

Status & Challenges for Multi-Agent Coordination Technology

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Tell Me About Yourself

- **developer**
 - **researcher**
 - **manager**
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- **... and a bit about me**

Outline

- **What Is Coordination Science?**
- **Types of Coordination Technology**
 - Dependency Capture
 - Process Management
 - Exception Handling
- **Focus on**
 - coordination *between* agents (human *and* computational), not agents per se

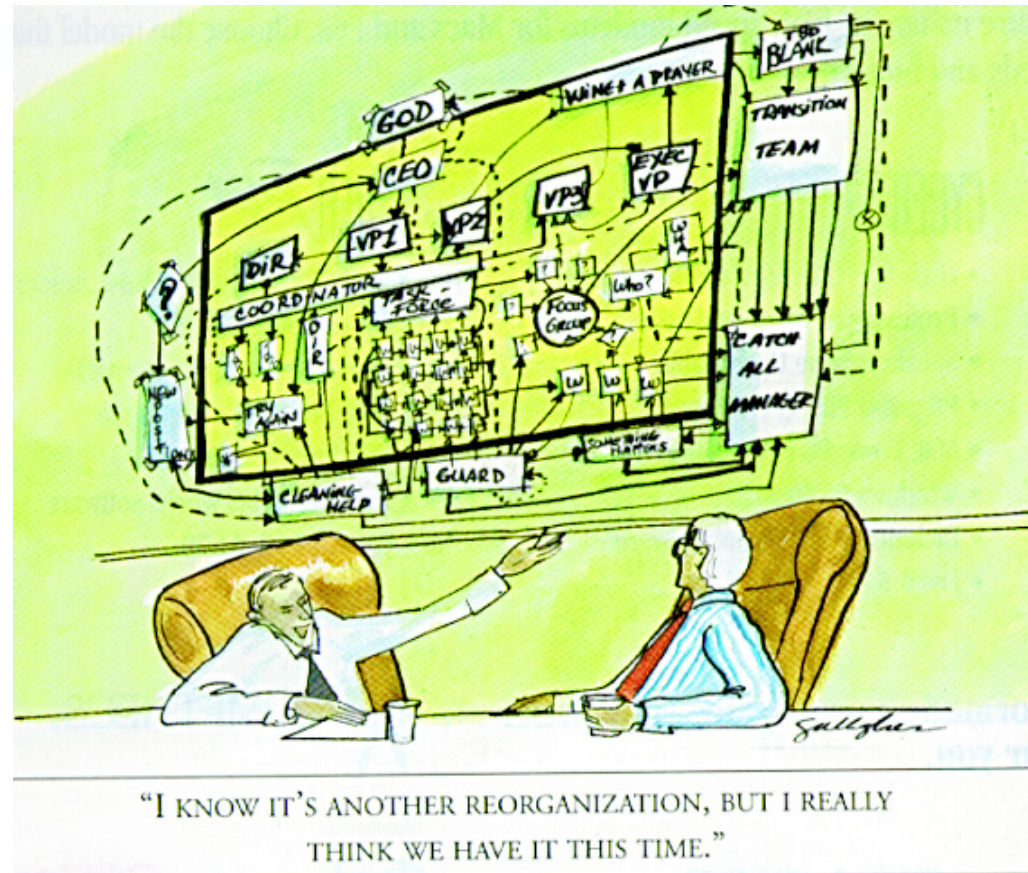
Advantages of Multi-Agent Systems

- **easier to create (naturalness)**
 - simplified knowledge acquisition & understanding
 - suitability for heterogeneous, resource bounded agents
 - suitability for inherently distributed problems
 - security/autonomy relationships and boundaries
 - potential of self-organizing systems (realizing the promise of OO systems)
- **better results**
 - increased performance
 - increased reliability
 - increased adaptability
 - reduced hardware cost
 - increased robustness (vs. “brittleness”)

Coordination is Pervasive

- *collaborative design* ripples of influence, rationale for [re-] design
- *logistics* information vs inventory in a dynamic environment
- *manufacturing* coordinating components & operations
- *office work* consistent adherence to constantly evolving processes
- *command & control* correct abstractions

