

Toolkit on Digital Transformation for People-Oriented Cities and Communities

5

Module 5: Accessibility and Digital Inclusion



Jointly developed by: ITU, UN-Habitat, UNDP



Module 5 – Accessibility and Digital Inclusion

- This Module of the ITU Toolkit on Digital Transformation for People-Oriented Cities and Communities focuses on accessibility aspects in smart sustainable cities and communities.
- Cities and communities that are starting on their digital transformation journey will find the resources highlighted within this Module useful toward deploying IoT and smart systems in their city to ensure inhabitants' inclusion and accessibility to services.
- This Module is also useful for cities that have already made some headway into their digital transformation process but would like to validate the efficacy of smart systems and applications in their city for these purposes.

Module 5 – Connectivity, Digital Divide and Digital Inclusion

This Module will cover the following topics:

1. Digital Inclusion and Accessibility in Cities and Communities
2. Barriers to Accessibility
3. Solutions for Addressing the digital divide
4. Key tools for Accessibility and Digital Inclusion
 1. Tool #1: Incorporating accessibility in Internet of things applications and services
 2. Tool #2: Incorporating accessibility in smart public transport
 3. Tool #3: Incorporating accessibility in audio and multimedia

1. Digital Inclusion and Accessibility in Cities and Communities

Digital Divide, Digital Inclusion and Beyond

Access is multidimensional and includes the physical, spatial, cultural, demographic and socioeconomic conditions of **accessibility**.

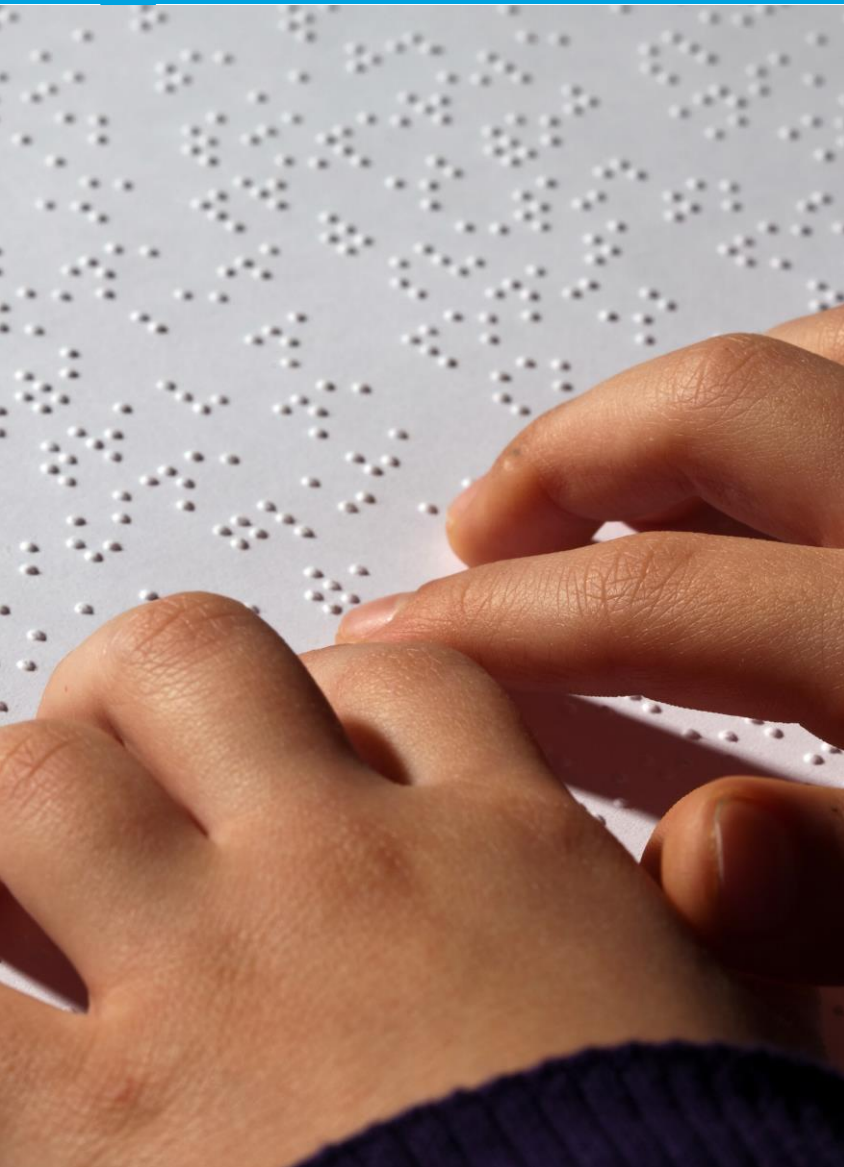


Barriers to Access and Use of ICTs



Some people with specific needs associated to differences of age, gender, ability, socioeconomic status and geography may have barriers to access and use digital information and services.





Disability Inclusion



15% of the world's population, or one billion people, are persons with disabilities.



80% of persons with disabilities live in developing countries.

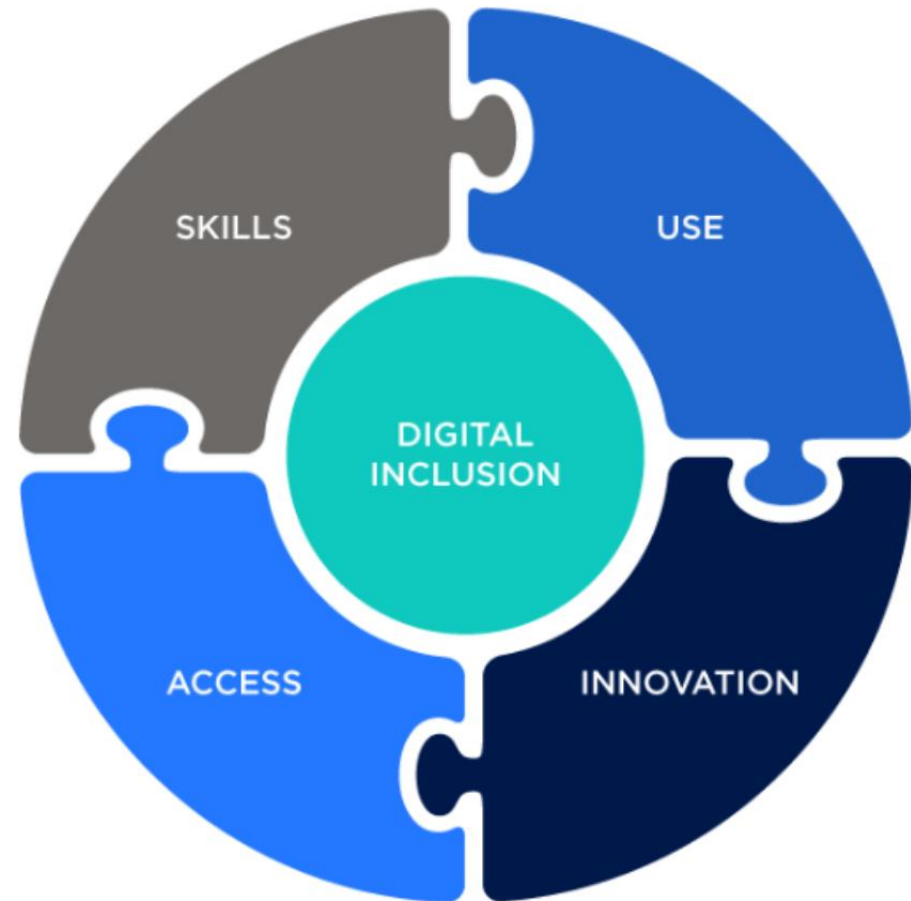


7 targets of the Sustainable Development Goals explicitly refer to persons with disabilities.

