Software and Supply Chain Assurance Spring Forum

Domestic and International Critical Infrastructure
Efforts In Support Of SSCA

Coloring Outside the Lines at NDIA

Aligning SSCA-Related Initiatives in NDIA

Dave Chesebrough

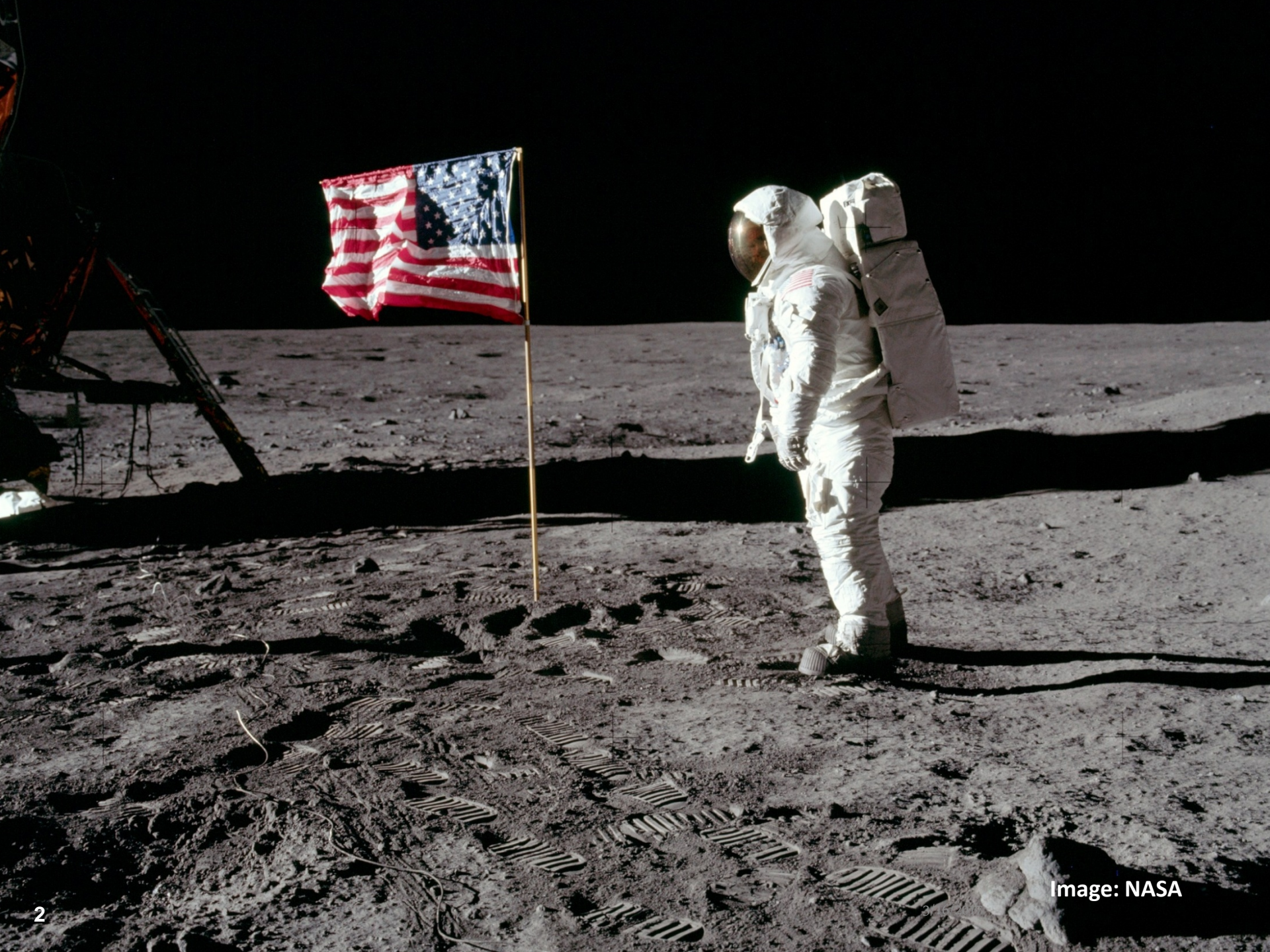**Vice President, Program Development**

March 15, 2017

2

Image: NASA

Moon Landing or Warm Bagel?

