Key Recommendation	Enabling Recommendation
Key Recommendation KR1.1: Establish a strategic national approach for taking full advantage of the opportunity presented by the IoT.	
	Enabling Recommendation ER1.1.1: Strongly consider including IoT in the federal critical and emerging technology list. Enabling Recommendation ER1.1.2: Further improve and elevate inter-agency coordination. Enabling Recommendation ER1.1.3: Fully fund existing IoT research, development, deployment and demonstrations. Enabling Recommendation ER1.1.4: Upgrade legacy federally-owned or operated IoT infrastructure that is integrated into government facilities, assets, and operations. (Updated)
	Enabling Recommendation ER1.1.5: Specify and use, for federally-funded projects, IoT technologies and applications that are energy efficient, sustainable, and “smart”.
	Enabling Recommendation ER1.1.6: Continue to support and fund technology research, through industry, university and its national labs, to further advance and accelerate the development of IoT technologies and its enabling Enabling Recommendation ER1.1.7: Lead the way in facilitating IoT adoption promotion by adopting IoT technologies and systems for its own internal operations and
Key Recommendation KR1.2: Accelerate IoT technology adoption as well as manufacturing for small businesses and startup organizations. This can be done via policies, procedures, and funding methods that specifically target them.	
	Enabling Recommendation ER1.2.1: Accelerate adoption of IoT technologies manufactured by small business and startup organizations through targeted Federal Government programs, policies, procedures, and funding methods. Enabling Recommendation ER1.2.2: Accelerate the adoption of IoT technologies manufactured by small business and startup organizations.
Key Recommendation KR1.3: Promote international collaboration in IoT adoption across global supply chains to share knowledge, best practices, and resources.	
	Enabling Recommendation ER1.3.1: Create internationally-compatible data minimization guidance related to IoT devices, aligning with the NIST Privacy Framework and NIST Cybersecurity Framework principles.

Key Recommendation	Enabling Recommendation
Key Recommendation KR2.1: Promote collaborative development across industries to adopt existing industry standards and protocols.	
	Enabling Recommendation ER2.1.1: Advocate for the implementation and adoption of interoperable data standards for public safety IoT. Enabling Recommendation ER2.1.2: Promote and, if necessary, develop a protocol for data exchange standards for IoMT (Internet of Medical Things) for interoperability, and promote the adoption of these standards. Enabling Recommendation ER2.1.3: Promote the development and use of standards for supply chain logistics, traceability, and assurance. Enabling Recommendation ER2.1.4: Promote standards and protocols for IoT technology in supply chain management to provide assurance of interoperability, reliability, and security across various IoT systems and devices.
Key Recommendation KR2.2: Establish methods to foster interoperability for IoT technology to the greatest extent possible, through the use of consistent models, protocols, application interfaces, and schemas. (Updated)	
	Enabling Recommendation ER2.2.1: Facilitate interoperability through the development of a consistent data taxonomy for the sharing and exchange of data collected from IoT and non-IoT sources. Enabling Recommendation ER2.2.3: Promote and adopt industry led standards, guidelines, and protocols for minimum baseline interoperability for IoT technologies to the greatest extent possible.
Key Recommendation KR2.3: Expand and improve programs that ensure sufficient availability, reliability and connectivity for IoT in all areas of the country.	

Enabling Recommendation ER2.3.1: Promote continued U.S. leadership on spectrum policy by continuing to make licensed and unlicensed spectrum available via spectrum sharing, repurposing underutilized federal spectrum and spectrum auctions.

Enabling Recommendation ER2.3.2: Increase funding and accelerate implementation of broadband deployment across rural America.

Enabling Recommendation ER2.3.3: Actively promote and support the adoption of satellite narrowband IoT systems, with the aim of improving connectivity, data collection, and decision-making in rural and remote areas, resulting in economic growth.

Key Recommendation	Enabling Recommendation
Key Recommendation KR3.1: Provide specific and consistent cybersecurity guidance for IoT providers and adopters to ensure secure operations in a whole-of-government approach.	
	Enabling Recommendation ER3.1.1: Strengthen cybersecurity measures focused on IoT across supply chain networks to address concerns around data privacy, security, confidentiality, trust, and potential risks associated with increased connectivity and interdependence of IoT systems. Enabling Recommendation ER3.1.2: Consider additional ways to highlight those vulnerabilities most likely to be applicable to IoT product developers. Enabling Recommendation ER3.1.3: Accelerate the promotion and adoption of procedures and methods to make the electric grid enabled by IoT more reliable and resilient. Enabling Recommendation ER3.1.4: Support domestic IoT cybersecurity labeling initiatives by establishing incentives for manufacturers to participate. Enabling Recommendation ER3.1.5: Congress must ensure adequate and continuing funding for the Cyber Trust Mark consumer education campaign. Enabling Recommendation ER3.1.6: Establish appropriate U.S. representation regarding international harmonization of IoT cybersecurity programs and requirements as such programs are established for domestic market sectors. Enabling Recommendation ER3.1.7: Recognize and promote existing standards and conformity assessment schemes that facilitate cybersecurity in industrial IoT applications.
Key Recommendation KR3.2: Congress should pass comprehensive federal privacy legislation.	

