

# RAPID RELATIONAL MODELING

*A Unique Decision Support Capability.....*

*A problem-solving methodology designed to assist in identifying, defining, ordering and understanding the structure of complex problems, thereby enabling high quality solutions*

# Why Are We Here?

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- To Tell You About The RRM Tool
  - What Is It and How It Works
  - Why Is It Unique - What's the Discriminator

# Outline

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- **The Challenges**
- **The Methodology**
- **The Benefits and Advantages of This Approach**
- **Examples**
  - **General**
  - **Within Our Interest Arena**

# The Challenge

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## **Efficient, Effective Decision Making is Complicated by:**

- **Problems With Too Many Variables and No Apparent Structure**
- **Endless Hours Spent in Conducting Expensive, Wasteful & Unproductive “meetings”**
- **Lack of Consensus Among Participants in Group Processes**
- **Subjective Assessment Processes**
  - **Intuitive/Unstructured Criteria**
  - **No In-line Verification/Validation**
  - **No Accountability**
  - **Insufficient Documentation**
  - **No Feed-back**
  - **Continuous Improvement is “Happenstance/Accidental”**

## **As a Result:**

- **Scarce Resources are Allocated Inefficiently/Inappropriately**
- **System Capabilities and Customer/Client Needs are Mismatched**
- **System Goals, Requirements and/or Priorities are Ill-defined/Fuzzy**

# The Target Problem Set

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- **Defining and Ranking Criteria, and Then Using These Criteria for Developing Figures of Merit**
  - **A Recurring Activity in Defense, Intelligence, Other Government, and Commercial Operations**
  - **In Some Way, Part of All Program Planning, Requirements Definition, and Program Execution Efforts**
- **The Root Difficulty:**
  - **While Many Criteria Are Objectively Definable, Many Others Are Subjective and Highly Dynamic or Volatile**
    - **Subjective Basis in Experience and Group Composition**
      - *(Varying Perception of the Same Problem)*
    - **Nested Levels of Interdependence and Priorities**
    - **Long Timelines For Non-Quantitative Decisions**
    - **Poor Concept Communication; Ill-Defined Problem Elements**

# The Objective

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- **Define a Generic Methodology to Address Dynamic and Non-Quantitative Criteria**
- **Provide A Structured Methodology That Allows for Timely Use of Expert Input**
- **Blend Quantitative and Other System Evaluation Methods in a Complementary Manner**
- **Replace “BOGSATs” with “Computer-aided Work Sessions”**
  - **Participatory & Consensus-building Process**
  - **Improved Communication**
  - **Goal-directed**
  - **Immediate Pay-off & Feed-back**
  - **High Quality Decision-Making Output**

# So What Is Rapid Relational Modeling?

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- **A Decision Support Software Tool That Uses Matrix Algebra & Graph Theory to Rapidly Define, Rank, and Map the Relationships Among a Group of Elements**
  - *A Computer-Aided Technique for Generating Contextual Maps, or “Structural Models” of Complex Issues.*
- **The Three-Step Methodology Involves:**
  - **A Nominal Group Activity to Extract a Set of Operational Elements Related to the Problem Domain**
  - **A Computer-aided Session to Interactively Order the Elements/Descriptors of a Problem Domain Using Transitive Logic**
    - **Output in the Form of a Directed Graph, or “Digraph”**
    - **Optional Graphical Presentation of the Relationships in Various Forms**
  - **Application of the Outputs of the Computer-aided Session to Construct a Binary Decision Tree/Logic Tree**

# Why an Automated Tool?

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- **For problems comprised of large sets of complexly interrelated variables, it has been shown that an unaided person can consistently manage & process a maximum of five variables (plus or minus, two) simultaneously**
- **Other COTS decision support tools are quantitatively focused and do not provide for the mix of complex empirical, subjective and expert inputs that often characterize the solution space of complex problems**



# Rapid Relational Modeling (RRM)

## RRM: What Does It Mean?

- True Participation/Empowerment
- Productive Development Strategies
- Human Resources Management
- Resource Allocation
- Process Improvement
- Focused Planning



- System Tasking Prosecutions
- Architecture Evaluations
- System Engineering Studies
- PPBS Mission Area Panels
- Source Selection
- C4I Decision Rules
- POM/BES Trades
- COEAs
- ORDs

- Structured Criteria for Performance
- Documented/Justified Decisions
- Priorities are Well Understood
- Improved Communication
- Objective Evaluation Metrics
- Faster Consensus/Buy-in
- Basis for Continuous Assessment
- Higher Quality Outcome
- & Progress/Performance Monitoring
- Right the First Time

**“Decision Support Systems (DSS) will eventually become as much an accepted part of business automation as word processing and spreadsheet applications are currently. DSS may lack the familiar ring of “spreadsheet”, “database” or “word processing”, but it describes a class of managerial support programs that are rapidly working their way into corporate boardrooms and business environments”... *PC Magazine (Sept. 15, 1995)***

# Rapid Relational Modeling (RRM)

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## How Does it Work?

- Identify a Problem
  - Gather Experts
  - Brainstorm Variables
  - Input Variables/Relationship/Context
  - Run Interpretive Structural Modeling Program
  - Review Output Model/Assign Metrics
  - Generate Tailored Solution(s) Fitted to Model
  - Using Model, Evaluate Solution
  - Using Model as Spec, Design Implementation
  - Verify/Validate
  - Monitor & Improve
- Other Decision-support Tools Exist, But...
    - Most of them require complete knowledge of the structure and dynamics of the problem domain;
    - The power of automation is expended on providing electronic “white-board” visualization .

RRM efficiently focuses rigorous computational resources to assault complex problems with minimum required input to produce the greatest level of understanding. This provides the basis for improved solution development and implementation.

**RRM REPRESENTS A NEW AND EXCITING BUSINESS OPPORTUNITY...  
TO PROVIDE HIGH-QUALITY SUPPORT TO OUR CUSTOMERS, LEADING TO  
IMPROVED DECISION-MAKING, GREATER PROCESS EFFICIENCY, CONSISTENCY  
AND PRODUCTIVITY...DOING THE RIGHT THINGS RIGHT THE FIRST TIME.**

# RAPID RELATIONAL MODELING (RRM)

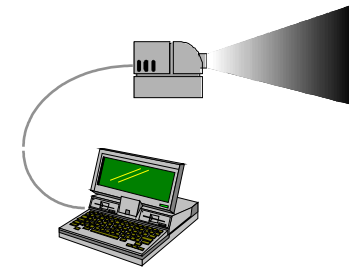


Step 1: “Brainwriting” - What are (or are ’nt) the Elements or Variables of Significance? ... A Comprehensive List of Group Ideas About the Issue.

Step 2: “Relating” Criteria - Possible “Relationships” or ‘Qualifications” to be Used as Basis for Evaluating the Variables.

- “More Important Than”...
- “Causes a Change In”...
- Depends On” or “Precedes”...

