FEMA Data Management Implementation Framework (DMIF)

Office of Policy and Program Analysis (OPPA)
Enterprise Analytics Division (EAD)

11/14/2017

Version 1.0

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Version History

Version #	Date	Description
0.0	05/19/17	Outline
0.1	06/15/17	First draft
0.2	07/20/17	Second draft
1.0	11/14/17	Final – Adjudicated all stakeholder comments

1 Executive Summary

To manage and deliver its programs, FEMA uses hundreds of systems and data sources that vary widely in maturity.[1] In the absence of mature enterprise-level data management structures and tools, answering simple questions about operations, threats, or resources becomes disjointed and confused. FEMA's inability to readily integrate, analyze, and share data internally and externally impairs the Agency's mission delivery. In the past, improvised operational workarounds and infrastructure modernization efforts have attempted to address program-specific deficits in data management. The fragmented nature of these efforts compromises the Agency's capacity to save lives, save money, improve outcomes, and comply with statutes and regulations.

To mitigate these risks, FEMA's leadership has directed the strengthening of FEMA's enterprise data management and analytics capabilities. In an April 2017 memorandum following a FEMASTAT session focused on improving data management and analytics, Acting Administrator Fenton noted "*the session highlighted the need to rapidly adopt an enterprise approach to FEMA data management and analytics to strengthen mission delivery*." [2] The memorandum directed actions including development of a framework articulating FEMA's enterprise approach for addressing the Agency's near-term data management needs.

This resulting Data Management Implementation Framework (DMIF) acts as a flexible roadmap, defining FEMA's data management vision, objectives, and activities. It lays out an innovative, rapid, and collaborative approach to address near-term needs of the Agency's ongoing modernization efforts, leveraging accepted business processes and the work of the modernization efforts to quickly establish core data models, architecture and standards while ensuring compliance with DHS and OMB mandates. It will integrate with and advance existing Agency policies, processes, and guidance (e.g., data security) to outline specific deliverables and timelines to address FEMA's near- and long-term data management needs. These include:

- **Data models,** such as the FEMA Conceptual Data Model, that explain how data elements should be related conceptually, logically, and physically.
- **Data standards**, such as a set of common location standards, that enable interoperability between systems and components.
- Tools and structures that enable robust **data stewardship**, increase data quality, and improve understanding of the Agency's inventory of data.
- Agency **directives and guidance**, including processes and procedures for system owners, that operationalize FEMA's data sharing and management decisions.

Issues created by a lack of enterprise data management are experienced across the entire Agency. By collaborating to realize the vision and activities contained in the DMIF, FEMA will successfully implement an enterprise approach to data management. This will ensure strengthened mission

[1] In FY2017, the Agency operated approximately 140 independent systems.

[2] FEMASTAT is a series of collaborative, in-depth, data-driven studies of the Agency's organizational challenges. Memorandum from Acting Administrator Robert Fenton, "FEMAStat Action Items: Improving Data Management and Analytics," April 18, 2017

delivery, compliance with existing laws and regulations, and risk mitigation while maintaining appropriate cyber security safeguards and effectively managing costs.

2 Overview & Background

Enhanced enterprise data management benefits FEMA in several ways. First, this approach leverages the existing work that has built analytic capacity in individual programs across FEMA. While innovative and valuable, these efforts have remained siloed. Enhanced data management will create mechanisms to sustain and implement analytic innovations at the Agency-level. Second, the Agency has invested significant organizational resources in initiatives modernizing key business systems supporting grants delivery, financial management, and flood insurance.[3] Agency-wide data standards and agreements will ensure these systems are able to effectively interface and share data. Finally, in the past, siloed data systems and lack of access to diverse data sets internal and external to the agency which could inform current issues from across multiple platforms have led to disjointed disaster reporting, causing delays, confusion, and inefficiencies during disaster operations as well as limited our abilities to serve the spectrum of our non-disaster, mitigation and insurance grant recipients. Enhanced data management and analytics will improve FEMA's ability to collaborate, communicate, and coordinate, thereby improving stewardship of future disaster assistance funds.

This document articulates FEMA's enterprise approach to rapidly modernize its data management to realize these benefits. In the near-term, it acts as a catalyst for action, coordinating efforts to improve operations and align ongoing modernization initiatives. In the longer-term, the DMIF establishes the structures and processes needed to enhance the enterprise's data governance and stewardship capabilities. It integrates with FEMA's existing data and cyber policies, and does not supersede the guidance in these policies. Implementation of robust enterprise data management supports FEMA's enterprise cybersecurity capabilities, enabling integration of security considerations into system and business process design from the ground up. Finally, the DMIF is itself iterative and is a "living" document that will evolve as data management efforts progress over time.

Data Management During Incidents

Geospatial Information System (GIS) specialists are often asked to create maps comparing Individual Assistance registrants' information and locations with other data, requiring analysts to combine disparate data types, such as address and geospatial coordinates. Varying data standards and formats frequently result in workarounds and frustration, unnecessarily slowing decisions that impact survivors.

