I. Introduction

As the nation looks back on the September 11, 2001 terrorist attacks, sharing terrorism- and cybersecurity-related information pose new challenges, as well as opportunities. While safeguarding information has always been a critical component of responsible information sharing, it has taken on new urgencies in the wake of the two, highly-publicized WikiLeaks and Snowden disclosures, and cyber-attacks across government and commercial networks.

This paper traces the evolution of Information Sharing Environment (ISE) policy-reforms and major ISE implementation milestones, all grounded in § 1016 of the Intelligence Reform and Terrorism Prevention Act (IRTPA) of 2004 (§ 1016), as amended, and related Executive Branch strategies and policies. It also provides insights into future implementation of the ISE.

By way of review, § 1016 established an ISE for counterterrorism, weapons of mass destruction, and homeland security information. Success in implementing the ISE is based on the principles of federated information management. The ISE is grounded in initiatives led by federal, state, local, tribal, territorial, international, and private sector partners, and is informed by the needs and requirements of ISE partners. At its heart the ISE is distributed and decentralized among these partners, coordinating under partner authorities, resources, policies, and mission equities, and supporting a networked model for secure and trusted collaboration against shared threats.

Additionally, the ISE is supported by governance structures, which include budget and performance frameworks. The ISE incorporates and prioritizes protections for privacy and civil liberties, including comprehensive policies, training, compliance assessments, and local control, which are essential to establishing and maintaining public confidence. All of these features provide the foundation for a successful ISE.

Although the need for greater sharing of terrorism-related information became more evident following the September 11 attacks, sharing and using data to enhance national security and improve public safety have been integral to a variety of reform efforts since the dawn of the information age.

Conversely, breakdowns in information sharing have contributed to iconic intelligence failures to detect or interdict unexpected threats or else impeded needed action. Further, failures in information safeguarding have led to data breaches, leaks, and violations of privacy with significant, adverse consequences to private, commercial, and government activities.

II. The Need for an ISE

Information sharing to enhance national security and improve public safety did not begin with the post-9/11 era of counterterrorism transformation and intelligence reform. Rather, information sharing has
been at the heart of a government reform movement that has sought to make the public sector more efficient and effective through the use of data.

For example, in the 1990’s, the New York City Police Department implemented community policing reforms, based on sophisticated crime mapping, contributing to a substantial drop in crime. Since that time, many other police departments have adapted similar approaches.

At the federal level, the military and intelligence communities also devoted serious efforts towards closer integration. In 1986, the Goldwater-Nichols Act substantially reorganized the Department of Defense and its chain of command to enable joint service operations and achieve greater operational efficiencies. The Goldwater-Nichols Act did so by eliminating stovepipes between the different military services while preserving the distinct culture and identity of the Army, Navy, Air Force, and Marines.

During the 1990’s, Director of Central Intelligence Robert Gates undertook steps toward similar reforms within the intelligence community. Despite progress, the reforms did not go deep or fast enough.

Following the September 11 attacks, a series of reviews uncovered failures of information sharing both within and between agencies, and a variety of legal, policy, and process impediments. These impediments were among the factors that resulted in the government’s failure to prevent the 9/11 attacks. The National Commission on Terrorist Attacks upon the United States, commonly called the 9/11 Commission, described a number of information sharing failures and recommended a series of reforms to prevent future failures.

III. 2004 – 2006: Establishing an ISE

Prompted by the 9/11 Commission recommendations, President Bush issued several executive orders, including Executive Order 13356, Strengthening the Sharing of Terrorism Information to Protect Americans, August 27, 2004, which required the heads of federal departments and agencies to share terrorism information, mandating that “... in the design and use of information systems ... the highest priority ...” must be given to the “... interchange of terrorism information among agencies.” The order also established an Information Systems Council chaired by a designee from the Office of Management and Budget (OMB).

