



The Rise of the Rest: Creating Vibrant Local Innovation Ecosystems Outside of Major Metropolitan Areas: The Role of Anchor Institutions and Research Parks



University Innovation-Research Parks

- University research parks are property-based innovation ventures:
 1. A property master plan designed for research and commercialization
 2. Partnerships with at least one university or other research institution
 3. Encouragement of the establishment and growth of new companies
 4. Technology translation from the lab to the marketplace
 5. A focus on technology-led economic development
- The key factor differentiating a university research park from a technology or industry park is the meaningful interaction between the companies in the park and the affiliated research institution(s).





Types of Governance and Development

- Developer led projects with private developer construction on university land, financed privately
- Public-private partnerships with mixed governance and oversight
- University foundation led projects and real estate development
- University remote facilities located within research parks
- Incubator facilities for university startup activities





Emerging Innovation Districts

- **Innovation District:** Geographic area with anchor institutions, company clusters, connect small firms, industry, incubators, accelerators. Physically compact with mixed use housing, retail, and office space.
- **Economic assets:** universities and major medical campuses, high value research oriented firms, highly creative fields, startup tech companies
- **Proximity** is everything, where workers can be collaborative
- **Millennial generation appeal:** urban lifestyle
- **Physical assets:** outdoor physical spaces that bring people together
- **Networking assets:** events to bring people together



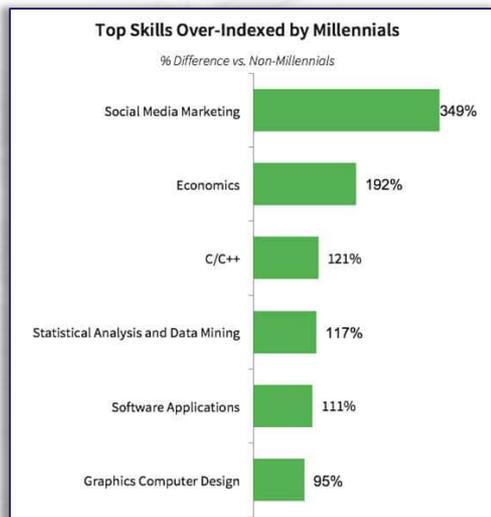


Key Tech Location Advantage: Tech Talent

- **War for tech talent**, shortage of tech works in computing/engineering and employers seeking to make location decisions based on talent preferences
 - Data from the U.S. Bureau of Labor Statistics indicates that 1.3 million IT and cybersecurity jobs will have to be filled by 2022. By 2020, there will be 1 million more IT jobs than computer science students in the U.S.
 - Overall shortage of people who know how to code, whether they're doing back-end on mobile apps or developing cloud-computing platforms. Tech job seekers are uniquely in demand both within the tech industry and without.

“For the first time in US history, there are more job openings than people to fill them. As businesses push up against this labor wall, the crunch for tech talent, in particular, is reaching a tipping point.”

- InformationWeek



SILICON VALLEY BUSINESS JOURNAL

Feb 11 2014, 1:17pm PST

Talent crunch ripple effect: HR tech market heats up with new Silicon Valley expansion

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As creepy as it may sound, "human capital management" is a booming field in Silicon Valley.

A return to economic prosperity is increasingly straining Silicon Valley human resources departments tasked with staffing large employers and startups alike. That talent crunch yields a market opening for a growing number of human resources technology companies that specialize in managing employees once they're hired.

On Tuesday, Oklahoma City-based

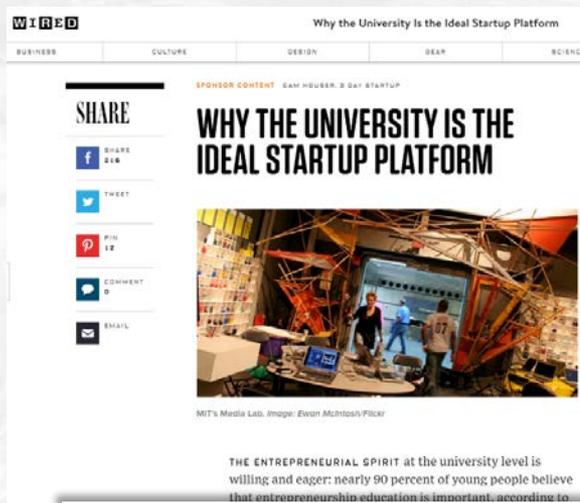
Employers in Silicon Valley increasingly cite talent recruitment and retention as their top business obstacle.