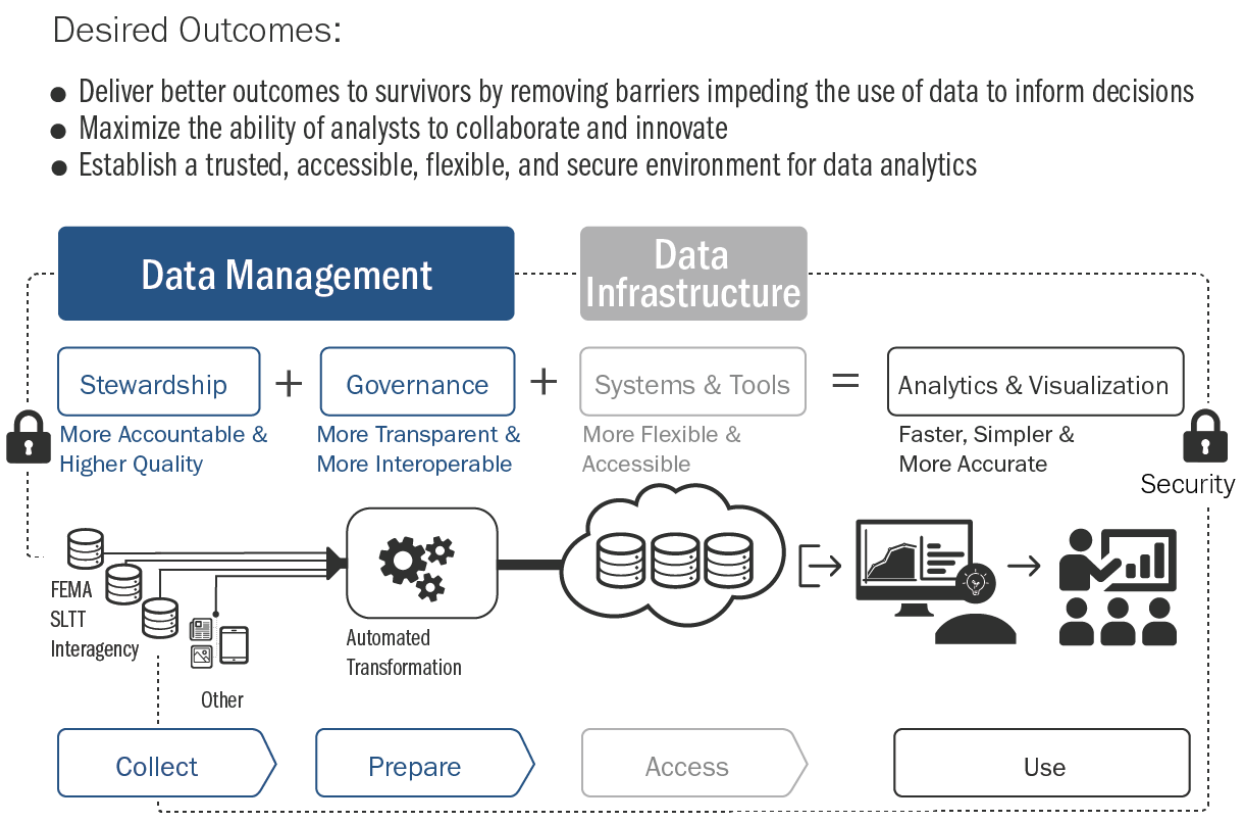
Three principles buttress the DMIF. First, execution of the DMIF will progress through collaborative processes, reflecting the **principle that enterprise data management will be driven by, and serve, the entire Agency and whole community.** Second, solutions to FEMA's near-term data management needs will be developed by leveraging existing work at the same time as performing iterative sprints to address complex data challenges, reflecting the **principle that data management will be implemented through agile, design-driven processes.** Finally, the DMIF is written from a systems-

[3] Initiatives include Grants Management Modernization (GMM), FEMA Financial Systems Modernization, and National Flood Insurance Program's IT System Modernization. See Appendix A for further definitions.

agnostic point of view reflecting the **principle that data should be conceived of, and managed, independent of underlying systems or applications**. Monthly Data Governance Council (DGC) sessions will enable stakeholder discussions and facilitate oversight reporting for ongoing data management efforts.[4]

FEMA's enterprise data management approach consists of two major components: data governance and data stewardship. Activities supporting this approach will be integrated with Agency enterprise architecture and data security needs coordinated through the Office of the Chief Information Officer (OCIO) and implemented across five lines of effort coordinated through the Office of Policy and Program Analysis (OPPA). These activities were identified through a collaborative process facilitated through the DGC and are defined in Section 3.

Figure 1. FEMA's Enterprise Data and Analytics Modernization Initiative (EDAMI) Approach



The DMIF builds on the work of many. It includes insights from both public and private sectors and leverages valuable ideas from the Federal Enterprise Architecture Framework, the DHS Enterprise Data Strategy, the FEMA Target Data Architecture, the FEMA Analytics Advancement Plan, and the most current work of FEMA modernization initiatives, among others.

[4] FEMA Data Governance Council (DGC) Charter Version 1.0, May 2017 (pending signature as of July 2017)

3 An Enterprise Data Management Framework

Vision

FEMA envisions a future-state in which:

> FEMA's enterprise data management enables fact-based decision-making to improve outcomes for survivors and responders and all FEMA partners and stakeholders, efficiently and effectively deploy resources, and ensure compliance with legislative authorities and applicable statutes and regulations, while continuously improving capabilities and processes.

The DMIF organizes and operationalizes efforts needed to achieve this envisioned future-state and create value across the whole community:

- **FEMA Headquarters** will provide Agency-wide guidance on effective data management to increase data interoperability, enable better decision making, reduce redundant data and ad-hoc solutions, lower system costs, improve reporting accuracy, more fully leverage predictive analytics, and ensure compliance with DHS and OMB mandates.
- **FEMA Regions** will have better access to data and tools needed to improve support to state and local governments, communities, and individuals at every phase of the emergency management lifecycle.
- **FEMA's governmental partners**, including State, Local, and Tribal and Territory (SLTT) partners and other Federal agencies, will have better access to accurate, transparent, and useful information that informs stronger service delivery and reduces duplicative efforts.
- **FEMA's private sector, non-profit, and voluntary partners** will be able to leverage data to more easily communicate, collaborate, and coordinate with FEMA, enhancing mutual understanding and improving situational awareness.
- **Survivors and communities** will be better served when the whole community can make decisions faster, allocate resources more efficiently, and share information more intuitively.

