TRAINING OF TRAINERS (TOT) WORKSHOP AND ACCESS AUDIT IN THE BUILT ENVIRONMENT 2021 AT KUALA LUMPUR

INTRODUCION OF APPLICATION OF UNIVERSAL DESIGN IN THE BUILT ENVIRONMENT

6th & 7th April 2021

PAM Centre, Jalan Tandok, Bangsar, Kuala Lumpur, Malaysia

Presenter:

PROF. DATO' SRI AR. DR. ASIAH ABDUL RAHIM

KAED UNIVERSAL DESIGN UNIT (KUDU) /

DEPARTMENT OF ARCHITECTURE, KULLIYYAH OF ARCHITECTURE AND ENVIRONMENTAL DESIGN,

INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

arasiah@iium.edu.my / kudu.kaed@gmail.com

Tel: 03-6421 5244 / 012-331 5801

KAED Universal Design Unit (KUDU)
Kulliyyah of Architecture & Environmental Design,
International Islamic University Malaysia
P.O.Box 10, 50728 Kuala Lumpur Malaysia

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Kulliyyah of Architecture & Environmental Design,
International Islamic University Malaysia

PROF.DATO' SRI AR. DR. ASIAH ABDUL RAHIM
HEAD OF KUDU

KAED Universal Design Unit (KUDU) is a research cluster established under Research Management Centre (**RMC**) in 2008, International Islamic University Malaysia (**IIUM**) and based at Kulliyyah of Architecture and Environmental Design (**KAED**), IIUM. KUDU has been collaborating with various organization such as **Ministry of Women, Family and Community Development, Ministry of Education , Ministry of Housing and Local Government and Ministry of Transportation and Jabatan Standard Malaysia, Ministry of Science, Technology and Innovation** as a smart partnership in promoting the Malaysian Standards (MS) and its application regarding awareness of providing accessibility and facilities for Persons with Disabilities (PwDs) .

SCOPE OF WORK AND EXPERTISE

Conducting hands-on **Access Audit Workshop using comprehensive Training Module** working with Local Authorities, Government agencies eg and NGOs. Conducting hands-on **Access Audit** for professionals, academicians, administrative staffs and students to enhance awareness about the importance of providing for the disabled.

Conducting **seminars and giving talks** on "Universal Design in The Built Environment", "Universal Design towards Social Sustainability" and "Creating Accessible Environment for All" by a renowned expert professor / architect on Universal Design topics. Organizing **international conferences and national product design competition** that relates on Universal Design and designing for the disable.

Development and promotion of **Malaysian Standards (MS)** and **Persons with Disabilities (PwDs)** Building **Guidelines** related to Architecture and Built Environment.

Promotion and encourage users of **Persons with Disabilities Act 2008 and UBBL 34A** that is directly related to Persons with Disabilities (PwDs),

Conducting **Research and Development (R&D) on Accessibility** in public spaces and buildings including heritage and religious buildings, Universal Design, elderly and children. Founders of KUDU are **referral persons on Universal Design and Accessibility as well as Access Audits Consultants** by Local Authorities, Government agencies and NGOs in local and international organizations, and chairing a number Malaysian standards, including MS1184:2014

KAED Universal Design Unit [KUDU]
Kulliyyah of Architecture and Environmental Design
International Islamic University Malaysia
P.O.Box 10, 50728 Kuala Lumpur Malaysia

+ 603 – 6421 3899 /603 – 6421 5244 / 012 – 331 5801

+ 603 – 6421 4864

kudu.kaed@gmail.com

ORGANISATION CHARTS

PROF.DATO' SRI AR. DR. ASIAH ABDUL RAHIM (HEAD OF KUDU)

ADMINISTRATION

1. **Asst.Prof. Dr. Izawati Tukiman**
2. **Siti Khadijah Samad**
3. **Wan Mohamad Amin W Seman**

RESEARCH & CONSULTANCY

IIUM

1. **Asst.Prof. Dr. Izawati Tukiman**
2. **Asst. Prof Dr. Syafiee Shuid**
3. **Assoc. Prof. Lar. Dr Mohd Ramzi Mohd Hussein**
4. **Asst. Prof. Dr. Shamzani Affendy Mohd Din**

A) COLLABORATION

1. **Pn. Nur Amirah Abd Samad, UKM**
2. **Sr. Dr Mohamad Ridzuan Yahya, UiTM**
3. **En.Shamsul bahrin Rahmat, P.Putrajyaya**
4. **En. Zainal Arifin Baseri, P.Putrajya**
5. **En. Muntaha Tasarib, P.Putrajya**
6. **Naziha Jaafar, MBPJ**

B) OKU ORGANISATION

1. **En. Azhari Ibrahim , PROCJAYA**
2. **En. Miskan Kasiman, POCAM**
3. **En. Rahmat Dolah, POCAM**
4. **En. Taslim Kosni, Society of the Blind Malaysia.**
5. **Dr. Basri Husin, NGO**
6. **En. Marzuki Ong Bin Maliki Ong, Malaysian deaf Muslim Association.**
7. **En. Zakri Bin Kamaruddin**
8. **En. Mohamad Sazali Shaari, Malaysian Federation of the Deaf.**

TABLE OF CONTENT

1 ISSUES FACED BY PERSON WITH DISABILITIES (PWDS)

INTRODUCTION

- Accessibility in the built environment is increasingly relevant to Malaysia, not only to prepare for the ageing population, PwDs but also the whole population at large. By year 2050, the ageing population in over 65 years in Malaysia would be 15%.
- Application of Universal Design in built environment inside and outside, connectivity, accessibility, and facilities for PwDs, the aged, children should be provided.

SUSTAINABLE DEVELOPMENT GOAL (SDG)

- UNDP – Malaysia, Singapore and Brunei Darussalam

- 17 goals –

1. no poverty,
2. zero hunger
3. **Good health and well being**
4. quality education
5. gender equality
6. clean water and sanitation
7. affordable and clean energy
8. decent work and economic growth
9. industry innovation and infrastructure
10. **Reduced inequalities**
11. **sustainable cities and communities**
12. responsive consumption and production
13. climate action
14. life below water
15. life on land
16. peace, justice and strong institution
17. partnerships for the goals

Convention on the Rights of Persons with Disabilities (CRPD)

- According to Convention on the Right of Persons with Disabilities (CRPD) 2006, the convention follows decades of work by the United Nations to change attitudes and approaches to persons with disabilities. It takes to a new height the movement from **viewing persons with disabilities as "objects" of charity, medical treatment and social protection towards viewing persons with disabilities as "subjects" with rights, who are capable of claiming those rights and making decisions for their lives based on their free and informed consent as well as being active members of society.**
- According to Preamble CRPD (v), recognizing the **importance of accessibility to the physical, social, economic and cultural environment, to health and education and to information and communication, in enabling persons with disabilities to fully enjoy all human rights and fundamental freedoms.**

Understanding deafness :

- Deafness is the complete loss of the ability to hear from one or both ears (*WHO*). 10% of disabled person population in Malaysia.
- 2 categories of deafness :

Deaf	55 decibel and above	•Sign language •Speech communication
Hard of hearing	54 decibel and below	•Hearing aids user •Cochlear Implant •Speech communication

- Visually oriented
- Communication : visual language
- Own Deaf Culture

Source: Mohamad Sazali Shaari from Malaysian Federation of the Deaf

Toward Barrier Free Environment for Deaf and Hard of Hearing Person

- **Building Entrance / information counter**
- **Solution :**
  - **Glass door**
  - **2 way video intercom**
  - **Induction loops**

- Information counter (Busy and noisy place)
- Solution :

Deaf	Hard of Hearing
Pen and paper	Induction loops

Source: Mohamad Sazali Shaari from Malaysian Federation of the Deaf

- Lift
- Solution :

Deaf	Hard of Hearing
• Special emergency button • Receiver for mobile phone	• Special emergency button • Receiver for mobile phone • Induction loop system

- Alarm/alerting system
- Solution :
  - Visible as well as audible to all users, flashing / strobe light designed not to confuse.
  - Placed at isolated places : toilet, bathroom, hotel bedroom

Source: Mohamad Sazali Shaari from Malaysian Federation of the Deaf

Alerting Devices for Deaf

Hotel Kit for Deaf Client

Flashing Door Bell

Source: Mohamad Sazali Shaari from Malaysian Federation of the Deaf

- Disaster warning/alerting system
- Solution :
  - Mass short message service (SMS) toDeaf mobile phone.

- Travelling – Airport/public phones
- Solution :
  - Accessible phone – buildin webcam, internet platform for YM, Skype, ooVoo, etc.

Source: Mohamad Sazali Shaari from Malaysian Federation of the Deaf

SAFETY CONSIDERATION AND ACCESS FOR THE ELDERLY

The components of **internal environment**

- Main entrance
- Doors
- Corridors and Interior Pathways
- Elevators/Lifts
- Stairs
- Ramps
- Toilets
- Resting facilities
- Reception & Information Counters
- Musolla / Prayer Room
- Shops
- Others

For the **external environment**:

- Bus and Taxi stop
- Accessible Parking
- Drop-off zone
- Pathways
- Pedestrian Walkways
- Building's Signage
- Hard Landscape

ISSUES FOR BLIND PERSON reported by Godfrey Ooi

Goat See from Malaysian Association for the Blind

1. Engineers and contractors may be ignorant of the PwDs standards in the Code of Practice
2. Lack of knowledge of Principal Submitting Person (PSP) towards facilities of PwDs
3. Cost-cutting by the developers and implementors
4. Lack of coordination between authorities, consultants and developers
5. Broken tiles – warning and guiding tiles
6. Uncut branches protruding into the pathway
7. Uncovered drains
8. Warning tiles right at the edge of the opening
9. Lamp-posts on the tactile blocks
10. Negative attitude of the public like parked vehicles on tactile guides
11. Public education from early age
12. Public awareness through mass media
13. Train more blind persons to be access audit inspectors with certificate

BARRIER ACCESS FOR WHEELCHAIR USERS

Should have, example:

1. **Accessible toilet**
2. **Accessible parking for wheelchair users**
3. **Suitable gradient 1:12 for ramp with railing**
4. **Avoid floor level with drops eg 25mm, 100mm**
5. **Rough floor surface with good grip**

2 INTRODUCTION TO UNIVERSAL DESIGN IN THE BUILT ENVIRONMENT

BACKGROUND

1957 – 1980s

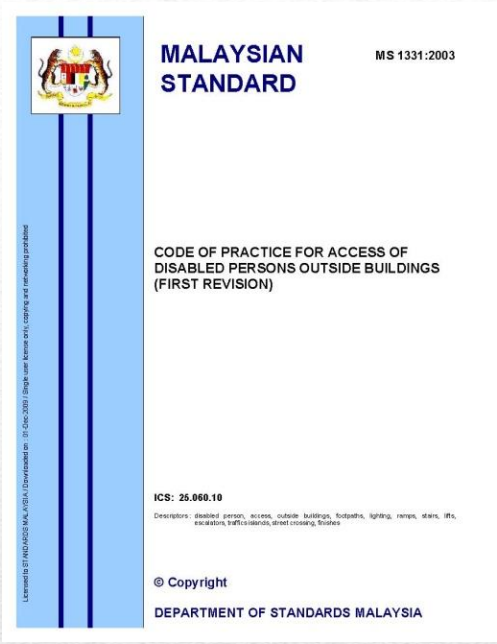
- Malaysia has just regained its independency, and is still underdeveloped. The primary focus of the country at that time was on the development of education, agriculture, economy, infrastructure and basic facilities.
- The buildings erected in this period are mostly not accessible for the disabled.

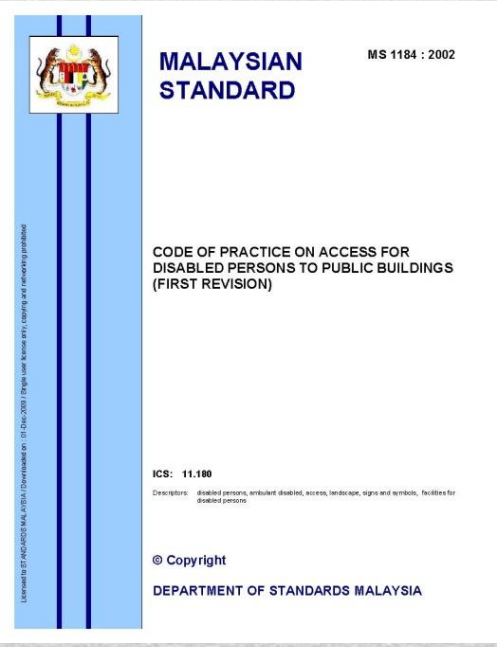
1980s

Malaysia has started to address the needs of People with Disabilities (PWD) in the built environment with the development of Malaysian Standards and code of practices

3 Standards was initiated in 1980s and published in 1990s

- MS 1183:1990 – Specification for Fire Precautions in the Design and Construction of Buildings
- MS 1184:1991 – Code of Practice on Access for Disabled Persons to Public Buildings
- MS 1331:1993 – Code of Practice for Access of Disabled Persons Outside Buildings





MALAYSIAN STANDARD

MS 1184:2014

Universal design and accessibility in the built environment - Code of practice
(Second revision)

ICS: 25.060.10

Descriptors: universal design, disabled person, ambulant disabled, access, landscape, sign and symbol, facility, lift, requirement

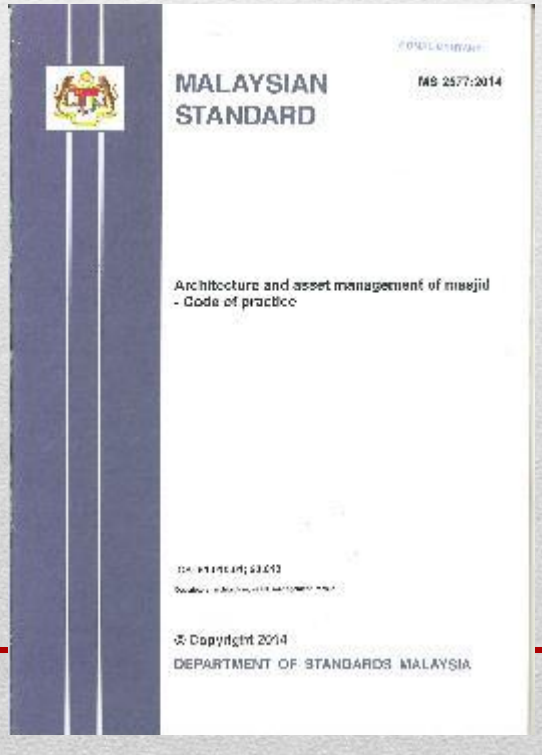
DEPARTMENT OF STANDARDS MALAYSIA

MS 1184 : 2014 UNIVERSAL DESIGN AND ACCESSIBILITY IN THE BUILT ENVIRONMENT – CODE OF PRACTICE (SECOND REVISION)

Other Related Malaysian Standard

- MS 2015: Part 1:2006 Public Toilet Part 1: Minimum Design Criteria
- MS 2015-1:2017 Public Toilet - Part 1: Design Criteria (First Revision)

- MS 2577:2014 Architecture and asset management of Masjid – Code of Practice



INTRODUCTION

- **"Universal Design"** means the design of products, environments, programmes & services to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design.
- **UNIVERSAL DESIGN** enables a wider cohort of people to benefit from **accessibility, safety and usability** - Without **discriminating** against anyone.
- The Seven Principles of Universal Design state that facilities should be designed to be **usable to the greatest possible extent rather than 'by all'**

Ron Mace (1985)

"Enabling inclusive design requires the **successful capture of information about the end-user** and representing that information in a form that is accessible to the designer since inclusive or **universal design are fundamentally derived from a user-centered design theory"**

S.KEATES & J. CLARKSON (2003)

"Housing is too frequently **designed for the 'average' person with 'average' physical ability when, in reality, few people meet this description of 'average'.** People range greatly in size and physical and mental abilities, and they experience many changes throughout their lives."

EMORY BALDWIN (2003)

GLOBAL - PEOPLE WITH DISABILITIES (PWDS)

- **Estimated 15% of the world's population has a disability**
- **More than ONE BILLION people with special needs worldwide**
- **An estimated 80% live in developing countries**

(Source: WHO Report, 2011)

PEOPLE WITH DISABILITIES (PWDS) IN MALAYSIA

- There are 588,159 PWDs registered with the Department of Social Welfare by 31 Dec 2020
- 202,204 - learning disabilities
- 214,114 - physically disabled
- 52,194 - visually impaired
- 40,389 - hearing impaired
- 48,775 - mentally disabled
- 3,006 - speech disability
- 27,477 - other type of disabilities.

(Source: Jabatan Kebajikan Masyarakat [JKM] Malaysia, 2021)

ELDERLY IN MALAYSIA (60+)

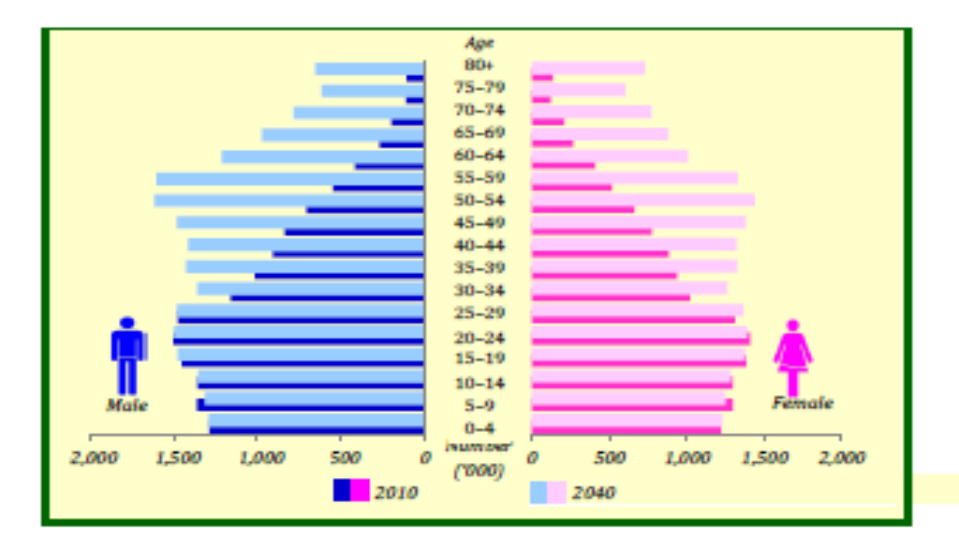
- **Population of 60+ in 2010 is 7.9%**
- **Population projection in 2040 will be 16.3%**

(Social Welfare Department, 2013)

AGEING POPULATION

- Malaysia is fast achieving an ageing population status, with rapid demographic transition.

