ARIZONA STATE UNIVERSITY

Arizona State University (ASU) is a leader in scientific research and development, education, and training of a creative and skilled workforce. We are pleased to contribute to the design of a solicitation for establishment of the National Network for Manufacturing Innovation (NNMI) through our response to a select number of questions contained in the Request for Information.

Technologies with Broad Impact

1. What criteria should be used to select technology focus areas?

ASU has a diverse portfolio of research activities and strong partnerships with industry leaders in technology development. As such, we believe that the definition of manufacturing should be broadly stated to include the entire manufacturing environment. This will allow for participation of those industries involved in sustainability of operations, including reduction of carbon footprints, improved energy efficiencies, construction, and innovations in operations and supply chain. This broad definition is also amenable to the variability in manufacturing opportunities across geography and population and will have the highest impact across multiple sectors. Manufacturing should also include diversifying markets to include unforeseen or unexpected sectors, such as water distribution and environmental (natural and man-made) impacts, and to adjust to population, economic, and infrastructure related shifts.

Criteria should consider reducing potential vulnerability introduced by products manufactured outside the U.S., especially in regards to the integration of products with national defense systems, improved U.S. cost-competitiveness in global manufacturing, meeting a national need for workforce and economic development, and stimulation of innovation through synergistic efforts between academia and industry.

2. What technology focus areas that meet these criteria would you be willing to co-invest in?

We would be willing to co-invest in technology that focuses on flexible electronics. The development of highly advanced electronic technologies, particularly those that are directed towards meeting defense requirements, represent a critical opportunity for domestic manufacturing. Investment in this area ensures carefully controlled conditions for manufacturing of sensitive goods and economic growth at a local and nation level. This approach would also achieve economies of scale, improving advanced manufacturing capabilities that have been in slow decline domestically.

Institute Structure and Governance

5. What business models would be effective for the Institutes to manage business decisions?

An effective business model for the Institutes would be one that leverages resources of each contributing partner equally, providing equal weight to tangible and financial assets. That is, financial contributions by government or industry are equal to the knowledge enterprise of academia.

6. What governance models would be effective for the Institutes to manage governance decisions?

Strategic direction and operations of the Institute would be overseen by a Governing Board composed of representatives of the consortium partners selected in accordance with procedures specified in a participation agreement. Each consortium partner would have the right to one seat on the Governing Board. Consortium partners would include industry, government and academic members.

7. What membership and participation structure would be effective for the Institutes, such as financial and intellectual property obligations, access and licensing?

The membership and participation structure for an Institute would focus on a participation agreement that outlines: the infrastructure and personnel resources available and conditions for use; protection of pre-existing intellectual property (IP); allocation of IP as a result of Institute activities; and dues related to participation in the Institute.

Strategies for Sustainable Institute Operations

10. How should initial funding co-investments of the Federal Government and others be organized by types and proportions?

Jointly setting priorities with industry and the federal government is key to governance, reflecting operational and strategic desires. There is a clear regard for the Institutes to be structured so as to move toward independence from Federal government support. There is also an implied view that industry partner financial support is evidence of the viability of the institute as an independent entity. However, this model does not adequately take into account current economic challenges. In addition, industry investment in R&D has been shrinking and our position as a global leader in advanced manufacturing is in serious decline. If we are truly committed to undertaking an effort directed toward nurturing the development of the manufacturing technologies of the future, we must recognize and encourage other forms of industry involvement as indicators that the institutes are moving in the right direction to achieve this goal.

Other signs and practices would include, but not be limited to, requiring an integrated management system with industry engagement in technology focus area selection, constant intellectual cross-fertilization via personnel exchange, project design taking into account downstream scaling and manufacturing planning and some reasonable co-investment. It is important to note that the level of co-investment should not be a selection factor as requirements for cost share can unreasonably narrow the potential field of participants, both universities and corporate partners. Ideally, awards will either allow for funding without cost sharing or provide for a variety of funding options depending on the availability of cost sharing.

12. What measures could assess progress of an Institute towards being self-sustaining?

Indicators of commercial relevance and institute direction should include industry engagement, including real value, but also in personnel development. This can include graduates, training and employment. However, it would be wise to consider the recent past and current economic climate when determining the timeline to self-sustaining operations. A dramatic drop in federal funding within 10 years of operation may unduly narrow the competitive field for Institutes and decrease interest in industry partnerships because of the perceived increased risk for Institute longevity.

Education and Workforce Development

17. How could Institutes support advanced manufacturing workforce development at all educational levels?

Institutes will benefit from regional networks that infiltrate down from the university level all the way to pre-K activities. This networked approach would integrate apprenticeships, internships, continuing education, and early education within the Institute activities. Community college technical education programs can be easily integrated with applied education programs at the university level, further improving a mid-level workforce.

18. How could Institutes ensure that advanced manufacturing workforce development activities address industry needs?

Institutes must develop joint governance and priority setting across all stakeholders. This collaboration will also be necessary when identifying key activities that are needed by industry to create and maintain a workforce. Industry partners are able to provide immediate workforce needs; but the Institute must be able to project needs near and long term. A truly collaborative Institute will be able to map these needs.