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MILKEN INSTITUTE

BRIDGING
Neuroscience, Health, and the Built Environment

A Giving Smarter Guide

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About the Milken Institute

The Milken Institute is a nonprofit, nonpartisan think tank focused on accelerating measurable progress on the path to a meaningful life. With a focus on financial, physical, mental, and environmental health, we bring together the best ideas and innovative resourcing to develop blueprints for tackling some of our most critical global issues through the lens of what's pressing now and what's coming next.

ABOUT MILKEN INSTITUTE STRATEGIC PHILANTHROPY

Milken Institute Strategic Philanthropy tackles persistent societal challenges by guiding individuals and foundations with the insights and tools to develop strategies, implement giving programs, and foster collaboration to create a better, more equitable world.

About the Science Philanthropy Accelerator for Research and Collaboration

The Milken Institute's Strategic Philanthropy's Science Philanthropy Accelerator for Research and Collaboration (SPARC) works to develop, launch, and lead initiatives that fund medical research and invest to accelerate the development of tools and treatments that will bring better health to millions of people. Our expertise lies within several medical research fields, including neuroscience, mental health, oncology, rare diseases, and immunology. We partner with philanthropists, leading them through complex medical research and clinical systems and guiding pathways for philanthropy to create a healthy, equitable world.

Table of Contents

Table of Contents *(continued)*

Foreword

Our environments shape our lives, but too often, they are invisible.

As David Foster Wallace once shared, “There are two young fish swimming along, and they happen to meet an older fish swimming the other way. He says, ‘Morning, boys, how’s the water?’ And the two young fish swim on. Eventually, one of them looks at the other and goes, ‘What the hell is water?’”

As a society, we often give as little thought to our built environment as fish do to theirs, even though we spend 90 percent of our time inside buildings. Our surroundings shape our cognition, emotions, nervous system, behavior, health, and more. Exciting research and new technology are teaching us how people respond physiologically to certain attributes of their environments and pinpointing which ones are helpful or harmful. This intersection of neuroscience, health, design, and the built environment shapes the emerging neurospatial design ecosystem, which applies insights into how spaces affect human biology to support health and well-being.

We continue designing buildings as if they are an afterthought, overlooking the opportunity to implement this growing knowledge to enhance schools, hospitals, and communities. Rather than creating spaces for positive health outcomes and solving societal issues, we aim no higher than preventing harm.

The Pedersen Foundation believes that we should hold ourselves to a higher standard.

Founded by George and Marilyn Pedersen, we invest in emerging fields with the power to change lives—including neurospatial design. We envision a world where people can read a building like a nutrition label: a universal standard that informs choices, ensures accountability, and gives everyone equal access to spaces that support and optimize their health and experience, from a child in a classroom to a patient in a hospital to a family in their home.

We partnered with the Milken Institute’s Science Philanthropy Accelerator for Research and Collaboration (SPARC) to develop this *Giving Smarter Guide* with a singular conviction: The spaces we build shape the lives we live. By joining the neurospatial design community, you help place people’s health at the heart of every structure, street, and city—and become part of a movement reimagining how we live, work, heal, and thrive.

THE PEDERSEN FOUNDATION

Executive Summary

Have you ever walked into a space with a design that immediately made you feel calmer, more focused, or creative? Has a building or design made you feel unwell, anxious, or even tired? If you answered yes, you are already intuitively aware that spaces and the built environment can significantly affect your brain and physical health.

Society is pushing for healthier foods, products, and air—but what about healthier spaces?

A deeper understanding of human biology, rising focus on brain health and science-informed living, rapid technological advances, and greater awareness of how the built environment affects well-being have collectively fueled interest in the intersection of neuroscience, health, and design. In the face of mounting societal challenges such as increased urban density, the growing loneliness epidemic, and rising rates of chronic and brain disease, demand for new solutions to widespread needs is accelerating. An emerging approach rooted in neuroscience and design, termed neurospatial design, offers a promising and scalable way to address these challenges by supporting individual, community, city, and economic health.

Neurospatial design draws on neuroscience and health research to better understand how design and the built environment affect human biology so that spaces that support health, experience, and well-being can be created. Harnessing the potential of neurospatial design to deliver these benefits across spaces, buildings, and cities can significantly shape the future of work, education, and health care. Ensuring that diverse sectors and stakeholders benefit from the widespread adoption of neurospatial design requires collaboration across academia, industry, nonprofits, government, and philanthropy. However, effectively engaging these sectors to leverage their respective strengths and align ongoing efforts has so far proven challenging for such an interdisciplinary topic.

In 2025, the Milken Institute Science Philanthropy Accelerator for Research and Collaboration (SPARC) began a partnership with The Pedersen Foundation to examine unmet needs, key stakeholders, and systemic hurdles to broader integration of neurospatial design. More than 90 experts were interviewed, and more than 580 organizations related to neurospatial design were analyzed. The resulting insights informed the development of this *Giving Smarter Guide*, which highlights core principles, challenges, key players, and actionable opportunities to catalyze the growth and application of neurospatial design. The guide also presents four philanthropic priorities as critical areas of opportunity and investment to advance neurospatial design and improve human health. Each priority focuses on a distinct area, but they are undoubtedly interconnected.

PRIORITY 1

Generate Actionable Evidence to Enable Implementation of Neurospatial Design

OPPORTUNITY 1.1:

Build an Interdisciplinary Research Community to Support Neurospatial Design

A robust evidence base is needed to realize the impact of neurospatial design. Philanthropy can catalyze initiatives that promote interdisciplinary research and build a network of researchers to generate actionable evidence for implementation.

OPPORTUNITY 1.2:

Collect Real-World Evidence for Neurospatial Design

For neurospatial design to be truly effective, studies beyond biomedical research labs or evaluations of completed buildings are needed. Philanthropy can support the generation of real-world evidence through living labs, pilot projects, and studies of human and economic outcomes to fill this critical evidence gap.

OPPORTUNITY 1.3:

Invest in Neurospatial Design Research Infrastructure

Neurospatial design research involves the use of specialized infrastructure that may not be widely available. Philanthropic investment for the development of this research infrastructure could accelerate findings and foster collaboration.

PRIORITY 2

Build a Robust, Diverse Neurospatial Design Talent Pipeline

OPPORTUNITY 2.1:

Expand Education and Training in Neurospatial Design Principles and Research

Dedicated educational courses and programs are needed to build expertise in neurospatial design. Philanthropy can fund educational initiatives to expand exposure, strengthen talent pipelines, and develop researchers and practitioners to foster a diverse and sustainable workforce.

OPPORTUNITY 2.2:

Enhance Continuing Education for Neurospatial Design Professionals

Continuous learning is important to ensure the neurospatial design workforce integrates emerging evidence into practical application. Philanthropy can support continuing education initiatives that equip professionals with emerging insights and the interdisciplinary training required for lasting careers.

PRIORITY 3

Fuel Integration of Neurospatial Design Across Buildings and Industry Sectors

OPPORTUNITY 3.1:

Integrate Neurospatial Design into Industry Standards

Widespread adoption of neurospatial design is critical to ensure equitable access to the health and economic benefits. Philanthropy can expand impact by supporting the integration of neurospatial design into scalable standards and tools used across industry sectors.

OPPORTUNITY 3.2:

Develop Financial Incentives for Adoption of Neurospatial Design

Reevaluating how neurospatial design research and implementation are financed is critical to translating evidence into real-world impact. Philanthropy can enable innovative financial incentives that promote integration across sectors and building types, driving health benefits for all.

PRIORITY 4

Expand Neurospatial Design Awareness Across Sectors and Society

OPPORTUNITY 4.1:

Leverage Associations to Expand Awareness of Neurospatial Design

Professional associations serve as vital channels to raise awareness of neurospatial design. Philanthropic organizations can leverage associations as platforms to share the impact of neurospatial design and engage more students and professionals in the ecosystem.

OPPORTUNITY 4.2:

Increase Interest in Neurospatial Design Across Related Sectors

Increasing interest in neurospatial design across related professional and industry sectors is essential for expanding adoption. Philanthropy is uniquely positioned to amplify the ecosystem and its work through strategic communications and engagement efforts to build bridges between disciplines and sectors.

OPPORTUNITY 4.3:

Grow Public Understanding and Demand for Neurospatial Design

Broader public demand is integral to scaling the use of neurospatial design across the built environment to improve human health. Philanthropy can leverage media and technology to raise awareness of the health benefits of neurospatial design among the public, driving demand for healthier spaces.

We envision this *Giving Smarter Guide* as a framework that (1) enables organizations currently investing in neuroscience, health, and/or the built environment to build on ongoing efforts and (2) elevates neurospatial design as an opportunity for other mission-aligned philanthropic and cross-sector leaders to enhance their impact in creating a thriving world. Realizing the potential of neurospatial design will require coordinated efforts to synergize cross-sector initiatives, and philanthropic investment is well positioned to contribute to this work.

The Time Is Now: Strengthening Brain Health, Well-Being, and Societal Progress Through the Built Environment

Over an average 80-year lifespan, people spend roughly 72 years indoors. This means that greater than 90 percent of the human lifetime is now spent inside buildings, a shift that has earned modern society the nickname "the Indoor Generation." Therefore, the built environment plays a central role in shaping daily life, from how we live and learn to how we work. Despite spending the majority of our lives indoors, research shows that individuals significantly underestimate the influence of the built environment on their health. Although frequent interactions with buildings are a defining feature of modern society, most people tend to overlook how features such as windows, sharp turns, color, and the materials used to build and furnish a space affect their experience, health, and well-being. **An emerging research and design approach at the intersection of neuroscience, health, and the built environment is elevating the conversation and calling for spaces that promote better health for individuals and communities.**

Defining the Built Environment

Human-made structures, encompassing interior and exterior designs, features, and facilities, that together form the spaces that support everyday human activity.

Advances in our understanding of human biology and psychology have enabled exploration of how our bodies and minds respond to the built environment. Decades of research have demonstrated the brain's role in regulating physiological, emotional, and mental health. However, applying our knowledge of the brain's centrality to health to shape and create everyday environments that prioritize well-being has remained a persistent challenge.

Over the past several years, the growing Global Brain Economy Initiative has reframed brain health as a strategic economic asset and demonstrated the socioeconomic importance of supporting brain, mental, and cognitive health. This reframing has sparked considerable global interest in the environment's impact on the brain and body.

At the same time, philanthropic leaders have increasingly called for greater application of neuroscience insights in real-world settings beyond the research lab. Together, these shifts establish a moral obligation to design spaces that actively support the health and well-being of individuals, communities, towns, cities, and economies.

These trends have prompted a reevaluation of the architecture and design of spaces, buildings, and cities and their impact on our cells, organs, bodies, and minds. Several key building types are now being recognized for their effects on health, well-being, connection, and productivity (see **Figure 1**).

Figure 1: Key Building Types Shaping Society

Source: Milken Institute (2026)

Factors Driving Attention and Investment Toward the Intersection of Neuroscience, Health, and the Built Environment

A host of global trends have contributed to the growing awareness of the built environment's role in health and well-being. While the idea of healthy buildings, including our understanding of indoor disease transmission, had taken shape by the mid-20th century, design priorities have largely remained unchanged, favoring function, efficiency, and cost over health. The connection between health and the built environment became especially clear in 2020, when the COVID-19 pandemic highlighted the link between shared spaces and public health. While discussions focused on airflow and disease transmission during the pandemic, a larger question emerged: What if every room, space, and building were designed for function, beauty, and health?

Today, numerous health and social factors further the discussion; for instance, concerns over rapid urbanization and the shortage of affordable housing have sparked debates about innovation in residential design. At the same time, emerging health trends underscore the importance of designing spaces that support neurodiversity, accommodate an aging population, and offer preventive health benefits. **Figure 2** illustrates major factors driving interest, attention, and investment at the intersection of neuroscience, health, and the built environment.

Figure 2: Factors Driving Attention Toward the Intersection of Neuroscience, Health, and the Built Environment

SOCIETAL AND PUBLIC HEALTH CHALLENGES

Emerging Awareness from COVID-19 Pandemic
The COVID-19 pandemic led to a reevaluation of the built environment's role in disease transmission, health, and overall well-being.

Growing Global Burden of Brain Disease
The World Economic Forum estimates that the global annual cost of brain diseases will reach $16 trillion by 2030, highlighting the need for spaces designed to support brain health.

Growing Interest in Sustainability and Climate Change
Climate change is expected to destroy trillions of dollars in US housing value by 2055, with negative impacts on displaced residents and implications for brain and mental health.

Rising Cost Burden of Chronic Disease
US health-care spending on chronic and mental health conditions costs over $4 trillion annually and is expected to rise. This will include greater spending on health-care settings.

Shortage of Affordable Housing
The US housing market is short as many as 4 million affordable single-family homes and 7 million rental homes, even as urban density and housing demand are rapidly increasing.

Epidemics of Mental Health and Loneliness
Spaces designed to support mental and social health can help reduce the incidence of depression, anxiety, and social isolation, which cost the global economy ~$1 trillion each year.

HEALTH AND SOCIAL TRENDS

Increasing Awareness of Neurodiversity
Greater than 50 percent of Generation Z identifies as neurodiverse, prompting a reevaluation of how spaces are designed to support different cognitive and sensory needs.

Expansion of Wellness Industry
The Global Wellness Institute estimated the global wellness industry's value at more than $6 trillion in 2023. The industry's rapid growth will make it a significant force shaping the built environment.

Social Prescribing for Health and Well-being
Medical science is increasingly focused on leveraging nonmedical social interventions, such as spending time in museums, as an approach to support patient health and well-being.

Evolving Workplaces
The rise of remote and hybrid work, amid employers' push to return to the office, has underscored the built environment's influence on work culture and productivity.

Support for Longevity and Healthy Aging
Average life expectancy in the US increased from 47 to 78 years from 1900 to 2010, a significant rise that has spurred investment in spaces that support longevity and meet the health needs of an aging population.

Rise of Artificial Intelligence (AI)
Widespread adoption of AI has raised discussions about the tool and its effects on brain health and the design of the built environment.

Source: Milken Institute (2026)

> A unique convergence of social, scientific, and cultural factors has created the perfect storm for the widespread adoption of neurospatial design. This interdisciplinary topic at the intersection of neuroscience, health, and the built environment leverages neurological and physiological insights to inform how spaces are designed for brain, body, and community health.

Coordinated action is needed to realize the health and societal impacts of neurospatial design. Philanthropy is well positioned to bring together cross-sector partners and drive progress across key priority areas.

Key Cross-Sector Priorities to Realize the Impact of Neurospatial Design

According to the US Census Bureau, construction spending totaled approximately $2.2 trillion in 2025, with the majority driven by private-sector investment. An estimated 111 million buildings are located in the US, including approximately 100 million single-family homes; 5.2 million multifamily residential properties; 5.5 million commercial buildings; 350,000 industrial facilities; and 24,000 military structures. Moreover, the federal government maintains more than 359 million square feet of owned and leased workspace through the Public Buildings Service to support federal employees. Together, these figures underscore the immense opportunity to leverage spaces and buildings as catalysts for change. The widespread adoption of neurospatial design can drive large-scale impact, improve the health and well-being of individuals and communities, and deliver dividends for companies, governments, and the global economy (see **Figure 3**).