Fig 1: Malaysia population pyramid, 2010 and 2040



Year		Age 65+	Age 60+
2010	N	1.4m/28.3m	2.3m/28.3m
	%	5.0%	8.1%
2018	N	2.1m/32.4m	3.2m/32.4m
	%	6.5%	9.9%

- When the population ≥ 65 years reaches 7%, 14% or 20% of the total population,

  → ageing society, aged society or a super-aged society, respectively. *(Department of Statistics Malaysia, 2018)*

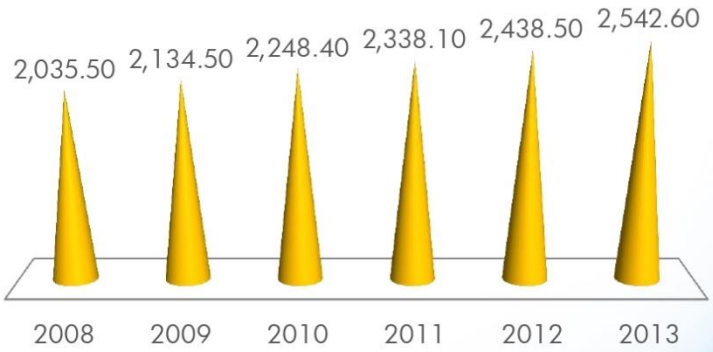
Source:
National Health & Morbidity Survey (NHMS) 2018: Elderly Health
NMRR-17-2655-39047
Principal Investigator: Dr Rajini Sooryanarayana

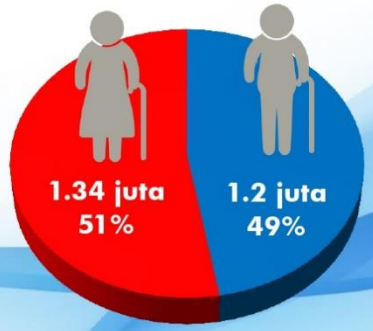
FAKTA UMUM WARGA EMAS

STATISTIK WARGA EMAS DI MALAYSIA

Terdapat **2.54 juta** warga emas di Malaysia (**8.6% daripada jumlah populasi** penduduk Malaysia)

Bilangan Warga Emas ('000)





Sumber: Jabatan Perangkaan Malaysia

Sambung...

FAKTA UMUM WARGA EMAS

STATISTIK WARGA EMAS DI MALAYSIA

Terdapat **peningkatan bilangan warga emas** setiap tahun

Berdasarkan unjuran Pertubuhan Bangsa-Bangsa Bersatu (PBB), **Malaysia dijangka menjadi sebuah negara tua (*aged nation*) pada tahun 2030** apabila penduduk negara ini yang berumur 60 tahun dan ke atas mencapai **15% daripada jumlah keseluruhan penduduk** pada tahun tersebut

Pindaan Dasar Warga Emas Negara dan Pelan Tindakan Warga Emas Negara telah **diluluskan** oleh Kerajaan pada **5 Januari 2011** bagi mendepani cabaran dan isu warga emas masa kini

Sumber: Jabatan Perangkaan Malaysia, Pertubuhan Bangsa-bangsa Bersatu, Kementerian Pembangunan Wanita, Keluarga dan Masyarakat

Healthy Ageing

- The process of developing & maintaining the **functional ability** that enables **well-being** in old age.
- **Functional ability** comprises the health-related attributes that enable people to be and to do what they have reason to value. [Intrinsic capacity of the individual, + relevant environmental characteristics]
- **Well-being** is considered in the broadest sense and includes domains such as happiness, satisfaction and fulfilment.

(WHO. World Report on Ageing and Health, 2011)

Successful Ageing

- Maximising desired outcomes and minimising undesired ones
  - Decreasing the risk of disease and disability; maintaining physical and mental functioning
  - Being actively engaged with life. Being in a good frame of mind, body and soul as one grows older.
  - Not just a matter of being free from physical disease, disability and ailments

(Bowling & Dieppe, 2005; Bowling & Iliffe, 2006; Kinsella & Phillips, 2005)

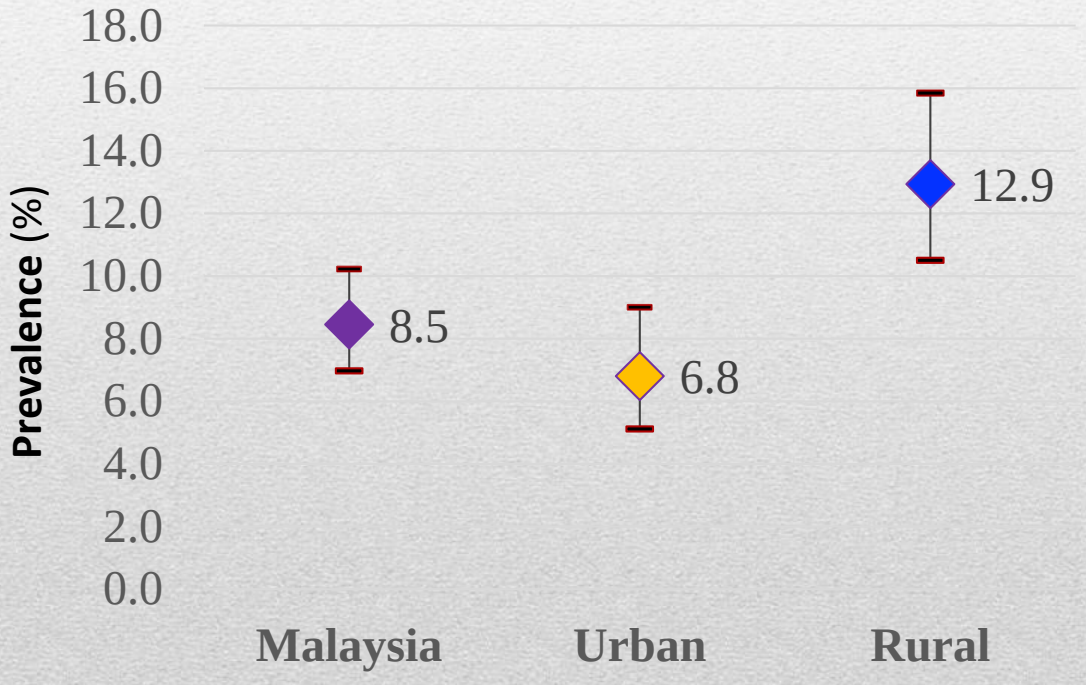
- To determine, among community dwelling elderly :

1) Socio-demography and the living arrangements
2) **Public transport usage to access health care facilities***
3) **Mental health status** (depressive symptoms and **dementia***)
4) Functional status
5) Prevalence of **urinary incontinence***
6) Prevalence of visual and hearing impairment
7) Prevalence of visual and hearing impairment
8) Prevalence of physical activity
9) Prevalence of oral health problems
10) Prevalence of **social support***
11) Nutritional status and dietary habits
12) Prevalence of self-reported chronic conditions (diabetes mellitus, hypertension, hypercholesterolemia, cancer, smoking)
13) Self-reported **elder abuse***
14) **Quality of life*** (QOL) **(*new topics)**

Source: National Health & Morbidity Survey (NHMS) 2018: Elderly Health
NMRR-17-2655-39047. Principal Investigator: Dr Rajini Sooryanarayana

STATISTICS

Prevalence of probable dementia* among elderly



WHO global estimate: 5% - 8% (2018)
Philippines: 10.6%, Dominguez et al (2018)
China: 5.3%, Wu et al (2018)
USA: 9.9% Freedman et al (Age 70+, 2015)

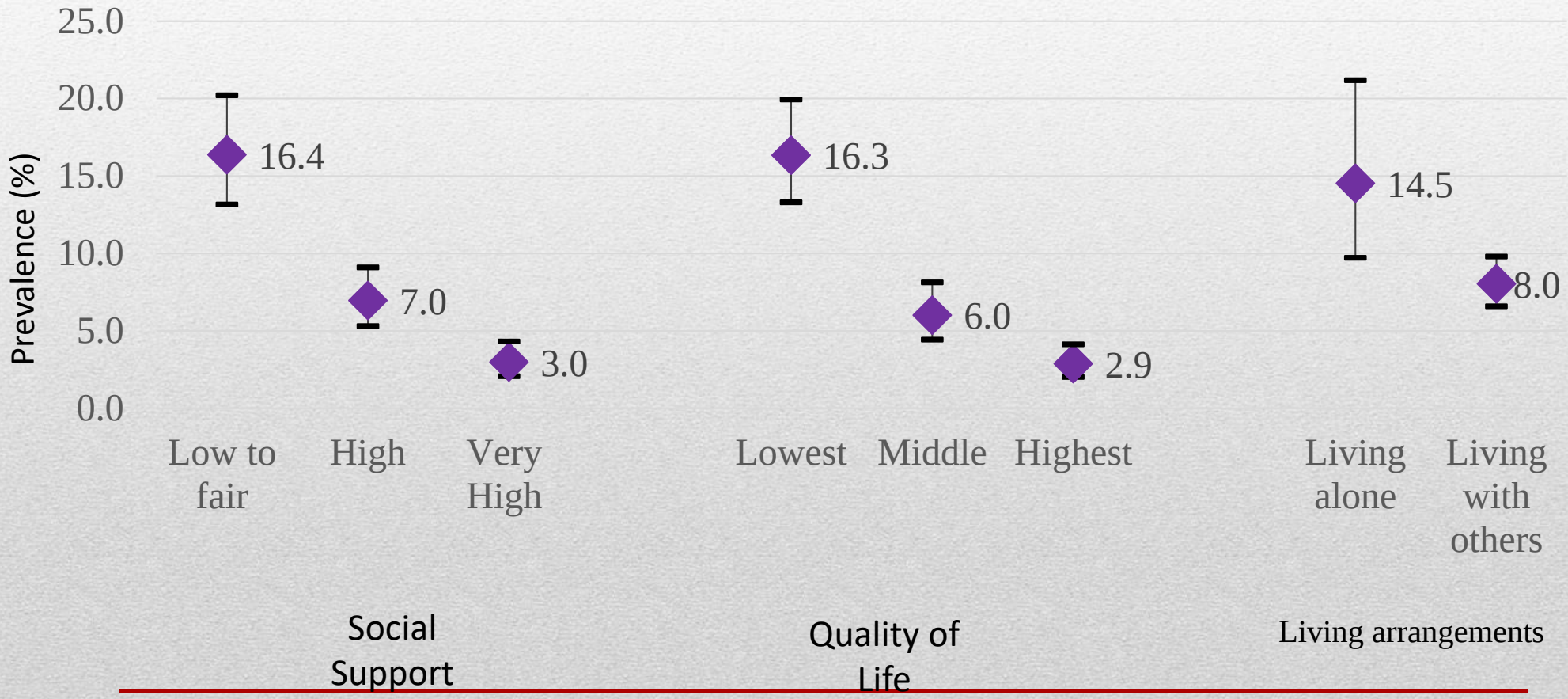
KL, Malaysia: 6.0% Krishnaswamy et al (Age 65+, 1997)
Malaysia:14.3%, Hamid TA et al. (2010)

*Dementia: score <10 /15, measured via the Identification and Intervention for Dementia in Elderly Africans (IDEA) Cognitive Screen.
Validation by Rosli R et al, UM, 2017.

Source: National Health & Morbidity Survey (NHMS) 2018: Elderly Health
NMRR-17-2655-39047. Principal Investigator: Dr Rajini Sooryanarayana

STATISTICS

Probable dementia among elderly by sociodemographic characteristics



Source: National Health & Morbidity Survey (NHMS) 2018: Elderly Health
NMRR-17-2655-39047. Principal Investigator: Dr Rajini Sooryanarayana

ELDERLY - DEMENTIA

ELDERLY

Normal living process of which the body is going through a mix of the biological and pathological process which also normally associated with morbid or mental health condition of a person.

Kalk, Baat and Meeuwissen, 1992 (pg 13)

AGE CLASSIFICATION

- 60 + — United Nations World Assembly in Vienna, 1982; ASEAN
- 65 + — World Health Organization, 2008

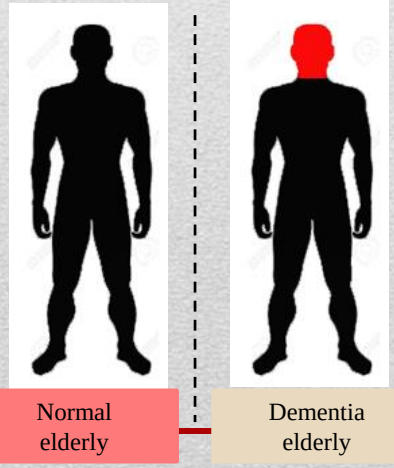
"Elderly is often associated with all sorts of impairments and to a significant extent, the estimation of a number of elderly with dementia will be expected to increase"

Harisson & Dalton, 2013 (pg 1)

DEMENTIA

Dementia is an obtained disorder of intelligent damage resulted by the brain dysfunction.

Passini *et. al.*, 1998 (pg 23)



Normal elderly

Dementia elderly

1. Alzheimer's disease
2. Vascular Dementia
3. Dementia with Lewy bodies
4. Frontotemporal dementia
5. Korsakoff's syndrome

Dementia is an obtained disorder of intelligent damage resulted by a set of symptoms that may include memory loss and difficulties with thinking, problem-solving or language.

Dementia Society of Alzheimer's (pg 23)

ELDERLY - DEMENTIA

UNIVERSAL DESIGN (UD)

"The design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design"

(Ronald Mace, 1998; Center for Universal Design, U.S.A., 1994)

Design Principle for Dementia Design

- Familiarity
- Legibility
- Distinctively
- Accessibility
- Comfort
- Safety

Mitchell *et. al.*, 2003

UD PRINCIPLES

1. Equitable use
2. Flexibility
3. Simple and intuitive use
4. Perceptible information
5. Tolerance for error
6. Low physical effort
7. Size and space for approach use

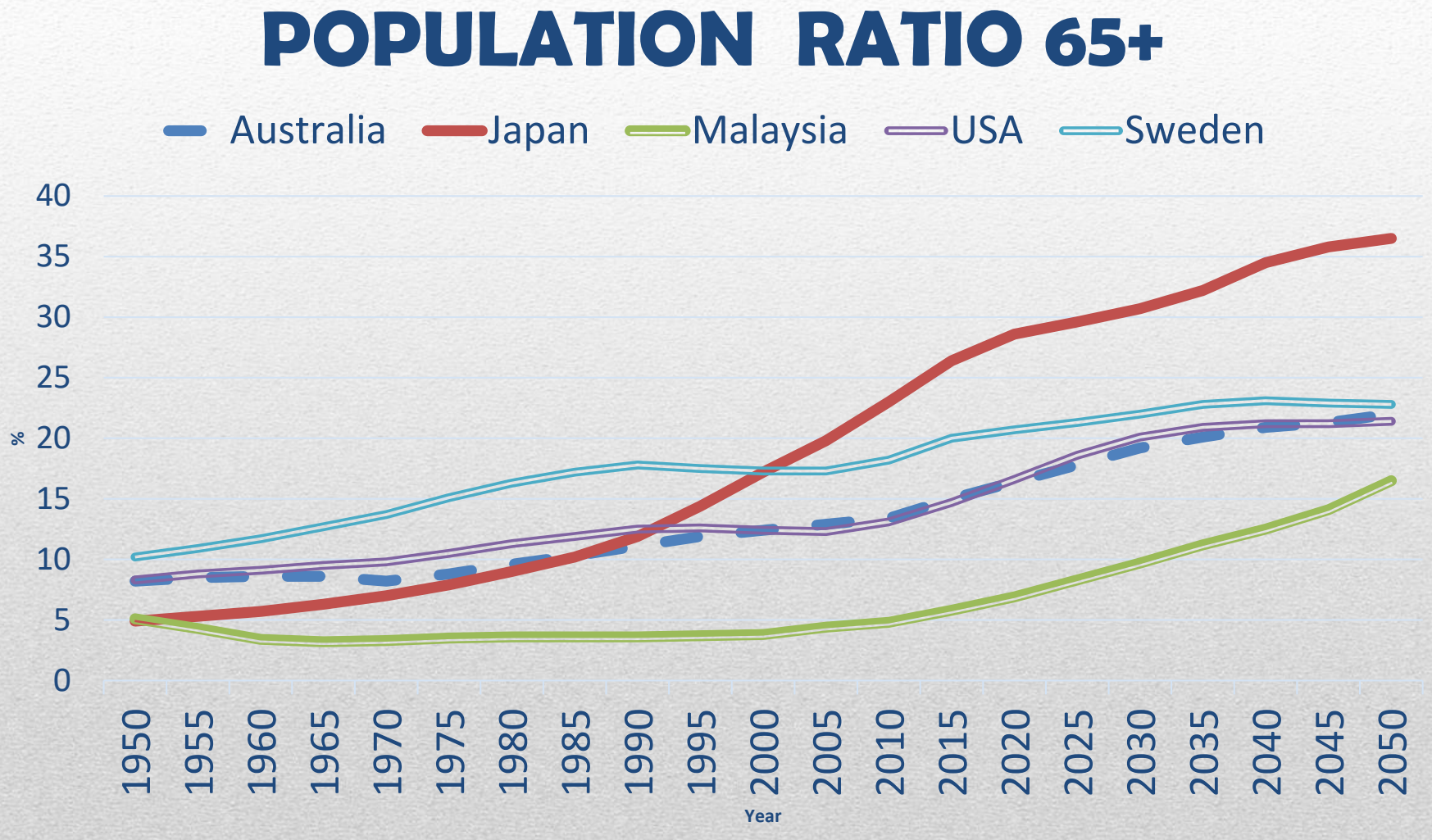
PRODUCT

ASSISTIVE DEVICES

An instruments that are manufactured to help individuals with disability with their everyday routine particularly exercises that in need of assistance, as well as promoting safety and independent lifestyles.

