SAND2007-3348P

An Ethnographic Study of Culture and Collaborative Technology in the Intelligence Community

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May 2007

Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

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Background

- Intelligence Community Innovation Center (ITIC) Knowledge Discovery and Dissemination Program
  - Chartered to develop tools to enhance collaboration across agencies/organizations in the Intelligence Community
  - BUT tools aren't adopted as quickly as we think they should be
  - We want to find out what inhibits collaboration within the Intelligence Community

Research Question

What does collaboration mean in the analytic environment, and what is the role of technology in supporting collaboration?

Hypothesis

- Organizational values attached to the production of work products and associated definitions of analysts' identity in the workplace will drive analysts' decisions to (not) engage in collaborative behavior.
    - Tools will facilitate behavior deemed desirable by other criteria, but will not generate the desire.

Approach

- Review literature on process of intelligence analysis
- Obtain human subjects approval for field research and develop appropriate protocols
- Conduct field observations and collect interview data at three DoD sites

‘Results – Literature Review

- Three theoretical models of why analysts fail to forecast the ‘forecast-able’
  - Analytic problems exist at the level of the individual
    - Problems are cognitive (innate)
      - Mental models, suppositions, lenses, mindsets, confirmatory bias, mirror-imaging, group think..
      - Fixes = training to recognize and overcome biases
    - Problems are methodological (taught)
      - Craft transmitted through OJT, mentorship, etc
      - Fixes = changing the business practices
  - Problems are at the institutional level
    - The structure of the institution defines the collective ability to process / analyze information
      - Fixes = changing the institutional structure

Results – Literature Review

US model of intelligence production is a structural one

- Post - 9/11 changes were structural
  - Creation of DNI
  - Challenge of barrier between foreign and domestic, national and state, local intel
  - Enhanced collaboration = improved information sharing, not changes in use of information
- Failure is clearly defined, success less so
  - Management is driven by constraints on behavior (negative incentives)
    - Security procedures, classification protocols, budget and resource limitations
    - Adherence to rules and procedures and control over assets (information, physical) is highly valued
- Tension between national, institutional, individual interests
  - Intelligence as consequential knowledge
    - National = timeliness, efficiency and accuracy of contribution to decision-making
    - Institutional = stability, survivability, control over resources
    - Individual = production of product leading to career advancement

Results - Fieldwork

- An analytic environment at Washington-based agency (2 sites)
  - Ongoing strategic analysis
  - Relatively stable groups of individuals
  - Embedded in large organization, part of core intelligence community
  - Observation targets are (potential) users of collaborative tools
    - Tools-in-use are fielded… in post-development stage
- A demonstration at a California military facility of a tool designed for cross-INT data integration
  - Tactical intelligence problems
  - Transient group of individuals/companies
  - Development and use environment is military
  - Observation targets are tool developers
    - Tools-in-use are in development/pre-deployment stage

Results - Fieldwork

- Research design gave insight into full tool development and deployment process
- Full cooperation from management and participants at all sites

THANK YOU!!

Results – Fieldwork
Intelligence Agency One

- Worked with roughly 50 people in three offices and five divisions
- 30 Interviews
- 40 hours or so of formal observation; plenty more informal observation
- Collection of documents, reports, slides, etc. related to the worksite, work environment