Objectives

FEMA has identified six objectives that collectively achieve the data management vision. These objectives represent actionable outcomes tied to the data management vision. All data management activities associated with implementation of the DMIF will aim to accomplish these six objectives. These objectives are further aligned with the guidance in the DGC Charter:[5]

- *Data are Understood and Valuable*: Build trust in data-driven analyses to enhance decision making. Develop and maintain policies, procedures, and best practices. Apply share-first principles to increase availability and transparency.
- *Data are High-Quality*: Establish business processes and data standards to ensure the accuracy, completeness, consistency, timeliness, and validity of FEMA's data.
- *Data are Collected and Integrated*: Ensure that data are not fragmented and that there are not duplications of data.
- *Data are Current*: Ensure the most recent and relevant data are accessible to users and that outdated data are easily identifiable for appropriate archival or deletion.
- *Data are Secure, Private, and Compliant*: Support, establish, or refine policies and procedures to ensure that all data collection, use, and maintenance complies with cybersecurity, privacy, and sensitivity requirements, while recognizing mission needs.
- *Data are Accessible*: Remove the barriers – organizational, architectural, process, and others – to ensure that data are accessible to users. Make data available to the maximum extent possible within security and privacy constraints. Continue and add data sharing arrangements with stakeholders.

[5] FEMA Data Governance Council (DGC) Charter Version 1.0, May 2017 (pending signature as of November 2017).

Components

The two components of data management that enable achievement of FEMA's data management vision and objectives are **data governance** and **data stewardship**. Moving forward together begins by understanding what these terms mean and how they relate. Figure 2 contains definitions for these terms:

Data Management

Processes used to **plan, specify, enable, create, acquire, maintain, use, archive, retrieve, control, and purge data**. Data management encompasses data governance activities, data architecture, data stewardship activities, and information sharing. Data management is important to FEMA because it centralizes the work of data governance, ensuring solutions are tailored to the needs of the entire agency and are integrated into data systems.

Stewardship

Management and oversight (not ownership) of an organization's data assets to help provide business users with high-quality data that is easily accessible in a consistent manner. Data Stewards are important to FEMA because they facilitate information sharing, data quality standards and processes, and support the overall maturation of data management.

Governance

Planning, oversight, assignment of authoritative data sources, and control over management of data and the use of data and data-related resources. Governance covers processes, not things, and includes setting of data standards and enterprise data models. Data governance is important to FEMA because it supports effective and efficient mission delivery, helps advance integrated analytics capabilities, and facilitates data-driven decision making.

Figure 2. Components of Data Management

Activities

During early 2017, stakeholders from FEMA's system modernization and data programs identified and prioritized five categories of data management needs. These needs have been translated into activities supporting implementation of data stewardship, governance, and management, as displayed in Figure 3. The stakeholder-driven process used to identify these activities is emblematic of the collaborative approach articulated in the DMIF. Together, these activities will achieve the Agency's data management objectives.

