



ASTM INTERNATIONAL
Additive Manufacturing Center of Excellence

AM CoE Request for Ideas (RFI)

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Chair of Subcommittee F42.01 – AM Test Methods

www.amcoe.org

- **AM CoE Overview**
- **F42 Overview**
- **RFI process**
- **Discussion with ASTM Sub-Committee Chairs**
- **Q&A**

If you have any questions,
please use the Q&A
function.



https://astm.iad1.qualtrics.com/jfe/form/SV_etcfDR52LtY8i58

- **ASTM formed Additive Manufacturing Center of Excellence (AM CoE) in 2018**

/// Mission

The Center bridges standards development with R&D to better enable efficient development of:

- Standards
- Education and training and
- Certification and proficiency testing programs



/// Vision

The Center facilitates collaboration and coordination among government, academia, and industry to:

- Advance AM standardization
- Expand ASTM International's and our partners' capabilities.

ASTM Committee F42 is dedicated to AM and has technical subcommittees focused on the development of consensus-based standards. This is happening in partnership with ISO TC261.

ASTM AM CoE is a collaborative partnership among ASTM and organization representing government, industry, and academia that conducts strategic R&D to advance standards across all aspects of AM in addition to create E&WD and Certification Programs.

AM CoE Partnership



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Research to Standards
ADDITIVE MANUFACTURING



