Thesis Title: Digital governance and hyper-local, grass-roots response in the crisis governance of the 2025 Eaton Fire

Word Count: 11,989

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Submission Date: 19/12/25

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Figure 1 - Altadena Strong - We Will Rebuild - Author's photograph, February 2025

Abstract

This thesis examines the role of hyperlocal digitally mediated grassroots actors in unincorporated communities in crisis governance contexts, utilizing the January 2025 Eaton Canyon Fire in Altadena, California, as a case study. Due to Altadena, California's fragmented, unincorporated status, residents turned to digitally mediated, hyperlocal grassroots groups to coordinate warnings, share information, and organize recovery efforts. Drawing on a dual typology—structural (Emergent Groups, Community-Based Initiatives, Boundary-Spanning Initiatives) and functional (sensor, trusted node, agent)—the study analyzes how citizen roles evolved across the crisis timeline: preparedness, response, and recovery (Houston et al., 2015).

Using a qualitative research methodology, this study assessed how hyperlocal digitally mediated grassroots actors contribute to crisis governance in an unincorporated, hyperlocal community, using a case study design. The findings reveal that informal digital actors not only filled coordination gaps left by formal agencies but also engaged in emotional support, symbolic recovery, and cross-platform translation.

This study contributes to the literature on crisis governance, digitally embedded hyperlocal, grassroots actors, and crisis informatics by showing how platform-based actors in structurally ambiguous jurisdictions become essential to adaptive emergency management. It indicates that citizen-led initiatives, through their temporal fluidity and digital credibility, form the backbone of informal governance in high-risk, under-governed contexts. The thesis concludes with recommendations for integrating grassroots platforms into formal emergency planning frameworks.

Keywords: crisis governance, hyper-local, digitally mediated, grassroots actors

Preface & acknowledgments

The journey of writing this thesis is a tale of its own. The Eaton Fire not only re-ignited the existing adaptive, grass-roots community-led coordination via social media in Altadena, but also my journey to address the unanswered gaps, concerns, and questions for the Altadena community.

Having personally experienced the grave horrors, confusion, and grief of losing a home to a natural disaster, it took me some time to pull myself together to write this thesis. I want to express my sincere gratitude to my stellar supervisor, Dr. Sofia Pagliarin, for her patient support and dynamic understanding throughout the entire process. My grandmother, Elizabeth (Betsy) God bless her, is 96 years old, a survivor of the Great Depression, Second World War, and the Cold War, as well as some natural disasters that came close to her home in Altadena. My grandmother is a stoic, resilient, and wise person whom I am very blessed to have. My mother and father sadly passed away recently, in 2024 and 2022, respectively. I owe them so much, and I am incredibly grateful for all the unconditional love, support, and backing they have provided to the very last end. I would also like to acknowledge the rest of my family and friends, who either shifted their roles to become good cops or bad cops, pressuring me to finish this thesis. I would also like to thank the staff at ESSB counselors, advisors, and dean's office for their patience, and support.

Finally, this thesis is dedicated to the community of Altadena, whose actions, whether before, during, or after the Eaton Fire, should be recognized, addressed, and presented in the realm of Academia.

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1.1 Background and Context

In the evening of January 7, 2025, strong Santa Ana winds, coupled with dry vegetation, ignited a wildfire in Eaton Canyon, bordering the unincorporated community of Altadena in Los Angeles County, California. The fire expanded rapidly; within the first 24 hours, approximately 10,000 acres were reported burned (Watch Duty, 2025). The fire was first named the Close Canyon Fire (its original location of origin) and was later renamed the Eaton Canyon Fire or Eaton Fire (Watch Duty, 2025). The devastation of the Eaton Fire resulted in the tragic loss of 17 lives, 9,400 structures destroyed, and over 1,000 more structures severely damaged (Cal Fire, 2025). Essential services, including utilities (electricity, gas, and water), road access, and communication towers, were also severely disrupted (Cal Fire, 2025).

Los Angeles County is the United States' largest county by population, spanning over 4,000 square miles and home to nearly 10 million people (LA County, 2025). There are 88 incorporated cities, each with its own city council and mayor. The areas not part of these cities are the county's unincorporated areas (LA County, 2025). With a population of nearly 1 million people spread over 2,600 square miles and approximately 120-125 communities, more than 65% of Los Angeles County is unincorporated (LA County, 2025). They represent two-thirds of LA County's area and around one-tenth of the population. (LA County, 2025). If grouped into a single city, the incorporated areas would rank third-most populous in California, after the City of Los Angeles and the City of San Diego (LA County, 2025). The Board of Supervisors is the city council, and the Supervisor representing the area is the mayor. Los Angeles County also provides various municipal services. Altadena is one of these unincorporated communities with a population of approximately 42,000 (CDP, 2020).

Despite Los Angeles County being the 20th largest economy in the world, with a GDP of nearly $962 billion (LA County, 2025), Los Angeles County's governance structure and setup create a grey area, leading to a lack of, or delayed, services, decision-making, and accountability that are revealed during a crisis (Comfort, 2007). Crisis management in unincorporated areas has developed a poor reputation due to slow, fragmented responses, rooted in complex bureaucratic processes and coordination challenges across county, state, and federal agencies (Comfort, 2007). Wildfire victims faced substantial delays in receiving insurance payouts and federal assistance (California Department of Insurance, 2025).

Given the challenges, digital platforms such as local Facebook community groups (Beautiful Altadena and Altadena Weather & Climate), wildfire alert applications (e.g., Watch Duty), and the local Altadena Town Council became the go-to channels for hyper-local, real-time, rapid information sharing and coordination, emotional comfort, and collective memory. (Palen & Vieweg, 2008; Houston et al., 2015; Alexander, 2004; Erikson, 1976).

1.2 Problem Statement

While literature on digital governance and citizen-driven disaster response has concentrated primarily in either centralized emergency management or contexts of institutional weakness and informality (Palen & Vieweg, 2008; Houston et al., 2015; Chin & Mees, 2021), less is known about how such dynamics unfold in unincorporated yet resource-rich communities within advanced administrative systems, such as Altadena in Los Angeles County.

In Altadena, dynamic, hyper-local, citizen-led digital governance practices emerged within a context where formal administrative capacity was not absent, but fragmented. Existing literature addresses such dynamics in contexts of informality, minimal institutional capacity, and limited institutional capacity (Bryson et al., 2013; Nederhand et al., 2019; Visser et al., 2023). The case of Altadena challenges this assumption by proving how urban governance gaps can emerge not from the absence of institutions, but from the fragmentation of responsibilities and bureaucratic entanglements within an advanced administrative system.

1.3 Research Objective

This thesis investigates how citizens utilized digital platforms to mobilize, coordinate, and organize either before, during, or after the Eaton Fire in Altadena. It also aims to explore how unincorporated status, digital participation, and hyper-local governance mechanisms are relevant to crisis management. This study integrates crisis phase theory (preparedness, crisis, recovery) with a dual typology of citizen action. The typology distinguishes between structural forms (community-based initiatives and boundary-spanning initiatives) and functional digital roles (sensor, trusted node, agent). Combining these phases, forms, and roles shows how citizen-led digital action shifts and evolves across the different stages of the crisis. All key concepts and typologies are substantiated by crisis management, governance, and citizen participation, which are defined and theoretically grounded in Chapter 2.

1.4 Research Questions

The following research questions are posed:

1. How did Altadena residents use digital platforms to coordinate preparedness, response, and recovery during the Eaton Fire?
2. What types of citizen-led initiatives emerged before, during, and after the Eaton Fire (community-based initiatives, boundary-spanning initiatives), and how did their roles and functions (sensor, trusted node, agent) evolve across different crisis phases?
3. How did Altadena's unincorporated governance status shape the organization, functioning, and responsibilities of grassroots, hyper-local crisis governance during the Eaton Fire?

4. How do the practices observed in Altadena contribute to understanding digital, citizen-led crisis governance in urban areas lacking a formal municipal governance structure?

1.5 Structure of the Thesis

This thesis consists of six chapters as its primary structure. Following this introduction:

- Chapter 2 establishes the theoretical base through a literature review and the theoretical framework that combines citizen co-production theory with digital emergency governance and hyper-local, grassroots response typologies.
- Chapter 3 describes the research design elements and methodological justification, which include case selection methods, data sources, typology development, and ethical standards.
- Chapter 4 presents and examines the empirical findings through thematic analysis, which investigates platform utilization patterns alongside actor functions and crisis management developments during the study period, and analyzes the results by relating them to the established theoretical framework.
- Chapter 5 synthesizes and discusses the empirical findings from Chapter 4 through the lens of the dual typology introduced in Chapter 2 and concludes with a summary of contributions, limitations, and policy implications.

1. 6 Significance of the Study

This thesis contributes to multiple themes of urban governance and public administration.

First, it contributes to the literature on digital and citizen-led crisis governance by examining how residents and hyper-local grassroots initiatives use digital platforms to mobilize, coordinate, and organize preparedness, response, and recovery within fragmented formal municipal governance.

Second, it contributes to research on community-based and boundary-spanning initiatives by documenting how citizen-led actors assume evolving roles – such as sensors, trusted nodes, and agents – across different crisis phases.

Third, it adds empirical depth to urban governance in unincorporated or fragmented governance settings, a context that remains understudied in the crisis governance literature.

Finally, it offers practical relevance for public officials, community organizers and leaders, and emergency managers by describing how digital platforms and hyper-local grassroots initiatives interact with formal authorities during times of crises.

2.1 Citizen participation and co-production in crisis governance

Public service delivery has undergone significant changes in citizen involvement, particularly in emergency and disaster response. Bouvaird (2007) defines co-production as the process through which citizens join forces to create public services. These public services are not limited to routine public service delivery but can be extended into contexts of crisis and emergency, where service uncertainty and time-sensitive responsibilities are fragmented amongst formal and informal actors (Alford, 2014; Brandsen & Honingh, 2016). During a crisis, and especially when formal response systems are fragmented or overwhelmed, citizens' roles are not limited to supplementing formal actors' governance roles, but also include operational roles in sharing information, coordinating, and providing care (Palen & Anderson, 2016; Boin et al., 2017). This extension posits crisis governance as a crucial factor that intensifies and reconfigures co-production.