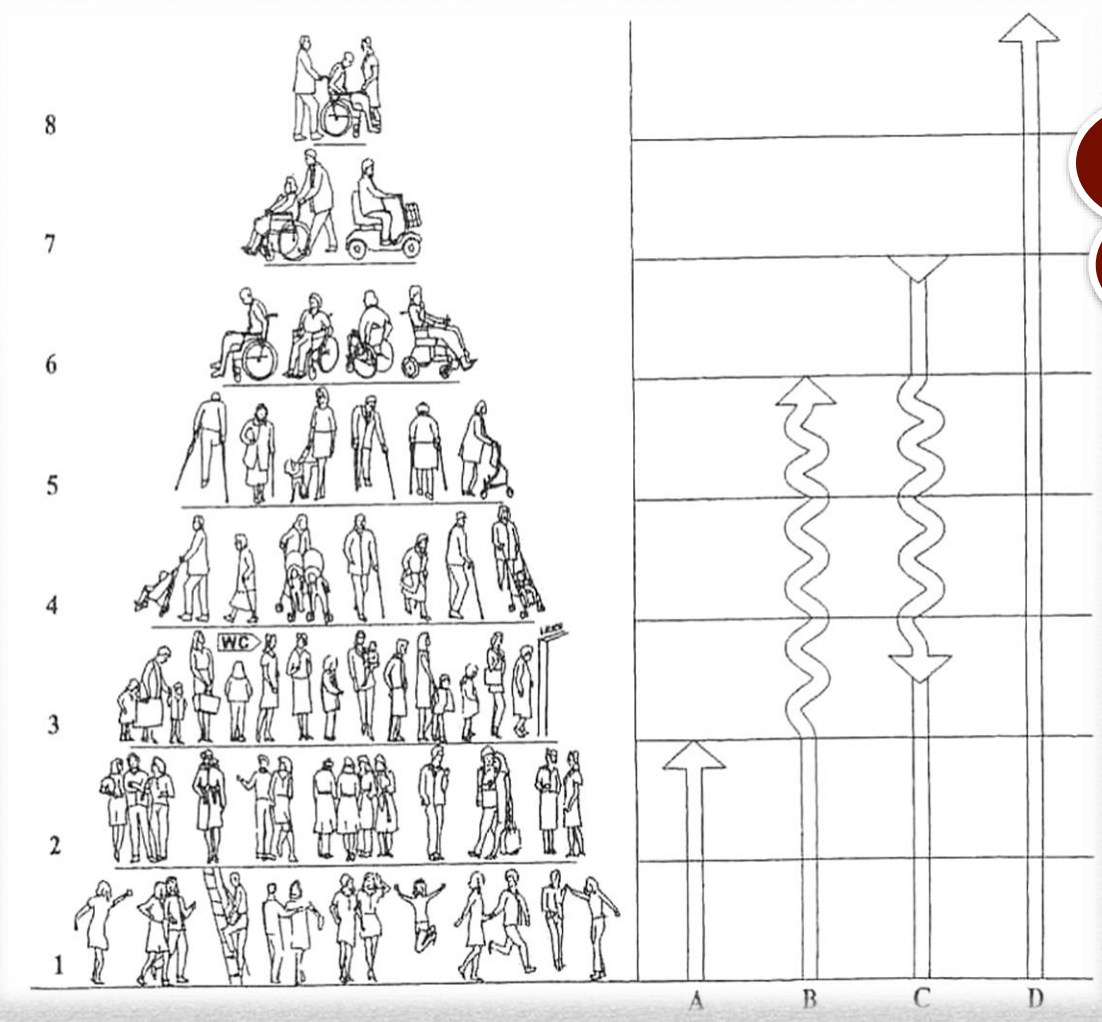
Pigot, 2005 ; McCredie & Tinker, 2005

INTRODUCTION



Source: Satoshi Kose (ICUDBE, 2013)

BUILDING COMMUNITY THROUGH ACCESSIBILITY – DESIGNING FOR THE LIFE OF A FAMILY



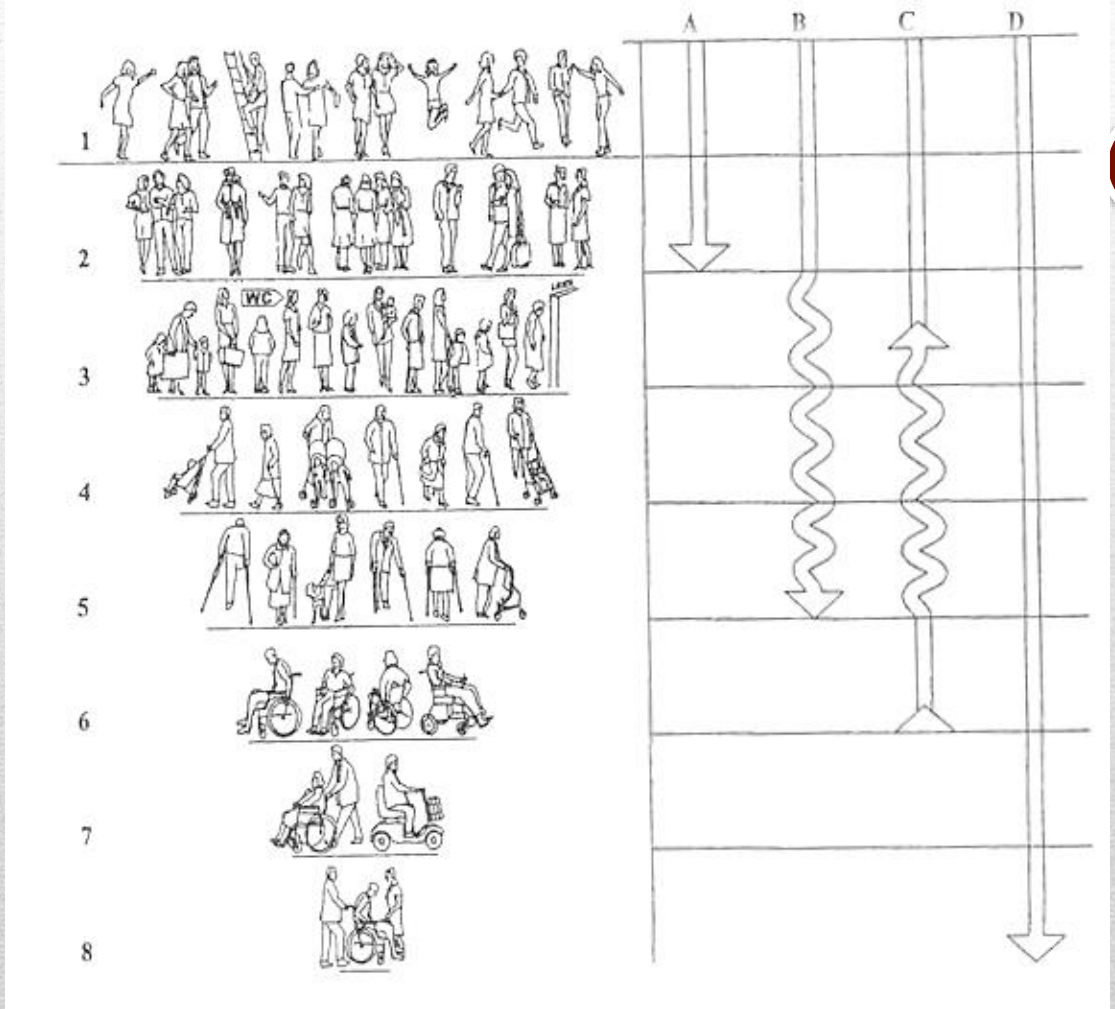
"PLAN FOR HUMANITY"
"BUILD FOR SOCIETY"
"DESIGN FOR PEOPLE"

JOSEPH KWAN (2013), ***Universal Design: Architect's Social Responsibility.*** **Hong Kong (ICUDBE 2013)**

The Universal Design Pyramid demonstrate the bottom up methodology of universal design.

Source: Universal Design Pyramid (Goldsmith,2000)

BUILDING COMMUNITY THROUGH ACCESSIBILITY – DESIGNING FOR THE LIFE OF A FAMILY

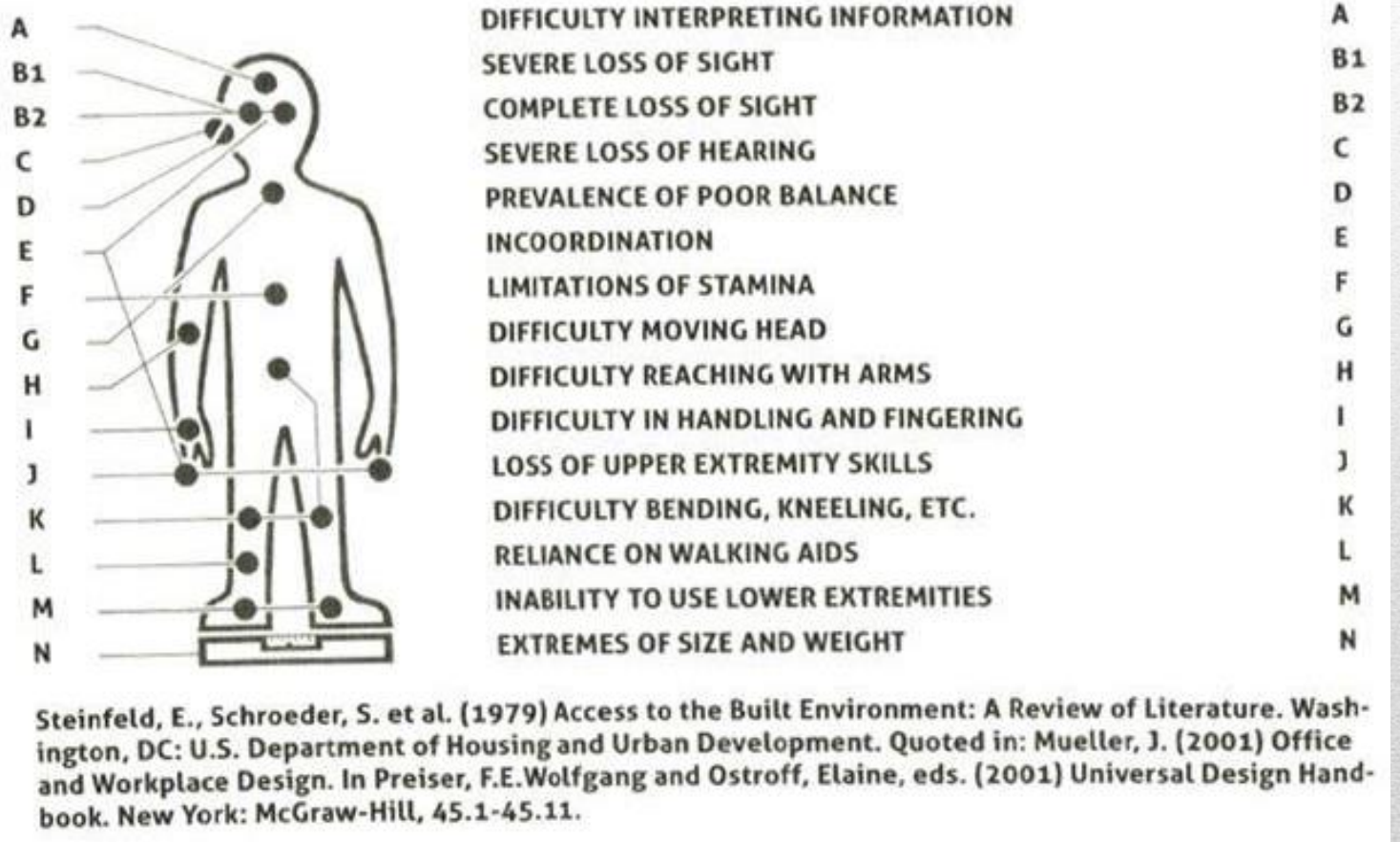


"USER-CENTRIC"

The Universal Design Pyramid demonstrate the bottom up methodology of universal design.

Source: Asiah Abdul Rahim (2016)

THE ENABLER



Steinfeld, E., Schroeder, S. et al. (1979) Access to the Built Environment: A Review of Literature. Washington, DC: U.S. Department of Housing and Urban Development. Quoted in: Mueller, J. (2001) Office and Workplace Design. In Preiser, F.E.Wolfgang and Ostroff, Elaine, eds. (2001) Universal Design Handbook. New York: McGraw-Hill, 45.1-45.11.

In the 70s', **Professor Edward Steinfeld**, as director and researcher with the Rehabilitation Engineering Research Centre (RERC) of the University at buffalo in New York, developed a usable synthesis of relevant design data related to functional limitations. In *The Enabler* (1979) he compiled an overview of such limitations, without becoming entangled in medical jargon and without revealing confidential medical data.

(Source: Hubert Froyen (Ed.) *Universal Design – A Methodological Approached*)

7 PRINCIPLES OF UNIVERSAL DESIGN

1

Equitable Use

The design is useful and marketable to people with diverse abilities.

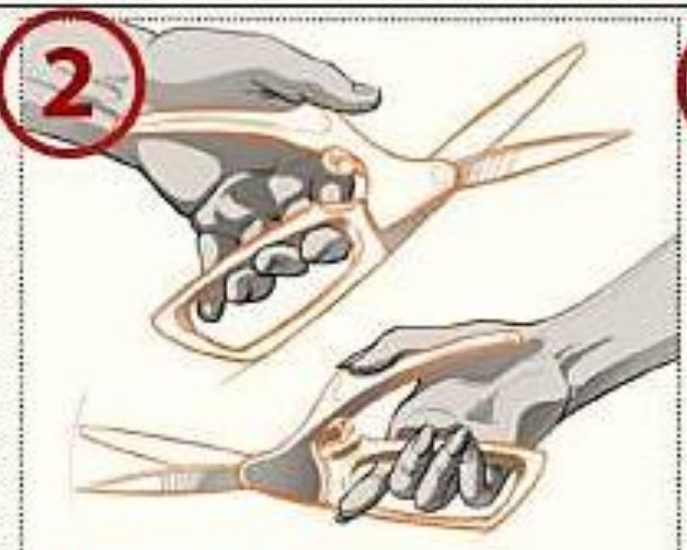
1a. Provide the same means of use for all users: identical whenever possible; equivalent when not.

1b. Avoid segregating or stigmatizing any users.

1c. Provisions for privacy, security, and safety should be equally available to all users.

1d. Make the design appealing to all users.

2



Flexibility in Use

The design accommodates a wide range of individual preferences and abilities.

2a. Provide choice in methods of use.

2b. Accommodate right- or left-handed access and use.

2c. Facilitate the user's accuracy and precision.

2d. Provide adaptability to the user's pace.

3

Simple and Intuitive Use

Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or education level.

3a. Eliminate unnecessary complexity.

3b. Be consistent with user expectations and intuition.

3c. Accommodate a wide range of literacy and language skills.

3d. Arrange information consistent with its importance.

3e. Provide effective prompting and feedback during and after task completion.

7 PRINCIPLES OF UNIVERSAL DESIGN

4 Perceptible Information

The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

- 4a. Use different modes (pictorial, verbal, tactile) for redundant presentation of essential information.
- 4b. Provide adequate contrast between essential information and its surroundings.
- 4c. Maximize "legibility" of essential information.
- 4d. Differentiate elements in ways that can be described (i.e., make it easy to give instructions or directions).
- 4e. Provide compatibility with a variety of techniques or devices used by people with sensory limitations.

5 Tolerance for Error

The design minimizes hazards and the adverse consequences of accidental or unintended actions.

- 5a. Arrange elements to minimize hazards and errors: most used elements, most accessible; hazardous elements eliminated, isolated, or shielded.
- 5b. Provide warnings of hazards and errors.
- 5c. Provide fail safe features.
- 5d. Discourage unconscious action in tasks that require vigilance.

6 Low Physical Effort

The design can be used efficiently and comfortably and with a minimum of fatigue.

- 6a. Allow user to maintain a neutral body position.
- 6b. Use reasonable operating forces.
- 6c. Minimize repetitive actions.
- 6d. Minimize sustained physical effort.

7 Size and Space for Approach and Use

Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

- 7a. Provide a clear line of sight to important elements for any seated or standing user.
- 7b. Make reach to all components comfortable for any seated or standing user.
- 7c. Accommodate variations in hand and grip size.
- 7d. Provide adequate space for the use of assistive devices or personal assistance.

