

Tri-Cities Research District Speaker Series:

Advancing Research Parks: Emerging Trends, Best Practices and Strategies for Recruiting Companies

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Why Advancing a Research Park Complex Matters

- **In today's global knowledge-based economy, physical environments matter in attracting talent, industry and furthering innovation.**
 - **Creates a “sense of place” for the technology business community**
 - **Provides a resource-rich environment for emerging and new ventures**
 - **Enables better linkages/alignment of university/federal labs/industries**
 - **Leverages access to talent pools**

World Winning Cities Research Program from Jones Lang LaSalle

Three key drivers for future winning cities:

- **Technology Richness**
- **Resort/Urban Hip with Urban Sustainability**
- **Challenge of Rising Mega Cities**

“Rising Urban Stars—Uncovering Future Winners,”
Jones Lang LaSalle and LaSalle Investment
Management, May 2003.

Variety of Potential Approaches Suggests Need to Tailor to Specific Drivers and Opportunities

- There is no *one-size-fits-all* approach to research and technology park developments. What is emerging is a series of potential developments that can fit a variety of regional settings, including:

Type of Development	Key Focus	Examples
Stand-alone Technology Accelerators	Enable emerging companies to take root and grow through incubator and specialized multi-tenant lab space.	Center for Emerging Technologies (St. Louis) Accelerator Corporation (Seattle)
University and Medical Center-affiliated Research Parks	Embody close relationships with the research capacities and technology commercialization of local universities, and also create ties with the talent pools generated by local universities.	Oklahoma City Presbyterian Foundation Research Park Virginia Biotechnology Park (Richmond)
Industry-related Technology Parks	Build on specific growth sectors and create strong regional agglomeration through high value infrastructure and activities, e.g., access to multi-tenant facilities, incubation services, technology networking.	Shady Grove Life Sciences Park (Montgomery County, MD) Research Triangle Park
Live-Work-Play Mixed Use Development	Incorporate BioComplex within larger mixed use development involving campus expansion, research park and housing/amenities.	Centennial Park (Raleigh) South Lake Union (Seattle) Memphis Medical District

Today's Presentation

- Emerging Trends in Research Parks
- Best Practices
- View from National Developers
- Strategies for Pro-active Outreach Marketing

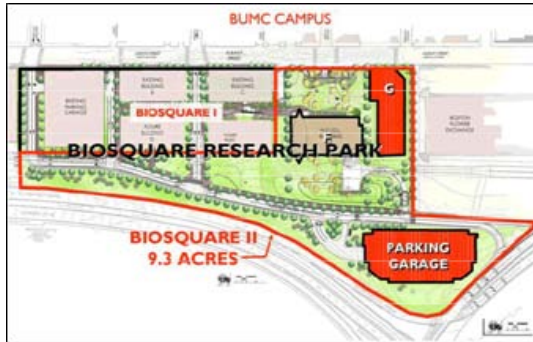
Emerging Trends in Research Parks

Evolution of Research Park Model

Early Parks: Stand Alone Physical Space	1990s: Connections	2000 and Beyond: Economic Driver for the Region
<ul style="list-style-type: none"> ➤ Real estate operations ➤ Campus-like environment, selling single parcels of land ➤ Focus on industrial recruitment ➤ Tenants had few, if any ties to university or federal laboratories ➤ Little provided in terms of business assistance or services 	<ul style="list-style-type: none"> ➤ Anchor with R&D facilities aligned with industry focus of park ➤ Innovation Centers and technology incubators become more common ➤ Multi-tenant facilities constructed to accommodate smaller companies ➤ Parks begin to directly provide some support for entrepreneurs and start-up companies 	<ul style="list-style-type: none"> ➤ More and more mixed use development, including commercial and residential ➤ Increased focus and deeper service support to start-ups and entrepreneurs with less focus on recruitment ➤ Formal accelerator space and plans for technology commercialization roles begin to emerge ➤ Greater interest on part of tenant firms in partnering with universities ➤ Universities more committed to partnering with research park tenants ➤ Adding amenities from day care to conference and recreational facilities

Examples from Around the Nation

BU BioSquare
(1.1 m sq ft built out)



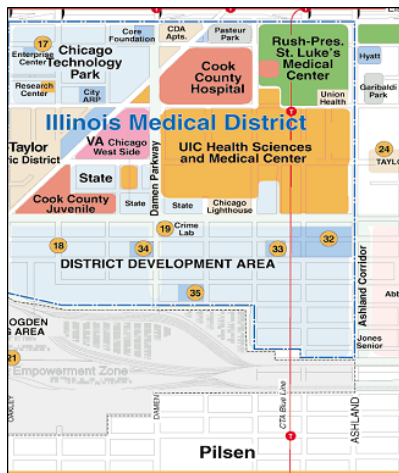
Key Features

- Close proximity and often integration of research and industry developments
- Presence of multi-tenant specialized lab space
- Leverage specialized shared-use university facilities
- Having a closely associated research park within an academic medical district is a proven approach
- Many are establishing “livable urban settings” involving work-live-play settings

Centennial Park, NC
(2.71 m sq ft built out)



Chicago Tech Park
(500,000 sq ft built out)



Mission Bay, S.F.
(6 m sq ft commercial dev planned)



Methodology



- Surveyed 174 university research parks in Canada and the U.S.
 - 77% (134) parks responded
 - 81% of respondents were in the U.S., 19% in Canada
- Conducted interviews with research park managers to identify trends
- Collected case study information on selected parks
- Analyzed data, estimated economic impact and prepared report

Key Findings

- **Research parks have grown at a steady pace during the past three decades**
- **The majority of parks continue to be developed in suburban areas, although activity is increasing in urban areas**
- **Research parks are considered an effective tool to spur homegrown business retention and expansion**
- **Research parks are placing greater emphasis on incubation and entrepreneurship**
- **Research parks are focusing on targeted industry clusters**
- **Research parks are being viewed as commitment to economic development**

The University Research Park Industry

Size Metric	Total for All Parks	Average	Median
Total acreage	47,274	358	114
Acreage currently developed	21,961	179	30
Total number of buildings open	1,833	16	6
Total square footage of open buildings	123.9 million	1.09 million	314,410
Estimated percentage of space currently occupied		86%	95%
Projected acreage at full buildout	35,354	283	114
Estimated total square feet at full buildout	274.8 million	2.43 million	1.10 million

