SQUARING THE PROJECT MANAGEMENT CIRCLE:

UPDATING THE COST, SCHEDULE, AND PERFORMANCE METHODOLOGY

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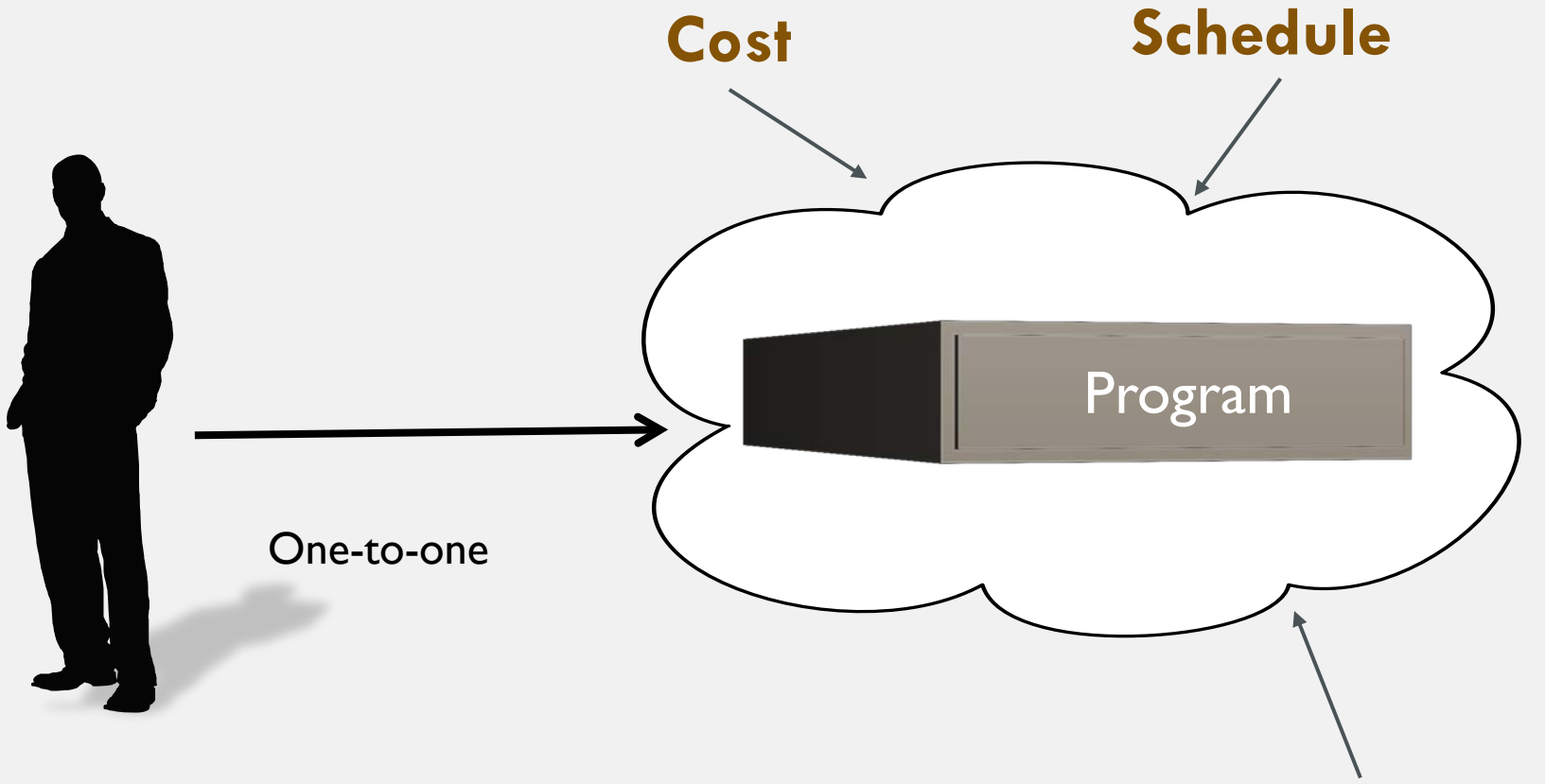
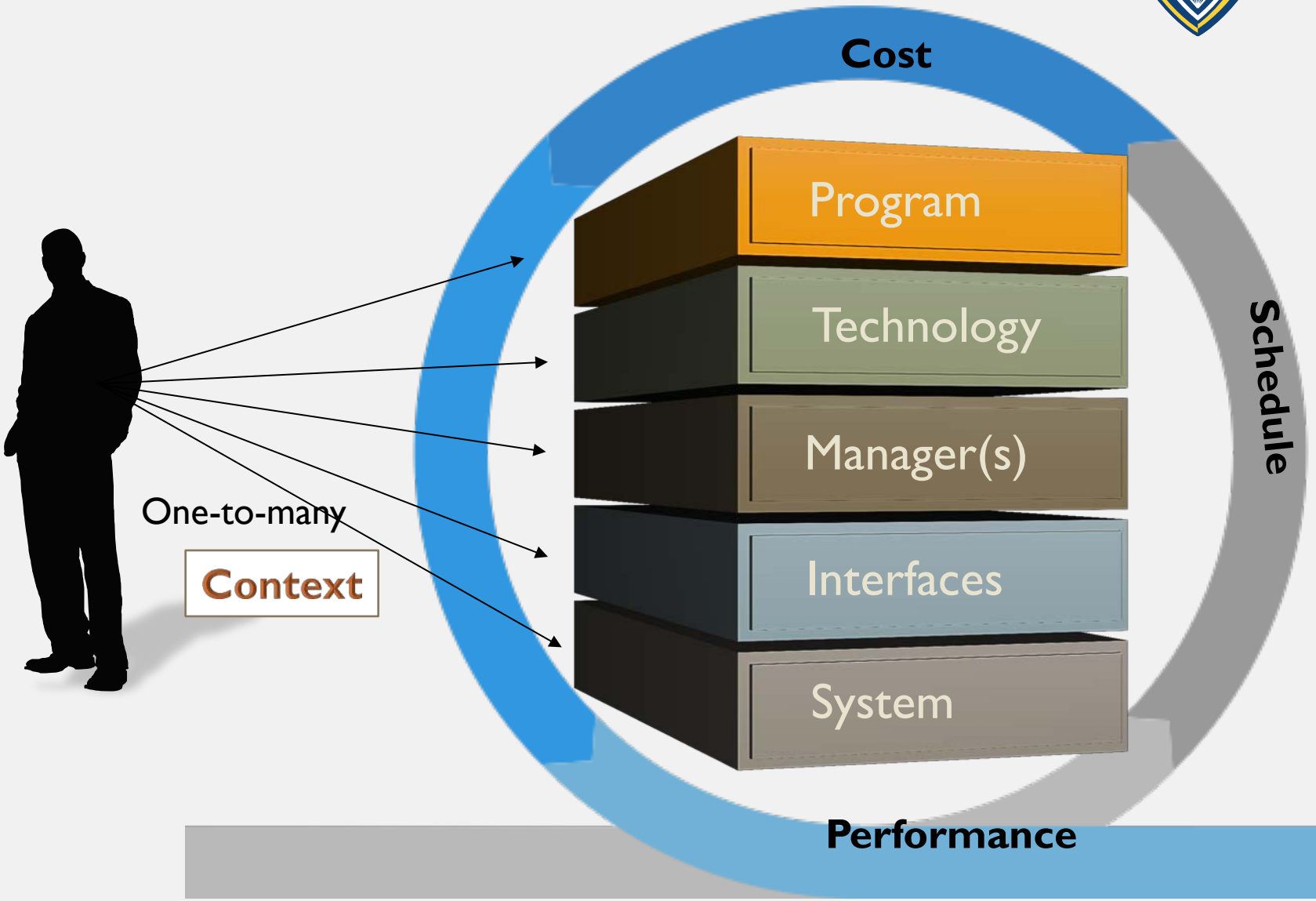
MANAGING SYSTEMS PROJECTS (CURRENT APPROACH)