Key Tech Location Advantage: Startups

Universities as a Catalyst for Startups:

- Students have time and low-risk to launch startup companies
- Universities are research hotbeds for technology commercialization
- Multi-disciplinary collisions spark innovation
- College towns attract high rates of venture capital per-capita



Besides attracting high-achieving individuals, universities house students from multidisciplinary backgrounds and provide a means for such individuals to easily interact with each other due to proximity.



Universities are stepping up efforts to create "spinouts," or business startups born from some of the cutting-edge research of their students or faculty.



University Research Parks in Smaller MSAs

- Universities have been cultivating tech ecosystems for decades
- Some of the best examples of successful research parks are in small cities, college towns that leverage anchor institutions:
 - Purdue Research Park: West Lafayette, IN
 - University Research Park: Madison, WI
 - Nebraska Innovation Campus: Lincoln, NE
 - NC State Centennial Campus: Raleigh, NC
 - Virginia Tech Corporate Research Center: Blacksburg, VA
 - University of Oklahoma University Research Campus: Norman, Oklahoma
 - University of Arizona Research Park: Tucson, AZ
 - Cummings Research Park: Huntsville, AL
 - University of Illinois Research Park: Champaign, IL





Purdue Research Park: West Lafayette, IN

- When established in 1961, the Purdue Research Park was the third such park established in the United States.
 - Stanford Research Park was founded in 1951, and the Research Triangle Park in North Carolina followed in 1959.
- The 725-acre Purdue Research Park is located 2 miles north of Purdue University's West Lafayette campus.
- More than 50 buildings; more than 3,200 employees; 327,000 square feet of business incubation space



PURDUETM
RESEARCH PARK



University Research Park: Madison, WI

- Established in 1984, University Research Park is in Madison on 255 acres with 37 buildings on former agriculture land.
- Supports nearly 9,300 jobs statewide, and generates \$43 million in state and local tax revenue each year
- URP2, is a new commercial and residential “New Urbanist” development where people can live and work.





Corporate Research Center: Blacksburg, VA

- The VT Corporate Research Center, is a science park on the Virginia Tech campus in Blacksburg, Virginia
- 33 completed buildings on 230 acres with 3,000+ employees
- More than 185 research, technology and support companies
- VT moved the Computer Science department CRC in 2006
- New affiliated research park in Newport News, VA





University of AZ Research Park: Tucson, AZ

- Former IBM campus became the UA TechPark in 1994, owned by the UA Board of Regents, operated by Tech Parks Arizona
- 40+ companies and organizations, including IBM, Citi, Raytheon and United Health Group/OptumRx, large solar farm
- 6,000 employees, \$50 million annual in state and local taxes
- New development in process, The Bridges





Nebraska Innovation Campus: Lincoln, NE

- Made possible by a 2008 state law which moved the Nebraska State Fair and gave the old state fairgrounds to the university
- NIC was established to facilitate new and in-depth partnerships between the Univ. of Nebraska and private sector businesses.
 - $\frac{1}{3}$ university employees, $\frac{2}{3}$ private business employees
 - 455,000 SF constructed, aimed at 2.2 million SF total





University of OK Research Campus: Norman, OK

- The University of Oklahoma Research Campus was established to create collaboration in a scientific community
- The 258,000-square-foot National Weather Center opened its doors in September 2006. One of the largest facilities of its kind, it houses OU, state and federal organizations with more than 500 employees, faculty, researchers and students.
- Tom Love Innovation Hub: fab laboratory and makerspace





NC State Centennial Campus: Raleigh, NC

- Centennial Campus is located just south of NC State's main campus in Raleigh, state gave the property in 1984 to the University. It was formerly a state-owned mental health facility.
- 1,334 acres, 2,700,000 sq ft of constructed space
- 70+ corporate, government or non-profit partners
- 75+ NC State research centers, institutes, and departments
- Mixed-use: housing properties, schools, golf course, library





Cummings Research Park: Huntsville, AL

- Established in 1962, 2nd largest research park in the US
- Collaborative environment for companies who supported the governmental research at Redstone Arsenal.
- IBM, Lockheed, Northrop, and the University of AL at Huntsville all located within the Park
- Now 300 companies, more than 26,000 employees
- Major industries: aerospace, defense, and biotech



