

# US Special Operations Command



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| Title of Presentation:<br><b>MEASURING TRAINING ROI: SILVER BULLET OR URBAN LEGEND</b>                                                                                                                                                                                                                             |  |                                                                                     |  |                                                                                                    |  |                                            |  |
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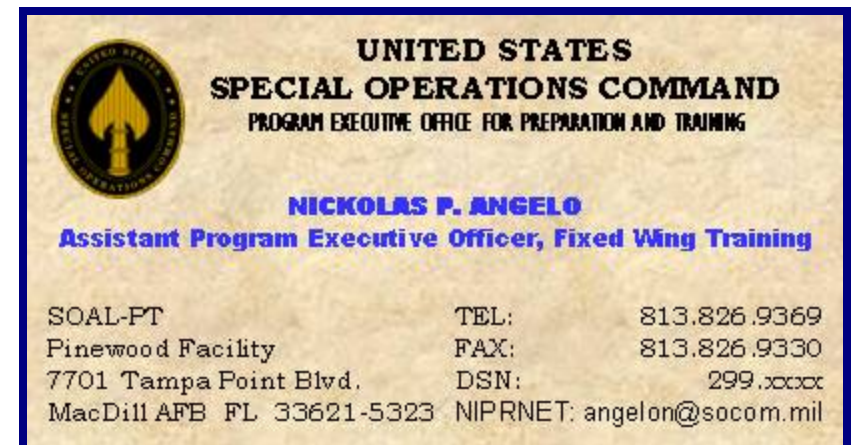


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# OVERVIEW

## MEASURING TRAINING ROI: SILVER BULLET OR URBAN LEGEND

- SILVER BULLET OR URBAN LEGEND?
- EVALUATION MODELS
- COURSES OF ACTION (ALTERNATIVES)
- EFFECTIVENESS EVALUATION
- COST EVALUATION
- COST-EFFECTIVENESS EVALUATION



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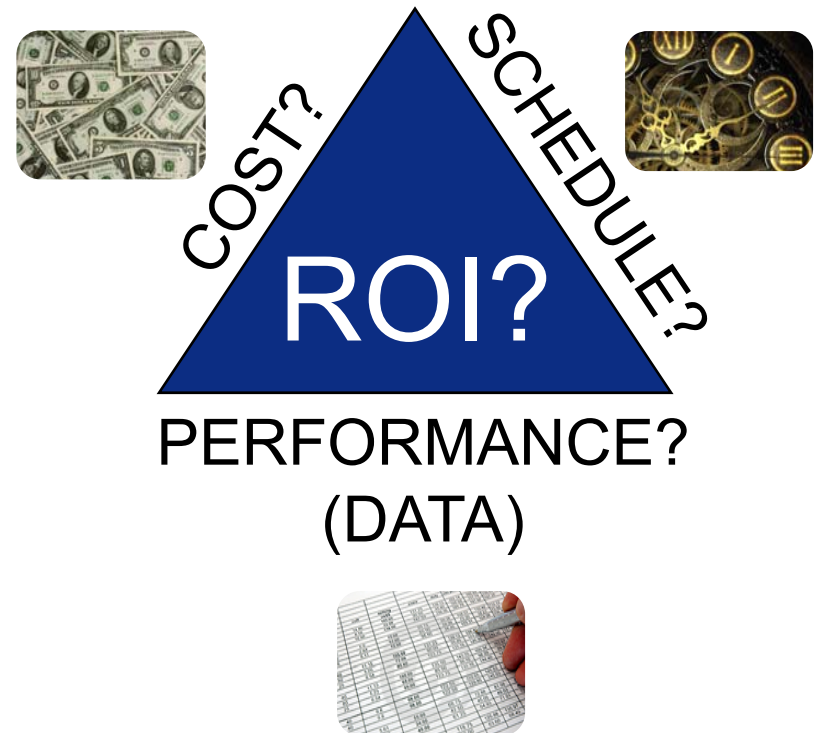
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# SILVER BULLET OR URBAN LEGEND?

- SILVER BULLET OR URBAN LEGEND?
  - ANTECEDOTES
  - ROI DEFINED
  - EVALUATION LEVELS
- EVALUATION MODELS
- COURSES OF ACTION (ALTERNATIVES)
- EFFECTIVENESS EVALUATION
- COST EVALUATION
- COST-EFFECTIVENESS EVALUATION



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# SILVER BULLET OR URBAN LEGEND?

## ANTECDOTES

"The biggest value that Training ROI ever produced was to sell books for a few authors, so unless you are one of those authors, forget all you have heard and read about. Training ROI is perhaps the least meaningful metric that you can determine when it comes to training, rated just below "smile" sheets. It is NOT indicative of the contribution that training makes to an organization."

*Bob Dust, GM Gyro Systems Inc., "The Myth of Training ROI," Jan '04*

The problem is that nobody is quite sure what the appropriate metrics are for measuring ROI for learning. Is it student throughput or time to mastery? Is it dropout rates or full-time equivalents returned to the workforce? One thing is certain: many smart people are completely befuddled by the topic."

*Marcia L. Conner, Learnativity.com, "How do I measure return on investment (ROI) for my learning program?, 5 Apr '02"*

"To some people--me included--the traditional concept of training ROI is obsolete. Astute training managers employ business metrics, not evaluation levels, I believe. Business unit managers value time more than ROI. Major decisions are based on descriptive business cases, not pro forma budgets. Senior executives tend to be more interested in the top line (dramatic growth from new markets and innovation) than the bottom line (the accounting fiction of profits)."

*Jay Cross, CEO of Internet Time Group, "A Fresh Look at ROI," Jan 01*

"The reason why I won't do an ROI study is that any major change effort within an organization requires not just training, but many other factors."

*Daniel R. Tobin, PhD, Corporate learning Strategies, "The Fallacy of ROI Calculations, '98*

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# SILVER BULLET OR URBAN LEGEND?

## ROI DEFINED



$$\text{BCR} = \frac{\text{PROGRAM BENEFITS}}{\text{PROGRAM COSTS}}$$

*BCR: BENEFITS COST RATIO*

TRAINING CHANGE  
EFFECTIVENESS



TRAINING CHANGE  
COST

$$\text{ROI\%} = \frac{\text{NET PROGRAM BENEFITS}}{\text{PROGRAM COSTS}} \times 100$$

*ROI: RETURN ON INVESTMENT*

Phillips and Stone. How To Measure Training Results: A Practical Guide To Tracking The Six Key Indicators, 2002, page 11, 19