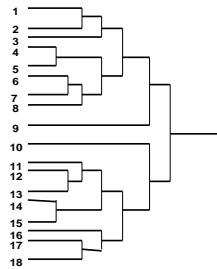
Step 3: Input the Variables and the Qualifications into the RRM Software, either Interactively or as a Text File.



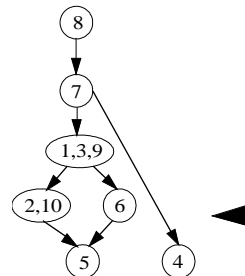
Step 4: Group Interaction with the RRM Software

- Relate Element to Element as Prompted
- Group Identifies Supportive Issues
- Software Generates Minimum Pairs

Life Cycle Objects



Step 6: Discussion Generates Iterations.



Step 7: Final Diagram can be Used to Build Turn-Key Expert Model/ Rule Set.

Step 5: Software Generates an Output Table and Diagram.

# Problem Applications

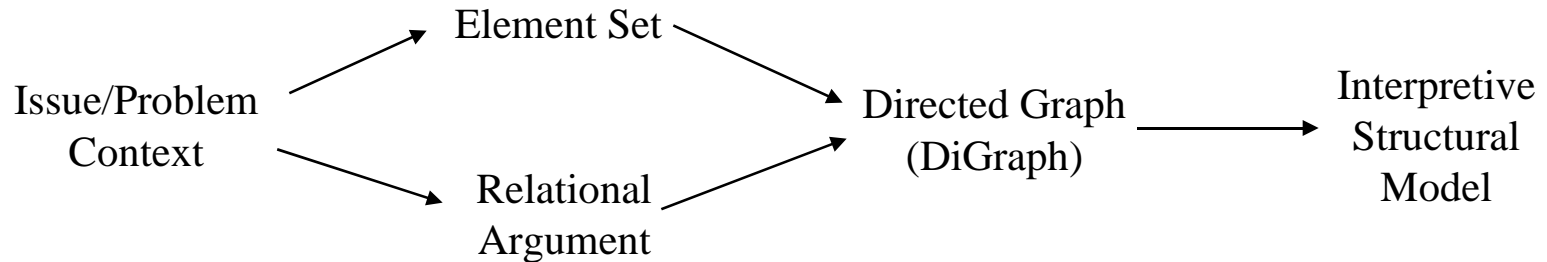
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- **Structuring Relationships and Developing Consensus Regarding the Understanding of Complex Problems**
- **Developing Criteria; Evaluating Alternative Architectures; Supporting System Design Trades, and Capability & Requirement Studies**
- **Approach Is Especially Valid For Application To:**
  - **Orderly Resource Allocation Process**
  - **Development Of Rules For Expert Systems;**
  - **Weapon and C4I System Requirements Definition & Performance Evaluation;**
  - **Battle Management Systems Definition;**
  - **Structuring Objective and Efficient Source Selection in Support of Acquisition Programs;**
  - **Prioritization of Goals and Objectives; and**
  - **Nearly Every Other Planning & Scheduling Activity Imaginable**

# Show Me An Example...

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## The Basic Conceptual Elements of RRM are as Follows:



- **The DiGraph Reflects an Initial Structuring Resulting From:**

- **Clustering,**
- **Causal & Supportive Links,**
- **Hierarchical Ordering**

**Which are Based Upon Interactive Responses of an Expert Group.**

- **The DiGraph Becomes the Quantitative & Logical Foundation of a Tailored Interpretive Structural Model (ISM) for Assisted Decision Support.**

# **RRM/ISM Involves a Series of Model Exchanges**

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- **Scientific Evidence Indicates the Human Brain is Severely Limited in Dealing Consistently With Large Sets of Elements that Comprise Complex Problems**
- **First Task in Handling a Complex Issue is to Exchange a Mental Model for Some Other Model Form Where the Elements Comprising the Issue and the Relationships Among Them May Be Viewed Clearly and in Their Totality**
  - **Once Accomplished, Changes to Correct Inaccuracies May Be Desirable**
  - **If Exchange Is Not Made, Inaccuracies in the Mental Model Will Likely Lead to Decisions & Policy Judgments Based Upon Erroneous Impressions of the Issue**
- **Model Exchanges are the Heart of the RRM/ISM Methodology**
- **The first exchange is from a mental model to a matrix model. While changing form, the structural relationships among the elements are faithfully preserved (“isomorphic”).**

# Simple Example

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- **A Simple Example of Relating Criteria Could Be:**

*“What is the Relative Importance of Each of the Ten Points of the Boy Scout Law?”*

- **The Relational Argument For This Could Be:**

*“Is the Attribute of Being (Element-x)*

*More important Than Being (Element-y), If You Are to be a Model Scout?”*

- **And the Elements Would Then Be:**

*Element 1: Trustworthy*

*Element 2: Loyal*

*Element 3: Helpful*

*Element 4: Friendly*

*Element 5: Courteous*

*Element 6: Kind*

*Element 7: Obedient*

*Element 8: Brave*

*Element 9: Clean*

*Element 10: Cheerful*

*Element 11: Thrifty*

*Element 12: Reverent*

# Example of ISM Model Exchanges

**BEHAVIORAL CHARACTERISTICS OF BOY SCOUTS**

*SOURCE: BSA MANUAL ; "BOY SCOUT CODE"*

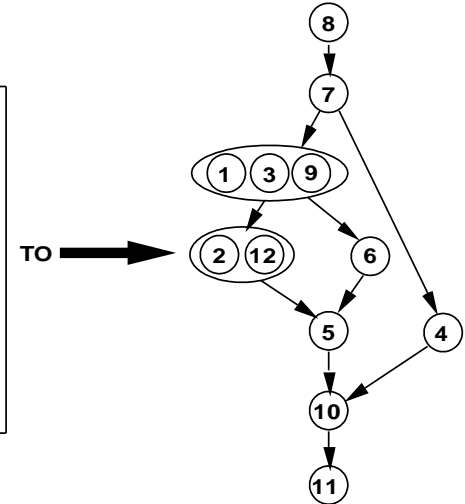
- 1=Trustworthy
- 2=Loyal
- 3=Helpful
- 4=Friendly
- 5=Courteous
- 6=Kind
- 7=Obedient
- 8=Cheerful
- 9=Thrifty
- 10=Brave
- 11=Clean
- 12-Reverent

Is the element x, in row Nx, "more important than" element y, in column Ny in the context of being a model Boy Scout? 1=No; 0=Yes

