

Consortium

- BPM Business & Project Management SA [EL]
with the assistance of Apintech Ltd., Daedalus Group [EL]
- ASM Centrum Badan i Analiz Rynku [PL]
- BBRI Belgian Building Research Institute [BE]
- BRE Building Research Establishment [UK]
- COIN Cooperative Integrate Onlus [I]
- ICTAF Interdisciplinary Centre for Technological Analysis and Forecasting [IL]
- ICIE Co-operative Institute for Innovation [I]
- Fundation LABEIN [ES]
- ITC Construction Technologies Institute [I]
- Info-Handicap - Conseil National des Personnes Handicapées [L]



Contact points:

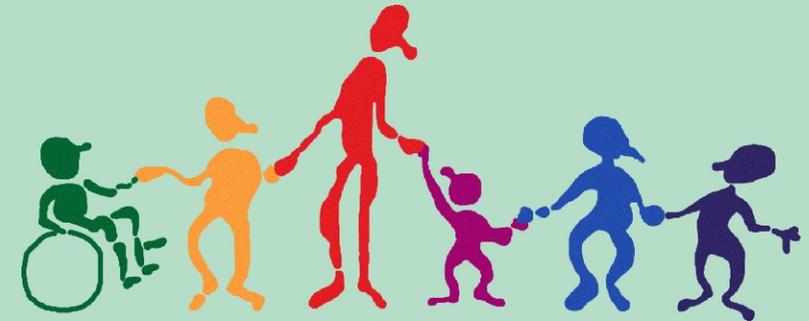
Co-ordinator:	Technical Manager:	Exploitation Manager:
Nikos Sakkas +30 210 7472850, +30 694 4866516 (GSM) nsak@bpm.gr	Annagrazia Laura +39 067129011 annagrazia.laura@sociale.it	Jan Desmyter +32 2 6557711 jan.desmyter@bbri.be

POLIS web site:

<http://www.polis-ubd.net>

POLIS

Decision Support for a Universal Building Design



Statement of purpose

POLIS believes that a systematic and cost efficient uptake of Universal Design by society may provide for an enhancement of the quality of life of all people, with disabilities or not, or with other specific needs (ageing, children, etc.)

Objectives and targeted users

POLIS is a policy oriented research action, aiming at the development, dissemination to society, and integration into policy instruments and standards, of a new generation of approaches and tools in the area of Universal Building Design. These tools essentially address the needs of diverse user groups such as the technical people involved directly in building design, the various decision makers in charge of broader building and urban space planning decisions and the private investors realising the value that can be created out of enhanced accessibility considerations.

1. POLIS Methodology BAM

(Building Accessibility Metrics)



BAM proposes a methodological approach, by means of which the accessibility of various citizen categories to particular buildings may be accurately evaluated. BAM carries out an accessibility audit, creates an inventory of accessibility deficiencies, and enables to analyse anyone of them in order to see the impact on the overall building accessibility level.

Follows a list of the important design features of the BAM approach:

1. It considers accessibility in a continuous way, as a spectral value, rather than by means of the traditional on/off approach, which is the basis of all standard compliance based methodologies.
2. It looks into the accessibility of building services (employment, entertainment, administration, etc.) rather than the accessibility of elements (ramp, elevator, etc.).

Figuring out a set of building services, representative of overall building accessibility, is an essential, departing, point of the BAM based accessibility audit. In the figure on the next page, five service paths were identified and analyzed, as representative of the building accessibility. First, the accessibility of a building service (c_1) from entrance point (e_1) is considered. Note that the same service (c_1) is offered at two different localities, resulting to two distinct service paths. Then, the accessibility of auxiliary service points (a_1) and (a_2) (e.g. toilet) from core service locations (c_1) was also included in the representative service set, leading to two more service paths.

Status: The BAM methodology is currently in publication process. Upon completion of the process, the respective paper will be made available at the POLIS site. Abridged versions can be provided in the meanwhile upon request.

Note that the system may be configured to observe any, national or international, modelled set of accessibility technical specifications. These specifications are kept in a separate database and reflect national or international approaches to accessibility. In contrast to this, AIM resembles more a technical and economic data-store of available accessibility solutions.

Case study: Academic Institution - BAM audit results



BAM for people with mobility impairments
~ 50%

BAM for people with vision problems ~ 60%

Significant distance discrimination

Major adaptations required,
Adaptability index ~80%

3. POLIS Publications & Events

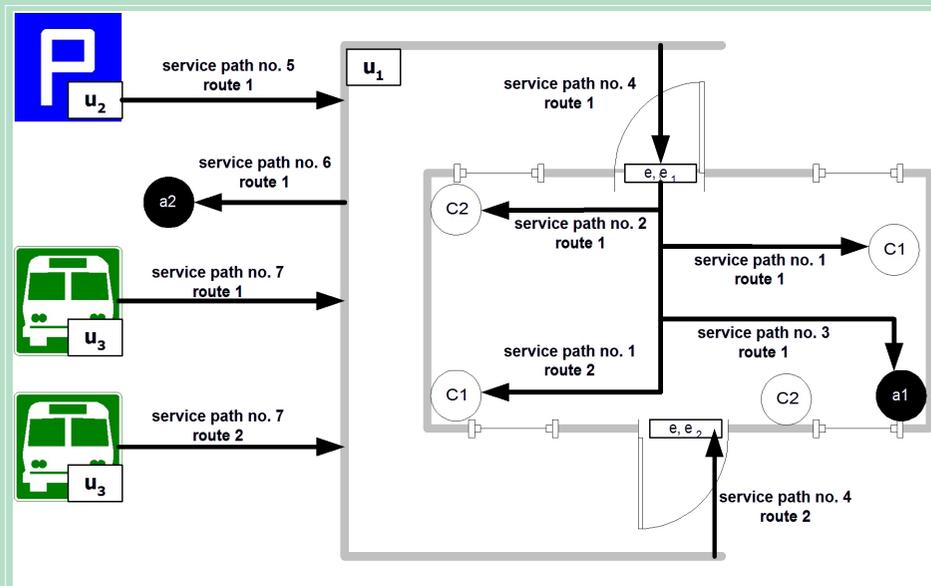
POLIS will develop and publish a collection of case studies from many parts of Europe and spanning over diverse building types (education, administration, business, accommodation, etc.). The case studies will be analysed from the point of view of the BAM methodology. Print and electronic versions of the POLIS publication will be made available in support of the dissemination of the project results.

