

Managing Risk Management in the Department of Homeland Security

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Objective and Agenda

Objective –

- To provide overview of DHS efforts to develop more comprehensive and better integrated collective approach to risk-informed decision-making
- To provide insights into kinds of tools being developed and analytic difficulties inherent in homeland security

Agenda

- Introduction and Fundamentals
- Desired Characteristics for DHS Risk Assessment/Analysis
- Distribution of Risk Responsibilities across DHS
- Risk Decision Matrix
- Glimpses “under the hood”
 - Tactical
 - Program Management/Operational
 - Strategic
- Analytic Difficulties
 - Assessing benefits of security
 - Coping with “Infinite” Scenarios
- DHS Commitments
- Closing Thoughts



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“We need to adopt a risk-based approach in both our operations and our philosophy. Risk management is fundamental to managing the threat, while retaining our quality of life and living in freedom. Risk management must guide our decision making as we examine how we can best organize to prevent, respond and recover from an attack.”

Secretary Michael Chertoff
Department of Homeland Security
16 March 2005



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Fundamental Difficulties

- Terrorists are intelligent, adaptive, reactive and strategically driven
- Terrorists have first move advantage
- Reliable data is not always available
- Multiplicity of decision-makers
 - Numerous federal Departments and Agencies
 - 54 states and territories
 - 'Municipal' jurisdictions (30 to 80K cities, towns, counties, etc.)
 - 85% of Critical Infrastructure Owned by Private Sector
 - International Dimension
 - Confusing jurisdictional picture
- Different allocation/aggregation of responsibilities
 - Port Authority of NY/NJ vs. Port Authority of San Francisco
 - Governor of State A vs. Governor of State B
 - Government different from Private Sector



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Fundamental Questions

- How do we identify and assess potential risks?
- Who is responsible for assessing and managing risks of particular kinds?
- How does risk information influence decision-making?
- How are risk deliberations coordinated across disparate missions?
- How are risk deliberations coordinated across disparate agencies/components?
- How are risk deliberations coordinated across multiple levels of government and across public/private sector divide?



Fundamental Propositions

- At best, decisions can only be Risk-Informed, never “Risk-Based”
- Managing risk is everyone’s job in DHS, but the risks managed will be a function of
 - Specific Area of Responsibility/Mission
 - Organizational Level – Strategic, Operational or Tactical
- There is no Risk Assessment or Risk Management “Silver Bullet”
- Needed:
 - A suite of different risk assessment and risk analytic tools tailored to specific problems or issues but which remain true to core principles
 - A framework identifying invariant elements of any risk assessment methodology



Risk Analysis & Homeland Security

- Threat
 - Capability: assumed, known, feasible
 - Intent: assumed, known, inferred (writings, ideological consistency)
- Vulnerability
 - Interaction of means of attack, target characteristics, in-place security
- Consequences
 - Deaths and Injuries
 - Economic Impact: direct and indirect
 - Intangibles: FUD, government credibility, societal cohesion
- Projected Impact/Benefit of Alternative Courses of Action
- Benefit/Cost Analysis
- Identify decision-irrelevant variables & factors
- Eliminate clearly inferior options
- Focus on what can be done, not what to worry about



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Desired Characteristics

- Intellectually sound at conceptual level
- Common understanding of role of “risk” in decision-making
- A clear lexicon that is standardized yet also flexible
- A menu of proven methodologies with guidance on applicability and proper usage
- Specific tools, built using proven methodologies but appropriately tailored to problem or issue in question
- Use of quantitative measures/data when possible and appropriate
- Use of subjective or qualitative data when necessary or appropriate, coupled with methods of reducing variability
- Use of appropriate methods to elicit expert opinion
- Appropriate for political nature of homeland security