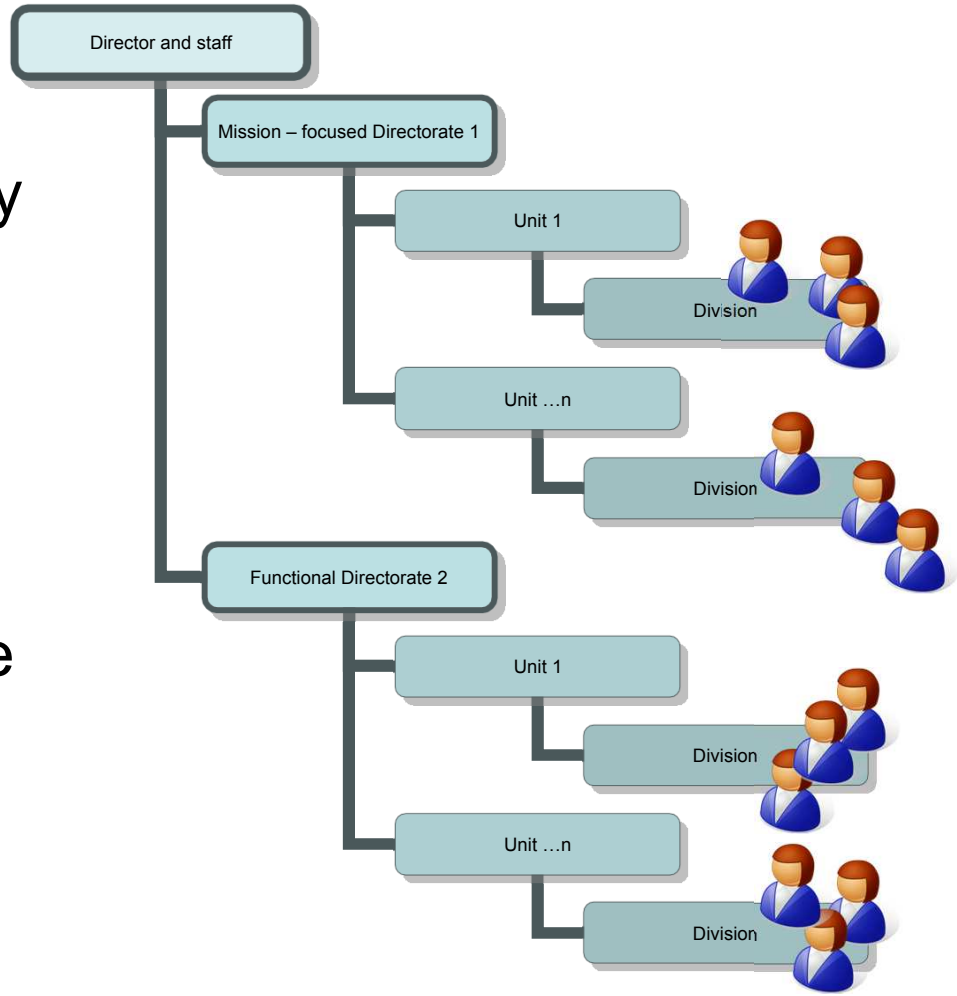
Results – Fieldwork
Intelligence Agency One

- Within the organization, how do I 'know'?
  - What falls into my purview - and what doesn't?
  - How do I parse the flow of information into categories?
  - How does information come to me? How do I share it?
  - What are the rhythms of my workweek?
  - What kind of products do I create? What format are they in? (quantitative, narrative, graphical)
  - Who has authority over my work?
  - What are the tools I use?
  - What makes for a good analyst? What would my worst work nightmare be? What would I never consider doing?

Results – Fieldwork

Intelligence Agency One

- All-source intelligence agency embedded in national security community
- Formal, recognized hierarchical organizational structure
- Open physical workspace (cubicles, not offices)
- Analysts (in Divisions) have AORs or ‘accounts’
  - Primary locus of identity for analysts is with their Division



