Central Indiana's Innovation Constellation

How emerging innovation geographies can generate compounding regional returns

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Contents

Foreword

A note from CEOs of Indiana Corporate Partnership

Central Indiana is the nation's BioHeartland. That distinction did not emerge overnight. For generations, the region's strengths in bio and life sciences—across plant, animal, and human health—have helped power the economy and shape its identity. After all, it was 150 years ago that Eli Lilly & Company—one of the world's most valuable companies—was founded here in Indianapolis.

Today, Lilly is joined by other global leaders—Elanco, Corteva, and Roche—that maintain a significant footprint in Central Indiana. They are complemented by other advanced industry leaders, the Indiana University and Purdue University campuses, the nation's largest medical school, and IU Health's academic medical center. Together, these assets make Central Indiana a regional powerhouse of innovation, a reality confirmed in the analysis that follows.

In recent years, Central Indiana has made significant investments to further build the region's innovation capacity. From the 16 Tech Innovation District, which began as a CICP project, to suburban hubs in Fishers and Noblesville, and from LEAP in Lebanon to the new One Health Innovation District, Central Indiana is embracing newer, more collaborative ways to foster innovation.

But investment alone is not enough. Realizing the full value of these efforts will require intentional action. To help inform that work, CICP engaged the Global Institute on Innovation Districts (GIID) to produce the report that follows. Drawing on robust quantitative analysis and input from corporate, academic, and civic leaders, GIID finds that Central Indiana's emerging innovation districts rest on a strong foundation. It also identifies untapped opportunities to build more intentionally across the region, particularly where many of the region's leading innovators rely on shared platform technologies.

CICP is already deeply involved in leading new and ongoing efforts to strengthen regional capacity to develop and apply those technologies, but more can and should be done. To that end, GIID offers a framework for unlocking greater returns from recent investments through a "constellation" approach, one in which innovation districts align around both their own priorities and broader system-wide strategies.

As GIID notes, Central Indiana already has a distinctive ability to discover, develop, and deliver new products for global markets. In other words, we invent, make, and move goods at scale. That strength was reflected in the State of Indiana's recent announcement that it would work with Central Indiana's regional mayors to invest $1 billion in growing the biosciences ecosystem. We are fortunate to be building from a position of real strength as we invest in the region's economic future. Yet important work remains. GIID's analysis helps show how Central Indiana's innovation districts can seize this moment and translate it into lasting regional advantage, ensuring that we remain the nation's BioHeartland for years to come.

Acknowledgements

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Their participation helped ground the work in local knowledge, test emerging findings, and sharpen the report's relevance to the region's next stage of innovation-led growth.

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Executive summary

Central Indiana has the assets to build one of the country's most complete innovation economies: a region that can connect discovery, invention, production, and delivery within a single market. The region already has global corporate anchors, major research universities, academic medical centers, hospitals, advanced production capacity, logistics strengths, startup activity, and a new generation of innovation districts and hubs taking shape. The opportunity now is to organize those assets so they compound.

This report examines that opportunity through the region's emerging constellation of innovation geographies: 16 Tech Innovation District, One Health Innovation District, LEAP, Fishers Life Science and Innovation Corridor, and other centers of research, enterprise, production, and growth. These places represent a major investment in Central Indiana's economic future. They give the region a more visible spatial form for its innovation economy and create settings where innovative people and organizations can engage around technical problems and market opportunities. The question is how deliberately Central Indiana wants to make those places work together.

The evidence points to four linked findings:

- **First, Central Indiana's innovation advantage is unusually complete.** Since 2014, organizations in the region have produced more than 93,000 peer-reviewed scientific discoveries, roughly 1.2 times the national average per job. Since 2010, local inventors have filed more than 12,800 patented inventions, about 2.9 times the national average. Advanced industries account for more than $34.8 billion in regional output, or roughly 19 percent of the economy. Startups and growth-stage firms have attracted roughly $8.5 billion in growth capital since 2010. These figures reveal a regional economy with meaningful capacity across discovery, invention, enterprise, and industrial production.
- **Second, that advantage is concentrated in a small number of differentiated places.** Less than one percent of land in the 11-county region accounts for roughly 93 percent of discovery, about 70 percent of growth capital, roughly two-thirds of advanced manufacturing employment, more than half of advanced services employment, and about 44 percent of invention. Place matters because a small set of geographies already carries a large share of Central Indiana's innovation work. These places differ by function and focus. Some are stronger in discovery, some in invention, some in startup formation, some in production, and others in corporate R&D, clinical activity, or advanced services. They also differ in operating maturity and lead structure, which shapes how each can participate in shared routing, platform access, and system-building today. That differentiation gives the region the basis for a constellation.
- **Third, proximity exists, but cross-organizational exchange does not yet scale.** Central Indiana already recycles local knowledge. Of the roughly 46 percent of local inventions that cite earlier regional knowledge, however, about 40 percentage points reflect knowledge being reused within the same organization, while only about six percentage points reflect knowledge crossing organizational boundaries. Only about 10 percent of potential inter-firm spillovers are currently realized, even though roughly two-thirds of recent inventions could have cited other inventions from the region. The region has a strong local feedback loop, but too much of it remains confined to individual firms and institutions.
- **Fourth, a small number of shared technology platforms connect sectors that are often discussed separately.** Human health, animal health, plant science, diagnostics, medical technology, advanced manufacturing, and industrial systems depend on overlapping technical foundations: biomanufacturing and advanced chemistry; genetics, bioinformatics, and biological data; AI, computing, and high-performance computing; and cyber-physical systems, sensing, and control. These platforms create practical ground for targeted collaboration, shared infrastructure, talent development, demonstration, validation, and new venture formation.

The findings demonstrate that Central Indiana has adjacent capabilities worth connecting, but firms and institutions do not yet reliably use them across organizational boundaries. This is not a call for broad collaboration for its own sake. It is a business case for structured engagement around shared technical needs. In complex and regulated industries, innovation often depends on combining specialized capabilities without compromising core intellectual property, strategy, or market position.

For firms, the value is practical. A better-organized constellation reduces search costs, improves access to specialized capability, creates lower-risk settings for early exploration, and helps technical teams move from broad interest to scoped opportunity. Firms participate when the pathway is useful: when they can find a relevant partner faster, validate a technology more efficiently, identify a startup or supplier with needed capability, access specialized equipment or data, or explore an adjacent opportunity without exposing proprietary assets. Innovation districts and hubs can create that pathway.

The findings point to three principles for making Central Indiana's innovation geographies behave more like a system:

- **First, the region should treat the system as the unit of strategy.** Individual districts and hubs will continue to measure success through tenants, jobs, investment, development, facilities, programming, and partnerships. Those measures matter. A constellation adds a second test: whether district-level success strengthens the broader discovery-to-delivery system. A new facility, research program, venture studio, corporate partnership, or demonstration environment creates more value when it adds a capability the region needs, makes an existing capability easier to use, or helps firms, founders, researchers, and investors move more effectively from one part of the system to another.
- **Second, the region should differentiate by function and focus.** Function describes the role a place plays in the innovation cycle: discovery, translational research, startup formation, demonstration, production, delivery, talent development, or corporate interface. Focus refers to the technical, sectoral, or platform areas in which a geography can credibly build depth. Central Indiana's strongest opportunity is not to make every district comprehensive. It is to help each place lead where it has a real advantage and connect to others where complementary capabilities sit elsewhere.
- **Third, the region should connect through platform-enabled interfaces.** Shared platforms become valuable when users can access them. The region needs practical interfaces: capability menus, referral pathways, technical convenings, shared-use facilities, platform-specific working groups, standard intake processes, demonstration environments, and trusted intermediaries who understand both the technical content and the institutional landscape. These mechanisms turn proximity into exchange and exchange into applied work.

The next question is operating capacity. Central Indiana can pursue the constellation at three levels of ambition.

- Under **coordinated alignment**, district leaders, universities, firms, hospitals, economic development partners, and civic backers work from a shared language and a clearer understanding of how the region's geographies relate to one another. This path can begin quickly, preserve autonomy, require limited new funding, and build trust. It is a valid starting point for a system still taking shape.
- Under a **standing operating layer**, the region creates dedicated capacity to make the constellation easier to use. That layer could maintain a capability menu, support referral and intake protocols, convene district operators, track system-throughput metrics, integrate platform proof points, and help partners move from shared interest to structured engagement. It would not replace district leadership. It would help distinct geographies work together more reliably.
- Under **durable stewardship and shared investment**, Central Indiana builds a more formal capacity to support system-level work over time. This path could align capital, shared infrastructure, access rules, platform development, business development, and long-term stewardship behind the broader innovation system. It offers greater execution capacity, but it requires more trust, legitimacy, resources, and disciplined governance.

Each pathway can create value. Each fits a different level of readiness, resourcing, and institutional commitment. The right choice depends on what Central Indiana wants the constellation to achieve.

Central Indiana has already begun marketing itself as the nation's BioHeartland. A constellation gives that story its operating substance: the moves below make the region's connectedness real, so the brand rests on a system that demonstrably works. Several early, "no-regrets" moves make sense under any pathway:

- The region should convene a standing district-operator forum focused on assets, prospects, platform needs, and handoffs.
- It should create a shared capability menu organized by function, focus, platform strengths, facilities, contacts, and entry points.
- It should establish a referral and intake protocol so opportunities can move when they enter through one door but belong elsewhere in the constellation.
- It should define system-throughput metrics, including referrals, repeat engagements, shared-facility utilization, cross-institutional pilots, startup handoffs, platform-based collaborations, and movement from pilot to follow-on investment or production.
- It should integrate platform proof points into existing efforts, including regional work already underway around data, analytics, applied research, commercialization, and industry need.

Central Indiana is building from strength. It has the firms, institutions, platforms, places, and momentum to create a more coherent innovation system. The region's task is to make those assets easier to see, enter, combine, and use. Organized with intention, Central Indiana's constellation can turn district-level ambition into durable regional advantage: a stronger entrepreneurial ecosystem, more productive collaboration among major firms and institutions, and a clearer path from discovery to delivery for the next generation of innovation-led growth.

Introduction

Central Indiana is at a defining moment in the development of its innovation economy. Across the region, major place-based investments are taking shape in 16 Tech Innovation District, One Health Innovation District, LEAP Lebanon Innovation District, Fishers Life Science and Innovation Corridor, and other centers of research, enterprise, production, and growth. These investments are strategic economic assets. They organize the places where scientific discovery, technical invention, advanced manufacturing, entrepreneurship, and talent reinforce one another, moving the region further up the value chain.

These emerging districts and hubs build on an established innovation landscape. Central Indiana already has global corporate anchors, research universities, academic medical centers, hospitals, corporate campuses, industrial corridors, production facilities, logistics assets, and specialized technical capabilities developed over decades. The new districts and hubs add an intentional place-based layer to that landscape. Their value lies in making the region's existing assets easier to see, access, combine, and use.

The region's innovation economy already has scale, depth, and national significance. The newer layer of districts and hubs gives that economy a clearer spatial form. Each place is being built around its own anchors, governance structure, investment model, and theory of growth. That independence should remain. It allows each district to pursue the markets, partners, and institutional relationships that fit its own proposition. The region's task now is to make those independent efforts reinforce one another.

A constellation strategy gives Central Indiana a practical way to do that. A constellation is a system of distinct places connected by clear roles, shared access, and reliable pathways. It helps each district sharpen its function and focus, define the partners it is best positioned to serve, and connect its capabilities to complementary assets elsewhere in the region. Differentiation makes each place more useful to the rest of the system. This approach can be especially helpful in this moment, as these places continue to take shape, both physically and operationally.

Central Indiana is well-positioned for this strategy because its innovation advantage is unusually complete. The region spans the full innovation pipeline within one economy: scientific discovery, technical invention, advanced production, logistics, and corporate scale. Many regions specialize at one end of that pipeline. Central Indiana can connect the path from idea to market.

This discovery-to-delivery capacity is a major regional differentiator. It gives Central Indiana a basis for innovation-led growth rooted in both frontier research and practical execution. The region translates knowledge into products, processes, and production systems. It supports firms operating in complex, regulated, and technically demanding industries. It connects discovery to implementation in sectors where execution matters as much as invention: human health, animal health, plant science, advanced manufacturing, and industrial technologies that link them.

The next stage of growth depends on usability. Firms, founders, universities, hospitals, investors, and civic partners choose places where the operating environment is clear, dependable, and low-friction. They need to find the right partners, access relevant capabilities, move from research to validation, and understand how a single relationship or investment connects to a larger system. Regions that make those pathways visible and reliable are better positioned to attract innovation activity, deepen local collaboration, and accelerate the movement from discovery to delivery.

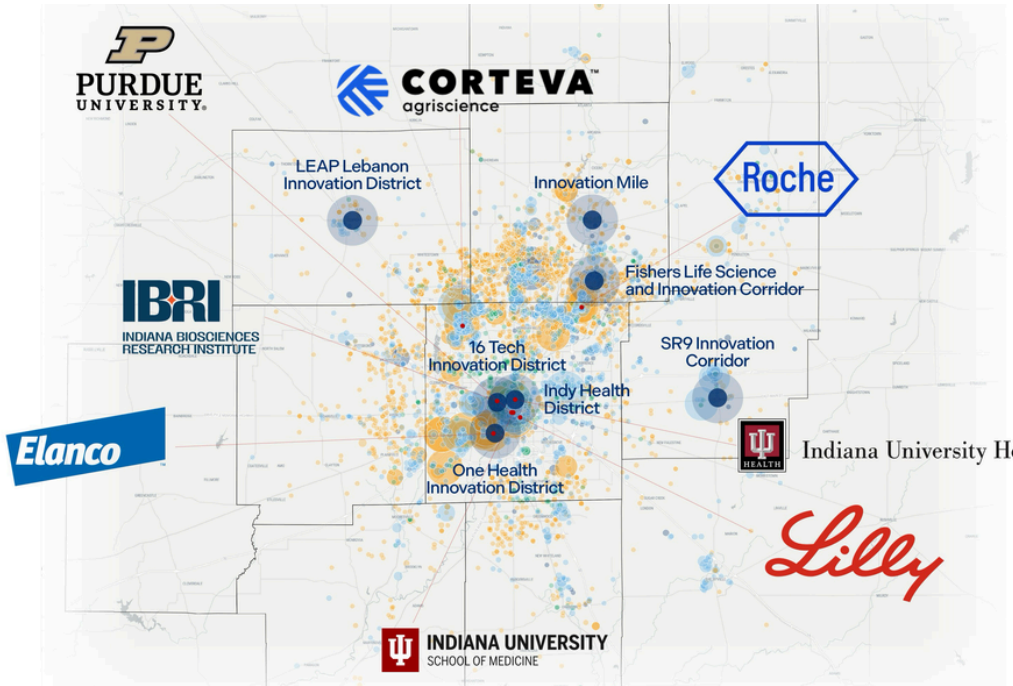
Properly organized, Central Indiana's districts and hubs become entry points into the regional innovation system. They create settings where large firms engage shared technical problems, universities and hospitals connect research to industry, startups find specialized capabilities, and outside investors understand where to engage. For firms, the value is practical: lower search costs, better-fit partners, clearer access to specialized capabilities, and stronger routes from pilot to production. For district operators, the value is strategic: each place states what it does best, where it fits in the region, and how investment in that place strengthens the larger innovation economy.

The same logic strengthens district ambition. Specialized innovation places must attract tenants, partners, talent, capital, public confidence, and long-term development activity. A district with a clear role in a larger system makes a stronger case for all of them. It shows why its facilities, programs, and partnerships matter; how they complement capabilities elsewhere; and how its own growth contributes to a broader regional thesis. A constellation makes ambition more credible because it makes each place's contribution more specific.

In this report, "constellation" refers to an operating concept for Central Indiana's innovation geography. It describes the relationships, roles, access points, and handoffs that allow specialized places to function as a system. Its value increases as the region makes those places easier to understand, enter, and connect. Central Indiana's constellation is already forming. The strategic choice is how deliberately the region organizes it.

The analysis that follows proceeds from regional strength, to geography, to exchange, to shared platforms. Its four findings establish the evidence base: Central Indiana's distinctive discovery-to-delivery advantage; the concentration of innovation activity in differentiated places; the need to make cross-organizational exchange more predictable, routable, and repeatable; and the shared technology platforms that give firms, institutions, sectors, and districts practical ground for collaboration. The report then considers how the region's established and newer innovation geographies can operate as a connected system, and what level of ambition Central Indiana should bring to organizing that system.

Figure 1. Central Indiana's research organizations are establishing new innovation hubs throughout the region
Established and emerging place-based innovation initiatives and major investments in the Central Indiana region



Source: CEOs of Indiana Corporate Partnership.

What is an "innovation district or hub"?