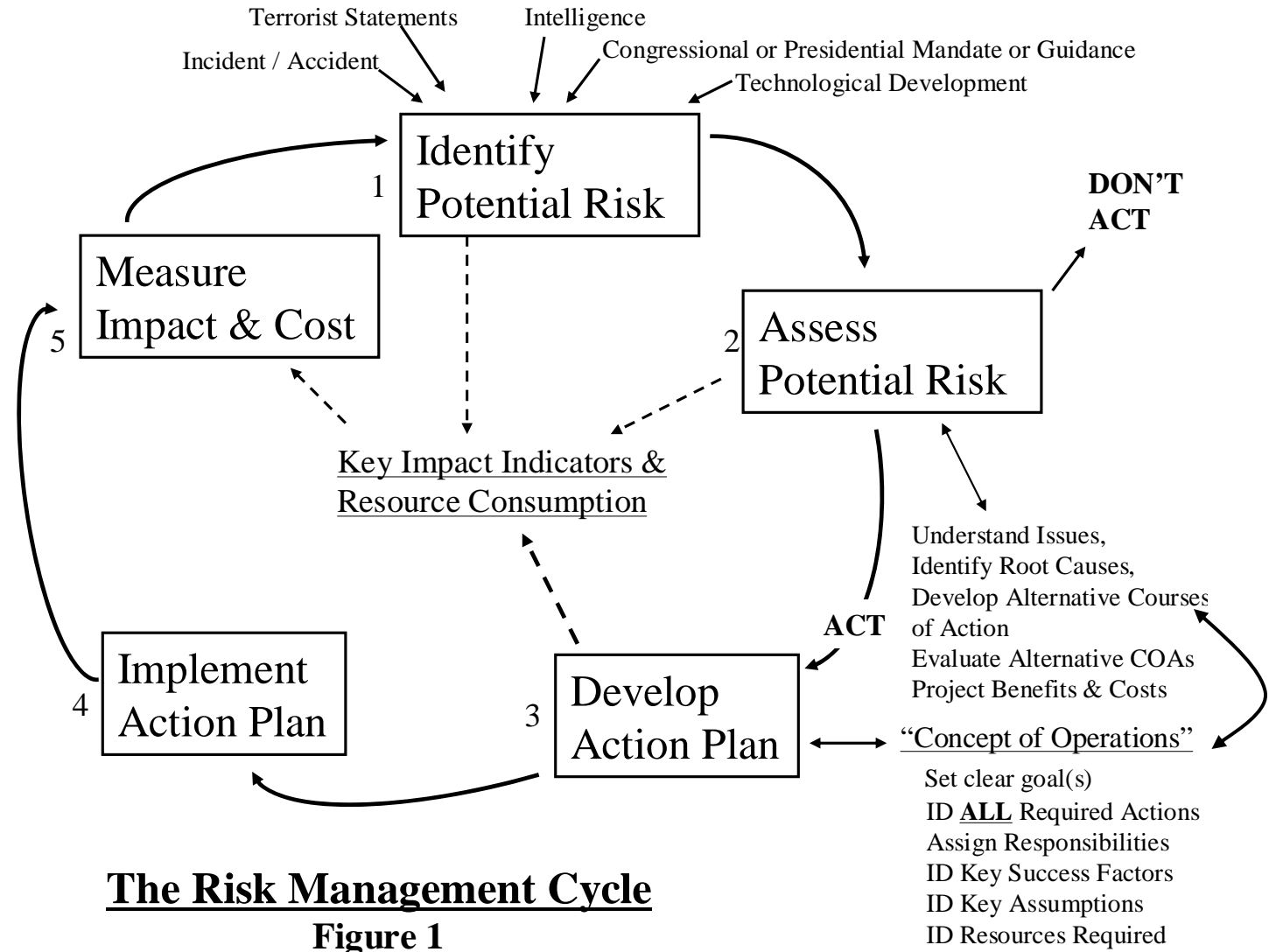
A Multi-Disciplinary Challenge

- Political Science
- Public Policy and Public Administration/Management
- Communications
- Economics
- Engineering and Physical Sciences
- Biological Sciences (medicine, micro-biology, veterinary, etc.)
- Intelligence
- Information Technologies
- Infrastructure and Business
- Mathematics
- Systems Analysis/Systems Management
- Sociology and Anthropology
- Operations (military, law enforcement, emergency response, etc.)
- Decision Analysis



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A Process View of Risk-Informed Decision-Making



The Risk Management Cycle
Figure 1

Risk Responsibilities Across DHS

RMA

DHS Executive Agent for “risk”

Coordinated, consistent, & collaborative approach to risk

Leverage risk expertise across DHS/HLS

DHS risk performance metrics

DHS risk communication strategy

Office of Risk Management and Analysis (RMA)

Risk Sciences Branch

RSB

Advancing the State of the Art

Validating Applications

Input to Policy Deliberations

Internal S&T Resource

Component Resource

DHS

COMPONENTS

Applying the State of the Art w/i Areas of Responsibility

Developing Issue-Specific Tools & Applications

Risk-Informed Programmatic Decision-Making

CBP
USCG
TSA
FEMA
CIS
ICE
USSS
NPPD/IP
OHA
MGMENT
S&T
Etc.

DHS Risk-Informed Decision Matrix

Decision Type

Context

Essential Nature of Decision

Strategic

International
National
Levels of Gov't

ID Desired Societal Outcomes
Policy (Goal Setting)
Setting Broad Strategies to Reach Identified Outcomes & Goals

Broad Budget Formulation

Topical/Issue
Department
Agency
Mission/Program

Operational

Department
Agency

Mission/Program
Mission Prioritization
Mission Design &
Concepts of Operations

Policy Implementation
Selecting Among Alternative Means to Achieve Identified Ends

Capability Building
Detailed Budget Development

Tactical

Department
Agency

Mission/Program
Mission/Task
Performance

Field Operations

Policy Execution
Selecting Among Alternative Courses of Action Allowed Under ConOps & Policy

Capability Utilization
Budget Execution



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Risk-Informed Decision-Making at Tactical Level



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PLACE OF REFUGE

Development and Application of a
Risk Informed Process



Place of Refuge

- Refers to situations where a vessel, not in imminent peril, requests to enter a port or place to make needed repairs or take other action to stabilize a dangerous condition.
- Previous incidents, including the Erika, the Castor, and the Prestige, led to political paralysis, sunken ships, and heavy pollution.
- Requires a process to de-politicize the decision making process and involve all appropriate stakeholders.



Complex Issue

- Search and Rescue
- Force Majeure
- Security
- Safety for Crew, Responders, Public
- Natural Resource damage
- Economic losses and liability



Coast Guard Methodology

- Quantitative, risk-informed approach
- Assigns distinct numerical values to the *probability* and *consequences* associated with any number of Place of Refuge options
- Intended use is scenario based planning to aid decision making in the event of an actual POR situation

Total Risk

		Risk by Consequence Type			
	Probability Score	Health and Safety	Natural Resources	Economic Impacts	Total Risk
Place of Refuge A	0.5	54	170	40	264
Place of Refuge B	0.75	69	183	42	294
Continue Voyage	0.9	212	367	86	666

Place of Refuge

- Individual scores for each POR option, and each consequence type
- Choose the lowest combined risk score, unless common sense dictates otherwise
- Sub-totals make it easy to identify the reason/source of the final score

Risk-Informed Decision-Making
at Operational or
Program Management Level



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Importance of Decision Requirements

- Assures that the Risk Analysis is useful and used
- Helps define Analytic Requirements
- Helps clarify when results should not be extrapolated to other uses

	Capital investments	Improvements in staffing/ training	Changes in policies or procedures	Improvements in technology	Distribute Resources
IP	Advise	Advise/make investments	Advise/make investments	Advise	Advise/make investments
SSA	Advise	Advise/make investments	Advise/make investments	Advise/make investments	Advise/make investments
Other Fed Agencies	Advise	Advise/make investments	Advise/make investments	Advise/make investments	Advise/make investments
Owner/ Operator	Make investments	Make investments	Advise/make investments	Advise/make investments	Advise/make investments
State and Local	Make investments	Make investments	Advise/make investments	Advise/make investments	Make investments

IP Sample Decision Requirements

Capital investments	Improvements in staff/training	Changes in policies or procedures	Improvements in technology	Distribute Resources
ID facilities and concerns	ID common needs	ID risks that can be managed by policy or procedural changes	ID high risks that cannot be managed without technological improvements	ID priorities for Buffer Zone Protection Plan Grants
ID risks that can be managed by capital investment	Seek staff/skills to improve risk reduction	Estimate the risk reduction and return-on-investment from the change	ID characteristics of the risks that would guide development	ID States, Territories, Urban Areas with higher CIKR concerns
Estimate the risk reduction and return-on-investment	Develop and provide training to improve risk reduction		Estimate the risk reduction and return-on-investment for improvement	ID new risks that might be managed through grant programs
Compare return on investment to identify priorities and persuade stakeholders				
Develop performance metrics to reflect maximizing risk-reduction return-on-investment				