Citizen participation and co-production in crisis governance do not emerge in isolation but are influenced by the institutional framework, temporal dynamics, and spatial context. In crisis governance contexts, where formal institutions are fragmented, overwhelmed, and otherwise deficient, citizen participation and co-production no longer remain supplementary; they become integral, playing a leading role in coordinating responses to the crisis and shaping narratives and interpretations of the event (Comfort 2007; Boin et al. 2017). Crisis governance literature, citizen participation, and co-production illustrate how non-state actors emerge, function, and assume governance roles within contexts of uncertainty, urgency, and sensitivity that are usually reserved for the traditional public authorities (Bovaird, 2007; Brandsen & Honingh, 2016). Such action by non-state actors occurs in crisis governance contexts where structures of formal authority are fragmented and constrained, requiring more adaptive distributed action and new forms of coordination to respond (Ansell & Gash 2008; Palen & Anderson 2016).

The absence or fragmentation of formal institutions often coexists with complex institutional relationships. According to Comfort (2007), emergency response systems are vulnerable to paralysis due to bureaucratic fragmentation and overlapping jurisdictional responsibilities, which disrupt coordination and decision-making. In such contexts, formal institutional fragmentation creates gaps in governance authority, delays in communication, and mismatched signals. As a result, citizens participate in and co-produce via informal networks, taking it upon themselves to navigate, organize, and coordinate within these contexts of formal institutional fragmentation.

Citizen participation and co-production are also influenced by spatial and place-based factors. Ma et al. (2023) found that neighborhood-based organizations in suburban areas with wildfire risks lead to faster, more accurate crisis governance. Physical proximity, shared risk exposure, and local knowledge enable residents to come together as a unified entity and emphasize the significance of place-based governance dynamics in crisis governance.

Contexts of institutional fragmentation, as well as spatial and place-based factors, influence and shape citizen participation and co-production in crisis governance literature. These contexts illustrate why citizen-led governance dynamics appear and flow under conditions of uncertainty, urgency, and sensitivity.

2.2 Dual typologies of citizen-led response and action: organizational forms and functional roles across the crisis timeline

Building on the preceding discussion of citizen participation and co-production in crisis governance, this section addresses the organizational and functional forms through which citizen-led responses and, eventually, citizen-led action unfold over the crisis timeline. Further conceptual precision is required to explain how citizen-led responses and actions are structured, what governance role they perform, and how these actions evolve over the crisis timeline.

In public administration and collaborative governance literature, community-based initiatives (CBIs) are semi-formal, durable groups that operate within a community based on shared trust, identity, and engagement (Brandsen & Honingh, 2016; Nederhand et al., 2019, Igalla et al., 2020). Brandsen and Honingh (2016) describe CBIs as grassroots actors that maintain structured coordination without being state-controlled. They are citizen-led, non-state actors that mobilize collectively around shared localized concerns, arrange a sense of local coordination and consistency over time, and perform duties largely outside formal government hierarchies (Brandsen & Honingh, 2016; Nederhand et al., 2019, Igalla et al., 2020). Legitimacy and trust are crucial components that drive CBIs and are usually achieved through ongoing credibility, support, and reputation, especially in high-risk, low-information crisis governance contexts such as natural disasters (Steelman & McCaffrey, 2013). These groups embody Bovaid's (2007) concept of co-production, as citizens collectively collaborate to deliver critical crisis functions usually associated with formal public institutions, including information sharing and verification, mutual aid coordination, and community mobilization. Furthermore, CBIs represent what Mees et al. (2019) refer to as locally embedded resilience platforms, whose role in adaptation is vital in under-governed areas. Their ongoing digital presence, established before the crisis, and especially in areas of fragmented, jurisdictional authority, laid the groundwork for swift mobilization during it, illustrating how crisis governance is often cultivated long before disaster strikes.

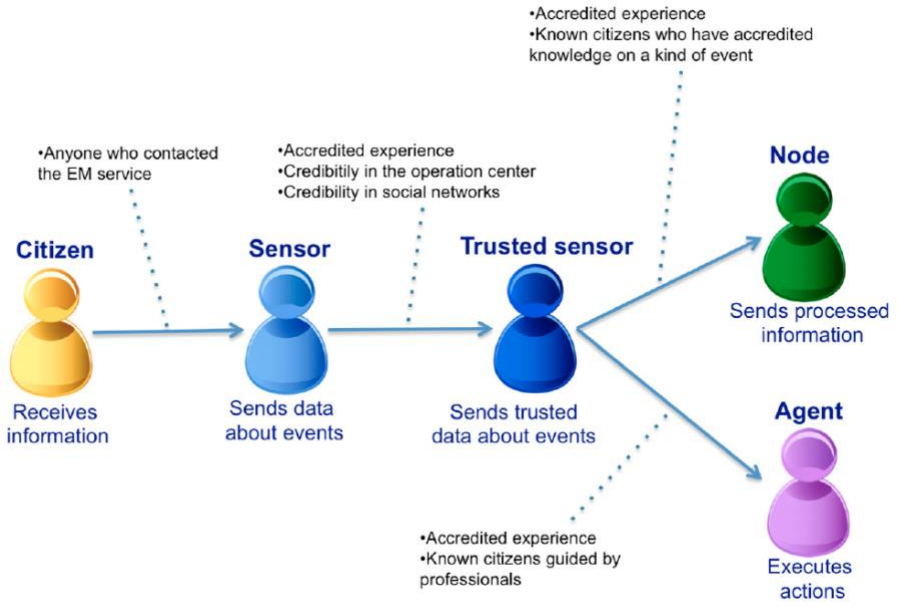
Furthermore, boundary-spanning initiatives (BSIs) are hybrid governance actors that translate information, align interests, and facilitate coordination across institutional, community, and informational boundaries between citizens and formal public institutions (Williams, 2002; Van Meerkerk & Edelenbos, 2014; Nederhand et al., 2019). The concept draws from Nowell and

Steelman (2014), who define BSIs as actors embedded within networks who enable inter-organizational collaboration by translating knowledge, fostering trust, and adapting to changing conditions. BSIs are not formally institutionalized, yet they operate as connective tissue between top-down emergency systems and bottom-up community efforts. Thaler and Seebauer (2019) further conceptualize such actors as vital mediators who translate between the logic of state institutions and community needs, especially in settings marked by fragmented authority or low institutional trust. Due to their unique, versatile positionality and role, BSIs operate both vertically with formal public institutions and horizontally among citizen groups. As Meijer and Boliver (2016) argue, these forms of digital governance derive their authority not from institutional hierarchy but from credibility, participatory legitimacy, and the ability to coordinate meaningfully under conditions of uncertainty. In structurally ambiguous, fragmented jurisdictions, BSIs become essential not only for real-time crisis coordination but also for sustaining memory, identity, and adaptive resilience over time.

Importantly, these structural forms are not static. CBIs may develop BSI capacities over time, while BSIs may revert to looser forms as urgency dissipates. This temporal fluidity – especially across the Houston et al. (2015) crisis timeline is central to understanding grassroots governance as a continuum. As Berkes and Ross (2013) note, such transformations reflect adaptive co-management, rooted in flexibility, feedback loops, and local knowledge.

The structural form alone does not fully capture the crisis-governance roles played by citizen-led participation and action. Research derived from crisis informatics literature emphasizes that digitally mediated participation enables citizens to perform functional roles in crisis governance contexts through information relaying, verification, and mobilization (Palen & Vieweg, 2008; Diaz et al., 2016). Trusted sensor detects, observes, and signals risk, posting early warnings through observation and reporting. Nodes validate, curate, and distribute credible information, often acting as moderators, translators, or cross-posters between platforms. Agents initiate or coordinate action – mobilizing resources, coordinating collective action, translating information into practical response or recovery efforts. While Diaz et al. (2016) illustrate the relationship between citizens and sensors as a baseline, subsequent contributors operationalize only the roles of trusted sensor, node, and agent, treating generic citizen participation and unverified sensing as background activity. Moreover, these functional digital roles are distinguishable, not tailored to specific actors, and occur in different structural forms, which may shift across the crisis timeline.

Figure 2: Understanding ways of participation through an ecology of participants *(Diaz et.al, 2016, p.10).*



While both the structural and functional dimensions capture the governance roles of citizen-led participation and action in crisis governance, the temporal dimension conceptualizes the crisis's phases. According to Houston et al. (2015), Table 1, the temporal phases of pre-event, event, and post-event are characterized by changes in the purposes and functions of communication, as reflected in Diaz et al. (2016), Table 2. Following Diaz et al., (2016), emergency management is conceptualized as a four-phase cycle consisting of mitigation, preparedness, response, and recovery. Mitigation emphasizes long-term risk-reduction measures to mitigate the impact of future crises. The pre-event (Houston et al., 2015) or preparedness (Diaz et al., 2016) period, the period before impact, is characterized by early warnings, awareness-building, and preventive actions. The event (Houston et.al, 2015) or response (Diaz et al., 2016), which are the acute phases of the crisis, are marked by rapid coordination, damage containment, and emergent relief. The post-event (Houston et.al, 2015) or recovery (Diaz et al., 2016) phase involves rebuilding, symbolic re-narration, and long-term adaptation. These phases are essential for complementing temporally the ways in which citizen-led participation and action play functional and structural roles in a crisis governance context. While mitigation constitutes a critical phase within the emergency management cycle, it is often characterized as long-term, structural, and institutional. It is not meaningfully captured in the digital and communicative data analyzed in this research.

By combining the structural forms (CBIs and BSIs), functional digital roles (trusted sensor, node, agent), across crisis phases (preparedness, response, and recovery), a conceptual framework for analyzing citizen-led participation and action in crisis governance is provided, as a dynamic, multi-layered, and evolving process.

