



GBE provides a library of coordinated group behaviors (plays), and provides a variety of group controls for the human puckster. Behaviors in this library are different from conventional behavior scripts because they provide the human puckster with real-time controls to be used during the mission, such that he or she is able to make adjustments to the play or to members of the team when unexpected developments arise, such as surprising trainee behavior or equipment failure. Further, the same play can be executed in different terrains at different times without any need to modify either the play or the terrain.

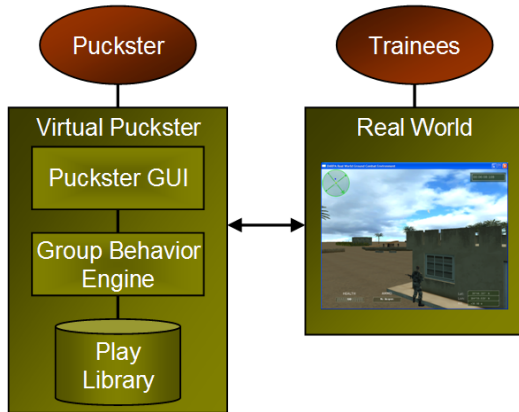


Figure 1. Virtual Puckster System

### 3. Plays and Teams

Table 1 shows an example of Virtual Puckster play. In this case, the human puckster is controlling the team leader and the rest of the team is automatically controlled by VP. The play has the team move in formation until it is fired upon. Then it switches to a React-to-Fire play where the team divides up into two sub-teams, each team searches for cover and then performs a coordinated bounding move towards the attacker, alternating supplying cover fire and moving. If the attacker is killed, the entire team reforms and resumes the team move play.

Table 1. Play Behavior and Transition

Puckster Control Inputs	Play	Team Action
Leader Position	Team move	Team Movement
Fire event		
Leader movement and fire	React to fire	Create sub-teams, Move to cover, Coordinated move and cover fire
Target killed event		
Leader position	Team move	Team movement

The team behavior is described by a set of plays. A play defines a set of tasks, their transition conditions and coordination points with other events. A play uses a

set of primitive actions (such as move and fire) which are supported by the game simulation environment. VP takes event inputs from either other characters or the human puckster to transition between states. VP can manage a set of parallel executing plays and coordination activities between them using coordination points such as one task will wait until an event generate by another task occurs.

In sum, Virtual Puckster is focused on generating realistic team behaviors to support small team training and mission rehearsal with a single human controller who is expert in the training domain, not the simulation system. It uses a sports team metaphor to generate a flexible, mixed-initiative approach that keys the actions of synthetic team members off the human's actions and allows the human to change roles to provide detailed control of individual team members when necessary. We believe Virtual Puckster will dramatically expand opportunities for embedded training and mission rehearsal in circumstances that have historically proved difficult.

### 4. References

- Dyer, J. L., Centric, J. H., Wampler, R. L. (2007). A Case for Decentralized Training. US Army Research Institute, Research Report 1866.

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