[\(Image Source\)](#)



Digital Inclusion and Accessibility



[Source](#)

What is Accessibility?

Accessibility refers to the extent to which a product, device, service, or environment is available and navigable for persons with disabilities, or for persons with other special needs or functional limitations.



What is Accessible ICT?

Accessible Information and Communication Technology is technology that can be used by people with a wide range of abilities and disabilities. It incorporates the principles of universal design. Each user is able to interact with the technology in ways that work best for him or her



Benefits of Accessibility

1

Enhancing participation at work

2

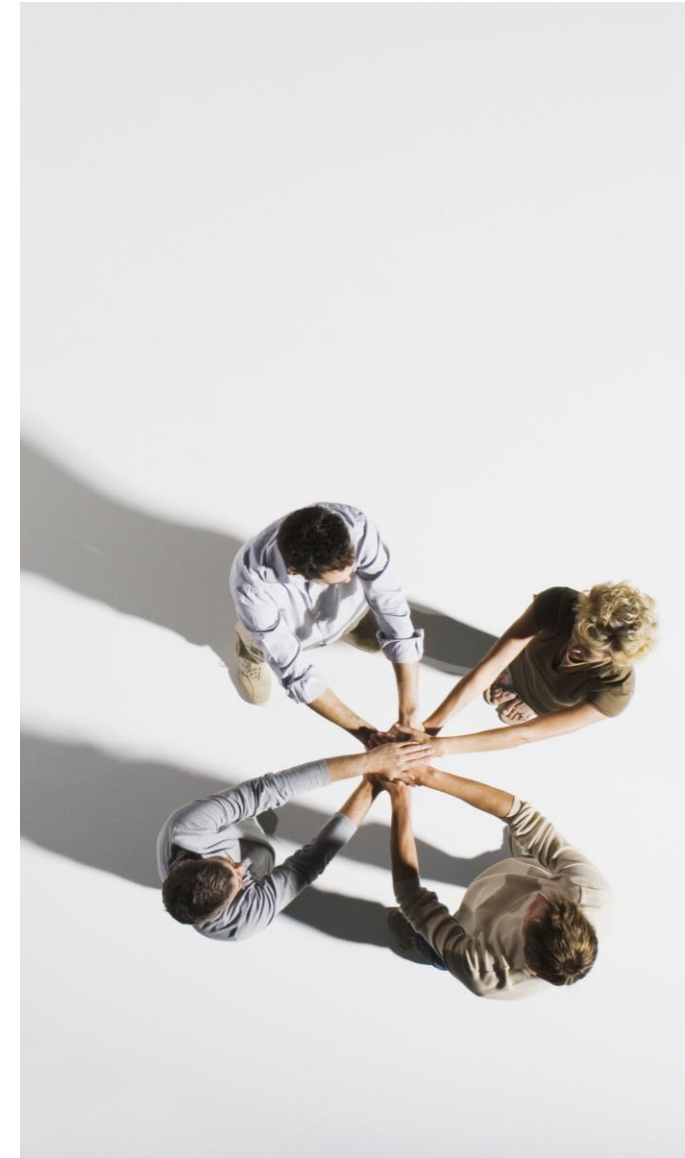
Improves access to education and training

3

Provides access to health information and providers

4

Provides access to basic city services such as emergency services



Digital Inclusion

How to successfully ensure digital inclusion for everyone regardless of gender, age, ability or location.

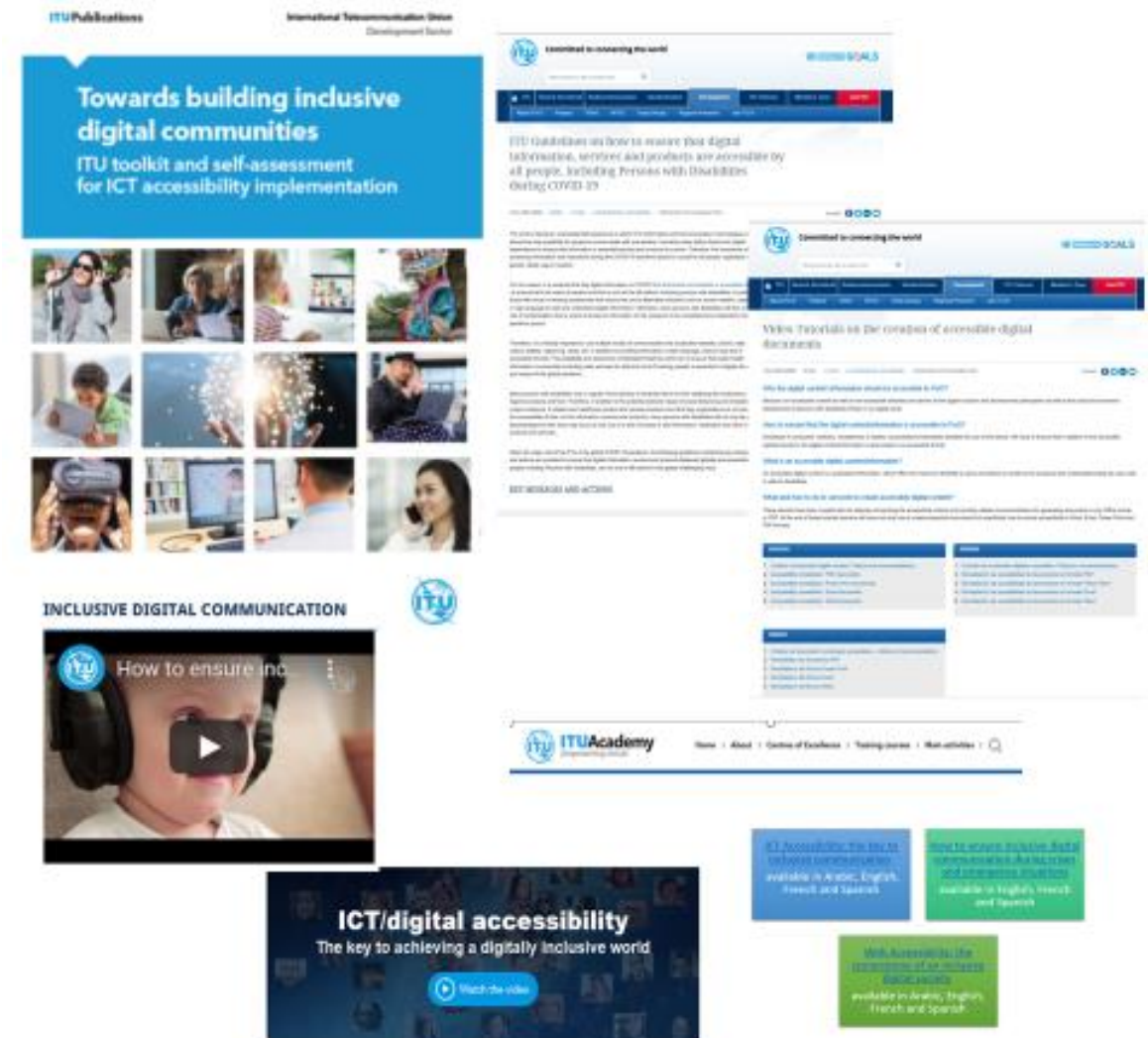
Accessibility – the key pillar to implement digital inclusion for all

The 6 A's



ITU Resources

Toolkits, Guides, Reports, Training, Video Tutorials to support ITU Members' national, regional and global efforts in building digitally accessible environments and communities.