Enabling Recommendation ER3.2.1: Congress should include IoT in proposed comprehensive privacy legislation.

Key Recommendation KR3.3: The White House and Congress should facilitate/support the development of a Data and Privacy Policy Framework.

Enabling Recommendation ER3.3.1: Promote "Privacy by Design" in IoT device development, deployment, and implementation.

Enabling Recommendation ER3.3.2: Establish clear policies for third-party data sharing and IoT device data use.

Enabling Recommendation ER3.3.3: Encourage the use of plain language in IoT privacy policies.

Enabling Recommendation ER3.3.4: Develop and implement privacy transparency mechanisms.

Enabling Recommendation ER3.3.5: Endorse universal opt-out signals for IoT devices and companion apps.

Enabling Recommendation ER3.3.6: Require IoT Privacy information on new car automobile “Monroney Stickers”.

Enabling Recommendation ER3.3.7: Add "Location Tracking Enabled" notice to U.S. E-labeled IoT devices. (Update pending)

Enabling Recommendation ER3.3.8: Promote the use, development, and implementation of Privacy-Enhancing Technologies (PETs) in IoT systems.

Enabling Recommendation ER3.3.9: Follow NIST sanitization standards for government automobiles before resale, and encourage NIST sanitization standards for automobiles before resale.

Key Recommendation KR3.4: Support trusted IoT architectures and infrastructure that enable supply chain provenance, and traceability of IoT systems starting from chip design and manufacturing. (Updated)

Enabling Recommendation ER3.4.1: Incentivize trusted multi-stakeholder alliances and collaboration networks to speed development and adoption of connected end-to-end IoT solutions. (Updated)

Enabling Recommendation ER3.4.2: Promote collaborative IoT platforms that align stakeholder business incentives and encourage businesses to work together, fostering innovation, efficiency, and competitiveness. (Updated)

Enabling Recommendation ER3.4.3: Encourage trusted digital twins and digital threads for accelerating IoT adoption across supply chains and IoT application markets. (Updated)

Enabling Recommendation ER3.4.4: Facilitate the creation of IoT business ecosystems that enable new business models and revenue streams. (Updated)

Enabling Recommendation ER3.4.5: Promote consistent levels of IoT device hardware and software identity documentation information included in trusted digital threads for Software IoT supply chains. (Updated)

Key Recommendation	Enabling Recommendation
Key Recommendation KR4.1: Integrate the needs of the future IoT workforce into existing initiatives and programs with industry, academia and state and local government efforts. (Updated)	Enabling Recommendation ER4.1.1: Review the National Cyber Workforce and Education Strategy and align and integrate any special or unique needs and considerations of the IoT workforce. (Updated) Enabling Recommendation ER4.1.2: Collaborate with industry, academia, and state and local government to create an IoT trained workforce embedded in target high priority industry sectors. (Updated) Enabling Recommendation ER4.1.3: Collaborate with industry, academia, state and local governments and private investors to create and place workforce in industries and areas of opportunity. (Updated) Enabling Recommendation ER4.1.4: Establish “student loan forgiveness” programs in exchange for providing critical emerging technology (IoT, data science, cybersecurity, etc.) skills to municipalities and agencies.

Key Recommendation	Enabling Recommendation
Key Recommendation KR5.1: Consider new financial models for sustaining and supporting programs when considering IoT project feasibility.	
	Enabling Recommendation ER5.1.1: Encourage other financial or funding models to help adopting organizations to sustain and support IoT projects. Enabling Recommendation ER5.1.2: Develop programs and grants to help underserved and less developed communities benefit from IoT adoption.
Key Recommendation KR5.2: Develop a comprehensive Agricultural IoT Strategy.	
	Enabling Recommendation ER5.2.1: The government should consider fully funding the deployment of a “farm of the future” setup in representative universities nationwide. This nationwide test-farm IoT network should span different forms of agriculture, including, but not limited to broadacre, horticulture, livestock, and aquaculture. Enabling Recommendation ER5.2.2: Support and promote industry and Standards Development Organization (SDO) efforts to address interoperability of agricultural systems and machinery. Enabling Recommendation ER5.2.3: Facilitate small farm/ranch adoption of IoT technologies. Enabling Recommendation ER5.2.4: Support enactment of federal “right to repair” legislation to address the inability of agricultural producers to service their smart equipment. Enabling Recommendation ER5.2.3: Provide overarching regulatory guidance for the drone industry. (Updated)

Key Recommendation KR5.3: The government should implement specific actions to further promote IoT adoption through smart communities.

Enabling Recommendation ER5.3.1: The government should facilitate and support the development and use of smart community and “IoT-related sustainable infrastructure” reference models.

