

# THE BUILT ENVIRONMENT FOR MILD COGNITIVE IMPAIRMENT

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Architecture & Design:

Empowering those with MCI to navigate the natural and built environment



# JOSH CREWS, AIA, EDAC



- 2.5 Million SF of Environments for Aging Projects
- National Thought Leader (20+ Publications/Presentations)
- Orchestrating Consensus

# HEATHER FELLOWS, NCIDQ, EDAC



- 1.75 Million SF of Environments for Aging Projects
- Experiential Design Leader
- Creating desired experiences through the built environment





# AGENDA

- WHAT IS MCI?
- IMPACT TO INDEPENDENCE
- IMPACT OF THE BUILT ENVIRONMENT
- VARIABLE BUNDLES IN EBD
- NEXT STEPS

# WHAT IS MCI?

## MILD COGNITIVE IMPAIRMENT

HEALTHY AGING

25% of adults over the age of 65

1 FDA Approved pharmaceutical

20% will revert back to healthy aging

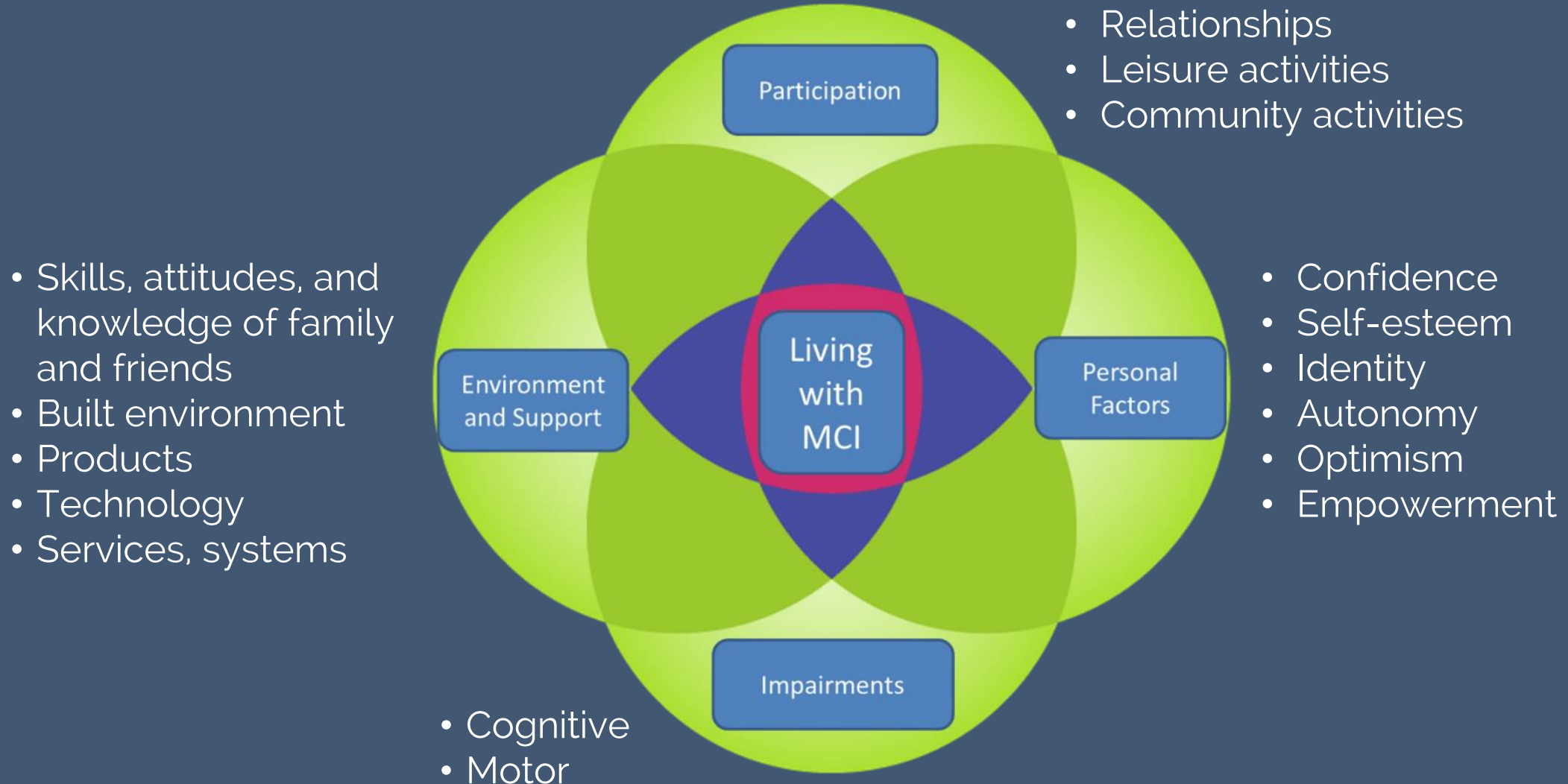
