The Next Generation Core Competencies:

Building a workforce with the knowledge, creativity,

and policy expertise for disaster risk management

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Abstract

Regardless of the setting, rural or urban, global north or south, highly resilient or not, successful Disaster Risk Management (DRM) depends on a deep understanding of governance, policy and other critical tools through which communities work together to bring about change that is required.   The Next Generation Core Competencies guide the professional development of the DRM workforce. The changing global drivers of risk along with the expectations of the Sendai Framework motivated this inquiry and development to support DRM education and practice. Oriented toward emerging needs, the core competencies have been built on existing DRM competencies, a review of related core competencies and global risks, a multi-cycle Delphi study, and wider community listening sessions around the globe. Behavioral anchors and key actions for measurement were developed to accompany the new core competencies. The resulting competencies and their measures were designed to be further contextualized for local settings. Professional development linked to the competencies and their measures can better equip the future workforce to carry out the Sendai framework vision, consistent with approaches taken across communities, civil society and business. Building from the point of mutuality with core competencies is the place that can unite and propel a future workforce.

Introduction

Building a future Disaster Risk Management (DRM)workforce requires a pathway that both realizes the vision of the Sendai framework and stays consistent with approaches taken across communities, civil society, and business. Regardless of the setting, rural or urban, global north or south, highly resilient or not, successful DRM depends on a deep understanding of governance, policy and other critical tools through which communities work together to bring about change that is required. DRM strategies can vary, but ultimately DRM is supported by governance processes, civic engagement, and leadership, where commonality across communities can be built upon. Finding this common ground is critical for advancing the Sendai Framework.

Competencies forming the basis for a successful future DRM workforce required a review of how current and anticipated drivers of risk are intensified by the changing interactions between the social, built, and physical environments (Feldmann-Jensen et al., 2019). Further, the practice of DRM is being changed by the shifting interactions between international, national and local actors, and government, business and civil society. Important implications for the workforce development today and into the future are found in these interactions; and consequently, core competencies are pivotal to developing successful future DRM practice. The fundamental and unifying nature of core competencies can undergird a diverse workforce as they advance and specialize.

A Next Generation Core Competency framework for DRM professionals was the focus of research conducted in 2016 -2017, with subsequent implementation. The resulting DRM core competencies and research methodology were designed for widespread application and local contextualization. The core competency framework offers several options for global application: 1) the core competencies derived in this study are broad enough to be applied and adjusted for a different contexts, 2) the core competencies can be used across the emergency services sector (DRM, humanitarian assistance, public health preparedness, fire, law enforcement, and counter-terrorism), or 3) the methodological processes can provide a roadmap to developing appropriate core competencies in a new context.
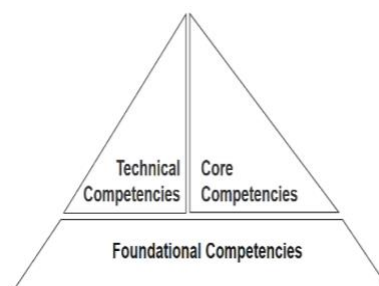
What are Core Competencies?

The idea of core competence was first introduced by Prahalad and Hamel (1990), who saw a successful corporation as deeply rooted and focused on its unique competencies. Prahalad and Hamel defined core competencies as follows:

> *Core competencies are the collective learning in the organization, especially how-to co-ordinate diverse production skills and integrate multiple streams of technologies...core competence is communication, involvement and a deep commitment to working across organizational boundaries... Unlike physical assets, which do deteriorate over time, competencies are enhanced as they are applied and shared* (p. 81).

A more current description for core competencies embodies collective learning that integrates and coordinates diverse skills and invests in strategies that unify the wider organization or stakeholder community (Feldmann-Jensen et al., 2019).

Differentiating *core* competencies from *technical* competencies is critical. *Core* competencies are the broader profession-relevant knowledge, motivation, and behaviors. As such, they embody the collective learning that undergirds and connects the wider community. In contrast, *technical* competencies are generally unique to a specific functional component of the discipline and are important to accomplishing the tasks related to those functions. The two competency types complement each other yet can often be confused. Similarly, *foundational* competencies are the more elementary and common expectations of anyone in the workforce, such as oral and written communication skills and basic mathematics. This core, technical, and foundational competency distinction is important for building appropriate strategies to implement the Sendai Framework across settings. The focus of this project is the core competencies that undergird and support broader workforce development.

Core competencies have been used in a variety of ways for focusing organizations. Most commonly they are used in developing student learning outcomes for training and education programs. Collective efforts are more focused as core competencies provide transparency in what is considered effective performance in the workplace. Development of job descriptions, selection of candidates, and performance evaluation are additional ways core competencies can be utilized. Likewise, core competencies can provide a framework for research. Thus, core competencies have significant influence, and can further professionalize DRM by providing a means for education, practice and research to work together using a common platform and metrics to achieve continual improvement at scale.

Risk Trends Affecting Competency Requirements

Bringing about the shifts required in a workforce entails significant lead time to do so. Future requirements need to be identified and built into policy. Higher education and training institutions need to understand and agree to the direction. Programs need to be adjusted, learning materials developed and faculty brought on-board. And then the learning can begin, students graduated and prepared for the inevitable collision with established forces. In the workplace, adjustment to new expectations will be necessary. National standards and frameworks may require amendments. Hiring, training and assessment mechanisms need to be addressed. With all of that in mind, the core competencies were built around what could reasonably be anticipated for workforce requirements over a ten to fifteen year horizon.

