Internet of Things and Smart City Accessibility Standards Development Status of ITU-T (SG20)

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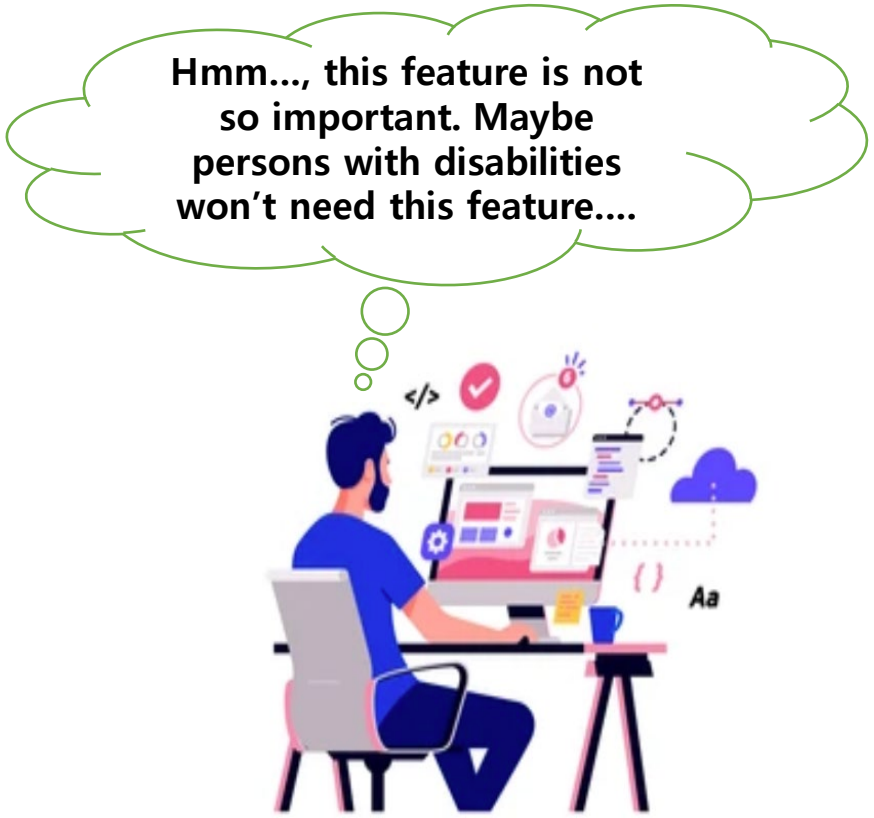
Need for accessibility standards in emerging technologies

Opportunity: Can provide various services to increase quality of life of people.

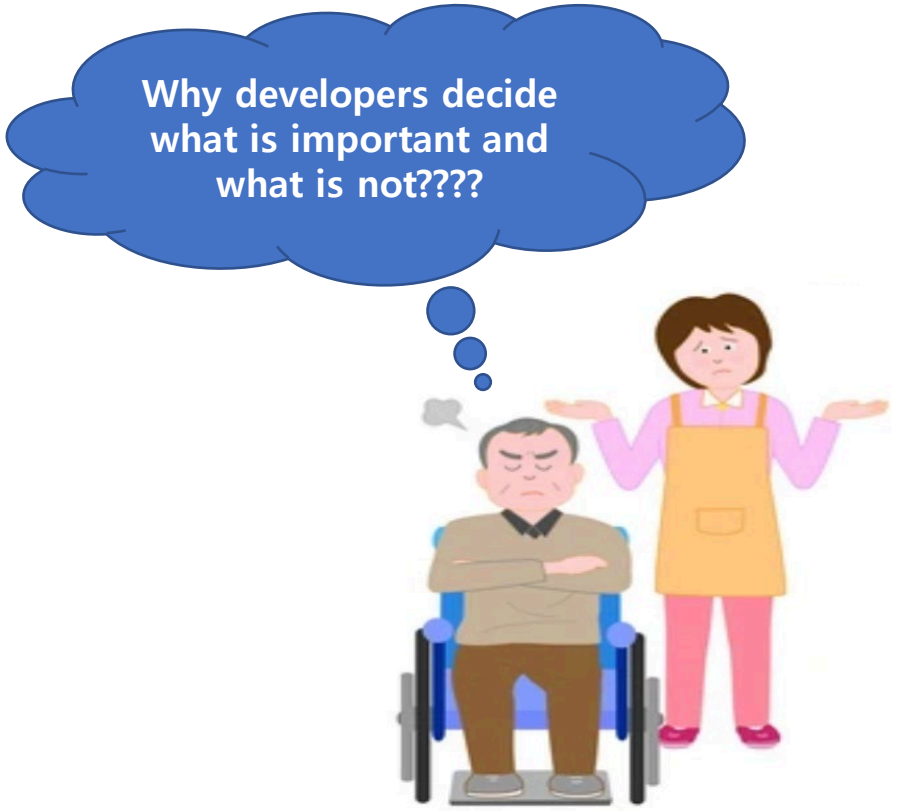
Threat: Sufficient potentials may not be realized due to lack of accessibility.