Congress also responded to the 9/11 Commission, both by removing real or perceived legal barriers and by establishing particular information sharing initiatives. In § 1016, Congress established the ISE, defined as “... an approach that facilitates the sharing of terrorism information, which may include any methods determined necessary and appropriate for carrying out this section.”¹

¹ The Government Accountability Office (GAO) in its 2008 report described the ISE as “…a set of cross-cutting communication links—encompassing policies, processes, technologies—among and between the various entities that gather, analyze, and share terrorism-related information.”
§ 1016 reinforced and codified many of the requirements of Executive Order 13356, including the requirement to share terrorism information. § 1016 also established a Program Manager for the ISE and an “Information Sharing Council” as the successor to the Information Systems Council. §1016 also mandated the issuance of guidelines to protect privacy and civil liberties.

Executive Order 13388, “Further Strengthening the Sharing of Terrorism Information to Protect Americans,” (2005) replaced the earlier Executive Order and reinforced the IRTPA approach. Executive Order 13388 restated again the imperative for agencies to share terrorism information with each other, subject to the requirement to protect privacy and civil liberties.

The structure and design of the ISE reflected, in large part, the vision of the Markle Foundation Task Force on National Security in the Information Age. In a report issued in 2002, the Markle Foundation had outlined its vision of a decentralized model for information sharing in which authorized users could access the information they needed to analyze threats, “connect the dots”, and provide useful information to prevent harm to national security. The ISE addressed the major shortcomings that contributed to 9/11, which were not a failure of collecting too little information, but a failure to analyze, share, and act upon information the government had already lawfully collected under its authorities.

Based in part on Markle Foundation Task Force recommendations, the ISE adopted a distributed, decentralized model. Instead of creating a central database of terrorism information, the ISE adopted an approach where information is controlled and maintained within the agency that collected the information and which has responsibility for distributed sharing.

§ 1016 requires an ISE that “connects existing systems.” The model enables operations across federal agencies as well as among the different levels of government and with private sector and international partners.

The distributed model also had significance for information sharing well beyond the boundaries of the ISE itself, which was limited by statute to terrorism information. Because of the law’s mandate to connect existing systems, and the reality that the systems being connected were and are, almost exclusively, not limited to terrorism information, the improvements to information sharing that the ISE realized were not – and generally could not be – limited to terrorism information alone. Rather, the ISE approach would inevitably lead – and did lead – to the establishment of best practices for information sharing and management in a number of areas, e.g. controlled unclassified information (CUI), as discussed below.

Through the IRTPA, Congress also established a new office, with government-wide authority – the Office of the Program Manager for the Information Sharing Environment (PM-ISE). PM-ISE was charged with spearheading efforts to realize the vision of the ISE and opened its doors on April 14, 2005.2

---

2 The Office of the PM-ISE has occupied office space at 2100 K Street, NW, since April 2005; the same space formerly occupied by the 9/11 Commission.
In January 2005, just one month after Congress enacted the IRTPA in December 2004, the Government Accountability Office (GAO) ensured continued focus on counterterrorism information sharing with its decision to designate a new GAO high risk area, Establishing Appropriate and Effective Information-Sharing Mechanisms to Improve Homeland Security. Due to the many challenges facing responsible information sharing, PM-ISE continues to welcome GAO’s oversight and recommendations.

§ 1016 did not specify in which agency the PM-ISE should reside, leaving that decision to the President. The Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction, commonly called the WMD Commission, recommended that the PM-ISE should be placed within the newly created Office of the Director of National Intelligence (ODNI) in order to better coordinate the Program Manager’s government-wide terrorism information sharing mission with the DNI’s responsibility to improve intelligence information sharing. The White House accepted this recommendation and directed the DNI to incorporate the PM-ISE and to administer “all of its personnel, funds, and other resources, as part of the ODNI.” However, it was understood that the PM-ISE would maintain a very close relationship with OMB and the Executive Office of the President.

Over the next several years, the ISE matured and started to have an impact through the adoption of a series of foundational documents and key programs. For example:

- The President issued a series of guidelines and requirements for the ISE in December 2005, which continue to embody the ISE’s basic structure. They include Guideline 5 - Protect the Information Privacy Rights and Other Legal Rights of Americans, developed with input from privacy and civil liberties advocates and with the participation of the major counterterrorism, law enforcement, and other ISE mission partners.