Room to expand: Only 62% of the acres and 45% of the square footage projected to be developed at full build out is currently developed

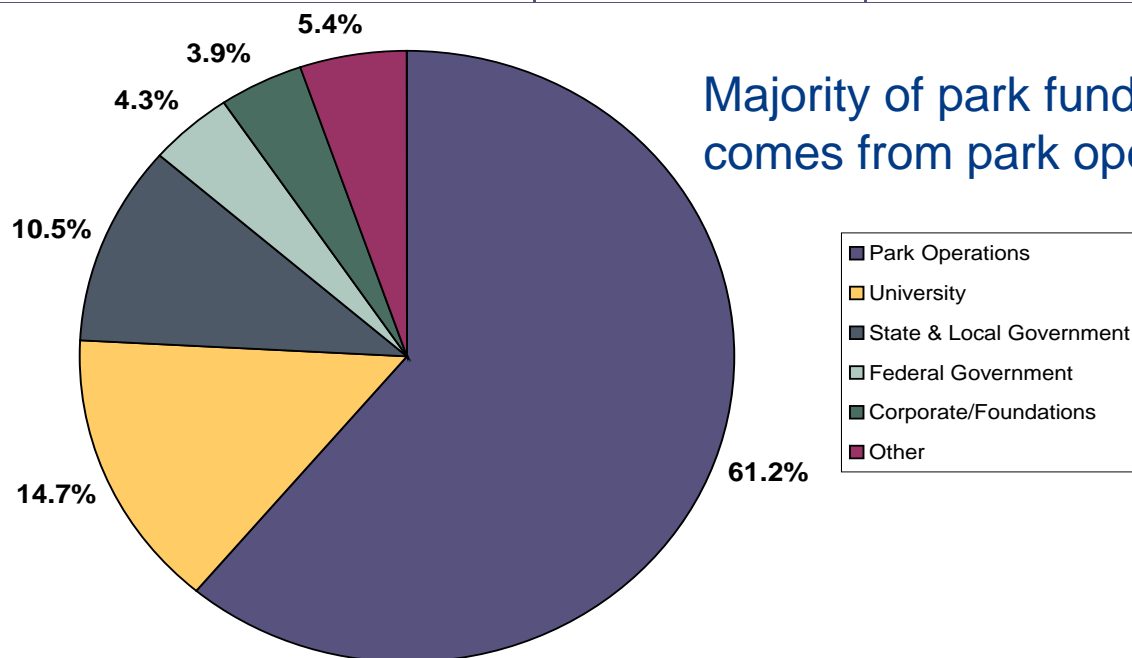
Profile of the Typical Research Park

Typical Research Park	
Size	<ul style="list-style-type: none"> • 114 acres • 6 buildings • 314,400 sq. ft. of space, 95% occupied • Only 30% of total estimated sq. ft at build out currently developed • 30,000 sq. ft. of incubator space
Location	<ul style="list-style-type: none"> • Suburban community • Less than 500,000 population
Governance	<ul style="list-style-type: none"> • Operated by the university or university-affiliated non-profit
Tenants	<ul style="list-style-type: none"> • 72% are for-profit companies • 14% are university facilities • 5 % are governmental agencies
Employment	<ul style="list-style-type: none"> • Typical park employ 750 • Major industry sectors: IT, drugs and pharmaceuticals, and scientific and engineering service providers
Finances	<ul style="list-style-type: none"> • Less than \$1 million per year operating budget • Revenues primarily from park operations but funds also come from universities and state, local and federal government • Limited or no profitability; more than 75% of the parks have no retained earnings or retained earnings of less than 10% of the park's operating budget
Services	<ul style="list-style-type: none"> • Provide a range of business and commercialization assistance services, including <ul style="list-style-type: none"> ○ Help accessing state and other public programs ○ Linking to or providing sources of capital ○ Business planning ○ Marketing and sales strategy advice ○ Technology and market assessment

Costs of Operating Research Parks

Current Annual Operating Budget	Number of Parks	Percentage of Total
Less than \$500,000	49	40%
\$500,000 to \$999,999	20	16%
\$1,000,000 to \$2,999,999	26	21%
\$3,000,000 to \$4,999,999	10	9%
\$5,000,000 to \$9,999,999	9	7%
\$10,000,000 to \$14,999,999	4	3%
\$15,000,000 or more	4	4%

More than half of all research parks have an annual operating budget of less than \$1 million



Majority of park funding comes from park operations

University Research Parks Employ Workers Across a Variety of Tech-based Industrial Sectors

- IT, drugs and pharmaceuticals, and scientific and engineering services account for 45% of all university research park jobs
- Almost half of the workers in university research parks work in companies that engage primarily in R&D

Industry	Percent of total core employment	R&D employment as percent of core
Total core park employment	100.0%	47%
Software	13.5%	61%
Computers & Related Hardware	11.0%	86%
Drugs/Pharmaceuticals/Diagnostics	10.6%	90%
Scientific & Engineering Services	9.7%	78%