Table 1: Functions of disaster social media *(Houston et al., 2015, p.8)*

Disaster social media use	Disaster phase
Provide and receive disaster preparedness information	Pre-event
Provide and receive disaster warnings	Pre-event
Signal and detect disasters	Pre-event → Event
Send and receive requests for help or assistance	Event
Inform others about one's own condition and location and learn about a disaster-affected individual's condition and location	Event
Document and learn what is happening in the disaster	Event → Post-event
Deliver and consume news coverage of the disaster	Event → Post-event
Provide and receive disaster response information; identify and list ways to assist in the disaster response	Event → Post-event
Raise and develop awareness of an event; donate and receive donations; identify and list ways to help or volunteer	Event → Post-event
Provide and receive disaster mental/behavioural health support	Event → Post-event
Express emotions, concerns, well-wishes; memorialise victims	Event → Post-event
Provide and receive information about (and discuss) disaster response, recovery, and rebuilding; tell and hear stories about the disaster	Event → Post-event
Discuss socio-political and scientific causes and implications of and responsibility for events	Post-event
(Re)connect community members	Post-event
Implement traditional crisis communication activities	Pre-event → Post-event

Table 2: Different perspectives of the EM (emergency management phases). *(Diaz et al., 2016, p.4)*

EM Phases	Top-Down Hierarchical EM [15]	Community-Level EM [28]
Mitigation	Deciding what to do when a risk has been determined and implementing a risk reduction program	Reducing the vulnerability of social capital
Preparedness	Developing a response plan and training first responders	Enhancement of social capital
Response	Providing emergency aid and assistance	Utilization of social capital in problematic situations, evoking resilience
Recovery	Provide support until the community returns to normal	Reestablishment of social capital, leveraging resilience

2.3 Social media and digital networks in crisis governance

Social media platforms and digital networks serve as the main environments where citizen roles become visible. The online environment has transformed citizens into dual entities that perform both sensing and communication functions, as noted by Palen and Vieweg (2008). These platforms allowed users to communicate in real time, in a decentralized manner. Social media platforms and digital networks may serve not only as information distribution tools but also as mechanisms for addressing, translating, and acting upon risk in contexts of crisis. Houston et al. (2015) created a functional classification system to organize digital disaster activities throughout the three stages of preparedness, response, and recovery. During the preparedness phase, social media use and digital network usage are centered upon providing early warning, situational awareness, and developing anticipatory sense-making capabilities. The response phases focus on facilitating real-time coordination among response agencies and providing sources for verifying ongoing crisis information and distributing time-sensitive guidance. The recovery phase focuses on providing the means for ongoing long-term coordination, emotional processing, and the reconstitution of the collective agreement associated with the crisis.

In addition to temporal dynamics, the existing literature emphasizes that digital networks are not merely neutral communication tools but also sites of governance. Meijer and Boiliver (2016) are that both the political nature of digital governance and the influence of the platforms themselves – including their architecture, moderation policies, and the way in which information is surfaced or made visible by algorithms – on the way in which different voices are given prominence and which voices are legitimized. During times of crisis, information from public formal institutions may be subject to delays, fragmentation, or contestation, thereby affecting trust formation, authority recognition, and decision-making. Existing literature supports the role of verification and credibility actions in digitally mediated emergency response. Qiao et al. (2019) highlight that

misinformation, and unverified alerts circulate rapidly during crises and require constant validation, correction, and moderation through social processes. Users who curate, contextualize, or cross-reference regularly to provide context for shared knowledge are emerging as informal validators of information across digital networks and exert disproportionate influence on the reliability of the knowledge they share. Additionally, these actions illustrate how crisis governance occurs through communicative actions between users and result from multiple instances of sustained interaction to build and establish authority.

Digital platforms serve multiple symbolic and emotional purposes during the crisis timeline. Cultural trauma theory asserts that the recovery of a group involves more than restoring the material aspects of the group's existence; it also consists of the creation of meaning about loss, telling the story of survival, and rebuilding social cohesion (Alexander, 2004; Erikson 1976). Social media is essential for facilitating communal storytelling and memorization, shared trauma and reflection, and processing collective experiences and resilience, while also emphasizing the continuity of shared, localized identity.

In addition to their emotional and symbolic utilization, recent literature highlights hyperlocal digital engagement within hyperlocal online platforms, where users interact around shared place-based concerns. During a crisis, these digital spaces offer consistent interactions, localized knowledge, trust, and real-time community mobilization (Pasitselska & Gagrcin 2025). These digital spaces are usually conceptualized as meso-spaces: semi-exclusive, accessible, digital spaces that operate between public platforms and private conversations, engaging with local issues and facilitating collective coordination and action (Pasitselska & Gagrcin, 2025). They may also serve as essential civic infrastructure through governance-related roles and relationships sustained during a crisis (Pasitselska et. al.,2025). Vlahos (2019) conceptualizes the relationship between these grassroots, hyper-local digital actors and formal, public, institutional decision-making along a spectrum that ranges from tenuous, ad hoc engagement to pragmatic, integrative forms of cooperation, highlighting that proximity to formal, public institutions is not fixed or uniform.

Further literature discusses how social media platforms are conceptualized as forms of digital commons. Hess and Ostrom (2007) explain that, as a digital commons, social media has many characteristics of collectively governed resources sustained by shared norms, user participation, and informal rule-making systems. In this same way, the concept of a digital commons is applied to crisis governance contexts, highlighting that users engage in the collective construction, curation, and regulation of information posted on social media platforms, transforming the platforms from private and commercial infrastructure into a site of shared governance among users. Scholz (2016) argues that using participatory, reciprocal, and collective stewardship as the basis for decision-making during crisis governance.

Finally, the recent focus on digital citizenship emphasizes how users effectively use digital tools to participate in digitally mediated crisis governance. According to Erokhin (2025), digital

citizenship encompasses greater access to information and the ability to verify information sources, interpret data, and coordinate responses with other users via social media. These competencies determine how users move from observing potential risk to validating the legitimacy of the source to acting in response to a perceived threat; these actions become critical for all involved during periods of uncertainty, urgency, and sensitivity, such as wildfires.

Combined, the literature views social media and digital networks as hybrid governance systems that structure communication, coordination, authority, and shared meaning across all phases of crisis governance. Understanding how social media platforms and digital networks shape transparency, trust, emotional expression, and collective memory is crucial to analyzing citizen-led responses and actions in crisis governance contexts, especially as later chapters examine platform use, actors' roles, and functional shifts.

2.4 Conceptual framework

This thesis adopts a conceptual framework that combines crisis phases, actor types, and functional roles to examine digitally mediated community response to crisis. This framework is based on the theoretical approaches discussed in the preceding sections and serves as an empirical foundation for the remaining chapters.

According to Diaz et al. (2016), emergency management is conceptualized as a four-phase cycle encompassing mitigation, preparedness, response, and recovery. Mitigation is defined as a series of long-term activities intended to minimize future risk; preparedness centers on planning, training, and early warning; response involves actions taken during an event; and recovery involves attempts to restore social, economic, and institutional norms. Although mitigation is considered a significant component of the overall cycle, this framework categorizes only the three temporal phases of crisis governance: preparedness, response, and recovery, since mitigation is typically viewed as a long-term, structural, and institutional process and is not adequately captured in the digital and communication data analyzed for this research. These phases are not strictly sequential phases; instead, they provide an analytical distinction between phases that track patterns of actor behavior and what coordination dynamics exist across the phases.

Figure 3 presents the conceptual framework guiding this thesis and guides the empirical analysis and findings in Chapters 3 and 4. Crisis governance is assessed over three phases – preparedness, response, and recovery – adapted from the emergency management cycle proposed by Diaz et al. (2016). Structural actors are identified between community-based initiatives (CBIs) and boundary-spanning initiatives (BSIs). Functional participation is analyzed through three roles – trusted sensor, node, and agent – which may be performed by different structural actors across the phases. The framework is analytical rather than sequential and does not imply specific roles in specific phases.

Figure 3 : Conceptual framework for analyzing digitally mediated crisis governance

	Preparedness	Response	Recovery
Boundary-Spanning Initiatives (BSIs)			
Community-Based Initiatives (CBIs)			

Functional Roles:

- Trusted Sensor
- Node
- Agent

3.1 Research methodology

The study adopts a qualitative research methodology to assess how digitally mediated grassroots actors contribute to crisis governance in an unincorporated, hyperlocal community context. The study interprets the roles, practices, and interactions of the actors rather than testing causal

relationships and measuring outcomes. A qualitative approach is relevant to the study because it enables a close examination of interpretation, coordination, and governance processes in the digital environment.

The study will use a case study design. This is based on the logic of case study research as proposed by Yin (2018), arguing that case studies offer a pertinent approach to studying complex social phenomena in real-world settings. The nature of crisis governance in unincorporated communities is characterized by a complex web of intersecting institutional roles and fluid role dynamics among actors. The case study design thus allows for a perspective that views all aspects together.

The study is guided by the conceptual framework developed in Chapter Two, integrating crisis phases with structural and functional actor roles. The conceptual framework should not be used as a theoretical model for testing; rather, it serves as an analytical lens to guide data collection and interpretation. Such an approach enables an analysis of observations from the different structural types of digitally mediated actors performing crisis-governance-related functions across the crisis phases.

Overall, the methodological approach emphasizes depth, contextualization, and analytical transparency. By incorporating multiple forms of qualitative data within a single case study, the study aims to provide a thorough, empirically informed account of crisis governance through digital mediation.

3.2 Case study: January 2025 Eaton Fire, Altadena, California

The January 2025 Eaton Canyon Fire in Altadena, California, was selected as an in-depth case study to examine digitally mediated crisis governance. The Altadena case study was chosen because it is an unincorporated area of Los Angeles County, which means its formal governance structure is fragmented and relies on informal, grassroots, hyperlocal community-based coordination during the crisis. This unique crisis governance context allows for a suitable setting for assessing how grassroots, hyperlocal informal actors assume crisis governance-related functions.

Altadena, California, is a fire-prone community located in the foothills of the San Gabriel Mountains. The Eaton Canyon Fire disrupted crisis communication among residents, leading to various forms of digital communication, coordination, mobilization, and collective sensemaking. The fire provided empirical context for assessing how digitally mediated actors operated across the crisis's stages.

