



# ***14th ICCRTS “C2 and Agility”***

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## ***GETTING PREPARED FOR THE 21st CENTURY C2 ENTERPRISE***

***Topic 7: C2 Approaches and Organization  
Paper ID: 155\_S***

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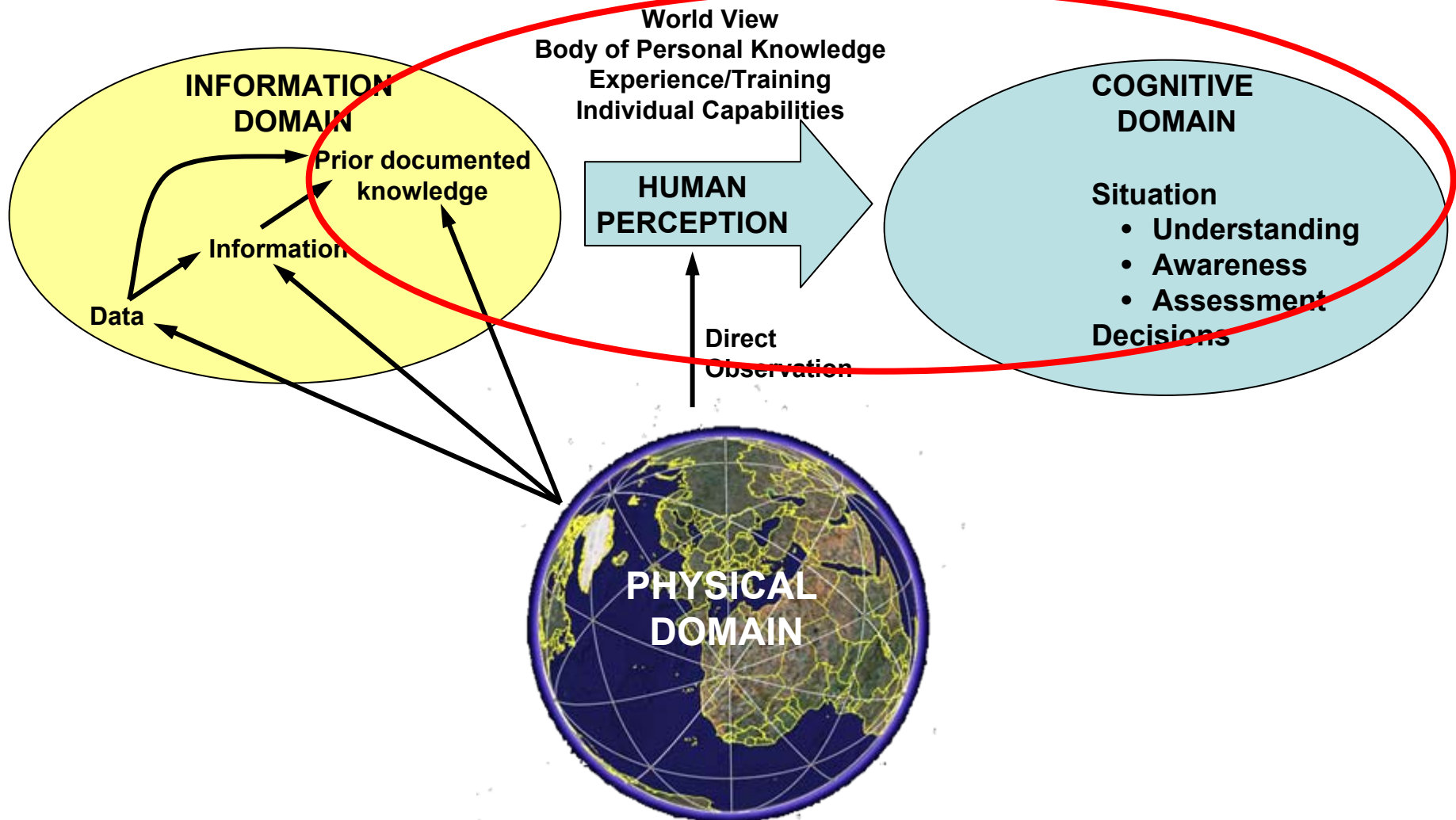
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# CONTEXT