Incubators Serve as an Important Driver of Tenants

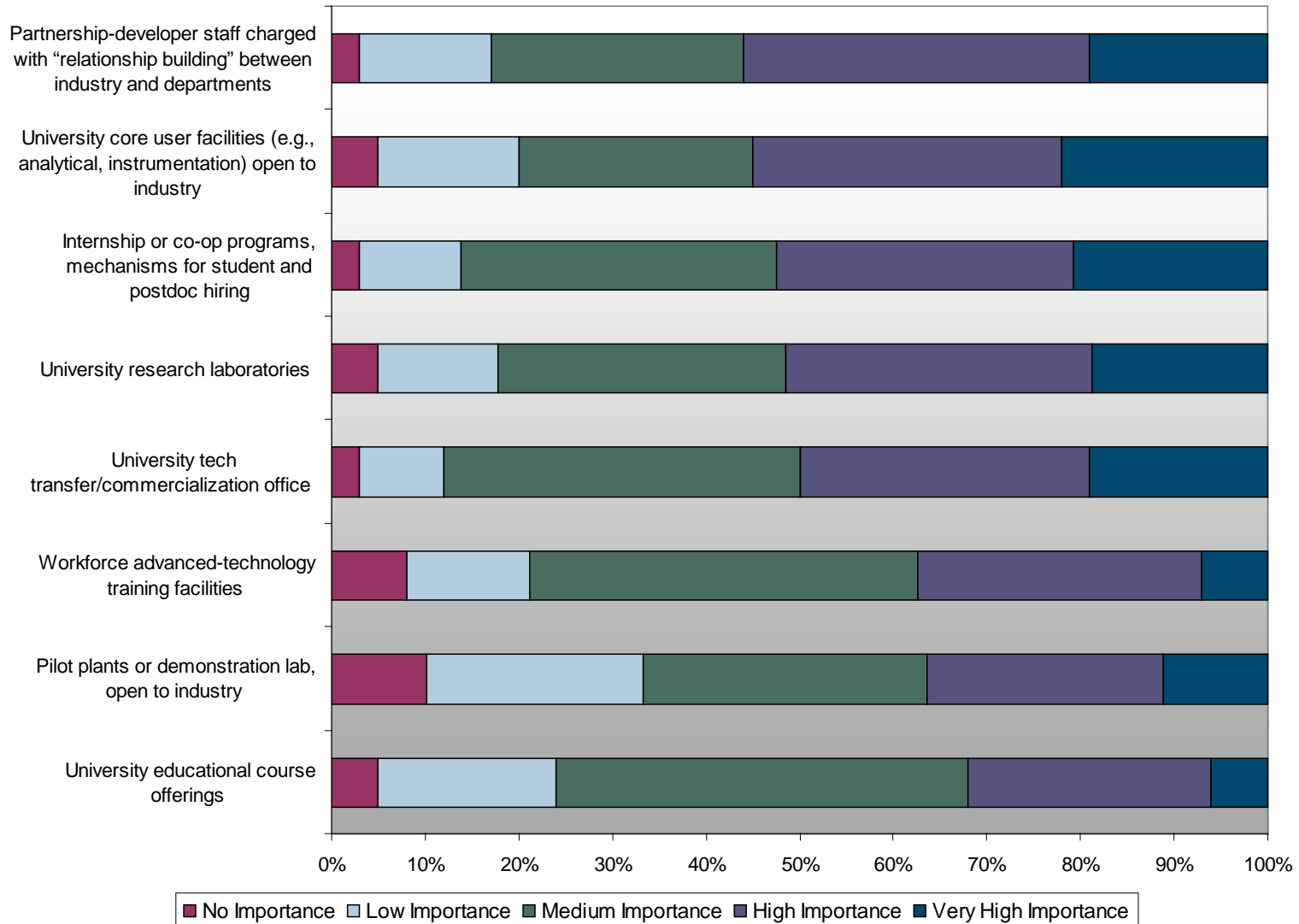
Number of Incubator Graduates Who	Number of Firms	Percentage of Total
Left the park but remain in the community	299	39.4%
Moved to multitenant space within the park	156	20.6%
Acquired or merged; and other outcomes	115	15.1%
Are no longer in business	97	12.8%
Left the region	73	9.6%
Moved to own building in the park	19	2.5%
TOTAL	759	100.0%

Research Parks Moving Towards Broader Infrastructure Services

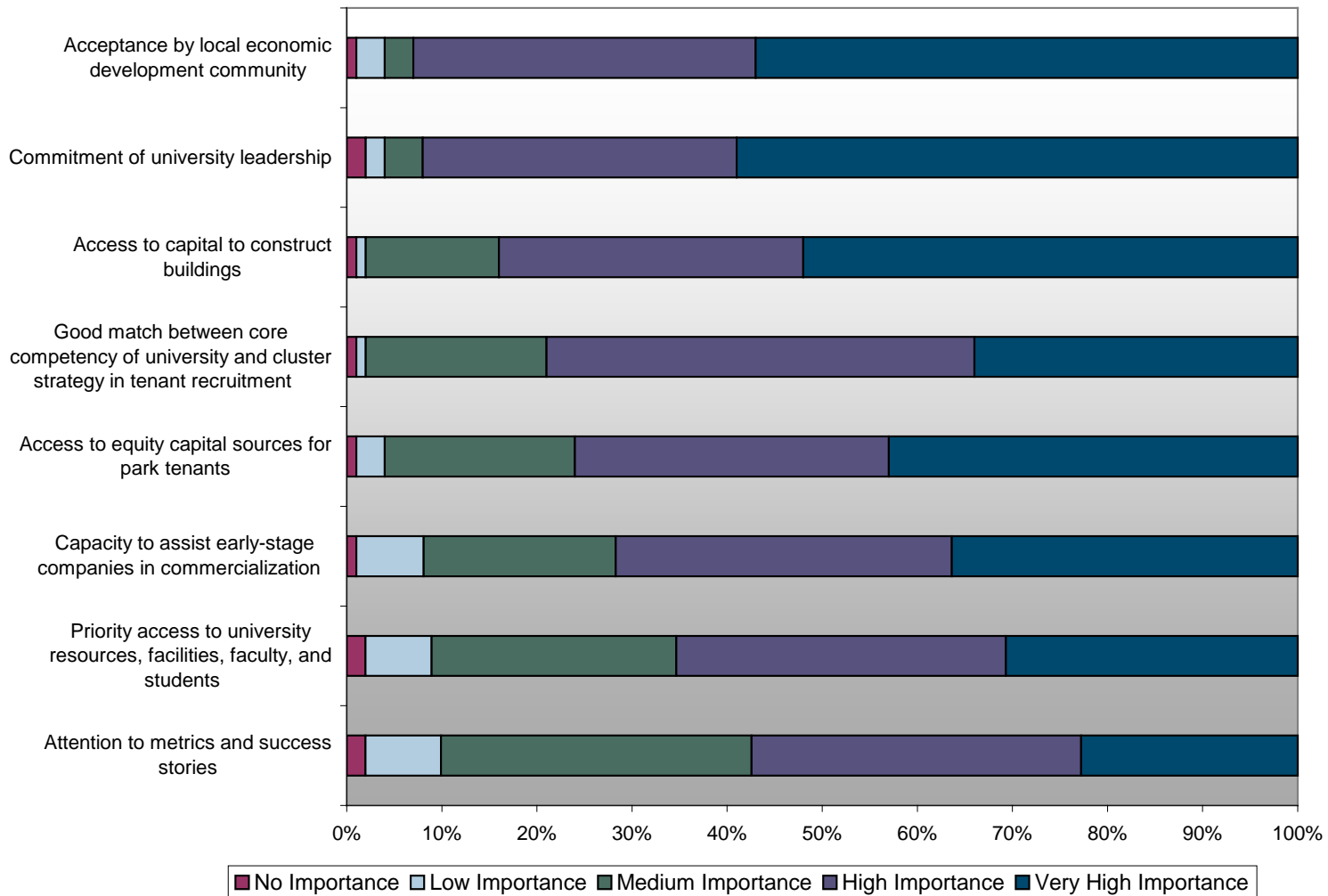
Service Offerings	Number of Parks Providing the Service	Percentage of Total Parks
Help access state and other public programs	94	81%
Link to or provide sources of capital	87	76%
Business planning	77	68%
Marketing and sales strategy advice	70	64%
Technology and market assessments	69	62%
Assist with human resource issues	48	45%
Provide proof-of-concept funding	40	38%

