

Next-Generation Models to Accelerate Innovating Industrial Networks

Wage growth in the United States is practically non-existent. This explains the lingering insecurity felt by many communities across the country, even as the economy continues to experience month-after-month job growth. It's easy to get distracted by the discussions of tax policy, wealth redistribution, and interest rates that dominate national economic discussions. But, these types of policies miss the fundamental problem: innovation-driven productivity gains since the Great Recession are roughly half the rate the country achieved in the two-and-a-half decades after WWII.¹ Meaningful and sustainable wage growth cannot occur without productivity growth. A closer look at the post-recession job numbers reveals that job growth is greatest in the relatively low skill, low productivity, low wage service sectors of economy – pulling down average productivity and, in turn, average wages. While the U.S. innovation system remains the envy of the world, the changing character of the global economy demands different approaches to innovation if we are to regain 20th Century productivity growth. Our challenge is to push innovation to every corner of the United States, boosting the productivity of U.S. businesses and creating the high skill, high productivity jobs that underpin American prosperity.

Fragmented Value-Creation

The U.S. industrial system has changed dramatically since the middle of the last century. The combined pressures of rising global science and technology capability, more open trade, rapid technological change, and increasingly impatient investors demanded that the large vertically integrated corporations of the 20th Century narrow their focus to core competencies. Beginning in earnest in the 1970s, all non-essential business units were often outsourced. Among many other dramatic transformations, U.S. manufacturing was scattered across the globe and research and development (R&D) resources were re-directed to business units for enhancements to existing products and processes at the expense of long-term exploratory projects. Simply stated, corporate value-creation was fragmented and distributed internationally.

This fragmentation has had a transformational impact on the institutions that comprise the U.S. innovation ecosystem. Slimmed-down global businesses (referred to as original equipment manufacturers, or OEMs) are more flexible and agile in the face of fierce competition. Yet, they are much less capable of innovating on their own. Today's competitive companies depend heavily on open innovation models that look to their supply chains, high-tech startup companies, and the university system for the disruptive ideas that will seed their next product or service. With innovation being pushed into the supply chain, small and medium-sized businesses (SMEs) are

¹ "Labor Productivity and Costs." *Bureau of Labor Statistics*. United States Department of Labor, 3 March 2016. Web. n.d. 29 March 2016.

presented with new growth opportunities; however, the complexity of connecting OEMs with relevant new technologies from SMEs increases.

While individual organizations are impacted in unique ways, the fundamental challenge affecting the entire innovation ecosystem is a loss of coordination and coherence. Twentieth century production models housed the resources, processes, and market access to drive the entire idea-to-market cycle within a single organization. However, the U.S. industrial system of 2016, at its best, might be described as one finding value created in loosely-connected, non-hierarchical industrial networks that systematically combine public and private assets. Product development occurs between innovative startups and OEMs. Successful SMEs adopt market innovation capabilities so they can operate independently from a single OEM's boom and bust cycles. OEMs possess knowledge of innovations within potential supply networks and are capable of assembling the players in timely, effective ways to meet market opportunities. The fragmentation of corporate value-creation, while allowing for increased agility and access to once-unavailable sources of innovation, has created gaps in the innovation system and blurred lines of authority. The corporation is no longer the coordinating body in the innovation ecosystem, nor should it be – yet coordination is needed, albeit in a different form, to increase the pace and scale of innovation that translates into broad-based prosperity.

Gap in Current Economic Development Portfolio

The economic development community has certainly responded to this new innovation-focused reality – moving well beyond 20th Century smokestack chasing. In particular, substantial public investment has been made over the last decade in multi-agency hubs and cluster mapping to coordinate innovation in a way that replicates capabilities that existed within vertically-integrated U.S. corporations. Yet there are gaps in the economic development portfolio. The major investments to incipient multi-agency manufacturing innovation hubs have not yet moved the needle on key success metrics, namely innovation-driven national productivity. Moreover, while the cluster concept is well understood and supported – evidenced by many localities around the nation making considerable investments in asset mapping – many of these expensive reports remain on the shelf, serving to describe a cluster rather than means of activation. In this emerging context, the challenge for next generation economic development models is to deliver design capabilities that make complex collaborations quick, agile, and strategic so disparate players can come together to generate a productive network of value creation and capture.

Next generation models need to be capable of accelerating innovating industrial networks and overcoming the inherent challenges embedded in the scale and complexity of the modern U.S. system of production. Greater system coherence involves creating **platform organizations** that serve as **intelligent enablers** for coordinated action. These platform organizations would play a critical role as honest brokers in bringing together public and private entities to collaborate broadly to offer integrated suites of tools and programs. At its center, these hubs would be activated by a **concierge function** that tailors synergistic programs for OEMs, regions, startups, and SMEs to accelerate the complex collaborations in which value is created in the U.S. industrial system.

The New Jersey Innovation Institute

The New Jersey Innovation Institute (NJII), a New Jersey Institute of Technology (NJIT) corporation, is a market-facing non-profit that has been designed as a collaborative platform to apply the intellectual and technological resources of New Jersey's world-class universities to challenges identified by the region's innovation stakeholders. NJII is working with partners at NJIT, Rutgers University, Rowan University and other private service providers to evolve a set of powerful, agile, and customizable solutions to intelligently coordinate and enable innovating networks.

NJII is itself part of the innovating network solution set. NJIT, the academic institution that seeded the idea for NJII, is not immune to the challenges facing academic institutions – namely the call by local and national leaders for universities to create, more directly, economic value for the communities in which they reside. Yet the institutional structure of the modern university was designed to support the mission of higher education, not commerce. NJII reflects the need to create new, adjacent, bridging institutions that mirror the horizontal, network-based environments they are designed to serve. NJII is new vehicle to harness and deploy university assets with the ability to operate in a highly competitive and fast-paced environment. Yet, with a hybrid public-private structure, NJII can make or coordinate public and private investments and perform functions that private companies must forgo for shareholder value, based on timelines and relentless pursuit of individual company profit.

An early target for NJII has been to pilot a set of solutions with the New Jersey Aerospace and Defense (A&D) cluster. Funded by the U.S. Department of Defense Office of Economic Adjustment, **NJMarketShift** (NJMS) focuses on supporting the A&D sector's resilience in the face of defense spending reductions by strengthening and diversifying the A&D supply chain. In addition to supporting the New Jersey defense industrial base, this initiative helps to establish core economic development infrastructure at NJII that could easily be expanded beyond the regional A&D cluster. The NJII solutions being developed through NJMS seek to fill the activation gaps in the economic development portfolio, while addressing the challenges faced by companies in an innovation ecosystem increasingly defined by fragmented value creation.

For more information about NJMarketShift and NJII's Economic & Cluster Development cLab, please visit: www.njii.com/economic-development