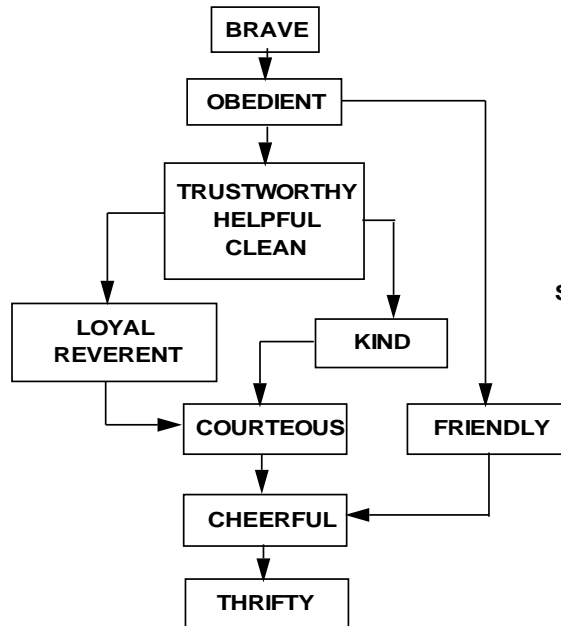
TO →

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11	1	1	1	1	1	1	1	1	1	1	1	1
12	1	1	1	0	0	0	1	1	1	0	0	1

MATRIX FOR ONE VIEW OF A MODEL SCOUT



DIGRAPH FOR ONE GROUP'S VIEW OF A MODEL BOY SCOUT



INTERPRETIVE STRUCTURAL MODEL FOR A MODEL BOY SCOUT

TO



# Simple Example

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- **The DiGraph Outcome, of Course, Could Be Different for Every Group or Individual - As the Products of the Relational Argument Represent Group Consensus or Individual Perceptions... The Outcome Should Be Considered a Testable Hypothesis**
  - **Builds A Roadmap for Subsequent Verification & Validation**
  - **Used to Understand the Nature & Structure of Complex Systems/Problems So That Solutions Can Be Proposed**

# Simple Example (Cont.)

- **One Possible Outcome Might Look Like:**

## Value Added

Clustering

Hierarchical  
Ordering

Supportive/  
Causal Linkage  
("Dominoes,"  
"Ripples,"  
& "Leverages")

## Raw Output

\*\*\*\*\*EQUAL ELEMENTS\*\*\*\*\*

CLUSTER 1 = 3 9

CLUSTER 2 = 12

\*\*\*\*HIERARCHIES\*\*\*\*

LEVEL 1)= 11

LEVEL 2)= 10

LEVEL 3)= 5 4

LEVEL 4)= 2 6

LEVEL 5)= 1

LEVEL 6)= 7

LEVEL 7)= 8

\*\*\*\*\*LINKS\*\*\*\*\*

(10) ==> 11

( 4) ==> 10

( 5) ==> 10

( 2) ==> 5

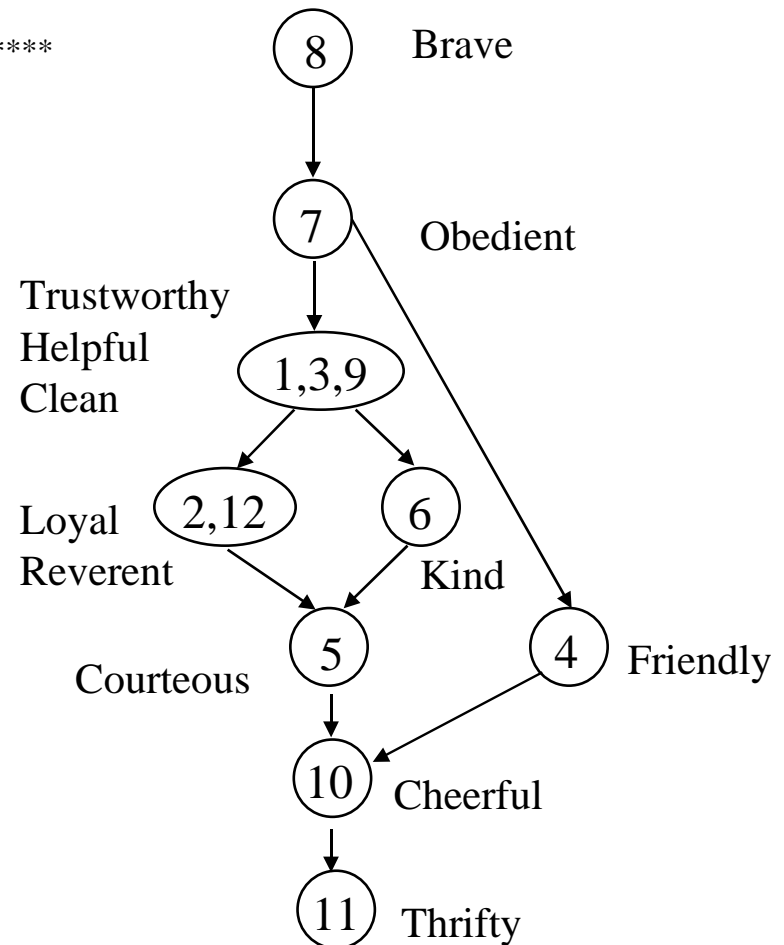
( 6) ==> 5

( 1) ==> 2 6

( 7) ==> 1 4

( 8) ==> 7

## DiGraph Output



# General Application

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## Context Is Variable:

*Elements (Variable) + Relationships (Variable) = Structured Outcome*

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- If Context = Process/Enterprise
  - Elements = Steps in Process
  - Relationship = “Precedes in Time” (Single Directional Case)
  - Output Produced = “Gantt Chart
- If Context = Process/Enterprise
  - Elements = Steps in Process
  - Relationship = “Necessary for” (Bi-Directional Case)
  - Output Produced = Pert/Critical Path
- If Context = Process/Enterprise
  - Elements = Steps in Process
  - Relationship = “More Important to Leverage Output”
  - Output Produced = Ordered Set of Sensitivity Drivers

# A More Complex Example

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- SDIO Architecture Trades and Measures Of Merit:
- Problem or Issue Statement:

*“ As Various SDI System Characteristics Change,  
Which Parameters or Functions Will Affect Which  
Others ?”*

- The Relational Argument Could Be:

*“Will a Change in (Element-x)  
Produce a Change in (Element-y)  
For the Defined SDI System Architecture ?”*

# SDI System Changes

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- **Element Set:**

ELEMENT 1: SURVIVABILITY - THE ABILITY OF A SYSTEM, SUBSYSTEM OR COMPONENT TO RESIST DEGRADATION OF SYSTEM EFFECTIVENESS FROM A HOSTILE ACT OR HOSTILE ENVIRONMENT.

ELEMENT 2: SYSTEM PERFORMANCE - QUANTITATIVE MEASURES REFLECTING THE CAPABILITY OF THE SYSTEM OR SUBSYSTEM TO ACHIEVE MISSION GOALS.

ELEMENT 3: COST/AFFORDABILITY - COST(\$)- TOTAL ARCHITECTURE LIFE CYCLE COST AFFORDABILITY - ABILITY OF THE COUNTRY'S ECONOMY AND DoD's BUDGET TO ABSORB THE COST AND ECONOMIC IMPACTS OF THE SYSTEM OVER ITS LIFE TIME.

