**Mapping the multi-layered additive manufacturing (AM) community: who is doing what, with whom**

**Layer 1: academic research (global scope)**

The academic community is responsible for many of the major *theoretic* breakthroughs in AM. We will map this layer of the AM community by building a database of (co)-authorship of academic research articles. Repositories of published research such as JSTOR will allow us to map the established network of AM knowledge and collaboration. We can also draw on stores of more cutting-edge theoretical work, using repositories of working papers such as ArXiv. The resulting network will provide information on “who is doing what, with whom” in the academic sphere. These data will allow us to map the emergence of the academic AM community over time, as well as the research trajectories of individuals and working groups in the AM field.

**Layer 2: patent applications (US-centric)**

Rapid developments in the *application* of AM technology are largely driven by the private sector, as individuals and corporations turn theoretical insights into marketable products. Using data from the US Patent and Trademark Office (USPTO), we will build a network of AM-related patent applications cross-referenced at both the individual and corporate level. This will let us map innovation and collaboration both by individuals (who often transition between companies) and through larger-scale joint corporate efforts.

The advantage of using patent applications and published research is that there is a high incentive to ‘self-report’ these data. Innovators in both the academic and private sectors want to protect their intellectual property and get credit for their innovations. This means that research publications and patent applications are likely to be a near-comprehensive data set, which is advantageous for our efforts.

**Layer 3: social communities (English-language scope)**

Many of the day-to-day practitioners in AM are unlikely to either publish academic research or apply for original patents. Instead, these individuals apply existing knowledge in innovative ways, adapting AM technology for often-unforeseen purposes. We will map this community in two steps. First, we will map the individual sub-networks that constitute AM-related online forums – communities dedicated to aiding and connecting users of AM technology. This will let us identify important ‘nodes’ in these forum networks: individuals who are highly active or hold positions of authority in the forum. Second, we will attempt to map broader cross-forum networks by identifying users who are members of more than one forum. This allows us to identify ‘bridging’ individuals who can easily transfer ideas and information between different forum communities.