Figure 3: Outcomes of Cross-Sector Attention, Engagement, and Investment in Neurospatial Design

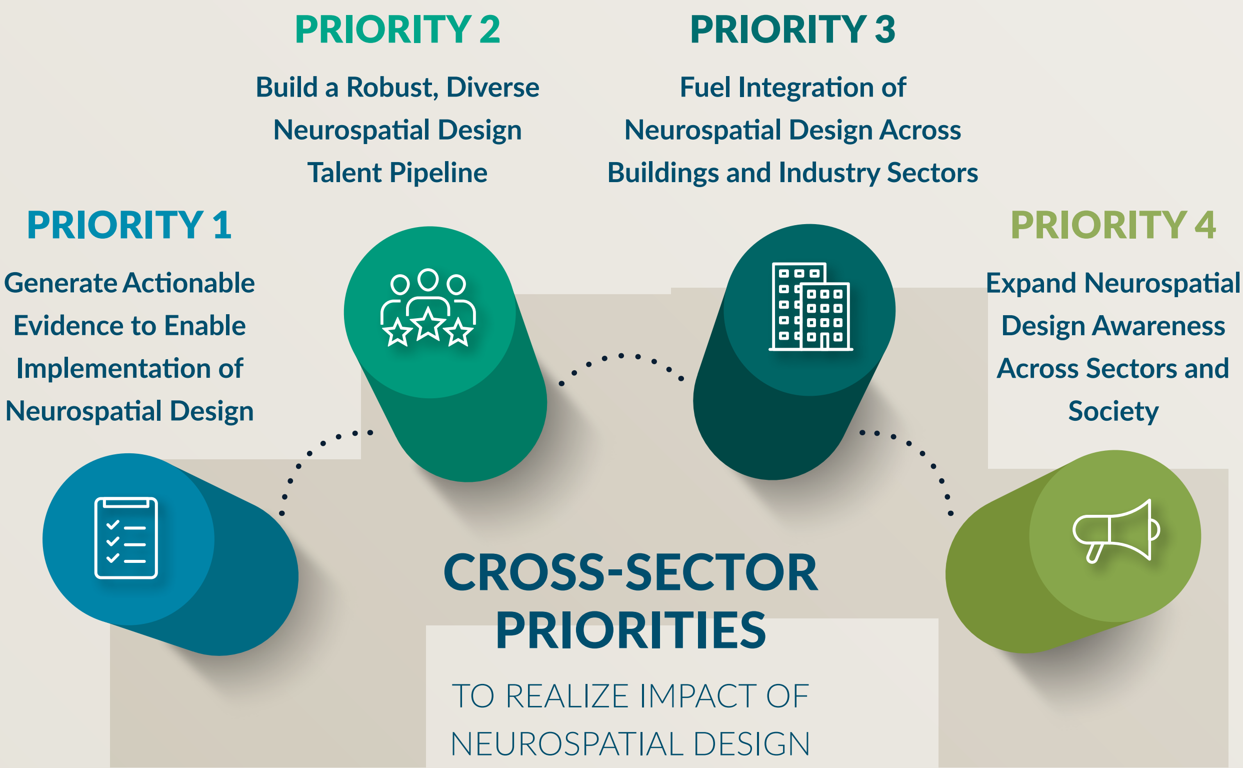
Source: Milken Institute (2026)

Public- and private-sector engagement will be crucial to reframing the built environment—and neurospatial design in particular—as a lever for societal impact. While the public sector has the capacity to scale solutions, private investment excels at piloting and validating meaningful health innovations. Philanthropy plays a distinct and essential role by de-risking early efforts, demonstrating value, and investing in the research and education needed to build and position neurospatial design for sustainable, long-term impact.

> Philanthropic and cross-sector organizations committed to improving health for individuals, communities, and cities have strong reasons to advance neurospatial design. Leaders prioritizing brain health, health equity, public health, economic opportunity, and thriving communities are uniquely positioned to champion its potential to help people live healthier, more successful lives.

To guide collaborative action and investment, SPARC identified four key priorities to build cross-sector awareness of, engagement with, and investment in neurospatial design (see **Figure 4**).

Figure 4: Four Key Cross-Sector Priorities to Realize the Impact of Neurospatial Design



Source: Milken Institute (2026)

Although presented discretely, these priorities are deeply interconnected and collectively essential to creating healthier spaces for all communities and holistically supporting the outcomes highlighted in **Figure 3.** This *Giving Smarter Guide* expands on these priorities below and describes specific opportunities and actionable approaches for philanthropic funders to consider in partnership with cross-sector leaders. Crucial to achievement of these priorities, however, is a shared understanding of the neurospatial design ecosystem.

Defining Neurospatial Design

Neurospatial design brings together diverse perspectives at the intersection of neuroscience, health, and the built environment. The following sections outline the core principles of neurospatial design, its relationship to related research and design approaches, and the cross-sector stakeholders critical to its advancement.

Core Principles of Neurospatial Design

Neurospatial design emerged from the desire for an inclusive, encompassing, and interdisciplinary topic grounded **in the three core principles** shown in **Figure 5**.

Figure 5: Definition and Core Principles of Neurospatial Design

Neurospatial design is an interdisciplinary topic at the intersection of neuroscience, health, and the built environment. It leverages neurological and physiological insights to inform how spaces are designed for brain, body, and community health.

Prioritizes **neurological and physiological data** to understand the relationship between health and design

Applies **research** to test hypotheses to improve health and design outcomes

Applies across **all building types and industry sectors**

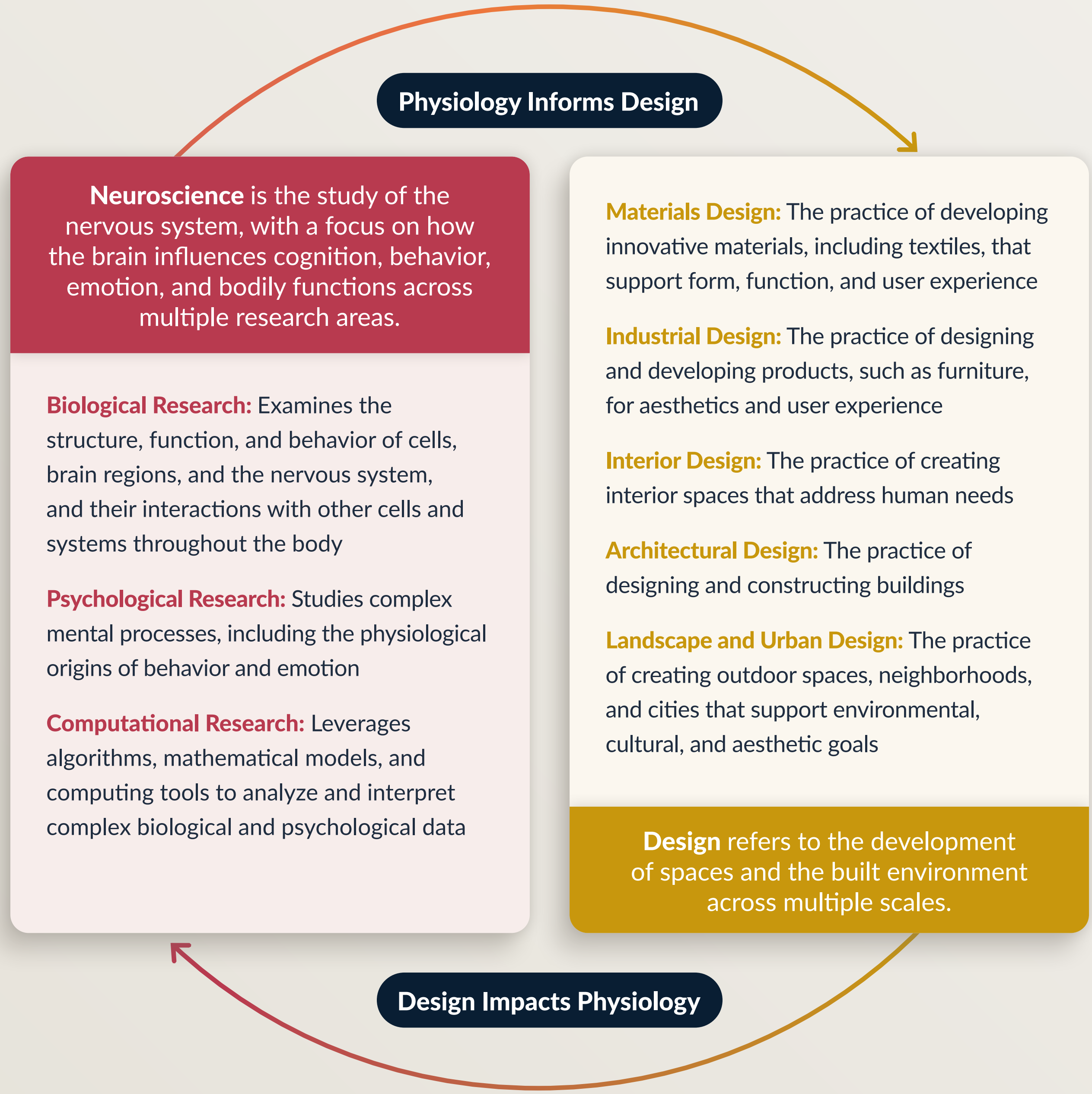
Source: Milken Institute (2026)

As its name suggests, the neurospatial design ecosystem aims to integrate two broad disciplines: neuroscience and design. However, fragmented training and practice in these professions complicate efforts to bridge these disciplines and integrate related fields (see **Figure 6**).

Entering Neurospatial Design Through Neuroscience: Neuroscientists can aim to understand how the built environment affects the nervous system across multiple levels, from sensory experiences to brain responses to the activity of individual cells. These efforts are often grounded in academic neuroscience and psychological research but often lack the ability to integrate physiological insights into real-world settings through design.

Entering Neurospatial Design Through Design: Design professionals often focus on the practical application of materials and spaces, from individual buildings to entire cities, to shape human experience, emotion, and behavior. These efforts are frequently based on general design principles rather than a deep understanding of neuroscience, biology, and related research methodologies.

Figure 6: Neurospatial Design Integrates Neuroscience with Design



Source: Milken Institute (2026); adapted from [Jelić et al. (2016)]

Entering Neurospatial Design Through Additional Fields: Experts across related fields, such as molecular biology, immunology, computational biology, and engineering, represent diverse entry points into neurospatial design. These experts contribute specialized insights and new perspectives to neurospatial design and should be more effectively engaged to foster an interdisciplinary ecosystem.

Neurospatial Design: An Encompassing and Inclusive Ecosystem

Neurospatial design has been shaped by decades of research and development in neuroscience and design. The following sections explore the history and emergence of neurospatial design, its inclusion of related research and design approaches, and the cross-sector stakeholders integral to its growth.

HISTORY OF THE INTERSECTION OF NEUROSCIENCE, HEALTH, AND THE BUILT ENVIRONMENT

Neuroscience and design are increasingly converging through neurospatial design initiatives and research. One notable milestone along this timeline was the 1957 founding of the Salk Institute, a space designed to connect biomedical research with nature and the built environment. In the decades that followed, several milestones across neuroscience, psychology, technology, and design have advanced interest and investment in the neurospatial design ecosystem (see **Figure 7**).

Additional scientific and field-building milestones at the intersection of neuroscience, health, and the built environment are outlined in the recent state-of-the-field report from the Building Brains Coalition and Center for Advanced Design Research and Evaluation (CADRE).

Figure 7: Milestones in the History of Neurospatial Design

1957
Jonas Salk and Louis Kahn conceived the Salk Institute to connect nature and scientific thought through the built environment. The Institute remains a hub for neuroscience research.

1968
The Environmental Design Research Association was formed, linking architects, designers, and behavioral scientists and anchoring the field of environmental psychology.

1990s
The US government increased its investment in neuroscience research, calling for a "Decade of the Brain."

2002–2003
The American Institute of Architects (AIA) established the Academy of Neuroscience for Architecture (ANFA), creating an infrastructure and community focused on neuroarchitecture research.

2010
International Arts + Mind Lab (IAM Lab) launched to study the relationship between science and the arts, greatly elevating the field of neuroaesthetics.

2023
Thomas Heatherwick launched the global Humanise campaign, raising international awareness and interest in city design.

2025
The brain economy was prioritized at the World Economic Forum, elevating brain health on the global stage.

The Building Brains Coalition launched, uniting work and interest in architecture, design, and brain health across sectors.

2026
IAM Lab released the Intentional Spaces Roadmap, meant to guide efforts to advance the design of intentional spaces.

Source: Milken Institute (2026)

RESEARCH AND DESIGN APPROACHES IN THE NEUROSPATIAL DESIGN ECOSYSTEM

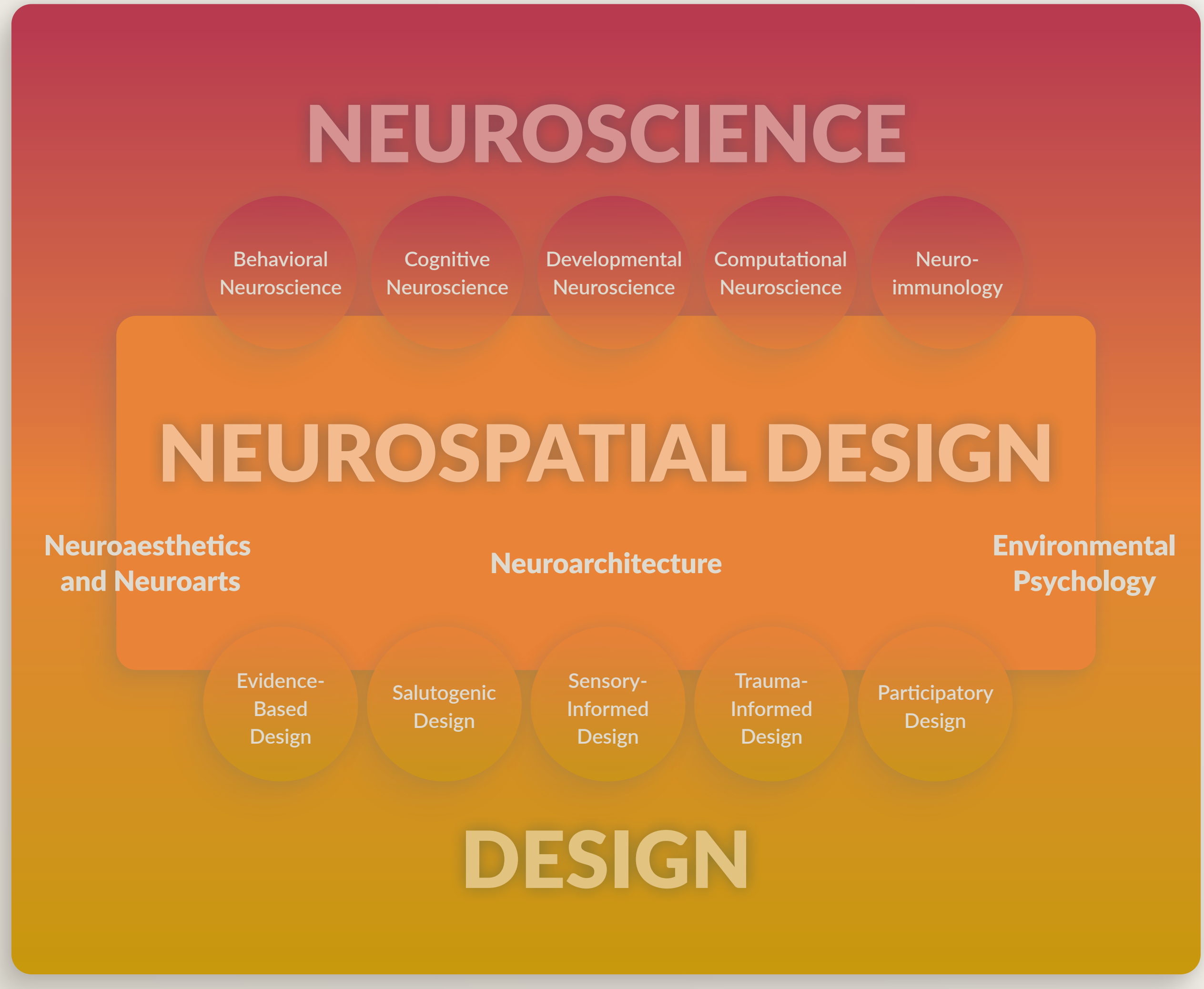
Interdisciplinary research into how natural, built, virtual, and immersive environments shape physiology, brain health, and broader health outcomes is gaining momentum and influence—giving rise to multiple interdisciplinary fields that operate within the neurospatial design ecosystem:

- **Environmental Psychology:** This interdisciplinary field is focused on the transactions between individuals and their surroundings, emphasizing theory, research, and practice to understand reciprocity between individuals' experiences and behaviors and the natural and built environments.
- **Neuroarchitecture:** This interdisciplinary field of study with varying definitions generally combines neuroscience, environmental psychology, and architecture. The term "neuroarchitecture" was popularized by Fred Gage, PhD, and John Paul Eberhard, alongside the establishment of the Academy of Neuroscience for Architecture (ANFA), at the 2003 American Institute of Architects (AIA) National Convention.
- **Neuroaesthetics and Neuroarts:** Neuroaesthetics is focused on the neurobiological and cognitive bases of aesthetic experience. Rooted in neuroaesthetics and other ways of knowing, neuroarts advances knowledge of how the arts and aesthetic experiences shape the brain, body, and behavior—and how this knowledge can be applied to improve health, well-being, and complex societal outcomes.

Some stakeholders question the boundaries of these individual interdisciplinary fields and whether fields such as neuroarchitecture encompass interior design, construction, or urban planning. Recognizing the complexity and breadth of research at the intersection of neuroscience, health, and the built environment, this ***Giving Smarter Guide*** **adopts neurospatial design as the preferred term because it emphasizes the central role of neurological and physiological data while encompassing a broader set of perspectives across neuroscience and design**. However, terminology is likely to evolve as the field expands and matures.

Figure 8 illustrates the overlap between these fields and their positions within the broader neurospatial design ecosystem. The figure also highlights several approaches originating in neuroscience and design that offer unique insights into the intersection of neuroscience, health, and the built environment (defined in Appendix A).

