



## **Wayfinding for Social Contexts -an inclusive experiential research path**

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IDRC Community July 12, 2017**

**Image: person with shopping cart walking down set of stairs at Eaton Centre, Toronto 2013**

- **Associate Professor, Faculty of Design**
- **Environmental Design + Inclusive Design Programs**
- **Architect with 30 years of experiences**
- **Specialization in accessibility assessments and planning for facilities**
- **Research is centred on Wayfinding, Wayshowing of public spaces with an inclusive perspective**

## **1.0 Housing Context**

- participatory research with Toronto Community Housing  
2010-2011

## **2.0 Hospital Context**

- course-based research with Baycrest Hospital, Toronto  
2013

## **3.0 Commercial Public Space Context**

- faculty masters and current research  
2012-present



## What is *'Wayfinding'* ?



**Image: morphous netting sculptures located at ceiling in airport setting to orient travellers**



# What is 'Wayfinding' ?

*Movement, orientation and navigation is a primary daily human activity, [and] choices based upon information, for routes and destinations...is part of a journey experience through the built and other environments.*

*- designworkplan,  
Netherlands*

## **1.0 Housing Context**

- participatory research with Toronto Community Housing  
2010-2011







**Image: launch of partnership between OCADU and Toronto Community Housing with residents, president and mayor in attendance**





# Context

Toronto Downtown-East  
Regent Park and Moss Park Housing Complexes

Image: aerial view of downtown east Toronto

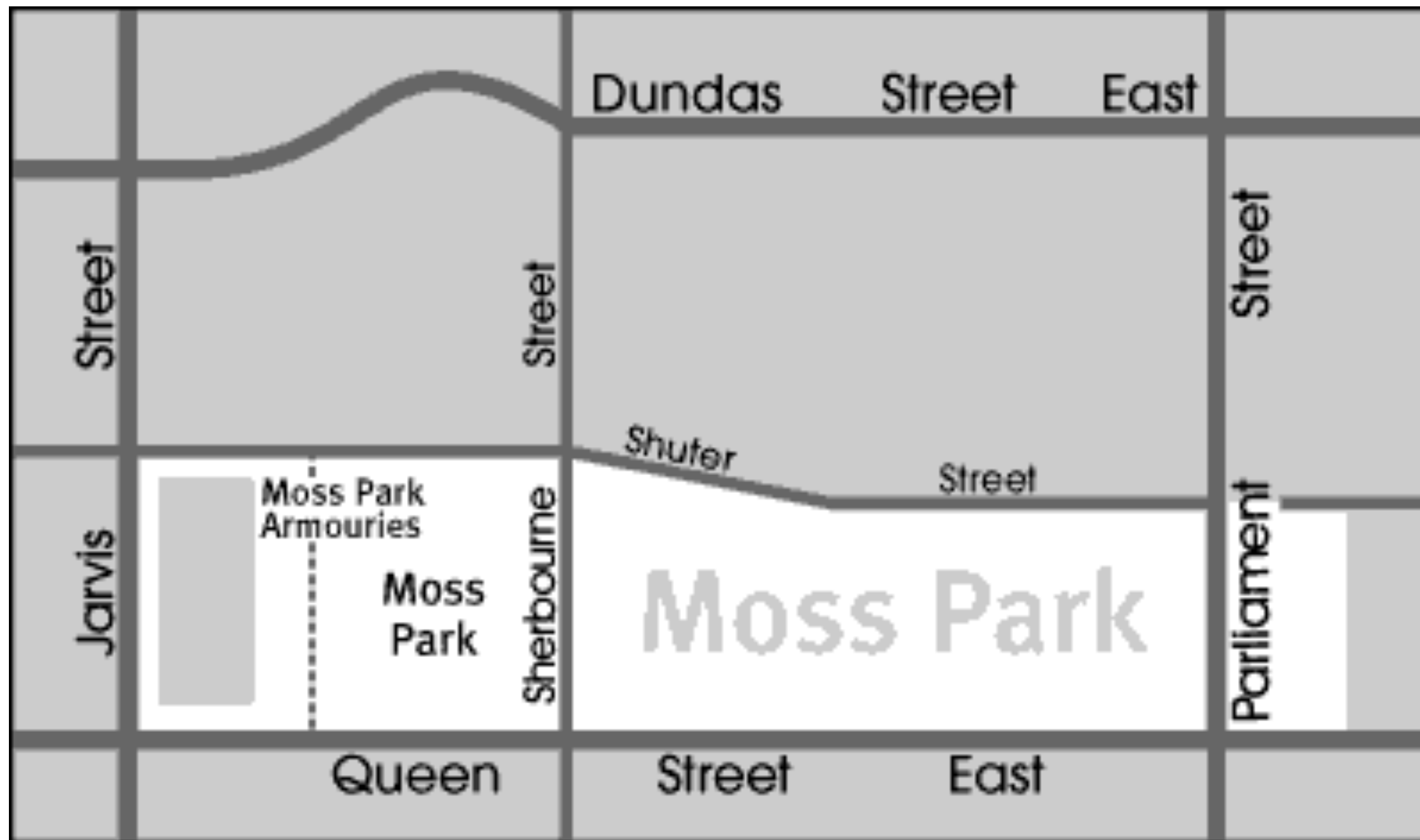


Image: map of toronto east area showing the boundaries of Moss Park Residential Community





# Objectives

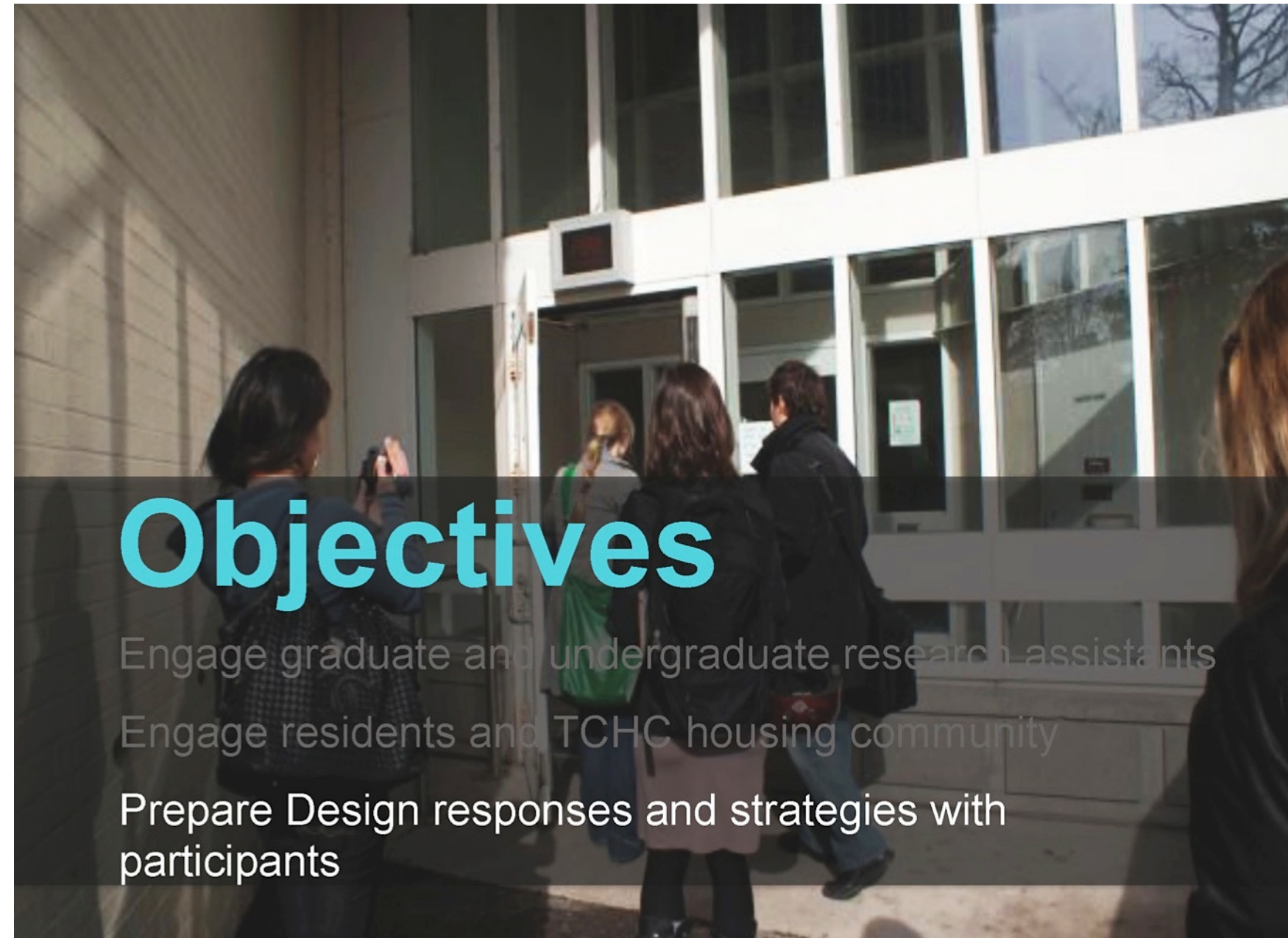
Engage graduate and undergraduate research assistants