- Emerging technologies such as Internet of Things (IoT) and smart cities applications and services may increase the quality of life of people, especially to persons with disabilities, those with age related disabilities and those with specific needs.
- However, lack of accessibility is a main barrier to realize such potential benefit of emerging technologies.
- In IoT environments, the interoperability and heterogeneous characteristics of IoT may create conflicting accessibility requirements when only the technology or platform specific accessibility features are considered.
- Therefore, accessibility requirements specific to the IoT applications and services still exist even when all the technology or platform accessibility features are met.

The two different perspectives of developers and persons with disabilities on information access rights.



View of application developer



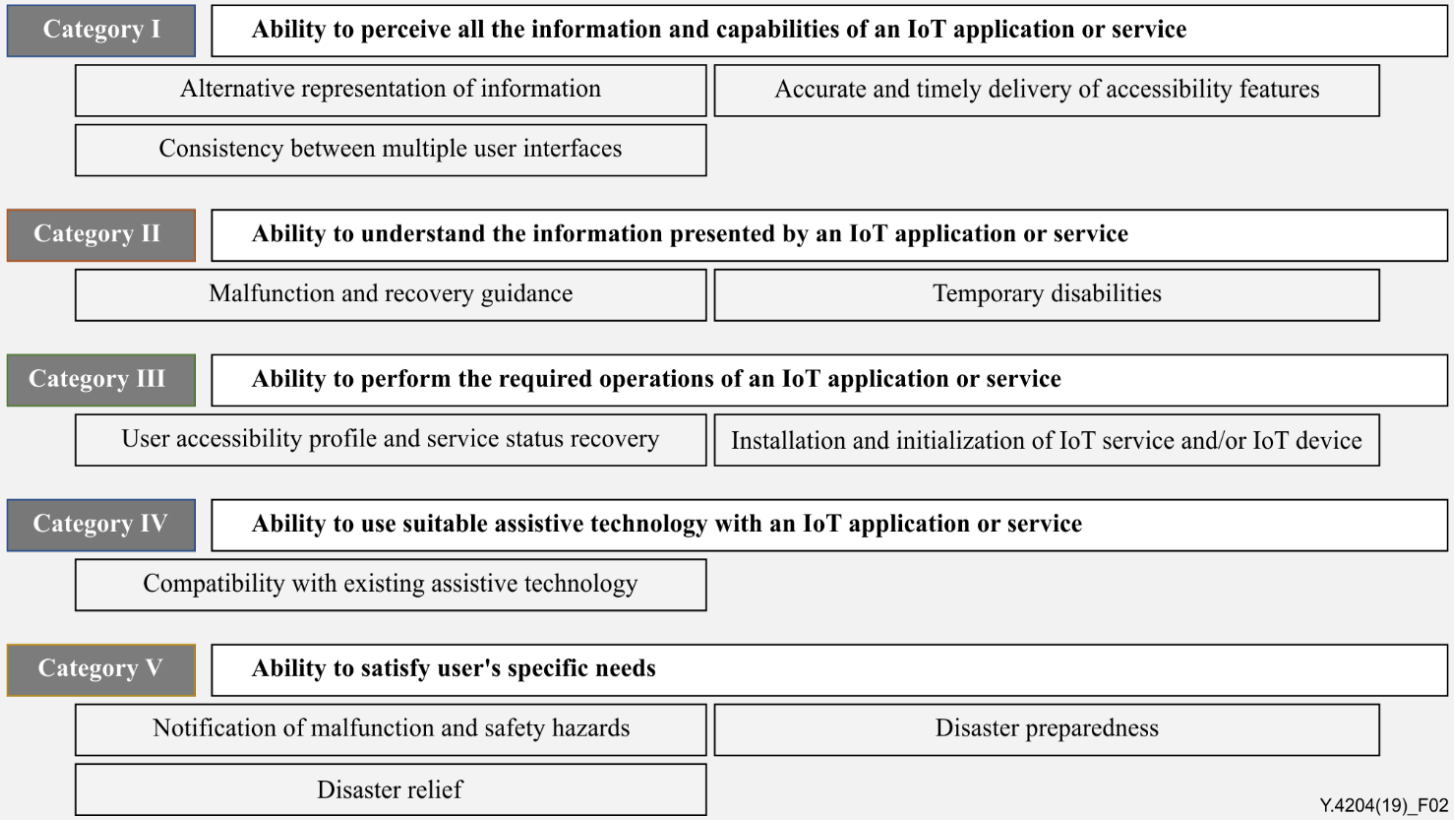
View of persons with disabilities

IoT and smart cities accessibility standardization activities in ITU-T SG20

