



Economic Clusters: Four Design Principles for Success

Everyone wants them, but competing in a fierce global economy requires focus

When well-executed and well-supported, economic clusters can offer enormous potential for regional health, collaboration, and growth, and they have long been a dominant theme in economic development circles. An increasingly global economy has bolstered the importance of economic clusters, since having a clear advantage in an industry can attract talent, firms and capital from all over the world. And every locality wants self-reinforcing economic engines from which prosperity equitably flows to all corners. But many regions, states, and cities fail in their attempts to identify and grow such entities.

So, what are economic clusters and what is their role within a broader economic context? How do we design clusters that are more than simply an excuse for overly expensive “catch and kill” business-attraction activities or big ideas rolled out by well-meaning planners but ignored by industry? And how do we design them to become functional engines of growth? In this paper, we will define and discuss economic clusters, and then outline four design principles for cluster success.

What are economic clusters?

Economic clusters are essentially local concentrations of similar or complementary industries. They aggregate production and exchange goods, services, talent, and tech, while serving as beacons for attracting further inbound investment, industry, and innovation, as well as potential personnel. Successful clusters benefit from a strong, enabling environment that supports the needs of businesses and their workforces. These supportive environments deliberately nurture sustainable vitality and collaboration on a multitude of levels—from individual to corporate to environmental—and provide a multiplier effect that serves to drive regional and national economies.

At their core, clusters are about talent. As talent has increasingly become the dominant determinant in where firms locate and grow, a deep pool of relevant talent from a cluster of related industries becomes a magnetic pull for others in that industry and those adjacent. The synergy between Silicon Valley and technology talent is an obvious example.

Silicon Valley

Silicon Valley is an obvious, if idealized, example of a successful economic cluster. Its early roots in the development of transistors was followed by forays into semiconductors and integrated circuits, eventually empowering Silicon Valley to advance up the value chain into personal computing. The area’s subsequent expansion into software has evolved more recently to encompass the diffusion of technology across society via developing new forms of social media. The region now has 250% as many technology jobs as the U.S. average, is responsible for 17% of all patent creation and intakes a third of all venture capital across the entire country. In other words, an economic cluster that began as a cottage industry in the homes and garages of innovators—and thrived in a context anchored by strong, supportive institutions—now produces an economic output equivalent to that of Switzerland.

Similarly, greater Detroit thrived in the early 20th century by growing a world-beating cluster around industrial manufacturing and mobility. But why did the auto industry grow in that particular location? The area combined physical assets—waterways, rail connections, access to timber and coal—with crucial talent assets, since the region was already home to carriage makers, cast iron boiler fabricators and entrepreneurs. These developments were also timed to global megatrends like the rise of mass-scale fossil fuel production. This unique set of synergies created the modern auto industry, thereby generating decades of prosperity for many local individuals and the region in general.

Another equally instructive example is Boston's footwear cluster. Boston is now home to Converse, New Balance, Puma, Clarks, Reebok, Sperry, Saucony, and Rockport. Many of these companies have been attracted to the region in the last few years, based on the specialized talent already there. This talent pool started with a nucleus of existing firms and was supported by the conditions necessary to attract and retain top talent. Over time, a deep labor market has emerged, consisting of skilled individuals who are happily situated in an environment that continues to draw both people and business.

In the above instances, we can clearly trace the essential contributing factors that led to each highly successful economic cluster. If, as it seems, the key attributes of clusters are identifiable and can be summarized in a few short paragraphs, why don't we simply repeat the recipe for cluster success in other states, counties, and cities?

Where do we get it wrong?

The challenge with clusters is that we are very good at identifying the components of cluster success after a given cluster has achieved it. But we struggle—and frequently do not succeed—with both intentional cluster design and the implementation of growth strategies.

Many regions attempt to develop clusters, with mixed results. A common mistake involves identifying clusters in a 'top-down' fashion. That is, clusters are often constructed as theories that sound promising on paper—chasing the new hot thing, e.g., “We want to be the next Silicon Valley,” or following generic, abstract design principles—whether or not the right assets are in place.