An innovation district is a compact, place-based geography within a city or metropolitan area where leading research institutions, companies, startups, and supporting organizations cluster in close proximity.[1] In the strongest cases, these places are not just employment centers. They are mixed-use environments—walkable, publicly accessible, and designed to bring research, entrepreneurship, demonstration, and commercialization into more regular contact.

Innovation districts emerged as an alternative to the older model of isolated science parks and corporate campuses.[2] Their premise is straightforward: innovation moves faster when people, firms, and institutions can connect more easily across organizational boundaries. Proximity does not guarantee collaboration, but it can lower the cost of finding partners, accessing specialized facilities, and moving from discovery toward application. That is why innovation districts have become a widely used tool of economic development and urban redevelopment.

Their value, however, is not confined to the district itself. When they work well, innovation districts create spillovers that extend across the broader region: they strengthen supplier and production networks, attract and retain talent, create more visible pathways for outside firms and investors to engage, and make it easier for ideas, companies, and capabilities to move into wider commercial and industrial use. In that sense, their economic significance lies not only in what happens inside their boundaries, but in how they connect to and reinforce the larger regional economy.

For firms, innovation districts create option value: a better view of useful people, technologies, facilities, and companies, and more control over which opportunities warrant deeper engagement.[3] Districts can lower the cost of finding relevant expertise, testing ideas, recruiting talent, accessing specialized facilities, and identifying partners with capabilities the firm does not need to build internally. They create a lower-friction environment for exploring adjacent technologies, shared technical problems, and potential applications without requiring commitment. That matters most in complex and regulated industries, where innovation often depends on combining internal R&D with external science and know-how.

Over the past decade, the landscape of innovation has changed. Many metropolitan regions no longer have just one flagship district or science park. They now have several innovation-oriented places: urban districts, campus expansions, advanced manufacturing hubs, redeveloped industrial sites, and other specialized geographies. This proliferation of innovation geographies reflects a broader shift. Innovation has become more central to growth, competitiveness, and redevelopment strategy, and more dependent on technological convergence, cross-sector collaboration, and access to diverse capabilities.

That proliferation has important implications. It creates more opportunities for specialization, partnership, and regional scale. But it also creates a new coordination challenge. Without clear differentiation and stronger connective pathways, multiple districts can drift into duplication, competition for the same resources, and confusion about where each place adds distinct value. The economic-development task, therefore, changes: it is no longer only about building successful places one by one, but about helping multiple places operate as a more coherent regional system.

That is the context for this report. Like many regions, Central Indiana is seeing the number of its innovation districts and hubs increase. What is more distinctive is that Central Indiana is already asking the next question: how to make its growing set of innovation geographies more differentiated, more connected, and more mutually reinforcing. In that sense, this report addresses a challenge that is becoming increasingly common—but from a region that is ahead of many peers in recognizing that coordination and coherence are now part of the work of creating and seizing new opportunities.

Findings

Four linked findings emerge from the analysis. Central Indiana's innovation advantage is unusually broad, spanning discovery, invention, production, and delivery within one regional economy. That advantage is grounded in a concentrated geography of differentiated places. Yet proximity alone has not made cross-organizational exchange routine, even where firms and institutions work on adjacent technical problems. The region's shared technology platforms provide the practical basis for making that exchange more visible, routable, and repeatable. Together, these findings show that Central Indiana's opportunity lies in organizing its constellation of districts and hubs around the region's distinctive strengths.

Finding 1. Central Indiana's differentiator is discovery-through-delivery.

Central Indiana's innovation advantage is systemic. The region combines scientific discovery, patented inventions, advanced industrial production, and the downstream movement of complex technologies to market within a single proximate regional economy. That combination is unusual. Many metropolitan regions are strong at one stage of the innovation chain: they may excel at research, specialize in startup formation, or host large-scale manufacturing capacity. Central Indiana is different because it brings discovery, translational capability, industrial production, and delivery together within a single regional system. The region's real edge is its ability to discover, invent, produce, and deliver complex products within the same economy.

The scale of that base is substantial:

- Since 2014, Central Indiana organizations have produced more than **93,000 peer-reviewed scientific discoveries**, roughly 1.2 times the national average per job.[4]
- Since 2010, inventors in the region have filed more than **12,800 patented inventions**, or about 2.9 times the national average.[5]
- **Advanced industries** account for more than **$34.8 billion of regional output**—roughly 19 percent of the total economy, or about 1.5 times the U.S. average.[6]
- The region has also attracted roughly **$8.5 billion in startup growth capital** since 2010.[7]

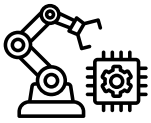
These figures demonstrate real strength across discovery, invention, enterprise, and industrial production. Central Indiana operates across the full innovation pipeline at a scale that makes it a nationally significant regional system.

That pipeline is broad and self-reinforcing. A meaningful share of local discovery is translational: roughly 17 percent of the region's scientific output is already connected to commercial application through corporate participation, patent citation, or clinical use.[8] More than $2 billion in growth capital has gone to firms commercializing patented inventions, including more than $1 billion directed to startups commercializing technologies invented locally.[9] Central Indiana repeatedly links adjacent stages of innovation. The result is a regional system in which earlier discovery can contribute to later invention, invention can support new firm formation, and both can feed downstream industrial and commercial activity.

Figure 2. Central Indiana's innovation ecosystem is strong compared to the United States
Local innovation outputs across Discovery, Invention, and Enterprise with per-job comparisons to the United States.

Central Indiana has published **93,000+** **discoveries** since 2014, which is **1.2x** the U.S. average

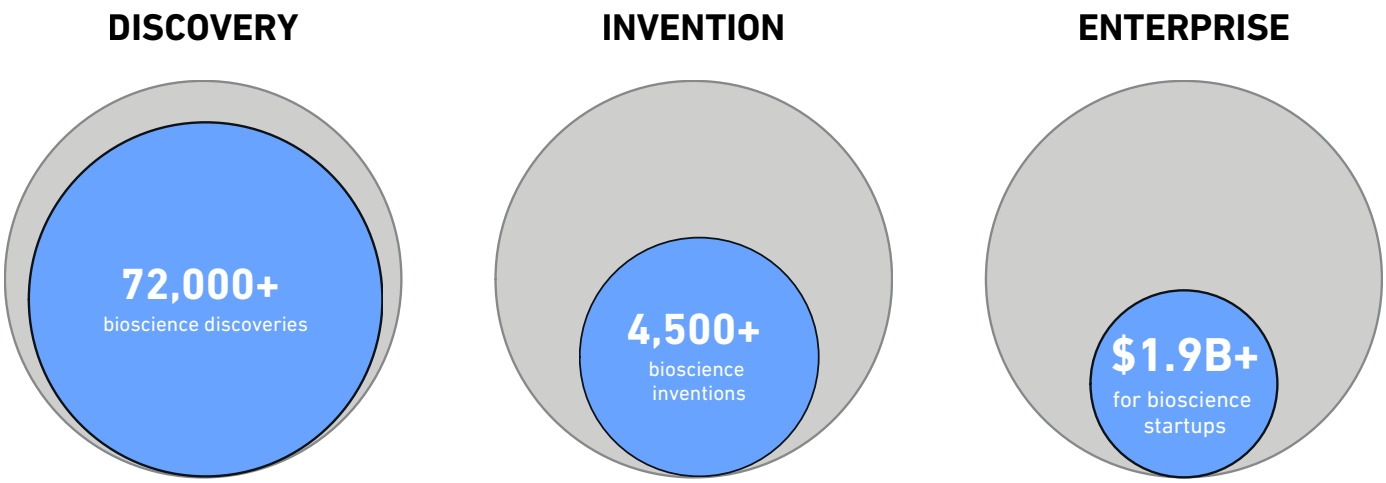
Central Indiana has invented **12,800+** **inventions** since 2010, which is **2.9x** the U.S. average.



Advanced industries represent **$34.8B+** of regional gross product, about 19% of the total, which is **1.5x** the U.S. average.

Source: GIID analysis of OpenAlex, USPTO, OECD, The Lens, Infobel, Lightcast, and PitchBook Inc. data.

Figure 3. Bioscience represents much of Central Indiana's innovation
Total local innovation artifacts that are relevant to the biosciences



85% of local discoveries relate to biosciences, about **3x** the average

35% of local inventions relate to biosciences, about **1.6x** the average

23% of growth capital was raised by bioscience startups, **0.7x** the average

Source: GIID analysis of OpenAlex, USPTO, OECD, The Lens, and PitchBook Inc. data.

Biociences sit at the core of this story, but the regional advantage extends beyond them. Bioscience accounts for roughly 72,000 local discoveries, more than 4,500 local inventions, and nearly $1.9 billion in startup capital. That pattern is also asymmetric in a revealing way: bioscience represents about 85 percent of discoveries, about 35 percent of inventions, and about 23 percent of startup growth capital.[10] The region's knowledge base in bioscience is therefore much deeper than its current entrepreneurial and capitalization layer. Engineering, chemistry and materials, computing, and advanced manufacturing all contribute to the region's capacity to turn scientific insight into regulated, manufacturable, and marketable products. That breadth supports the design, testing, scaling, and delivery of complex technologies across multiple domains, from human and animal health to industrial systems and precision manufacturing.

The region's breadth is organized through a smaller set of shared enabling platforms and capabilities that connect bioscience, agriscience, health technology, and complex manufacturing. Those connections help explain why Central Indiana can participate in several parts of the innovation economy at once, and why its innovation base is broader and more versatile than any single-sector label suggests.

At the same time, the system remains uneven in one important respect. Central Indiana's entrepreneurial and capitalization layers are real, but thinner than the scale of its research and industrial base might suggest. That pattern is common across many U.S. metros, except for a small number of coastal outliers, and should not be taken as evidence that the region is uniquely weak in entrepreneurship. But it does matter strategically. A region can be strong at discovery, invention, and production and still leave value on the table if it does not generate enough new firms, attract enough risk capital, or create enough pathways for emerging companies to scale locally. In Central Indiana, that thinner entrepreneurial layer is one of the clearest reasons to organize the region's strengths more intentionally. A stronger constellation would help incumbent firms access complementary capabilities more effectively and make the region more accessible to startups, technical founders, translational partnerships, and outside investors seeking a clearer path into the system.

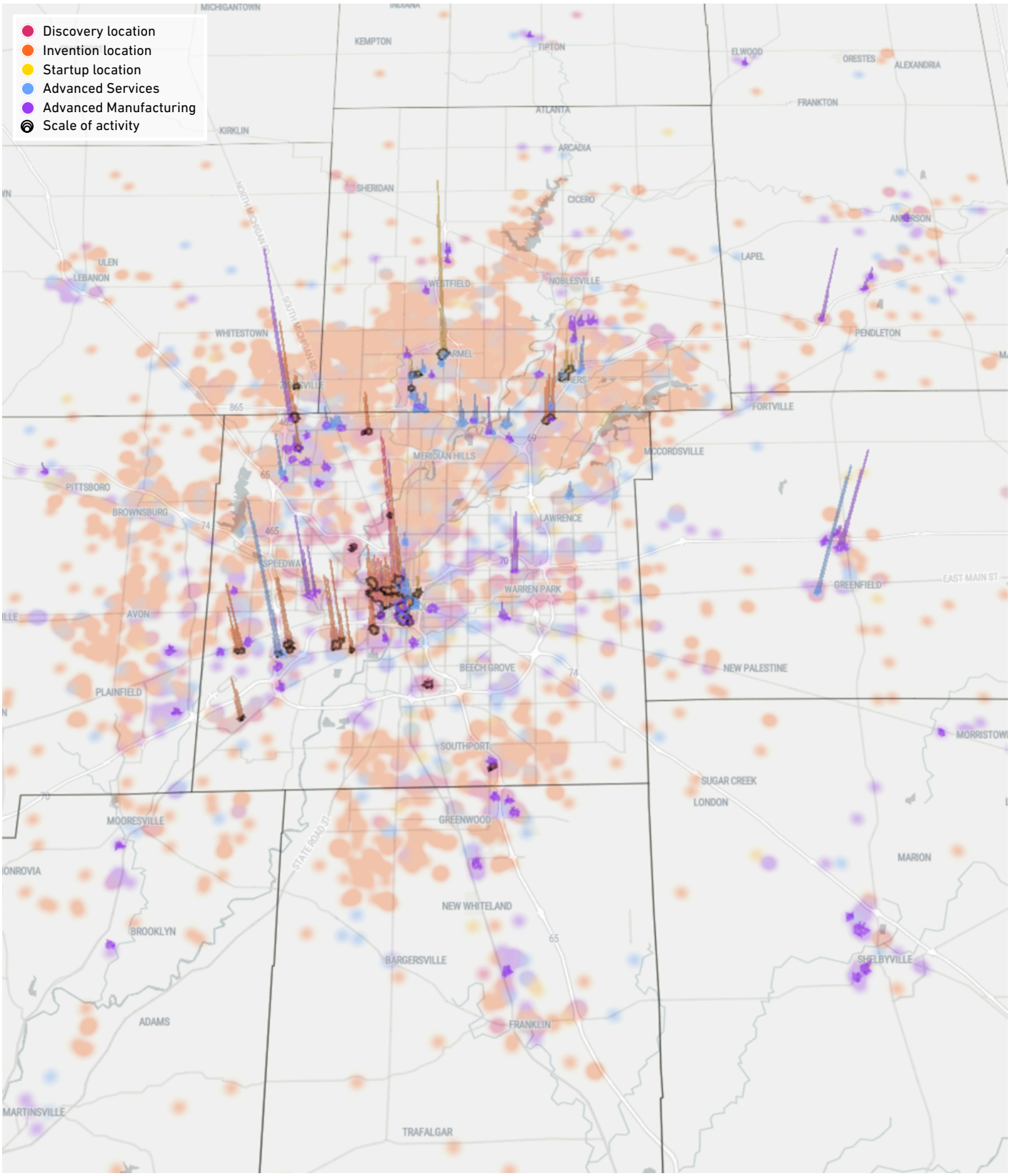
The implication of this first finding is twofold. First, Central Indiana should be understood as a regional innovation system with unusual breadth: strong sectors and high-performing organizations connected within a broader discovery-to-delivery economy. Second, the next layer of value will come from making those assets easier to navigate, combine, and scale across organizational and geographic boundaries. That advantage is concentrated in a relatively small number of places that already account for a large share of the region's innovation activity. Understanding how that spatial pattern operates—and what kind of regional system it already implies—is the next step.

Finding 2. Central Indiana's innovation is concentrated in differentiated places whose value depends on clear roles.

Like most regions, Central Indiana's innovation activity is concentrated. It is carried by a relatively small number of places where research, advanced industry, startup activity, and invention co-locate at a meaningful scale. That concentration makes the region's innovation system strategically legible. Central Indiana's innovation advantage is visible because it is grounded in real geographies: university campuses, corporate sites, medical centers, industrial corridors, and emerging hubs where talent, infrastructure, and technical capability already intersect.

Figure 4. Central Indiana's innovation activities are concentrated in about three dozen regionally-significant hotspots that are distributed throughout the 11-country region
Density of activity in Central Indiana's regionally significant innovation hotspots, by function

This map illustrates the spatial distribution of innovative activity in Central Indiana. Each point on the map represents the location where an innovation artifact was created, colored by the dimension of innovation. The black boundaries with spikes represent the region's hotspots of innovation for Discovery, Invention, or Enterprise, while the blue and purple boundaries represent advanced services and manufacturing hotspots, respectively. GIID defined these hotspots with a spatial clustering analysis that centered on each innovation location's physical accessibility and walkability to ensure that the spatial clusters reflect Central Indiana's built environment.



Source: GIID analysis of OpenAlex, USPTO, OECD, The Lens, Infobel, and PitchBook Inc. data.