Source: http://www.fpintell.fpinnovations.ca/en/2012/07/aging-in-place/

UNIVERSAL DESIGN IN THE BUILT ENVIRONMENT

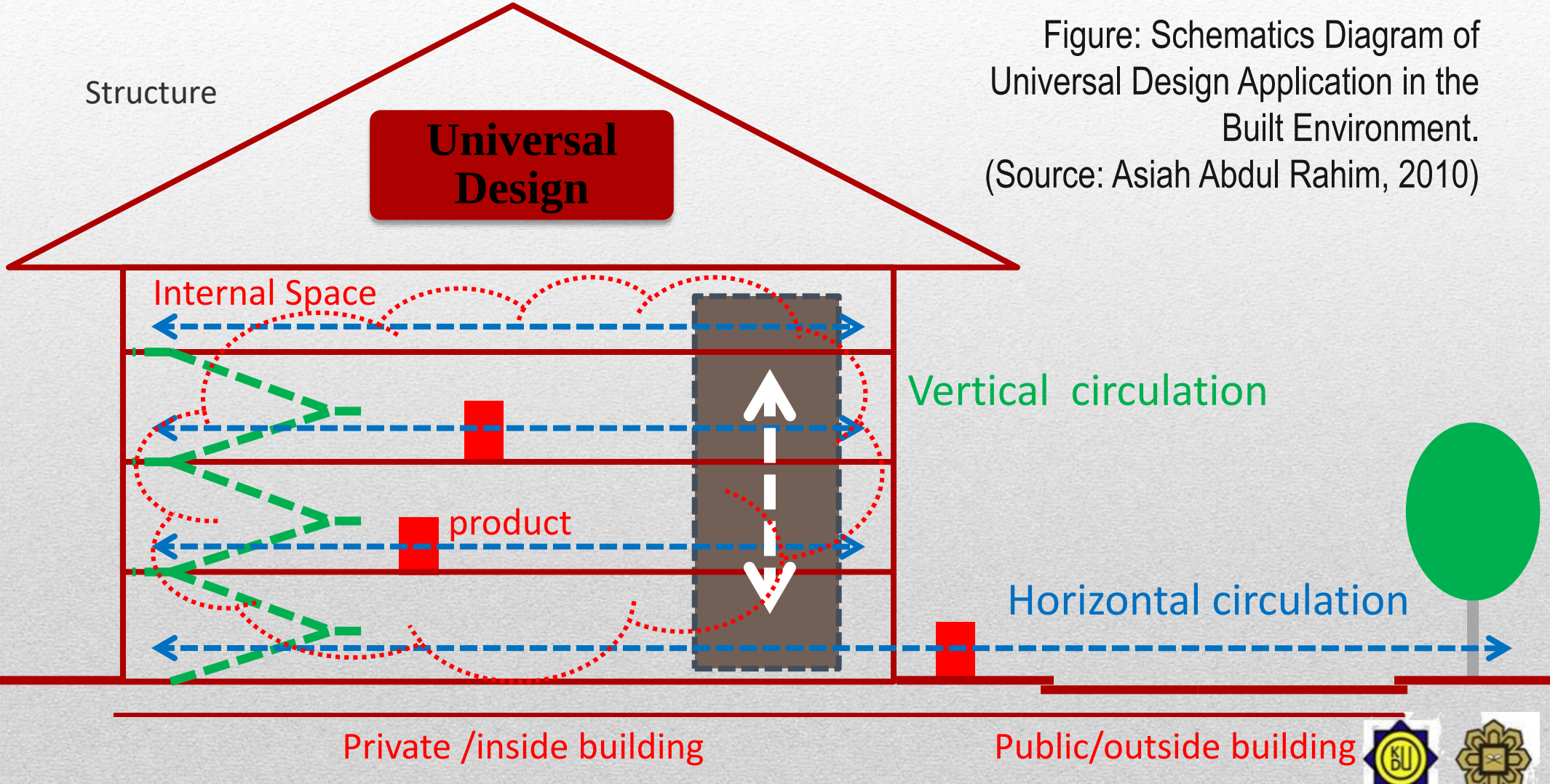


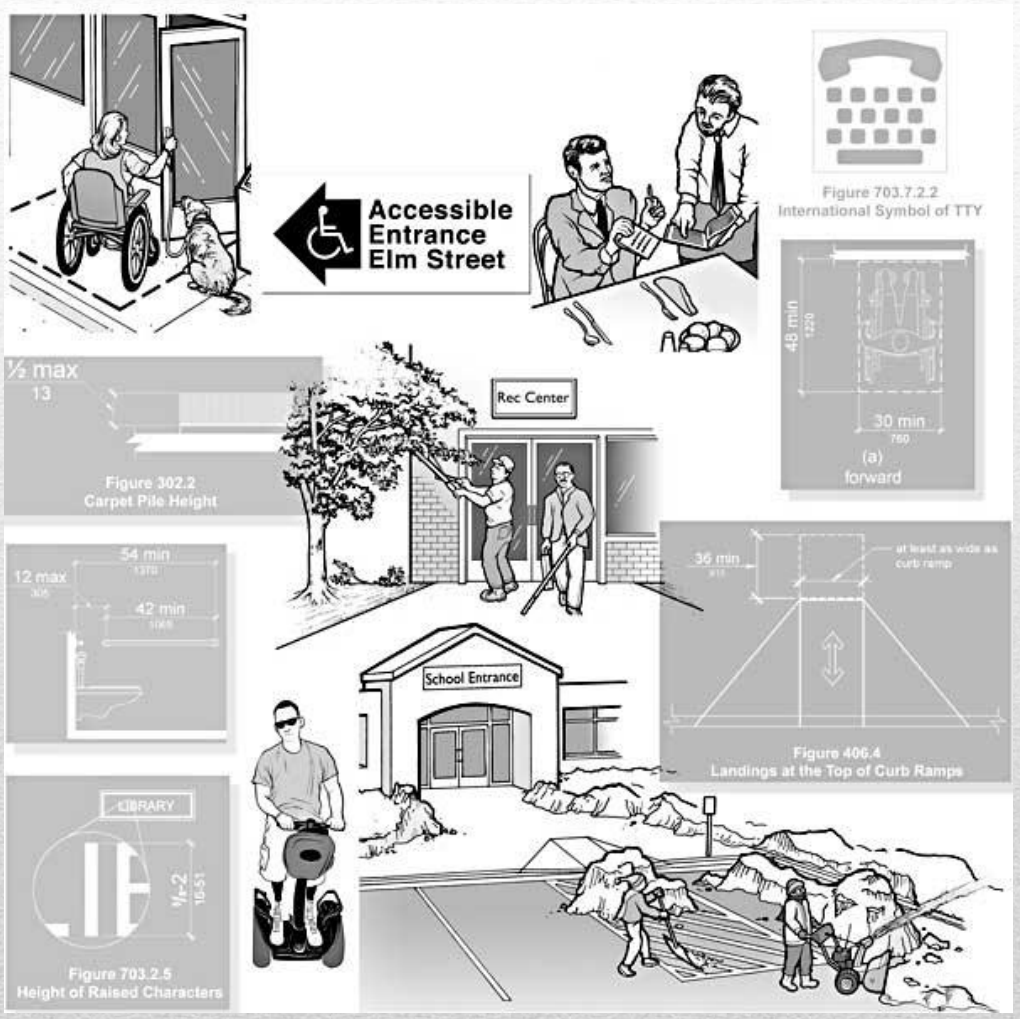
Figure: Schematics Diagram of Universal Design Application in the Built Environment.
(Source: Asiah Abdul Rahim, 2010)

Universal Design –I.E. Its Application

Example Building typology	Example of Products Design			Services (human resources)
Waterfront / tourist attraction areas	Digitized information	Guiding Blocks	Warning blocks	Doorman Assistance
Residential	Ramps	Braille Lettering	Hazard Lights	Service Personnel
Public buildings / Religious Building	Accessible toilets' appliances	Grab bars / Hooks	Flashing Lights	Interpreter
Institutional / Healthcare	Railing	Legible / Embossed Graphics	Commercial Wheelchairs	Sign Language

(Source: Asiah Abdul Rahim, 2010)

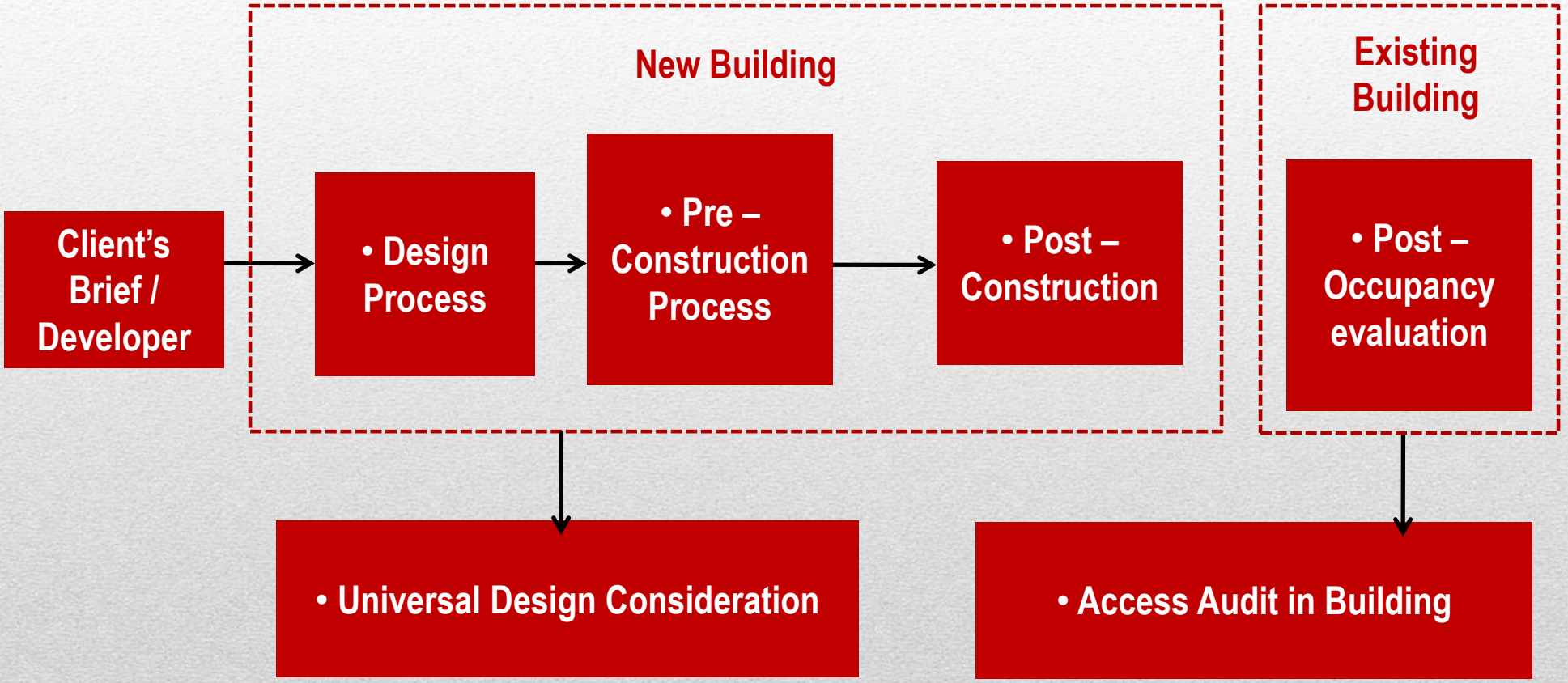
STANDARD OPERATING PROCEDURE (SOP) PWDS FOR TRANSPORTATION SERVICES



Standard Operating Procedure (SOP) is a **set of written instructions that document a routine or repetitive activity followed by an organization.** (Source: U.S. Environmental Protection Agency (EPA), 2007)

(Source: Google images)

UNIVERSAL DESIGN CONSIDERATION



(Source: Asiah Abdul Rahim, 2010)

Figure 1: Involvement of PSP in providing good Access for people with disabilities.
(Source: *Asiah Abdul Rahim, 2018*)

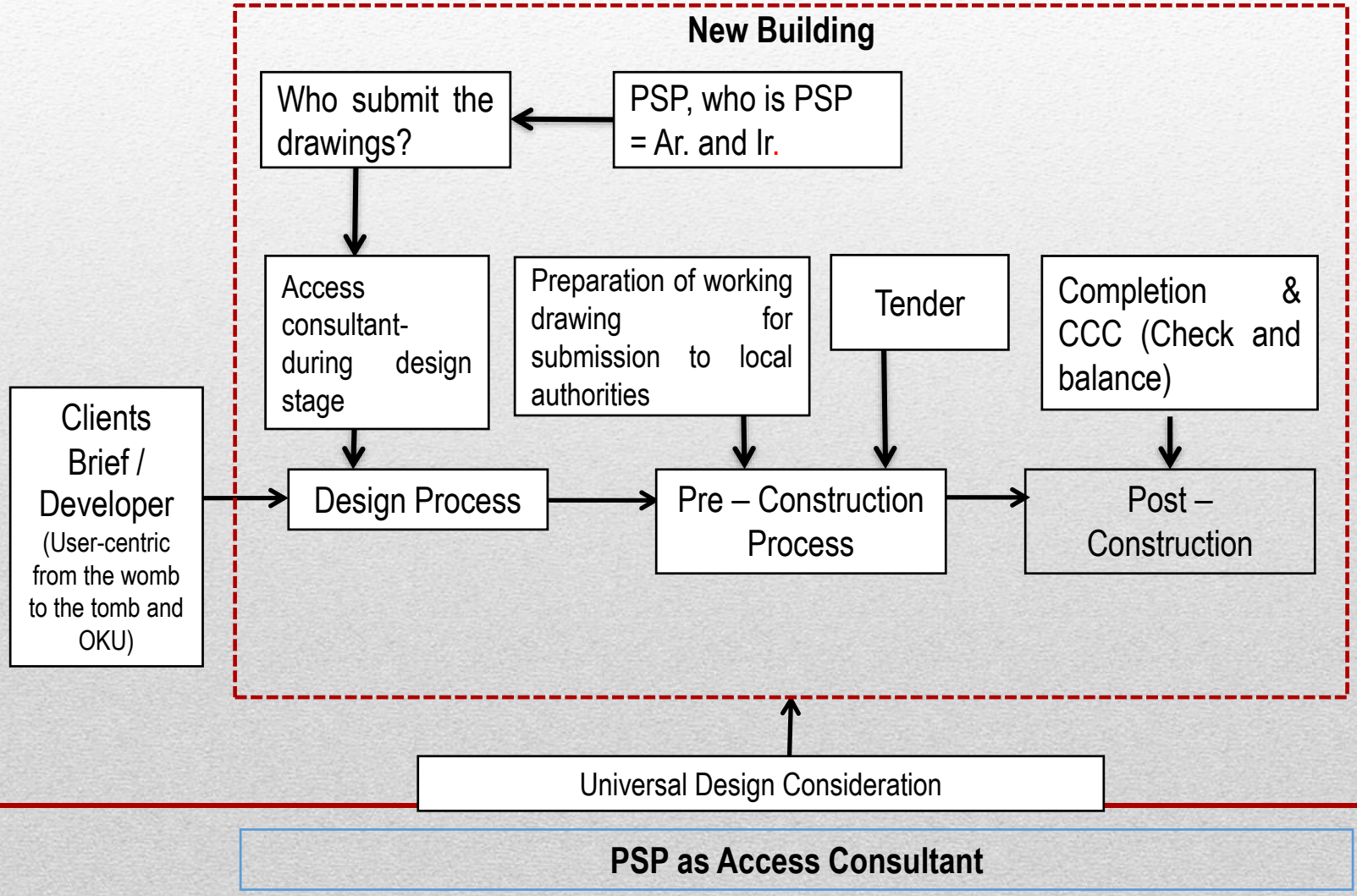
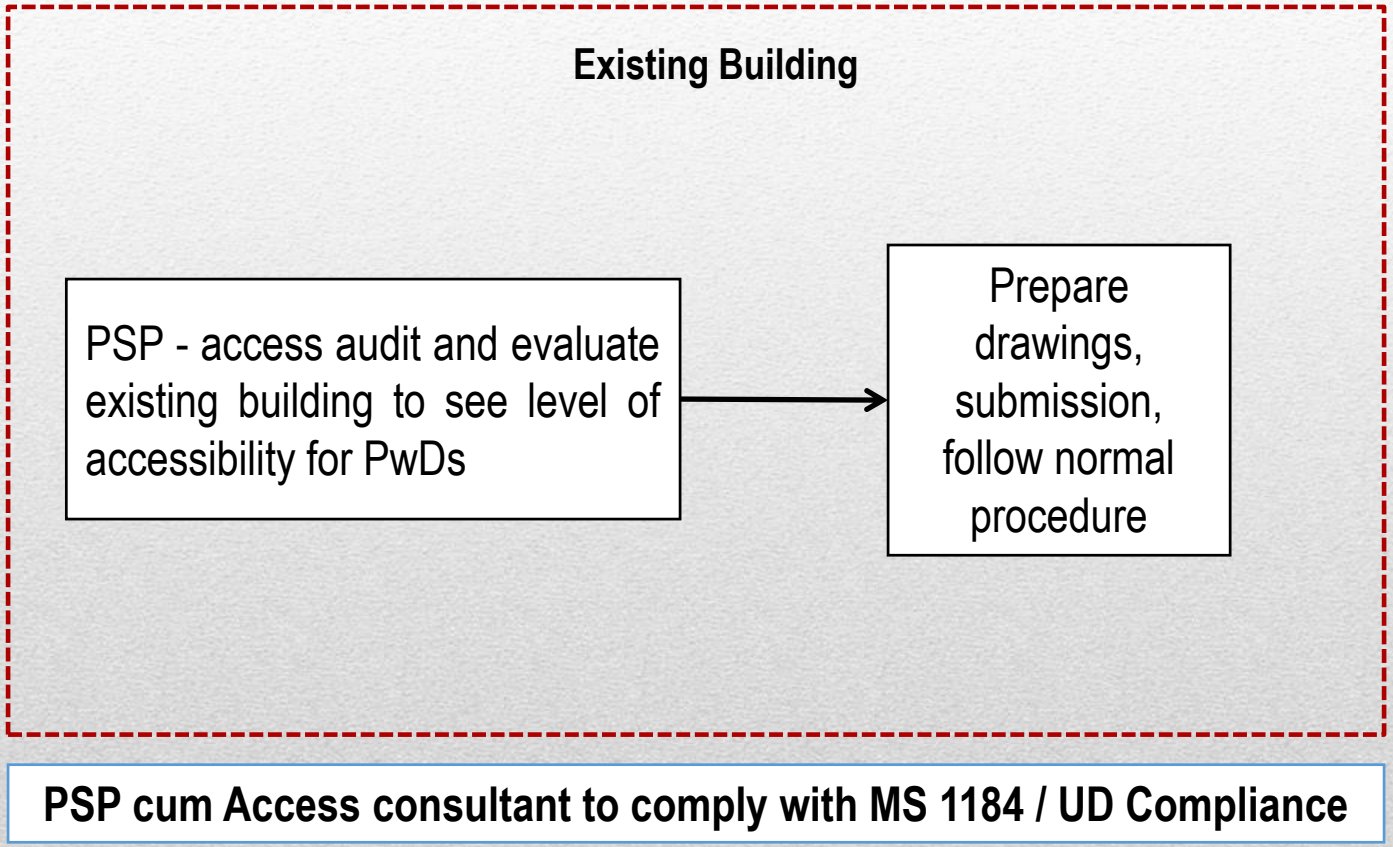


Figure 2: Involvement of PSP to provide Access for PwDs during renovation works.
(Source: *Asiah Abdul Rahim, 2018*)

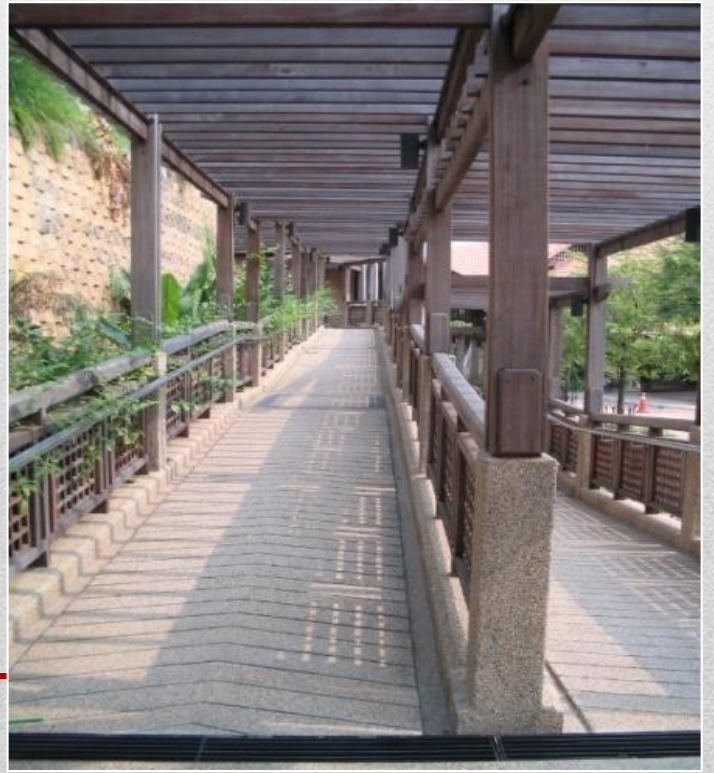


PHYSICAL BARRIERS IDENTIFIED

Access Audit Simulation in Existing Building

CASE STUDY: PUTRAJAYA
HOUSING, RESIDENTIAL & COMMUNITY AREA

- Comfortable width of walkway with railings assist the wheelchair users to use this ramp.
- Suitable floor finishes and sufficient walkway width help in providing good and safe outdoor environment.