The research anticipated likely forces of change that will influence DRM professionals' successful practice in the future, where challenges are likely to be different from those we confront today. A total change from the past is occurring in every domain (Lagadec, 2008). In looking at potential future shifts, it is useful to consider the interactions of multiple drivers within and between the natural, built, and social environments.

Changes to the natural environment include multiple processes such as degradation, resource depletion, loss of biodiversity, and emerging pathogens. The changing climate may be the most significant development influencing physical and economic disaster loss. At the same time, the relationships between climate change adaptation, DRM, and sustainable development have been widely recognized. An integration of these practices could yield synergistic benefits (Coppola, 2015). The shared core competencies among DRM, climate change adaptation, and sustainable development could be the common point for the fields to work more effectively together.

The built environment is heavily influenced by demographic changes. Population movement trends are producing areas of greater population density, rapid unplanned urbanization, and more people living in high risk hazard zones. The trends contribute to increased hazard exposure, a concentration of risk, and escalating response and recovery costs.

Transformative trends are most evident in the social environment. Driving much of these trends is the pace of information communication technologies development over the past 30 years, which has enabled the interconnectedness and interdependence of today's social systems. While the diffusion of information and

resource sharing is empowering, network structures can also be characteristically uneven. And so, the evolving flow of information not only changes how people carry out daily functions, but also brings with it new vulnerabilities and increasingly polarized societies.

The interrelationships within and between the natural, built and social environments brings challenges and opportunities for DRM, with the interdependence in networks yielding potential solutions. "Planning for the future might not be so much a matter of foreseeing what could go wrong as of making our systems and institutions robust enough to withstand a variety of shocks. This is how the new history will work" (Ball, 2011, p. 448). Similarly, Wildavsky states,

> *The organism or social system that can, from its supply of basic resources, synthesize what it needs whenever new dangers arise is in a much stronger position to cope with unexpected consequences or with hazards that only occasionally manifest themselves* (1988, p. 71).

Thus, in building capacity, networks can be better positioned to derive their own DRM solutions.

The future workforce will require depth and breadth. While the need for DRM in large cities is well appreciated, there is a rapidly escalating demand in small- to medium-sized cities, as well as rural areas. Rapid urbanization is resulting in significant growth among smaller cities, which are also facing increased density of population and built environment, elevating levels of risk. From the wider governance perspective, cities are tending to be a bright spot, serving as incubators of innovative approaches to managing complex problems. Closest to the action and real estate, cities are proving to be nimble. Much of the recent success of cities can be traced back to a shift from a state-centric approach to a more comprehensive view of governance that mobilizes communities through inclusion of a wide range of institutions (Jensen et al., 2015). Optimistically, Glaeser (2011) writes in Scientific American:

> *… the crush of people living in close quarters fosters the kind of collaborative creativity that has produced some of humanity's best ideas, including the industrial revolution and the digital age. In the years ahead, such collaborations can be expected to help solve the world's most pressing problems* (p. 50).

As a result, capacity does not need to reside in government itself, but can exist in the larger community. Likewise, the local level is showing a demand for an increase in the ability to govern and develop creative solutions for complex problems confronting individual urban areas.

While the myriad changes are beyond the scope of this introduction, the point is that they have profound implications for developing the future DRM workforce. Lagadec reminds us, "Our responsibility is to address the situation and to rethink our tools, organisations, mindset, culture, and training processes accordingly" (Lagadec, 2008, p. 1). Recognizing potential and building the collaborative networks requires the depth of a well-developed DRM workforce. Such complexity and uncertainty require entirely new approaches, tools and capabilities at the front line of management and the local community.

Education Role

The opportunity before us is to establish educational groundwork for preparing future DRM professionals, so they may effectively reduce disaster risk in the communities they serve amid emerging and unexpected conditions (Feldmann-Jensen et al., 2019). Education, and higher education in particular, is essential in building DRM capacity at all levels. A commonly used phrase addresses the issue that a problem cannot be solved by the same processes that created it. A need exists to educate a new type of professional, one that can move beyond the mindset that contributed to increasing risk to a consciousness that can adapt to and contribute solutions to complex problems. Castells and Cardoso (2005) describe the new professional as:

> …a new kind of worker, the self-programmable worker, and a new type of personality, the values-rooted, flexible personality able to adapt to changing cultural models along the life cycle because of her/his ability to bend without breaking, to remain inner-directed while evolving with the surrounding society (p. 18).

Preparing a future DRM professional that can contribute to shaping resilient and thriving communities is a task in which higher education can play an instrumental role. Delivery of high-quality low-cost DRM programs will be critical to professional preparation in many locales.

Energy for a systematic approach for preparing a future DRM workforce that spans disciplines is also building. As an example, a call for formal accredited qualifications in capacity development for both disaster risk reduction and climate change adaption was submitted in a concept paper (Hemstock et al., 2016); further suggesting a regional approach in the effort. The fundamental component of core competencies is the first step toward attaining these standardization prospects.

The core competency work was designed to support the education processes involved in preparing the DRM workforce of 2030 and beyond. Future oriented core competencies can undergird and inform a pathway for education programmatic outcomes and student learning, which is in itself a lengthy process. Further, core competencies can provide a unity of effort among and between programs, creating a pathway for consistency in DRM professional criteria.

Core Competency Development Methodology

Discovering how to best prepare the next generation of DRM professionals in relationship to the evolving disaster risks was the motivating force of this research. The more specific objective was to establish core competencies, related behavioral anchors and key actions that align with the evolving professional requirements and guide the preparation of the future DRM workforce. The methodology is provided as a road map and reference document for those locations interested in developing their own set of core competencies.