**Image: students touring Moss Park Housing to learn about and discuss wayfinding issues in 2010**



**Image: students and residents meeting at Moss Park community centre to discuss wayfinding issues in 2010**





# Objectives

Engage graduate and undergraduate research assistants

Engage residents and TCHC housing community

Prepare Design responses and strategies with participants

**Image: students and residents meeting at Moss Park community centre to discuss wayfinding issues in 2010**





**Image: students and residents meeting at Moss Park community centre to discuss wayfinding issues in 2010**



**Images: students, residents and TCHC management in 2010 workshops discussing wayfinding issues and navigating public spaces within the Moss Park Toronto housing complex to experience the issues being discussed.**



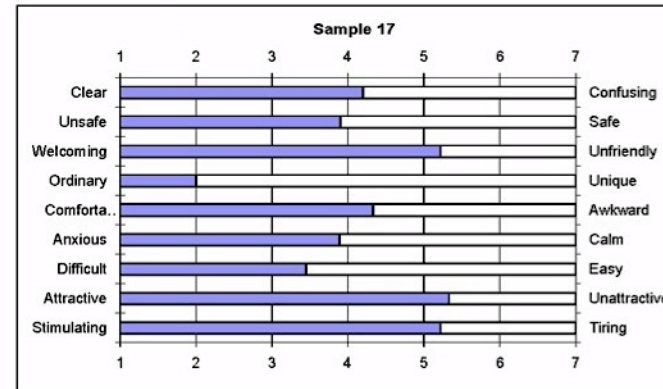


# Visual, Auditory & Tactile Juries

Qualitative Research- Pre-cognitive Programming

## Visual Jury Results- Sample 17

Juror #	Persona	Clear	Unsafe	Welcoming	Ordinary	Attributes	Anxious	Difficult	Attractive	Stimulating	Juror #	Persona
		Confusing	Safe	Unfriendly	Unique	Comfortable	Calm	Easy	Unattractive	Tiring		
A		2	6	2	4	2	4	4	2	2	A	2
B		5	3	7	1	4	4	1	7	6	B	7
C		5	4	5	3	5	3	3	5	4	C	4
D		7	5	7	1	5	5	5	6	7	D	7
E		2	2	6	2	6	2	6	6	6	E	6
F											F	
G		6	3	5	1	5	5	3	7	7	G	7
H		4	6								H	
I		3	5	6	1	4	5	4	6	6	I	6
J		3	2	4	2	4	4	2	4	4	J	4
K		5	3	5	3	4	3	3	5	5	K	5
L											L	
M											M	
N											N	
O											O	
P											P	
Total		42	39	47	18	39	35	31	48	47		
Average		4.20	3.90	5.22	2.00	4.33	3.89	3.44	5.33	5.22	Average	4.17
Opposite		3.80	4.10	2.78	6.00	3.67	4.11	4.56	2.67	2.78		3.83

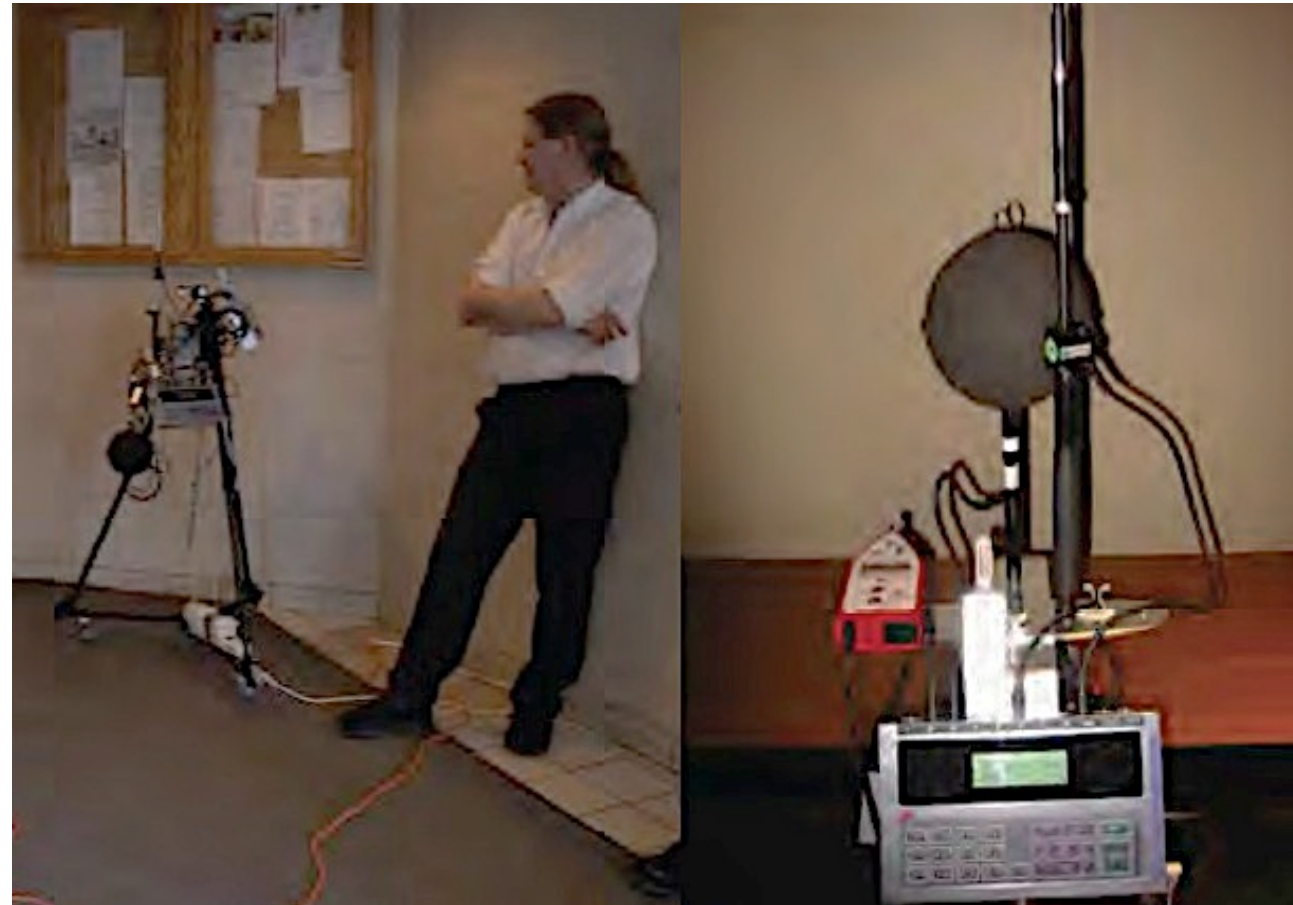


### Images:

Left: residents partake in different jurying activities providing reactions to various building settings to help determine perceptual and cognitive preferences for design features that may help with wayfinding.

Right: graphic results from one Visual Jury showing how a building image solicited a variety of qualitative responses such as calm, confusing, bright, clear etc.