2. Barriers to Accessibility

Policy Barriers to Accessibility



Inconsistent application of international accessibility instruments



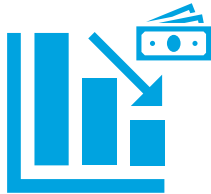
Lack of goal setting and compliance monitoring



Lack of governmental guidelines or regulations



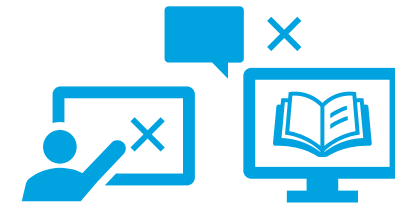
Institutional Barriers to Accessibility



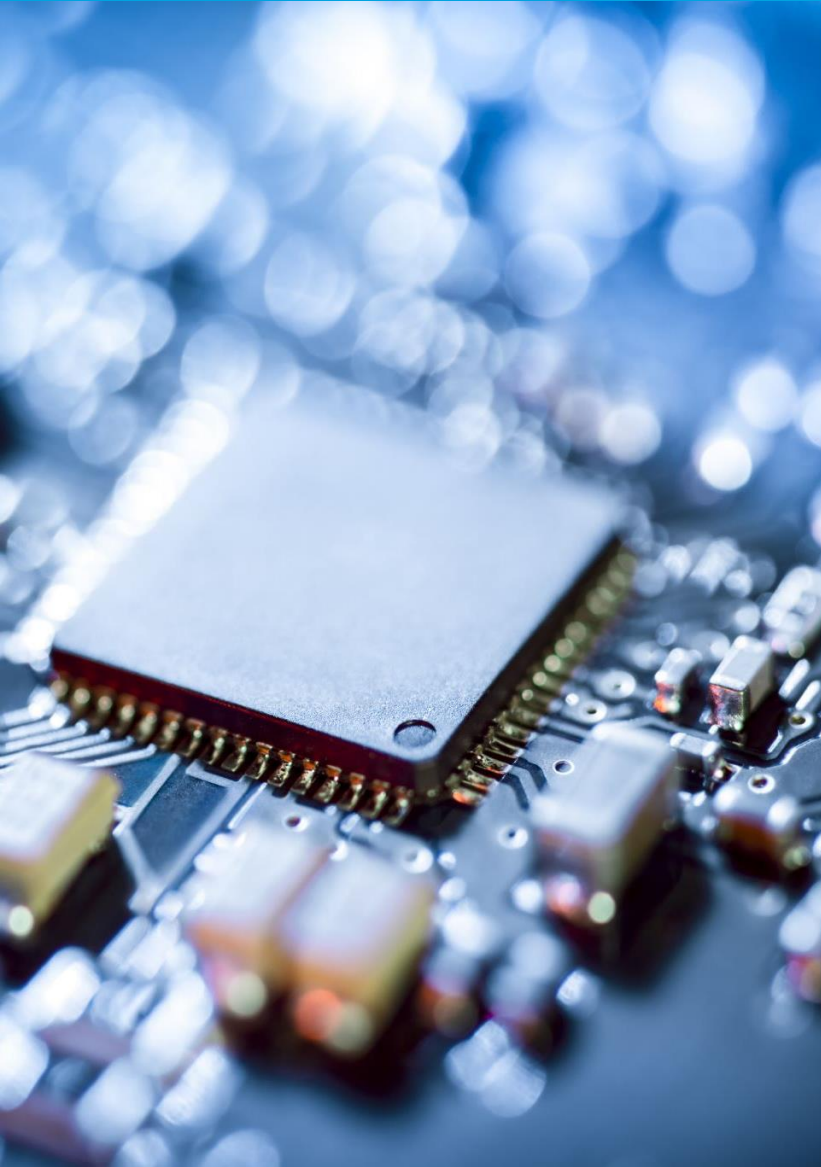
Perception of lower profitability of inclusive technologies



Stakeholders who do not share common ground



Inhibiting attitudes and use of language



Technological Barriers to Accessibility



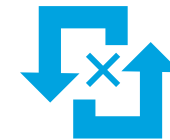
Inability to cover diverse
accessibility needs



Outdated accessible
technologies



Cost of accessible
technologies



Accessibility
guidelines constraints

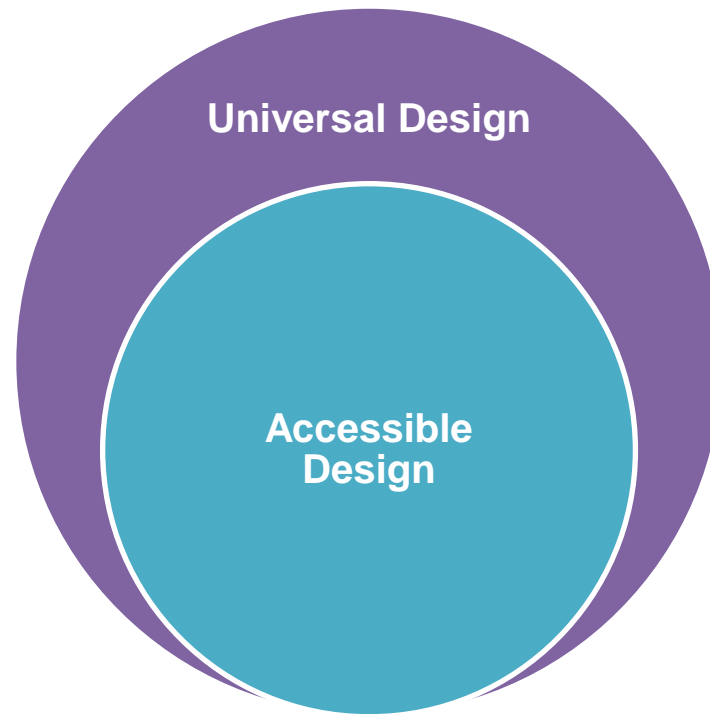
3. Solutions for Addressing the Digital Divide



Connectivity Solutions

Efficient and affordable ICT infrastructure and services, combined with enabling policy and regulatory environments, enable businesses and governments to participate in the digital economy, helping countries boost their overall economic well-being and competitiveness.

