

Leadership

Updated Key Recommendation	Updated Enabling Recommendation	Rating	Consensus?
Key Recommendation KR1.1: The IoTAB recommends a strategic national approach for taking full advantage of the opportunity presented by the IoT.		1	Include
	Enabling Recommendation ER1.1.1: IoT <del>must</del> should be added back to the critical and emerging technology list.	1	Include
	Enabling Recommendation ER1.1.2: Congress <b>and the Executive Branch</b> should further improve and elevate inter-agency coordination. (amended)	1	Include

Updated Key Recommendation	Updated Enabling Recommendation	Rating	Consensus?
New Key Recommendation applying a national strategic approach to federal activities in IoT adoption		2	Include
	Enabling Recommendation ER1.1.3: The government should fully fund existing IoT research, development, deployment and demonstrations already approved and taking place throughout the federal government. (amended)	1	Include
	Enabling Recommendation ER1.1.4: The government should consider upgrading legacy federal owned or operated <del>buildings</del> assets that have inadequate security in their connected systems. (amended)	2	Include
	Enabling Recommendation ER1.1.5: The government should specify and use, for federally-funded projects, IoT technologies and applications that are energy efficient, sustainable, and “smart”.	2	Include
	Enabling Recommendation ER1.1.6: The federal government should continue to support and fund technology research, through industry, <del>university</del> academia and its national labs, to further advance and accelerate the development of IoT technologies and its enabling infrastructure. (amended)	1	Include

Leadership

Updated Key Recommendation	Updated Enabling Recommendation	Rating	Consensus?
Key Recommendation KR1.2: The government should accelerate IoT technology adoption by small businesses and support small business IoT technology development and manufacturing. <b>(amended)</b>		2	Include
	Enabling Recommendation ER1.2.1: The government should accelerate the adoption of IoT technologies manufactured by small businesses and startup organizations through targeted Federal Government programs, policies, procedures, and funding methods.	2	Include
	Enabling Recommendation ER1.2.2: The government should accelerate the adoption of IoT technologies manufactured by small businesses and startup organizations. <b>(Amended)</b>	2	Include
Key Recommendation KR1.3: The government should promote international collaboration in IoT adoption across global supply chains to share knowledge, best practices, and resources. <b>(amended)</b>		1	Include?
	Enabling Recommendation ER1.3.1: The government should create internationally compatible data minimization guidance related to IoT devices, aligning with the NIST Privacy Framework and NIST Cybersecurity Framework principles.	2	Include

Modernization

Updated Key Recommendation	Updated Enabling Recommendation	Rating	Include
<p>Key Recommendation KR2.1: The government should foster policies that encourage responsible and equitable sharing of IoT data and thereby drive economic growth, societal benefits, and sustainability.</p>	<p>Enabling Recommendation ER2.1.1: The government should establish templates or best practices for clear and robust corporate policies regarding data sharing, usage, and licensing among parties in the IoT ecosystem.</p> <p>Enabling Recommendation ER2.1.2: The government should partner with industry and collaborate with international allies to develop and support comprehensive data sharing policies that stimulate economic growth, societal benefits, and sustainability.</p> <p>Enabling Recommendation ER2.1.3: The government should establish data repositories for privately collected data.</p>		
<p>Key Recommendation KR2.2: The government should establish methods to foster interoperability for IoT technology, including through the use of consistent models, protocols, application interfaces, and schemas.</p>	<p>Enabling Recommendation ER2.2.1: The government should work with various organizations to facilitate interoperability through the development of a consistent data taxonomy for the sharing and exchange of data collected from IoT and non-IoT sources.</p> <p>Enabling Recommendation ER2.2.2: The government should support research and industry-led standards in areas such as telematics and sensor technologies for automated vehicles.</p> <p>Enabling Recommendation ER2.2.3: The government should promote and adopt industry led standards, guidelines, and protocols for minimum baseline interoperability for smart transportation technologies and corresponding transportation infrastructure (i.e., sensors in roads, cameras at intersections).</p>		

