The two chapters in this part are concerned with the so called layer integration problem: how to integrate the different levels of representation and reasoning that must be present in an autonomous robot. An essential aspect of this integration consists in maintaining the right correspondence between the execution of behaviors at the lower layer of control, and the achievement of the goals considered by the higher layers of reasoning and control.

The chapter by Surmann and Peters treats the integration problem in terms of embedding a human-like higher-level decision strategy that supports autonomous, behavior-based navigation in office buildings. This chapter presents the various steps during the design cycle, from specification to implementation. The experimentation is conducted on MORIA, a low cost autonomous service robot.

The chapter by Zhang and Knoll describes the integration of deliberative and reactive strategies for the control of a mobile robot. Motion control at the task-level in a partially known environment is divided into two consecutive stages: subgoal planning and subgoal-guided plan execution. A modular fuzzy control scheme is proposed, which allows independent development and flexible integration of different rule bases.