The case study focuses on community engagement on Facebook, the central hub of local communication in Altadena. Facebook was chosen for its popularity among residents and its real-

time updates. Two Facebook groups were considered the key sites for empirical observation: Altadena Weather and Climate and Beautiful Altadena. Both these groups differ in purpose and function. Altadena Weather and Climate focuses on meteorological monitoring and communication. Beautiful Altadena is focused on broader engagement and community support. This approach enables a comparative observation of structural types and functional actor roles across the crisis timeline for each Facebook group administrator.

In addition to Facebook-based activity, the case study also examines two more elements that help complete the picture of the non-governmental actors involved in the crisis governance. First, the study examines Watch Duty as a nonprofit emergency information platform for verified alerts and incident developments across the crisis timeline. Second, the study incorporates the January and February 2025 Altadena Town Council virtual meetings as a supplementary governance source that brought together both formal and informal actors to relay information, mobilize the community, and provide situation updates.

When combined, the Altadena case and the selected digital governance platforms offer an empirically complex context to examine how either enacted community-based or boundary-spanning initiatives on the structural level, and their functions either as trusted sensors, nodes, or agents, sometimes at the same time, are mapped in the various phases – preparation, response, and recovery in the absence of formal fragmented governance actors.

3.3 Data collection methods

Data collection for this study aimed to examine and capture multiple dimensions of digitally mediated crisis governance and to triangulate across all platforms and data types. The study draws on digital content and supplementary qualitative materials created either before, during, or after the January 2025 Eaton Fire. All data were collected retrospectively and organized and categorized to allow for phase-based, structure-based, and role-based analysis.

3.3.1 Facebook groups

The primary data source comprises Facebook admin-only posts and threads from the two Facebook groups: Altadena Weather & Climate and Beautiful Altadena. Beautiful Altadena had two administrators, while Altadena Weather & Climate had one, for a total of three actors across the Facebook groups examined in this study. Data collection for the examined Facebook posts and threads spans late December 2024, the preparation phase, to early February 2025, the recovery phase.

Posts and threads were collected through systematic screenshotting to preserve original timestamps, author markings, and the actual text content. This approach accounted for the transitory nature of social media content, including post edits and deletions. The dataset

comprises individual posts and threads, including weather forecast alerts, situation updates, community mobilization, resource information, policy/blame, and reflective messages. The content of posts and threads provides the core empirical basis for analyzing the evolution of structural and functional actor roles across the crisis phases.

3.3.2 Watch Duty

In addition to Facebook content, the study uses data from Watch Duty, a nonprofit emergency information platform that disseminates, aggregates, and shares evacuation alerts, resource information, and live, real-time updates. In this study, Watch Duty is examined for its roles as a structural actor and its functions across the crisis phases. Data collection for the examined Watch Duty alerts and messages on the evening of January 7th, 2025 (as soon as the fire was spotted in Eaton Canyon) and continued through early February 2025, well into the recovery phase.

Watch Duty alerts and messages were collected through systematic screenshotting to preserve original timestamps, author markings, and the actual text content. This approach accounted for the transitory nature of social media content, including post edits and deletions. The dataset accounts for several hundred individual posts and threads, including weather forecast alerts, situation updates, community mobilization, resource information, policy/blame, and reflective messages. The content of posts and threads provides the core empirical basis for analyzing the evolution of structural and functional actor roles across the crisis phases.

3.3.3 Altadena Town Council virtual meetings

The Altadena Town Council (ATC) is a locally elected advisory body that represents Altadena's residents. The ATC is not a formal legislative or executive authority. Its purpose, instead, is to serve as a liaison forum for discussing, debating, and communicating community concerns, inquiries, or suggestions to county-level institutions. Public meetings and standing committees are established to address any issues affecting residents of Altadena. Within the context of crisis governance, the ATC's role is to serve as an intermediary between residents and formal government authorities. While it was not directly active during the crisis's preparation and response phases, it provided a space to mobilize, organize, and hold all relevant actors accountable in the recovery phase. In this study, publicly available recordings and official minutes of the Altadena Town Council virtual meetings held in January and February 2025 were examined as supplementary material. Each actor who attended the meetings and provided their role and scope in either crisis timeline was considered. This was not limited to members of the ATC, but also to formal government authorities and occasional NGOs that played crucial functional roles during the response and recovery phases. However, they were not accounted for their structural roles, as this is only applicable to citizen initiatives, not formal government authorities.

ATC virtual meetings were systematically listened to, and the participating actors, whether government or citizen, were categorized based on the information shared and their functional roles across the crisis timeline. The dataset accounts for the different actors, including weather forecast alerts, situation updates, community mobilization, resource information, policy/blame, and reflective messages.

3.4 Data analysis

Data analysis was conducted using a qualitative coding approach using Atlas.ti coding and analysis program. The analytical strategy employed a combination of theory-driven and data-driven coding processes to examine how digitally mediated structural actors enacted crisis-governance functions across different phases of the crisis timeline. The analysis not only focused on measuring frequency or impact but also on identifying fluctuations in functional roles and structural role evolution across the crisis timeline.

3.4.1 Coding strategy

The coding strategy used a hybrid approach. Initially, a deductive coding framework was derived from the conceptual framework developed in Chapter 2, including structural actor types, functional roles, and crisis phases. Simultaneously, inductive coding was used to highlight actor tone/style and post type and to refine labels to ensure conceptual consistency. To ensure conceptual consistency, coding labels were refined prior to analysis to align fully with the final conceptual framework presented in Chapter 2.

All coding decisions were documented through analytical documents within Atlas.ti to ensure transparency and reflexivity throughout the analysis. The final codebook comprised the following code sets: structural actor codes, functional role codes, crisis phase codes, post type codes, and post tone and style codes applied across posts, threads, and meeting excerpts. Total count, distributions, and patterns from the coding process are provided in Chapter 4. A detailed codebook with definitions, inclusion, and exclusion criteria is provided in Appendix A.

3.4.2 Structural actor coding

Actors were first coded according to their structural role within the crisis governance network. Two groups were operationalized: community-based initiatives (CBIs) and boundary-spanning initiatives (BSIs). The categories were developed to reflect the actor's core organizational positioning rather than the content or purpose of specific, individual posts, threads, or meeting excerpts.

CBIs are grassroots, hyper-locally embedded groups with pre-existing trust and cohesion operating within digital spaces, such as community Facebook groups. In this study, Beautiful Altadena and its main administrator, grouped as Beautiful Altadena – A, were coded as CBI.

BSIs are actors or groups that integrate across platforms, scales, or formal-informal boundaries, connecting citizen networks with external systems or authorities. In this study, Watch Duty, the Altadena Town Council (members when acting in their council capacity), NGOs (the American Red Cross), as well as the community Facebook groups, Altadena Weather and Climate, and the moderator of Beautiful Altadena, grouped as Beautiful Altadena – B, were coded as BSI.

In the Altadena Town Council meetings, excerpts from governmental or formal actors were omitted from the coding process, and this study focuses only on citizen initiatives.

Structural actor roles were determined based on dominant positional roles, while variation in situational behavior was measured using functional role coding.

3.4.3 Functional role coding

Functional role coding was used to identify governance-related actions performed by actors in selected excerpts. Three functional roles were operationalized: trusted sensor, node, and agent. These functional roles refer to non-sequential actions and can occur simultaneously in a single selected excerpt.

The trusted sensor role detects and posts early warnings or risks (e.g., fire signs, weather changes). The node role curates, verifies, or amplifies credible information, and bridges community actors. The agent role mobilizes or coordinates direct action, such as donations, evacuation planning, or symbolic storytelling.

Functional role coding was applied when governance-related activity was present, and only situationally. Routine or administrative content was not coded as functional roles unless it involved a governance-related activity. Functional role coding did not alter an actor's structural identity.

3.4.4 Crisis phase coding

Crisis phase coding was used to situate excerpts temporally within the crisis timeline. Three crisis phases were operationalized: preparedness, response, and recovery. These phases served as analytical frameworks rather than strict chronological or causal sequences, allowing for overlaps.

The preparedness phase is characterized by anticipatory behavior, risk monitoring, and informal coordination. The response phase refers to information exchange, real-time coordination, and active mobilization at the onset of the crisis. The recovery phase includes emotional processing and reflection, platform retrospectives, and informal rebuilding after the fire.

Mitigation was recognized as a component of the emergency management cycle; however, it was not operationalized in this study. This emphasizes the study's concentration on observable communicative and coordinative actions surrounding the crisis, rather than long-term risk reduction.

3.4.5 Post type and post tone

In addition to structural actor, functional role, and crisis phase coding, excerpts were analyzed by type and tone to depict variations in communication purpose and emotional behavior. Post type refers to the labelling of the intended purpose of an excerpt, while post tone refers to the severity and emotional style of an excerpt. Post type was operationalized into five types: forecast alert, situation update, resource information, community mobilization, policy/blame, and reflective message. Post tone was operationalized into six types: affective, neutral, urgent, reassuring, and symbolic.

Both post type and post tone were analyzed inductively as the data collection process progressed. Coding for post type and post tone was executed in parallel with the deductive coding of structural actor, functional role, and crisis phase.

3.5 Limitations, reflexivity, ethical considerations, and positionality

This study examines a single crisis event within a specific context, limiting generalizability beyond similar unincorporated or digitally savvy communities. The findings reflect analytical rather than statistical generalization.

This study relies exclusively on digital content archived via screenshots and identifying details removed, primarily from Facebook groups, a nonprofit platform, and public town council meeting records. References to actors use role-based descriptions, such as group administrator, moderator, or council member. Private interactions, interviews, or surveys could not be systematically utilized, thereby potentially limiting specific community perspectives.

The researcher experienced all phases of the Eaton Fire firsthand, which triggered emotional and practical challenges throughout the research process. Analyzing a large volume of crisis-related digital content required emotional resilience and sustained attentiveness to overcome mental fatigue and the emotional labor it entails. To avoid potential bias, the analysis focused on a predefined coding framework and archived textual data rather than personalized narratives and stories.

