IoT Advisory Board Meeting #13
May 14-15, 2024

IoT Advisory Board Meeting # 13 Outcomes

- Baseline understanding of the current state of the latest overall report draft
- Approval/rejection of new recommendations for final report
- Approval/rejection process for findings
- Review edits and reconsiderations of existing approved recommendations
- Review report content and graphics
- Understanding and expectations for next steps

Meeting announcements and logistics

- Speaking/Participation
- Send Barbara copies of everything you shared here today
- IoTAB to the Audience: Disclaimer
- Audience comments: please send to us

Who’s out

Day 1 – May 14 (Times given in Eastern time)

Maria – 1-2 pm

Robbie – all day

Ranveer – all day

Arman – 1 – 2 pm EDT

Mike – 2 – 3 pm

Day 2 – May 15 (Eastern time)

Maria - 11am-12

Robbie – all day

Ranveer – all day

Steve – 2 – 3 pm

Dan – 1 – 3 pm

Mike – 2 – 3 pm

Pete - 2:30-3:00, 3:15-3:45

Agenda

Day 1 – May 14 (Times given in Eastern time)

11:00 AM - Chair's overview of the Agenda and Meeting Goals

11:20 AM – Walkthrough of the current report organization

12:00 PM – Review recommendations and complete initial votes on all recommendations

2:00 PM – Break

2:15 PM – Recommendations review continued.

3:30 PM – Complete review of findings

5:00 PM – Adjourn

Day 2 – May 15 (Times in Eastern time)

