

# A Crisis Translation Maturity Model for Better Multilingual Crisis Communication

Patrick Cadwell

Dublin City University

[patrick.cadwell@dcu.ie](mailto:patrick.cadwell@dcu.ie)

Sharon O'Brien

Dublin City University

[sharon.obrien@dcu.ie](mailto:sharon.obrien@dcu.ie)

Aline Larroyed

Dublin City University

[aline.larroyed@dcu.ie](mailto:aline.larroyed@dcu.ie)

Federico M. Federici

University College London

[f.m.federici@ucl.ac.uk](mailto:f.m.federici@ucl.ac.uk)

**ABSTRACT:** Accurate, timely, and trusted communication in appropriate languages and cultural frames and through appropriate channels is vital to achieving principles of equity and inclusivity in crisis settings. However, organizations engaging in multilingual and multicultural crisis communication can struggle to achieve such communication and assess their communicative capacities. Maturity models are well-established instruments used to understand, review, and assess processes and practices within organizations. This article discusses the development of a crisis translation maturity model to assist organizations in evaluating and improving their multilingual crisis

communication efforts. The model does not evaluate translation per se; it evaluates organizational capability to engage in translation in crisis settings. The model presented here builds on a previously published iteration. The current iteration aimed to refine the model and was co-designed with stakeholders from 11 organizations across two design workshops using a multiagency design-thinking methodology. Design thinking was chosen for this research because it is a collaborative approach to problem solving that prioritizes creativity and innovation, user-centeredness and involvement, iteration and experimentation, and interdisciplinary collaboration. This approach allowed us to co-design with stakeholders a model that considers crisis translation capabilities along 17 evaluative categories, with each category described across five maturity levels: ad hoc, repeatable, defined, managed, and optimizing. The categories are all defined in detail and the corresponding maturity levels are explained to help members of an organization evaluate their current crisis translation capabilities and discern the changes that would be required to improve their level of crisis translation maturity. The objective of the research described in this article is to present a version of a crisis translation maturity model that will now be field-tested, customized, and refined. We plan to conduct further tests with stakeholders in authentic settings to produce improved versions of the model going forward.

**KEYWORDS:** crisis translation, maturity models, inclusive societies, multilingual crisis communication, multiagency design-thinking

**논문초록:** 위기 상황에서 적절한 언어와 문화적 틀을 통해, 그리고 적합한 채널을 통해 이루어지는 정확하고 시의적절하며 신뢰할 수 있는 의사소통은 형평성과 포용성의 원칙을 달성하는 데 필수적이다. 그러나 다언어 및 다문화 위기 커뮤니케이션에 참여하는 조직은 이러한 커뮤니케이션을 효과적으로 수행하고 자신들의 커뮤니케이션 역량을 평가하는 데 어려움을 겪을 수 있다. 성숙도 모델은 조직 내 프로세스 및 실무의 이해, 검토, 평가에 널리 사용되는 도구이다. 본고는 조직이 다언어 위기 커뮤니케이션 노력을 평가하고 개선할 수 있도록 돕는 위기 번역 성숙도 모델의 개발을 논한다. 동 모델은 번역 자체를 평가하지 않으며, 위기 상황에서 번역에 참여할 수 있는 조직의 역량을 평가한다. 본고에 제시된 모델은 이전에 발표된 초기 버전을 기반으로 한다. 본 연구의 목표는 모델의 정교화로, 다기관 디자인 사고 방법론을 활용하여 두 차례의 디자인 워크숍에서 11개 조직의 이해관계자와 공동 설계하였다. 본 연구에서 선택한 디자인 사고는 창의성과 혁신, 사용자 중심성 및 참여, 반복과 실험, 그리고 학제간 협업에 우선순위를 부여하는 협력적 문제 해결 접근법이다. 동 접근법을 통해 17개

의 평가 범주에 따라 위기 번역 역량을 고려하는 모델을 이해관계자와 함께 공동 설계할 수 있었으며, 각각의 범주는 다섯 가지 성숙도 수준(임시적, 반복 가능, 정의됨, 관리됨, 최적화됨)으로 설명된다. 범주별 정의와 해당 성숙도 수준에 대한 설명은 조직 구성원이 현재의 위기 번역 역량을 평가하고 성숙도를 개선하기 위해 필요한 변화를 파악하는 데 도움이 된다. 본고에서 설명한 연구의 목적은 한 가지 버전의 위기 번역 성숙도 모델을 제시하는 것으로, 동 모델은 앞으로 현장 테스트, 맞춤화, 추가 정교화를 거치게 된다. 향후 이해관계자와의 실제 현장 테스트를 통해 동 모델의 개선된 버전을 개발하고자 한다.

**핵심어:** 위기 번역, 성숙도 모델, 포용적 사회, 다언어 위기 커뮤니케이션, 다기관 디자인 사고

## 1. Introduction

Recent experiences of crises that cross geographic, linguistic, and cultural barriers—such as pandemics, extreme weather events, or forced migrations—have brought translation as a crisis communication tool to a wider public consciousness. O'Brien (2022) summarized a considerable body of research that investigates translation in crisis settings and situated the still-emerging research area of crisis translation in the broader field of translation and interpreting studies. A major recommendation from O'Brien (2022) was that translation studies scholars should work with multiple disciplines and stakeholders<sup>1</sup> to place translation, interpreting, and language at the heart of a greater disaster studies research agenda. This article is a response to that recommendation.

We present a collaboration between translation scholars, human rights scholars, representatives of government bodies, emergency services, migrant and ethnic minority advocacy groups, language service providers, and medical practitioners, all with a stake in multilingual crisis communication. We worked with the organizations to co-design a capability maturity model for crisis translation. The model does not evaluate translation *per se*; it evaluates organizational capability to engage in translation in crisis settings. Maturity models are widely used in many fields, especially business management and technology development, to evaluate and improve

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1 We acknowledge important debates about the appropriateness of the term stakeholder (see e.g., Reed, 2022). We continue to refer to stakeholders in this paper because an alternative term has yet to receive widespread use or acceptance.

organizational capabilities. Our objective was to develop a capability maturity model for crisis translation, which could then be field-tested, customized, and refined in the future. We see this work as evolving and emerging. Its goal is to ensure that more people have better outcomes as a result of more appropriate communication in crisis settings. We believe that the maturity model proposed in this article is a novel and, hopefully, useful step towards achieving those better outcomes. We hope that others will be encouraged by this article to field-test and customize the model so it is appropriate for the crisis contexts in which they work. We provide this second iteration of the model, building on the previous model described in O'Brien and Cadwell (2022), as an adaptable tool to facilitate capability evaluation and promote greater crisis translation maturity, rather than as a fixed prescription for how translation in crisis settings should be conducted. In this article, we first describe the context for the work. Section 2 discusses relevant previous work. Section 3 describes the methods we used to co-design the maturity model. In Section 4 we provide the results with accompanying discussion and conclusions are offered in Section 5.

