



# Athena Alliance



## Policy Brief

Information Innovation Intangible Economy

## Intellectual Capital and Revitalizing Manufacturing

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February 2010

The White House paper, *A Framework for Revitalizing American Manufacturing*, makes an excellent case that the federal government has a strong role to play in reinvigorating this important sector of the U.S. economy. The *Framework*, released in December 2009, outlines the challenges facing manufacturing while describing the opportunities in new areas such as biotechnology, wind power, nanotechnology, aerospace, and next-generation automobiles. What is also needed, however, is a strategy that builds on the changes already taking place in manufacturing, not just a shift to new types of products.

Manufacturing is in the process of being transformed into a much more knowledge-intensive activity. During the Industrial Revolution, as machine power replaced human and animal power, the key input was energy. In the 21st century, knowledge is a key input of production.

The process is analogous to the transformation of agriculture in the early 20th century. Farming did not simply move to other nations with lower-cost producers using the traditional techniques. Agriculture was mechanized—or industrialized, if you prefer. That transformation led to efficiencies that revolutionized the production of commodities and contributed to U.S. economic growth.

The transformation in manufacturing to a knowledge-intensive activity will require attention to all the inputs to the production process—technology, worker skills, and cooperative/collaborative organizational structures. The Obama administration’s manufacturing *Framework* recognizes that the nature of the economy has changed and implicitly accepts this basic premise. “Intellectual capital, such as patents from research

and development as well as managerial know-how,” the document states, “is a vital component in determining costs, growth rates and the creation of new industries.”

But while patents and managerial know-how are important components, a successful manufacturing framework must embrace the full range of intellectual capital and intangible assets. For example, scientific and creative property, beyond that formalized as intellectual property, are valuable assets. These include product development activities beyond the patent, new architectural and engineering designs, and social and organizational sciences research. Computerized information, including customized software and databases, are other important company assets that go beyond our definitions of intellectual property. Specific business models, organizational structures, and organizational capabilities are key elements of any company’s ultimate success. Worker skills and tacit knowledge—both general and firm-specific—are assets that managers describe as leaving the company every evening and returning every morning. Brand equity, reputation, and relationships with customers and suppliers are all important. All of these forms of intellectual capital need to be explicitly developed and managed by successful manufacturing companies.

The recommendations below show how policymakers can directly incorporate intellectual capital into a manufacturing strategy and best position the United States for accelerated job, productivity, and economic growth in the coming years.\*

**Expand the Manufacturing Extension Partnership (MEP) to Boost Intellectual Capital.** The *Framework* appropriately calls for doubling the MEP budget, but the scope of this assistance to manufacturers needs to be expanded to include innovation, new product development, and utilization of intellectual capital. Manufacturing companies have a wealth of intellectual capital that they often do not recognize or manage well. MEP services must include intellectual resource management that covers a broad array of assets, beyond help with intellectual property. The program’s budget increase should be used to expand services and staffing in areas such as marketing, finance, and business model development, in addition to new product development and process adoption.

**Help Entrepreneurs Manage Intellectual Capital.** The *Framework* specifically cites efforts by the U.S. Small Business Administration (SBA) to provide entrepreneurship training and to foster partnerships with community colleges, universities, and others. It also mentions the U.S. Economic Development Administration (EDA) program of supporting business incubators. But most of these training programs do not explicitly recognize the importance of managing intangible assets and intellectual capital. Programs

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\* Some of these recommendations are based on working papers published by Athena Alliance, specifically [Maximizing Intellectual Property and Intangible Assets](#) (November 2009), [Intangible Asset Monetization](#) (April 2008), and [Reporting Intangibles](#) (April 2005).

that support entrepreneurs need to incorporate these topics as part of their activities and impart these essential skills to would-be innovators.

**Transform the Baldrige National Quality Program into the Baldrige Quality, Productivity, and Innovation Award.** The *Framework* calls for “facilitating the diffusion of business practice innovations.” One way to do this is through the Baldrige program, whose criteria have shifted and broadened over time to focus more on productivity and innovation. This shift, however, has largely gone unheralded. Changing the name—in essence, rebranding the program—would ensure that it rewards not just quality, but also productivity and innovation. The change might also prompt a review of the selection criteria to reflect this broader view.

**Increase Worker Training.** The *Framework* rightly calls for increasing federal funding for job training. However, the current system is geared toward assisting workers who have lost their jobs. Just as vital is support for on-the-job training so that workers are able to bolster their current skills, which enhances the competitive edge of employers and improves workers’ viability in the marketplace. The importance of on-the-job training is heightened in an economic downturn, when companies can easily lose their built-up supply of intellectual capital by laying off workers who may eventually find employment elsewhere.

Funding for on-the-job training could take a number of forms:

- Direct government funding of training programs, possibly run through the community colleges (as also mentioned in the *Framework*).
- A knowledge tax credit to cover employer costs. We already give tax incentives for investments in research and development (R&D) and in machinery. We should also give tax incentives for investments in workers.
- In a “job-sharing” program. Proposals have been made for a national job-sharing program, where workers would reduce the number of hours worked from full time to part time; for example, from 40 hours to 35 hours a week. The wages saved by the employer would be used to hire additional workers and unemployment insurance funds would be used to pay workers for hours not worked as part of the program. On-the-job training could be included in such programs by requiring workers to spend that time in a training program.