Figure 8: Snapshot of Neuroscience and Design Approaches Encompassed in Neurospatial Design



Source: Milken Institute (2026)

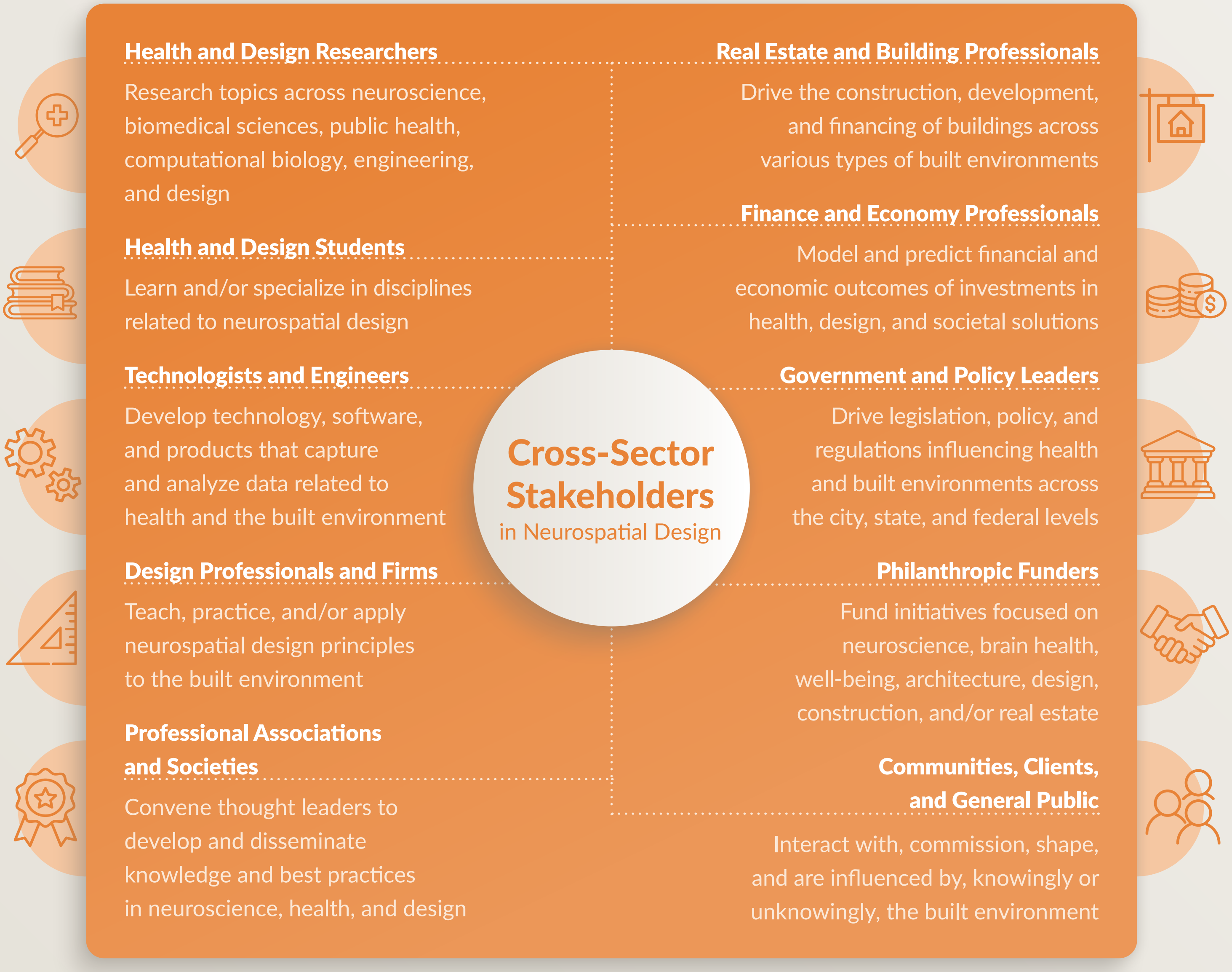
While professionals often specialize in a single approach, neurospatial design encourages combining these approaches. For example, professionals can draw on both cognitive neuroscience and evidence-based design to apply neurological and physiological insights into how the brain perceives, navigates, and learns spaces and thereby shape environments to optimize health.

The promise of neurospatial design lies in the ability to combine and apply insights across these fields and others, such as public health and engineering, to transform individual and community health through the built environment.

Cross-Sector Stakeholders Integral to Neurospatial Design

While neurospatial design is rooted in neuroscience and design professions, fully establishing it as an interdisciplinary ecosystem to improve human health will require integrating additional perspectives and expertise across sectors, industries, and society. **Figure 9** emphasizes the key cross-sector stakeholders crucial for the development, adoption, and realization of neurospatial design's impact on communities.

Figure 9: Key Cross-Sector Stakeholders Critical to Neurospatial Design



Source: Milken Institute (2026)

Efforts to integrate these cross-sector stakeholders are taking shape. The Building Brains Coalition, launched in 2025, brings together professionals in the built environment and experts in core scientific disciplines—neuroscience, psychology, public health, and climate science—to reimagine spaces for brain health. Established by the global architecture and design firm HKS, in partnership with The University of Texas at Dallas Center for Brain Health, Brain Capital Alliance, Rice University's Baker Institute, and the Center for Advanced Design Research and Evaluation (CADRE), the coalition aims to realize cross-sector solutions, such as brain-healthy cities, workplaces, and educational environments. These cross-sector efforts are crucial to elevating conversations about brain health and the built environment and advancing practical solutions that apply neuroscience research and design expertise to address targeted challenges across industries.

The Building Brains Coalition has grown to include public, private, and nonprofit organizations, such as:

- American Heart Association
- American Cancer Society
- City of Dallas
- International Interior Design Association (IIDA)
- AARP
- Jones Lang LaSalle (JLL)
- International WELL Building Institute

How Neurospatial Design Works

The following sections outline how neurospatial design works in practice by highlighting core methodologies, design features known to influence brain health and physiology, and considerations for implementation for societal impact.

Core Research Methodologies to Measure the Physiological Impact of Neurospatial Design

Neurospatial design relies on neurological and physiological data gathered through a range of well-established research methodologies that examine how the brain responds to the built environment (described in **Table 1**). Integrating these and other physiological measures rigorously into research and practice is both a necessity and an ongoing challenge to ensure that spaces have a positive impact on health.

Table 1: Select Methodologies and Their Applications Within Neurospatial Design

METHODOLOGY *(listed alphabetically)*	**PURPOSE AND APPLICATION IN NEUROSPATIAL DESIGN**
Biomolecule Analysis	**Purpose:** Uses blood, saliva, or other samples to measure hormones linked to stress, sleep, or other characteristics **Application:** Provides a mechanistic evaluation of the built environment's impact on the brain and body
Electroencephalography (EEG)	**Purpose:** Records the brain's electrical activity to evaluate attention, stress, and emotional response in real time **Application:** Used to evaluate emotional and cognitive responses to different built environments or designs
Eye-Tracking	**Purpose:** Monitors eye movement patterns to understand visual attention, interest, and cognitive load **Application:** Allows for real-time data on occupants' visual engagement with different architectural and design elements
Functional Magnetic Resonance Imaging (fMRI)	**Purpose:** Records the activation of different brain regions by measuring blood oxygenation **Application:** Used to evaluate the impacts of different architectural and design approaches on aesthetic processing, spatial navigation, emotional regulation, and social engagement

Functional Near-Infrared Spectroscopy (fNIRS)	**Purpose:** Maps brain activity related to thought and decision-making by measuring blood oxygenation **Application:** Used to evaluate real-time brain activity and cognition in response to different architectural and design attributes
Galvanic Skin Response (GSR)	**Purpose:** Records changes in sweat gland activity to measure changes in stress level **Application:** Used to evaluate stress levels in response to changing architectural or design approaches
Heart Rate Variability (HRV)	**Purpose:** Records changes in heart rate as a measure of physiological stress or relaxation **Application:** May be integrated into wearable sensors to evaluate an individual's stress response to different architectural or design approaches in real time
Mobile Brain/Body Imaging (MoBI)	**Purpose:** Combines EEG with motion tracking to record real-time changes in attention, stress, and emotional load while engaging with a dynamic or immersive environment **Application:** MoBI has been used to study the real-time effects of visual perspective and changes to architecture and design on emotion

Source: Milken Institute (2026)

Insights from neurological and physiological research are essential for building the evidence base needed to integrate neurospatial design features into both new and existing spaces. **Despite momentum, further evidence, particularly from interdisciplinary research into neuroscience and design, will be required to support the equitable implementation of neurospatial design across building types, diverse populations, cultural contexts, and lived experiences.**

Challenge: Siloed Research and Funding Limit Neurospatial Design's Growth

In the late 1990s, neuroscience research established that the environment can induce cellular changes in the brain, sparking broad interest in how the built environment affects brain physiology. Research, including fundamental neuroscience, is critical for advancing the neurospatial design ecosystem; however, current research tends to remain siloed within either neuroscience or design fields. Funding priorities across organizations have further reinforced these silos by supporting discrete neuroscience or design hypotheses that hinder the interdisciplinary collaboration needed to unlock the full health and economic benefits of neurospatial design. Overcoming this challenge will require research and funding programs that prioritize interdisciplinary perspectives, including public health, economic, technological, and community experts, to generate meaningful data, ensure effective implementation, and position neurospatial design as an evidence-based, community-centered solution.

Evidence-Informed Design Features Associated with Neurospatial Design

The research methodologies presented in **Table 1** have enhanced understanding of how design features exert measurable impacts on human health, physiology, and experience. **Table 2** summarizes select design features, their known impacts on health, physiological evidence, and real-world application. It is important to emphasize that the applications are not directly related to the physiological evidence presented, and some examples do not demonstrate a rigorous focus on neurospatial design methods or outcomes. That discrepancy underscores the need for more robust, targeted research—reinforcing the importance of Priority 1 in advancing the neurospatial design ecosystem.

Table 2: Select Evidence-Informed Features Associated with Neurospatial Design

FEATURE (*listed alphabetically*)	IMPACT, PHYSIOLOGICAL EVIDENCE, AND APPLICATION
Acoustics	**Impact:** Evidence indicates that a space's acoustic conditions, particularly excessive, unwanted, or chronic noise exposure, can affect an individual's health, well-being, and experience. **Physiological Evidence**: Studies have found that moderate noise (55 dBA–70 dBA) has a range of physiological impacts, including increased heart rate; blood pressure; and levels of epinephrine, a stress hormone. Studies have also shown that moderate noise can positively affect creativity. A deeper understanding of the acoustic characteristics of built spaces will become increasingly important as neurodiversity grows and people live longer. **Application:** High-traffic spaces, such as transportation hubs, often provide dedicated areas with alternate acoustic conditions. Quiet rooms at San Francisco International Airport and sensory rooms at Gerald R. Ford International Airport provide travelers with spaces to regulate their exposure to noise and other stimuli.
Color	**Impact:** Color is a feature of spaces and built environments that may affect human emotion, mood, behavior, and well-being. **Physiological Evidence:** Studies using EEG and GSR suggest that certain colors may affect neurophysiological processes, including those underlying cognitive arousal. However, individual, social, and cultural differences, as well as methodological variation, may shape perception and the physiological evidence identified in color research. **Application:** Color is often used in pediatric settings to improve behavioral and mental health outcomes, as seen at the Sensory Well-being Hub at Lane Tech College Prep High School, where rooms can be customized for each child's sensory needs and preferences.

Curved Walls	**Impact:** Walls contribute to individuals' spatial navigation and have been shown to influence individuals' emotional and physiological responses to space. **Physiological Evidence:** Curved walls in architecture have been shown to foster positive emotions, boost creativity, and aid relaxation, as evidenced by lower heart rates. Methodologies, such as fMRI, have also been used to pinpoint brain regions involved in processing the aesthetic appeal of curved and linear spaces. **Application:** The Clifton Center for Medical Breakthroughs features a curved façade to maximize natural light and outdoor visibility, as well as gently curving hallways meant to reduce stress and improve wayfinding for employees and patients.
Exteriors	**Impact**: Building façades can exert a powerful effect on both occupants and passersby and are poised to play an increasingly important role amid rising urban density. **Physiological Evidence:** The shapes, materials, and architectural complexity of building exteriors influence how they are perceived and processed by the brain. Recent work measuring the physiological impact of building façades has shown that complex façades can be a source of visual stress, as indicated by fNIRS and elevated HRV. **Application:** The Guggenheim Museum Bilbao generates a striking visual effect by blending titanium shingles into a curving structure that evokes movement and fluidity.
Indoor Air Quality	**Impact:** While indoor air quality contributes to disease transmission, there is growing recognition that design supporting clean air also influences brain and physical health, cognitive function, and emotional stress. **Physiological Evidence:** Studies show that indoor air can be significantly more polluted than outdoor air, potentially affecting brain function and health. Indoor carbon dioxide levels can reach four to six times those outdoors, and elevated carbon dioxide and other contaminants are associated with higher blood pressure and other markers of physiological stress. **Application:** SoFi Stadium in Inglewood, California, is the first truly indoor-outdoor stadium; it maximizes air quality and flow by incorporating an array of openable roof panels that allow efficient air exchange.
Light	**Impact:** Light, whether natural or artificial, can profoundly affect physiology and influence core biological cycles such as circadian rhythm. Specific populations, such as neurodiverse individuals or those with neurological conditions such as migraines, can be especially sensitive to light. **Physiological Evidence:** Studies have shown that inappropriate artificial light can contribute to sleep disruptions and cardiovascular stress, as measured by melatonin levels in the blood and HRV, respectively, while natural light and circadian lighting systems can support physiological regulation, cognitive function, and healthy sleep patterns. **Application:** Given the impact of light on sleep cycles, sites like the John S. Dunn Behavioral Sciences Center have implemented natural and carefully developed artificial lighting to support a healthy circadian rhythm and patient recovery.

Materials	**Impact:** Materials, such as wood and natural textiles, can affect occupant comfort by shaping the tactile, acoustic, and visual experience of a space. New and emerging materials may further affect how occupants experience the built environment and represent a new area of discovery, research, and innovation. **Physiological Evidence:** Studies using EEG and biomarker analysis have found that the use of wood in building architecture and design can reduce stress, promote relaxation, and support memory among building occupants. **Application:** Mass timber is rapidly gaining popularity across building types for its multifaceted benefits as a sustainable wood composite. The Lauremont School Bayview Campus, designed by Farrow Partners, is one recent example of its use to create a warm, engaging learning environment.
Nature	**Impact:** Incorporating natural elements into built environments, such as views of nature, vegetation, and water features, has been shown to improve human health and well-being. **Physiological Evidence:** Studies measuring heart rate, GSR, EEG, and blood flow have found that exposure to nature imagery can accelerate recovery from a stressful event. This is important in workplace, residential, and health-care settings, where stress may be high, and exposure to natural features can have an outsized impact on cognitive function and overall health. **Application:** Parrott Creek's behavioral health facility in Oregon leverages views of nature, a layout designed for social interaction, and other design features meant to support individuals participating in their programs. Their redesigned facility, developed by Adre, emphasizes the positive effects of nature views and reinforces the project's commitment to land stewardship.
Patterns	**Impact:** Patterns in the built environment, such as stripes, can elicit visual interest or discomfort, and research is investigating how different individuals perceive these visual stimuli as appealing or stressful. **Physiological Evidence:** Patterns, notably those derived from natural forms, have been shown to support relaxation and recovery through physiological studies measuring eye-tracking, GSR, and EEG. Recent studies have further investigated and identified specific design elements, including exterior building features, that can induce visual stress. **Application:** Employers, including architecture firms, are particularly aware of the impact of patterns and their potential benefits. HKS' Asia Pacific headquarters in Singapore was optimized for employee well-being, leveraging features such as natural light, biophilic materials, and geometric patterns, to support employees' cognitive and brain health.

Thermal Comfort/ Temperature	**Impact:** Temperature and thermal comfort are important factors that influence an individual's experience of the built environment and can affect physiological, cognitive, and health outcomes. **Physiological Evidence:** Rising global temperatures will require increased attention to thermal comfort. Studies have shown that indoor air conditioning can measurably affect an individual's blood pressure, cognitive performance, and oxygen consumption. These findings translate to the workplace and educational environments, where EEG has been used to demonstrate the connection between indoor air temperature, focus, and employees' cognitive performance. **Application:** The Edge building in Amsterdam uses an innovative, energy-efficient heating and cooling strategy, combined with an array of nearly 30,000 occupancy, temperature, and humidity sensors, to carefully manage the building's climate and eliminate natural hot and cold spots. These features have earned The Edge the title of world's smartest building and generated high employee satisfaction scores among its occupants.

