



# DirectAI

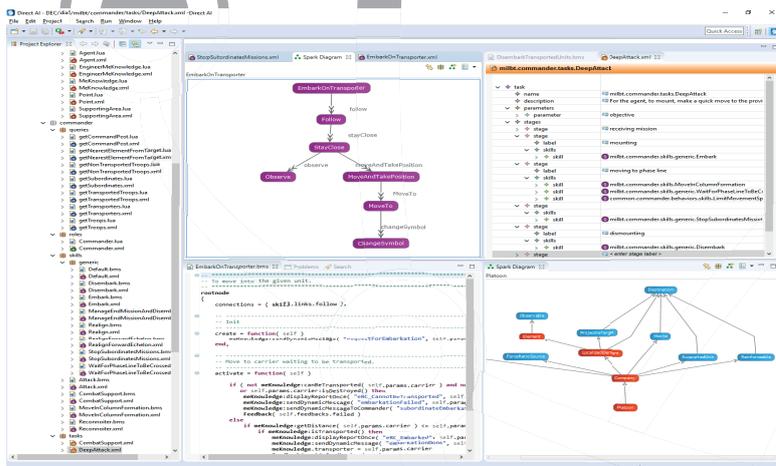
Artificial Intelligence for Smart Simulations

## What is it for?

- Enrich applications with AI capabilities
- Allow third-party application developers to implement characters that exhibit autonomous behavior (e.g. simulator or serious game developers)
- Some use cases:
  - Ambient life (bring a city to life by adding autonomous agents)
  - Automate complex tasks to allow users to focus on training rather than controlling characters
  - Automate complex behaviors to match specific behavior doctrine
  - Implement training scenarios

## What is it?

- Direct AI is an SDK (Software Development Kit). It contains:
- The Direct AI runtime engine for behavior execution, which includes a Lua scripting engine
  - A C/C++ integration API
    - Easy C integration (less than 10 C functions, integration in a single day)
    - C++ API renders the binding of Lua functions seamless
  - A structured AI language ('Spark') and Lua libraries for scripting behaviors
  - An IDE (Integrated Development Environment) based on the Eclipse platform



## IDE features

- Edition of Spark behaviors using industrial-strength Lua editors (that include completion, syntax coloring, common shortcuts, etc.)
- Spark entity definitions in XML
- Explore and view Spark AI entities graphically
- View class and behavior diagrams
- Validation of a behavior library contract
- Work with multiple projects

## Direct AI features

- Structured approach:
  - Organize entities in categories
  - Faster behavior creation through strong reusability
- Use 'task' entities to compose simple behaviors declaratively. No programming needed
- Behaviors are scripted in Lua and are dynamic (no need to compile)
- Based on the FFH (Free-Flow Hierarchy) paradigm, Direct AI allows you to easily implement adaptive, opportunistic, and complex behaviors (and simple behaviors too!)
- A messaging component allows AI agents to communicate
- Multi-threading: leverage the power of current multi-processor architecture by distributing AI brains over distinct processors
- Debug mode checks contract violation on-the-fly
- Profile AI using built-in Lua profiler
- C API provides for integration with C#, Python, Java, etc.
- Fast, lightweight, robust and heavily tested
- Used daily by MASA & their Army customers with SWORD