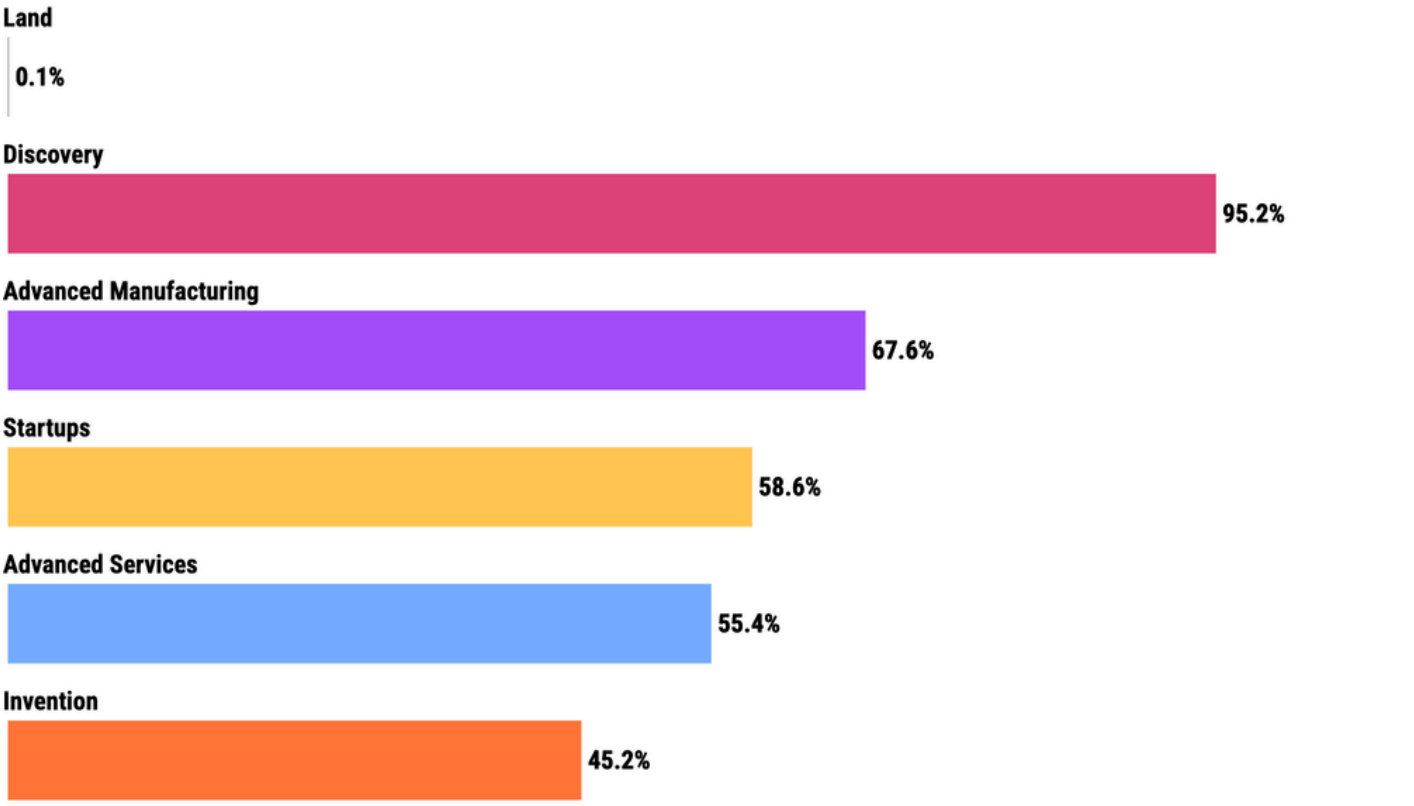
An analysis of Central Indiana's geography of innovation activity shows just how concentrated that activity is. Less than a tenth of one percent of land in the 11-county region[11] accounts for roughly 93 percent of discovery, about 70 percent of growth capital, roughly two-thirds of advanced manufacturing employment, more than half of advanced services employment, and about 44 percent of invention.[12] In Central Indiana, place matters because a small set of geographies already accounts for a large share of the region's innovation work. The upshot is that relatively small improvements in a relatively small number of places can generate disproportionate regional returns. The task is to make those places more usable, better connected, and more productive as a system.

The region's innovation is concentrated and highly differentiated in at least two important ways. First, places differ by function. Some hotspots are discovery-heavy, some are invention-heavy, some are more startup-oriented, and others are more strongly tied to advanced services or advanced manufacturing. Second, they differ by focus. Even places that appear similar at a high level often specialize in distinct scientific or technological domains. In the region's invention landscape, one hotspot may lean toward ag and food technologies, another toward biomedical and health technology, and another toward engineering. On the discovery side, several places may all register as health-science hotspots while still differing substantially in emphasis, from metabolic research to cardiovascular science to applied clinical domains. Complementarity creates the value of the regional system. These differences form a coherent regional pattern of distinct roles.

That broader pattern is what makes the region's newer layer of organized districts and hubs so important. Central Indiana's branded innovation geographies—16 Tech Innovation District, One Health Innovation District, LEAP, and others still taking shape—sit atop the existing geography of corporate campuses, hospitals, universities, and industrial sites as a more intentional layer of visibility, programming, and place-based investment. Compared with the broader landscape of innovation "hotspots," these organized hubs are fewer, more proximate, and better positioned to connect multiple functions and actors in one place. The strategic task is to ensure that, as they continue to take shape—both physically and operationally—the newer hubs and districts add distinct capacity, clarify roles, and make the wider system easier to understand and use—rather than simply reproducing capabilities that already exist elsewhere.

This pattern makes a constellation strategy plausible. Central Indiana needs a system in which different places are legible for different functions, and in which firms, researchers, founders, and investors can move among them as their needs evolve. Concentration gives the system recognizable nodes. Differentiation gives those nodes distinct roles. The demonstrated value of proximity suggests that there is still additional regional upside to unlock. The region's challenge is to make that value more repeatable across organizations through clearer roles, better interfaces, and more deliberate handoffs—so that places that are already proximate can function more intentionally as a system.

Figure 5. Central Indiana's innovation hotspots contribute to most of the region's innovation with little land
Portion of innovation activity and land accounted for by Central Indiana's innovation hotspots, 2015 – 2023

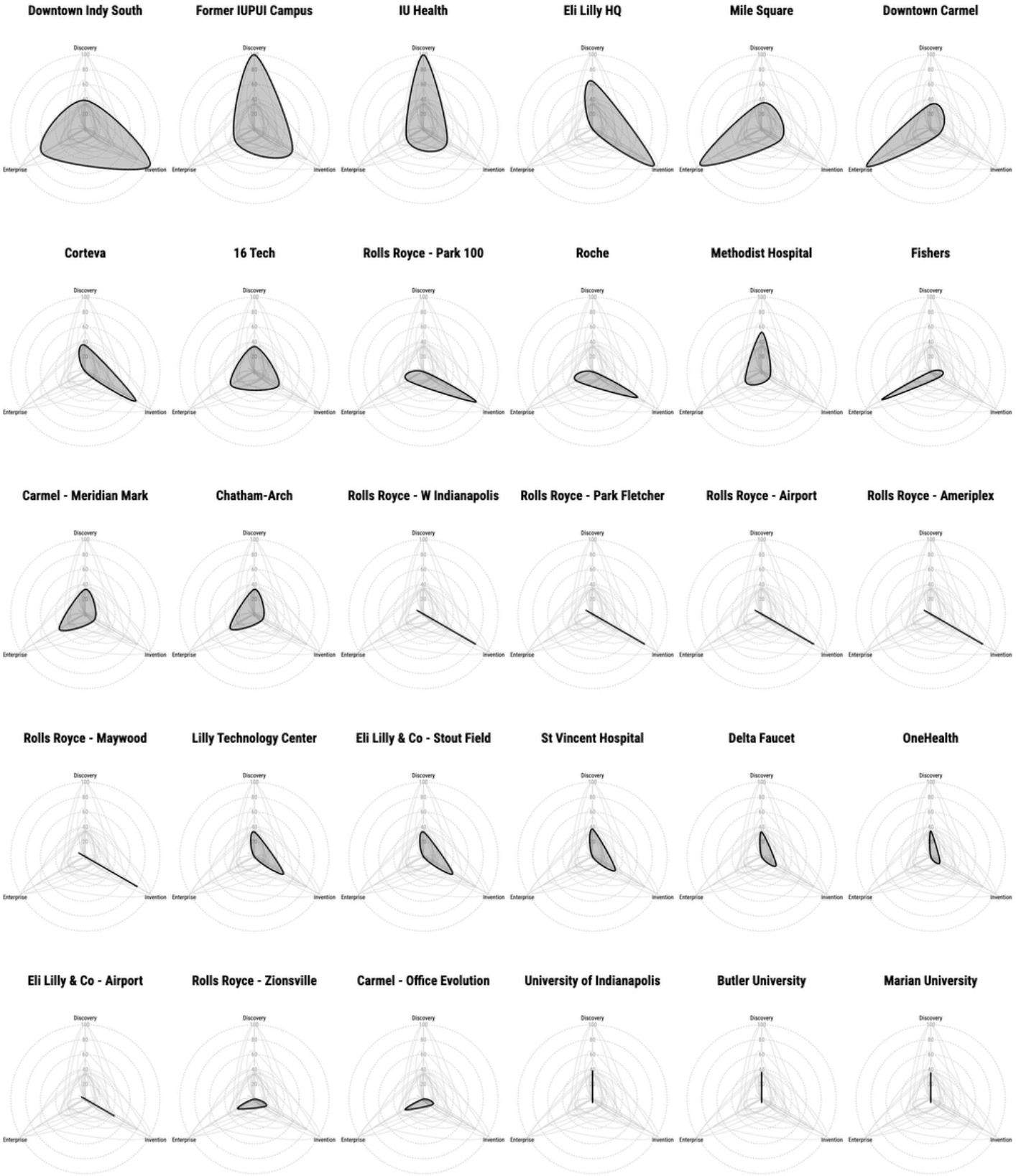


Source: GIID analysis of OpenAlex, USPTO, OECD, The Lens, Infobel, and PitchBook Inc. data.

Figure 6. Central Indiana's innovation hotspots differentiate themselves by innovation function across the discovery-delivery continuum

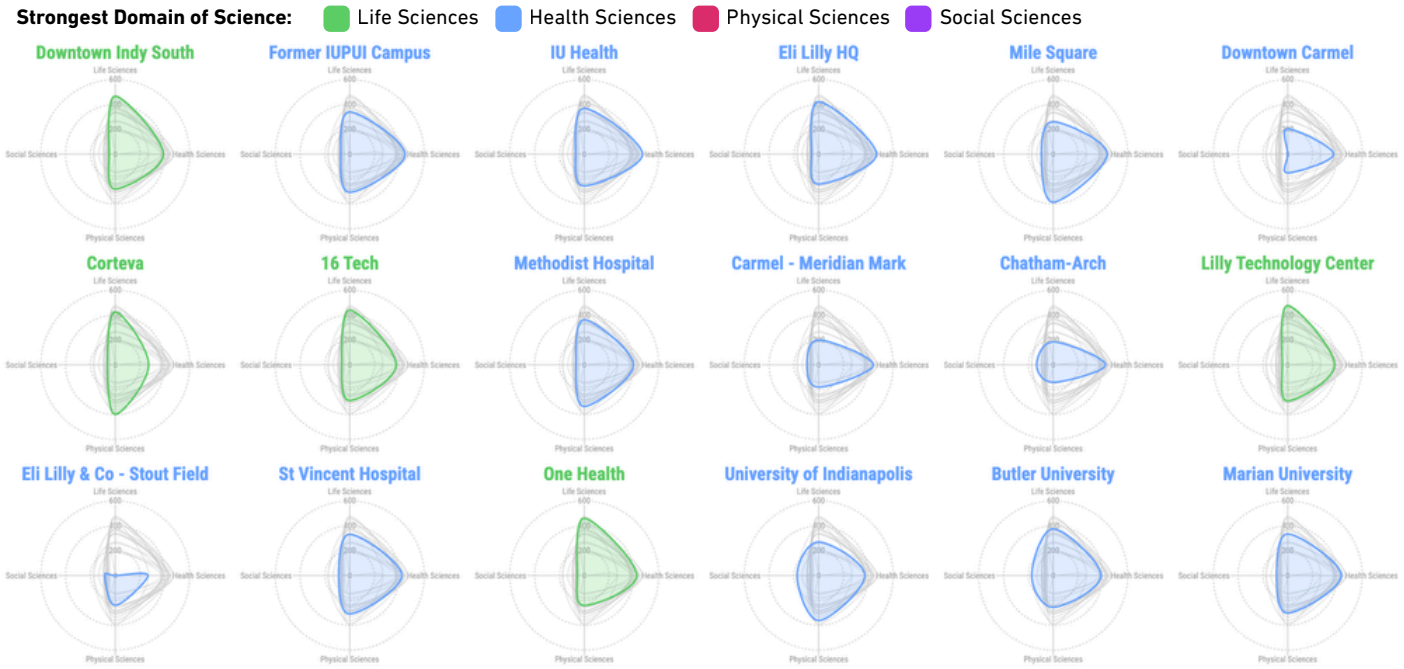
Innovation hotspots' relative strength across Discovery, Invention, and Startup Enterprise Activity, 2015 – 2023

Figure 6 characterizes Central Indiana's innovation hotspots by the amount of Discovery, Invention, and Enterprise activity contained within. Each axis of the radar chart is a relative score of activity across hotspots; those with the greatest amount of activity in a dimension of innovation exhibit a score of 100 for that dimension, while those with the minimum score exhibit a value of 0. Overall, this chart points to the functional capabilities of each hotspot from discovery to delivery, both as evidence of this phenomenon and as a view of how a structured constellations ecosystem might leverage each place. Figures 7 and 8 follow from a similar analysis examining the scientific and technical specializations of districts that host discovery or inventive activities.



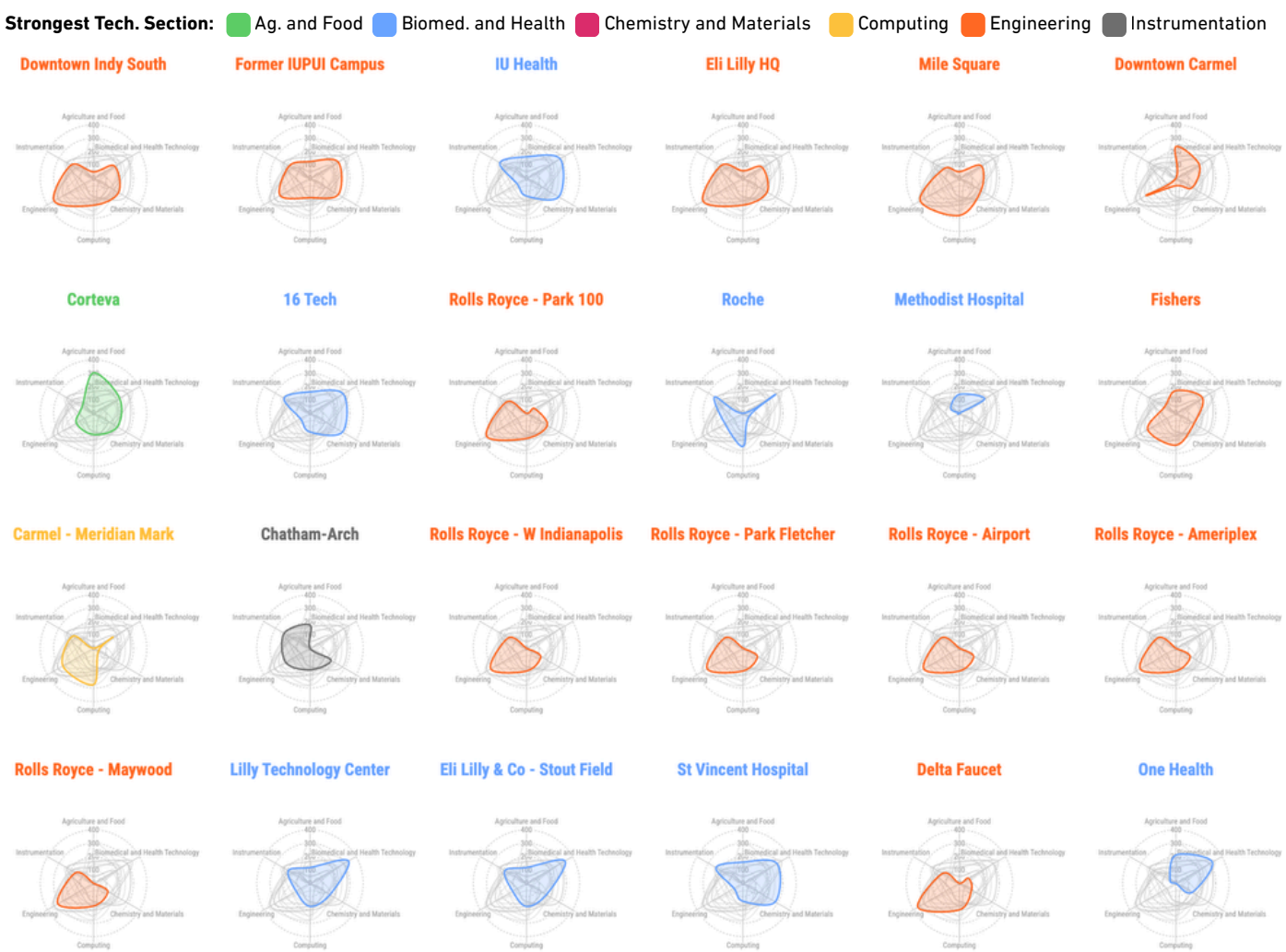
Source: GIID analysis of OpenAlex, USPTO, OECD, The Lens, and PitchBook Inc. data.