Three-quarters of the parks reported helping entrepreneurs and start-up companies access public and private sources of financing

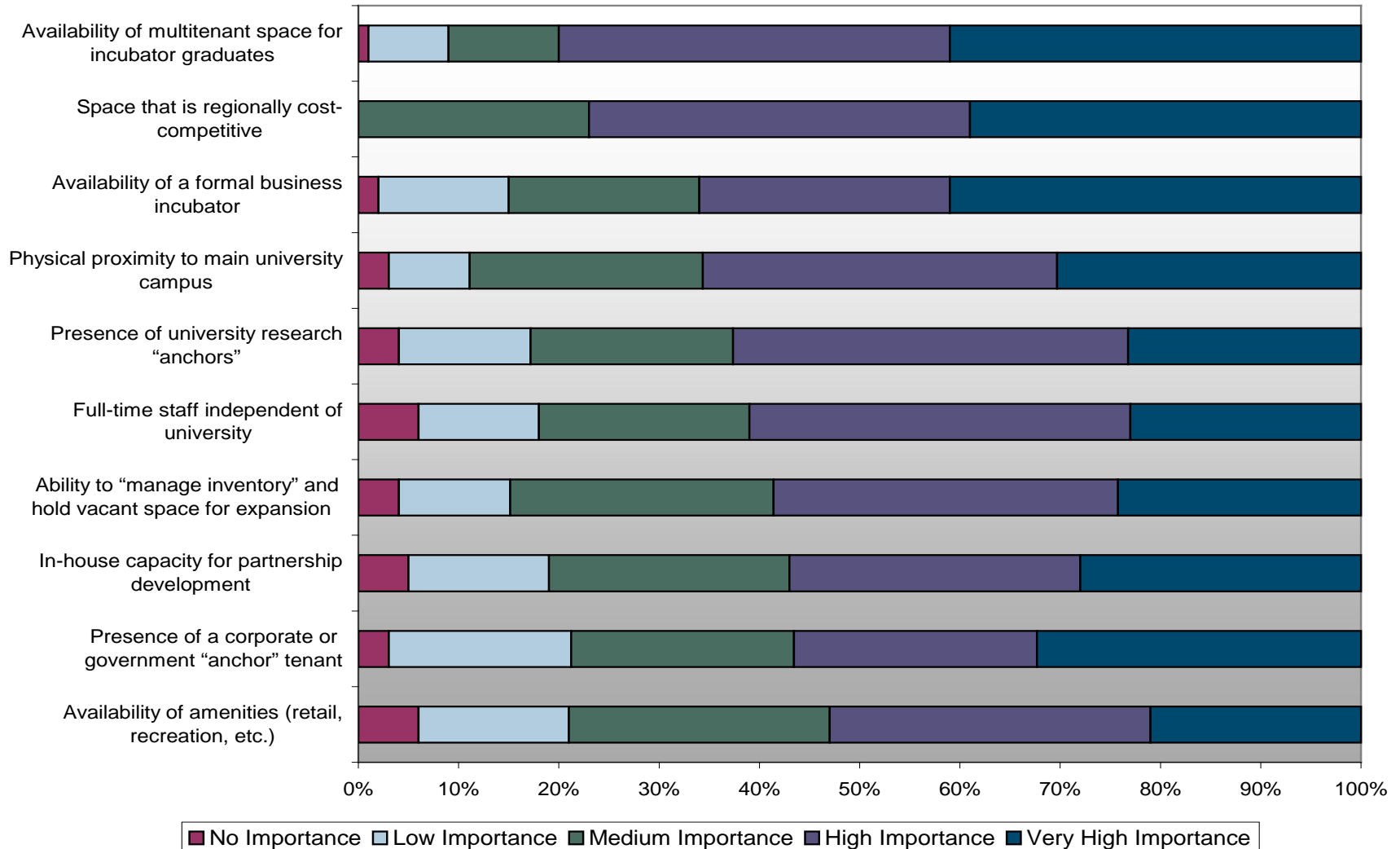
Research Parks Use Many University-Industry Partnership Mechanisms



Local Economic Development and University Leadership Critical to Success



Success also Depends on Quality and Type of Space



Need to Select Your Own Benchmark Set

- For benchmarks to be useful, they must share at least some key features
- That way one can learn from the strategic choices the benchmarks made
- No benchmark will be exactly like your site in all respects
- So mix and match to achieve a balanced representation of important factors – some will be like you in some ways, but not in others

Typical Findings from Battelle Benchmarking

- Critical to ensure available multi-tenant space to maintain a research park's development momentum.
- Need to put in place a pro-active outreach marketing program – typically, developers fill demand and local economic developers package deals.
- In working with developers, it is important to set clear development milestones and be able to change horses as needed.
- Patience, patience, patience.