NDIA

Apollo Guidance Computer had less processing power than a Toaster oven today

Image: NASA

Image: Best Buy Catalog

2 KB of memory
operating at 2.048 MHz

128 KB of flash memory
operating at 8 MHz

TI MSP430F5418A Microcontroller

1. e4 c6 2. d4 d5 3. Nc3 dxe4

1997

Image: STAN HONDA/AFP/Getty Images

Faster, Smaller, Cheaper, More Connected

NDIA
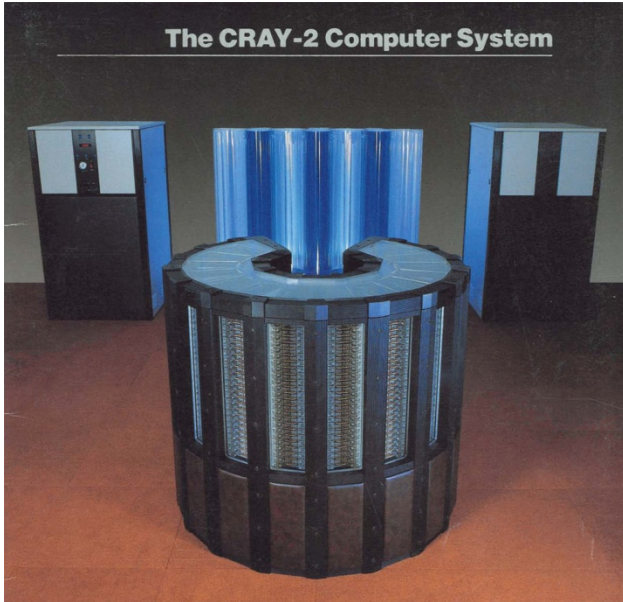
Image: Cray research Inc

=

Image: Apple, Inc.

 + =

Image: Apple, Inc.

Source: Experts Exchange

As measured in GFLOPS

The Challenge

1. Information technology ubiquity

- Exponential Growth in Networks and Devices
- Digital Innovation and Transformation
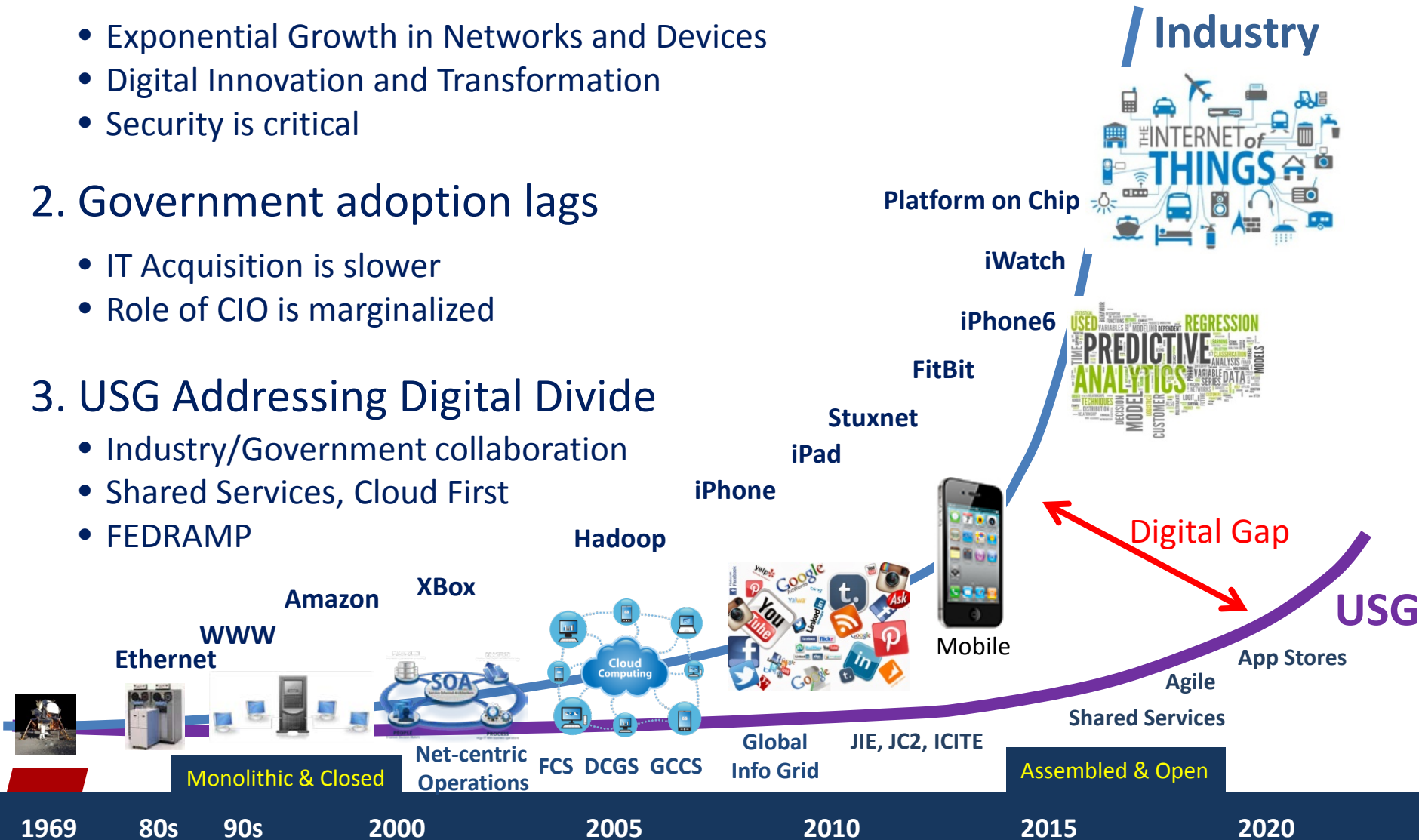- Security is critical