4.1 Findings

This chapter presents the study's research results, based on a qualitative analysis of digital content related to the Eaton Fire. Using the coding framework outlined in Chapter 3, this chapter analyzes how crisis governance-related structural positions, functional roles, and communicative characteristics were enacted via digital platforms across the crisis's phases.

The findings are structured through four analytical dimensions: structural positions, functional roles, crisis phases, and communicative characteristics. The structural position dimension

distinguishes between community-based initiatives (CBIs) and boundary-spanning initiatives (BSIs). The functional role dimensions highlight the enactments of trusted sensor, node, and agent roles. The communicative characteristics dimension presents the type and tone of each excerpt. The crisis-phase dimension situates the other dimensions within the phases of the crisis. This structure allows for multidimensional tracing of the evolution, shifts, and transitions in digitally mediated crisis governance across the disaster timeline.

This chapter presents patterns and variations observed in the data through illustrative excerpts. Analysis and discussions are reserved for Chapter 5. All excerpts provided are anonymized and identity details removed in accordance with the ethical considerations referenced in Chapter 3.

4.2.1 Community-based initiatives (CBIs)

Community-based initiatives (CBIs) represented the first structural position dimension within the digital-mediated crisis governance context surrounding the Eaton Fire. These actors were grassroots, hyper-locally embedded within the unincorporated town of Altadena, California, that operated on pre-disaster trust and legitimacy via online networks. Their presence, actions, and activities were oriented toward internal, intra-community communication, organization, and mobilization rather than toward cross-institutional collaboration.

The administrator of the Beautiful Altadena Facebook community group operated as the central CBI in the dataset. Throughout the crisis phases, the group established an exclusive, localized safe space for resource information, community mobilization, and communal support. However, as specified in Chapter 3, two actors within Beautiful Altadena operated as distinct structural positions throughout the crisis phases. The group administrator, grouped as Beautiful Altadena – A posts, threads, and excerpts were all coded as CBI. The role of administrator reflected characteristics of a community-embedded actor rather than a boundary-spanning intermediary.

During the preparedness phase, CBI activities focused on potential hazards and community awareness. The following excerpt illustrates how CBI actors contributed to localized, historical, contextualized risk communication and understanding:

“Fingers crossed Tuesday night's wind is nothing like December 2011's (some forecasters are concerned it will be) but it is shaping up to be a serious and potentially very damaging event nonetheless. Prepare now!” (Group administrator, Beautiful Altadena – A Facebook group, preparedness phase).

In the response phase, CBI activity escalated as the disaster unfolded. CBIs became an anchoring actor in sharing real-time information updates, serving as a localized integrator and providing communal support. The following excerpt shows how multiple threads were set up covering a diverse range of impending issues, topics, and resources:

“If you become aware of any closures please share them here. Note: We have multiple active "official" threads today to consolidate everyone's updates and information and communicate as effectively as possible during this critical wind event. The topical windstorm threads include: Power Outage Thread, Lost & Found Thread, School & Business Closure Thread, Traffic & Safety Thread, Windstorm Photos.” (Group administrator, Beautiful Altadena – A Facebook group, response phase). CBI behavior primarily emphasized internal cohesion, awareness, and solidarity rather than external engagement, coordination, and collaboration.

During the recovery phase, CBI activity transformed toward reflective and symbolic messaging. Posts and threads were dedicated to emotional regulation, collective memory, and moments of resilience. Reflective communication and symbolic messages – such as condolences, mean-making, and community identity were prominent. They emphasized the role of CBIs in strengthening social cohesion, trust, and legitimacy in the aftermath of the disaster. The following excerpt reflects a month after the devastating fire:

“A month in and I feel like it's the first day I'm coming up for air, which I'm guessing many of you can relate to. We had planned an online vigil for today, but our team (all of whom lost their homes) has been as overwhelmed as all of you who have been trying to pick up the pieces of their lives and navigate this uncharted territory together the last few weeks.” (Group administrator, Beautiful Altadena – A Facebook group, recovery phase).

Throughout all the crisis phases, the structural position of the CBIs remained unchanged. Despite the use of different functional roles – such as trusted sensor, node, and agent – these variations were not affected by the community-oriented focus of the actors. CBI activity involved hyper-local embeddedness, community social cohesion, and strengthening communal ties throughout the crisis phases.

4.2.2 Boundary-spanning initiatives (BSIs)

Boundary-spanning initiatives (BSIs) represented the second structural position dimension within the digital-mediated crisis governance context surrounding the Eaton Fire. Unlike CBIs, BSIs functioned at the boundaries between community spaces and formal or institutional systems, translating information, coordination efforts, and cross-boundary communication. BSI’s activity manifested beyond intra-community relations and facilitated connections between local groups with formal, institutional governance actors, systems, and infrastructure.

Several actors exhibited BSI structural characteristics and behaviors, including Watch Duty, Altadena Town Council (ATC) members in their council capacity, NGOs such as the Red Cross, and the Facebook groups Altadena Weather and Climate, and the group moderator, grouped under Beautiful Altadena – B. These actors were coded as BSIs based on their structural characteristics rather than the content of posts, threads, or dialogue. Across the crisis phases,

BSIs extensively operated characteristics oriented toward aggregation, collaboration, and mediation across organizational, institutional, and governance boundaries.

During the preparedness phase, BSI activity focused on early risk detection and coordination. Posts commonly cascaded, translated, and simplified official, formal, institutional information – such as weather and climate forecasts, preparation tips, and situational awareness. The following excerpt emphasizes boundary-spanning preparedness communicated in a basic manner and style:

“Unfortunately, I must ask you all to begin paying attention to the forecast. The last several weeks have been rather mundane, and we've all been able to safely ignore the weather. That period is over. I am keeping a close eye on the potential for mountain wave activity on the night of Tuesday, January 7th, 2025 into the morning of Wednesday, December 8, 2025 for the San Gabriel Valley foothills.” (Group administrator, Altadena Weather and Climate Facebook group, preparedness phase).

In the response phase, BSI activity transitioned to a more operational state. Posts communicated live, in real time, on-the-ground updates, coordination, and related actions, often linked from formal, official institutions and communication channels. BSI actors acted as essential aggregators of crucial knowledge, cascading crisis-related information, and mobilizing community attention to official, verified sources and their instructions:

“Fire is making a strong push to the east and is spotting in front of itself, per the helicopter coordinator (HLCO) overhead. Fire will impact the Kinneloa Canyon area shortly. The following message was sent on Genasys to Zones ALD-EASTLOMA, ALD-EATONCANYON, ALD-GARFIAS, ALD-MENDOCINO, ALD-MIDLOTHIAN, KIN-KINNELOA, PAS-E014, PAS-E015, PAS-E016, PAS-E017, PAS-E018, PAS-E019: "Fast moving wildfire in your area. BE AWARE of your surroundings and MONITOR the situation closely. Follow all instructions from first responders in the field. More information will be posted on alertla.org when available." These zones are visible on the Watch Duty map or Genasys Protect.” (Watch Duty app, response phase).

In the recovery phase, BSI activity moved toward long-term coordination, governance dialogues, and shared responsibility. Posts ranged from institutional critiques to resource information to community mobilization efforts. The following excerpt illustrates BSI characteristics in the recovery phase:

“As we navigate these difficult times we are transitioning from crisis management into the early stages of recovery this is a long-term process and for many the road to rebuilding will take years likely two years or more for those seeking to restore their homes while it may feel like things are moving slowly I want to assure you that they are moving forward we have the full support and resources of LA County behind us as well as that of the state.” (Council member, Altadena Town Council virtual meeting, recovery phase).

Throughout the crisis phases, the structural position of BSIs remained unchanged. Despite the use of different functional roles – such as trusted sensor, node, and agent – these variations were not affected by the boundary-spanning orientation of the actors. BSI activity was characterized by cross-boundary communication, information aggregation, and coordination among all crisis governance-related actors.

Table 3: Structural positions across crisis phases

	Preparedness	Response	Recovery
BSI	25	281	173
CBI	1	18	63

Table 3 summarizes the distribution of structural positions across crisis phases. BSIs were primarily active during the response phase, followed by the recovery phase, and then the preparedness phase. CBIs were most active during the recovery phase, followed by the preparedness phase.

4.2.3 Structural positioning and functional role enactment

Across the dataset, the two structural positions, BSIs and CBIs, remained stable throughout the crisis phases. Structural position assignment was based on dominant positional orientation within the context of crisis governance and did not change in relation to post-level classification or situational arrangements.

While each actor played different functional roles, such as providing verified information, aggregating data, or mobilizing collective action, these variations instead reflect situational incidents rather than structural evolution. Functional role changes occurred within rather than across structural positions.

This key distinction emphasizes the conceptual difference between structural positioning and functional role enactment. Structural stability ensured continuity in how actors perceived governance processes, while functional roles provided the dynamic, adaptive nature of crisis collaboration and communication. This distinction enabled subsequent analysis to examine how crisis-governance-related actions varied across actors and crisis phases without altering positional roles.

4.3.1 Trusted sensors

The trusted sensor role was one of three functional roles across the dataset, particularly during the preparedness and response phases of the Eaton Fire. Trusted sensor activity involved providing verified or credible situational information relevant to the crisis. This role was enacted by both structural positions, CBIs and BSIs, though the framing of information varied by actor.

During the preparedness phase, trusted sensor activity focused on early warnings, disaster-related updates, risk interpretation, and confirmation of conditions. These actions demonstrated time sensitivity and watchfulness rather than emotional reflection or institutional critique to raise community awareness before the disaster.

The following excerpt demonstrates anticipatory behavior during the preparedness phase:

“After careful consideration, long hours comparing this wind event against others in the past, and watching forecast model trends, l've opted to maintain my forecast for a high end class-3 windstorm to surface in Altadena late Tuesday night into Wednesday morning.”(Group administrator, Altadena Weather and Climate Facebook group, preparedness phase).

In the response phase, trusted sensor activity intensified and became more situational, location-based, and time-sensitive. Posts provided on-ground situational updates, fire location information, and immediate mobilization. Information relayed was based on official, verified reporting and direct on-the-ground observations. During the response phase, trusted sensor posts highlighted verification and credible situational information:

“Resources responding to a reported vegetation fire are advising of a large glow on the hillside, per radio traffic. Resources responding to a reported vegetation fire are advising of a large glow on the hillside, per radio traffic.” (Watch Duty app, response phase).