Download at: <https://amcoe.org/rd-publications>

AM CoE R&D Themes

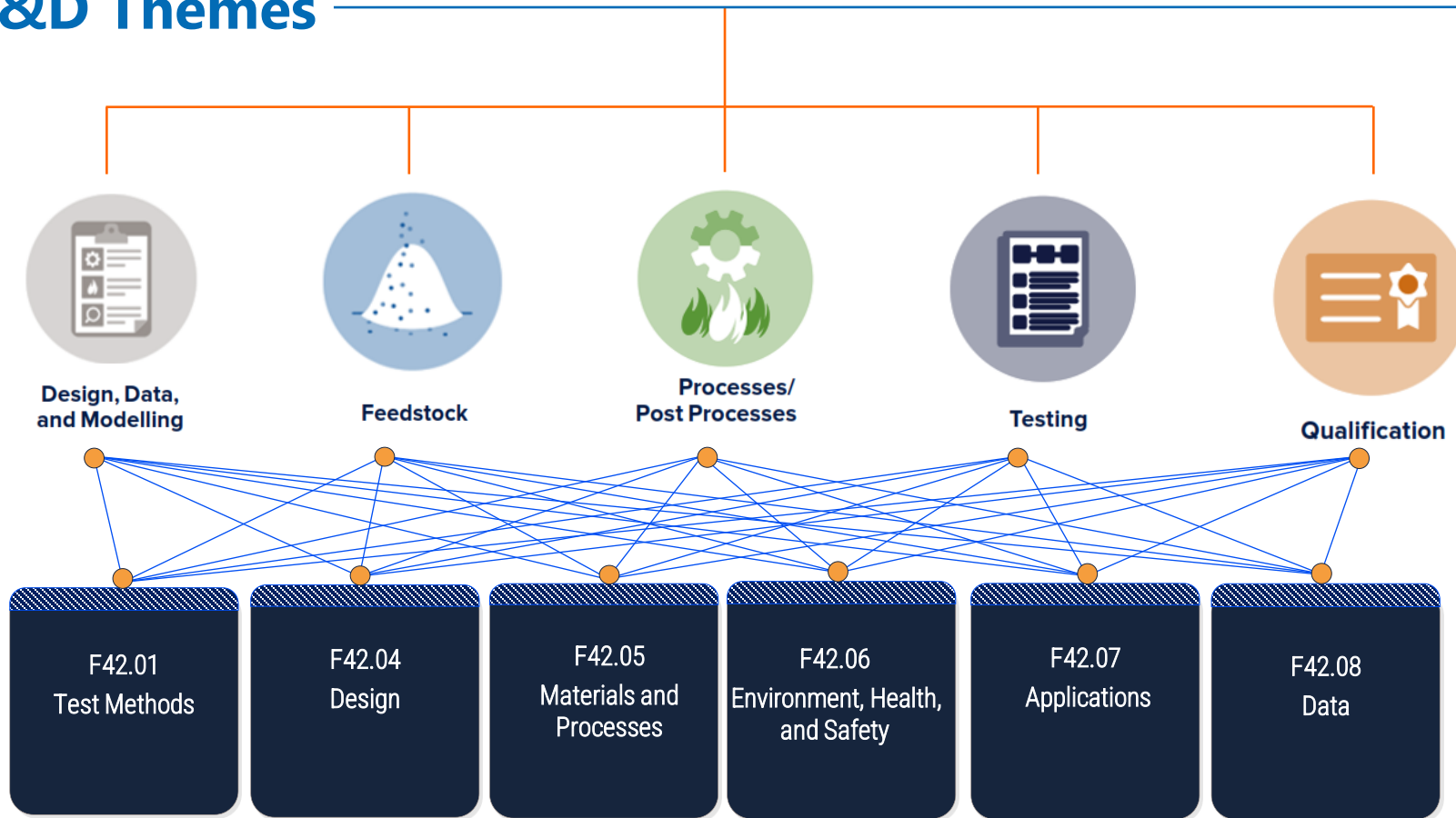
CoE R&D Areas



Topics are crosslinked to create synergy!



F42.07 Applications



- 1. Defined based on the input of ASTM members
- 2. Short-term
- 3. Highly-focused
- 4. High-priority (linked to AMSC roadmap and Committee F42)
- 5. Coordination/collaboration with America Makes, NASA, FAA, FDA, NIST, and others

AM CoE - Research to Standardization Status Update



F42.01																	
1801 F3439	1901 WK71395	2001 WK76163	2103 WK78911	1802 WK66682	2106 WK75584	2009 WK78092	1803 WK66030	1903 WK71393	2104 WK80171	2010 WK78093	2005 WK75901	2007 WK76038	1805 WK66029	1805 WK71391	1909 WK73340	2105 TBD	2102 WK77008
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5

Project #
Project PI
WK #

● Active Projects

F42.04		
1904 F3530	1905 F3529	1905 F3413-19
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5

F42.05							
2003 WK75184	2004 WK75265	2006 WK76048	1804 WK65937	1804 WK65929	2101 WK76983	2107 TBD	2108 WK81194
1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5

F42.06

F42.07

F42.08		
1902 F3490-21	2002 WK75158	1906 WK74390
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5

- Status Key:**
1. Work item scoping and registration
 2. Draft under development
 3. Editorial Support & Pre-Ballot
 4. Undergoing Balloting
 5. Final approval as a standard
- Completed
 - In-Process
 - Upcoming

➤ All standards are being developed by ASTM Committees, such as F42.

- Five approved standards
- 10 work items in ballot

<https://amcoe.org/projects>



Request for Ideas (RFI)

- **Idea Submission:** ASTM members
- **Idea Evaluation:** ASTM F42.90.05
- **Project Lead:** AM CoE Partners*
- **Standardization Lead:** AM CoE Partners**
- **Project Duration:** 6-9 months
- **Frequency:** once a year (Q2)
- **Funding Agency:** ASTM International



Call for Proposals (CFP)

- **Idea Submission:** All (except AM CoE Partners)
- **Idea Evaluation:** ASTM F42.90.05
- **Project Lead:** Submitting Organization*
- **Standardization Lead:** Submitting Organization **
- **Project Duration:** 6-9 months
- **Frequency:** once a year (Q4)
- **Funding Agency:** ASTM International