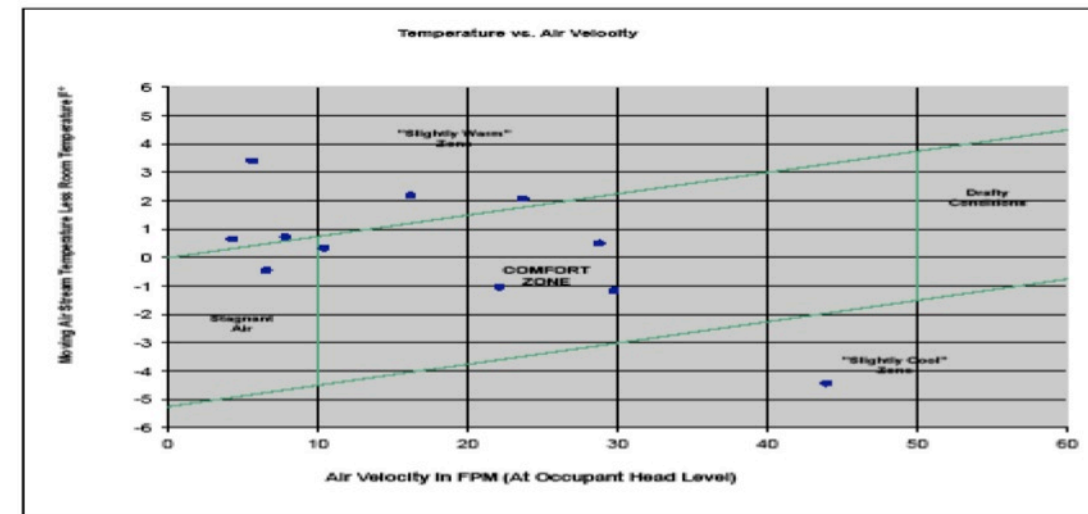




## ENVIRONMENTAL DATA CAPTURE

TEMPERATURE & AIR VELOCITY READINGS FOR MOSS PARK  
MARCH, 2010

Location	File	Temperature	Air Velocity	Location	Description
1	1030	0.66	4.31	1	Center of rec (lounge) room on first floor
2	1030	0.34	10.40	2	Deside entrance to rec (lounge) room on first floor
3	1043	-1.43	43.96	3	Deside front vestibule on first floor
4	1051	2.20	16.22	4	First floor corridor near front vestibule
5	1100	2.08	23.72	5	First floor corridor by elevators (elevator lobby)
6	1115	-1.03	20.12	6	First floor corridor near rear vestibule
7	1123	3.41	5.62	7	Deside rear vestibule on first floor
8	1140	-0.44	6.56	8	Twelfth floor corridor by elevators
9	1154	0.73	7.87	9	Twelfth floor corridor by incinerator
10	1204	0.51	28.78	10	Penthouse floor corridor by elevators
11	1222			11	Penthouse floor in center of rec room
12	1228	-1.15	29.77	12	Penthouse floor in laundry room



### Images:

Left: Orfield research shown measuring environmental conditions at Moss Park such as temperature, light levels, sound level and air quality

Right: graphic tables from the research showing overall results for one location in the complex



# Wayfinding Analysis

A Day in the Life of Moss Park Residents

**Image: students interviewing Toronto Community Housing residents on their trip to OCAD U in 2010**



## Route Analysis Sample

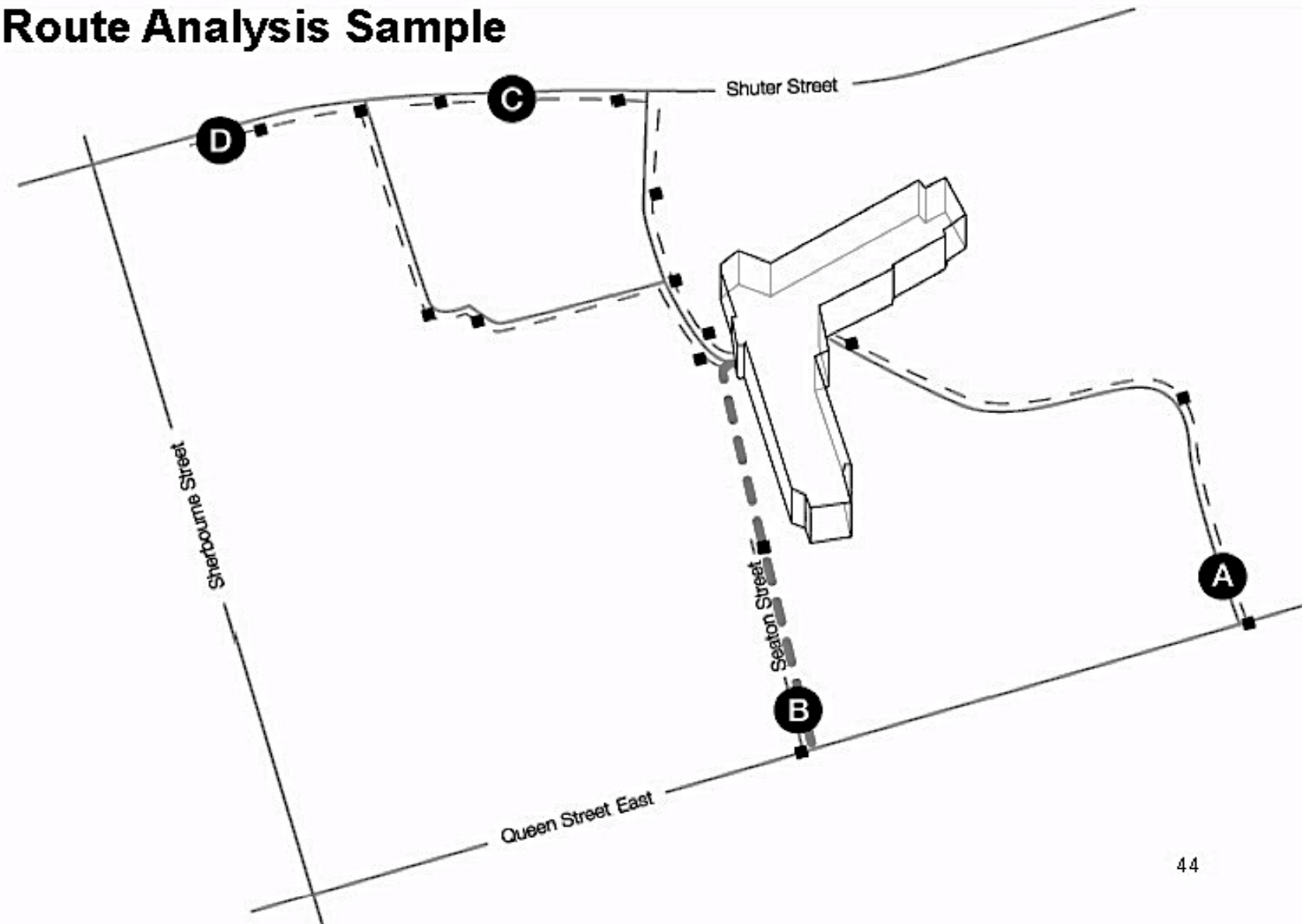


Image: sample of a diagram showing route analysis for a series of pathways throughout the Moss Park housing Complex



**Image: student with resident discussing emerging themes for the research work including challenges arising from safety matters within the complex**





**Image: student with resident discussing emerging themes for research work including challenges arising from poor accessible travel to and from complex and clear navigation of both internal and external spaces**



# Emerging Themes

Safety  
Accessible Travel & Navigation  
Signage & Orientation

**Image: student with resident discussing emerging themes for research work including challenges arising from poor wayshowing signage and support for clear orientation within complex**