Accessible Design vs. Universal Design



Accessible vs. Universal design

Universal Design Principles



Equitable Use



Flexibility in Use



Simple & Intuitive Use



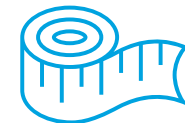
Accessible Information



Tolerance for Error



Low Physical Effort



Size and Space

Web Accessibility

W3C®

WCAG 2.1

**Web Content
Accessibility
Guidelines**



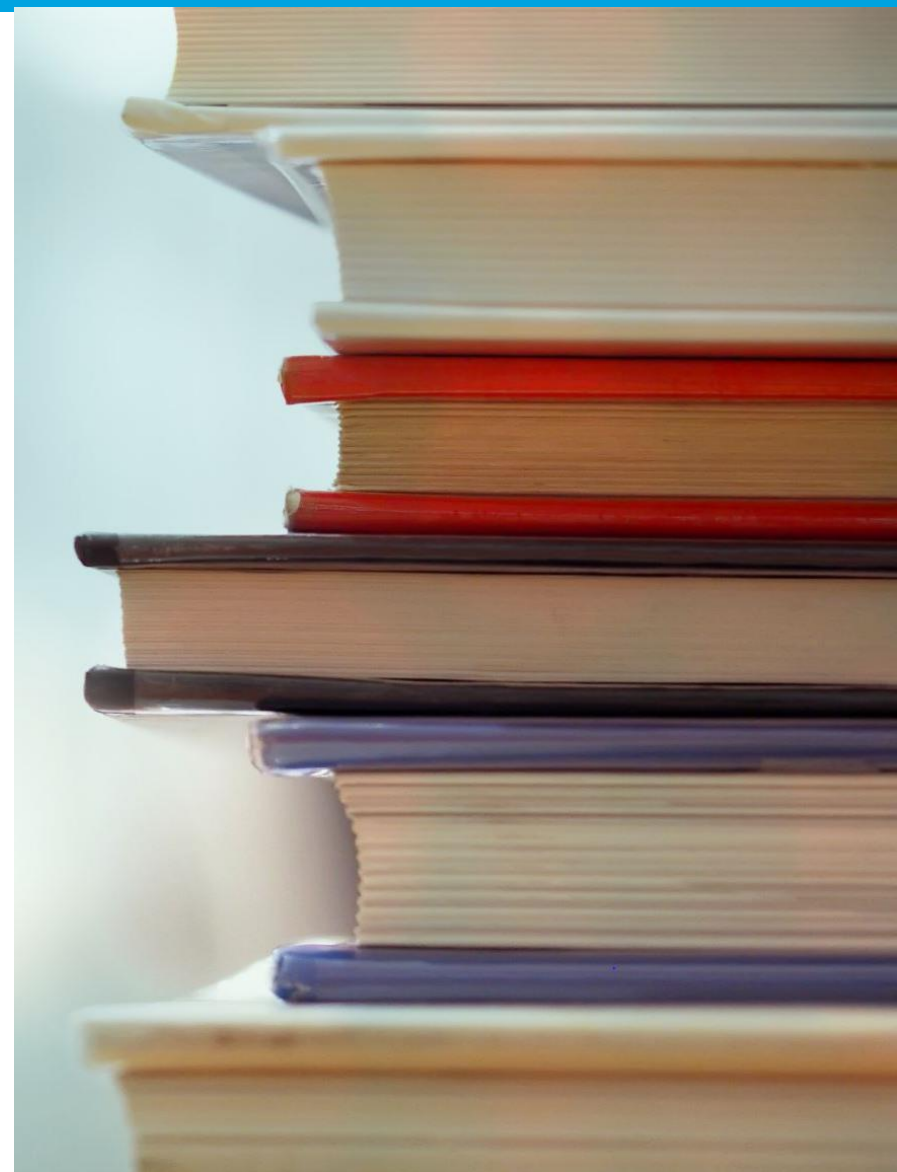
Education and Digital Skills



**Basic Education and
Literacy**



Digital Training



4. Key Tools for Narrowing the Gap on the Digital Divide for Cities

Introduction to Tools for Accessibility and Digital Inclusion

Tool #1:
Incorporating
accessibility in Internet
of things applications
and services

Tool #2:
Incorporating
accessibility in smart
public transport

Tool #3:
Incorporating
accessibility in audio
and multimedia

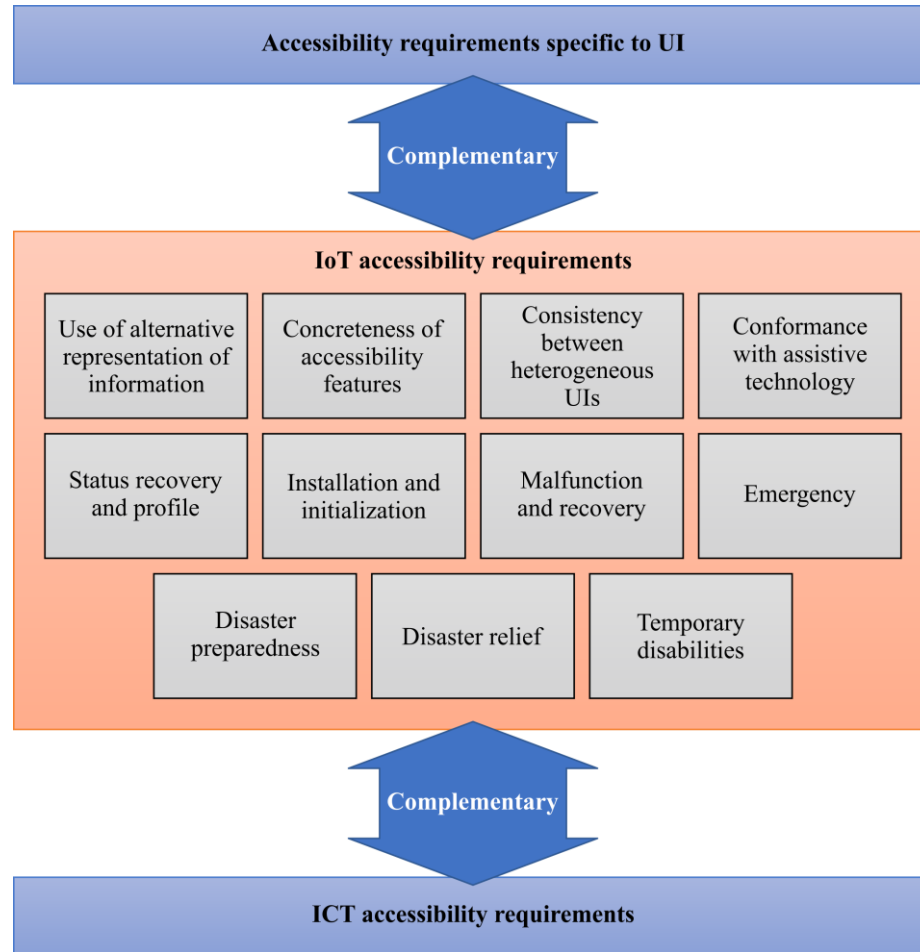
Tool #1



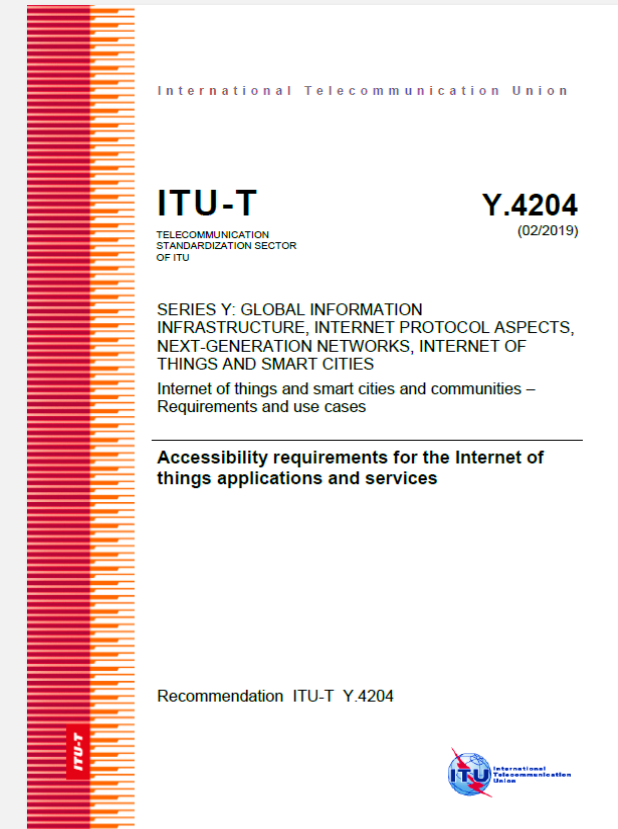
Incorporating accessibility in
Internet of things applications
and services



Accessibility Requirements for IoT



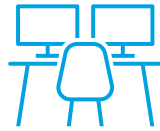
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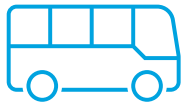
Use Case Environments for IoT Accessibility