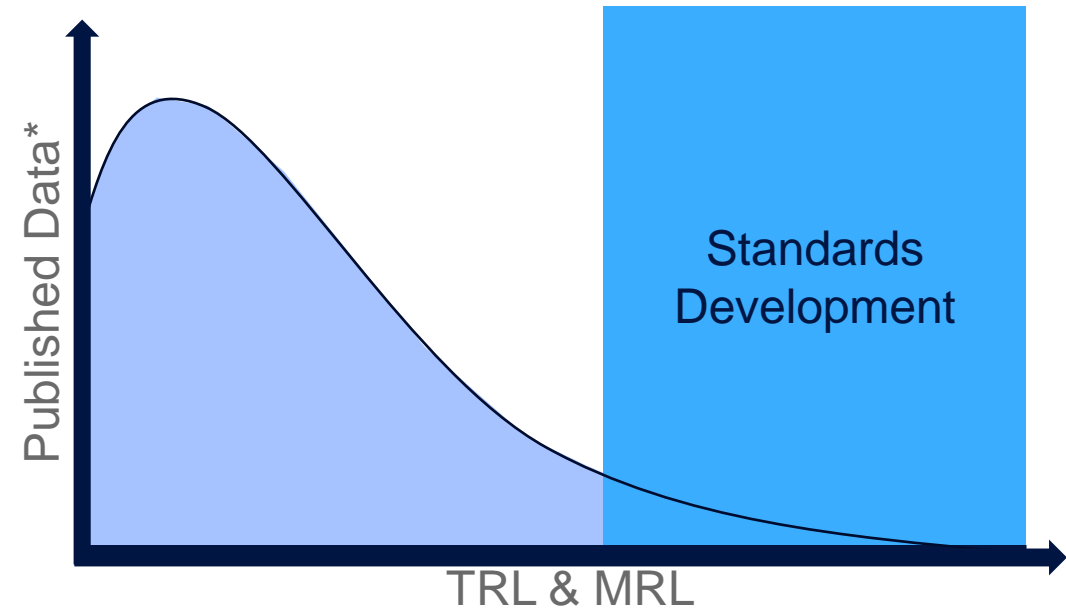
* ASTM AM CoE highly encourages collaboration from all AM community members

** AM community members are highly encouraged to participate in the development of the draft standard.

- Some levels of maturity and adoption is required before a topic can be standardized.
 - TRL > 5-6

Topics that may not be suitable for CFP/RFI

- Fundamental studies with low maturity
- Low adoption level



* Publicly available and high-quality data, with full pedigree

Breadth

- More than 20 AM relevant Committees
- 1000+ standards applicable to AM
- 2000+ technical experts

History (F42)

- Oldest
- Largest
- Most globally relevant

Collaboration

- PSDO – ISO TC261 (CEN TC438)
- MOU & Membership – America Makes
- MOU – SME
- Liaison Agreement – 3MF
- Strategic Relationships – NIST, NASA, FAA, FDA, DOD, MMPDS, CMH17,

