



Information, Decision, & Complex Networks AFOSR/RTC Overview

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Report Documentation Page

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Information Decision and Complex Networks AFOSR/RTC

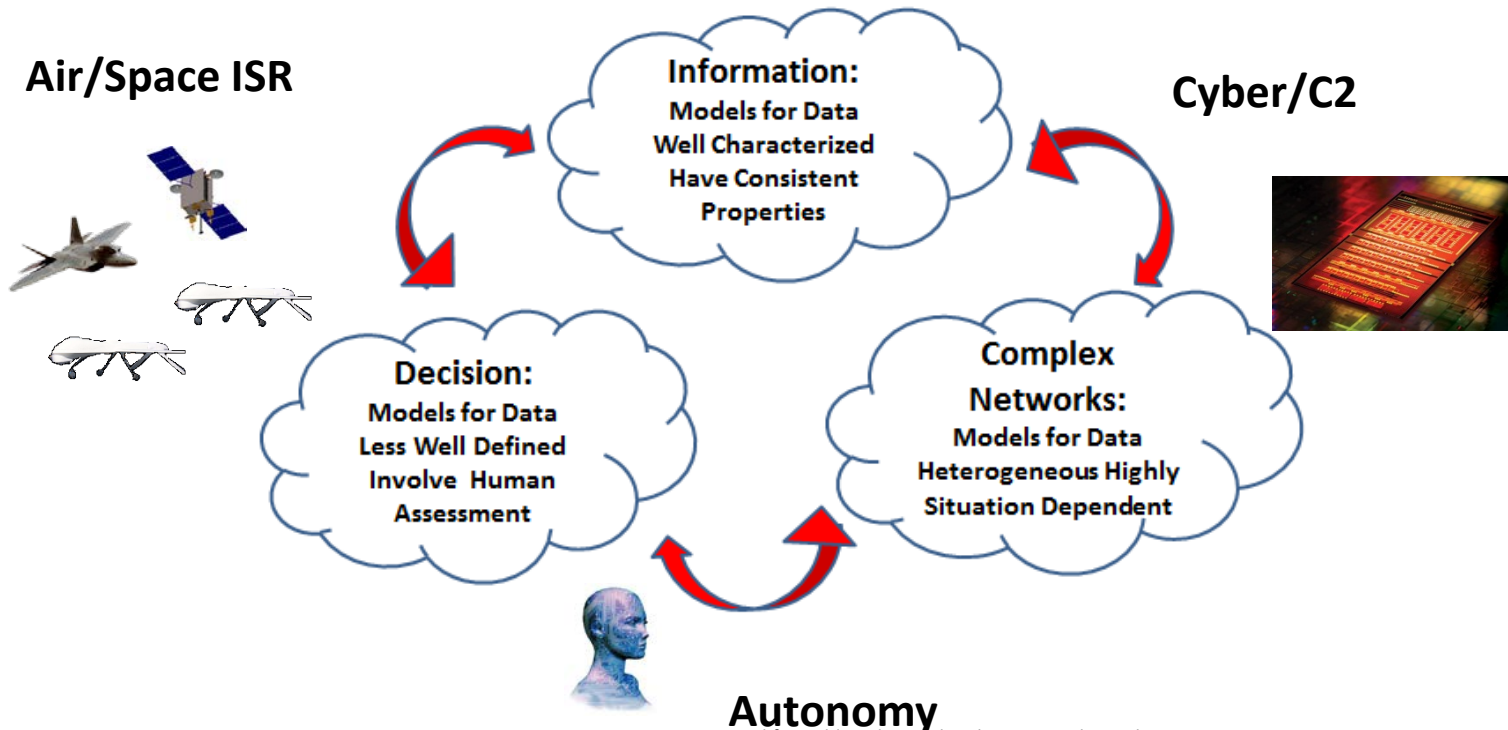


Supported Key Air Force Technology Areas Include: Air and Space Situational Awareness/ISR, Autonomy, Cyber/C2

Technical Questions Addressed:

How well modeled and structured is data in the problem?

How inter-dependent, heterogeneous, and dynamic is the problem?

