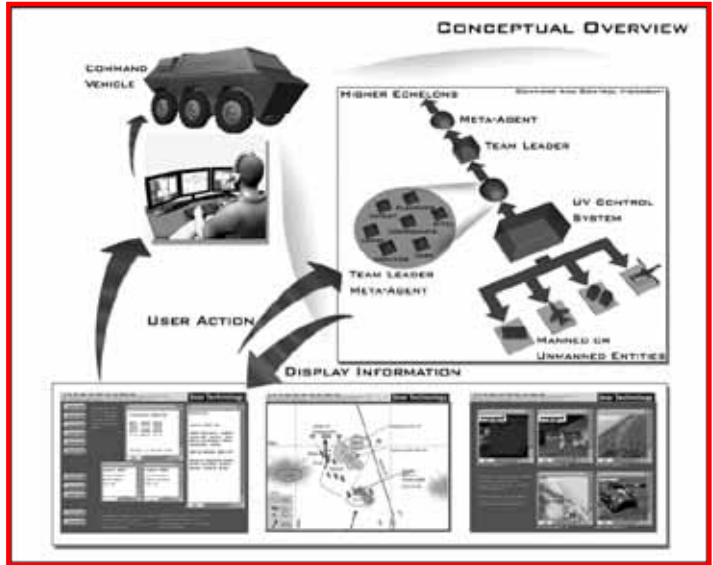


CIANC³

Cooperative Interface Agents for Networked Command, Control and Communications



Controlling robots the way we command humans

The CIANC³ project is researching and developing software technologies that allow human commanders to control robot teams the way they command human teams — in the language of the military.

CIANC³ addresses the Future Combat Systems need for:

- Command and control for higher echelons
- Cooperative actions across echelons of smaller, more specialized platforms
- Single-commander control of manned vehicles, direct fire vehicles, indirect fire, beyond-line of sight (BLOS) vehicles, sensor vehicles, unmanned aerial vehicles, and other layered sensors such as satellites
- Communication and coordination techniques that are accessible to field commanders

Multi-agent framework for control across echelons

Many intelligent agents work together within the CIANC³ framework to provide a layer of abstraction between command echelons, as well as between human controllers and robotic control systems.

Special-purpose agents responsible for the detail work of resource acquisition, tasking, and monitoring are encapsulated into a meta-level agent to facilitate internal agent communication and information sharing.

Interface agents control the flow and form of much of the information displayed to the human operator in a mixed-initiative dialog. The human operator uses direct manipulation techniques to interact with the agents. The result is an interaction so natural that the human operator is not aware of the underlying agent technology or the separation of agent roles.

CIANC³ Implementation

CIANC³ is a flexible, agent-based C3 control system based on the Soar cognitive architecture. *Soar* has resulted from extensive research into building the details of human behavior into reactive and deliberative knowledge-based systems. Systems based on *Soar*, such as TacAir-Soar for tactical air combat, enable one or two operators to control more than 50 autonomous agents simultaneously.

The CIANC³ infrastructure is built on a Soar cooperative interface agent framework, and utilizes DARPA's CoABS agent environment and the FIPA agent communication language (ACL) protocol.

SoarTech POC

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