- Guidelines were also issued for sharing with state, local and tribal sector entities and the private sector and for sharing with international partners.

- The ISE’s initial Implementation Plan, as required by § 1016, was issued in November 2006 and laid out a series of tasks required to achieve particular requirements of the statute, such as the requirement to provide directory services.

- A process was developed to issue common terrorism information sharing standards. Several standards were issued pursuant to that process.

Signature initiatives enabled the information sharing that makes the ISE a reality. For example:

---

3 GAO-05-207 High-Risk Series An Update, January 2005
4 The White House memorandum, July 2, 2009, Strengthening Information Sharing and Access, John O. Brennan, Assistant to the President for Homeland Security and Counterintelligence
5 The White House memorandum, December 16, 2005
• Strengthening of a national network of state fusion centers through guidelines issued in 2006;
• Major improvement and maturation of the terrorist watch list;
• The development of a nationwide system for documenting, vetting, and sharing suspicious activity reports (SAR). The SAR effort involved all aspects of the ISE approach – including building a program with input from stakeholders at all levels of government and non-government organizations, using functional standards to guide decentralized sharing (i.e., no central database), and including privacy and civil liberties protections in the development of the standards and process for sharing SARs; and
• Support for agencies to establish ISE Privacy Policies “as comprehensive as” the President’s ISE Privacy Policy.

IV. 2007-2010: Expanding Information Sharing Priorities

In 2007, Congress enacted the Implementing Recommendations of the 9/11 Commission Act (“9/11 Act”), a major update to the IRTPA. In so doing, Congress indefinitely extended the initial two-year term of the Program Manager for the ISE, added homeland security and weapons of mass destruction information to the scope of the ISE, and included several new ISE attributes for information sharing. These amendments demonstrated that Congress valued the ISE approach to information sharing and had confidence in the efforts of the Executive Branch to bring it about.

The 9/11 Act also directed the Program Manager to report on the feasibility of replacing existing policies for information collection, sharing, and access with a standard allowing information to be accessed using a threat or mission based approach - commonly described as an “authorized use” standard. Such a standard would require “mission-based or threat-based permission to access or share information” in order to accomplish “a particular purpose” that the government, in consultation with the Privacy and Civil Liberties Oversight Board, determines to be lawful for “a particular agency, component, or employee.” In response, the Program Manager determined that such an approach would not be a feasible replacement for existing rules and laws, but that such a standard would be consistent with the ISE approach if it worked within existing rules and laws.

The National Strategy for Information Sharing, issued by the White House in 2007, essentially replaced the 2006 ISE Implementation Plan with a comprehensive approach and an overall framework for counterterrorism information sharing that included many of the signature initiatives previously outlined. In 2007, the PM-ISE began to issue comprehensive annual reports to congress on information sharing as required by the IRTPA. Along with the annual reports to Congress, PM-ISE collaborated with the OMB and the White House staffs of the National and Homeland Security Councils to plan and execute information-sharing priorities across the government.
The White House through OMB began to issue general information sharing programmatic guidance, complemented by PM-ISE’s subsequent and more specific implementation guidance, which included clearly established milestones, objectives, and timelines for implementing the ISE. The annual guidance cycle became important elements of the ISE’s new performance management framework and essentially replaced the 2006 ISE Implementation Plan with an approach that was fully integrated with the Federal Government’s annual budget and programmatic priorities. The ISE performance management framework clearly addressed GAO’s recommendations for establishing more accountability in implementing the ISE.

One example of the new approach was the comprehensive reform to handling what is now described as controlled unclassified information (CUI). An interagency policy review process identified over one hundred markings for sensitive, but unclassified information. There was no standard approach for such markings, making exchange of such information for counterterrorism purposes, as for other valid purposes, difficult. The PM-ISE, using its government-wide authority and pursuant to Presidential ISE guidelines, formulated and negotiated a process for standardizing CUI, first codified in a 2008 Presidential memorandum (later in Executive Order 13556). The CUI initiative is an example of how addressing a problem that impeded information sharing for counterterrorism purposes has made sharing for other, valid purposes easier.