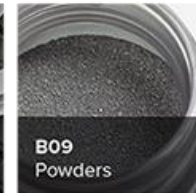


F42
Additive Manufacturing

Feedstock



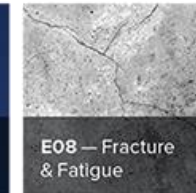
A01
Steels



B09
Powders



E07
NDT



E08 – Fracture
& Fatigue



E28 – Mechanical
Testing



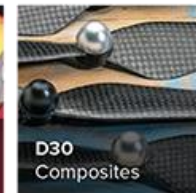
F07, F37, F38,
F44, F47 –
Aerospace



F04, E55 –
Medical Devices,
Pharmaceuticals



D20
Plastics



D30
Composites



E37 – Thermal
Measurement



E57
3D Imaging



G01
Corrosion

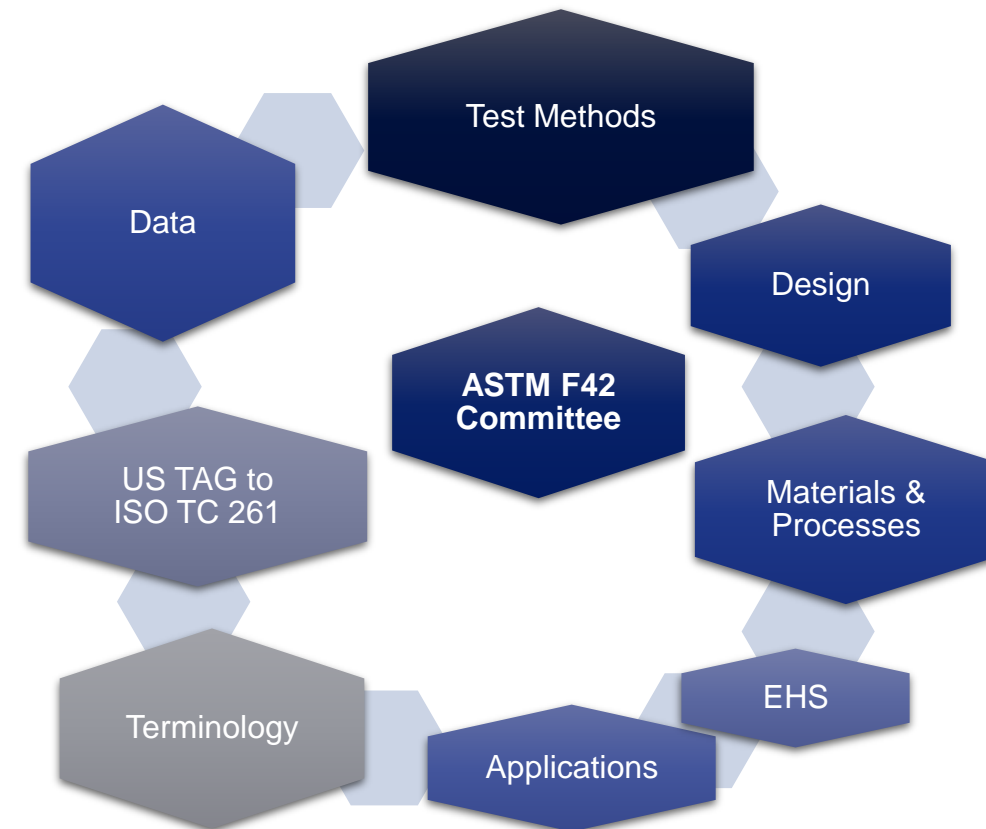


F25
Ship and Marine

Quick facts

- **Formed:** 2009
- **Current Membership:** Over 1050 members (Over 30% outside the US)
- **Standards:** 36 approved, 60+ in development (Jointly with ISO)
- **Meet twice a year, next meeting:** 19-23 September 2023, Munich
- **Global Representation,** with members from 39 countries

8 Subcommittees and Focus



- **Standards are needed, but we don't need several competing standards...**
- **ISO & ASTM have signed a Partnership Standards Development Organization (PSDO) agreement:**
 - Fast tracking the adoption process of an ASTM International standard as an ISO final draft international standard
 - Formal adoption of a published ISO standards by ASTM International
 - Maintenance of published standards
 - Publication, copyright and commercial arrangements

Great collaborative coordination to avoid duplication and contradiction:



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International
Organization for
Standardization



James Thomas, ASTM President, and
Rob Steele, ISO Secretary-General

ASTM / ISO TC261 Develops AM Standards



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International Organization for Standardization

Standards under the jurisdiction of F42 (<https://www.astm.org/COMMIT/SUBCOMMIT/F42.htm>)

Subcommittees address specific segments within the general subject area covered by the technical committee.