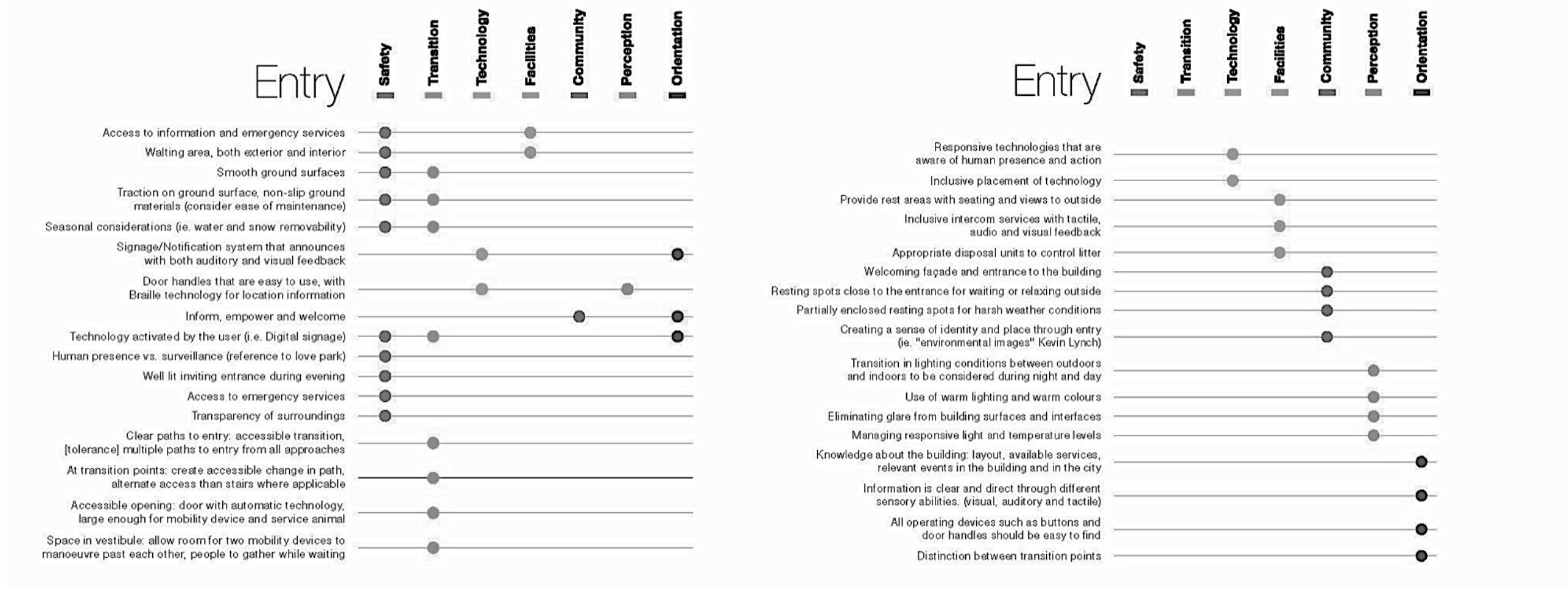




**Image: plan of housing complex with student and resident marking key areas of wayfinding to improve.**



# Mapping Emerging Themes & Strategies



**Image: graphic table showing text for various design strategies emerging for an entrance area of the main buildings in the housing complex**



**Image: start of images showing various design strategies and concepts. This solution shows young people walking through Moss Park in the evening with improved lighting throughout the grounds and exterior buildings**





**Image: this solution shows concepts for revitalizing transit shelters for accessible travel and orientation within the housing complex**



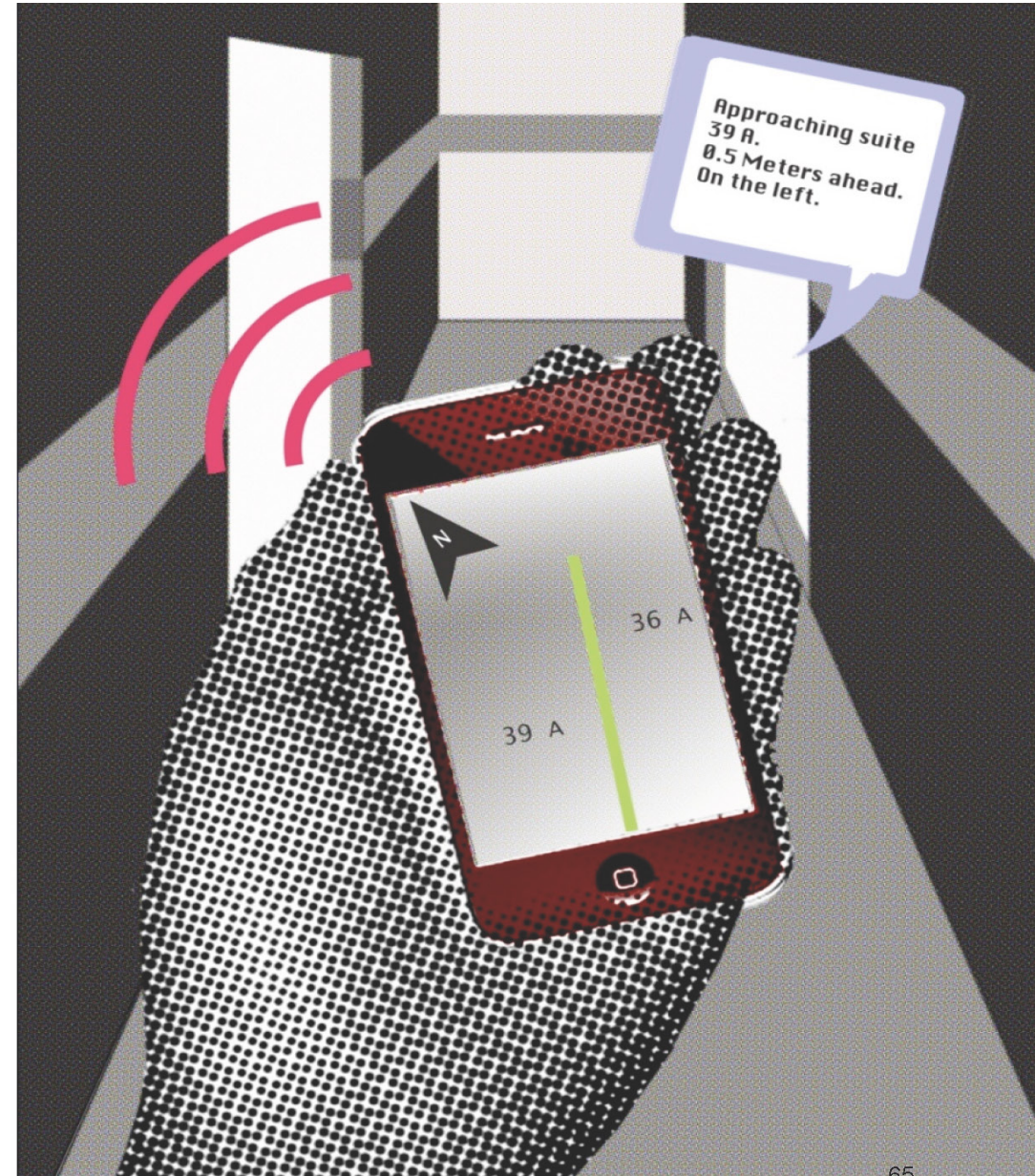


**Image: this solution shows an idea for a major scented garden within the housing complex**



**Image: this solution shows large size graphics and signage for the underground parking areas of the complex along with stronger contrast for Exit and Fire Safety paths**





**Image: this solution shows an idea for using talking and mapping phone apps to support navigation, wayfinding and communication within the housing complex**





# Sharing results

**Image: poster presentation by researchers who presented their work at an international conference on access and inclusion, Toronto, 2011**

## **2.0 Hospital Context**

- course-based research with Baycrest Hospital, Toronto  
2013





## Think Tank 1: Awareness

# Wayfinding in the Baycrest Context



Image: cover for 2013 publication of student course-based research work with Baycrest Hospital, Toronto and showing various design strategies and solutions for wayfinding issues

# Inclusive Wayfinding

**In the Hospital Context:  
Think Tank 1 Project**

**Baycrest Health Sciences  
Centre for Aging**

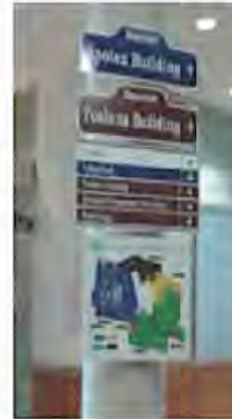




# Key Issues:

in the areas of signage, maps and navigation, elevators, entrances and exits, technology and landmarks.