## RESEARCH CONTEXT

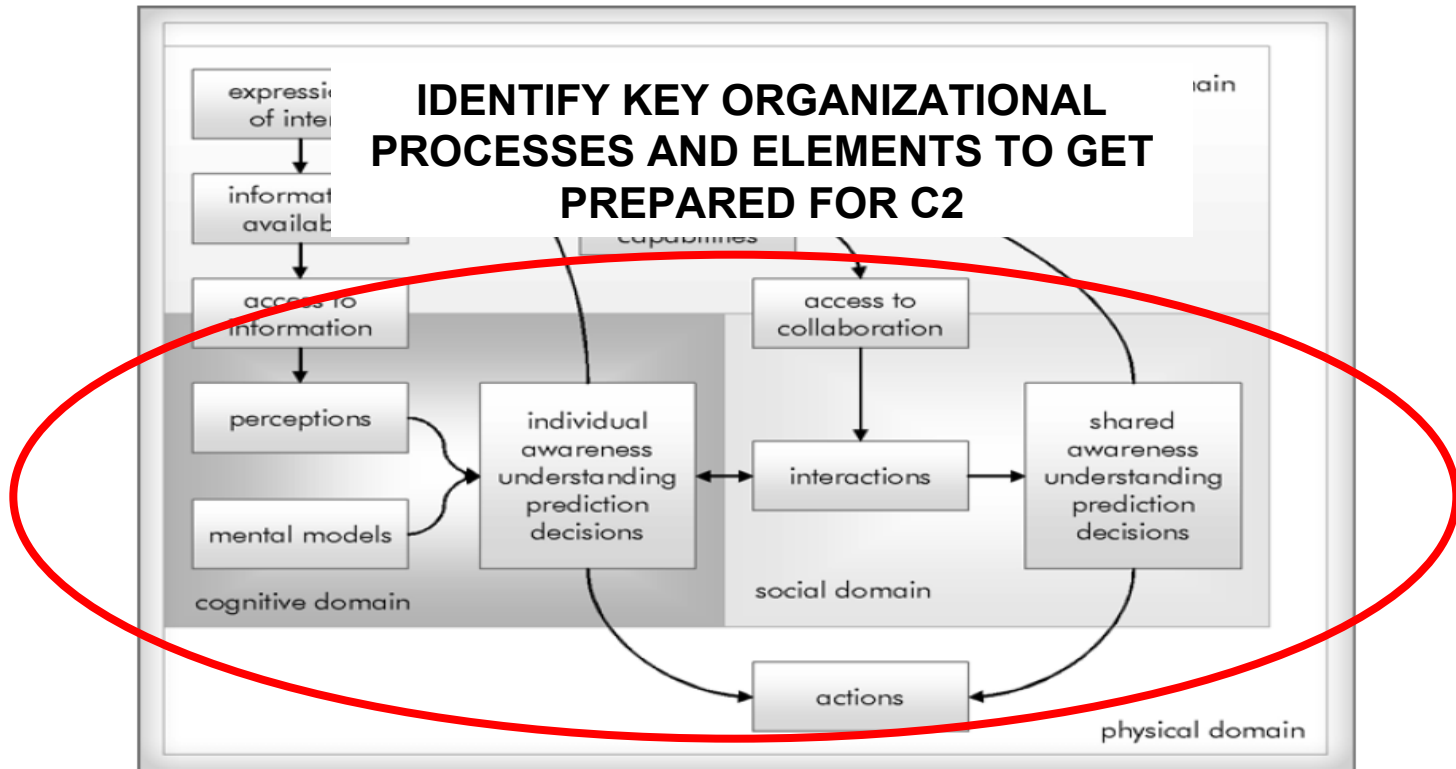




# OBJECTIVE



WE CONCENTRATE ON THE PROCESS OF “SENSEMAKING”.



Source: Alberts *et al.* (2006). *Understanding Command and Control*, p. 65.

AT SENSEMAKING, PREEXISTING KNOWLEDGE IS COMBINED WITH REAL TIME INFORMATION TO DEVELOP APPROPRIATE ACTION PLANS.