Risk-Informed Decision-Making at Strategic Level



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“RAPID”

**Risk Assessment Process
for Informed Decision-making**

A Broad Strategic Approach



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RAPID Purpose

To develop strategic-level, Department-wide process that can assess risk and inform Strategic Planning, Programming, Budgeting and Performance Management processes

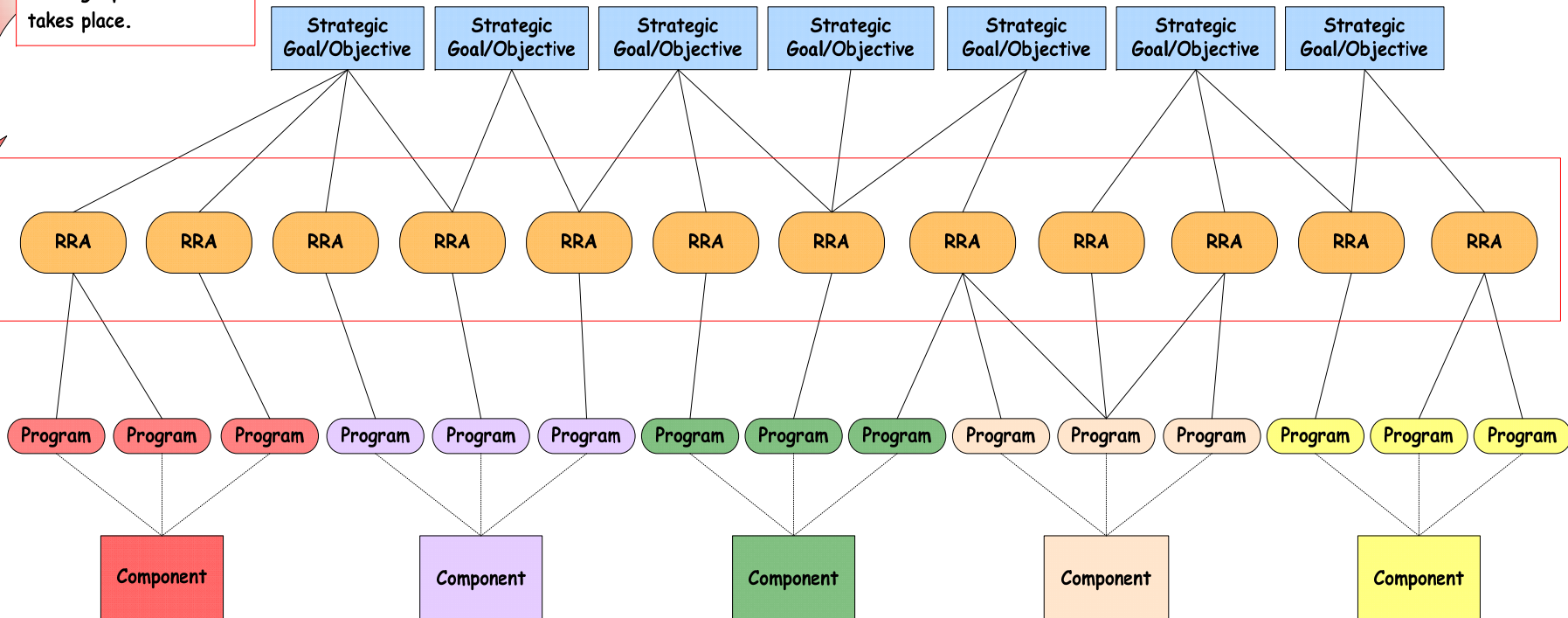
“Risk management must guide our decision-making as we examine how we can best organize to prevent, respond, and recover from an attack Our strategy is, in essence, to manage risk in terms of these three variables – threat, vulnerability, consequence. We seek to prioritize according to these variables, to fashion a series of preventive and protective steps that increase security at multiple levels.”