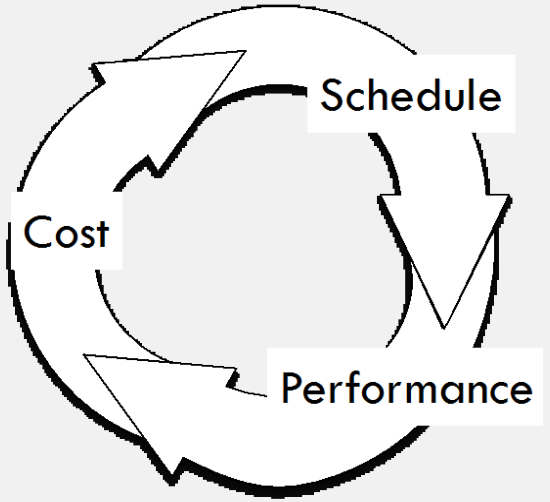
Cost, schedule and performance is the Management Mantra

MANAGING SYSTEMS PROJECTS (DEFENSE ENVIRONMENT)



OVERVIEW

- Problems
- The Project Management Circle
  - Cost, Schedule Performance
  - Project Success
- Methodology—Systems Approach
  - Cost, schedule and performance
  - Defense Project Complexity
- Conclusion



Goal: Identify Factors beyond Cost, Schedule & Performance that influence defense development programs

Ultimate use is to model the defense acquisition process to provide a training environment for PMs

PROBLEM 1—DEFENSE SYSTEMS DEVELOPMENT ENVIRONMENT

- Defense systems acquisition has three major characteristics…
  - Complex (well beyond complicated)
  - Not transparent (opaque)
  - External and internal dynamics that are not completely understood by the people charged with their execution.

  → Results in imperfect decision making
- DoD Focus driven by cost, schedule and performance considerations
  - overly simplistic short-term decisions made without considering their later effects…. Providing a less than optimal decision focus

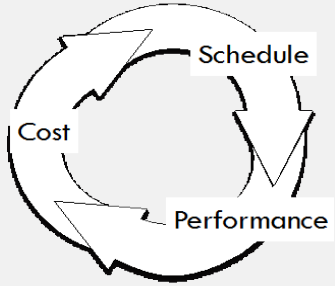
THINGS ~~PROJECT MANAGERS~~ *PEOPLE* DON'T DO WELL

- Take the long-view…anticipating the consequences of decisions
- Anticipate future problems
- Appreciate the effects of Time (delayed feedback systems)
- Easily understand large amounts of data
- Change—we tend to hold on to beliefs **more** strongly when we feel insecure/challenged/ are wrong.
- Deal with Complexity

PROBLEM 2—DEFINING SUCCESS

Project Success

…achieving technical performance and/ or mission performance goals, coupled with customer (warfighter) satisfaction

