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## ACNIS Analysis & Research Workshop

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# The Analytical Process

## I. The Process of Analysis

- Defining the Analytical Question
- Crafting the Methodology
- “Collecting the Dots” & “Connecting the Dots”

## II. The Tools for Analysis & Knowledge

- Crafting a “Knowledgebase” & System of Systems Model

## III. Key Questions & Guides

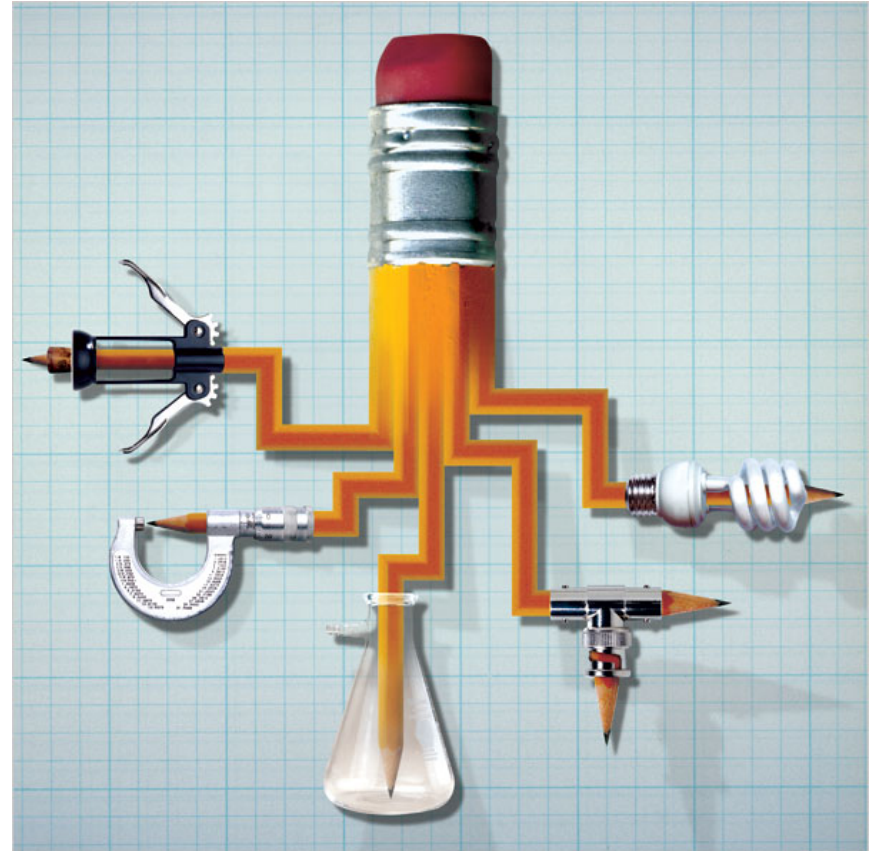
# The Process of Analysis

## Defining the Question

- What? How?
- Why? So What?

## Crafting Methodology

- Survey? Study?
- Limits & Lessons



# “Connecting the Dots”

- We live in a sea of “dots” of information (facts, events, relationships, etc)
- We try to “connect the dots” to best interpret and understand the world
- But it is first necessary to “*collect* the dots” in order to “*connect* the dots”

# **“Collecting the Dots”**

- “Collecting the Dots” is the process of seeking and grouping the scattered bits of information into some proximity to each other to enable pattern recognition
- In a perfect world, the dots are neatly in place and easy to find (low-hanging fruit)
- In reality, the dots are almost never arranged in an orderly way, and are not easily found

# Challenges to Collecting the Dots

- Knowledge is time-sensitive (a short shelf-life)



# “Connecting the Dots”

“Connecting the Dots” is the process of connecting a vast amount of disconnected pieces of information to reveal the patterns

But the challenge is gathering data and recognizing patterns



# The Process of Connecting the Dots

- Data recognition: which facts are important?
- Data gathering: where to go to collect the important facts?
- Data sorting: how to organize the facts?
- Data analysis: what trends can be revealed?