- **Joint Coordination Activity on Accessibility and Human Factors (JCA-AHF)** coordinates activities related to accessibility and human factors in order to avoid duplication of work, and to ensure that the needs of persons with disabilities and persons with specific needs are taken into account.
- **SG16 – Q26(Accessibility to multimedia systems and services)** is the lead group of accessibility in ITU-T standardization activities.
- **SG20 – Q2(Requirements, capabilities and architectural frameworks across verticals enhanced by emerging digital technologies)** is not mainly focusing on accessibility *per se*, but accessibility requirements for the emerging digital technologies is one of its interested areas.

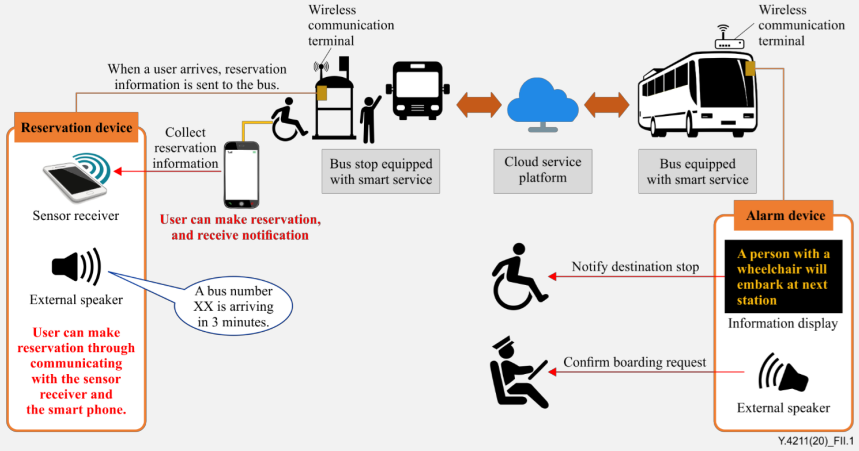
Accessibility requirements for the Internet of Things applications and services

- The first IoT accessibility recommendation at ITU-T.
- Benefits of accessible IoT applications and services are addressed
- 11 accessibility requirements in 5 categories were identified.
- Some use cases are also provided in the Appendix to illustrate the need for IoT accessibility.