Another mistake emerges from the ways we, as economic development practitioners, tend to project our biases and perspectives on which clusters exist (or should exist) in our economies based on our own sense of what our communities are and ought to be, i.e., “We are a county of ranchers” or “We have advanced manufacturing.” Sometimes, the reality is that these putative clusters are an aspirational extrapolation of certain sector assets, rather than a data-based analysis of sectoral relationships such as capital flows, employment, and knowledge creation.



A cluster is very much more than firms from similar sectors working alongside each other in a business park.”

All too often, economic development functions in city and state governments reduce the concept of economic development to a series of opportunistic, binary real estate deals—quid pro quo transactions aimed at incentivizing new companies to set up and create jobs. In these cases, the concept of clusters is typically introduced to provide a post-facto rationale for targeting prospective inbound enterprises. While the physical aspects of clusters are important—and businesses all need a place to work—the importance of physical proximity between entities in a cluster tends to be overblown. A cluster is very much more than firms from similar sectors working alongside each other in a business park.

Ultimately, no matter how well-evidenced the argument may be for growing a particular cluster, or how solid the business case looks on paper, clusters will struggle to get off the ground without the right implementation strategies. Too many cluster strategies fail when leaders simply conceive of a cluster and then hope the status quo will deliver a new reality. Changing the trajectory of economic history requires effort, wisdom and energy.

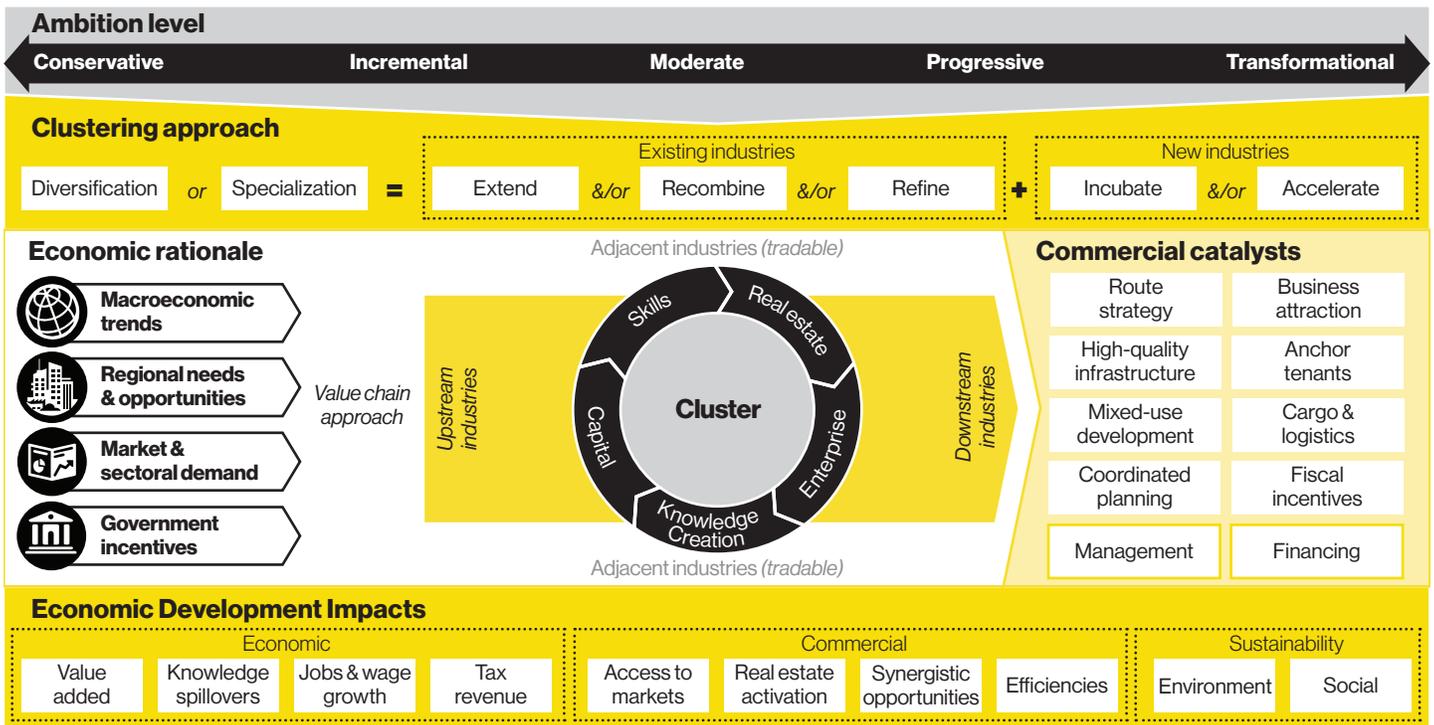
At root, key actors must determine what changes are achievable and by which party or parties—all of which must be grounded in existing and potential relationships, as well as regional specifics. This is where execution expertise becomes indispensable to creating a strong action plan.

