

Organizing Global Democratic Collaboration in Crisis Contexts: The International Triangulation System.

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Abstract. The 2020 global crisis triggered by the Covid-19 pandemic progressively shut down economies from East to West as the virus spread worldwide. Progressively, nations suffered massive economic losses as their markets became both disrupted and polarized, reflecting public authorities' weaknesses to collaborate on a socio-economic speed adaptation. Beyond an organizational crisis, significant management and leadership concerns were raised on the sporadic and disjoint initiatives taken across sectors. Paradoxically, big data utilization wasn't optimized and fully potentialized. It, in turn, leads to a worrying number of R&D waste in time and outputs. Globalized trans-disciplinary and multi-sectorial ecosystems' intertwined character adds to a Global Alliance's organizational complexity to operate successfully. This paper proposes the International Collaboration Guideline on Crisis Management (ICGCM), which aims to be automatized by International Triangulation Systems (ITS).

Keywords: Business Transformation Innovation · Global collaborative management · International relations · Project Management · Global crisis management · Covid19 · Diplomatic coopection · Knowledge Management · Global Alliance · Agile Operations

1. Introduction

As the world froze in 2020, starting with a viral outburst in China of unknown etiology, spreading from East to West of the globe within two months, the pandemic disrupted international business activities, financial markets, domestic and global economies, social interactions, and governmental actions. Yet, the Covid-19 pandemic was not the only major event polarizing markets and endangering populations in 2020. The year marked by multiple crises reminds the global community's pressing need to collaborate

faster and more effectively on commonly faced threats, including bio-hazards, raising inequalities, and climate change symptomatic events. In the past five years, a notable shift has been the cleavage across nations on critical and humanitarian challenges, which even upturned some core democratic principles [1]. More than ever, the "Global Alliance," a recurrent theme in the post-pandemic literature, needs to be democratically organized.

2. Multifactorial Disruptions of Unprecedented Magnitude

The lack of proactive response, efficient communication, and most-importantly agile collaborative organization unleashed markets' negative externalities on social welfare. It exposed unprecedented volatility in the financialized global economy. It stressed the New Technological Establishment of modern societies.

On February 20th, 2020, fifty days after the outbreak, marked the beginning of the Covid-19 recession catalyzed by the US stock market crash in the subsequent two months with 1800 points fall on the opening of the DJIA (08/03/20) [2], 7.6% drop for the S&P500 [3], and an exceptional decrease of the US-Treasury securities' yield below 0.4% [4]. The Great Lockdown surpassed some losses of the notorious 2008-2009 global crisis [5]. In fact, "the worst crisis since the Great Depression" [6] is forecasted by the World Bank to last until at least 2025 before some recovery signs in the least impacted states show [7]. These consequences are undeniably imputable to organizational glitches, pointed by all parties involved. The 2020 pandemic went from a Health Crisis to an "Organizational Crisis" with the main challenge being solving the coordination and cooperation problems which prevailed across organizations and within partnerships.

3. The Global Coordination Problem in Crisis Management

Notably, by a surge of individual initiatives taken by stakeholders from all backgrounds, the pandemic has shown that global proactiveness can solve this challenge. In fact, by late September 2020, over 84,800 research papers had been published on the domain of Covid-19 [8]. Keegan and Tan's work on tracing a quantitative portrait of wiki collaborations indicates an evident intellectual interest surge (academic, professional, popular). Contributions on the topic are depicted as peaks in article creations and revisions and clicks [9].

However, "waste in research" is part of coordination problems. The pandemic surged the previous astonishing waste level of 85% due to time pressures, disjoint communication means, and a drowning multiplicity of bureaucratic layers. The wasteful outcomes are poor questions, poor study design, inefficient regulation and conduct, and non or poor reporting results [10]. A democratic universal method must be standardized and become the main procedure framework, adaptable for any crisis response to solve this coordination problem.

4. The International Collaboration Guideline for Crisis Management (ICGCM)

4.1 Addressing a potential organization for the Global Alliance.

Modern problems require global solutions, as the Covid-19 outbreak reminded the international community that no nation is capable of solely handling unpredictability or hedge against various risks and crisis management on their own. National interest has to be adjacent to global collaboration when human species integrity is at stake. The original model has thus limitations in scope and complexity for international project management and strategic risk hedging.