In 2009, the new Obama Administration made further adjustments to information sharing governance. Under Presidential Policy Directive 1 (PPD-1), the Administration combined the White House staffs of the National Security Council (NSC) and the Homeland Security Council (HSC) and directed that day-to-day work be supported by a combined NSC staff. The NSC staff leads Interagency Policy Committees (IPCs), senior bodies on geographic or topical areas that do the bulk of policy coordination work, raising issues to the Deputies’ or Principals’ Committees of the NSC or HSC as appropriate.

In keeping with this new structure, the Information Sharing Council (ISC), the interagency body established by IRTPA, and chaired by the PM-ISE, was integrated into the Information Sharing and Access Interagency Policy Committee (ISA IPC) in order to streamline and strengthen the work of implementing the ISE. When the ISC was integrated with the ISA IPC the Program Manager became co-chair of the ISA IPC along with a senior member of the National Security Council staff. The ISA IPC serves as both an IPC under PPD-1 and as the ISC under § 1016.

Additionally, in 2009, the ISA IPC was given a broader remit to the original scope of the ISE when the White House established that:

> Achieving effective information sharing and access throughout the government is a top priority of the Obama Administration. This priority extends beyond terrorism-related issues, to the sharing of information more broadly to enhance the national

---

7 Guideline 3 - Standardize Procedures for Sensitive But Unclassified Information
The ISA IPC has served as the principal interagency forum for information sharing issues, both those that concern the ISE itself and the broader issues related to sharing beyond the ISE’s formal scope.

Pursuant to this new approach, the ISA IPC launched new initiatives, particularly in the areas of standards development with industry, with a goal of influencing government-wide procurement of information technology systems. It has focused its attention on critical infrastructure and key resources, and the need to partner with the private sector to further strengthen information sharing. Another major effort has been in the area of data aggregation to ensure the right policy approach for aggregation of high-value terrorism-related data sets.

**V. 2010 – 2013: Increasing Information Sharing and Safeguarding**

Safeguarding information on classified government networks came to the forefront in 2010 when the website WikiLeaks, in cooperation with leading newspapers including the New York Times, published a trove of secret diplomatic cables downloaded and provided to WikiLeaks by 23-year old Army private, Bradley Manning.

The WikiLeaks disclosures led some to question whether sharing had gone too far, endangering sources and methods. However, the reaction of national security leaders was not to jettison or slow the pace of sharing, but to refocus on the need for sharing to go hand-in-hand with safeguarding sensitive information.

Following a comprehensive interagency review of the WikiLeaks disclosures, President Obama issued in October 2011 Executive Order 13587, “Structural Reforms to Improve Sharing and Safeguarding of Classified Information on Computer Networks”, which established three new interagency bodies to coordinate efforts to improve security on classified networks, including:

- a **Senior Information Sharing and Safeguarding Steering Committee (Steering Committee)** that has overall responsibility for fully coordinating interagency efforts for implementation of information sharing and safeguarding policy and standards;

- a **Insider Threat Task Force** with responsibility to develop a government-wide program for insider threat detection and prevention; and
- a senior representative each from the National Security Agency and the Department of Defense who jointly act as the Executive Agent for Safeguarding to develop technical safeguarding policies and standards and conduct assessments of compliance.

To ensure that information sharing efforts are complemented with appropriate safeguarding efforts, Executive Order 13587 also established a Classified Information Sharing and Safeguarding Office (CISSO) within the PM-ISE.

Like other bodies established in Executive Order 13587, CISSO’s work focused on classified information on computer networks, a category that is both broader than the ISE because it includes all information, not just terrorism, homeland security, and WMD information, and narrower because it covers only classified information on computer networks.

Prior to the release of Executive Order 13587, the Steering Committee identified five priority areas for departments and agencies to focus their efforts in improving the safeguarding of classified information within their classified networks, with the understanding that these areas will take several years to fully implement. These priorities include: 1) Removable Media; 2) Insider Threat Programs; 3) Reduced Anonymity; 4) Access Control; and 5) Enterprise Audit. In 2012, the Steering Committee developed clear, consensus-based goal descriptions for each priority, which included identifying initial and final milestones.