What is the way forward?

There are four main design principles for successful cluster strategies:

- ✓ Holistic framing of a cluster’s economic role and context
- ✓ Using a bottom-up, data-driven approach
- ✓ Securing political, leadership, and community buy-in and cooperation
- ✓ Designing an ecosystem-wide implementation strategy

Holistic framing of a cluster’s economic role and context



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Traditional clustering theory—as found in Porter’s Five Forces model—typically identifies skills, knowledge creation, enterprise, real estate, and capital as the dominant drivers of the establishment and evolution of clusters. While this conception is generally still valid, newer models of clustering theory also consider the wider enabling environment in stimulating the emergence and growth of clusters.

For example, the absence of non-compete laws in California in the 1970s is often cited as a factor aiding the growth of the nascent IT industry in Silicon Valley. Employees who left established firms, such as Fairchild Semiconductor, were allowed to freely move to other firms, thereby strengthening competitors and spawning new entrants in the industry, including Intel and Sun Microsystems. Today, factors such as school-district quality, the availability of parks and recreation areas, cost of living, and other placemaking concepts serve as the tools economic development professionals use to lure high-quality talent—and where workers go, firms follow.

Effective cluster selection and execution will therefore require a more holistic framing of the full range of assets and enablers that a region has and may bring to bear. This, in turn, involves reflection around certain basic variables, the combination of which will be unique to each area. These diverse perspectives should be built in at the outset of any cluster-development process to ensure that each of the asset layers can be identified and incorporated into analysis as part of the strategy.

The key considerations for fruitful cluster strategy include:

- 1** **Ambition level:** While the default position might be that every city or region wants their cluster strategy to focus on the splashiest, most transformative ambition level, not every ambition type is appropriate for every region. A city, for example, may have established-but-informal economic clusters, rendering consolidation a primary concern and indicating an appropriate current ambition level that tends towards the conservative/incremental. Making those clusters more efficient and retaining the existing talent base will typically be higher priorities than seeking to transform clusters into something new, such as a high-tech hub, with the new infrastructure and skills that implies.
- 2** **Clustering approach:** The level of ambition selected therefore informs the choices that are available in a clustering approach. Fundamentally, this is a choice between diversification or specialization (aiming to attract complementary businesses in adjacent industries) or specialization (focusing on reaching significant market share in a specific type of product or service)—and cases may be made for both. In any scenario, a smart clustering approach will seek to build off from existing industries rather than to start over.
- 3** **Economic rationale:** In order for clusters to be more than simply collections of similar firms, clusters require an economic rationale that underpins their interrelationships. Whether a given cluster is seeking to exploit a global market opportunity or develop a niche based on local and regional factors, a sense of the macroeconomic forces in which a cluster operates is critical to success.
- 4** **Commercial catalysts:** A variety of factors contribute directly to the likelihood of business success per se. While such commercial catalysts alone are not panacea for implementing economic clusters (rather, ecosystem-wide enablers are also required), many cities already have the institutional infrastructure—such as chambers of commerce—that will allow them to get tactical on building economic clusters. Enriched with transactional, deal-making business development tools, an economic clustering approach can provide increased focus and coherence. This enables regions to intentionally target specific firms and to support the organic growth of small and medium-sized enterprises (SMEs).
- 5** **Economic development impacts:** Finally, economic clusters exist to serve as regional engines of growth, addressing societal and economic needs. A consideration of the impacts of clusters therefore needs to be a built-in aspect of the business case. This includes assessing whether there are any unacceptable trade-offs, such as the pollution impacts of clustering heavy industry, or the inequities that can arise when attracting high-income workers without developing adequate mechanisms for lower-income groups to be upwardly mobile. A truly sustainable cluster will skew towards positive impacts by fostering community engagement, honoring ecological concerns, and maintaining fair access to public goods and regional resources.