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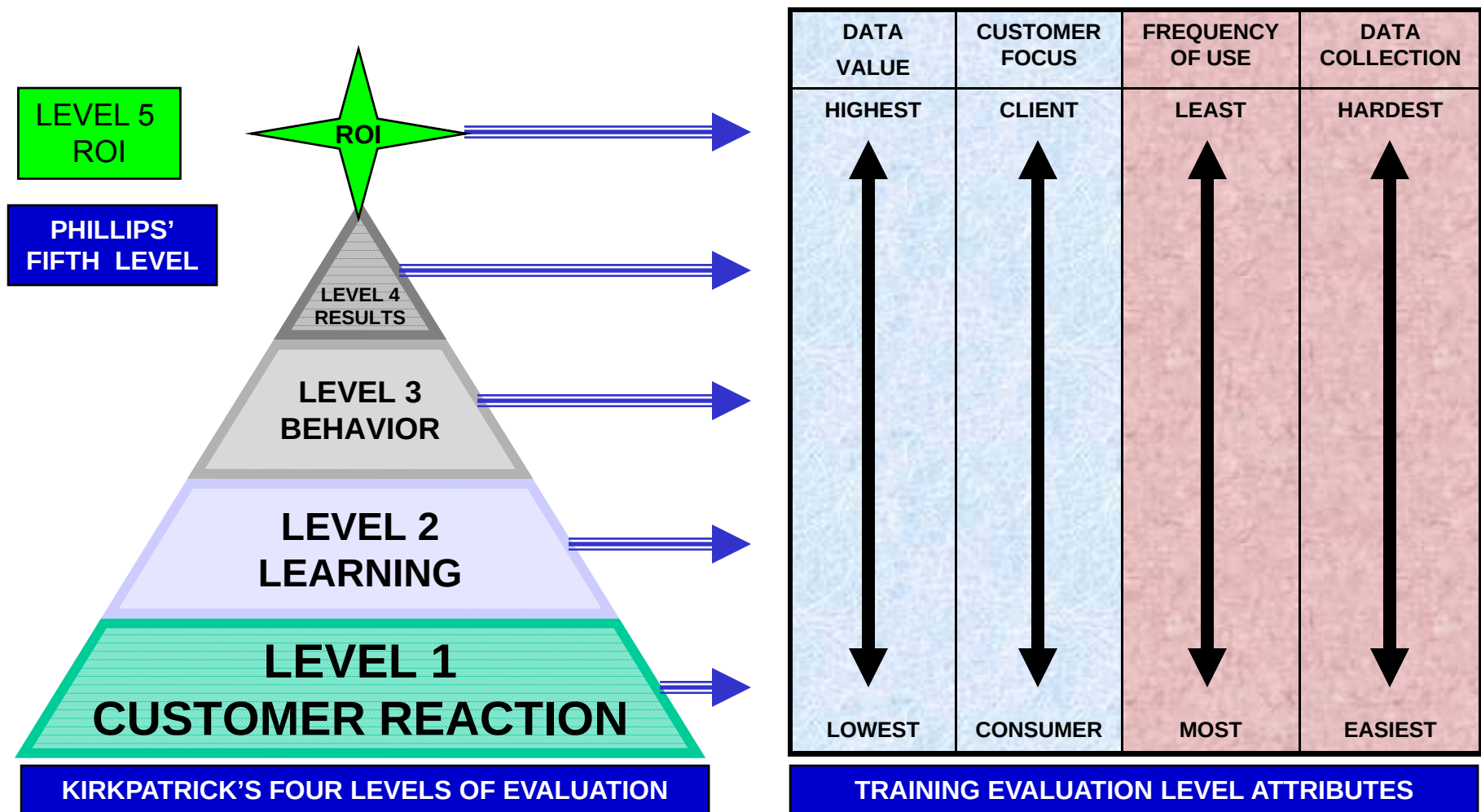
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# SILVER BULLET OR URBAN LEGEND?

## EVALUATION LEVELS



Phillips. *The Bottom Line on ROI: Basics, Benefits, & Barriers to Measuring Training and Performance Improvement*, 2002, page 45

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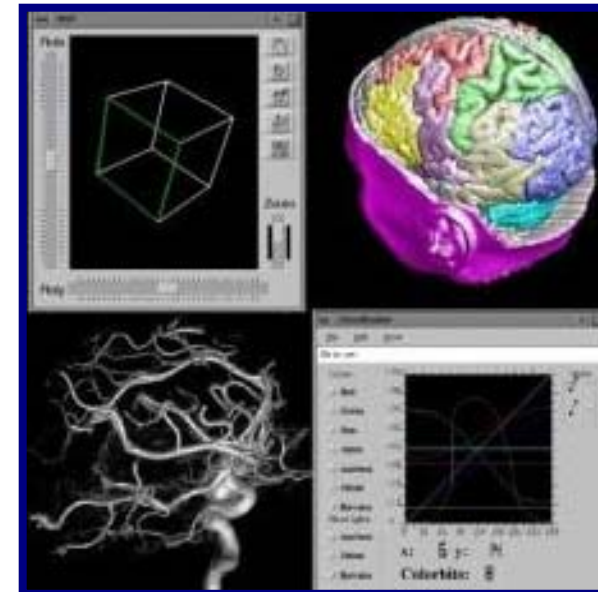
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# EVALUATION FRAMEWORKS

- SILVER BULLET OR URBAN LEGEND?
- EVALUATION FRAMEWORKS
  - ANALYSIS OF ALTERNATIVES
  - TRAINING SYSTEMS REQUIREMENTS ANALYSIS
  - M&S RETURN ON INVESTMENT
  - TRAINING RETURN ON INVESTMENT
  - THE HYBRID MODEL
- COURSES OF ACTION (ALTERNATIVES)
- EFFECTIVENESS EVALUATION
- COST EVALUATION
- COST-EFFECTIVENESS EVALUATION



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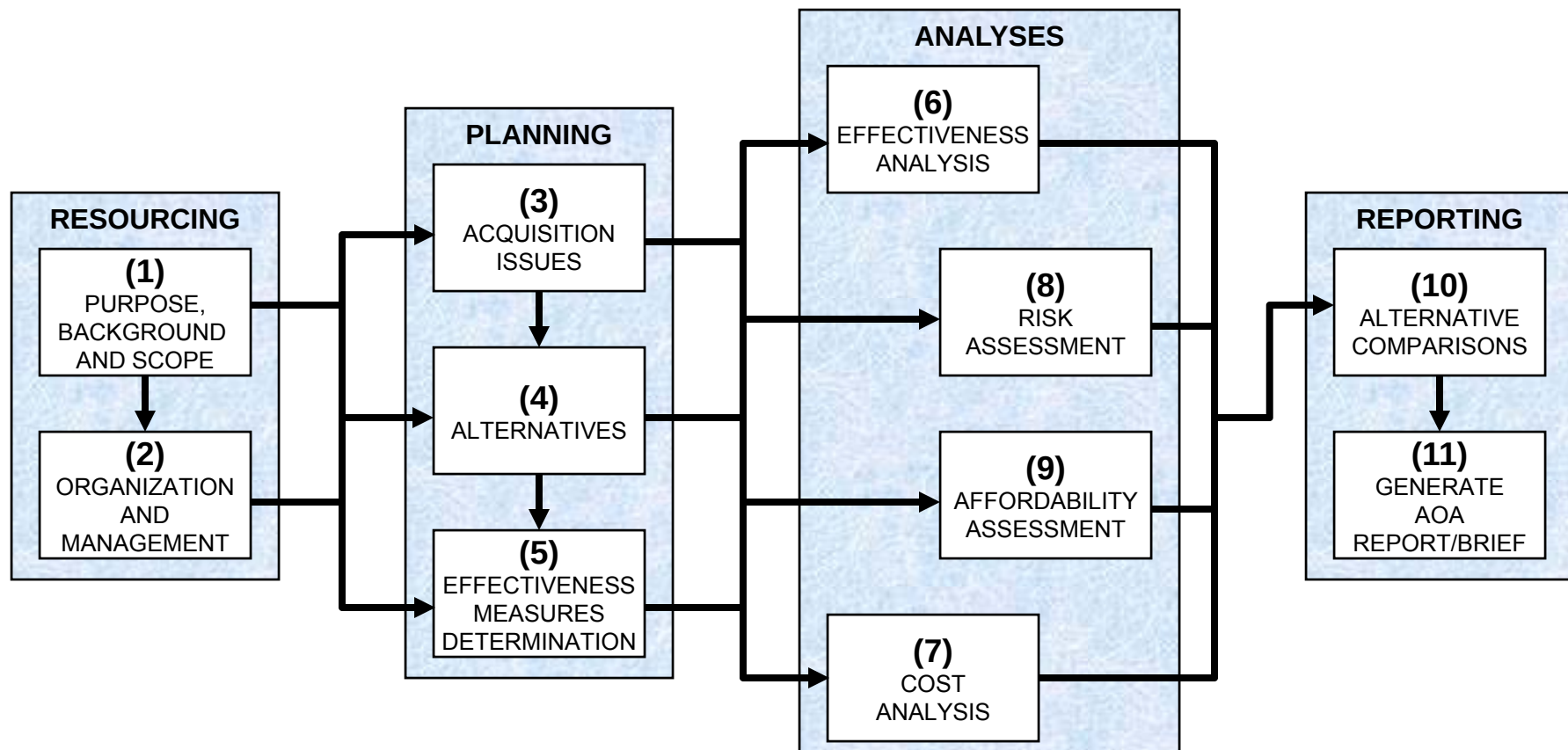