The future orientation was a distinct perspective of this study and includes the uncertainty of outcomes current risk drivers may yield. For that reason, meaning was sought and interpreted through historical core competency findings, as well as conclusions from a range of DRM experts. Further, multiple strata of information gathering, and analytic refinement of the competencies were utilized to address any bias arising in the inductive processes. A variety of participants were engaged to inform the processes and core competency development over several phases of the research. The derived future-oriented competencies, their definitions and measures were achieved through an inclusive multi-phase process.

Several notable core competency projects have influenced DRM since 2003. Related core competency models were examined as a starting place. The points of convergence among the models informed the argument and components of the initial the Next Generation DRM Core Competencies precís. During the same time frame as this project, the development of Australian standards was underway, but differing in research design; as such, the model served in Phase 3 as a means of triangulating results.

The qualitative research design comprised several processes, which included multiple contributors at several stages of inquiry. The multiple phases outlined can also be utilized as a roadmap for development of similar core competencies specific to new localized context. For this study, the authors facilitated a FEMA sponsored Focus Group, followed by a multi-cycle Delphi study, and culminated with a yearlong consultation with

the wider DRM community. As noted in the Journal of Emergency Management, the phases of the methodological processes were described as follows:

Phase 1: The Focus Group. A small focus group comprised a range of regionally diverse DRM educators in the USA, who examined the present and future contexts of core competency projects to date, and core competency work in similar fields. The charge given the group was to discuss the currency of disaster risk drivers in relationship to disaster risk management competencies, draft the set of next generation core competencies, and conduct the Delphi study for refinement and ratification of the updated competencies. During the two-day gathering period, the focus group debated the drivers of future disasters and what foundations a future DRM might require. Consensus was reached with drafted competencies for the initial précis. Focus group members then conducted the multi-cycle Delphi study and analyzed the qualitative data obtained toward refining the competencies and their definitions.

Phase 2: The Delphi Study. A Delphi technique was selected as a systematic method for recognizing and refining the draft core competencies. An iterative and interactive process, the Delphi technique is particularly useful when a question is future oriented, and the data is uncertain. The design relies on a panel of subject matter experts to gain consensus on the subject. Feedback from the international expert panel was solicited through two or more cycles of questions regarding the draft précis. The information derived from each cycle of responses was amalgamated by one focus group member and then sent to three other focus group participants for a qualitative analysis and summary of the data. The qualitative results informed the précis update. The revised core competency draft was then redistributed for repeated questions and validation of the future oriented core competency model. The cycles were repeated until there was reasonable consistency among the participating expert panel members. The preliminary report, which summarizes the next generation core competencies for DRM professionals derived in the Delphi study, and was then posted for wider community feedback.

Phase 3: Listening sessions from wider exposure. Presentation and listening sessions were conducted among a wide range of DRM practitioners, executive leadership, and researcher settings. Recommendations were documented from each setting. The listening sessions provided amalgamated data for a final round of qualitative analysis. The analytic results were also triangulated with relevant

literature and the recently published Australian standards. These processes served to refine the competencies, definitions, and their re-categorization.

* **Phase 4: Development of the measurement model.** A model for the measurement was developed to accompany the competencies to further support both education and practice. The process of deriving the behavioral anchors and key actions came directly from the range of literature and theories pertaining to the subject within each core competency itself, the Delphi participant data, and DRM community listening data. Cognitive, Affective, and Psychomotor domains of Bloom's Taxonomy were foundational to the measurable key actions for each core competency. The key actions of the undergraduate, master, and doctoral levels are designated by the action verb used and based upon Bloom's Taxonomy for the lower to higher order learning depth* (Feldmann-Jensen et al., 2019).

Resulting Core Competencies Discussion

The resulting thirteen competencies and their measures were designed for widespread application and to be further contextualized for each location, such that the preparation of DRM professionals can benefit. A core competency grouping that fell into three interrelated and nested categories was generated from the data of Phase 3. The nested categories of core competencies have attributes, which foster the individual, the practitioner, or relationships: 1) DRM Core Competencies that Build the Individual, 2) DRM Core Competencies that Build the Practitioner, and 3) DRM Core Competencies that Build Relationships. The depiction of the nested relationship can be viewed in ***Figure 1***. Further, the interrelationship of core competency characteristics is such that the competencies cannot be ordered for priority, and so, the order presented does not reflect importance. The 13 core competencies with wide international consensus are presented below in ***Table 1*** and in greater detail with agreed upon definitions in ***Appendix 1***.

An evidence-based model for measurement accompanies each core competency. The connected behavioral anchors provide broader observable examples that demonstrate achievement of the core competency. The behavior anchors and their definitions associated with each core competency can be found in ***Appendix 1***.