Source: Milken Institute (2026)

These design features are neither exhaustive nor exclusive to neurospatial design; rather, they represent some characteristics that have been shown to influence human physiology. The widespread recognition of these features highlights their potential to enhance aesthetics and promote positive health outcomes across various building types. Additional evidence for the impact of these and other features can be found in recent reviews at the intersection of health, architecture, and design.

Collectively, these features influence how individuals experience the "Neuroarchitectural Triad"—coherence, fascination, and hominess—within a space. Recognizing this complexity, Priority 1 addresses the need for interdisciplinary research to deepen understanding and support the integration of evidence into design decision-making, including how design features interact to influence health and well-being.

A cognitive framework called the aesthetic triad proposes that an individual's experience of the built environment is driven by their unique sensory perception, emotional processing, and personal knowledge and experience. Researchers are now using EEG, MRI, and other methods to apply that framework to explain how disparate spatial features influence the brain's response to an environment.

Challenges and Considerations for Implementing Neurospatial Design Across the Built Environment

The successful adoption of neurospatial design depends on robust, evidence-based insights that empower decision-makers to incorporate it into design processes across building types. Yet, in addition to the challenges to bridging neuroscience and design fields, several other challenges continue to limit its implementation and impact (see **Figure 10**).

Figure 10: Challenges in Implementing Neurospatial Design

CHALLENGES

Before Implementation

Lack of Shared Vocabulary Among Design Professionals

In 2024, more than 50,000 design professionals and 8,000 students were enrolled in design-related fields in the US. The absence of a shared vocabulary and specialized training in neurospatial design poses challenges to building awareness among design professionals. *Opportunities are discussed in Priority 4.*

Limited Availability of Real-World Data

Demonstrating the real-world benefits is critical to driving broader adoption of neurospatial design. Specialized research methods and data collection requirements complicate efforts to measure its impact outside controlled lab settings, limiting the availability of real-world data across building types and industries. *Opportunities are discussed in Priorities 1 and 3.*

Limited Evidence to Enable Implementation

Widespread integration of neurospatial design requires robust evidence that is tailored to the range of stakeholders and decision-makers. Gaps in interdisciplinary evidence remain a key barrier to fully embedding neurospatial design across building types and industry sectors. *Opportunities are discussed in Priority 1.*

Lack of Data on Economic Return on Investment

While neurospatial design can improve a space's or building's impact on individual and community health, data demonstrating its value when integrated into health-care, workplace, education, or residential settings is needed to drive adoption among industry leaders. *Opportunities are discussed in Priority 1.*

During and After Implementation

Lack of Time and Training for Integration of Evidence into Implementation

Approximately 75 percent of architecture firms have fewer than 10 employees, and individual designers often lack the time to locate, review, and incorporate emerging evidence into projects. Design training does not always teach professionals how to interpret and apply physiological data into practice. *Opportunities are discussed in Priority 3.*

Lack of Integration into Design Briefs, Budgets, and Workstreams

Current design briefs shape project workstreams but often fail to clearly define the time, budget, and desired outcomes needed to fully integrate neurospatial design principles. *Opportunities are discussed in Priority 3.*

Lack of Accountability for Impact and User Experience

Professionals designing and financing the built environment often fail to center impact and user experience in their decisions. Mechanisms to assess design impact, such as post-occupancy evaluations, are underused and rarely examine the neurological and physiological impacts of design, limiting accountability. *Opportunities are discussed in Priority 3.*

Source: Milken Institute (2026)

TECHNOLOGY AS A DRIVING FORCE IN NEUROSPATIAL DESIGN RESEARCH AND IMPLEMENTATION

Neurospatial design operates within a landscape of rapid technological and computational advances that enable the analysis of personal and physiological data collected from individuals—their bodies, behaviors, and brains. Together, these developments introduce a range of challenges related to the ethics, cost, rigor, reproducibility, and integrity of neurospatial design research (see **Figure 11**).

Figure 11: Technological Challenges Influence the Growth of Neurospatial Design Research

TECHNOLOGICAL COMPONENTS OF NEUROSPATIAL DESIGN RESEARCH

Devices and Technology | **Physiological Data** | **Computational Tools**

Despite technological advances in wearables/devices that measure physiological data, challenges around **access to raw data and interoperability** remain, limiting the scalability of neurospatial design research.

Reproducible research findings are essential for generating meaningful insights across building types. **Limited resources are dedicated to sharing neurospatial design research standards and protocols**.

Hurdles related to **data ownership, access, and intellectual property** pose a barrier to collaboration and should be addressed as neurospatial design expands across disciplines, geographic boundaries, and sectors.

Effective analysis of physiological data at the intersection of neuroscience, health, and design requires **integrating computational researchers into neurospatial design**.

The growing volume, complexity, and diversity of physiological data from neurospatial design research will **require greater access and funding for computational infrastructure** for storage, analysis, and interpretation.

As personally identifiable physiological data become more available, **appropriate safety and privacy protections** must be adopted to protect participants.

Source: Milken Institute (2026)

Applying Neurospatial Design to Address Evolving Needs Across the Built Environment

Neurospatial design is relevant at every stage of a building's life cycle. Renovation or remodeling of spaces offers a significant opportunity to implement neurospatial design, expanding its impact and enabling its use in buildings regardless of age or condition. The examples below explore select opportunities in residential, commercial office, health-care, and government spaces that can undergo periodic updates to accommodate changes in style, building code requirements, and maintenance needs.

RESIDENTIAL SPACES

Significant changes occur over the lifespan of a residential building in response to occupants' preferences and needs. While custom home construction offers high levels of control, it remains cost-prohibitive for most homeowners. As a result, declining rates of custom builds, rising home prices, and broader market shifts have increased interest in upgrading and renovating existing homes. With more than 147 million housing units in the US and renovation firms accounting for an estimated 56 percent of the residential construction market, this shift marks an opportunity for design firms, developers, and contractors to integrate neurospatial design into both new builds and renovations. In turn, educating real estate agents, homebuyers, and renters on the evidence behind design that promotes health, rest, and relaxation can further drive demand.

According to a recent study, annual spending on home improvements is projected to total $518 billion by the end of 2026, signaling a strong demand for renovations and an opportunity to infuse neurospatial design.

COMMERCIAL OFFICE SPACES

Shifts to remote and hybrid work during the COVID-19 pandemic significantly affected the construction, leasing, and sale of commercial office spaces. However, a shift back to in-person work will accelerate the development and use of these spaces in the coming years. Incorporating neurospatial design can increase employee productivity, satisfaction, retention, and health, thereby boosting profitability for employers and supporting long-term business strategy. Jones Lang LaSalle (JLL) predicts that workspaces designed with human interaction and neurodiversity in mind are more future-proof and represent better investments for companies and employers. Combined with the growing interest in healthy workplaces and brain health in the age of artificial intelligence (AI), neurospatial design is well positioned for widespread adoption in commercial office spaces.

Federal and state initiatives are calling for the conversion of commercial offices to residential use, offering an opportunity and financial incentive to implement neurospatial design in residential spaces, including affordable housing.

In the UK, Maggie's has centered design as part of its approach to cancer care. Working closely with architects and landscape designers, they have ensured each of their centers has a unique design, emphasizing features such as those listed in **Table 2**, to create calming, restorative environments that support patient treatment and recovery.

HEALTH-CARE SPACES

US spending on health-care construction reached a record $33.9 billion in 2024. Trends also suggest that spending on outpatient and specialty clinics will become increasingly important, providing an opportunity to leverage design to support healing and care of specific patient populations. While spending on new hospitals and clinics is expected to grow through 2030, renovations and remodels have become an efficient and popular way to update health-care infrastructure, enhance patient experience, and improve employee well-being. This is especially true in rural health-care settings, where funding constraints limit new construction. Design and renovation guided by neurospatial design can enhance patient outcomes, promote health equity, and improve community health.

MUNICIPAL AND GOVERNMENT SPACES

In 2024, state and local governments spent over $450 billion on infrastructure, including building construction.

State and local governments collectively own or lease more than 20 million square feet of commercial space, making them primary funders of infrastructure development in the US. Despite substantial spending, rising infrastructure, repair costs, and competing priorities such as investment in public health services have left many US cities and states facing considerable budget shortfalls. To tackle these challenges, governments must pursue innovative public development approaches. Neurospatial design offers a solution to this dilemma, ensuring that government spending on infrastructure projects also provides public health and economic returns. Programs such as the Mayor's Institute on City Design and Bloomberg Philanthropies city leadership initiatives provide local leaders with education and support to overcome infrastructure challenges in their communities.

> Momentum is building around neurospatial design, but significant challenges remain to widespread adoption. The above insights underscore the pivotal role that philanthropy can play in catalyzing initiatives that bridge neuroscience, health, and the built environment. Strategic philanthropic investment, paired with cross-sector leadership and collaboration, will be essential to scaling implementation and realizing neurospatial design's potential to transform community health and well-being.

Key Priorities for Philanthropy and Cross-Sector Investment to Advance Neurospatial Design

As described above, neurospatial design is a complex, interdisciplinary ecosystem that encompasses and integrates diverse disciplines, fields, methods, and approaches. SPARC has identified four key cross-sector priorities to advance neurospatial design as a transformative influence in the built environment, with the goal of improving human health and well-being (see **Figure 4**). Each priority highlights meaningful opportunities and practical approaches for philanthropic capital to catalyze momentum and cross-sector investment. While philanthropy is well positioned to drive this growth, realizing the vision for neurospatial design at scale will require sustained support and collaboration across multiple sectors, including those already engaged and others emerging as essential partners.

Snapshot of Current Stakeholders Advancing Neurospatial Design

Neurospatial design draws on expertise and perspectives from a range of stakeholders, as shown in **Figure 9**. The geographic distribution of more than 580 stakeholders working at the intersection of neuroscience, health, and the built environment was analyzed, identifying the US, Europe, and Asia as emerging neurospatial design hubs. These stakeholders span five sectors: academia, nonprofit, industry, government, and philanthropy, each encompassing a diverse range of actors. **Figure 12** provides an overview of each sector and highlights its main contributions to the ecosystem.

Figure 12: Sectors and Stakeholders Shaping the Future of Neurospatial Design

Source: Milken Institute (2026)

Academia, nonprofit, and industry stakeholders are crucial to building the neurospatial design ecosystem by generating actionable evidence, fostering a skilled workforce, and providing forums to drive implementation and awareness. For example, ANFA has remained an important hub, fostering community among academic, industry, and nonprofit researchers and professionals across neuroscience and design. Through biennial convenings of its global members, the professional society brings together diverse perspectives.

Government and philanthropy are crucial to funding the growth of the neurospatial design ecosystem. Government support has largely focused on research and education in neuroscience and the biomedical sciences, with limited investment in interdisciplinary initiatives at the intersection of neuroscience, health, and the built environment. Across federal, state, and local levels, public funding also supports implementation and the infrastructure needed for societies to function and thrive. Philanthropy has assumed a more active role in expanding neuroscience beyond the lab by funding initiatives in research, design, and education that are not traditionally supported by government. However, siloed investments remain a challenge, with few initiatives explicitly dedicated to integrating neuroscience, health, and the built environment.

Government investments underscore the need to actively engage communities—as taxpayers and integral stakeholders—in neurospatial design research and implementation to address local challenges, maximize the impact of public funds, and improve health and economic outcomes.

Figure 13 highlights select stakeholders from academia, nonprofit, industry, government, and philanthropy that are bridging neuroscience, health, and the built environment and advancing the four key priorities identified for the neurospatial design ecosystem.

Figure 13: Select Stakeholders Engaging in Key Priorities to Advance Neurospatial Design

ORGANIZATION	**PRIORITY 1:** Generate Actionable Evidence to Enable Implementation of Neurospatial Design	**PRIORITY 2:** Build a Robust, Diverse Neurospatial Design Talent Pipeline	**PRIORITY 3:** Fuel Integration of Neurospatial Design Across Buildings and Industry Sectors	**PRIORITY 4:** Expand Neurospatial Design Awareness Across Sectors and Society
ACADEMIA				
Georgia Institute of Technology	●	○	●	
Johns Hopkins University	●	○	●	●
University College London	●	○	●	○
University of Pennsylvania	●	○		○
Università Iuav di Venezia		●		

● Indicates a main priority of the organization ○ Indicates some level of activity in this priority area

NONPROFIT				
Academy of Neuroscience for Architecture (ANFA)	●	●	○	●
American Institute of Architects (AIA)		●		●
American Society of Interior Designers (ASID)		●		●
Building Brains Coalition			●	●
Humanise	○			●
Urban Land Institute (ULI)		●	○	●
INDUSTRY				
Autodesk	○	○	●	
HKS	●		●	
International WELL Building Institute	●		●	○
JLL	●		●	
Perkins&Will	●		●	
GOVERNMENT				
Australian Research Council	●			
European Research Council	●			
Japan Society for the Promotion of Science	●			
National Institutes of Health	●			
Research Institutes of Sweden	●	○		
Singapore Ministry of Health		○	○	

● Indicates a main priority of the organization ○ Indicates some level of activity in this priority area

PHILANTHROPY				
Allen Institute	○			○
Architects Foundation		●	○	○
Dana Foundation	○			○
Driehaus Foundation				○
Norman Foster Foundation	○	●	○	
Viñoly Foundation	●	●		○

● Indicates a main priority of the organization ○ Indicates some level of activity in this priority area

Source: Milken Institute (2026)

The four priorities present significant opportunities to reimagine relationships among existing partners while engaging new partners across sectors. Philanthropy is primed to accelerate progress in neurospatial design through strategic investment to ensure that spaces benefit the health and well-being of individuals, communities, and society. The following sections describe each priority, including current activities of key stakeholders, opportunities and approaches for philanthropic organizations, and next steps to guide cross-sector engagement to advance the neurospatial design ecosystem.

PRIORITY 1

Generate Actionable Evidence to Enable Implementation of Neurospatial Design

While neurospatial design is grounded in interdisciplinary evidence, current research efforts remain siloed across disciplines, limiting cross-sector impact and scalability. Prioritizing coordinated evidence generation is essential to building the foundational knowledge required to advance the ecosystem. This section provides deeper context on the stakeholders involved in evidence generation, highlights opportunities to address current barriers to generating the evidence, and identifies cross-sector stakeholders needed to support these efforts.

KEY STAKEHOLDERS ADVANCING AND FUNDING PRIORITY 1

Academia, industry, government, and philanthropy are the main sectors currently supporting evidence generation at the intersection of neuroscience, health, and the built environment. Select initiatives and funding trends are outlined below.

Academia Advances Neurospatial Design Research

Academic organizations play a critical role in advancing neurospatial design by conducting research, generating foundational knowledge to fuel innovation, and translating findings into practice. Given its interdisciplinary nature, collaboration within and across universities can bring new perspectives, expertise, and approaches, such as those presented in Appendix A. Examples of academic organizations advancing neurospatial design research are highlighted below. *This list is not exhaustive, and additional academic researchers and their respective organizations can be found on the ANFA website*.

Living labs are real-world, user-centered spaces that collect data on occupants as part of their daily operation. They are increasingly used in neuroscience and design research, offering an alternative to traditional laboratory research by providing real-world environments and experiences in which to collect data.

- **Georgia Institute of Technology** is a leader in human-centered design research with a focus on the intersection of the built environment and human health. The School of Industrial Design and the School of Architecture each work to understand how humans interact with the built environment. The university's use of living labs and interdisciplinary research centers, such as SimTigrate Design Center, further distinguishes it as a leader with significant potential.
- **Johns Hopkins University** is a global leader in the field of neuroarts. Established in 2010, the university's International Arts + Mind Lab in The Center for Applied Neuroaesthetics advances multidisciplinary research and practice in neuroarts and neuroaesthetics through collaborations with experts in the sciences, the arts, architecture, design, public health, and technology. The Lab works to deepen understanding of the built environment and the role of the arts and aesthetics in supporting brain health and wellness, while fostering research, education, and field-building across intersecting disciplines.
- **Mayo Clinic**, in partnership with the real estate wellness firm Delos, launched the Well Living Lab in 2015. Established after Delos raised $20 million in equity to fund its research and expansion initiatives, the Lab is housed at Mayo Clinic and is a source of rigorous, peer-reviewed scientific data on the built environment's role in human health and well-being.
- **University College London (UCL)** is home to established research and educational programs in both neuroscience and the built environment. In 2024, UCL partnered with the Research Institutes of Sweden (RISE), Sweden's state-owned research institute, to found the International Centre for NeuroArchitecture and NeuroDesign. While the Centre is largely funded by RISE and UCL, its start-up was supported in part through a $200,000 grant from the Swedish government. The Centre's research areas include biophilic design, virtual and extended reality, green infrastructure, health-care facilities, urban planning, and enriched environments.