Policy on timely, accurate, trusted, and actionable communication in appropriate languages, cultures, modes, and directions across diverse channels before, during, and after a crisis (hereafter crisis translation policy) is underdeveloped in various organizational, national, and supranational contexts (Federici et al., 2019; O'Brien & Cadwell, 2022; O'Brien et al., 2018). Multilingual crisis communication is affected by several compounding factors, well-known in crisis communication: information sharing and distribution in crises are fragmented with participants possessing only partial information, with an impact on efficient decision-making (Treurniet & Wolbers, 2021). Successful crisis management depends on communicating in languages that are spoken by the people affected, without which there may be cascading effects (Mulder, 2020). Affected persons often must fill gaps in planning and delivery of multilingual communication (O'Mathúna et al., 2020), also in digital contexts (Ruohonen & Backholm, 2023). These factors can combine with low literacy, adding layers of social vulnerability as described by Orru et al. (2023).

To achieve principles of inclusivity and equity, the need for accurate, timely, and culture-appropriate crisis and emergency risk communication (CERC) has been considered as key and embedded in CERC's six principles for two decades (Reynolds & Seeger, 2005). In addition, the World Health

Organization crystallized its crisis communication policies for public health into six principles (World Health Organization, 2023). Both sets of principles focus on ensuring that information is understandable in a language that affected communities speak following principles of equality and equity, which reflect the intertwined aspirations of some of the Sustainable Development Goals 3 (Good Health and Well-Being), 10 (Reduced Inequalities), and 17 (Partnerships for the Goals) (United Nations General Assembly, 2015). Multilingual crisis communication relies on obtaining written translations or oral interpretations in the needed languages, often across multiple modalities, quickly and efficiently. Therefore, crisis communication strategies ought to consider local language needs as part of emergency planning (McConnell & Drennan, 2006). The most significant obstacles often seem to stem from lack of embedded guidelines within organizations deputized to engage with multilingual communities, as well as lack of a dedicated budget and know-how, which in turn has an impact on the organization's own capacity to oversee crisis communication plans that reach every community equally. A capability maturity model of policies, guidelines, and organizational practices is one step towards the provision of tools that can address this gap between the overarching principles of rights-based and equal access to information, and the undeniable difficulty of supporting minoritized or remote (Coombs & Tachkova, 2023) language communities.

Organizations that hold responsibility for crisis communication have a duty to understand the (evolving) linguistic landscape in which they operate and to ensure the highest level of operational effectiveness possible, including the provision of appropriate multilingual communication. Researchers in crisis translation interpret this duty first as a moral imperative. However, it is also a legally binding expectation in some jurisdictions and for some organizations. For instance, the UK's National Health Service must provide information in languages the patients understand. Legal action has followed in some cases where it has failed to meet this binding expectation. Capability maturity models assist organizations in their duty to understand their linguistic landscapes and operational effectiveness. Models have been developed to assess the sophistication and embeddedness of organizational policies and practices in domains such as information management, digital government, language policy, and disaster preparedness (e.g., Katuu, 2019; Mohamed & Qu, 2018; Office of the Commissioner of Official Languages of Canada, 2023). These models are often referred to as "maturity models" and they

are developed in order to promote organizational learning and to improve performance (Bititci et al., 2015). Until recently, no such model existed that could be used by organizations to assess their maturity for provision of multilingual crisis communication. Recent research resulted in the proposal of a preliminary maturity model for crisis translation policy and practice (O'Brien & Cadwell, 2022). This model provides a high-level description only and lacks detail on the specific elements for implementation by relevant organizations. Given its high level and preliminary nature, a more detailed model is now being proposed in this article for evaluation and validation. As Wendler (2012) noted, measures are needed to close the gap between conceptual maturity models and their validation.

To develop a more detailed maturity model, we conducted two design workshops with key NGO, governmental, and translator stakeholders. The stakeholders included Irish-based organizations that the authors have liaised with previously (representatives of Ireland's Health Service Executive communications team, local government bodies, emergency services, migrant and ethnic minority advocacy groups, local language service providers, and medical practitioners) as well as overseas organizations in our network (Amnesty International, Goal Global).

While several of the stakeholders are based in Ireland, they deal with a multitude of multilingual and multicultural crises, both on individual and community levels. We believe that the data and the model developed are applicable internationally. The organizational model could therefore be adapted to a particular legislative or organizational framework.

In the next section we provide a brief discussion of the concept of maturity models, focusing on those used in crisis management.

## **2. Previous Work**

### **2.1 Maturity Models in Software Development**

As Wendler (2012) notes, maturity model research and development has been heavily dominated by the software development and software engineering domains. Since their introduction in the software engineering industry, maturity models have been adopted as instruments to understand, review, and assess the processes and practices within organizations. For Bititci et al. (2015),

a maturity model is “a matrix of practices that define, for each organizational area, the level of formality, sophistication and embeddedness of practices from ad hoc to optimising” (p. 3065). Maturity models are often divided into five levels that distinguish stages or steps of organizational maturity, while enabling organizations to assess their weaknesses and strengths.

Capability maturity models (CMMs, or maturity models—MMs—as is used in this paper from now on) were first conceptualized by Humphrey (1988) as a way of optimizing software features by progressive and iterative processes of incremental adjustments and enhancements. The enhancements can happen in multiple iterations; the incremental adjustments are not necessarily always linear, nor are they cyclical, but they are focused on optimizing capabilities. Integrated in software design evaluation for two decades (Rosenstock et al., 2000), MMs can also be used to evaluate procedures that reduce risks in areas such as cyber security (Caralli et al., 2012). Advanced MMs embed assessment certifications, as in the example of the maturity framework to assess risk management in relation to issues of cybersecurity for the technological sector, introduced by the European Union Agency for Cybersecurity (European Union Agency for Cybersecurity, 2022). A further application in the IT sector is the assessment of the efficiency of healthcare IT systems and of their functionalities in supporting ordinary and emergency healthcare provision (Carvalho et al., 2016).