**CUMMINGS
RESEARCH PARK**
HUNTSVILLE, ALABAMA





University of Illinois Research Park at Urbana-Champaign



**CORPORATE
PARTNERSHIP**



**TECHNOLOGY
INNOVATION**



**STUDENT
RESEARCH**



**ENTREPRENEURIAL
SUPPORT**



Champaign-Urbana Location

- The Champaign-Urbana MSA population: 237,849
 - Fastest growing MSA in the State of Illinois
 - Champaign population is 87,432 and Urbana is 41,989
- The University of Illinois at Urbana-Champaign
 - Public land grant institution
 - 49,000 students
 - Top Ranked College of Engineering, Informatics, Agriculture, Accounting
 - \$630 Million in annual research
 - 6,000+ companies recruiting annually
 - Birthplace of the web browser, LED





University of Illinois Research Park

The Research Park at the University of Illinois is a leading innovation hub for technology commercialization with a unique environment that cultivates startups and increases capabilities for established companies. The mixed use composition promotes creative collisions and interdisciplinary collaborations, strengthening the bridge between campus and community.

- 200 Acres on University campus, 17 buildings, 790,000 SF of space
- 120+ companies: Corporate Innovation Centers and University startups
- 2,100 employees: third largest collective employer in Champaign County



The Research Park has transformed UIUC's South Campus

From Greenfield Sites and Fish Ponds in 2000...



To private-public partnership in land development



The Research Park now includes 16 Buildings and 125 Companies





Public-Private Partnership in Development

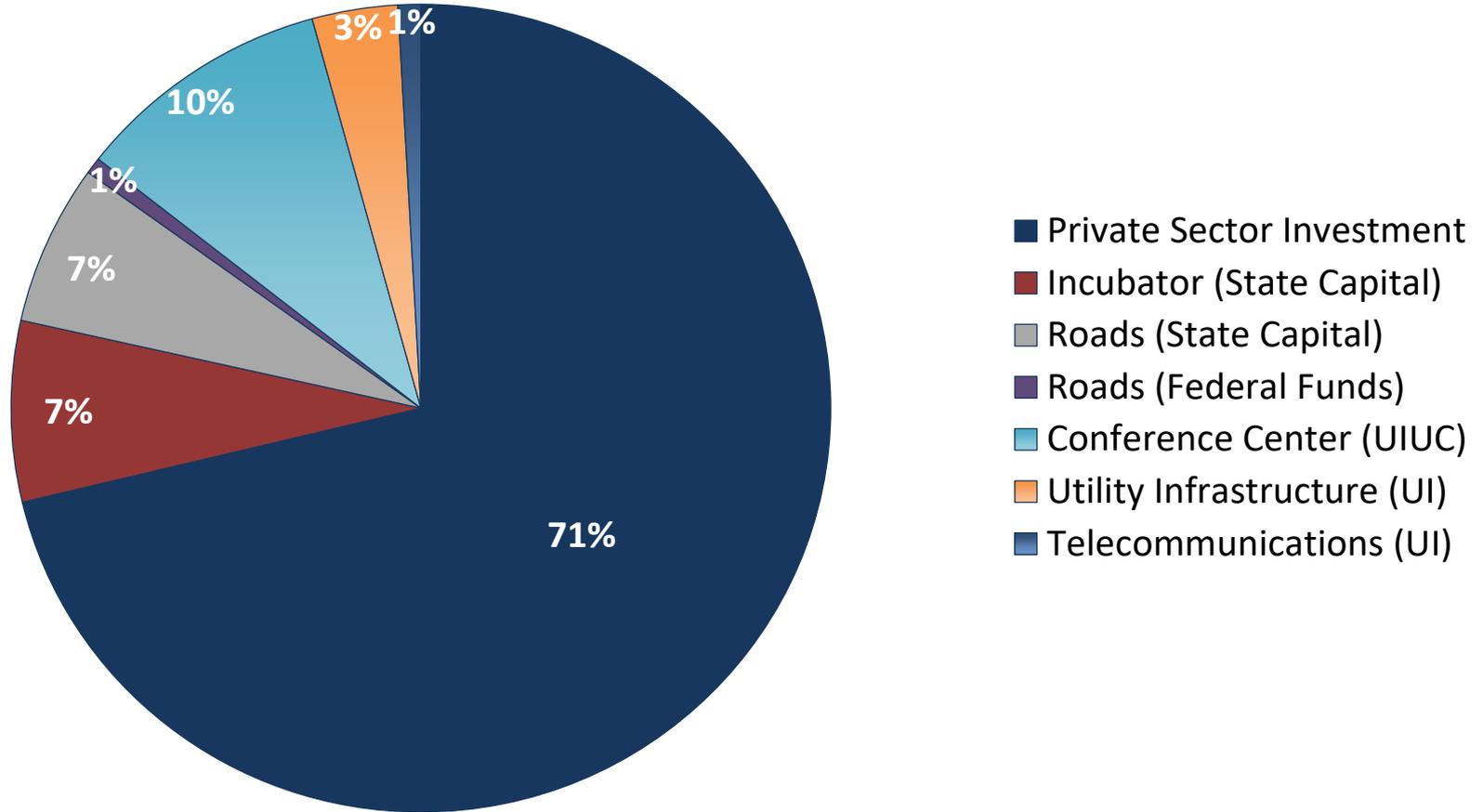
- UIRP, LLC established in 2000 to govern the Research Park, the University of Illinois Board of Trustees is the sole member
 - Public-private board composition with university leadership
- Research Park staffed by University of Illinois employees supporting company operations, recruitment, programming, land development
- Fox/Atkins Development is the private developer of the Research Park, constructs the buildings in the Research Park for commercial operations
 - 50 year ground leases with the University of Illinois via the UIRP LLC for use of University land, this income funds continued infrastructure investment
 - All leases with companies are subject to Covenants of the Research Park with permitted uses for technology and research purposes
 - Company leases are typically 3-10 years at market rates





