ASTM INTERNATIONAL
Helping our world work better

Aligning the Standards and Innovation Communities to Benefit All

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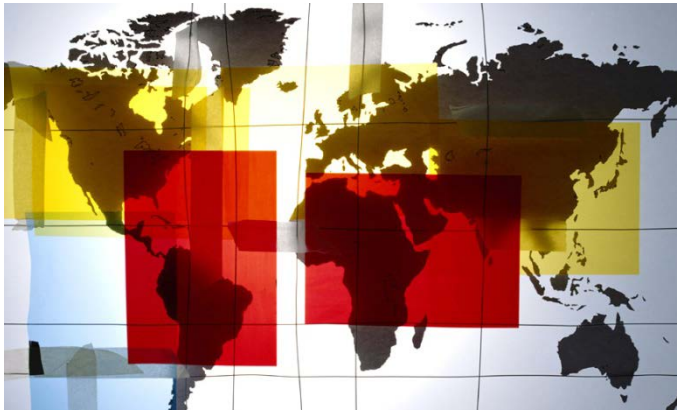
Council on Ionizing Radiation Measurements & Standards (CIRMS)

www.astm.org

What is ASTM?

A Proven and Practical System



- Established in 1898
- 148 Committees & 12,500+ Standards
- 32,000 members
  - 8,000+ International Members from 135 countries
  - 5,100 ASTM standards used in 75 countries
- Accreditation:
  - American National Standards Institute (ANSI)
  - Standard Council of Canada (SCC)
- Process complies with WTO principles: Annex 4 of WTO/TBT Agreement

Business Model

- Innovative Development and delivery of information
- A common sense approach: industry driven
- Market relevant globally
- No project costs

Important. Every Day.

The Role of ASTM Standards

- **Ensures safety, quality and reliability**
- **Emerging Industry Support**: Standards are a foundation to build upon
- **Responsive:** innovations, new challenges, new technology and new markets
- **Industry Lead:** Effective and relevant across diverse markets
- **Built on Consensus**: 90% approval; balanced and equal
- **Helping Everyone**: all stakeholders involved directly impacts content
- **Voluntary until Referenced**: contracts, regulations, codes, and laws around the world.

White Paper: Innovation & Commercialization

Kathie Morgan, ASTM International President

"More than ever before, businesses throughout the world need high-quality standards that evolve in tandem with rapid advances in 3D printing, nanotechnology, robotics, and other cutting-edge fields.

Together, we can meet that challenge by creating aligned roadmaps, by maximizing participation in standards development, and more."

What We Have Heard from Industry:

Lower R&D Costs

– “If a technology or system has a standard in place, it will lower my R&D costs”

Gain Competitive Edge

– “In the standardization process, I will get insider knowledge and early access to information”

Shorten Cycles

– “If standardization is happening either before or during my research and prototyping, I can cut my time to market”

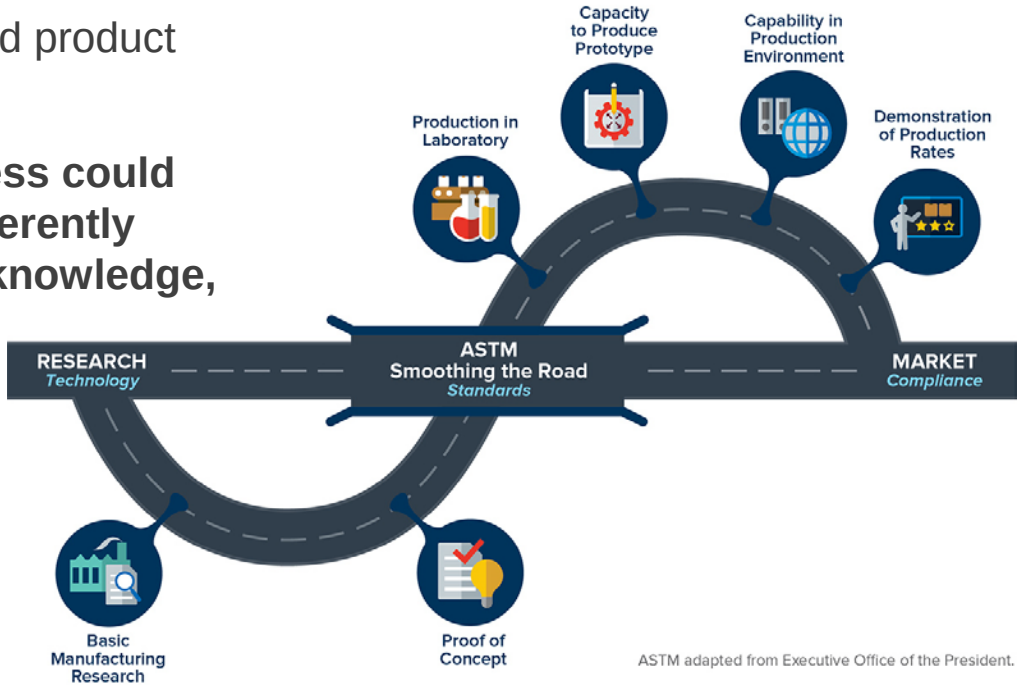
Influence the Technical Foundation

– “If I am at the table, I can influence the requirements and guidelines to benefit my industry, my company, and my product”