A number of workshop events (POLIS events) are planned in Poland, Greece, Belgium and Spain, in years 2005/ 2006 for the promotion of the POLIS results. Information may be accessed on the POLIS site, as soon as it is made available.

Status: The POLIS publication will be available in 2006. Sample case studies may be retrieved from the POLIS web site.

3. It accounts fully for the urban space accessibility, by considering private and public transport access as vital building services.

A service based building accessibility is not conceivable without integration of outdoor, urban space accessibility considerations. In the figure below, a real case study is illustrated, from an educational establishment. All service paths are represented, out of which three correspond to the private car park accessibility (service path No. 5) and the bus accessibility (service path 7, implemented physically by two distinct routes, 1 and 2).



Note that urban space accessibility has been also modeled by the considering the building nearby environment (building ambience) and the accessibility of both building entrances from it (service path 4, two physical implementations). Apparently these entrances have different accessibility characteristics that makes necessary to include them both in the representative accessibility services.

4. It accounts for the different type of citizens, as different citizen categories experience different barriers in accessing building services.

5. It enables checklisting against any embedded or user created set of technical specifications (compliance analysis).

6. It enables to track and analyze, in a detailed and cost- benefit way, all potential interventions that may realistically be carried out to enhance accessibility (BAM analysis). In this way it embeds in its design the concept of building adaptability, i.e., the accessibility level that would result should all realistic interventions be carried out (adaptability analysis)

Case study: Adjusted for all tourist facility - BAM audit results



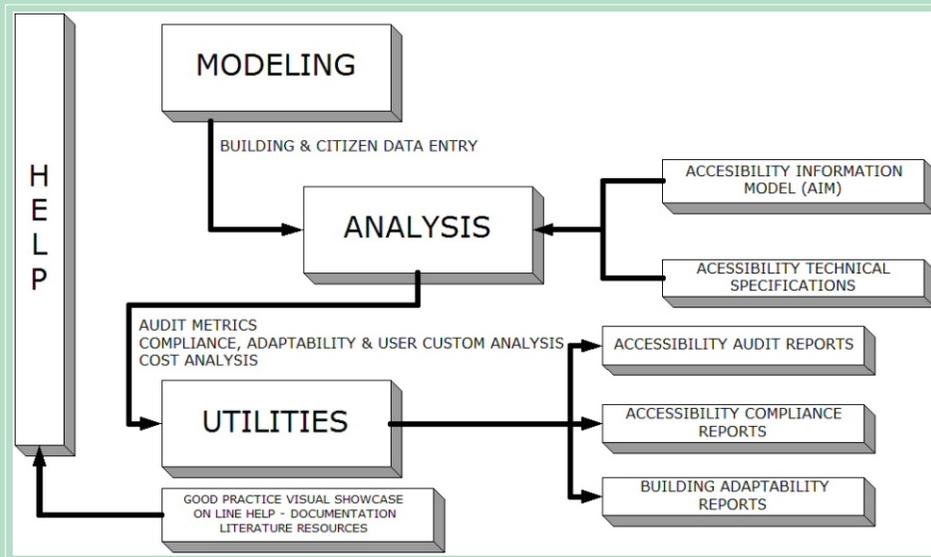
Excellent score for mobility impairments; BAM ~100%

Average performance for people with hearing problems; BAM ~ 65%

Average performance for people with vision problems; BAM ~ 60%

2. POLIS Tools - Decision Support System for Universal Building Design (DSS.UBD)

The POLIS DSS.UBD is a software environment that is based on the Accessibility Information Model (AIM). AIM is a database schema including detailed technical and cost information on architectural, assistive, or ICT elements that are typically used to enhance building and urban space accessibility. It is an integral part of the POLIS DSS.UBD. It will deliver the functionality, which is roughly illustrated in the following Figure. Detailed UML (Unified Modelling Language) models of the system can be made available upon request. The DSS will be validated, in the development phase, by various groups of stakeholders, including decision makers, policy managers and members from the research community, allowing thus to integrate their remarks.



Note the crucial role of the AIM database model as an interactive supplier of techno-economic information on the various, citizen dependent, accessibility interventions that may be selected by user or automatically suggested by the system itself.

Finally, the path between the core service locations was considered important to include in the representative set and analyze. This can, for example, be the case of workplace locations, with intense physical communication between them. Note also that in this example entrance point e_2 was not included in the analysis, as it was judged that its accessibility characteristics did not present any substantial differences as to entrance point e_1 .

BAM accounts totally for the fact that the physical path for accessing services may vary upon citizen category. Discrimination can also result when the path is accessible, yet, far longer, as a distance.

BAM distinguishes between abstract service paths (e.g. accessing service c_1 from entrance e_1), physical routes (the two distinct service routes e_1c_{11} and e_1c_{12}) as well as actual accessibility ways (depending on the citizen category concerned).

Status: The BAM data model will be published in the course of the first half of 2005. A first version of the POLIS DSS.UBD (Decision Support System for Universal Building Design) will be made available soon thereafter.