Public-Private Joint Investment

Construction Investment



Public-Private Development Partnership

Agreement	Purpose	Public Partner	Private Partner
<p>Operating Agreement</p>	<ul style="list-style-type: none"> • Establish the Research Park as an entity • Organizational and governance of the UIRP LLC and Board of Managers 	<ul style="list-style-type: none"> • University of Illinois Board of Trustees 	<ul style="list-style-type: none"> • University of Illinois Research Park, LLC (UIRP)
<p>Services & Management Agreement</p>	<ul style="list-style-type: none"> • The relationship between the UIRP and the University of Illinois Board of Trustees, roles 	<ul style="list-style-type: none"> • University of Illinois Board of Trustees 	<ul style="list-style-type: none"> • University of Illinois Research Park, LLC (UIRP)
<p>Master Developer Agreement</p>	<ul style="list-style-type: none"> • Define standards, procedures and expectations for developing the Research Park 	<ul style="list-style-type: none"> • University of Illinois 	<ul style="list-style-type: none"> • UIRP • Fox/Atkins Development, LLC
<p>Covenants and Subdivision/ Zoning</p>	<ul style="list-style-type: none"> • Permitted uses, signage requirements, utility planning • Design review process for new development • Stormwater planning 	<ul style="list-style-type: none"> • University of Illinois • City of Champaign 	<ul style="list-style-type: none"> • UIRP, LLC • Fox/Atkins Development and Tenants must build to standards and follow land uses



P3 Project Delivery at the University of Illinois

- Why the trend toward more P3 projects at Illinois?
 - Off balance sheet capital for project delivery
 - Lack of state funding for capital infrastructure
 - Moody's downgrades during 3 year budget crisis
 - Lower Cost-private sector advantages
 - More efficient
 - Less cumbersome bidding
 - Speed-design build advantages
 - Twice as fast as traditional University capital delivery methods
- Three different financial models of P3 utilized
 - Project Leasing
 - Developer equity
 - Non Profit 501c3



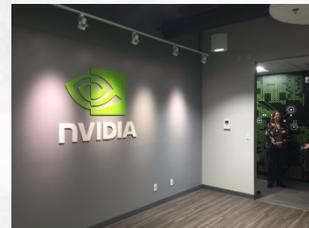


Corporate Innovation Centers

BP Innovation Center
State Farm Research Center
Axis Insurance
CME Group Innovation Center
Country Financial DigitalLab
Capital One Digital Campus Lab
Synchrony Innovation Lab
John Deere Tech Innovation Center
Corteva (Dow Agrosiences)
Anheuser-Busch InBev Data Lab