- **The University of Pennsylvania's** Penn Center for Neuroaesthetics, established in 2018, aims to advance basic and applied neuroaesthetics research, educate the next generation of neuroaesthetic researchers, and raise awareness of the field among researchers and the public. The Center's focus areas include the built environment and wellness, studying how design features influence experience and psychological dimensions, such as fascination.

Industry Engages In and Funds Neurospatial Design Research

According to AIA's 2024 Firm Survey Report, 76 percent of architecture firms reported engaging in practice-relevant research, up from 66 percent in 2017. While each firm's definition of research varies, they often produce evidence to inform workflows, future projects, and competitive advantage. Several firms that are members of the Building Brains Coalition are conducting studies at the intersection of neuroscience, health, and the built environment.

- **HKS** is a leading firm driving innovation in architecture and design. In partnership with the Center for Brain Health, the firm published a study on the roles of place, process, policy, and technology in a brain-healthy workplace. HKS has also used its own offices as living labs to study, implement, and demonstrate the real-world impact of design on employee performance and well-being. In 2025, HKS launched Project WHY, a research initiative crowdsourcing data on design features that instill a sense of awe, belonging, and creativity to better understand how design shapes the human experience.
- **JLL,** in partnership with Emotiv, launched a series of studies on workplace design in 2022 as a part of its future of work initiative. The studies, grounded in neuroscience, collect data on brain activity, productivity, and emotion to inform how different employees respond to design.
- **Perkins&Will** is a leader in research and brain-healthy design. The firm studies and implements evidence-based strategies, including neuroinclusive and trauma-informed design approaches. Its Public Repository to Engage Community and Enhance Design Equity (PRECEDE) pilot is one recent initiative that aggregates public health data from the Centers for Disease Control and Prevention, the Environmental Protection Agency, and the US Census Bureau to enable architects, designers, and planners to equitably implement health-informed design. PRECEDE was made public through a $30,000 American Society of Interior Designers (ASID) Foundation Transform Grant.

Expanding neurospatial design research across design firms and industry sectors—including workplaces, education, and health-care settings—could significantly advance community and public health and reinforce the private sector's responsibility to prioritize human health and well-being through design and the built environment.

Government Agencies as Funders of Neurospatial Design Research

Government agencies are key funding sources for research related to neurospatial design, including neuroscience, biomedical science, engineering, and public health. In the US, these fields are typically funded by specific institutes or centers within the National Institutes of Health (NIH) rather than a dedicated agency. To evaluate government support, funding data for relevant projects across select agencies in North America, Europe, Asia, and Australia were analyzed. Because federal funding for this interdisciplinary topic remains siloed, accessing and accurately determining the level of government funding in this area remains challenging.

Table 3 summarizes 2024 funding estimates for selected agencies. Government funding worldwide supported more than $28 million in research related to neurospatial design, led by NIH. These projects accounted for less than 1 percent of each agency's total budget, and many projects likely allocated only a small share of resources to work directly relevant to neurospatial design. Compared to NIH, global government investment was more limited; however, other regions often placed greater emphasis on materials, sustainability, and culture- or community-specific needs. Overall, limited government funding for neurospatial design highlights a significant opportunity for US agencies, such as the Department of Veterans Affairs and the Department of Defense, as well as governments worldwide, to expand support for research that enhances residents' health and well-being.

Table 3: Funding for Research on Health and the Built Environment for Select Government Funding Agencies in 2024

	FUNDING FOR RESEARCH RELATED TO NEUROSPATIAL DESIGN (USD)	ANNUAL BUDGET (USD)	PERCENTAGE OF ANNUAL BUDGET
National Institutes of Health	$17,762,414	$32,891,000,000	0.05%
European Research Council	$5,744,000	$3,100,000,000	0.19%
Australian Research Council	$3,961,000	$673,000,000	0.59%
Canadian Institutes of Health Research	$1,047,000	$926,000,000	0.11%
Japan Society for the Promotion of Science	$175,500	$1,900,000,000	0.01%

Source: Milken Institute (2026); utilizing data from the NIH RePORTER database, *the* European Research Council dashboard of funded projects and evaluated proposals, Australian Research Council Data Portal, Canadian Institutes of Health Research Funding Decisions Database, *and the* Japan Society for the Promotion of Science KAKEN database

Philanthropic Organizations Support Evidence Generation

Philanthropy plays a crucial yet often underappreciated role in supporting evidence-building for neurospatial design. Unlike government funders, philanthropic organizations have greater flexibility to support interdisciplinary research at the intersection of neuroscience, health, and the built environment through diverse funding models. However, philanthropic investments tend to concentrate on specific areas, funding subsets of the neurospatial design ecosystem. **Table 4** provides a snapshot of select philanthropic funders supporting evidence generation across these areas.

Table 4: Select Philanthropic Funders Supporting Research Related to Neurospatial Design

ORGANIZATION	RECENT INITIATIVES RELATED TO NEUROSPATIAL DESIGN
Allen Institute	The Allen Institute launched its first Impact Partnership with Thomas Heatherwick's Humanise campaign. The partnership released an evidence review highlighting the relationship between building exteriors and human health.
The Gambrell Foundation	"In Awe of Charlotte," in partnership with Gehl, is a research initiative that explores how the built environment shapes emotional experiences (awe, belonging, safety, and connection) and how these influence well-being and community life. In 2025, the Foundation supported over **$5.2 million** in research and other work related to its mission.
The Kavli Foundation	In partnership with the National Science Foundation, Kavli's Neurobiology and Changing Ecosystems program provides **$1 million over three years** to support interdisciplinary research focused on exploring how the nervous system responds and adapts to environmental changes.
Norman Foster Foundation	Focused on projects that explore the intersection of technology and the built environment, the Norman Foster Foundation supports research and prototypes that advance innovative materials and solutions in architecture and design.
Simons Foundation	The Simons Collaboration on Ecological Neuroscience, announced in 2025, is a 10-year initiative meant to establish the field of ecological neuroscience to understand how the brain interprets and responds to its environment. The **$80 million effort** brings together an international team of interdisciplinary researchers.
SOM Foundation	The SOM Foundation awards its Research Prize annually to support faculty-led, interdisciplinary research teams. In 2025, the Foundation awarded **two $30,000 Research Prizes** focused on spatial layout and mobility.
Viñoly Foundation	The Viñoly Foundation seeks to improve public life by supporting work in architecture, urban planning, education, the arts, and science, including how early interactions with the built environment shape cognitive development. In 2025, the Foundation announced its establishment of a Developmental Neuroaesthetics Gift Fund at the University of Pennsylvania.

Source: Milken Institute (2026)

While these four sectors—academia, industry, government, and philanthropy—actively contribute to evidence generation in disciplines related to neurospatial design, significant additional effort is needed to generate actionable evidence for implementation. **Figure 14** summarizes the opportunities and approaches to advance Priority 1. Although these approaches are framed around Priority 1, many also support progress across all four priorities.

Figure 14: Opportunities and Approaches to Advance Priority 1

OPPORTUNITY AREA	APPROACH	PRIORITY 1: Generate Actionable Evidence to Enable Implementation of Neurospatial Design	PRIORITY 2	PRIORITY 3	PRIORITY 4
Opportunity 1.1 Build an Interdisciplinary Research Community to Support Neurospatial Design	1.1.1: Advance Interdisciplinary Research in Neurospatial Design	●	●	●	
	1.1.2: Establish an Online Platform for Interdisciplinary Collaboration	●	●		●
Opportunity 1.2 Collect Real-World Evidence for Neurospatial Design	1.2.1: Expand Real-World Data Through Living Lab Approaches	●		●	
	1.2.2: Support Industry-Specific Pilot Projects in Neurospatial Design	●		●	●
	1.2.3: Build Evidence to Demonstrate Economic and Community Health Benefits of Neurospatial Design	●		●	●
Opportunity 1.3 Invest in Neurospatial Design Research Infrastructure	1.3.1: Develop a Centralized Research Repository for Neurospatial Design	●	●		●
	1.3.2: Establish Academic Research Hubs for Neurospatial Design	●	●	●	●

Source: Milken Institute (2026)

OPPORTUNITY 1.1: BUILD AN INTERDISCIPLINARY RESEARCH COMMUNITY TO SUPPORT NEUROSPATIAL DESIGN

A robust evidence base is needed to widely implement neurospatial design. Interdisciplinary research is constrained by siloed expertise and funding priorities, yet it is vital to enabling the application of neurospatial design to spaces. Opportunities for philanthropy and cross-sector stakeholders to collaboratively address this challenge are outlined below.

Approach 1.1.1: Advance Interdisciplinary Research in Neurospatial Design

Interdisciplinary neurospatial design research has remained dispersed across departments, universities, and sectors. This fragmentation limits the development of interdisciplinary research methods and standards, slows the implementation of findings, and restricts the potential to scale neurospatial design approaches across sectors. Launching a funding program to expand interdisciplinary research in the field is a key opportunity. **Philanthropy, with its flexibility and capacity for innovation, can catalyze critical interdisciplinary research in new areas of study through dedicated neurospatial design research programs that bring together neuroscience and design professionals to explore impactful research questions.** Topics of interest include the following:

- Exploring how emerging materials can be applied in architecture and design to support and improve brain health across building types
- Advancing neuroinclusive design in educational and workplace settings to better understand how environments contribute to student success
- Identifying and applying new biomarkers in neurospatial design research to develop more effective approaches for studying brain health
- Developing new technologies and methodologies to measure the impact of neurospatial design and promote the broader collection of physiological data

Regardless of focus, the funding program should require interdisciplinary teams with expertise spanning neuroscience, design, engineering, computational biology, and public health. By incorporating matchmaking initiatives and collaboration grants to facilitate partnerships, the program could deepen cross-disciplinary research between academia and industry, as well as among experts in technology, economics, and real estate, to broaden perspectives and develop impactful, community-led solutions.

Approach 1.1.2: Establish an Online Platform for Interdisciplinary Collaboration

Neurospatial design research has traditionally faced challenges due to limited collaboration and communication among its diverse fields and sectors. Developing a platform that enables researchers to interact virtually will be vital for advancing the neurospatial design ecosystem. One potential approach is to create a digital platform or leverage an existing network to enable neuroscience researchers, design researchers, architects, interior designers, and other individuals working within the ecosystem to engage online. With such a professional network, investigators could establish mentorship and collaboration networks. Core features could include an investigator database, discussion forums, and collaboration and mentorship matchmaking tools. **As a neutral third-party convener, philanthropy is well suited to provide seed funding to support efforts to formalize this network and attract additional partners to scale for sustainability.**

OPPORTUNITY 1.2: COLLECT REAL-WORLD EVIDENCE FOR NEUROSPATIAL DESIGN

To date, most evidence on the relationship between the built environment and physiology has been collected in controlled labs and settings. There is a clear need for evidence demonstrating the real-world impact of neurospatial design through living labs, pilot projects, and studies of human and economic outcomes.

Approach 1.2.1: Expand Real-World Data Through Living Lab Approaches

Living labs have emerged as promising tools for evaluating the impact of neurospatial design in real-world settings. They enable researchers and practitioners to implement and test design and architectural solutions while collecting physiological, behavioral, and environmental data that may link design choices to health and behavioral outcomes. Despite their value, living labs remain underutilized because they require substantial financial investment and specialized expertise to fully leverage their research benefits.

Because of its flexibility and capacity to scale innovative technologies, philanthropic capital is well positioned to expand neurospatial design living labs across academia and industry. These labs would integrate advanced neuroscience methods and emerging technologies, such as extended reality and AI, to assess the physiological impact of design features across diverse individuals, building types, and social contexts. Living labs can also be developed to directly study community needs and cocreate solutions within community-centered spaces, driving local impact.

Long-Term, High-Impact Actions

Philanthropy can partner with design firms, academic labs, and communities to establish living labs and/or pilot projects to collect real-world data on the impact of neurospatial design on:

- Creating neuroinclusive learning spaces to support student well-being
- Enhancing patient outcomes in health-care settings
- Supporting employee health, productivity, and the future of work
- Advancing entertainment experiences as vehicles for healing
- Reinforcing wellness and hospitality settings as spaces for restoration

Approach 1.2.2: Support Industry-Specific Pilot Projects in Neurospatial Design

Widespread adoption of neurospatial design will rely on demonstrating its impact and value across building types and industry sectors. Pilot projects in built environments that integrate iterative research, data collection, and user feedback into the design process are an effective way to assess impact and influence future design decisions. **Philanthropy is well positioned to support these efforts by funding pilot projects that generate actionable, real-world evidence.** Pilot projects would encourage design firms, industry leaders, and academic researchers to implement neurospatial design in real-world projects and measure their impact on health, experience, and financial returns. By engaging real estate developers and other crucial stakeholders, such as community members, philanthropy could help launch and scale pilots to strengthen the evidence base for neurospatial design, address community challenges, and catalyze additional private-sector investment in both research and implementation.

Approach 1.2.3: Build Evidence to Demonstrate Economic and Community Health Benefits of Neurospatial Design

Demonstrating the value of neurospatial design requires a clear understanding of its financial and human capital benefits. However, few studies have directly examined these impacts or synthesized findings across disciplines, underscoring a gap in data on the economic and health benefits of investing in neurospatial design. **Traditional funding mechanisms often operate on short time horizons, but philanthropy can provide the sustained support required to conduct longitudinal research that builds a comprehensive, compelling financial and health case for neurospatial design.** Dedicated funding for either (1) integrating economic analysis into interdisciplinary neurospatial design research or (2) conducting targeted studies in the economic and community health benefits of neurospatial design could provide valuable evidence to support broader implementation across diverse spaces, buildings, and sectors.

OPPORTUNITY 1.3: INVEST IN NEUROSPATIAL DESIGN RESEARCH INFRASTRUCTURE

The interdisciplinary nature of neurospatial design research demands specialized and centralized resources to bridge disciplines and siloes. Advancing initiatives that connect and contribute to centralized infrastructure, such as repositories and research hubs, can benefit researchers throughout the neurospatial design ecosystem.

Approach 1.3.1: Develop a Centralized Research Repository for Neurospatial Design

One step toward harmonizing the broad, interdisciplinary neurospatial design ecosystem is establishment of a centralized repository for resources, research standards, findings, and discussion to share practical guidance on experimental design, methods, data management, and analysis. Such a repository would foster scientific rigor, produce more consistent research, and allow greater comparability of evidence across disciplines within the ecosystem. **Traditional funding bodies often overlook shared research infrastructure; therefore, philanthropy can play a crucial role by investing in the formal centralization of evidence and resources needed to advance neurospatial design research and implementation.** A repository could be combined with community-building (Approach 1.1.2) and house professional development courses (Approach 2.2.1) to establish a centralized hub for neurospatial design research.

Near-Term, High-Impact Actions

Philanthropic capital could support ongoing updates to centralized resource repositories, such as the Neuroarts Resource Center, which can potentially serve as a hub for neurospatial design evidence.

Approach 1.3.2: Establish Academic Research Hubs for Neurospatial Design

The absence of dedicated neurospatial design hubs capable of supporting interdisciplinary research remains a significant barrier to coordination, unification, and implementation. Establishing academic research hubs at institutions with demonstrated expertise in neuroscience, interior design, architecture, and other relevant disciplines could provide critical infrastructure for the ecosystem. By leveraging the unique strengths and composition of each host institution, such as medical and business schools, the hubs could specialize in a diverse range of research topics. Together, these hubs could serve as a larger network for developing partnerships and collaboration among a range of stakeholders, such as design firms, state and local governments, and community members, to leverage neurospatial design hubs as centers for community-led research.

Philanthropy has been instrumental in advancing hubs of neuroscience, architecture, and interdisciplinary research, demonstrating its readiness to support neurospatial design hubs. Once established, these hubs could evolve to encompass interdisciplinary research programs, living labs, fellowships, and rotational programs, thereby becoming critical infrastructure for holistically advancing the neurospatial design research ecosystem.

Long-Term, High-Impact Actions

Philanthropic organizations with shared or complementary interests, such as neuroscience, architecture, engineering, public health, and social-impact research, are poised to partner with interested academic institutions to pilot an academic hub for neurospatial design.

PRIORITY 2

Build a Robust, Diverse Neurospatial Design Talent Pipeline

The growth and impact of neurospatial design will require a diverse, interdisciplinary workforce. However, education and training remain largely siloed between neuroscience and design, as in research, limiting opportunities for early exposure, real-world training, and professional development. This section examines the stakeholders involved in education and training and offers actionable approaches to build a robust, sustainable neurospatial design workforce.

KEY STAKEHOLDERS ADVANCING AND FUNDING PRIORITY 2

While many stakeholders, including industry, play a role in educating and training the neurospatial design workforce, this section focuses on academic institutions and philanthropic organizations.