F42.01 Test Methods – J. Boyer, Pratt & Whitney

F42.04 Design – D. Rosen, GA Tech

F42.05 Materials and Processes – Frank Medina, UTEP

F42.06 Environment, Health, and Safety – Francoise Richard, P&W Canada

F42.07 Applications – Shane Collins, PBFC

F42.08 Data – Alex Kitt, EWI

F42.90 Executive – J. Slotwinski, JHU/APL

F42.90.01 Strategic Planning – C. Park, Supernal

F42.90.02 Awards – J. Porter, Velo3D

F42.90.05 Research and Innovation – N. Hrabe, NIST

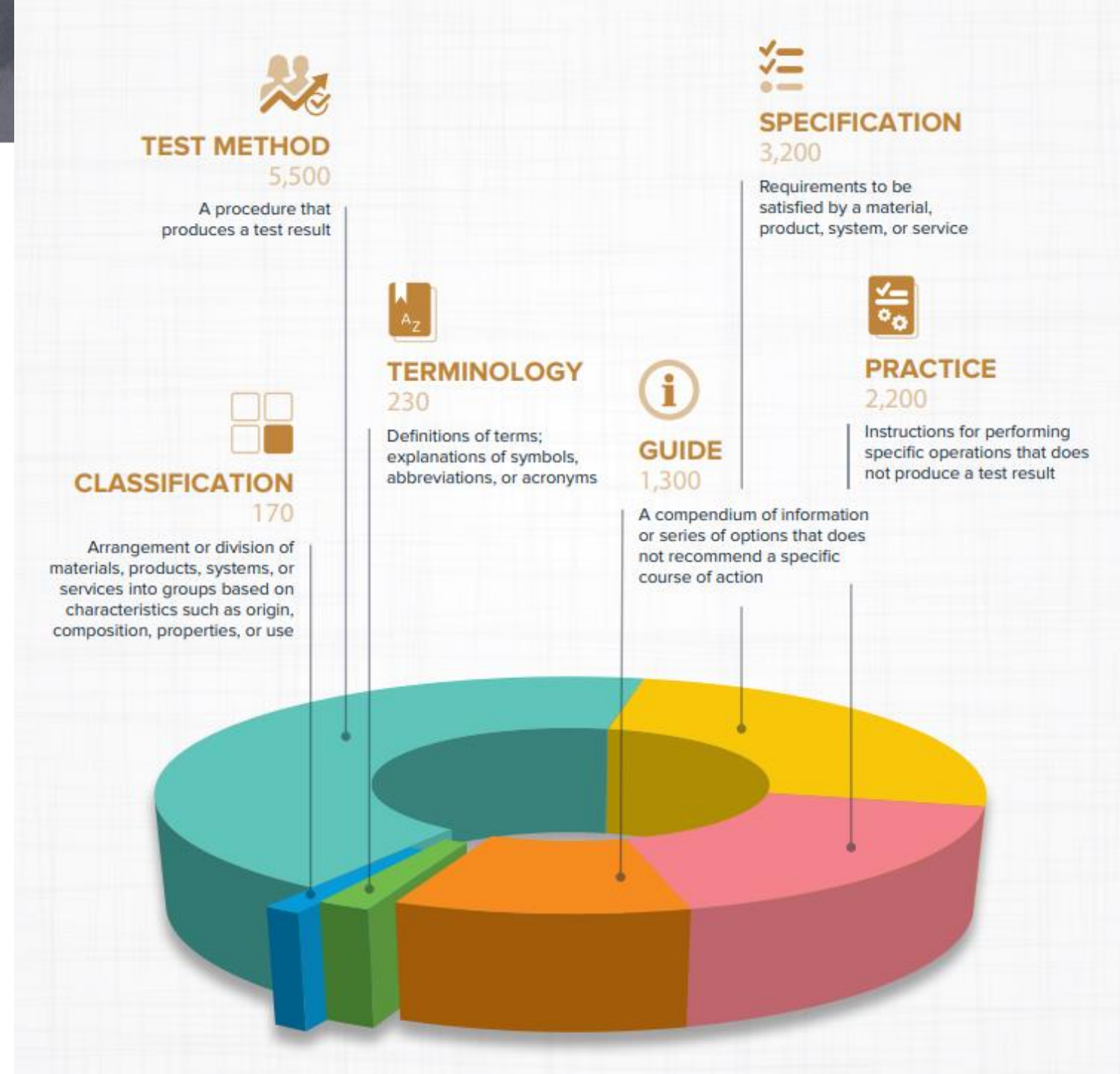
F42.91 Terminology – Klas Boivie, Sintef

F42.95 US TAG to ISO TC 261 – Stacey Clark, US Army

Each main committee in ASTM International is composed of subcommittees that address specific segments within the general subject area covered by the technical committee. Links to existing standards & work items appear for each subcommittee.

Types of Standards

- Test Methods
- Specification
- Practice
- Guide
- Terminology
- Classification



2022 Request for Ideas – 5th Round of R&D Projects



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- **The idea solicitation process is open to all ASTM members as a benefit of membership**
- **Submissions may address a wide range of challenges in AM that ASTM members face, including:**
 - Design, Data, and Modeling
 - Feedstock
 - Processes and Post processing
 - AM Testing
 - Inspection and Qualification
- **Project ideas process:**
 - Ideas are evaluated by AM CoE and ASTM F42.90.05
 - AM CoE and its partners develop project SOWs
 - AM CoE partners perform the projects