Syngenta Innovation Lab
Abbott Labs
AGCO-GSI
Bayer Crop Innovation Lab
Nutrien
Littelfuse
Riverbed
Foxconn Interconnect
Nvidia
Verizon (Yahoo)

Caterpillar Innovation Lab
Forcepoint (Raytheon)
AARP Tech Nest
Grainger Design Lab
Abbvie Innovation Center
Ameren Innovation Center
FutureWei (Huawei)
Graybar Innovation Lab
Brunswick Innovation Lab
ADM Modeling Center





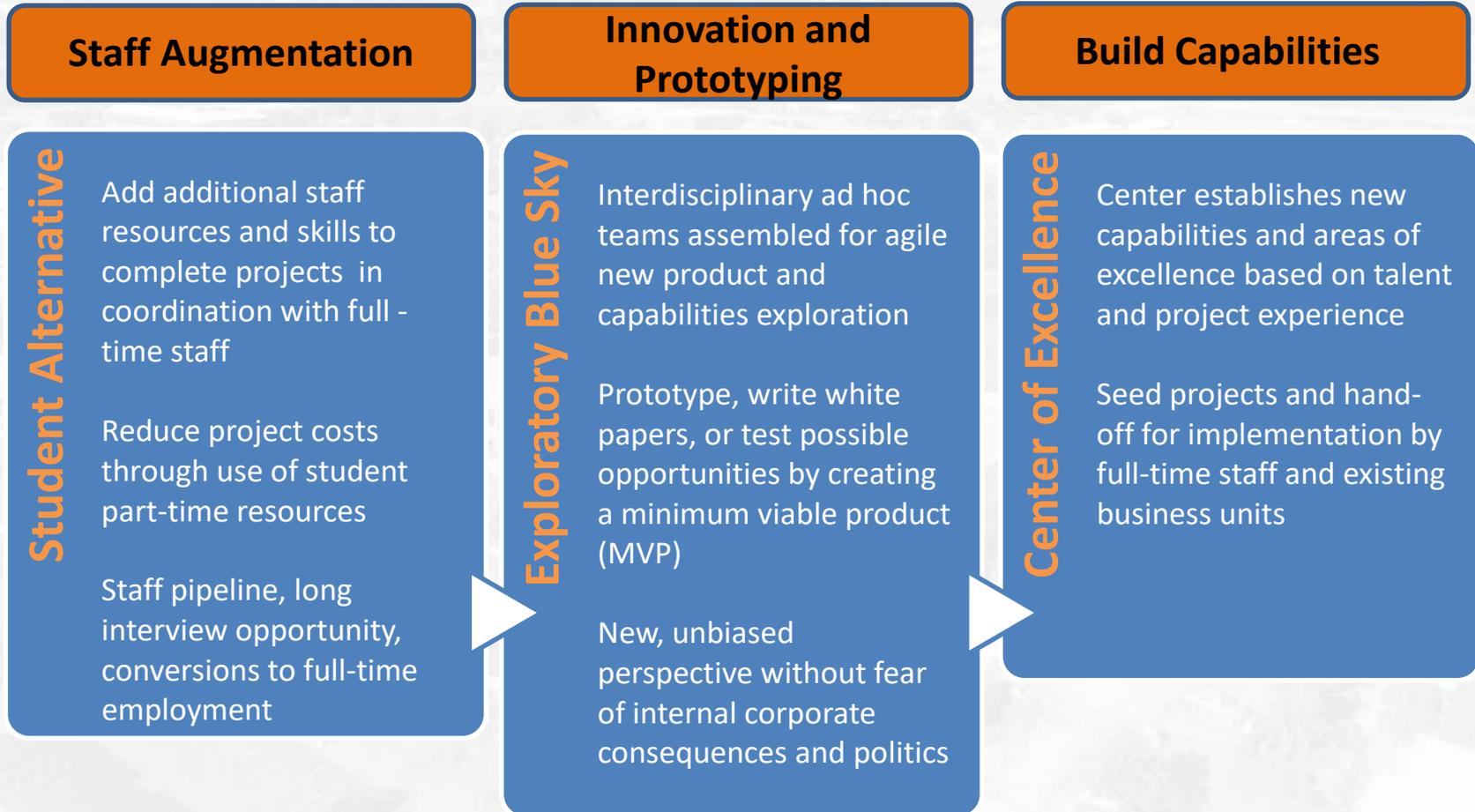
Why do Corporations Locate in Research Park?