## 2.2 Maturity Models in Crises

Since their inception, it became apparent that MMs can be widely applied beyond software engineering, as they are suitable for evaluating organizations' management approaches. MMs have been increasingly adopted to evaluate organizational policies and their performances in a variety of settings (see Katuu, 2019), due to their usability as evaluative instruments for incremental enhancements and iterative reviews of existing practices. Relating to the provision of information in particular, MMs have been used to enhance language policy (e.g., Office of the Commissioner of Official Languages of Canada, 2023), disaster preparedness (Mohamed & Qu, 2018), as frameworks to investigate crisis management systems that oversee human-machine interactions in addressing societal resilience (Gholamizadeh et al., 2022), and for crisis translation policies (O'Brien & Cadwell, 2022). Mohamed and Qu (2018) associated MMs with disaster preparedness; their work indicates

how MMs can conduct stress tests on disaster management capabilities during scenario-based training exercises to go beyond existing capabilities by learning from the gaps and weaknesses of their practices. Mohamed and Qu (2018) state that “it is desirable that disaster management agencies strive to reach the highest level of organizational maturity for those core disaster management processes of command, coordination, communication, logistics and supply chain management” (p. 2). In a report of a study assessing the earliest phase of multilingual communication strategies about the COVID-19 response in Ireland, O’Brien et al. (2021) concluded that evaluations of the effectiveness of communication policies for crisis translation could be measured against the 5-level MM proposed by Mohamed and Qu (2018).

O’Brien and Cadwell (2022) further explored the potential of foregrounding analyses of crisis translation policies and practices by evaluating their maturity. Based on documentary evidence and interview data, they identified six evaluative categories relevant to the crisis translation policy, practice, and perception of a key stakeholder in Ireland’s COVID-19 response, the Health Service Executive (HSE). The six categories were (1) policy records, (2) ability to provide target languages, (3) selection of target languages produced, (4) content types produced, (5) communication channels used, and (6) business practices employed. The authors assessed the HSE’s performance along each category and assigned each one a corresponding level from the five ascending levels of maturity proposed in the Mohamed and Qu (2018) model: ad hoc, repeatable, defined, managed, and optimizing. With each level assigned and justified, O’Brien and Cadwell (2022) aggregated the results and decided on an overall level of maturity for the HSE’s crisis translation performance. The 5-level MM of reference, which we refer to as CTMM v1.0, shows that MMs seem to offer a solution to measuring the maturity of policies and practices that should preside over communicating risks multilingually. As mentioned above, however, this preliminary model (CTMM v1.0) lacks detailed categories for evaluation by any organization responsible for multilingual crisis communication and did not involve relevant stakeholders in its creation. The model presented here builds upon the first version, elaborating categories and their definitions based on stakeholder input.

Organizations typically engage with MMs through self-assessment. We anticipate that organizations responsible for crisis communication will be the parties that make use of and implement this model. They will take



responsibility for evaluating their maturity levels and implementing actions for continuous improvement themselves, possibly with collaboration from consultants. The authors of this article, and of CTMM v1.0 (O'Brien & Cadwell, 2022), hold the belief that the construction of tools and resources that are destined to be used for self-assessment ought to be realized through collaboration between academia and the final users of the resources. For this reason, a collaborative approach was adopted in this research, and we worked closely with representative crisis communication stakeholders in the elaboration of the latest iteration of the model. Similar collaborative approaches have been used in, for example, the sector of urban resilience (Gimenez et al., 2017). In the next section we describe the multiagency design-thinking approach that we adopted for our MM development.

### 3. Methods

This research was motivated by the fundamental problems discussed in the previous section: the importance of crisis translation is still underrecognized and organizations involved in multilingual and multicultural crisis communication struggle to assess their ability to engage in such communication. We proposed CTMM v1.0 to address these problems (O'Brien & Cadwell, 2022). However, this initial proposal did not involve authentic final users in its design and lacked detail. To address the limitations in our former work, we wanted to take a user-centered approach to problem solving that would involve diverse stakeholders from various fields who engage in crisis communication and who could contribute their detailed knowledge. We considered various traditional research methods, such as interviews, surveys, and focus groups. However, we decided to adopt design thinking as our methodological approach.

Micheli et al. (2019) list the most frequently cited attributes of design thinking in a systematic review of relevant, authoritative literature. The five most-cited attributes in their full list of ten are: creativity and innovation, user-centeredness and involvement, problem solving, iteration and experimentation, and interdisciplinary collaboration (Micheli et al., 2019). As such, design thinking is a collaborative approach to problem solving (Liedtka, 2015) in which human needs are at the forefront (Buchanan, 1992). It assumes that collaboration is desirable among people with different perspectives on

and understandings of a problem (Frisk & Bannister, 2022). It also assumes that the problem to be addressed is complex and ill-defined and focuses as much on accurate problem definition as effective solution design (Mintrom & Luetjens, 2016). The approach produces artifacts, which include not just concrete objects but also abstract models or methods (Peppers et al., 2007).

This gave us confidence that design thinking would be a reasonable methodological approach to addressing the limitations of CTMM v1.0. It would place a stronger focus on the collaborative, interdisciplinary participation and involvement of authentic stakeholders in multilingual crisis communication than in the other well-established research methods that we considered. Furthermore, design thinking has already been used to address various public policy challenges and societal problems (Mintrom & Luetjens, 2016).

A design-thinking methodology typically involves a defined set of tasks distributed over several phases (Frisk & Bannister, 2022). Core activities remain broadly similar and are typically presented in a linear manner, though it is understood that the implementation of the process may be more iterative (Ambrose & Harris, 2009). Prototyping and visualization are frequently cited tools used in the approach (Micheli et al., 2019).

Our research followed the first five of the seven stages of design thinking suggested in Ambrose and Harris (2009): define, research, ideate, prototype, and select. We did not include the final two stages (implement and learn) in our adaptation of this approach because these steps require authentic end-users or clients—not the co-designers/researchers—to apply the designed solution and provide feedback. As explained in Section 1, we aimed to provide this new version of the model so that organizations responsible for crisis communication would be encouraged to field-test and customize it to be appropriate for the crisis contexts in which they work.

### **3.1 Stage 1: Define**

The first stage of the Ambrose and Harris (2009) design-thinking methodology involves understanding the problem to be solved by the design.

To achieve this step, we began by conducting desk-based research to examine MMs and the main problems involved in crisis translation maturity assessment. The results of this task have been presented in the introduction to this article. We also gathered relevant findings from our own and other's

previous research to establish principles of effective crisis translation policy and practice and effective crisis communication. These principles came from ten recommendations on crisis translation policies that were delivered as part of the EU-funded INTERACT (International Network on Crisis Translation) research network (see Federici et al., 2019) and six principles of effective communication elaborated by the World Health Organization (see World Health Organization, 2023). The 16 principles from these combined sources covered such key issues as accessibility, trust, timeliness, relevance, channel, actionability, mode, and more. Overall, all these principles indicated what successful communication should be able to achieve in the context of crisis translation, i.e. an initial framework for the capabilities that should be required of an organization. They also provided important context when generating design ideas for a crisis translation maturity model.