Enabling Recommendation ER5.3.2: Develop Smart Community and Sustainability Extension Partnerships (SCSEP).

Enabling Recommendation ER5.3.3: The government should facilitate opportunities for adoption and equity of benefits of IoT and smart technologies for local communities.

Enabling Recommendation ER5.3.4: Facilitate smart community opportunities and IoT adoption for rural communities that have broadband infrastructure, have received broadband infrastructure funding or have completed broadband infrastructure build-outs.

Enabling Recommendation ER5.3.5: Support and promote industry and SDO efforts to address interoperability of smart communities (including smart buildings, energy and utilities, traffic)

Enabling Recommendation ER5.3.6: Facilitate small to medium city adoption of smart community technologies.

Enabling Recommendation ER5.3.7: Facilitate equity in realization of smart community benefits.

Key Recommendation KR5.4: Promote IoT adoption that will improve public safety.

Enabling Recommendation KR5.4.1: Create a stockpile of public safety IoT devices that is available for immediate access. (Revision pending)

	Enabling Recommendation KR5.4.2: Include privacy and data usage policies in federally-funded public safety and smart community projects that use IoT technologies.
	Enabling Recommendation KR5.4.3: Include IoT considerations (including IoT adoption and utilization plans) in federal procurements that support public safety applications.
	Enabling Recommendation KR5.4.4: Create a program that enables local communities to purchase IoT systems or IoT enabled systems for public safety applications.
Key Recommendation KR5.5: Promote IoT adoption in the health care industry.	
	Enabling Recommendation ER5.5.1: Promote IoMT as an enterprise priority, including to healthcare facilities' leadership teams.
	Enabling Recommendation ER5.5.2: Facilitate cybersecurity in IoT in smart medical devices and equipment, including wearables, in-home devices, community IoT-related systems, and a continuum of care.
	Enabling Recommendation ER5.5.2: Facilitate cybersecurity in IoT in smart medical devices and equipment, including wearables, in-home devices, community IoT-related healthcare systems, and a continuum of care.
	Enabling Recommendation ER5.5.3: Facilitate and support the use and adoption of healthcare IoT in rural communities.
	Enabling Recommendation ER5.5.4: Facilitate the adoption of AI in IoT in healthcare through improved AI research, development and workforce improvement.

Adoption Theme	
	Enabling Recommendation ER5.5.5: Enact HIPAA-like protection for users' medical data in mobile applications and IoT devices.
Key Recommendation KR5.6: Promote IoT adoption that will improve sustainability and environmental monitoring.	
	Enabling Recommendation ER5.6.1.: Support development of IoT environmental data repositories to better enable open and available data. (Needs discussion)
	Enabling Recommendation ER5.6.2: Facilitate and support the research, development and deployment of low cost Air Quality sensors.
	Enabling Recommendation ER5.6.3: Implement a nationwide IoT-based Water Monitoring Infrastructure) to expand the nationwide water monitoring system, including water treatment facilities.
	Enabling Recommendation ER5.6.5: Facilitate and promote the use and integration of IoT technologies to complement and support wide area environmental situational awareness capabilities to monitor and inform on a variety of environmental conditions and hazards in environmentally sensitive areas.
Key Recommendation KR5.7: Promote IoT adoption in Smart Transit and Transportation.	
	Enabling Recommendation ER5.7.1: Promote development and adoption of policies, procedures and funding methods that can accelerate the adoption of smart, connected, and electrified transportation technologies.

Key Recommendation	Enabling Recommendation
Key Recommendation KR6.1: Monitor and evaluate progress of IoT adoption for supply chain logistics.	
	Enabling Recommendation ER6.1.1: Establish and provide financial incentives to encourage businesses to adopt IoT technologies in their supply chain operations by reducing the initial investment costs and perceived risks associated with the implementation of IoT solutions. (Restored)
	Enabling Recommendation ER6.1.2: Apply an appropriate mix of policies, incentives, and requirements to support sustainable and scalable growth in the domestic IoT manufacturing supply chain. (Restored)
Key Recommendation KR6.2: Facilitate public-private partnerships (PPPs) focused on IoT adoption to facilitate collaboration and knowledge sharing between government agencies, businesses, technology providers, and academia.	
	Enabling Recommendation ER6.2.1 Foster orchestrated Public-Private Partnerships (PPPs) promoting network effects among connected enterprises and across supply chains. Enabling Recommendation ER6.2.2: Encourage digital infrastructure initiatives to the digital transformation of enterprise business processes.
	Enabling Recommendation ER6.2.3: Promote the enablement and use of trusted digital threads, trusted digital marketplaces and platform-based business ecosystems.

Key Recommendation KR6.3: The government should actively promote and support the adoption of AI applications to improve decision-making, optimize resource utilization, and enhance productivity. (Updated)

Enabling Recommendation ER6.3.1: The government should promote trusted AI-IoT platforms across circular supply chains and ecosystems to improve transparency and sustainability and drive economic growth.