Using a bottom-up, data-driven approach

Data is one aspect of economic cluster strategies that is actually reasonably well-understood. However, there are some common mistakes in how data is used to justify the case for a cluster. Typically, extrapolation from already successful clusters shapes such hypotheses. However, a spate of cluster failures over time has revealed that situational data is exponentially more relevant.

The effective use of data hinges on the central premise that the data itself needs to be digested from a bottom-up perspective. That is, the process should necessarily involve looking at the specific economic configuration of a region and identifying, on that basis, where strong inter-industry relationships exist and where there are true and durable competitive advantages. Executing this design principal often entails a period of following the data and honest soul-searching. This facilitates a genuine understanding of regional strengths and weaknesses and, crucially, promotes bias-free cluster identification.

Economic cluster development strategy needs to incorporate a broad-based and bottom-up analytical approach.

<i>Macroeconomic</i>			<i>Microeconomic</i>		
Industry interlinkages	Competitive advantage	Institutional & enabling environments	Workforce	Spatial expression	Firm composition
Capital flows between sectors show the real inter-dependency of current economy and nascent clustering.	Location quotient (LQ) analysis is a tool to indicate competitive advantage compared to peer locations.	Assessing government, education and private-sector assets informs cluster feasibility.	The cognitive power of the available workforce informs which clusters can grow today and long-term strategies for development.	Where assets are matters—spatial analysis offers location-focused support and insight into currently forming clusters.	Evaluating existing firms to identify focus, strengths, size and stability identifies specific gaps to fill.

As shown in the table above, such a process requires in-depth, quantifiable knowledge around the composition of the regional economy and the flow of capital between sectors to identify which sectors have strong trading relationships, the concentration of labor relative to the national average and the tradability—and existing and potential spillovers—of the sectors involved. It also encompasses other relevant factors, such as the enabling business environment, policies for workers, innovation, patenting, and infrastructure.

The thornier data issues are associated with analyzing the indirect enablers of a cluster, such as the proximity of a Federal Patent Office, or the role of culture and placemaking in attracting highly skilled technology workers. It is difficult to quantify the roles of indirect enablers in contributing to cluster success; rather, they are qualitatively associated with clusters. These qualitative factors can sometimes be used 'as is' to bolster data-based findings. But qualitative attributes may also be transformed into a quantifiable dataset using methods such as weightings and scorings based on calibration with a number of stakeholders.

Securing political, leadership, and community buy-in and cooperation

That being said, successful cluster strategies are about more than just quantitative exercises. To deliver results, cluster strategies need buy-in from all stakeholders—from the top down in all entities concerned—to create and maintain focus on the right topics.

Securing and maintaining buy-in can be tricky. It certainly takes much more than a simple endorsement of a strategy by a region's elected officials. Cluster strategies succeed when supported by a broad consensus of business, government, academic (if applicable) and philanthropic leaders. Leadership buy-in can leverage clout and brand to promote the region, cultivate productive public-private synergies, and generate pull-through in the business community on trade delegations and other profile-raising efforts.

Cluster strategies are more likely to succeed when key stakeholders are engaged early—providing substantive input on the development process. In addition to governmental, corporate, and other institutional input, other groups (e.g., civic organizations) and individuals in the community will have a vested interest in cluster development and success—and their participation should be encouraged from the outset. Media and other influencers can be important to amplify messaging and build awareness as the cluster grows.



This early engagement also helps to identify potential conflicts and interactions. For example, if multiple, proximate entities identify the same cluster, the result can be either a mutually reinforcing partnership or a bitter zero-sum battle. The level of cooperation and buy-in will make all the difference.

Designing an ecosystem-wide implementation strategy

Municipal and state governments oftentimes feel that the responsibility for the implementation of cluster strategies rests entirely on their shoulders. However, this is not the case.

