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Title: III:RI:Small:Information integration and human interaction for indoor and outdoor spaces *

*Abstract: *

The goal of this research project is to provide a framework model that integrates existing models of indoor and outdoor space, and to use this model to develop an interactive platform for navigation in mixed indoor and outdoor spaces. The user should feel the transition between inside and outside to be seamless, in terms of the navigational support provided. The approach consists of integration of indoors and outdoors on several levels: conceptual models (ontologies), formal system designs, data models, and human interaction. At the conceptual level, the project draws on existing ontologies as well as examining the “affordances” that the space provides. For example, an outside pedestrian walkway affords the same function as an inside corridor. Formal models of place and connection are also used to precisely specify the design of the navigational support system. Behavioral experiments with human participants assess the validity of our framework for supporting human spatial learning and navigation in integrated indoor and outdoor environments. These experiments also enable the identification and extraction of the salient features of indoor and outdoor spaces for incorporation into the framework. Findings from the human studies will help validate the efficacy of our formal framework for supporting human spatial learning and navigation in such integrated environments. Results will be distributed using the project Web site www.spatial.maine.edu/IOspace <<http://www.spatial.maine.edu/IOspace>>. They will be incorporated into graduate level courses on human interaction with mobile devices, shared with public school teachers participating in the University of Maine’s NSF-funded RET (Research Experiences for Teachers), and provide linkages with the two companies and one research center associated with the project.