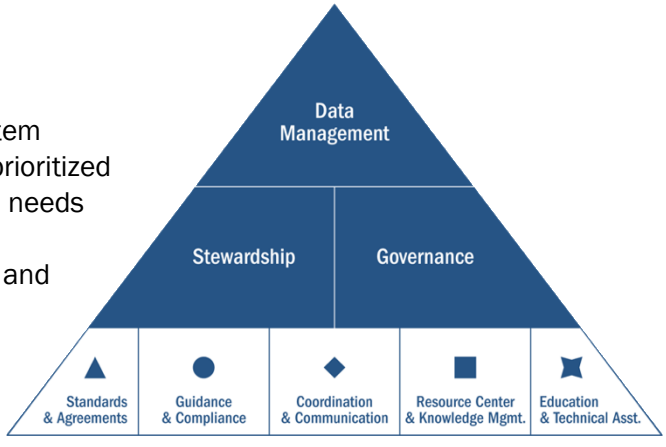


Figure 3. FEMA's Data Management Components and Activities

Table 1. Data Management Activities

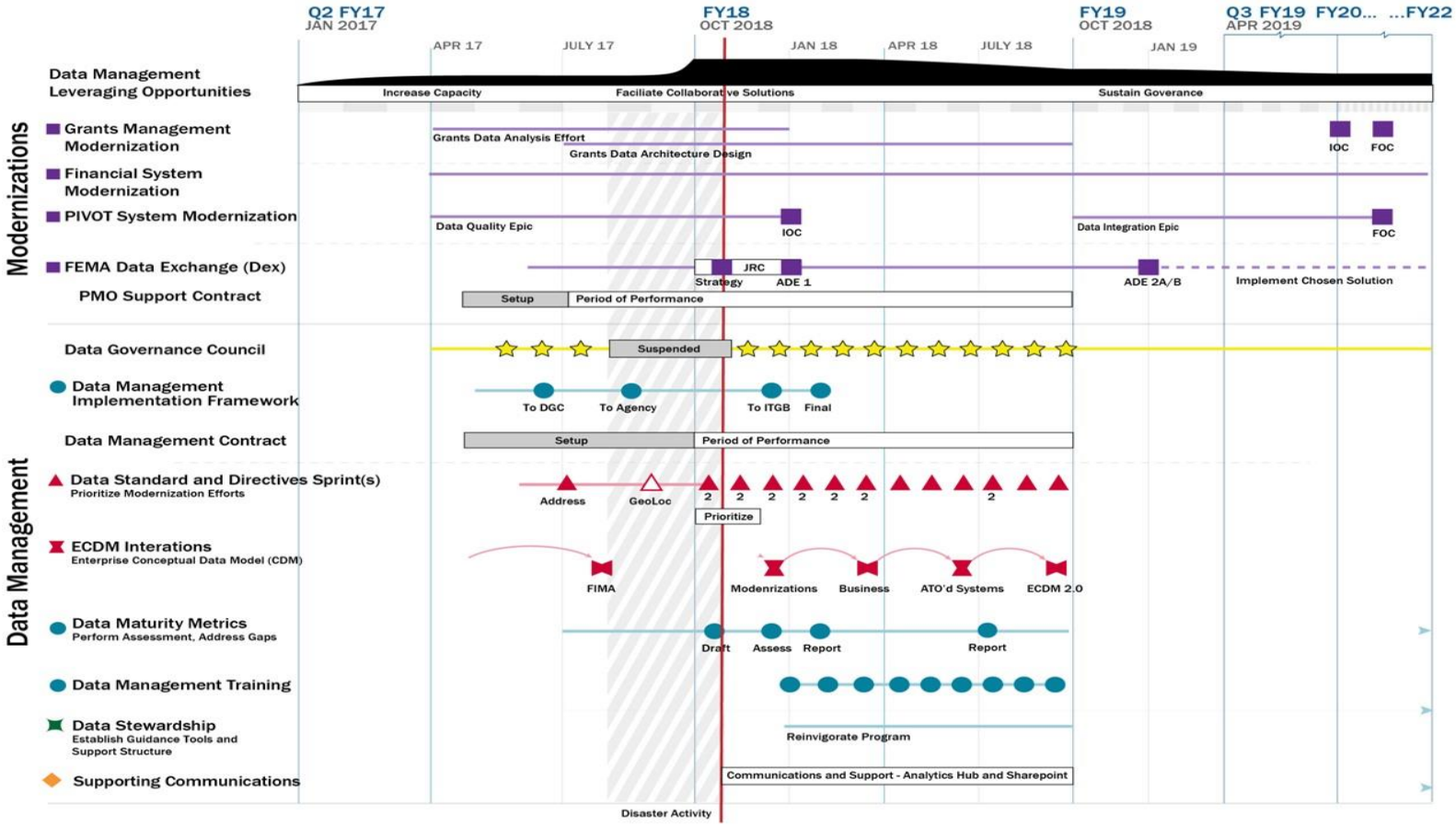
ACTIVITY		DETAILS	MILESTONES and DELIVERABLES
Primary Activities	**Standards & Agreements** 	Inconsistencies, incompatibility, and restrictions between programs and systems cost both time and money. Data management will leverage the work of program offices to define best-fit enterprise standards. In doing so, the Agency will comply with legal requirements while working to increasingly conform with National Information Exchange Model (NIEM) best practices. Standards will be defined by leveraging existing work and through rapid, iterative sprints on a monthly cadence.	• Establish enterprise **location data** standard via iterative sprints. • Leverage best practices to rapidly **adopt existing standards.** • Collaboratively work towards establishing new enterprise **data standards** on a monthly cadence. • Work with stakeholders to expand the existing **Conceptual Data Model (CDM)** into a more robust version. • Identify and establish user agreements for authoritative data sources. • Build Master Data Management (MDM) processes and guidelines for establishing enterprise reference data.
	Guidance & Compliance 	Ensuring that governance and data management are supported, maintained, and ongoing is essential to long-term mission success. This includes helping others find value in participating, and enforcing, agreements and standards.	• **Identify and prioritize** policy and guidance needs. • Begin developing oversight **checklists and tools**. • Establish a **maturity model** and assess data management maturity status and gaps. • Continue developing data management **guidance and policies** (e.g., Tableau Security). • Establish a **data stewardship** program and associated tools.
Enabling Activities	**Coordination & Communication** 	Sustained coordination between programs, business, and systems on data practices is needed to implement data management at an enterprise level. This includes coordinating with all stakeholders, including those that may influence standards and agreements (e.g., DHS).	• Continue to facilitate monthly **DGC meetings** aligned with the new DGC Charter. • **Report** to leadership with monthly status updates and performance scorecard(s). • Enhance **coordination of modernization teams** to ensure the requirements of efforts are met by data management activities and all decisions for future systems, standards, etc. comply with FEMA's data management approach. • Develop processes with External Affairs and DHS for review and

ACTIVITY		DETAILS	MILESTONES and DELIVERABLES
			approval of data governance policies, standards and guidance. • Develop processes for review and approval of data projects subject to data governance policies, standards and guidance. • Establish and execute and communications plan with External Affairs designed to inform and engage the FEMA community, increasing use of approved standards and best practices.
	Resource Center & Knowledge Management 	A clearing house for data management information helps centralize and record activities and decisions. This includes (but is not limited to) policies, standards, guidance, best practices, and lessons learned.	• Further develop and maintain a **SharePoint** page for storing and collaborating on enterprise data management information. Build out links to all pertinent guidance (both FEMA, other Federal, and private sector/academic) that will be used for data management efforts. • Coordinate and connect with liaisons to promote use.
	Education & Technical Assistance 	Stakeholders need information and technical assistance to facilitate understanding and adoption of data management tools, agreements, policies, and standards. This includes market research to identify potential beneficial products, solutions, and processes.	• Develop **training materials** to build shared understanding of the terms, processes, and goals of data management efforts to include what is expected of and how it impacts all FEMA employees and the whole community. • Provide direct technical assistance to stakeholders. • Develop **peer support networks** through online and in-person mediums to ensure changes implemented by data management are clearly explained, supported, completed. • Build **communities of practice** around data management.