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# EVALUATION FRAMEWORKS

## ANALYSIS OF ALTERNATIVES (AOA)



U.S. Air force. Air Force Analysis of Alternatives Orientation Course, August 2006

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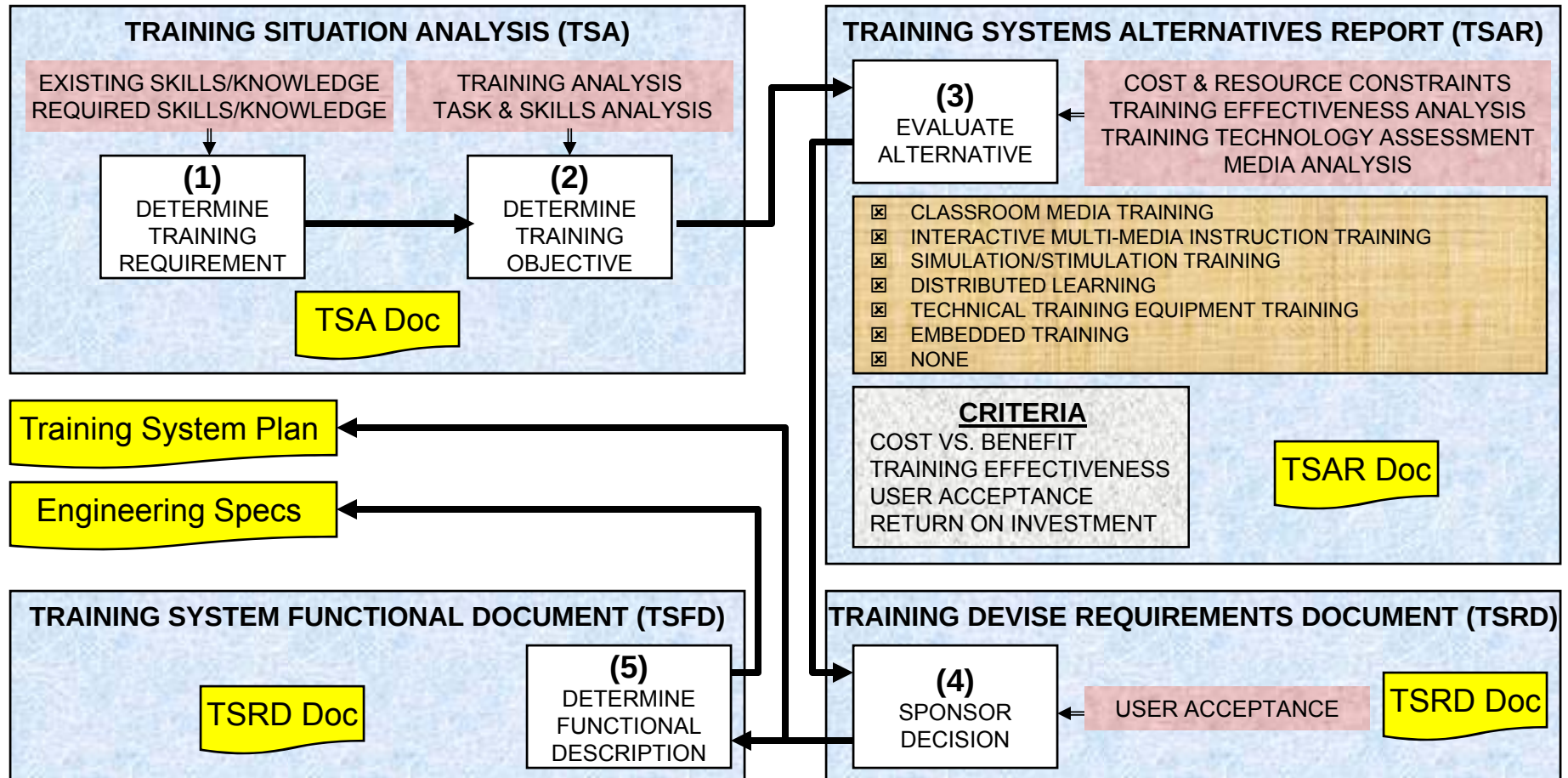
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# EVALUATION FRAMEWORKS

## TRAINING SYSTEMS REQUIREMENTS ANALYSIS (TSRA)



NAWC Training Systems Division. [Training Systems Requirements Analysis Webpage](#), 30 August 2007

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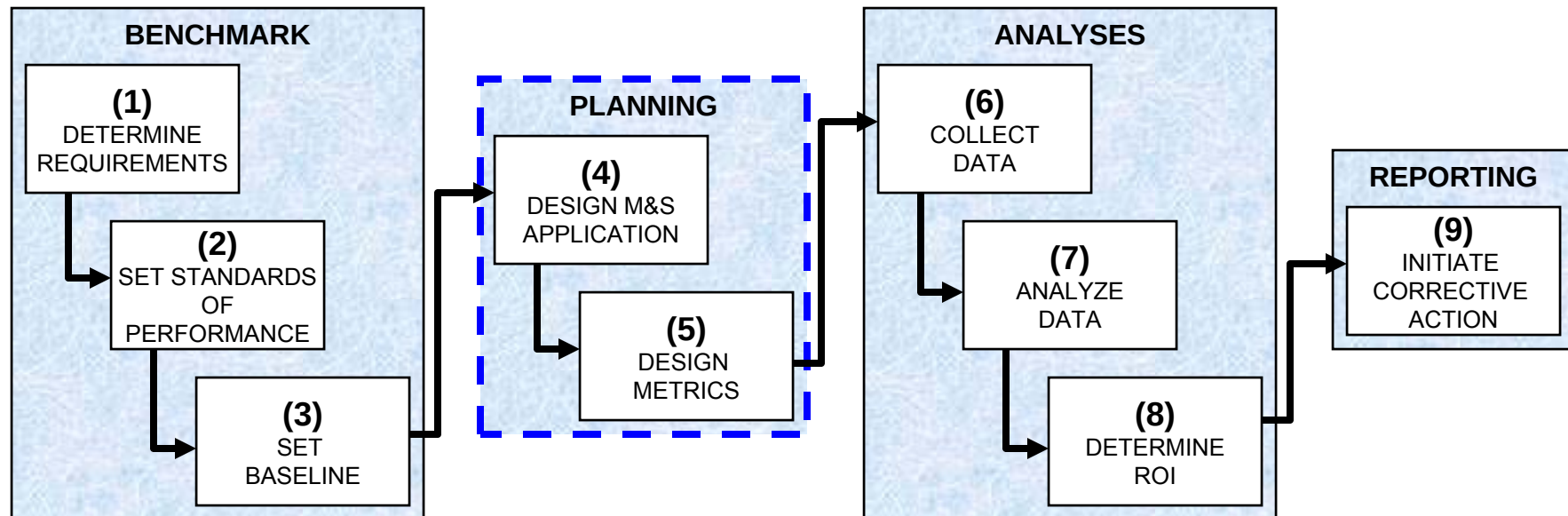
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# EVALUATION FRAMEWORKS