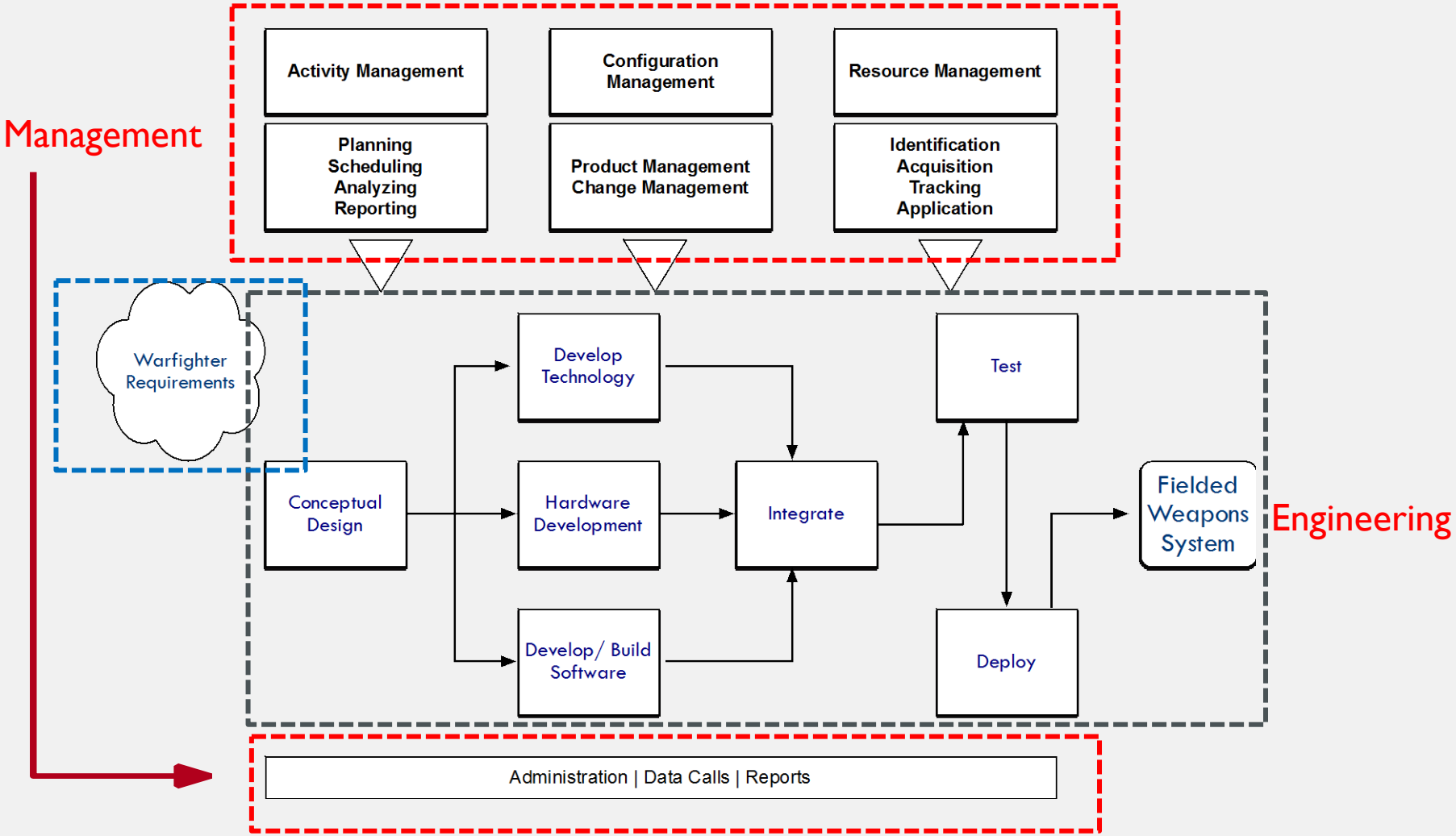


Project Management Success

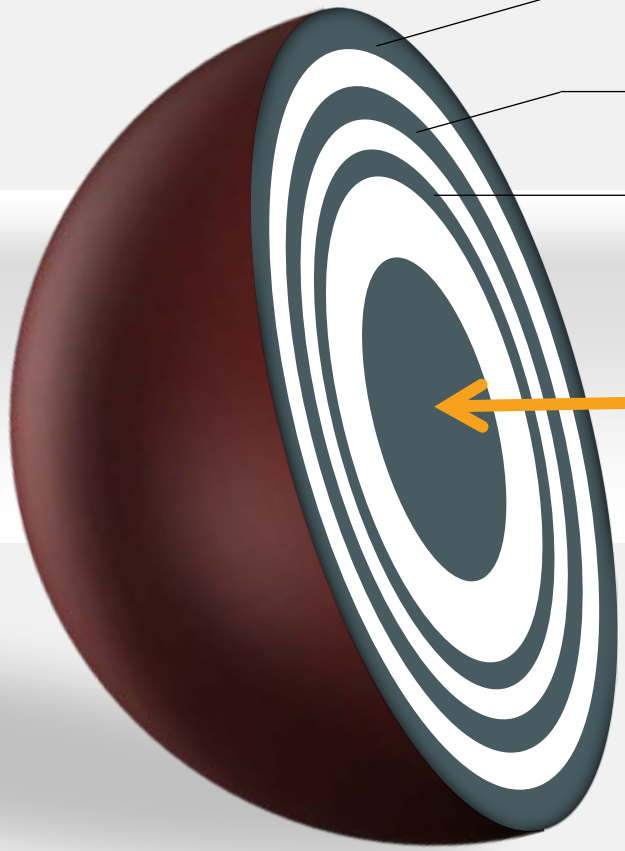
…how efficiently the project has been managed