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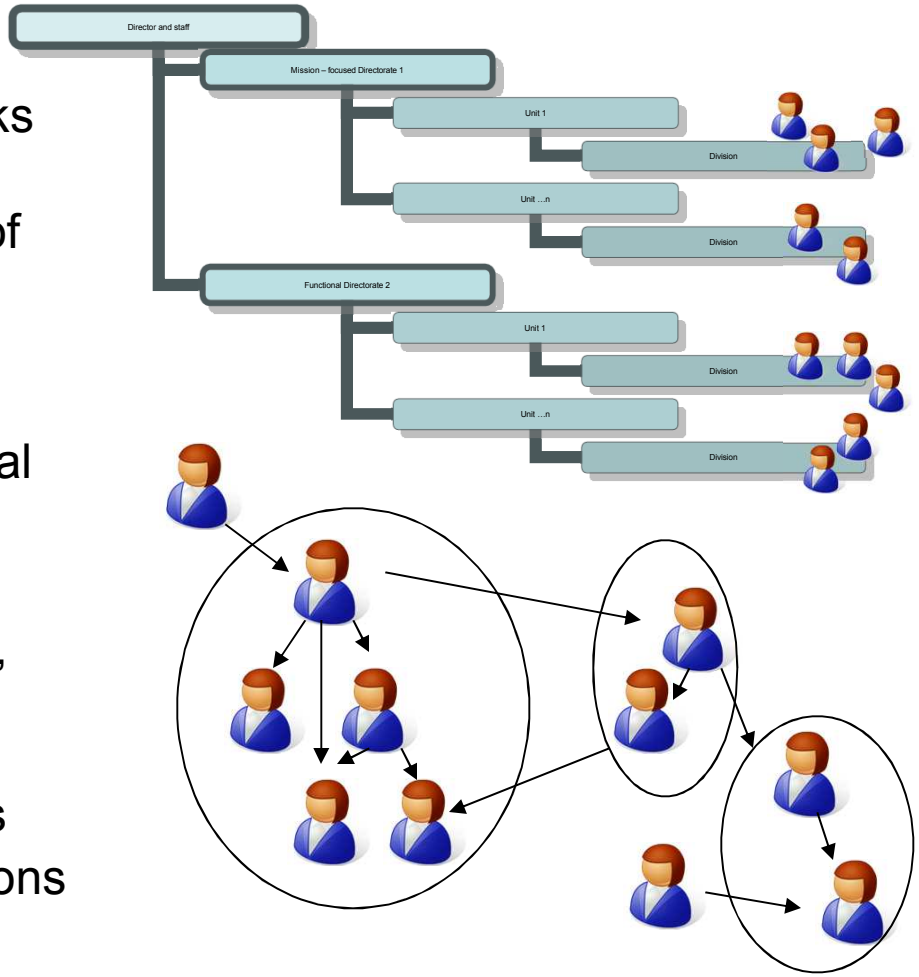
Results – Fieldwork
Intelligence Agency One

- Formal hierarchy…
  - Allows mapping of identified tasks onto large, diverse workforce
  - Provides a mechanism for flow of resources and decisions
  - Identifies a career path for individuals
  - Provides a locus of organizational identity for individual analysts
- Informal or prestige hierarchy….
  - Represents distribution of social, political and intellectual capital within the organization
  - Provides role models for novices
  - Creates links to other organizations



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Results – Fieldwork
Intelligence Agency One

- Explanations by analysts for why people 'don't collaborate'
  - Innate psychology
    - Meyers-Briggs tests indicate that most people in the intelligence community are introverts.
  - Ownership over subject matter
    - Expertise combined with a sense of personal responsibility for accuracy and reliability leads to desire for control
  - Formal reward system
    - Rewards privilege individual achievement over group efforts
  - Organizational knowledge
    - Difficulty of knowing who knows what in the intel community writ large, and if and how their work is relevant makes it hard to know with whom to collaborate
  - Turf wars
    - Institutional rivalries, a consequence of bureaucracy, classification rules, and systems of punishment for transgressions, mitigate against cross-organizational collaborations

Intelligence Agency One

Nested Identity

Results – Fieldwork
Intelligence Agency One

- Recent initiatives to improve intelligence analysis
  - Changes made in workspace configuration
    - An open workspace designed for ad hoc teams
  - New approaches to work cross analysis areas that have been traditionally separate, and treat tool development from a mission not a support function
    - Rapid Knowledge team
      - Develop computational modeling environments to simulate interactions among physical systems in specific geographic regions
    - Nonproliferation Assessments Division
      - Focuses on different networks that support proliferation around the world and across technological capabilities