Perspectives from National Developers

Outreach to Developers to Develop a Major Research Park Complex for a Florida Client

- Nine developers responded to Battelle's inquiry – 5 completed interviews and 4 declined due to lack of interest in Tampa at this time.
- *Focus of Discussions:*
 - Key market demand indicators that influence your selection to enter a new region
 - Overall dimensions that create most viable projects
 - Expected size and phasing of development
 - Types of public support needed

Key Factors Identified and Compared with Benchmarks

- **Size and Initial Phases of Development**
- **Type of Site**
- **Access to Land**
- **Anchor Tenants and Leasing Commitments**
- **Nature of Local Support**
- **Nature of Government/Developer Relationship**

Size and Initial Phases of Development

Summary of Input from National Developers	Insights from Benchmarks
<ul style="list-style-type: none"> •Initial building to launch park needs to be in range of \$25 to \$50 million or approximately 50,000 to 100,000 sq. ft. •National developers would like to see strong prospects for at least a first phase of development of 200,000 to 500,000 sq. ft. within 3 to 4 years. •Over time, a 1 million plus square foot build-out is expected. 	<p>Generally in line with comments of national developers:</p> <p>Atlanta: 1 commercial building of 160k s.f. to date – 70% leased in first three months. Short-term buildout target 600k s.f. over 4 pads on 11 acres; long term 1m s.f. on 16 acres</p> <p>Denver: Buildout of institutional core moving to completion on 230 acres. 60k s.f. incubator built, first multi-tenant building planned for 160 acres dedicated to commercial use</p> <p>Oklahoma City: 225k s.f. over two buildings in first five years (1994-1999). 700k s.f. over 6 buildings (+ commercial/parking) to date. Buildout target 1m s.f. over 10 buildings on 27 acres</p> <p>Orlando: 100k s.f. of spec wet-lab space committed but not yet built; Buildout target 2m s.f. institutional/commercial on 50 acres</p> <p>Raleigh: Currently 2.7m s.f. of institutional/commercial over 25 buildings on 1120 acres. Buildout target not determined for main campus; 1.6m s.f. on 214 acres at biomedical (one initial 35k s.f. lab under construction)</p> <p>Richmond: 575k s.f. over 8 commercial/institutional/governmental buildings in first five years (2000-2005). Philip Morris under construction will take it most of way to buildout target of 1.2m s.f. over 9 buildings on 34 acres</p> <p>Seattle: Counting bioscience only and excluding commercial/retail/residential, 634k s.f. over 5 buildings in first five years (2004-present). Ultimate buildout including all uses estimated 14m s.f. over approx. 150 acres</p>

Type of Development

Summary of Input from National Developers

- **Developers vary, but in general there is a greater interest in campus-like developments.**
- **Some of the national developers are willing to work with urban in-fill sites, if this ensures proximity to institutional research drivers and meets the needs of anchor tenants.**

Insights from Benchmarks

Campus-like developments, even within urban settings, more typical than scattered in-fill buildings:

- Atlanta** – compact, mid-rise campus, situated at edge of Georgia Tech campus, across the road from Coca Cola HQ, near downtown.
- Denver** – large campus, diverse building types, situated adjacent to Lowry/Stapleton redevelopment zones, in inner-ring suburb (Aurora)
- Oklahoma City** – compact, low-rise campus at edge of medical district, situated east of downtown, north of Bricktown entertainment zone
- Orlando** – compact low-rise campus situated inside a large golf resort/development, just east of the airport and south of UCF
- Raleigh** – large campus with ample green space, master-planned to live/work principles, mostly low rise, situated on redevelopment site 2 miles from downtown, connected by bus to main NCSU campus
- Richmond** – compact, low-rise campus in heart of downtown/capital district, adjacent to VCM and hospital complex
- Seattle** – large, mid-rise, mixed-use redevelopment situated between downtown (Seattle Center) and Lake Union, abutting Hutchinson Cancer Research Center and across the lake from UW

Access to Land

Summary of Input from National Developers

- Developers would like to have land pre-assembled and under control of local government, university or intermediary and have options to land and draw down in light of the pace of development

Insights from Benchmarks

Benchmarks are generally in line with national developer expectations that it be assembled. Notable exception is Seattle.

Atlanta – Land under university control, appears to be leased to master developer as needed site by site

Denver – Land sold to State for \$1 by Dept. of Defense (via BRAC), under control of Fitzsimons Redevelopment Authority. Leased as package to master developer for 75 years, with escalating option payments to preserve rights, 10% of cash flow in lieu of rent

Oklahoma City – Land under Urban Renewal Authority control and sold to foundation (the developer) as needed site by site

Orlando – Land already owned by developer, ceded or sold to users as needed, zone by zone or site by site

Raleigh – Former state mental hospital land (800+ acres) transferred to university ownership in 1984; either developed by university itself or leased to developers site by site or zone by zone

Richmond – Land acquired through urban renewal process, including condemnation; development managed by University via state authority with bonding capacity

Seattle – Land under diverse ownership, with multiple, site-specific development models

Anchor Tenants and Leasing Commitments

Summary of Input from National Developers

- The national developers expect the key anchor(s) in emerging markets will reflect institutional demand from universities, research institutes and hospitals.
- As a complement to anchor tenants, the national developers are generally open to emerging firms or satellites of established firms demanding initial space in the 2,500 to 5,000 sq ft range.
- First building should be at least 40 to 50% pre-leased before construction begins, with strong prospects of it being fully leased by the time of initial occupancy.
- Expectation that all subsequent buildings would have some significant level of pre-leasing, with lower % if momentum is achieved.

Insights from Benchmarks

Most of the benchmarks leverage institutional user demands or provide substantial leasing guarantees, often via master leasing portions of the facility. Note that business incubators can serve as packaging of “graduate” demand down the road

Atlanta – Georgia Tech master leased facility, first tenants are companies graduating from Georgia Tech incubators. ATDC has 22k s.f. of wet-lab space in Tech’s life science complex.

Denver – Initial building was 60k s.f. Bioscience Park Center incubator, supported by federal EDA grant, state and university funds; private developer now planning first commercial building to capture graduates.

Oklahoma City – Presbyterian Research Foundation took all development risk. Anchor tenants in first building were local bioscience start-up (Uracor, later acquired by Labcorp), Oklahoma Medical Research Foundation labs and University of Oklahoma labs.

Raleigh – North Carolina State and its Engineering Graduate Research Center served as anchor tenants with 18k s.f. of incubator space (mixed wet and dry) included within initial two university-developed buildings. Other initial facilities were single tenant occupancy for ABB and Lucent.