Figure 7. Central Indiana's hotspots differentiate themselves by focus on unique scientific specialties
Innovation hotspots' relative strength in the Life, Health, Physical, and Social Sciences, 2015 – 2023



Source: GIID analysis of OpenAlex data.

Figure 8. Central Indiana's hotspots contain unique technological capabilities to differentiate by focus
Innovation hotspots' relative strength in technology section for local invention activity, 2015 – 2023



Source: GIID analysis of USPTO, OECD, and The Lens data.

Finding 3. Proximity exists, but cross-organizational exchange does not yet scale.

Central Indiana recycles the knowledge it creates, a strong indication that the region functions as more than a loose collection of firms and institutions. A large share of local inventions builds on earlier discoveries or inventions produced in the region, meaning that new work draws on ideas already circulating locally. Central Indiana already exhibits the kind of recursive innovation dynamic that place-based ecosystems are supposed to generate: discovery feeds invention, invention inspires later invention, and knowledge produced in the region matters in future work.

The opportunity is to make more of this recycling less organization-bound. Of the roughly 46 percent of local inventions that cite earlier regional knowledge, about 40 percentage points reflect knowledge being reused within the same organization, while only about 6 percentage points reflect knowledge crossing organizational boundaries.[13] The region has a strong local feedback loop via it's corporations, but an underdeveloped inter-organizational knowledge market. This, most of the speed and reinforcement generated by proximity are captured within firms rather than between them.

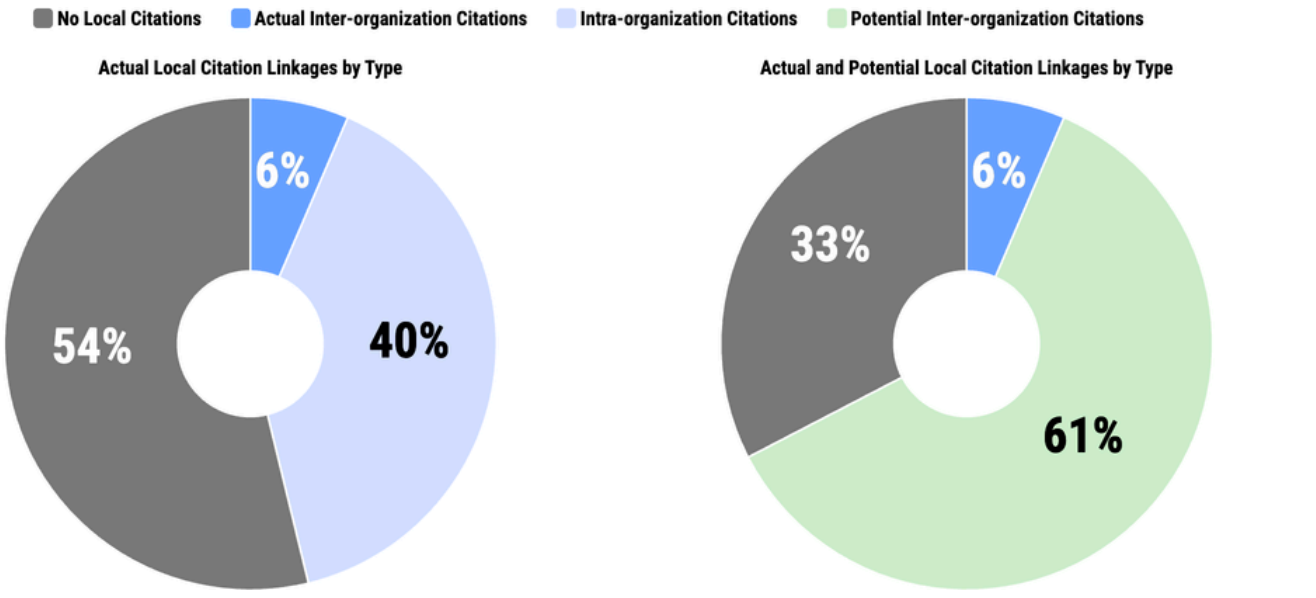
The scale of the unrealized opportunity is substantial. Only about 10 percent of potential inter-firm spillovers are currently realized, even though roughly two-thirds of recent inventions could have cited other inventions from the region.[14] That latent applicability appears across agriculture and food, biomedical and health technology, chemistry and materials, cleantech, and engineering. Central Indiana has adjacent capabilities worth connecting. Those capabilities remain too difficult to discover, interpret, and use across organizational boundaries routinely.

Local spillovers move materially faster than external ones. On average, the knowledge cited in a local invention is about 12.6 years old when drawn from the wider world, but only about 6.1 years old when it comes from Central Indiana.[15] That difference gives proximity operational significance. When knowledge is readily available, it can be integrated more quickly into subsequent work. Today, however, that speed premium appears to be captured most strongly within firms. The next layer of advantage lies in making that speed more portable across firms, institutions, and places.

The constraint is an access problem. Relevant local knowledge and expertise remain hard to find and route across organizational boundaries. Firms and institutions may sit near one another and work on adjacent technical problems, yet still lack visible pathways for initial contact, shared ways of scoping opportunities, and repeatable processes for handling IP, governance, and relationship-management questions. In that environment, internal development remains the more rational default, even when complementary capability exists nearby. A general call for more collaboration misses the structural problem: the region has proximity, but it needs the access architecture to convert that proximity into routine exchange.

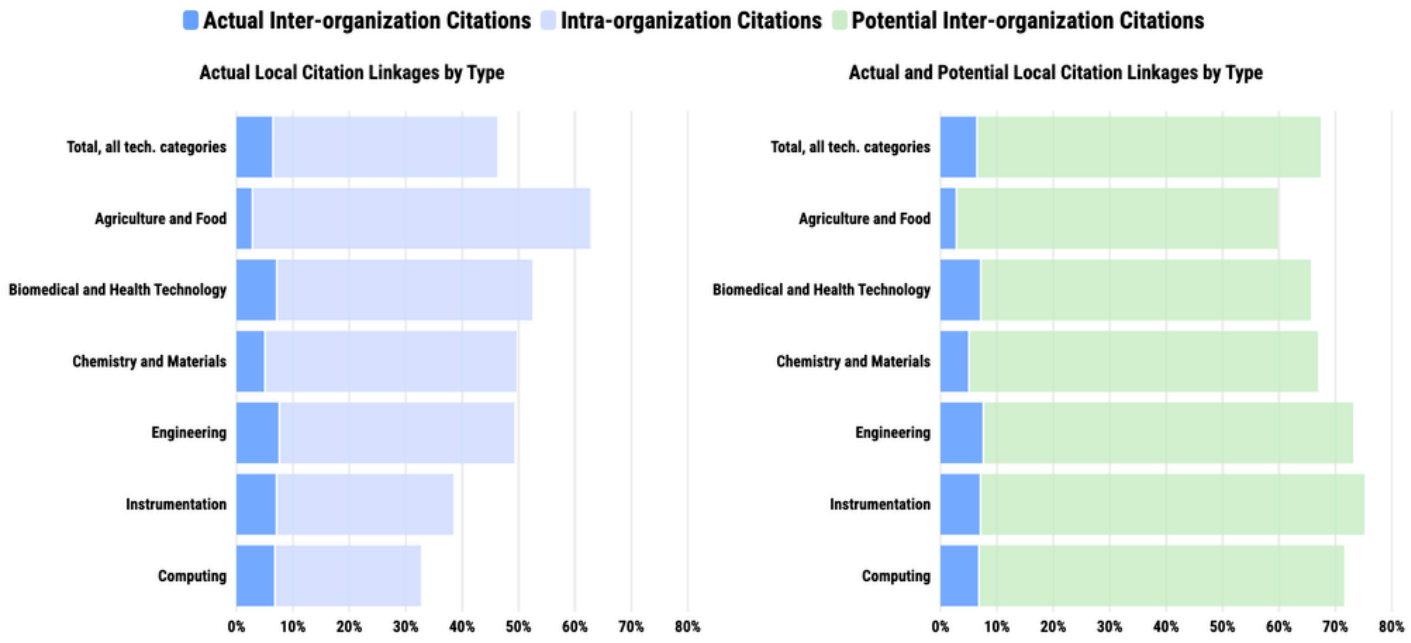
Innovation districts and hubs have a distinctive role to play here. Their value includes serving as access infrastructure for the wider regional system: visible entry points, recurring technical programming, shared maps of capability, routable referral paths, and low-stakes environments in which people, ideas, and expertise can circulate more predictably across organizational boundaries. The region has already demonstrated its innovation assets. The opportunity now is to make exchange across those assets predictable, routable, and repeatable enough for proximity to compound at the system scale.

Figure 9: Central Indiana realizes just 10% of its potential knowledge spillovers between local organizations
Share of local inventions that actually versus could cite earlier local scientific articles or patents, by inter-/intra-organizational status, 2010 – 2023



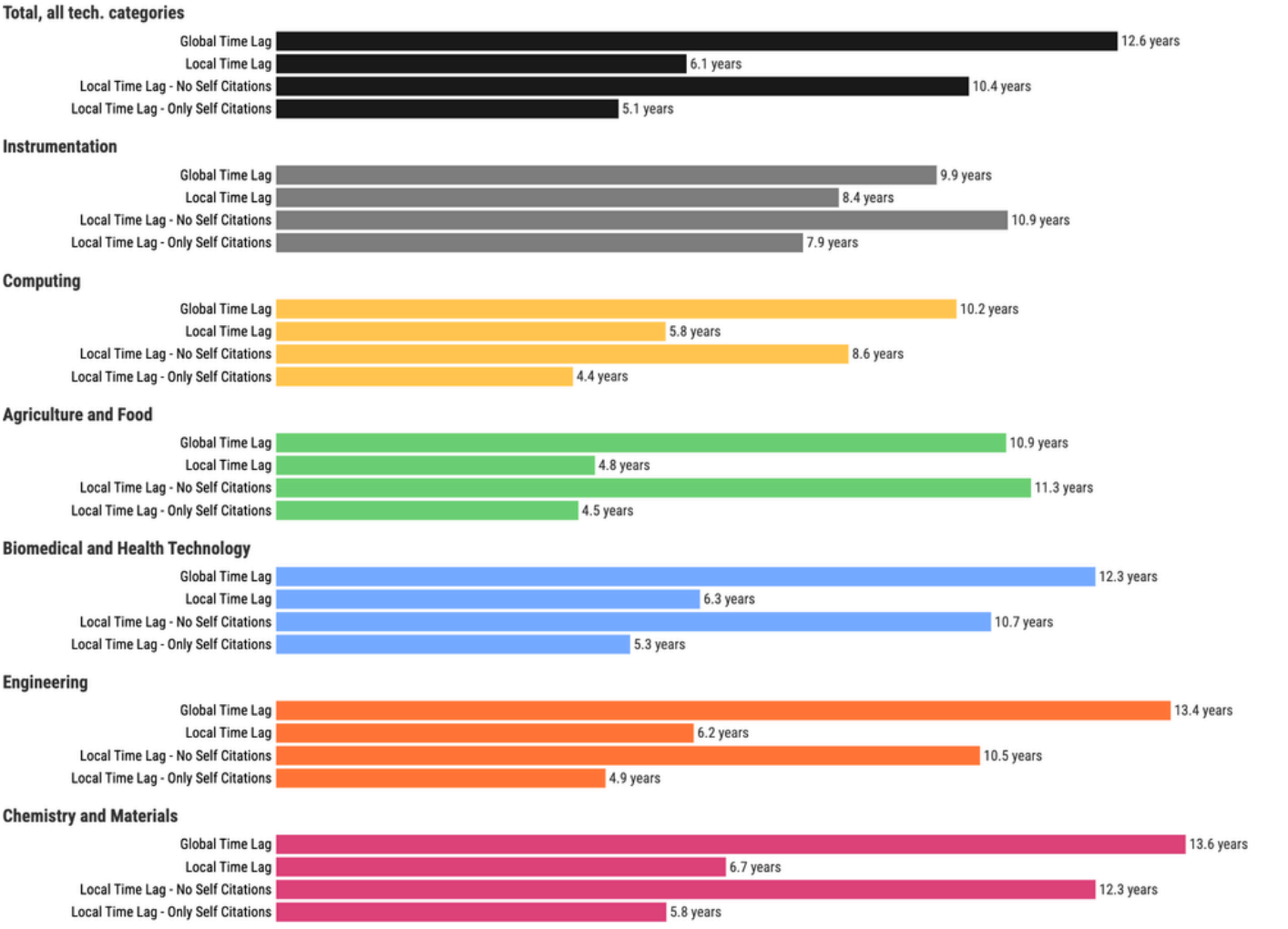
Source: GIID analysis of USPTO, OECD, and The Lens data.

Figure 10: The intensity of actual and potential local knowledge spillovers varies by technology
Share of local inventions that actually versus could cite earlier local scientific articles or patents, by inter-/intra-organizational status, 2010 – 2023



Source: GIID analysis of USPTO, OECD, and The Lens data.

Figure 11: Local knowledge spillovers accelerate the rate of invention in most types of technologies
Average age of cited inventions when citing local inventions are filed, by location of the cited inventions' inventors, 2010 – 2023



Source: GIID analysis of USPTO, OECD, and The Lens data.

Why collaboration can be good for firms

Firm collaboration in Central Indiana is already producing named products, new companies, production partnerships, systems-integration projects, and corporate technology handoffs. The opportunity is to make that activity easier to find, scope, and repeat.

The business logic starts with market adjacency. Central Indiana's leading firms often work in related technical domains without competing directly in the same product markets. Eli Lilly & Company develops human therapeutics. Elanco focuses on animal health. Corteva works in plant science and crop protection. Roche's presence in Indianapolis is tied to diagnostics. Cook Medical manufactures medical devices. Cummins, Rolls-Royce, Allison Transmission, and other industrial firms work in complex engineered systems. These companies serve different end markets, but they draw on overlapping capabilities in biological science, chemistry, data, process engineering, instrumentation, quality systems, regulatory knowledge, and advanced production. That creates room for targeted collaboration around shared inputs and technical problems while allowing firms to protect their core market positions.

The firm-relevant collaborations are usually bounded. They protect intellectual property, limit disclosure, and focus on a specific technical or commercial objective. A therapeutic company and a diagnostics company can align around a clinical pathway. An animal-health company can use a new venture to commercialize an adjacent platform. A medical-device company can partner around regulated production and workforce capacity. Industrial firms can integrate specialized components into complex systems. These models help firms reach complementary capabilities, validate technologies, access specialized facilities, identify talent, and explore adjacent opportunities while retaining control over strategy, proprietary assets, and commercial decision-making.

Publicly visible examples show the range that such collaborations can take and their benefits. Roche and Lilly collaborated on an Alzheimer's diagnostics pathway that includes Roche's Elecsys Phospho-Tau (181P) Plasma test, the first-ever FDA-cleared blood test for Alzheimer's. Elanco's platform-related collaborations have taken several forms, including Athian, OneHealth Studio, and BiomEdit, the animal-health microbiome company formed through an Elanco platform carve-out and Ginkgo Bioworks partnership. Allison Transmission's work with Rolls-Royce shows a systems-integration model.

The findings in this report show why these examples matter. Only about 10 percent of potential inter-firm spillovers are currently realized, even though roughly two-thirds of recent inventions could have cited other inventions from the region. That gap is the opportunity: adjacent capabilities the region already has, but firms do not yet routinely find or use. Elecsys Phospho-Tau shows what structured collaboration can produce in a regulated market. Many future opportunities will be smaller or earlier-stage, but they can still create value: a faster validation pathway, a shared facility, a new venture, or a production relationship.

Innovation districts and hubs can help firms find and de-risk those opportunities. They provide neutral settings for early conversations, visible access to specialized capabilities, and clearer pathways from technical problem to partner, pilot, validation, production, or new venture. They also support collaboration beyond knowledge sharing and co-invention, including venture creation, workforce partnerships, contract manufacturing, platform access, supplier integration, and shared technical programming. For firms, the value is practical: lower search costs, faster access to useful capability, better visibility into adjacent opportunities, and clearer rules for deciding which opportunities deserve deeper engagement.

Finding 4. A small number of shared technology platforms connect otherwise separate sectors.

Central Indiana's industries may appear diverse on the surface. Human health, animal health, plant science, medical technology, advanced manufacturing, and industrial systems are often discussed as separate sectors with distinct markets, firms, and institutions. But the region's innovation system is not organized only by sectors. At a deeper level, many of these activities depend on the same enabling capabilities. Sectors describe products and markets, whereas shared platforms describe the technical foundations on which multiple sectors can build simultaneously. The question, then, is what technical terrain the region's access architecture should connect.