Academic Institutions Are the Primary Educators in Neuroscience and Design

Academic institutions are the primary providers of professional education and research exposure at the intersection of neuroscience, health, and the built environment. **Figure 15** provides an overview of the common pathways to a career within neurospatial design research and/or practice. These varied pathways result in differing levels of exposure to neurospatial design principles, research, and training.

Figure 15: Common Pathways for Education and Training of Neurospatial Design Professionals

Source: Milken Institute (2026)

Regardless of their path, many neurospatial design professionals trace their interest to personal experience or self-directed exploration because coursework and degree programs on the topic remain limited at both the undergraduate and graduate levels. One of the few dedicated programs at the intersection of neuroscience, health, and the built environment is the Master of Neuroscience Applied to Architectural Design at Università Iuav di Venezia, which prepares architects, designers, psychologists, neuroscientists, and others to create projects that enhance the human experience of the built environment. Because formal coursework typically focuses less on interdisciplinary topics, design professionals often pursue additional education to gain subject-matter expertise and research methodologies—whether through advanced degrees, individual courses, certificates, or continuing education units (CEUs). Select education and training programs related to neurospatial design are highlighted in Appendix B.

Nonprofit and Philanthropic Organizations Support Education and Career Development

While philanthropic organizations fund research as described in Priority 1, several also support education and career development opportunities in neuroscience or design, reflecting the close relationships among research, training, and education (see **Table 5**). There is limited investment from biomedical funders focused specifically on education at the intersection of neuroscience, biomedical sciences, and design, so reimagining training programs represents a powerful opportunity to drive long-term change for neurospatial design.

Table 5: Select Nonprofit and Philanthropic Organizations Supporting Education and Training

ORGANIZATION	RECENT INITIATIVES RELATED TO EDUCATION AND TRAINING
ANFA	The John Paul Eberhard Fellowship supports master's students, PhD students, and postdoctoral researchers working at the intersection of neuroscience and architecture, with the goal of preparing them to advance the neurospatial design knowledge base.
Architects Foundation	The Architects Foundation provides several educational scholarships for undergraduate and graduate architecture students, as well as early-career professionals. The AIA Emerging Professionals Grant provides complementary conference registration to early-career professionals who bring critical perspectives on business, workplace culture, equity, leadership, design, technology, and climate action.
ASID Foundation	The ASID Foundation provides several educational scholarships for undergraduate and graduate interior design students, as well as early-career professionals: • The Joel Polsky Academic Achievement Award recognizes undergraduate or graduate interior design research projects on select topics, including wellness and behavioral science. • The Legacy Scholarship for Graduate Students is awarded to graduate students in recognition of work that advances the field of interior design toward user health and well-being.
Norman Foster Foundation	The Norman Foster Foundation, in partnership with the Royal Institute of British Architects, annually awards a £7,000 scholarship to students pursuing international research. Within the Foundation, the Norman Foster Institute offers postgraduate education in topics such as sustainable city design.

Source: Milken Institute (2026)

Philanthropy, in partnership with other sectors, can lead educational and professional development initiatives in neurospatial design to build a focused and sustainable workforce. Moreover, philanthropic organizations aligned with broader biomedical research priorities—such as initiatives supporting science, technology, engineering, arts, and mathematics (STEAM) education; early-career investigators; and workforce diversity—represent strong potential partners. **Figure 16** highlights opportunities and approaches for philanthropy to help advance this priority across the current neurospatial design education and workforce pipeline.

Figure 16: Opportunities and Approaches to Advance Priority 2

OPPORTUNITY AREA	APPROACH	PRIORITY 1	PRIORITY 2: Build a Robust, Diverse Neurospatial Design Talent Pipeline	PRIORITY 3	PRIORITY 4
Opportunity 2.1 Expand Education and Training in Neurospatial Design Principles and Research	2.1.1: Integrate Research and Education Through Neurospatial Design Fellowships	●	●		
	2.1.2: Support Interdisciplinary Educational Curricula for Graduate Students		●		●
	2.1.3: Develop Neurospatial Design Courses for Undergraduate Students		●		●
	2.1.4: Support Neurospatial Design in Education for K–12 Students		●		●
Opportunity 2.2 Enhance Continuing Education for Neurospatial Design Professionals	2.2.1: Establish Continuing Education Programs for Neurospatial Design Professionals		●		●
	2.2.2: Foster Education and Experience Through Cross-Sector Rotational Programs	●	●	●	●

Source: Milken Institute (2026)

OPPORTUNITY 2.1: EXPAND EDUCATION AND TRAINING IN NEUROSPATIAL DESIGN PRINCIPLES AND RESEARCH

The lack of dedicated educational programs grounded in the core principles of neurospatial design has inhibited the growth of a robust workforce. Addressing this gap will require interdisciplinary curricula that expose students to relevant research and practices. Philanthropic funding for such educational initiatives could expand access, strengthen talent pipelines, and support the development of researchers and practitioners working in the ecosystem.

Approach 2.1.1: Integrate Research and Education Through Neurospatial Design Fellowships

Graduate and professional training in neurospatial design research and practice are essential, but the infrastructure and resources necessary to support a growing workforce remain limited. Fellowships are a common tool for increasing access to resources and training across the life sciences, architecture, and design fields, and could support costs for:

- Fellows' salaries to create protected time for trainees engaged in neurospatial design research
- Research supplies to collect and analyze physiological data related to the built environment
- Professional development, including conferences, society memberships, and industry internships

Philanthropy is well poised to play a pivotal role in growing the neurospatial design workforce by funding fellowships that support undergraduates, graduate students, postdoctoral fellows, and early-career individuals. These fellowships would attract new researchers to the ecosystem and further strengthen the talent pipeline by supporting professionals seeking advanced training at the intersection of neuroscience, architecture, and design.

Approach 2.1.2: Support Interdisciplinary Educational Curricula for Graduate Students

Graduate-level education at institutions for neurospatial design professionals currently does not offer curricula that integrate interdisciplinary perspectives, such as neuroscience, architecture, interior design, and data science. Courses that offer conceptual and technical education could have a transformative impact on the workforce at the intersection of neuroscience, health, and the built environment, such as:

- An introductory course for **biomedical science graduate students** focused on environment, brain function, and physiology to increase awareness of design's impact on brain, mental, and physical health
- An advanced course for **design graduate students** focused on physiological research methods to prepare them to design, conduct, and interpret studies within the built environment
- A studio course for **design graduate students** to provide greater access to hands-on experience with relevant technologies and design techniques in neurospatial design

Philanthropy has a strong history of supporting innovative education and research within academic institutions and can help develop, pilot, and scale neurospatial design courses across the higher education landscape. These initiatives can also elevate neurospatial design as a career pathway and drive changes in accreditation standards for architects, interior designers, and real estate professionals, with a focus on health and the human experience.

Near-Term, High-Impact Actions

Philanthropy can partner with interested academic institutions to integrate neurospatial design into existing biomedical sciences, neuroscience, design, and engineering curricula to prepare graduate and undergraduate students for interdisciplinary research and practice that center on health and well-being.

Approach 2.1.3: Develop Neurospatial Design Courses for Undergraduate Students

Few undergraduate programs intentionally integrate neuroscience, health, and the built environment, limiting exposure to neurospatial design during a formative stage of learning and career exploration. Expanding undergraduate awareness could significantly enhance the visibility of neurospatial design in higher education and encourage more students to pursue related careers. Developing a dedicated undergraduate course focused on topics such as the neuroscience of wayfinding, brain-healthy architecture, and designing for physiology and the human experience could benefit students across disciplines. Making these introductory courses accessible to students from programs such as business, public health, and engineering would also help cultivate a broader interdisciplinary neurospatial design workforce. **Philanthropic investment could rapidly establish initial university courses at institutions with strengths in neuroscience, architecture, and design or existing programs related to neurospatial design (Appendix B).**

Approach 2.1.4: Support Neurospatial Design in Education for K–12 Students

Early education—from kindergarten through high school—is a critical time for children to explore and understand their environments, providing valuable opportunities to introduce new ideas and ways of thinking. Neurospatial design principles are known to benefit students' academic performance, mental health, and overall well-being. Integrating these principles into early education classrooms and curricula could help students gain cognitive and physical benefits while creating an early appreciation for the built environment. However, funding constraints often limit the incorporation of new educational concepts despite their potential impact.

Philanthropic support for neurospatial design programs during early education would help foster students' interest and ultimately grow the neurospatial design workforce of tomorrow. Programs could include healthy classroom design initiatives, teacher training, curriculum development, or summer camps to incorporate neurospatial design into K–12 education. These initiatives could stimulate curiosity about the intersection of neuroscience, health, and the built environment and potentially promote brain health during a vital developmental period.

OPPORTUNITY 2.2: ENHANCE CONTINUING EDUCATION FOR NEUROSPATIAL DESIGN PROFESSIONALS

While formal education in architecture, design, and neuroscience is essential for building foundational expertise, success in the neurospatial design ecosystem depends on continuous professional development. As new findings develop, researchers and practitioners need access to continuing education that translates emerging evidence into practical applications. The approaches below build on Opportunity 2.1 to further cultivate a skilled neurospatial design workforce.

Approach 2.2.1: Establish Continuing Education Programs for Neurospatial Design Professionals

Ongoing education is crucial for maintaining a workforce equipped with the skills needed to meet evolving industry standards. For design professionals, CEUs offer the opportunity to stay current with new research, tools, and methodologies while meeting accreditation requirements. However, opportunities for professionals already in the workforce to gain exposure to neurospatial design remain limited. **Philanthropy is uniquely positioned to address this gap by establishing CEUs that provide researchers and practitioners with practical, timely guidance to advance their work.** Partnerships with professional associations can support the development, piloting, and scaling of new CEUs to align design professionals around core neurospatial design principles, research, and practice.

Near-Term, High-Impact Actions

Philanthropy can partner with professional associations, such as ANFA, AIA, ASID, and ULI, to pilot CEUs or short courses in neurospatial design to equip design and real estate professionals with foundational knowledge and awareness of the ecosystem and its impact.

Approach 2.2.2: Foster Education and Experience Through Cross-Sector Rotational Programs

Neurospatial design is hindered by siloed researchers, practitioners, and decision-makers, limiting the cross-sector exposure and experience required to translate neuroscience and design insights into practical, viable solutions. Programs that immerse professionals in cross-sector learning are one solution because they ask leaders to apply their expertise in new ways and engage in real-world tasks to bridge conceptual and practical skills and approaches. **Philanthropy can leverage its academic and industry ties to develop and facilitate rotational programs, including the following:**

- **Academic-industry rotational programs** introduce academic researchers from neuroscience, engineering, or design into industry settings to familiarize them with the needs of the architecture and design industry, introduce research methods to industry practitioners, and build cross-sector mentorship opportunities.
- **Regulatory rotational programs** integrate industry practitioners or researchers into regulatory roles to facilitate better working relationships with the regulatory landscape while helping shape policies that influence the implementation of neurospatial design across the built environment.

Near-Term, High-Impact Actions

Philanthropy can partner with design and engineering firms already investing in neurospatial design—such as HKS and Perkins&Will—to create rotational research and/or mentorship programs to provide experiential learning for neuroscience and design professionals.

Whereas academic researchers and practitioners may lack the connections needed to initiate these cross-sector partnerships, as a flexible funder, philanthropy is well positioned to support training costs and facilitate connections between these groups.

PRIORITY 3

Fuel Integration of Neurospatial Design Across Buildings and Industry Sectors

Research and education are essential for establishing neurospatial design as a robust ecosystem, as is integrating evidence and insights into practice for actually enhancing health and well-being in communities. The following sections explore the diverse stakeholders that are driving integration and application of neurospatial design, highlight opportunities to overcome current barriers to implementation, and highlight key industry sectors poised to adopt neurospatial design.

KEY STAKEHOLDERS ADVANCING AND FUNDING PRIORITY 3

Integration of neurospatial design principles into spaces and the built environment is complex and influenced by a variety of stakeholders. Industry organizations—including design firms and technology companies—along with certification systems, local governments, and nonprofit organizations—are major players in promoting the integration of neurospatial design into practice across built environments to improve health outcomes for individuals and communities.

Industry Organizations Advance Integration of Neurospatial Design

Design professionals and firms are the primary implementers of neurospatial design in practice. However, broader adoption will require greater capacity to translate evidence into actionable solutions and to engage a range of stakeholders, including technology companies. Leading firms demonstrate how research can effectively guide implementation and improve health outcomes across spaces. Two examples include:

- HOK, an architecture firm based in St. Louis, MO, is a thought leader in neuroinclusive workplace design and cognitive well-being. In 2023, HOK received a $20,000 grant from One Workplace, a program dedicated to new or developing research on design's influence on the human experience. The study used biometric data alongside post-occupancy evaluations to inform neuroinclusive workplace design, fueling HOK's continued thought leadership and recently published book, *Designing for Neuroinclusivity*.

A recent issue of *HOK Forward*, the firm's annual publication, emphasizes the importance of studying and implementing design as a "biological intervention."

- HKS often publishes project-based impact reports that summarize design outcomes and promote transparency in the design ecosystem. After completing the University of California San Diego North Torrey Pines Living and Learning Neighborhood, the firm reported the design's profound impact on students' health and well-being, including an 8.2 percent reduction in student-reported depression and a decrease in the project's environmental footprint. Sharing this impact data helps strengthen accountability, centers user experience, and showcases the value of investing in evidence-informed design.

Technology companies are also developing software, wearables, and data platforms that are accelerating the integration of neurospatial design across built environments, with several exemplifying this scalable approach.

- **Autodesk,** a leader in architecture and design software, announced in 2025 its support for a PhD studentship at UCL's Bartlett School of Architecture. This collaboration will leverage data from UCL's Person-Environment-Activity Research Laboratory and 100 Minds in Motion project to advance Autodesk's technologies and tools, helping design professionals integrate neurospatial design principles across buildings and sectors to improve health outcomes and user experiences at scale.
- Technology companies, such as **Google**, are leveraging their real estate assets to advance workplace design. Through its R+D Lab for the Built Environment, Google takes an implementation-first approach, using real-world building projects to generate insights and ensuring that workplace design supports employee health alongside sustainability goals. Additionally, wearable technology companies, such as WHOOP and Oura, are partnering with businesses to provide real-time insights to address workplace challenges, opening up opportunities to utilize real-world data to improve spaces to enhance well-being.

Certification Systems as Drivers of Cross-Sector Adoption

Certification systems are widely adopted methods for standardizing and implementing evidence-based frameworks to promote health across the built environment. They are applied across building types and establish national and global standards that shape how research is translated into best practices and how emerging architectural and design approaches are adopted to support health and well-being. Certification programs such as WELL, Fitwel, and LEED leverage research to shape professional training and accelerate the implementation of health-focused design strategies across the built environment (see Appendix C for details).

State and Local Policy Affects Implementation and Financing of Neurospatial Design

State and local policies play a crucial role in shaping building codes, infrastructure investment, and public services, making them key drivers of neurospatial design adoption, particularly in sectors such as health care and education. Therefore, policymakers, legislative bodies, and policy implementers are important stakeholders for integrating neurospatial design into the built environment.

- **Policy implementers at the state level** are licensing boards, building councils, infrastructure and environmental departments, and infrastructure planners.
- **Policy implementers at the local level** are building inspectors, zoning administrators, city architects and planners, planning commissions, and review boards.

Nonprofit Organizations Showcase the Impact of Implementation

As understanding of the relationship between neuroscience, health, and the built environment deepens, nonprofits are leveraging existing evidence to evaluate and inform real-time design decisions, bridging the gap between research and implementation to address societal challenges. Key nonprofit organizations advancing neurospatial design include ANFA and the Building Brains Coalition (as described earlier), as well as:

- CADRE, a nonprofit advancing the built environment through rigorous architecture and design research. Supported by HKS, CADRE works to bridge the gap between research and implementation by empowering coalitions to tackle challenges through initiatives that link the design of industry sectors (e.g., education and workplaces) with the health and well-being outcomes of communities.
- The Brain Health Applied Research Institute (B+HARI), a nonprofit based in Hawaii, is combining existing neuroscience research with community and culture-informed design approaches. Working closely with the Hawaiian government and the local community to establish Kumu Ola Hou, B+HARI has applied neuroscience-informed principles to the design of residential spaces for individuals recovering from brain or mental health challenges, particularly those who have experienced homelessness.

As both a funder and convener, philanthropy can support innovative projects that integrate neurospatial design into built environments in partnership with government, private, and academic sectors. Figure 17 outlines opportunities and approaches to advance the integration, implementation, and adoption of neurospatial design.