Schedule

The schedule below (Figure 4) identifies data management activities over the next five fiscal years with a focus on activities up to FY19. These activities will continue to be shaped over time. Graphics are designed to capture activities as of the acceptance of the DMIF. Dependencies (e.g., support, resourcing) may impact specific dates.

Figure 4. Project Plan for Data Management Activities



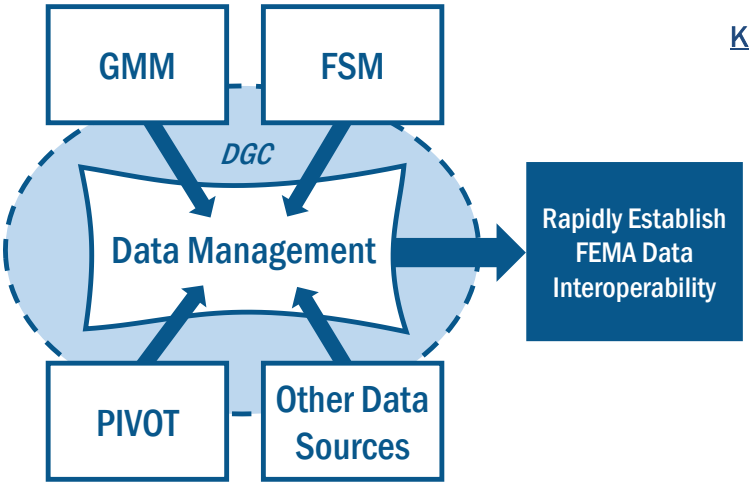
Implementing and Managing Change

Strengthening enterprise data management entails changes in how data are categorized, combined, managed, and applied across the Agency. FEMA's conceptual and planning processes, business processes, and systems will all be impacted in time. Further, FEMA's approach balances developing solutions to satisfy near-term data management needs for its major system modernizations with a longer-term focus on maturing analytic and data management capabilities for the full enterprise.

Success requires the deliberate and intentional management of implementation efforts. To create the foundation for data interoperability in the near-term (within twelve months), FEMA will incorporate current Federal standards; DHS data management requirements, and standards required by law, regulation, or policy. Simultaneously, FEMA will collaborate with and leverage modernization efforts and those of applicable subject matter experts to expand existing solutions and develop comprehensive solutions to meet the needs of enterprise. The Data Governance Council (DGC) will coordinate with all data management stakeholders to draft and validate agreements needed to advance both Data Governance and Stewardship, as well as provide supporting policy. When agreements are in place, programs, business and system owners, analysts, and other stakeholders will collaborate to ensure mutual understanding and implementation, recommending any needed changes to the DGC. Finally, FEMA will work with internal and external stakeholders to build the capacity and understanding needed to sustain data stewardship and governance over the long-term.

The DGC will facilitate oversight of this work, ensuring agreement, from initial corporate planning to implementation and sustainment, of implementation efforts, as shown in Figure 5. More information on FEMA's data management process is contained in Appendix C.

Figure 5. Aligning Data Management Activities



Keys to Success:

- **Collaborative Design:** Enterprise data management should be driven by, and serve, the entire Agency.
- **Focus on Data:** Data should be conceived, and managed, independent of underlying systems or applications.
- **Iterative, Rapid Implementation:** Progress will be driven by agile sprints, leveraging ongoing work of modernization efforts.

Roles and Responsibilities

Development and implementation of the DMIF is a process that is led by, and benefits, FEMA leaders, employees, and whole community partners. All data management stakeholders are encouraged to engage, participate, and bring expertise and insights to help drive this important work forward. Stakeholders will contribute to successful data management through many channels,

including DGC meetings, supporting Information Technology Governance Board (ITGB) deliberations, and implementation of supporting activities. The roles and responsibilities of some stakeholders involved execution of the DMIF are described in Table 2.

Table 2. Data Management Roles and Responsibilities

STAKEHOLDER	DESCRIPTION
Information Technology Governance Board (ITGB)	The ITGB is FEMA's decision-making entity responsible for IT capital planning and investment control, including strategic-objectives, program priorities, requirements validation, and oversight of the FEMA IT investment portfolio.[6]
Information Technology Investment Management Council (ITIMC)	Capital planning and investment control is a decision-making process for ensuring IT investments integrate strategic planning, budgeting, procurement, and the management of IT in support of agency missions and business needs.
Data Governance Council (DGC)	FEMA's DGC is a representative collection of Agency technology leadership, business owners, system owners, analysts, and other data and information stakeholders that work together to strengthen the management of data within the Agency. DGC members engage stakeholders within their areas of responsibility, review and provide feedback on policies, guidance, standards, and models. In addition, DGC members assist in sharing information and representing the interests of stakeholders.
Data Stewards	Data stewards serve as program data subject matter experts for data originating, transformed, or stored in their mission or program area. They work to provide data definitions, improve data accuracy, communicate concerns, validate and approve metadata, determine user access roles and rights, determine appropriate level of aggregation for details, and work with Privacy, FOIA, OpenFEMA, External Affairs, and Field Operations to support data dissemination and analytics for their respective data domains. Additionally, data stewards assist programs in managing and maintaining the integrity of the data-lifecycle in accord with data governance policies and procedures.