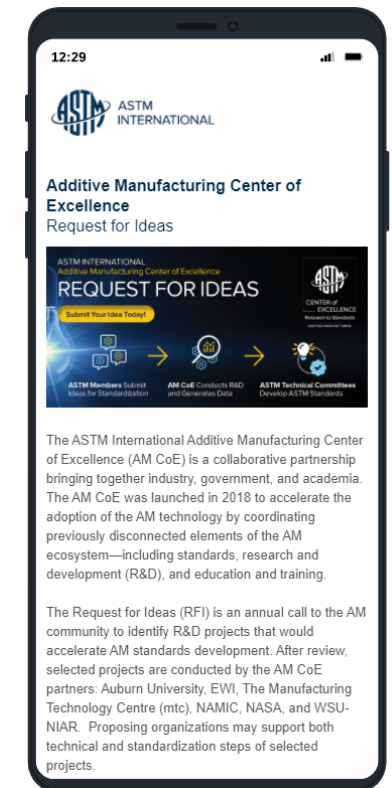
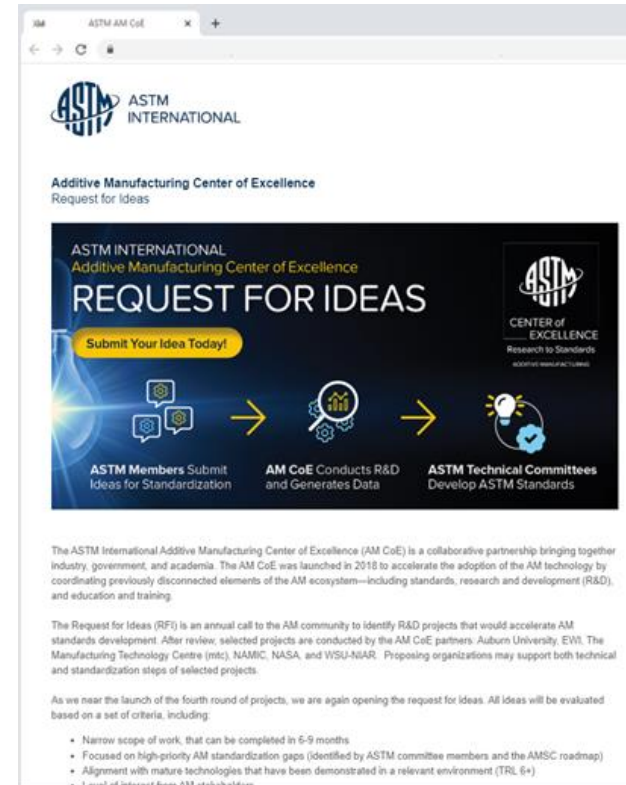


Simple process – less than five minutes!

1. Proposed project title
2. Problem or gap the idea addresses
 - List any relevant standards gaps from the AMSC Roadmap
3. Proposed solution to the problem or gap(s)
4. R&D theme(s) related to the idea
5. Contact Information

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Available on desktop and mobile



What happens next?



Submitted ideas are evaluated by the AM CoE and F42.90.05



AM CoE and its partners develop SOWs for selected project



AM CoE partners perform the projects and register new WK items

Proposing Organizations

Proposers of selected ideas may support both technical and standardization steps of selected projects.



Request for Ideas Timeline



Key Dates

- May 20: RFI Survey closes
- June: Ideas Evaluation ends
- July: SOW development begins
- September: Public announcement
- October: Projects Kick-off

May 2022						
SU	MO	TU	WE	TH	FR	SA
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	1	2	3	4

**For inquiries about
AM CoE R&D Programs:
amcoe-research@astm.org**

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Discussion with ASTM Sub-Committee Chairs



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2nd ASTM AM CoE Specialty Workshop In-Situ Technology Readiness for Applications in AM Qualification and Certification

June 28, 2022 | Huntsville, AL, USA

<https://amcoe.org/calendar>

SAVE THE DATE

8th Additive Manufacturing Center of Excellence
Snapshot Workshop in conjunction with ASTM
F42 and ISO TC261

September 19 | Munich, Germany

<https://amcoe.org/calendar>

ICAM2022

ASTM International Conference on Additive Manufacturing

Research to Application
through Standardization

October 31 – November 4
Orlando, FL



<https://amcoe.org/calendar>