11:00 AM - Chair review of the day's agenda

11:10 AM - Speaker – Hilary Cain, Alliance for Automotive Innovation

11:30 AM - Speaker – Andrea Amico, Privacy4 Cars

11:50 AM - Questions for speakers

12:15 PM – FCC

12:45 PM - Review of Executive Summary, Introduction, other Sections

2:00 PM – Break

2:15 PM – Motions to reconsider or edit recommendations

3:45 PM - Any additional actions and next steps

4:15 PM – Motion to accept the report as edited at this meeting as final

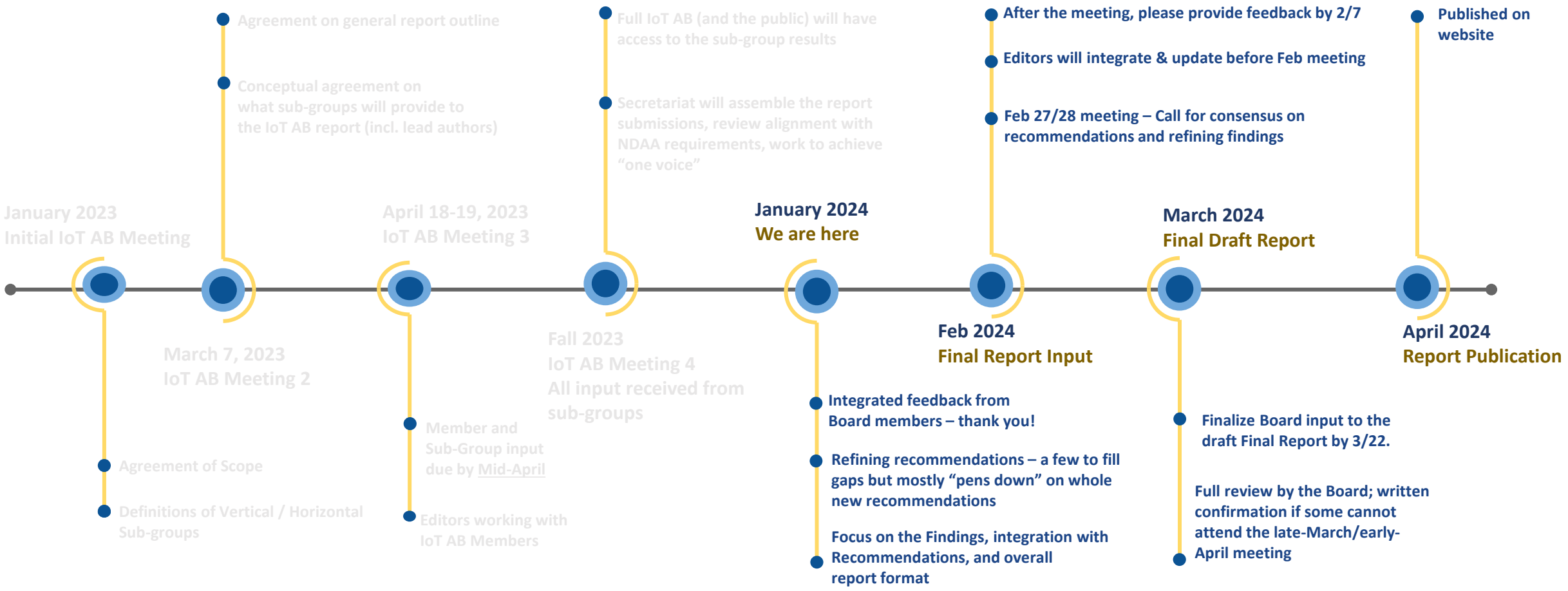
4:45 PM – Chair wrap up

5:00 PM – Adjourn

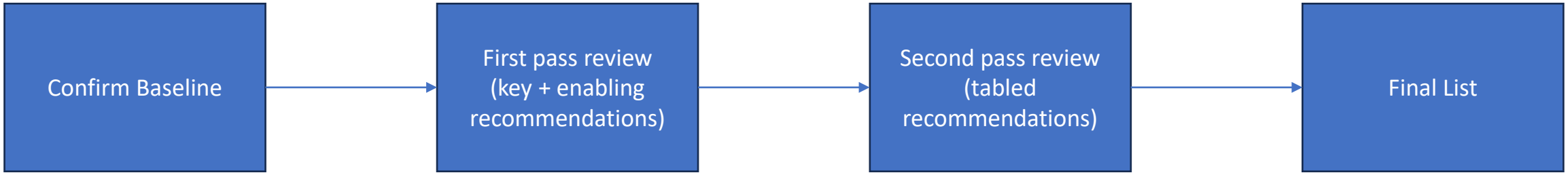
Report Structure

		Current	Target
Exec Summary			10 pages
Introduction	• 3 examples/future scenarios/stories/benefits • Impacts and call to action	4 pages	5 pages
IoT Intro	• IoT tech overview • Specific applications of IoT - consumer, industrial, medical, city • IoT transforms business models • IoT transforms business ecosystems • Current state of IoT • Future state of IoT	34 pages	15 pages
Unlock the IoT enabled Economy Facilitate Adoption Modernize Infrastructure / Establish Trust / IoT Ready Workforce Government Leadership	• 6 themes • 23 findings	64 pages	35 pages
Govt Leadership; Modernize Infrastructure; Establish Trust; IoT enabled economy?; Facilitate adoption; IoT ready workforce	• 6 themes • 22 key recommendations • 81 enabling recommendations	110 pages	60 pages
Miscellaneous	• Title, Table of Contents, Background, Members • Abbreviations, Compliance Table, Appendix A, B	19 pages	15 pages
		231 pages	

Draft IoT AB Timeline to Complete Report Publication in April 2024



Recommendations review process



- Identify missing/omitted recommendations
- Confirm mapping of recommendations to themes, findings
- Confirm mapping of enabling recommendations to key recommendations
- Identify recommendations to be withdrawn

- Identify recommendations requiring additional discussion (FWG and board) and move to second pass
- Rank recommendations 1-2-3
- Review and approve/reject key recommendations and enabling recommendations as a block
- Identify missing recommendations

- Review and approve/reject key recommendations and enabling recommendations as a block
- Identify missing recommendations

1 Recommendations that are strategic, bold, and will have the major impact and whose exclusion will cause someone to notice

2 Recommendations that are strategic "quick wins" – big impact, doable in the short term (existing infrastructure, etc.)

3 Recommendations that
- If we eliminate, no one will notice or care
- Risks confusing or masking the main recommendations ("forest for the trees")

