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"Innovative Urban Design solutions and technologies for the aged, towards an accessible socio-economically integrated Metropolis of the future. A South African example"

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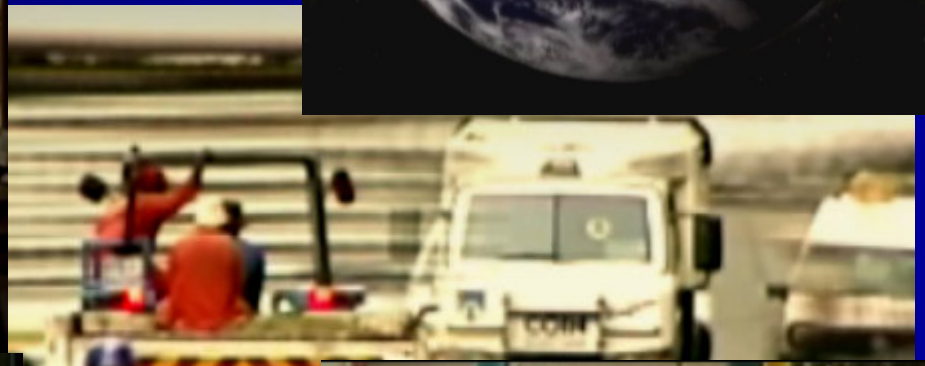
our future through science

" Our " *world…*

A world for everybody ?



Questions

- Is the design & structure of our cities conducive to accessibility for all ?
- Is everybody capable to participate fully to city life ?
- Is socio-economic integration for all a myth or a reality ?
- What about the aged and the disabled ?
- What is the vision for the future ?
- How can integration be accelerated ?
- Can technology help?
- Which technology? And How?

Project main focus areas:

1. The People (focus on the Aged and People with Disabilities)

2. The Technology (focus on Wearable Computing, Augmented Reality, HCI, 3D tracking and wireless communication)

3. The Built Environment (accessible Urban Areas)

Project envisaged area of maximum impact and relevance:

South African Metropolitan Areas

- ***Current major problems***

  - Massive physical expansion due to SA rapid economic growth.
  - Rapid Immigration (search for better life, opportunities, economic/education upliftment).
  - Poor provisions for the Aged and People with Disabilities (physical mobility, access to services, social integration, economic dependency and burden on society, low skills/education levels).
  - Low technical infrastructure (wireless broadband network etc.).
  - Limited metropolitan authorities management & services delivery.

The challenge

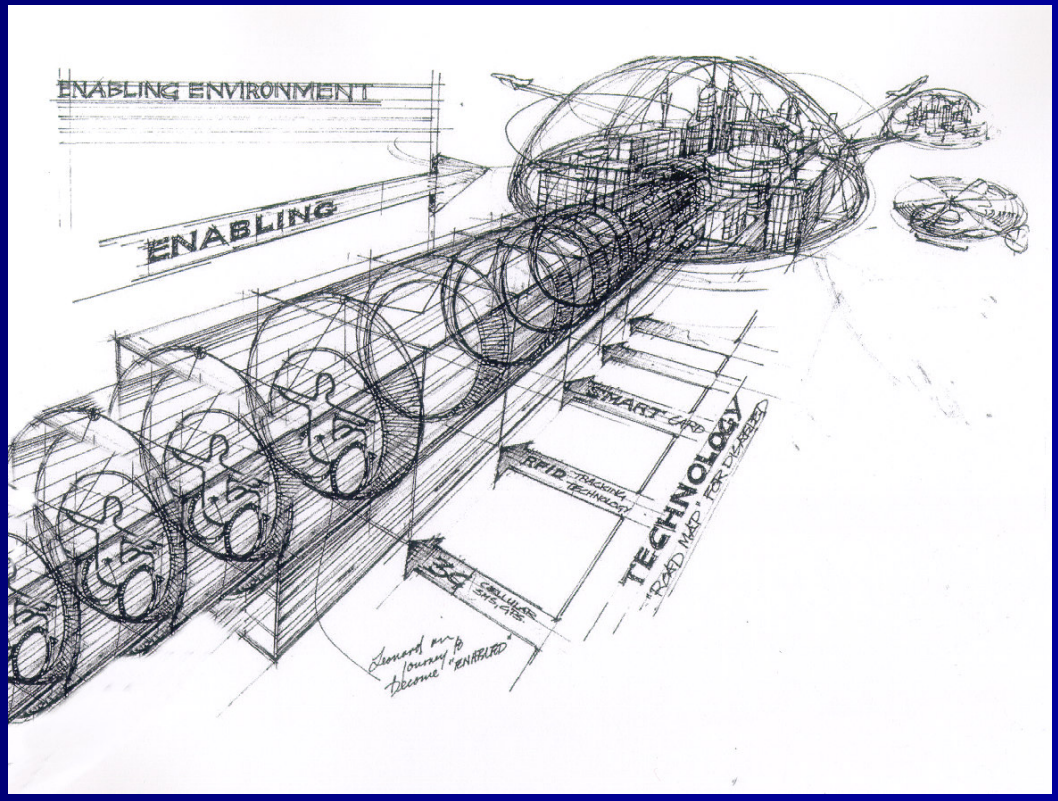
➢ To research and create enabling, intelligent or "smart" systems and environments able to monitor, track, reason, adapt to, and interact with the user in a South African context.