Secretary Chertoff, March 16, 2005

Purpose of Mapping

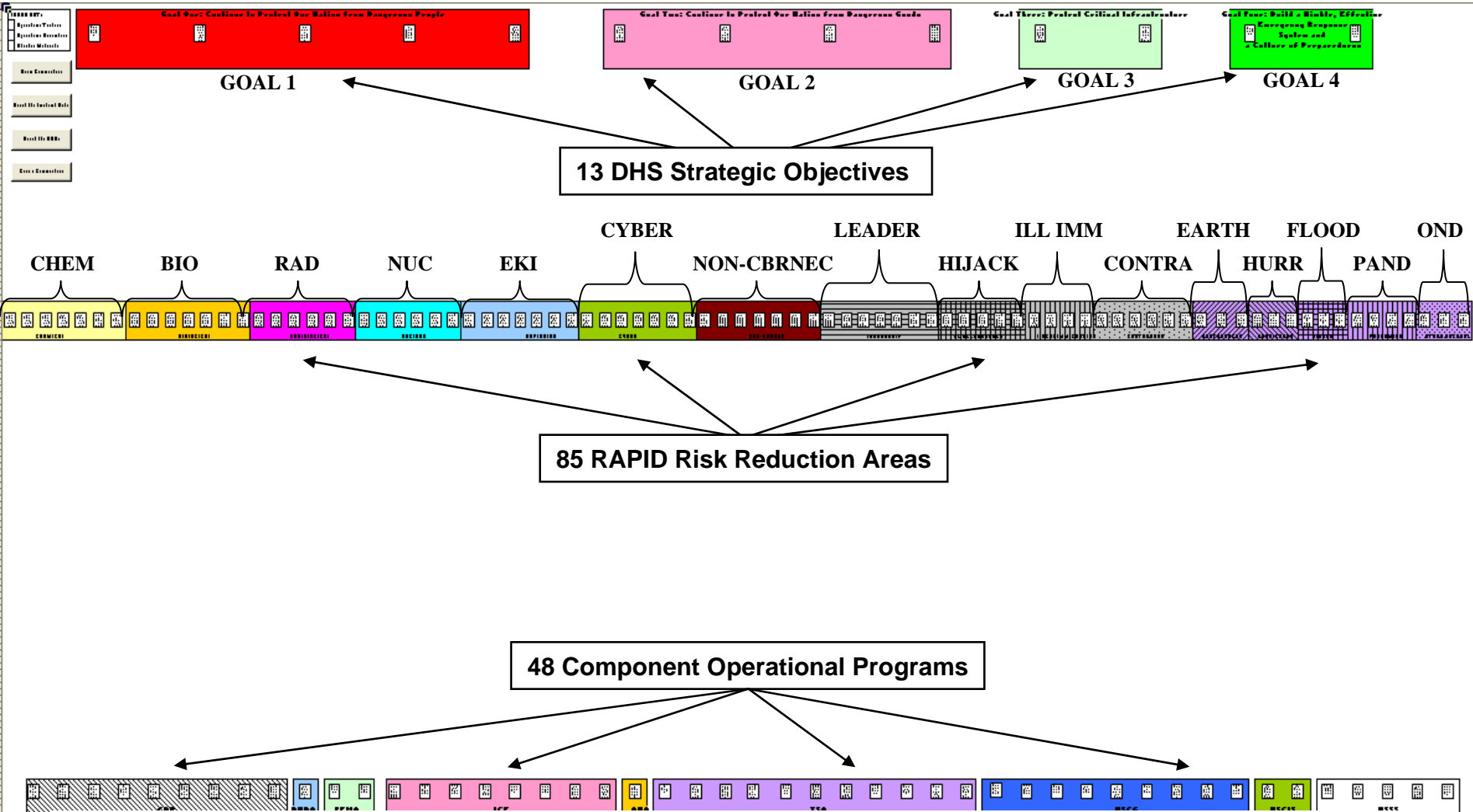
Relate Operational Programs to Strategic Goals and Objectives through Risk Reduction Areas (RRAs).

Note: This is where the risk-informed strategic prioritization takes place.



- Risk Reduction Areas (RRAs) are (collectively) the work DHS has to do to reduce/manage risk
- DHS Component Programs provide ways/means to reduce risks and “operate” on the RRAs