### **3.2 Stage 2: Research**

The second stage concerns reaching out to end-users and gathering relevant feedback from past projects (Ambrose & Harris, 2009).

We contacted members of our existing network of organizations involved in crisis communication with whom we had liaised previously in other research projects about their interest in participating in our new research. Members of this network all hold a stake in crisis communication with the public, either as a producer, intermediary, or receiver. Some participants directly engage in crisis communication. Other participants do not directly engage in crisis communication, but they translate it, or their members benefit from it. In total, 11 members of organizations regularly involved in crisis communication with multilingual audiences participated in the project. Participants took part on a voluntary basis and gave us their informed consent to participate. Institutional ethical approval for this project was provided by the Research Ethics Committee of DCU's Faculty of Humanities and Social Sciences under reference number DCU-FHSS-2023-018. Participants were representatives of INGOs, NGOs, community-based organizations, health and emergency services, local authorities, and language service providers, who could all be authentic final users of a crisis translation maturity model. We provided a donation of €150 to each participant's organization or to the charity of their choice as a token of our appreciation for their time.

### 3.3 Stage 3: Ideate

The third stage in the design-thinking approach that we adopted involves the generation of ideas, with a particular focus on brainstorming (Ambrose & Harris, 2009).

To facilitate brainstorming and the generation of design ideas for a crisis translation maturity model among research participants and us as researchers, we ran two co-design workshops at Dublin City University on April 11th and 13th, 2023. Both workshops were run under the same conditions and followed the same protocol. Both workshops lasted approximately four hours, with three hours devoted to design tasks and one hour for refreshments and casual discussion. In total, five participants took part in the first workshop and six in the second.

Prior to the workshops, we sent an information sheet by email to all participants to explain the 16 principles of crisis communication and crisis translation policy and practice that would form the backdrop to all workshop tasks (explained above in Stage 2), as well as to introduce the other workshop participants and clarify the broad aim for the workshop.

The workshops began with a presentation by researchers of an existing MM—the five-level OMDP model moving ad-hoc to optimizing maturity proposed by Mohamed and Qu (2018, p. 2)—along with the evaluation of crisis translation maturity in general defined at Stage 1. Following the presentation, there was discussion among the group to decide whether the OMDP model could provide a useful existing overall structure on which to design a new model and brainstorming of ideas for what a new more detailed and informative model might look like. All participants in both workshops agreed that the OMDP model was useful, and many participants began to express opinions on how it could be improved.

To capture and review these design ideas more systematically, we moved on to the fourth stage of the Ambrose and Harris (2009) approach.

### 3.4 Stage 4: Prototype

The fourth stage sees the working-up of design ideas in a way that can be presented for user-group review and comment (Ambrose & Harris, 2009).

In both our workshops, this involved dividing participants into two smaller groups and asking each group to write their ideas for what an

organization should be able to do at each level of crisis translation policy and practice maturity on flip chart sheets. After a short break, participants then spent a further hour presenting to each other the model prototypes that they had produced on their flip chart sheets and discussing their reasoning and motivations for their design ideas.

In total, we ended the two workshops with four sets of flip chart sheets corresponding to four prototypes for a detailed, five-level crisis translation policy maturity model. The information written by participants on these sheets constituted the main data set of this research.

### **3.5 Stage 5: Select**

In the fifth (and, for us, final) stage of the process, proposed solutions are reviewed against the design aims and a final solution is selected (Ambrose & Harris, 2009).

We, the researchers, took on the role of selecting the final version of the model to be released. We used a process of collaborative thematic analysis to consolidate common patterns among all four prototypes and create a final version.

One member of the team conducted a preliminary thematic analysis of this raw workshop data and summarized some patterns and recurring ideas. All researchers then met online together for six collaborative coding sessions, in which we iteratively developed codes and themes that described the patterns that had been observed in the data. Following a first examination of all data, we wrote rules for inclusion for 18 themes, and then re-examined the raw workshop data to ensure that the thematic rules that we had established captured all the ideas that our participants had provided about the model in some way. Several rounds of collaborative discussion and reworking were required until we were all satisfied that the themes that we had created represented the combined ideas of our participants well. In this process, we decided that one of the initial themes proposed was redundant and its corresponding data was already fully described by other themes. This reduced the total themes identified by us in the participant data to 17. As a further validation step, we sent the 17 themes to our participants for their consideration and feedback, and they did not respond with any negative comments.

Applying a design-thinking approach to research presents some

challenges. The biggest challenge is ensuring that stakeholders are willing and available to participate in workshops. Mutual trust is required. We would not have secured stakeholder participation in the workshops without the bonds of trust that we had built up together over years of collaboration. Ideally, all participants in the co-design should be involved from the earliest stages of research. Practically, this requires a longer lead-in time and more negotiation than may be expected. A further challenge that we experienced relates to capturing data in a co-design workshop. We used flip charts and observational notes. In hindsight, video or audio recording of the sessions would be more effective, where possible.

In the next section, we describe the results of our coding and analysis. We present the categories of information to be included in our crisis translation maturity model, how we defined each of these categories in our data coding, and how our interpretation of participant data from the co-design workshops suggests that each category should be considered at each level of maturity.

## 4. Results and Discussion

This section describes the categories of information that an organization with responsibility for multilingual crisis communication should consider when assessing its crisis translation maturity. The 17 categories are: needs analysis; cultural and political context; communicative context; ethics; legislative frameworks; information and digital literacy; organizational responsibility; complexity of translation; policy; resources database; budget; feedback mechanisms; technology that supports translation; quality; risk assessment; training; trust building and management.

Each subsection below begins with one of these evaluative categories. Each subsection continues with a definition of the type of information contained within that evaluative category. This is followed in each case by a detailed explanation of how the information under consideration in that category will differ as an organization's crisis translation efforts mature across the model's five levels.

The five levels begin at ad hoc. This is the lowest level of maturity in the model and is a common starting point in most of the MMs outlined in Section 2.2 because MMs focus on improvement and optimization. The maturity levels then progress from ad hoc to repeatable, defined, managed,

and finally optimizing.