Accessibility Requirements for Smart Public Transport Services

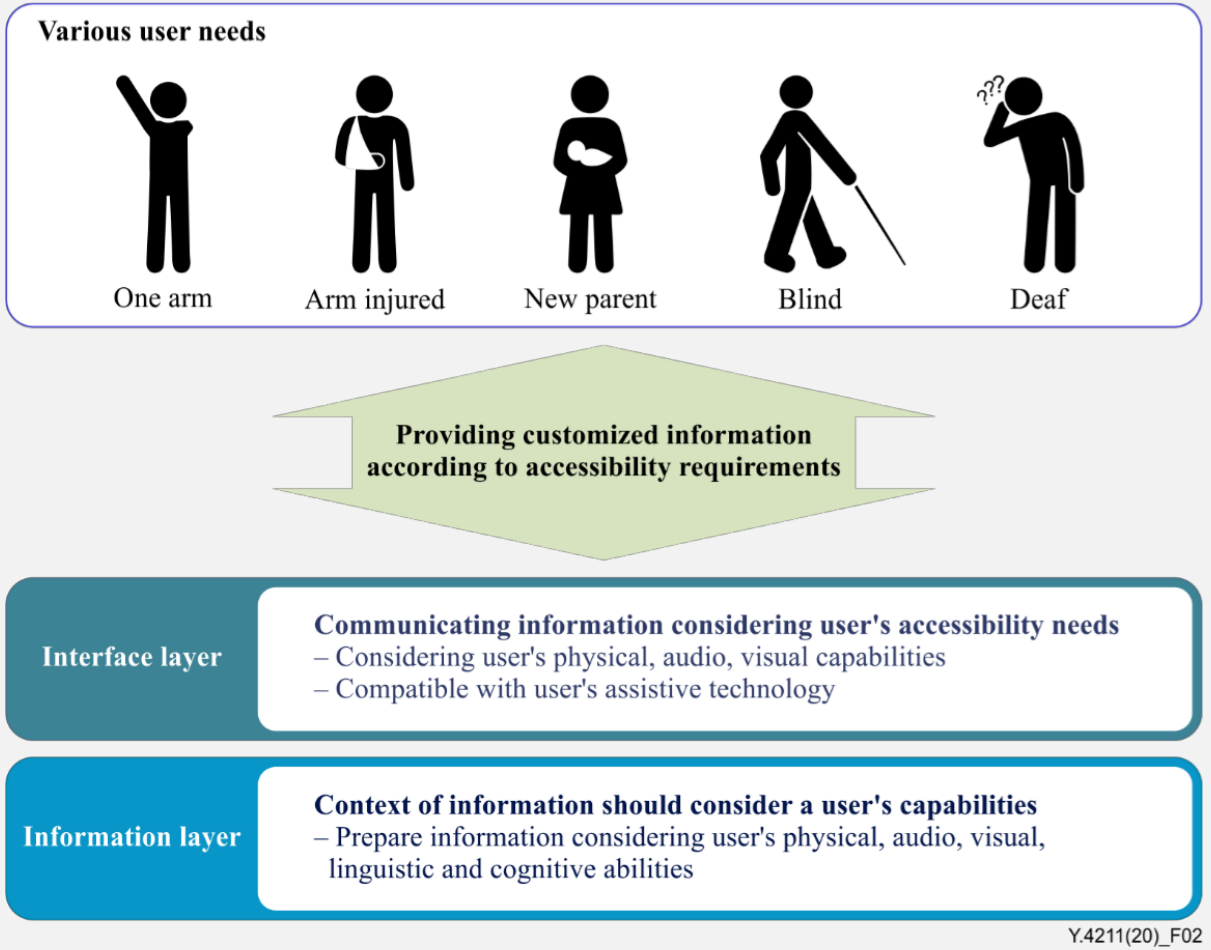
- Smart services for public transport that make usage of the IoT, when properly designed, may increase accessibility.
- Note that not all such barriers can be removed with the aid of IoT services. However, an IoT can provide efficient and economical means to remove at least some of the significant barriers.
- In order for the smart transport services to appropriately provide accessible services, information about accessibility profiles must be agreed upon in advance. Such accessibility profiles should basically include information on accessibility needs while travelling on public transport services.
- It specifies accessibility requirements for smart public transport services for persons with disabilities (PWDs), persons with age-related disabilities and those with specific needs to utilize the benefits of Internet of things (IoT) applications and services.
- It also specifies accessibility profile requirements for accessible smart public transport services.