## M&S RETURN ON INVESTMENT



AFAMS. Return on Investment of Modeling and Simulation (M&S) Workshop Briefing, April 2008

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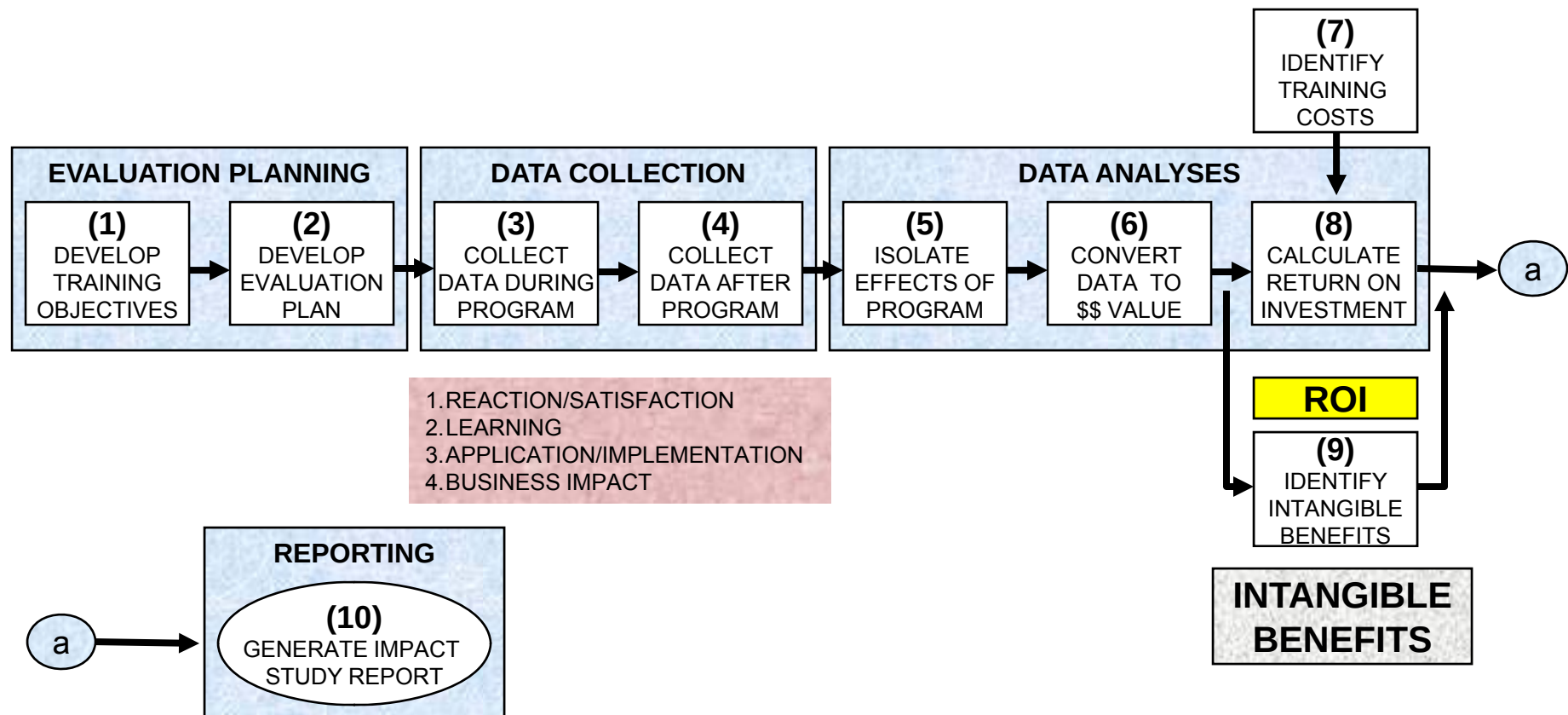
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# EVALUATION FRAMEWORKS

## TRAINING RETURN ON INVESTMENT (ROI)



Phillips and Stone. How To Measure Training Results: A Practical Guide To Tracking The Six Key Indicators, 2002, page 34

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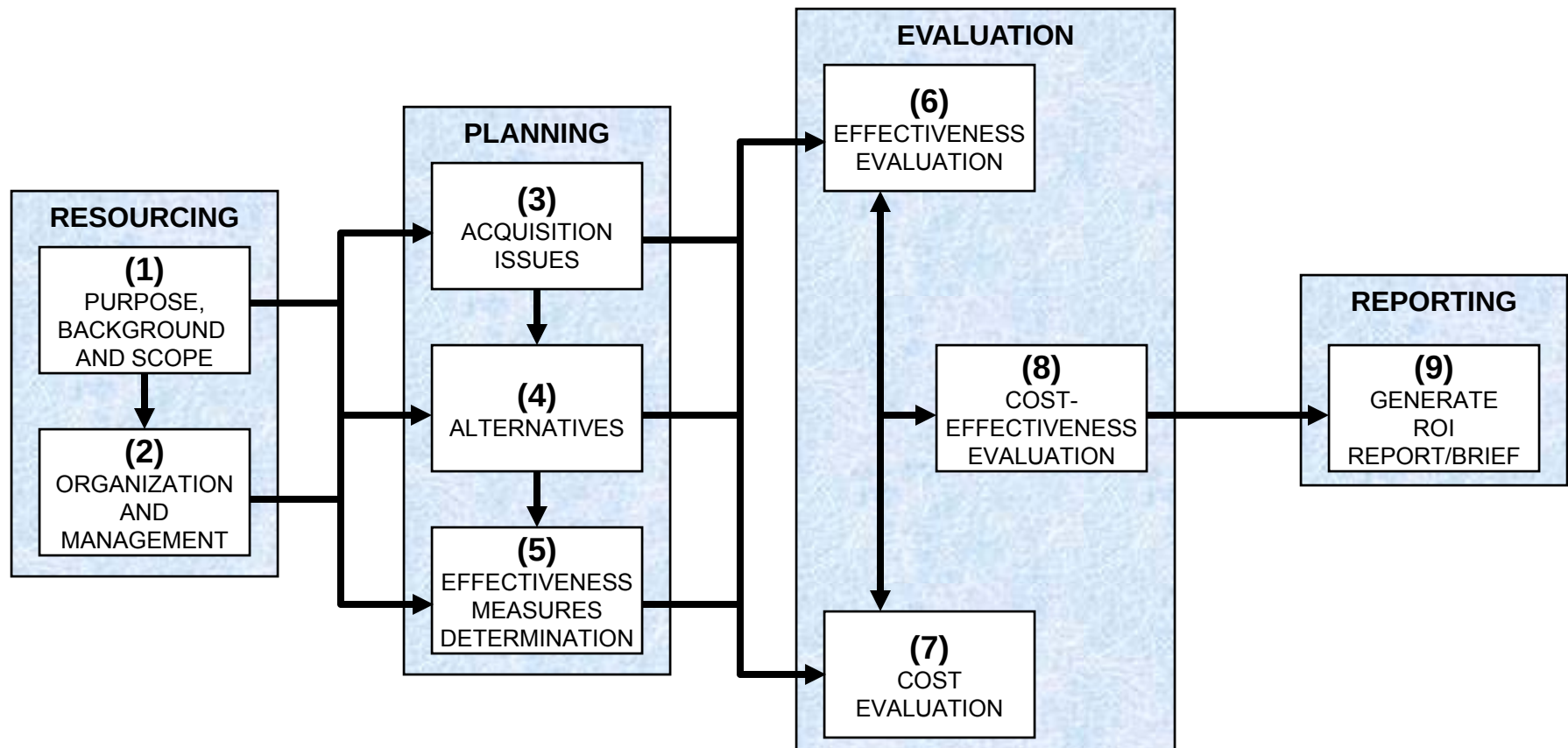
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# EVALUATION FRAMEWORKS