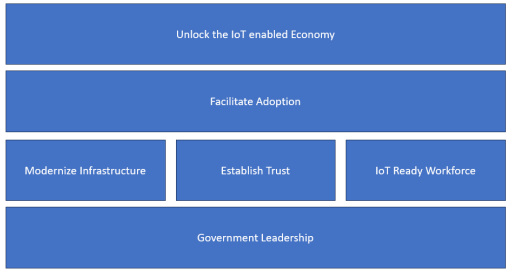
Our process and how it is organized

NDAA topics and charter

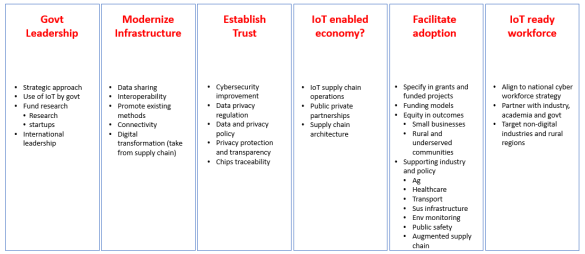
Input

Internal expertise
Speakers
Research
Industry input

Findings



Recommendations



Finding	Key Recommendations
Industry adoption is slower than expected and hindered by a variety of challenges.	All
A lack of coordination at the national level is hindering IoT adoption and operation across the economy and industry sectors. [need writeup]	Strategic approach for IoT
The adoption and operation of innovative IoT applications are hindered by various existing policies and regulations at local, state and federal levels.	Funding models,
Equity in access, opportunities, benefits and outcomes is necessary for the sustainable integration of IoT into all aspects of the national economy and civil society.	Funding models,
Small businesses can reap significant benefits from IoT, but significant barriers hinder adoption.	Small business and startup
Small companies and startups are instrumental in developing many innovative and disruptive technology solutions and services, but face a variety of barriers in getting adoption.	Small business and startup
IoT enables new innovative business models which requires new business and technology platforms and ecosystems to support and scale it.	
Interoperability is a key challenge for IoT across multiple industries.	Interoperability, Standards development
A variety of connectivity challenges is hindering IoT adoption, operation and scaling.	Availability of connectivity
A lack of trust in IoT is a major barrier to widescale adoption.	Cybersecurity guidance, Data Privacy legislation, Data and privacy policy framework, Trusted arch.
Artificial Intelligence (AI) is critical to unlocking and accelerating the value of IoT.	Need an AI recommendation
There is an insufficient number of people in the current workforce with the technical, digital and analytic skills required to develop, integrate and deploy, operate and maintain IoT devices and IoT-enabled systems and applications.	Invest and promote education and workforce dev for IoT [around 4 areas – workforce recruitment, workforce development, Placement into industry, and retention]
Many barriers to IoT adoption due to legacy infrastructure, security, and interoperability require multi-stakeholder platform-based business ecosystem partnerships that align business incentives on high value end-to-end solutions.	

Finding	Key Recommendations
Disconnected supply chains with multiple stakeholders involved pose IoT adoption barriers. Industry specific partnerships using IoT for augmented supply chain logistics reduce risks, speed adoption and fuel economic growth.	
Digitalization of Enterprise Workflows is Foundational in Creating a Trusted Digital Thread for a Continuous Flow of Data Connecting Business Processes, Products, Assets, and Digital Marketplaces Across Value Chains.	
Digital transformation combining digitalization and organizational changes enables IoT product suppliers to become smart-connected suppliers offering new IoT applications and solutions that drive something-as-a-service revenue streams.	
Slow adoption of enterprise digital transformation is the main barrier to IoT adoption. Phased approaches toward creating a Digital First Business are emerging that leverage industry ecosystem partners to drive economic growth.	.
IoT supply chain resilience requires a multinational stakeholder collaboration (app B)	
Precision Agriculture. IoT brings significant value to agriculture, but adoption is slow.	Ag IoT strategy
Smart cities and infrastructure. The development of smart cities in the United States is limited, uneven and slow to develop.	Facilitate IoT in smart cities
Transit and traffic: IoT is transforming transit systems and traffic management with real-time data analytics, intelligent traffic management, and predictive analytics to enhance efficiency, reduce congestion, increase safety, and improve overall transportation experiences.	Facilitate IoT in smart transit and transportation
IoT is transforming healthcare and is poised to revolutionize it, but significant challenges need to be addressed.	Facilitate IoT in health care
IoT supports environmental sustainability through real-time monitoring, optimizing resource usage, and facilitating data-driven decision-making across infrastructure and multiple sectors of the economy.	Facilitate IoT in sustainability and env monitoring

Finding	Key Recommendations
	International collaboration in IoT across supply chains
	Data sharing
	Funding models

Framework of Themes

Unlock the IoT enabled Economy
Realize and maximize the value and benefits of IoT

Facilitate Adoption
Accelerate adoption and remove barriers to IoT consideration and adoption

Modernize Infrastructure
Standards and interoperability, connectivity, digital infrastructure, data sharing

Establish Trust
Cybersecurity, privacy, supply chain integrity

IoT Ready Workforce
Workforce development and empowerment

Government Leadership
Areas where government can take direct action, within its area of authority, to accelerate IoT (international, strategy, legislation, internal use, etc.)