0 Evidence-based Treatments

Within 5 years 32% progress to ALZ

Within 5 years 38% progress to Non - ALZ Dementia

ALZHEIMERS

# WHAT IS MCI?



# IMPACT TO INDEPENDENCE

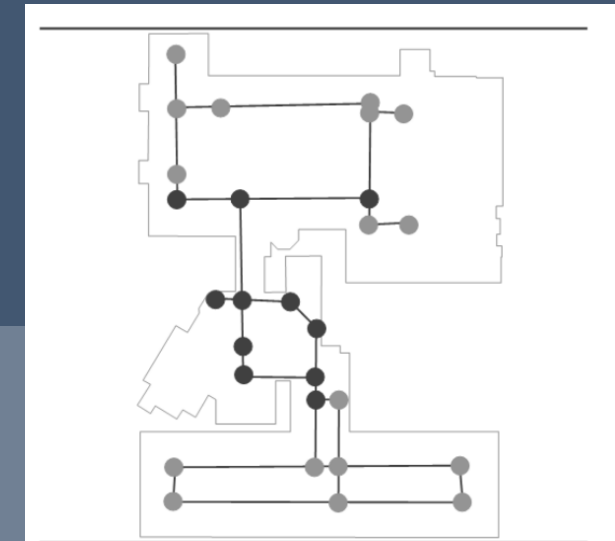
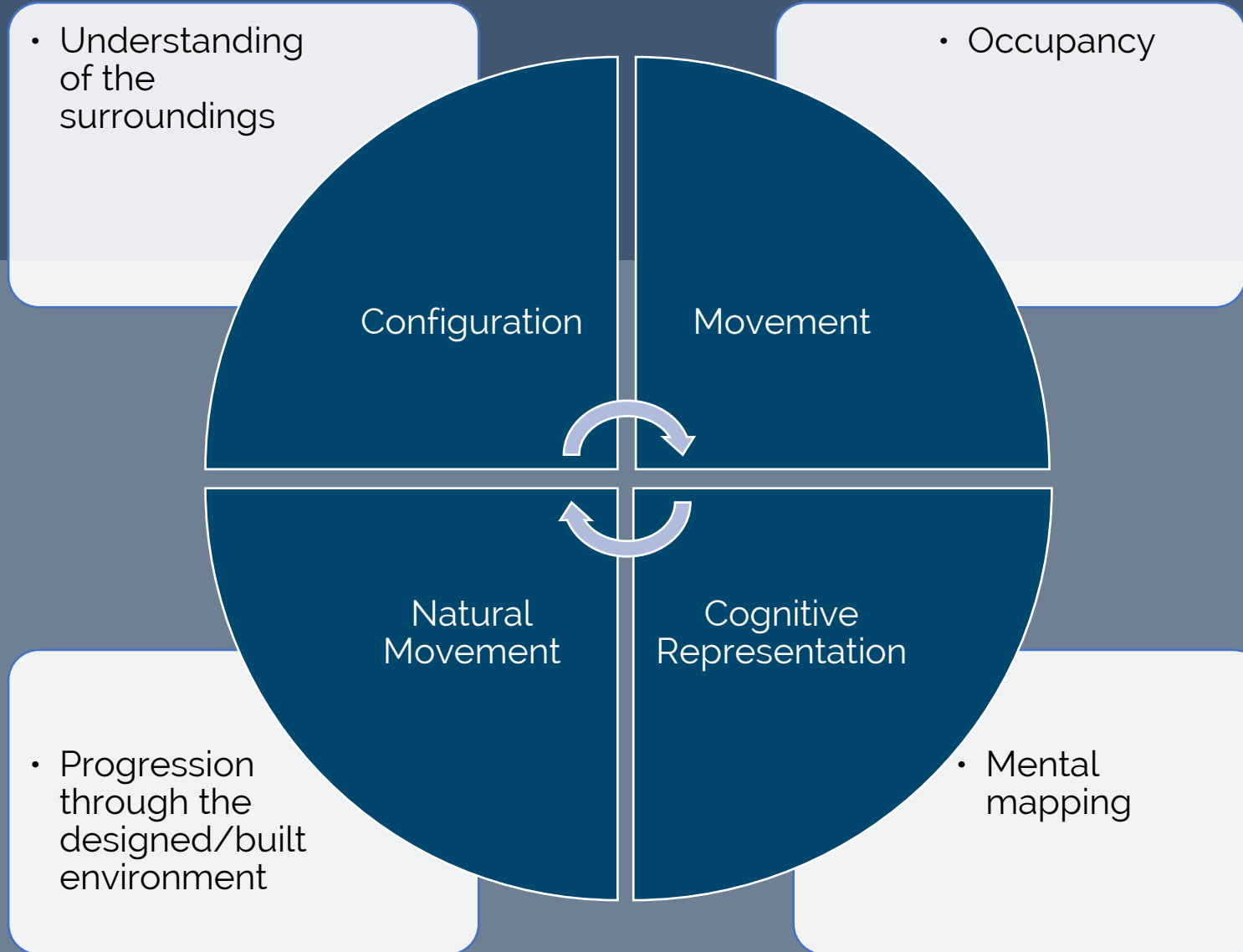
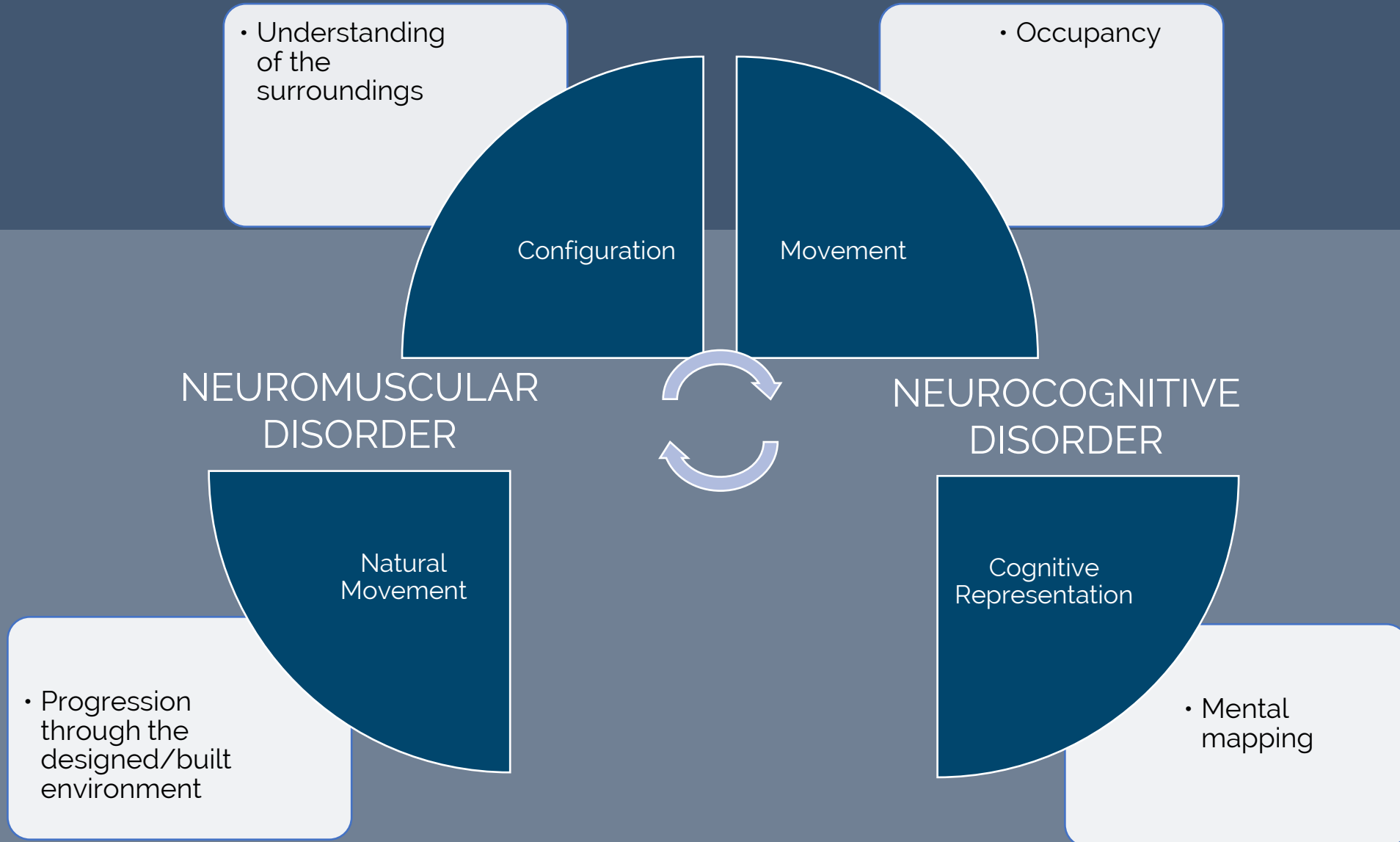