## Signage



## Visual Clutter

When it comes to signage, there is sensory overload. Some issues with the signage are the shapes, colour and amount of information on the signs. The shape of the sign, being fairly complex as opposed to a simple shape, adds unnecessary visual information. - Group 1

Visual clutter is consistent throughout the entire main floor. Every space is occupied with signs, artwork, sculptures and advertisements. The artwork is not curated; it's almost placed at random. This causes confusion for visitors because it distracts them from the signs, which are already difficult to navigate with. - Group 4

The touchscreens are a very powerful tool, and are one of the best wayfinding tools that Baycrest has. However, the touchscreens are not being used properly. Three quarters of the screen is dedicated to advertisements and event notifications that continuously change every minute. That leaves just a quarter of the space for Baycrest's map. - Group 4

# Maps & Navigation

## Maps & Navigation



### Directional Confusion

Both staff members and the many people who come to visit Baycrest have difficulty distinguishing the Apotex from the Hospital. Another large issue for Baycrest visitors is locating the Terrace. Many people do not know that the Terrace is not inside Baycrest, but across the parking lot, which creates confusion and frustration and may cause visitors to be late for certain events that they may be attending. - Group 1



Most maps don't indicate where you currently are, while some do. Most maps serve more as a layout of the building rather than a wayfinding tool. - Group 5



Not only do visitors of Baycrest, but also Baycrest's own staff members have difficulty with navigation. Specifically, navigating the basement compartments is a difficult task. They look very similar and it is hard to distinguish North, East, South and West when you are underground, as there are few if any, points of reference to guide you. - Group 1



# Design Solutions

disposal. Designing a new wayfinding interface for the touch screen can make the entire wayfinding experience more enjoyable. The home screen for Baycrest's touchscreen would have the following options and functions:



- 1 The three icons represent the centre's zones that we've previously proposed.
- 2 When touched, a detailed map of that specific zone will pop-up.
- 3 The map button will bring the user to an overall map of the centre. From here the user will be able to pinch to zoom and look for their destination.
- 4 The "Search" button allows users to type in the name of the zone or facility they were looking for. As the user types the search bar will reveal its results colour coded by zones.
- 5 Haptic response system, causes the monitor to vibrate when a button on the touchscreen is tapped to reduce input errors.
- 6 Auditory responses built into "Help" guide users through the user interface.
- 7 Help button will contact the information desk for assistance. Info desk can control touch screen to show the person's route.
- 8 Separate input screen, stylus and auditory interaction will allow people who cannot reach or extend their arms to interact with screen.

# Design Solutions

eye level, would make wayfinding much more user friendly. By colour coding navigating entrances and exits to their appropriate zoning colour, and providing contrast for the visually challenged, the new signage system would also compliment the glass entrances and provide safety markers for users.



## Technology Strategies and Solutions:

Interactive touch-screen maps allows the user to navigate their own way around. Users would be able to input their destination by touching and following instructions on the screen-useful if no physical staff member is available to help. The system could map out the route to the destination using colours, arrows and both written and spoken information in any language.





# Design Solutions

formation prior to their visit to the centre. The application would give the user a sense of the layout of the hospital, and they will know what to expect and where to go upon arriving.

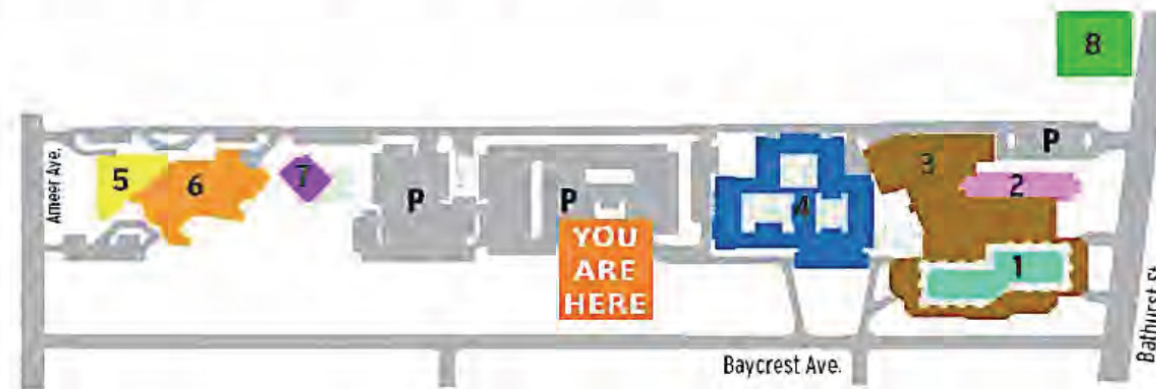


## Help Intercom at Baycrest:

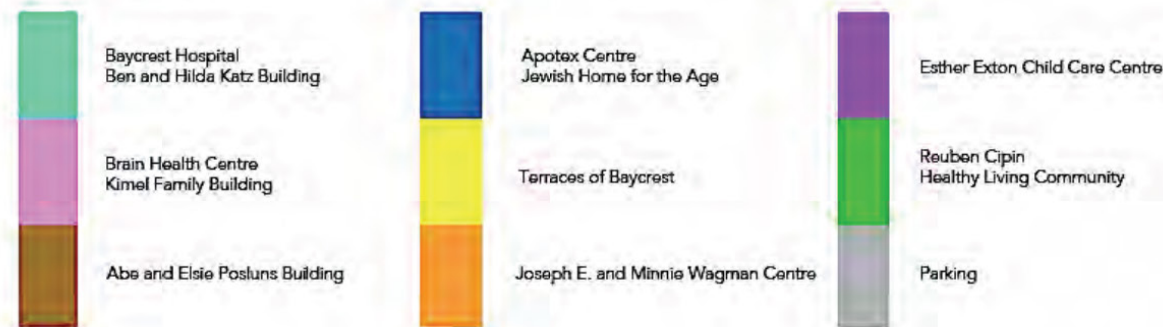
This system provides assistance for users when in need at the touch of a button. The help intercom should be connected directly to an employee at Baycrest who can provide immediate response whether it is an emergency or a simple question. This system should be placed throughout Baycrest and be clearly labeled to describe their function.



## 2D Mapping Strategies and Solutions:



- 1. Baycrest Hospital - Ben and Hilda Katz Building
- 2. Brain Health Centre - Kime! Family Building
- 3. Abe and Elsie Postluns Building
- 4. Apotex Centre, Jewish Home for the Aged
- 5. Terraces of Baycrest
- 6. Joseph E. and Minnie Wagman Centre
- 7. Esther Exton Child Care Centre
- 8. Reuben Cipin Healthy Living Community
- P. Parking