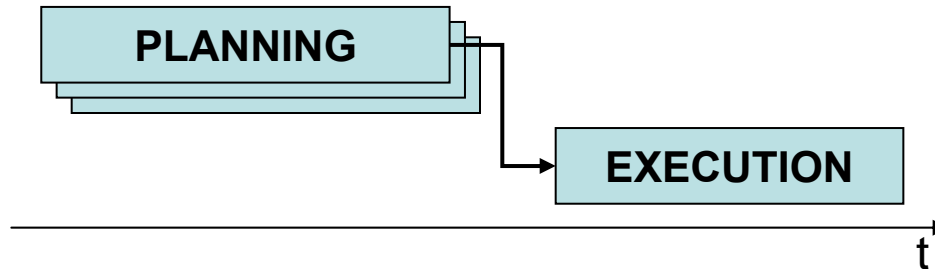


# DISRUPTIVE INNOVATION



NCW may and should be viewed as a disruptive innovation (Alberts *et al*, 2001)

## INDUSTRIAL AGE

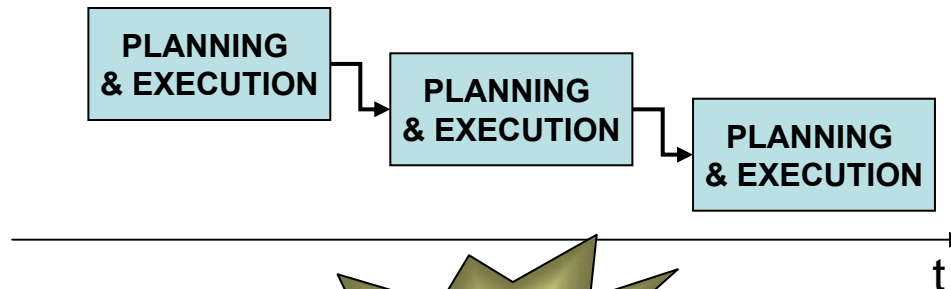


**Different activities:**

- Conceptually
- Organizationally
- Temporally

**FORCE AGILITY**

## INFORMATION AGE



**Simultaneous activities:**

- Shrinking windows of opportunities
- Plan is a pattern of action that constantly adjusts to the situation.