Manufacturing Innovation Initiatives

Key Opportunities to Align Efforts

- Goal of new initiatives/institutes is often to support emerging technologies where standards do not yet exist
- Immediate need for standards to speed product testing, qualification, certification, etc.
- **Idea: Standards development process could serve as a conduit because it is inherently collaborative: fosters exchange of knowledge, expertise, perspectives, etc.**



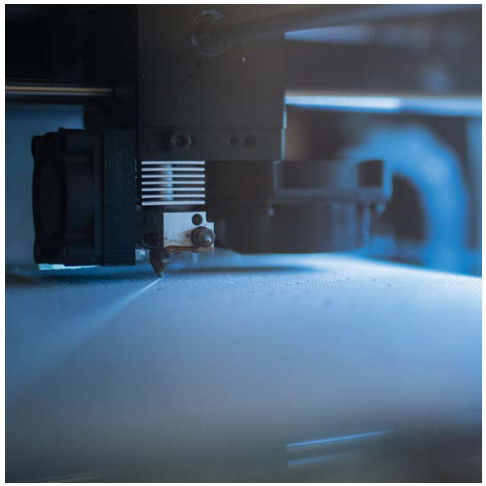
ASTM adapted from Executive Office of the President.

Case Study: Additive Manufacturing

First “Manufacturing USA” Institute

- Memorandum of Understanding
- Goal of institute: mainstream additive manufacturing
- Standards component: transition AM technologies into broader use
  - Example: Researchers extending guidelines to test metal products to those made via AM
- AM Standards Collaborative creates roadmap with priority areas and gaps
- ASTM International / ISO partnership to prevent duplication globally