[6] FEMA Information Technology Governance Board Charter, May 2015.

STAKEHOLDER	DESCRIPTION
Information Management Division (IMD)	The IMD is responsible for managing the information lifecycle for records collected, used, and maintained by the Agency, to include privacy compliance, records management, and disclosure of Agency records.
Office of Policy and Program Analysis (OPPA)	As directed in the April 18, 2017 FEMASTAT Memo,[7] OPPA is responsible for coordinating and leading FEMA's collective efforts to strengthen data management and analytics across the Agency.
Office of the Chief Information Officer (OCIO)	The OCIO is responsible of maintaining governance and operations of the Agency's information systems, ensuring the system complies with regulatory and security requirements in support of FEMA's mission and objectives.
Office of the Chief Security Officer (OCSO)	The OCSO is responsible for security of FEMA facilities and information systems and sets the standards, policies, and practices for the Agency.
Business Owners[8]	Business owners are responsible for ensuring the mission of the organization is accomplished. In some cases, business owners are responsible for funding and other resources that support their line of business. Business owners are responsible for the data they collect, manage, and report in support of their lines of business.
System Owners[9]	System owners use information technology to help achieve the mission needs within their program area of responsibility. They are responsible for the successful operation of the information systems and programs within their program area and are ultimately accountable for their data.

[7] Memorandum from Acting Administrator Robert Fenton, "FEMASTAT Action Items: Improving Data Management and Analytics," April 18, 2017.

[8] FEMA Target Data Architecture 2.0.

[9] Ibid.

Collaborative Decision-Making

Enhanced management of FEMA data will be achieved through inclusive, coordinated processes. Monthly DGC meetings will provide a forum to facilitate stakeholder discussion, review and validation of standards and policies, and report progress. OPPA and the OCIO, as implementing and coordinating offices, will routinely consult with members of FEMA's analytics community, system modernization teams, or data stakeholders to inform enterprise solutions and requirements.

Integration with Existing Security Policy and Guidance

Data security and cybersecurity are essential to ensure data maintains and sustains the appropriate degree of confidentiality, integrity, and availability. The DMIF is not intended to replace or supersede any existing program, Agency, or DHS policy or guidance pertaining to data or digital system security. Rather, it is an integrative document, drawing together the many related yet distinct administrative and operational domains needed to articulate and implement FEMA's enterprise data management approach. Further, strong enterprise data management, such as common metadata standards and data stewardship, provide a basis for a "secure by design" data environment. Existing policies and guidance that the DMIF integrates with include FEMA's Digital Architecture 2.0, the FEMA Analytics Advancement Plan, DHS Sensitive Systems Policy Directive 4300A, FEMA Information Technology and Data Management Directive 140-1 and 140-2, FEMA Recovery Policy 9420.1, "Secure Data Sharing" (Sept. 9, 2013), FEMA Manual 141-1-1, Records Management: Files Maintenance and Records Disposition (Mar. 2014), and the FEMA Strategic Plan (2014-18).

Measuring Success

Performance measures are useful tools to gauge progress and identify areas for improvement. FEMA has reviewed several sources, including the Federal Government Data Maturity Model[10] and the FEMA Analytics Advancement Plan,[11] to identify measurement themes that will monitor the maturity of data management at FEMA. These themes are contained in Table 3.

FEMA will develop a balanced set of measures for data management, including both *outcome* and *use* measures. Outcome measures will assess the impacts of FEMA's data management efforts and may include indicators such as the sophistication, speed, or interoperability of the Agency's analytics processes, community, and environments. These measures will be used to indicate overall progress towards achieving data management goals. Use measures will assess how data management is applied across the enterprise and may include indicators such as the degree to which data governance and stewardship are implemented within FEMA programs. These measures will track the progress of FEMA's major data management activities and identifying roadblocks to achieving maturity. Together, these measures provide a gauge for FEMA to strengthen data management across the enterprise.

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[10] The Federal Government Data Maturity Model, https://www.ntis.gov/assets/FDMM.pdf, accessed 06/14/17.

[11] FEMA Analytics Advancement Plan, March 2017

Table 3. Maturity Measure Themes

THEME	DETAILS
Data Sharing	**Extent to which data is shared across FEMA's systems and platforms and with external stakeholders.** Example indicator(s): Quantity of sharable data exposed through OpenFEMA; Ability to share data with partners.
Data Utility	**Extent to which system data is useful in meeting FEMA's needs.** Example indicator(s): Identified data limitations; ability of data to support decisions.
Data Integration	**Effectiveness of integrating system data with other internal systems interoperability of system data within FEMA.** Example indicator(s): Use of Master Reference Data (MRD); Usage of Application Programming Interfaces (API).
Data Culture	**Extent to which data governance, stewardship, and management processes are adopted.** Example indicator(s): Percentage of FEMA systems with identified Data Stewards; Level of accountability established for personnel with data responsibilities.
Data Management	**Extent to which data are managed in an effective manner through the full data lifecycle.** Example indicator(s): Quantity and quality of data element documentation; extent to which a system Conceptual Data Model (CDM) exists and is aligned with the Enterprise CDM.
Data Personnel	**Extent to which FEMA data professionals have capabilities and training needed to access, use, and maintain data in compliance with data management guidelines.** Examples indicator(s): Percentage of data personnel that follow approved training plans.
Systems and Technology	**Extent to which systems, technology, and applications comply with, and support, enterprise data management.** Examples indicator(s): System developers that utilize existing data assets; Percent of systems that have fully documented Application Programing Interfaces (API).
Data Governance	**Extent to which FEMA systems, platforms, and processes align with data governance requirements and practices.** Example indicator(s): Existence of Data Management Plan(s), Data Quality Plan(s); Documentation of authoritative and/or trusted data.

