Towards computer-assisted wayfinding design support
Interview-based needs analysis across stakeholders

CHRISTOPH HÖLSCHER, ETH Zurich, Switzerland
RUTH CONROY DALTON, Northumbria University, United Kingdom
SASKIA KULIGA, University of Freiburg, Germany
MARTIN TÖMWKO, The University of Melbourne, Australia

Contact us: christoph.hoelscher@gess.ethz.ch

Background
The architectural design process includes numerous sequential design alterations in order to optimize multiple aspects (e.g. energy efficiency, accessibility, capacity, costs, aesthetics, user needs).

This collaboration investigated:
- The interaction of stakeholders across the design process
- The evolution of floor plans and how they impacted wayfinding
- Reasons why existing formal quantitative and qualitative approaches to wayfinding design are not systematically applied in practice
- Conceptual ideas, which technological tool improvements could promote wayfinding considerations in the early design stages

The Case, a new building for the faculty of architecture University of Melbourne, Australia Designed by John Wardle Architects and NADAAA, to be opened in September 2014

Results
- Impacts of iterative design changes during the lifecycle of the project are not systematically evaluated for their impact on wayfinding performance. Floor plan changes are often due to budget constraints, rather than wayfinding considerations.
- Wayfinding is important, and future user groups are considered, yet wayfinding is not a central aspect during the design. Wayfinding experts are usually brought in only after the architects have already completed the main structure and circulation of the building.
- Wayfinding analysis is conducted based on the designers' experience and seldom supported by quantitative tools, such as space syntax, which is mostly used as a visualization tool in order to communicate ideas to other stakeholders and as a ground for perspective-taking.

Conclusions
- Considerations for movement and orientation design are dominantly based on tacit knowledge and experience.
- Analytic quantitative and qualitative evaluation tools are seldom used consistently throughout the architectural process.
- Standardized optimization parameters should be identified and exposed through interfaces; e.g. by on-the-fly feedback during the modification of a design, via generative design tools or interactive CAAD modes.
- Earlier consideration of the quantitative parameters of designed spaces could support the deliberation of stakeholders groups, as well as future users' wayfinding experience.

Methods
- 14 interviews in 2 rounds, with representatives of 6 major stakeholder groups
- Video and audio record of stakeholder interviews, hand movements and sketches
- Qualitative analysis of transcribed interviews by two raters, using 'mental maps'
- Summarization of findings based on rater consensus.

Example of mental maps based on a transcript, in order to explore the dynamics of 3 key aspects:
Tools, stages of the process, and stakeholder interaction
(here: zooming in on tools)

Acknowledgments
This research has been supported by the New Building Grant of the Faculty of ABR. The University of Melbourne, and by the Go8/DAAD Grant for Formko and Hölscher. We would like to thank the stakeholders for participating in the interviews.