CASE STUDY: PUTRAJAYA
HOUSING, RESIDENTIAL & COMMUNITY AREA

- Junction design that has provision of pedestrian zebra crossing
- Bollards provide good barrier for motorcyclist and cars from parking at this area and going up the curbs as the pavement are ‘curb cuts’
- Should have ‘warning tactile’ at curd cuts before & after zebra crossing

CASE STUDY: PUTRAJAYA
HOUSING, RESIDENTIAL & COMMUNITY AREA

- Accessible Bus Stop provides an area for wheelchair next to normal seating area, an e.g of integrated design
- The bus stop has minimum difference in levels making it easier to wheel as gentle slopes are designed and curbs from the road are sufficient with height of bus

CASE STUDY: PUTRAJAYA
HOUSING, RESIDENTIAL & COMMUNITY AREA

- The walkway are leveled off from the house entrance to the main road.
- Any hard landscapes should be surrounded by a minimum height curb; e.g like in this neighborhood
- Floor furnishes have a non-slip surface and its texture should be traversal by disabled persons.

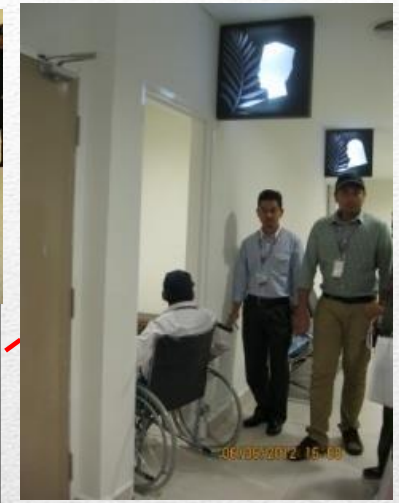
CASE STUDY: PUTRAJAYA
HOUSING, RESIDENTIAL & COMMUNITY AREA

- At Parks and green area should have clear signage and appropriate location of signboard.
- Sitting area is provided at the park
- Seamless Walkway connected to houses without steps.
- Clear pedestrian walkway between soft landscape and hard landscape.

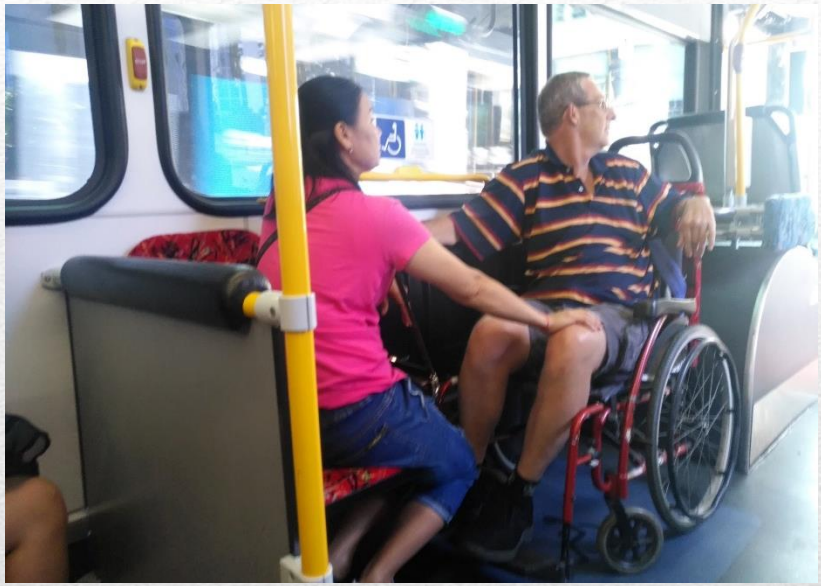
CASE STUDY: KLIA2 AIRPORT

CASE STUDY: LANGKAWI INTERNATIONAL AIRPORT

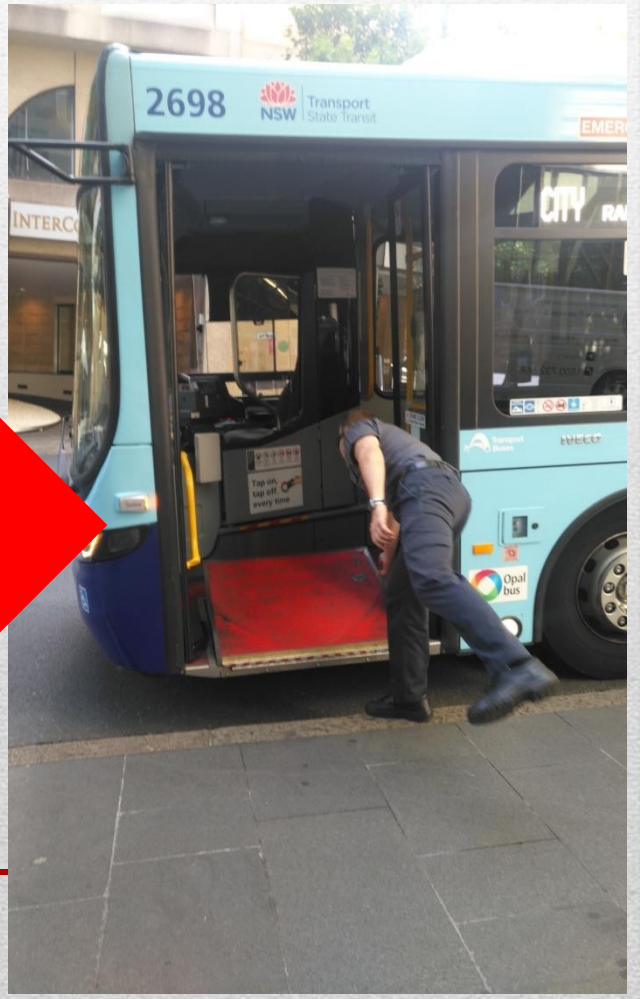
CASE STUDY: PULAU PINANG INTERNATIONAL AIRPORT



CASE STUDY: BUS STOP AT SYDNEY, AUSTRALIA

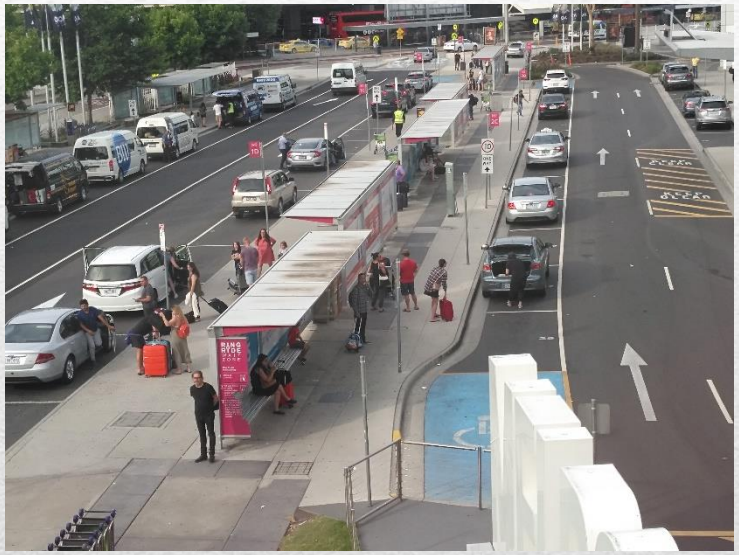


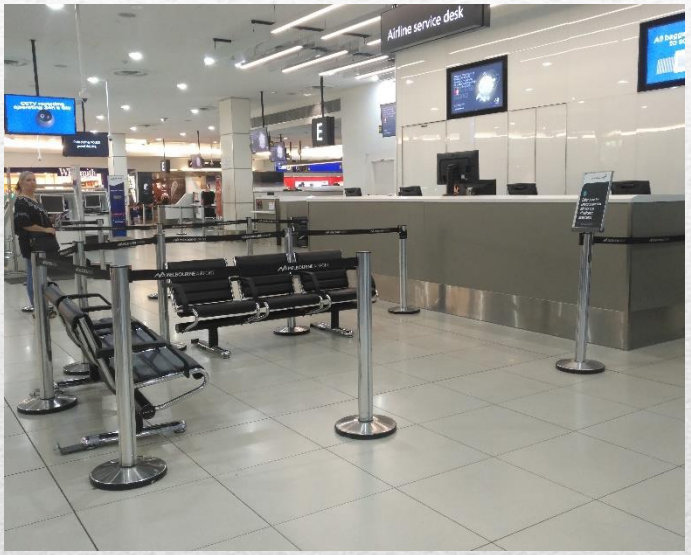
Buses are designed with foldable ramp for wheelchair user to use it and well trained driver that can assist wheelchair user



CASE STUDY: MELBOURNE AIRPORT, AUSTRALIA

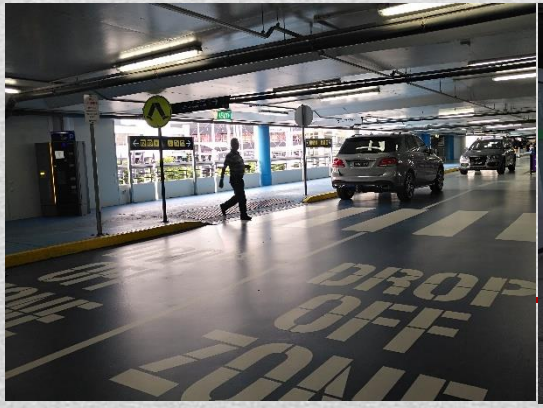
Guiding and warning blocks are place to connect between the building and parking/drop off point area



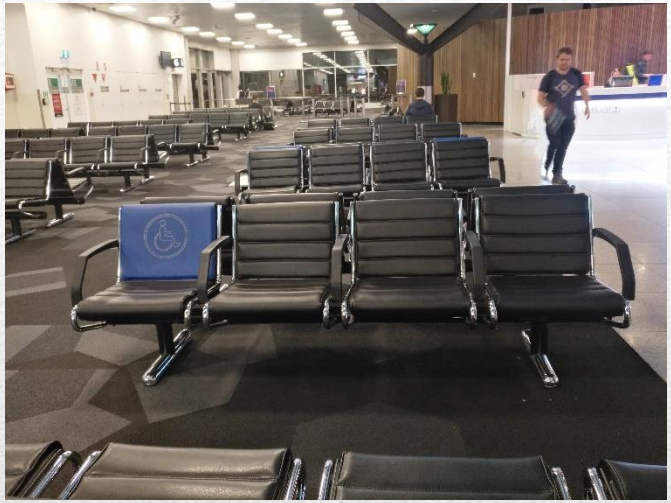


PwDs parking and access to building are clearly visible

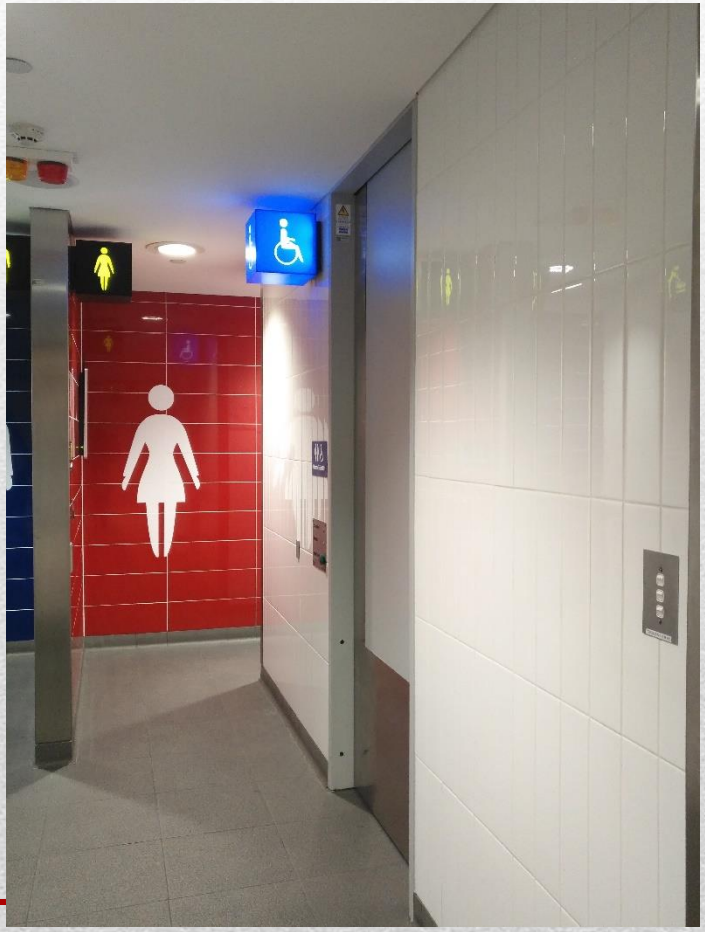
PwDs assistance area are placed near the counter



CASE STUDY: MELBOURNE AIRPORT, AUSTRALIA

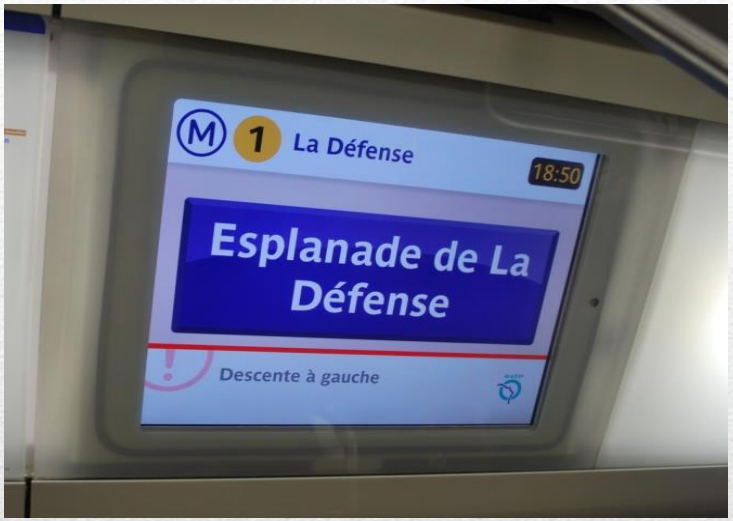


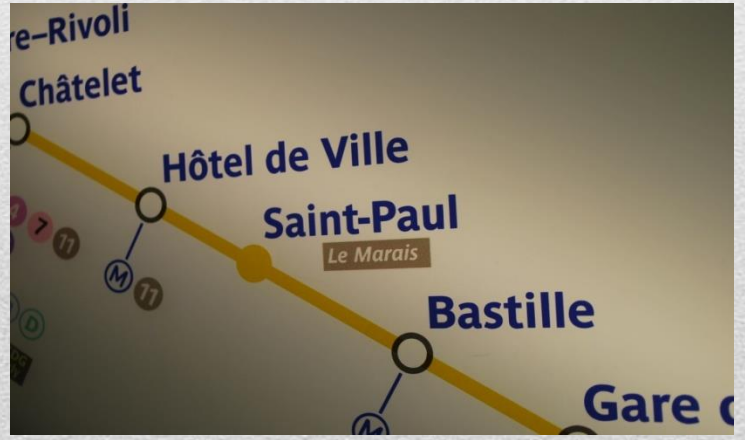
Symbol PwDs chair and toilet are clearly visible and there are braille for the blind



