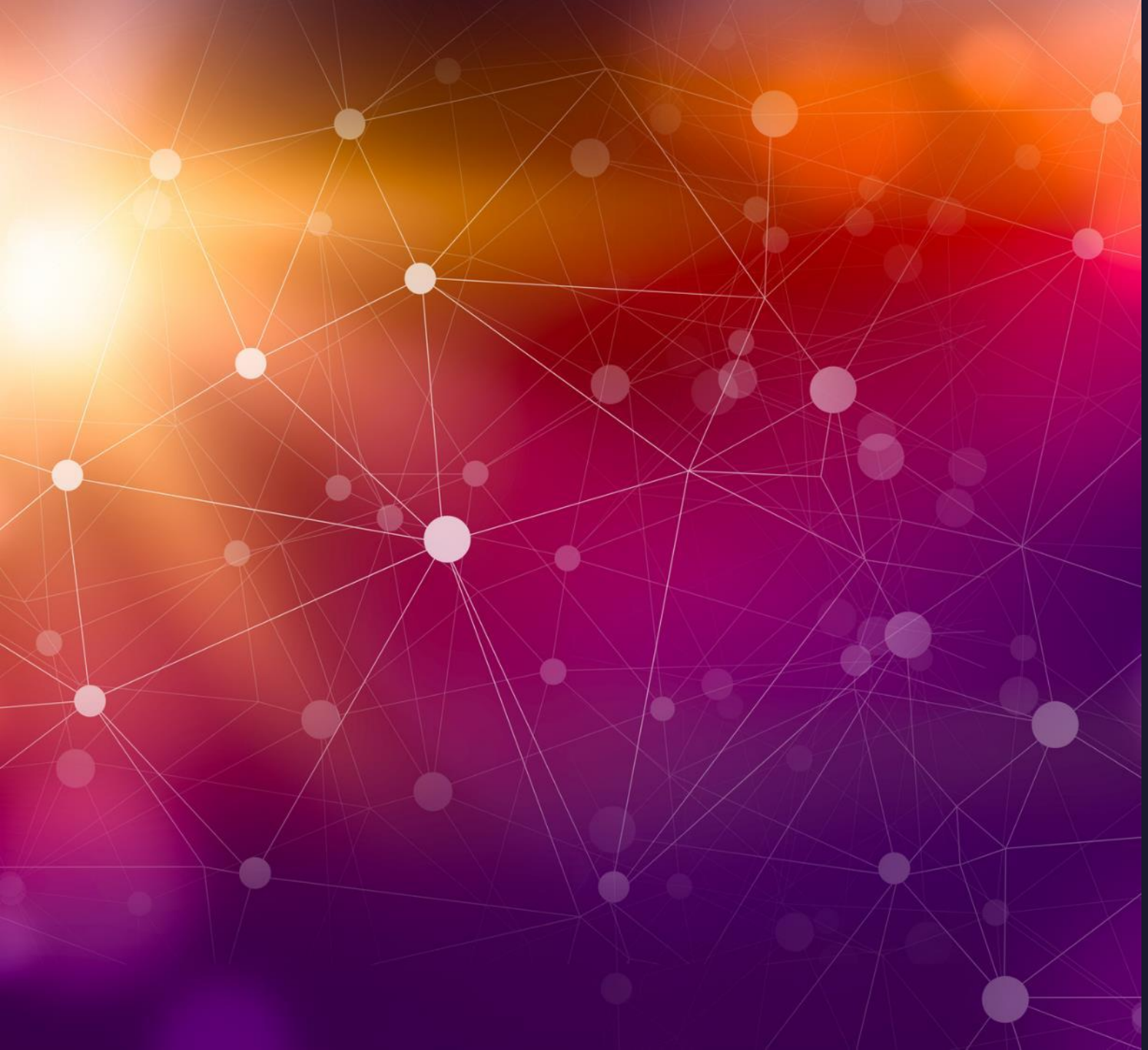

Removing Barriers to IoT Adoption

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National Cybersecurity Center of Excellence

