Notes for CCRP Panel

• Current draft presentation captures structure and topics
• Graphics to be added
Support for Dynamic Collaborative Action Teams

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Outline

• Overview of DCAT
• Role of the Resource Broker in DCAT
• Architecture of the Resource Broker
• Brokering Process
• Benefits
• Future Work
DCAT Overview

• Dynamic Collaborative Action Teams (DCAT)

• The goals of the DCAT effort are:
  – To develop a process and management framework for rapidly assembling collaborative teams.
  – To identify and incorporate business rules.
  – To measure collaborative C2 effectiveness.
DCAT Process

• The DCAT Process encompasses:
  – Identification of patterns of activity.
  – Based on known pattern, identification of roles required to field a response.
  – Marshalling of resources based on required roles.
  – Support for collaboration among team members.
  – Facilitation of team activities in fielding a response.
Resource Broker: Overview

• Based on requirements specified by a DCAT pattern, resolves needed roles to actual resources.
• Rule-based for flexibility and easy customization.
• Agent-based to support integration with advanced search and interaction frameworks.
Resource Broker: Architecture

Various Search Behaviors

Basic Search Behavior

Patterns

Role Descriptions for Pattern

Rules for Resolving Roles

Java Resource Broker Agent

Jess Reasoning Engine

JADE Agent Framework

Role Descriptions for Pattern

Rules for Resolving Roles

Patterns

Role Descriptions for Pattern

Rules for Resolving Roles

Java Resource Broker Agent

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JADE Agent Framework

Various Search Behaviors

Basic Search Behavior
Broker Agent

• The Broker Agent is entirely rule-based, allowing easy customization and reconfiguration of search behaviors.
• Behaviors can be loaded in response to a specific need, and customized based on user, need and context.
• Based on JADE/Jess agent; supports future interaction with other agent-based components supporting search capabilities (other ongoing work).
Broker Support: TTPs

• Tactics, Techniques and Procedures (TTPs) describe processes for acquiring specific types of resources.

• Located in a repository which is accessed by the broker.

• Can specify a wide range of methods of search and data access.
Brokering Process (High Level)

- DCAT Pattern provides broker with role descriptions and location of TTPs.
- Broker acquires TTPs for relevant roles and context.
- Broker implements TTPs to obtain static and operational information on candidate resources.
- Constraints resolution is applied to set of candidates.
- Candidate sets are provided to client for selection/tasking.
Benefits

• The rule based framework allows easy adaptation to different contexts or solution needs, based on selection or modification of business rules.

• The process separates the high level processes (overall search rules) from specific procedures tailored for resource access (TTPs for specific roles).

• The framework supports the integration of agent-based search technologies, to further enhance resource acquisition capabilities across enterprise boundaries.
Summary/Future Work

• The Resource Broker provides a mechanism for resolving roles to resources in a flexible and customizable way.

• We would like to explore extensions of this work, to include:
  – More advanced interactions with heterogeneous data sources.
  – The use of ontologies to reason about resources across various domains.