- No national coordination
- Policies & regulations hinder
- Startup barriers

- Interoperability challenges
- Connectivity challenges
- Legacy infrastructure
- Digitalization of workflow
- Digital transformation

- Lack of trust

- Insufficient workforce

- Slow industry adoption
- Equity in access, oppties
- Small business barriers
- Startup barriers
- Disconnected supply chains
- Precision ag value
- Slow smart city adopt
- Value of traffic and transport
- Healthcare barriers
- Env Monitoring value
- Public safety value

- AI and IoT
- Other Tom findings

Govt Leadership

- Strategic approach for IoT
- Small business and startup
- International collaboration in IoT across supply chains

Modernize Infrastructure

- Data sharing
- Interoperability
- Standards development
- Availability of Connectivity

Establish Trust

- Cybersecurity guidance
- Data privacy legislation
- Development of Data and privacy policy framework
- Support trusted architectures

IoT ready workforce

- Invest and promote education and workforce dev for IoT [around 4 areas – workforce recruitment, workforce development, Placement into industry, and retention]

- Align to national cyber workforce strategy
- Partner with industry, academia and govt
- Target non-digital industries and rural regions

Facilitate adoption

- Funding models
- Ag IoT strategy
- Facilitate IoT in smart cities
- Facilitate IoT in public safety
- Facilitate IoT in health care
- Facilitate IoT in sustainability and env monitoring
- Facilitate IoT in smart transit and transportation

IoT enabled economy?

- IoT supply chain operations
- Public private partnerships
- Supply chain architecture

- No national coordination
- Policies & regulations hinder
- Startup barriers

Govt Leadership

- Strategic approach for IoT
- Small business and startup
- International collaboration in IoT across supply chains

- Add IoT to CET list
- Improve interagency coordination
- Fund research, development, deployment and demonstration
- Upgrade legacy fed owned buildings and systems
- Specify IoT in federally funded projects
- Support research and development in IoT tech

- Polices, programs and funding to accelerate adoption of IoT by small businesses
- Accelerate adoption of IoT manufactured by small businesses and startups

- Create internationally compatible data minimization guidance

- Interoperability challenges
- Connectivity challenges
- Legacy infrastructure
- Digitalization of workflow
- Digital transformation

Modernize Infrastructure

- Data sharing
- Interoperability
- Standards development
- Availability of Connectivity

- Establish templates or best practices for policies for sharing, using, and licensing
- Collaborate with international allies to develop/support data sharing policies
- Establish data repositories for privately collected data

- Facilitate interoperability thru development of consistent taxonomy
- Support research and industry led standards for automated vehicles
- Promote/adopt standards for min baseline interoperability in smart transportation and infrastructure

- Advocate for standards in public safety IoT
- Data exchange standards for IoMT
- Standards for supply chain logistics, traceability and assurance
- Standards for IoT in supply chain management

- Make license, unlicensed spectrum available
- Increase funding and accelerate broadband in rural America
- Support satellite narrowband IoT

- Lack of trust

Establish Trust

- Cybersecurity guidance
- Data privacy legislation
- Development of Data and privacy policy framework
- Support trusted architectures

- Strengthen cybersecurity measures on IoT across supply chain networks
- Consider ways to highlight vulnerabilities applicable to IoT product developers
- Accelerate promotion and adoption of methods to make grid more resilient
- Support domestic IoT cybersecurity labeling initiatives
- Ensure adequate funding for cyber trust mark consumer education campaign
- Establish appropriate US representation re: international harmonization of IoT cybersecurity
- Promote existing standards and conformity assessment schemes for industrial IoT applications

- Include IoT in proposed comprehensive privacy legislation

- Promote privacy by design
- Establish clear policies for 3rd party data sharing
- Use plain language in privacy policies
- Develop and implement privacy transparency mechanisms
- Endorse universal opt-out signals
- Privacy info (Maroney stickers) on cars
- Add location tracking enabled notice to devices
- Promote use, deve, and implementation of Privacy Enhancing Technologies
- Follow NIST sanitization stds for govt automobiles before resale

- Incentivize multi-stakeholder alliances for trusted end to end solutions across supply chains
- Support collaborative IoT platforms that align stakeholder business incentives
- Encourage use of digital threads for connected supply chains
- Facilitate creation of business ecosystems that enable new business models and revenue streams
- Promote consistent levels of s/w identity documentation in trusted digital threads for s/w IoT supply chains

- Insufficient workforce

IoT ready workforce

- 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.]

