

Mission Planning and Decision Making Theme Threads

Our vision:

The successful adoption and deployment of machine autonomy in the Battlespace is dependent on growth in our ability to engineer systems that support and integrate with human visualisation and decision-making processes

Aim

To develop key technologies needed for automated mission planning and re-planning in response to changing situations.

Approach

We are using four threads: Awareness, understanding, deliberation and Teamwork: To address the system challenges identified below

Outcomes

16 Completed Research Items: Evaluation of some underway in real military systems
8 Current research items, 10 new identified.
5 peer reviewed published papers.

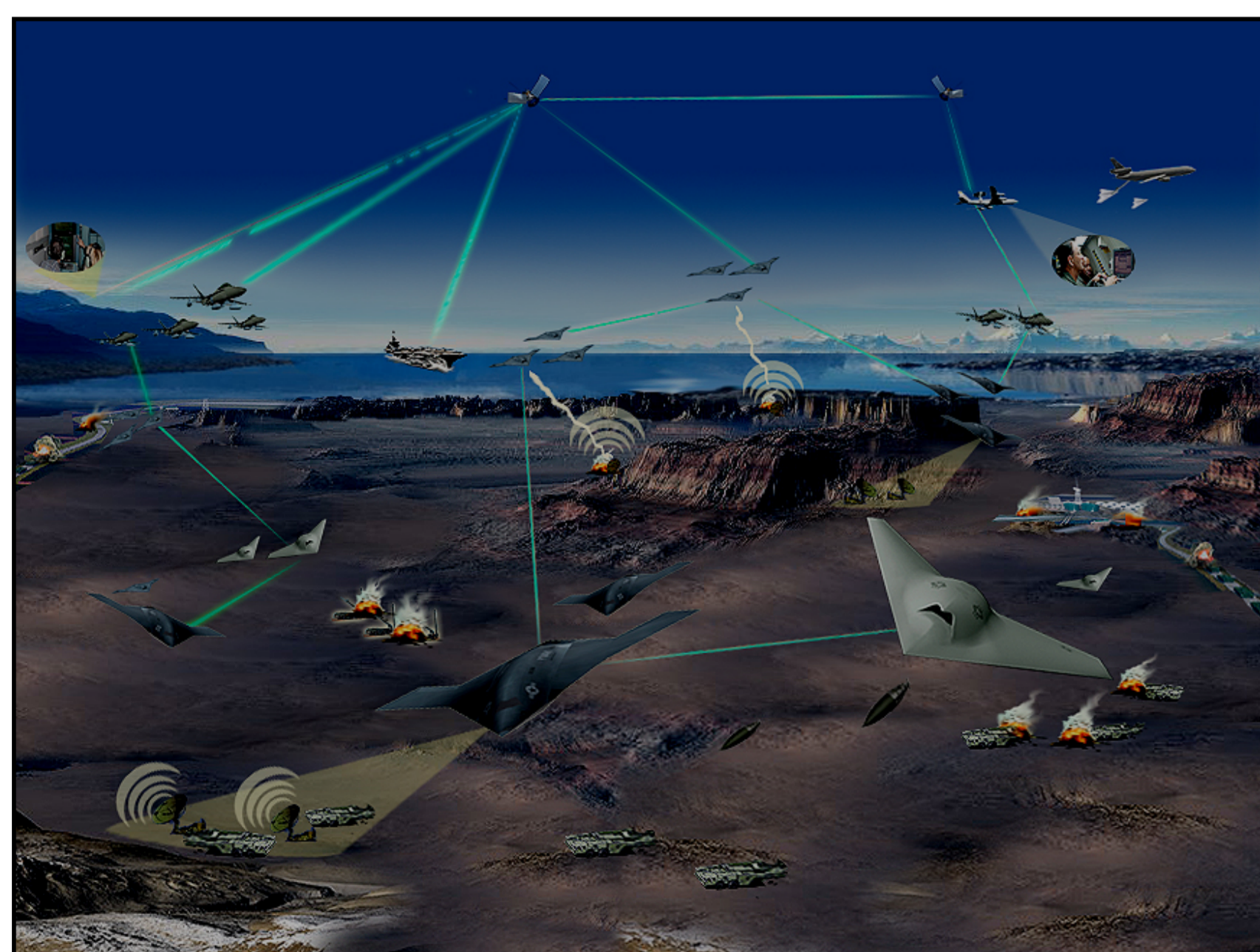
Mission Management (Deliberation Thread)

Command and planning of military operations:

- Is a complex management problem that creates emergent capabilities from the available assets
- It is against an abstract view of the operational context
- Consequently it is undertaken at the goal or task level.
- Requires mechanisms to bound the behaviour of the deployed system.

Local leadership:

- Is responsible for small numbers of defined assets
- Has real-time high fidelity view of local situation
- Refines the planned goals and tasks into required behaviours in light of the local situation and available assets.
- Constrains the behaviour of local assets.