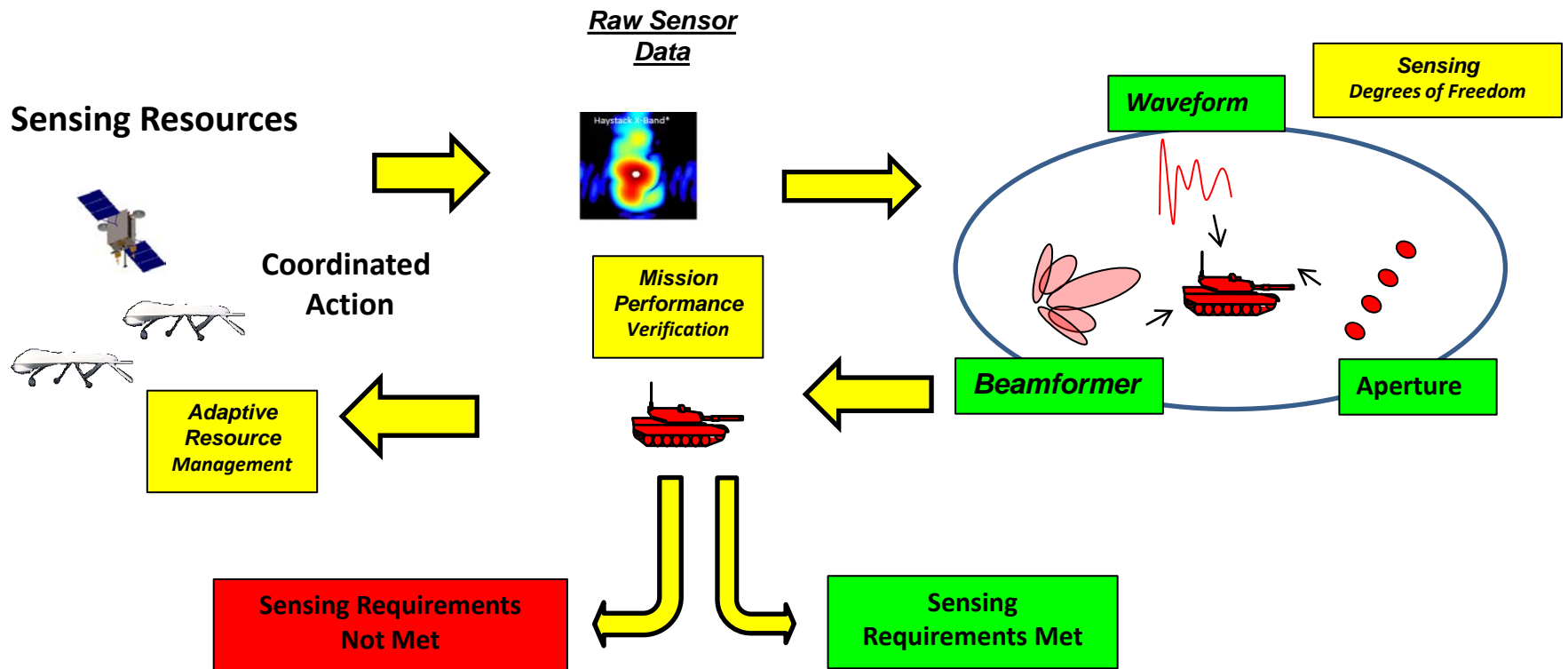




AFOSR/RTC: Information

Information: Problem has strong models such as from EM propagation and data characterized accordingly

Example AF Problem: Sensor Resource Management Air and Space ISR Situational Awareness