## **3.0 Commercial Public Space Context**

- faculty masters and current research  
2012-present



**Image: graduate students celebrating their big day**





# Inclusive Wayfinding

**Matter of Access:**

*Evolving Material Practices for Inclusive Wayfinding*

**Image: woman in wheelchairs with travel bag navigating an airport**

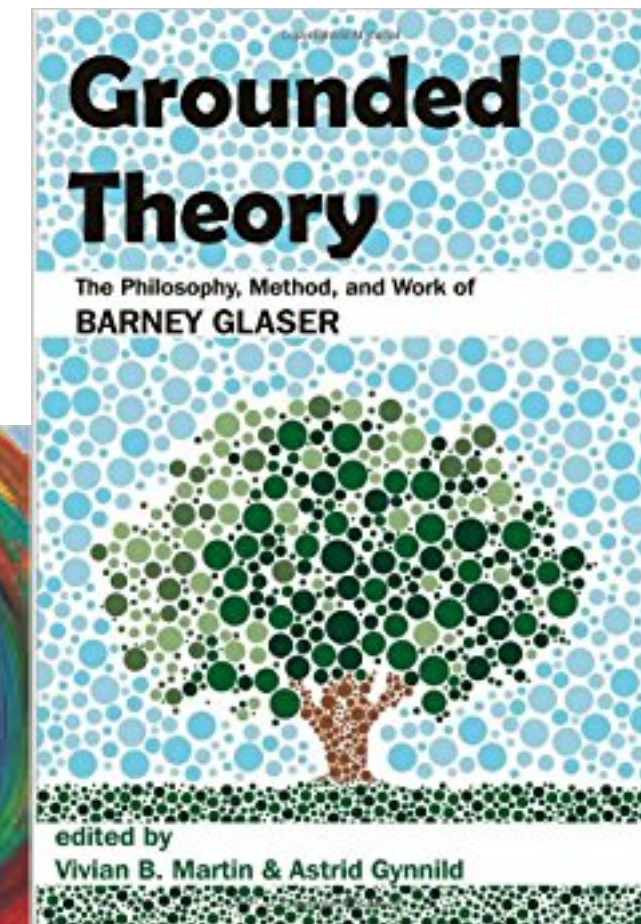
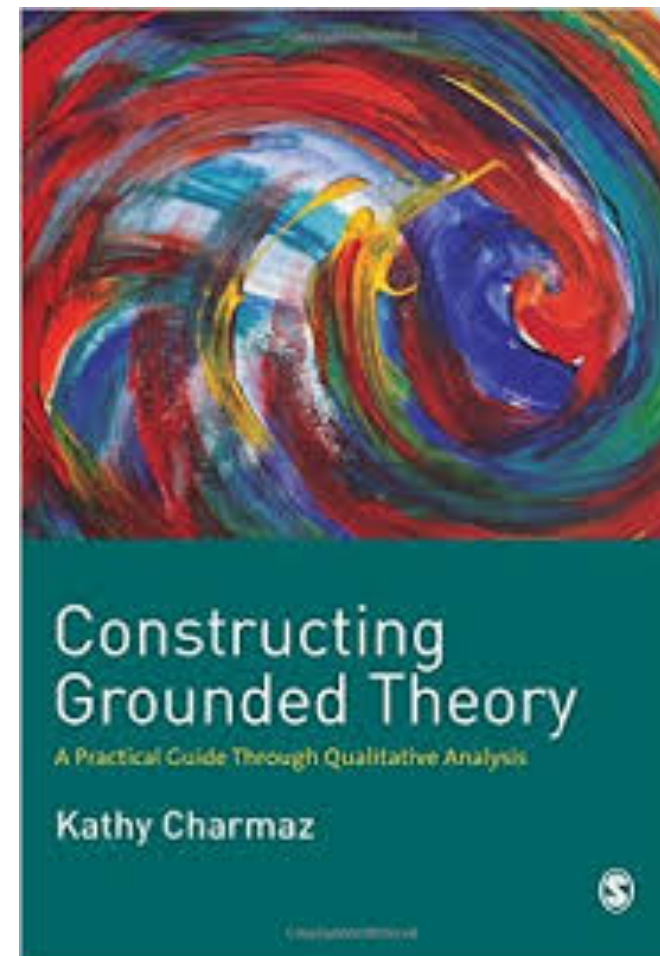