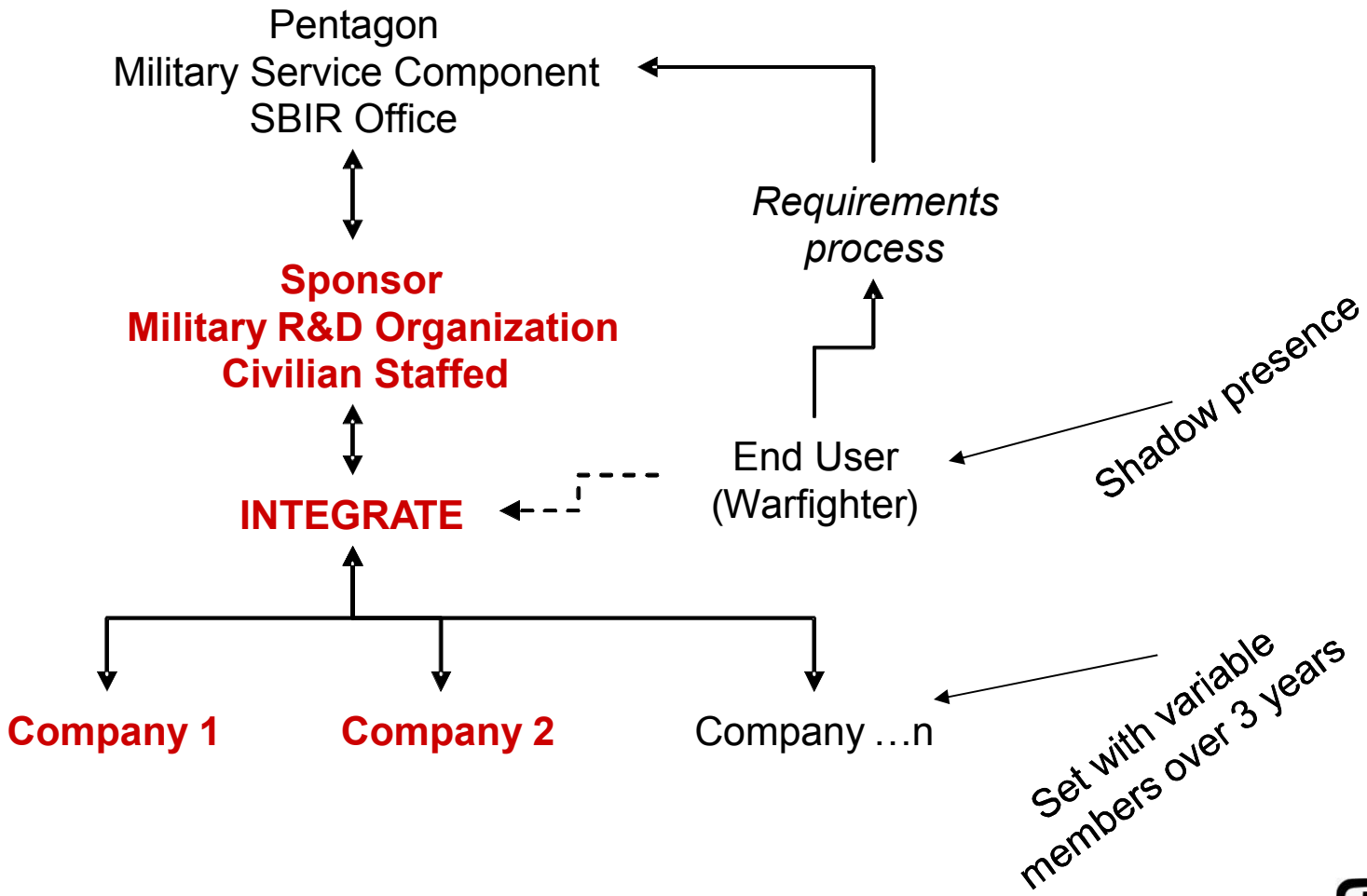
Results – Fieldwork
Intelligence Agency Two

- Worked with roughly 15 people from five companies and the SBIR military sponsor
- 5 Interviews
- 40 + hours of observation
- Collection of documents, reports, slides, etc. related to the product and participating developers/companies