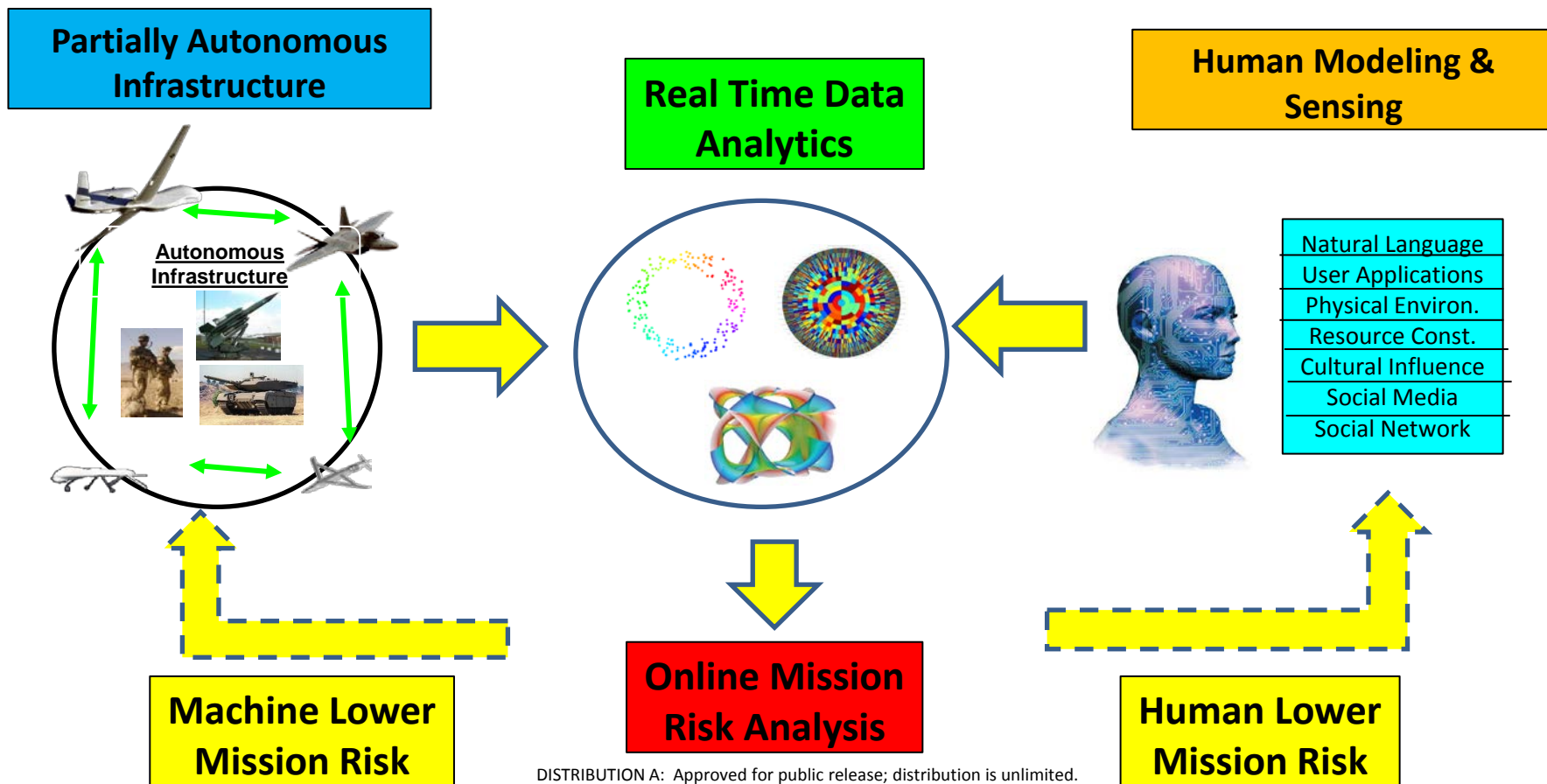




AFOSR/RTC: Decision

Decision: Problems have less well defined model – requires human intervention/analysis

Example Problem: Human/Machine Behavior Modeling and Risk Characterization – (Autonomy)