## HYBRID



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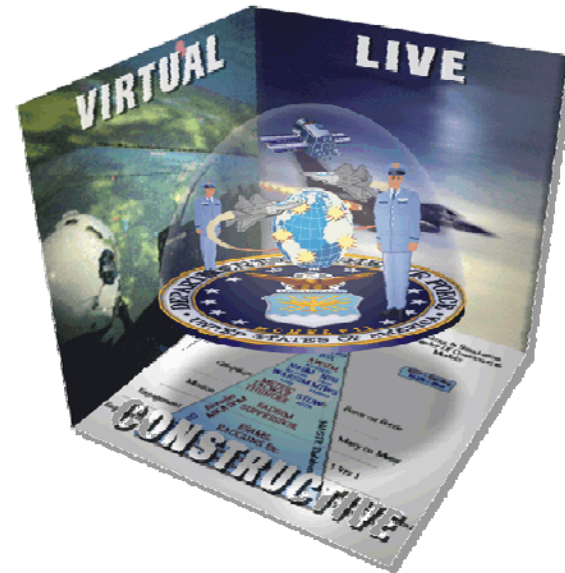




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# COURSES OF ACTION (ALTERNATIVES)

- SILVER BULLET OR URBAN LEGEND?
- EVALUATION MODELS
- COURSE OF ACTION (ALTERNATIVES)
  - TRAINING SPECTRUM
  - AC-130U ILLUSTRATION
- EFFECTIVENESS EVALUATION
- COST EVALUATION
- COST-EFFECTIVENESS EVALUATION



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# COURSES OF ACTION

## TRAINING SPECTRUM



AFAMS. Return on Investment of Modeling and Simulation (M&S) Workshop Briefing, April 2008

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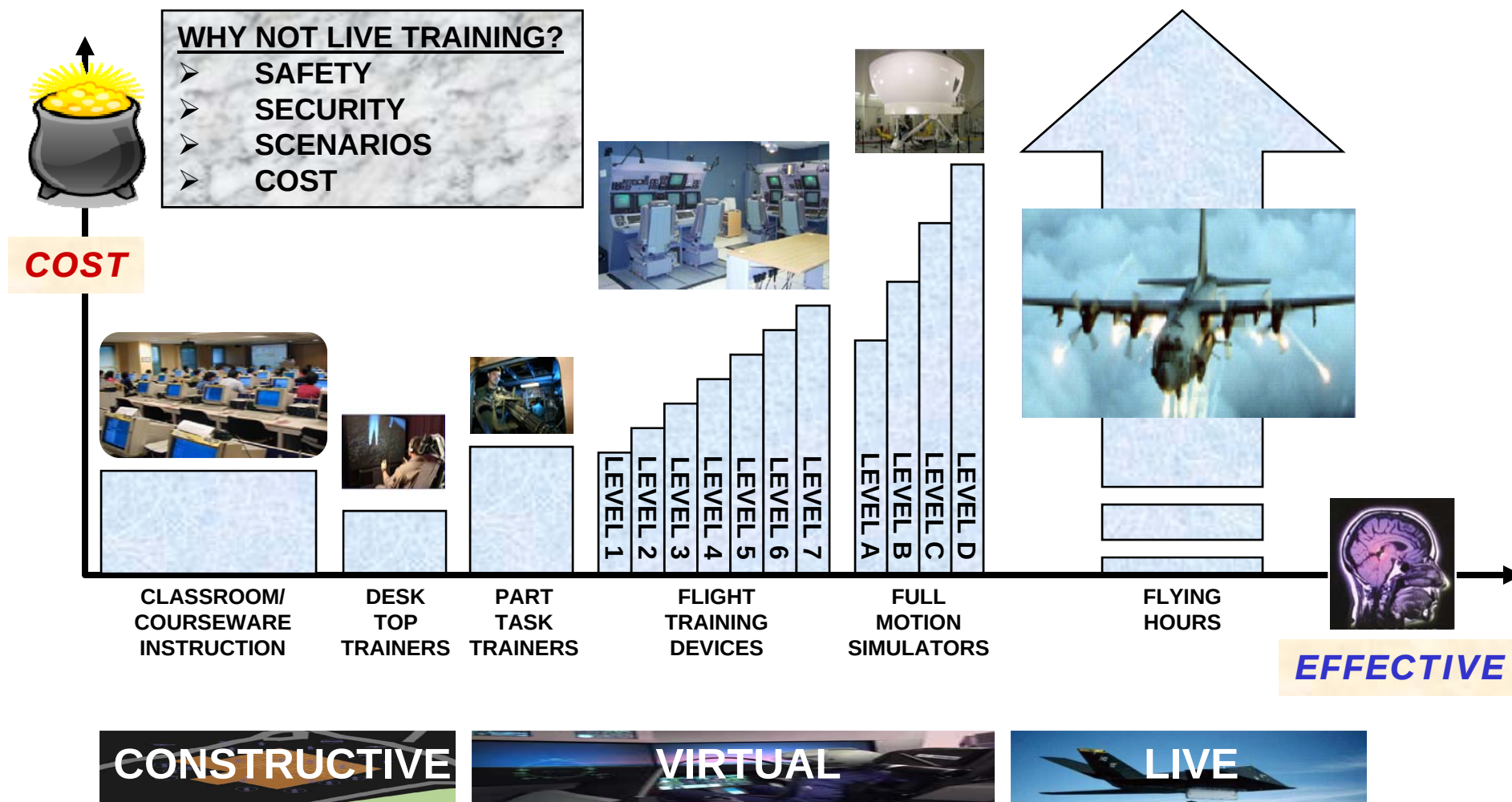
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# COURSES OF ACTION

## AC-130U ILLUSTRATION



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# EFFECTIVENESS EVALUATION

- SILVER BULLET OR URBAN LEGEND?
- EVALUATION MODELS
- COURSES OF ACTION (ALTERNATIVES)
- **EFFECTIVENESS EVALUATION**
  - ATTRIBUTES
  - METRICS
- COST EVALUATION
- COST-EFFECTIVENESS EVALUATION



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# EFFECTIVENESS EVALUATION

## ATTRIBUTES

### ■ JOINT TRAINING

- RIGHT INFORMATION
- RIGHT AUDIENCE
- ADAPTABILITY
- RESPONSIVENESS
- INTEROPERABILITY
- LEARNING TRANSFERENCE
- PERSISTENT/REINFORCED
- NETWORKED
- EXPEDITIONARY
- EFFICIENCY