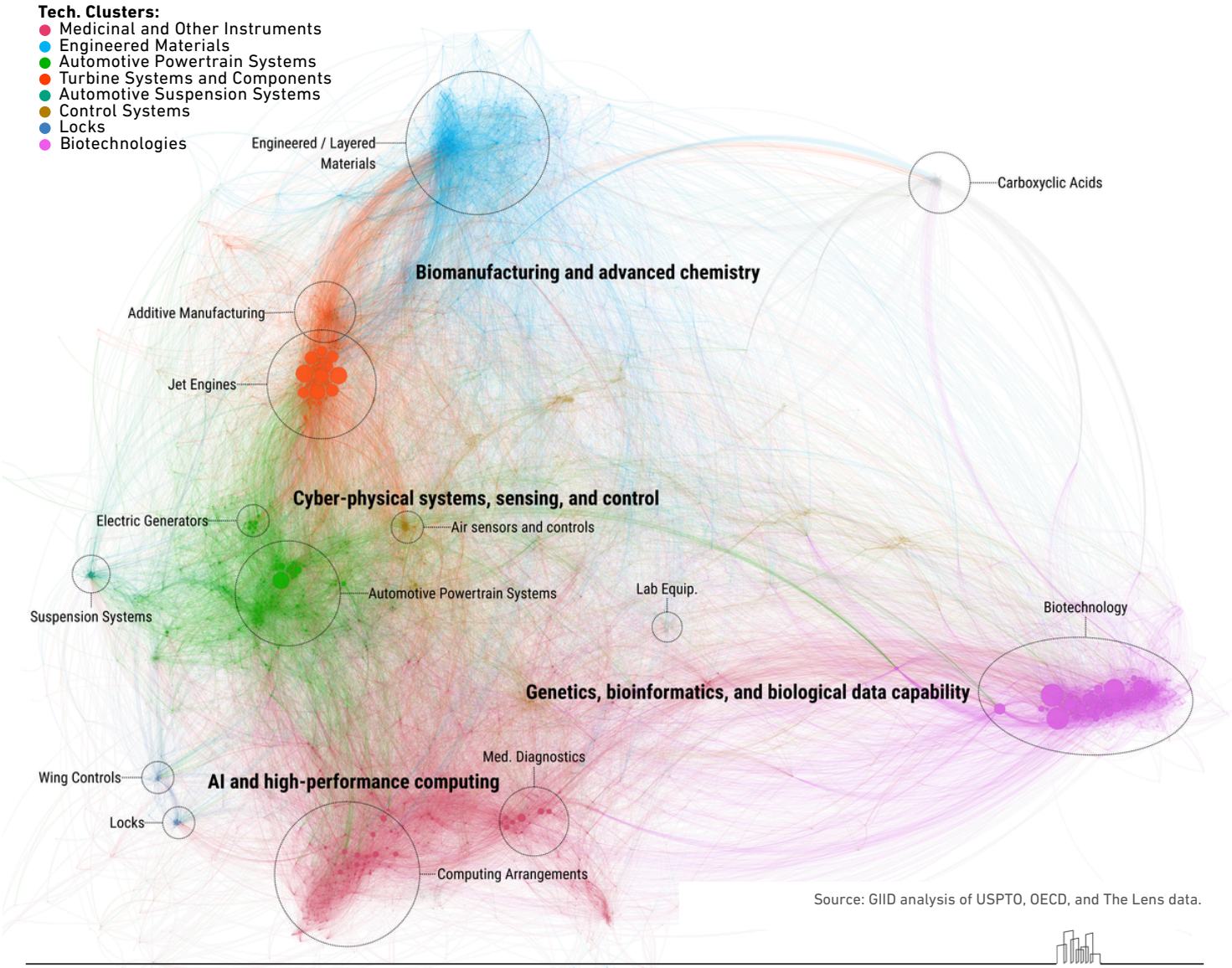
The evidence points to four technology platforms that recur across the regional system.

- **Biomanufacturing and advanced chemistry:** the processes, formulations, and biological production capabilities needed to develop and manufacture complex life sciences and related products.
- **Genetics, bioinformatics, and biological data capability:** the ability to generate, interpret, and apply biological information across human, animal, and plant systems.
- **AI and high-performance computing:** the data, modeling, simulation, and analytical capacity are quickly becoming critical to discovery, diagnostics, and design.
- **Cyber-physical systems, sensing, and control:** the instrumentation, automation, monitoring, and integrated technical systems that connect digital intelligence to physical production, testing, and operation.

These platforms are the connective tissue through which otherwise separate sectors increasingly intersect.

Figure 12: Central Indiana's inventions share common technology applications across various platforms
The relative frequency of technologies' appearances together on inventions local to Central Indiana and the tech clusters they form, 2010 – 2023

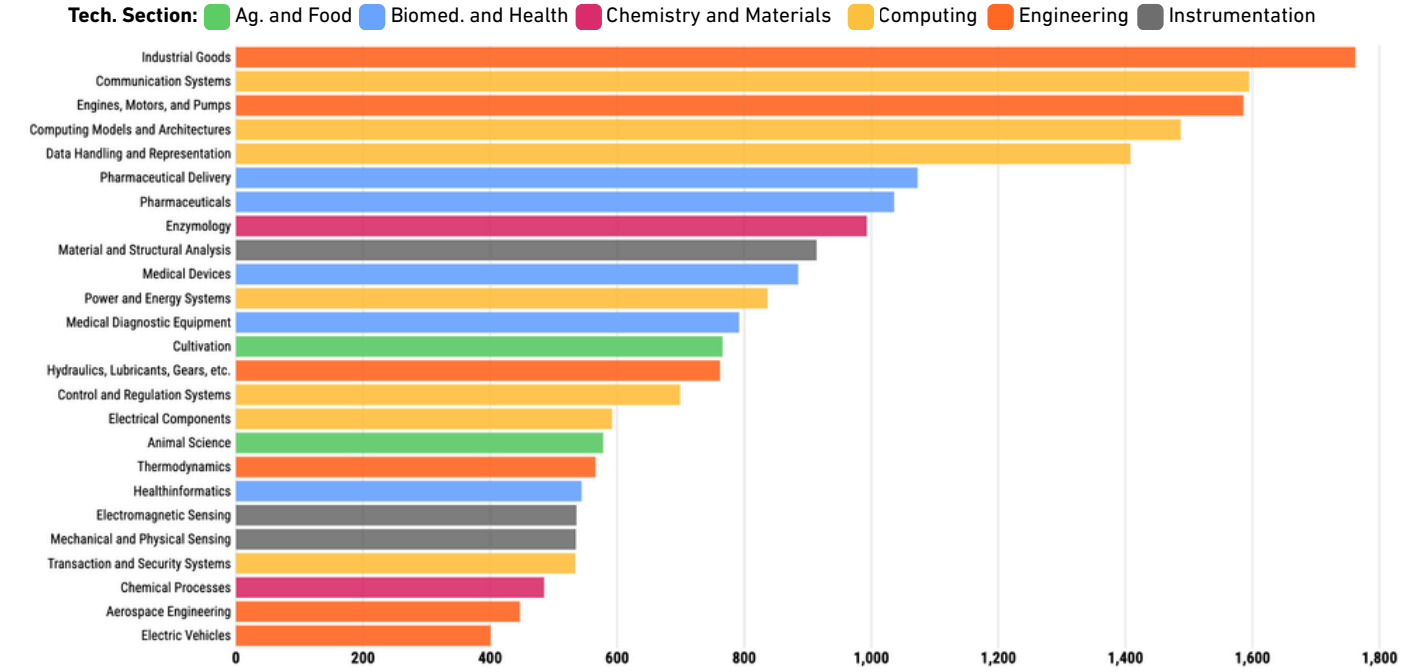
This network shows how the region's research organizations combine technologies to develop new inventions, forming clusters of related technologies that reflect key technology development strengths and related platforms. Each dot or node represents a specific technology, sized by the number of local inventions that use it. The distance between the nodes, and the lines or "edges" that connect them, represent the relative frequency with which those nodes appear together on locally invented inventions, with nodes that appear together more frequently being closer to one another. The network reveals a diverse but highly integrated set of mutually reinforcing enabling technologies and end products.



Source: GIID analysis of USPTO, OECD, and The Lens data.

Figure 13: Central Indiana's organizations can benefit from each other's invention via shared technology inputs
Top 25 CPC subsections by number of local inventions with potential citation linkages to other local inventions, 2015 – 2023

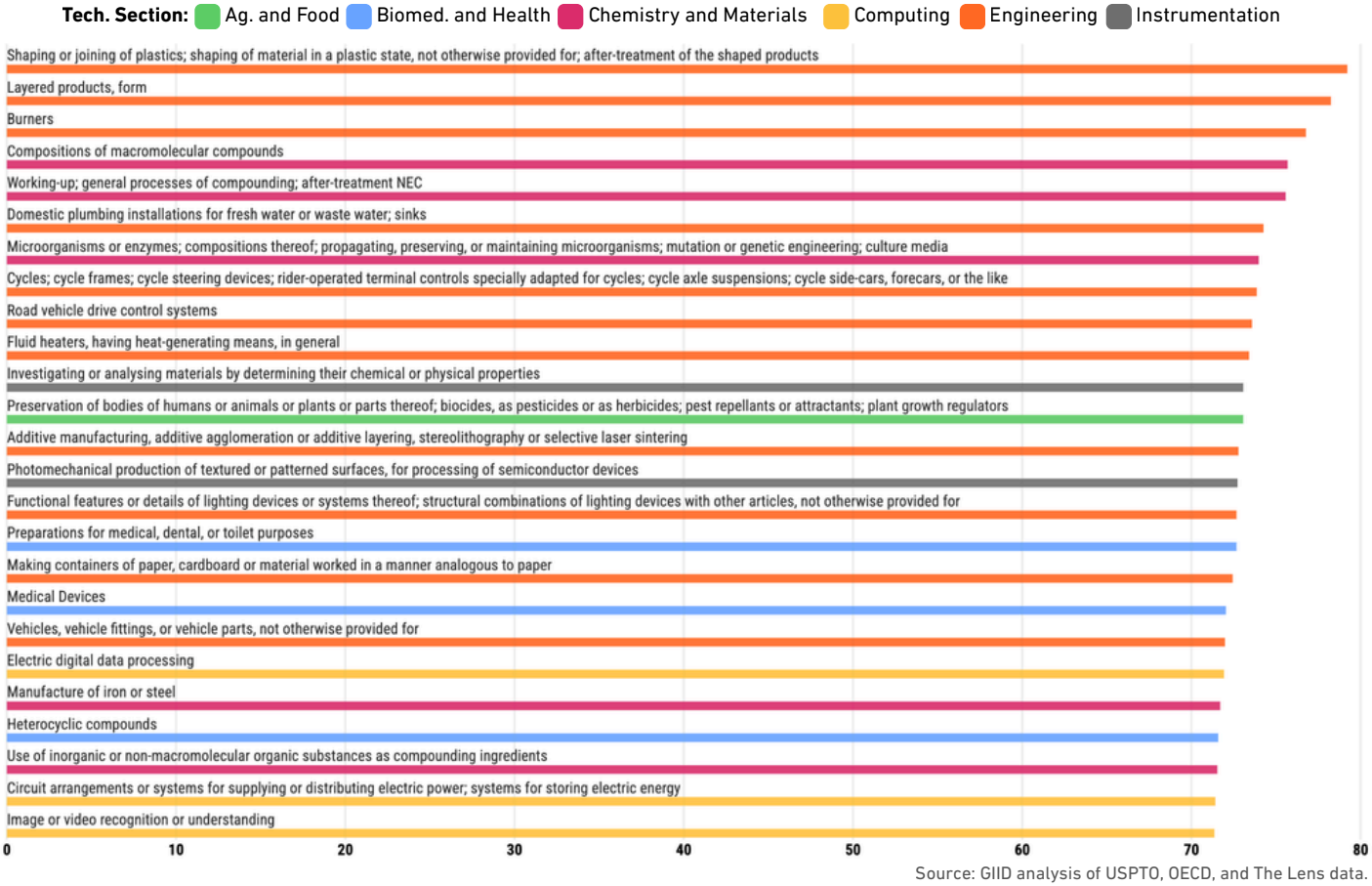
This analysis examines how existing inventions could be used by other local organizations (besides the one that invented them). The largest number of mutually useful inventions fall into specific sets of enabling technologies. For example, pharmaceuticals and enzymology relate to biomanufacturing and advanced chemistry; cultivation, materials analysis, and health informatics relate to genetics and bioinformatics; computing models and data handling relate to AI and computing; and communications and control systems relate to cybernetics.



Source: GIID analysis of USPTO, OECD, and The Lens data.

Figure 14: Central Indiana's companies depend on a set of shared technologies to bring their inventions to market
Top 25 most general CPC groups according to their appearance on Central Indiana companies' locally invented patents, 2010 – 2023

This analysis examines the importance of individual technologies in enabling inventions in the region—how generally they may be used to support innovation across companies and industries. The findings demonstrate how critical advanced chemitry and materials science have become to Central Indiana's innovation, not only in biomanufacturing but in the method of manufacturing other types of technologies as well.



Source: GIID analysis of USPTO, OECD, and The Lens data.

These platforms emerge from analyses of cross-organizational invention overlap (Figure 13) and of the generality of regional technology classes (Figure 14). Across Central Indiana's invention system, opportunities for knowledge spillovers between organizations are most frequent in biological production and formulation, data-intensive computation and modeling, sensing and control, and diagnostic and analytical instrumentation.[16] Meanwhile, in practical terms, the region's firms and institutions are repeatedly working on technical problems that draw on common or "general" technological capabilities. Some of those capabilities are highly visible in life sciences. Others are shared across a wider set of industrial and chemistry domains. Together, these analyses suggest that the region's strongest common ground lies less in a single end market than in specific sets of enabling technologies that are broadly relevant across the system.

That is why a platform lens is more useful than a purely sectoral one when thinking about collaboration. A firm in human health, animal health, plant science, or advanced manufacturing may serve a different market, yet still rely on related process chemistry, computational tools, instrumentation, or biological data capabilities. A platform lens identifies where sufficient technical overlap makes shared facilities, demonstration environments, compute and data capabilities, and talent development more plausible than sector labels alone would suggest. Platforms matter because they identify where common infrastructure can support many kinds of work at once.

This also helps explain why the region's newer innovation geographies matter. The district and hub model is most useful when it makes cross-cutting capabilities more visible, accessible, and usable than they would be if left dispersed among firms and institutions. Some places are already stronger environments for discovery-oriented computation and biological data capability, while others are better positioned for process development, instrumentation, or manufacturing demonstration. The value of the constellation lies in making these differences legible and navigable across the system. A platform lens, therefore, clarifies both the common technical ground linking the region's firms and the basis on which different geographies can add distinct value.

Taken together, these findings describe a region that is already distinctive in its innovation. Central Indiana discovers, invents, makes, and moves new technologies within a single regional economy. That strength is grounded in place. It is carried by a broader geography of campuses, corporate sites, hospitals, industrial corridors, and production assets, and is becoming more visible and usable through a newer layer of innovation districts and hubs. The region's opportunity is to decide how ambitious it wants to be in organizing this newer layer of geography around what it already does unusually well: making the constellation more legible, more usable, and more capable of turning proximity, specialization, and shared platforms into cumulative regional advantage. The next section considers what that choice could mean in practice.

Implications

The findings in this report point to a specific action opportunity for Central Indiana. The region has an unusually complete discovery-to-delivery economy, with strengths in research, invention, production, logistics, and corporate scale. Those strengths are concentrated in a small number of differentiated places. Yet much of the region's innovation advantage remains enclosed within individual firms and institutions. Local knowledge moves quickly when available, but cross-organizational exchange does not yet occur at the scale that the region's assets should support.

That gap is also an opportunity. Central Indiana's firms and institutions work on related technical problems across human health, animal health, plant science, advanced manufacturing, and industrial systems. Many of those problems depend on shared enabling platforms: biomanufacturing and advanced chemistry; genetics, bioinformatics; AI and high-performance computing; and cyber-physical systems, sensing, and control. These platforms provide a practical foundation for targeted collaboration, especially in the design, testing, validation, production, and delivery of complex, regulated products.

The implication is clear: Central Indiana should leverage its emerging layer of innovation districts and hubs to make this collaboration easier to initiate, route, and repeat. The opportunity is not broad collaboration for its own sake. It is a structured engagement focused on shared technical needs: process development, manufacturing demonstration, regulatory validation, instrumentation, data infrastructure, applied computation, biological production, and scale-up. These are the places where firms can benefit from complementary capability without surrendering their own strategies, intellectual property, or competitive boundaries.

This is where the region's innovation geographies become economically important. The 16 Tech Innovation District, One Health Innovation District, LEAP, and other innovation places can accommodate and encourage the kinds of applied, cross-organizational work the findings identify. They create settings where firms engage shared technical problems, institutions connect research to industry, startups access capabilities they cannot build alone, and investors find routes into the region. Properly organized, these places become access infrastructure for the discovery-to-delivery economy.

