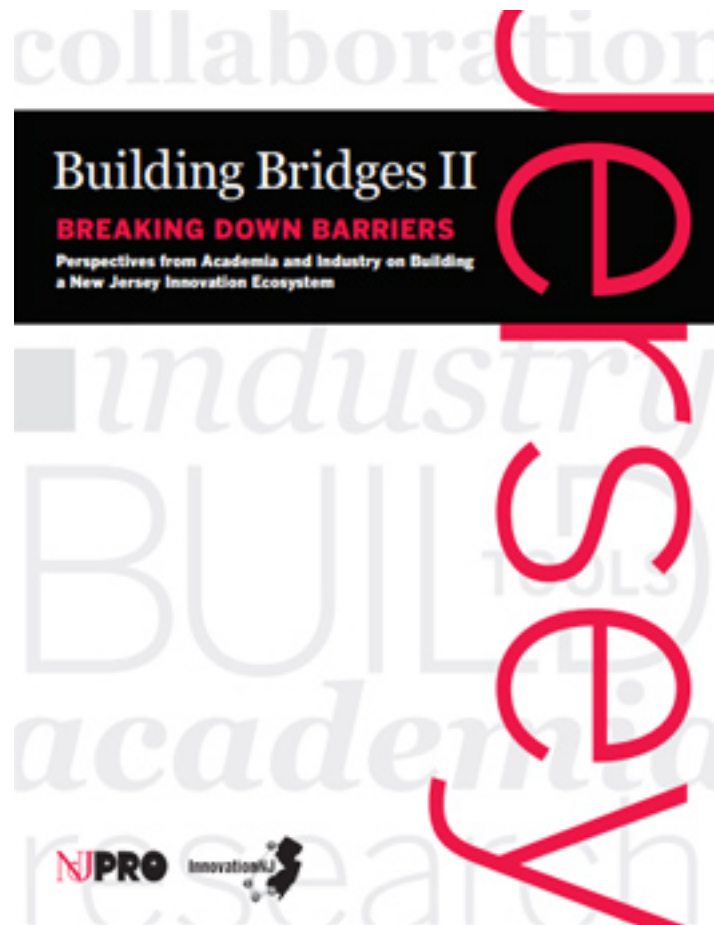


***Building Bridges II: Breaking Down Barriers: Perspectives from academia and industry on building a new Jersey innovation ecosystem***, is a report I drafted for the New Jersey Policy Research Organization, a think-tank of the New Jersey Business and Industry Association. The report recommended actions to Governor Chris Christie to leverage collaboration between universities and industries in the state to drive economic growth. An excerpt from the report, which is based on my analysis of focus group research, follows below. The complete report can be found at: <http://njprofoundation.org/wp-content/uploads/2014/08/buildingbridges2.pdf>





***Excerpt from *Building Bridges II: Breaking Down Barriers: Perspectives from academia and industry on building a new Jersey innovation ecosystem****

**Building Bridges II**

The past few decades have brought significant change to the New Jersey innovation landscape. Until the late 20th century, the State was in the forefront of innovation, scientific advancement, and research and development (R&D). It pioneered such industries as telecommunications, life sciences, food processing, and petrochemicals. Items such as electric light and the phonograph (Edison), Band-Aid (Johnson and Johnson), the transistor (Bell Labs), the color television (RCA), and vaccines for measles, mumps (Merck) and streptomycin (Rutgers University) all were invented or discovered in New Jersey. Forced to find ways to catch up, rival states actively embraced their colleges and universities as engines for economic growth. By conducting sponsored research and providing facilities, equipment and intellectual expertise, these states have leveraged their academic assets to attract and support industry investment. Meanwhile, the emergence of the new global marketplace, offering companies greater choices on where to invest and find talent, has increased competition not only with other U.S. states, but with foreign countries, as well.

This change in the marketplace underscores the need for New Jersey to look closely at its innovation ecosystem. Recent attempts at collaboration by its industries and institutions of higher education have not matched the levels of activity and vigor of those initiated by its rivals. New Jersey has recognized the need to develop a strategy to compete. In December 2010, the Report of the Governor's Task Force on Higher Education ([http://nj.gov/governor/news/reports/pdf/20101201\\_high\\_edu.pdf](http://nj.gov/governor/news/reports/pdf/20101201_high_edu.pdf)) urged New Jersey to “develop a structure to foster better collaboration between its businesses and its institutions of higher education.” This strategy must be jointly developed by state, industry and academic partners in order to be successful. This report recommends strategies to increase collaboration between these partners by examining the relationships and collective interests of each party.

**Building Bridges I**

In July 2010, the New Jersey Policy Research Organization (NJPRO) Foundation issued a report, *Building Bridges Between Academic Institutions, Business and Government to Bring Innovation to the Marketplace*, to examine these issues. That report showed that the State's universities

and colleges must serve as the foundation for research and development to support innovation that is needed to drive the growth of New Jersey's high-technology economy. Leveraging the research capabilities of higher education institutions is necessary to help the State compete with other states and foreign countries that have positioned their schools as engines of growth.