Figure 17: Opportunities and Approaches to Advance Priority 3

OPPORTUNITY AREA	APPROACH	PRIORITY 1	PRIORITY 2	PRIORITY 3: Fuel Integration of Neurospatial Design Across Buildings and Industry Sectors	PRIORITY 4
Opportunity 3.1 Integrate Neurospatial Design into Industry Standards	3.1.1: Integrate Neurospatial Design Research into Certification Systems	●		●	●
	3.1.2: Support the Development of Tools to Integrate Neurospatial Design Evidence into Design			●	●
Opportunity 3.2 Develop Financial Incentives for Adoption of Neurospatial Design	3.2.1: Incentivize Innovative Applications of Neurospatial Design Through Prize Programs	●		●	●
	3.2.2: Develop Innovative Financing to Promote the Application of Neurospatial Design			●	●

Source: Milken Institute (2026)

OPPORTUNITY 3.1: INTEGRATE NEUROSPATIAL DESIGN INTO INDUSTRY STANDARDS

Research at the intersection of neuroscience, health, and the built environment is expanding, but its insights have yet to be fully embedded in design standards and professional practice. By supporting the integration of neurospatial design into established field standards, philanthropy can accelerate broad adoption and significantly expand scale and impact.

Approach 3.1.1: Integrate Neurospatial Design Research into Certification Systems

Certification systems are grounded in research and are iteratively updated as new insights emerge. Integrating neurospatial design into the research pipeline could strengthen evidence-based standards and scale integration of health-focused design across buildings and spaces. Expanding the research that informs these certification systems to include neurospatial design can also refine research questions, guide best practices, and support the creation of healthier spaces. **Philanthropy is well poised to partner with certifying organizations; support their research initiatives; and mobilize networks of experts to contribute to study design, data collection, and analysis.**

Near-Term, High-Impact Actions

Philanthropy can partner with certification systems, such as WELL, to integrate neurospatial design into research questions to inform the development of industry standards prioritizing well-being, health, and sustainability.

Approach 3.1.2: Support the Development of Tools to Integrate Neurospatial Design Evidence into Design

Insufficient training for design professionals to translate neurological and physiological research, and time constraints for incorporating that research into design projects, hinder the integration of neurospatial design into practice. Technologies such as AI can help professionals access and interpret complex research, enabling broader adoption. Embedding neurospatial design insights into commonly used design tools offers a scalable path for wider implementation. **Philanthropy could partner with technology companies to develop, train, and deploy AI-powered tools, such as software and chatbots, to translate evidence into design recommendations.** This approach would build on other efforts to create, share, and integrate new evidence from research grants, industry pilot programs, and fellowship training to accelerate the adoption of evidence in research and practice across the ecosystem.

Near-Term, High-Impact Actions

Technology companies already engaged in implementation of neurospatial design research—such as Autodesk—represent potential partners for developing tools to support implementation on an industry-wide scale.

OPPORTUNITY 3.2: DEVELOP FINANCIAL INCENTIVES FOR ADOPTION OF NEUROSPATIAL DESIGN

Achieving widespread prioritization of health in built environments will require system-level changes, including stronger research-to-implementation feedback loops and new financial models to facilitate adoption of neurospatial design. Currently, integrating evidence into design is largely shaped by project-specific constraints, such as client priorities, timelines, and budgets. Philanthropy can help overcome these barriers by introducing innovative financial incentives that accelerate the implementation of neurospatial design across building types, improving health outcomes and well-being.

Approach 3.2.1: Incentivize Innovative Applications of Neurospatial Design Through Prize Programs

Expanded adoption of neurospatial design requires real-world examples that demonstrate where and how design features can improve measurable health outcomes. **Philanthropic capital can catalyze prize competitions, which offer a powerful mechanism for crowdsourcing solutions to defined challenges, incentivizing practical demonstrations of neurospatial design, and mobilizing interdisciplinary teams.** By requiring cross-sector collaboration, physiological research, and the use of emerging technologies, these competitions can advance neurospatial design research while measuring the impact of implementation and establishing clear integration criteria. Importantly, by rewarding applied solutions over abstract concepts, prize programs can increase visibility, strengthen evidence, and accelerate adoption of neurospatial design as a scalable solution across the built environment.

Approach 3.2.2: Develop Innovative Financing to Promote the Application of Neurospatial Design

Despite evidence that specific design elements can meaningfully improve productivity and increase building value, these elements are not widely factored into project plans, briefs, and financial strategies. Innovative financing mechanisms can help integrate neurospatial design into large-scale capital projects, such as hospitals, accelerating adoption across both public and private sectors. **Philanthropy, with its flexibility and risk-taking capacity, can partner with financial institutions to develop and test new models (e.g., loan subsidies or blended financing) for pilot projects that plan to adopt neurospatial design.** These efforts can establish proof of concept and support broader uptake of neurospatial design in construction, real estate development, and architecture, while prioritizing health outcomes as a core consideration in financing spaces and buildings.

INDUSTRY SECTORS POISED TO BENEFIT FROM IMPLEMENTATION OF NEUROSPATIAL DESIGN

Because neurospatial design is applicable across a wide range of building types (see **Figure 1**), a significant opportunity exists for philanthropy, alongside cross-sector partners, to rally around it as a tool to transform communities through its unique health, societal, and economic benefits. Select industries—health care, workplace, education, residential, and hospitality—are uniquely poised to benefit from adopting neurospatial design (see **Table 6**).

Table 6: Select Industry Sectors Poised to Benefit from Neurospatial Design

INDUSTRY SECTOR	OPPORTUNITY
Health care	Health care carries a moral imperative to help and heal; thus, neurospatial design provides a natural complement to evidence-based design, a widely used approach in health-care settings (Appendix A). Incorporating neurological and physiological evidence alongside other data, such as readmission rates, length of stay, employee retention, and cost savings, can ensure that design enhances patient outcomes, improves employee experience, and increases profitability. **Philanthropic organizations focused on health equity, clinical care, and brain health are well positioned to partner with health-care systems to advance the role of neurospatial design in health-care environments.**

Workplace

The average individual spends one-third of their life at work, and estimates suggest US companies lose an average of [$575 billion] annually from employee health-related delays and absenteeism. Increasingly, investment in workplace design is becoming a strategic and business imperative for competitive advantage and profitability. Philanthropy can engage with workplace decision-makers to advance research and expand awareness of the dual economic and health benefits of neurospatial design. **Philanthropic organizations passionate about neuroinclusivity, the future of work, and economic opportunity are uniquely positioned to partner with workplaces to better understand and implement neurospatial design as a strategy for driving impact across their respective areas of interest.**

Education

Educational settings, from K–12 through higher education, represent a substantial and influential sector that shapes the future workforce and broader economy. According to Pew Research Center, K–12 students spend 180 days in school each year, nearly 50 percent of the year. Growing recognition of neurodiversity and emphasis on school safety reinforce the need for spaces that support all students and their educational experience. Education remains a priority for philanthropic organizations, creating a clear opportunity to align shared interests in improving learning environments for students and work environments for educators. **Philanthropic support for initiatives that integrate neurospatial design across the educational continuum offers a meaningful pathway to enhance outcomes for learners, teachers, and educational institutions alike.**

Residential

People spend a significant portion of their lives in residential environments, which often serve as places of refuge and restoration. Housing sits at the intersection of many economic and societal challenges, and its growing overlap with other sectors makes it an important leverage point for impact. Applying neuroscience-informed approaches to residential environments—including single-family homes, multifamily housing, and affordable housing—offers an opportunity to expand impact while addressing pressing societal challenges such as housing affordability and homelessness. **For philanthropic organizations focused on community engagement, economic mobility, and place-based giving, reframing housing solutions through the combined lens of neuroscience and design creates opportunities to improve health and economic outcomes for individuals and communities.**

Hospitality

Modern travelers are often sleep-deprived, stressed, and time-poor. As a result, over 70 percent of luxury travelers seek out wellness services that emphasize rest, recuperation, and cognitive health as part of their travel plans, driving substantial growth in the wellness travel sector. **Philanthropy is well positioned to partner with the hospitality sector to expand the evidence base for neurospatial design while raising awareness of its value in promoting individual wellness, health outcomes, and increased profitability for companies.**

Source: Milken Institute (2026)

PRIORITY 4

Expand Neurospatial Design Awareness Across Sectors and Society

Many stakeholders within the ecosystem (see **Figure 9**) do not recognize their work as connected to neurospatial design, underscoring the need to clarify its relevance and strengthen cross-sector alignment. Broad awareness of neurospatial design across professional associations, adjacent sectors, and the public will be crucial for advancing the ecosystem. The sections below discuss the stakeholders that are currently working to increase cross-sector engagement and public awareness of neurospatial design and identify opportunities to further enhance engagement and visibility.

KEY STAKEHOLDERS ADVANCING AND FUNDING PRIORITY 4

Professional associations, governments, and philanthropy are the key communicators working to raise awareness of neurospatial design among both professionals and the public.

Nonprofit Organizations as Conveners and Communicators

Nonprofit professional societies play an important role in raising awareness of industry trends and expanding learning and professional development opportunities. As mentioned, ANFA is a central resource for the neurospatial design community, convening stakeholders across the ecosystem through meetings and workshops. Other associations bring together specific groups—such as neuroscientists, architects, interior designers, and real estate developers—to share emerging ideas and best practices. These major professional associations (listed in Appendix D) are primed to engage in neurospatial design and scale educational initiatives through their extensive membership networks.

Additional nonprofit organizations—particularly those focused on public awareness and advocacy—play a key role as communicators, raising awareness of how the built environment influences our health and everyday lives. One example is the Humanise campaign, which was launched by Thomas Heatherwick. As neurospatial design becomes more interdisciplinary, nonprofits will be increasingly important in fostering cross-sector collaboration, amplifying initiatives to specialized networks, demonstrating impact to industry leaders, and building awareness among the public.

Government Engagement at the Local, State, and Federal Levels

Government decision-makers often fail to acknowledge the significant impact of the built environment on everyday health and well-being, despite its influence on their constituents and the communities they serve. Changes to policy and investment in the built environment most often occur at the state and local levels, typically in response to specific community needs. However, federal policy can exert broad influence by including neurospatial design in executive actions and legislation, especially as federal regulations on pollution and safe materials have already been important for creating space. Engagement with policymakers at all levels of government will be key for widespread adoption, including:

Local: Mayors, town councils, homeowners' associations

State: Governors, cabinet members, state representatives

Federal: Congresspeople, cabinet members, federal agency staff

Philanthropic Organizations Build Awareness Among Key Audiences

Public support is essential to driving awareness of and demand for healthier spaces and will require engaging diverse communities to understand the role of neurospatial design as a positive force shaping individual and community health. Philanthropic organizations have a strong track record of investing in public engagement and awareness initiatives, including efforts that highlight the societal impact of neuroscience, biomedical research, and design. These initiatives play a role in expanding public understanding and interest in healthier built environments:

Video is a powerful medium for conveying visual topics such as neurospatial design. Recent films, including *Constructing Health*, *What Design Can Do*, and *Built Beautiful: An Architecture & Neuroscience Love Story*, help showcase elements of neurospatial design and thereby raise awareness.

- The Dana Foundation has been a leader in advancing the intersection of neuroscience and society through initiatives such as Brain Awareness Week, which has expanded global public engagement with brain research. In 2024, it launched the multimillion-dollar Dana Center Initiative for Neuroscience & Society, supporting a network of research universities to engage communities in neuroscience research. This enabled the University of California, Los Angeles, to work with residents on a study of the effects of noise pollution and heat on the brain and mental health.
- The Richard H. Driehaus Foundation has invested in historic preservation, architecture, and the built environment in Chicago and supported public awareness projects, such as the short film *What Design Can Do*, to draw attention to the profound role of buildings in shaping the experiences of our everyday lives.

Philanthropic capital can help organizations expand existing efforts, reach new sectors and audiences, and build broader public interest and credibility for neurospatial design. Figure 18 outlines opportunities and approaches for philanthropy to raise awareness of neurospatial design across sectors and society.

Figure 18: Opportunities and Approaches to Advance Priority 4

OPPORTUNITY AREA	APPROACH	PRIORITY 1	PRIORITY 2	PRIORITY 3	PRIORITY 4: Expand Neurospatial Design Awareness Across Sectors and Society
Opportunity 4.1 Leverage Associations to Expand Awareness of Neurospatial Design	4.1.1: Build Awareness of Neurospatial Design Through Ambassadors		●		●
	4.1.2: Leverage Association Conferences to Foster Collaboration and Increase Awareness		●		●
Opportunity 4.2 Increase Interest in Neurospatial Design Across Related Sectors	4.2.1: Integrate Neurospatial Design into Experiential Learning Programs		●	●	●
	4.2.2: Raise Awareness Among Policymakers Through Advocacy Campaigns			●	●
Opportunity 4.3 Grow Public Understanding and Demand for Neurospatial Design	4.3.1: Drive Demand for Neurospatial Design Through Media and Storytelling				●

Source: Milken Institute (2026)

OPPORTUNITY 4.1: LEVERAGE ASSOCIATIONS TO EXPAND AWARENESS OF NEUROSPATIAL DESIGN

Professional associations and societies serve as vital communication channels for stakeholders within the neuroscience and design fields. Philanthropy can leverage existing associations and their networks to expand awareness, build credibility, and foster alignment among professionals across disciplines within the neurospatial design ecosystem.

Approach 4.1.1: Build Awareness of Neurospatial Design Through Ambassadors

Identifying and supporting representative leaders within neurospatial design can strengthen the ecosystem's credibility, visibility, and momentum. Ambassadors could include experts whose work integrates neuroscience, architecture, design, and other disciplines. Elevating researchers and practitioners as ambassadors at conferences, meetings, and workshops can increase awareness and generate interest in this interdisciplinary topic. **Philanthropy, through its funding, networks, and convening power, can**

help position these ambassadors in influential events and spaces where they can engage with decision-makers, connect with thought leaders, and mentor emerging leaders advancing neurospatial design.

Approach 4.1.2: Leverage Association Conferences to Foster Collaboration and Increase Awareness

Professional associations and societies host annual conferences that are critical for raising awareness, fostering collaboration, and advancing research and practice. As an emerging interdisciplinary ecosystem, neurospatial design lacks the broad network of convenings that exist across neuroscience, biomedical research, architecture, interior design, technology, public health, and real estate. **Philanthropy can catalyze partnerships among these associations to create cross-disciplinary meetings and programming that advance research and design innovation, while raising awareness of neurospatial design.** Philanthropic support could fund dedicated neurospatial design events at association conferences, such as poster sessions, networking receptions, and immersive experiences, to strengthen collaboration and visibility. A list of potential association partners and conferences is available in Appendix D.

OPPORTUNITY 4.2: INCREASE INTEREST IN NEUROSPATIAL DESIGN ACROSS RELATED SECTORS

While design professionals often work across sectors, industry leaders are typically embedded within their own ecosystems and may not fully recognize the value of neurospatial design for advancing their priorities. Philanthropy can play a pivotal role by supporting initiatives that build awareness of and hands-on experience with neurospatial design among decision-makers, enabling them to use it as a tool to address industry and community challenges.

Approach 4.2.1: Integrate Neurospatial Design into Experiential Learning Programs

Experiential learning programs use proven models of hands-on, cohort-based training to develop skills and community around shared interests. **Philanthropic funding can help launch and scale neurospatial design experiential learning programs that increase awareness, credibility, and implementation.** By bringing together leaders from industry sectors such as health care, education, and the workplace, a cohort-based experiential learning program can help apply neurospatial design to real-world challenges while building trust and establishing best practices for future use.

Near-Term, High-Impact Actions

Philanthropy can partner with established experiential learning programs such as the Mayors' Institute on City Design and ULI Health Leaders Network to incorporate the neuroscience and design expertise needed to apply neurospatial design to health and infrastructure challenges found across sectors and society.

Approach 4.2.2: Raise Awareness Among Policymakers Through Advocacy Campaigns

Widespread adoption of neurospatial design will require engagement from policymakers at the local, state, and federal levels. Past advocacy and awareness campaigns have shown that targeted outreach and education can successfully influence policymakers to prioritize sustainability in building codes. **Philanthropy can launch similar efforts for neurospatial design by raising awareness among policymakers and positioning the ecosystem as a solution to key health and infrastructure challenges.** Such campaigns could educate policymakers and eventually lead to incentives that reward the use of neurospatial design principles, updated building codes, and ultimately embedding of these principles into public space requirements.

OPPORTUNITY 4.3: GROW PUBLIC UNDERSTANDING AND DEMAND FOR NEUROSPATIAL DESIGN

Broader public and consumer interest is essential to increasing the demand for, adoption of, and impact of neurospatial design. Engaging the public through compelling stories, creative visual media, and real-world examples can showcase the broader impact of the built environment on brain function and overall well-being. Philanthropy can help close this gap by supporting storytelling efforts that amplify the process and impact of neurospatial design, as well as the relationship between neuroscience, health, and the built environment.