Richmond – Anchor tenant for first research park facility was university, master leasing 27k s.f. Biotech Center incubator.

Seattle – Anchor tenants were University of Washington, Seattle Biomedical Research Institute and Rosetta Bioinformatics (part of Merck).

Nature of Local Government Support

Summary of Input from National Developers

- Assemble land and make available at nominal cost or through long-term land lease (60 yr.) upfront.
- Address permitting issues
- Ensure infrastructure is in place upfront, make funding available for site prep, utilities, telecommunications, roads, streetscape and public open space / amenities.
- Address parking needs – while this can be done as development takes place, developers do not want to use their own resources to address parking, especially garages needed in an urban setting.
- Provide incentives--funding for tenant recruitment and building-out (TI).

Insights from Benchmarks

State and Local government involvement varies considerably across the benchmarks.

Atlanta – Unspecified incentive from Atlanta Development Authority (may have been from tax increment financing district).

Denver – Site is a TIF zone; using US EDA infrastructure grants; City of Aurora involved in funding incubator operations. Planned light rail extension will serve Medical District and Park.

Oklahoma City – Land starts under ownership of OKC Urban Renewal Authority, transferred to Foundation as needed for development at or below market value; city provided \$7m in TIF financing and \$5m for associated garage.

Orlando – Burnham package included \$70m from city and county, evenly divided, plus commitment to new fire station, road and infrastructure as well as schools (accelerated by loan from developer/landowner).

Raleigh – city apparently involved only in planning/zoning process for site.

Richmond – State provided \$5 million in bonding authority to launch research park development. More recently, Mayor (former Gov.) Wilder provided \$3.2m in land to Philip Morris to seal recruitment .

Seattle – Extensive rezoning package made life science development possible; city supervises community-benefit agreements.

Approach to Government-Developer Relationship

Summary of Input from National Developers	Insights from Benchmarks
<ul style="list-style-type: none"> • Developers are seeking a level of confidence in the commitment of local government for the project – need to see strong champions and a firm sense that local government support will be sustained • National developers will look to local government or their intermediaries to assist in packaging demand among potential tenants. • Many developers see value in having a special purpose development entity comprised of key stakeholders as a vehicle to advance project implementation. • Developers are not seeking public support for equity or financing of the facilities. 	<p><i>Among the benchmarks, only in a few cases does a developer drive the relationship independently. More typical is for a university or non-profit research corporation to have key role in developing, managing, marketing and providing services.</i></p> <p>Atlanta – Georgia Tech manages the research park and entered into a relationship with the developer (Gateways).</p> <p>Denver – Fitzsimmons Redevelopment Authority owns the land, which it leased to Forest City as a master developer. A non-profit research park corporation is involved in marketing and support services.</p> <p>Oklahoma – The Presbyterian Research Foundation serves as the owner, manager and developer.</p> <p>Orlando – Developed managed by Lake Nona Land Company, LLC, a subsidiary of Tavistock Group, owned by the Lewis family. Tavistock has shown willingness to donate, sell or self-develop plots in Lake Nona’s Medical City district.</p> <p>Raleigh – University manages the overall park and works with individual, site-specific developers (Craig Davis, Phase 3, etc.)</p> <p>Richmond – Separate intermediary entity owns underlying leases, plays a key role in working with developers, marketing site and serving tenant needs.</p> <p>Seattle – City government rules on community-benefit agreements: contributions to transit and affordable housing in return for zoning/height concessions</p>

Strategies for Pro-Active Outreach Marketing

Success in Today's Global Knowledge Economy Requires Finding Your "Niche"

▶ Similar to private industry, states and regions need to bring a strategic focus in understanding the opportunities that their industry and university research base can sustain and leverage

- Recognition that not all regions are built alike in technology development ... **It is the differences that can best define how a region can succeed** in technology-based economic development.
- More focused efforts in specific areas of technology development where a region has a comparative advantage
 - Plant and life sciences in St. Louis
 - Logistics in Memphis

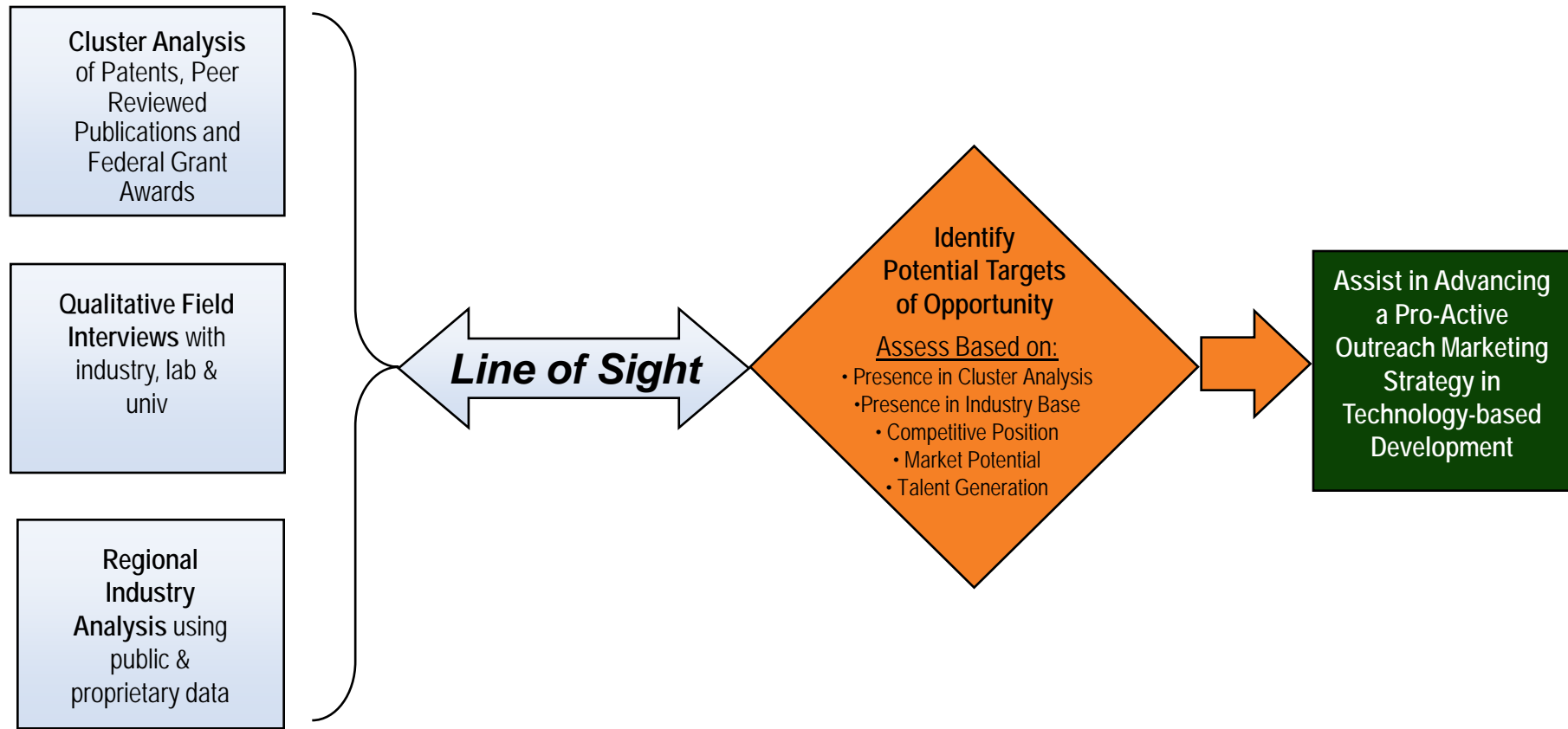
- Hamel and Prahalad in their landmark study, *Competing for the Future*, explain how a focus on core competencies can improve competitiveness:

"To successfully compete for the future a company must be capable of enlarging its opportunity horizon. This requires top management to conceive of the company as a portfolio of core competencies rather than a portfolio of individual business units ... Core competencies are the gateways to future opportunities."

Positioning a Park

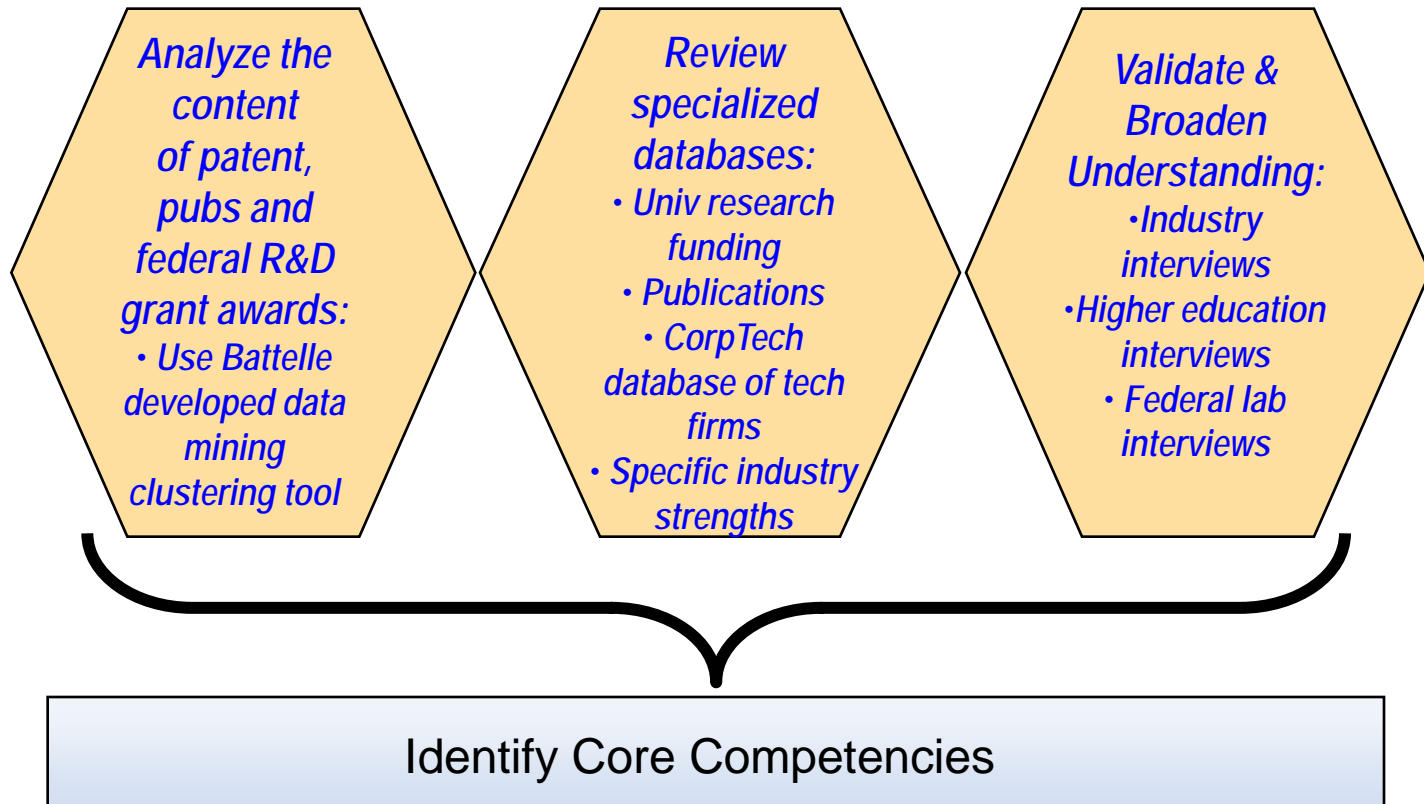
- What are your regional industry niches?
- What are the core competencies of your research institutions?
- What do industry and universities need that research parks can offer?
 - Shared user facilities
 - Core labs
 - Certificate/upgrading workforce programs
 - Commercialization Centers
 - Accelerators, generators and incubators
 - A good neighborhood