- Promote continuing education, prof dev and vocational training in supply chain mgmt.
- Develop educational initiatives that include IoT, targeting workforce development, and enhancing business, govt, and consumer data privacy and trust

- 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
- 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.
- 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.).

- Slow industry adoption
- Equity in access, oppties
- Small business barriers
- Startup barriers
- Disconnected supply chains
- Precision ag value
- Slow smart city adopt
- Value of traffic and transport
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Facilitate adoption

- Funding models
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- Facilitate IoT in health care
- Facilitate IoT in sustainability and env monitoring
- Facilitate IoT in smart transit and transportation

- Encourage other funding models to sustain and support IoT projects
- Consider student loan forgiveness in exchange for providing critical skills to cities and agencies
- Develop programs and grants to allow underserved communities
    - Farm of the future setup in land grant universities
    - Regulatory guidance for drone industry
    - Promote industry and SDO efforts for interoperability
    - Facilitate small farm/ranch adoption of IoT
    - Support enactment of federal right to repair legislation
- Support development of smart city and sustainable infrastructure reference models
- Support development of smart city and sustainability extension partnerships
- Facilitate adoption and equity of benefits for local govts, regional entities, etc.
- Facilitate smart community oppties for rural communities with broadband infrastructure, or funding for BB
- Promote industry and SDO efforts for interoperability
- Facilitate small and medium city adoption
- Facilitate equity in realization of smart city benefits
    - National stockpile
    - Agencies to specify need for project awardees to develop privacy and usage policies
    - Federal RFI/RFPs to consider IoT, and marketing of service to users
    - Establish program for local communities to purchase and use IoT for public safety
- Promote IoMT as enterprise priority, including by leadership teams
- Facilitate cybersecurity in smart medical devices and equipment
- Facilitate and support use and adoption of healthcare IoT in rural communities
- Facilitate adoption of AI in IoT through research, development and workforce improvement
- Enact HIPAA like protection for users medical data in mobile applications and IoT devices
    - Support development of environmental data repositories
    - Support development of low cost air quality sensors
    - Establish nationwide IoT based water monitoring system
    - Utilize IoT tech to facilitate carbon transparency across economic sectors
    - Promote use of IoT to complement and support wide area environmental situational awareness in remote and sensitive areas
- Promote development and adoption of policies and funding methods that can accelerate smart, connected and electrified transportation technologies

- AI and IoT
- Other Tom findings

IoT Economy

- IoT supply chain operations
- Public private partnerships
- Supply chain architecture

- tbd

- Foster PPPs and promote network effects
- Subsidize initiatives for digital infrastructure supporting digital transformation
- Promote enablement and use of trusted digital threads, digital marketplaces and platform based business ecosystems