Results – Fieldwork

Intelligence Agency Two

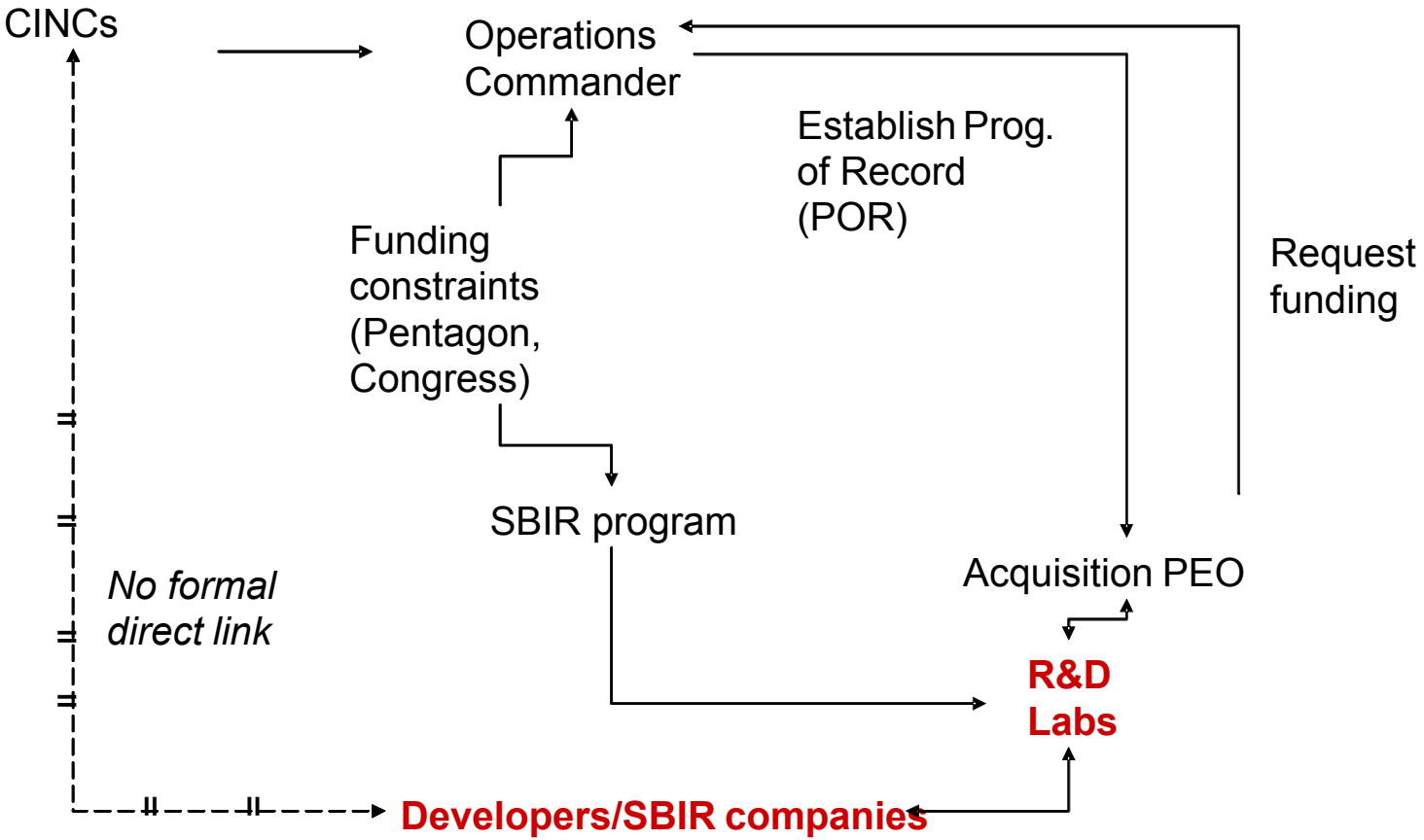
The Players



Results – Fieldwork

Intelligence Agency Two

The Requirements Process



Results – Fieldwork
Intelligence Agency Two

- Key features of new technology
  - Analyst can task different types of sensors which are on a single platform and receive data from them from a single point
  - Data is automatically cross-verified, reducing uncertainty
- Environmental changes required
  - From one sensor type-one platform to many sensor types-one platform
  - Change in institutional location of platform tasker
  - Reduction in training necessary to interpret certain specialized signals