**EXPERTS**

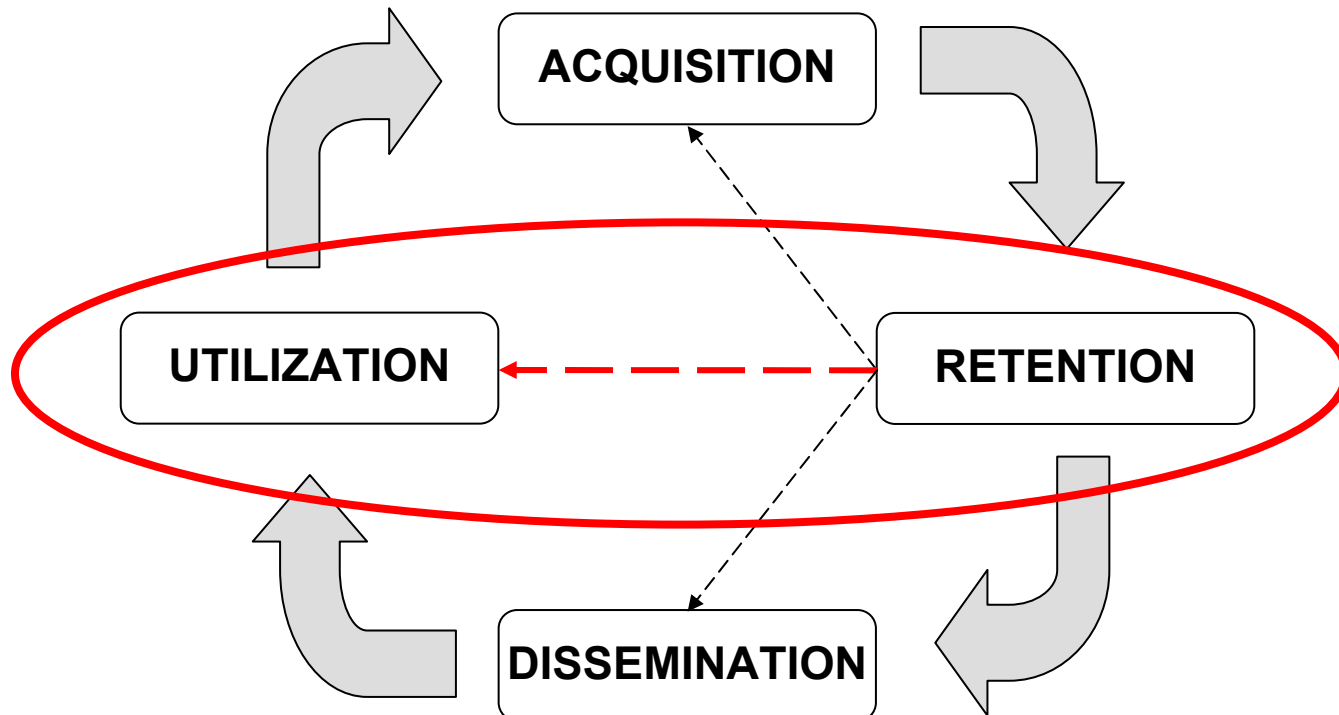


# GETTING PREPARED



Force agility is highly dependent on being able to deploy both individual and collective intellectual capital.

KM encompasses a number of processes that integrate an organization's approach to managing and applying knowledge assets.

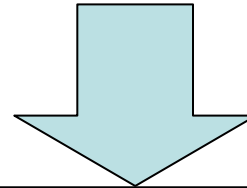




# ORGANIZATIONAL MEMORY



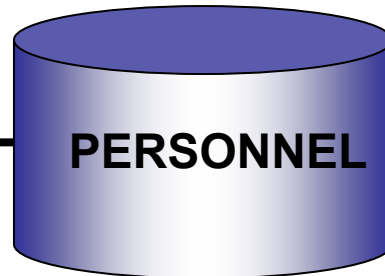
## ORGANIZATIONAL KNOWLEDGE RETENTION



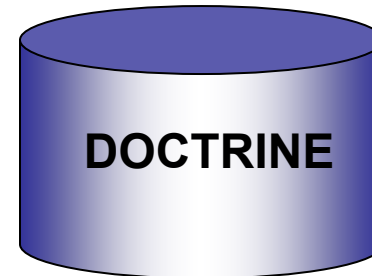
### ORGANIZATIONAL MEMORY

#### PERSONNEL:

- Education
- Training
- Values & beliefs
- Motivations



PERSONNEL



DOCTRINE

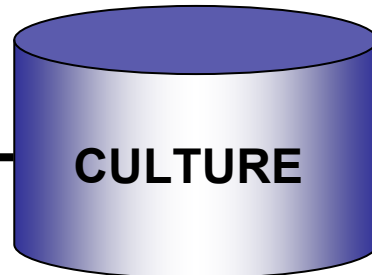


#### DOCTRINE:

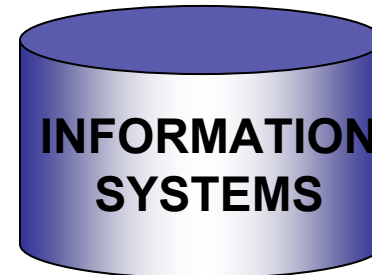
- Official Knowledge
- Force guidance
- Tactics, techniques, procedures
- Standardization

#### CULTURE:

- Shared basic assumptions
- Correct way to perceive act and feel
- Values, emotions
- Socially constructed



CULTURE



INFORMATION  
SYSTEMS



#### IS:

- Storage explicit knowledge
- Help to overcome spatial, temporal & organizational barriers