2. Government adoption lags

- IT Acquisition is slower
- Role of CIO is marginalized

3. USG Addressing Digital Divide

- Industry/Government collaboration
- Shared Services, Cloud First
- FEDRAMP

Social   Cloud   Analytics   Mobile   Cyber

Industry

THE INTERNET of THINGS

Platform on Chip

iWatch

iPhone6

FitBit

PREDICTIVE ANALYTICS REGRESSION

Stuxnet

iPad

iPhone

Digital Gap

Hadoop

USG

XBox

App Stores

Amazon

WWW

Ethernet

SOA

Cloud Computing

Mobile

Agile

Shared Services

Net-centric Operations   FCS   DCGS   GCCS   Global Info Grid   JIE, JC2, ICITE

Monolithic & Closed

Assembled & Open

| 1969 | 80s | 90s | 2000 | 2005 | 2010 | 2015 | 2020 |

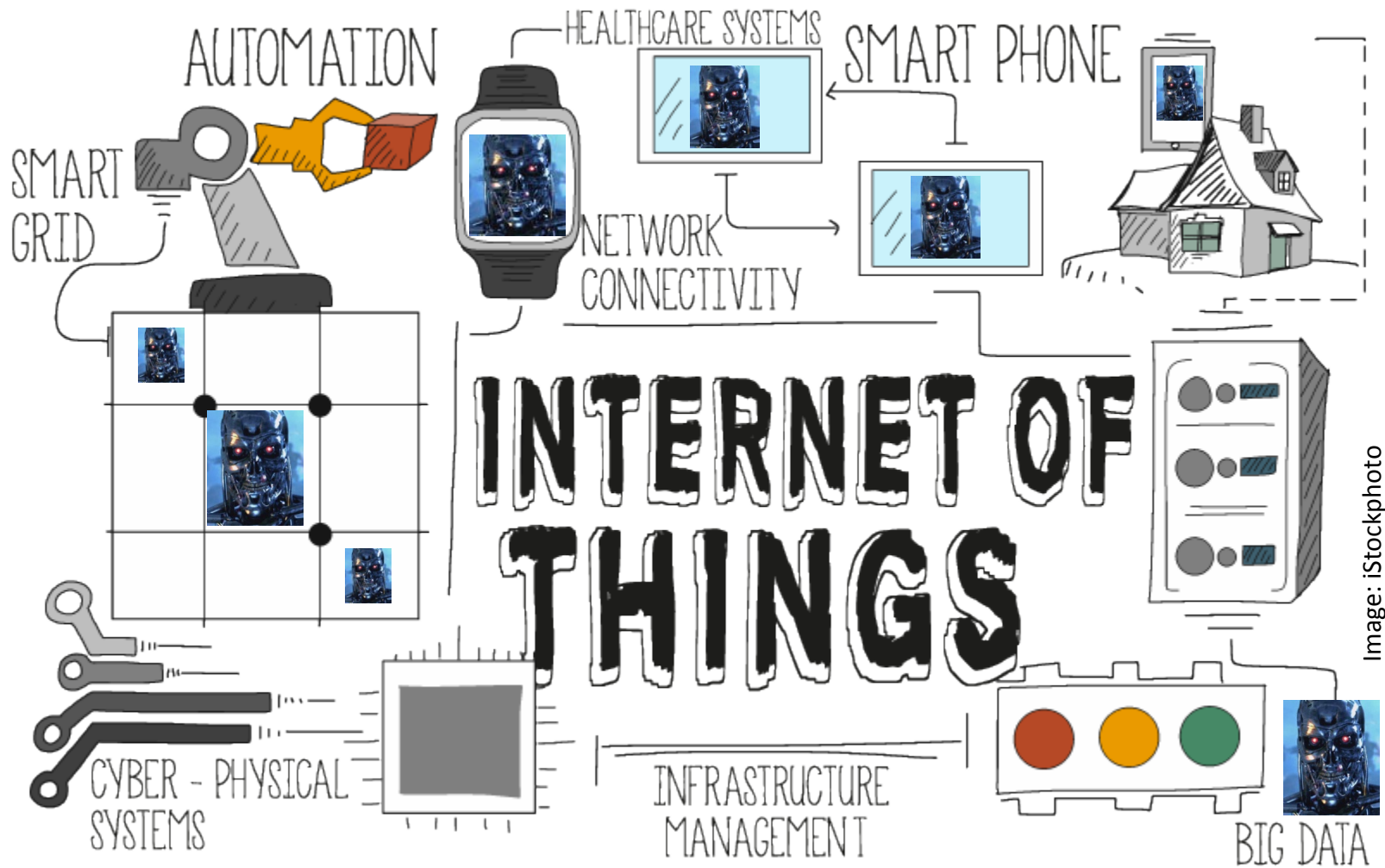2015 Survey: Over 25% of IT workers believe Skynet will become real