4 Looking Forward

Thoughtful data management is essential to achieving FEMA's strategic priority of "working smarter through data analytics."[12] To establish mature enterprise data management, the Agency is taking an approach that will foster collaboration across the enterprise, leverage existing solutions and tools, and achieve near- and long-term data management vision and goals. These efforts will not be successful without individual ownership and engagement across the whole community. Thus, this framework seeks to make progress through iterative actions and to make decisions through listening and coordination with all FEMA data stakeholders.

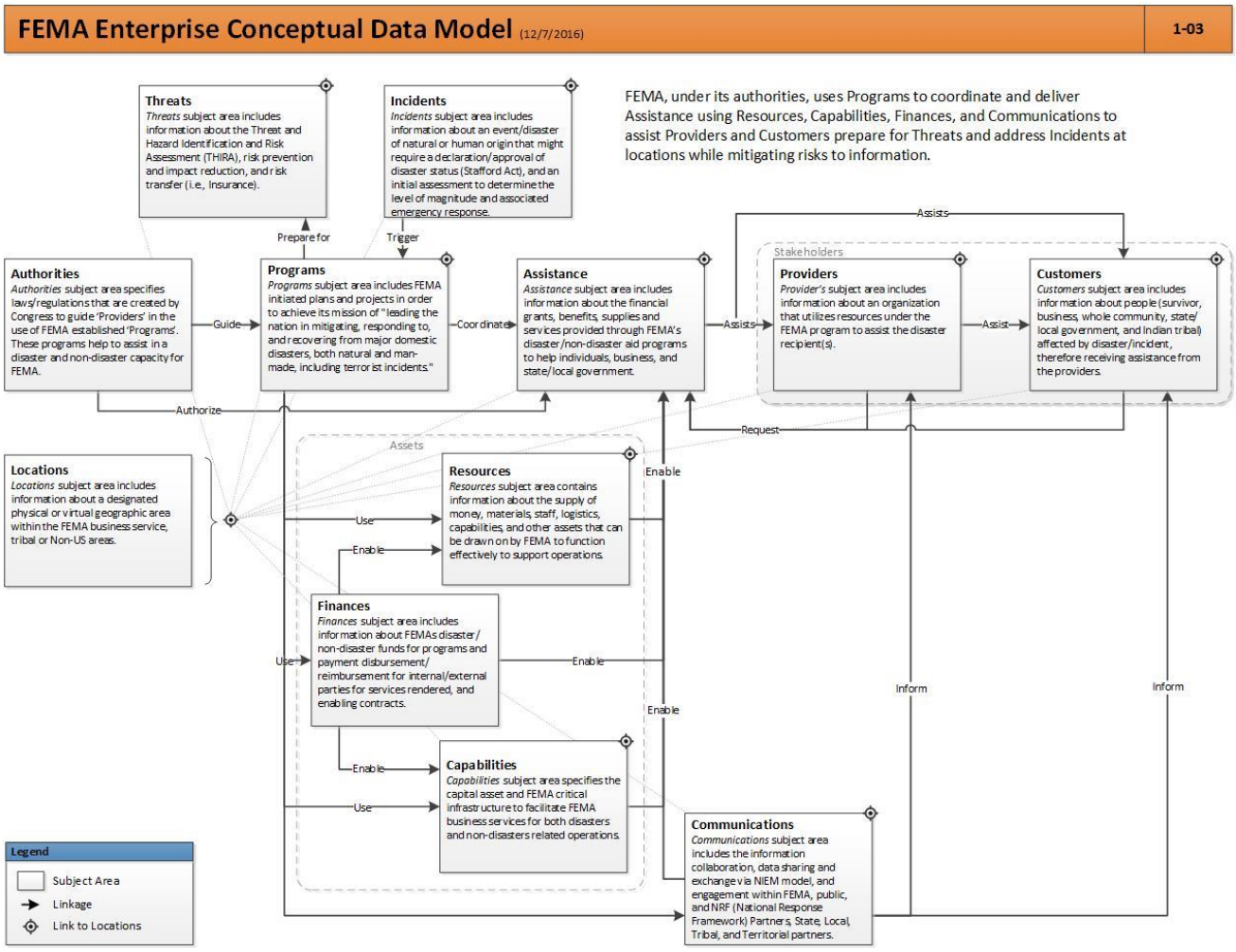
[12] FEMA Strategic Plan Priority 5.2 "Working Smarter through Data Analytics."

Appendix A: Glossary / Terms List

Authoritative Data Sources	Sources of data or information that are recognized by the Agency to be valid and trusted because they are considered highly reliable or accurate, from an official publication or reference, or are aligned to a legal requirement or statute. *(DHS Authoritative Data Exchange)*
Conceptual Data Model (CDM)	FEMA's CDM is a key data management deliverable. The CDM is FEMA's most abstract-level data model. It does not model information specific to a system or application. Rather it models how the enterprise's data are categorized and interrelated. It articulates how FEMA views its data and will be referenced during ensuing data management activities to ensure continuity of effort and vision.
Data	The term data refers to individual facts or figures. Data are often referred to as structured, semi-structured, or unstructured. (Note: The word data is the plural form of datum, although frequent practice has it used as a singular term.) (*FEMA Analytics Advancement Plan)*
Data Asset	A data asset is a distinct organized collection of structured, semi-structured or unstructured values. Examples include a database, web site, document repository, Excel spreadsheet, extended mark-up language (XML) file, a geospatial image file or a data service. *(Homeland Security Open Government Plan 2.0)*
Data Governance	Data governance is planning, oversight, and control over management of data and the use of data and data-related resources. Governance covers 'processes,' not 'things'. Data governance is important to FEMA because it supports effective and efficient mission delivery, helps advance of integrated analytics capabilities, and facilitates data-driven decision making. *(Data Management Association, Data Management Body of Knowledge)*