The categories and maturity level descriptions in the model are available in tabular form as MM\_CT\_Data Set 3 at <http://doi.org/10.5281/zenodo.8348647> for easier cross comparison. A table was provided online and not included in this article because it did not lend itself to legible presentation in an article format

#### 4.1 Needs Analysis

*Definition: The process of identifying the multilingual, multimodal, and/or multicultural communicative needs of stakeholders, taking into account the different crisis phases that may be involved.*

**Ad hoc:** preliminary analysis of communication required, languages, modes, and platforms; focus on response

**Repeatable:** fundamental and emerging needs are addressed and prepared for; from reactive to proactive

**Defined:** analysis systematized to identify regular needs, reduce redundancy, and manage resources through regular feedback

**Managed:** key performance indicators analyzed to respond and prepare for future needs

**Optimizing:** needs beyond immediate crisis settings can be approached and anticipated; focus on preparedness

#### 4.2 Cultural and Political Context

*Definition: The cultural and political aspects that may influence, sometimes in unexpected or unanticipated ways, the reception of crisis communication and hoped for behaviors.*

**Ad hoc:** awareness of cultural and political context that determines how crisis information is received

**Repeatable:** awareness of potential for cultural and political factors to shift and change as crisis develops

**Defined:** feedback leveraged to recognize cultural specificity of local context, relationships, and collaborations; interlocked with trust building

**Managed:** representation among organizational members and collaborators reflects cultural and political context

**Optimizing:** cross-cultural engagement, including outside immediate

crisis, and diversity of representation continuously improved

### 4.3 Communicative Context

*Definition: The multidimensional context in which crisis communication takes place, across all phases and types of crises.*

**Ad hoc:** awareness of broader communicative context and its impact on crisis translation efforts

**Repeatable:** channels established to engage in clear, simple, contextually appropriate and effective communication

**Defined:** information, communication protocols, channels, and formats formalized; awareness of plans for contextually effective dissemination raised

**Managed:** contextually appropriate communication and translation style guidelines established; translation quality measured against them

**Optimizing:** understanding of communicative context, including outside immediate crisis, continuously improved; focus on preparedness

### 4.4 Ethics

*Definition: The principles, either at a governmental, organizational, or individual level, that guide decisions, policy, and practice as applied to crisis communication and, specifically, to the (non-)provision of essential information to those who are impacted in a language that can be understood and a format that can be accessed in all phases of a crisis.*

**Ad hoc:** preliminary discussion of ethical implications of decisions

**Repeatable:** specific measures related to decision-making, communicative efforts, and staff safety and well-being implemented

**Defined:** guidelines on when to use translators and interpreters shared; ethics of quality, privacy, and confidentiality systematically addressed

**Managed:** diversity of organizational members and collaborators measured; stakeholder provision of feedback on organizational performance compensated

**Optimizing:** focus on transparency and accountability to stakeholders, including outside immediate crisis



## 4.5 Legislative Frameworks

*Definition: International, national, or regional guidelines, laws, or covenants that specify the legal obligations of those organizations engaged in crisis communication. These obligations are rooted in human rights and can entail responsibilities across a broad range of dimensions including data protection, employment, health and safety, property, non-discrimination, and accountability.*

**Ad hoc:** basic measures on data protection taken; broader principles of law begin to inform and regulate efforts

**Repeatable:** clear guidelines on all relevant legislation established

**Defined:** measures to influence relevant policymaking and legislation taken

**Managed:** national and international comparisons made to measure performance with respect to relevant legislation; communication with stakeholders to ensure they know their rights and relevant rights-based legislation

**Optimizing:** sustained commitment to meeting national and international legislative obligations and protecting staff well-being; advocate for improved legislation and regulations in both the national and international arenas

## 4.6 Information and Digital Literacy

*Definition: The varying levels of ability of those impacted in a crisis to read, write, or understand crisis communication and to find, evaluate, or communicate using different media.*

**Ad hoc:** awareness of different levels of literacy among targeted recipients

**Repeatable:** fundamental and emerging literacy needs are addressed and prepared for; focus on clear, plain, contextually effective communication

**Defined:** more sophisticated, multimodal approaches to engage with literacy levels identified and applied

**Managed:** knowledge of literacies used to establish communication and translation style guidelines

**Optimizing:** understanding of literacies, including outside immediate crisis, continuously improved

#### 4.7 Organizational Responsibility

*Definition: Recognition by the organization of its responsibility to endorse and support crisis translation services and embed such services into its organizational structure. This category might encompass a broad range of activities such as implementation of needs analysis, training, creation of a policy, quality evaluation, creation of resource databases, advocacy, etc.*

**Ad hoc:** need for key internal stakeholder responsible for crisis translation considered

**Repeatable:** process reviews used to consolidate key organizational roles, job descriptions, and stakeholder collaborations

**Defined:** language support embedded in organization's communication strategies and key practices and protocols; relevant budgetary needs understood and advocated for

**Managed:** crisis translation performance linked to broader organizational key performance indicators

**Optimizing:** increasingly advanced qualitative and quantitative indicators set, regularly evaluated, and appropriately resourced

#### 4.8 Complexity of Translation

*Definition: Recognition by the organization that translation is not a literal word-for-word replacement activity and is instead a complex, cross-linguistic, cross-cultural, contextually dependent, technical, and specialized activity that normally requires a professional who has been trained and who demonstrates an agreed set of skills and competences. It recognizes that translation might involve spoken translation (i.e. interpreting), sign language interpreting for the deaf community, audio description or transcription into Braille for the blind community, and highly technical expertise (for subtitling or dubbing, for example).*

**Ad hoc:** awareness that translation is more than simple word matching done by bilinguals or machine translation

**Repeatable:** standard operating procedures that encode complexity of translation implemented and reviewed periodically

**Defined:** staff training on appropriate use of translation technologies and resources considered

**Managed:** complexity of translation acknowledged in measurement of organizational performance

**Optimizing:** consolidated crisis translation project management system run to professional standards employed

## 4.9 Policy

*Definition: Written or unwritten, formal or informal statements of intent by an organization on their approach to the provision of crisis translation.*

**Ad hoc:** preliminary crisis translation policy developed but not yet in writing

**Repeatable:** crisis translation policy encoded and placed within broader organizational policies on communication

**Defined:** crisis translation policy known and understood by internal and external stakeholders

**Managed:** crisis translation policy and roles reviewed based on organizational performance and comparisons

**Optimizing:** crisis translation policy regularly and consistently evaluated and reviewed; helps shape organization's higher-level policy direction

## 4.10 Resource Databases

*Definition: A collection of data – normally online – containing information of relevance to the provision of multilingual, multicultural crisis communication.*

**Ad hoc:** database of resources required for crisis translation begins to be compiled

**Repeatable:** FAQ for users of organizational databases established

**Defined:** databases managed, updated, and deployed by internal stakeholder responsible for crisis translation policy; staff training in use and maintenance of databases provided

**Managed:** databases used as a data source for organizational performance evaluation

**Optimizing:** databases integrated into a consolidated crisis translation project management system run to professional standards

## 4.11 Budget

*Definition: Financial resources dedicated to the provision of translation for all stages of crisis response and for any related activities.*

**Ad hoc:** preliminary budgets for crisis translation and its promotion established, even if this means reallocating funds from non-crisis operating budgets

**Repeatable:** budgets expanded to address training, resource and relationship building, and staff safety and well-being