A constellation strategy helps these investments compound rather than compete. It gives each geography a clear role in and a practical basis for deciding where to lead, where to partner, and where to route opportunities that fit better elsewhere. That clarity is also a market advantage. The strongest districts make their sites, programs, and partnerships work as innovation platforms, not just development projects. They give prospective tenants, partners, and investors a clearer sense of the unique value proposition of *this* place and its value to the region.

Central Indiana's innovation geographies can become the places, interfaces, and routines through which firms and institutions turn shared platforms into applied work. The question for this section is what would make that possible.

What creating a constellation requires

A functioning constellation requires more than proximity among multiple innovation districts and hubs. It requires a shared operating logic. Each geography needs a clear view of the role it can play. Each major investment should strengthen both the site where it lands and the wider system around it. Firms, founders, universities, hospitals, investors, funders, and civic partners should be able to move through the system with greater clarity and purpose.

That operating logic must also respect the region's real institutional and political context. Corporate anchors act in competitive markets and have legitimate reasons to protect strategy, talent, and intellectual property. Universities and hospitals manage complex missions, funding pressures, and partnership constraints. Public and philanthropic partners need confidence that investments will produce visible returns. The region's innovation places have varying operational and institutional contexts, which shape how—and how readily—each can take part in shared work. A constellation strategy succeeds if it works with those incentives. It should make cooperation practical, useful, and worth the effort for each actor whose participation matters.

For Central Indiana, that operating logic rests on three mutually reinforcing principles. The region should treat the system as the unit of strategy, so district-level decisions generate broader regional returns. It should differentiate by function and focus, so each place becomes more legible and complementary. It should connect through platform-enabled interfaces, so shared technical strengths become usable across organizational and geographic boundaries. These principles define how the region can move from a collection of promising places to a more coherent engine of innovation, entrepreneurship, and regional growth.

1. Treat the system as the unit of strategy

Central Indiana's innovation advantage is systemic, so the region's strategy should be systemic as well. Each district or hub will continue to measure success through its own tenants, jobs, investment, facilities, programming, and partnerships. Those measures matter. A constellation adds a second test: whether each district-level success strengthens the broader discovery-to-delivery system around it.

A new building, shared facility, research program, venture studio, demonstration environment, or corporate partnership creates greater value when it adds a capability the system needs or helps firms, founders, researchers, and investors move more effectively from one part of the constellation to another. A translational research environment becomes more valuable when it connects to downstream demonstration and production capacity. A manufacturing-oriented site becomes more valuable when it is linked to discovery, talent, and startup formation. A startup-oriented district becomes more valuable when founders can access specialized equipment, corporate partners, clinical settings, biological data, or production expertise without having to rebuild those relationships from scratch.

This system logic preserves local ambition. Each place still needs a strong proposition of its own. The constellation simply places those propositions in a larger regional portfolio in which the value of any one asset depends partly on how it relates to the others. Central Indiana's districts and hubs will create more value when they reinforce one another rather than develop as parallel, self-contained projects.

Specialized innovation investments are expensive and difficult to sustain. Wet labs, pilot-scale facilities, computational infrastructure, demonstration environments, advanced manufacturing assets, and sector-specific programming require capital, operating capacity, and credible demand. Few regions can build every capability everywhere. Few districts benefit from trying to be comprehensive. Central Indiana's greater opportunity is to make each investment count twice: first for the district or institution that hosts it, and second for the wider constellation that can benefit from it.

That requires a different way of judging success. District-level measures remain essential: tenancy, jobs, investment, programming, development activity, and institutional partnerships all help determine whether a place is working. A constellation also requires system-level questions: whether a new investment strengthens a capability the wider system can use, clarifies the region's external story, creates a handoff that did not previously exist, expands access to a shared platform, or reduces unnecessary overlap with assets already being built elsewhere.

These questions are practical. They help each district sharpen its value proposition while making the region easier to navigate. They also help regional partners make more disciplined decisions about where to convene, invest, advocate, and route opportunities. Each district's purpose should add up to a stronger regional system.

When the system becomes the unit of strategy, individual wins can compound. A startup recruited to one district can find a corporate partner in another. A company exploring a production problem can be routed to a university capability, a pilot facility, or a specialized platform elsewhere in the region. A funder can see how an investment in one geography strengthens a broader regional thesis. Over time, this shared logic turns multiple promising innovation places into a true constellation.

2. Differentiate by function and focus

A constellation becomes more valuable when its parts are distinct enough to be useful to one another. For Central Indiana, differentiation should make each district or hub more legible, more fundable, and more valuable to the wider system. A place with a clear function and focus is easier for firms to understand, for founders to navigate, for investors to evaluate, and for civic and philanthropic partners to support.

Function describes the role a place plays in the innovation cycle. Some geographies are strongest as environments for discovery, translational research, and startup formation. Others are better positioned for demonstration, process development, advanced production, or downstream delivery. Still others provide specialized corporate interfaces, talent pipelines, clinical settings, test beds, or shared infrastructure that help ideas move from one stage to the next. The purpose is to clarify what each place is well-suited to contribute and how that contribution helps the system perform.

Focus describes the technical, sectoral, or platform areas in which a geography can credibly build depth. Central Indiana's innovation system is broad. Its strongest opportunity is to build focused depth in ways that reinforce one another. A place that is clear about its technical focus can attract better-fit tenants and partners, build programming around real market demand, make a stronger case for shared facilities or specialized infrastructure, and help firms and founders understand when that place is the right entry point.

Differentiation by focus matters especially because many of the region's newer districts and hubs are developing around related themes. That is a strength when those themes become complementary. Multiple places can contribute to bioscience, advanced manufacturing, applied AI, or other platform areas while serving different users, operating at different stages of the innovation cycle, or providing different forms of access. The region's task is to make those distinctions visible enough that they strengthen each district's identity rather than dilute it.

Districts and hubs also differ in form—how each is governed, staffed, and resourced. Some are led by independent non-profit operators, others by corporate sponsors, state agencies, or municipal partners, and each model carries different strengths, time horizons, financing routes, and constraints. Some places already operate with established governance, professional staff, and active programming; others are still building that capacity. A constellation should work with this variation rather than against it. That the region is not relying on a single institutional model to carry the full innovation pipeline is itself a source of resilience.

These types of differentiation protect ambition. A district with a broad but indistinct proposition can be harder to explain and harder to finance than one with a clear role, audience, and platform. A district that knows what it does best can be more confident in what it pursues, what it declines, and where it sends opportunities that belong elsewhere in the system. That kind of clarity increases the chance that the district becomes indispensable for the role it is best positioned to play.

For the constellation, the payoff is cumulative. Clearer function and focus make the regional system easier to navigate from the outside and easier to coordinate from within. Firms find partners faster. Startups reach the capabilities they need next. Research moves more readily into commercial pathways. Investors trace the connection between individual sites and the broader regional thesis—and district leaders argue that their own places are essential parts of a larger system rather than standalone projects.

The practical objective is confident differentiation: enough clarity for each place to stand out, and enough connection for each place to strengthen the others. That is how Central Indiana turns multiple innovation geographies from parallel projects into a more coherent regional advantage.

3. Connect via platform-enabled interfaces

Differentiation clarifies what each place contributes. Interfaces make those contributions usable. Central Indiana's shared technology platforms—biomanufacturing and advanced chemistry; genetics and biological data; AI and computing; and cyber-physical systems—create common ground among firms and institutions that often operate in separate markets. The region's opportunity is to build the connective mechanisms that make those platforms easier to find, access, and apply across organizational boundaries.

Platform-enabled interfaces are the practical tools that make a constellation work. They can include shared capability directories, technical convenings, platform-specific working groups, referral pathways, standard intake processes, shared-use facilities, demonstration environments, and trusted intermediaries who understand both the technical content and the institutional landscape. Their purpose is simple: reduce the effort required for a firm, founder, investor, researcher, or district leader to know where to go, whom to contact, and how to move from interest to action.

Many of the region's strongest opportunities sit at the intersection of large-firm expertise, research capability, specialized infrastructure, and entrepreneurial energy. A startup working on a biological production challenge may need process-development expertise, capital, and a corporate partner. A large firm exploring a shared technical problem may need a neutral place to engage adjacent firms, university researchers, or startups before committing to a formal partnership. A university or hospital may have research with commercial relevance and need clearer pathways to firms that can test, validate, manufacture, or scale it. Platform-enabled interfaces make those movements more routine.

The collaboration should be targeted, lower-friction, and tied to specific technical problems. A platform focus helps because it gives firms a reason to engage around shared capabilities rather than broad civic aspiration. Companies that would rarely collaborate at the level of product strategy may still have reason to work around common problems in data, biological systems, instrumentation, regulatory validation, process development, or production. Well-designed interfaces allow firms to share expertise, identify complementary capabilities, and explore opportunities without requiring every interaction to begin as a high-stakes transaction.

For startups and growth-stage firms, these interfaces are especially important. Emerging companies often need access to capabilities they cannot afford to build themselves: equipment, data, testing environments, technical expertise, regulatory knowledge, manufacturing insight, or customer validation. A constellation that makes those capabilities visible and routable helps more startups form, stay, and scale in the region. It also gives outside investors a clearer view of Central Indiana as a place where new companies can access the assets needed to grow.

For districts and hubs, platform-enabled interfaces create a way to contribute to the broader system while strengthening their own value propositions. A district that hosts a platform-related program, facility, or convening function becomes more valuable when that asset can serve users beyond the site itself. A district without a particular capability also becomes more valuable when it can confidently route firms and founders to another part of the constellation and receive reciprocal opportunities in return. Interfaces make cooperation practical. They allow each place to specialize without becoming isolated.

The larger regional benefit is cumulative. Platform-enabled interfaces convert proximity into exchange, exchange into applied work, and applied work into new firms, partnerships, products, and investment. They help the region move from a set of strong but partly enclosed capabilities toward a more usable innovation system. The operating test is whether engagement becomes more predictable, more routable, and more repeatable because users know where to begin, where to go next, and how to return to the system as their needs evolve. Shared platforms provide the technical foundation. Interfaces provide the operating layer that makes those platforms accessible across the region.

Scale the constellation to the region's ambition

The principles above define what a functioning constellation requires. Central Indiana's innovation geographies should strengthen the regional system, differentiate by function and focus, and connect through interfaces that make shared platforms easier to use. Those principles are practical, but they are not self-executing. They require operating capacity: people, routines, tools, relationships, and investment discipline.

The level of capacity should match the region's ambition. A modest ambition requires enough coordination to make the system easier to understand. A stronger ambition requires more reliable handoffs, shared routing, platform access, and system-level measurement. A more durable ambition requires stewardship and investment capacity that no single district, firm, or institution can provide alone.

Central Indiana has the assets, geographies, and shared technical foundations to build a more coherent innovation system. The question is how much operating capacity the region is prepared to build around them.

Pathways

Central Indiana now faces an operating choice. The findings identify the opportunity, and the implications define the principles. This section translates those principles into goals and pathways for establishing an operating constellation of innovation. The goals define what the constellation should accomplish. The pathways describe different levels of operating capacity that Central Indiana can build around those goals. Each pathway can create value and requires a different level of readiness and institutional commitment.

Why the constellation requires intentional organization

Central Indiana's innovation districts and hubs are being advanced by serious institutions, firms, civic leaders, and investors with real assets and ambitions. Each geography can create value on its own terms. A constellation creates additional value by helping those geographies reinforce one another. Its highest returns are system-level: clearer pathways for firms, stronger use of shared platforms, faster movement from discovery to demonstration and production, and a regional story that investors and talent understand.

Those returns require deliberate organization. Each district will naturally focus on its own priorities and milestones. Strong local propositions are essential. The broader regional opportunity comes from how those propositions interact: when one place's platform creates opportunity for another, when firms can move to the right capability as their needs evolve, when startups can access specialized assets beyond their first point of entry, and when new investments add distinctive capacity to the broader system.

These geographies are complements. A translational district, a manufacturing-oriented site, a startup environment, a clinical setting, and a corporate R&D asset can each play different roles in the same regional innovation system. They also differ in how ready they are to take on shared routines: some already have organizations that can convene partners, run programming, and route opportunities; others are earlier-stage geographies still forming a lead entity or operating mandate. A constellation should be built to include places at different stages rather than presuming equal capacity from the outset. The market will help each place sharpen its own proposition. Shared operating capacity helps those places work together by creating referral pathways, platform access rules, operator routines, system-level measures, and practical interfaces that make the constellation easier to use.

That operating capacity strengthens district-level ambition. A district that understands its role in the constellation can be clearer about what it pursues, more confident in routing opportunities to another geography when that is the better fit, and better positioned to receive reciprocal opportunities from the rest of the system. This kind of exchange requires shared operating habits: the people, tools, and routines that help distinct places act as parts of a larger whole.

The choice is how much operating capacity Central Indiana wants to build. The region can build enough capacity to make the system legible, enough to make handoffs and platform access reliable, or enough to support durable stewardship and shared investment over time. The following goals define what any successful pathway should accomplish.

Three goals for the next phase

Every pathway for Central Indiana's constellation should advance the same three goals. First, the system should become easier to understand and use. Second, it should perform more reliably, with clearer handoffs and lower activation costs. Third, it should build and connect shared platform capacity. These goals do not require a single institutional model. They define the operating conditions that any successful approach must create.

Goal 1. Make the system legible and usable

The first goal is to make Central Indiana's innovation constellation easier to see, enter, and navigate. The region already has deep capabilities across discovery, invention, production, delivery, and entrepreneurship. Those capabilities are distributed across firms, campuses, hospitals, universities, districts, industrial corridors, and emerging hubs. A usable constellation helps a company, founder, investor, funder, or institutional partner answer practical questions quickly: what exists, where it is, who it serves, how to access it, and where to go next.

A legible constellation makes clear what each geography is best positioned to support, how its capabilities relate to others, and how users can move through the system as their needs evolve. That requires more than a regional story. It requires a shared capability menu organized by function, focus, platform strengths, and stage of innovation. The purpose is to help users understand where relevant capabilities are located and how they connect to the broader discovery-to-delivery system.

A capability menu should focus on assets that shape use: laboratories, validation environments, data capabilities, venture studios, shared equipment, corporate partners, development capacity, production assets, talent programs, and specialized technical expertise. Its value lies in navigation. It should help a startup identify where to find specialized support, a firm understand where to test an idea or find a partner, a funder see how one site connects to the larger regional thesis, and a district operator know when another geography is better suited to serve an opportunity.

The constellation also needs routing logic. Opportunities will enter the system through many doors because the region has many strong institutions and geographies. That distributed entry can become an advantage when partners know how to move opportunities toward the right capabilities. The constellation should make those movements easier and more reliable, so users can benefit from the regional system without first having to understand it entirely.

Legibility also strengthens the region's market signal. Outside firms, investors, funders, and talent evaluate individual projects and the coherence of the broader regional proposition. A clearer constellation shows where Central Indiana is strong, how those strengths are organized, and how a user can engage them. It turns a collection of impressive assets into a navigable system.

Goal 2: Make the system perform

The second goal is to help the constellation move opportunities from awareness to action. A legible system helps users understand where capabilities sit. A performing system helps them reach those capabilities, form the right relationships, and move from first contact to pilot, validation, investment, partnership, or scale-up activity.

Performance depends on handoffs. In a differentiated constellation, each geography will serve some opportunities better than others. A founder may begin in a startup-oriented environment and later need biological data, clinical validation, production expertise, or a corporate partner. A company may enter through one civic or district relationship and discover that the most relevant capability sits elsewhere. A university researcher may need an industry problem, a demonstration setting, or a path to capital. A functioning constellation helps those movements happen with less friction and greater confidence.

Those handoffs require operating relationships among the people who run the system day-to-day. District leaders, universities, hospitals, firms, investors, and economic development partners need enough familiarity to know what one another can offer, when to route an opportunity, how to make a useful introduction, and how to follow up. These relationships are practical infrastructure. They turn a map of related places into a working system.

Performance also depends on lowering the cost of structured engagement. Firms and institutions may work on adjacent technical problems yet still need clarity on who has the relevant capability, how a project should be scoped, who has authority to participate, how IP or confidentiality questions will be handled, and what outcome the engagement is meant to produce. A stronger constellation makes those steps easier. It helps partners move from broad interest to defined opportunity without reinventing the process each time.

This matters for large firms as well as startups, universities, and civic partners. Corporate participation depends on practical value. Firms are more likely to engage when the constellation reduces search costs, provides neutral settings for early exploration, clarifies access to specialized capability protects competitive boundaries, and helps technical teams move from possibility to scoped opportunity. The region should make collaboration targeted, low-friction, and tied to concrete technical problems.

