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Editorial Note

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Planning and Executing Plans in a Dynamic and Uncertain World. *Introduction to the issue special theme*

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You will find in this issue three articles pertaining to a special theme, called "Planning and executing plans in a dynamic and uncertain world". These articles are based on contributions to a workshop at IJCAI-99 in Stockholm, which broader scope was "Scheduling and Planning meet Realtime Monitoring in a dynamic and uncertain world".

The main concern in this theme is to address real world planning applications in which multiple executing agents have to carry out together the execution of a plan, taking into account the inherent uncertainties of a partially known environment. The main target application domains of the three contributions are military and spatial missions, and they present various existing architectures that differ in the way planning and execution of the plan are processed, each being either off-line or on-board, while centralized or distributed approaches may be preferred.

The first paper by M. Paolucci *et al.* focuses on the planning process : multiple decision agents collaborate to build the common plan, that is then passed on to the executing agents. In the presence of uncertainties, planning agents may gather information either from other decision agents, or from the environment by choosing to halt the planning process and execute some of the already planned actions.

In the paper by R. Washington *et al.* planning is still made off-line, there in a centralized manner, before plans are uplinked on-board of planetary rovers. But adaptation capabilities are given to each rover plan monitoring system to allow reactive behaviours : not only plans contain contingencies, but preprocessed reactive plans are also uplinked. Those can be activated in the presence of modelled possible deviations. Rovers can then respond in real-time to failures or even opportunistically optimize their current plan to do more than expected.

Finally, T. Estlin *et al.* address similar planetary rovers dedicated there to geology-related science missions, opting for putting on-board all capabilities ranging from goal generation and planning to re-planning and plan execution (this overall process being also referred as “continuous” planning). Anyway, there still exists a central planner that is in charge of the goal generation step, while re-planning and execution is distributed among the rovers, thus calling for rover coordinating features.

We strongly believe that gathering these three articles in a common theme will be a valuable source of information for anyone interested in some of the most recent and accurate research projects addressing the challenging goal of having various fully autonomous agents achieving elaborate goals while partially facing the unknown.