Each behavioral anchor has associated key actions at multiple levels of education and practice, which provide greater specificity of core competency demonstration. The behavioral anchors and their key actions can be used toward observable performance measures or generating measurable learning objectives to underpin a

higher education program or curriculum (Smith & Kendall, 1963). The subsequent observations offer a versatile

evidence base for focused improvements, refinement of curriculum or organizational practice, and locating

unknown potential. Further, an illustrated sample learning objective for each educational stage is also given for

each behavioral anchor. Together, the core competencies, behavioral anchors, and key actions form an easy to
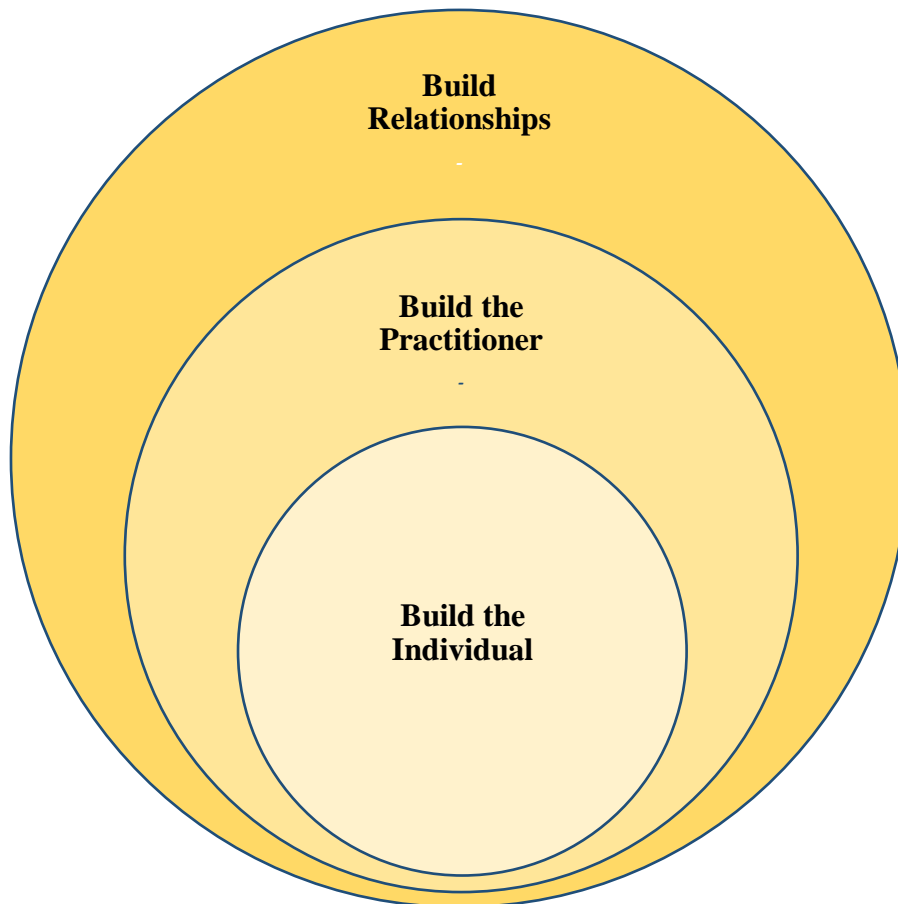
use guide toward preparation of a future DRM workforce.

Figure 1: *Nested Relationship of the Core Competencies' Functional Categories (Feldmann-Jensen et al., 2019)*

Core Competencies that Build the Individual
➢ **Possess Critical Thinking**
➢ **Abide by Professional Ethics**
➢ **Continual Learning**
➢ **Operates within the DRM Framework, Principles, and Body of Knowledge**
Core Competencies that Build the Practitioner
➢ **Scientific Literacy**
➢ **Geographic Literacy**
➢ **Sociocultural Literacy**
➢ **Technological Literacy**
➢ **Systems Literacy**
Core Competencies the Build Relationships
➢ **Disaster Risk Management**
➢ **Community Engagement**
➢ **Governance and Civics**
➢ **Leadership**

Table 1 The Resultant Core Competencies

The contribution of the future DRM professional will be paramount for realizing the vision of the Sendai framework. Accordingly, the core competencies and their measures were shaped by an intention toward equipping future DRM workers to foster more resilient and thriving communities amid a future of high turbulence, uncertainty and complexity (Feldmann-Jensen et al., 2019).

The prototypical evidence, noted in our earlier publication, highlighted that both communications and finances are sets of fundamental proficiencies, which necessarily underpin the core competencies for future DRM professionals. The 13 core competencies identified for the preparation of the future DRM workforce are relevant at all levels of service, and do not address all the foundational of technical competencies needed. Furthermore, it is unrealistic to expect all competencies to be fully available in one person. Developing a full core competency range through a team approach may yield the fuller representation (Feldmann-Jensen et al., 2019).

The core competencies were founded on understandings of emerging challenges and complexity are ready to be disseminated, incorporated into curriculums, fostered, adapted, and built upon. Nevertheless, adjustments to the core competencies may be needed as an adaptation to unexpected changes occurring in the physical, built or social environments, and in their subsequent interactions (Feldmann-Jensen et al., 2019). Contextualization is emphasized as a valuable supplementary process to shape or add to the competencies and their measures in order to meet the needs of a specific locale, region, or country.

Application

A range of pathway options exist to integrate the core competency work with a more regional or localized approach. Contextualizing the core competency work for a new location has several options: 1) In similar contexts, the Core competencies can be adopted as is; 2) The competencies and supporting materials for measurement can be revised to match the practices and culture of the new location; 3) Portions of the competencies or background research can be used to supplement core competency work already underway, or; 4) The methodology can be utilized as a roadmap to ascertain appropriate core competencies specific to a new localized context.

Advances in core competency linkages to workforce development and performance measures are already underway. A roadmap was established for emergency and disaster management core competencies among the Caribbean nations (Rovins et al., 2017), as an example of building on the phases outlined. As a follow on, DRM graduate courses are now being offered at the University of the West Indies. The core competencies are being used to guide curriculum in 41% of the higher education programs in the U.S. A., as of May 2018 (Bennett, D., 2018). For example, Arkansas Tech University's Emergency Management and Homeland Security graduate program changed their entire curriculum and student learning objectives to align with the 2016 core competency draft (Smith et al., 2017). Such developments generate a movement toward a more consistent professional effort in the fostering of thriving disaster resilient communities around the globe.