# KNOWLEDGE UTILIZATION

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**BACKGROUND  
KNOWLEDGE**

**PRESENT SITUATIONS**

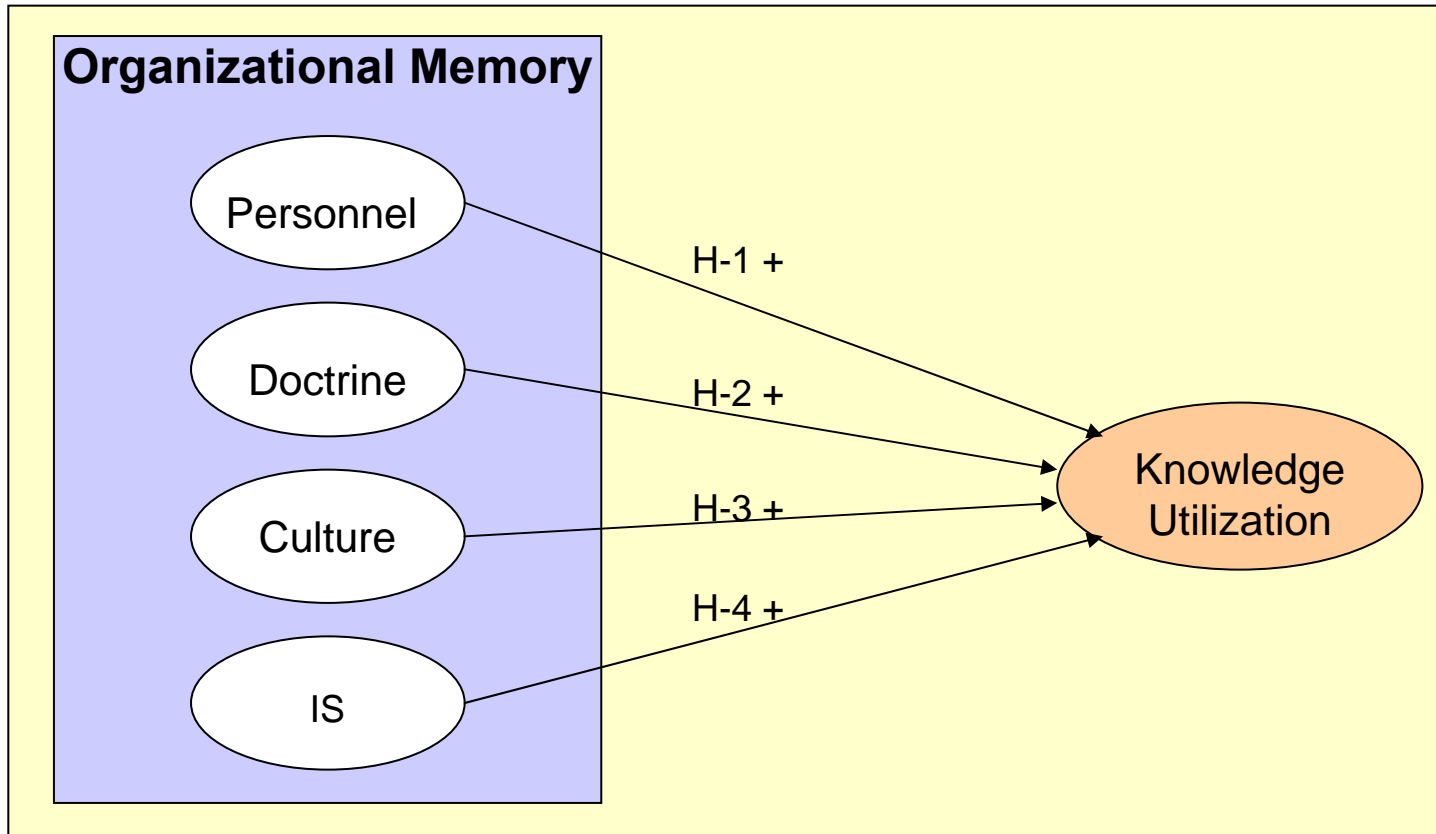
**DECISION MAKING  
ACTIVITY EXECUTION**



