

[From Research Park to Innovation Community]

Strategic Planning and Design as a Competitive Advantage

Research parks are a key component of today's knowledge economy. Initially conceived in the 1950s as real estate development projects, by the 1990s parks had begun to shift away from recruitment of established technology companies to the support of entrepreneurs and start-ups. University research parks have achieved differentiation within this group, through the promise of engagement with university researchers and access to institutional infrastructure. The challenge facing 21st century university research parks is integrating a broad range of actors and activities—venture capitalists, IP specialists, entrepreneurs, university scientists involved in basic and applied research, engineers, product developers, marketing and sales forces—into a business ecosystem that consistently creates growth and opportunity.

Having worked with university research parks for decades, the SmithGroup team is particularly interested in the design and planning implications inherent in this shift. To better explore these issues, the team met with a group of university research park management and development staff at the 2013 Association of University Research Parks International Conference to discuss their successes and challenges. This paper summarizes that roundtable, and suggests how strategic design and planning interventions can create a competitive advantage and continued growth.

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Figure 1

- 1 Research Triangle Park
- 2 Clemson University Innovation and Technology Park
- 3 Clemson University International Center for Automotive Research
- 4 BioHio Research Park
- 5 Nebraska Innovation Campus
- 6 bwtech@UMBC: Research & Technology Park
- 7 Temple University
- 8 University of Maryland BioPark
- 9 University of North Texas Discovery Park
- 10 University of Arizona Science and Technology Park
- 11 The University of Oklahoma Technology & Research Park
- 12 University of South Dakota
- 13 University of Illinois