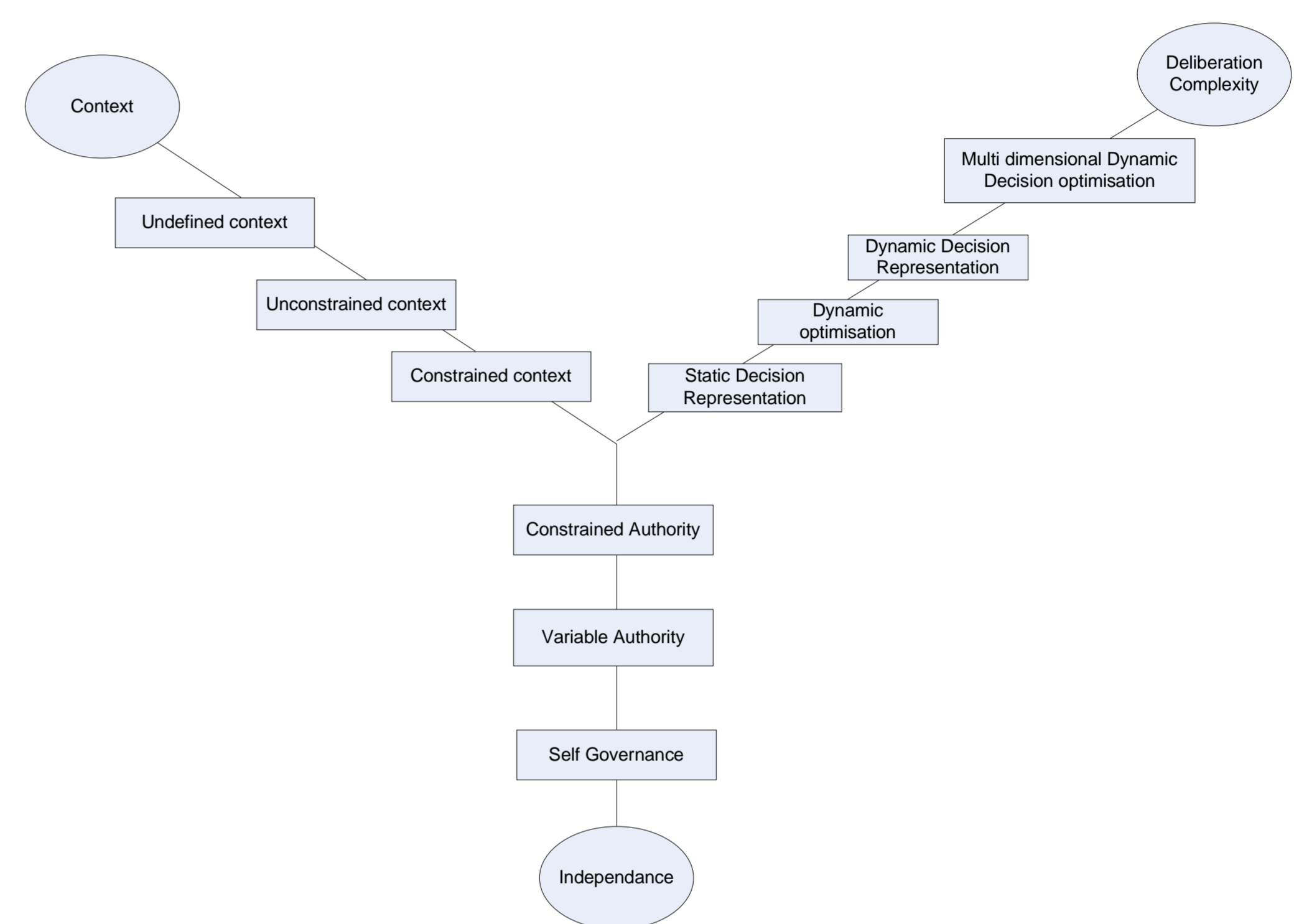
Machine Awareness, Knowledge and World Modelling (Awareness & Understanding Threads)

System Level

- System level awareness: the Conceptual model of itself in context
- Ability to monitor itself against the mission.
 - recognising the need to evolve system capability to meet the changing deployment situation.

Individual Deliberative Agents

- Machine Awareness: Its nature and dynamic maintenance.
- Delivering machine understanding: the ability to comply with RoE.
- Creation (Learning) and dissemination of Knowledge.



Human/Machine Relationships (Teamwork Thread)

Command of Autonomous Systems

- Command needs to understand evolving system capability.
- They requires mechanisms for remote supervision of local behaviour against allocated goals
- Decision Authority: Delegation (down) and justification (up) mechanisms.

Working together

- Collaboration, co-operation and co-ordination?
- Enabling Trust: the two way relationship
- Common Team Understanding across humans/machines
- We require to actively maintain Human operational effectiveness

