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## PubTrans4All – Public Transportation Accessibility for All

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### Abstract

The EU-funded project “Public Transportation – Accessibility for All” (PubTrans4All) will develop a prototype vehicle-based boarding assistance system that can be built into new rail vehicles or retrofitted into existing rail vehicles to improve accessibility for all persons – not only for handicapped people but also for people with huge luggage, parents with baby carriages or elderly. Accessibility for all is essential for creating an equitable, effective and efficient transport system. Therefore the PubTrans4All project will help building a fully accessible rail network.

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Keywords: Public Transportation; Railway sector; Accessibility; Persons with reduced mobility (PRM); Boarding assistance systems; Prototype

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### 1. The project PubTrans4All

The project PubTrans4All funded under the European Community's Seventh Framework Programme (FP7/2007-2013) has started in September 2009 with a project duration of 39 months. The project's objective is to develop a standard boarding assistance system (BAS) that can be built into new rail vehicles or retrofitted into existing rail vehicles to improve accessibility especially for persons with reduced mobility (PRM) – disabled persons, elderly, persons with prams, persons with heavy luggage etc. The boarding assistance system will not simply be a device, but rather include contributing elements that

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make it possible to effectively use the device to access rail vehicles. Accessibility for rail vehicles is particularly problematic since rail vehicles have a long service life (30 years or longer) and many currently inaccessible vehicles will remain in service well into the future.

Therefore, the PubTrans4All project pursues three main objectives:

- Survey existing practices for the use of vehicle and platform based boarding assistance systems (BAS) and develop best practice recommendations for their design and use
- Develop a prototype for a standard BAS that can be retrofitted into all types of existing rail vehicles or installed on all types of platforms
- Disseminate information about the project findings and recommendations widely

The multi-disciplinary consortium consists of 13 project partners from seven different European countries and includes users, public transport operators, academic researchers and manufacturers.

## 2. Main problem - existing high floor vehicles

The main accessibility problem for rail transport operators is that many old trains have significant vertical differences (e.g. steps) and horizontal gaps between the vehicle and the platform. This problem is accentuated by the fact that rail rolling stock and infrastructure has a very long service life. Railway operators will use their current rolling stock for many more years and therefore, temporary solutions must be found until the fleet can be replaced with modern fully accessible rolling stock.

It is difficult to develop a standard accessibility solution because of the huge variety in rolling stock and platform heights. Even on a single rail line several different types of rolling stock are often used and platforms may have different heights and profiles. Moreover, the exact physical dimensions of rolling stock (e.g. height) can also vary depending on its occupancy and wear. Designers must also consider a safety margin between the train and platform to account for train rocking etc. Finally, accessibility devices must work under all types of environmental conditions (e.g. rain, snow, etc.).

### 2.1. Evaluation criteria

This section presents an overview of all relevant parameters that must be considered when designing a new boarding assistance system. Table 1 presents the importance of a boarding assistance system for different user groups, fully described in Deliverable 2.1 “Boarding Assistance System Evaluation Criteria Report” (Rüger, Tauschitz, & Petutschnig, 2010) and Table 2 summarizes the evaluation criteria. For generating the following ranking many experts from whole over Europe particularly from railway operators, representatives from handicap and from passenger associations, from Universities and from the railway industry have been asked to give their opinion on the importance of the several criteria.

Table 1: Boarding assistance – for different user groups

Score	Users
Very important (“must have”)	Wheelchair, walking frame
Important	walking disabled, with crutch or sticks
high benefit for users & operators (“nice to have”)	elderly, diminutive people
	baby prams, passengers with luggage
Less important	children
(“nice to have” - but not absolutely necessary)	pregnant
	visual and hearing impaired

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