**Image: general area of Eaton Centre, Toronto**

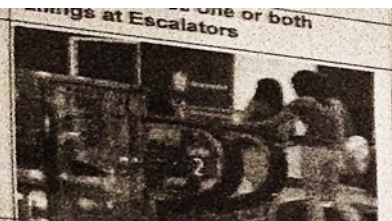

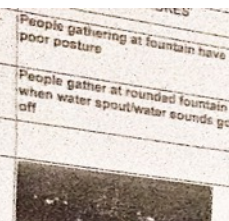

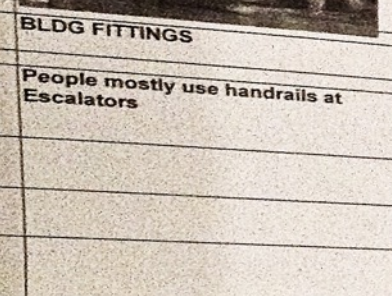

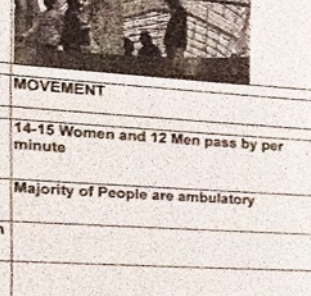

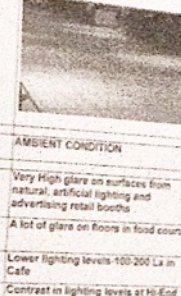




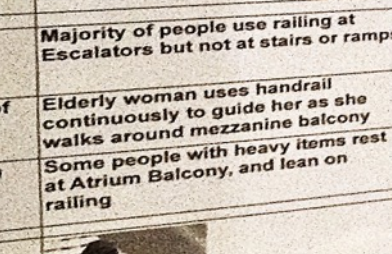

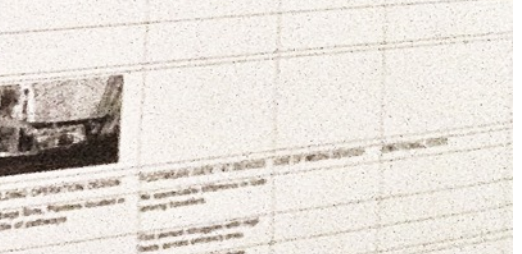

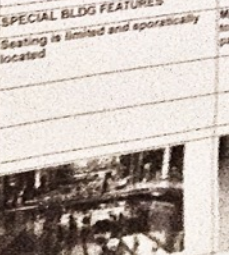






**Image: various images of people navigating Eaton Centre, Toronto**

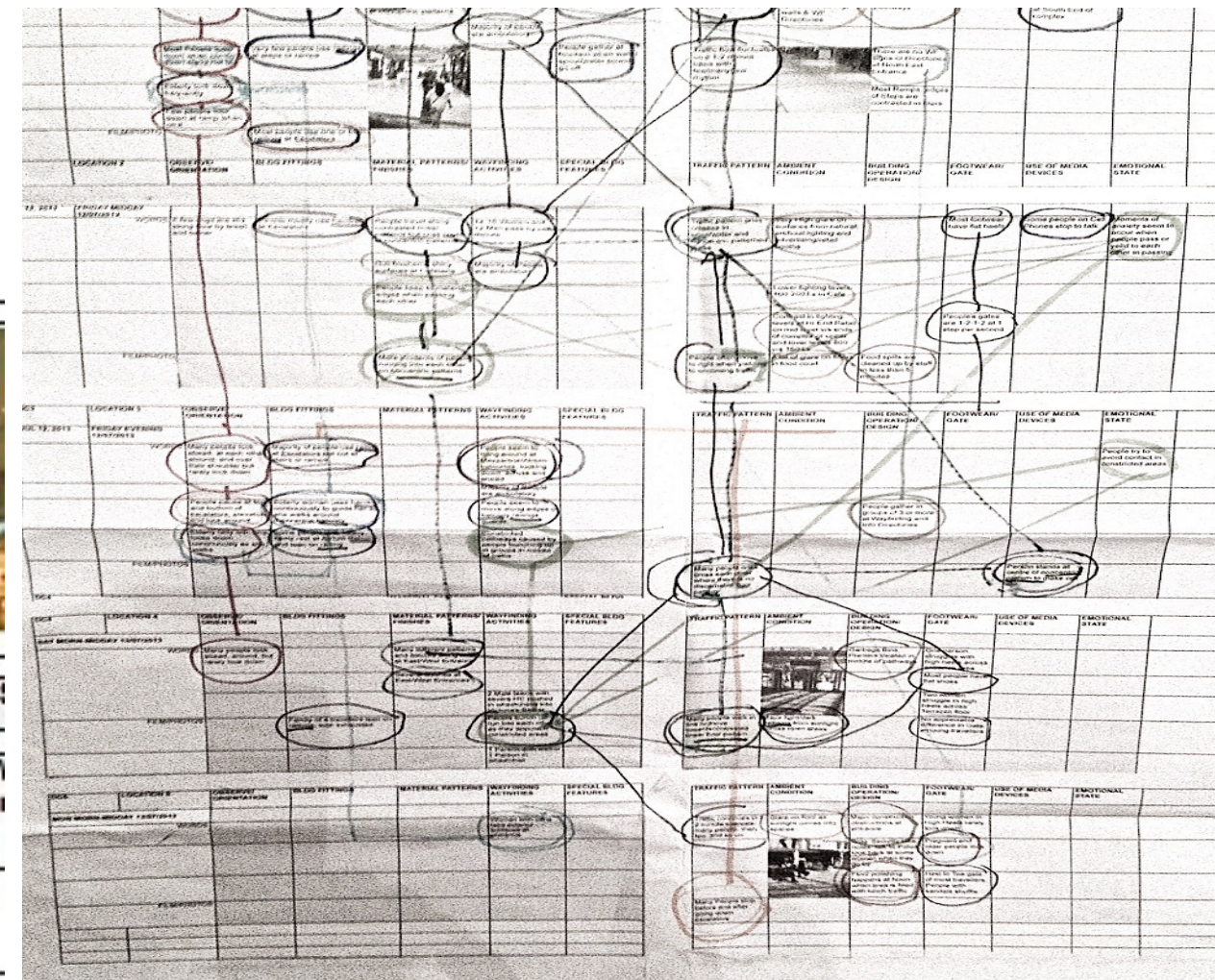




 <p><b>OBSERVE/ ORIENTATION</b> A few dogs are slid along floor by leash and owner</p>	<p>Things at Escalators</p>  <p><b>BLDG FITTINGS</b> People mostly use handrails at Escalators</p>	 <p><b>MATERIAL PATTERNS/ FINISHES</b> People travel along contrasted linear patterns but criss cross at concentric patterns</p>	<p>People confused, retake looks and wipe brows at directory, take long time to discover information</p>  <p><b>MOVEMENT</b> 14-15 Women and 12 Men pass by per minute</p>	<p>People gathering at fountain have poor posture</p>  <p><b>SPECIAL BLDG FEATURES</b> Directory has many areas of glare, shadow and reflection</p>	<p>People gather at rounded fountain when water spout/water sounds go off</p>  <p><b>TRAFFIC PATTERN</b> Traffic pattern criss crosses in open/wider areas</p>	<p>When sun comes into complex major glare spots on flooring, walls &amp; Directories</p>  <p><b>AMBIENT CONDITION</b> Very High glare on surfaces from natural, artificial lighting and advertising retail booths</p>	<p>Garbage bins located in middle of pathways</p>  <p><b>BLDG OPERATION DESIGN</b> There are no signs or Directories at North East Escalator</p>
<p><b>OBSERVE/ ORIENTATION</b> Many people look ahead, at each other, around, and over their shoulder but rarely look down</p>	 <p><b>BLDG FITTINGS</b> Majority of people use railing at Escalators but not at stairs or ramps</p>	<p>Dull finishes/no shiny surfaces at Cafeteria</p>  <p><b>MATERIAL PATTERNS/ FINISHES</b> People keep to material edges when passing each other</p>	<p>More incidents of people running into each other on concentric patterns</p>  <p><b>MOVEMENT</b> Majority of People are ambulatory</p>	<p>People often move to right when yielding to oncoming traffic</p>  <p><b>SPECIAL BLDG FEATURES</b> A lot of glare on floors in food court</p>	<p>Lower lighting levels 100-200 Lx in Cafe</p>  <p><b>TRAFFIC PATTERN</b> Traffic flow fluctuates on a 1-2 minute basis with few many/low rhythm</p>	<p>Food spills are cleaned up by staff in less than 5 minutes</p>  <p><b>AMBIENT CONDITION</b> Contrast in lighting levels at Hi-End Retail on mid level vs end of complex or upper and lower levels</p>	<p>People's glare on 1.4/1.2 at 1 stop per second</p>  <p><b>BLDG OPERATION DESIGN</b> People's glare on 1.4/1.2 at 1 stop per second</p>
<p><b>OBSERVE/ ORIENTATION</b> People pause at top and bottom of escalators, elevators and look around</p>	 <p><b>BLDG FITTINGS</b> Elderly woman uses handrail continuously to guide her as she walks around mezzanine balcony</p>	<p>Some people with heavy items rest at Atrium Balcony, and lean on railing</p>  <p><b>MATERIAL PATTERNS/ FINISHES</b> Variety of Surfaces, carpet, terrazzo, quartz tile, and stained oak flooring</p>	<p>Constricted pathways caused by people bunching up in groups in middle of paths</p>  <p><b>MOVEMENT</b> People seem to hang around at Mezzanine/Atrium balconies, looking down, across and ahead</p>	<p>Woman uses ledge seating but needs to perch, can't reach seat</p>  <p><b>SPECIAL BLDG FEATURES</b> Seating is limited and sporadically located</p>	<p>Many people criss cross each other where there is no discernable floor pattern</p>  <p><b>TRAFFIC PATTERN</b> Many people criss cross each other where there is no discernable floor pattern</p>	<p>Glare, shadows are stark at entrances and in open atrium</p>  <p><b>AMBIENT CONDITION</b> Major light/dark patterns from sunlight across open areas</p>	<p>People gather in groups of 3 or more at Wayfinding and Info Directories</p>  <p><b>BLDG OPERATION DESIGN</b> People gather in groups of 3 or more at Wayfinding and Info Directories</p>
<p><b>OBSERVE/ ORIENTATION</b> Elderly lady with limp looks down continuously as she walks</p>	 <p><b>BLDG FITTINGS</b> Some people with heavy items rest at Atrium Balcony, and lean on railing</p>	 <p><b>MATERIAL PATTERNS/ FINISHES</b> Many different patterns and colours along floor at East/West Entrance</p>	<p>People bunch up, run into each other as they approach constricted areas</p>  <p><b>MOVEMENT</b> People bunch up, run into each other as they approach constricted areas</p>	<p>1 Person with walker 1 Person in wheelchair</p>  <p><b>SPECIAL BLDG FEATURES</b> Seating is limited and sporadically located</p>	<p>Many people walk in line or move towards constricted linear floor pattern</p>  <p><b>TRAFFIC PATTERN</b> Many people walk in line or move towards constricted linear floor pattern</p>	<p>Major construction identifiable at entrances</p>  <p><b>AMBIENT CONDITION</b> Major construction identifiable at entrances</p>	<p>People's glare on 1.4/1.2 at 1 stop per second</p>  <p><b>BLDG OPERATION DESIGN</b> People's glare on 1.4/1.2 at 1 stop per second</p>
<p><b>OBSERVE/ ORIENTATION</b> Many people look ahead, around, but rarely look down</p>	 <p><b>BLDG FITTINGS</b> Family of 4 travellers lean on railings, look exhausted</p>	<p>Several material finishes at East/West Entrances</p>  <p><b>MATERIAL PATTERNS/ FINISHES</b> Several material finishes at East/West Entrances</p>	<p>2 Male teens with severe HC pushed in wheelchairs into Victoria's Secret</p>  <p><b>MOVEMENT</b> 2 Male teens with severe HC pushed in wheelchairs into Victoria's Secret</p>	<p>People lean over at fountain, bad posture</p>  <p><b>SPECIAL BLDG FEATURES</b> People lean over at fountain, bad posture</p>	<p>Traffic continues in 1-2 minute intervals, many people, clear flow</p>  <p><b>TRAFFIC PATTERN</b> Traffic continues in 1-2 minute intervals, many people, clear flow</p>	<p>Major construction identifiable at entrances</p>  <p><b>AMBIENT CONDITION</b> Major construction identifiable at entrances</p>	<p>People's glare on 1.4/1.2 at 1 stop per second</p>  <p><b>BLDG OPERATION DESIGN</b> People's glare on 1.4/1.2 at 1 stop per second</p>



		
<b>BLDG FITTINGS</b>	<b>MATERIAL PATTERNS/ FINISHES</b>	<b>MOVEMENT</b>
Majority of people use railing at Escalators but not at stairs or ramps	Variety of Surfaces, carpet, terrazzo, quartz tile, and stained oak flooring	People seem to hang around at Mezzanine/Atrium balconies, looking down, across and ahead
of Elderly woman uses handrail continuously to guide her as she walks around mezzanine balcony		People seem to move along edges of balcony railings, guards