- **Students:** Employ student interns year-round as a low-cost workforce with a high potential for full-time recruitment after graduation
- **Tech Talent:** Recruit engineering talent from campus and community
- **Scout:** Early awareness of technology and research trends and innovations
- **UI Relationships:** Proximity to sponsored research and engagements
- **Startups:** Corporate venture groups engage and partner with UI startups
- **Sharing:** Peer-to-Peer Learning from other corporations located here
- **Skills:** Continuing professional and technical education for employees





Center Workforce Models





Student Year-Round Employment

- Companies create “**skunkworks**” innovation interdisciplinary teams
- **Invent Faster**: students work as rapid application development teams
- 800 students intern with Research Park companies part-time during the school year and full-time in the summer
 - 10-20 hours a week during school
 - Full time in the summer
 - Freshman – PhD level employed
 - Average wages:
 - \$17.57 undergraduate
 - \$24.75 graduate students
- **Experiential learning**, apply academics at work
- More students at UIRP working than any other US Research Park





Top Tech Skills in Demand

- Data analytics, data mining
- Machine learning and natural language processing
- Business intelligence, competitive and strategic innovation
- Modeling and simulation
- Software - enterprise application development
- User experience design
- Internet of Things
- Cybersecurity
- Augmented reality, virtual reality
- Voice recognition programming
- Mobile app development
- Smart supply chain, ecommerce solutions
- Robotic Process Automation
- Cryptocurrency, blockchain
- Precision agriculture
- Actuarial science, risk management





Caterpillar Started it All

- Caterpillar created an “**apprenticeship**” model employing UI students on teams led by experienced Caterpillar engineers, who serve as mentors, jointly deliver modeling services.
 - Identify the top students from campus, starting as freshman
 - More than 120 interns have become full time engineers
 - 80% acceptance rates
- Caterpillar Data Innovation Lab opened in 2015, for data analytics
- New Caterpillar combined 20,000 SF facility opened in September 2018





Full Time Engineering Teams on Campus

- Motorola built an engineering team in Champaign-Urbana and new building for 300 full time developers
- Employed deep-tech engineers to build new products
- Team was later hired by Yahoo as Data Pipelines team in Champaign
- 98% annual retention rate of employees. Critical projects moved to Champaign from California.
- Yahoo (Oath) 90+ patents from the 3 “Master Inventors” located here
- Center of Excellence model for other California companies has followed
 - Nvidia, Riverbed, Granular, Amobee



THE CHRONICLE OF HIGHER EDUCATION

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How Close Is Too Close? Industry Courts Computer Scholars





State Farm Research & Development Center

- Original Problem: Not getting enough actuaries
- Now the Research Center has 70 interns at a time
 - 800+ students have gone through the internship program since 2005
 - Half projects are “systems”, including augmented reality, drones, mobile apps, virtual reality, software
 - MagNet programs MS sponsored applied stats program, 50% time employed at SFRDC, requirement to work at State Farm after graduation
- Most patents of any State Farm location



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STATE FARM

Research center exceeds State Farm's 'wildest dreams'



APRIL 24, 2015 7:00 AM • LENORE SOBOTA
LSOBOTA@PANTAGRAPH.COM

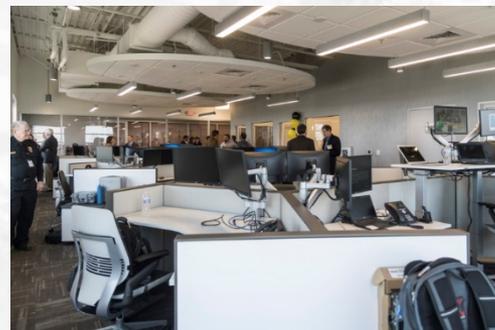
CHAMPAIGN — State Farm opened its Research and Development Center in Champaign in 2005 not only as a research resource but also as a place to develop and recruit future employees with skills the company needs.

The center has succeeded “beyond our wildest dreams,” Greg Hayward, State Farm assistant vice president and actuary, said this week at a celebration of the center’s 10-year partnership with the University of Illinois.



