

# Dynamic Adaptive Super-Scalable Intelligent Entities

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## Introduction

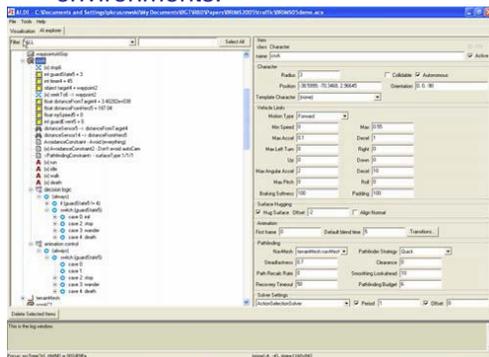
The Dynamic Adaptive Super-Scalable Intelligent Entities, or DASSIEs, project seeks to explore what does and does not work in creating a system in which to easily deploy artificial intelligence (AI) into first- and third-person games, ultimately providing a way to create and deploy AI agents into war fighter mission rehearsals.

## Background

Commercial AI software tools that allow the rapid development of AI agents for games:

### AI.implant

- An AI development tool created by Engenuity Technologies, Inc.
- Created to provide solutions for the creation of individual-level human agents for use in Military Simulation and Training applications in 3D environments.

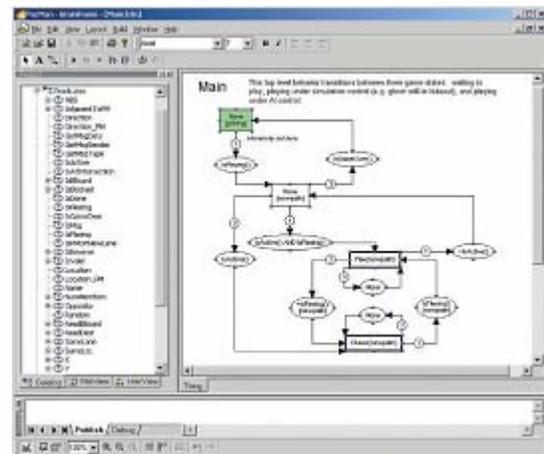


AI.implant development environment.

## Background continued

### BrainFrame

- Based on research regarding how to provide an AI toolkit by Stottler Henke Associates, Inc.
- The toolkit is designed to provide developers a way to quickly create AI elements without having to start from scratch.
- Uses a visual drag-and-drop interface to create behavioral networks
- Uses the visual representation to better expose the AI so that non-programmers can understand how existing behaviors work or even develop their own behaviors.



BrainFrame behavior editor.

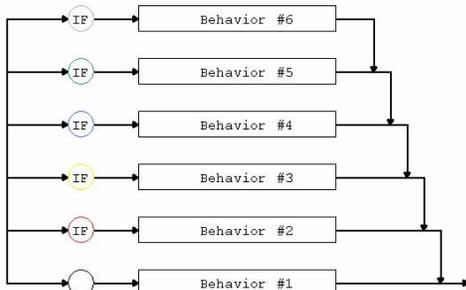
### References

Fu, D., Houlette, R., and Bascara, O. (2001) An Authoring Toolkit for Simulation Entities, In *Proceedings of IITSEC*.

Kruszewski, Paul. (2004) A game-based COTS system for simulating intelligent 3D agents.

## Research

- Determine which AI architecture would be most understandable to non-programmers.
- Study the functionality and understandability of current AI middleware on the market and decide how much control and functionality to provide users in the DASSIE menu based on the successes of current software.
- Design a menu in Microsoft's XNA Game Studio Express to provide an easy to understand and controllable menu.
- Determine the best way to integrate the menu into an existing game engine and integrate the menu with an existing game to deploy and test created DASSIE agents.



Subsumption architecture as utilized by the DASSIE menu.

## Impact

- Users without computer programming backgrounds are able to create their own AI agents for games
- Soldiers will be able to use DASSIE to rapidly deploy intelligent entities for mission rehearsals taking part in computer game environments
- Provides immediate feedback by allowing users to run a simulation using the created agents.

## Conclusions

- While the full functionality of a visual programming interface utilizing drag-and-drop boxes seemed to provide the user with greater control, it resulted in losing a representation of the architecture within the menu and ran the risk of confusing users.
- The most efficient menu for non-programmers is one that is intuitive and easy-to-learn while still providing a high degree of control.
- It is important to provide users with a visualization of the agents they are creating by deploying them directly into a gaming test bed.



DASSIE agents deployed into the test bed.

## Future Work

The first steps in continuing work on DASSIEs would be to enhance the library of conditions and behaviors from which users would be able to choose to create more responsive agents. It would also be necessary to run a study comparing the DASSIE menu for creating agents to other current methods. It would also be required to make DASSIE compatible with a variety of systems and scenarios in order to fully utilize its benefits.