<p>Key Recommendation KR2.3: The government should promote collaborative development across industries to adopt existing industry standards and protocols.</p>		2	Include
	<p>Enabling Recommendation ER2.3.1: The government should advocate for the implementation and adoption of interoperable data standards for public safety IoT.</p>	2	Include
	<p>Enabling Recommendation ER2.3.2: The government should 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.</p>	2	Include
	<p>Enabling Recommendation ER2.3.3: The government should promote the development and use of standards for supply chain logistics, traceability, and assurance.</p>	2	Include
	<p>Enabling Recommendation ER2.3.4: The government should 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.</p>	2	Include
<p>Key Recommendation KR2.4: The federal government should expand and improve programs that ensure sufficient availability, reliability and connectivity for IoT in all areas of the country.</p>		2	Include
	<p>Enabling Recommendation ER2.4.1: To promote continued U.S. leadership on spectrum policy, the government should continue to make licensed and unlicensed spectrum available via spectrum sharing, repurposing underutilized federal spectrum and spectrum auctions.</p>	2	Include
	<p>Enabling Recommendation ER2.4.2: The government should increase funding and accelerate implementation of broadband deployment across rural America.</p>	2	Include
	<p>Enabling Recommendation ER2.4.3: The government should 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.</p>	2	Include

## Trust

Updated Key Recommendation	Updated Enabling Recommendation	Rating	Consensus?
Key Recommendation KR3.1: The Federal Government should <b>enhance efforts to</b> provide specific and consistent cybersecurity guidance for IoT providers and adopters to ensure secure operations in a whole-of-government approach.		1	Include
	Enabling Recommendation ER3.1.1: The government should 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.	2	Include
	Enabling Recommendation ER3.1.2: The government should consider additional ways to highlight those vulnerabilities most likely to be applicable to IoT product developers.	2	Include
	Enabling Recommendation ER3.1.3: The government should accelerate the promotion and adoption of procedures and methods to make the electric grid enabled by IoT more reliable and resilient.	2	Include
	Enabling Recommendation ER3.1.4: Congress and regulatory agencies should support domestic IoT cybersecurity labeling initiatives by establishing incentives for manufacturers to participate.	2	Include
	Enabling Recommendation ER3.1.5: Congress must ensure adequate and continuing funding for the Cyber Trust Mark consumer education campaign.	2	Include
	Enabling Recommendation ER3.1.6: The government should establish appropriate U.S. representation regarding international harmonization of IoT cybersecurity programs and requirements as such programs are established for domestic market sectors.	2	Include
	Enabling Recommendation ER3.1.7: The government should recognize and promote existing standards, and conformity assessment schemes that facilitate cybersecurity in industrial IoT applications.	2	Include
Key Recommendation KR3.2: Congress should pass comprehensive federal privacy legislation.		1	
	Enabling Recommendation ER3.2.1: Congress should include IoT in proposed comprehensive privacy legislation.	2	Include
Key Recommendation KR3.3: The White House and Congress should facilitate/support the development of a Data and Privacy Policy Framework.		1	Include
	Enabling Recommendation ER3.3.1: The government should promote "Privacy by Design" in IoT device development, deployment, and implementation.	1	Include
	Enabling Recommendation ER3.3.2: The government should establish clear policies for third-party data sharing and IoT device data use	2	Include
	Enabling Recommendation ER3.3.3: The government should encourage the use of plain language in IoT privacy policies.	2	Include
	Enabling Recommendation ER3.3.4: The government should develop and implement privacy transparency mechanisms.	2	Include

Trust

Updated Key Recommendation	Updated Enabling Recommendation	Rating	Consensus?
	Enabling Recommendation ER3.3.5: The government should endorse universal opt-out signals for IoT devices and companion apps.	2	Include
	Enabling Recommendation ER3.3.6: The government should require IoT Privacy information on new car automobile “Monroney Stickers”.	2	Include
	Enabling Recommendation ER3.3.7: The government should add "Location Tracking Enabled" notice to U.S. E-labeled IoT devices.		
	Enabling Recommendation ER3.3.8: The government should promote the use, development, and implementation of Privacy-Enhancing Technologies (PETs) in IoT systems.	1	Include
	Enabling Recommendation ER3.3.9: The government should follow NIST sanitization standards for government automobiles before resale, and should encourage NIST sanitization standards for automobiles before resale.	2	Include

Workforce

Updated Key Recommendation	Updated Enabling Recommendation	Rating	Consensus?
Key Recommendation KR4.1: The government should invest in and promote IoT-related aspects of education and workforce.			
	Enabling Recommendation ER4.1.1: The government promote continuing education, professional development, and vocational training for IoT integration in supply chain management.		
	Enabling Recommendation ER4.1.2: The government should develop educational initiatives that include IoT, targeting workforce development, and enhancing business, government, and consumer data privacy and trust.		
Key Recommendation: The federal government should integrate the needs of the future IoT workforce into existing initiatives and programs with industry, academia and state and local government efforts.			
	Enabling Recommendation 1. The government should review the National cyber workforce development strategy and align and integrate any special or unique needs and considerations of the IoT workforce		
	Enabling Recommendation 2. The federal government should create partnerships with industry, academia, and state and local government to create workforce around certain critical digital and non-digital skills, including cybersecurity, privacy, AI, data science, and systems integration, etc.		
	Enabling Recommendation 3. The federal government should create partnerships with industry, academia, state and local governments and private investors to create workforce in industries that have traditionally not been digital, or have attracted significant digital talent (cities, industrial type industries like mining, construction, manufacturing, etc.) or in geographic areas that have struggled with recruiting people (rural areas, tribal lands, etc.).		