America Makes



An Integrated Approach Drives Innovation

Early Engagement

Robust Participation

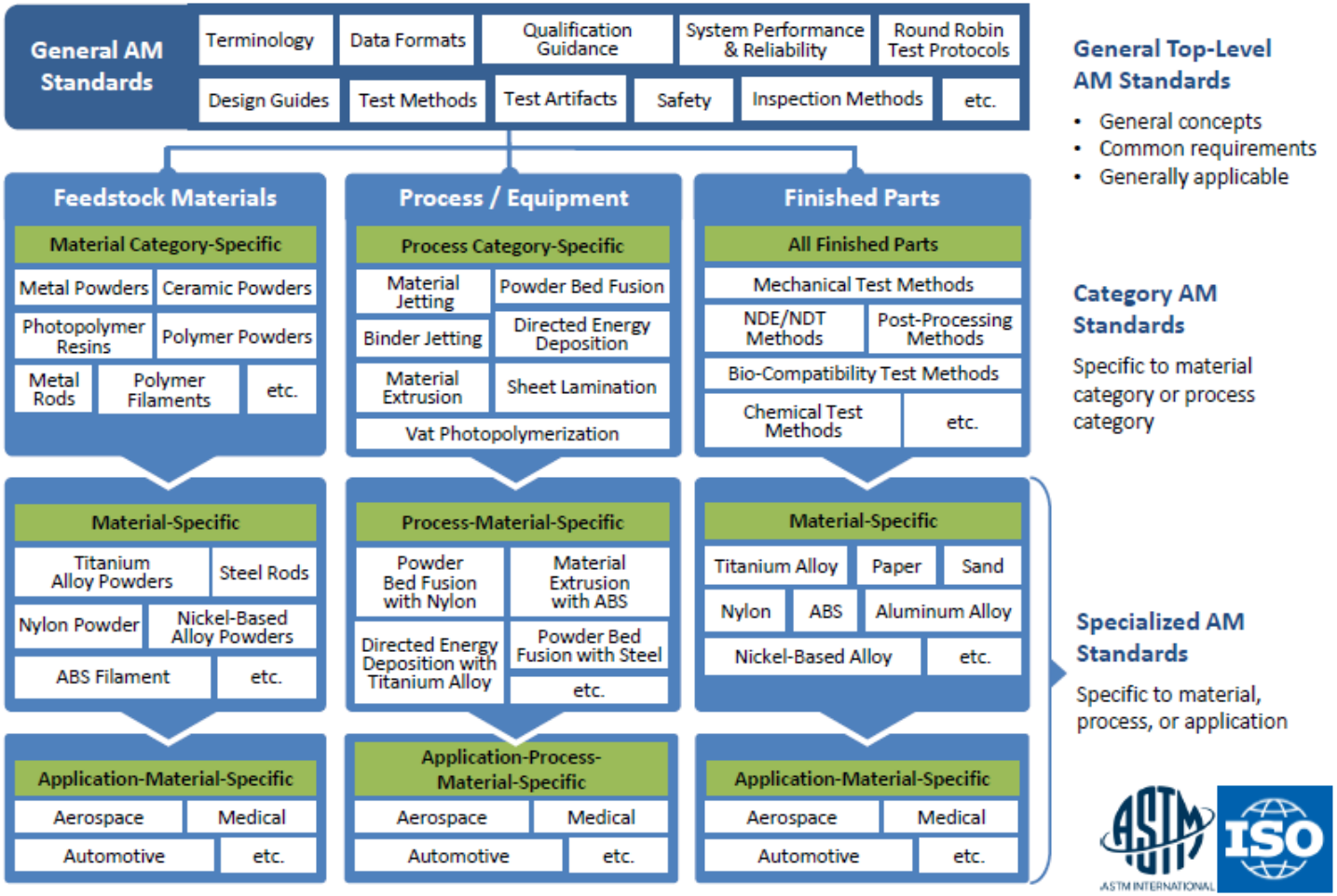
Leverage SDOs Strengths

1. Early Engagement in Strategic Planning

Linking Standards and Tech Roadmaps

- Early, formal partnership prevents delays and reduces time to market
  - Examine tech developments v. existing standards landscape: Where are the gaps?
  - Audit standards-based resources worldwide
  - List SDOs and key standards to focus on which leaders need to be engaged
  - Align to ensure robustness, market-relevancy, first-attempt compliance

Additive Manufacturing Structure



2. Robust Participation

All Stakeholders Contribute

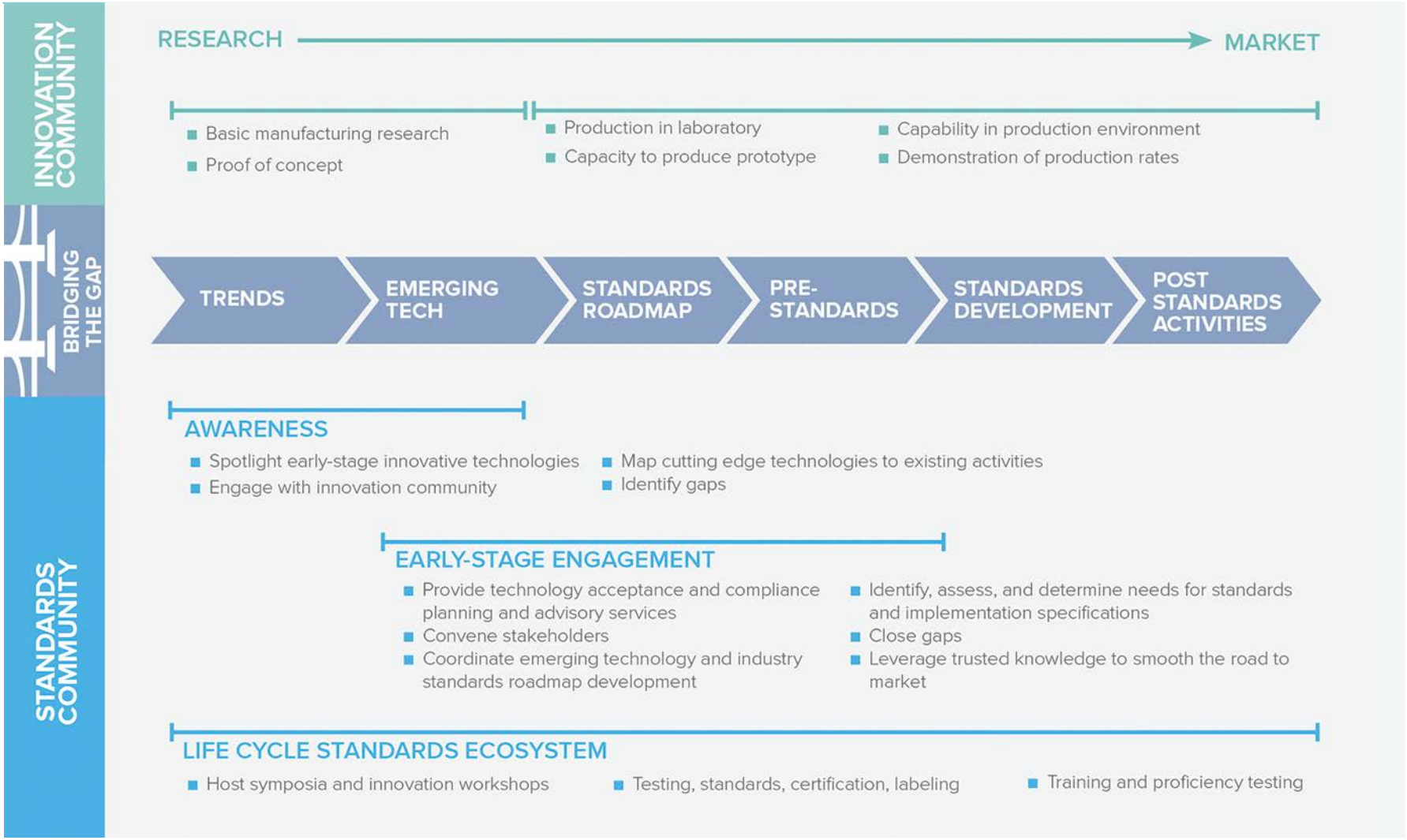
- SDOs in both traditional and advanced manufacturing work to both anticipate and respond to emerging technologies
  - Examples: Pharma, industrial biotech, additive manufacturing, 3D imaging, nano, smart textiles, robotics
- Quality and relevance of standards are directly proportional to participation from entrepreneurs, innovators, universities, governments, etc.
- Sustained outreach and commitment to WTO principles

