Competence Cluster Cooperating Systems

The cluster Cooperating Systems deals with intelligent mixed-initiative systems where a number of manned and unmanned systems cooperate and jointly take decisions. This requires research and development by several actors in the areas of planning and re-planning of missions, decision support, autonomy and Human-Machine Interface (HMI), as follows:

- A new generation of planning and control stations for planning and control of multiple heterogeneous manned and unmanned systems
    - During the planning process it should be possible to quickly and easily simulate different dynamic effects of the mission, including re-planning during the mission
- Distributed decision making between manned and unmanned units, taking into account e.g.
    - Shared situation awareness
    - Dynamic re-planning as needed during the mission
    - Varying levels of autonomy, depending on e.g. tasks or positions, and with focus on
        - Operator trust and understanding of the autonomous functions, for the higher autonomy levels
        - Decision support to the operator, for the lower autonomy levels
    - Proper work share between human operators and systems, with respect to operator work load
- Multimodal interfaces (e.g. touch screens, eye and gesture control, voice control,) allowing cooperation between multiple distributed operators and unmanned systems such that they provide operators with sufficient trust, understanding and control of the system in order to perform complex tasks in a safe manner

In current NFFP projects there is ongoing work in the area of distributed decision support, where it is interesting to integrate parts of distributed decision algorithms in realistic simulation environments. Another interesting possibility is e.g. to integrate electronic knee pads and decision support functions in a realistic HMI environment for cooperation between manned and unmanned aircraft.

This area is also interesting for other applications where intelligent systems cooperate with human operators, or where decision making has to be made distributed between a number of humans and/or intelligent systems.