23e SYMPOSIUM SCIENTIFIQUE sur l'incapacité visuelle et la réadaptation

École d'optométrie
Université de Montréal

# AI Scene CAMM

## Web-based platform to assist clinicians in measuring environmental features during real-world travel

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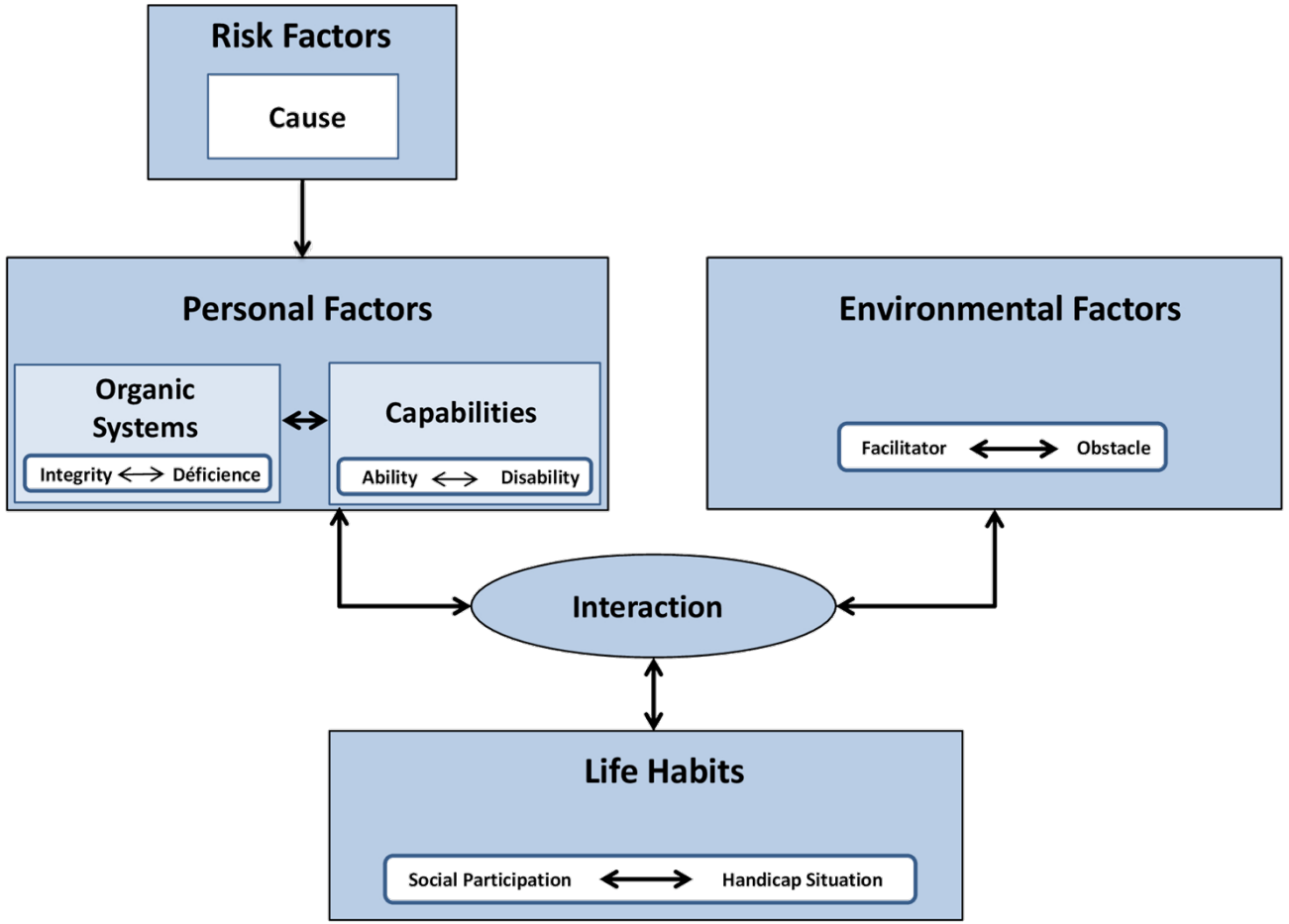
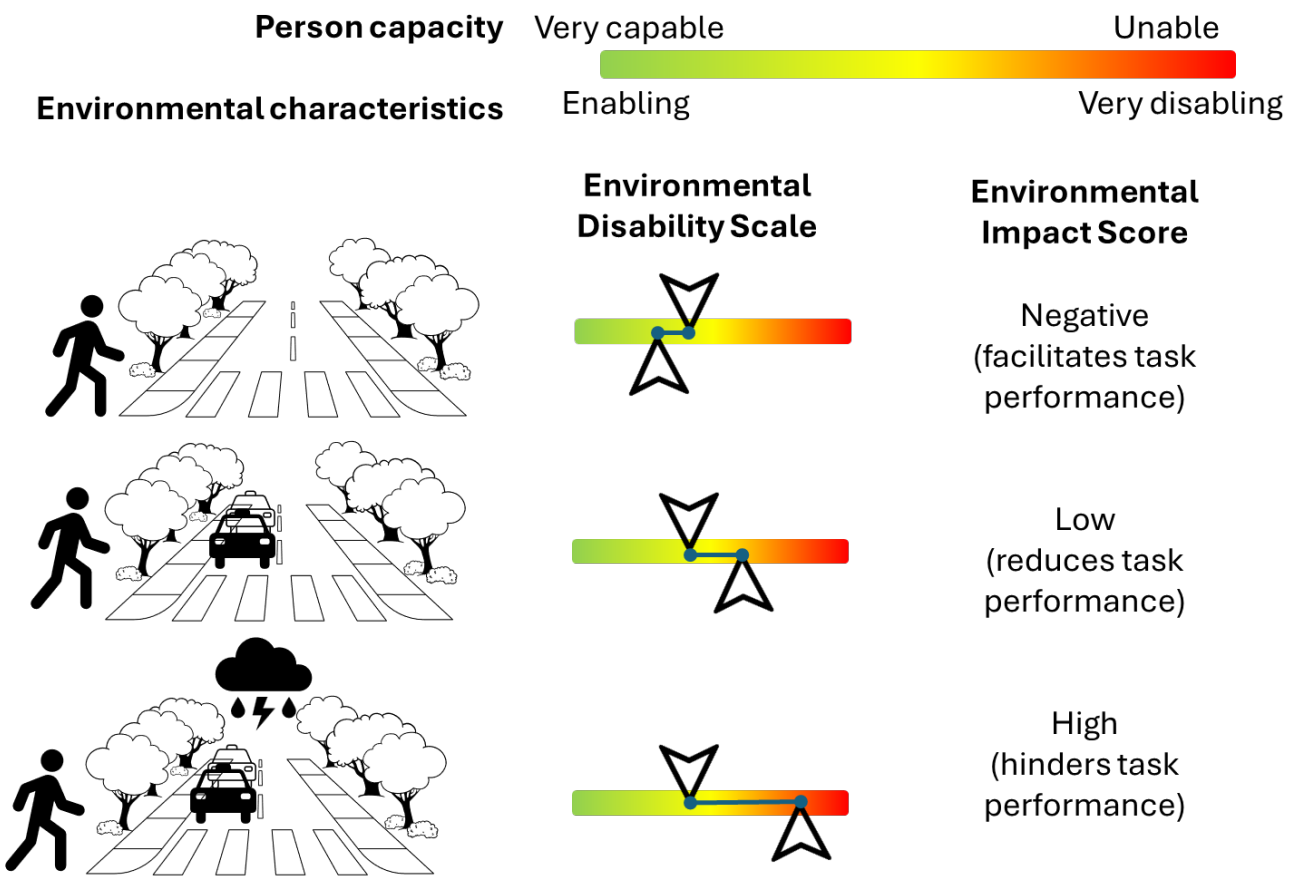
# HDM-DCP (PPH) Model of disability:




The ability of an individual to perform a task is based on their person capacity and environmental characteristics.

- Measuring personal capacity:
  - Vision: ETDRS Chart, MARS Contrast sensitivity, etc
  - Hearing: Audiogram, etc.
  - Environment: ?

# Measuring environmental disability:




Both the person capacity and the environment are inherently linked

How to measure this when it is always changing?

- Sound
- Lighting
- Moving objects

# AI Scene CAMM concept:

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- Quantifies the environmental scene difficulty using:
    - Luminance & contrast
    - Clutter & crowding
    - Motion
    - Object detection
    - Timing

- Need to develop and validate the models

# Experimental Approach:

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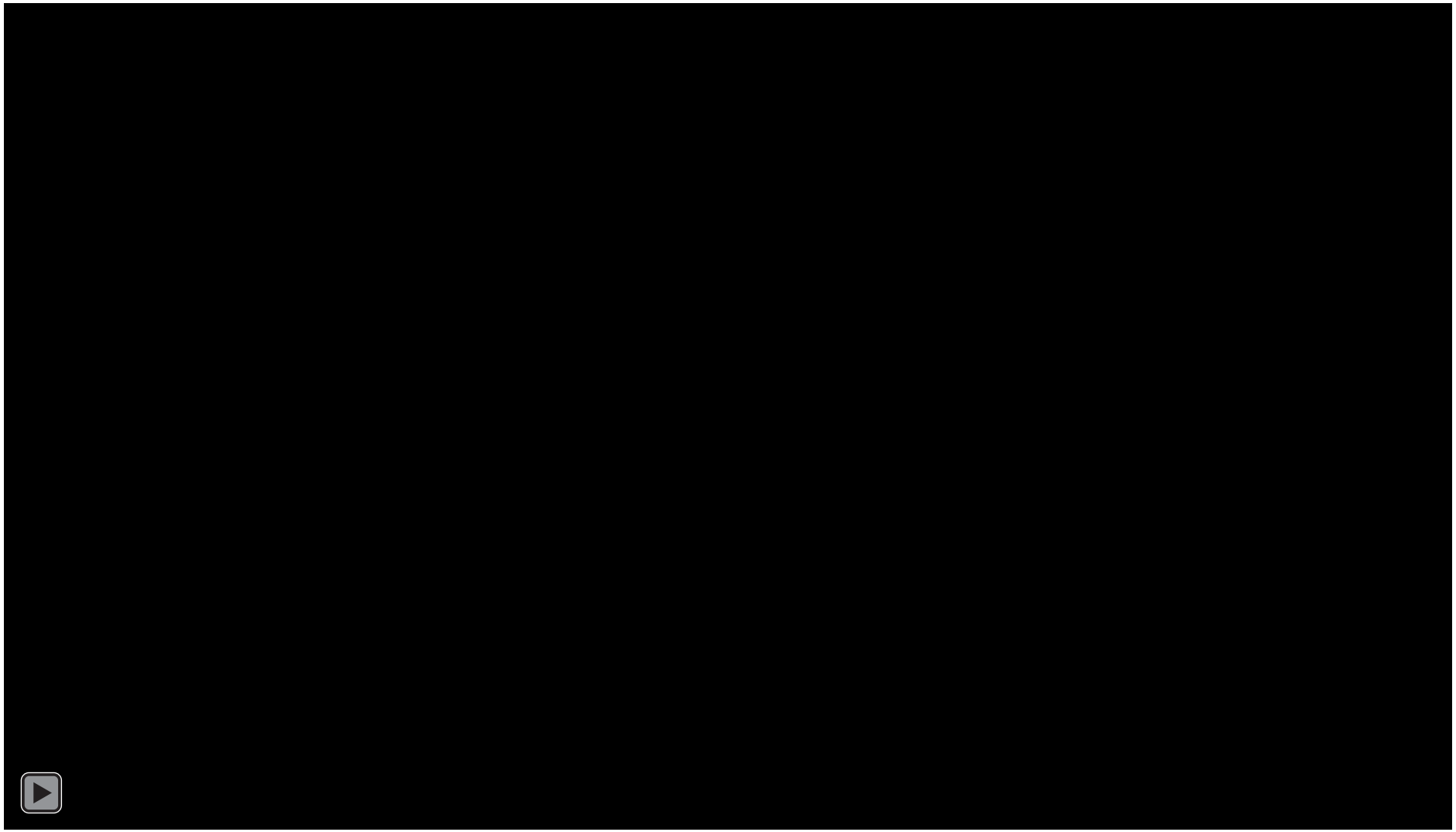
- Recruiting participants:
  - VI, HI, DSI & controls
- Inputs:
  - Short online videos + laboratory trials

- Objective metrics:
  - Visual: luminance, contrast, entropy, edge density, optical flow, object detection
  - Auditory: Background, Volume, Frequency, Dynamics, traffic, saliency