Synchrony Emerging Technology Center

- Synchrony (SYF: NYSE) is a consumer financial services company that provides over 120 credit cards and store branded credit cards.
- The Synchrony Emerging Technology Center advances finance and technology capabilities in artificial intelligence, data science, human-centered design and other emerging technologies.
- Current projects include 'Ensemble Methods,' exploring the potential applications of machine learning to credit risk modeling, and the 'Machine Vision' project, aimed at transforming the in-store shopping experience by removing the need for the traditional checkout process.
- Projects: 1/3 near term ROI, 1/3 short range innovation, 1/3 long term bets





Growth of AgTech Cluster

Fast Growth of AgTech cluster includes many multi-national corporations, startup companies, new accelerator, annual large AgTech Summit



Bayer Crop Science
Innovation Center



Corteva Agriscience
and Granular



Nutrien Ag Solutions
(Acquired Agribile)



Syngenta Digital
Innovation Lab



AGCO Acceleration
Center



John Deere Tech
Innovation Center



Corporate Relationships at Research Park

Sample roles when recruiting corporations to the Research Park:

- **Lead generation:**
 - UI Corporate Relations identifies a potential client and arranges in a corporate schedule for a visit to the Research Park
 - Developer completes cold calls, prospecting online, attends events and networks to generate prospects (including career fairs and corporate tech events), UI relationships
 - Companies contact the Research Park directly based on interest, referrals
 - Faculty and departments refer prospects to the Research Park directly
- UIRP staff **arrange tours** for the company with other companies, prepare “pitch” for the corporation on the benefits of locating in the RP
- UIRP staff **follow up** with numerous client follow up discussions, corporate visits, additional details including **business plans** and models for the companies (can take years)
- Developer works on **property information**, putting together the financial and building portion of the sale, drafts layouts for companies of space/furniture
- University establishes **faculty and departmental relationships**, helps recruit talent for the company, arranges for student recruitment through Career Services
- Corporation signs a lease with developer for a site location
- University/UIRP work on **grand opening event**, host press, government and University leaders
- UIRP will receive land lease income from the corporate presence
- UIRP and UI Corporate Relations continues to serve as **client service** for employee needs, growth plans, **research collaborations**, corporate strategy



EnterpriseWorks Incubator

EnterpriseWorks is a 43,000 sq ft startup business incubator in the Research Park for early stage tech firms operated by the University of Illinois.

- 62 Current tenants of the incubator with lease agreements
- Leases are with the University of Illinois Board of Trustees
- Managed and leased by the University of Illinois
- Entrepreneur assistance programs are pre-incubation, during incubation, and support growth after incubation
- Focused on scientific and technology driven startup companies
- The incubator is fully leased annually
- Companies have raised \$1.1 Billion in VC/Angel Capital



validate idea



establish startup



move into incubator



support



grow



graduate



EnterpriseWorks Facility: 43,000 SF



- 23 labs for rent
- 2 equipment labs
- Colocation server room for rent
- 25 offices for rent of varying sizes
- Coworking space
- 4 conference Rooms
- Amenities: kitchen, shower, loading dock, mail area, business equipment, atrium
- Administrative office



EnterpriseWorks Incubator Space

Offices

Furnished office from 130-600 SF



Labs

Labs available with casework, fume hood, plumbing, gas, shelving.



Commons Area



Coworking Space





Entrepreneurship Support Programs

Entrepreneurs-in-Residence

Designer-in-Residence

SBIR Technical Assistance and Grant Application Assistance

Student Shared Services – Short Projects for Startups

Startup Café, EIR Workshops, CEO Roundtable

UIUC Core Lab and Chemical Stores Access

Student Hiring: Recruiting, Intern Program international students

**I-Start Early Stage Seed Funding
(First Year Startup Launch)**

Number of EIR requests - 286

Number of SBIR requests - 41

Number of Shared services requests - 55

FY 2018 Requests



iHotel and Conference Development

Adjacent to the State Farm Center, 16,000 seat arena, the iHotel and Conference Center is an upscale complex developed in the Research Park

- 125 hotel rooms, Houlihan's restaurant, and iCafe coffee bar
- 38,000 SF conference center: 2 large ballrooms and 10 meeting rooms
- Privately owned hotel, University owned conference center, jointly managed





Community Building in the Research Park

200+ free events for clients
planned annually

- Tech Peer Sharing
- Entrepreneurship Education
- Recruiting Events
- Social Events for Networking
- Professional Development
- Community Engagement Events
- Conferences