Filtered drinking water is placed low to facilitate wheelchair user to use it

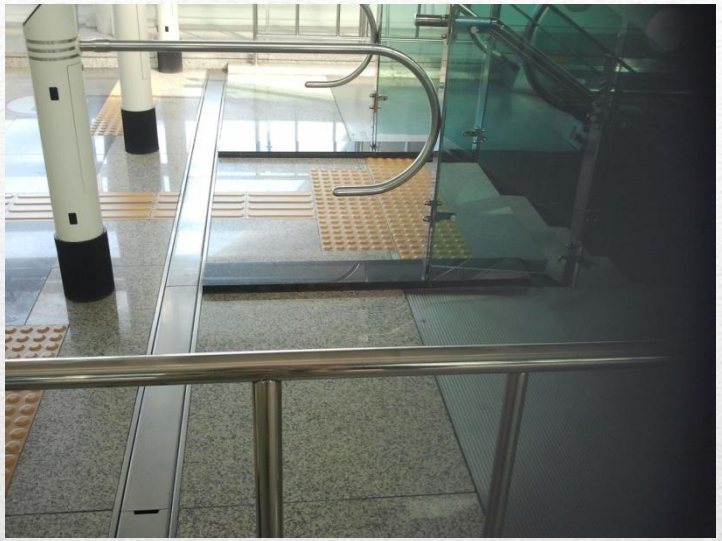
GOOD EXAMPLES IN PARIS, FRANCE





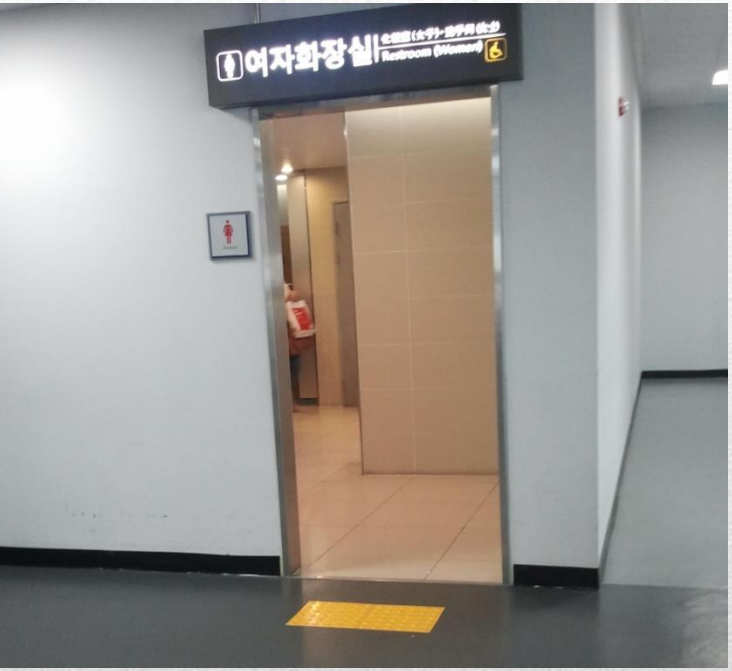
Directive and interactive Signage at Metro Train in Paris (Light & Sound)

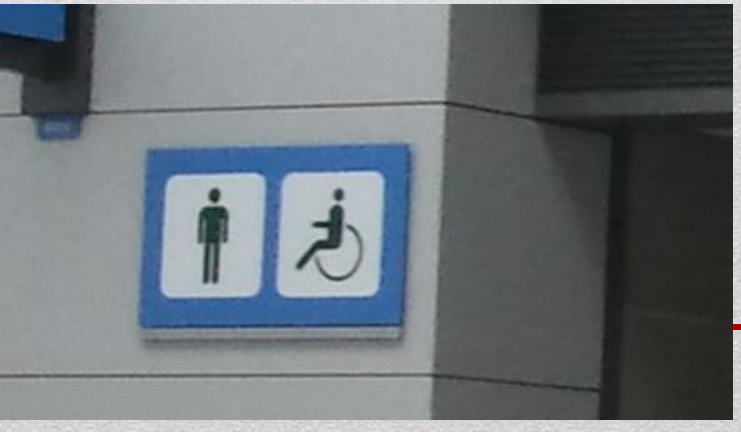
GOOD EXAMPLES IN SEOUL, KOREA



The application of guiding blocks and warning blocks at public areas and train station

GOOD EXAMPLES IN SEOUL, KOREA





Symbols at toilet entrance that clearly indicate accessible toilet and normal toilet has warning blocks for the blind.

INTERGRATED TRANSPORTATION HUB

Accessible underground station and St. Pancras International in London

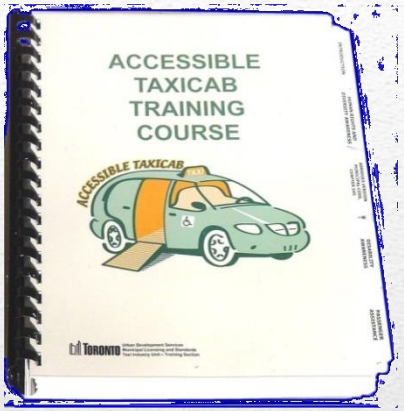
Airport Railroad Express (AREX) from Incheon International Airport to Seoul Station.

TRAINS / AIRPLANES

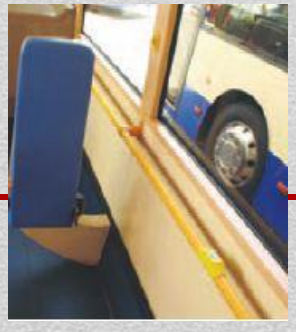
Metro Train in Paris

Interactive display, wheelchair park spot in train, mode of wheelchair transfer & Accessible toilets

PUBLIC BUSES / COACHES / VANS / TAXIS



Adaptable ramps and allocation areas for PWDs on public buses and taxis (Hong Kong, United Kingdom & Malaysia)



GOOD EXAMPLES IN SINGAPORE

Correct use of gradient and warning block for the ramp

Clear signage for the PWD & appropriate Height for wheelchair users

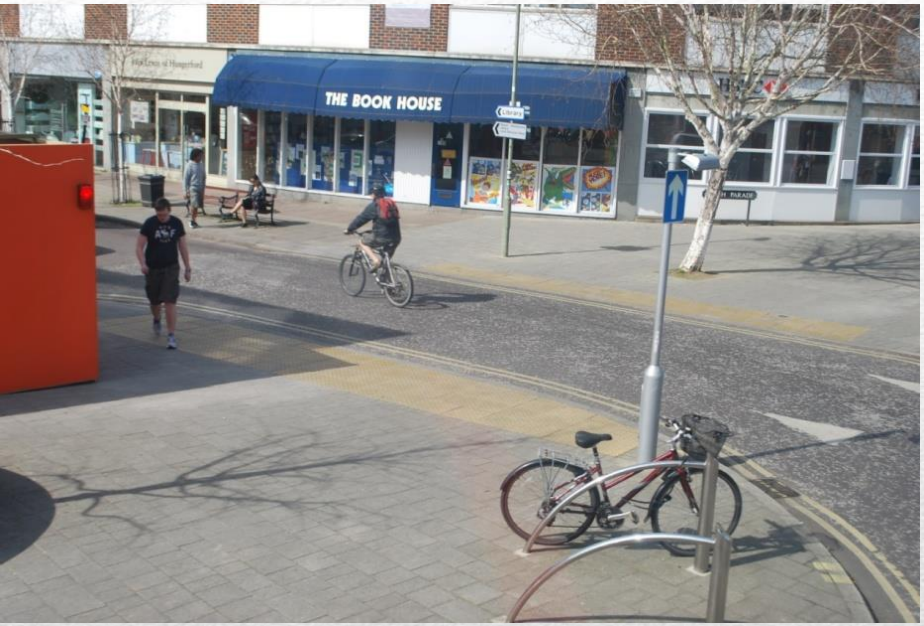
GOOD EXAMPLES IN EUROPE/UNITED KINGDOM

- Pedestrian friendly walkway for all types of user
- Accessible, multi-purpose and wide public walkway
- Ramps provided at heritage and new buildings

GOOD EXAMPLES IN UNITED KINGDOM

Adaptable Design to Heritage Building: External Lift at A Museum in Oxford University

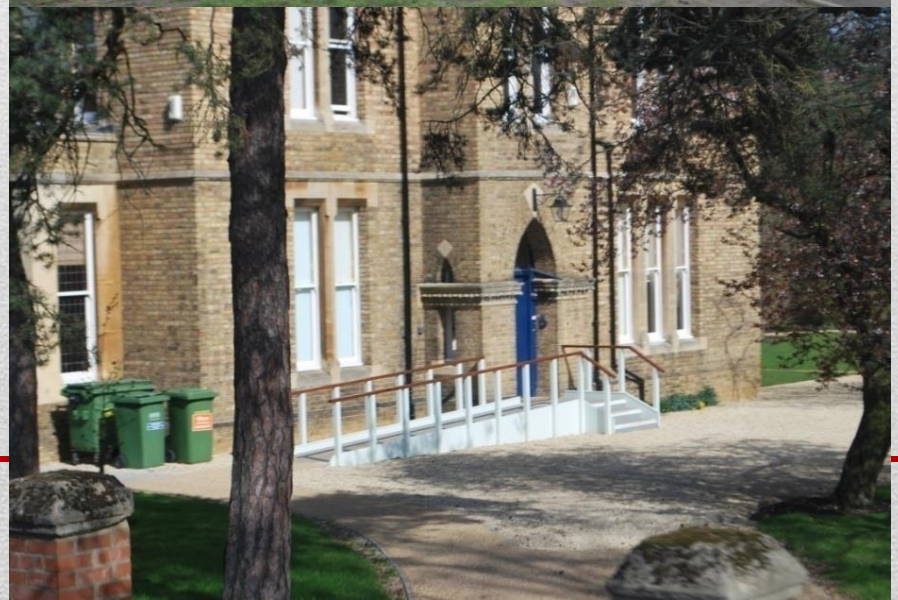
GOOD EXAMPLES IN UNITED KINGDOM



Pedestrian Crossing

GOOD EXAMPLES IN UNITED KINGDOM

- Ramp Design in new buildings



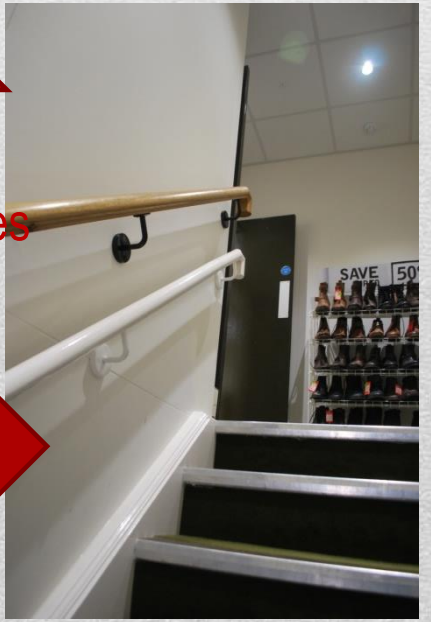
- Adaptable Design to Heritage Building: Ramp Design

GOOD EXAMPLES IN UNITED KINGDOM

Signage for PWDs

Complete Accessible Toilet

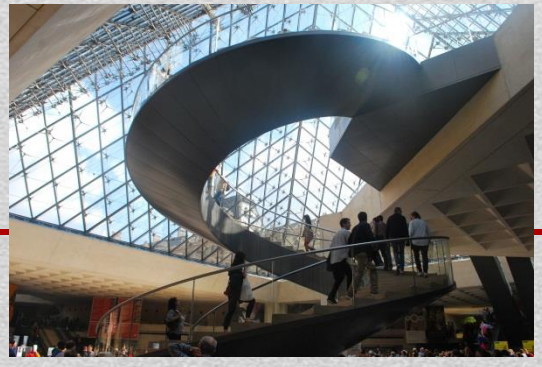
Staircases Handrail Design



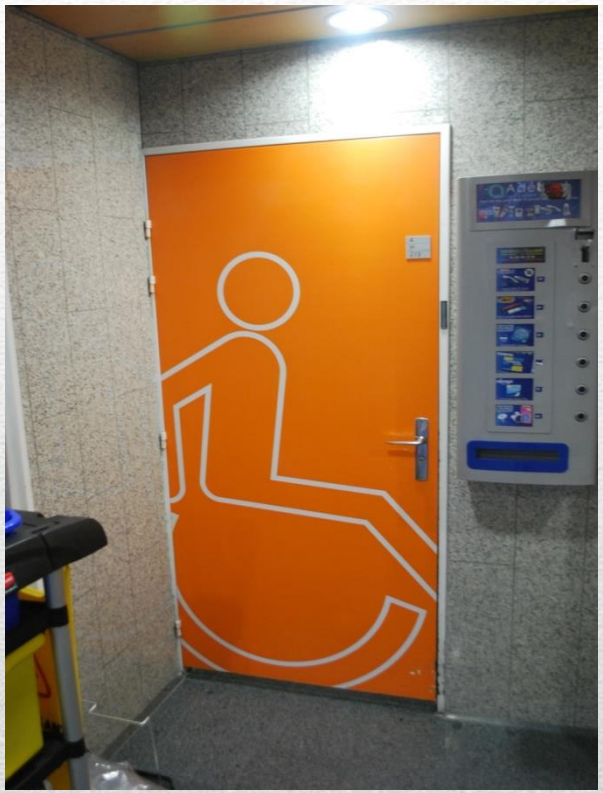
GOOD EXAMPLES OF STREETSCAPE

Several outdoor streetscape

Vertical transport at The Louvre



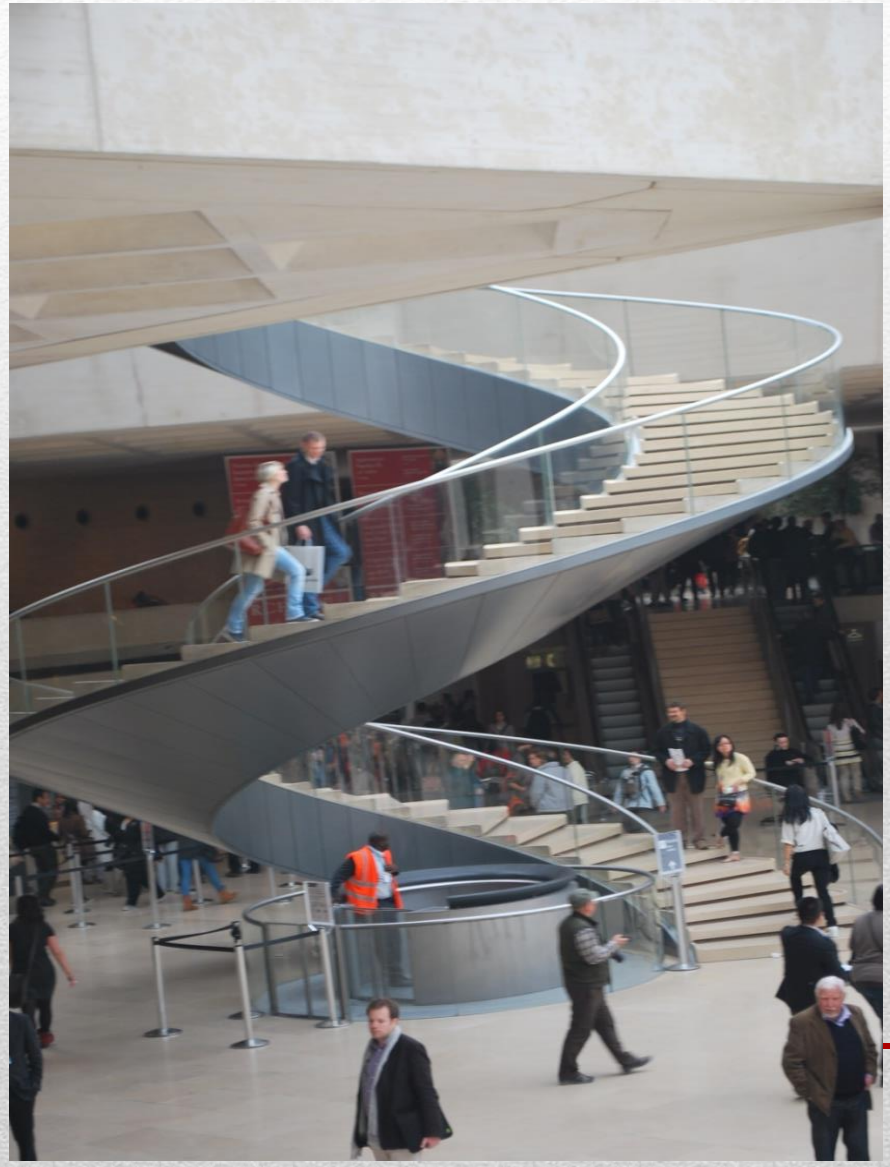
GOOD EXAMPLES IN PARIS, FRANCE

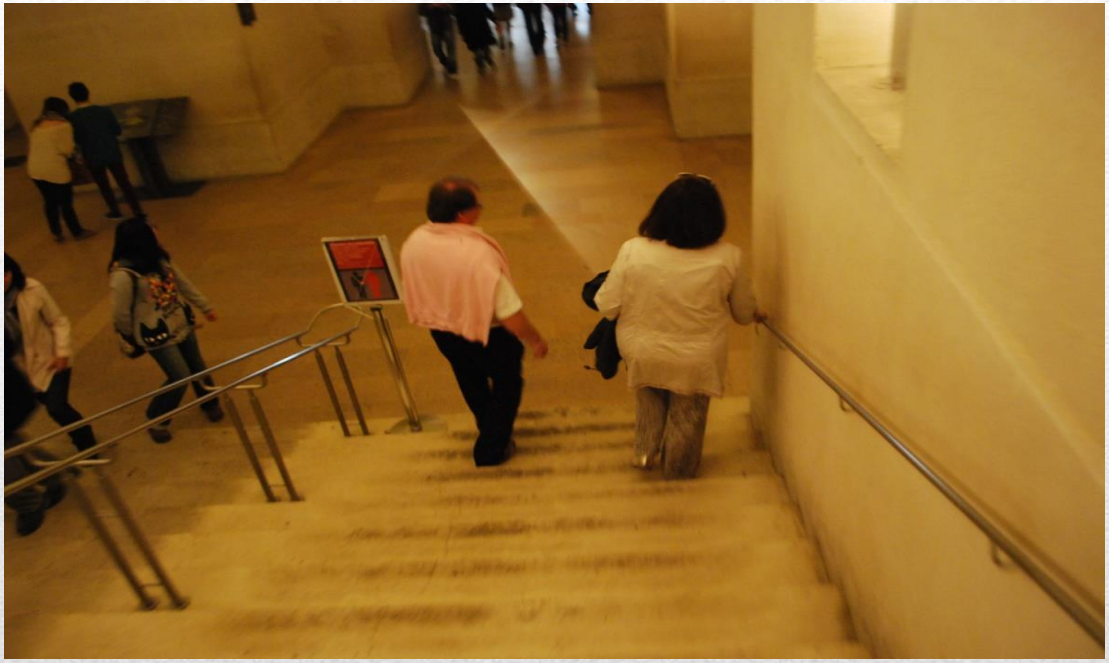


Accessible toilet and electronic door with manual push button at wheelchair height at Charles De Gaulle Airport, Paris.

A Disabled Friendly Welcome Desk with Seating Area at Charles De Gaulle Airport, Paris.