**Use IP to Provide Capital.** As noted in the *Framework*, the administration is taking steps to increase the flow of capital to small businesses. Currently, small businesses can raise money based on their physical and financial assets, which can be easily bought and sold, borrowed against, and used to back other financial instruments. But using intangible assets, such as IP, to borrow funds is difficult. Here are some ways the government can free up this type of capital to unleash small business creation, innovation, and growth:

- **Tap SBA loans to fund innovation.** SBA underwriting rules should be changed to allow companies to use their IP as collateral on loans. SBA already allows its loan funds to be used to buy intangibles when a new owner wants to acquire a company. Allowing IP to be used as collateral will increase the amount of funds a company, such as one in the high-tech sector, would qualify for.
- **Create an IP-backed loan fund.** Other nations have developed special programs to encourage IP-based finance. The U.S. should set up similar programs on a pilot basis, ideally run by the SBA to take advantage of its lending expertise. Technical support could be provided by the SBA's Office of Technology, which already coordinates the Small Business Innovation Research (SBIR) program. The SBA technology office also works with the U.S. Commerce Department's National Institute of Standards and Technology (NIST) on its Technology Innovation Program and has a hand in other federal science- and technology-related initiatives. Such a direct lending program would be a step beyond SBA's current loan guarantee programs—direct lending is needed to jumpstart the process. Once the process of utilizing IP as collateral is fully established, the program could be converted to a loan guarantee structure.

**Include Intellectual Capital and Intangible Assets in the Financial Regulatory System.** The *Framework* explicitly points out that financial regulatory reform is necessary to create an environment of stability to promote economic growth and innovation. Yet intellectual capital and intangible assets remain outside of the discussion on financial reform, even though they represent between one-half and two-thirds of aggregate company value. The following methods could be used to bring these assets into the financial regulatory system:

- **Increase disclosure of intangible assets.** The U.S. Securities and Exchange Commission (SEC) should be directed to study the barriers to intangible asset disclosure on corporate financial statements; assess past disclosure requirements, such as the 2003 guidance on the Management's Discussion and Analysis (MD&A) section in financial statements; and analyze the merits of a safe harbor for limited disclosure of financial information on intangibles not currently allowed in financial statements. In addition, the relevant federal agencies—the SEC and the departments of Treasury and Commerce—should establish an advisory committee to recommend ways to provide investors with an improved method of assessing the impact intangibles have on the accuracy of a company's financial picture and for supporting industry trade associations' efforts to adopt intellectual asset management and intangible disclosure guidelines for particular industries.

- ***Provide information on intellectual capital and bank lending practices.*** The U.S. Federal Reserve is seeking to strengthen bank supervision practices through the expansion of stress testing to assess the health of individual institutions. As bank regulators undertake these actions, they should be aware of the role and value of intangible assets. The failure to overtly include intangible assets may have the following consequences:
  - Underestimation in the amount of collateral a lending institution has to call on in case of default (and therefore the undervaluation of the underlying loan).
  - Miscalculation of a lending institution's ability to recapture collateral if the lending institution is dealing with an asset it does not understand.
  - Improperly priced loans due to a failure to assign the correct value to the intangible assets or a tendency to apply exceedingly low loan-to-value ratios that are less a reflection of risk than of the institution's lack of knowledge about the performance of intangible assets.
  - Higher capital costs for borrowers, especially those in businesses heavily reliant on knowledge and technology.

Regulatory agencies can take steps to study and collect information on the role of intangibles in the financial system—and to underscore the risks of ignoring them. As they build knowledge in this area, the Federal Reserve and other financial regulatory agencies might consider the following questions:

- To what extent are lending institutions employing intangible asset as collateral, either explicitly or implicitly?
- What provisions are there in bank reporting requirements for intangibles?
- Given that intangible assets can be wrapped up in the catch-all category of a blanket lien on all assets, how can lending institutions determine the value of intangible assets for the purposes of assessing collateral?
- If intangibles are used explicitly as collateral, what underwriting standards are used and what are the specific valuation standards and loan-to-value ratios?

**Promote Better Understanding of Intellectual Capital and Intangible Assets.** The *Framework* mentions intellectual capital using the example of patents and managerial know-how. Yet, as noted earlier, intellectual capital and intangible assets cover a much broader range of categories, including worker skills and knowledge, business methods, organizational structure, and customer relations. There is a need to broaden the understanding of policymakers, business leaders, and the general public on the full scope of intellectual capital and intangible assets and how they function in the marketplace. There are a few ways to widen the scope of knowledge around this subject:

***Commission a National Academies' study on intangibles.*** This was proposed at a June 2008 conference sponsored by the Bureau of Economic Analysis and the National Academies. A broad study of intangibles could include the following components:

- A survey of efforts in other countries to advance the understanding of intangibles and their role in corporate performance and economic growth, promote financial investments in intangible assets, and foster the utilization of intangibles
- An inventory of federally owned intangible assets and an exploration of how to exploit them for economic growth
- A list of policy recommendations to accelerate private investment in and management of the types of intangible assets most likely to contribute to growth.

***Manage the government's intangible assets more effectively.*** The federal government is a major investor in intangibles, but we don't have a clear picture of the size or nature of that investment across the agencies. The U.S. Office of Management and Budget (OMB) should build on the current federal budgeting process to engage in a cross-cutting analysis of federal investments in intangible assets. For some time the federal budget, as prepared by the Office of Management and Budget (OMB), has included a capital budget that includes physical capital, R&D, and education and training. The budget documents also include a separate analysis of statistical agencies' funding, which is not included in the investment budget. These and other budget studies already undertaken by OMB can serve as the starting point for a wide-ranging budgetary analysis of federal investments in intangible assets.