Home



Workplace



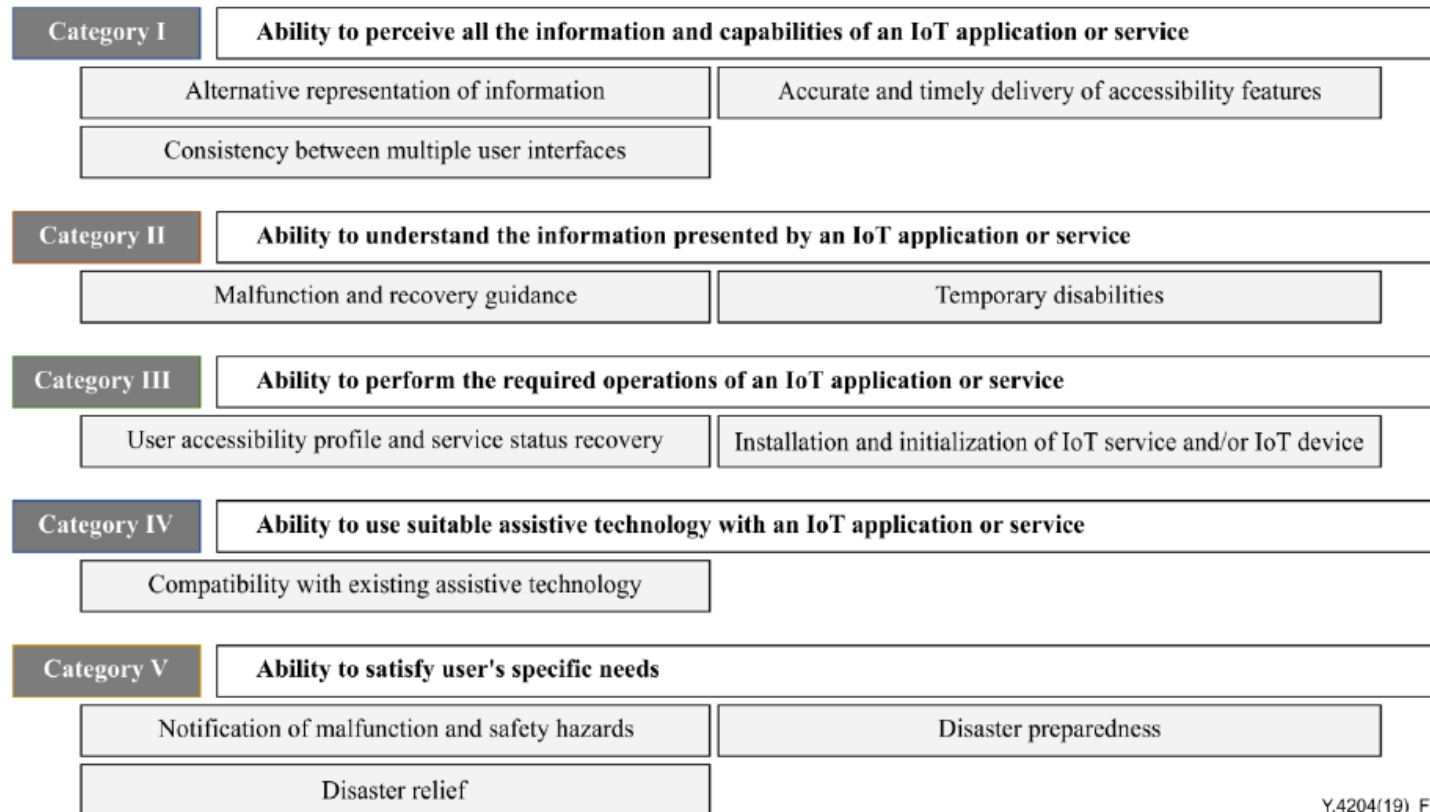
Transport



Emergency & Medical Care



Categories of IoT Application and Service Requirements



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Tool #2

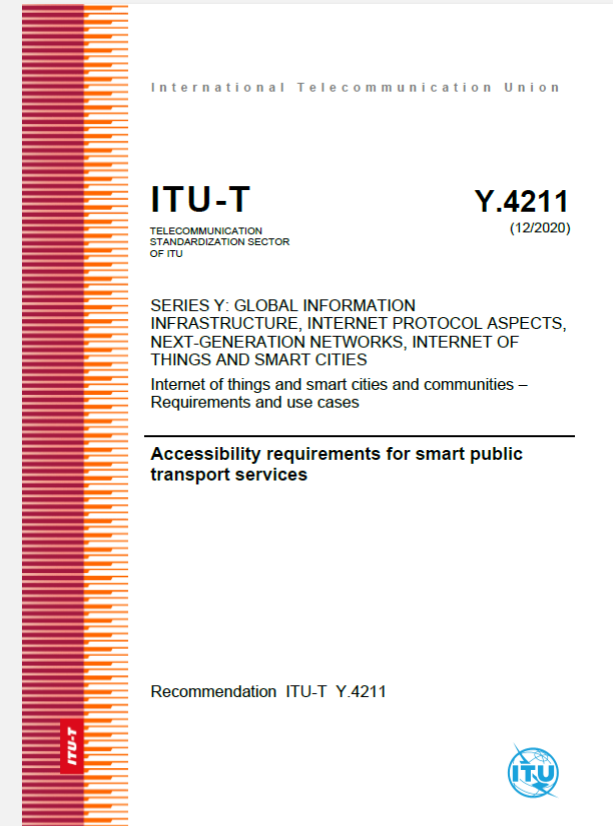


Incorporating accessibility in
smart public transport



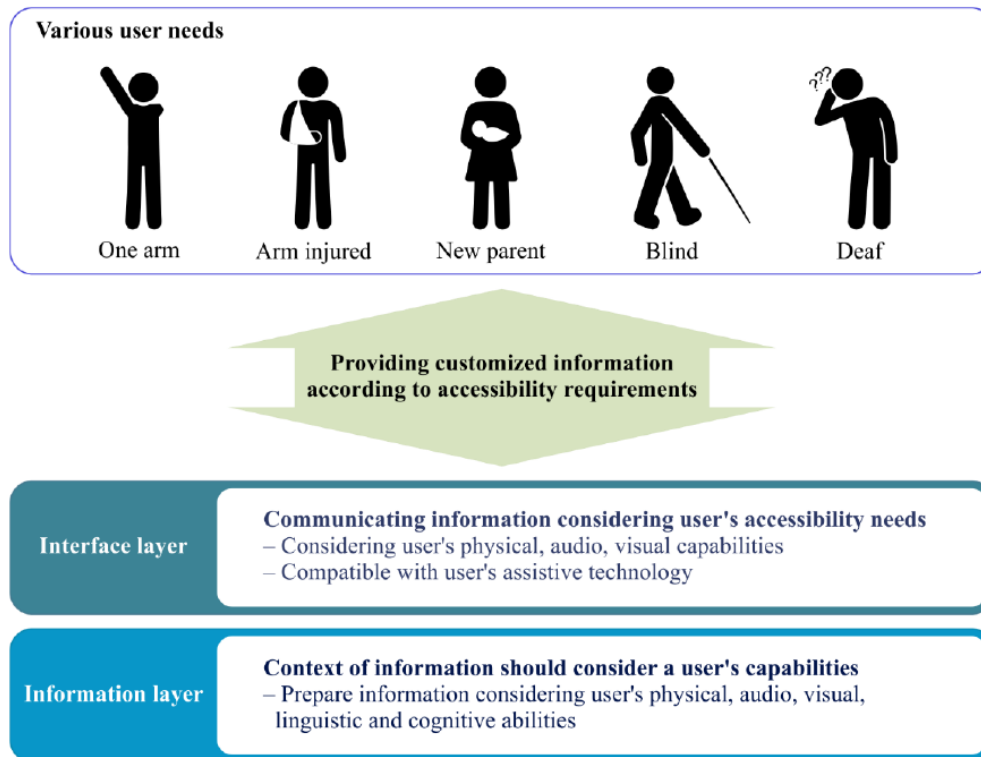
Accessibility in Smart Transportation

An example of accessible public transport

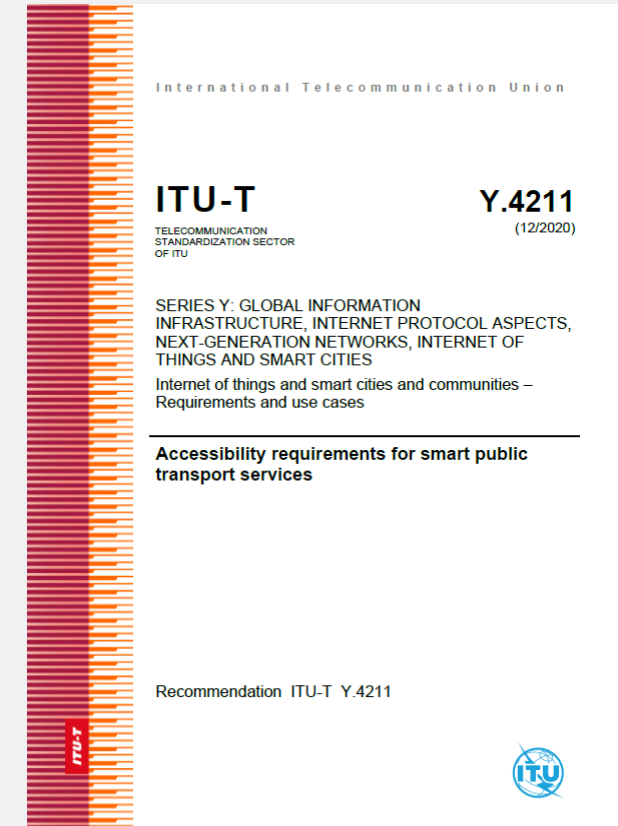


Recommendation ITU-T Y.4211:
'Accessibility requirements for smart public
transportation services'

Two-layer Structure of Accessibility Requirements

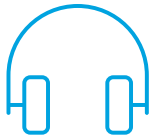