As previously discussed, the PM-ISE already had considerable expertise in sharing and safeguarding of controlled unclassified information (CUI) and classified terrorism-related information. The CUI initiative originated within PM-ISE before being handed off to the National Records and Archives Administration (NARA). Many of the issues concerning sharing and safeguarding were similar whether the information was classified or unclassified, but sensitive. The establishment of CISSO and the integration of its work with the larger information sharing and safeguarding mission represented a significant broadening of the PM-ISE’s role in responsible information sharing.

In December 2012, the President released the National Strategy for Information Sharing and Safeguarding (2012 Strategy) which is anchored in the 2010 National Security Strategy and built upon the 2007 National Strategy for Information Sharing. The 2012 Strategy provides guidance for more effective integration and implementation of policies, processes, standards, and technologies to promote secure and responsible national security information sharing.

Following the release of the 2012 Strategy, the NSC staff and the PM-ISE jointly released a Strategic Implementation Plan in 2013 for the 2012 Strategy which provided high-level implementation guidance on the 2012 Strategy’s 16 Priority Objectives. The Strategic Implementation Plan also provided a higher-level overview of a longer, more detailed implementation plan for the 2012 Strategy, and was intended

---

9 The White House, Office of the Press Secretary, FACT SHEET: Safeguarding the U.S. Government’s Classified Information and Networks, October 07, 2011
to assist in briefing senior policy makers on plans, progress, and performance related to achieving the vision in the 2012 Strategy.

The 2012 Strategy coupled with its Strategic Implementation Plan defined the general vision and framework for responsible information sharing across the national security and public safety environments, and provided the strategic guidance needed to continue maturing the ISE. Both documents built on and integrated the tools and initiatives generated by the Nation’s previous investments in terrorism-related information sharing. Positioning these tools and initiatives for reuse and further integration with critical mission areas defined the future work in implementing the ISE.

The unauthorized disclosures of classified information in 2013 by NSA civilian contractor Edward Snowden revealed vulnerabilities and shortcomings that universally impacted all ISE mission areas and clearly illustrated uneven progress toward safeguarding information. In response, the Steering Committee mapped out clear, consensus-based goals and a plan for measuring progress on classified information sharing and safeguarding. The Steering Committee continued to oversee department and agency implementation of its initial priorities through 2013 and developed future plans for addressing emerging vulnerabilities on classified systems.

In spite of the Steering Committee’s efforts, broad-based efforts to implement federated, standards-based, and interoperable identity, credential, and access management with the sensitive but unclassified and secret networks continued to suffer from unaligned management practices within federal departments and agencies.

VI. 2013-2014: ISE Partners Expanding the Scope of Efforts

With the release of the February 2013 GAO update to Congress\(^\text{10}\), terrorism-related information sharing remained a high risk list issue. GAO acknowledged that, while there had been substantial progress by departments and agencies in integrating many of GAO’s earlier recommendations, no progress had been made in establishing an overall enterprise architecture management capability to manage the selection and progress of ISE projects.

Shortly after the release of GAO’s update to Congress, the April 2013 Boston Marathon bombing clearly reinforced the need to accelerate projects focused on homeland security information sharing missions. Accordingly, federal departments and agencies began to identify and align communities of interest to address specific priority threats, including terrorism and homeland security information sharing.

\(^{10}\) GAO-13-283, February 2013, p. 173
PM-ISE, in collaboration with federal departments and agencies represented on the ISA IPC, began to develop the ISE Interoperability Framework (I2F) and associated ISE Management Plan to further plan, manage, and oversee the implementation of the ISE. The I2F and the ISE Management Plan constituted the foundation for an enterprise-wide management framework to guide prioritization and implementation of ISE projects, which effectively addressed GAO’s recommendation for an ISE-wide management capability.

In early 2014, PM-ISE expanded I2F to align ISE programs, projects, and initiatives on mission area outcomes. Accordingly, I2F was re-branded “Project Interoperability”, which more accurately described the alignment of ISE programs, and the leveraging information sharing tools, against mission focus areas.