Imperfect understanding of project success

PROJECT MANAGEMENT IS ACCOMPLISHED BY MANAGEMENT & ENGINEERING PROCESSES…DRIVEN BY REQUIREMENTS



COMPLEXITY AS CONTEXT



Structural

Uncertainty

Dynamic

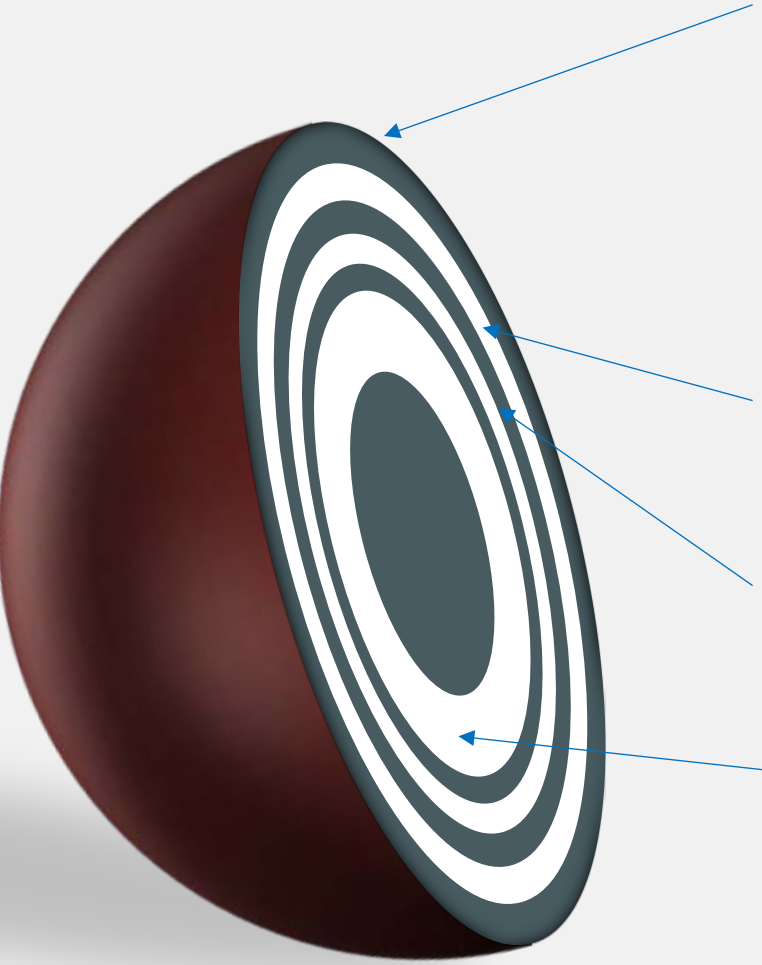
Socio-Political

System

Project

Cost, Schedule and Performance

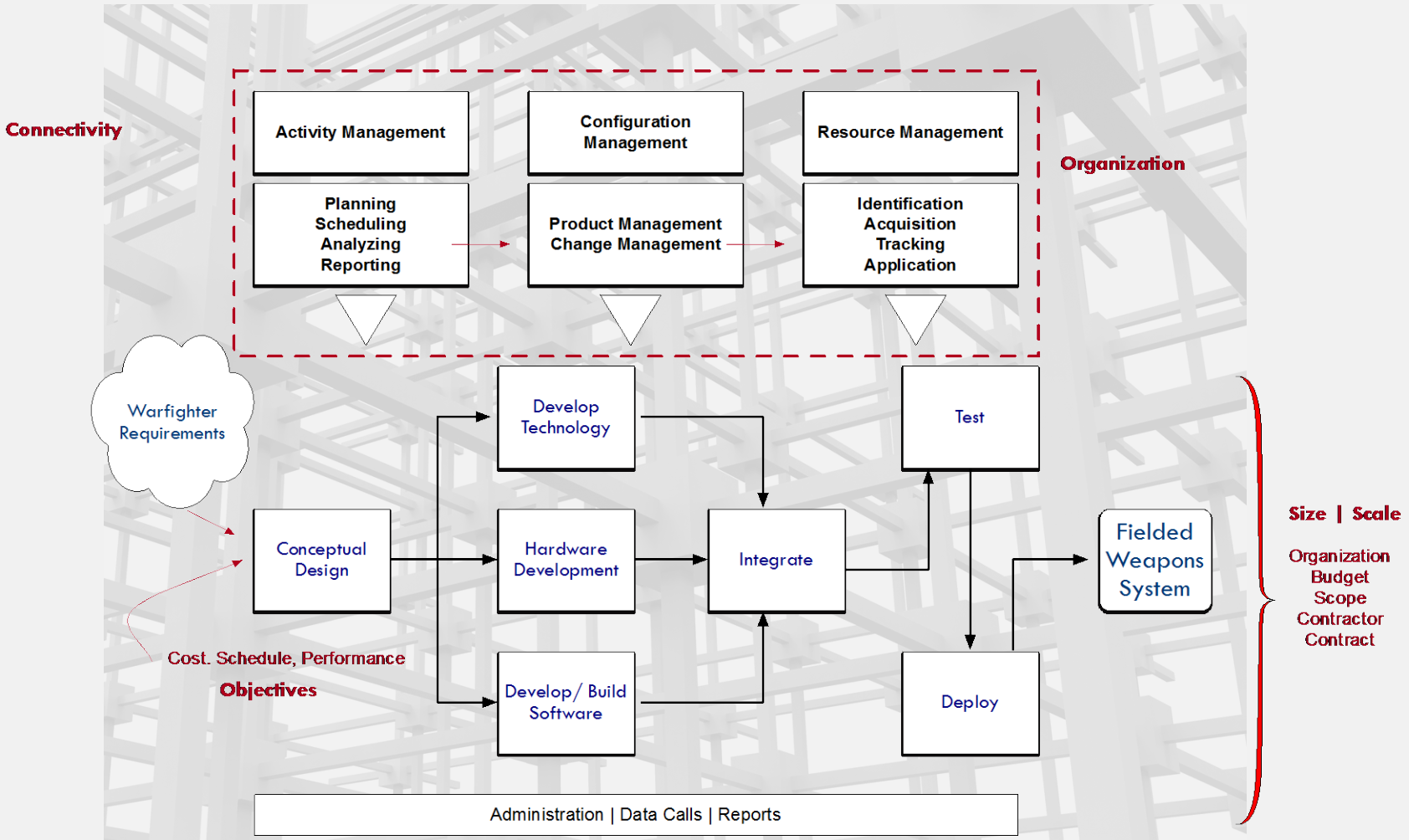
COMPLEXITY* AS CONTEXT



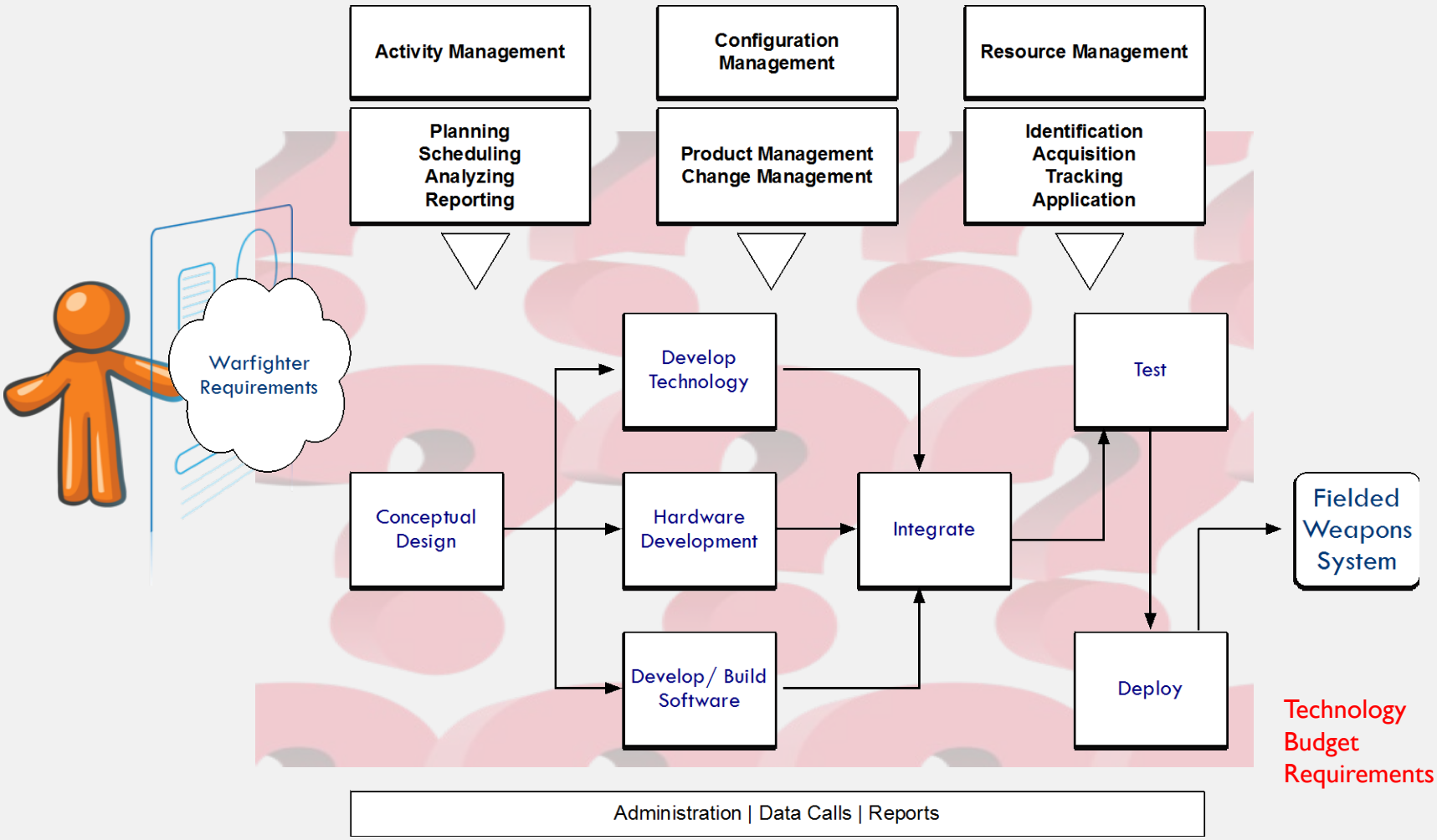
Type	Sub-type	Acquisition Management Example
Structural	Size	Organization (number of people) Budget Scope of work Contractor (size and number of people)
	Connectivity/ Actions/ Approvals	**Acquisition organizations** **Requirements organizations** **Industry organization** **Review processes (both programmatic and technical)**
	Organizational	Stakeholder Organizations Boundaries/ different commands/ different agencies Executive Branch Congress
Uncertainty	**Budget**	**Funding**
	Technical Complexity	Variety of tasks Interdependencies between tasks
	Objectives	**System Requirements**
Dynamic	Short-term	Daily problems Personnel changeover Engineer shortage Materials failures Short requirement dynamics Rework
	Long-Term	**Changing budget** **Environment**
Socio - Political	Social-Political	Personnel changeover "the new PEO/ PM" Change and change management Regulations/ Policy changes
System	Interdependency	**Emergence** **Unanticipated actions and consequences a result of incomplete appreciation of system**

*After Sheard and A. Mostashari, "A complexity typology for systems engineering," *Syst. Eng*, 2009.