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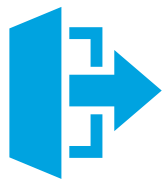
Recommendation ITU-T Y.4211:
'Accessibility requirements for smart public
transportation services'

Tool #3



Incorporating accessibility in
audiovisual content

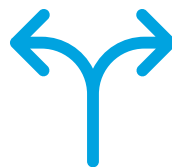
Audio Accessibility in Media



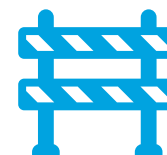
Entrances and Exits



Pathways



Decision Points



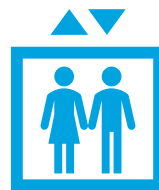
Ticket Gates and Barriers



Escalators



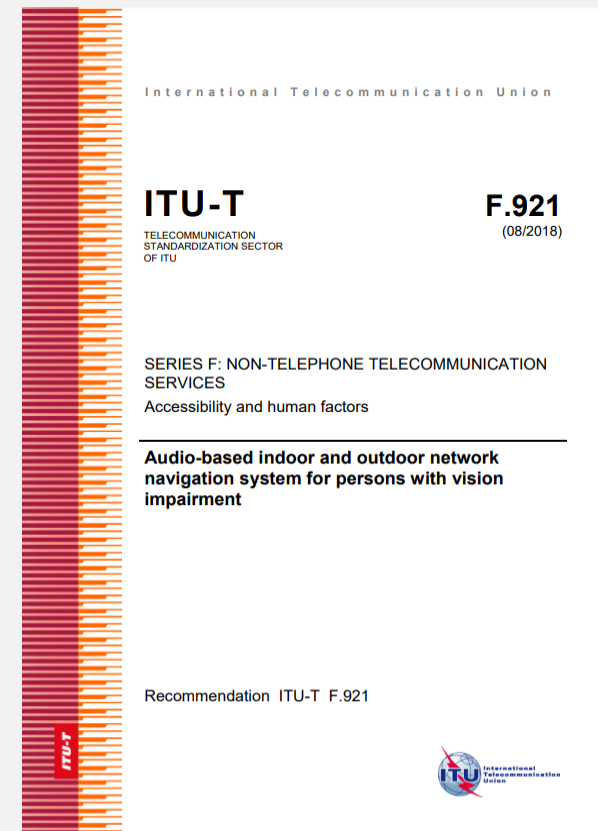
Stairs



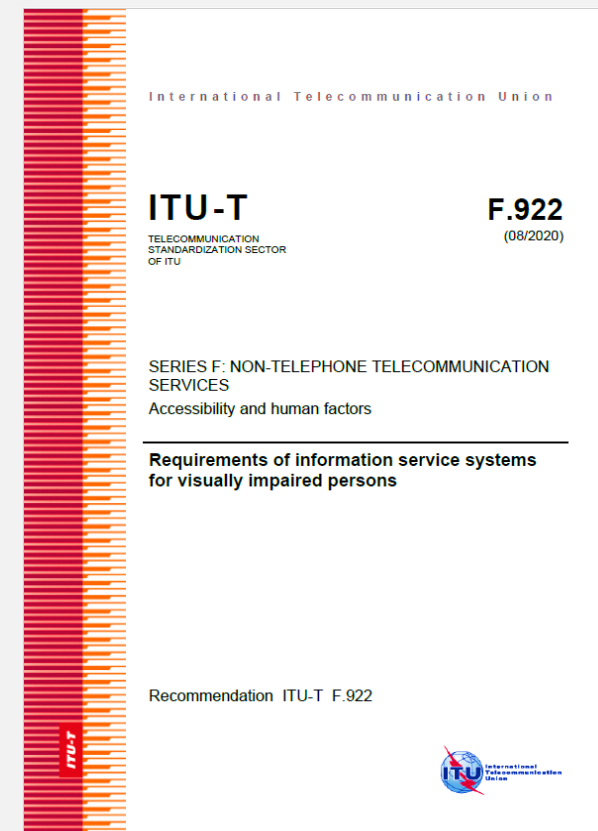
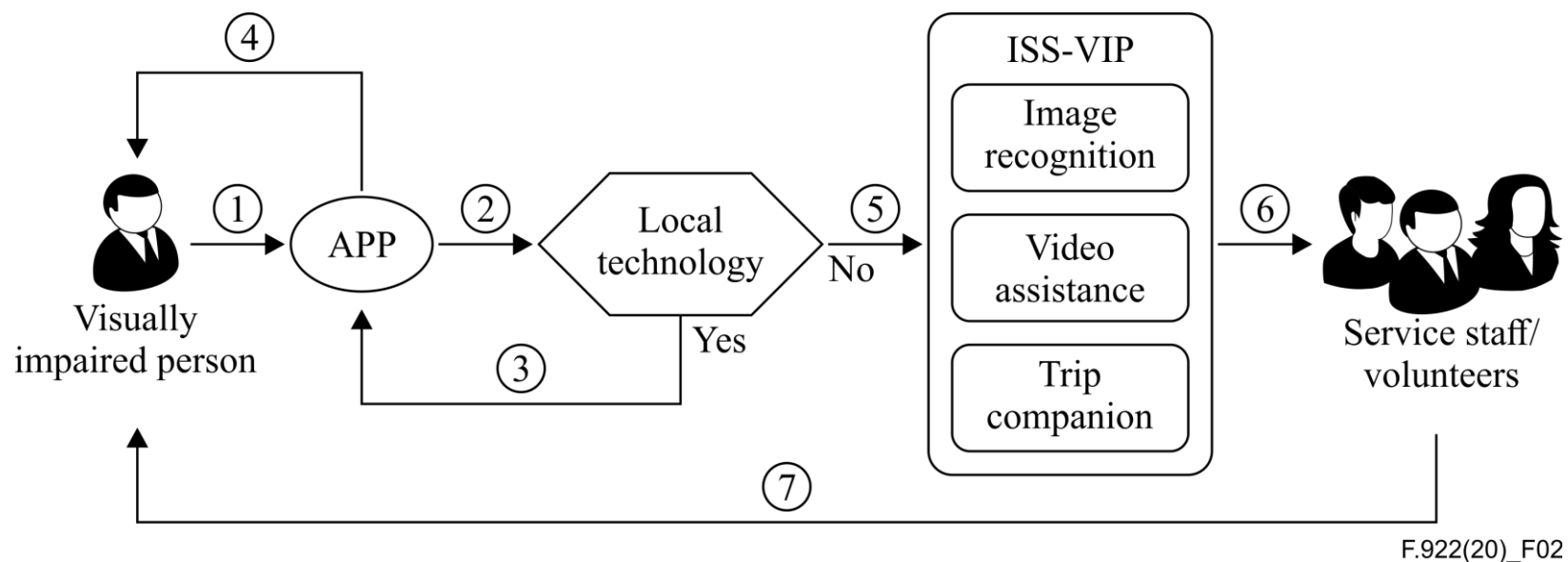
Lifts and Elevators