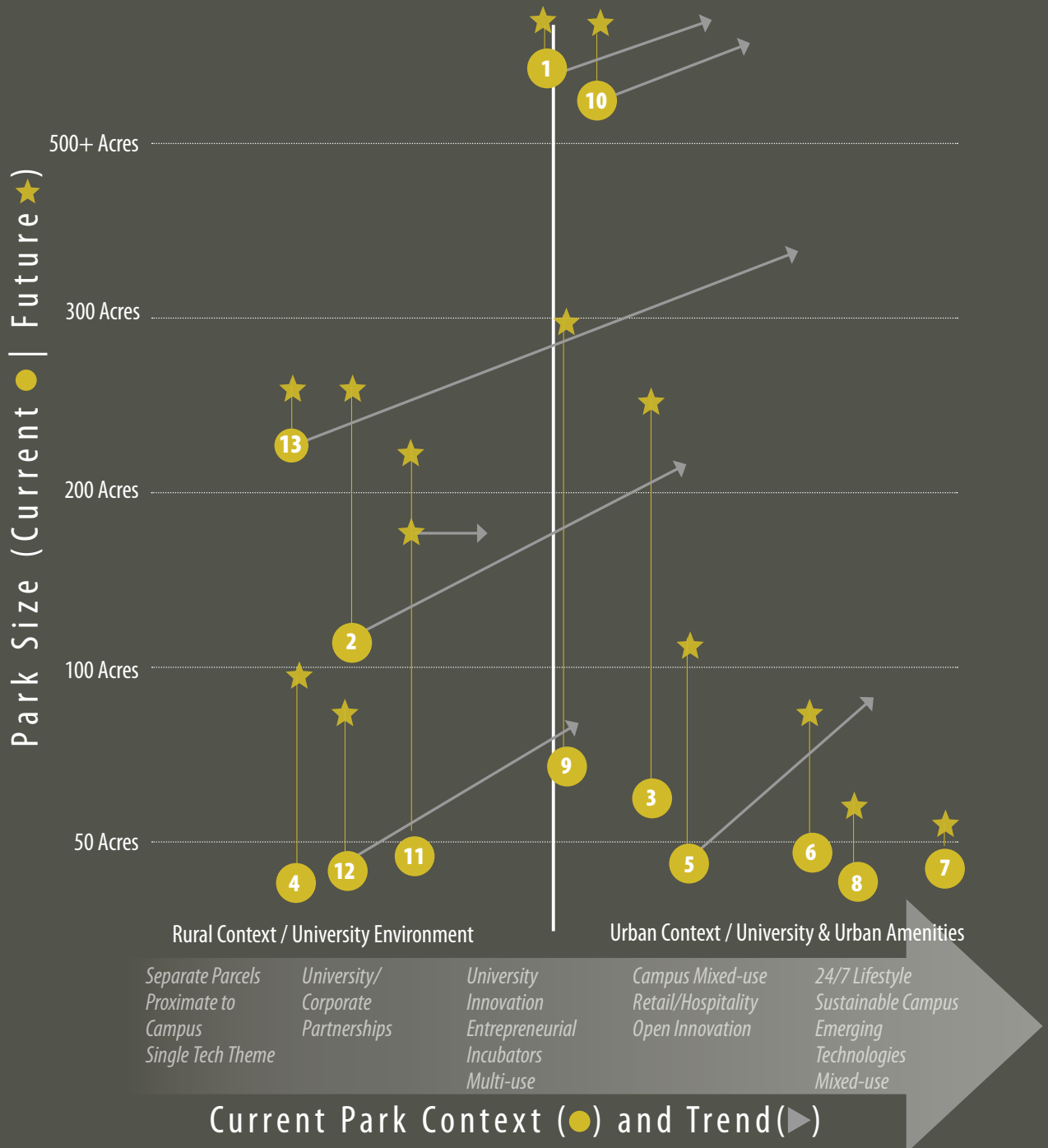


Figure 1: Trending Towards an Innovation Campus

Many research parks are shifting from traditional real estate development models to more campus-like environments. This includes 24/7 lifestyle amenities and mixed-use components. This presents a significant challenge to rural and non-urban parks in recruiting and retaining the next generation of knowledge workers.

The graph on the following page is a representative look at where select research parks across the country stand in capacity and context (yellow dots), projected growth (yellow star) and how they are pushing past the traditional research park model to create an innovation campus (gray arrows).

“ Wall Street and Main Street are not the fuel for competitiveness, innovation and productivity—its the Research, Industrial, and Office Complex Streets that will drive productivity through new technologies, especially ones that develop and commercialize innovations. ”

*-- Innovation Economics,
Atkinson and Ezell*

THE CHALLENGES

Shifts in funding

The decline in federal dollars supporting university research has led to new ways of thinking that engages both public and private sector research and development. Robert Atkinson, a keynote speaker at the conference and co-author of *Innovation Economics*, made the case for a new federal policy that would encourage investments in innovation and job growth. He profiled the need to reinstate manufacturing jobs in the U.S. to eliminate the trade deficit and grow new technology industries through partnerships with universities and corporate investment. He also called for actions to catalyze industry-university research partnerships through national sector grants.

Figure 2: Entrepreneurship Ecosystem

This model comes from Koltai & Company and illustrates "that no single factor alone moves entrepreneurship forward. Rather, entrepreneurs thrive when multiple sectors and actors consciously work together to develop a supportive environment for entrepreneurship."

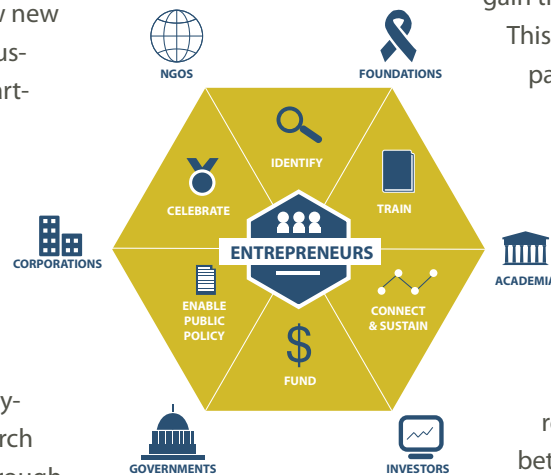


Figure 2

Greater Flexibility in Park Policy

Research parks and universities are increasingly looking to attract tenants with a greater range of research and product development needs. This has required more flexibility in park covenants and design guidelines to allow for building typologies more suited to prototyping, first generation production and 'light' manufacturing activity.

Regional Economic Growth and Entrepreneurship

The original research park model depended on recruiting large established firms to develop within the park. This left parks open to disruption when national firms changed direction or moved on to different markets. Parks have re-tooled to provide more business incubation and accelerator programs. They have seen that the value of incubator space is the ability to grow firms in place; firms with strong local ties are less likely to relocate as they gain traction and grow.

This model requires that parks provide more extensive networking and technical support than before. University research parks can differentiate as facilitators of research partnerships between public and private interests. This can be a particularly powerful advantage as corporations increasingly look to invest in broader and more innovative portfolios.

Sustainable Development

The impact of climate change; modifications to local, state and federal regulations; increased emphasis on energy and resource efficiency; and university responses to broad environmental issues are all drivers in the trend to de-

“ The suburban detached environment doesn’t lend itself well to attract 20, 30, 40 year olds to populate these companies. How do we design the physical environment, adjust programming and enhance employee connections to create a sense of community and place? ”

-- Research Park Colloquium Participant, 2013

velop more sustainably. Research parks are increasingly looking to responsible design as a differentiator to attract partners and improve efficiency. New research parks are in a position to consider alternative energy sources, such as geothermal, solar, and other innovative approaches. However, older parks might struggle with meeting the new demands of energy efficiency in existing facilities cost effectively. To meet the challenge, park directors, engineers, planners and architects should work together to agree upon the most effective energy model that will elevate efficiency and value.

Amenities and Support

Amenities can be powerful recruiting tools. Small firms and start-ups do not have the resources to provide the university on-campus life-style environment and amenities that larger firms can. They will look to the research park to provide the conference centers, resi-

dential, entertainment, dining and fitness opportunities their employees seek and their competitors offer. Achieving the right density, demographics, and market demand to support the development of amenities without subsidies has been a challenge for research parks, particularly those in rural areas or at an early phase in their development.