The aim

➢ To facilitate inclusiveness, accessibility and usability irrespective of age, disabilities, language, gender, literacy and culture.

How?

➢ Through dynamic integration of persons with disabilities and the aged into present and future urban life and city physical structure/design, through futuristic human-computer and human-ICT systems.



South African cities are designed for the able bodied , young , educated and productive citizen…..

- *Is this a current reality of a "third world …*
  or a problem of global context?

The "Enabling Environments" project

Main project aims:

1. The People issue:

- To research how people, future technologies and the urban environment could become integrated into an interactive ICT system, where the physical and virtual infrastructure becomes intelligent, connected and able to respond to human psychological and physical needs, in an accessible and usable manner.

2. The Technology issue:

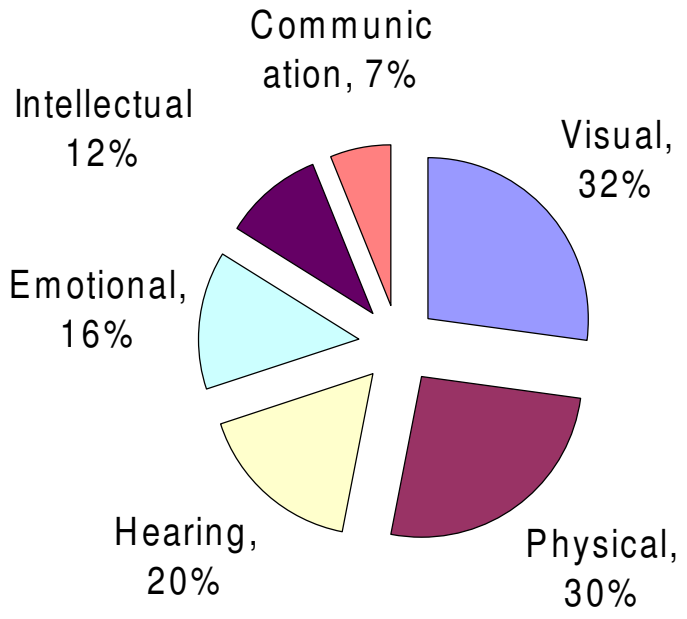
- To explore current state of development of advanced R&D in the use of ICT to empower disadvantaged people to live independently and to re-integrate in society.

3. The Environment issue:

- To explore how, through technology, a dynamic integration of the aged and the disabled would be possible into present and future South African urban life and city physical structure and design.