3. Leveraging Strengths of SDOs

What do SDOs bring to the table?

- Speed
  - Online meetings
  - Digital paths
- Collaborative Expertise
  - Partnerships with leading trade associations
  - Partnerships between/among SDOs
- Agility
  - Responsiveness to immediate needs (eg., hazards, consumer safety issues)
  - Supporting analyses
- Service offerings
  - Training, proficiency testing, certification, symposia

A New Model: Bridging the Gap



An Approach that Benefits this Community

Industrial Applications

E61 Radiation Processing

F45 Driverless Automated Guided Vehicles

F48 Exoskeletons and Exosuits

F47 Commercial Spaceflight

E21 Space Simulation and Applications of Space Technology

F42 Additive Manufacturing

Public Safety Personnel

E54 Homeland Security Applications

F48 Exoskeletons and Exosuits

F38 Unmanned Aircraft Systems

F23 Personal Protective Equipment

F40 Declarable Substances in Materials

D13.50 Smart Textiles

F42 Additive Manufacturing

Medical Applications

F04 Medical and Surgical Materials and Devices

F48 Exoskeletons and Exosuits

F42 Additive Manufacturing

D20 Polymers

F23 Personal Protective Equipment

D13.50 Smart Textiles

E55 Manufacture of Pharmaceutical and Biopharmaceutical Products

Cross-Sector Technologies

Committees Supporting Various Industries

– F42 Additive Manufacturing Technologies

– F23 Personnel Protective Equipment

– D15 Textiles / Smart Textiles

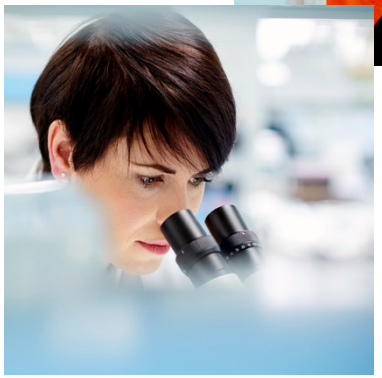
– F48 Exoskeletons and Exosuits

– F38 Unmanned Aircraft Systems

– More..

Industrial Applications

Public Safety Personnel



Medical Applications

Radiation Activities

Committee	Title	Date Formed	Mbrs / Stds
E10	Nuclear Technology and Applications	June 1993	145+ / 72
E10.05	Nuclear Radiation Metrology.		40+ / 31
E10.07	Radiation Dosimetry for Radiation Effects on Materials and Devices		40+ / 15
E10.08	Procedures for Neutron Radiation Damage Simulation		20+ / 4
E61	Radiation Processing	June 2012	150+ / 34
E61.05	Food Irradiation		100+ / 5
F01	Electronics	January 1955	75+ / 112
F01.11	Nuclear and Space Radiation Effects		15+ / 13
E20	Temperature Measurement	January 1962	150+ / 44
E20.02	Radiation Thermometry		30+ / 3

Questions?

Contact Information

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White Paper

www.astm.org/ABOUT/white_papers.html