Academics across fields call for greater awareness of international research's recent dynamic shifts and instantaneous diffusion of temporary and final findings to foster collaboration during threatful episodes [11]. Furthermore, international committees stress the need to address "global economics, the environment, and the future of work" amongst other challenges in a cooperative manner to fulfill the definition of 2021's global interaction. Thus, this paper proposes the foundation of standardized transnational and international crisis management [12].

The proposed 'International Collaboration Guideline for Crisis Management' (ICGCM) can be defined as a general framework, agile enough for individual and contextual arrangements. It provides a cooperative structure for joint crisis management, starting from the threat-identification to its resolution, hedging, or eradication. The ICGCM is here schematized based on its benchmark model but can be road-mapped differently with the core purpose of being an improved organization of collaboration across varied cultures, bureaucracies, and jurisdictions when humanity as a whole faces a critical danger.

4.2 Defining the ICGCM guideline.

The Hexa-staged pyramid notoriously represents the original Company Democracy Model (CDM), the ultimate level of which opens the organization's progress toward extroversion and international upscaling, mainly concerns organizations [13]. This model, driven by a shared value approach, focuses merely on national scale organizations, aiming to restructure for more agility in their internationalization process [14].

The ICGCM extends the CDM in its organizational representation and internal mechanisms, yet focusing on articulating international creative problems solving, design thinking, especially those of human development, humanitarian challenges, and sustainable development, as the pandemic stressed their prevalence. ICGCM's pyramid shape, by bringing together each face up to its summit, frames a close multilateral collaboration between various centers. This construct is defined between 'Entities': countries, headquarters, companies, organizations, laboratories, institutes, and more, depending on the defined initial project. These entities are contextualized in different environments: economies, jurisdictions, and market configurations, as shown in figure 2.

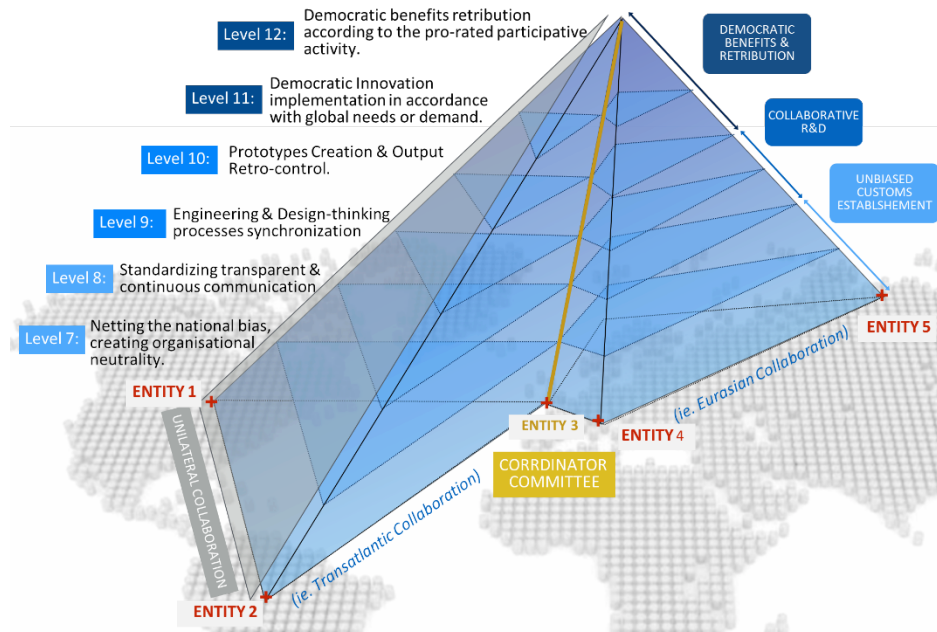


Fig. 2. The mainstream representation of the ICGCM: International Standard Collaboration Guideline for Crisis Management, (levels 7-12).