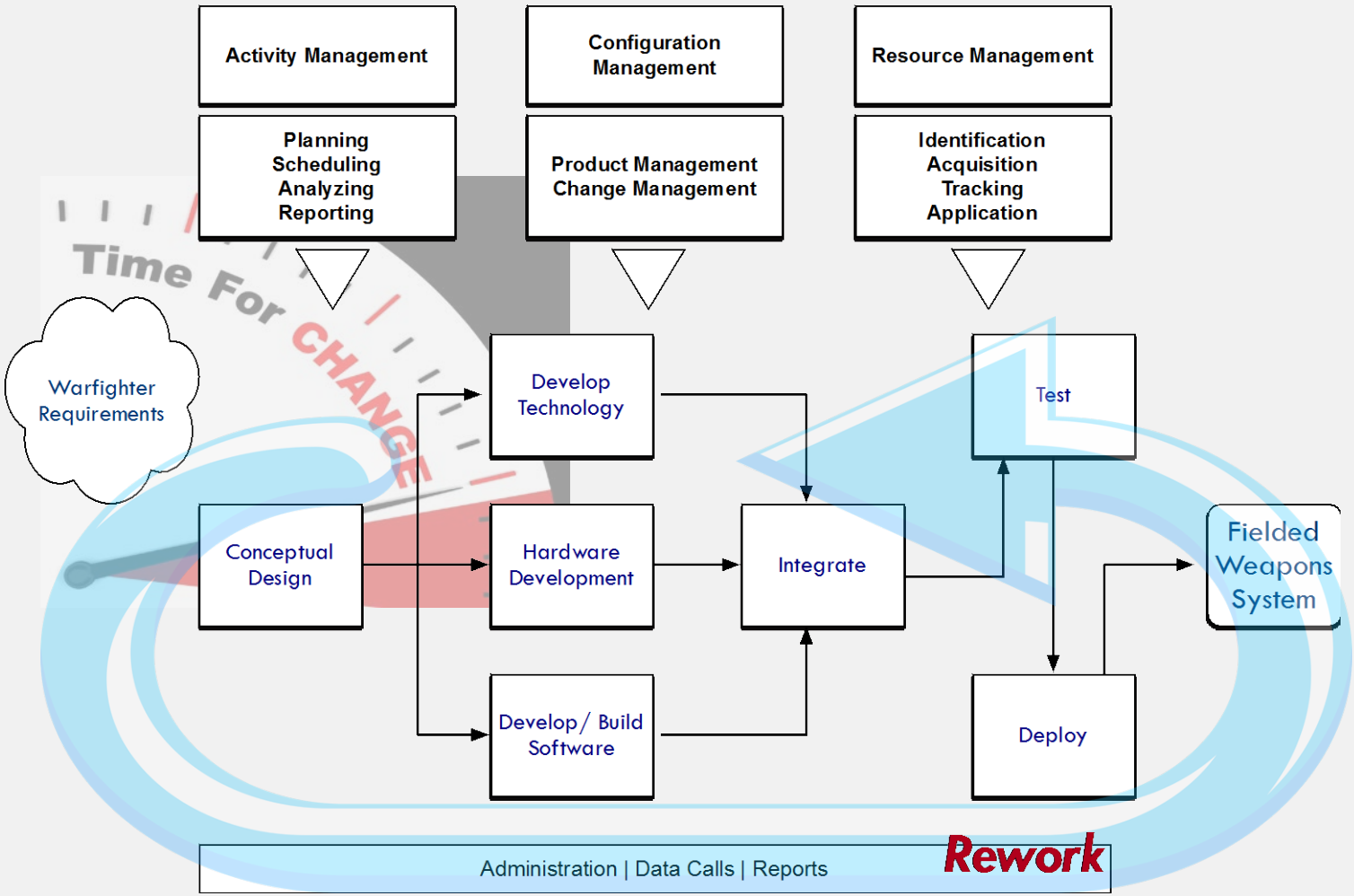
STRUCTURAL COMPLEXITY



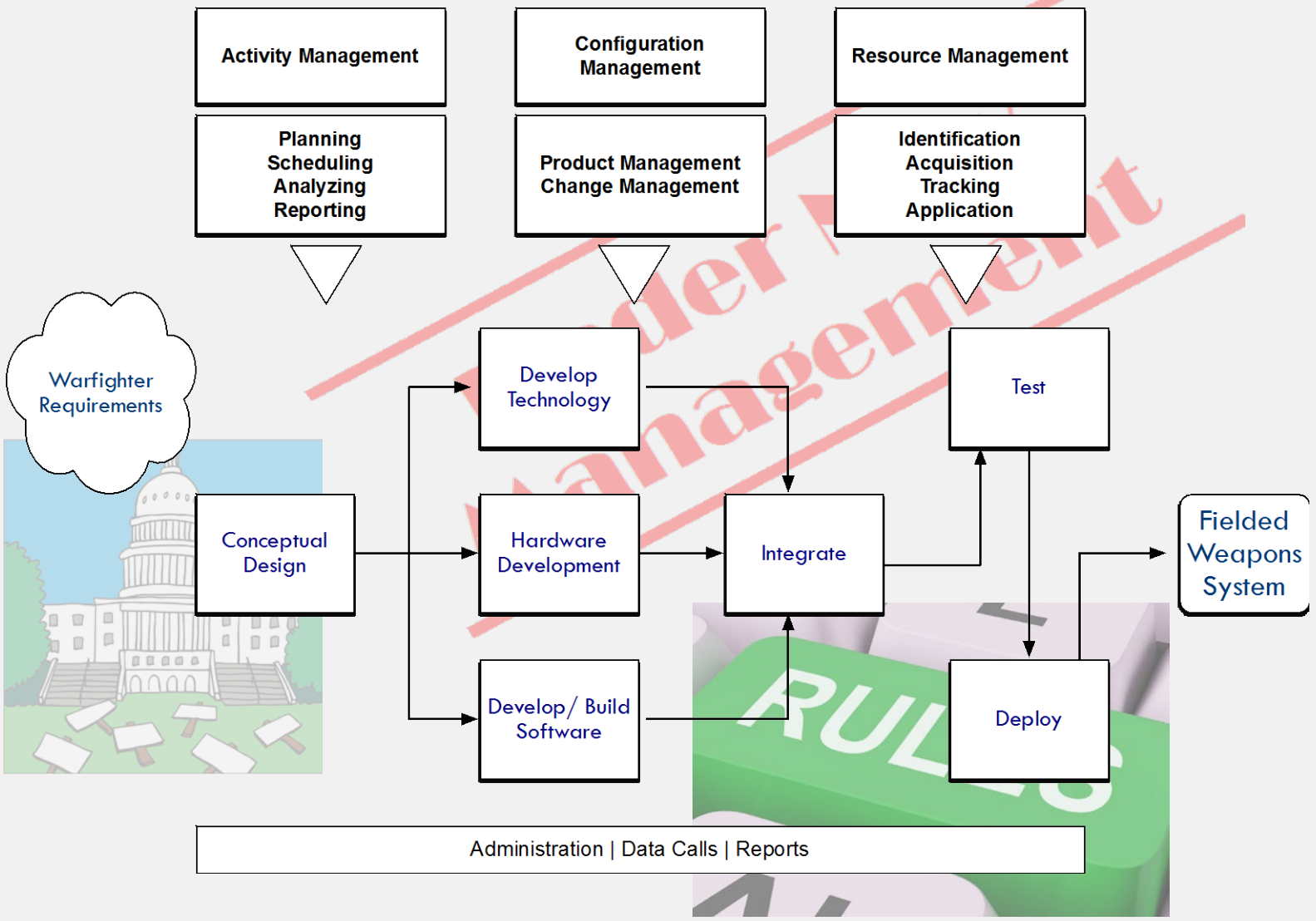
UNCERTAINTY