ELEMENT 4: STRATEGIC STABILITY - DEVELOPMENT/DEPLOYMENT OF SYSTEM WILL NOT BE PROVOCATIVE, I.E., LEADING TO INCREASED TENSION, ARMS RACE, OR MILITARY CONFRONTATION (FIRST STRIKE). - CRISIS, ARMS RACE

ELEMENT 5: GROWTH POTENTIAL - ABILITY IN THE FUTURE TO PERFORM NEW MISSIONS AND/OR CREATE NEW OR EXPANDED MILITARY THREATS WITHOUT MAJOR REDESIGN.

ELEMENT 6: FLEXIBILITY - ABILITY WHEN DEPLOYED TO PERFORM ALTERNATE MISSIONS, COUNTER CHANGES IN THE DESIGN THREAT OR TACTICS, AND/OR COUNTER NEW OR EXPANDED MILITARY THREATS WITHOUT MAJOR REDESIGN.

ELEMENT 7: U.S. PUBLIC ACCEPTANCE - PROVIDES A SENSE OF NATIONAL SECURITY, FURTHERANCE OF NATIONAL GOALS WITHOUT INTERFERING WITH CIVILIAN PROGRAMS, AND IS PERCEIVED TO BE SAFE.

ELEMENT 8: ALLIED ACCEPTANCE - SAME AS U.S. PUBLIC ACCEPTANCE.

ELEMENT 9: ADVERSARY ACCEPTANCE - NOT DEFINED IN WORKSHOP.

ELEMENT 10: TIMELINESS - THE ABILITY OF AN ARCHITECTURE TO BE OPERATIONAL BY A REQUIRED TIME AS MEASURED BY THE DIFFERENCE BETWEEN PROJECTED IOC OR FOC AND THE DESIRED IOC OR FOC.

ELEMENT 11: TECHNOLOGICAL RISK - PROBABILITY THAT THE TECHNICAL APPROACH MEETS REQUIREMENTS WITHIN COST AND SCHEDULE GOALS.

# SDI System Changes

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- **Element Set (CONTINUED):**

ELEMENT 12: AVAILABILITY - PROBABILITY OF BEING OPERATIONALLY READY WHEN REQUIRED AFTER DEPLOYMENT.

ELEMENT 13: RELIABILITY - PROBABILITY THAT SYSTEM MEETS MINIMUM SYSTEM REQUIREMENTS WHEN CALLED UPON TO OPERATE IN A NON-HOSTILE (NOMINAL) ENVIRONMENT.

ELEMENT 14: SAFETY - PROBABILITY OF AN ACCIDENT OCCURRING TIMES THE EXPECTED CONSEQUENCES OF THE ACCIDENT.

ELEMENT 15: TESTABILITY - EXTENT TO WHICH SYSTEM CAN BE VALIDATED BY TEST AS AN INTEGRATED UNIT.

ELEMENT 16: ARMS CONTROL INCENTIVES - INCREASES OPPONENTS DESIRE FOR ARMS CONTROL GOALS DESIRED BY U.S.

ELEMENT 17: DETERRENCE - OPPONENTS PERCEIVED UNCERTAINTY OF THE SUCCESS OF A BALLISTIC MISSILE ATTACK ON THE U.S. AND ITS ALLIES WHICH DECREASES THE LIKELIHOOD OF HIS INITIATING SUCH AN ATTACK.

ELEMENT 18: SUSCEPTIBILITY TO COUNTERMEASURES - LIKELIHOOD OF SYSTEM DEGRADATION DUE TO ENEMY ACTIONS OTHER THAN DIRECT ATTACK ON THE SYSTEM.

ELEMENT 19: RESOURCE IMPACT - RESOURCE REQUIREMENTS OTHER THAN FINANCIAL WITH EMPHASIS ON THOSE WHICH ARE IN SHORT SUPPLY.

ELEMENT 20: POLICY RESPONSIVENESS - ABILITY TO SUPPORT A WIDE RANGE OF NATIONAL SECURITY POLICY OPTIONS.

ELEMENT 21: COST TO COUNTER - COST OF THREAT UPGRADE WHICH SIGNIFICANTLY DEGRADES SYSTEM EFFECTIVENESS.

ELEMENT 22: AVAILABLE DECISION TIME - THE ABILITY OF A SYSTEM TO PROVIDE THE NCA'S AS MUCH DECISION TIME AS POSSIBLE, CONSISTENT WITH THE GRAVITY OF THE DECISION.

# SDI System Changes

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- Output of an Interactive Session with a Select DoD Expert Group:

\*\*\*\*\*EQUAL ELEMENTS\*\*\*\*\*

CLUSTER 3 = 17, 19  
CLUSTER 5 = 7, 9, 22  
CLUSTER 18 = 21  
CLUSTER 6 = 11  
CLUSTER 14 = 15

\*\*\*\*\*LINKS\*\*\*\*\*

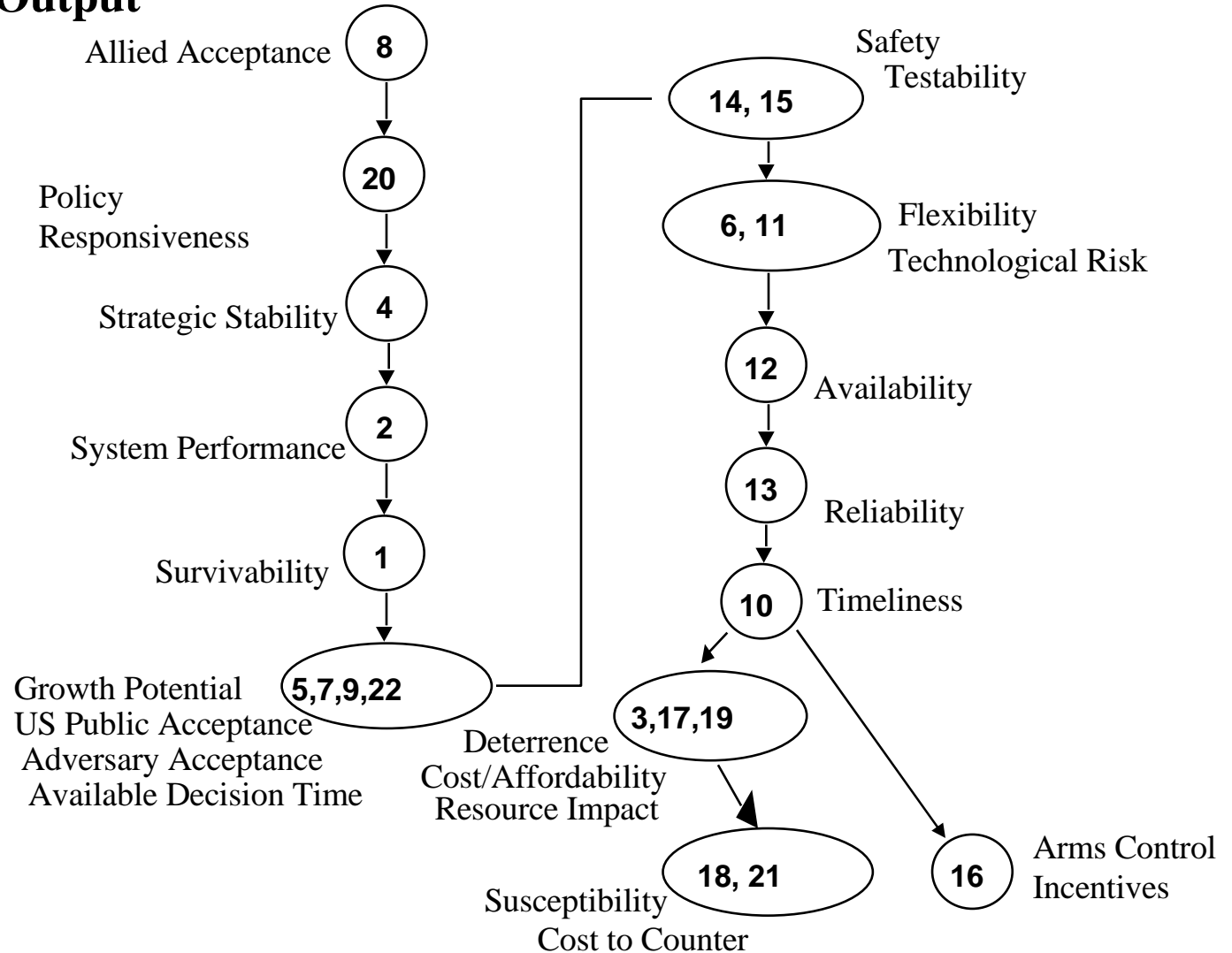
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(4) ==> 20  
(2) ==> 4  
(1) ==> 2  
(5) ==> 1  
(14) ==> 5  
(6) ==> 14  
(12) ==> 6  
(13) ==> 12  
(16) ==> 13  
(10) ==> 16  
(3) ==> 10  
(18) ==> 3