Project Interoperability incorporated information sharing tools and resources beyond those identified in the 2012 Strategy and was further expanded through the public-private Standards Coordinating Council (SCC) to advance a broader approach to terrorism-related information sharing. The SCC began a process to orient first on mission area outcomes, and second on enabling tools, resources, and initiatives to demonstrate mission-oriented progress against the 16 priority objectives in the 2012 Strategy.

The 2014 Annual ISE Report to the Congress highlighted communities of interest identified as priorities across the ISE that focused on five mission areas: sharing public safety information through statewide and regional ISEs; improving watchlisting, screening, and encounters; sharing cybersecurity information; advancing information sharing within the air and maritime domains; and improving first-responder, incident-related information sharing.

In 2014, federal, state, and local agencies took important steps to integrate the National Network of Fusion Centers (National Network), the Nationwide Suspicious Activity Reporting (SAR) Initiative, and interoperable sensitive but unclassified networks, achieving a critical milestone to expand the ISE.

Through its partnership with the FBI and other agencies, DHS led federal efforts to integrate the National Network. The National Network continues to grow its critical operating capabilities, serving as the key, bi-directional link for sharing threat information between and across federal, state, local, tribal, and territorial agencies, as well as the private sector. This intelligence and information sharing extends well beyond terrorism, to the full range of priority threats at the nexus of public safety and national security.

The National Network, via the National Fusion Center Association, developed in 2014 a three-year strategy in response to the recommendations in the July 2013 House of Representatives Homeland Security Committee Majority Staff Report on the National Network of Fusion Centers,11 which includes all major law enforcement associations and state and local field-based entities, and holds the promise of bringing policy and governance processes at all levels of government to a new level of maturity.

---

VII. 2015 – Forward: Scaling the ISE

PM-ISE views responsible information sharing as a journey, not a destination. Requirements for responsible information sharing evolve with the current threat environment, technology, and societal trends. Likewise, efforts to align agency-based polices and management processes across a myriad of stakeholders is a continual process.

Early in 2015, GAO released its biennial update to Congress calling out continued progress against terrorism-related information sharing high risk list areas of concern previously identified in 2013.

In our 2013 high risk update, we listed nine action items that were critical for moving the Environment forward. In that report, we determined that two of those action items—demonstrating that the leadership structure has the needed authority to leverage participating departments and updating the vision for the Environment—had been completed. Since then, the Program Manager and key departments have achieved four of the seven remaining action items and have made progress on the remaining three actions.12

Still, the GAO maintains government-wide terrorism-related information sharing—i.e. development of the ISE - on its high risk list. GAO’s criteria in this regard focuses on governance, strategy, policy, supporting enterprise architecture and related technical frameworks, management processes, and performance outcomes. The GAO’s 2015 report noted sustained and substantial Executive Branch progress. The ISE’s lines of effort address GAO’s recommendations. Next year, the ISE expects to report substantial implementation of the 2012 NSISS SIP, demonstrate scaling of Project Interoperability, and highlight continued government-wide program outcomes causally linked to these efforts.

Targeted outcomes will address GAO’s recommendations. Progress is setting the groundwork for agency leadership—federal, state, and local—to make effective and independent calculations and support scaling the ISE. Adoption by departments and agencies, under their own authorities to integrate effective government-wide responsible information sharing, is the required critical support for scaling the ISE. The result will be creation of a self-sustaining cycle of responsible information sharing to protect the American people and enhance national security.

PM-ISE continues to plan, oversee, and manage the implementation of the ISE as envisioned by the Congress in IRTPA. The attributes of the ISE are about broad responsible information sharing aspirations. There is wide interest and adoption with Project Interoperability, creating options for policy makers by lessening friction, reducing cost, and speeding agility around horizontal and inter-governmental collaboration. The ISE has made significant progress executing policy guidance, aligning the domestic architecture, and advancing information interoperability frameworks. The stage is set for scaling and sustained maturation of the ISE as partners continue to respond to a constantly changing threat environment.