Data Management	Data management is an overarching term that describes the processes used to plan, specify, enable, create, acquire, maintain, use, archive, retrieve, control, and purge data. Data management encompasses data governance activities, data architecture, and information sharing. Data management is important to FEMA because it centralizes the work of data governance, ensuring that governance solutions are tailored to the needs of the entire agency and are integrated into data systems. *(Data Management Association, Data Management Body of Knowledge)*
Data Stewardship	Data stewardship is the management and oversight of an organization's data assets to help provide business users with high-quality data that is easily accessible in a consistent manner. Data Stewards are "keepers of the flame" in terms of data quality. They are responsible as stewards to serve and protect the customers' needs or assets. *(US Geological Survey)*
National Flood Insurance Program's IT System Modernization	The National Flood Insurance Program (NFIP) IT System Modernization program, known as PIVOT, is an effort to replace the underlying IT infrastructure that supports the NFIP program and develop a capability to provide real-time data on the number and type of policies in an impacted disaster area to deliver more targeted assistance. The existing IT system was developed 30 years ago and provides limited access to critical program data, including policy and claims data provided by insurers. Final operating capability is targeted for FY 2020. *(Improving Analytics, FY 19-23 Program Decision Option (PDO), Narrative Justification)*
System	A system generally refers to a software application (such as EMMIE, NEMIS, IFMIS, etc.) and the associated hardware used to manage, store, and process information. *(FEMA Analytics Advancement Plan)*

Appendix B. Conceptual Data Model 1-03

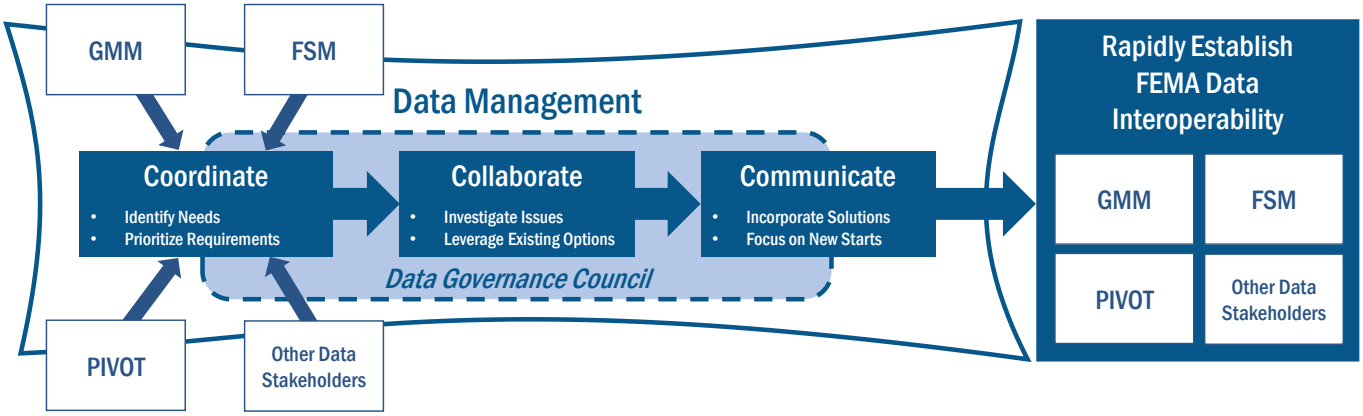


FEMA Enterprise Conceptual Data Model v1-03 (as approved by the Data Governance Board in 2017)

Appendix C. Data Management Processes

Enterprise data management is a system of systems and includes many interconnected processes and activities. The figure below depicts how major data management phases interrelate to "rapidly establish FEMA data interoperability."

FEMA Data Management Process



- **Coordinate:** Data management needs exist across the entire Agency. The initial step is to identify needs in relationship to timelines from modernization initiatives or other data sources. Requirements are extracted from needs and prioritized to identify areas requiring near-term attention. Efforts under the five lines of business will be prioritized per 1) law, regulation, or policy; 2) leadership direction and intent; 3) opportunities to leverage and support modernization efforts; 4) Data Governance Council direction; and 5) other data stakeholder needs.
- **Collaborate:** Data management stakeholders join to investigate issues, identify opportunities, and learn about existing solution options. Whenever possible, existing knowledge, tools, and solutions are leveraged to inform solution design and selection. Collaboratively, stakeholders work together to find solutions for high-priority needs. The Data Governance Council (DGC) helps to facilitate this process by coordinating "sprints" to rapidly and iteratively develop best-fit solutions for FEMA programs and modernization initiatives. Sprints will be focused on addressing the most readily adoptable work, as well as investigate solutions to difficult problems where the answers are not immediately clear.
- **Communicate:** These solutions are then disseminated to all data management stakeholders, becoming standard across the enterprise. In the near-term, incorporation of data management solutions is focused on modernizations, new IT investments, and existing IT investments performing major changes to their data. In the near-term, legacy systems may incorporate solutions on an as-needed basis. Implementation will be directed by system and business process owners while technical assistance will be provided by DGC members.