\*\*\*\*\*HIERARCHIES\*\*\*\*\*

LEVEL 1) = 8  
LEVEL 2) = 20  
LEVEL 3) = 4  
LEVEL 4) = 2  
LEVEL 5) = 1  
LEVEL 6) = 5, 7, 9, 22  
LEVEL 7) = 14, 15  
LEVEL 8) = 6, 11  
LEVEL 9) = 12  
LEVEL 10) = 13  
LEVEL 11) = 10  
LEVEL 12) = 3, 17, 19  
LEVEL 13) = 18, 21, 16

# SDI System Changes

- **DiGraph Output**





# What Does It Take to Run a Session?

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## *As a Minimum:*

- Expert Group
- Facilitator & Data Entry Operator
- White Board/Chalk Board
- Note Pads/ Pencils for Expert Group
- Macintosh PowerBook or Desktop Computer With “RRM” Compiled Application Software

*Other Requirements May Vary with Scope of Objectives*

# RRM/ISM Applied to Curriculum Development for Learning Disabled

**INFORMATION PROCESSING ABILITIES &/OR COGNITIVE FACTORS RELATED TO READING AND MATHEMATICS**

- 1=Auditory Reception
- 2=Visual Reception
- 3=Auditory Association
- 4=Visual Association
- 5=Verbal Expression
- 6=Manual Expression
- 7=Grammatical Closure
- 8=Auditory Closure
- 9=Sound Blending
- 10=Visual Closure
- 11=Auditory Sequential Memory
- 12=visual Sequential Memory
- 13=Visual-motor Coordination

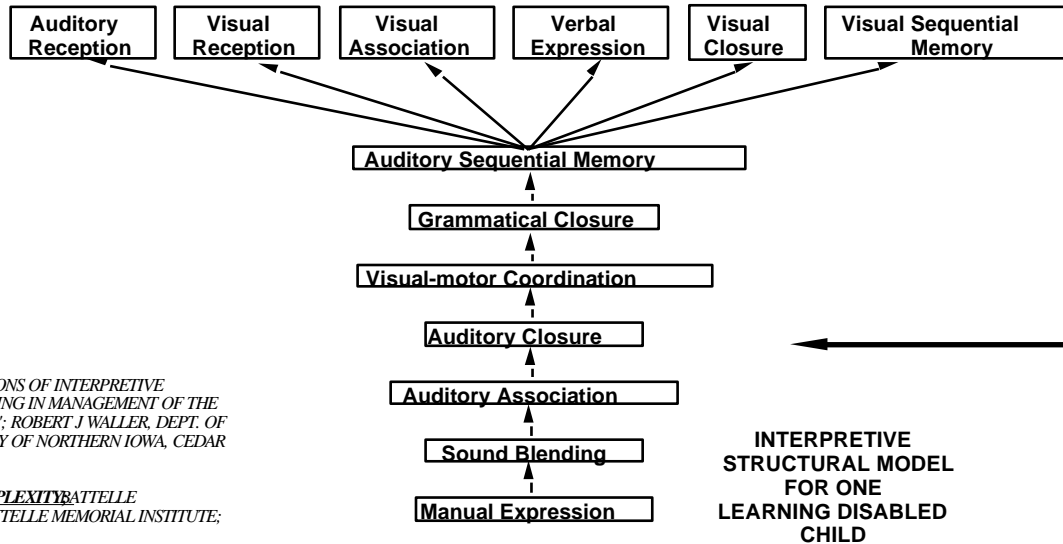
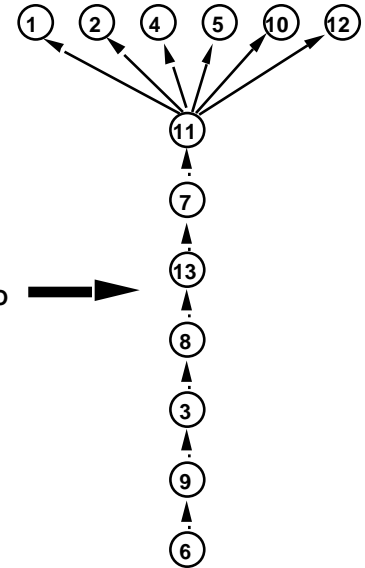
Is the element x, in row Nx, "subordinate to" element y, in column Ny (i.e., Is Auditory Reception more severe in impeding a child's learning than Visual Reception)? 1=Yes; 0=No

TO →

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13	1	1	0	1	1	0	1	0	0	1	1	1	0

TO →

MATRIX FOR ONE LEARNING DISABLED CHILD



SOURCE: "APPLICATIONS OF INTERPRETIVE STRUCTURAL MODELING IN MANAGEMENT OF THE LEARNING DISABLED"; ROBERT J WALLER, DEPT. OF BUSINESS, UNIVERSITY OF NORTHERN IOWA, CEDAR FALLS, IOWA (1974)