RAPID Mapping Structure



Full View – All Links

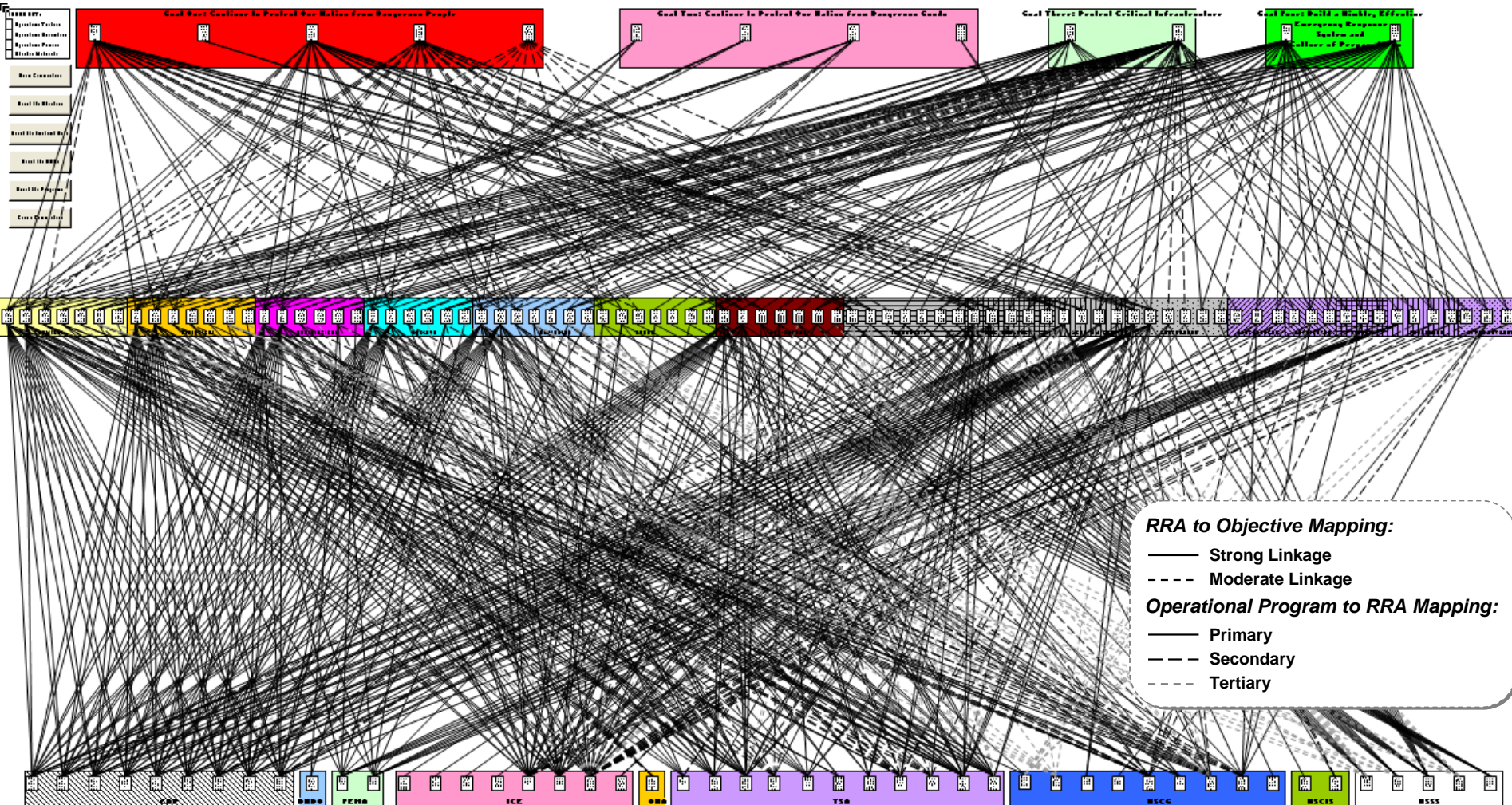
34 Incident Sets

85 RRAs (Strong & Moderate)

48 Operational Programs (Primary, Secondary, Tertiary)

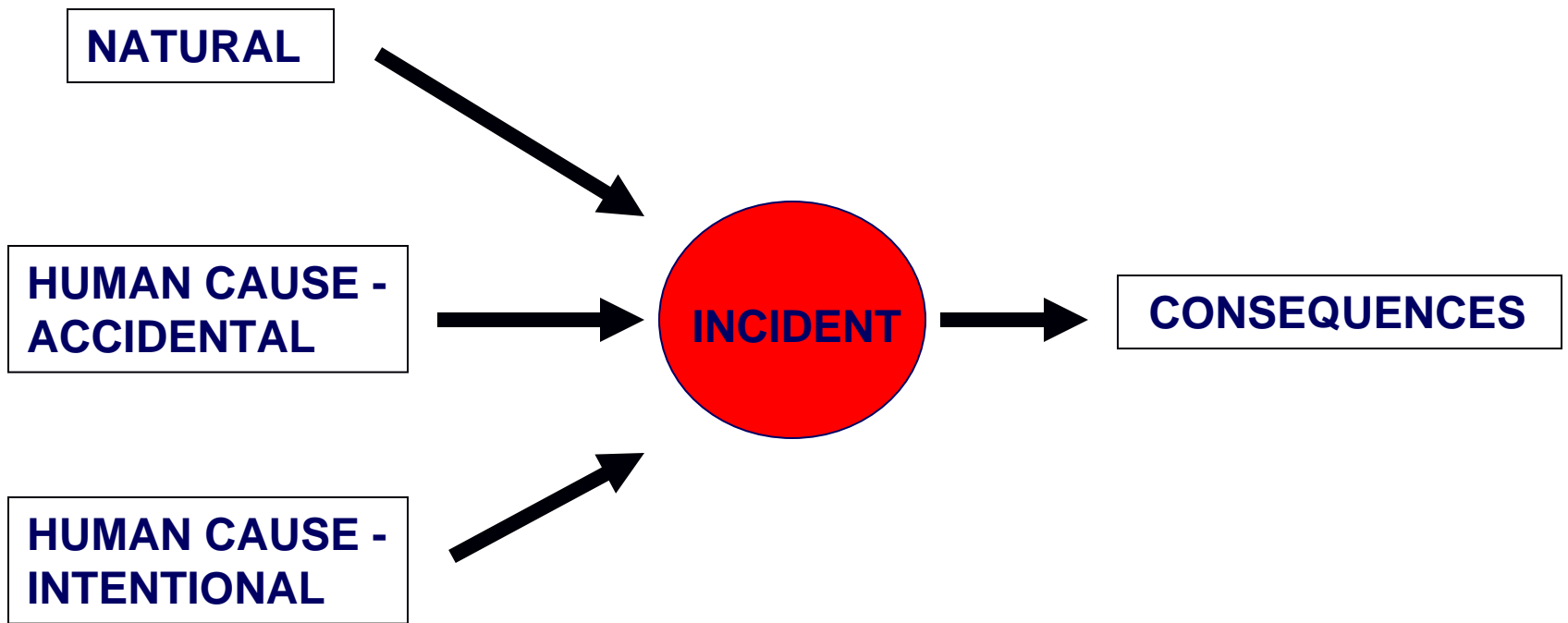
Key Observations:

- All 13 Objectives/associated Goals supported
- All 85 RRAs have program support
- All 48 Operational Programs map to RRAs



RRA to Objective Mapping:
—— Strong Linkage
- - - Moderate Linkage

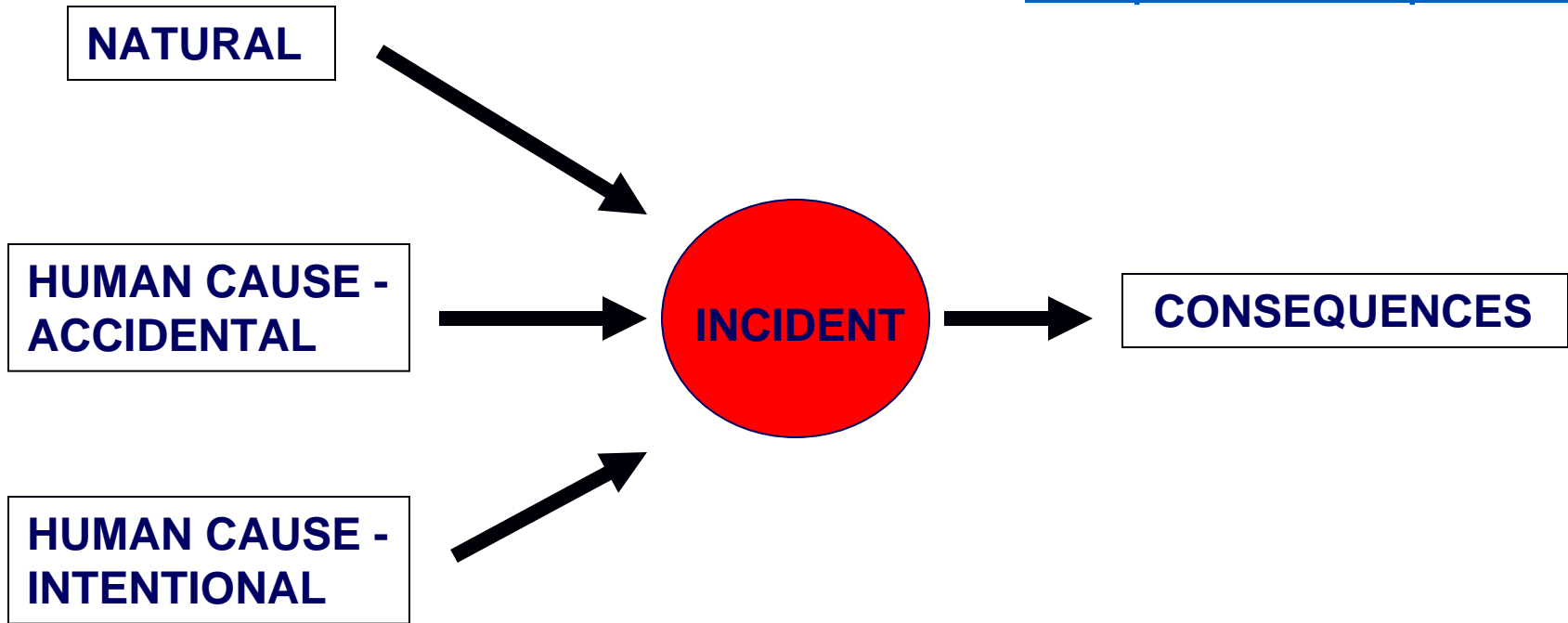
Operational Program to RRA Mapping:
—— Primary
- - - Secondary
- - - Tertiary