Adoption

Updated Key Recommendation	Updated Enabling Recommendation	Rating	Consensus?
Key Recommendation KR5.1: The government should consider new financial models for sustaining and supporting programs when considering IoT project feasibility.		2	Include
	Enabling Recommendation ER5.1.1: The government should encourage other financial or funding models to help <del>select-adopting organizations to</del> sustain and support in <del>evaluating</del> IoT projects <del>feasibility</del> .	2	Include
	ER5.1.2 was Moved with workforce considerations		
	Enabling Recommendation ER5.1.3: The government should consider developing programs and grants to allow underserved and less developed communities <b>to benefit from the adoption of IoT.</b>	2	Include
Key Recommendation KR5.2: The government should develop a comprehensive strategy for agricultural IoT.		1	Include
	Enabling Recommendation ER5.2.1: The government should consider fully funding the deployment of a “farm of the future” program at various universities. <del>setup in every land-grant university nationwide.</del> This nationwide test-farm IoT network should be representative of <del>should span</del> different forms of agriculture, including, but not limited to broadacre, horticulture, livestock, and aquaculture.	1	Include
	Enabling Recommendation ER5.2.3: The government should <del>provide</del> ensure that is sufficient overarching regulatory guidance for the drone industry. The Federal Government should also provide funding for the drone industry for additional research in order that existing technical obstacles <del>can be overcome.</del>		
	Enabling Recommendation ER5.2.4: The government should support and promote industry and SDO efforts to address interoperability of agricultural systems and machinery.	2	Include
	Enabling Recommendation ER5.2.5: The government should facilitate small farm/ranch adoption of IoT technologies.	2	Include
	Enabling Recommendation ER5.2.6: The government should support enactment of federal “right to repair” legislation to address the inability of agricultural producers to service their smart equipment.	2	Include
Key Recommendation KR5.3: The government should implement specific actions to further promote IoT adoption through smart <del>cities</del> communities.		2	Include
	Enabling Recommendation ER5.3.1: The government should facilitate and support the development and use of smart community <del>city</del> and <b>"IoT-related sustainable infrastructure"</b> reference models.	2	Include
	Enabling Recommendation ER5.3.2: The government should consider the development of Smart Community <del>City</del> and Sustainability Extension Partnerships (SCSEP).	2	Include

Adoption

Updated Key Recommendation	Updated Enabling Recommendation	Rating	Consensus?
	Enabling Recommendation ER5.3.3: The government should facilitate opportunities for adoption and equity of benefits of IoT and smart city technologies for local communities <del>governments (cities, counties), regional entities (water districts, sanitation districts, air quality districts, etc.) and utility companies.</del>	2	Include
	Enabling Recommendation ER5.3.3A: The government should facilitate smart community opportunities and adoption of IoT for those rural communities that have broadband infrastructure, have received broadband infrastructure funding or have completed broadband infrastructure build-outs.	2	Include
	Enabling Recommendation ER5.3.4: The government should support and promote industry and SDO efforts to address interoperability of smart communities <del>cities</del> (including smart buildings, energy and utilities, traffic)	2	Include
	Enabling Recommendation ER5.3.5: The government should facilitate small to medium city adoption of smart <del>city</del> community technologies.	2	Include
	Enabling Recommendation ER5.3.6: The government should facilitate equity in realization of smart <del>city</del> community benefits.	2	Include
Key Recommendation KR5.4: The government should implement specific actions to promote IoT adoption that will improve public safety.		2	Include
	Enabling Recommendation ER5.4.2: For public safety and smart city projects supported by federal grants that utilize IoT technologies (such as cameras, plate readers, and other applications that may be used to identify people), the grantor agencies should include a provision specifying the need for the awardees to develop privacy and data usage policies in collaboration with the communities that they serve as part of the deployment.	2	Include
	Enabling Recommendation ER5.4.3: Federal RFPs/RFIs that support public safety applications should include a requirement for bidders to consider how IoT can be incorporated into it, as well as to include an IoT user adoption and utilization plan as part of the evaluation process.	2	Include
	Enabling Recommendation ER5.4.4: The federal government should create a program that enables local communities to purchase IoT systems or IoT enabled systems for public safety applications. This includes systems that support law enforcement, fire, emergency management services, and public safety access points.	2	Include
Key Recommendation KR5.5: The government should implement specific actions to promote IoT adoption in the health care industry.		2	Include
	Enabling Recommendation ER5.5.1: The government should promote IoMT as an enterprise priority, including to healthcare facilities' leadership teams.	2	Include