Other related efforts building on the core competency work are also advancing. One promising effort explored the relationship between the core competencies and the popular Meta-Leadership Model (Marcus, Dorn, & Henderson, 2015) developed and taught through the Harvard National Preparedness Leadership Initiative. This research examined the skills and attributes that emerge by integrating the DRM Core Competencies and Meta-leadership model. Further, this study identified recommendations for training and education. (Cwiak et al.,

2017).   Building on the Core Competency/Meta-leadership work, a survey among senior DRM professionals was conducted to further validate the next generation DRM core competencies, as reported by Phelps (2017). A high correlation was found regarding the necessity for the competencies as identified.

Looking beyond, many of the core competencies articulated have potential to gather diverse but related functions for workforce development under a common core competency; thus, making the education far more efficient and cost effective. Going forward, the diffusion and implementation of the competencies into practice needs to be better understood.   Professional development linked to the core competencies and their measures will better equip the future workforce to carry out the Sendai framework vision across communities at all levels. Toward that end, the Next Generation Core Competency project is available to be used in whatever way will further the development of the DRM workforce. The work can be downloaded in its entirety along with supporting materials at: www.adapt.institute.

Critical Success Factors

Several critical success factors have been identified among a range of core competency projects produced in other parts of the world. Consistent with sound policy formulation and implementation practice, the principles below are powerful keys to a successful core competency development path.

1. *Promote high level buy-in and commitments to support the initiative.* The committed support from leaders can bring about more rapid diffusion of the competencies and sustainable implementation.

2. *Synchronize the core competency work with other strategic and complementary initiatives.* Working in concert with these initiatives will augment the range and effectiveness of core competency development.

3. *Engage stakeholders at all phases of the core competency development and implementation.* Obtain the input of all relevant stakeholders from the project beginning. Continue to obtain feedback throughout the phases of core competency identification, definition, measurement, and implementation; so that a robust product is generated, and a wider investment in and diffusion of the work is formed.

4. *Match the implementation of the core competencies with the organizational development and capabilities.* Pace implementation of the core competencies in step with other supporting structures, processes, resources, and priorities. Optimally, the organizational components and the core competencies can continually inform and support the progress and development of each other in a feedback loop.

5. *Focus the level of DRM core competency development.* Core competencies are interconnected and exist in nested relationships.

6. *Present associated tools in meaningful and timely way.* Worthwhile diffusion of related products supporting the core competencies require compelling and meaningful presentation. Moreover, associated tools, such as continuing education materials, need to be developed in a timely way.

7. *Build in processes for continual improvement.* Core competencies require ongoing adjustments to the changing needs. Incorporate processes for ongoing up to date research, monitor effectiveness, evaluate both short and long-term outcomes, and continually improve the product based upon the evidence.

8. *Consider competencies developed for other applications.* Core competencies can have wide application beyond disaster management; similar requirements are encountered in related fields such as the emergency services, public health and humanitarian assistance. Future collaborations with other disciplines can become much easier when shared knowledge evolves from similar core competencies.

9. *Support the long-term view.* Full outcomes can take time; thus, it is important to manage expectations for short term outcomes (Rovins et al., 2017, pp. 10-11).

Implementation of core competencies takes time and requires fostering continual improvement. Therefore, the future orientation of the competencies needs to be continually refined. The integration of the feedback mechanisms is key to core competency formulation, implementation, evaluation, and improvement of workforce development.

Conclusion

Professional development linked to the competencies and their measures can better equip the future workforce to carry out the Sendai framework vision, consistent with approaches taken across communities, civil society and business. The changing world of hazard and risk governance prompted the exploration into how to best support the preparation of a future DRM workforce. The goal of inquiry was to determine core competencies that would guide the development of future DRM professionals, and design them for widespread application and local contextualization. The thirteen competencies and their measures can be fully adopted or adapted to match the practices and culture of the location. Further, the multi-phase method can serve as a roadmap to developing competencies appropriate for the setting. Applying the core competencies and their supporting measurement model through education, practice and research will produce a future DRM workforce more wholly able to fulfil

the Sendai framework vision. Building from the point of mutuality is the place that can unite and propel a future

workforce. In this way, we can work together to develop a DRM workforce with the depth and scale to meet the

challenges which lie ahead.

Appendix 1

Identified DRM Core Competencies, their Definitions, and Behavioral Anchors

The resulting thirteen competencies and their measures were designed for widespread application and to be further contextualized for each location, such that the preparation of international DRM professionals can benefit.   Because of the interrelationship of characteristics, the competencies are not numbered or ordered for priority.

An evidence-based model for measurement accompanies each core competency. The connected behavioral anchors provide broader observable examples that demonstrate achievement of the core competency. Each behavioral anchor has associated key actions at multiple levels of education and practice, which provide greater specificity of core competency demonstration. For brevity, the **key actions** for the stages of education or professional levels are not listed, but can be accessed in *The Next Generation Core Competencies* at: www.adapt.institute . The model presented forms as an easy to use guide for curriculum and evaluating demonstrated core competency levels in workforce development.

DRM Core Competencies that Build the Individual

➢ **Possess Critical Thinking**

The DRM professional employs critical thinking to identify and reduce disaster risk in the communities they serve. Critical thinking is a disciplined and multifaceted intellectual process, which involves problem-solving, strategic, adaptive, and innovative thinking. The practice of recognizing relevant evidence, understanding relationships in multi-layered data, and making clear the connections between potential causes and effects is fundamental to decision-making, adaptive actions, and thriving in uncertain environments.