**Defined:** regular budget allocations for a standardized protocol to deploy crisis translation, train personnel, support their well-being, and fund a person who is responsible for crisis translation and its quality assurance

**Managed:** budgets allocations for training on effective performance measurement and stakeholder feedback incentivization

**Optimizing:** budgets refined and made more transparent; budget allocations for crisis translation project management system and internal and external advocacy work

#### 4.12 Feedback Mechanisms

*Definition: All activities that elicit and allow for two-way communication of and about multilingual, multicultural, multimodal communication in all phases of a crisis. This might involve responses from those targeted by the communication or those who are involved, even peripherally, in the provision of related services (e.g., organizational training), or feedback from third parties (e.g., academia).*

**Ad hoc:** initial processes for two-way communication with recipients of crisis translation established

**Repeatable:** processes expanded beyond recipients to include staff and stakeholder debriefing

**Defined:** recipient, staff, and stakeholder feedback appropriately incentivized and included in periodic organizational performance reviews

**Managed:** feedback responded to effectively and efficiently and leads to policy review

**Optimizing:** positive and open feedback loops in place from all levels of the organization and its external counterparts

#### 4.13 Technology that Supports Translation

*Definition: All specialized computer tools that seek to assist the process and product of translation and related, peripheral computer tools. This might include, but is not limited to: translation memory tools, machine translation,*

*audio-visual translation tools, terminology management, collaboration platforms, translation project management tools, speech-to-speech and speech-to-text tools, and tools for aiding simplification of text.*

**Ad hoc:** awareness of how technologies that support translation could be utilized

**Repeatable:** use of translation technologies (TM, termbases, MT, etc.) defined and standardized and resources (wordlists, glossaries, databases, etc.) developed; possible deployment of translation technology internally to facilitate organizational operations

**Defined:** translation technologies embedded in organizational practices; stricter quality controls employed; staff informed and trained on best use of translation technologies

**Managed:** performance of technologies measured; focus on technological opportunities but also risks

**Optimizing:** technologies integrated into consolidated crisis translation project management system

#### 4.14 Quality

*Definition: The level of quality of any translated and interpreted content, tools that aid its instantiation and its measurement, awareness and implementation of procedures that facilitate, measure, or assess quality, training to improve the quality of translated products in crisis communication, awareness of the need for quality and the impact on affected people if quality is not at a necessary level, as well as budget required to ensure quality.*

**Ad hoc:** awareness of need for high quality translation products, processes, and policies but no concrete measures in place to assure this

**Repeatable:** processes, tools, and policies that facilitate higher quality crisis translation established

**Defined:** crisis translation quality begins to be assured by the organization

**Managed:** adoption of flexible and contextually appropriate concept of quality and measurement using established communication and translation style guidelines

**Optimizing:** quality assured through consistent and regular service and organizational evaluations, well-funded staff training, and a comprehensive and technologically integrated project management system

#### 4.15 Risk Assessment

*Definition: Proactive processes implemented by those responsible for crisis translation to assess and mitigate risks if information is not provided in multiple languages and appropriate formats or at appropriate quality levels in all phases of a crisis.*

**Ad hoc:** awareness that risks may need to be assessed

**Repeatable:** imminent risks to crisis translation success identified and mitigated where possible

**Defined:** broader and more systematic consideration of risk to include quality, ethics, and operations; mitigation through policy and practice considered

**Managed:** risks afforded by technological developments monitored

**Optimizing:** longer-term risks to staff safety and well-being mitigated

#### 4.16 Training

*Definition: Any formal or informal assessment of training needs and implementation of training relating to the provision of multilingual, multicultural, multimodal crisis communication and related processes or tools.*

**Ad hoc:** awareness that training may be needed

**Repeatable:** basic staff training implemented as organization attempts to clarify its crisis translation roles and relationships, use more sophisticated resources, and meet its legal and ethical obligations

**Defined:** specialized training on how to work with translators and interpreters, use technologies, and recognize complexity of translation implemented

**Managed:** training on how to measure translation and communication performance effectively implemented; training offering adapted as needs evolve

**Optimizing:** training on ethics, feedback implementation, and project management systems implemented; commitment to continuous improvement of training

#### 4.17 Trust Building and Management

*Definition: All activities between those responsible for crisis translation and targeted communities to co-create and manage trust and any tools, resources, training, and other assets and activities that might enable the creation and maintenance of trust.*

**Ad hoc:** awareness that trust may be important

**Repeatable:** relationships of trust with key stakeholders built

**Defined:** relationships of trust with key stakeholders built and managed over longer term

**Managed:** focus on contextually appropriate representation among organizational members and collaborators to deepen trusted connections with communities served

**Optimizing:** focus on budgetary transparency, cross-cultural engagement, and internal and external advocacy to increase trust

Designing a maturity model with enough abstraction to be flexible but also enough detail to be useful is challenging. It is hoped that with stakeholder involvement and our design-thinking approach we have struck an acceptable balance between abstraction and detail in our proposed model. Assessing 17 categories with five levels could certainly be seen as a considerable challenge, in particular for organizations that are only now starting to accept the necessity of translation in crisis settings. Nonetheless, this model represents an ideal of sorts and something that can be aspired to, measured, and used as a benchmark. Organizations that wish to use this model should first consider their own organizational contexts, linguistic landscapes, organizational objectives, and key stakeholders. The full 17 categories of this “ideal” model may not be relevant to the operational effectiveness of all organizations. We encourage organizations to customize this model and apply its categories as appropriate to their contexts. While a comprehensive evaluation under all 17 categories may be challenging, or even overwhelming for some organizations, these categories can be a productive basis from which to begin an evaluation and an indication of what a comprehensive evaluation could entail.

As alluded to in the literature review, MMs represent a process of incremental adjustments and enhancements. Exactly how incremental the adjustments should be is difficult to ascertain. An organization may find that they can only enhance a small amount on each iteration, meaning they cannot

move from one level to the next for specific categories, or, alternatively, that they can leapfrog across levels. It is to be expected that organizations seeking to apply this model may find that they are at a low level in one category and a high level in another. This will hopefully provide a focus for where the greatest effort is required and the greatest gains can be achieved within the organization.

The application of an MM should not be a one-off process, but is iterative and non-linear. Our aspiration is that this proposed model would be adopted by organizations and applied in an iterative manner with continuous improvements in mind. As highlighted in the model itself, for this to happen an internal advocate, high-level buy in, and budget are necessary factors. Recognition of the importance of multilingual crisis communication as an essential risk management tool and a tool for reducing inequalities is a fundamental prerequisite of course.