Adoption

Updated Key Recommendation	Updated Enabling Recommendation	Rating	Consensus?
	Enabling Recommendation ER5.5.2: Facilitate cybersecurity in IoT in smart medical devices and equipment, including wearables, in-home devices, community <del>IoT</del> IoT-related healthcare systems, and a continuum of care.	2	Include
	Enabling Recommendation ER5.5.3: Facilitate and support the use and adoption of healthcare IoT in rural communities	2	Include
	Enabling Recommendation ER5.5.4: Facilitate the adoption of AI in IoT in healthcare through improved AI research, development and workforce improvement.	2	Include
	Enabling Recommendation ER5.5.5: The government should enact HIPAA-like protection for users' medical data in mobile applications and IoT devices.	2	Include
Key Recommendation KR5.6: The government should implement specific actions to promote IoT adoption that will improve sustainability and environmental monitoring.		2	Include
	Enabling Recommendation ER5.6.2: The government should facilitate and support the research, development and deployment of low cost Air Quality sensors.	2	Include
	Enabling Recommendation ER5.6.3: The government should implement a nationwide IoT-based Water Monitoring Infrastructure to expand the nationwide water monitoring system, including water treatment facilities.	2	Include
	Enabling Recommendation ER5.6.4: The government should utilize IoT Technologies to facilitate carbon transparency across economic sectors.	2	Include
	Enabling Recommendation ER5.6.5: The government should 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.	2	Include
Key Recommendation KR5.7: The government should implement specific actions to promote IoT adoption in Smart Transit and Transportation.		2	Include
	Enabling Recommendation ER5.7.1: The government should promote the development and adoption of policies, procedures and funding methods that can accelerate the adoption of smart, connected, and electrified transportation technologies.	2	Include

Economy

Updated Key Recommendation	Updated Enabling Recommendation	Rating	Consensus?
Key Recommendation KR6.1: The government should monitor and evaluate progress of IoT adoption for supply chain logistics.		1	Include
Key Recommendation KR6.2: The government should help establish and foster 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 The government should foster orchestrated Public-Private Partnerships (PPPs) promoting network effects among connected enterprises and across supply chains.		
	Enabling Recommendation ER6.2.2: The government should subsidize initiatives for digital infrastructure supporting the digital transformation of enterprise business processes including design, production, procurement, distribution.		
	Enabling Recommendation ER6.2.3: The government should 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.			
	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.		

Parking Lot

Updated Key Recommendation	Updated Enabling Recommendation	Next Action
		Benson will create and submit a new recommendation inspired by ER1.1.4
Key Recommendation KR2.1: The government should foster policies that encourage responsible and equitable sharing of IoT data and thereby drive economic growth, societal benefits, and sustainability.		Consensus to Remove from the report
	Enabling Recommendation ER2.1.1: The government should establish templates or best practices for clear and robust corporate policies regarding data sharing, usage, and licensing among parties in the IoT ecosystem.	Consensus to Remove from the report
	Enabling Recommendation ER2.1.2: The government should partner with industry and collaborate with international allies to develop and support comprehensive data sharing policies that stimulate economic growth, societal benefits, and sustainability.	Consensus to Remove from the report
	Enabling Recommendation ER2.1.3: The government should establish data repositories for privately collected data.	Consensus to Remove from the report
		Steve will draft amended language
	Enabling Recommendation ER2.2.1: The government should work with various organizations to 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 ER2.2.2: The government should support research and industry-led standards in areas such as telematics and sensor technologies for automated vehicles.	
	Enabling Recommendation ER2.2.3: The government should promote and adopt industry led standards, guidelines, and protocols for minimum baseline interoperability for smart transportation technologies and corresponding transportation infrastructure (i.e., sensors in roads, cameras at intersections).	
	Enabling Recommendation ER3.3.7: The government should add "Location Tracking Enabled" notice to U.S. E-labeled IoT devices.	Debbie will work with Mike to identify an applicable method for achieving this labeling, if possible
		Retain in parking lot for next pre-read; Greg will add (including supporting text to the report)
	Enabling Recommendation 1. The government should review the National cyber workforce development strategy and align and integrate any special or unique needs and considerations of the IoT workforce	Retain in parking lot for next pre-read; Greg will add (including supporting text to the report)
	Enabling Recommendation 2. The federal government should create partnerships with industry, academia, and state and local government to create workforce around certain critical digital and non-digital skills, including cybersecurity, privacy, AI, data science, and systems integration, etc.	Retain in parking lot for next pre-read; Greg will add (including supporting text to the report)
	Enabling Recommendation 3. The federal government should create partnerships with industry, academia, state and local governments and private investors to create workforce in industries that have traditionally not been digital, or have attracted significant digital talent (cities, industrial type industries like mining, construction, manufacturing, etc.) or in geographic areas that have struggled with recruiting people (rural areas, tribal lands, etc.).	Retain in parking lot for next pre-read; Greg will add (including supporting text to the report)
	Enabling Recommendation ER5.1.2: The government should consider "student loan forgiveness" programs in exchange for providing critical emerging technology (IoT, data science, cybersecurity, etc.) skills to municipalities and agencies.	Retain in parking lot for next pre-read; Greg will add (including supporting text to the report)

