



# Accessibility instruments in planning practice: Bridging the implementation gap



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## ABSTRACT

Accessibility concepts are increasingly acknowledged as fundamental to understand cities and urban regions. Accordingly, accessibility instruments have been recognised as valuable support tools for land-use and transport planning. However, despite the relatively large number of instruments available in the literature, they are not widely used in planning practice.

This paper aims to explore why accessibility instruments are not widely used in planning practice. To this end we focus our research on perceived user-friendliness and usefulness of accessibility instruments. First, we surveyed a number of instrument developers, providing an overview on the characteristics of accessibility instruments available and on developers' perceptions of their user-friendliness in planning practice. Second, we brought together developers and planning practitioners in a number of local workshops across Europe and Australia, where participants were asked to use insights provided by accessibility instruments for the development of planning strategies.

We found that most practitioners are convinced of the usefulness of accessibility instruments in planning practice, as they generate new and relevant insights for planners. Findings suggest that not only user-friendliness problems, but mainly organizational barriers and lack of institutionalization of accessibility instruments, are the main causes of the implementation gap. Thus user-friendliness improvement may provide limited contributions to the successful implementation of accessibility concepts in planning practice. In fact, there seems to be more to gain from active and continued engagement of instrument developers with planning practitioners and from the institutionalization of accessibility planning.

## 1. The implementation gap of accessibility-based PSS

The integration of land use and transport planning is a key topic in urban and regional planning, and the concept of accessibility is believed to provide a central framework for this (Bertolini et al., 2005; Straatemeier and Bertolini, 2008). There is a myriad of concepts and tools to address this issue in academic research (reviews in e.g. Handy and Niemeier, 1997, Bhat et al., 2000a, 2000b, Geurs and van Wee, 2004; Geurs et al., 2015), a result of the last decades of theoretical and methodological developments around the definition, measurement and workings of accessibility. However, the use of these concepts and tools in professional planning practice did not follow the same pace, and there is today a significant gap between the advances in scientific knowledge on accessibility and its effective application in professional

planning practice (Te Brömmelstroet, 2010a).

The literature on Planning Support Systems (PSS) identifies the dichotomy between supply and demand of planning support instruments as the main reason for this phenomenon of underutilisation (Vonk et al., 2005; Te Brömmelstroet, 2010a). On the one hand, planning practitioners (the potential users) are generally unaware of the instruments or, if familiar, are quite inexperienced in using them. The value and potential of the instruments is not recognised, resulting in low use. On the other hand, developers of planning support instruments have little awareness of the demand requirements. The effective use of PSS is currently suffering from a 'rigour-relevance dilemma' (Andriessen, 2004; Fincham and Clark, 2009; Straatemeier et al., 2010), with developers mainly concerned with scientific rigour and users mainly concerned with practical relevance, leading to

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diverging paths, where each group fails to see and appreciate the perspective of the other. As a result, developers produce planning tools based on abstract ideas far removed from actual practice – rather than a clear, shared understanding of the needs and demands of specific planning contexts. Planners, on the other hand, often hold unrealistic expectations of what the tool can offer, where the inevitable disappointment with the provided support leads to antagonistic attitudes towards new knowledge technologies (Meadows and Robinsons, 2002; Te Brömmelstroet, 2010b; Vonk et al., 2005). Bringing these two worlds together could help bridge the implementation gap and address some of the most pressing urban mobility dilemmas.

This paper looks directly at this dichotomy from both the viewpoint of the developers of accessibility-based PSS and the viewpoint of the planning practitioners, by confronting their perspectives on *user-friendliness* and *usefulness*. *User-friendliness* refers to the (perceived) ease of use of a functionality for the intended end-user. We define user-friendliness here as “the degree to which a person believes that using a particular system would be free from effort” following Keil et al. (1995, p. 76). An example of user-friendliness is how easy it is for you to operate your coffee machine at home. *Usefulness* of PSS is related to problems/issues addressed in the real planning practice and refers to a different question: does a PSS have an added value for the quality of the tasks that the planning practitioners have (as discussed in Pelzer, 2015). Likewise, Nielsen (1994, p. 24) defines usefulness as the ‘issue of whether the system can be used to achieve some desired goals’. In the example usefulness does not relate to operating a coffee machine, but to the quality of the coffee it produces. This dichotomy implies that a PSS can be very usable, without being useful and vice versa, pointing to the need of considering them both. Indeed, a really simple and user-friendly instrument addressing planning/policy issues outside the scope of practitioners will not be useful. Also, many relatively complex models (e.g. discrete choice models) are used in the transport planning practice in many countries, which probably are in many cases not user-friendly but are directly related to current policy issues/goals (Pelzer, 2015; Pelzer et al., 2016).