### ■ MODELING & SIMULATION

- REUSE
- READINESS
- EFFICIENCY
- RISK REDUCTION
- EFFECTIVENESS
- ~~MONEY~~
- ENVIRONMENT
- LIVES
- TIME

JCS. Joint Functional Concept for Joint Training, July 2007

AFAMS. Return on Investment of Modeling and Simulation (M&S) Workshop Briefing, April 2008

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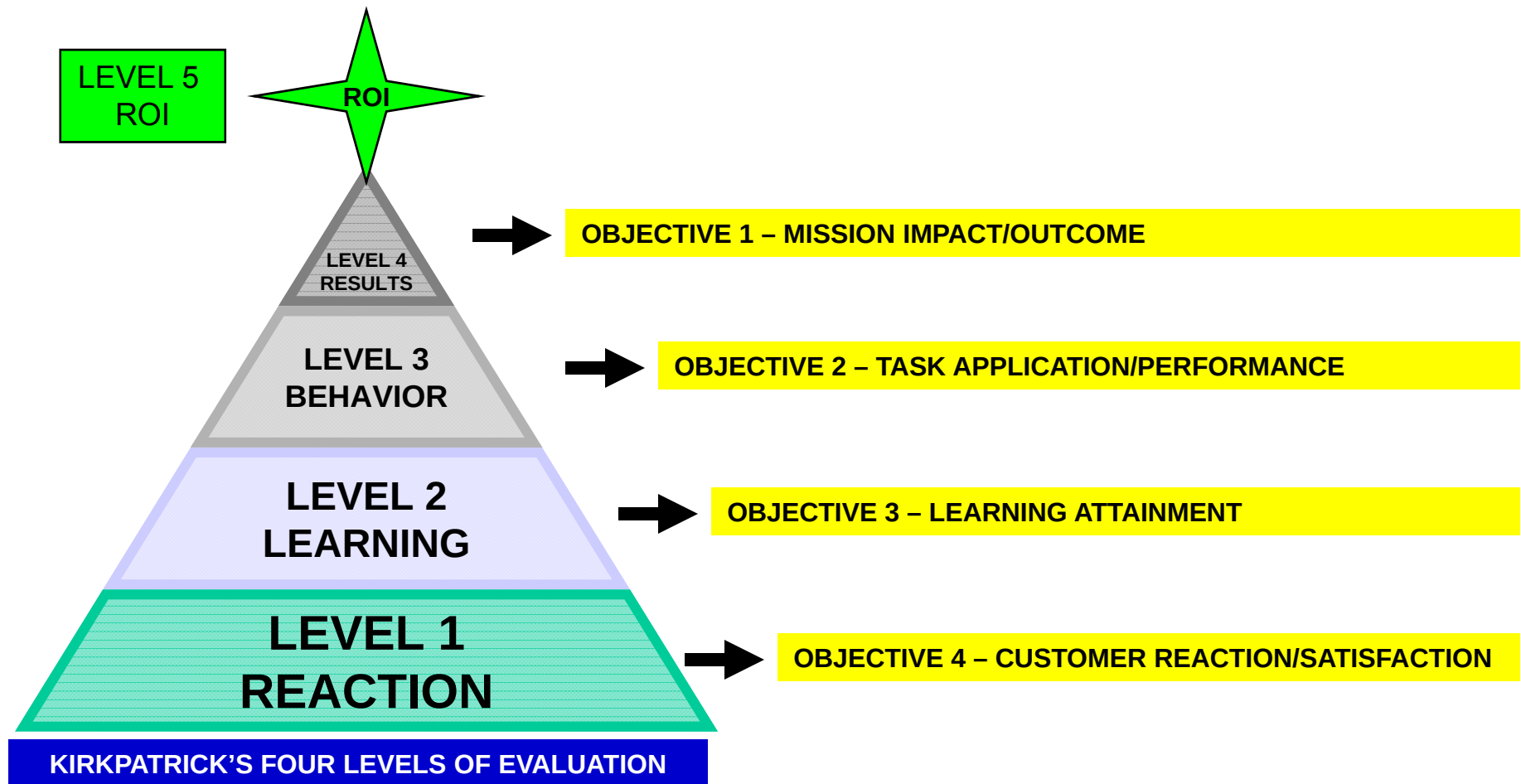
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# EFFECTIVENESS EVALUATION METRICS



Phillips. The Bottom Line on ROI: Basics, Benefits, & Barriers to Measuring Training and Performance Improvement, 2002, page 45

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# EFFECTIVENESS EVALUATION METRICS

## OBJECTIVE 1 – MISSION IMPACT

### MEASURES OF EFFECTIVENESS

1-X: MSN EFFECTIVENESS  
(OUTPUT-ORIENTED)

e.g.: SAFETY  
ENVIROMENTAL IMPACT  
TARGET NEUTRALIZED

### DATA SOURCES

- ACTION/IMPROVEMENT PLANS
- ASSIGNMENTS RELATED TO PROGRAM
- FOLLOW-UP
  - PROGRAM SESSIONS
  - QUESTIONNAIRES
- PERFORMANCE
  - CONTRACTING
  - MONITORING

ISOLATING TRAINING EFFECTS DIFFICULT

Phillips and Stone. How To Measure Training Results: A Practical Guide To Tracking The Six Key Indicators, 2002, page 34

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# EFFECTIVENESS EVALUATION METRICS

## OBJECTIVE 2 – TASK APPLICATION

### MEASURES OF EFFECTIVENESS

2-X: TASK EFFECTIVENESS  
(INPUT ORIENTED)

e.g.: TIME  
RESOURCES  
READINESS  
RISK REDUCTION

ISOLATING TRAINING EFFECTS DIFFICULT

### DATA SOURCES

- ACTION/IMPROVEMENT PLANS
- ASSIGNMENTS RELATED TO PROGRAM
- OBSERVATIONS ON-THE-JOB
- FOLLOW-UP
  - FOCUS GROUPS
  - INTERVIEWS
  - PROGRAM SESSIONS
  - QUESTIONNAIRES
  - SURVEYS
- PERFORMANCE
  - CONTRACTING

Phillips and Stone. How To Measure Training Results: A Practical Guide To Tracking The Six Key Indicators, 2002, page 34



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# EFFECTIVENESS EVALUATION METRICS

## OBJECTIVE 3 – LEARNING

### MEASURES OF EFFECTIVENESS

- 3-1: TRAINING PROFICIENCY RATIO
- 3-2: TRAINING THROUGHPUT RATIO
- 3-3: TRAINING APPLICABILITY RATIO
- 3-4: TRAINING APPROPRIATENESS RATIO

### DATA SOURCES

- ASSESSMENTS
  - SELF
  - TRAINER
- TESTS
  - FORMAL
  - CRITERIA REFERENCED
  - PERFORMANCE BASED
  - SIMULATION
- EXERCISES/ACTIVITIES

Bob Dust. The Myth of Training ROI, January 2004

Phillips and Stone. How To Measure Training Results: A Practical Guide To Tracking The Six Key Indicators, 2002, page 34

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# EFFECTIVENESS EVALUATION METRICS

## OBJECTIVE 4 – REACTION

### MEASURES OF EFFECTIVENESS

#### 4-1: STUDENT COURSE REACTION RATINGS

- 4-1-1: COURSE OVERALL
- 4-1-2: COURSE CONTENT
- 4-1-3: COURSE METHODOLOGY
- 4-1-4: COURSE FACILITY
- 4-1-5: COURSE INSTRUCTION
- 4-1-6: COURSE CHANGE ASSESSMENT

