Abstract: Behavioural models offer the ability to simulate autonomous agents like organisms and living beings. Psychological studies have shown that the human behaviour can be described by a perception-decision-action loop, in which the decisional process should integrate several programming paradigms such as real-time, concurrency and hierarchy. Building such systems for interactive simulation requires the design of a reactive system handling data?ows with the environment, and involving task control and preemption. Since a complete mental model based on vision and image processing cannot be constructed in real time using purely geometrical information, higher levels of information are needed in a model of the virtual environment. For example, the autonomous actors of a virtual world would exploit the knowledge of the environment topology to navigate through it. Accordingly, we present in this paper our programming framework for real-time behavioural animation which is composed of a general animation and simulation platform, a framework for motion control, a behavioural modelling language, a perception control module and a scenario authoring tool. Those tools have been used for different applications such as pedestrian and car driver interaction in urban environments, or a virtual museum populated by a group of visitors.

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