While the trusted sensor role was most relevant during the preparedness and response phases, activity was also found in the recovery phase. During this phase, the trusted sensor role confirmed fire containment status, general safety precautions, and assessments of damaged structures. The following excerpt reflects trusted sensor activity during the recovery phase:

“Already hearing of friends and family being scammed please be on high alert. City spokesperson: We're already seeing door knocking in impacted areas with fraudulent claims and scams.” (Group moderator, Beautiful Altadena – B Facebook group, recovery phase).

Throughout the crisis phases, the trusted sensor role focused on information verification, credibility, and situational awareness. Despite being enacted by the two structural positions, the defining characteristic of this role was the reliability of information rather than the structural position of the actor providing it.

4.3.2 Nodes

The node role identified instances in which actors aggregated, synthesized, and disseminated information to facilitate better understanding and cascading to the users. In contrast to a trusted sensor, which provided credible information, node activity served as an intermediary, collecting updates, translating them, and directing attention to verified sources. Both structural positions enacted the node role with variations across the crisis phases.

During the preparedness phase, node activity started by gathering forecast-related information into easy-to-understand summaries. Posts combined multiple sources to present essential information users needed to understand new potential threats, while avoiding any additional details. The following excerpt illustrates node activity during the preparedness phase through information aggregation shared from the US National Weather Service website:

“Here are maximum wind gusts as of 8:56 AM. Local winner is Henninger Helipad at 79 MPH. It is also the Southern California winner at the moment.” (Group administrator, Altadena Weather and Climate Facebook group, preparedness phase).

The response phase saw Node activity increase significantly due to the amount of information being shared. Posts were a combination of synthesized real-time updates, fact-checking conflicting reports, and re-sharing of verified information to reduce misinformation. Node activity also served as navigational markers, enabling users to identify, track, and follow fast-paced developments:

“The Kinneloa Canyon area will be impacted in 20 minutes and is being prioritized for structure defense, per radio traffic. 2 additional type 1 copters requested.” (Watch Duty app, response phase).

The recovery phase of Node activity focused on collecting data related to recovery operations, institutional updates, and community requirements. Posts provided updates, centralized essential information, and guided users to resource information. The following excerpt shows node activity during the recovery phase through post-disaster synthesis:

For Small Business Owners impacted by the Eaton Fires, tomorrow Feb 3 from 10-2PM at the First AME Church with the Altadena Chamber of Commerce & Civic Association and Judy Chu and Los Angeles County Department of Economic Opportunity.” (Group moderator, Beautiful Altadena – B Facebook group, recovery phase).

Throughout the crisis phases, the node role performed informational mediation, rather than creating or mobilizing information. The structural positions performed different functional roles in situational contexts, focusing on developing information pathways and supplementing communal sense-making during and after the crisis.

4.3.3 Agents

The agent role identified situations in which actors facilitated mobilization, coordination, and collective action during the crisis phases. Agent activity differed from that of trusted sensors and nodes, focusing on behavioral direction, resource transfer, and supporting specific precautionary actions rather than on information provision and aggregation. Both structural positions enacted the functional role, particularly during the response and recovery phases of the crisis, with some activity during the preparation phase.

During the preparation phase, the agent's activity was implemented through posts that encouraged users to take precautionary measures before the disaster. Posts delivered pre-evacuation tips, safety measures, and coordinated assistance. These posts were time-sensitive and complemented existing information from trusted sensors or nodes. The following excerpt illustrates agent activity during the response phase through community mobilization:

“If a mountain wave brakes over Altadena, anticipate 60 - 120 minutes of hurricane force winds of 75 MPH, gusting to 100 in town. A mountain wave can break at any time during the night, so most of the night will likely see only 40 - 70 MPH gusts, but if that wave breaks, everything will jump 30 MPH. Please take today to prepare. THIS IS A MAJOR WIND STORM.” (Group administrator, Altadena Weather and Climate Facebook group, preparedness phase).

During the response phase, agent activity was prevalent during the onset of the crisis. Posts urged users to follow evacuation orders and preparations closely, and highlighted zones under immediate threat from the fire. These posts were action-oriented and detailed, and also built on information from trusted sensors and nodes. The following excerpt provides insight into the type of communication received during the peak of the crisis:

“Additional Evacuation Orders have been issued for Zones ALD-MOUNTLOWE & ALD-RUBIO. Leave NOW. For the zones' parameters, see the Watch Duty Map or Genasys Protect.” (Watch Duty app, response phase).

In the recovery phase, agent activity increased in the early stages, with attention focused on maintaining stability and addressing urgent requirements in the immediate aftermath of the disaster. Posts emphasized resource information and organized support networks for community-wide issues related to housing or access to essential services:

“I am pleased to announce that the Altadena Town Council, in partnership with GoFundMe.org, is launching the Altadena Eaten Fire Relief Fund. This fund is specifically designed to support Altadena residents who have been affected by the recent crisis in these extraordinary times. We have been working to ensure that the financial needs of our community remain a priority.” (Council member, Altadena Town Council virtual meeting, recovery phase).

As the recovery phase progressed, the agent's activity shifted towards more symbolic, reflective, and communal identity patterns, such as participation in recovery meetings, organizing donation drives, and supporting extended community initiatives focused on reconstruction, transparency, and accountability:

“ICYMI, there is an IN PERSON Eaton Fire Community Meeting TODAY at 4pm at PCC. I hope as many of you as can be will be there in person. They need to look at the faces of the people whose lives they have completely destroyed through mismanagement, lack of planning and poor decision making and they need to be held accountable.” (Group administrator, Beautiful Altadena – A Facebook group, recovery phase).

Throughout the crisis phases, the agent role was defined by collective action in contrast to trusted sensor and node activity through information signaling and aggregation, respectively. The structural positions performed different functional roles based on situational demands; agent behavior stemmed from coordinated responses or recovery practices and from symbolic meaning-making.

Table 4: Functional roles across crisis phases

	Preparedness	Response	Recovery
Trusted Sensor	21	165	31
Node	22	296	239
Agent	16	165	200

Table 4 summarizes the distribution of functional roles across crisis phases. Trusted sensor activity was intensified during the response phase, and relatively less prominent during the preparedness and recovery phases. Node and agent activity intensified during the response and recovery phases while remaining less prevalent in the preparedness phase.

4.3.4 Role fluidity and overlap

Across the dataset, the three functional roles, trusted sensor, node, and agent, did not have fixed roles and were not mutually exclusive. Actors performed different functional roles at various times, and sometimes carried out multiple functional roles in the same post. Role fluidity was prevalent during periods of intense activity. This excerpt illustrates when information signaling (trusted sensor), aggregation (node), and collective action (agent) occurred in rapid succession during the response phase:

“Here are the facts as I know them to be. WILL BE UPDATED THROUGHOUT THE NIGHT: You should not go to sleep tonight. If you are anywhere in the foothills, it's time pull an all-nighter. The fire danger is sky high. Everyone in Altadena, even the western side, should prepare to evacuate.” (Group administrator, Altadena Weather and Climate Facebook group, response phase).

This excerpt highlights the overlap of functional roles and the adaptive, flexible, and fluid nature of digitally mediated crisis governance actors. This overlapping and fluidity of functional roles did not undermine the analytical precision of the framework. Instead, it demonstrates how functional roles are directly correlated to the situational activity throughout the crisis phases. Structural position identities remained unchanged, while functional roles highlighted momentary actions influenced by information signaling, aggregation, and collective action across the crisis phases.

This pattern emphasizes the importance of distinguishing between structural positioning and functional enactment, illustrating how analysis should include continuity and adaptability in crisis governance settings without attributing actor characteristics to specific momentary actions.

4.4 Crisis phases

Crisis-phase coding was used to determine the temporal distribution of governance-related activities across the crisis phases: preparedness, response, and recovery. Crisis phasing was not fixed or sequential; instead, it functioned as an analytical category that tracked digitally mediated governance communication through structural positioning and functional enactment.

The preparedness phase involved early warnings and awareness, preparedness guidance, and anticipatory communication. Posts highlighted precautionary measures, specialized and locally tailored forecast updates, and situational awareness of impending disasters. Trusted sensor and node functional roles were prevalent, emphasizing information signaling and aggregation before the disaster.

The response phase marked a period of escalated activity and increased transfer of information exchange. Posts addressed on the ground, status updates, explained how the crisis was unfolding, and provided instructions for collective action. Functional role enactment became more fluid, overlapped, and intensified.

The recovery phase brought about a shift in communication practices, moving from real-time responses to symbolic, reflective, and long-term coordination. Posts reflected on institutional critique and responses, identified community requirements, and sense-making on shared communal experiences. Agent activity continued to play a role in community mobilization, while node activity supported information cascading.

Throughout the crisis phases, the adaptive nature of functional role enactment complemented the fixed structural positioning of the two groups in digitally mediated crisis governance communication. This temporal framework allowed for the comparison of how crisis governance practices evolved across the crisis phases, from preparedness to response to recovery.

Table 5: Crisis phase co-occurrence (timeline coding) – blank cells indicate analytically non-applicable phase combinations

	Preparedness	Response	Recovery
Preparedness		10	4
Response	10		94
Recovery	4	94	

Table 5 summarizes the overlap between crisis phases. The response and recovery phases are the most overlapped instances, followed by the preparedness and response phases, and then the preparedness and recovery phases.

4.5 Post-type and post-tone

In addition to structural positions, functional roles, and crisis-phase coding, posts were analyzed by type and tone to capture variation in communicative purpose and style orientation across the dataset. These dimensions showed how crisis governance-related practices were defined, disseminated, and framed throughout the crisis phases. Both post-type and post-tone codes were executed non-exclusively, as there were instances of overlapping and fluidity; the counts in this section represent patterns of co-occurrence.

4.5.1 Post-type

Post-type coding showed distinct patterns throughout the crisis phases. Post-type coding was applied non-exclusively, with multiple post-types coded into a single post. Patterns that emerged reflected the co-occurrence of post-type purposes.

