

HPTS++ is a platform independent toolkit to describe and handle the execution of multi-agent systems. It provides a specific object oriented language encapsulating C++ code for interfacing facilities and a runtime kernel providing automatic synchronization and adaptation facilities.

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The language provides functionalities to describe state machines (states and transitions) and to inform them with user specific C++ code to call at a given point during execution. This language is object oriented and supports concepts such as polymorphism and inheritance (state machines and user defined C++ classes). The compilation phase translates a state machine in a C++ class that can be compiled separately and linked through static or dynamic libraries. The runtime kernel includes a scheduler that handles parallel state machines execution and that provides synchronization facilities such as mutual exclusion on resources, dead lock avoidance, notions of priorities and execution adaptation in accordance with resources availability.

HPTS++ also provides a task model. Thanks to this model, the user can describe primitive behaviors through atomic tasks and combine them, thanks to some provided operators (sequence, parallelism, loops, alternatives). These operators are fully dynamic. Hence they can be used at runtime to rapidly create complex behaviors.