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Significant Differences in Requirements for Prevention and Protection

Potential for Significant Commonality in Response Requirements



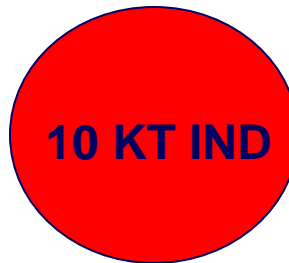
Multiple National Jurisdictions

Multiple Potential Actors

Multiple Potential Targets

Unknown Consequences

**HUMAN CAUSE -
INTENTIONAL**



CONSEQUENCES

Multiple Potential Paths

Unknown Response
Requirements

Multiple Involved Agencies



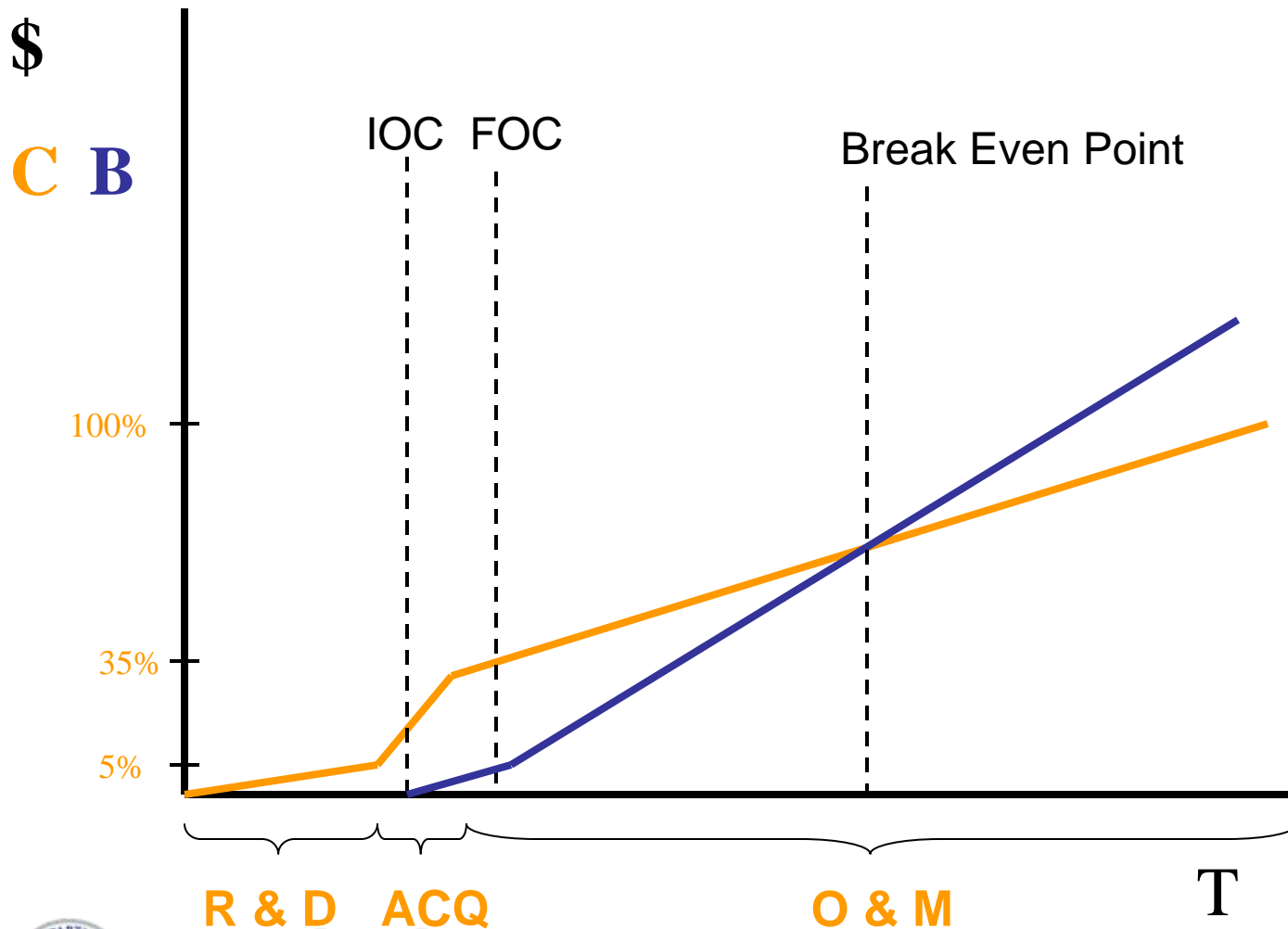
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Measuring the Benefits of Security

- **Alternative courses of action must be compared for effectiveness and costs of execution**
- **Security regulations must satisfy OMB benefit-cost criteria**
- **Measures of Effectiveness required for program management and to satisfy GPRA requirements**
- **Adaptive, reactive, strategically driven adversaries create a risk management problem fundamentally different than traditional risk issues**

