

# Team Decision Making in Time-Sensitive Environments

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# Problem

- **Greater complexity, increased reliance on teams**
- **Human decision making is often the 'long pole in the tent'**



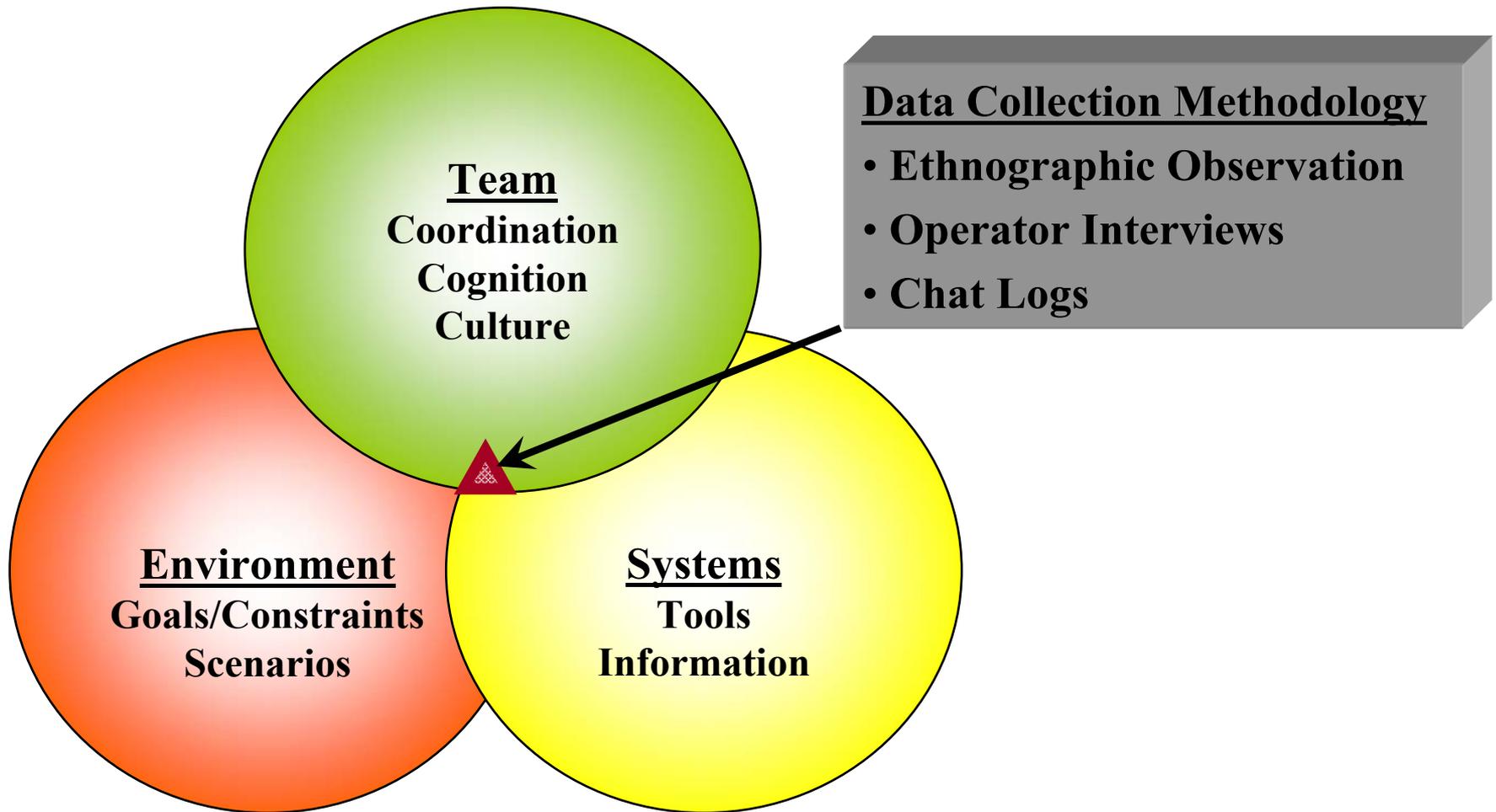
# Impact

**“Some futurists seem continuously anxious to replace humans... In general, it will be better to pursue not substitution but complementarity... [which] requires seeing the differences between information-processing agents and human agency.”**

**From Brown and Duguid (2000), [The Social Life of Information](#).  
Boston, MA: Harvard Business School Press.**

- **Understand “human agency” to enable complementarity between humans and information technology**
- **Human adaptations, emergent behavior**
  - **can reveal unmet needs for effective collaboration in complex environments**