- Promote trusted AI-IoT platforms across circular supply chains and ecosystems

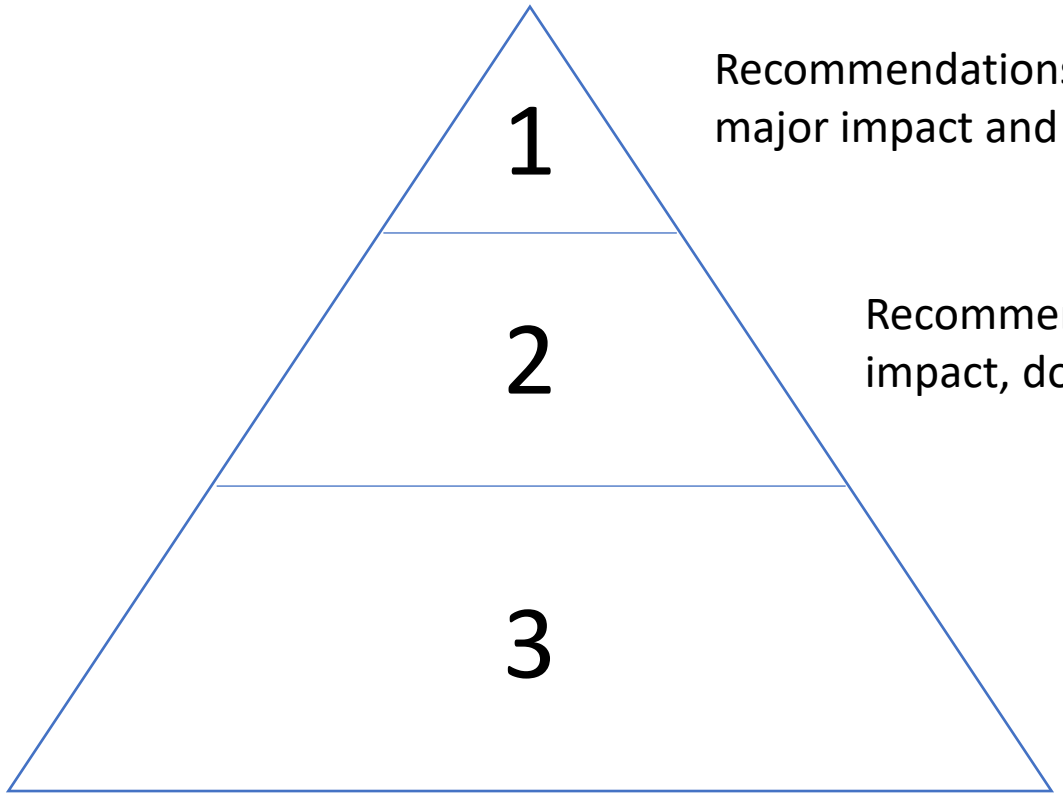
Report structure

Section	Purpose	Content
Executive Summary	Summary of content, findings and recommendations	• Introduction and overview • Summary of the most important content in introduction to IoT section • Table of findings • Table of recommendations
Introduction and overview to IoT	Brief “level setting” about IoT including overview, benefits, capabilities, vision and state of industry	• What can IoT do? • Specific “types” of IoT • Current state of IoT • The future of IoT
Findings	Discussion of opportunities and challenges we learned from speakers, research and sub team discussions. Findings should lead to recommendations	• General findings (cross industry) • Industry findings
Recommendations	Recommendations of the board based on input from speakers, team discussions and other sources. Recommendations should map to one or more findings.	Recommendations are organized into six themes • Government leadership • Establish trust in IoT • Modernize infrastructure • Connect and secure the supply chain • IoT ready workforce • Facilitate industry adoption
Other	Miscellaneous content that doesn’t fit into above categories	• Introduction • Background • Glossary • Appendix content • Compliance matrix • IoT stakeholders

Paring down content (Target 150 pages)

- Consolidate
    - Redundant sections and content
    - Similar recommendations across industries
- Simplify
    - Cut anything that doesn’t directly support the main recommendations, or is important, insightful or relevant
    - Cut anything that will “clutter” up the main messages, findings and recommendations
    - Cut anything that doesn’t have any industry or data to support it
    - Cut anything that is “out of scope”
    - If you or the FWG can’t understand it, simplify it or cut it
    - Identify content where it can be replaced by a graphic or infographic
- Retain
    - Identify the most important, impactful and “move the needle” recommendations
    - Cut or move to appendix “supplementary” recommendations

Recommendations categorization considerations



Recommendations that are strategic, bold, and will have the major impact and whose exclusion will cause someone to notice

Recommendations that are strategic “quick wins” – big impact, doable in the short term (existing infrastructure, etc.)

Recommendations that

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- Risks confusing or masking the main recommendations (“forest for the trees”)