#### 4-2: ADMINISTRATION REACTION RATINGS

- 4-1-1: CURRICULUM OVERALL
- 4-1-2: CURRICULUM CONTENT
- 4-1-3: CURRICULUM METHODOLOGY
- 4-1-4: CURRICULUM FACILITY
- 4-1-5: CURRICULUM INSTRUCTION
- 4-1-6: CURRICULUM CHANGE ASSESSMENT

### DATA SOURCES

#### ■ INITIAL

- INTERVIEWS
- QUESTIONNAIRES

Phillips and Stone. How To Measure Training Results: A Practical Guide To Tracking The Six Key Indicators, 2002, page 34





# EFFECTIVENESS EVALUATION

## METRICS

### TRAINING ISOLATION/MONETARY CONVERSION

#### TRAINING EFFECTS ISOLATION

- CONTROL GROUPS
- TREND LINE ANALYSIS
- FORECASTING
- PARTICIPANT ESTIMATE
- SUPERVISOR ESTIMATE
- MANAGEMENT ESTIMATE
- CUSTOMER INPUT
- EXPERT ESTIMATE
- SUBORDINATE INPUT
- OTHER FACTORS IMPACT

#### TRAINING "\$" CONVERSION

- CONVERTING
  - OUTPUT TO CONTRIBUTION
  - COST OF QUALITY
  - EMPLOYEE TIME
- HISTORICAL COSTS
- INTERNAL/EXTERNAL EXPERTS
- INTERNAL/EXTERNAL DATABASES
- PARTICIPANTS' ESTIMATES
- LINKING WITH OTHER MEASURES
- SUPERVISOR/MANAGER ESTIMATES
- TRAINING STAFF ESTIMATES

Phillips and Stone. How To Measure Training Results: A Practical Guide To Tracking The Six Key Indicators, 2002, page 34



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# COST EVALUATION OVERVIEW

- SILVER BULLET OR URBAN LEGEND?
- EVALUATION MODELS
- COURSES OF ACTION (ALTERNATIVES)
- EFFECTIVENESS EVALUATION
- COST EVALUATION
  - ATTRIBUTES
  - METRICS
- COST-EFFECTIVENESS EVALUATION



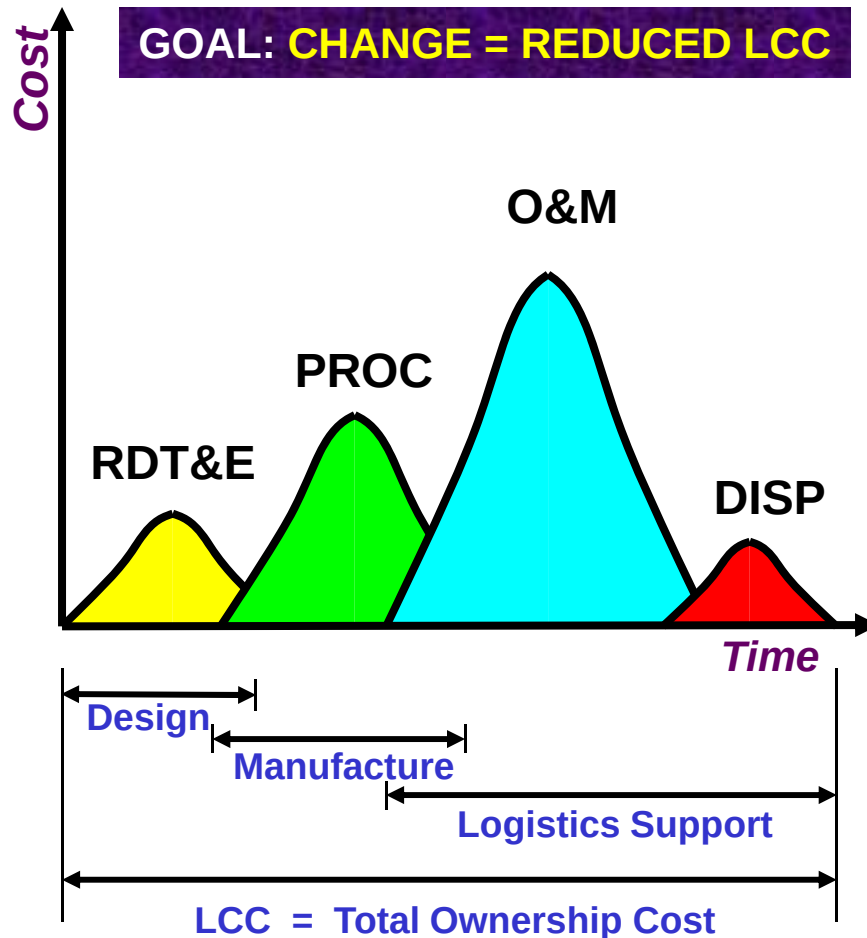
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# COST EVALUATION ATTRIBUTES



- **Research and Development** – All costs required to research and develop a system before committing it to production (engineering design, manufacturing of test articles, testing to prove the design, contractor ST&E, engineering development equipment, software development, intelligence design, data, etc)
- **Investment/Production** – Costs associated with the fabrication, assembly and delivery of a system (prime mission equipment, support equipment, initial spares, modification to existing platforms, intelligence production, integration costs, data, etc)
- **Operations & Support** – Includes all direct and indirect costs required for operation and support of a system (cost of personnel, materials, facilities, depot maintenance, inventory management control, intelligence support, data, etc)
- **Disposal** – Cost to dispose of the system after its useful life (disposal or long-term storage costs, environmental and related costs, development and manufacturing cleanup costs, etc)

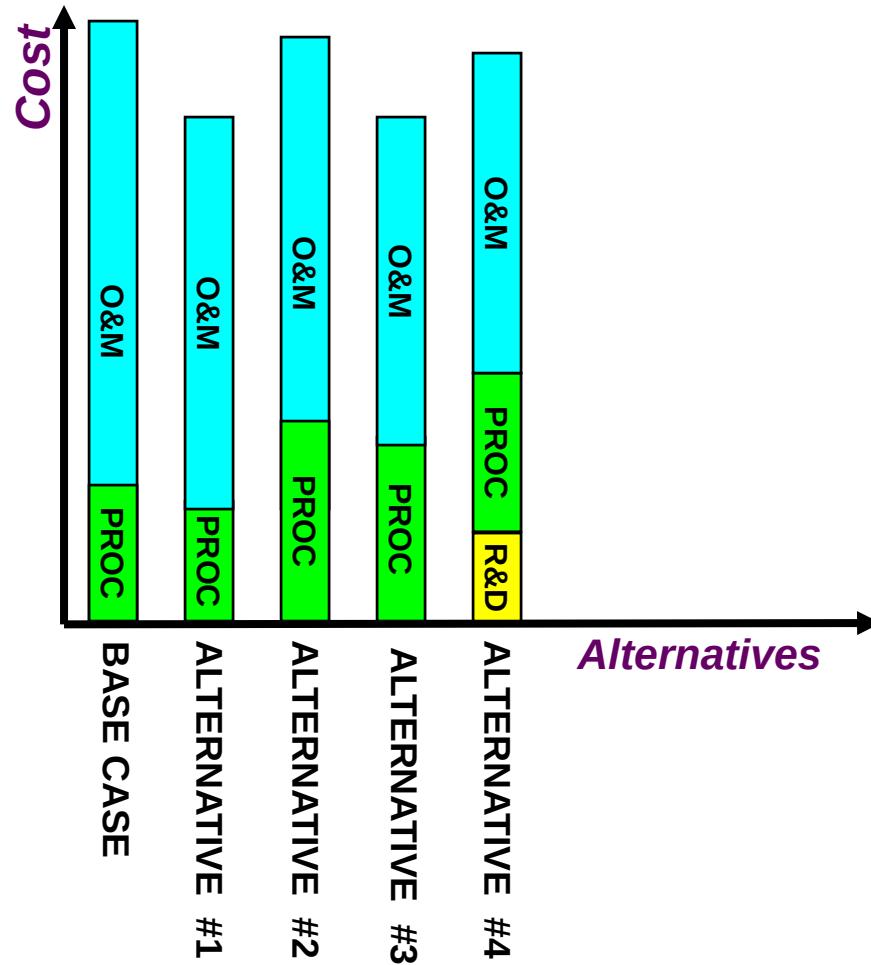
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# COST EVALUATION METRICS