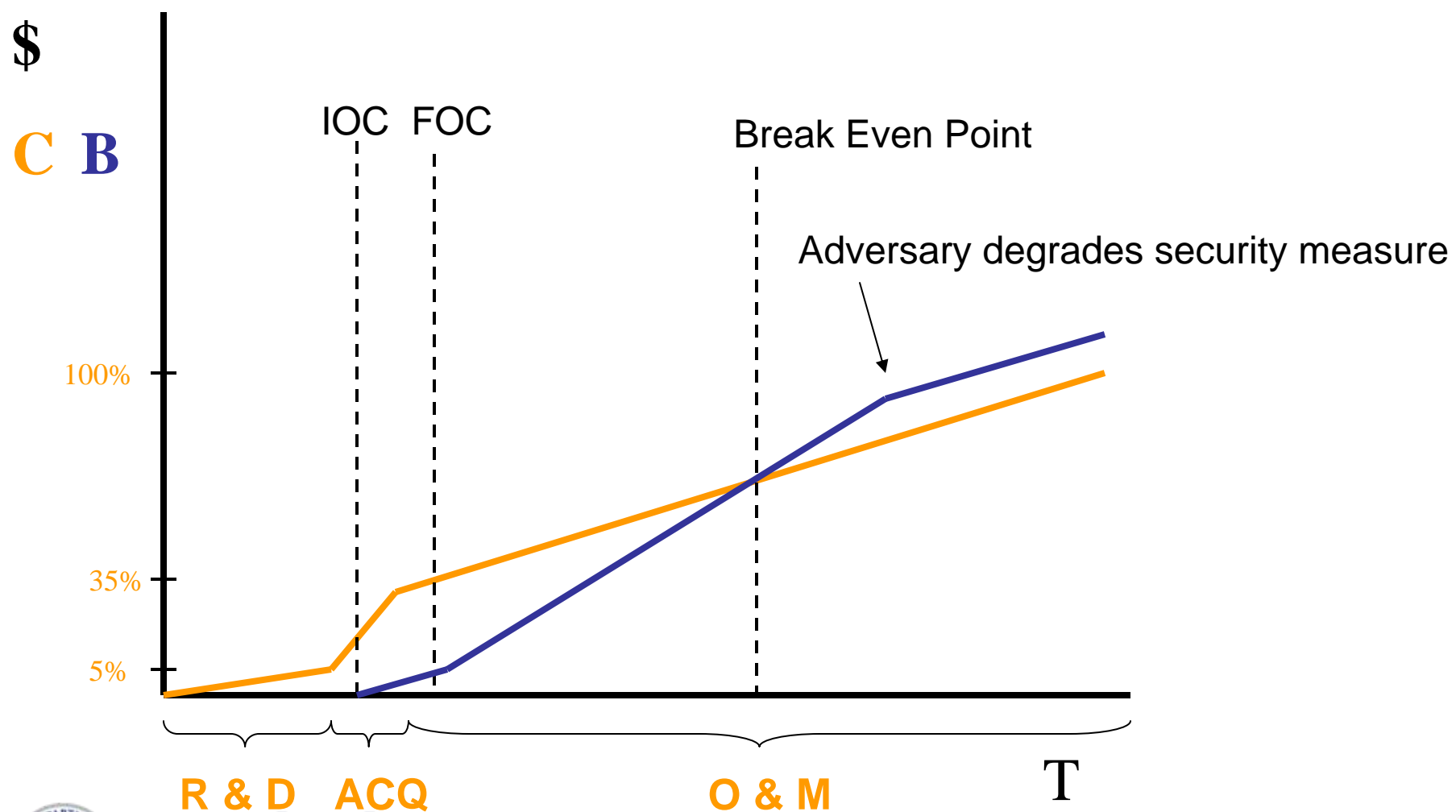


Cumulative Benefits & Costs – “Normal” Case



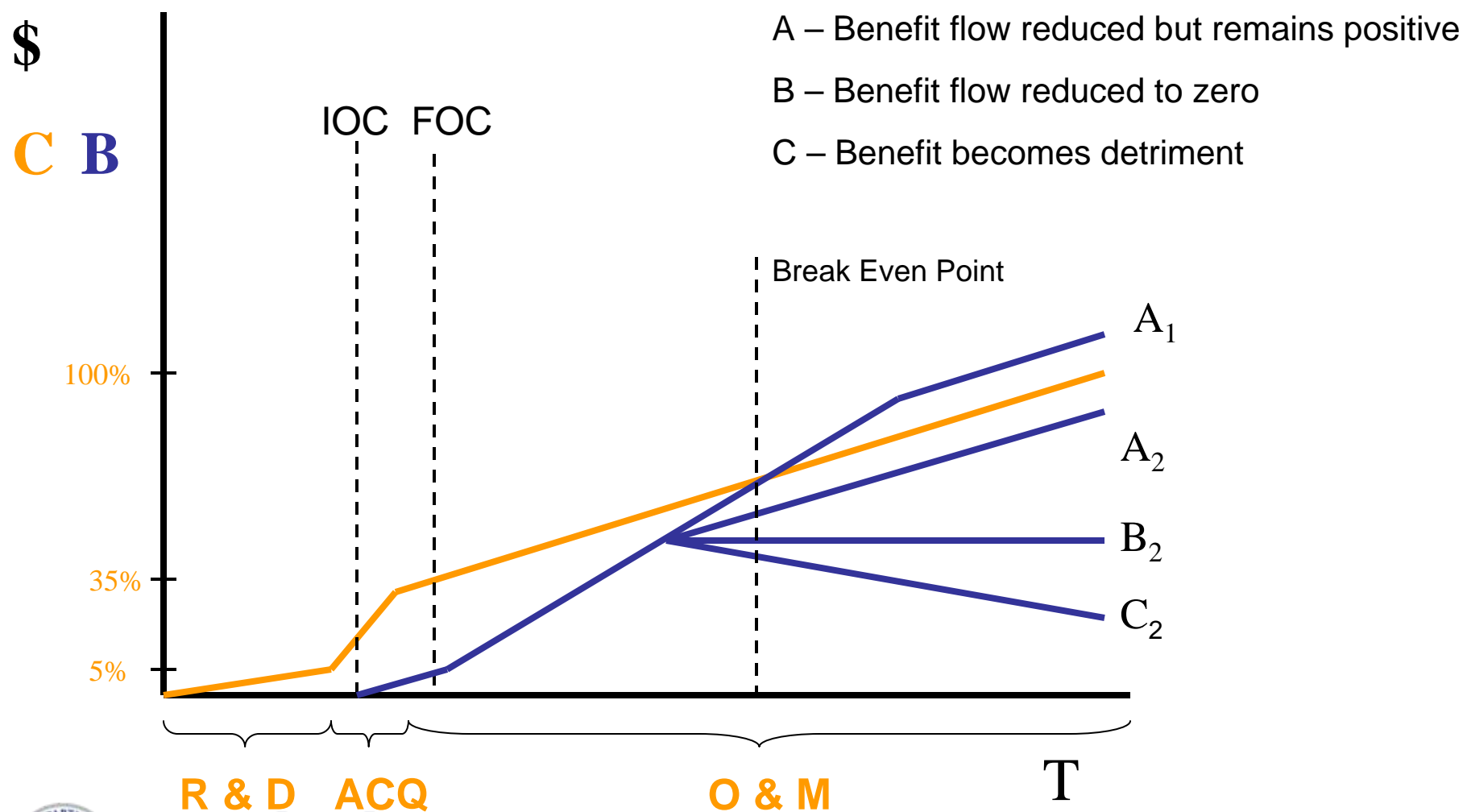
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Cumulative Benefits & Costs – Adaptive Adversary