# STRUCTURAL MODEL "A"



Independent effects of OM bin development  
on background knowledge utilization



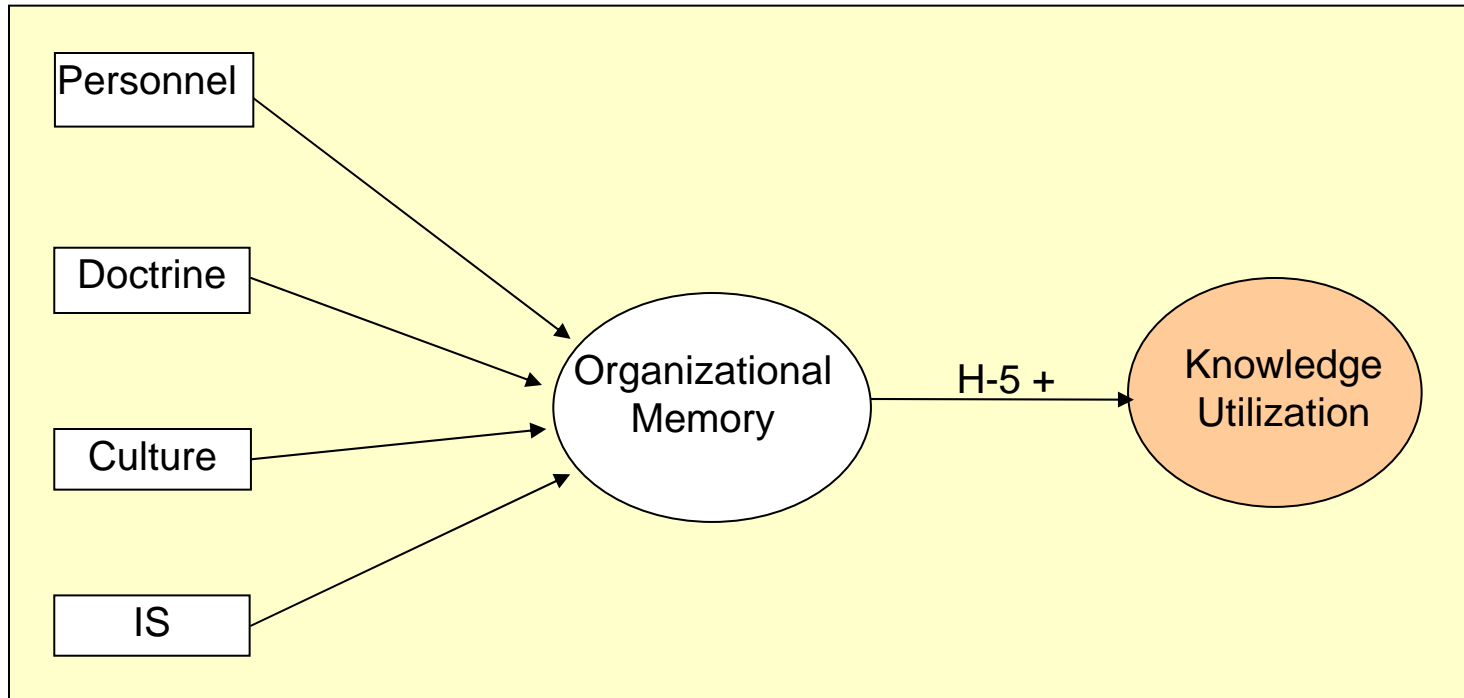




# STRUCTURAL MODEL "B"



Compound effect of OM development  
on background knowledge utilization





# METHOD

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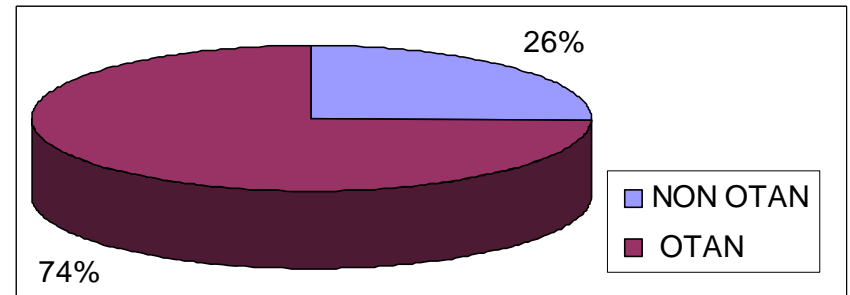
- We used subjective evaluation through questionnaire designed for this research.
- Respondents were experienced active military officers.
- Most of the indicators in our measurement instrument were taken from previous research (reliability and validity).
- Measurement was practiced at three military organizations each from a different countries.
  - Two of them are NATO member country services that have deployed forces at the most demanding conflicts in the last ten years.
  - The third one is non NATO member country service that deploys its force in peacekeeping operations.



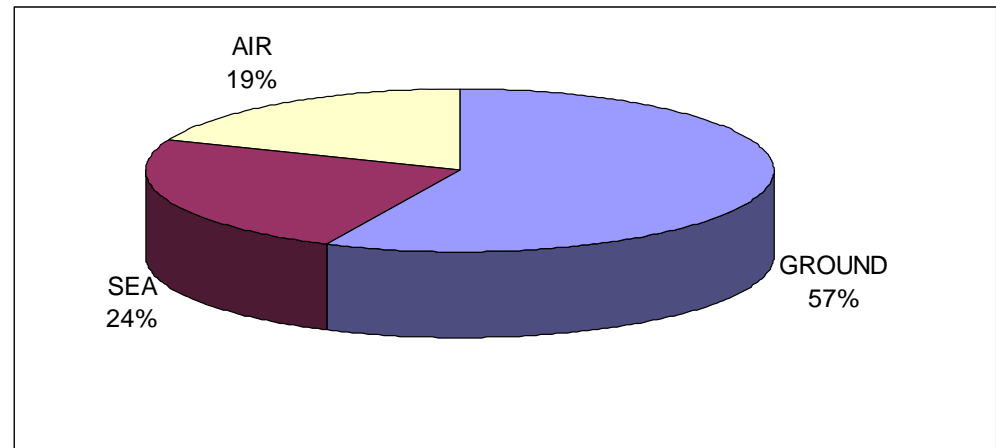
# DATA



- **Sample:** 443 officers from joint staff academies.
- **Responses:** 121 valid questionnaire answers were received, a 27,31% response rate.
- 74% of the respondents were NATO officers .