Rarely does a government administration create policy that in itself causes a linear sequence of actions that directly results in the inception and growth of an economic cluster. Rather, local and state governments exist within an overlapping and fragmented ecosystem of county- and municipal-level actors that together manage our planning and governance. Other agencies manage mobility, infrastructure, and school districts, not to mention the patchwork of utilities and service providers. Meanwhile, the private sector represents a range of firms, from small businesses and local companies that have scaled to large national and multinational corporations that have footprints within the region. Each of these entities plays a vital role in the regional ecosystem.

A global agtech hub in St. Louis, Missouri

St. Louis is becoming known as a global agricultural technology (“agtech”) hub. With Missouri’s large agricultural economy seeking advancement, St. Louis provides distinctive cluster assets such as the Danforth Plant Science Center, Washington University in St. Louis, and anchor firms, including Monsanto (now part of Bayer AG). Continued success of the cluster ecosystem will involve enhancing cluster complementarities, demonstrating the city’s competitive advantage against the relatively proximate talent-attracting hub of Chicago and focusing on addressing the fundamentals of housing affordability, schooling, and livability that influence the attraction of skilled workers.

Thus, the most successful models for implementation of cluster development strategies are based on ecosystem approaches. Two key facets shape such approaches. First, it’s crucial to map the landscape of actors that directly contribute to cluster success or indirectly inform wider location decisions by firms. Second, shares of responsibility should be allocated to all of the actors in that landscape, so that each is working collaboratively towards a shared cluster agenda.

Together, these steps—landscape-mapping and responsibility-allocating—integrate the resources of economic development agencies to coordinate the ecosystem approach, local government to provide local resources, state-level government and elected officials to raise the national and international profile of clusters, and chambers of commerce to provide a supportive forum for firms. They also lean on school districts, higher education institutions, and business training programs to create the workforce development pathways that are critical for cluster success.

Taking a wider view, ecosystem-wide approaches may also address the role of planning departments, architects and real estate developers in creating the types of environments that target firms may be drawn to. There may also be a role for the nonprofit space to build communities that welcome and integrate new workers and root them in the region.

Working in tandem, these elements tend to nurture a vibrant environment that signals positive possibilities to a wide range of actors. And ultimately, when a cluster strategy secures buy-in from as diverse a group of stakeholders as possible, it is more likely to succeed.

Conclusions

Economic clusters are an important aspect of economic development. The process to develop working strategies is straightforward, but it requires a method that is free of bias, data-driven, and holistic in understanding what drives economies. In addition, it must leverage the ecosystem approach to align on a shared agenda for economic success.

Designed poorly, cluster strategies end up being coffee-table reports that lack real-world resonance; in practice, they may require returning to the drawing board, again and again. Designed well, cluster strategies channel context-grounded initiatives, dynamic leadership and talent, broad-based resources, community engagement and investor confidence to successfully support the growth of a region.

Why Guidehouse?

Our perspectives on economic cluster design are based on Guidehouse's considerable breadth of experience in helping cities, states, and regions navigate important economic, societal, and technological challenges. We have developed economic cluster approaches for regions seeking the next step on the value chain after industrialization, states seeking to equitably spread economic success from urban areas to rural, and cities looking to position themselves as global knowledge hubs.

Our recipe for success is simple. We embark on a data-driven approach, we thoughtfully engage with and consider the voices of the community, and we ensure that the right stakeholders are equipped with rich insights to make informed choices. This comes together in an intimate collaborative model with the states, cities, and regions we work with to deliver ecosystem-wide strategies that multiply the effect of our clients.

Guidehouse is dedicated to addressing the needs of the public sector. Our purpose is to act as a trusted advisor to our clients in solving the central challenges facing their societies and economies.

About Guidehouse

Guidehouse is a leading provider of management, technology, and risk consulting services to the public and commercial markets. We help our clients solve their toughest challenges through the co-creation of scalable, innovative solutions to prepare them for future growth and success. Headquartered in Washington DC, the company has more than 1,800 professionals in over 20 locations. Guidehouse is a Veritas Capital portfolio company and led by seasoned professionals with proven and diverse expertise in traditional and emerging technologies, markets and agenda-setting issues driving national and global economies.

For more information, please visit: **www.guidehouse.com**.