## ■ MEASURES OF COST

- BREAK EVEN
- PAYBACK

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# COST-EFFECTIVENESS EVALUATION

## OVERVIEW

- SILVER BULLET OR URBAN LEGEND?
- EVALUATION MODELS
- COURSES OF ACTION (ALTERNATIVES)
- EFFECTIVENESS EVALUATION
- COST EVALUATION
- COST-EFFECTIVENESS EVALUATION
  - ATTRIBUTES
  - METRICS



△ EFFECTIVENESS

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# COST-EFFECTIVENESS EVALUATION

## ATTRIBUTES

| PROBABILITY OF RISK                                                                                |                                                                                                                         |                                   |
|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| <u>Process Past Performance</u><br>The process...                                                  | <u>Observed Process Characteristics</u><br>The process looks like...                                                    | <u>Level/Likelihood</u>           |
| ...Risk events are imminent and cannot be avoided under current conditions – incapable process     | Lack of planning and management for any process change; any success is due to individual effort/knowledge               | <b>5</b><br><b>Nearly Certain</b> |
| ...expects risk events and most of them are likely to occur – incapable process                    | Process management based on experience with similar processes; successful practices used                                | <b>4</b><br><b>Highly Likely</b>  |
| ...anticipates risk events but may not avoid them – marginally capable process                     | Tech and management aspects of process documented; standards used; sub-processes understood and used to improve process | <b>3</b><br><b>Likely</b>         |
| ...has usually avoided or resolved risk events in similar cases – capable process                  | Quantitative management of process capability; trends are predicted                                                     | <b>2</b><br><b>Unlikely</b>       |
| ...will effectively avoid or resolve risk events using standard practices – highly capable process | Continuous improvement is norm; best practices used; process capability expanded routinely                              | <b>1</b><br><b>Remote</b>         |

| PROBABILITY | 5 | M      | M | H | H | H |
|-------------|---|--------|---|---|---|---|
|             | 4 | L      | M | M | H | H |
|             | 3 | L      | L | M | M | H |
|             | 2 | L      | L | L | M | M |
|             | 1 | L      | L | L | L | M |
|             |   | 1      | 2 | 3 | 4 | 5 |
|             |   | IMPACT |   |   |   |   |

| IMPACT OF RISK                           |                      |                   |          |
|------------------------------------------|----------------------|-------------------|----------|
| Effectiveness                            | Schedule             | Cost              | Level    |
| Minimal/No Impact                        | Minimal/No Impact    | Minimal/No Impact | <b>1</b> |
| Acceptable; Some Margin Reduction        | Meets milestones     | Increase <5%      | <b>2</b> |
| Acceptable; Significant Margin Reduction | Minor milestone slip | Increase 5-7%     | <b>3</b> |
| Acceptable, No Margin Remaining          | Major milestone slip | Increase >7-10%   | <b>4</b> |
| Unacceptable                             | Not Meet Milestones  | Increase >10%     | <b>5</b> |

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# COST-EFFECTIVENESS EVALUATION

## METRICS

| ALTERNATIVES   | MEASURES OF EFFECTIVENESS |         |                           |         |                         |         |                         |         | RISK   | TOTAL LCC |
|----------------|---------------------------|---------|---------------------------|---------|-------------------------|---------|-------------------------|---------|--------|-----------|
|                | OBJECTIVE 1<br>MSN IMPACT |         | OBJECTIVE 2<br>TASK PERF. |         | OBJECTIVE 3<br>LEARNING |         | OBJECTIVE 4<br>REACTION |         |        |           |
|                | MOE 1-1                   | MOE 1-2 | MOE 2-1                   | MOE 2-2 | MOE 3-1                 | MOE 3-2 | MOE 4-1                 | MOE 4-2 |        |           |
| #1 (BASE CASE) | Green                     | Yellow  | Red                       | Green   | Yellow                  | Red     | Yellow                  | Green   | Yellow | Red       |
| #2             | Red                       | Green   | Red                       | Yellow  | Yellow                  | Green   | Yellow                  | Yellow  | Red    | Green     |
| #3             | Green                     | Red     | Yellow                    | Red     | Green                   | Yellow  | Red                     | Green   | Yellow | Red       |
| #4             | Green                     | Yellow  | Green                     | Red     | Yellow                  | Green   | Green                   | Yellow  | Red    | Green     |
| #5             | Yellow                    | Green   | Red                       | Green   | Yellow                  | Green   | Green                   | Green   | Yellow | Yellow    |
| #6             | Red                       | Yellow  | Green                     | Yellow  | Green                   | Red     | Yellow                  | Red     | Red    | Yellow    |

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# SUMMARY

- 
- **1. BENCHMARK CURRENT TRAINING PROGRAM**
    - TRAINING PROGRAM EFFECTIVENESS (INCLUDE CAPABILITY GAPS)
    - TRAINING PROGRAM COST
  - **2. TREAT TRAINING AS EXPENSE**
    - COMPARE TRAINING PROGRAM COSTS (CURRENT vs NEW)
    - DETERMINE PAYBACK OF NEW TRAINING PROGRAM, IF ANY
  - **3. ISOLATE THE BENEFITS**
    - COMPARE TRAINING PROGRAM EFFECTIVENESS (CURRENT vs. NEW)
    - DETERMINE BENEFITS OF NEW TRAINING PROGRAM, IF ANY
  - **4. AVOID THE “ROI” RATIO**
    - ONE NUMBER MEANS NOTHING
    - CONSIDER THE FOLLOWING EXPRESSIONS (OBJ. 3) OF RETURN:
      - \_\_\_ % IMPROVED PROFICIENT
      - \_\_\_ % IMPROVED THROUGHPUT
      - \_\_\_ % INCREASES SKILLS VALUED BY COMMAND
      - \_\_\_ % INCREASED TRAINING SPECIFIC PEOPLE IN SPECIFIC FUNCTIONS

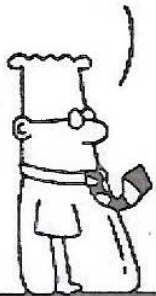


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# QUESTIONS?

**DILBERT**  
BY SCOTT ADAMS

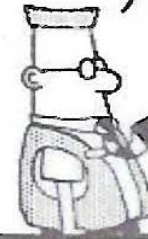
MY **SIMULATOR** IS  
TOO SLOW. I NEED  
TO UPGRADE IT.



I NEED A COST-  
BENEFIT ANALYSIS  
INCLUDING THE COST  
OF ALL ALTERNATIVES,  
AND VICE PRESIDENT  
APPROVAL.



IT WAS EASIER TO GET  
A SECOND JOB AND PAY  
FOR THE UPGRADE  
MYSELF.



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