Use case 2. Person with a physical disability riding on a bus

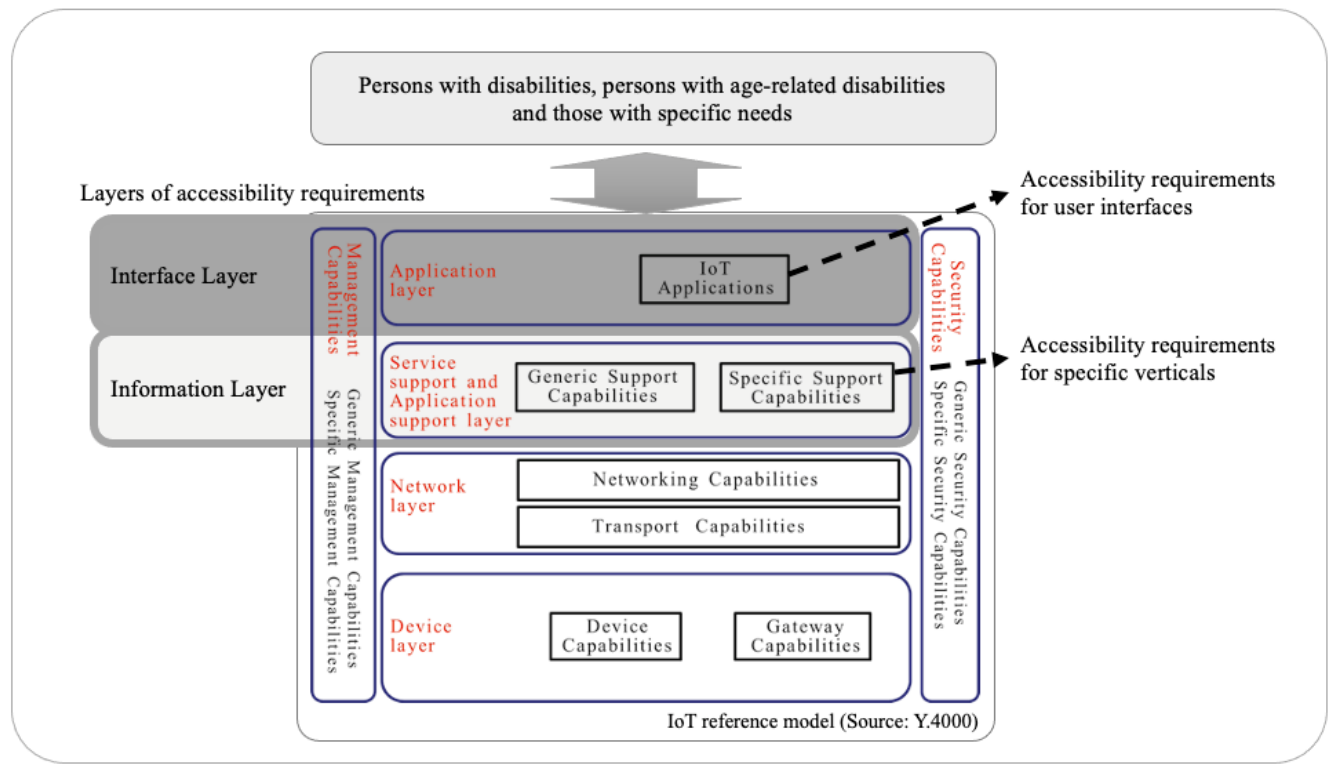
Y.4211: The Two-layer structure of accessibility requirements

- To provide customized information using user accessibility requirements to fulfil various user needs, a two-layer approach is recommended.
- The first layer is the information layer, which prepares information concerning the user's physical, audio, visual, linguistic and cognitive abilities.
- Then the information prepared is manipulated in the interface layer, taking into account the user's physical, audio and visual capabilities, and considering compatibility with any AT used by the user.