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Agenda

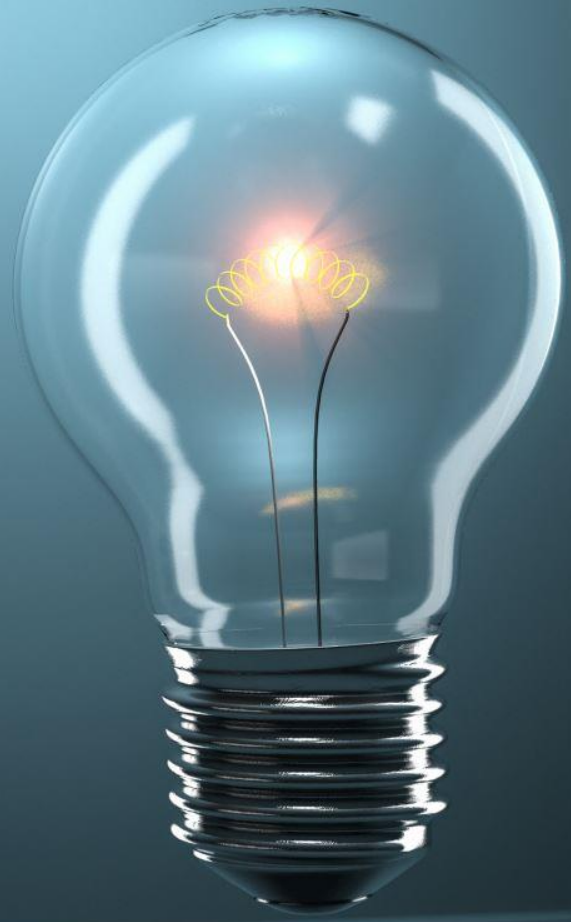
- Key Barriers & Opportunities
- Clear Standards for Technology Providers & Adopters
- Digital Public Infrastructure
- Dependable Supply Chain
- Public/Private Partnership

Key Barriers

- Cost of development, implementation, and maintenance
- Complex integration due to fragmentation and technology sprawl
- Cybersecurity and privacy concerns
- Supply chain challenges – availability, authenticity, turbulence
- Workforce skill gaps – lack of knowledge and/or trust in technology
- Business transformation – fundamental shift in business model

Opportunities

- Clear standards for technology providers & technology adopters
  - Data standards, integration, and communication protocols
  - Cybersecurity & Privacy (devices and software)
- Digital public infrastructure
- Dependable supply chain
- Public/Private partnership



The current landscape without clear standards is overly complex and expensive

- Competing proprietary solutions
- Incompatible protocols
- Stranded solutions when vendors exit
- Increased complexity and total cost of ownership

The adoption of IoT can be accelerated by creating clear and consistent standards for technology providers & adopters

Cybersecurity & Privacy

Challenge: Adopters struggle to evaluate and compare potential vendors

OPPORTUNITIES

Minimum Cybersecurity Capabilities

Guidelines/requirements based on device classification

Product Labels

Help manufacturers communicate capabilities

Help adopters understand, evaluate, and compare cybersecurity & privacy capabilities

Software Bill of Materials (SBOM)

Enable vulnerability management programs

Data Standards & Communication Protocols

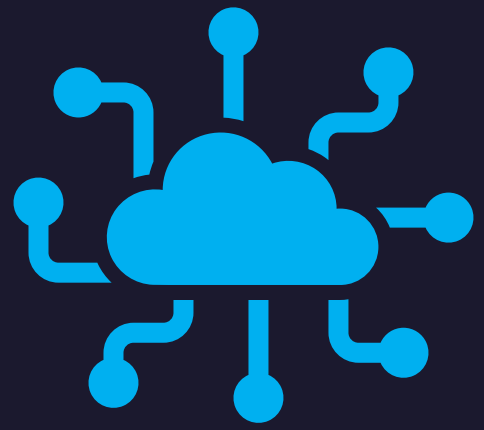
OPPORTUNITIES FOR IMPROVEMENT – THE "WHAT"

- Data Standards / Governance / Sharing
  - Shared data formatting & ontologies provide a common language to facilitate integration and data sharing
  - Data sharing ecosystem reaches beyond IoT
- Communication Protocols
  - Proprietary solutions drive cost and complexity
- Clarity around data ownership and use

IMPACT OF SOLVING – THE "WHY"

- Simplify and accelerate integration
- Improve device interoperability
- Reduce total cost of ownership
- Allow product teams to focus on value-added differentiation

Digital Public Infrastructure



- **Challenge:** The cost of core infrastructure deployment is a significant hurdle
- **Opportunity:** Lowering the cost of IoT connectivity will reduce the barrier to entry
- Digital Public Infrastructure for IoT (multiple ways to get there, variety of options)
  - Shared gateway infrastructure
  - Public Wi-Fi networks
  - Low-cost cellular transport for IoT devices outside the range of other wireless networks
- Potential drawbacks and concerns
  - Building trust – Privacy & confidentiality – Reliability – Maintaining high-speed & low-latency connectivity

Dependable Supply Chain

Challenge: Supply chain challenges demand massive investments and require repeat acts of heroism to mitigate availability crises, constant turbulence, lack of transparency, and dependability/security/trust

Supply Chain Improvement Opportunities

- Chip Availability & Component Supply
- Supply Chain Transparency & Security
  - Ability to understand & mitigate supply chain disruptions
  - Real-time data & reasonable lead times
  - Clear standards of quality & authenticity
- American Manufacturing

Public/Private Partnership

- Development of standards
- Facilitate data sharing
- Training initiatives & education programs
- Financial incentives to foster adoption and accelerate growth
- Business transformation

Thank you!

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Q&A and Discussion