Source: Betanews.com

Image Credit Orion Pictures

Image: iStockphoto

"**Ecosystems are the future of digital**"

Peter Sondergaard, SVP, Gartner Research

Initiatives Related to SSCA

NDIA

- **Cybersecurity**
  - DFARS 252.204-7012 & NIST 800-171 implementation
    - Covered Defense Information (?)
    - Flowdown and reporting, primes and supply chains, legal/contractual issues, Small Business Impacts

    Divisions: Cyber, Manufacturing Supply Chain Committee, Small Business, Procurement, Systems Engineering SSE Committee

    Chapters: All 25

  - Cybersecurity for Advanced Manufacturing (CFAM)
    - Second study – AT&L sponsoring
    - Operational vice business systems and networks

    Divisions: Cyber, Manufacturing, Systems Engineering

NDIA

- **Supply Chain Risk Management**
  - Sustainability in Design
    - 70% of lifecycle cost is in sustainment – determined in development
    - Acquisition – sustainment disconnects
    - Life-cycle sustainment planning
  - Assurance of integrity
  - Resilience and quality
  - Counterfeits, malware/malicious code
  - Obsolescence, tech data, IP, sources, reverse engineering
  - Workforce

  Divisions: Cyber, Manufacturing, Systems Engineering

Trusted Microelectronics Working Group

NDIA

- **Advanced military capabilities depend on microelectronics**
- **DoD is less than 1.5% of market**
  - $5 Billion of $339 Billion global market
- **HV IC Fab is mostly offshore**
  - US taxes and regulations add nearly $1 B to cost of a fab plant in the US (source: SIA)
  - China investing heavily in the market
- **DoD <u>must</u> have trustable microelectronics**
  - ASICs, FPGAs, Microprocessors, Logic Application Specific Standard Products, Memories, A-D Converters, Interface Chips

Trusted Microelectronics Working Group

NDIA

- ## DoD has 12 or more efforts assessing trust regimes for semiconductors
  - No substantial involvement of Industry
- ## Trusted Microelectronics Working Group (TMWG) established to involve industry
  - TM WG has four teams, final recommendations briefed in March at GOMATECH 17
    - Future Needs & System Impact of Microelectronics Technologies
    - Trustable Leading Edge Technology Access
    - Trustable Microelectronics Standard Products
    - New Methods to Instill Trust in Semiconductor Fabrication
  - NDIA plans to extend and expand this activity
    - Need to address assemblies and other aspects of IC fab and integration

3/16/2017

Challenges

- N4 Supply Chain Surety
  - Provenance, Integrity, Chain of Custody, Anti-tamper
- Cybersecurity in all forms
- Trust mechanisms for microelectronics
- AMC Counterfeit Parts and Obsolescence
- Additive Manufacturing
- AI and Autonomy
- Model-based Systems Engineering
- Digital Thread/Digital Twin
- Adoption of IPv6
  - 340×10^{36} addresses

Summary

- **Assurance is a team sport**
- **It depends on multiple factors**
  - Silicon to ether
- **First step in synergy is awareness, followed by building on common interests**
- **NDIA has a diverse community**
- **Collaborative efforts will generate better results**

3/16/2017

Contact Information

Dave Chesebrough
Vice President, Program Development
dchesebrough@ndia.org
(703) 247-2597