Results – Fieldwork

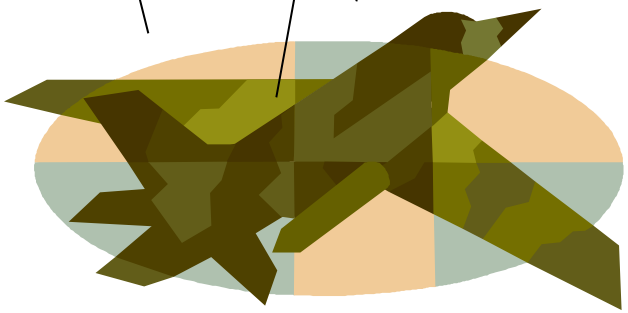
Intelligence Agency Two

The Technology

IMINT

COMINT

ELINT



MultiINT platform

INTEGRATE's technology

Analyst can cross-verify data s/he receives

analyst

Required:
- Sensors
- Sensor interface to INTEGRATE
- Data pipe (reliable, big enough)
- INTEGRATE (two-way comms link)

Results – Fieldwork
Intelligence Agency Two

- Consequences for collaboration
  - Collaboration among development team
    - No issues – worked well
  - Collaboration in deployment environment
    - Changes will be required in locus of organizational control over sensors, platforms
      - Sensors, platforms, and knowledge produced are not just a collection of hardware and software – *they are valuable organizational resources which translate into institutional power*
        - » Once resources are relinquished, it is (perceived to be) very difficult to get them back
    - Reduction in data uncertainty can affect tempo of operations through entire operation
      - Will require changes in CONOPS

Analysis

- Collaboration in IA-1 (strategic intelligence) is one of a set of cooperative communicative events
  - Exchange information
    - Necessary but not sufficient for collaboration
  - Coordination
    - Checking analyses against the expertise of others
    - Is a demonstration of recognition of expertise and respect
  - Collaboration
    - Yields a product in which all participants have a sense of ownership and responsibility
    - Key factor is TRUST among participants

Enhanced collaboration will NOT be addressed through structural fixes OR the introduction of new tools

Analysis

- Introduction of a tool designed to enhance collaboration in IA-2 (tactical intelligence)
  - Will require changes in ownership of resources
  - Will change the character of the information produced
    - reduce uncertainty, speed up the flow rate
      - Will require changes in CONOPS

These environmental issues were NOT considered as part of the development process… the tool was defined as a hardware-software set

The demonstration would show if the tool would 'work'…. It would not show if the tool would be used

Conclusion

We proved our hypothesis

- *Hypothesis*
  - Organizational values attached to the production of work products and associated definitions of analysts' identity in the workplace will drive analysts' decisions to (not) engage in collaborative behavior.
    - Tools will facilitate behavior deemed desirable by other criteria, but will not generate the desire.

Conclusion

- ***Key Issues***
- **Nested identities** generate competing agendas for individuals that are situationally resolved… often in favor of non-collaborative behavior
- The role **control over resources** plays as a marker of power can mitigate against relinquishing those resources to further collaborative behavior
- **Existing business practices (CONOPS)** and the punishments and rewards for following them may work against collaborative behavior

Conclusion

Four

- Three theoretical models of why analysts fail to forecast the 'forecast-able'
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    - Problems are methodological (taught)
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      - Fixes = changing the business practices
  - Problems are at the institutional level
    - The structure of the institution defines the collective ability to process / analyze information
      - Fixes = changing the institutional structure
    - Institutional (cultural) values play a large role in defining (dis)incentives for individuals to collaborate