The preparedness phase saw minimal activity and was primarily anticipatory. Forecast alerts and community mobilization posts were most prominent during this phase, followed by resource information and situation updates. Posts in this phase mainly focus on early signal detection, risk awareness, and safety precautions rather than on hands-on, real-time, on-the-ground coordination.

The response phase saw post-types intensified as the crisis elapsed and became more diverse. Situation updates were the most dominant post types in this phase, emphasizing on-the-ground, rapid information distribution and exchange. Community mobilization and resource information posts followed, reflecting active collaboration around evacuation, assistance, and collective response. Forecast alerts decreased when compared to the preceding phase.

The recovery phase showed stability in intensity and continued diversity of post-types. Community mobilization and resource information were most prevalent, highlighting active coordination, recovery efforts, and calls to action. Reflective messages and policy/blame became more prevalent, demonstrating collective evaluation, grievances about the institutional response, and future recovery efforts. Situation updates were persistent but less dominant than during the response phase.

Table 6: Post-type across crisis-phases

	Preparedness	Response	Recovery
Community Mobilization	18	154	164

Forecast Alert	26	41	9
Policy/Blame	4	7	23
Reflective Message	3	31	76
Resource Information	9	106	144
Routine Admin Post (Excluded)	0	0	0
Situation Update	8	273	142

4.5.2 Post-tone

Post-tone coding identified the style orientation of communication across the crisis phases. Post-tone coding was applied non-exclusively, with multiple post-types coded into a single post. Patterns that emerged reflected the co-occurrence of post-tone styles.

During the preparedness phase, the communication style remained neutral and urgent, reflecting early warning and anticipatory risk monitoring. Affective, symbolic, and urgent post-tones appeared briefly, indicating minimal emotional involvement at the preparedness phase.

The response phase showed increased emotional depth and more intensity. The neutral tone continued to dominate as verified, real-time information circulated, but urgent and affective tones increased significantly, often co-occurring, illustrating the ongoing, rapid reporting with highly emotional expressions. The reassuring tone was also prevalent in an attempt to maintain community sentiment as the crisis erupted.

The recovery phase brought about a change in tone, focusing on emotional processing and collective meaning-making. Affective, reassuring, and symbolic tones became dominant, expressing gratitude, loss, solidarity, and remembrance. The critical tone was also more prevalent during this phase, especially in posts that evaluated formal institutional responses.

Table 7: Post-tone across crisis phases

	Preparedness	**Response**	**Recovery**
Affective	10	34	38
Critical	3	3	25
Neutral	22	262	143
Reassuring	6	51	75
Symbolic	1	11	32
Urgent	16	81	68

4.6 Chapter synthesis

This chapter examined how digitally mediated actors enacted structural positions and crisis governance-related functions across the phases of the crisis. The analytical framework presented shows that crisis governance in the context of the Eaton Fire in Altadena developed through shifting dimensions of structural positions, functional roles, and communicative practices rather than through formal institutional authority.

The findings on structural positions demonstrated how governance capacity shifted throughout the crisis phases. The response phases illustrated the highest instances of BSI positions that supported cross-coordination and translation across platforms and institutional positions. CBIs, on the other hand, became more prevalent during the recovery phase, highlighting their role in localized reflection, emotional support, and community memorialization. The emergent pattern of the temporal fluidity of governance arrangements and challenges creates clear boundaries between formal and informal crisis governance actors.

The findings on functional roles further reflect this pattern. Trusted sensor activity was most active during the preparedness and response phases, detecting early threats, enhancing situational awareness, and supporting preparation. As the crisis erupted, the response phase intensified, with node and agent roles shifting through information circulation, aggregation, calls to action, and mobilization. The recovery phase continued the node and agent roles. At the same time, the trusted sensor declined, marking a transition from on-the-ground, real-time updates and verification toward collective sensemaking and rebuilding efforts. These patterns conclude that functional roles overlap, remain situational, and change over time.

The crisis timeline analysis reinforces the non-subsequent, nonlinear, and non-chronological nature of the crisis phases. The response and recovery phases overlapped, revealing how reflection and coordination were inter-twined in crisis communication. Though fewer instances of overlap were recorded among the remaining phases, the analytical treatment of these phases should be treated as overlapping temporal brackets rather than subsequent phasing.

Analysis of post-type and post-tone revealed how communication practices transformed alongside governance functions. Informational and coordination post-types are mostly prevalent in the response and recovery phases. Affective, symbolic, and reassuring tones became more commonplace during the recovery phase. The observed patterns demonstrate how digital platforms serve as tools for operational coordination, emotional processing, and collective meaning-making.

Combined, the findings illustrate that crisis governance in the context of the Eaton Fire in Altadena was produced by grassroots, hyper-local, digitally embedded actors that evolved across phases and functional roles with fixed structural positions. This chapter establishes an empirical foundation for Chapter 5, which will address the interpretive discussion and contextualize these patterns through the lenses of digital governance and citizen-led crisis response.

Chapter 5: Conclusions, discussion, & recommendations

This chapter synthesizes the empirical findings from Chapter 4 through the conceptual framework introduced in Chapter 2. The research examined how Altadena's grassroots, hyper-local, digitally embedded actors evolved across phases and functional roles, while maintaining fixed structural positions. These actors responded in real time by filling governance gaps that emerged because Altadena lacks municipal incorporation. The chapter uses the findings to

demonstrate how these actors served governance capacities that were traditionally the purview of formal institutional actors in a crisis governance setting.

5.1 Actor role fluidity and adaptive governance

Boundary-spanning initiatives exemplified a central role in advancing adaptive crisis governance by coordinating across platforms, interfacing between formal institutions and local audiences, and translating communication where authority is fragmented (Williams, 2002; Van Meerkerk & Edelenbos, 2014; Nederhand et al., 2019). BSIs exhibited flexible role behavior, shifting their functional roles in response to changing information needs and coordination requirements throughout the crisis phases.

During the preparedness and response phases, BSIs performed in sensor and trusted node functional capacities via contextualizing, verifying, and cascading risk-related information, early warnings, and forecasts across digital and institutional boundaries (Diaz et al., 2016). These functions operated through alert systems, moderation rules, and governance-focused communication platforms, allowing early coordination in the absence of centralized, institutional authority (Palen & Vieweg, 2008; Diaz et al., 2016; Qiao et al., 2019). Vlahos (2019) advocates that grassroots actors shift between tenuous, ad-hoc interaction and more integrative coordination, which reflects the behavior of structural positions depending on situational demand.

As the crisis escalated, BSIs assumed agent-like roles, performing real-time coordination, emphasizing evacuation instructions, and reinforcing collaboration between community members and formal, authoritative authorities. This transition demonstrates how adaptive governance operates as actors shift from information distribution to operational leadership as the crisis unfolds (Ansell & Gash, 2008; Nowell & Steelman, 2014; Meijer & Boliar, 2016).

During the recovery phase, BSIs served as trusted nodes by facilitating information exchange, hosting governance-oriented discussions, and overseeing accountability processes. These activities follow research on hybrid governance and post-crisis sense-making, demonstrating how BSI actors protect institutional memory, legitimacy, and adaptive capacity after the response phase (Meijer, 2012; Berkes & Ross, 2013; Erokhin, 2025).

In sum, the observed role fluidity shows that BSIs operate as governance intermediaries that gain power through their ability to build trust, credibility, and legitimacy. The finding validates conceptualizations of crisis governance models as dynamic, hyper-local, temporal role transformation in structurally fragmented governance contexts (Comfort, 2007; Scholz, 2016).

5.2 Platform-enabled emotional commons and memory work

Community-based initiatives (CBIs) proved essential for establishing emotional commonalities, facilitating grief and memory sharing, and fostering collective identity during the recovery period. CBIs served as symbolic recovery centers, hosting photo collections alongside crowdsourced individual accounts of loss and survival—CBIs operated as digital memorials rather than conventional disaster recovery forums.

Crisis governance literature emphasizes that recovery requires far more than physical reconstruction; instead, it involves symbolic narratives of loss, survival, memorialization, and the restoration of social cohesion (Erikson, 1976; Alexander, 2004). Within the analysis, CBIs facilitated collective storytelling, memory preservation, and shared identity preservation. CBIs transformed into a shared emotional, reflective, safe space that affirmed emotional expression into civic engagement and communal trauma.

Digital crisis informatics research shows how online platforms enabled emotional connections among users by providing rapid feedback and visibility for content, and by mobilizing participation (Palen & Vieweg, 2008). CBIs maintained continuous participation through reflective posts, visualized content, and the creation of memorial stories, which allowed users to contextualize their personal trauma within the communal shared trauma.

These emotional commons were established and helped pave the way for longer-term governance capabilities by preserving nativism in the crisis and emphasizing trust-based community ties. As Meijer (2012) and Scholz (2016) argue, digital civic spaces function as unofficial governance systems because they preserve social connections, shared values, and legitimacy over time. CBIs supported crisis recovery not through formal, institutional authorities, but through symbolic activities and relationship-building, which strengthen community resilience and future organizational potential. Moreover, they also functioned according to Pasitselska & Gagrcin (2025) as hyper-local, meso-spaces, situated between private communication and public platforms that empowered trust, shared place-based identity, and collective sense-making.

Figures 4, 5, and 6 depict examples of community resilience and future organizational potential as residents implemented signs with symbolic messaging: “Altadena is not for Sale” and “It’s ok to rest” and “You don’t have to do it ALL”, participating in the process of symbolic recovery as described by Alexander (2004).

Figure 4: "Altadena is not FOR SALE" signage (Author's photograph, February 2025)

Figure 5: "It's ok to rest" signage (Author's photograph, February 2025)

Figure 6: "You don't have to do it ALL" signage (Author's photograph, February 2025)

5.3 Governance without a government: crisis coordination in an unincorporated community

The institutional context of Altadena as an unincorporated community shaped the entire crisis management process. Altadena's lack of city incorporation significantly hampered the crisis response. Because the area lacked both a city council and an emergency services department, it entered a state described by Ansell and Gash (2008) as an institutional void, in which formal authority is diffused, authority structures are unclear, and coordination systems are slow or fragmented.