1. The People

SA Disability statistical spread and future projection for the Aged



30% Have been excluded from education system (no schooling)
65% Have lower than primary level education
82% excluded from Workforce and is unemployed
60% of the elderly requires medical care (hospital or other medical facility)

Results: *Poverty, Dependence, Social Isolation, Unemployment*

South African Reality Check: the Aged and People with Disabilities

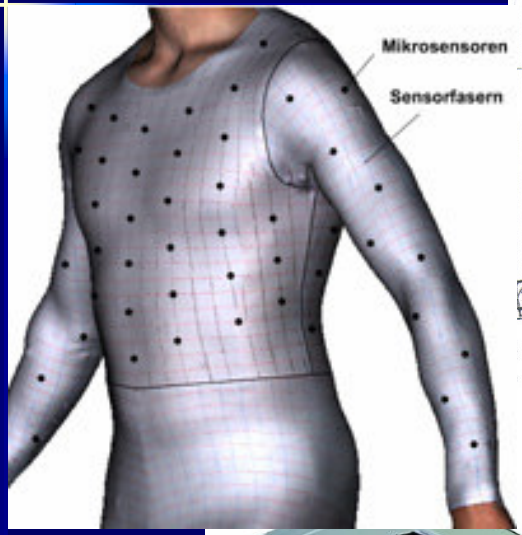
- ***The Aged***
- *Up to 10% of the population above 65 years of aged (up to 4 million people)*
- *The majority economically dependent and unproductive*
- *Skilled people not able to continue to use their skills because of progressive physical deterioration and lack of opportunities*

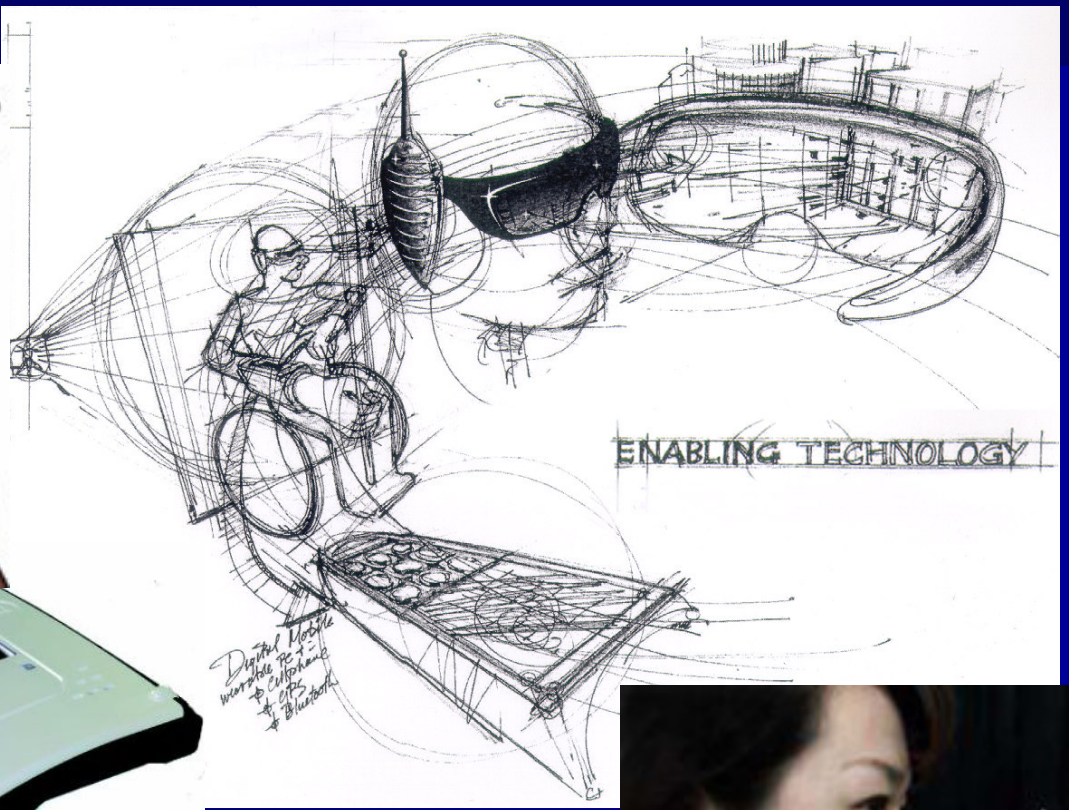
- ***People with Disabilities***
- *Various types of disability are affecting the lives of up to 12% of the South African population (up to 5 million people)*
- *Add: temporary and long-term disabilities caused by accidents/illnesses*
- *Good national legislation (e.g. Building Regulations, Disability strategy) – 1997 White Paper and Codes of practice/design*