Figure 13: City Hospital, Actual Node Integration



Figure 8: City Hospital, Syntax Analysis of Public Lines

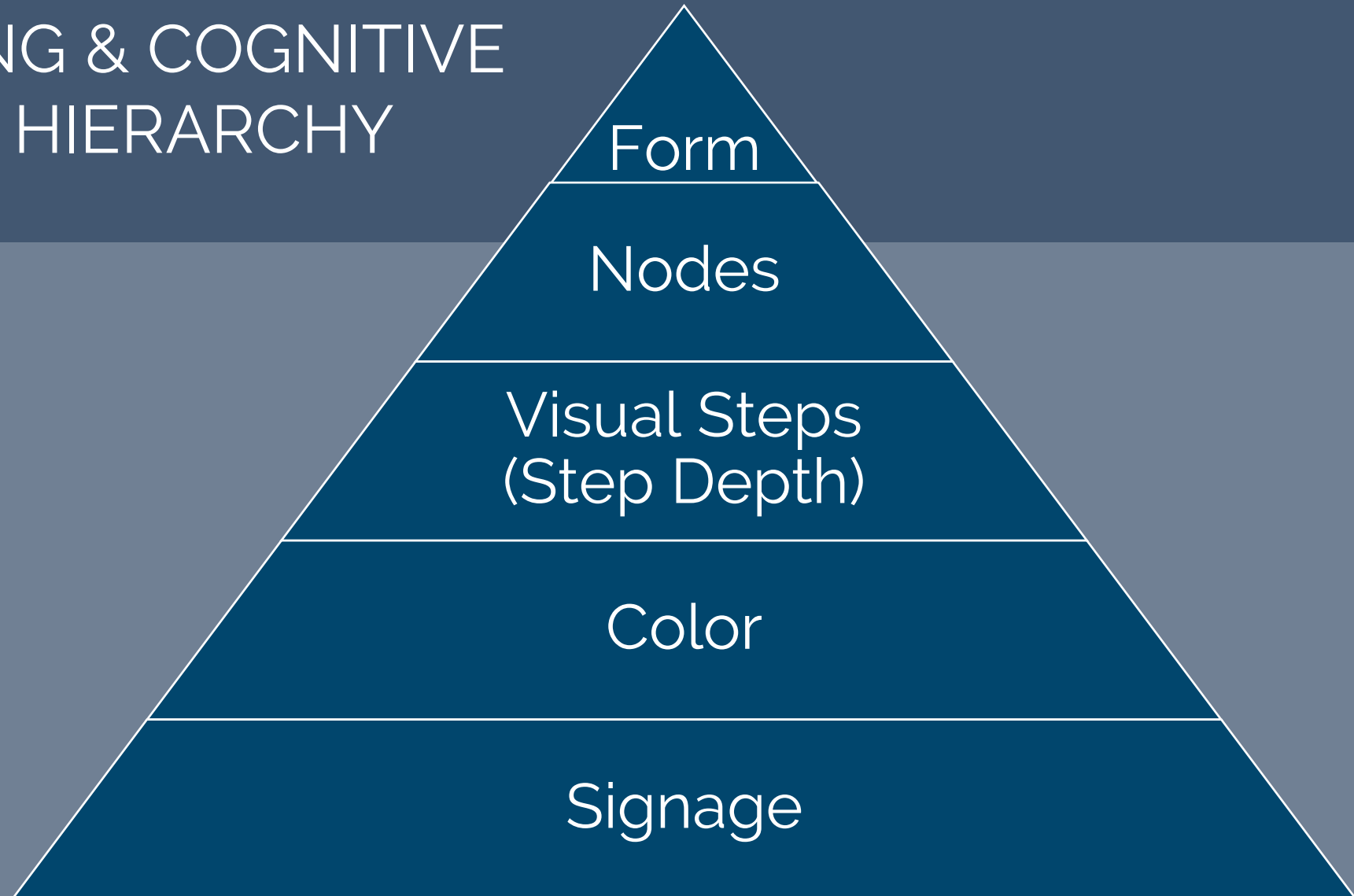
# IMPACT TO INDEPENDENCE





# IMPACT TO INDEPENDENCE

WAYFINDING & COGNITIVE  
DESIGN HIERARCHY



# INFLUENCE OF THE BUILT ENVIRONMENT

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- Artwork
- Daylight Access
- Finish Cues
- Points of Choice
- Clear Entry/Exit Sequence
- Tunable/Dimmable Lighting
- Biophilic Design
- Material Authenticity
- Recall & Reminders
- Thoughtful Visual Access
- Reduced Cognitive Clutter
- Circulation/Return (No Step Depth)
- Audibility/Intelligibility
- Universal Design

# DESIGN STRATEGIES

The center's program is made up of four cores, which are interdisciplinary teams responsible for planning and implementing research and interventions with members and care partners.



- The Built Environment Core
- The Therapeutic Core
- The Technology Core
- The Innovation Accelerator Team

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# VARIABLES OF THE BUILT ENVIRONMENT

# LIGHT



Disruption or desynchronization of the circadian rhythm has been linked with obesity, diabetes, depression and metabolic disorders.

- Intrinsically photosensitive retinal ganglion cells
- Code required vs human centered
- Sleep Quality
- Mood and Productivity
- Technology for tunable, dimmable LED

# LIGHT



Light is the main driver of the visual and circadian systems.

