**Taking a French bus with an Austrian smart wheelchair, guided by a German app as Greek tourist – can that work?**

***Insights from the TRIPS project’s September workshop***

When looking at making public transport systems accessible, we face interesting challenges in terms of interoperability and integration of different data sets and the need for data to be shared across technologies and country borders.

These challenges show up in the way we communicate information to the user who might be using one app and one technology, or might be using several apps and several technologies in parallel, or might be using no personal technology at all and rely on analogue information. How do we in such varied circumstances communicate time-critical information where temporary barriers to mobility emerge? In this context and throughout the work in the TRIPS project, standards and communication modalities seem to constantly gain in importance.

We know by now that the numbers are impressive: around 10-15% of the population are considered having a disability and inaccessible transport systems effectively limit their equal access to important services, job opportunities, education, overall lifestyle choices and capacity for independent living.

The TRIPS project therefore aims at developing public urban transport systems that are more accessible by using a co-design approach that empowers disabled users to actively take part in the innovation of transport solutions. The end result should be an urban inclusive digital mobility solution designed by disabled users with the support of methodology experts, assistive technology suppliers, transport operators and municipalities.

The project work revealed that the issue of accessibility and the requirements to consider the needs of persons with disabilities hinge on an intricate play between policies, legislation and standards – on international, European and national level. In this context, the necessary technological solutions are often not called assistive technology or not put in relation to AT, which contributes to the confusion.

Diving deeper into the aspect of communication in public transport, the question was put forward whether interface accessibility can guarantee content accessibility. While we have now regulations to ensure interface accessibility, content accessibility is often ignored. Either because it is taken for granted or because it is difficult to create and then even more difficult to maintain in an adequate way. Also, “content” of human communication is largely underestimated and underrepresented in standardization. And even if there is a comprehensive set of guidelines such as the W3C Web Content Accessibility Guidelines (WCAG) 2.0, there is still lack of consistent implementation.

Indeed, content interoperability has many fascinating aspects. Urban public transport requires a very high level of interoperability across ICT systems, across languages for linguistic minorities and tourists, new communication modalities beyond the written and spoken word. There are different types of content (sometimes system dependent) as well as different abilities and disabilities of users. Many different coding systems are involved to make interoperability between all of these modes possible.

Things become even more complicated when we have to deal with unstructured content. For instance, daily irregularities in the transport system like a broken elevator or a passenger fainting in one of the waggons. Also highly unexpected events might occur like a big accident on the tracks, which in turn requires the interaction and communication with external parties (emergency services etc.). A very systematic approach is needed to ensure content interoperability across all those different systems.

The transport sector is very aware that many of their customers live with a disability and are getting older. Furthermore, on European level we have legislation both general and specific to the transport sector to ensure the inclusion of persons with disabilities. These legal requirements as well as political attention have been accompanied by higher investment in accessible public transport. However, pitfalls persist such as the lack of a common definition for “reduced mobility” or “severe disability”. Interpretations are different amongst EU Member States, and even within in some of them at regional and local levels.

There are wonderful examples of local, even regional solutions. However, today people with disabilities also travel increasingly internationally and face the issue that most of the solutions that work for example in Paris will not work in Munich or New York or any other city. This brings the challenge that content must be coded in a way that it can become interoperable and that a person would be able to travel to different places and have their personal device be able to understand the messages, train numbers, announcements and any other relevant information in the transport network they are traveling in.

A coordination across countries and regions is complex. If we take the Middle East as example, there are currently hardly minimum requirements for accessibility in place for public transport, also because the public transport system is not as developed in these countries as it is in Europe for example.

When trying to make public transport accessible, we need to focus on three main aspects: system responsiveness, role of mainstream apps, and people traveling in foreign environments (tourists). Can we ensure quick responses in our transport systems in cases of emergencies or unforeseen events? What mainstream apps can serve as AT or in general improve accessibility? For example, Google Maps has the advantage of being a globally used app as opposed to local accessibility maps that are limited in their reach. And how do we deal with people who are traveling in foreign environments where they might not understand the language and hence face temporary disabilities?

A non-negligible challenge is to convince service providers and manufacturers to apply the relevant standards. We do have useful standards for accessibility and AT, such as the harmonised European standard EN 301549 for digital accessibility. But how many manufactures have it implemented in their devices? The bigger challenge to creating an ecosystem for AT standardization might indeed be to ensure that existing standards progress into products to make these accessible and available on the market.

User interfaces are key and they need to be accessible and interoperable – not only in their content but also in their underlying technology. APIs, machine to machine communication, the whole idea of coming to a bus in France and the bus understands my Austrian smart wheelchair and knows to drive out the ramp. This interoperability and accessibility need to be international, cross-borders and based on open standards.

Indeed, there is the concept of the Web of Things, which would be an extension of the Internet of Things (IoT). If the web is the primary interface to the “traditional” internet, the Web of Things could be the primary interface to the Internet of Things and help things connect on this platform, ensuring interoperability by using open data, semantic web technologies and the likes to allow machine and humans to communicate. This circles back to what Aya said about mainstream apps like Google, which indeed pulls in a lot of data across the globe – including information on accessible locations and transport services.

In all this, we cannot forget that standardisation can also be a trap. Each time we generalise, we tend to go for the mean, disregarding the most potent members of the group and the most vulnerable members of the group. We standardise for the average in the middle in the hopes this will make things work for everyone. But that is not the case. In particular when it comes to ICT, our ageing generations need it most for support and help in their daily live, but are at the same time the most vulnerable and least educated in this area. Instead of focusing on the technology, we need to be human centred, and in this context consider the demographics we are developing products and services for.

In making public transport accessible to all, we might get inspired by the corner stones AAAQ for the right to health in the UN Convention. AAAQ stands for accessibility, availability, adapted to the person and of quality. On top of these, we need to consider data protection and privacy, and then factor in the exponential technological and medical improvements of today’s world.

What all of these considerations leave us with, is the need for an ecosystem that incorporates both AT and accessibility as well as usability and human-centred design. There are a number of challenges from the integration of devices, user interfaces and data to the interoperability of software and information systems, as well as the issue of specifically designed AT versus accessible mainstream technologies. Clearly this is not the end of the discussion but rather a starting point and the invitation to dig deeper and explore how we can fit the pieces together so that one day public transport may be easy, accessible and frictionless for all users, with and without disabilities.

The above is a short summary of the discussions led in an online workshop organised in September 2020 by **AAATE’s Special Interest Group on Standards** in collaboration with the **TRIPS project consortium**.

For more details and background, please have a look at the workshop report where we summarise in 9 pages the main arguments of our speakers and panellists, interwoven with telling stories from their personal and professional experiences.

You can download the report as Word Document or have a look at the online pdf version: <https://aaate.net/2021/02/01/taking-a-french-bus-with-an-austrian-smart-wheelchair-guided-by-a-german-app-as-greek-tourist-can-that-work/>

Learn more about the TRIPS project: <https://trips-project.eu/>