- Branch participation:
  - Army 57%.
  - Navy 24%.
  - Air Force 19%.

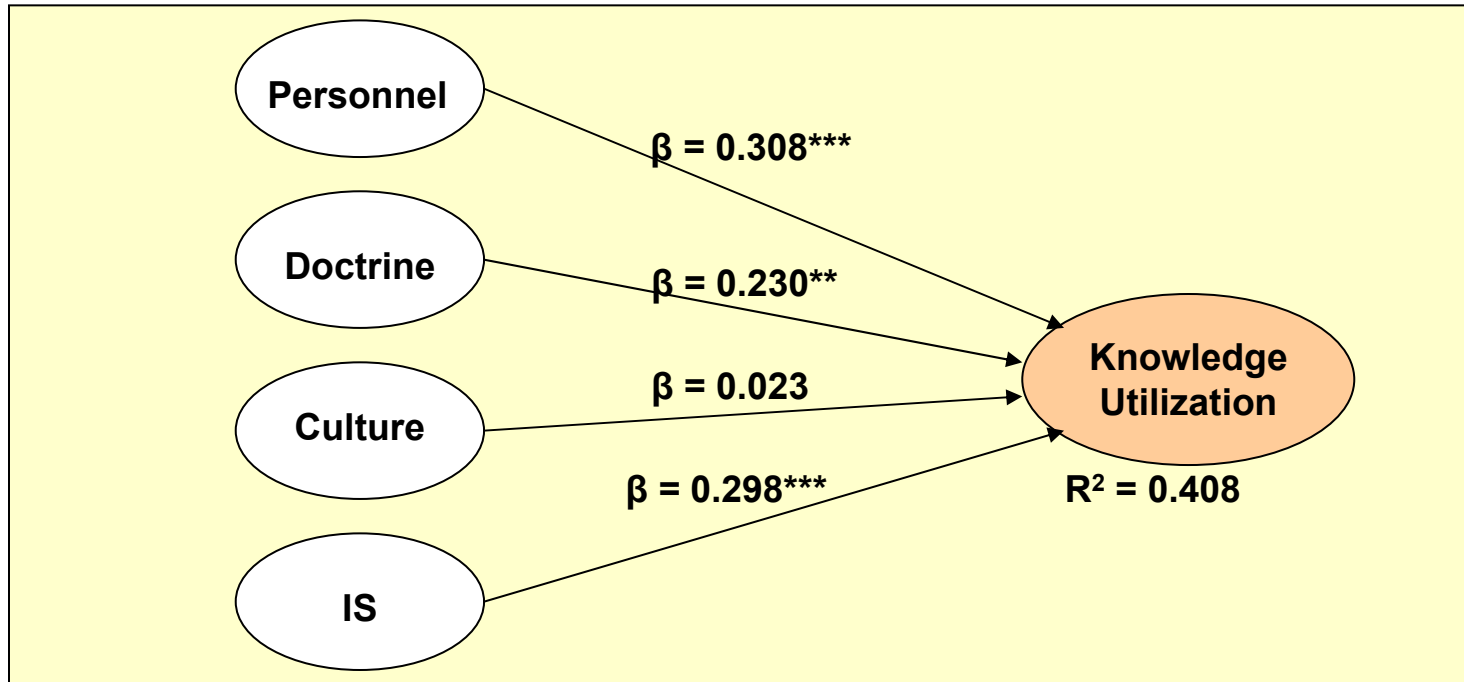




# RESULTS FOR MODEL "A"



## Independent effects of OM bin development on background knowledge utilization



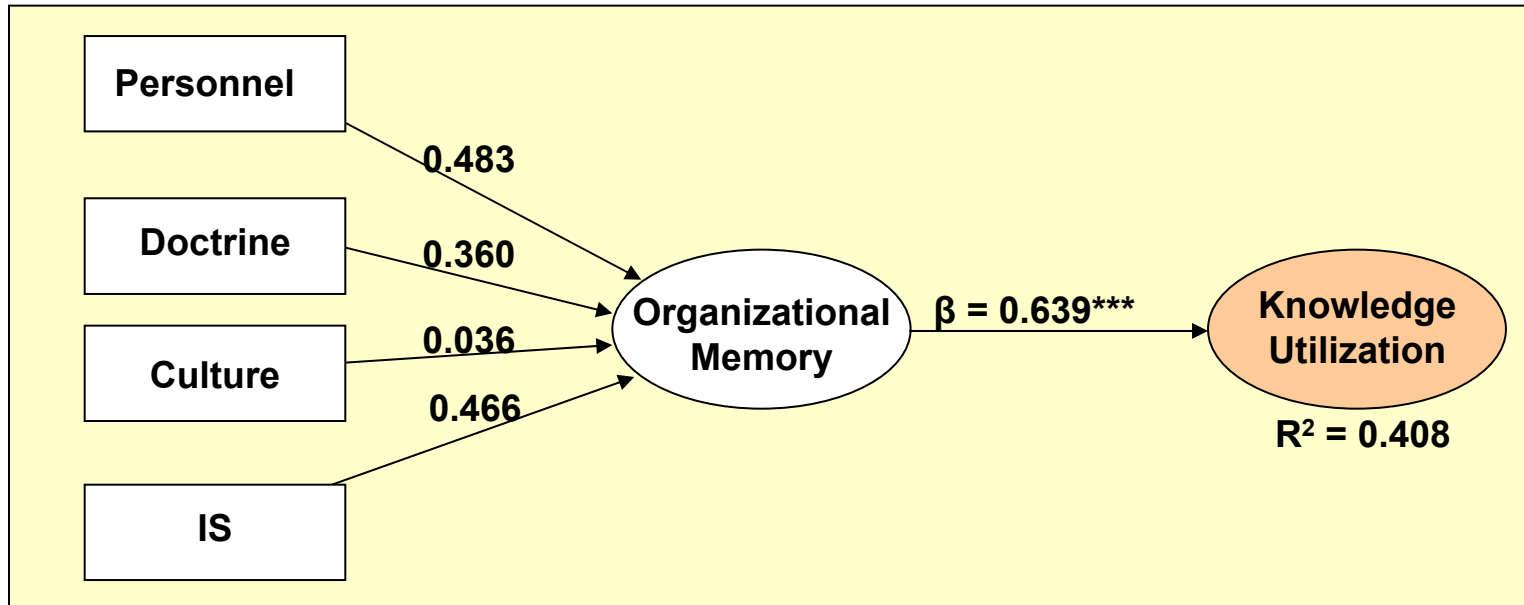
- There is a positive relationship between the development of knowledge bins and background Knowledge Utilization.
- When tested separately, Personnel OM, Doctrine OM and Information Systems OM, exhibited a positive causal effect on Knowledge Utilization.
- Culture strength is not by itself a significant generator of background knowledge utilization.



# RESULTS FOR MODEL "B"



## Compound effect of OM development on background knowledge utilization



- All four knowledge bins contribute to the formation of OM.
- OM exhibits a strong causal effect on background knowledge utilization, which is more significant than any of the ones tested in Model "A".
- OM is an integrated system of knowledge bins.



# GENERAL COMMENTS

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- In this research we have identified those organizational elements where individual and collective knowledge that come to bear in combat situations resides.
- Managerial efforts should target to develop OM bins over time so that high quality knowledge is applied in battlefield decision making.
- We recommend to develop all four knowledge bins simultaneously:
  - **Personnel:** education, training, and a challenging environment.
  - **Doctrine:** richness (complete, correct, current, accurate, and consistent) and also pervasiveness (familiarity with doctrine content).
  - **Culture:** social context that eloquently informs what the correct way to proceed is.
  - **IS:** strong IT infrastructure, widespread accessibility, and effective knowledge detection and access tools.
- Soldiers and commanders that perform like experts are the result of long term efforts oriented to nurture organizational knowledge bins.



# *FINAL THOUGHTS*

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- C2 maturity is largely a matter of good decision makers that keep in mind collective purposes and coordination needs, which is a skill and knowledge affair.
- Only when commanders and soldiers become competent enough is their organization capable of starting to climb up the C2 maturity ladder.