4.3 Applying the ICGCM

Each ICGCM face represents a unilateral collaboration between two entities, which support specific levels adapted to the participants. The six levels are not ambiguous in a formulation as they can be tailored for each face, increasing the efficiency, effectiveness, resilience, and agility of the collaboration.

The six levels presented in the ICGCM are only informative and could be adapted for each collaboration for effective partnership. Each edge of the pyramid scales the Entity's evolution in terms of competitiveness and collaborative value, stressing each Entity's critical importance in their individual and shared progress. The ICGCM comprises three stages, each subdivided into levels, the label of which is only an indicative status for the collaborating Entities. The brief example is based on the global research for a vaccine at the pandemic declaration in early 2020.

Table 1. Research Reference table of the ICGCM, levels explanation, rationale for modification upon contexts and projects, and a covid-19 example.

Guideline Stage	Levels Labels	Competitive Collaborative Scale	Edge & Value	Example
	(Level.7) Netting the national bias, creating	Democratic culture establishment, varied netting jurisdictions,		Identify best tangible resources, assess market

Unbiased Customs Establishment	organizational neutrality. (Level.8) Standardizing transparent and continuous communication.	economies, and cultural market spaces Transnational Democratic Communication and Knowledge Sharing Engines.	authorization procedures, flag intangible strength, and weaknesses in public health change management
Collaborative R&D	(Level.9) Engineering and Design-thinking processes synchronization. (Level.10) Prototypes Creation & Output Retro-control.	R&D methodologies development based on available intellectual capital. R&D output design proposals and production engineering.	Vaccine research: split the methods (RTPCR, Antigenic, etc.)
Democratic Benefits Retribution	(Level.11) Democratic Innovation implementation following global needs or demand. (Level.12) Democratic benefits retribution according to the pro- rated participative activity.	Assess national needs for innovation and prepare domestic implementation across markets, demographics, sectors. Fair-share allocation upon the performance of the parties involved.	Collaboration on vaccine distribution and post- vaccinal follow-up Distribution of contributions recognition, intellectual property rights, and commercialization rights and limitations

The transition from intra- to extra-Entity project scaling and development stipulates the Company Democracy Model as an intra-entity between level 6 (CDM) and 7 (ICGCM) stands the critical moment internationalization where domestic and local organizations can cluster into unified Entities. This International Collaboration Synchronization defines the moment where entities are developed based on their stakeholder reach, size, representativity, and, more importantly, their expertise. In the "Covid-19 vaccine development" narrative, certain research-hospital conglomerates like the French IHU Marseille Méditerranée stand out as an Entity on their own due to its material capacity, infrastructure, knowledge, expertise, and insights on infectious diseases. However, South Africa as a whole country might gather all its relevant organizations, in this case, medical institutions, as one Entity, as the means provided by each one of them wouldn't be sufficient to collaborate internationally.

5. Coordinating parallel ICGCMs geographically and across disciplines: federating the Global Alliance

5.1. The ITP: International Triangulation Procedure.

The International Triangulation Procedure represents the processes allowing multiple ICGCM pyramids of transnational or sectorial collaboration to be connected to the same summit. The International Triangulation Systems includes all innovative systems and emerging technologies in the Industrialization 4.0 era to be integrated for a faster, more agile, less bureaucratic, and continuously revised objectives planning, execution, and scaling. In this metaphorical/symbolic representation, bringing all summits into a common point implies collaborating on a global goal, for instance ceasing the Covid-19 pandemic by finding a standard pharmaceutical protocol or creating a novel vaccine.

5.2. The International Triangulation System (ITS).

In the ITS, all pyramids must juxtapose against a common axis, conferring the concerned Entities of the central role of coordinator committee (Fig 3.).