This paper aims to improve the understanding and contribute to bridging the implementation gap of accessibility-based PSS in European Planning Practice, by innovatively integrating assessments of *both* their user-friendliness *and* usefulness. Accessibility Instruments (AI) are defined here as tools “that aim to provide explicit knowledge on accessibility to actors in the planning domain, a tool of measure, interpretation and modelling of accessibility, developed to support planning practice (analysis, design support, evaluation, monitoring etc.)” (Papa and Angiello, 2012, p. 255).<sup>1</sup> The paper elaborates on the main findings of COST Action TU1002, a research that brought together a large network of more than 100 researchers (among which AI developers) and 80 practitioners, from 22 countries, to discuss the user-friendliness and usefulness of 24 AIs which were offered by their developers as test subjects for this large scale research (see for the full background [www.accessibilityplanning.eu](http://www.accessibilityplanning.eu)). The paper’s contribution is markedly distinct from other contributions based on the COST Action (see for instance, Hull et al., 2012b; Te Brömmelstroet et al., 2014b; Papa et al., 2016), which either highlight, without connecting, specific aspects of the argument (as in Papa et al., 2016), or are geared at describing the results rather than reflecting on them (as in Hull et al., 2012b; Te Brömmelstroet et al., 2014b).

The next section describes the research approach and the data collection methods. Section 3 presents an overview of the AIs discussing their user-friendliness from the perspective of developers and the main concerns and priorities developers have when putting together these planning support tools. This debate is followed by an analysis of

the perspective of planning practitioners focussed on the usefulness of AI (Section 4). The last two sections confront these two perspectives of analysis synthesizing the main research findings (Section 5), and the wider planning implications and research questions opened by this research (Section 6).

## 2. Research approach

### 2.1. Research aims

Aiming to improve the understanding and contribute to bridging the implementation gap of AIs in planning practice, the research set out to look at the gap from both **the developers’ perspective and the planning practitioners’ perspective**. These perspectives were then confronted in search of a wider understanding of the gap and for recommendations for new AIs.

For the **developers’ perspective** we looked at the perception of **user-friendliness** of AIs by their developers’, and at concerns and priorities developers have when putting together these planning support tools. Perceptions and priorities were collected among the developers of AIs taking part in the research by resorting to the *Accessibility Instrument Survey* (AIS) which is discussed in detail below. A total of 24 AI developers’ were surveyed.

For the **practitioners’ perspective** we looked at the experience of **usefulness** of the same AIs by planning practitioners. Their perceptions were collected after they experienced a particular AI in a near-to real life planning exercise. A *Post-Workshop Survey* (PWS) was one of the main tools for collecting planning practitioners’ perception of usefulness – also to be discussed in detail below. A total of 16 local workshops were developed during this research, of which 13 successfully collected planning practitioners’ perception on usefulness from 80 practitioners with different backgrounds (see for detailed discussion of these workshops: Te Brömmelstroet et al., 2016).

### 2.2. Sample

Table 1 presents the AIs considered for the results presented in this paper. The AIs selected for the proposed analysis are original instruments, in some cases used in planning practice by private consultancies or local authorities, and all open to improvement or even still in a development phase. The interest in possible improvement or adaption was a main concern in the research being fundamental in opening the debate between developers and planning practitioners around the implementation gap. Of the 24 AIs involved in the research only 20 were considered in the analysis of the results of the AIS.<sup>2</sup> Of these 13 were used in local workshops and collected evaluations on usefulness through the PWS.

Table 1 presents the 20 AIs considered in the analysis of the AIS and the name of the city of the local workshop, when applicable. Half of these had previously been used in planning practice while the other half had only been used for research and/or was still under development. Fig. 1 summarizes the main data collection phases as well as the main outputs in each phase. In Hull et al. (2012b) a comprehensive and detailed description of each instrument is provided, including a discussion on the use of accessibility instruments in planning practice, and the presence of national guidelines on accessibility measure..

### 2.3. Research design

The research design combines elements of a classical multiple case study, whereby each accessibility instrument is used and analysed

<sup>1</sup> This definition, as all others from COST Action TU1002’s Glossary (<http://www.accessibilityplanning.eu/glossary/>), reflect the general position of the COST Action members, and are the result of a general debate and of detailed contribution from several of its members, later put together by Enrica Papa and Gennaro Angiello.

<sup>2</sup> Of the four excluded, two didn’t fill in the survey, another misunderstood the evaluation scales and another was at a too early stage of development at the time of the survey.

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