Project Methodology for Identifying Targets of Opportunity

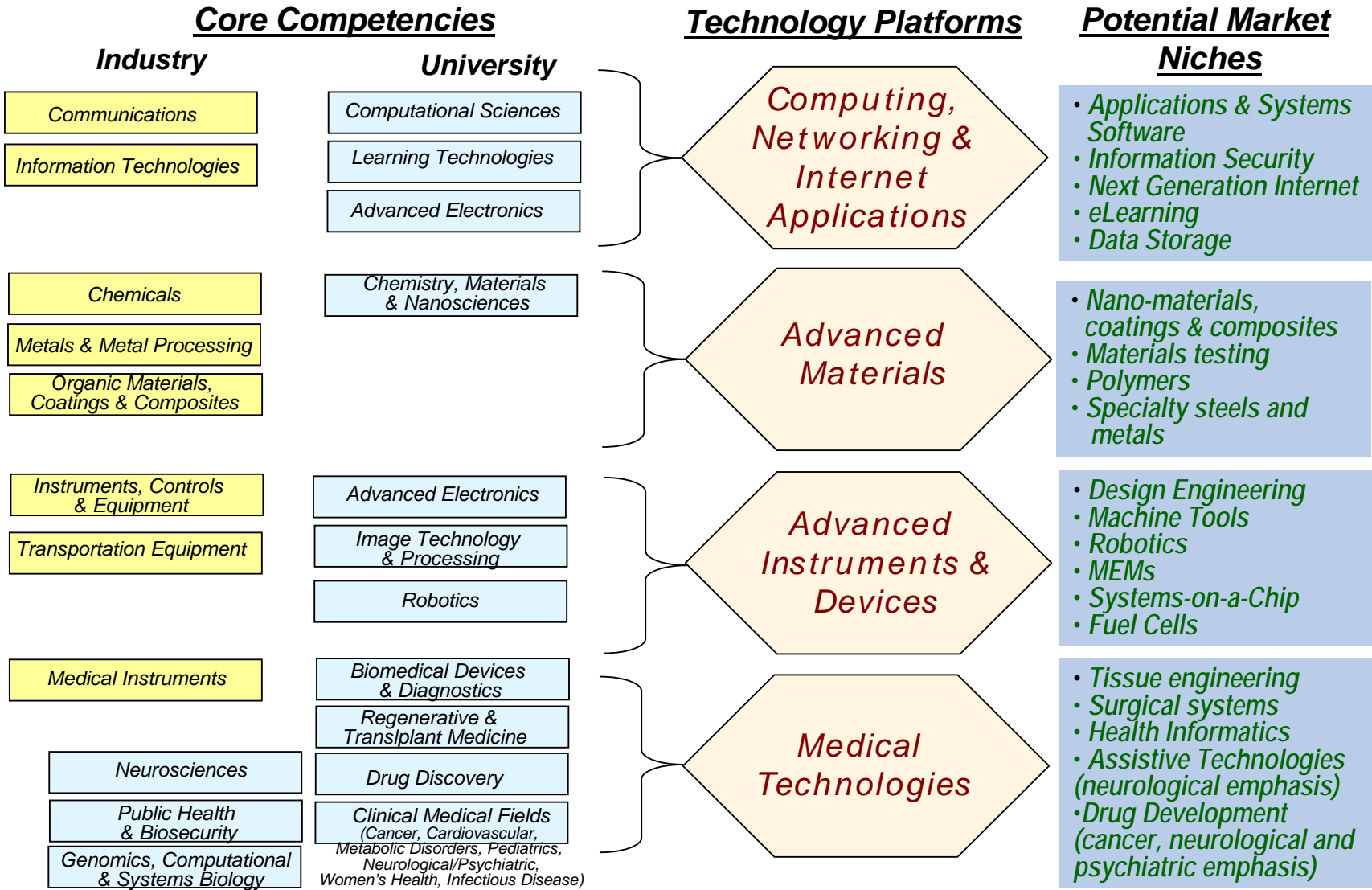


Identify Core Competencies Through Use of Clustering Analysis, Specialized Databases & Extensive Field Interviews

Proven methodology used in projects from Massachusetts, Arizona, Colorado, Iowa, and Georgia, among others.



Preliminary List of Technology Platforms for Greater Pittsburgh Region



Potential Targets of Opportunity Linking USC Core Competencies With External Drivers

Target of Opportunity	Related USC Core Competencies , Strengths & Weaknesses	Industry Presence & Competencies	Target Tenants	Examples from Other Regions	Specialized Facility Needs	Examples of Required Program Activities
Clinical research center of excellence	<p>Access to patients</p> <p>Presence of HRA, Pharmacy School and Liver Disease Center</p> <p>Public Health platform</p> <p>Cancer, Neurological and Other Medical Disease Research</p>	<p>Growing pharma, not yet an industry specialization</p> <p>Strong presence of medical device industry</p>	<p>CROs</p> <p>Biotech/pharma satellite offices</p>	Duke Clinical Research Center	<p>Phase I facilities</p> <p>Pre-clinical testing, including animal</p> <p>Dry and wet labs</p>	<p>Incentives for USC physician practices to participate</p> <p>New NIH Clinical & Translational Research Awards</p>
Medical Device/ Diagnostics Product Development	<p>Medical technology platform involving bioeng, regenerative medicine, imaging, modeling</p> <p>Alfred Mann Institute</p>	<p>Specialized industry in region</p>	<p>Alfred Mann Institute</p> <p>Developmental companies</p> <p>Research arms of established companies</p> <p>Swing space for bioengineering faculty</p>	<p>UMass Dartmouth Advanced Mfg Center</p> <p>CIMIT</p>	<p>Prototyping (including device dev. and biologics for human use)</p> <p>Access to animal facilities</p> <p>Clean room</p> <p>Dry & wet labs</p>	<p>Regulatory, Marketing, Clinical Collaborations</p>
Core Labs in Research & Testing	<p>Personalized medicine platform involving gen-epi, cancer, drug discovery</p>	<p>Specialized and fast growing industry</p>	<p>More small based companies</p>	<p>Cleveland Clinics with Amersham and Quark Biotech</p>	<p>Biotech quality space</p>	<p>Develop partnering approaches</p>

Prepare Targeted Industry Development Plans

- Develop the “business case” for each selected technology platforms:
 - Regional Assets
 - Current Industry Base
 - Fit with Locational Needs
 - Opportunities
 - Challenges
- Incorporate relationship marketing that leverages research base and use of alliance marketing approaches

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