The operating test is whether engagement becomes more predictable, routable, and repeatable. Users should understand what to expect when they enter the system, where an opportunity should move next, and how a successful handoff can happen again. That will make the surrounding system easier to use, so firms, founders, researchers, and investors can spend less effort finding the right path and more effort advancing the work.

A performing constellation also needs system-throughput measures. District-level metrics will remain important, including tenancy, jobs, development, investment, programming, and partnerships. The region should also know whether opportunities are moving across geographies, organizations, and stages of work. Useful measures include referrals across districts, repeat engagements among partners, time from first contact to active project, shared-facility utilization, cross-institutional pilots, startup handoffs, corporate-startup introductions, platform-based collaborations, and movement from pilot to follow-on investment or production.

Goal 3: Build the platform infrastructure the industrial base justifies

The third goal is to build and connect shared platform capacity where Central Indiana's industrial and research base can support sustained use. The region's firms, universities, hospitals, startups, and districts already work across common technical domains: biomanufacturing and advanced chemistry; genetics, bioinformatics, and biological data; AI, computing, and high-performance computing; and cyber-physical systems, sensing, and control. These platforms cut across sectors that are often discussed separately, giving the region a practical basis for shared infrastructure that can serve multiple users and geographies.

Central Indiana is already moving in this direction. Initiatives such as AnalytiXIN and Catalyze Indiana show that regional partners can organize shared capacity around common technical needs and industry demand. Those efforts demonstrate that platform-building is not an abstract recommendation or a new concept imported from outside the region. The next opportunity is to expand and more deliberately connect these and related efforts to the region's innovation places, access pathways, proof points, and users.

Platform infrastructure takes several forms: wet labs, pilot-scale production environments, shared equipment, demonstration spaces, test beds, and specialized manufacturing assets—alongside data infrastructure, computational capacity, access protocols, technical programming, talent pipelines, and applied working groups organized around recurring technical problems.

A disciplined platform strategy begins with use. The region should identify where shared depth is justified by demonstrated demand, existing assets, and cross-sector relevance. Some capabilities belong in districts with strong discovery or translational activity. Others belong near production environments, corporate R&D assets, clinical settings, or industrial test beds. Some platforms can be distributed across multiple sites through common access rules, shared programming, and coordinated stewardship. The starting point should be the capability the region needs, the users it would serve, and the role it would play.

A staged approach protects ambition by grounding larger investments in proof of use. Before major capital is committed, the region can test demand through shared-access arrangements, pilot programs, technical convenings, equipment-sharing agreements, demonstration projects, or platform-specific working groups. These efforts can reveal which users are most likely to participate, what access rules are needed, what governance questions arise, and where deeper investment would generate the greatest return.

The strongest platform investments should meet three tests:

- They should align with Central Indiana's existing industrial and research strengths.
- They should serve users across more than one organization or geography.
- They should make the constellation easier to navigate, use, and invest in.

Built this way, platform infrastructure gives the constellation a concrete operating foundation: shared capabilities around which firms can collaborate, startups can grow, districts can differentiate, and the region can convert its discovery-to-delivery advantage into more durable economic growth.

Three pathways for organizing the constellation

The goals above can be pursued at different levels of ambition. That ambition should shape the kind of operating capacity the region chooses to build around its emerging constellation, and the durability of that capacity over time. The region can begin with a lighter coordination model, create a standing operating layer, or move toward more durable stewardship and shared investment capacity. Each pathway can strengthen the constellation. Each also carries different implications for autonomy, speed, resources, legitimacy, and long-term execution.

Ambition can also scale with capacity over time. Central Indiana could begin with coordinated alignment, use early experience to test the value of a standing operating layer, and later determine whether deeper stewardship or shared capital mechanisms are warranted. The level of ambition should be chosen deliberately. A constellation can remain a coordinated network of well-informed actors, or it can become an operating system that helps the region route opportunities, build shared platforms, support startups, and compound the value of district-level investments.

Pathway 1: Coordinated alignment

Coordinated alignment relies on existing organizations, relationships, and convening structures. District leaders, universities, firms, hospitals, economic development partners, and civic backers work from a shared language and a clearer understanding of how the region's districts and hubs relate to one another. The emphasis is on visibility, communication, informal referral, and basic coordination.

This pathway has real merits. It can begin quickly. It preserves the autonomy of individual districts and institutions. It requires limited new funding. It allows leaders to build trust, clarify roles, and test the constellation's usefulness before creating new structures. For a system still taking shape, coordinated alignment may be the first move.

Its limits are also clear. Coordinated alignment depends on relationships, attention, and individual champions. It can improve awareness and reduce confusion, but it may not create enough capacity to manage handoffs, build platform pilots, sustain system metrics, or organize shared investment. If the region's ambition is mainly to improve communication among strong districts, this pathway may be sufficient. If the ambition is to improve the constellation's performance over time, coordinated alignment is likely only a starting point.

Pathway 2: Standing operating layer

A standing operating layer creates dedicated capacity for the constellation. This does not require a new institution. It could be housed within, affiliated with, or convened by an existing trusted organization. The defining feature is operational capacity: people and resources assigned to make the system easier to use and more reliable in practice.

A standing operating layer maintains the capability menu, supports referral and intake protocols, convenes district operators, tracks system-throughput metrics, helps integrate platform proof points, and supports partners as they pursue structured engagement. Its purpose is to help distinct geographies work together more effectively while preserving their own governance, brands, and market propositions.

This pathway offers a practical balance between autonomy and performance. It gives the constellation enough capacity to become more than a set of relationships, while avoiding the complexity of creating a major new entity. It helps district leaders route opportunities confidently, helps firms and founders navigate the system, and helps funders see how site-specific investments fit a broader regional thesis.

The main requirement is sustained commitment. A standing operating layer needs reliable resources, a clear mandate, and participation from operators rather than only executives. It also needs discipline. If it becomes a general-purpose committee, it will lose value. Its work should remain focused on the functions that make the constellation perform: legibility, routing, handoffs, platform access, business development, operating relationships, and system learning.

Pathway 3: Durable stewardship and shared investment

Durable stewardship and shared investment would create a more formal capacity to organize system-level work over time. This could take different forms: a new vehicle, a formally designated partnership, a platform organization, or another structure with enough legitimacy, professional capacity, and capital alignment to support the constellation across multiple years. Its purpose would be to steward the functions that no single district, firm, or institution can organize alone.

This pathway becomes relevant if Central Indiana decides that the constellation should support deeper platform investments, shared business development, pooled planning or project capital, access rules for shared infrastructure, development support, and long-term management of system-level priorities. It could also provide a clearer vehicle for philanthropic, corporate, public, or private capital seeking to support the broader innovation system rather than a single site at a time.

This pathway is appropriate if the region wants the constellation to function as a serious platform for economic development, startup growth, shared infrastructure, and innovation-led investment. It gives Central Indiana stronger execution capacity, but it also requires more institutional commitment. Durable stewardship needs legitimacy across districts, firms, universities, hospitals, funders, and public partners. It needs a disciplined scope so that it supports existing organizations rather than competing with them. It needs governance clear enough to support shared decisions while remaining focused, trusted, and practical. It also requires a capital strategy proportionate to its ambition.

Central Indiana is already acting through the investments now underway in its innovation districts and hubs. The choice is how deliberately to organize that action, and how much operating capacity, coordination, and shared investment the region is prepared to build around the constellation. The right answer will evolve over time. The choice itself should be made deliberately, with a clear view of the ambition the region wants this constellation to achieve.

Five no-regrets moves

Central Indiana has already begun telling this story to the wider world. The region's BioHeartland identity gives its innovation economy a single, recognizable frame, and the State's recent commitment to invest in the biosciences ecosystem signals that the region's ambition is being heard. A constellation gives that story its operating substance. The moves below make the region's connectedness real — visible capabilities, reliable handoffs, measurable throughput — so that the BioHeartland story rests on a system that demonstrably works. Regardless of which pathway the region chooses, these five moves would strengthen the constellation and help it determine the level of operating capacity it needs.

1. **Convene a standing forum of district operators, lead organizations, and development sponsors.** Bring together the entities responsible for each geography to align on assets, active prospects, platform needs, and handoffs. This forum should focus on practical coordination, not general alignment alone.
2. **Create a shared capability menu.** Develop a practical inventory of district assets, platform capabilities, facilities, technical strengths, development capacity, operating contacts, and entry points.
3. **Establish a referral and intake protocol.** Create a simple way for opportunities to move when they enter through one door but belong elsewhere in the constellation. The protocol should clarify who receives opportunities, how they are triaged, how introductions are made, and how follow-up occurs.
4. **Define a small set of system-throughput metrics.** Track how opportunities move across districts, organizations, and stages of work. Potential measures include referrals, repeat engagements, time from first contact to active project, shared-facility utilization, cross-institutional pilots, startup handoffs, corporate-startup introductions, platform-based collaborations, and follow-on investment or production activity.
5. **Integrate platform proof points into existing efforts.** Use existing equipment, expertise, facilities, programming, and initiatives such as AnalytiXIN and Catalyze Indiana to test demand, access rules, governance, and place-based use before pursuing larger capital investments.

These moves would help Central Indiana test how the constellation works in practice and clarify what type of more durable operating capacity is warranted.

Conclusion

Central Indiana is building the foundation for a more powerful innovation economy. Across the region, major firms, research institutions, hospitals, universities, civic partners, and district leaders are investing in places where discovery, invention, production, entrepreneurship, and talent come together. These investments reflect confidence in the region's future and in an innovation base few regions can match. They also come at a time when innovation investments face greater scrutiny and must demonstrate clearer returns. The region's task is to make these investments work hard: for the districts and hubs where they land, and for the regional economy they can strengthen.

The evidence in this report points to a distinctive regional advantage. Central Indiana connects discovery, invention, development, production, and delivery within a single economy. That gives the region a practical innovation edge in industries where scientific insight, technical validation, advanced production, regulatory knowledge, and market delivery must work together. Many regions depend on capabilities scattered across distant markets to move from idea to implementation. Central Indiana has many of those capabilities nearby, rooted in firms, institutions, production assets, and specialized geographies that already carry significant innovation activity.

The region's innovation districts and hubs convert that advantage into usable geography. They serve as organized entry points into a complex regional system. They create settings where large firms engage shared technical problems, universities and hospitals connect research to industry, startups reach capabilities they cannot build alone, and investors and funders see a clearer regional proposition. They also strengthen each geography's own value proposition. A district with a clear role in the constellation is easier to explain, support, navigate, and connect to complementary strengths elsewhere in the region.

This report clarifies the strategic choice facing Central Indiana. The region can pursue the constellation through coordinated alignment, a standing operating layer, or more durable stewardship and shared investment capacity. Each pathway offers a different level of operating capacity, institutional commitment, and regional ambition. The choice is now visible, and the region can make it deliberately.

The work begins with practical operating habits. Regional partners should make the region's capabilities easier to see and use. District operators should build shared routing practices so that firms, founders, and institutional partners can move more reliably to the right capabilities. Corporate, university, hospital, and civic leaders should test shared-platform proof points where common technical needs already exist. Funders and investors should evaluate district-level opportunities in relation to a broader regional thesis. These are the operating habits that allow place-based investments to generate compounding returns.

Central Indiana has the assets, the places, and the momentum. It now needs the operating discipline to match them. A well-organized constellation preserves the distinctiveness of each geography while making each one more legible, more connected, and more useful to the others. Organized with intention, Central Indiana's constellation will help turn today's district-level ambition into durable regional advantage: a stronger entrepreneurial ecosystem, more productive collaboration among major firms and institutions, and a clearer path from discovery to delivery for the next generation of innovation-led growth.

Technical Appendix

Research Design and Scope

This appendix describes the evidentiary basis of the report. The project was designed to explain how discovery, invention, and commercialization are distributed across Central Indiana; how those activities relate to one another; and how the region's organized and informal geographies of innovation can be understood as parts of a larger discovery-to-delivery system. For that reason, the methodology combines microdata, spatial validation, network analysis, and structured engagement. The aim was not to produce a ranking of places or a single composite verdict on any one district or hub. It was to build a region-wide fact base that could show where activity concentrates, what each concentration does, how knowledge circulates through the system, and where emerging investments sit within that wider landscape.

The unit of analysis throughout was the 11-county Indianapolis-Carmel-Greenwood, Indiana metropolitan statistical area. GIID worked at the level of individual records and addresses wherever the data allowed, then aggregated upward into interpretable regional patterns. Headline regional measures draw on post-2010 windows for invention and enterprise and a roughly decade-long window for discovery, reflecting the cadence and coverage of the underlying sources. Across those windows, each dataset was used for the question it was best suited to answer: scientific literature to observe discovery, patent families to observe invention, and growth-capital and advanced-industry data to observe commercialization, scaling, and industrial depth.

The methods are described here at a level intended to make the logic of the analysis visible: what was measured, how records were located and classified, how concentrations were identified, and how the evidence was interpreted. Because the report's purpose is strategic rather than regulatory, the analysis privileges repeated patterns, comparative signals, and system relationships over a parcel-by-parcel inventory of every activity in the region.

Data collection and geographic validation

This appendix describes the evidentiary basis of the report. The project was designed to explain how discovery, invention, and commercialization are distributed across Central Indiana; how those activities relate to one another; and how the region's organized and informal geographies of innovation can be understood as parts of a larger discovery-to-delivery system. For that reason, the methodology combines microdata, spatial validation, network analysis, and structured engagement. The aim was not to produce a ranking of places or a single composite verdict on any one district or hub. It was to build a region-wide fact base that could show where activity concentrates, what each concentration does, how knowledge circulates through the system, and where emerging investments sit within that wider landscape.

Discovery

The discovery analysis focused on original discoveries disclosed in peer-reviewed scientific literature, including journal articles, book chapters, and conference proceedings. OpenAlex supplied the core dataset of local articles, together with author addresses, affiliations, and topic classifications derived from publisher metadata. GIID geocoded author and institution addresses to confirm their relevance to the region. To connect discovery to later invention and translation, GIID also gathered related scientific works and patented inventions that cite, or are cited by, those discoveries through Cambia's The Lens.

Invention

The invention analysis examined families of patented documents tied to Central Indiana through their inventors and, where relevant, sponsoring applicants. Initial local patent records were sourced from databases maintained by the OECD and the USPTO's PatentsView. Cambia's The Lens was then used to enrich those records with family-level metadata, citation relationships, and inventor addresses drawn from the patent files themselves. Treating the patent family—not the single document—as the relevant unit allowed the analysis to focus on distinct inventions that were being protected across jurisdictions rather than on the proliferation of procedural filings around the same underlying claim. GIID geocoded inventor and sponsor addresses to confirm relevance to the region and gathered related patented inventions and discoveries linked to local inventions by forward and backward citation.

Enterprise

Enterprise was measured through two complementary lenses. The first tracked the growth capital raised by startup and scale-up companies headquartered in Central Indiana. PitchBook supplied company headquarters, deal histories, and the industry and market classifications used to characterize those firms; GIID geocoded headquarters addresses to confirm location. The second lens examined the region's advanced-industries base. Advanced industries concentrate private-sector R&D spending and STEM employment and were treated in the report as a proxy for the region's deeper industrial and production capacity. Metadata on firms and establishments tagged to relevant NAICS codes were assembled from Dun & Bradstreet and Infobel, then organized analytically into Advanced Manufacturing and Advanced Services categories. Companies associated with mining, utilities, and construction were excluded from this advanced-industries screen. Where local economic baselines were required for benchmarking, GIID used employment data from the U.S. Bureau of Labor Statistics.

Spatial identification of hotspots and hubs

To identify where innovation activity meaningfully concentrates, GIID mapped the artifacts for each dimension of innovation using the locations of the parties responsible for the output. Discovery was anchored to the addresses of authors or author-affiliated institutions; invention to the addresses of inventors or sponsoring organizations; and enterprise to the addresses of companies associated with growth capital or advanced-industry activity. This translated abstract innovation indicators into building-level signals.

The analysis then applied a walkability logic to identify functional innovation hotspots. Rather than assuming that administrative boundaries capture the real geography of exchange, GIID used five-minute walk catchments around buildings where innovation activity takes place as a proxy for the interaction zone. The choice of this threshold reflected the practical scale at which people can meet, share facilities, and sustain frequent contact without the friction of vehicle trips or long transfers. Where many of these catchments overlapped, they generated the core signal of localized innovation intensity.

To stabilize that signal and identify coherent geographies, GIID standardized the resulting accessibility surface using a hexagonal spatial grid and then clustered contiguous areas of elevated intensity algorithmically. The methodology retained clusters as innovation hotspots when they captured a material share of region-wide activity in at least one dimension of innovation. GIID then combined overlapping hotspots across dimensions, assigned consistent and intuitive place names, and manually vetted the results to ensure that each identified geography corresponded to a recognizable anchor institution, corporate campus, research concentration, or nexus of regional innovators.