- ***People with Disabilities and the Aged***
- *Difficult coordination/management by National Organizations and Councils*
- *Limited education/skills (also care-givers)*
- *Lack of employment opportunities*
- *Low access/usage of ICT*
- *Language challenges*
- *Barriers to: communication, information, mobility, etc.*
- *Limited understanding of the functioning of the modern SA metropolis*
- *Limited knowledge of "how to" use city opportunities and services*

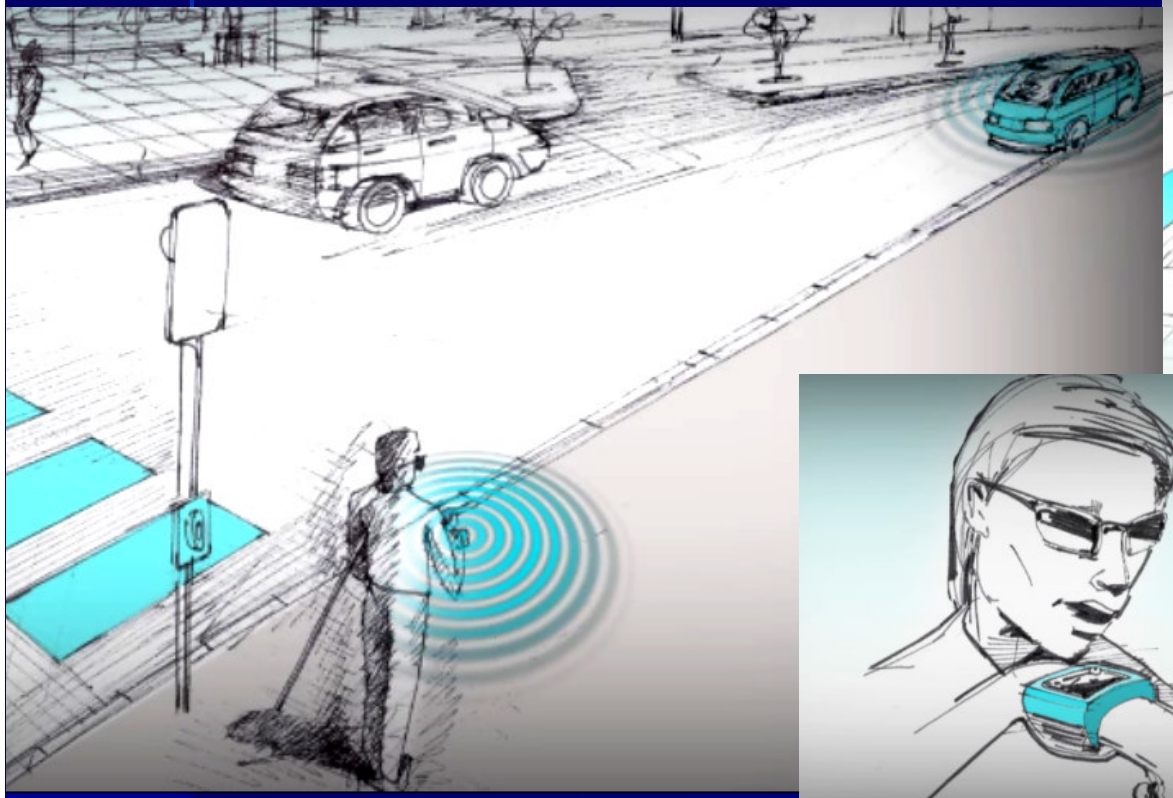
2. The Technology

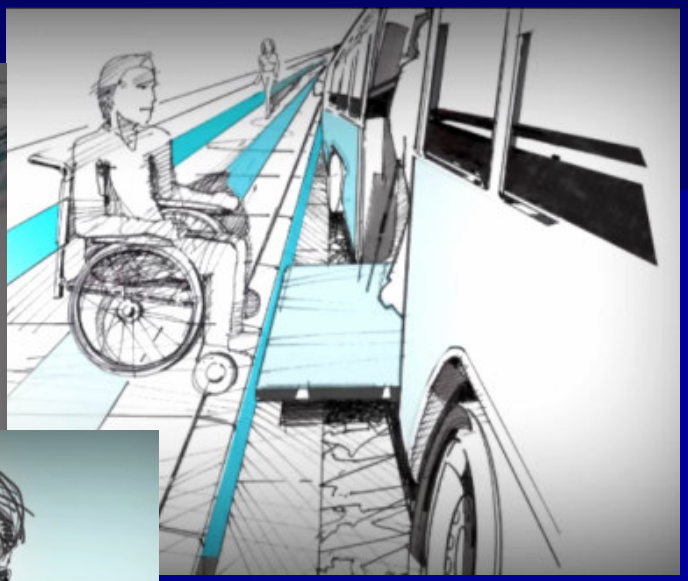
➢ Creation of an ***accessible and inclusive world*** where the elderly, progressively disabled persons and people with disabilities, can carry around ***smart devices*** (wearable computing, embedded devices, *nano*-augmented reality displays)