# Collaboration: Challenges for Data Collection, Measurement & Analysis



**Goal: Study Human Teams *with* Technologies *in* Rich Environment**

# Setting the Stage: A Glimpse of Team *with Systems in Context*

## Example of 2 minutes with Cell Chief:

- *Text* chats in private to an individual regarding a possible leadership target
- *Audio* chats with someone else to ask why they're working a target
- Starts another audio conversation
- Accepts a text chat message requesting *chat in private*
- Accepts another private chat going about priorities ("Is this urgent?")
- Uses audio chat to give entire team a heads up ("There are two actions heading our way, take a look.")
- At the moment, he has three private chats going, plus the 8 regular chat windows, then audio chat comes in for him...
- Initiates a follow-up audio chat to another individual. Gets no reply, so text chats in private: "Call me *on the headset* or *visit me...*"
- Meanwhile, gets a different kind of text message from left screen application...

[Note: This is all separate from target list application, email messages, face-to-face conversations, public announcements, wall displays...]

# Attention Management: “Where do I focus my attention?”

- Operator juggled 8+ chat windows on **right screen** alone:
  - Hears “ping” for an incoming chat message, “But which room is it in?”
  - Adaptation: highlights most recent message in each window; new messages appear unhighlighted, easy to spot (but must repeat...)

- Self-organize to cue others:
  - To returning TST Chief:
  - “You missed lots of chat on...”  
(indicates target and chat room)



Technology could better support human focus

# Information Sharing: “Who else should see this?”

- Chief audio chats regarding leadership target
  - “Why are you working it? **Stop – it’s a misdirect.** Target is ‘in the background’... Don’t work it until it’s pushed to you.”



- Adaptation to avoid misdirecting others
  - TST Chief’s left screen displays target information on AOC data wall
  - Until sure of ID, he enters some targets as hidden rows

**More information sharing isn’t always desired**

# Managing Relationships for Speed of Command

Joint Time Sensitive Targets																				
File Edit Filter View Plot Tools Report																				
Nominator	Track	Target	Description	TOT	Pri	NLT	PSD	MCC	ACC	LCC	SOF	OTH	COA	CFC	PID	CDE	MSN	CM	BDA	CA
JFACC	A0012	AC0002	SW TBM TEL	2320/2325	2B	1 hr+		"X"	EXE	CCR	FRD	"X"	"X"	CCR	ROE	LOW				
M JSOTF	S1722	SO0001	NW-11 SCD BTY	2245/2250		22:33		"X"	EXE	"X"	"X"	"X"	"X"	"X"	100	LOW				
JFLCC		LC0001	BSM	1430/1435	1A	1 hr+		"X"	"X"	EXE	"X"		"X"	"X"	100	LOW	DES	TIW	DMG	

## Teams of Teams

- In one scenario, **Air and Land Component Commanders** coordination key
- TST Chief proactively monitored LCC's indicator on stoplight chart and communicated with them even when no action needed. Reported wanting to "get them energized," ensure buy-in and coordination "before it's a TST"

Challenge increases if crossing organizational boundaries

# Observation Highlights from Time-Sensitive Command & Control Events

## Teams Manage Complex, Fluid Environment

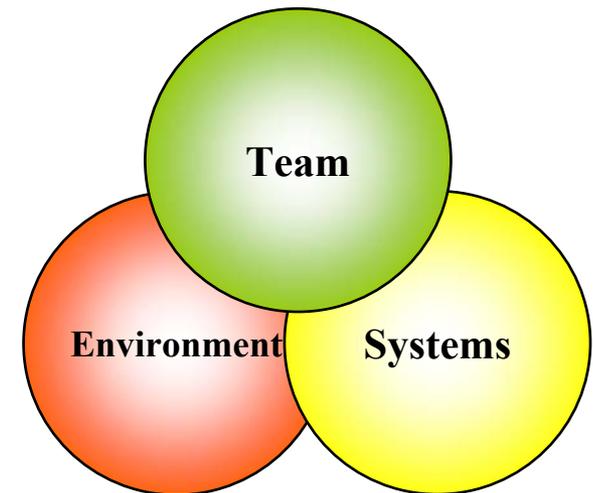
- manage attention
- cue others
- handle ambiguity

## Teams Manage Information

- determine reliability of information
- determine who should see what, and how

## Teams Manage Team Dynamics

- coordinate roles, priorities
- establish trust, credibility, buy-in
- maintain team awareness
- develop shared situation awareness



Teams Manage More Than Information