International Technology Alliance
In Network & Information Sciences

The Holistan Scenario

A Futuristic Scenario for Coalition Operations

Introduction

- International Technology Alliance (ITA) is a collaborative partnership between
  - US Army Research Laboratories
  - UK Ministry of Defense
  - a consortium of industries and universities in US and UK
- Research issue in four technical areas
  - Network Theory
  - Security Across a System of Systems
  - Sensor Information Processing & Delivery and
  - Distributed Coalition Planning & Decision Making

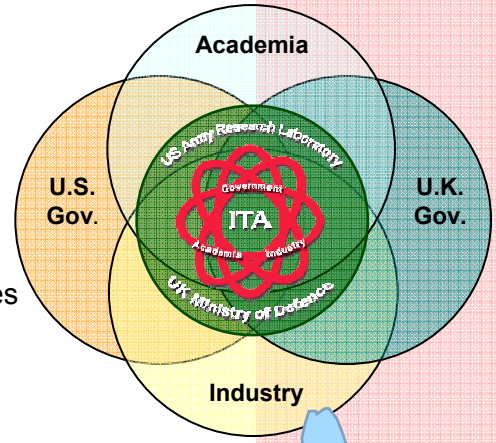
The ITA Vision

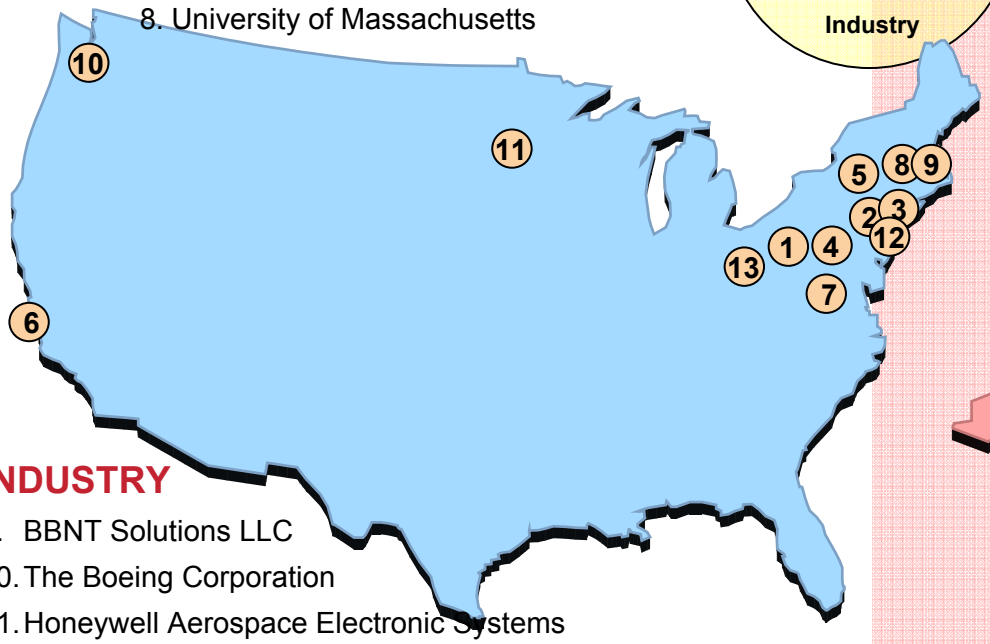
- Creating an international collaborative research culture
  - Academia, Industry, Government in US and UK
  - Innovative multidisciplinary approaches
- Developing ground-breaking fundamental science
  - Empower innovators
  - Develop understanding of the root cause of military technical challenges
- Making an impact on coalition military effectiveness
  - Focus on key problems with a critical mass of researchers
  - Gain synergies from UK/US alignment
  - Innovative transition model

ITA Team Overview

ACADEMIA

1. Carnegie Mellon University
2. City University of New York
3. Columbia University
4. Pennsylvania State University
5. Rensselaer Polytechnic Institute
6. University of California Los Angeles
7. University of Maryland
8. University of Massachusetts