Behavioral Anchors of Critical Thinking:

1. *Problem identification and problem-solving:* Recognizes and verifies both opportunities and problems, evaluates a wide range of data to inform options, identifies and manages existing constraints, and uses reliable methodology to recommend a course of action in achieving the desired outcome.

2. *Strategic thinking processes:* Establishes, prioritizes, and implements evidence based long term strategies consistent with reducing disaster risk; adjusts plans as needed for both the short and long terms, and makes the most of opportunities to manage disaster risk.

3. *Flexible, innovative, adaptive thinking processes:* Is alert to changing conditions, integrates new information, considers alternative tactics, and readily adapts approaches to the fluctuating disaster risk environment.

➢ **Abide by Professional Ethics**

The DRM professional both abides by and champions professional ethics. Professional ethics delineate expected and appropriate conduct, principles, and moral and ethical values that guide practice in the midst of both known and uncertain environments. Ethics must be approached as a totality of principles, not as individual guidelines; together, the sum of principles provides an important foundation for action.

Behavioral Anchors for Professional Ethics:

1. *Respect:* Actualizes honoring of individuals and groups of people by promoting dignity, diversity, and the rights of others; recognizes and respects the weight of their own actions as they work in communities.

2. *Veracity:* Demonstrates truthfulness and accuracy of facts, and abstains from misrepresentation in all situations.

3. *Justice:* Embodies a sense of obligation to the common good and treats others equitably and fairly; honors the rights of all species (present and future) when making decisions regarding the distribution of resources.

4. *Integrity:* Displays consistency between belief and action in all arenas of life.

5. *Service:* Acts to help others; is altruistically motivated. Puts others first, operating beyond the ego.

6. *Duty to protect:* Considers the moral obligation to avert harm (both present and future) and works toward a common good; facilitates community building, cognizant that all actions have consequences affecting people and performance.

7. *Integrates ethical principles within stakeholder discourse*: Guides ethical decision making across multiple stakeholders, who have varying interests, to derive public value.

➢ **Continual Learning**

The DRM professional engages in continual learning as a central means of increasing their efficacy when operating in a dynamic risk environment. Continual learning is about building adaptive capacity through an iterative exchange of new information in relationship to prior understanding. The continual learning process allows ongoing improvement, which is critical to achieving system stability, resilience, and thriving opportunities in the midst of an uncertain and complex future. Continual learners develop and nurture a frame of mind that values and utilizes curiosity, reflection, experience, and the development of new understanding.

Behavioral Anchors for Continual Learning:

1. *Reflects and questions*: Seeks to expand personal knowledge on a regular basis and allows ideas to be challenged and modified because personal knowledge limit awareness exists; the hallmark of continual learners is humility.

2. *Understands confidence levels:* Appreciates the importance confidence levels have in the pursuit of understanding, reduction of inquiry duplication, and expansion of the body of knowledge.

3. *Contributes to a body of knowledge that spans disciplines:* Focuses inquiry at the intersection of relevant disciplines to gain a fuller understanding of the drivers of a problem, and builds the body of knowledge.

4. *Engages others in inquiry:* Demonstrates willingness to challenge and transform mental models and engage others, whether casually in discourse or through formal scientific processes.

5. *Seeks practical applications for public value:* Engaged learning includes application as an essential part of inquiry, seeking ways in which we can improve the world around us even if it is in some small aspect.

> **Operate within the DRM Framework, Principles, and Body of Knowledge**

The DRM professional utilizes a proactive, anticipatory, and innovative approach for guiding public policy. DRM seeks to promote safer, more resilient, and thriving communities. All necessary actions are employed to mitigate against, prepare for, respond to, and recover from threatened or actual hazards. DRM activities must be comprehensive, progressive, risk-driven, integrated, collaborative, coordinated, flexible, and professional (Blanchard, et al., 2007).

Behavioral Anchors for Operating in the DRM Framework, Principles, and Body of Knowledge:

1. *Comprehensive:* Considers and takes into account all hazards, phases, stakeholders, and impacts relevant to disasters.

2. *Progressive:* Anticipates future disasters and develops community-based frameworks that encourage and support preventive and preparatory actions, which build toward disaster-resistant and disaster-resilient communities.

3. *Risk-driven:* Utilizes sound risk management principles, such as hazard identification, risk and vulnerability analyses, and impact analysis, in assigning priorities and resources.

4. *Integrated:* Ensures unity of effort among all levels of government and all elements of a community to manage disaster risk.

5. *Collaborative:* Creates and sustains broad and sincere relationships among individuals and organizations to encourage trust, advocate a team atmosphere, build consensus, and facilitate communication.

6. *Coordinated:* Facilitates synchronous activities among all relevant stakeholders to achieve a common purpose.

7. *Flexible:* Uses creative and innovative approaches in solving disaster challenges.

8. *Professional:* Values a science and knowledge-based approach based on education, training, experience, ethical practice, public stewardship, and continuous improvement.

9. *Body of knowledge:* Considers, utilizes, and values the growing body of DRM literature to support actions improving processes across all hazards and phases toward building disaster resilient communities.