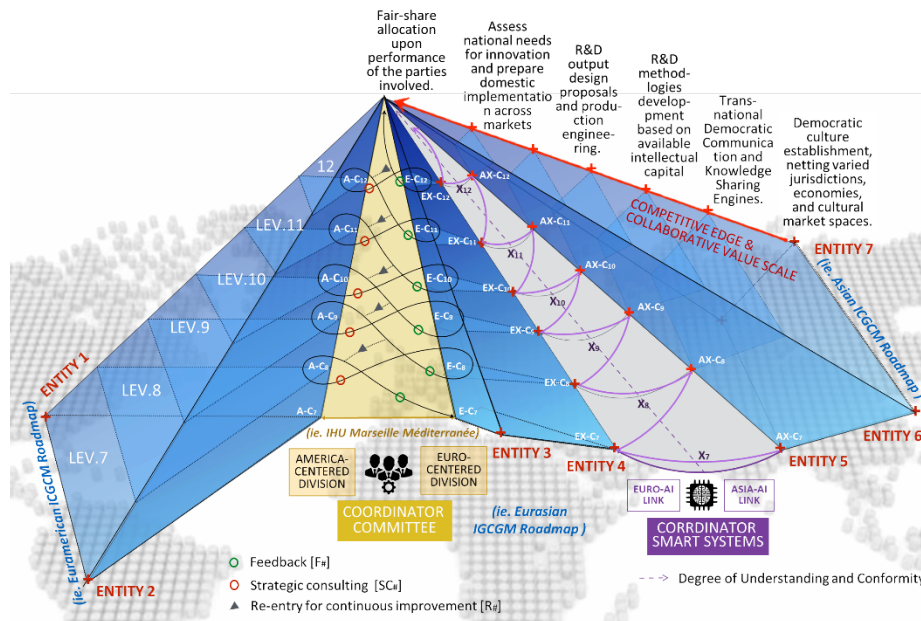


Fig. 3. Integration of the International Triangulation Procedure

According to experts and decision-makers' seniority, the coordinator committees' positions are decided at the beginning of the process. These committees act as guardians for fair collaboration practice and thoughtful prospects of innovations. They must be

strategically oriented in two directions for each Aggregate (Transnational Pyramid) to facilitate internal control and operations optimization between them.

One approach the coordinating Entity can follow on its effort to internally organize the International Triangulation Procedure is to operate on basis of the Co-Evolutionary Spiral Method. In this case a division at an inferior level sends feedback to another other division who studies along with its aggregate an alternative method for improved pertinence and performance. This strategic consulting is sent back and forth among other divisions in this process scaling up the levels. To achieve continuous and incremental improvement, re-entries in the spiral are possible if mismatches or delays occur between the aggregates [15]. Figure 3 indicates that knowledge derived from either side of the divisions at level 7 (i.e., noted E-L7 for European entered division at Level 7) is sent in a feedback path from the opposed division. The central committee evaluates this feedback by the cluster progress. It synthesizes its recommendations in an internal consulting format sent back to the division, leveling-up the knowledge progression. If the feedback analysis indicates the proposals' poor application, the division descends one or more levels to complete or repeat the research needed to achieve the level's requirements and advance to the next.

The automation of this system via cloud computing programs, artificial intelligence as expert systems, and the securitization of information, smart contracts, and big/metadata via blockchain is the next step that will provide practical applicability to the ITS. The coordination in the ITP (Fig. 3) can be human-managed whenever the Entity's size, expertise, and resources permit it. Otherwise, innovative systems intervene in bridging two Entities that cannot, for diplomatic reasons, time constraints, or unforeseen factors, provide a neutral and open data sharing and analysis. Such an approach would answer the post-pandemic literature, which stresses the time and resource savings intelligent systems can provide when given an international synchronized reach [16].

6. Conclusions

The The ICGCM proposed in this paper can be considered as a candidate model for consensual standardization by international organizations and professional associations. It stresses the critical importance of systematizing collaborative networks in global crisis response. It creates the space needed for democratic knowledge contributions from any Entity anywhere in the world [17]. This approach helps Entities organize their projects, reduce their environment's false alarms or inaccurate information, and facilitate collaborative focus. The mindset applied stands on the four pillars for collaborative crisis management and unity which are Synthesis (ideating together), Symbiosis (being together), Synergy (acting together), and Synchronicity (timing together).