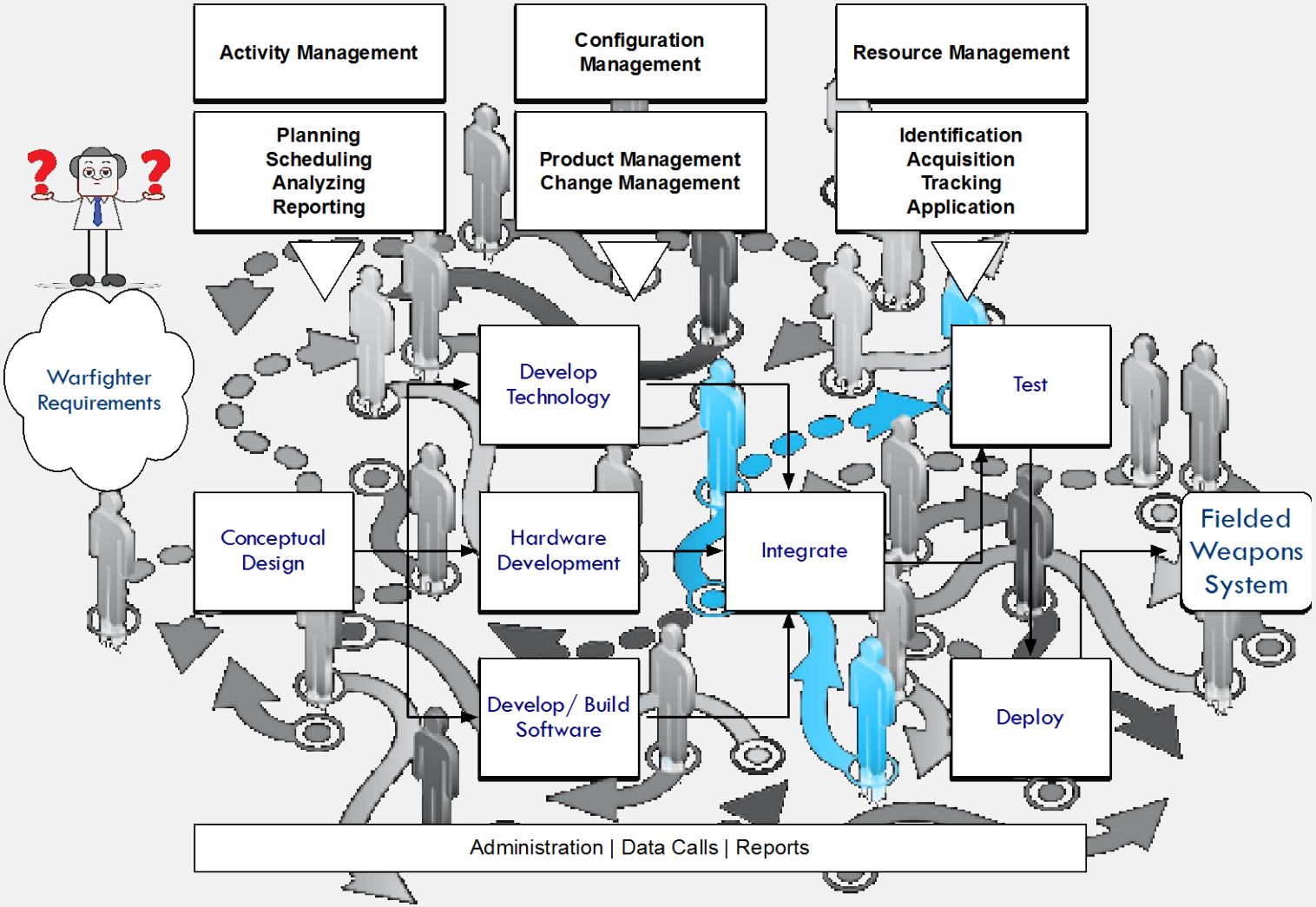
DYNAMIC COMPLEXITY



SOCIO-POLITICAL COMPLEXITY



SYSTEM COMPLEXITY



SO WHAT?