DRM Core Competencies that Build the DRM Practitioner

➢ **Scientific Literacy**

The DRM professional possesses an understanding and working knowledge of scientific processes, as well as a familiarity with the natural, social, and applied sciences. Diverse scientific knowledge is essential as they inform the management and understanding of disaster risk and vulnerability on local, regional, national, and global levels. Scientific literacy is the capacity to objectively and systematically work through complex problems, using the scientific process to identify questions, interpret evidence-based findings to inform decision making, and effectively communicate the results to policy makers and the public. Through the use of the scientific process and principles in relationship to hazards, risks, and vulnerabilities, practitioners can deliver enhanced value to the communities they serve to thrive.

Behavioral Anchors for Scientific Literacy:

1. *Knowledge and understanding*: Demonstrates an appreciation of scientific processes and how their applications to practice benefits humanity**.**
2. *Find and evaluate credible literature sources*: Begins the scientific process with a review of reliable scientific literature; finds and evaluates credible sources of literature to support the inquiry and development of an argument.
3. *Inquiry and problem-solving processes*: Applies and integrates scientific process in the presentation and evaluation of an argument, relates the argument to the existing evidence, and draws conclusions.

➢ **Geographic Literacy**

The DRM professional possesses a foundational and comprehensive understanding of the geographic configurations of hazards, vulnerability, and risk. Geographic literacy comprises knowledge of the earth's physical and human systems, utilizing a spatial foundation where hazards, vulnerability, and risk can be conceptualized. The interconnections, interactions, and implications across complex physical, built, and social environments can be analyzed to track changing disaster risk profiles and inform decision making.

Geographic Literacy Behavioral Anchors:

1. *Interaction:* Recognizes the world is made of physical, built, and social systems, which interact in multifaceted ways, producing varying levels of risk and vulnerability.

2. *Interconnection:* Inquiries are based on an understanding that people and places are connected in a dynamic network of global relationships.

3. *Implications:* Applies geographic reasoning, which involves connections and interactions of physical, built, and social systems, to influence decision-making processes toward reducing hazard risk and vulnerability.

➢ **Sociocultural Literacy**

The DRM professional recognizes the social determinants of risk, as both the risks for and the effects of disasters are socially constructed. A sociocultural foundation provides the lens to examine and understand human behavior; and the ways in which humans, both individually and collectively, through political and legal processes, may affect their relationship to risk, adaptive capacity, and the ability to thrive.

Socio-cultural Literacy Behavioral Anchors:

1. *Social determinants of disaster risk:* Advances the understanding of others concerning the relationship between social factors and disaster risk concentration.

2. *Politics, political, and legal processes:* Influences relationships and advocates for the resiliency of others through the collective action of political and legal processes.

3. *Building adaptive capacity:* Cultivates and models an environment of inclusion and diversity. Values and gives voice to differences toward achieving collective pre-disaster capability building and disaster risk reduction goals.

➢ **Technological Literacy**

The DRM professional possesses a fundamental understanding of evolving technologies, their relevant application to practice, and timely adoption of these technologies. Technology refers to the mechanisms or devices developed from the application of scientific knowledge. Integrating emerging or evolving technology into DRM practice requires an awareness of current innovations, the ability to evaluate their potential utility,

willingness to access expertise to utilize technologies, and a grasp of the security measures necessary to protect the technology.

Behavioral Anchors of Technological Literacy:

1. *Utilizes technology:* Uses existing appropriate technologies in DRM practice.

2. *Evaluation of technology:* Assesses existing and emerging technologies that benefit or can benefit DRM; in the process, demonstrates understanding of both advancing technology and the progressive practice of DRM.

3. *Advances the use of technologies:* Adopts and incorporates appropriate new technologies into DRM practice.

4. *Assesses the legal, ethical, and social implications of technology:* Considers ethical, legal, and social implications when determining appropriateness of a technology application for DRM.

➢ **Systems Literacy**

The DRM professional sees the whole picture, particularly inter-relationships and patterns of change. Systems literacy helps the DRM professional synchronize their understanding and practice with the ongoing shift away from a linear and hierarchical human order to one that is characteristically dynamic, complex, and exponential. The focus of systems literacy is on interdependent relationships that produce reactions, changes, and adaptations over time. This scientific foundation provides the DRM professional a deeper understanding of the present for developing future focused strategies that enable adaptation and the ability to thrive.

Behavioral Anchors of Systems Literacy:

1. *Guides information flow:* Establishes channels and protocols for information to flow freely through a complex system allowing parts to make continual adjustments consistent with the state of the whole system. It is important to highlight that information drives a complex adaptive system, both internally in adaptation among its constituent parts and externally in an exchange with the environment. The combined flow of information allows different views of multiple issues, with the information product

being much more than the sum of the parts. The mutual information shared throughout the system enables structural change to match the environment (Comfort, 1994).

2. *Guides action between the parts and the whole:* Facilitates conditions conducive to achieving the desired outcome state; recognizes the priority of the current state of the system, and synchronously directs the individual parts of the system to move toward the anticipated state. Notably, complex systems function through mutual adjustment of the parts relative to each other to stabilize the whole and achieve the mission. "No system can remain stable, unless the parts are able to vary in order to protect the whole" (Wildavsky, 1988, p.77).

3. *Guides understanding of the wider environment:* Utilizes and interprets information from the wider environment and sensing equipment, then communicates the derived situational awareness, and facilitates adjustments to the changing environment.   To clarify further, a system's adaptation to change in the wider environment depends upon the rate of change and the system's capacity to understand the evolving situation. The adaptive process stems from new knowledge that is created and offered back to the wider system. The process can lead within the system to a mutual pattern of organizational learning, which can be critical for a complex endeavor such as disaster response (Comfort, 1994).