At the same time, the Healthcare Institute of New Jersey also launched a report on medical innovation. Together these reports served to foster a discussion in the state on how to build collaborative efforts. The result was the creation of the Innovation NJ (INJ) coalition, whose goals include increasing private and public sector R&D, retaining and advancing high-paying innovation-related jobs in the state, and increasing the number of Science, Technology, Engineering and Mathematics (STEM)-related graduates from New Jersey colleges and universities.<sup>ii</sup> INJ is a coalition of more than 90 member businesses, higher education institutions and state government agencies dedicated to promoting policies that foster an innovation environment in New Jersey.

In the fall of 2011, the NJPRO Foundation and INJ embarked upon a study to examine the collaborative environment in New Jersey and to test the findings of NJPRO's Building Bridges I report. To that end, Building Bridges II seeks to shed light on actions that can assist the progress of industry-academia collaboration by talking directly to the experts in business and academia who initiate and manage collaborations as part of their regular work.

## **Building Bridges II**

Building Bridges II utilized focus groups composed of academic and industry professionals representing eight New Jersey industries with a large R&D presence to test the hypotheses developed in Building Bridges I. INJ's Collaboration Committee played a major role in this report by recruiting INJ's members to participate in the focus groups for this study. The collective perspectives from academia and industry on how to bring about effective collaboration and develop New Jersey's innovation ecosystem distinguish this report and differentiate it from Building Bridges I.

This report examines specific data regarding what the experts on the ground saw as obstacles or aids to effective collaboration between academia and industry. The focus group participants' comments and insights illuminate courses of action that would accomplish the rebuilding of New Jersey's innovation ecosystem to drive growth and competitiveness for years to come.

## **Methodology**

Seeking to learn more about the factors that contribute to successful academia-industry partnerships in New Jersey and other states, NJPRO and INJ invited members from various organizations and institutions to take part in focus groups for this study. New Jersey's eight (8) leading innovator industries were targeted for inclusion in this study. Selected on the basis of their experiences with academic and industry collaborations, each group included 10 to 12

industry representatives and academic experts. The targeted industries were: Agriculture/Food Processing, Biotechnology, Chemical, Defense, Energy, Information Technology, Pharmaceuticals and Medical Technology, and Transportation and Logistics.

The higher education institutions represented were: Fairleigh Dickinson University, Monmouth University, Montclair State University, New Jersey Institute of Technology, Princeton University, Rowan University, Rutgers University, Stevens Institute of Technology and University of Medicine and Dentistry of New Jersey.

Moderated by a professional facilitator and lasting a minimum of 90 minutes each, the focus group sessions took place in the John J. Heldrich Center for Workforce Development, located at the Edward J. Bloustein School of Planning and Public Policy at Rutgers University, New Brunswick.

Four key questions framed the focus group discussions:

- What impediments, if any, are preventing greater collaboration between your industry and higher education in New Jersey?
- What resources, skills and support is each party seeking when searching for either an academic or industry partner?
- Does the State have a role in bringing industry and academia together?
- What recommendations do you have that will encourage greater collaboration between industry and higher education in New Jersey?

### **Growing New Jersey's innovation ecosystem**

Bringing together both sides of the research equation, the focus groups aimed to provide perspectives and “ground truth” on prior research done in Building Bridges I. Emerging out of the conversations were common themes related to impediments, challenges, and best practices found in other states. The discussions brought to light several challenges in New Jersey to cultivating a functional innovation ecosystem. Five common themes arose during the discussions and include:

1. Administrative Burdens
2. Lack of Coordination Between the State, Business and Academia
3. Clashing of Cultural Differences
4. Lack of Dialogue Between Industry and Higher Education
5. Lack of Coordinated Efforts to Secure Funding from Various Sources

As we examine these five challenges, the report reviews the groups' discussions on how to overcome these impediments and presents NJPRO/INJ's recommendations aimed at fostering a world-class innovation ecosystem.

### The Need for an Innovation Ecosystem

The case for building an effective innovation ecosystem is made in the National Science Foundation's report, *What is an Innovation Ecosystem?* which calls innovation the "fundamental source of significant wealth generation within an economy." In the report, written by Deborah J. Jackson, innovation ecosystem is defined as a model of "the economic dynamics of the complex relationships that are formed between actors or entities whose functional goal is to enable technology development and innovation."<sup>iii</sup> These actors, she says, include both the material resources (funds, equipment and facilities) and human capital (students, faculty, staff, industry researchers and industry representatives) that make up the institutional entities (colleges/universities, industry, funding sources and government) participating in the ecosystem.

Given the higher growth potential that high-tech industries typically offer, Jackson says that a state government has a "strong incentive" to play a role in developing and nurturing innovation ecosystems that spur job creation and economic growth. The challenge, however, is "figuring out how to turn the breakthroughs of R&D efforts into products that lead to profits." As Jackson points out, the difficulty in achieving success is getting two "distinct but largely separated" economies that comprise an ecosystem and operate on different reward systems, to coexist.

The recent reorganization of the State's higher education institutions demonstrates that New Jersey is committed to meeting this challenge.