# The Process of Connecting the Dots



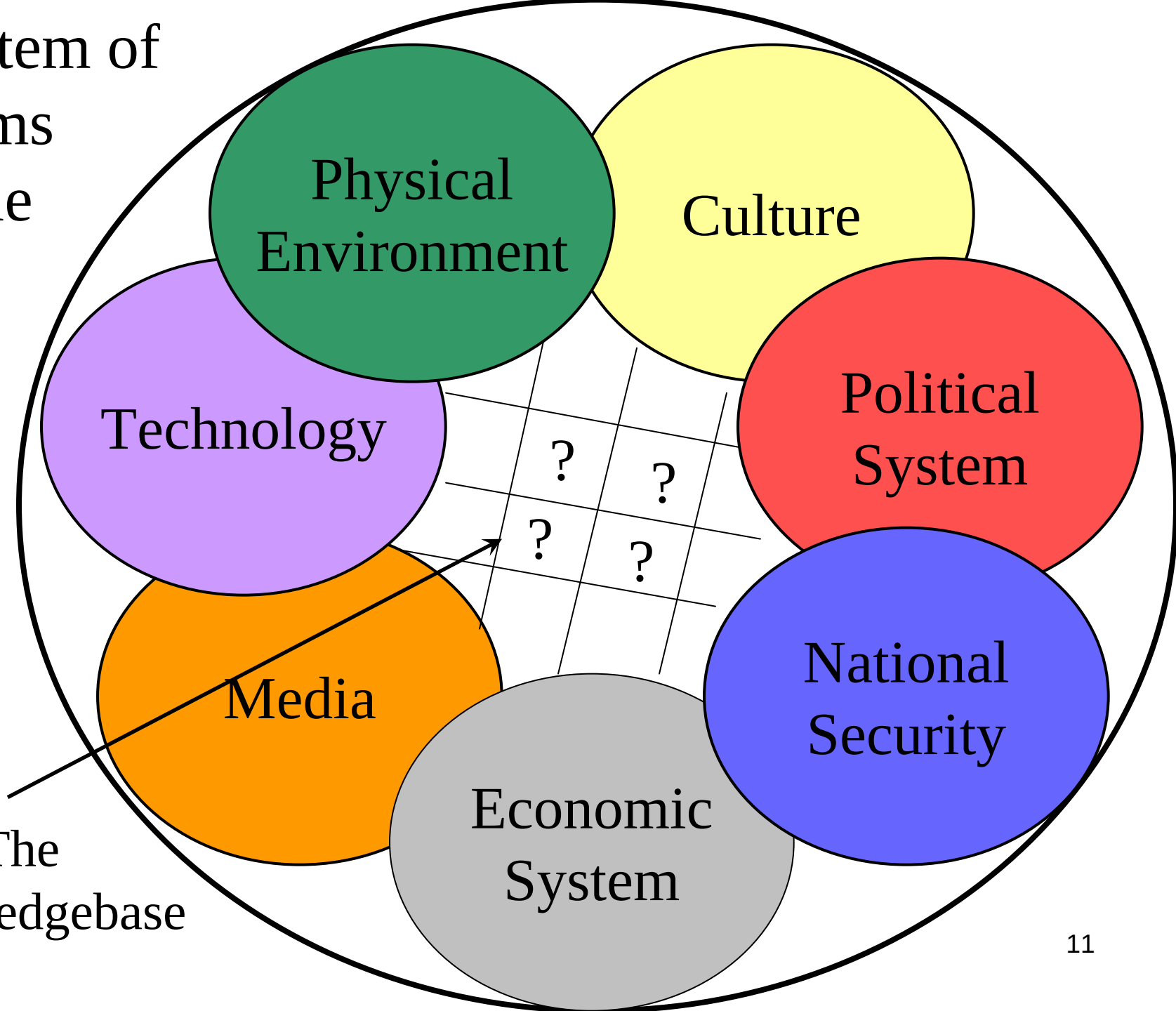
# **An Analytical Tool: Creating A Knowledgebase**

A knowledgebase is a comprehensive set of data identified with specific relevance

For analysis, a knowledgebase represents the storehouse of information and pertinent data

The knowledge base is also the sum of the many parts of a *system of systems* approach

# A System of Systems Sample



# The Benefits of the System of Systems Approach

Look for the linkage of systems:

In the 1950s, the World Health Organization (WHO) tried to fight a malaria outbreak in Borneo by spraying DDT to kill the mosquitoes that carried the malaria. The mosquitoes died, the malaria declined; so far, so good. But there were side-effects: all of the villagers' thatched-roofed huts collapsed. The DDT was killing a parasitic wasp that had previously controlled thatch-eating caterpillars.

Next, the DDT-poisoned insects were eaten by geckoes, which were eaten by the cats. The cats died, the rats flourished, and people were threatened by outbreaks of plague and typhus. To cope with these problems, which it had itself created, *the WHO decided to parachute 14,000 live cats into Borneo.*

# Key Questions

“What are the rules” for analysis?

“How do we know when we have the right info, or enough info?”

“Where and how do we collect the information relevant to the topic?”

“What do we do about information overload?”