



## SUMMER SCHOOL ON

# “INTELLIGENT TRANSPORT SYSTEMS: DESIGN AND SAFETY”

3 – 6 July 2005

Pyrénées Mountains, Saint Lary, France

## CONTENT OF LECTURES AND CV OF SPEAKERS AND AFFILIATIONS

### Ellen Wilschut, IFADO

#### Drivers' workload and brain processes

To assess the mental workload induced by advanced driver assistance systems a precise measurement of mental workload, or more specifically, the strength and timing of different processing stages is needed. The use of the electroencephalogram (EEG) and event-related brain potentials (ERPs) to measure brain processes can offer diagnostic specification of the type of workload involved and give insight in workload changes. A short overview is given concerning event-related brain potentials related to mental workload, attention, and performance monitoring/error processing. Examples are given of recent research in which EEG is applied to assess driver's cognitive mental workload while driving in a simulator or in real traffic situations.

Ellen Wilschut is a researcher of the Cognitive Neurophysiology Group at IFADO, Germany. She completed a Master of Science degree in experimental and work psychology at the University of Groningen, the Netherlands (2004). The subject of the master's thesis was: "Mental workload and time-on-task effects on the Event Related Potential in a simulated air-traffic-control task". Part of the research was conducted at the National Aerospace Laboratory in Amsterdam, the Netherlands. She is preparing her PhD thesis that deals with psycho-physiological measurement of mental workload induced by information provided by driver assistance systems.

The Leibniz Research Centre of Human factors and Working Environment (IfADo), Dortmund, Germany, has as its mission of to perform basic research focussed on applicability in order to preserve human fitness for work by avoidance of work-related strain. The Institute is a member of the scientific community WGL (Wissenschaftsgemeinschaft Gottfried Wilhelm Leibniz). The research topics are: (1) support and improvement of physical and mental performance, (2) evaluation of work-related strain, and (3) evaluation of individual and situational vulnerability. The main areas of IfADo are

- toxicology and neurobehavioral toxicology
- musculoskeletal load and disorders, movement co-ordination and training
- health hazards at the work place and in the environment
- sensory and mental load, cognitive neurophysiology

The approach of IfADo is organized in a hierarchical manner:

- the investigation of work-relevant physiological processes at different levels, namely the biochemical-cellular level, the level of specific organs, particularly the central nervous system, and the behavioural-subjective level.
- the evaluation of work-related influences on those processes;
- the development of ergonomic principles and standards to shape those influences.

IfADo has a staff of roughly 150 people, among them about 50 scientists.