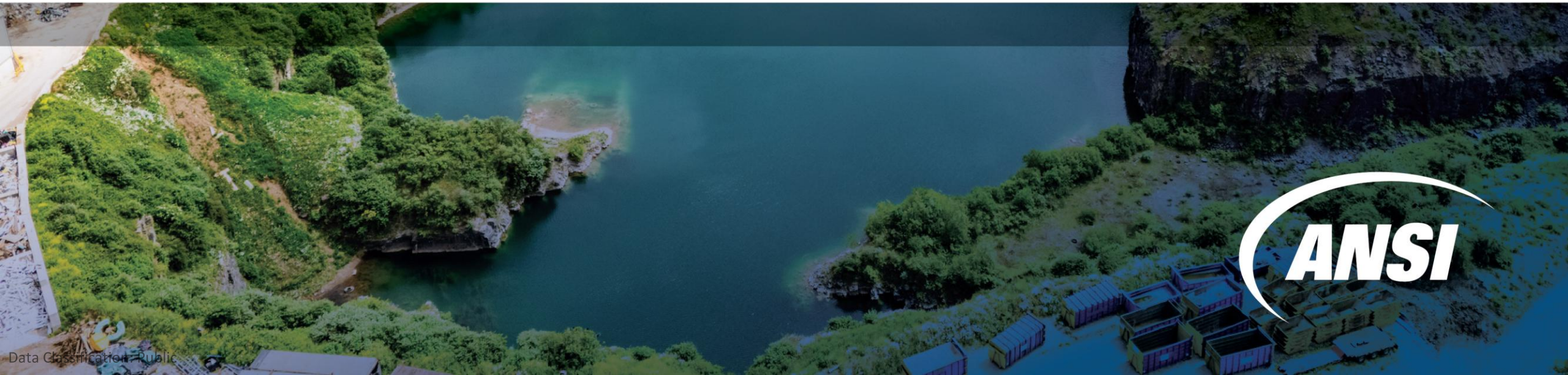




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They are not positions or recommendations from session moderators or formal and final statements.



Battery & Energy Storage Systems Deep Dive

Moderated by:
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SMI



S Scope | Battery & Energy Storage Systems

Technologies that use critical minerals to:

- **store, manage, and deliver energy**, including
 - *battery materials*
 - *cells*
 - *modules*
 - *packs*
 - *stationary energy storage systems*

*Discussion topics may include **material specifications, performance and safety** requirements, **testing and certification** approaches, **battery passports**, and **end-of-life management**.*

1 Desired-End State | Battery & Energy Storage

- *What outcomes are stakeholders seeking to achieve in downstream activities, including manufacturing, component production, and end use?*
- *How do downstream requirements depend on upstream inputs and midstream material specifications?*
- *What capabilities are currently in place, and what additional capabilities are needed to support consistent implementation?*
- *What does U.S. leadership in the global market look like, and what are the indicators of success?*
 - *Leadership in standards? Are we there yet?*
 - *Leadership in the market? Are we there yet?*
- *What role do standards play in the desired end-state?*

Battery supply chains deliver trusted, high-performance, traceable, and recyclable materials and products that support energy security, manufacturing competitiveness, and circularity objectives.

Key Characteristics:

- Qualified material inputs
- Battery traceability
- Verified recycled content
- Global interoperability
- End-of-life material recovery

- *How do regulatory frameworks, product requirements, trade conditions, and conformity assessment approaches (e.g., testing, inspection, certification) affect downstream applications?*
 - *Do these approaches leverage standards? Which?*
 - *How do these approaches affect (enable or hinder) standards implementation?*
 - *Where do differences across jurisdictions or systems create challenges for implementation or for accepting inputs from upstream and midstream stages?*
- *Where none exist, should they? Why type?*

Feedback Prior to Workshop:

1. EU Battery Regulation
2. NDAA/DFARS sourcing requirements
3. Battery passport initiatives
4. OEM qualification requirements
5. Safety and certification programs

Workshop Whiteboard:

1. Discussion captured here
2. Discussion captured here

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Implementation Experience & Barriers | Battery & Energy Storage

- *How are standards applied today? Is it effective implementation?*
- *What challenges have stakeholders encountered in integrating materials into manufacturing processes or final products?*
- *What factors (e.g., technical, operational, or commercial) affect the ability to consistently use materials that meet product and performance requirements?*

Feedback Prior to Workshop:

1. Lengthy qualification cycles
2. Traceability breaks below Tier 1 suppliers
3. Inconsistent recycled-material validation
4. Supply-chain transparency challenges
5. Data exchange limitations

Workshop Whiteboard:

1. Discussion captured here
2. Discussion captured here

- *What standards or frameworks currently support downstream activities, including product specifications and performance requirements?*
 - *Organization level feedback is a great start!*
- *Where are gaps, overlaps, or inconsistencies observed, particularly in aligning material inputs with product-level expectations?*

Standards Utilized:

1. SAE J3327
2. IATF 16949
3. RMI frameworks
4. IEC battery standards

Gaps :

1. Recycled-content verification
2. Battery passport harmonization
3. Qualification data standards
4. Requalification reduction pathways
5. Material provenance verification

- *Where is alignment needed between downstream requirements and upstream/midstream capabilities?*
- *What challenges arise in ensuring that material specifications, data, and performance criteria are compatible across the value chain?*

Feedback Prior to Workshop:

1. Align regulatory and OEM requirements
2. Harmonize battery passport initiatives
3. Connect traceability systems globally
4. Improve supplier-to-OEM data exchange
5. Standardize recycled content reporting

Workshop Whiteboard:

1. Discussion captured here
2. Discussion captured here

- *What data, definitions, or technical inputs are needed to support downstream applications and their connection to earlier stages of the supply chain?*
- *Are there areas where additional work is needed before standards can be developed or more widely implemented?*

Feedback Prior to Workshop:

1. Standard qualification datasets
2. Battery-grade material specifications
3. Recycled material benchmarks
4. Provenance verification methods
5. Shared battery performance reporting

Workshop Whiteboard:

1. Discussion captured here
2. Discussion captured here