses.

Consequently, the DHS boosted operational coherence, bolstered intelligence sharing within the U.S. and with international security agencies, and promoted the adoption of best practices. Internationally, the U.S.'s move was mimicked by various nations, increasing global collaboration and enhancing collective security.

The creation of the DHS served as a landmark innovation built out of a crisis. Its formation not only displayed an adaptive response to the 9/11 crisis but also a proactive approach towards securing the future, setting a precedent for how societies can respond innovatively and effectively to crises.

Conclusion

The terrorist attacks on September 11, 2001, not only resulted in immediate devastation and loss of life but also sparked a two-decade long crisis against Islamic extremism and the use of terrorist attacks against civilian targets. The response to this crisis required innovative approaches in various sectors, including the airline industry, financial regulations and sanctions, global coordination of national security, and the creation of the Department of Homeland Security (DHS).

Overall, the response to the 9/11 crisis required innovation and collaboration across sectors, resulting in significant advancements in airline security, financial regulations, global coordination of national security, and the reorganization of national security operations through the creation of the DHS. These innovations have not only addressed immediate dangers but also provided valuable lessons for future crisis response. The 9/11 attacks may have marked the beginning of a lengthy crisis, but the response to it has demonstrated the resilience and adaptability of societies in the face of such devastating events.

⁵ For the full list of agencies incorporated into the new Department of Homeland Security, see: https://en.wikipedia.org/wiki/United_States_Department_of_Homeland_Security#List_of_incorporated_agencies.

About the Driving Innovation in Times of Crisis Initiative

The DITC is a multidisciplinary, multi-stakeholder, global initiative to advance the understanding of crisis and harness its potential to generate innovation and promote prosperity. The project started in 2022 with funding and support from our member Japan Science and Technology Agency (JST).

Since then, we have engaged in relevant discussions, unveiling historical moments when innovation flourished in the face of adversity to gather lessons and review solutions. [We invite you to check our report documenting all discussions held in 2022.](#)

In 2023, we onboarded two researchers working in organizations within our network: John Katsos, Ph.D. candidate at Queens University Belfast, and Ailun Gu, a postdoctoral research fellow at the University of Auckland.

They were responsible for collecting, comparing, and synthesizing existing crisis definitions, performing a literature review of crisis typologies and epistemologies, and mapping out relevant examples of crises.

They based their work on extensive academic research and a series of interviews with our members and fellows, which resulted in the publication of a white paper on crisis definitions and frameworks and three case studies, uncovering the 9/11 terrorist attacks, the COVID-19 pandemic, and the ongoing armed conflict in Ukraine. The latter was written by Denys Ilnytskyi, an academic from Kyiv National Economic University, which will be published shortly.

We thank JST for their continuous support, and we look forward to continuing our work to help individuals, businesses, and organizations develop new structures and capabilities to drive prosperity and innovation in times of crisis.

We firmly believe that while a crisis can threaten competitiveness, it also poses numerous opportunities. We want to provide a framework for stakeholders to navigate turbulence, limiting competitiveness losses while enhancing their potential to develop creative solutions and prosper.

For more information, visit our webpage:

<https://www.thegfcc.org/driving-innovation-in-times-of-crisis>

If you want to join us for the journey, please contact:

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