GOOD EXAMPLES IN PARIS, FRANCE

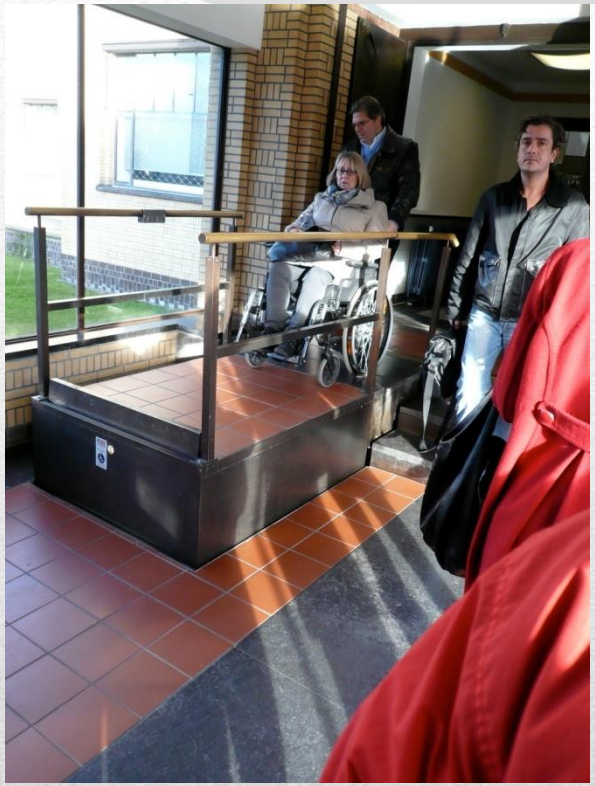


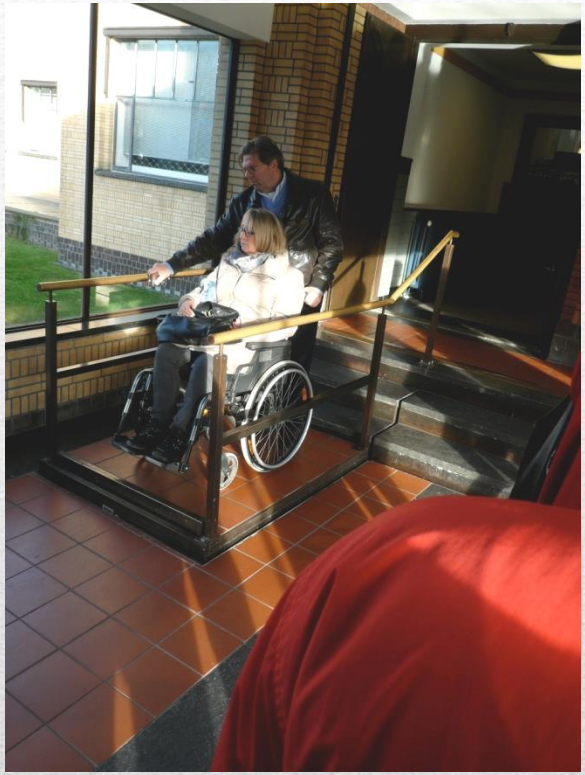


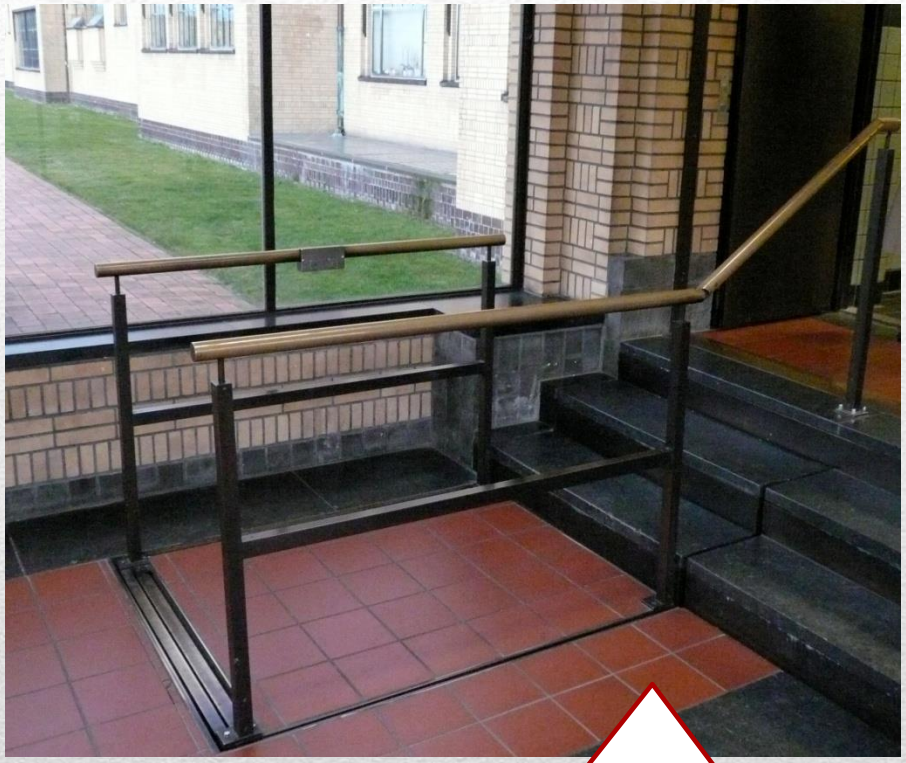
The addition of handrails at both sides of the stairs for the elderly inside The Lourve Musee in Paris

A design of spiral staircase integrated with an open accessible lift inside The Lourve Musee in Paris

DESIGN & PLANNING INNOVATIONS – PLATFORM LIFT







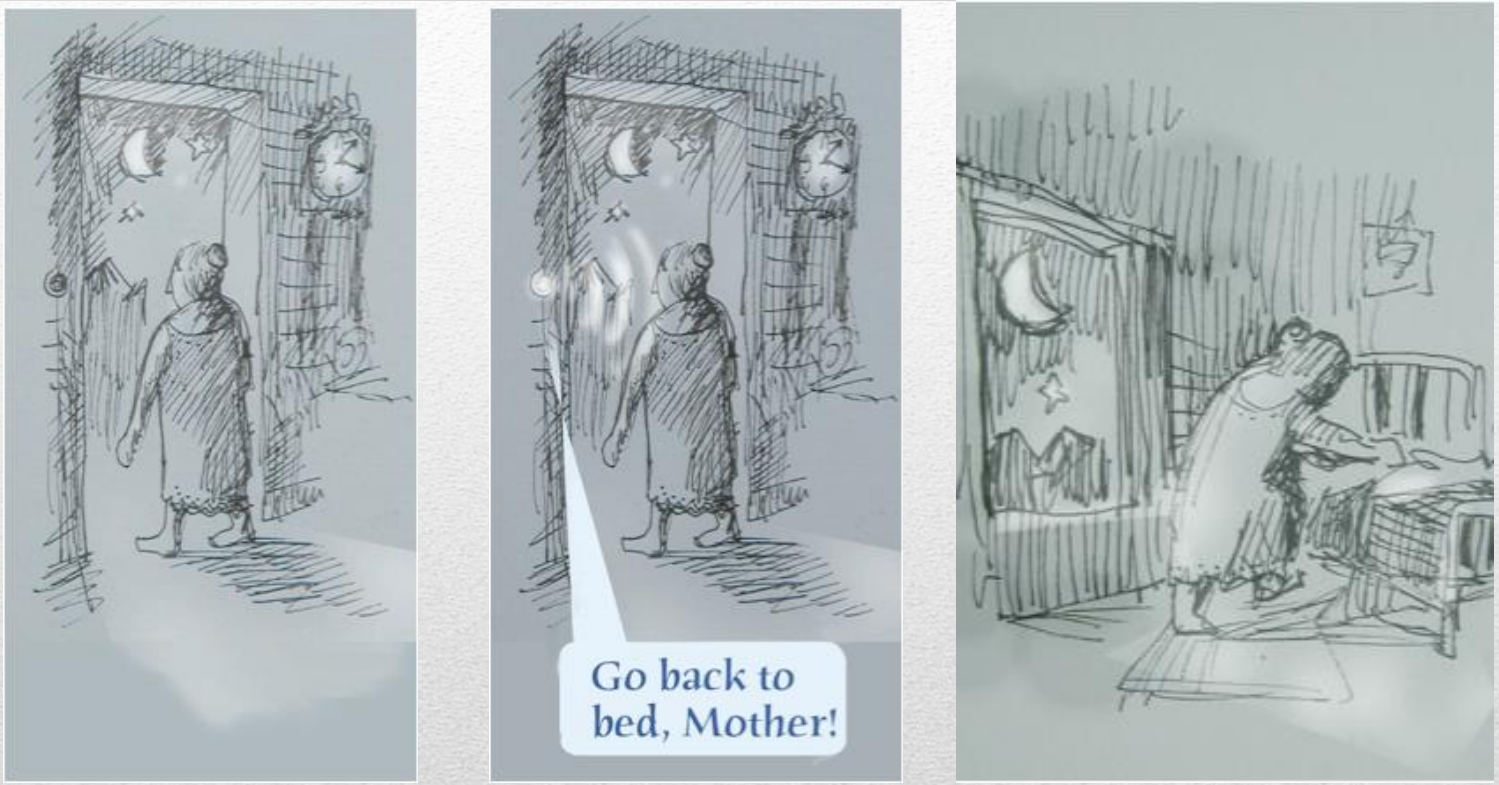
PLATFORM LIFT FOR WHEELCHAIR USERS WHEN NEEDED

BECOMES STEPS WHEN THE PLATFORM IS NOT IN USE

(Figure Source: Jim Harrison, ICUDBE 2013)

DESIGN & PLANNING INNOVATIONS - PRODUCTS

DESIGNING FOR DEMENTIA

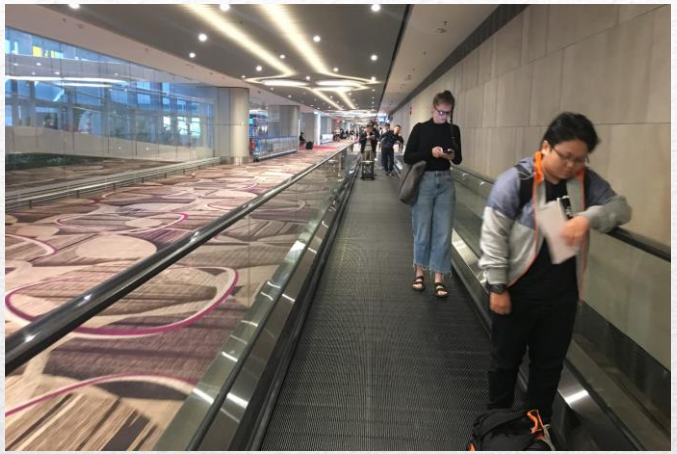


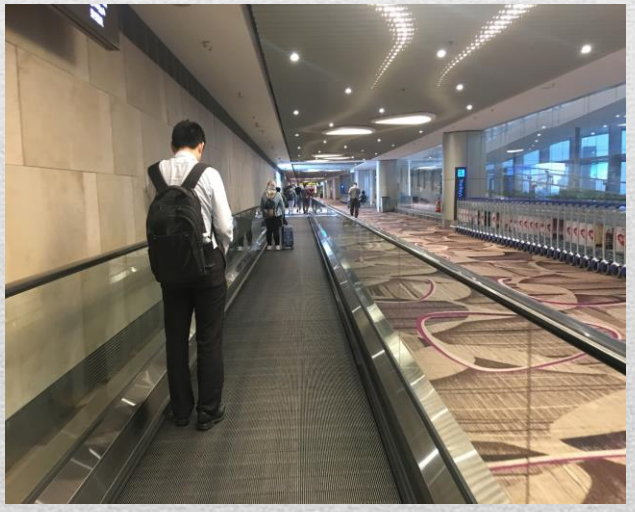
(Figure Source: Jim Harrison, ICUDBE 2013)

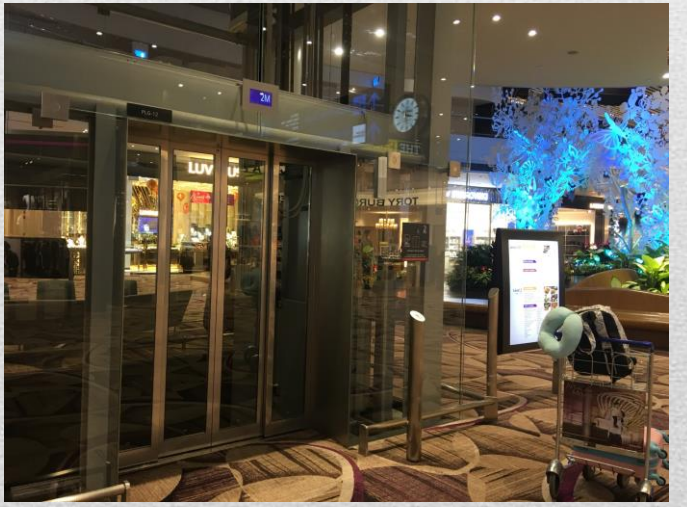
- Communication devices - sensors and 'apps' that are used on mobile phones, bluetooth or RFID (radio frequency identification) with proximity sensors (eg audio guide handsets in museums)
- Can be located to activate existing parts of the building - opening doors, switching lights or providing information
- Through the use of wearable sensors the services can be designed to respond to the individual needs of the building user, rather than just for people in general.

3 CASE STUDY OF SINGAPORE

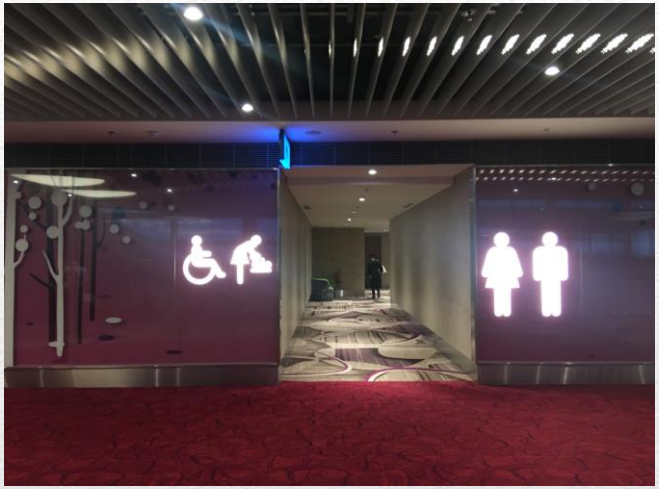
Changi International Airport (Terminal 4), Singapore







Changi International Airport (Terminal 4), Singapore



Changi International Airport (Terminal 4), Singapore

Changi International Airport (Terminal 4), Singapore

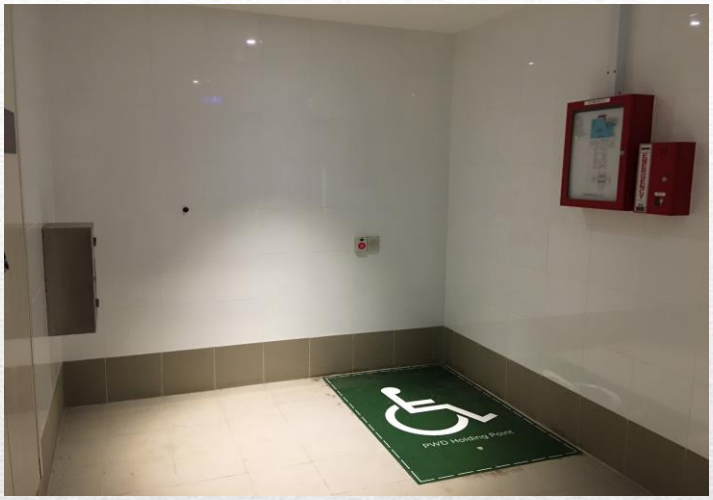
Kampung Admiralty, Singapore

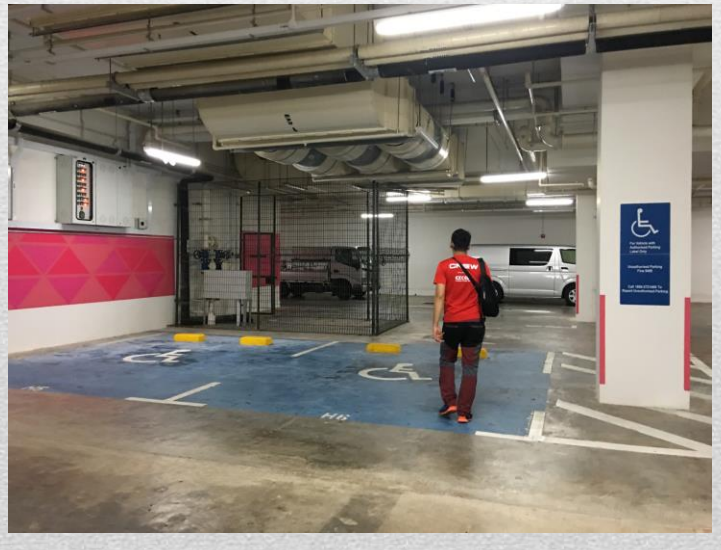


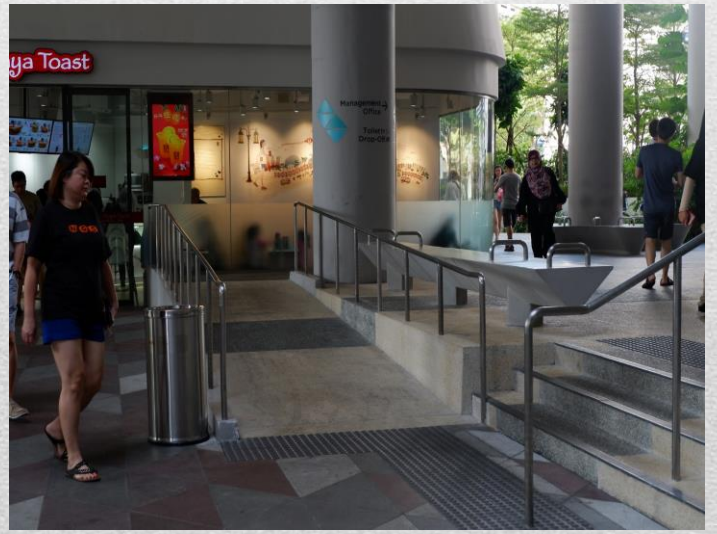



Retrieve from:https://www.hdb.gov.sg/cs/infoweb/residential/where2shop/explore/woodlands/kampung-admiralty