Master Plan and EnterpriseWorks 2.0

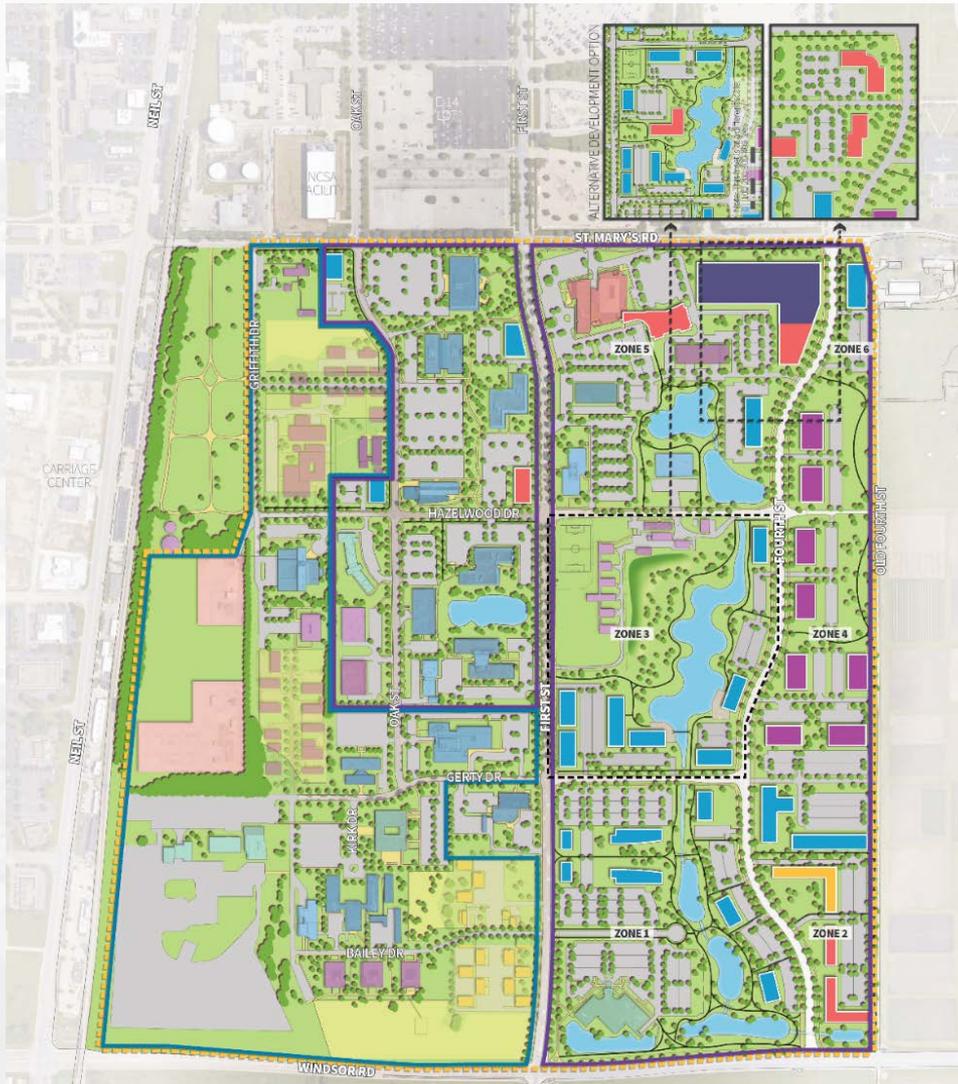
- University of Illinois Board of Trustees approved a new Research Park master plan in September 2018 to double the size of the park with new commercial, lab, incubation, and mixed-use development projects.
- New UIUC strategic plan supports the Research Park and the EnterpriseWorks:
 - Grow the entrepreneurial ecosystem
 - Support regional economic development
 - Student experiential learning
- EnterpriseWorks 2.0 planned to increase incubation capacity and provide additional common amenities for the park
 - Graduation space for growth stage startups
 - Affordable lab space
 - Training rooms, programming and event space
 - Video: https://youtu.be/nN_o4Ypz0fl



Rendering of EnterpriseWorks 2.0 at the Research Park



2018 Research Park Master Plan



New Development Projects in Plan

-  Office/Lab Multi-Story
-  Lab & Light Industrial Single-Story
-  Mixed Use Development
-  Residential Development
-  Community and Clinical Facilities
-  Entertainment or Athletic Project

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