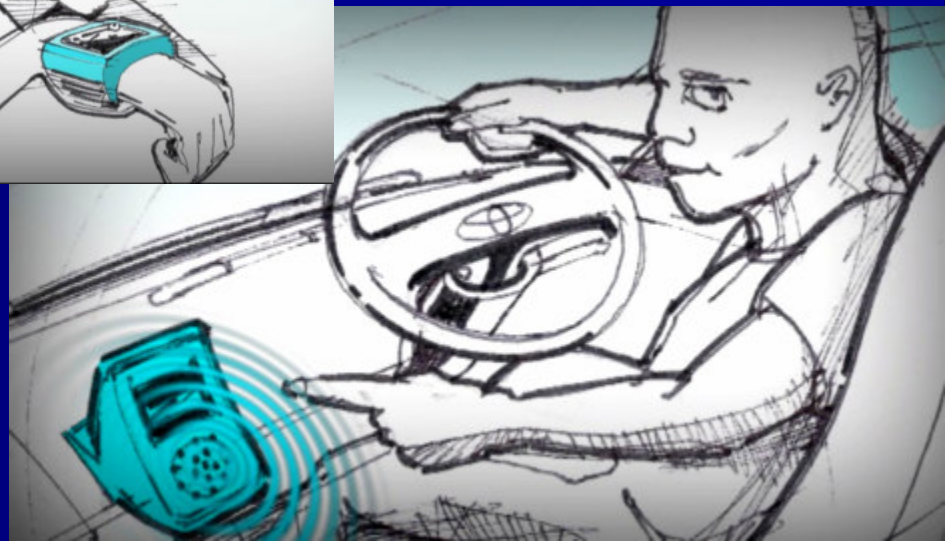




Technology solutions





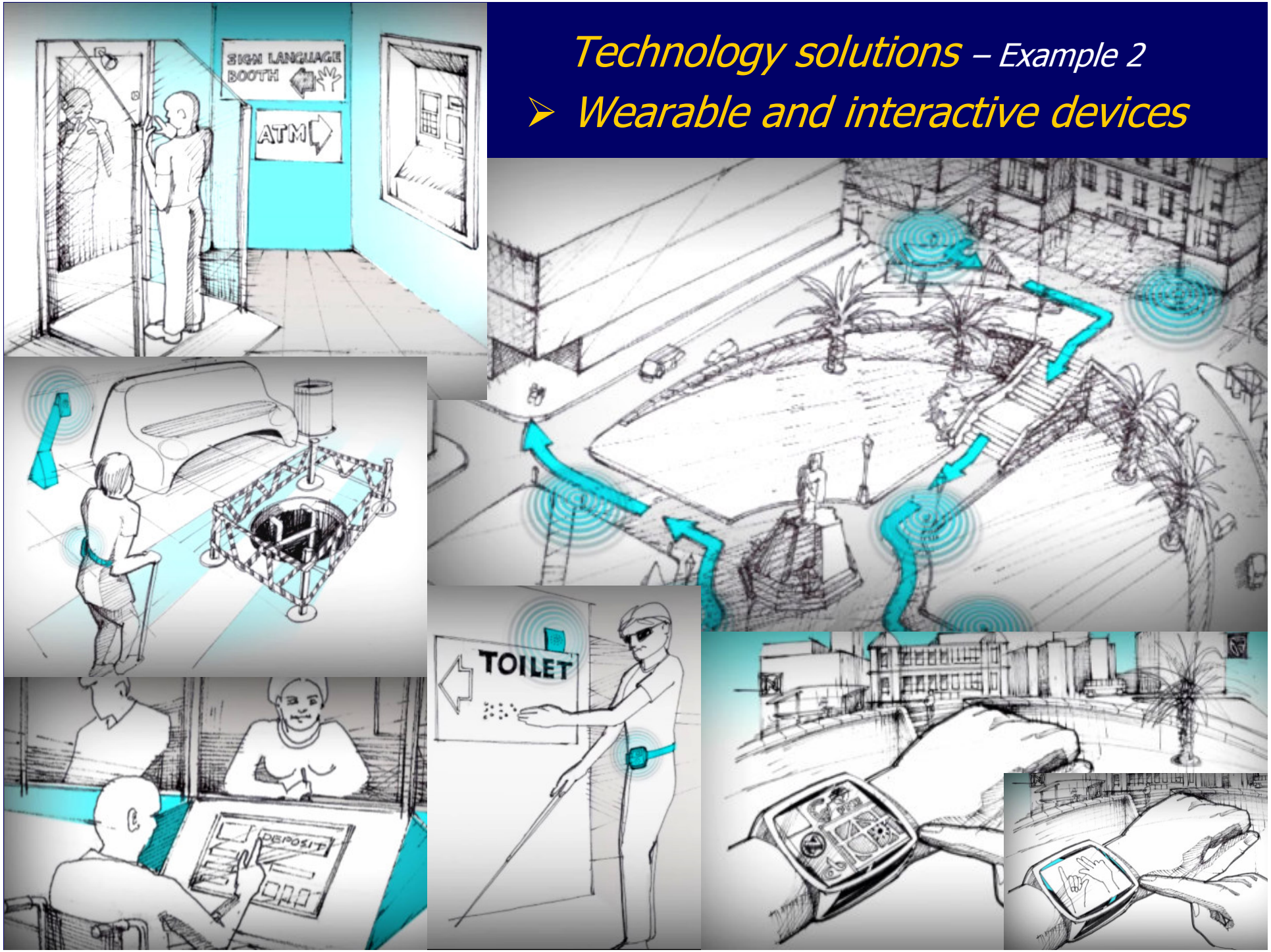


-Example 1:

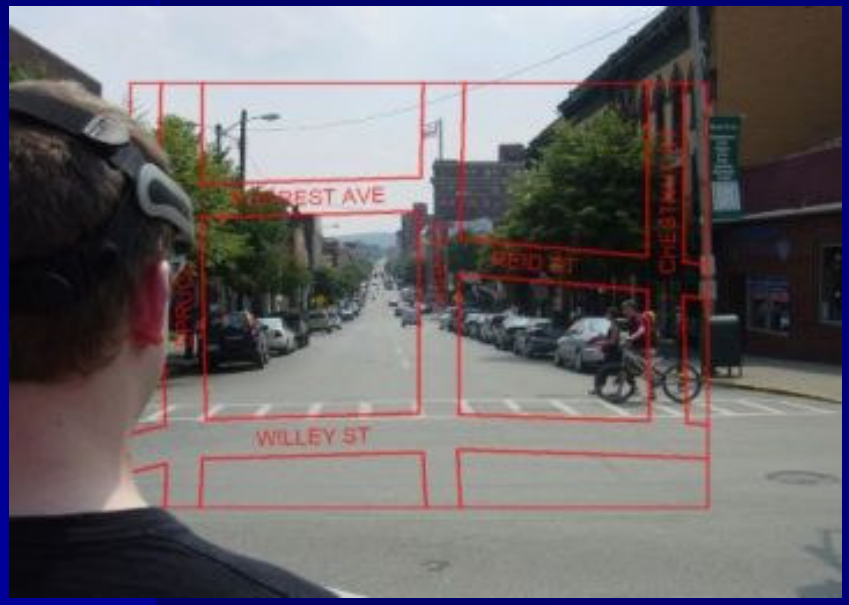
- *Transport solutions*

Technology solutions – *Example 2*

- *Wearable and interactive devices*



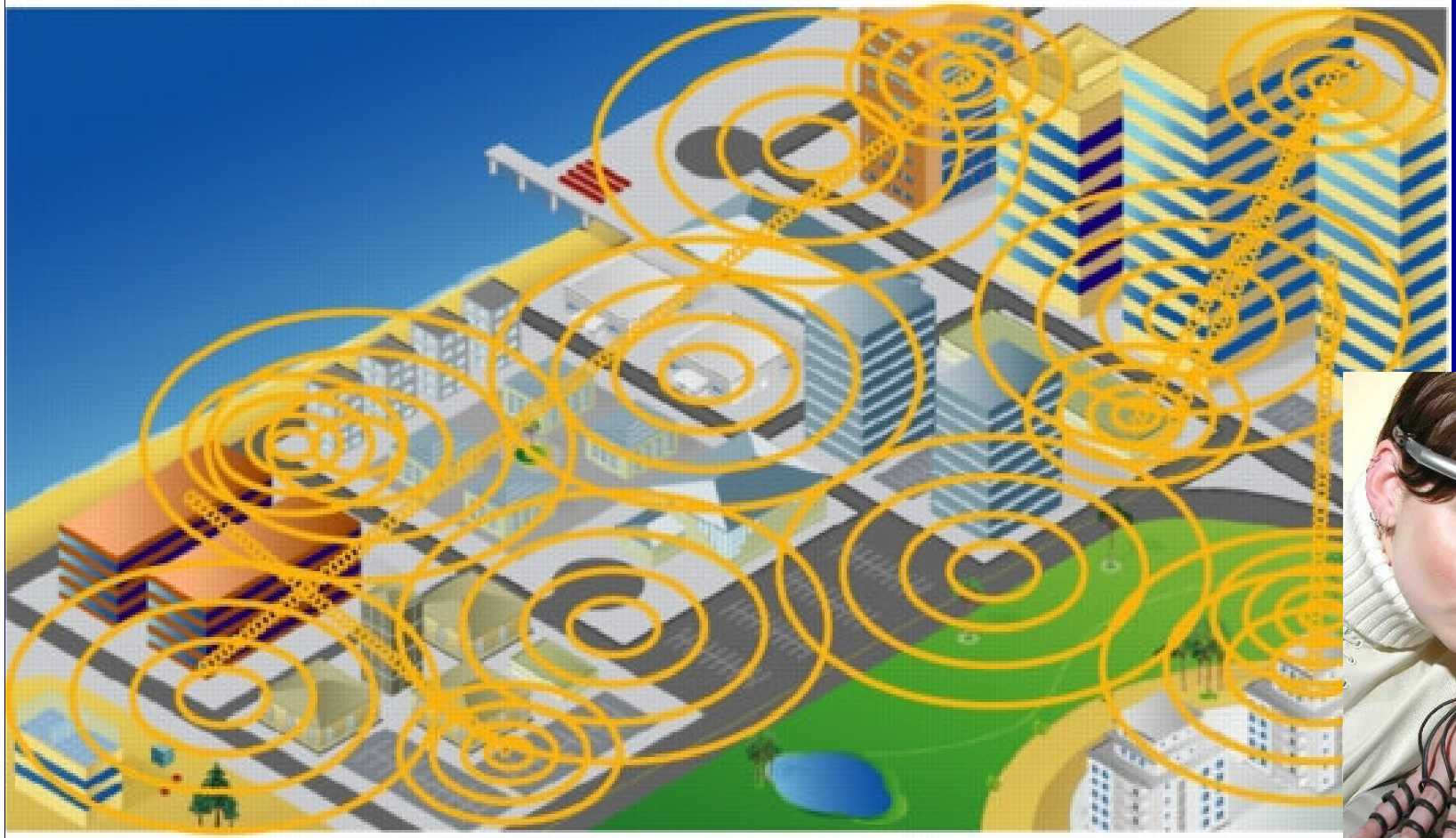
- Creation of an ***integrated wireless network*** (hot-spots on masts/buildings–satellite etc.), capable of offering information on-the-go and interactive connectivity both indoor (various building types and inside a home), and at city level, in public buildings (libraries, municipal offices, places of learning, churches), along streets and pavements, in open spaces, on public transport (rail stations, bus stops, airports etc.) and in places of work.