- Provide access to Daylight
- Understand Physiological Needs
- Reduce circadian phase disruption
- Improve Sleep Quality
- Positively Impact Mood and Productivity

# ACOUSTICS



“Exposure to noise sources, such as traffic and transportation hinder the health and well-being of people in a number of different ways”

- Linked to sleep disturbance & hypertension
- Hinder productivity, focus, & memory retention
- Lack of privacy/security

# ACOUSTICS

Provide a comprehensive and holistic approach to addressing the concerns of acoustical comfort through research-based design considerations that buildings can accommodate for the purposes of improving occupant health and well-being.



- Planning & Commissioning of HVAC
- Add mass & glazing to partition elements
- Sealing gaps at doors/connections
- Replace hard surfaces with absorptive materials
- Consistent background sound levels



# WAYFINDING

Inadequate wayfinding in the built environment can have significant effects on the aging population.



- Stress & Confusion that may affect their confidence and willingness to venture out
- Increased Social Isolation and Reduced Mobility
- Increased Dependency on others

# WAYFINDING

Improving wayfinding through age-friendly design principles, clear signage, and accessible pathways can help create a more inclusive and supportive built environment for aging adults.



- Vistas and nodes provide clearer paths of travel for new environments
- Provide glass walls for exterior views
- Minimize step depth
- Finish cues
- Clear Entry

# MATERIALS



Deliberate design strategies for each sense is critically important to activate recall and memory

- Using authentic materials can enhance sensory stimulation, trigger positive memories, and promote cognitive well-being
- Can result in increased engagement, improved mental health, and a sense of comfort, reducing feelings of disorientation or confusion

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VARIABLE BUNDLES  
IN  
EVIDENCE-BASED DESIGN

# VARIABLE BUNDLES



## EVIDENCE BASED DESIGN CONSIDERATIONS TO ACHIEVE GUIDING PRINCIPLES

- Construct the Built Environment as a tool of **Empowerment** for independence
- Create moments within the flow of space for **Fellowship**
- Provide **Flexibility** within the Built Environment at multiple scales

# VARIABLE BUNDLES



## EVIDENCE BASED DESIGN CONSIDERATIONS

- Biophilic design
- Experience (Evoking Emotion)
- Active design
- Safety/security
- Aesthetics
- Function

# VARIABLES BUNDLES



- Diffused lighting for a non-reflective glare on counter and technology
- Located directly adjacent to the elevator for a clear view
- Thoughtful materials used to enhance the sound environment
- Warms woods, soft tones, and accessories

# VARIABLES BUNDLES



- Diffused lighting for a non-reflective glare
- Located in a quiet corner of the space – staff escort
- Materials used to dampen sound to allow members to focus
- Warms woods, soft tones, and accessories



# VARIABLES BUNDLES



- Direct/Indirect Lighting for task-oriented work
- Active space in the main circulation
- Designed for students to observe members
- Exposed ceiling, glass partitions, & brighter colors to activate space

# VARIABLES BUNDLES



- Task Lighting
- Located in the “hearth” of the space
- Adjacent to dining but tucked away so noise does not interfere with teaching
- Warm woods, durable counters with minimal pattern, and textured backsplash

# VARIABLES BUNDLES



- Lighted Bollards
- Protective hedges & water feature to provide an acoustical barrier
- Direct sight lines from garden to entry
- Smooth concrete, flush wood decking, textured plants, and stone wall water feature

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# FINDINGS

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Universal design was not utilized in all spaces.



# FINDINGS

The experience created by the variable bundles led to a feeling of safety, security, and empowerment.



# FINDINGS

The initial baseline is not the baseline



# FINDINGS

Fellowship was an unexpected driver.





# SUMMARY



- MCI impacts more than a quarter of the population over the age of 65.
- The built environment has a direct impact on Independence
- Flexibility can help implement variable bundles in design
- Co-design and follow-up have provided strong lessons learned



WHAT QUESTIONS DO  
YOU HAVE FOR US?

THANK YOU!

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Stegenga + **PARTNERS**

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