Kampung Admiralty, Singapore







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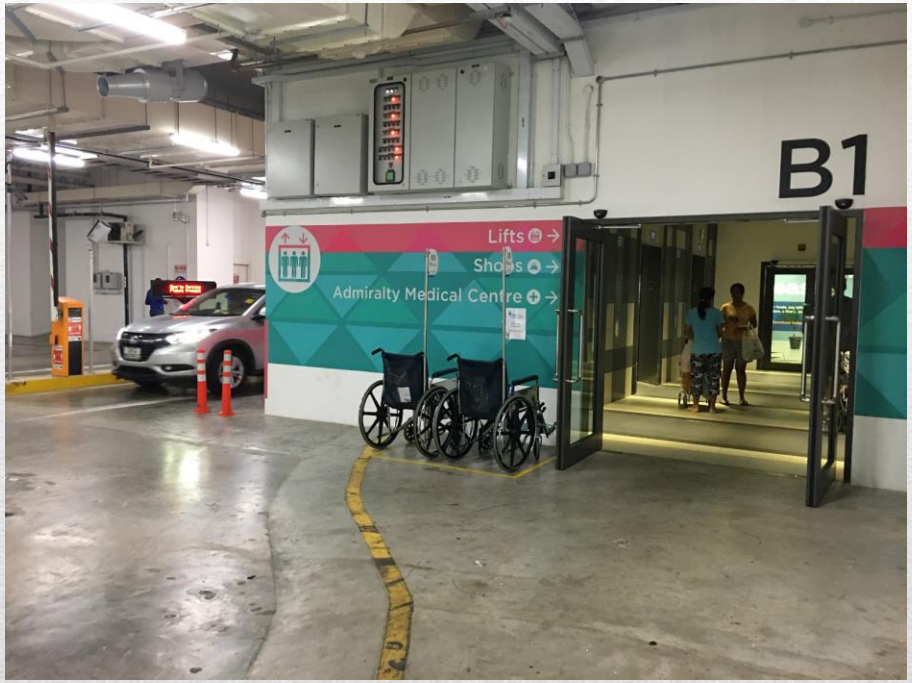
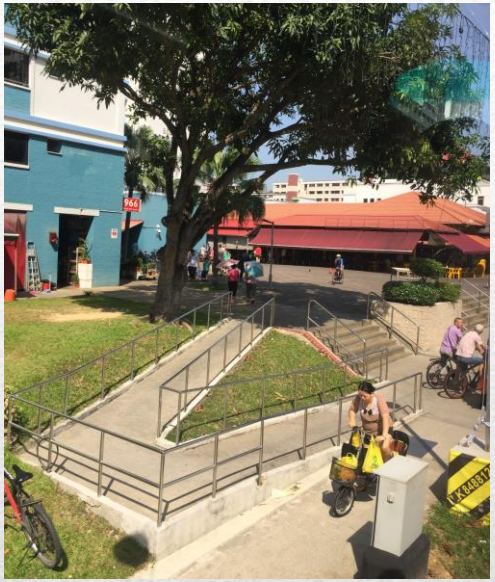
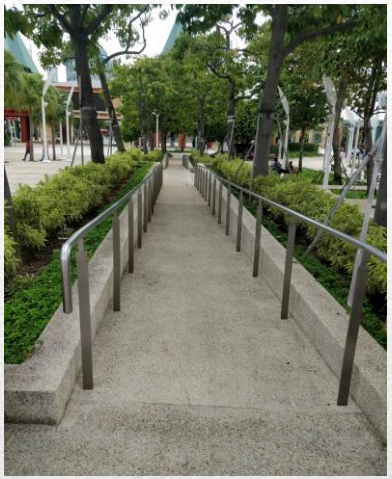
Kampung Admiralty, Singapore

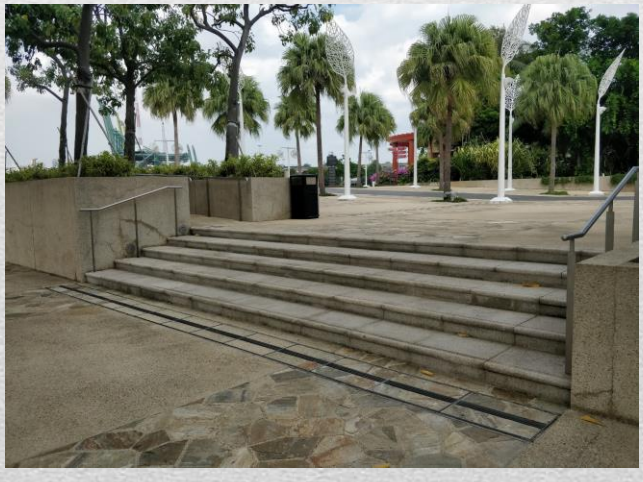


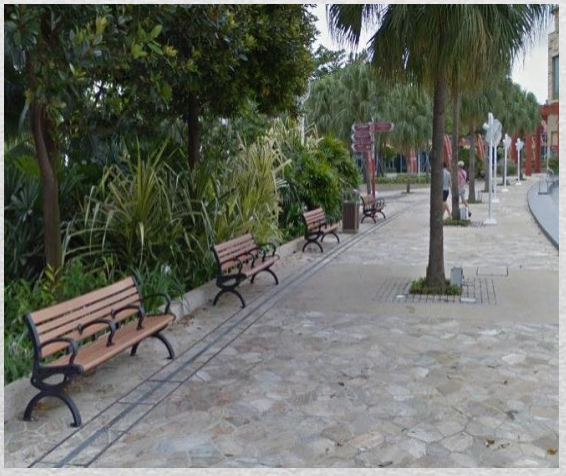
Public Areas



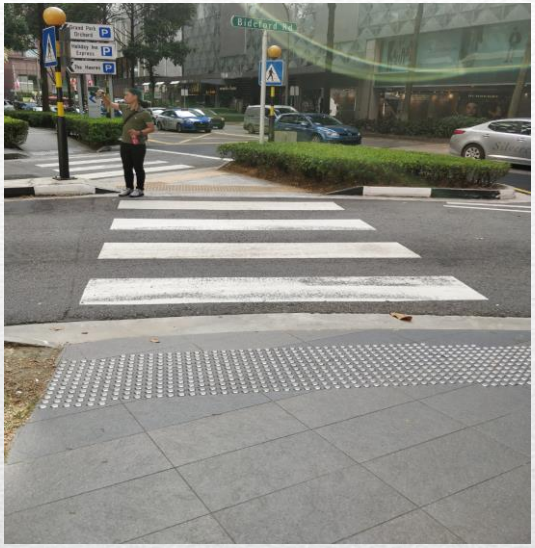
Waterfront, Resort World Sentosa

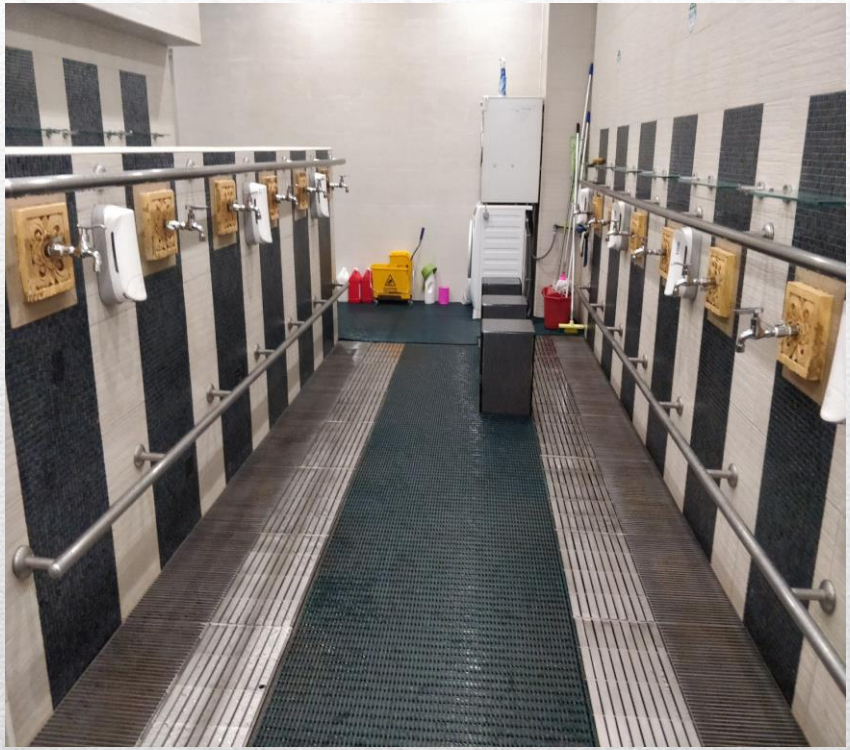


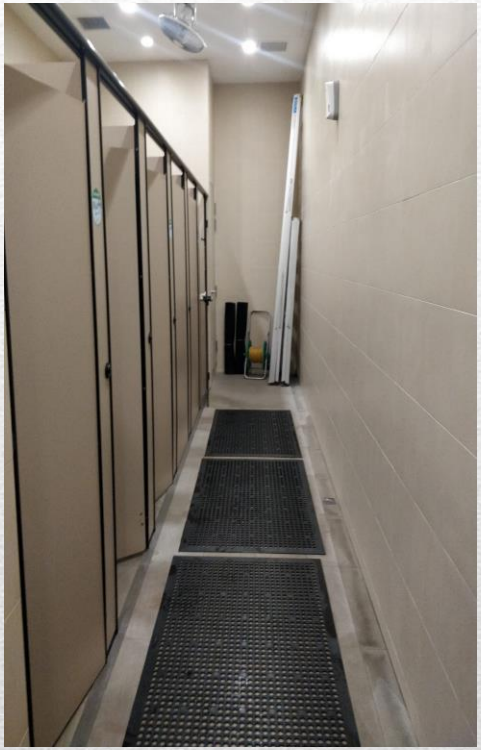
Masjid Al-Falah



Masjid Al-Falah

Ablution and Toilet





Nanyang Technological University (NTU)

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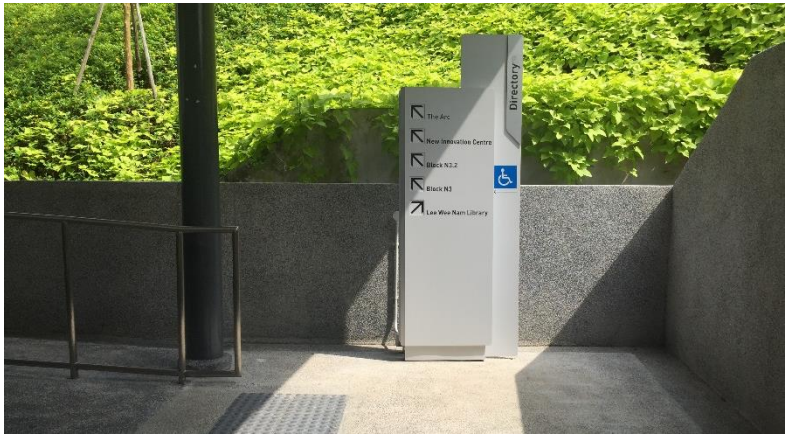

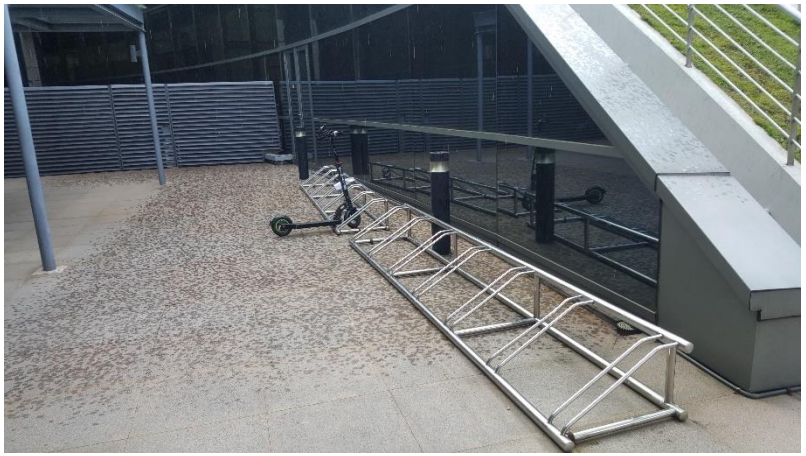

National University Singapore (NUS)

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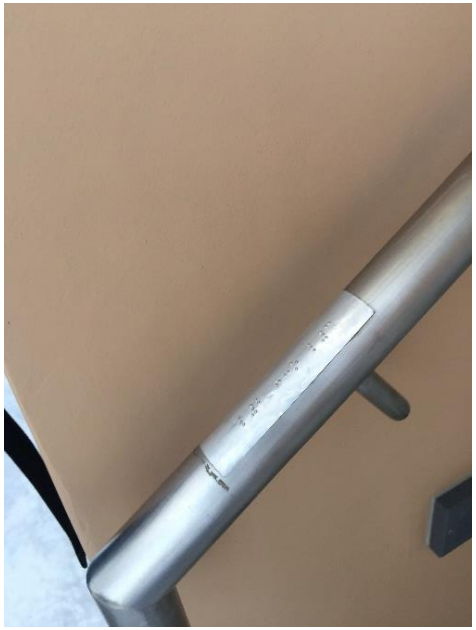

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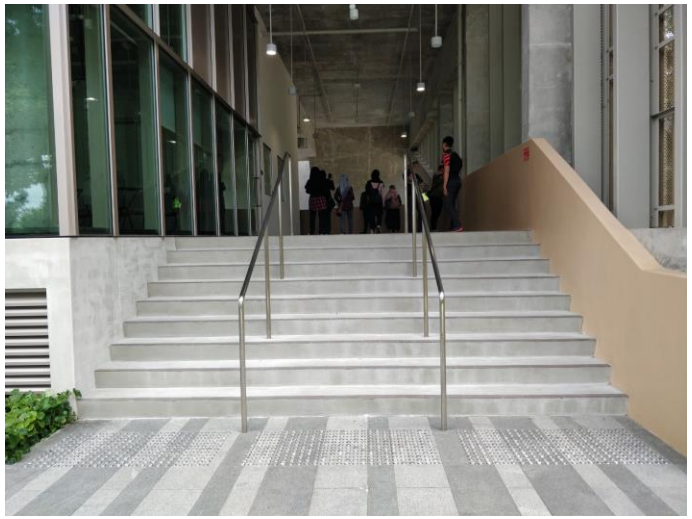
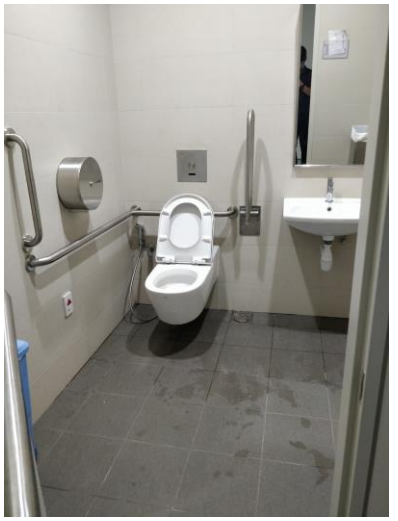
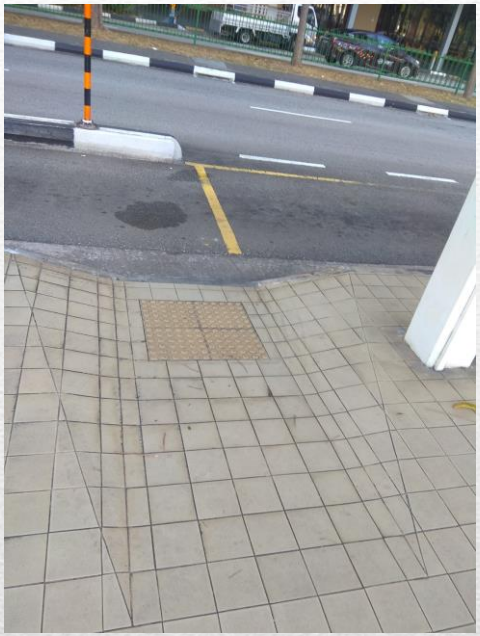
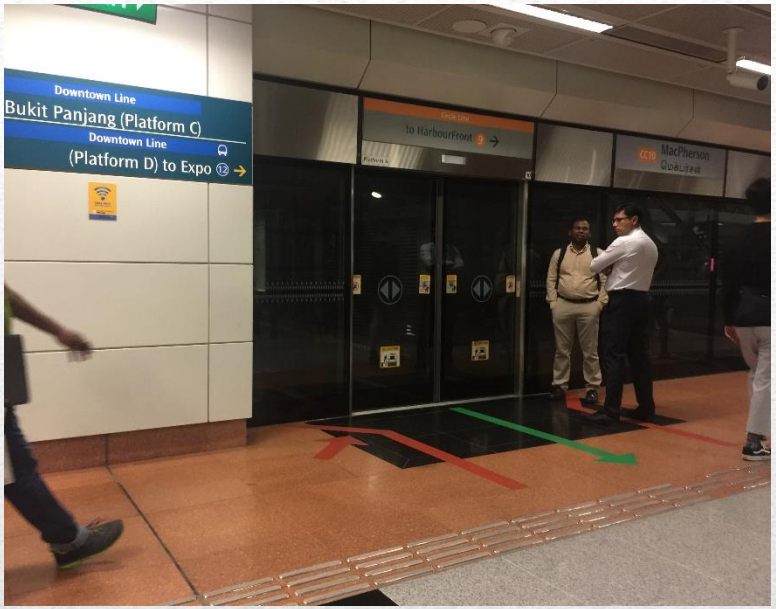




The Mass Rapid Transit (MRT)



The Mass Rapid Transit (MRT)



CONCLUSION

1. **UD awareness programme to be continued to all both technical and administration staff**
2. **Promoting Malaysian Standards MS 1184:2014, MS 2015-1:2017 Public Toilet - Part 1: Design Criteria (First Revision)and MS 2577:2014 Architecture and asset management of Masjid – Code of Practice**

Thank You

Email:
arasiah@iium.edu.my