Instead of leading to disorder, the situation led to swift community self-organization. The digitally mediated, grassroots, hyperlocal actors filled this institutional void by providing emergency alerts, logistics support, and psychological assistance to affected residents. This aligns with research indicating that governance gaps create conditions that lead actors to establish their own hybrid coordination networks rather than suppress collective action (Boin et al., 2017; Meijer & Bolivar, 2016).

Digital platforms functioned as alternative coordination systems, allowing users to share local information and peer-to-peer guidance and to remain connected to external alert and formal response networks. These platforms operated as additional resources that supplemented established, formal, authoritative institutions by addressing temporal and informational gaps throughout the crisis (Houston et al., 2015). Erokhin (2025) argues that platform-based governance appears most strongly in areas without sufficient governance because these areas require flexible, adaptive, distributed systems to handle institutional, fragmented uncertainty.

5.4 Typological hybridity and role convergence

This research shows that while analyzing both structural positions and functional roles provides analytical clarity, crisis governance is not fixated on categories. Across the crisis phases, actors demonstrated role convergence and hybridity, executing various functional roles within the same crisis phase or changing roles as situational circumstances evolved. This aligns with the crisis informatics literature, which shows that digitally mediated participation exists as a fluid, adaptive, and flexible rather than a predetermined sequence of roles (Palen & Vieweg, 2008; Diaz et.al, 2016).

The hybridity between structural positions and functional enactment does not undermine the analytical framework; instead, it demonstrates how structural positions shape – but do not determine – functional enactment. Community-based initiatives may perform agent-like duties, while boundary-spanning initiatives may act as trusted sensor functions as urgency fades. This hybridity demonstrates flexibility in adaptive governance dynamics in which authority and coordination stem from legitimacy, trust, and credibility (Meijer, 2012; Berkes & Ross, 2013).

Understanding digitally mediated crisis governance requires an appreciation of typological hybridity and role convergence as a dynamic, context-sensitive process. The research framework utilized should be appreciated as an interpretive structure that identifies coordination patterns and role behaviors while preserving the flexibility of social interactions.

5.5 Implications for theories of crisis governance

The experience in Altadena demonstrates a fundamental change in our understanding of crisis management governance. Crisis governance now extends beyond state agencies and pre-registered NGOs, as it encompasses emotional civic engagement that generates symbols and operates through digital platforms. Traditional disaster planning models face challenges because public-private and formal-informal, as well as emotional-instrumental boundaries, have become increasingly unclear. Three implications emerge.

First, platforms as infrastructure: digital platforms are not neutral tools—they are governance infrastructures. The way information travels, trust forms, and coordination develop depends on platform architectural features and moderation systems, together with user demographics (Meijer, 2012; Meijer & Bolivar, 2016; Scholz, 2016).

Second, emotional resilience as civic capacity: Emotional and symbolic responses are not side effects; they are core components of civic resilience. The way communities express their pain, record their stories, and find symbolic ways to deal with loss plays a crucial role in both healing and rebuilding trust among citizens over time (Meijer, 2012; Meijer & Bolivar, 2016; Scholz, 2016).

Third, a crisis governance model based on hybridity becomes necessary because CBI structures function as agents while sensors operate as coordinators. Hybrid actors in unincorporated or jurisdictionally fragmented areas deliver better results than formal institutions due to their rapid pace and broad reach (Ansell & Gash, 2008; Diaz et. al, 2016, Erokhin, 2025).

When combined, these implications suggest that effective crisis governance relies on interactions among citizens, platforms, and institutional actors within dynamic, adaptive, and relational governance systems, rather than on formal institutional authority alone.

5.6 Recommendations

This chapter presents theoretical and practical solutions derived from the research findings of this thesis. The recommendations developed from the Altadena case analysis aim to enhance community-based digital governance, particularly in unincorporated and ambiguous areas with complex structural characteristics. These recommendations encompass three primary areas: local policy and planning, digital platform design, and future research.

5. 7 Policy and planning recommendations

First, formal integration of informal actors: county emergency management agencies must create standardized operating procedures that incorporate trusted community-based Facebook groups into their official disaster response plans. The Facebook groups Beautiful Altadena and Altadena Weather and Climate served as unofficial coordination centers, according to the Altadena example. Los Angeles County, along with other similar jurisdictions, needs to establish either advisory partnerships, formal liaison positions, or verified registries of community actors for effective collaboration (Meijer, 2012; Ansell & Gash, 2008).

Second, support for digital civic infrastructure: local governments, in collaboration with philanthropic organizations, should provide funding and technical support to train local digital group moderators on emergency communication, ethical moderation, and data stewardship practices. These actors manage their roles without financial compensation while performing vital governance responsibilities during crises (Scholz, 2016; Palen & Vieweg, 2008).

Third, resilience planning for unincorporated communities: counties need to establish decentralized preparedness frameworks for areas like Altadena, given its fragmented jurisdiction, which can be addressed through peer-to-peer networks and digital mesh governance. The combination of official alert systems with trusted informal platforms, facilitated through Watch Duty integration, helps reduce response delays and builds trust among community members (Houston et al., 2015; Erokhin, 2025).

5.8 Digital platform design recommendations

First, design for role flexibility: The platform should implement features that enable verified users and moderators to activate emergency response capabilities via post-urgent tags, a map, and scanner feed links, as well as alert-only thread management. This would institutionalize the trusted node and agent functions observed in the Altadena case (Palen & Vieweg, 2008).

Second, facilitate archiving and memory work: Recovery from crisis requires three essential functions: grieving, storytelling, and documentation, according to Alexander (2004). The platform needs to incorporate features that enable users to save vital content, display community thoughts through pinned sections, and organize memories into specific categories. The implemented tools would allow symbolic recovery and civic remembering (Erikson, 1976; Alexander, 2004).

First, apply the conceptual framework in other digital environments such as Nextdoor, WhatsApp, and Telegram. Research studies must examine how different platform features affect role changes and community disaster preparedness through comparative analysis (Scholz, 2016; Meijer, 2012).

Second, include offline and digitally excluded residents: research studies should involve residents who do not actively use social media platforms. This includes older adults, undocumented individuals, and those with limited digital access. The use of analog surveys, combined with oral histories, will bridge this information gap while creating a more comprehensive crisis evaluation approach (Houston et al., 2015).

Third, promote participatory and co-produced research: Academic researchers should establish participatory research methods that enable communities to help interpret study outcomes and develop toolkits. The practice of ethical reciprocity ensures that the knowledge generated benefits those directly affected (Palen & Vieweg, 2008; Scholz, 2016).

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Appendix A

Structural Actors

Code	Definition	Inclusion Criteria	Exclusion Criteria
Community-Based Initiatives (CBI)	Grassroots, hyper-locally embedded groups with pre-existing trust and cohesion operating within digital spaces	Community Facebook groups; residents or admins acting in informal or community-oriented contexts	Actors primarily engaged in cross-boundary or institutional coordination
Boundary-Spanning Initiatives (BSI)	Actors that integrate across platforms, scales, or formal-informal boundaries, connecting citizen networks with external systems or authorities.	Nonprofits, town councils, or individuals linking community activity to formal response systems	Actors acting solely within informal or community-only settings

Functional Actors

Code	Definition	Inclusion Criteria	Exclusion Criteria
Trusted Sensor	Provision of verified or credible situational information relevant to the crisis	Early warnings; fire updates; risk interpretation; confirmation of conditions.	Unverified speculation; emotional expression without informational content
Node	Aggregation, synthesis, clarification, or amplification of information across audiences or platforms	Summarizing updates; resharing verified information; translating content for broader reach	Original information provision without aggregation or synthesis
Agent	Mobilization or coordination of collective action to the crisis	Evacuation guidance; resource coordination; calls to action	Informational or emotional content without mobilizing intent

Crisis Phases

Code	Definition	Inclusion Criteria	Exclusion Criteria
Preparedness	Anticipatory communication prior to the acute crisis event	Early warnings; preparedness guidance; risk awareness	Real-time response or post-event reflection
Response	Communication during the active crisis period	Live updates; coordination during the fire; immediate mobilization	Pre-event warnings or recovery-oriented discussion
Recovery	Post-event reflection, emotional support, and rebuilding narratives	Reflection, emotional support; governance discussion after the fire	Immediate crisis response content

Post-type

Code	Definition	Inclusion Criteria	Exclusion Criteria
Forecast Alert	Anticipatory warnings or hazard forecasts related to potential fire risk	Weather forecasts, early warnings, risk anticipation	Real-time crisis updates
Situation Update	Factual updates describing unfolding or evolving conditions	Fire location updates; status reports; confirmations	Forecasts or mobilization messages
Resource Information	Information about available resources or assistance	Shelter info; aid resources; contact details	Calls to action without resource details
Community Mobilization	Posts facilitating coordination or collective action	Evacuation guidance: help requests/offers; coordination	Informational updates without action intent
Reflective Message	Post-event reflection, meaning-making, or emotional processing	Personal reflections; collective memory; lessons learned	Immediate crisis coordination
Policy/Blame	Evaluation or critique of institutional response or policy	Accountability claims; governance critique	Neutral reflection without evaluation content
Routine Administrative Content	Group maintenance or moderation communication	Welcome posts; rule reminders; moderation notices	Content performing governance or coordination functions

Post-tone

Code	Definition	Inclusion Criteria	Exclusion Criteria
Affective	Emotionally expressive language reflecting personal or collective feeling	Emotional reactions; distress; empathy	Purely factual language
Neutral	Descriptive or informational tone without emotional framing	Factual updates; neutral statements	Emotionally charged language
Urgent	Language emphasizing immediacy or high risk	Emergency framing; time-sensitive alerts	Calm or reflective messaging
Reassuring	Calming or stabilizing language aimed at reducing fear	Messages of reassurance; safety confirmation	Alarmist or urgent framing
Symbolic	Language emphasizing meaning, memory, or collective identity	Solidarity framing; memorialization; community identity	Immediate operational coordination
Critical	Evaluative or questioning tone towards actors or systems	Critique of response; accountability language	Neutral observation