Innovation hubs were identified through a related but more demanding process. Rather than combining separately identified hotspots after the fact, GIID analyzed all dimensions of innovation together in order to surface places where multiple dimensions coincided. These geographies were distinguished as hubs because they exhibited not only activity, but convergence: a meaningful co-location of discovery, invention, commercialization, or industrial capacity. Because the term hub also implies organizational plurality, the identification process factored in the number of unique organizations operating in close proximity. In practical terms, hotspots captured places with a material concentration of one or more dimensions; hubs captured places where multiple dimensions and multiple actors were genuinely interacting.

Classification and sectoral schema

Different kinds of innovation records require different classification systems. GIID therefore used a set of source-appropriate schemas to describe the content of the artifacts analyzed in each dimension. These systems are not literally interchangeable, but taken together they make it possible to describe the region's capability mix from multiple vantage points and to compare places by function and focus rather than by a single universal label.

For discovery, GIID used the OpenAlex schema of domains, fields, subfields, and topics of science. This schema was developed with the Centre for Science and Technology Studies at Leiden University (CWTS) and uses clustering methods and large language models to assign scientific topics. For patented inventions, GIID used the Cooperative Patent Classification (CPC) system, enhanced analytically to improve higher-level grouping and interpretability. For growth capital, GIID relied on PitchBook's industry and market designations, which combine machine learning with manual curation. For advanced industries, GIID used NAICS-based classifications, organized around the Brookings definition of advanced industries, further differentiated into Advanced Manufacturing and Advanced Services.

These schemas were used not only to describe what the region does, but also to interpret how different geographies function within the larger system. In the later stages of the work, places were read through a combination of their dominant innovation function, their substantive focus, and their relative position along the discovery-to-delivery continuum.

Analytical framework

The report did not rely on a single indicator of innovation strength. GIID instead used a family of measures designed to capture size, specialization, connectivity, translation, and change over time. Together these measures made it possible to distinguish between sectors that are simply large, sectors that are disproportionately concentrated, sectors that bridge multiple areas of activity, and sectors that appear to be gaining strategic momentum.

Core Descriptive Metrics

The report did not rely on a single indicator of innovation strength. GIID instead used a family of measures designed to capture size, specialization, connectivity, translation, and change over time. Together these measures made it possible to distinguish between sectors that are simply large, sectors that are disproportionately concentrated, sectors that bridge multiple areas of activity, and sectors that appear to be gaining strategic momentum.

- **Volume** measured the size of a given science, technology, industry, or market by counting the total number of artifacts produced by local actors during the analysis period. For discovery, volume reflected the number of publications or authors in a given science. For invention, it reflected the number of patented inventions. For enterprise, it reflected growth capital raised together with the number of relevant companies and deals.
- **Relative concentration** measured the share of activity devoted to a science, technology, or industry relative to a benchmark. GIID expressed this as a location quotient: the region's share of activity in a given area divided by the benchmark's share of activity in that same area. A value greater than one indicates that Central Indiana is more concentrated in that area than the benchmark.

- **Economic concentration** compared the size of a technology or industry to the size of the local economy in employment terms. This metric was applied to invention and enterprise, where a local employment baseline could be used to assess whether the observed activity occupied an unusually large place in the region's economy.
- **Impact**, used only in the discovery analysis, estimated the relative importance of discoveries within their scientific fields by assigning citation percentiles against global topic-based benchmarks. This made it possible to distinguish between local research areas that were merely active and those that were also influential in the wider scientific literature.
- **Translation**, also used only in the discovery analysis, evaluated the propensity of a science's articles to move toward commercialization. A discovery was treated as translational when it was cited by a patent, produced with business participation or business funding, or linked to a clinical trial. This measure helped identify areas where research activity was more visibly connected to later technical and commercial development.
- **Momentum** assessed the extent to which a science, technology, industry, or market was outperforming the pace suggested by its benchmark. GIID compared local growth to benchmark growth and used the difference between actual and expected performance to identify areas that were advancing faster than their broader comparison set.
- **Convergence** described the connective flexibility of a science, technology, industry, or market: its propensity to be combined and recombined with other areas of activity in ways that facilitate innovation. Because many innovation artifacts carry multiple descriptors—for example, multiple CPC codes on a patent or multiple topics on a scientific article—GIID could examine how often different classifications co-occurred and which ones functioned as bridges across otherwise separate clusters of activity.

Network, convergence, and system analysis

A central aim of the project was to understand not only where activity occurs, but how the regional system works. GIID therefore used network analysis at several levels. At the topic and technology level, it examined co-occurrence networks of scientific topics and patent technologies to identify clusters of related activity and the platform areas that connect them. Betweenness centrality was used to identify the sciences and technologies that act as bridges across different clusters, which is why convergence in the report is treated as both a descriptive measure and a network property.

At the organizational level, GIID examined collaboration and relationship patterns among firms, universities, hospitals, and research institutions through co-publication, co-patenting, sponsorship, funding, and citation links where those relationships were observable in the data. This made it possible to distinguish between dense within-organization pipelines and relationships that genuinely crossed institutional boundaries.

GIID also conducted citation-based ecosystem analysis to estimate the extent to which new local invention relied on earlier local knowledge. That work asked, first, whether a local invention cited any earlier local discovery or patented invention from the region and, second, how old those cited knowledge sources were at the time the new invention was filed. Read together, those measures yielded a picture of local dependency and temporal velocity: not only whether Central Indiana was building on itself, but whether proximity appeared to accelerate the conversion of earlier knowledge into later invention. This analysis was especially useful for distinguishing fields in which tacit, synthetic, or highly combinatorial forms of knowledge played a larger role from those in which knowledge traveled more easily at distance.

Finally, these methods were used to connect the report's three core dimensions. GIID traced how discovery related to later invention, how invention related to later enterprise, and where the region exhibited repeated evidence of research-to-market spillovers. The purpose was not to assert a mechanistic pipeline in every case, but to identify the parts of the regional system in which discovery, invention, and commercialization most visibly reinforced one another.

Composite analysis

To surface sectoral strengths within each dimension, GIID calculated composite scores that combine performance across all applicable metrics. Each metric was normalized within its own universe so that the strongest local performer scored highest, the weakest scored lowest, and the average sat near the midpoint. The resulting scores were then summed by science, technology, industry, or market.

Because GIID calculated different metrics for each dimension, each composite score used a different combination of underlying measures. The discovery composite incorporated Volume, Relative Concentration, Convergence, Impact, Translation, and Momentum. The invention composite incorporated Volume, Relative Concentration, Convergence, and Momentum. The enterprise composite incorporated Volume, Relative Concentration, Economic Concentration, and Momentum, with enterprise volume reflecting capital raised and scale.

These composite scores were used as heuristic summaries rather than as standalone verdicts. Their role was to surface areas that performed consistently well across multiple measures and to help order attention within very large datasets. They did not substitute for close reading of the underlying metrics, spatial analysis, or later interpretive work on how sectors and places relate to one another.

Structured engagement and process

The report's findings were not produced by quantitative analysis alone. From the outset, the project was designed as a staged process moving from research, to inquiry, to insight. In the research stage, GIID assembled and mapped the underlying data. In the inquiry stage, it used recurring discussion with regional stakeholders to test interim findings, identify the questions the evidence most usefully raised, and refine how patterns should be interpreted. In the insight stage, those findings were translated into the narrative and strategic implications presented in the report.

This interpretive process was supported by a two-tiered engagement structure. A core project team composed of CICP staff and select partners met regularly with GIID to review work in progress, clarify local context, and help sequence the research. A broader steering committee—drawing from CICP initiatives, major research universities and medical centers, leading industry stakeholders, and state and regional actors—was convened at key milestones to ground-truth emerging findings, surface additional context, and test the work's broader relevance.

In addition to those recurring convenings, GIID used targeted discussions with operators, institutional leaders, and other regional participants to clarify emerging investments, organizational relationships, and on-the-ground constraints that are not always legible in lagging quantitative data. These conversations were used to improve interpretation, not to override the evidence. Their value lay in helping distinguish between what the data could already show, what was newly taking shape, and what required more careful explanation because formal data sources only partially captured it.

That combination of empirical analysis and structured sensemaking was especially important because the project's purpose was regional and strategic. The report is not a master plan for any one place, nor a governance blueprint for the system. It is a shared evidence base and operating frame. The engagement process helped ensure that the analysis remained rigorous while also staying usable to the leaders asked to act on it.

Endnotes

1. Bruce Katz and Julie Wagner, The Rise of Innovation Districts: A New Geography of Innovation in America (Washington, DC: Brookings Institution, 2014), https://www.brookings.edu/articles/rise-of-innovation-districts/.
2. Julie Wagner, Bruce Katz, and Thomas Osha, The Evolution of Innovation Districts: The New Geography of Global Innovation (New York: The Global Institute on Innovation Districts, 2019), https://giid.org/research/evolution-of-innovation-districts/
3. Empirical support for the firm-level value of proximity, external search, and R&D cooperation is substantial. See Adam B. Jaffe, Manuel Trajtenberg, and Rebecca Henderson, "Geographic Localization of Knowledge Spillovers as Evidenced by Patent Citations," The Quarterly Journal of Economics 108, no. 3 (1993): 577–598; Keld Laursen and Ammon Salter, "Open for Innovation: The Role of Openness in Explaining Innovation Performance Among U.K. Manufacturing Firms," Strategic Management Journal 27, no. 2 (2006): 131–150; Wolfgang Becker and Jürgen Dietz, "R&D Cooperation and Innovation Activities of Firms—Evidence for the German Manufacturing Industry," Research Policy 33, no. 2 (2004): 209–223; and René Belderbos, Martin Carree, and Boris Lokshin, "Cooperative R&D and Firm Performance," Research Policy 33, no. 10 (2004): 1477–1492.
4. GIID analysis of OpenAlex and the United States Bureau of Labor Statistics data.
5. GIID analysis of the United States Patent and Trademark Office (USPTO), the Organisation for Economic Co-operation and Development (OECD), The Lens, and the United States Bureau of Labor Statistics data.
6. GIID analysis of Infobel and Lightcast data.
7. GIID analysis of PitchBook Inc. data.
8. GIID analysis of OpenAlex, USPTO, OECD, and The Lens data.
9. GIID analysis of USPTO, OECD, The Lens, and PitchBook Inc. data.
10. GIID analysis of OpenAlex, USPTO, OECD, The Lens, and PitchBook Inc. data.
11. For the purposes of this report, "Central Indiana" is defined as the 11-county region that comprises Metro Indianapolis, which is also known as the Indianapolis-Cermal-Anderson Metropolitan Statistical Area (MSA). The region's counties include Boone, Brown, Hamilton, Hancock, Hendricks, Johnson, Madison, Marion, Morgan, Shelby, and Tipton counties. See Executive Office of the President, Office of Management and Budget, Revised Delineations of Metropolitan Statistical Areas, Micropolitan Statistical Areas, and Combined Statistical Areas, and Guidance on Uses of the Delineations of These Areas, OMB Bulletin No. 23-01 (Washington, DC: The White House, 2023), https://www.whitehouse.gov/wp-content/uploads/2023/07/OMB-Bulletin-23-01.pdf.
12. GIID analysis of OpenAlex, USPTO, OECD, The Lens, and PitchBook Inc., and Infobel data.
13. GIID analysis of USPTO, OECD, and The Lens data.
14. Ibid.
15. Ibid.
16. Ibid.

References

Becker, Wolfgang, and Jürgen Dietz. "R&D Cooperation and Innovation Activities of Firms—Evidence for the German Manufacturing Industry." Research Policy 33, no. 2 (2004): 209–223. doi:10.1016/j.respol.2003.07.003.

Belderbos, René, Martin Carree, and Boris Lokshin. "Cooperative R&D and Firm Performance." Research Policy 33, no. 10 (2004): 1477-1492. doi:10.1016/j.respol.2004.07.003.

Cambia. The Lens. https://www.lens.org.

Dun & Bradstreet. Company Data and Firmographic Records. Accessed March 11, 2026. https://www.dnb.com/.

Executive Office of the President, Office of Management and Budget. *Revised Delineations of Metropolitan Statistical Areas, Micropolitan Statistical Areas, and Combined Statistical Areas, and Guidance on Uses of the Delineations of These Areas*. OMB Bulletin No. 23-01. Washington, DC: The White House, 2023. https://www.whitehouse.gov/wp-content/uploads/2023/07/OMB-Bulletin-23-01.pdf.

Infobel. Global Company and Location Data. https://www.infobel.com/.

Jaffe, Adam B., Manuel Trajtenberg, and Rebecca Henderson. "Geographic Localization of Knowledge Spillovers as Evidenced by Patent Citations." The Quarterly Journal of Economics 108, no. 3 (1993): 577–598. doi:10.2307/2118401.

Jefferson, O. A., D. Koellhofer, B. Warren, T. Ehrich, S. Lang, K. Williams, A. Ballagh, B. Schellberg, R. Sharma, and R. A. Jefferson. "Mapping Innovation Trajectories on SARS-CoV-2 and Its Variants." *Nature Biotechnology* 39 (2021): 401–3. https://doi.org/10.1038/s41587-021-00849-z.

Katz, Bruce, and Julie Wagner. *The Rise of Innovation Districts: A New Geography of Innovation in America*. Washington, DC: Brookings Institution, 2014. https://www.brookings.edu/articles/rise-of-innovation-districts/.

Laursen, Keld, and Ammon Salter. "Open for Innovation: The Role of Openness in Explaining Innovation Performance Among U.K. Manufacturing Firms." Strategic Management Journal 27, no. 2 (2006): 131–150. doi:10.1002/smj.507.

Lightcast. Labor Market Analytics Data. https://lightcast.io/.

Muro, Mark, Jonathan Rothwell, Scott Andes, Kenan Fikri, and Siddharth Kulkarni. *America's Advanced Industries: What They Are, Where They Are, and Why They Matter*. Washington, DC: Brookings Institution, 2015.

OpenAlex. *OpenAlex: End-to-End Process for Topic Classification*. OpenAlex, 2024. https://docs.google.com/document/d/1bDopkhuGieQ4F8gGNj7sEc8WSE8mvLZS/edit.

Organisation for Economic Co-operation and Development (OECD). OECD.Stat. Accessed May 21, 2026. https://stats.oecd.org/.

PatentsView. PatentsView Data. United States Patent and Trademark Office. Accessed May 21, 2026. https://patentsview.org/.

PitchBook. PitchBook Platform Data. https://pitchbook.com/.

Priem, J., H. Piwowar, and R. Orr. "OpenAlex: A Fully-Open Index of Scholarly Works, Authors, Venues, Institutions, and Concepts." *arXiv* (2022). https://arxiv.org/abs/2205.01833.

U.S. Bureau of Labor Statistics. "Employed Persons in Indianapolis-Carmel-Anderson, IN (MSA) [LAUMT182690000000005A]." FRED, Federal Reserve Bank of St. Louis, 2026. https://fred.stlouisfed.org/series/LAUMT182690000000005A.

U.S. Bureau of Labor Statistics. "Employment Level [CE16OV]." FRED, Federal Reserve Bank of St. Louis, 2026. https://fred.stlouisfed.org/series/CE16OV.

Wagner, Julie, Bruce Katz, and Thomas Osha. *The Evolution of Innovation Districts: The New Geography of Global Innovation*. New York: The Global Institute on Innovation Districts, 2019. https://giid.org/research/evolution-of-innovation-districts/.

About GIID

The Global Institute on Innovation Districts (GIID) is a global-reachingnot for profit organization conducting independent, practice-oriented research on innovation districts—new geographies of innovation emerging primarily in cities and urbanizing areas. Drawing on deep analytics and proven impact, GIID's work seeks to understand how districts transform into engines of city and regional economic growth.

In 2020, GIID launched the Global Network, now comprising more than 50 leading districts and precincts across 15 countries on five continents. The Global Network enables unparalleled access to global perspectives on the forces shaping this evolving field, while offering a continuously expanding set of tested solutions, models, and benchmarks.

Beyond research and peer learning, GIID provides tailored, on-the-ground support to help districts accelerate their progress. We work directly with emerging and established district leaders—including universities, medical research institutions, governments, landowners, developers, and ecosystem builders—to turn strategic insight into tangible action. Our engagements help districts identify exceptional R&D capabilities, clarify competitive strengths, forge key partnerships, and build governance models aligned with long-term success. Support ranges from focused strategic coaching to comprehensive, multi-month engagements that co-design roadmaps and implementation plans tailored to each district's context.

Our mission is to accelerate the evolution of innovation districts into 21st century problem solving geographies that address major societal challenges, including climate change, infectious diseases, and social equity.

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Scan the QR code to learn how insights can unlock the potential of your district

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