PORTRAITS OF COMPLEXITY/BATTELLE MONOGRAPH #9; BATTELLE MEMORIAL INSTITUTE; COLUMBUS, OHIO

# RRM/ISM Applied to Curriculum Development for Learning Disabled

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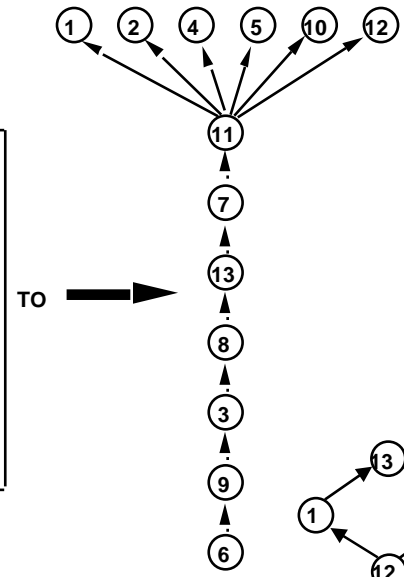
MATRIX FOR ONE LEARNING DISABLED CHILD

**M1**

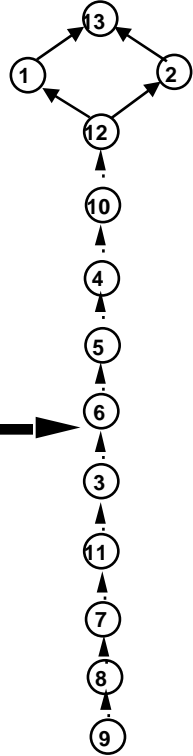
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13	1	1	0	1	1	0	1	0	0	1	1	1	0