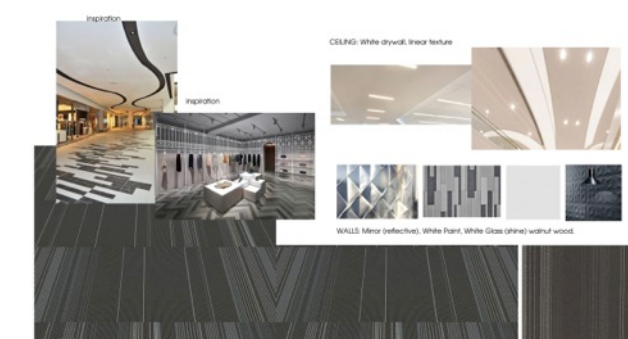
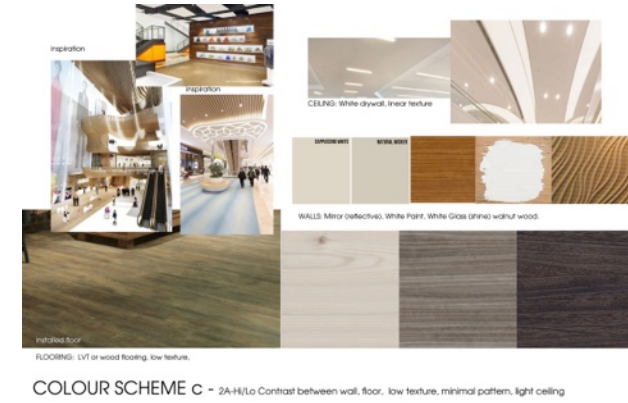
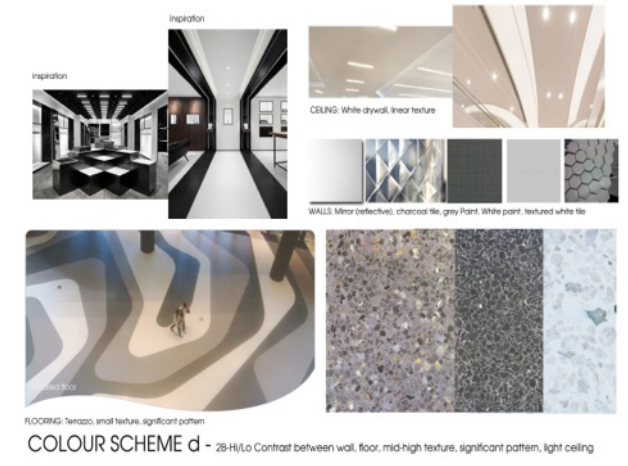
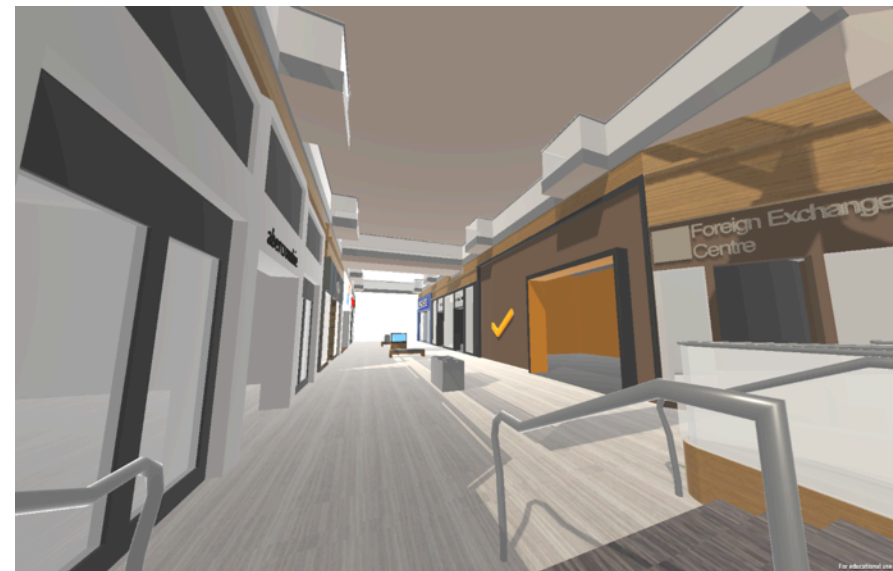
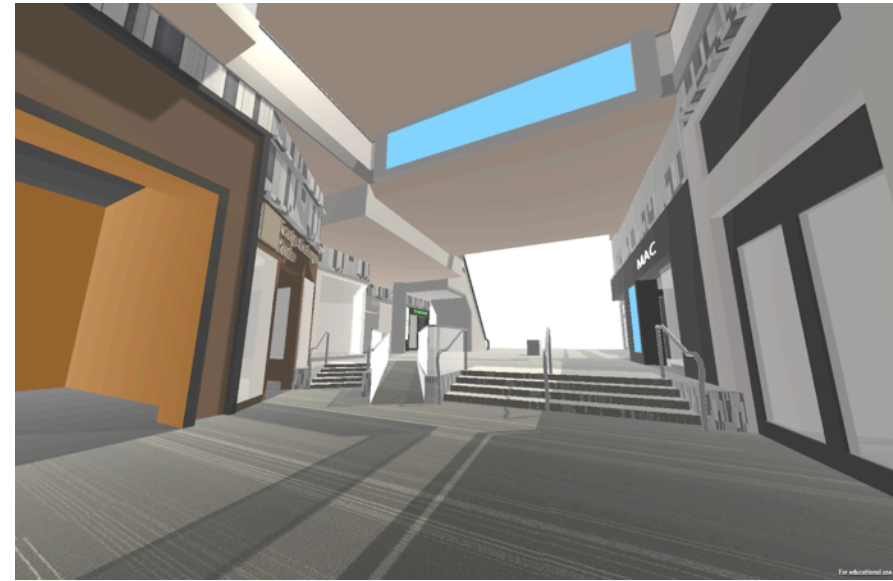
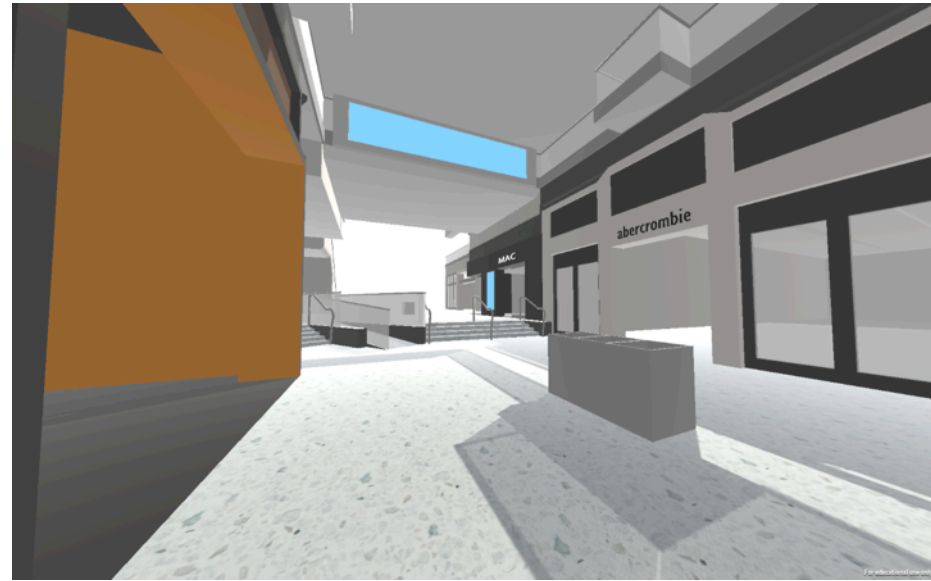






**Image: image of Eaton Centre, main corridor, and image of researcher using virtual reality goggles to look at 3D images of Eaton Centre**





**Image: various images of research work showing 3D views of Eaton Centre and building materials palettes used in creating the images**



**Image: woman in a virtual reality setting at Toronto Rehab's StreetLab facility**