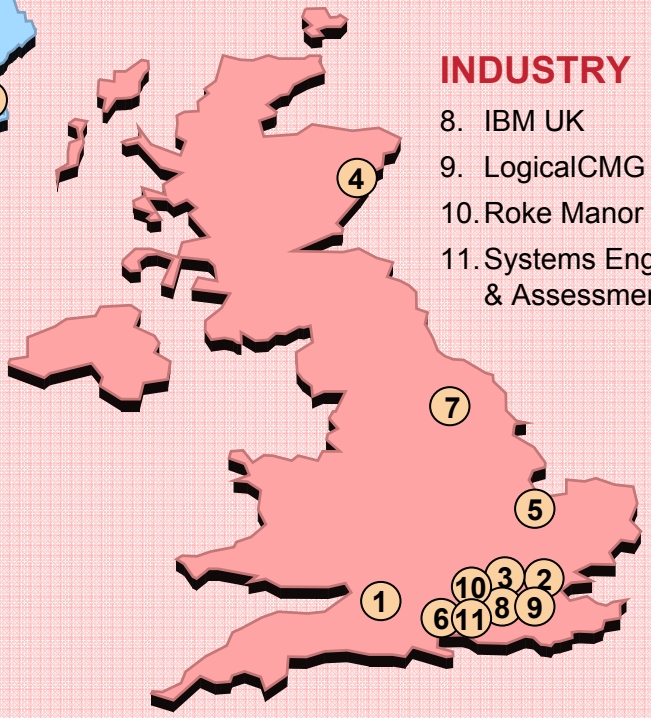


INDUSTRY

9. BBNT Solutions LLC
10. The Boeing Corporation
11. Honeywell Aerospace Electronic Systems
12. IBM Research
13. Klein Associates

ACADEMIA

1. Cranfield University, Royal Military College of Science, Shrivenham
2. Imperial College, London
3. Royal Holloway University of London
4. University of Aberdeen
5. University of Cambridge
6. University of Southampton
7. University of York



INDUSTRY

8. IBM UK
9. LogicalCMG
10. Roke Manor Research Ltd.
11. Systems Engineering & Assessment Ltd.

Technical Areas

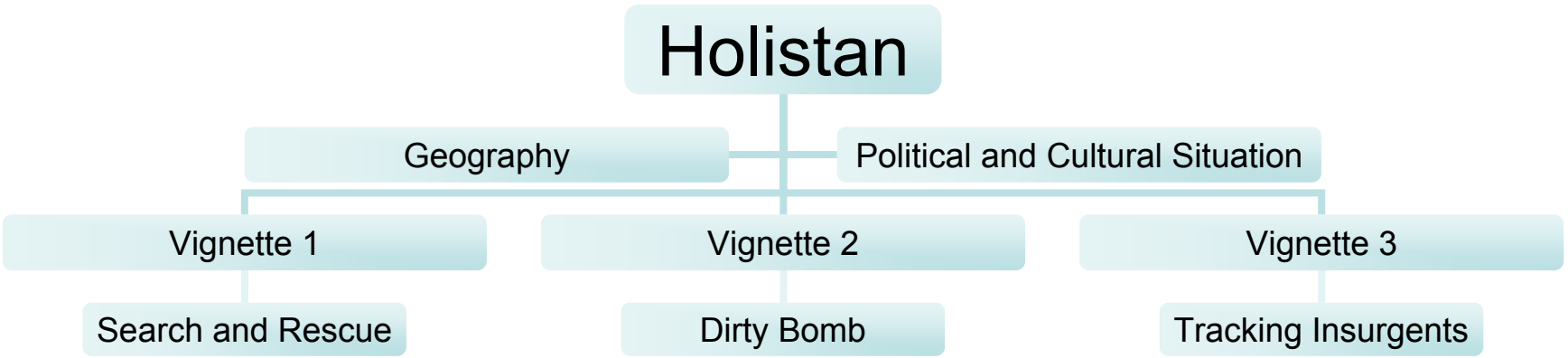
- Network Theory
  - Enable the formation/operation of ad hoc coalition teams
- Security Across a System of Systems
  - Fundamental underpinnings for adaptive networking and security to support complex system-of-systems
- Sensor Information Processing and Delivery
  - Sensor information processing/delivery from distributed sensor networks to support enhanced decision-making
- Distributed Coalition Planning and Decision Making
  - Understand and support complex human, social, and technical interactions in distributed coalition teams