MATRIX FOR ONE LEARNING DISABLED CHILD

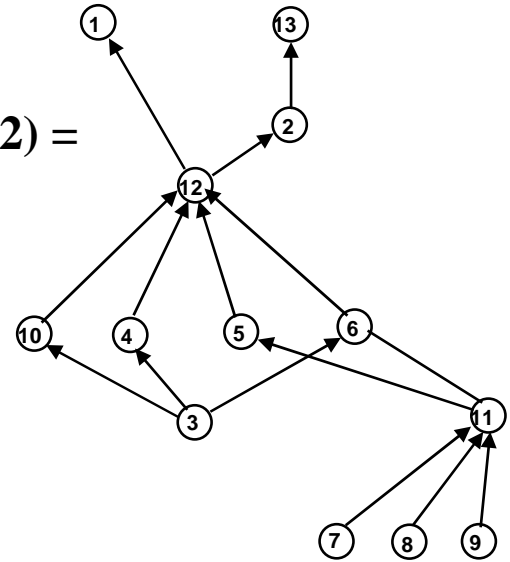
**M2**



$(M1) \times (M2) =$

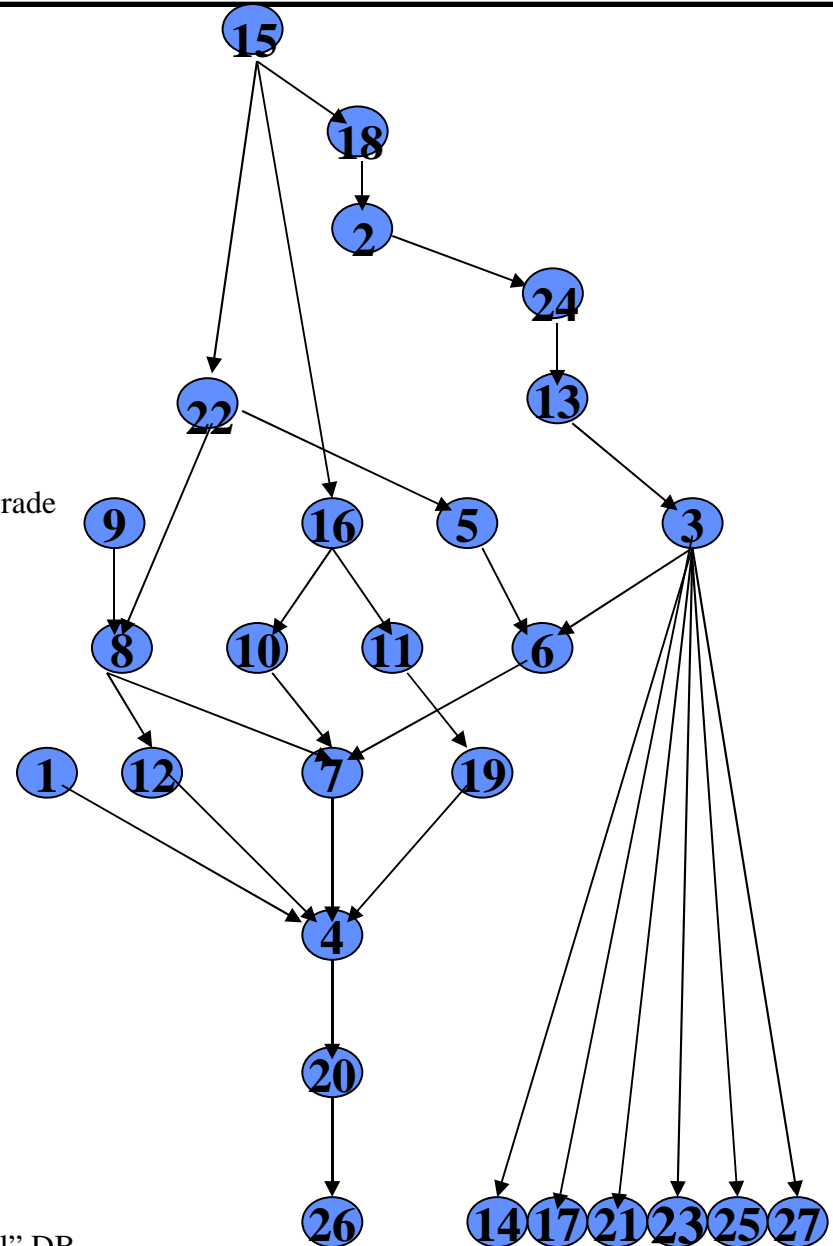


## Tailored Teaching Model For Class Composite



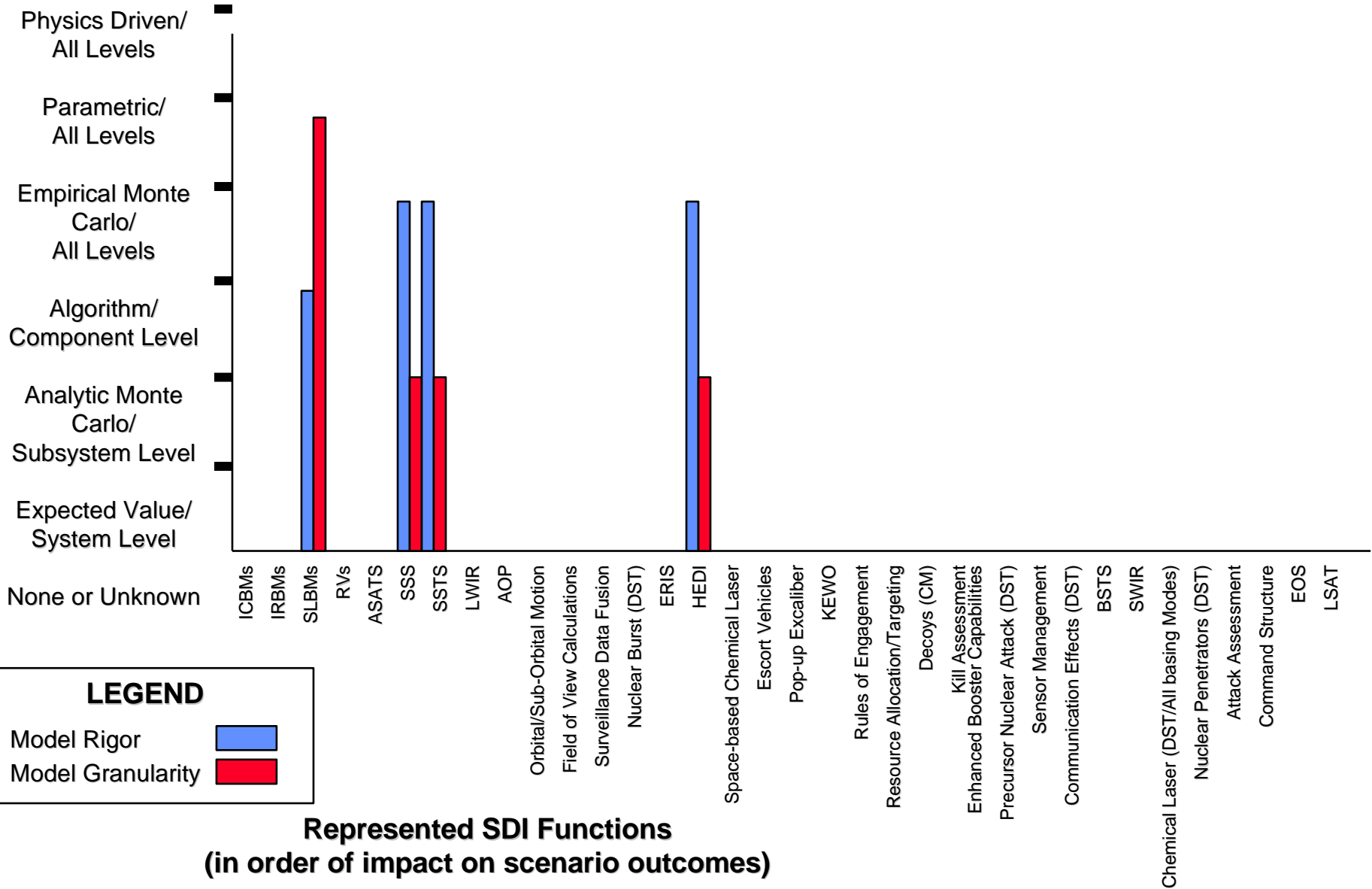
# Typical RRM Output: FORCES Delivery Task Relationships

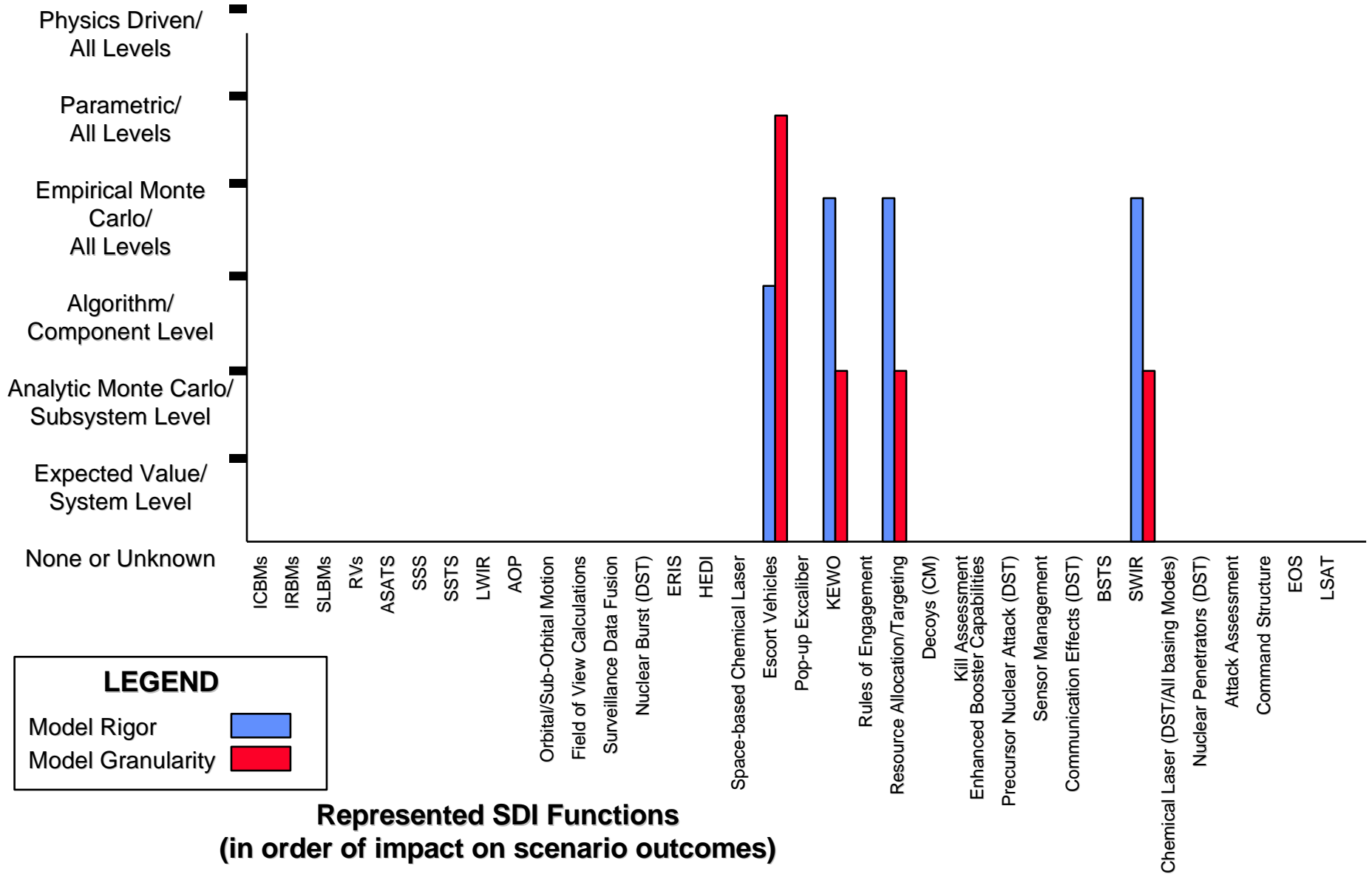
- 15: Define Version 1.0 Release (functional baseline)
- 18: Conduct Version 1.0 module & integration testing
- 2: ID Deficiencies to existing CM baseline Version 1.0
- 24: Test Database(s)
- 22: Define SGI node functions & integrate into HDW Configuration
- 13: Write required SDRs & recommended fixes for existing CM baseline
- 9: Define INGRES configuration requirements
- 16: Develop remote-site operations plans & procedures
- 5: Define compiler requirements to support CM baseline & Solaris upgrade
- 3: Review Allowable SDRs & establish priorities for fixes
- 8: Define repeatable installation requirements
- 10: Order COTS SW licenses
- 11: Develop plan for customer on-site support
- 6: Move simulation to Solaris
- 1: Provide J-9 Korean Scenario
- 12: Create & Test installation script
- 7: ID third-party SW requirements
- 19: Develop Training Plan, scenario and User's Manual
- 4: Update documentation: Including Installation Manual, System Admin. Manual, User's Manual & Code Comments
- 20: Train Customer staff (hands-on) to run Scenarios
- 26: Train End-users
- 14: Integrate STRATCAM legacy software
- 17: Verify "Snapshot", "Checkpoint", & "Preview" functions
- 21: Perform DB/"Platter" integration
- 23: Define process for V/V of simulation rules and parameters
- 25: Change DA\_Tables definitions & ICD definition tables to "Tactical" DB
- 27: Fix outstanding and High-priority SDRs