# AI Scene CAMM: Objective scene measurements



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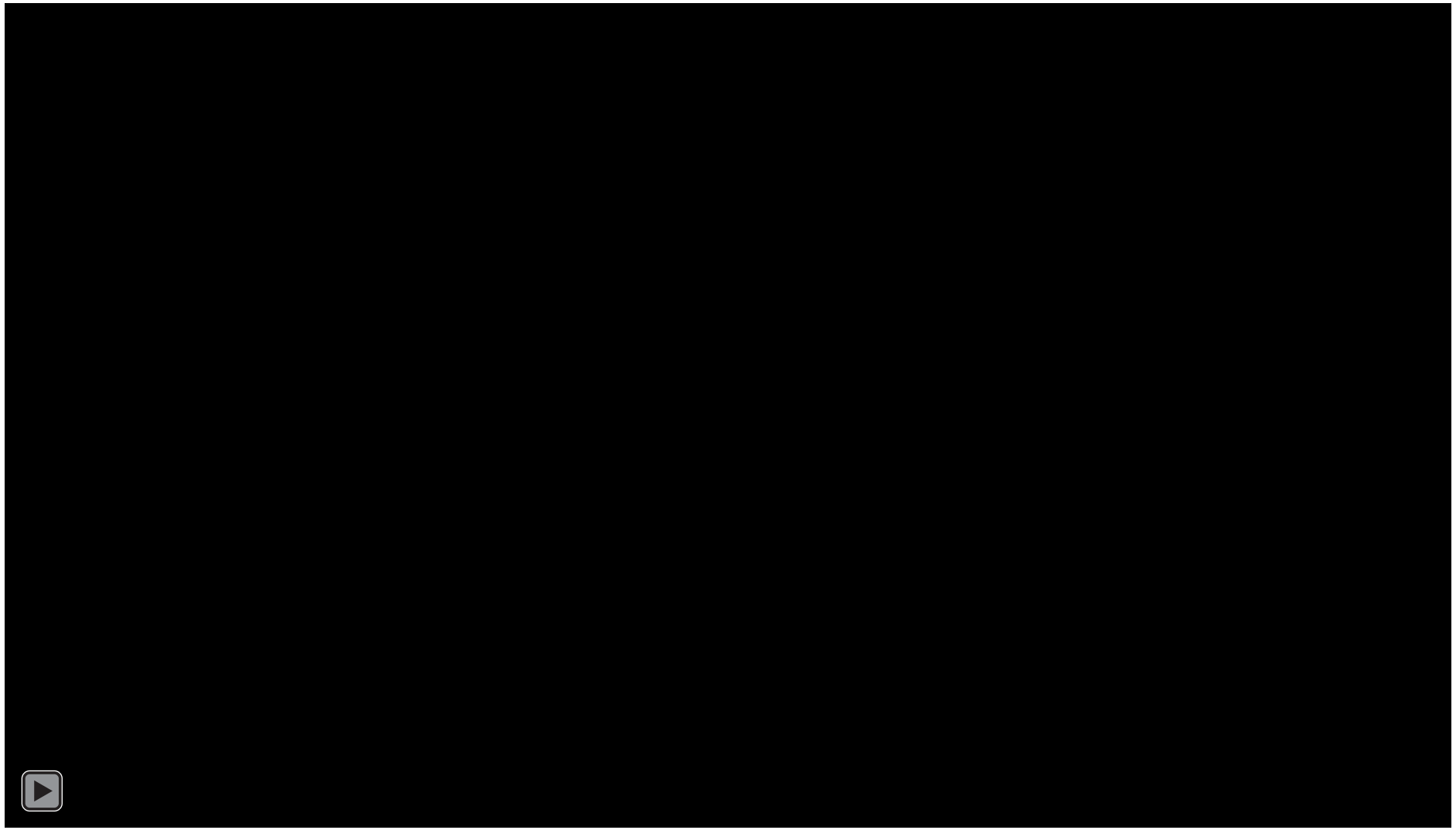
# AI Scene CAMM: Video note-taking



# Safety and confidentiality

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- Server in Nemargut laboratory at the Université de Montréal
- Restricted access (dual-factor identification)
- Face blurring
- No shared access
- No sharing of data to third parties (i.e. Google, Meta, etc.)

# Future Work:

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- Integration of AI models (traffic, crowd, clutter…)
- Open Platform for clinical testing
- Integration of Clinical / Rehab tools to measure performance
- Accessibility index

# Demo :
# AI Scene
# CAMM

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