

## SFB/TR 8 Spatial Cognition / IQN Video Conference

### Conversational Dialogue Systems for GeoCollaborative Crisis Management

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Natural (spoken) language and free-hand gestures provide a promising alternative for interacting with geographical information systems, but such new modalities impose great challenges to semantic processing and dialogue management. This paper presents an approach for enabling mixed-initiative, conversational dialogues human-GIS interactions. Conversations with a GIS are modeled as human-computer collaborative activities within a task domain. We adopt a mental state view of collaboration and discourse and propose a plan-based computational model for conversational grounding and dialogue generation. As a proof of concept, we have implemented a dialogue agent, *GeoDialogue*, which actively recognizes user's information needs, reasons about detailed cartographic and database procedures, and acts cooperatively to assist user's problem solving. *GeoDialogue* serves as a semantic 'bridge' between the human languages and the formal language that a GIS understands. The behavior of such dialogue-assisted human-GIS interfaces is illustrated through a scenario simulating a session of emergency response.

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