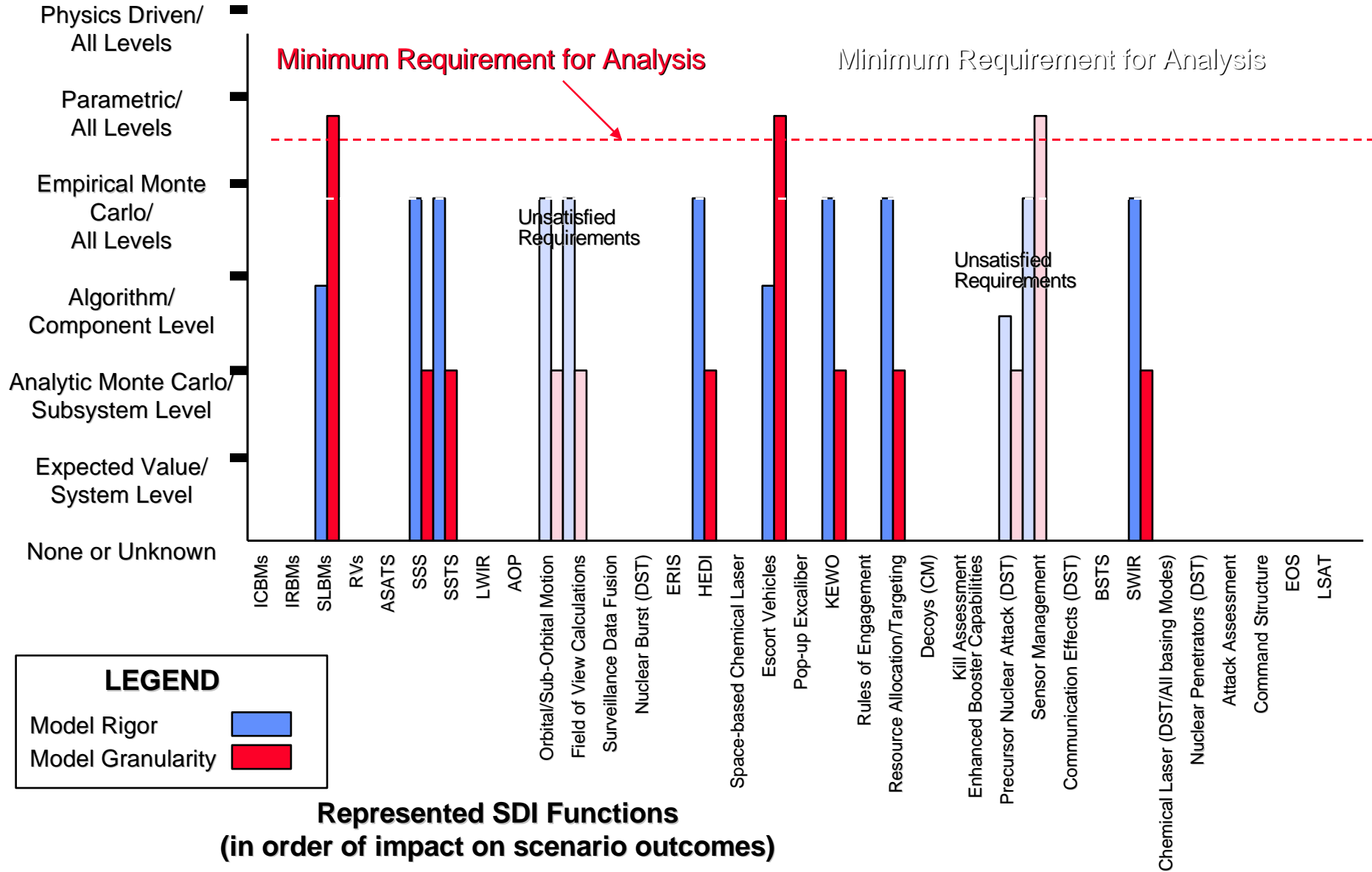


The next three slides illustrate the application of RRM in support of re-use of legacy models and configuration management within the Force Operational Readiness Combat Effectiveness Simulation (FORCES) architecture

- RRM is used to establish the relative ordering of functions required to achieve required simulation objectives
  - Slide 1: A fidelity profile is created for candidate Model A using RRM outputs to determine which functions will have the greatest leverage (left-to-right) on simulation outcome
  - Slide 2: A similar profile is constructed for Model B
  - Slide 3: A composite of all candidates indicates which integrated or confederated combination best meets the profile of requirements for the simulation and provides structure for finding/developing models (in order of importance) that will fill in the missing requirements.









# Are There other Decision Aids Available?

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## Yes, But...

- Most require the user to input all of the structure required to solve the problem; If you already know the answer, why would you need the tool?
- RRM requires less understanding & fewer inputs to produce more value on output
- RRM represents a fully integrated range of capabilities incorporating many of the features offered by vendors as stand-alone products...
- With RRM, "The Whole is Greater than the Sum of Its Parts"
  - Ease of Use
  - Simplicity
  - Efficiency
- RRM processes allow simultaneous/single-pass structuring of multiple (intersecting or disjoint) sets of data from randomly selected data sources
- RRM manages subjective data without resorting to "pseudo-quantification"
  - Less likely to produce errors of omission
  - Allows user to properly include elements in problem definition and/or decision-making for which data has not been collected
- AND..With RRM, the process may be as valuable as the product:
  - Early identification/resolution of undefined/improperly understood terms
  - Improved lines of communication & higher quality interaction within organization (Empathy, interdependency, empowerment and meaningful participation in decision-making)