MMs in other fields such as cybersecurity include assessment certifications. While it would be a welcome development to see translation of crisis communication taken this seriously, we are far from a situation where there is national or international certification of maturity in relation to crisis translation. This is something to aspire to but, for the moment, application of this model, self-reflection, and action within relevant organizations would represent significant progress.

## 5. Conclusions

This work represents an incremental step in the development of a crisis translation maturity model. Building on several years of work on the concept of translation and interpreting in crisis settings, we first proposed a conceptual crisis translation maturity model that was inspired by Mohamed and Qu's (2018) disaster preparedness maturity model (CTMM v1.0). Our conceptual model was tested against Ireland's Health Service Executive's crisis translation activities during COVID-19 (O'Brien & Cadwell, 2022).

This model was a high-level one and more detail was required for it to be a truly useful one for organizations that are engaged with translation of crisis information. Furthermore, the conceptual model was developed without direct input from stakeholders. The model we present here sought to address these two limitations by engaging relevant stakeholders in a design-thinking



methodology to provide more detail for the categories of information to be evaluated in the model and clearer definitions for these categories. MMs work best when they influence practices in a meaningful way for the stakeholders by enabling the design of guidelines that can be implemented. Then, in turn, their implementation enhances and shapes better policies and multilingual crisis communication efforts.

Following the workshop, data analysis, and writing stages, stakeholders were provided with the proposed new iteration of the MM and were given an opportunity for further input. No alterations were suggested at that point. As such, what is presented in this paper is version two of a proposed crisis translation maturity model (CTMM v2.0). As organizations' remits tend to be vast with finite budgets and staff, the CTMM aims to serve as a practical instrument to support current practices, while seeking to fulfill the organizations' drive towards inclusion and equal access to information in crisis communication. This model considers organizational capabilities relevant to the policy, practice, and perception of crisis translation. It is composed of 17 defined evaluative categories, with each category described across five maturity levels of ad hoc, repeatable, defined, managed, and optimizing.

Adequate evaluation of new initiatives such as this one requires time, and intended effects may only be realized over the longer term (Mintrom & Luetjens, 2016). For these reasons, in future work, we will seek to have the CTMM v2.0 field tested for robustness and utility by multiple, diverse organizations, across different jurisdictions. We expect that the model will not be perfectly aligned with every organizational context, and there may very well be categories that are more or less relevant to specific contexts. Nonetheless, no MM is completely applicable to every organization's context, and it will be up to each organization to select the categories that are most relevant to them, perform honest self-assessment, and implement incremental improvements. Our goal is not to produce a perfect CTMM, but to produce a tool that can better assist organizations to improve their multilingual crisis communication efforts. With this in mind, it is our intention to first field test version two of the CTMM and then to develop tools that would assist further in organizational deployment. These tools are envisaged to have informative content on legal frameworks and on the essential role of translation and interpreting in crisis settings, with links to good examples of policies and practice, the full explanation of the CTMM, a tool for self-evaluation and

guidelines for its application, as well as a mechanism for feedback on the model and on the experience and outcomes of its application. In keeping with the spirit of the essential role of translation, we hope also that the model can be translated into multiple languages.

## Appendix

Datasets for this study, comprising raw workshop data, interpreted workshop data, and the model in tabular form, are available on Zenodo.org: <http://doi.org/10.5281/zenodo.8348647>.

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## References

- Ambrose, Gavin and Paul Harris. (2009). *Basics Design 08: Design Thinking*. Bloomsbury Publishing.
- Bititci, Umit S., Patrizia Garengo, Aylin Ates and Sai S. Nudurupati. (2015). Value of maturity models in performance measurement. *International Journal of Production Research*, 53(10), 3062-3085. <https://doi.org/10.1080/00207543.2014.970709>
- Buchanan, Richard. (1992). Wicked problems in design thinking. *Design Issues*, 8(2), 5-21.
- Caralli, Richard, Mark Knight and Austin Montgomery. (2012). *Maturity models 101: A primer for applying maturity models to smart grid security, resilience, and interoperability* [White paper]. Carnegie Mellon University.
- Carvalho, João Vidal, Álvaro Rocha and António Abreu. (2016). Maturity models of healthcare information systems and technologies: A literature review. *Journal of Medical Systems*, 40(6), 131. <https://doi.org/10.1007/s10916-016-0486-5>
- Coombs, Timothy W. and Elina R. Tachkova. (2023). Extending the value of crisis translation in crisis communication. In Sharon O'Brien & Federico M. Federici (Eds.), *Translating Crises* (pp. 37-48). Bloomsbury Academic.
- European Union Agency for Cybersecurity. (2022). *ENISA CSIRT Maturity Framework*:

- Updated and Improved.* European Union Agency for Cybersecurity.
- Federici, Federico M, Sharon O'Brien, Patrick Cadwell, Jay Marlowe, Brian Gerber and Olga Davis. (2019). *International network in crisis translation: Recommendations on policies.* Retrieved August 9, 2024 from <https://doras.dcu.ie/23880/>
- Frisk, Jane Elisabeth and Frank Bannister. (2022). Applying design thinking to the decision-making process: A field study in Swedish local authorities. *Management Decision*, 60(1), 66-85. <https://doi.org/10.1108/MD-03-2020-0384>
- Gholamizadeh, Kamran, Esmaeil Zarei, Saman Poursiahbidi and Omid Kalatpour. (2022). A hybrid framework to analyze crisis management system maturity in sociotechnical systems. *Journal of Safety Science and Resilience*, 3(4), 302-320. <https://doi.org/10.1016/j.jnlssr.2022.06.00>
- Gimenez, Raquel, Leire Labaka and Josune Hernantes. (2017). A maturity model for the involvement of stakeholders in the city resilience building process. *Technological Forecasting and Social Change*, 121, 7-16. <https://doi.org/10.1016/j.techfore.2016.08.001>
- Humphrey, Watts S. (1988). Characterizing the software process: A maturity framework. *IEEE Software*, 5(2), 73-79.
- Katuu, Shadrack. (2019). *Diverse Applications and Transferability of Maturity Models.* IGI Global. <https://doi.org/10.4018/978-1-5225-7080-6>
- Liedtka, Jeanne. (2015). Perspective: Linking design thinking with innovation outcomes through cognitive bias reduction. *Journal of Product Innovation Management*, 32(6), 925-938. <https://doi.org/10.1111/jpim.12163>
- McConnell, Allan and Lynn Drennan. (2006). Mission impossible? Planning and preparing for crisis. *Journal of Contingencies and Crisis Management*, 14(2), 59-70. <https://doi.org/10.1111/j.1468-5973.2006.00482.x>
- Micheli, Pietro, Sarah J. S. Wilner, Sabeen Hussain Bhatti, Matteo Mura and Michael B. Beverland. (2019). Doing design thinking: Conceptual review, synthesis, and research agenda. *Journal of Product Innovation Management*, 36(2), 124-148. <https://doi.org/10.1111/jpim.12466>
- Mintrom, Michael and Joannah Luetjens. (2016). Design thinking in policymaking processes: Opportunities and challenges. *Australian Journal of Public Administration*, 75(3), 391-402. <https://doi.org/10.1111/1467-8500.12211>
- Mohamed, Sherif and Xiaobo Qu. (2018). *Organisational Maturity for Disaster Preparedness.* Sustainable Built Environment National Research Centre.
- Mulder, Femke. (2020). Humanitarian data justice: A structural data justice lens on civic technologies in post-earthquake Nepal. *Journal of Contingencies and Crisis Management*, 28(4), 432-445. <https://doi.org/10.1111/1468-5973.12335>
- O'Brien, Sharon. (2022). Crisis translation: A snapshot in time. *INContext: Studies in*