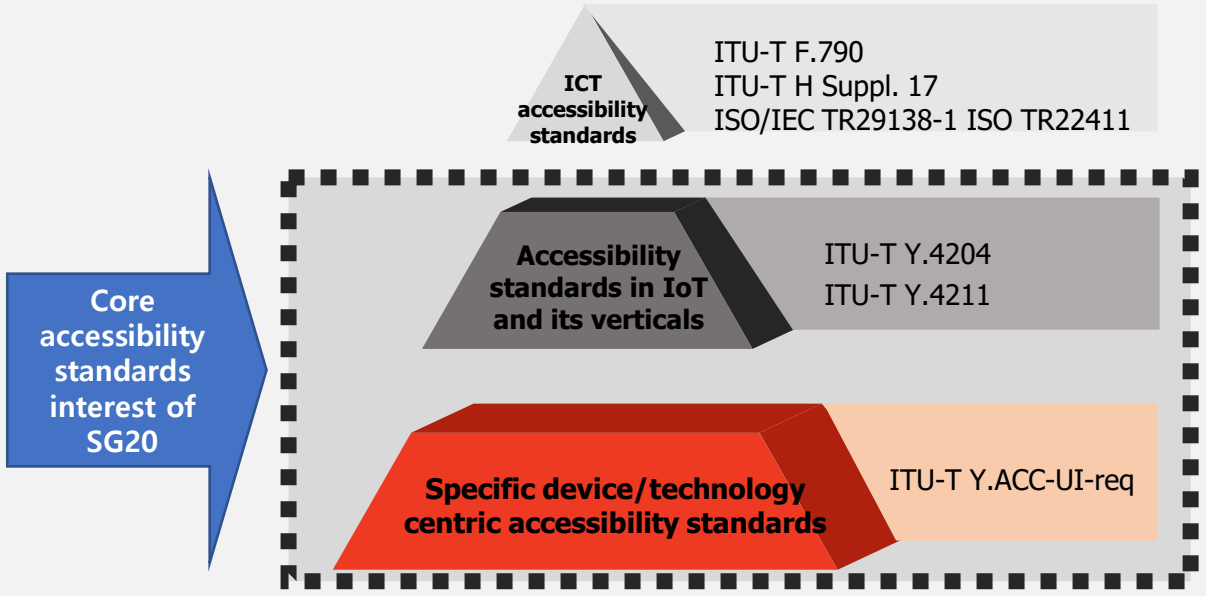
Accessibility requirements for user interface of smart applications supporting IoT

- The work started in 2021 @Q2/20.
- This Recommendation specifies accessibility requirements for user interface of smart applications supporting IoT.
- The scope of this Recommendation includes accessibility requirements for user interfaces of smart applications supporting Internet of things (IoT) in order for persons with disabilities, persons with age-related disabilities and those with specific needs to utilize the benefits of IoT services.



Future of SG20 accessibility activities

- Standards do exist for securing accessibility, but the level of satisfaction with accessibility services in emerging technology of persons with disabilities is not high enough.
- Many accessibility services are still in form of “patchwork” solution by placing detours for persons with disabilities to use in existing services.
- A structural approach that maximizes service utilization in the IoT service environment is still in the basic stage.
- In order to secure information accessibility in emerging technology successfully, it is necessary to develop comprehensive standards that includes requirements, guidelines, and evaluation models.



Thank you

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