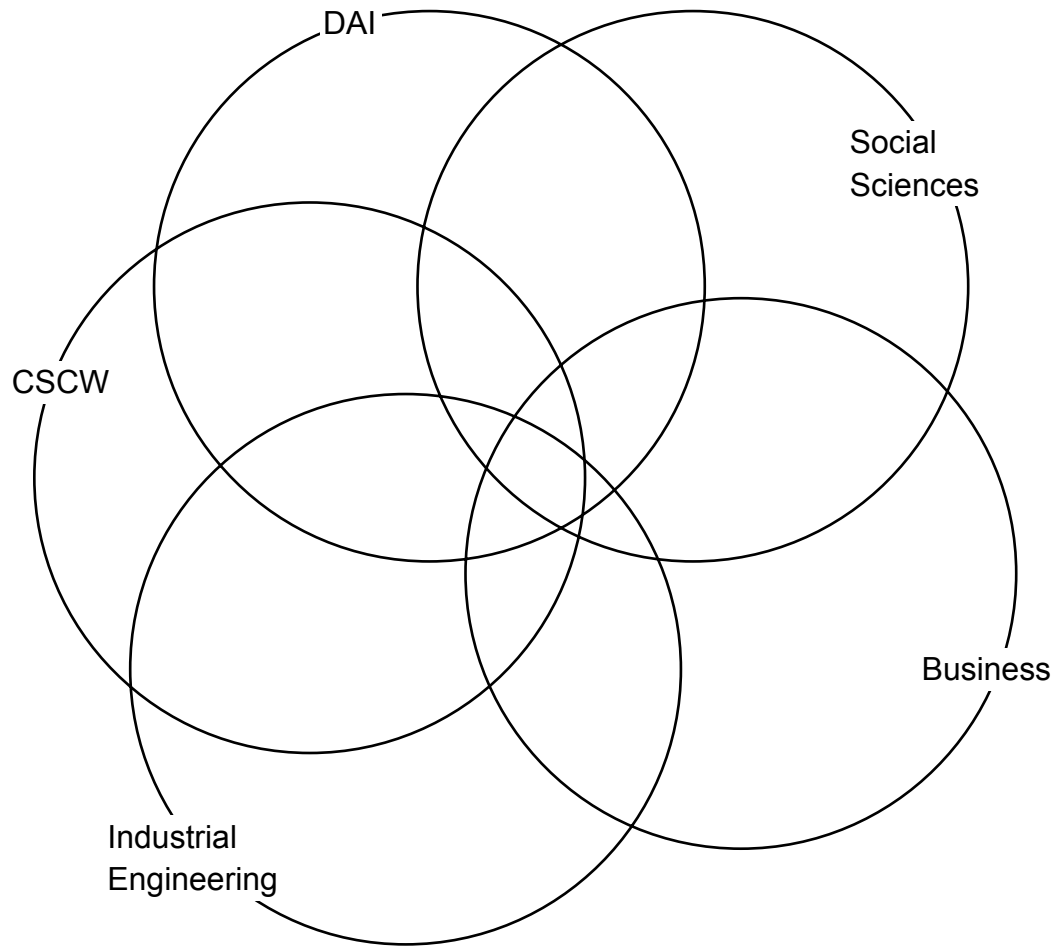
Can We Do It Better?



Coordination Science Mission

- **Reduce cost & increase ability**
- **To design and enact effective coordination**
- **In collaborative enterprises**
- **Of all types and scales (but esp. big)**
- **By understanding cross-cutting theoretical fundamentals**

A Field of Intersections



- multi-disciplinary
- cross-cutting
- homeless

A Definition of Coordination

Co-Ordination: What Do I Do Now?

The management of inter-dependent activities.
(Tom Malone, MIT)

Co-Operation

Access to a shared artifact.

Communication

Information exchange in a common language.

Types of Coordination Technology

Co-ordination		
Dependency Capture	Process Management	Exception Handling
Co-operation		
Communication		

Evaluation, Please

- **Did the tutorial cover the material you were interested in?**
- **Was the presentation clear and well-organized?**