Approach 4.3.1: Drive Demand for Neurospatial Design Through Media and Storytelling

To date, awareness of the potential to improve brain health and overall well-being through design has been largely limited to neuroscience and design professionals. **Philanthropy has a strong track record of supporting storytelling that centers on impact and communities and can fund initiatives to highlight the value and relevance of neurospatial design to human health.** By collaborating with researchers, design professionals, media, and storytellers, philanthropic capital can help craft clear and compelling stories about the ecosystem. Efforts to increase public awareness and interest can take many forms, with several media formats particularly well suited for this topic:

- Social media influencers can showcase neurospatial design to design-minded individuals and others who may not engage with more traditional media.
- Podcasts can connect architecture, design, and neuroscience experts to explore and showcase the impact of neurospatial design on brain health, longevity, and disease prevention.
- Short films or micro documentaries can illustrate the key visual elements that define neurospatial design and provide compelling visual narratives to drive public understanding.
- Social impact campaigns can elevate public consciousness and awareness of the role of the built environment in daily life and health outcomes.
- Immersive real-world experiences can demonstrate and lead to a better understanding of the impact of the built environment on senses, emotions, and human health.

Media outlets already raising awareness of topics related to neurospatial design, such as *Fast Company*, *Work Better Magazine*, and *TED*, could be instrumental for building momentum through these and other media formats.

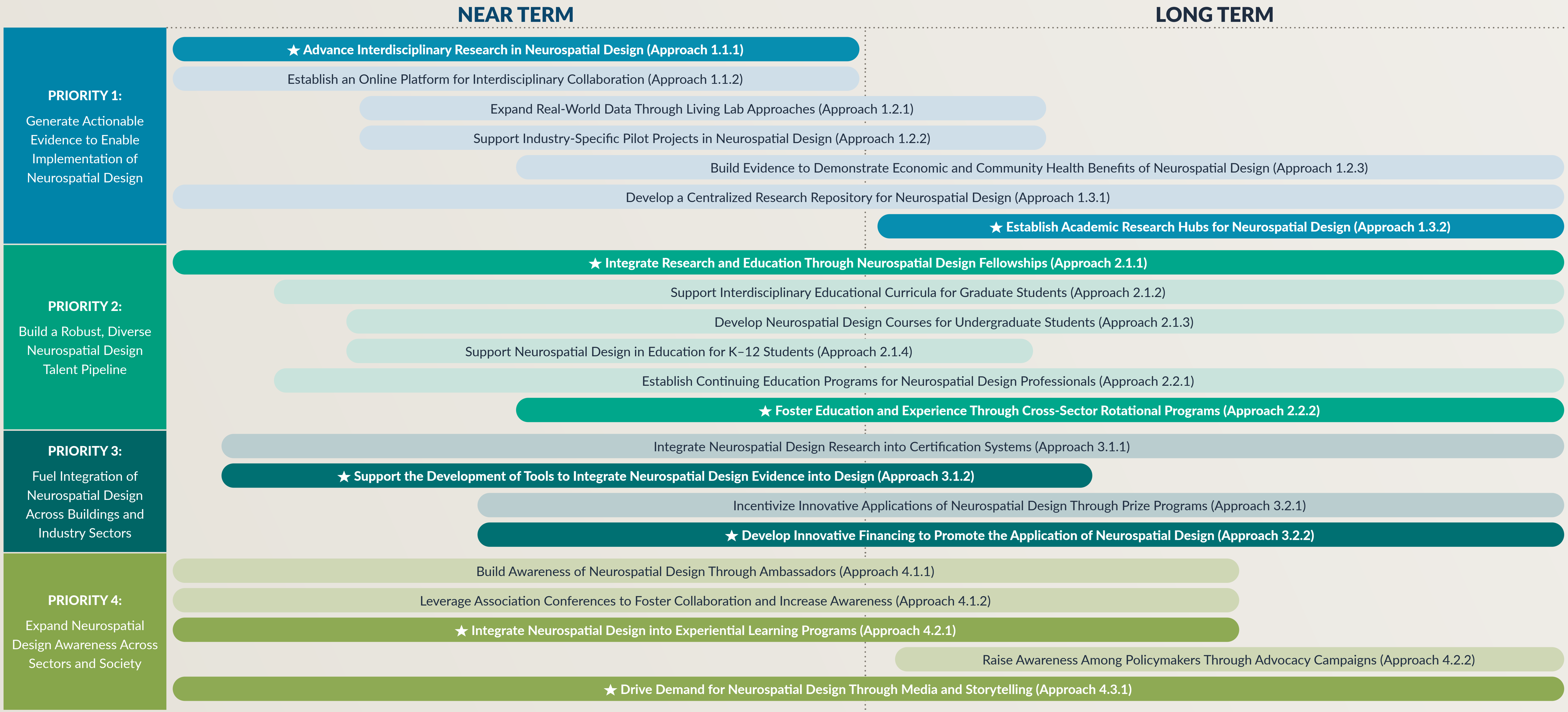
Near-Term, High-Impact Actions

Strategic partnerships among funders on awareness campaigns—particularly those focused on neuroscience, health, and the built environment—offer a valuable opportunity to align efforts and showcase the human impact, moral imperative, and transformative potential of neurospatial design in improving societal well-being.

Strategic Timeline of Investment to Advance the Impact of Neurospatial Design on Human Health

Given the breadth of opportunities to advance neurospatial design by bridging neuroscience, health, and the built environment, strategic investment in all four key priority areas will be essential to initiating and sustaining growth and impact for communities. **Figure 19** proposes a strategic timeline for philanthropic and cross-sector investment in the neurospatial design ecosystem, highlighting specific approaches for near- and long-term attention. Select high-impact approaches that are well positioned for collaboration between philanthropic and cross-sector funders are indicated by ★.

Figure 19: Strategic Timeline of Investment Opportunities Across Key Cross-Sector Priorities



Source: Milken Institute (2026)

Conclusion

The future of health is the future of our spaces. This *Giving Smarter Guide* introduces neurospatial design—its foundations, applications, and promise—and positions it as a powerful research discipline and design approach. Neurospatial design asserts that people, health, and buildings are inseparable and that an expanding understanding of neuroscience and the built environment should actively drive more equitable and effective outcomes for all communities.

Neurospatial design is an encompassing research and design ecosystem and, most importantly, a solution. It is an integral response to society's most pressing challenges and reflects a moral responsibility to create spaces that actively and equitably promote the health of individuals, communities, cities, and the world.

Philanthropy has played a critical role in catalyzing neurospatial design. As highlighted throughout this *Giving Smarter Guide*, significant opportunities exist to expand engagement across the philanthropic sector to further develop neurospatial design as a durable, scalable solution to ensure that individuals flourish and communities thrive.

Philanthropic organizations committed to a better future for all have an important role in advancing neurospatial design. In addition to philanthropic funders in neuroscience and design, this guide invites place-based, science, and social impact funders—working in partnership with other cross-sector stakeholders—to drive meaningful progress in their communities through neurospatial design. Aligned funders have an opportunity to support initiatives that generate actionable evidence in neurospatial design, cultivate a diverse interdisciplinary workforce, and advance the implementation of brain-healthy buildings. In doing so, they can help realize a fundamental truth: The built environment is part of our everyday lives and holds the power to shape our health, economic vitality, and the future of society for the better.

Appendix A. Select Neuroscience and Design Approaches Included in Neurospatial Design

APPROACH	DESCRIPTION
Neuroscience	
Affective Neuroscience	How the brain processes emotions and mood
Behavioral Neuroscience	How biological mechanisms (e.g., neural, genetic, developmental) shape behavior, and how behavior in turn influences those biological systems
Biomedical Engineering	The study and application of engineering, including electrical, chemical, optical, mechanical, and other engineering principles, to understand, modify, or influence biological systems
Chronobiology	How the body and brain respond to daily rhythms in sleep-wake behavior, hormone signaling, and other processes
Clinical Neuroscience	The study of mechanisms of brain disorders, bridging research and patient care
Cognitive Neuroscience	How the brain processes information and gives rise to mental processes such as perception, attention, memory, decision-making, and language
Computational Neuroscience	The study and application of computer science tools to understand neurological and physiological data
Developmental Neuroscience	How the brain forms, grows, develops, and adapts over the lifespan
Environmental Neuroscience	The study of bidirectional relationships between organisms (cells, tissues, behavior) and their physical surroundings (natural, social, built environments)
Molecular and Cellular Neuroscience	How genes, proteins, and cells contribute to brain structure, function, and health
Neuroendocrinology	How the brain responds to and influences hormone signaling

Neuroethics	The intersection of neuroscience and bioethics, including societal, legal, and ethical considerations for and implications of brain research
Neurogenetics	How genetic variation affects brain development, structure, and function
Neuroimmunology	How the brain and the immune system interact
Neurology	The diagnosis and treatment of disorders of the brain and nervous system
Neurophysiology	The study of the physiological mechanisms and functions (electrical, chemical, molecular) of the nervous system and brain
Neuropsychology	How behavior arises from emotional and psychological processes
Sensory Neuroscience	How the brain processes external stimuli (light, sound, scent, touch, taste)
Spatial Neuroscience	How the brain understands, processes, and navigates space and the environment
Design	
Acoustic Engineering	The design of materials, spaces, and technologies to improve spatial acoustics and the individual acoustic experience
Biophilic Design	Aims to incorporate natural features and systems into the built environment to provide people with their much-needed exposure to nature, grounded in the belief that such exposure is important to human well-being
Culturally Competent Design	Meant to create spaces that recognize and incorporate occupants' unique sociocultural backgrounds and values. It is often used in the design of health-care, residential, and community spaces.
Environmental Science	Understanding the impacts of environmental design, sustainability, and health within the built environment
Evidence-Based Design	Uses the best available evidence to create design solutions tailored to a specific need or audience, aiming to improve human performance and well-being. This approach is commonly used in health care and workplaces.
Experiential Design	Combines space, technology, and/or media to shape experiences within the built environment
Human-Centered Design	Focuses on developing, iterating on, and implementing design features that meet users' specific emotional and psychological needs. This design method is commonly used in product development and across the built environment.
Industrial Design	Designs products, services, and objects optimized for function, aesthetics, production, and user experience

Neuroinclusive Design	Prioritizes individuals of all sensory and cognitive perspectives within the built environment to create environments that foster autonomy and enable all individuals to thrive
Participatory Design	Involves users in the development and implementation of design, often used in health-care, residential, and community settings
Salutogenic Design	Developing built environments that improve human health and well-being rather than merely preventing sickness or disease. Salutogenic design is often applied in health-care settings and has served as a conceptual foundation for additional frameworks, such as the Architectural Determinants of Health, an evidence-based framework proposed by Tye Farrow that posits the built environment as a primary determinant of health, directly influencing neurophysiological, psychological, and social outcomes.
Sensory Design	An evidence-based design methodology focused on engineering design features, such as lighting, acoustics, textures, and biophilia, to help regulate individuals' sensory experience in the built environment, often with the goal of preventing sensory overload
Trauma-Informed Design	Considers lived experience to create environments that provide comfort, safety, and other fundamental psychological needs. This approach is typically used in health-care, residential, and educational settings.
User Interface/User Experience Design	Focuses on how users interact with and respond to a product, system, service, or company

Appendix B. Select Education and Training Programs Related to Neurospatial Design

EDUCATIONAL LEVEL	INSTITUTION	DESCRIPTION OF PROGRAM
K–12	Center for Architecture	The Center's Summer Programs offer students the opportunity to explore and test out innovative ideas in architecture.
	University of California, Berkeley	The Design + Build Bootcamp, offered through the Berkeley College of Environmental Design, provides high school students with the opportunity to gain experience in architecture, design, and construction.
Undergraduate Programs	Northeastern University	The Design and Behavioral Neuroscience program offers students an interdisciplinary curriculum at the intersection of biology, psychology, design, and art.
	University of Texas at Austin	The School of Architecture offers undergraduate and graduate courses in architecture, interior design, planning, and related fields, with curricula integrating human-centered design.

Graduate Programs	Clemson University	The Architecture + Health Programs include a specialized, accredited Master of Architecture track focused on designing health-care environments and on the relationship between the built environment and human health. It integrates focused studio and seminar coursework with evidence-based design principles to prepare architects to creatively address complex challenges. The PhD in Design and the Built Environment program equips students with the skills to pursue a research career in architecture, urban design, real estate development, and related fields, with an emphasis on the relationship between the built environment, health, and sustainability.
	LCI Barcelona	The Master's Degree in Wellbeing, Neuroarchitecture, and Bioconstruction is an interdisciplinary graduate program that trains students to design built environments that enhance human well-being while prioritizing sustainability and ecological responsibility.
	Stanford University	The continuing education course Brains, Bodies, and Buildings: Neuro-Architecture and the Spaces That Shape Us explores how architectural design affects the brain, the body, and the community.
Graduate and Professional Training	NeuroAU	The NeuroAU course is an online, science-informed program offering live classes that link neuroscience, cognition, and architectural design, suitable for professionals and graduate students.
	NewSchool of Architecture & Design	The Certificate in Neuroscience for Architecture is a structured sequence of courses that teach neuroscience fundamentals and design principles relevant to architecture and spatial cognition.
	University of Cambridge	Interdisciplinary Design for the Built Environment is a part-time, interdisciplinary program designed primarily for mid-career professionals, including architects, engineers, planners, project managers, surveyors, and landscape architects. The program focuses on developing the skills needed to collaborate across professional boundaries and respond to major global challenges, including sustainability, climate resilience, and integrated design.
	University of Michigan	The Graduate Certificate in Healthy Cities is offered by the Taubman College of Architecture and Urban Planning in collaboration with the School of Public Health and the Ford School of Public Policy. This interdisciplinary graduate-level credential is designed for students interested in understanding and addressing urban health challenges through the combined lens of public health, urban planning and design, and public policy.

Appendix C. Select Certifications for Architecture and Design

CERTIFICATION	DESCRIPTION
Fitwel	The US Centers for Disease Control and Prevention and the US General Services Administration originally created the Fitwel certification as a standard to promote occupant health and well-being through evidence-based design and operational strategies. Launched in 2016, Fitwel uses scorecards tailored to specific building types to measure impact across seven key health categories: community health, morbidity reduction, social equity, well-being, healthy food access, safety, and physical activity. The Center for Active Design now supports and updates Fitwel to meet the evolving needs of the built environment.
LEED	The LEED standard, developed by the US Green Building Council in 1998, provides a global framework for sustainable building design, construction, and operation. The standard measures building performance across categories including Sustainable Sites, Water Efficiency, Energy and Atmosphere, Materials and Resources, Indoor Environmental Quality, Innovation, and Regional Priority.
Living Building Challenge	The Living Building Challenge and the Living Product Challenge were developed by Living Future. These certifications are grounded in research on human health, materials chemistry, environmental performance, and regenerative design, guiding design and construction practices to improve sustainability and the relationship between people and their environments.
WELL	The International WELL Building Institute launched the WELL Certification standard in 2014 to advance the principles of equity, global applicability, technical rigor, and customer focus in the built environment. It includes strategies across 10 categories that address both physical and social aspects of the built environment. These categories include air, water, nourishment, light, movement, thermal comfort, sound, materials, mind, and community.

Appendix D. Select Professional Societies Contributing to Professional Development

FIELD	ORGANIZATION	ESTIMATED MEMBERSHIP	MEMBERSHIP BASE	OPPORTUNITIES	ANNUAL MEETINGS
Neuroscience and Biomedical Sciences	Academy of Neuroscience for Architecture	~400	Global	Convenings, workshops	ANFA Events
	American Association for the Advancement of Science	~100,000+	Global	Convenings, workshops, fellowships, professional courses	AAAS Annual Conference
	Society for Neuroscience	~30,000	Global	Convenings, workshops, professional courses	SfN Meetings

Design	American Institute of Architects	~100,000+	US	Convenings, workshops, professional courses, CEUs	AIA Annual Conference
	American Society of Interior Designers	~25,000+	US	Convenings, workshops, professional courses, CEUs, certifications	ASID Events
	International Interior Design Association	~15,000+	Global	Convenings, workshops, professional courses, CEUs	IIDA Events
Government and Real Estate	American Planning Association	~39,300	Global	Convenings, workshops, CEUs	APA Annual Conference
	National Association of Realtors	~1.5 million	US	Convenings, professional courses, workshops, CEUs	NAR Events
	Urban Land Institute	~45,000–48,000	Global	Convenings, workshops, professional courses, CEUs, certifications, mentorship	ULI Events

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