Meeting 11 (Feb 2024) Actions

Action	Who	When

Meeting 11 (Feb 2024) Actions

Action	Who	When

Planning – Next Meeting

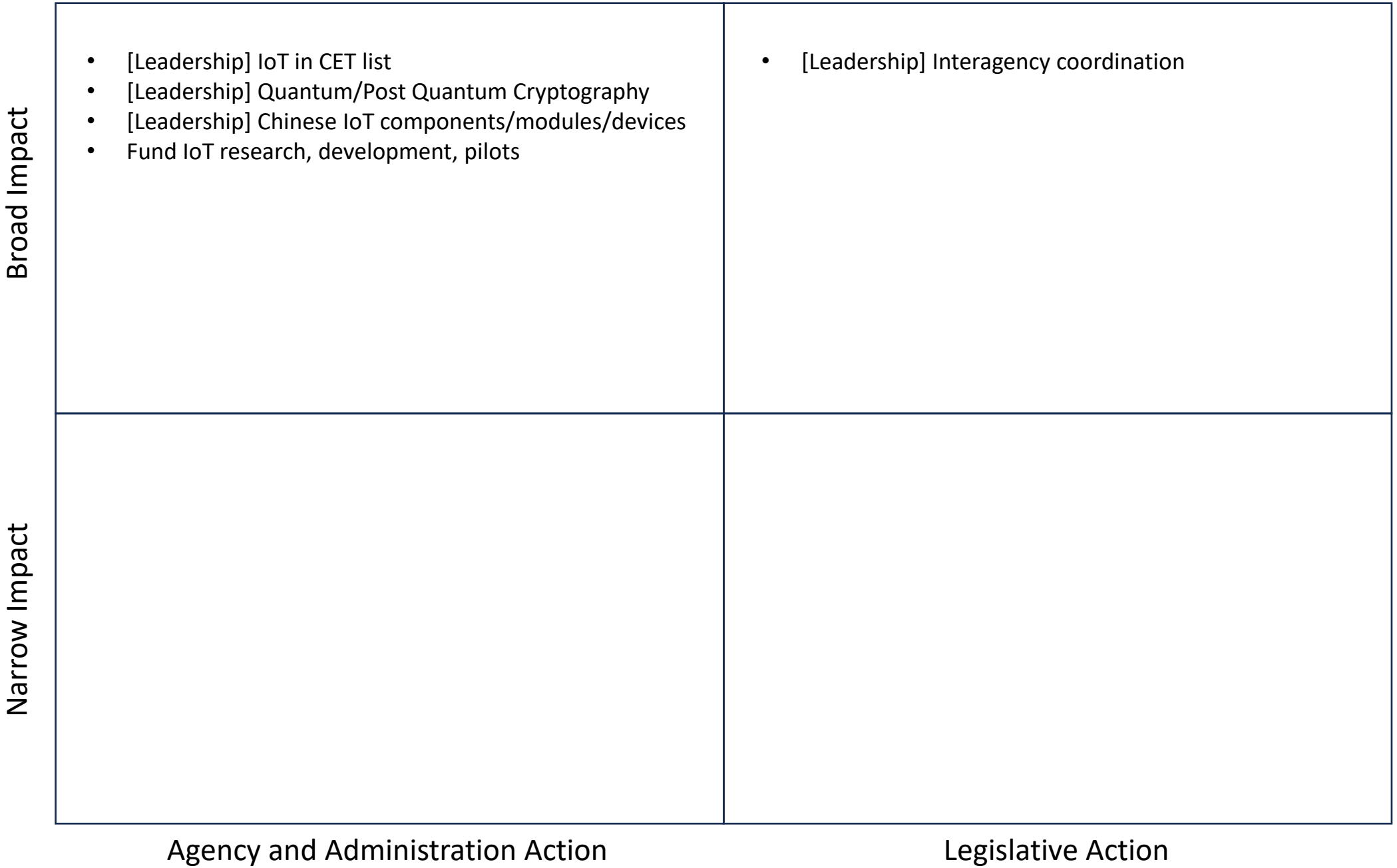
Meeting #12 planning

- Next meeting April 2-3, 2024
- Virtual format
- TBD

Reminder

Please send to Barbara electronic copies of everything you shared here today.

Theme	Objective	Key recommendations
Leadership	create and implement a coherent comprehensive coordinated national IoT strategy,	• Establish a strategic national approach for taking full advantage of the opportunity presented by the IoT. • 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. • Promote international collaboration in IoT adoption across global supply chains to share knowledge, best practices, and resources.
Modernize infrastructure		
Establish trust		
IoT-ready workforce		
Facilitate adoption		
Unlock IoT-enabled economy		


Broad Impact
Narrow Impact
[Leadership] IoT in CET list
[Leadership] Quantum/Post Quantum Cryptography
[Leadership] Chinese IoT components/modules/devices
Fund IoT research, development, pilots
[Leadership] Interagency coordination
Agency and Administration Action
Legislative Action