

## **EXPERIENCE FROM THE DEVELOPMENT OF A SPEECH-BASED DIALOG SYSTEM FOR COMMUNICATION WITH A PERSON-ASSISTING UAV**

*Erik Sandewall*

*(Linköping University and KTH-Royal Institute of Technology, Sweden)*

The goal of the Swedish WITAS project was to develop an on-board system providing certain intelligence-level capabilities for an unmanned aerial vehicle (UAV). The purpose was to explore the possible designs and to build a "concept UAV"; the purpose was not to develop a product. One of the aspects of this project was to develop a dialog system whereby a human operator on the ground could communicate with one or more UAV:s, with speech as the primary communication medium, but with the additional use of visual interaction in the form of diagrams, still images, or video clips when appropriate. The speech part of this task was realized first, and involved the identification of an appropriate grammar and its implementation in combination with openly available, general-purpose software systems for speech input and output. It further involved the development of software for planning and scheduling and for the execution of plans corresponding the commands that had been input. - The extension of the system for graphical services was more complex, in particular for the case of interactive use of video, and for dialog about video flashbacks. The chosen solution involves the insertion of markup information into the video stream, where the purpose of the markup is to provide information about the coordinates of the UAV and of the area being shown, as well as the coordinates of objects of special interest in the field of vision. I will give an overview of the issues that had to be addressed in the design of this system and in its integration with other parts of the UAV system.