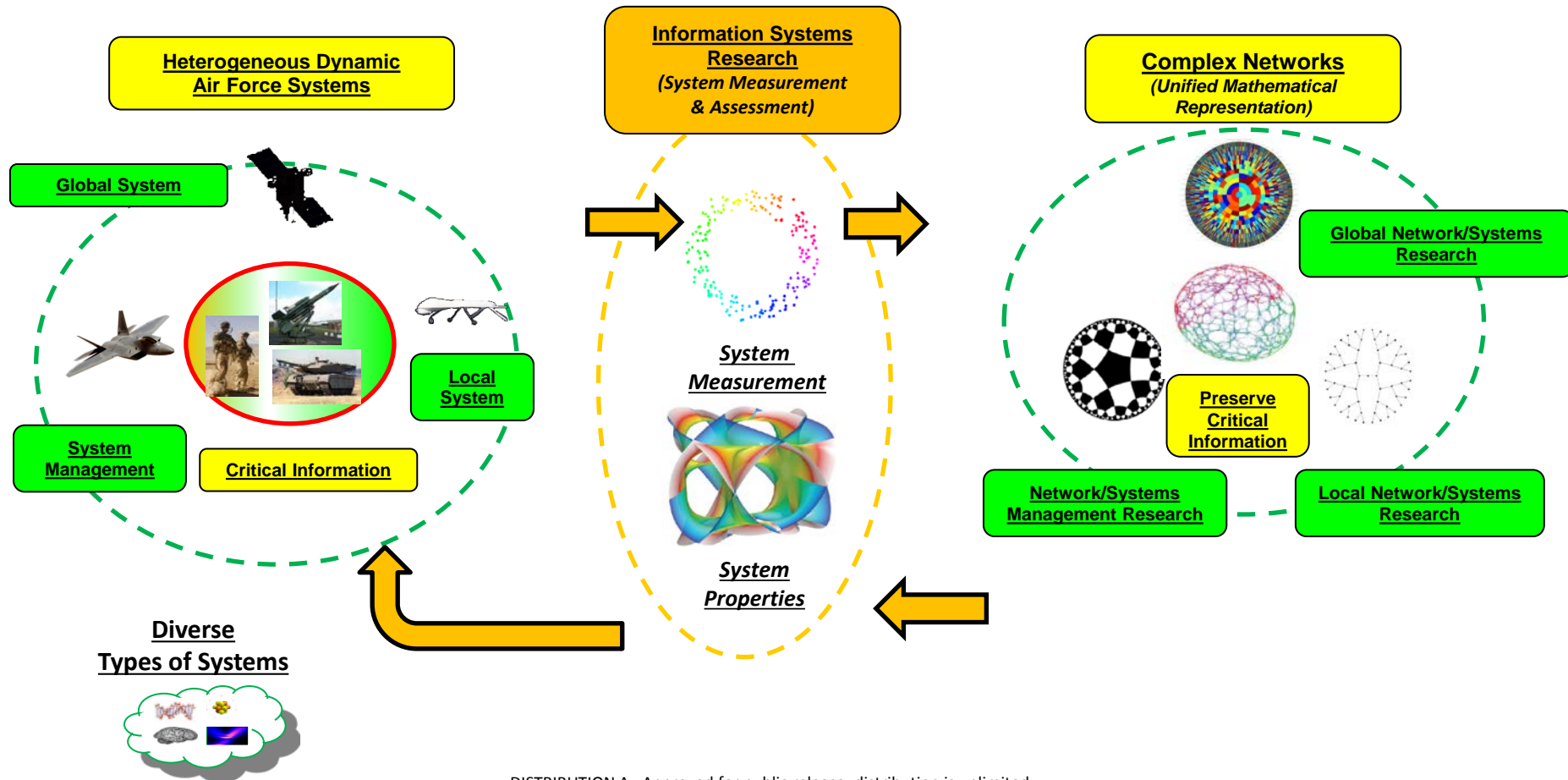




AFOSR/RTC: Complex Networks



Complex Networks uses measured information to assure, manage, predict, and design distributed networks, systems, and architectures





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Complex Networks/Foundations of Information Systems – Robert Bonneau

- mathematically represent networks of all kinds including communications and computational at all levels including content, protocol, and architecture/verify validate critical infrastructure performance

Computational and Machine Intelligence/Mathematical Computational Cognition – Jay Myung

- objective is to maximize the ability of machines to conduct higher level cognitive activities with quantifiable risk and accurate models of human decision makers

Dynamic Data Driven Application Systems – Frederica Darema

- enables analysis of the interplay between physical systems such as fluid dynamical systems and software systems and architectures as in the case of aircraft flight systems

Information Operations and Security – Robert Herklotz

- looks at fundamental issues for assessing systems in terms of secure operations and mission assurance



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Science of Information Computation and Fusion – Tristan Nguyen

- enables the ability to collect, disseminate and integrate information in such a way as to mathematically characterize and assess the most appropriate information for a range of mission critical tasks

Sensing Surveillance and Navigation – Tristan Nguyen

- develops algorithms to collect and decompose critical sensing information and enables techniques that interface between the physical domains such as electromagnetics and methods in navigation and geo-location

Systems and Software – Kathleen Kaplan

- assesses these systems from a verification and validation standpoint to guarantee operations under a variety resource constraints

Trust and Influence - Joe Lyons

- seeks to model and measure the way collections of individuals make decisions and are influenced both in small groups and culturally