- Translation and Interculturalism*, 2(1), 84-108. <https://doi.org/10.54754/incontext.v2i1.12>
- O'Brien, Sharon and Patrick Cadwell. (2022). Communicating COVID-19 in multiple languages: A maturity model assessment of Ireland's crisis communication practice. *Revista de Llengua i Dret [Journal of Language and Law]*, 77, 1-17. <https://doi.org/10.2436/rld.i77.2022.3630>
- O'Brien, Sharon, Patrick Cadwell and Alicja Zajdel. (2021). *Communicating Covid-19: Translation and trust in Ireland's response to the pandemic*. Dublin City University. [https://www.dcu.ie/sites/default/files/inline-files/covid\\_report\\_compressed.pdf](https://www.dcu.ie/sites/default/files/inline-files/covid_report_compressed.pdf)
- O'Brien, Sharon, Federico M. Federici, Patrick Cadwell, Jay Marlowe and Brian Gerber. (2018). Language translation during disaster: A comparative analysis of five national approaches. *International Journal of Disaster Risk Reduction*, 31, 627-636. <https://doi.org/10.1016/j.ijdr.2018.07.006>
- O'Mathúna, Dónal P., Carla Parra Escartín, Proinsias Roche and Jay Marlowe. (2020). Engaging citizen translators in disasters: Virtue ethics in response to ethical challenges. *Translation and Interpreting Studies*, 15(1), 57-79. <https://doi.org/10.1075/tis.20003.oma>
- Office of the Commissioner of Official Languages of Canada. (2023). *Official Languages Maturity Model (OLMM)*. Office of the Commissioner of Official Languages of Canada. Retrieved August 9, 2024 from <https://www.clo-ocol.gc.ca/en/tools-resources/official-languages-maturity-model-olmm>
- Orru, Kati, Margo Klaos, Kristi Nero, Friedrich Gabel, Sten Hansson and Tor-Olav Nævestad. (2023). Imagining and assessing future risks: A dynamic scenario-based social vulnerability analysis framework for disaster planning and response. *Journal of Contingencies and Crisis Management*, 31(4), 995-1008. <https://doi.org/10.1111/1468-5973.12436>
- Peppers, Ken, Tuure Tuunanen, Marcus A Rothenberger and Samir Chatterjee. (2007). A design science research methodology for information systems research. *Journal of Management Information Systems*, 24(3), 45-77. <https://doi.org/10.2753/MIS0742-1222240302>
- Reed, Mark. (2022, August 9, 2024). Should we banish the word "stakeholder"? *Fast Track Impact*. <https://www.fasttrackimpact.com/post/why-we-shouldn-t-banish-the-word-stakeholder>
- Reynolds, Barbara and Matthew W. Seeger. (2005). Crisis and emergency risk communication as an integrative model. *Journal of Health Communication*, 10(1), 43-55. <https://doi.org/10.1080/10810730590904571>
- Rosenstock, Christian, Robert S Johnston and Larry M Anderson. (2000, September 7-16). *Maturity model implementation and use: A case study*. Proceedings of the Project Management Institute Annual Seminars & Symposium, Houston, TX. <https://www.pmi.org/learning/library/maturity-model-implementation-case-study-8882>

- Ruohonen, Heini and Klas Backholm. (2023). Matter of trust: How to include digital volunteers in crisis management. *Journal of Contingencies and Crisis Management*, 31(4), 843-852. <https://doi.org/10.1111/1468-5973.12484>
- Treurniet, Willem and Jeroen Wolbers. (2021). Codifying a crisis: Progressing from information sharing to distributed decision-making. *Journal of Contingencies and Crisis Management*, 29(1), 23-35. <https://doi.org/10.1111/1468-5973.12323>
- United Nations General Assembly. (2015). *Transforming Our World: The 2030 Agenda for Sustainable Development*. Resolution A/RES/70/71. Retrieved August 9, 2024 from <https://sdgs.un.org/publications/transforming-our-world-2030-agenda-sustainable-development-17981>
- Wendler, Roy. (2012). The maturity of maturity model research: A systematic mapping study. *Information and Software Technology*, 54(12), 1317-1339. <https://doi.org/10.1016/j.infsof.2012.07.007>
- World Health Organization. (2023). *WHO Principles for Effective Communications*. Retrieved August 9, 2024 from <https://www.who.int/about/communications/principles>

## Professional Profiles

Patrick (Pat) Cadwell is Assistant Professor of Translation Studies at the School of Applied Language and Intercultural Studies in Dublin City University (DCU), Ireland. He is also a member of the Centre for Translation and Textual Studies there. His current research centers on how experiences of crisis, disaster, community, and development are lived from the perspectives of language and culture, especially through the lenses of translation and interpreting.

Sharon O'Brien is Full Professor of Translation Studies in Dublin City University (DCU), Ireland, and currently Dean of Graduate Studies. Her research centers on the topics of translation technology and human-computer interaction and translation and interpreting in crisis and disaster settings. She has published numerous articles and chapters on these topics, co-edited special issues and collected volumes and has co-authored a book on research methodologies in translation studies.

Aline Larroyed holds a PhD in International Law from the University of Maastricht, the Netherlands, and is a postdoctoral researcher at Dublin City University (DCU), Ireland. Formerly a senior researcher at the Max Planck Institute for Innovation and Competition Law and an international assistant of the Deputy Defender General in UN-Brazil relations, she

investigates the role of translation in realizing human rights within crisis contexts, comparing Brazilian and Irish experiences.

Federico M. Federici is a Professor of Intercultural Crisis Communication and Director of the Centre for Translation Studies (CenTraS) at University College London, UK. Federico's research focuses on translators and interpreters as intercultural mediators and on the role of translation in crises. Alongside research articles, Federico has contributed to policy briefs to ensure translators and interpreters are involved in disaster risk reduction and public health communication campaigns.