Further research will be conducted on resolving challenges such as intellectual property rights distribution, international legislative changes, commercialization rights distribution, pricing, research funding allocation, and others related to the model's practical and ethical operations that follow any success achieved at the research level. The Covid-19 pandemic tested the world's international cooperation, capability, capacity, and maturity in addressing the global crisis. It indicated the need for unity, the adaptation of more democratic procedures for collaborative thinking in a co-opetitive

and not competitive way, and the joint transformation of knowledge into practical wisdom [18]. The first version of the ICGCM aims to set co-opetitive global networks that can proactively, preferably, or reactively address critical, humanitarian, and sustainable challenges with unity.

References.

1. Time Magazine, <https://time.com/5919494/person-of-the-year-2020-editors-letter/>
2. MSNBC, <https://www.msnbc.com/stephanie-ruhle/watch/stocks-plunge-at-market-open-trading-halts-after-dow-drops-1800-points-803195578623>.
3. Fortune. <https://fortune.com/2020/03/09/dow-jones-sp-500-today-nasdaq-stock-market-crash-2020/>
4. CNBC, <https://www.cnbc.com/2020/03/09/10-year-treasury-yield-plunges.html>.
5. BloombergQuint, <https://www.bloombergquint.com/business/global-great-lockdown-will-dwarf-the-great-recession>
6. Wall Street Journal, <https://www.wsj.com/articles/coronavirus-slump-is-worst-since-great-depression-will-it-be-as-painful-11589115601>
7. The Guardian, <https://www.theguardian.com/business/2020/apr/14/great-lockdown-coronavirus-to-rival-great-depression-with-3-hit-to-global-economy-says-imf>
8. Cardoso C., Galou E., Kervella A., Kwok P., Data Power, Eyrolles Editions (2020)
9. Keegan B, Tan C. June A Quantitative Portrait of Wikipedia's High-Tempo Collaborations during the 2020 Coronavirus Pandemic, arXiv:2006.08899 (2020)
10. Glasziou P., Sanders S., Hoffman T., Waste in Covid-19 research. *The Bio-Medical Journal*. BMJ 2020;369:m1847 (2020)
11. Fry CV., Cai X., Zhang Y., Wagner CS. Consolidation in a crisis: Patterns of international collaboration in early COVID-19 research. *PLoS ONE* 15(7): e0236307. (2020)
12. Vision of Humanity, <https://www.visionofhumanity.org/davos-2021-calls-for-greater-global-collaboration-peace/>
13. Markopoulos E. and Vanharanta H. 'Democratic Culture Paradigm for Organizational Management and Leadership Strategies - The Company Democracy Model.' In: Charytonowicz J. (ed) *Advances in Human Factors and Sustainable Infrastructure*. 5th International Conference on Applied Human Factors and Ergonomics. vol 20. pp 190-201 (2014)
14. Markopoulos E., Vanharanta H. 'Company Democracy Model for Development of Shared Value', Elsevier, *Procedia Manufacturing*, Volume 3, Pages 603-610, (2015).
15. Markopoulos E., Kirane I.S., Balaj D., Vanharanta H. Artificial Intelligence and Blockchain Technology Adaptation for Human Resources Democratic Ergonomization on Team Management. In: Ahran T., Karwowski W., Pickl S., Taiar R. (eds) *Human Systems Engineering and Design II. IHSED 2019. Advances in Intelligent Systems and Computing*, chapter 69, vol 1026, pp 445-455. Springer, Cham. (2020)
16. Peiffer-Smadja, N., Maatoug, R., Lescure, FX. et al. Machine Learning for COVID-19 needs global collaboration and data-sharing. *Nat Mach Intell* 2, 293–294 (2020).
17. Markopoulos E., Vanharanta H. Space for Company Democracy. In: Kantola J., Barath T., Nazir S., Andre T. (eds) *Advances in Human Factors, Business Management, Training and Education. Advances in Intelligent Systems and Computing*, vol 498. Pp. 275-287. Springer, Cham. (2017)
18. Vanharanta H., Markopoulos E. Visualization of the Wisdom Cube Scientific Knowledge Space for Management and Leadership. In: Kantola J., Nazir S. (eds) *Advances in Human Factors, Business Management and Leadership. AHFE 2019. Advances in Intelligent Systems and Computing*, vol 961, pp 14-25. Springer, Cham. (2020)