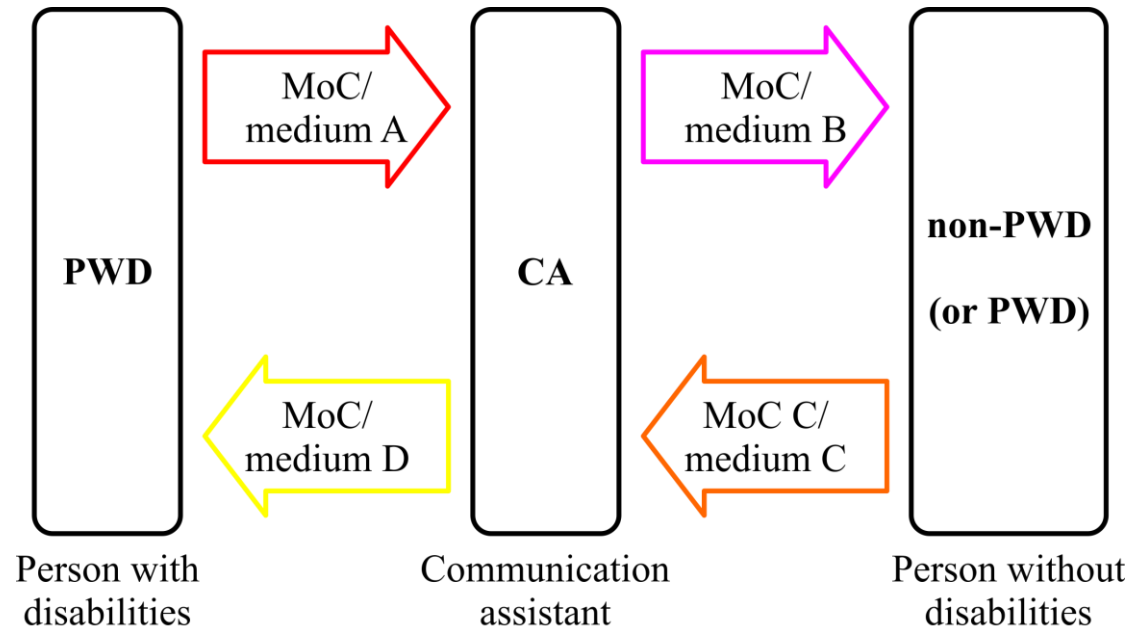
Railway Stations and Platforms



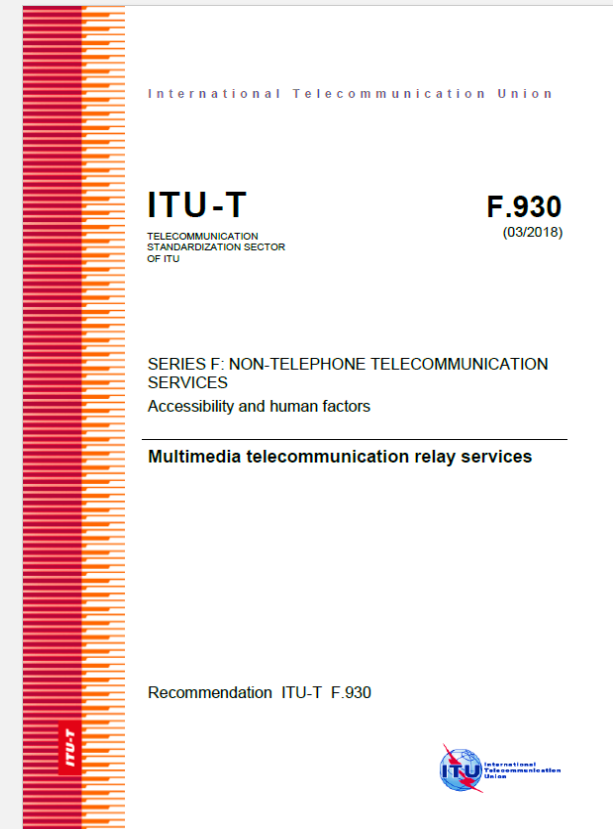
Visual Accessibility in Media



Telecommunications Relay Services

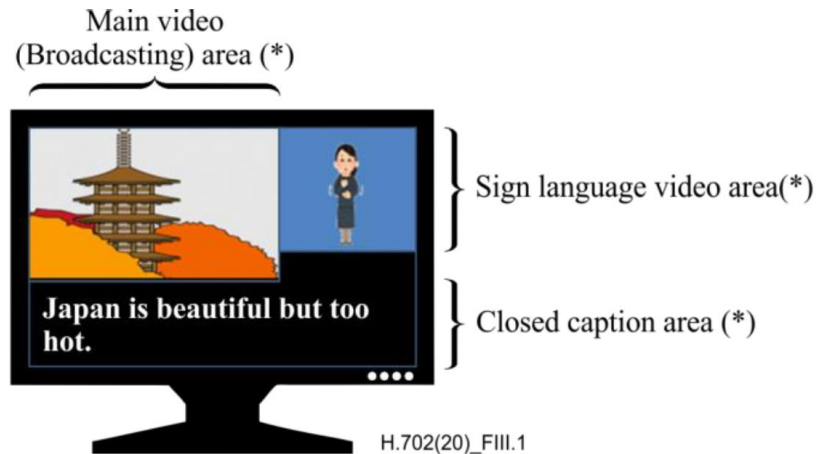


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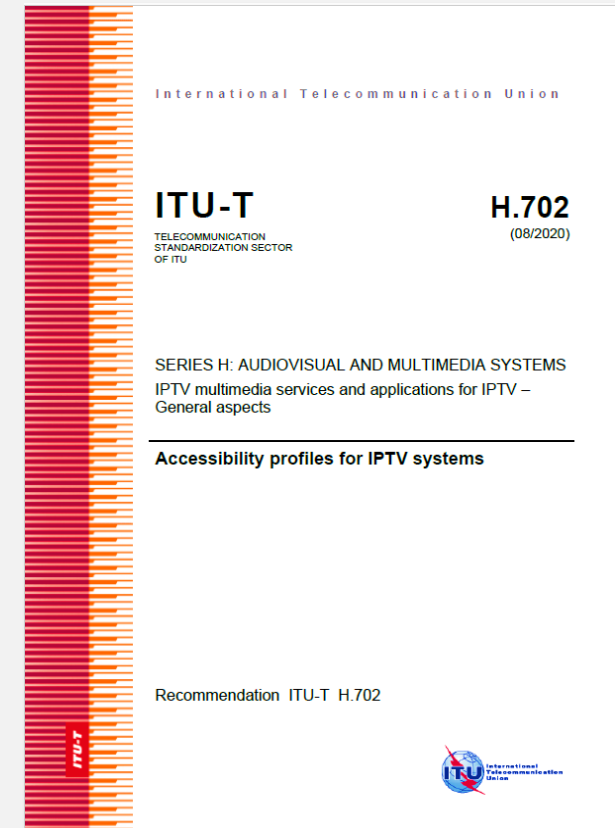
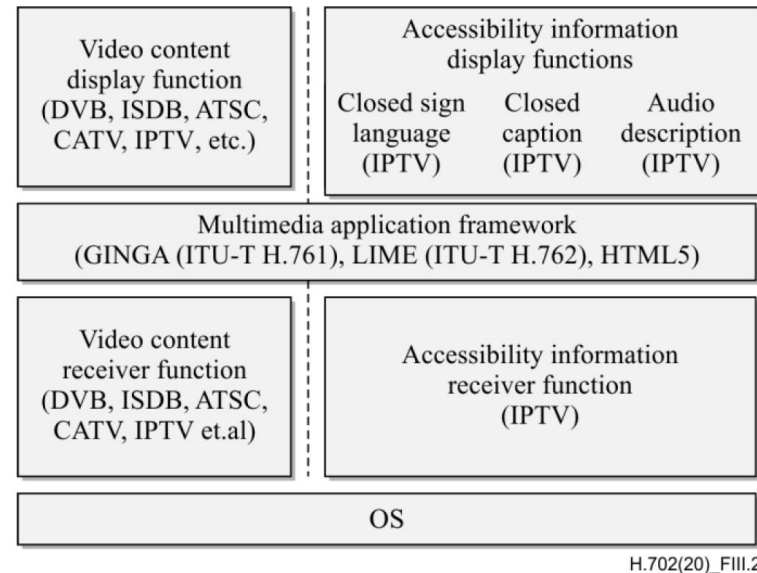
Accessibility profiles for IPTV systems

TV screen image with the accessibility functions

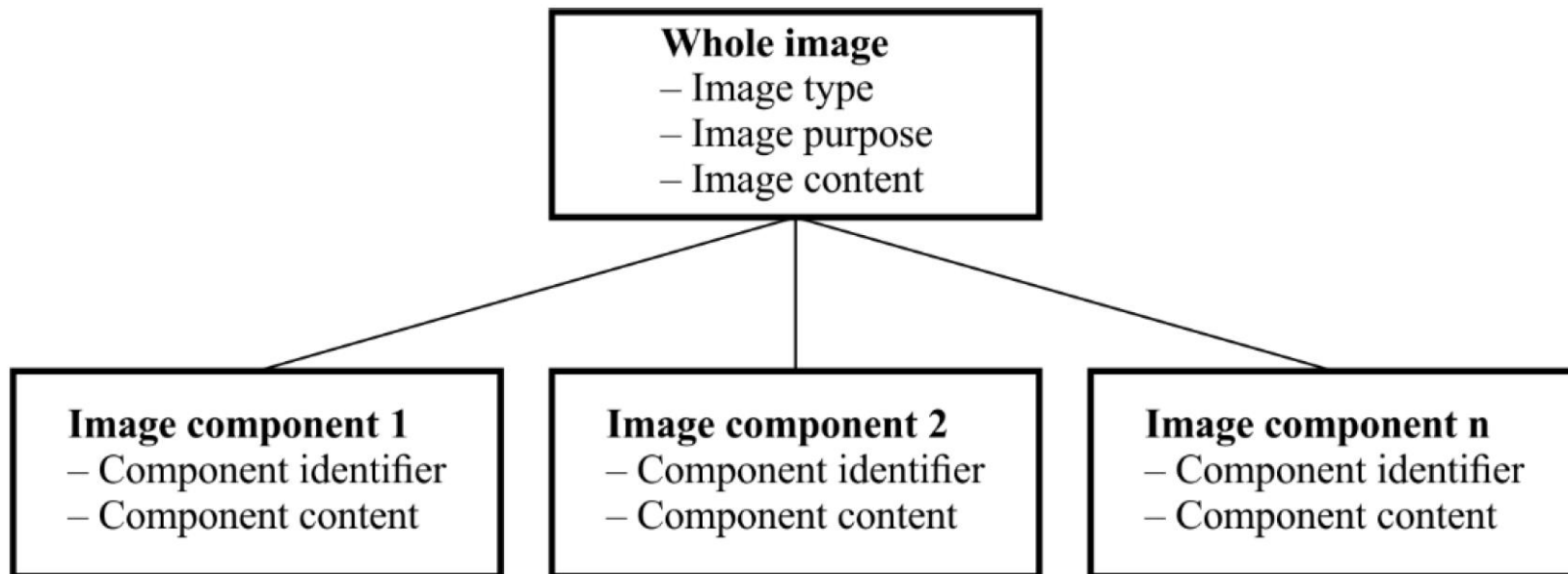


(*) Size and position of both sign language and closed caption can be changed by remote controller

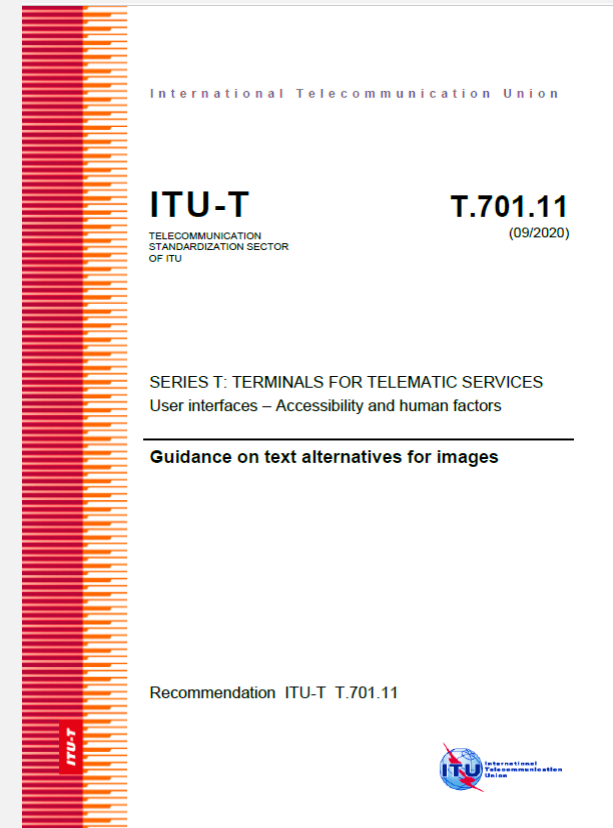
Architecture of the ITU-T H.702 terminal



Text Alternatives for Images



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Module 5 – Accessibility and Digital Inclusion

Thank you for completing this Module of the ITU Toolkit on Digital Transformation for People-Oriented Cities and Communities.

We hope that you found the information in this Module useful toward planning and initiating your city or community's digital transformation process.

Please review the resources highlighted within for further details, including valuable real-world use cases, on how to get started on – and optimize from the onset – your city or community's digital transformation journey.



[Toolkit on Digital
Transformation for People-
Oriented Cities and Communities](#)



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