Mission Oriented C²

Command and Control Systems as Knowledge Systems

Office of the CTO | June 2004
Point of Contact

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Agenda

- Information-overflow problem
- Information-oriented C² systems
- Mission-oriented C² systems:
  - Definition
  - Mission as a shared awareness framework
  - Characteristics of a mission-oriented C² system
- Summary
Information-Overflow Problem

- Information age leading technologies:
  - IP – Domestic expenses on communication rose up to 5 times in 30 years (OECD, 2001)
  - HTTP – Internet traffic increased $1,000,000,000$ since 1983 (ISC)
  - RFID – 14 billion (tagged & connected) physical entities expected by 2010 (Forrester Research, 2002)

- Large quantities of easily available information leads to information overflow

- The need to cope with the problem of information overflow has created a new products market – Knowledge Services
**Information-Overflow Problem**

- Knowledge is a **model of reality**, based on the information known about that reality
- The knowledge consumer uses the model to **control and manipulate reality**
  - **Consumer sites on the Internet** – gather product information, present it to the potential consumers, and help them carry out the purchase
  - **Health advise** – provides health information for a specific set of symptoms
- The knowledge service provides **context** for the information
Information-Oriented C² Systems

- Infostructure will ensure unbounded availability of information to all forces in the battlespace
- Command and control systems built today focus on the information they manage
- Information Oriented C² Systems:
  - Functionality includes data storing and maintenance of its integrity and coherence
  - Graphical interface and human engineering – all follow the data structure of the system
Information-Oriented C^2 Systems – Example

Objectives

Targets

Forces
Information-Oriented C² Systems

- Information-oriented systems are tools to manage data.
- The knowledge of how to use these tools to achieve the user’s goal – lies within the user.
Mission-Oriented C² Systems

Definition:

- A mission is the **context of a certain operational process**
- The context represents the **knowledge known about that operational process**

Mission as a knowledge service, answers the questions of:

- What **decisions** and **actions** are expected to be taken by the user
- What information should be presented in order to help achieve the mission and in **what context should this information** be presented

The mission enables the user to build a **knowledge model**:

- Reflects reality
- Means to manipulate that reality
Mission-Oriented C² Systems

Choose your mission
Mission-Oriented C² Systems

Choose your mission

Only relevant mission info
Fill in your data
Choose next phase of the mission
Mission-Oriented C² Systems

- A mission-oriented system contains the operational knowledge – as a collection of missions
- Each mission presents to the user the information needed to accomplish the mission
Mission-Oriented C² Systems

The mission as a shared awareness framework:

- A mission can be shared by many users
- A common mission picture is built jointly all through the mission’s phases and is updated constantly by the users
- Participants see their part of the common picture
- Participants can view the picture seen by the other users to better understand their view of the mission
Mission-Oriented C² Systems

List of all mission participants
A mission oriented C2 system will provide a framework in which distributed forces around the battlespace could build a common situation picture.

On its basis, the forces will manage reality in a synchronized fashion.
Mission-Oriented C² Systems

Characteristics of a mission-oriented C² system:

- Composed from a set of services:
  - Collection of services working together to satisfy the user’s needs
  - Plug & play

- Embodies operational knowledge
  - Formulization of operational knowledge
  - Uninterrupted information flow

- Infostructure-based:
  - Hiding information resources
  - Hiding information consumers
Summary

A mission oriented system contains the operational knowledge as a collection of missions:
- Each mission presents to the user whatever information is required to accomplish the mission

Accomplishing a mission is an integrated effort by a group of operational users:
- A framework in which distributed forces around the battlespace could build a common situation picture
- Allowing forces to act in a synchronized fashion in order to complete their mission

Creating self-synchronizing forces:
- Acting to complete the mission, based on shared awareness achieved between them