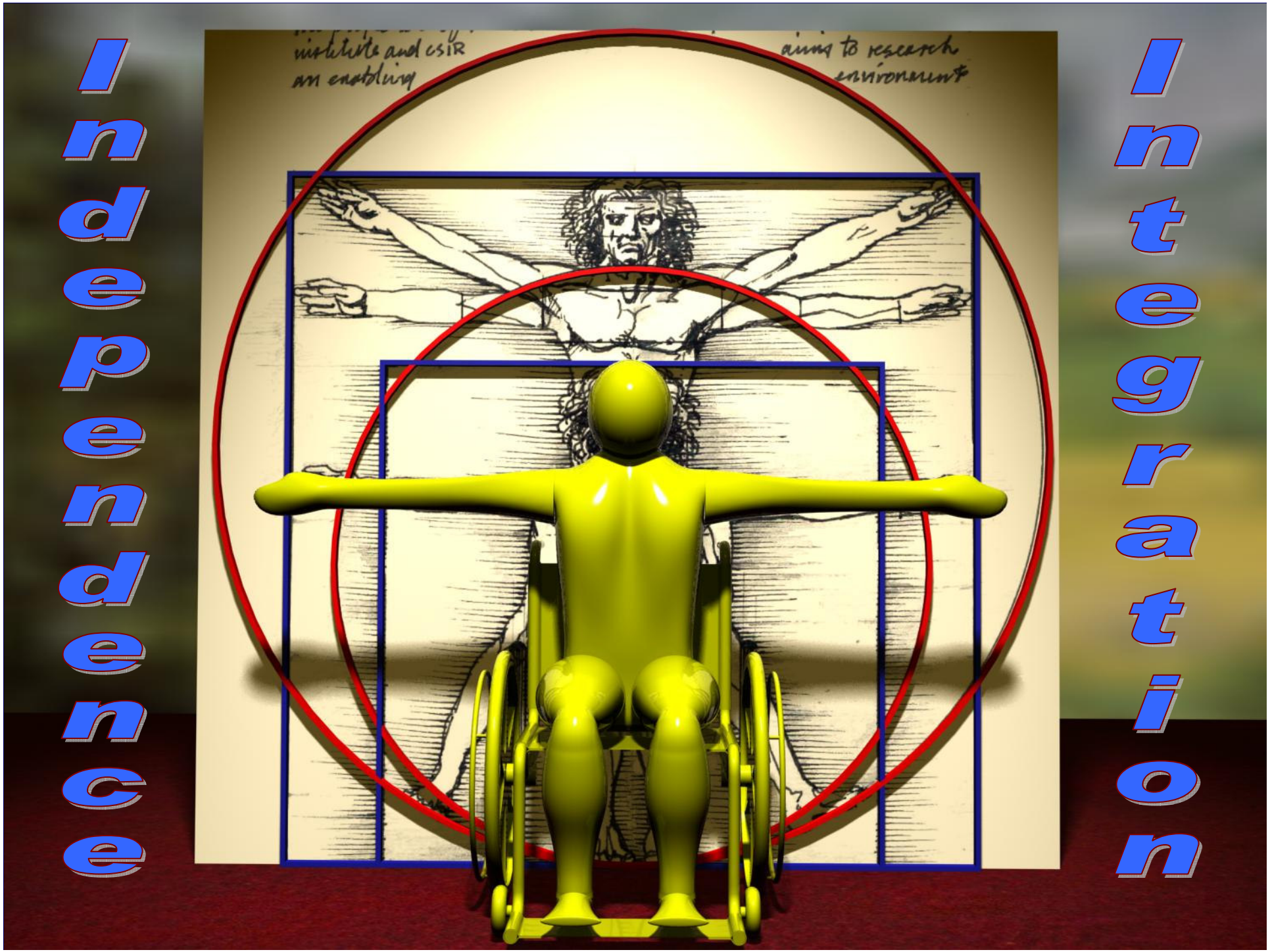


'Augmented Reality' solutions

3. The Future city: integrated, accessible, sustainable_

Build Intelligence (ICT) into a future ***'smart , fully integrated city environment'*** where buildings, public and private transport, urban design and physical infrastructure in general are made more accessible and safe for all.




Independence
Integration