Entrepreneurship in University Culture

Basic science has long been the mainstay of university research. Land grant institutions, in particular, have followed a model where research was freely made available. However, the commercialization and practical application of research are not often supported within the institutional culture. Applied research may not improve a professor’s chance at tenure, and may preclude the opportunity to publish. Similarly, the facilities needed for basic research are not the same as those that would



Conference Centers



Dining



Prototyping Laboratories

support the application and scale-up necessary to bring that research to market. Research parks can be the bridge linking technical, financial, and facilities support to encourage entrepreneurial engagement in faculty.

HOW DOES DESIGN MAKE A DIFFERENCE?

Consider the Whole Research Continuum

Research parks can serve as true economic engines when they provide a place that allows applied research to be conducted. This research operates at a different scale and requires different facilities than the basic research conducted by universities. Testing, prototyping and first generation production are the areas where industry is coming to universities for help, and research parks can play a critical role in this stage. A strong applied research component that encourages university scientists and post-doc students to develop their own research can create an ecosystem of innovation, where startups more easily make the transition from the incubator stage to successful businesses.

Target Specific Niche Sectors

There is no “silver bullet” that makes a park attractive to every business sector. University research parks are successful because they capitalize on the established clusters of research specialties. The range of market sectors within which universities are pursuing development and commercialization partnerships is broad, ranging from bioscience to advanced materials and agriculture. The ability to offer close ties

“ It’s more complicated than the real estate factor—it’s about engagement with university. If you miss that you miss the opportunity to sell the value to the university. They [universities] struggle with how you create economic development potential, which is more than just jobs. It’s about technology commercialization and taking your research to the next level. ”

-- Research Park Colloquium Participant, 2013

to renowned researchers and a specialized workforce are powerful attractors. Similarly the presence of specialized facilities and tailored infrastructure can be a critical differentiator.

Plan for Change

Any place devoted to research is a place that must embrace change. Design and planning strategies must assume that buildings, sites and infrastructure will constantly need to be updated and modified; possibly in ways that were never considered during their initial design. Research park design must be flexible and sustainable, attracting businesses that may need unusual or highly specialized space and infrastructure, and it must be scalable over time to accommodate growth. Existing park covenants and design guidelines must keep pace with new technologies, materials, and building typologies that encourage innovation.

Create a Sense of Place

Access to a highly educated, specialized workforce is a major competitive advantage

for any university research park. Due to the demand for their skills, these next generation knowledge workers are mobile, able to choose from a variety of employment options. An attractive, engaging work environment can play a major role in recruitment and retention of these workers. The old suburban office model that provides nothing more than a place to work is no longer enough. Parks have begun to concentrate on the work/live/learn/play model, increasing density and developing housing, retail, recreation, and social spaces. Some have provided land for day care and elementary schools, as these can be particularly attractive to a workforce likely to have young children.

Design Sustainable

Innovative businesses are attracted to innovative places. Sustainably designed and managed parks resonate with the technologically adept and highly educated leaders they are trying to attract. They can also serve as test beds for sustainable products and research in renewable energy, water resources and green infrastructure.



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Retail Amenities

“ We understood that we needed a lifestyle community from the park’s inception. We have a vibrant hotel, conference facilities, and day care. And now, as expected, our clients are demanding retail.

-- Research Park Colloquium Participant, 2013

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CONCLUSION

The transition of research parks from their original real estate development model to their current role as regional economic drivers has moved them into a pivotal period of reinvention.

To succeed in this new role, parks must move away from simply recruiting established national tenants, to working with small local firms that will remain loyal to the region as they grow. Providing collaborative opportunities for university researchers to commercialize their findings can be a powerful differentiator.

In addition to the intellectual resources of the university, a successful research park will also need to offer the right mix of physical resources and amenities. Facilities that can support the entire continuum of basic and applied research, from laboratories through prototyping and small scale manufacturing, will be critical. The importance of amenities that create and support a sense of community cannot be ignored. Conference centers, coffee shops and restaurants, and the informal encounters they encourage, can create a synergy

between park tenants. Opportunities for recreation can be important recruitment tools, as can day care centers or even primary schools, depending on the expected demographics of a research park workforce.

Master planners and architects can play a critical role in developing a framework that can accommodate such a wide range of facility types within a coherent whole. The careful siting of prototyping or manufacturing facilities with respect to recreational spaces is only one example of the issues master planners must address. A design language that can allow office buildings, retail development and manufacturing to maintain consistency and remain flexible is a particular challenge for architects.

Of course, each park must apply this common framework within the context of its own unique appeal. Some may choose to capitalize on a specific concentration of research expertise, others on geographic advantages. Building on this individualistic core, the new Innovation Community will be one that fosters collaborative economic growth, and sets the stage for the next phase in the research park’s evolution.

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