4. *Guides innovation processes:* Works in partnership with others and utilizes a range of resources available within the system to establish an innovative solution to a pressing problem. Complex systems have an inherent capacity for creative innovation, which is essential for adaptive capacity. Innovation allows organizations, in concert with their partners, to rearrange available resources to respond to unexpected threats or modify the response to known threats.

DRM Core Competencies that Build Relationships

➢ **Disaster Risk Management**

The DRM professional communicates and facilitates disaster risk awareness, assessment, measurement, and reduction across a broad spectrum of stakeholders. Disaster risk management is the application of strategies and policies to prevent new disaster risk, reduce existing disaster risk, and manage the residual disaster risk, ultimately contributing to loss reduction, resilience building, and thriving communities. An understanding of how systems interact to create risk, along with recognition that risk is interdependent with social systems is

fundamental to the function. The extensive experience with disaster risk management frameworks of New Zealand can be found in their Civil Defence Emergency Management Competency Framework (2009), which provides a substantive resource. Because of New Zealand's expertise, many of the key actions for this core competency were derived from the NZ framework.

Behavioral Anchors of Disaster Risk Management:

1. *Communicates and interprets hazards and risks:* Clearly communicates and explains hazard risks to a wide range of stakeholders.

2. *Understand and apply disaster risk management:* Provides a structured process using disaster risk management frameworks for identifying and managing risk.

3. *Monitor, evaluate, and review risk management processes and outcomes:* Monitors, evaluates, and reviews risk management processes and outcomes.

> **Community Engagement**

The DRM professional is able to facilitate community ownership of risk. Community engagement involves an open dialogue and relationship development that fosters working constructively to reduce the shared disaster risk. The practices of clearly communicating information, giving voice to unheard community members, integrating divergent perspectives, promoting and supporting individuals, families, businesses and organizations are vital for building the foundation of respect and support for a thriving community.

Behavioral Anchors of Community Engagement:

1. *Involves key stakeholders*: Identifies the range of people and organizations affected by the disaster risk issue, takes action to involve the stakeholders, and builds strategic partnerships to focus on the disaster risk exposure.

2. *Cultivates partnerships and mutual respect:* Identifies opportunities to form partnerships and establishes two-way information flow for building both social capital and collective capacity to work with each other; these processes underpin the evolution toward community disaster risk ownership and participation in disaster risk reduction activities.

3. *Creates public value:* Facilitates a community learning process through communications, dialogue, negotiation, and cooperation; establishes collective disaster risk reduction goals appropriate for present and future conditions.

4. *Establishes a process for expanded engagement and continual learning:* Supports community networks through ongoing improvement of collective disaster risk reduction goals and interventions.

➢ **Governance and Civics**

The DRM professional understands how to participate within civic and legal processes, from politics to policy. The way society manages collective processes is referred to as governance, which seeks to identify, evaluate, and operate within the context of relational dynamics including those within power structures. Collaborative processes further expand the achievement of public value by bringing people together across the boundaries of public agencies, levels of government, NGOs, business, and civil society.

Behavioral Anchors for Governance and Civics:

1. *Considers policy options in relationship to the stakeholders:* Identifies and analyzes a hazard risk issue for action, policy options to consider, the stakeholders' positions on the issue, the feasibility of the policy options, and the feasibility of engaging in a collaborative process with stakeholders.

2. *Political and legal:* Analyzes access to, the relational dynamics of, and the ramifications from those in positions of political power in connection to the disaster risk issue. Considers the legal parameters for a collaborative process, and assesses the potential implications of political access, policy, and legal parameters, including when to obtain legal assistance and involve legal counsel in the collaborative process as applicable to the risk issue.

3. *Brings people together across sectors:* Initiates bringing a wide range of stakeholders together; engages stakeholders in a process to identify mutual goals that address the disaster risk issue at hand and shares the vision for greater public value.

4. *Builds social capital through collective processes:* Facilitates dialogue on the issue bringing the stakeholders together, guides exploration of options, negotiates differing views, cultivates shared learning, and builds social capital in the establishment of shared goals.

5. *Implementation:* Supports collaborative processes to collectively achieve the shared policy goal through forward mapping and planning. Expands collaboration to establish mutually supported components of constituency involvement, governance structures, monitoring/evaluation agreements, and continual improvement cycles.

6. *Evaluation and continual improvement:* Support the processes of continual improvement through monitoring, evaluation, and implementation of improvements, with a mindfulness of possible unintended consequences.

- **Leadership**

The DRM professional is comfortable leading within and across organizations. Effective DRM leadership emphasizes team building, collaboration, collective leadership, and communication connectivity to a wide range of stakeholders, so that the complex risks can be addressed. Leadership is characterized by: informed decision-making, constructive administration and management techniques, fostering a shared vision, empowering others, establishing communication capabilities across varied networks, and creating an outcome-oriented environment for continual improvement.

Behavioral Anchors for Leadership:

1. *Inspires a shared vision:* Supports and informs the creation of shared vision with a network of community stakeholders. Communicates clearly how people can contribute to achieve the vision, so that mutual adjustments can be made in concert with others.

2. *Creates an empowering environment:* Identifies and negotiates constraints to enable others in the organization to successfully pursue its vision.

3. *Resolves conflict:* Resolves conflict that may emerge within the organization or between the organization and the community it serves. Promotes a vision of a shared outcome and facilitates agreement by constructively resolving differences of opinion.

4. *Strategic decision making that influences others toward change*: Develop strategic plans created through participatory process within and between organizations.

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