Parking Lot

Updated Key Recommendation	Updated Enabling Recommendation	Next Action
	Enabling Recommendation ER5.2.3: The government should <del>provide</del> ensure that is sufficient overarching regulatory guidance for the drone industry. The Federal Government should also provide funding for the drone industry for additional research in order that existing technical obstacles can be overcome.	Steve will review and revise as needed
	Enabling Recommendation KR5.4.1: The government should create a stockpile of public safety IoT devices that is available for immediate access.	Ann and Nicole will review and revise as needed
	Enabling Recommendation ER5.6.1.: The government should support development of IoT environmental data repositories to better enable open and available data.	Retain in parking lot
Key Recommendation KR3.4: The government should support trusted architectures and conduct a limited pilot to assess the value of trusted digital threads for provenance and traceability across the supply chain.		Greg, Benson, and Tom will review and revise as needed
	Enabling Recommendation ER3.4.1: The government should incentivize multi-stakeholder alliances and collaboration for trusted end-to-end solutions across supply chains.	Greg, Benson, and Tom will review and revise as needed
	Enabling Recommendation ER3.4.2: Support collaborative IoT platforms that align stakeholder business incentives.	Greg, Benson, and Tom will review and revise as needed
	Enabling Recommendation ER3.4.3: The government should encourage the use of digital threads for connected supply chains.	Greg, Benson, and Tom will review and revise as needed
	Enabling Recommendation ER3.4.4: The government should facilitate the creation of business ecosystems that enable new business models and revenue streams	Greg, Benson, and Tom will review and revise as needed
	Enabling Recommendation ER3.4.5: The government should promote consistent levels of IoT device hardware and software identity documentation information included in trusted digital threads for Software IoT supply chains.	Greg, Benson, and Tom will review and revise as needed
	Key Recommendation KR6.2: The government should help establish and foster public-private partnerships (PPPs) focused on IoT adoption to facilitate collaboration and knowledge sharing between government agencies, businesses, technology providers, and academia.	Greg, Benson, and Tom will review and revise as needed
	Enabling Recommendation ER6.2.1 The government should foster orchestrated Public-Private Partnerships (PPPs) promoting network effects among connected enterprises and across supply chains.	Greg, Benson, and Tom will review and revise as needed
	Enabling Recommendation ER6.2.2: The government should subsidize initiatives for digital infrastructure supporting the digital transformation of enterprise business processes including design, production, procurement, distribution.	Greg, Benson, and Tom will review and revise as needed
	Enabling Recommendation ER6.2.3: The government should promote the enablement and use of trusted digital threads, trusted digital marketplaces and platform-based business ecosystems.	Greg, Benson, and Tom will review and revise as needed
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.		Benson will review and revise as needed, to broaden to include other AI considerations and topic areas
	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.	Benson will review and revise as needed, to broaden to include other AI considerations and topic areas
	Recommendation 9: The federal government should select the most appropriate mix of policies, incentives, and requirements to support sustainable and scalable growth in the domestic IoT manufacturing supply chain.	Greg will provide the text for discussion at next meeting; Greg will also review other enabling recommendations for supply chain topics