GETTING TO PROJECT SUCCESS

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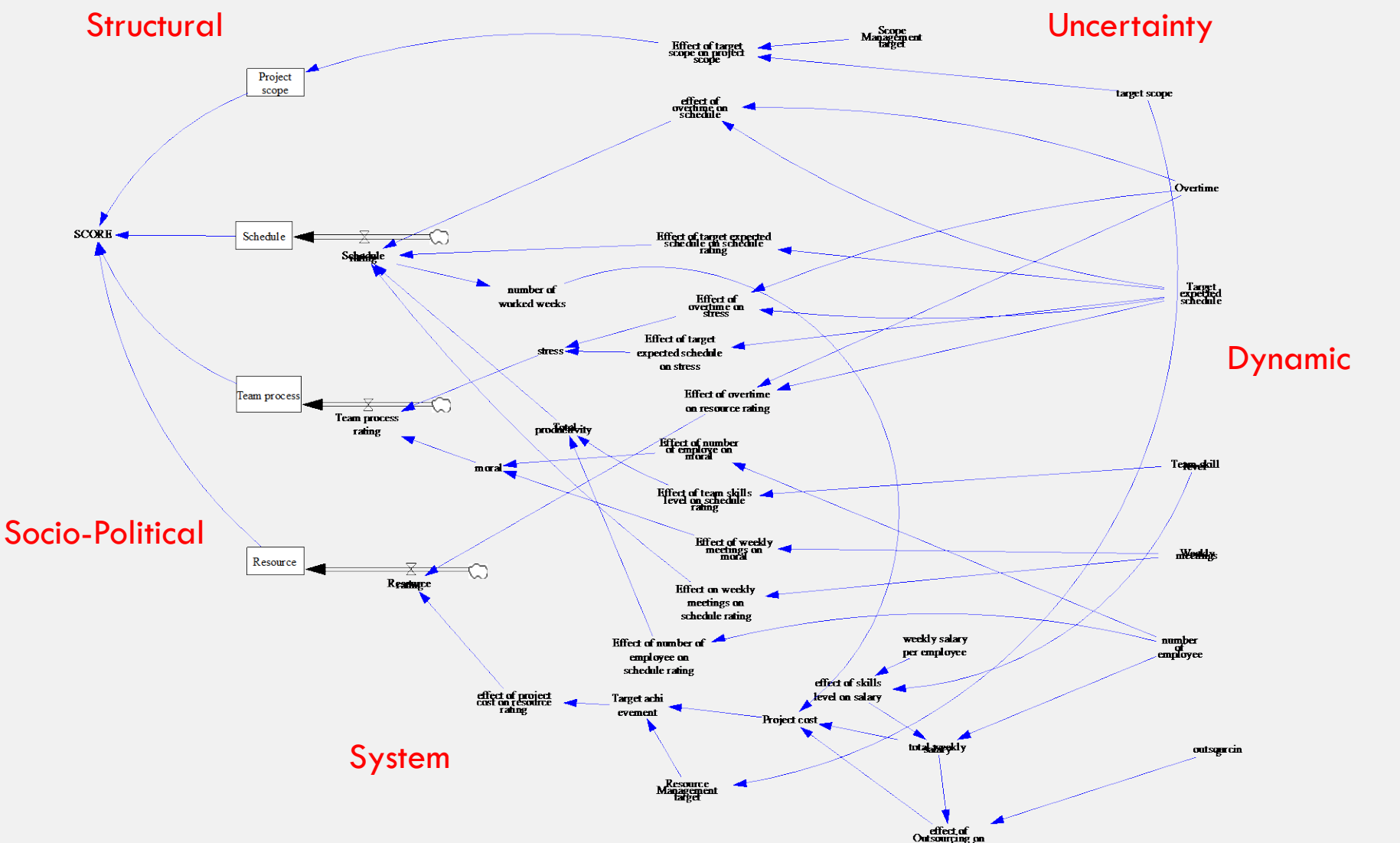
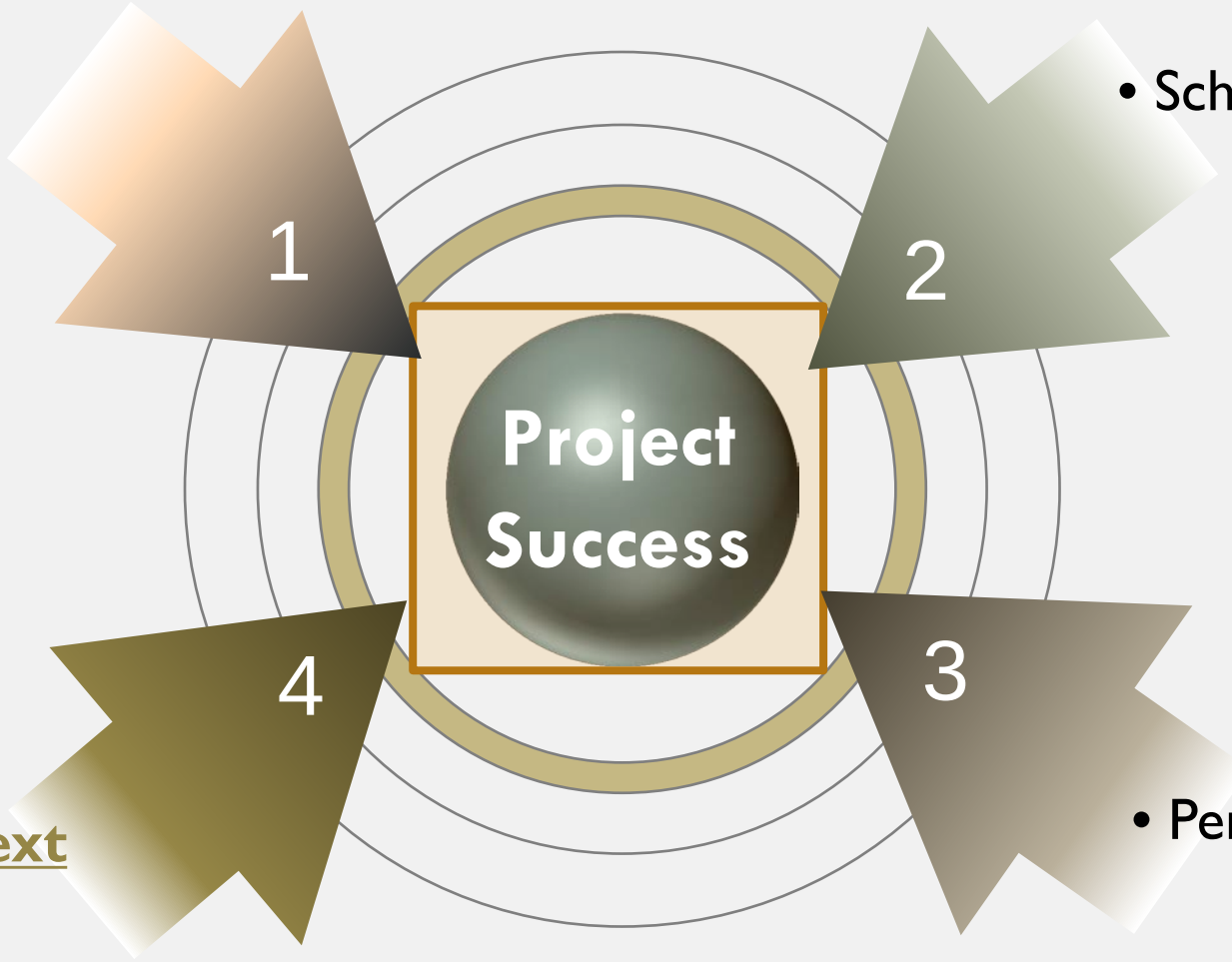
Context

APPLYING CONTEXT VARIABLES



SQUARING THE CIRCLE



- Cost
- Schedule
- Performance
- **Context**

CONCLUSION

- Cost, Schedule and Performance are insufficient to inform today's defense project/ engineering management environment
- Context shapes the project development process—it is at the heart of successful execution
- A thorough appreciation of the effects of context variables is critical for successful program execution

QUESTIONS

CHARACTERISTICS OF PROCESS*

- Define how the work of the organization is done
- Logical organization of people, materials, energy, equipment and procedures into work activities designed to produce a result.
- Set of processes lead to the accomplishment of a task
- Cross organizational boundaries (between tasks and organizations)
- Process Entities
  - Interorganizational
  - Interfunctional
  - Interpersonal
- Process Activities
  - Operational
  - Managerial

A Systems Approach to Project Management Research is Essential

*Davenport, T. (1990). The New Industrial Engineering: Information Technology and Business Process Redesign | MIT Sloan Management Review. MIT Sloan Management Review. Retrieved from http://sloanreview.mit.edu/article/the-new-industrial-engineering-information-technology-and-business-process-redesign/