This initiative adds unique value in two ways.

First, we adopt an explicitly network-centric approach to mapping the AM community. Innovation is not an isolated phenomenon: it requires information sharing and collaborative effort within an intellectual community. By embedding the individuals, groups, and organizations driving AM innovation in their relational context, we can uncover new information about how the community as a whole is evolving and changing.

Second, our conception of the AM community is multi-layered. Our approach identifies three facets of this community: academic research, professional innovation, and social information-sharing. The overlap between these populations is significant, but nowhere near complete, and the underlying social structures and motivations of these groups can vary widely. Understanding the differences between academic, professional, and social groups can help us model and predict community behavior, and tailor more effective strategies for multi-layer engagement.

This multi-layered network analysis has three goals: *mapping*, *understanding*, and *engaging* the AM network.

**Mapping the AM community**

This initiative looks at the AM community as a multi-faceted, interconnected web of actors and relationships. Because of this, we can ask and answer different questions not only about specific aspects of AM (breakout innovators, emerging growth areas) but about the structure of the community as a whole. For example, much of the rhetoric surround AM emphasizes how this tech “democratizes” innovation. Network analysis can help us identity the extent to which this is true: are innovations being spread out among the community? What is the size and population of the ‘core innovators’ across these different layers of AM?

**Understanding the AM community**

What is the impact of innovation? How can we measure, track, and even simulate and predict changes in the structure and scope of the AM community as new inventions and discoveries enter the field? Effectively mapping the AM community network will allow us to better understand the cascading effects of new innovations, and to create explanatory and predictive models that shed light on how the AM community responds to new developments.

**Engaging the AM community**

The United States government needs to develop strategies to effectively interface and collaborate with the AM community. However, there is no ‘one size fits all’ approach to doing so. Effective strategies are likely to vary both by formal role (for example, private sector developers versus academic researchers) and by functional role (mobile collaborators, solo inventors, and other archetypes of AM innovator). Network analysis of the AM community allows us to identify key actors in terms of both formal and functional roles, and to develop effective strategies that target these different types of actors for engagement.