Goal: *Enhancing distributed, secure, and flexible decision-making to improve coalition operations*

Why Create a New Scenario

- Provide a background for telling stories
  - How each of our projects will improve coalitions
  - How our projects work together
- Provide a range of possibilities
  - Both conflict and humanitarian actions
  - A wide range of players
    - with a variety of capabilities
- Broader than Binni
  - Avoid implicit assumptions
  - Not clearly good-guys versus bad-guys

The Structure of the Scenario



- Each Vignette has elements that could impact the four technical areas
- Enough details to start but not enough to constrain

Theatre of Operations

- Holistan is somewhere in the middle-east
  - Former colony
  - Unstable political situation
    - Segments of population
    - Disputes with neighbors
    - Weapons of mass destruction
  - Coalition force
    - Protecting installations
  - Varied terrain
    - Coast, mountain and plains

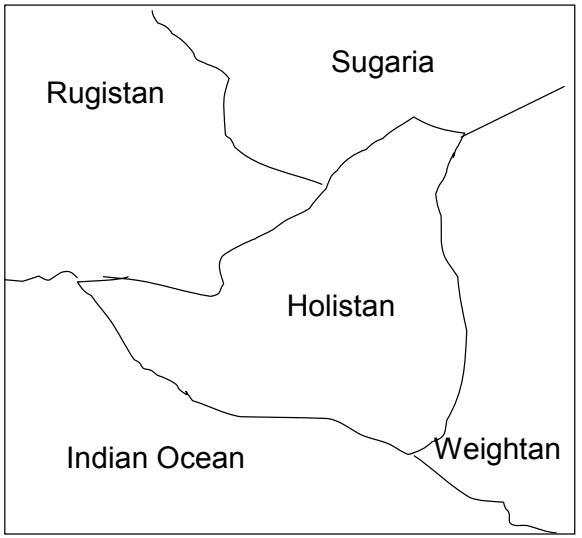


Figure 1

Vignette 1: Search and Rescue

- Helicopter crash
  - Humanitarian mission with potential conflict
    - Site of cultural significance
    - Potential for interference
- Rapid deployment of ‘infrastructure’
  - Network assets
  - Security and trust
  - Changes in sensor requirements
- Cultural issues

Vignette 2: Dirty Bomb

- Misuse of nuclear material
  - Terrorism on a large scale
  - HUMINT source
- Four phases of the operation
  - Deploy new assets
  - Plan intervention
  - Capture insurgents and
  - Recover in a safe manner

Vignette 3: Tracking Insurgents

- Longer term deployment
  - Sensors from multiple parties
  - Human intelligence agents
  - Collection and processing of information
  - Potential for tampering
- Difficult to track those who are trying to hide
- Local forces are the public face

Further Developments

- Develop and change as needed
  - As storyboards are created we learn
  - At least one large scale humanitarian intervention Vignette
    - Incorporate a mixture of parties
- Cross cutting Themes

  Theme 1 - Information Flows

  Theme 2 - Dynamic Mission-Focused Communities of Interest

  Theme 3 - Trust and Risk – Enabling Risk-Based Decisions

Information sharing is a key component of Network Centric Operations: providing both the right information to the right users at the right time and also the means for users to share and use information. For the soldier on the ground this is a hard problem since he/she is often dependent upon ad-hoc mobile communications networks and will be part of a coalition force with national differences in equipment, security policies and culture.

A community of interest is a smaller subgroup of a coalition force which is formed to undertake a mission. To be effective such subgroups require networks to provide robust operation, small world properties, security properties, bandwidth and efficiency. There are a range of issues to be addressed.

The visions for Network Enabled Capability and Network Centric Warfare embrace the concept of providing more flexible access to information in response to operational needs. To do this requires a shift in security policy to risk-based decisions. Trust is an important factor in evaluating risk. There is a range of issues to be addressed, from conceptual concerns to system design and usability issues.

Conclusion

- “It’s hard to make predictions, especially about the future”
  - Attributed to Yogi Berra
- Need to have a flexible framework we can develop from
  - We have a starting point

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- Gavin Lock has subsequently left the team