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Cumulative Benefits & Costs – Adaptive Adversary



Benefits & Costs – The “Grants” Case ?

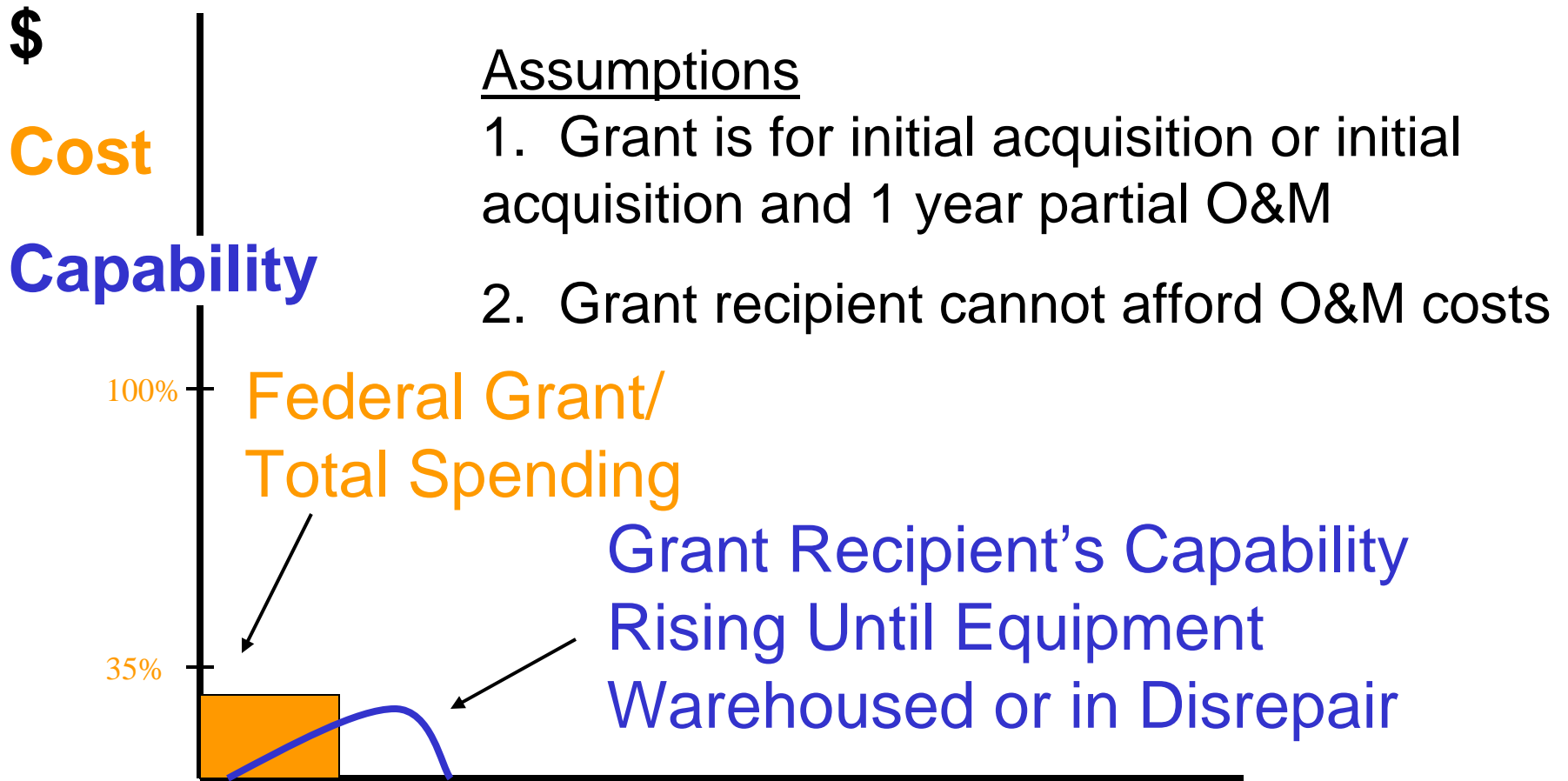


Chart reflects debatable assumption that the capability created has some value

Needs & Sources of Support

Needs (partial list)

- Methodologies tailored to specific problems/issues
- Basic and applied research to fill gaps in risk assessment and risk analytics state of the art
- Improved Risk Communications
 - Generally
 - Within specific disciplines or other communities of interest

External Sources

- Homeland Security Institute
- Other FFRDCs
- National Labs
- Consultants/Contractors
- University Centers of Excellence
- Others?



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DHS Commitments

We will use existing tools and information to the best of our ability

We will get better over time



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Closing Thoughts

- Under the best of circumstances, Risk can be difficult to address – it requires understanding and careful thought
- Homeland Security risk considerations are not taking place under the best of circumstances
 - Highly Complex Problems, Rampant Uncertainty, Significant Ambiguity
 - Numerous legitimate but competing public & private goods
 - Social Complexity is High (Politics)
- Everyone wants Risk-Informed decisions, at least until...
- Current decision-support tools and decision-making processes are inadequate to the task
 - Analytic Methods – Discursive Approaches (epistemological – reflective – participative) – Consistent Lexicon – Comparable Results – Etc.
- If it were easy we would have already solved the problem



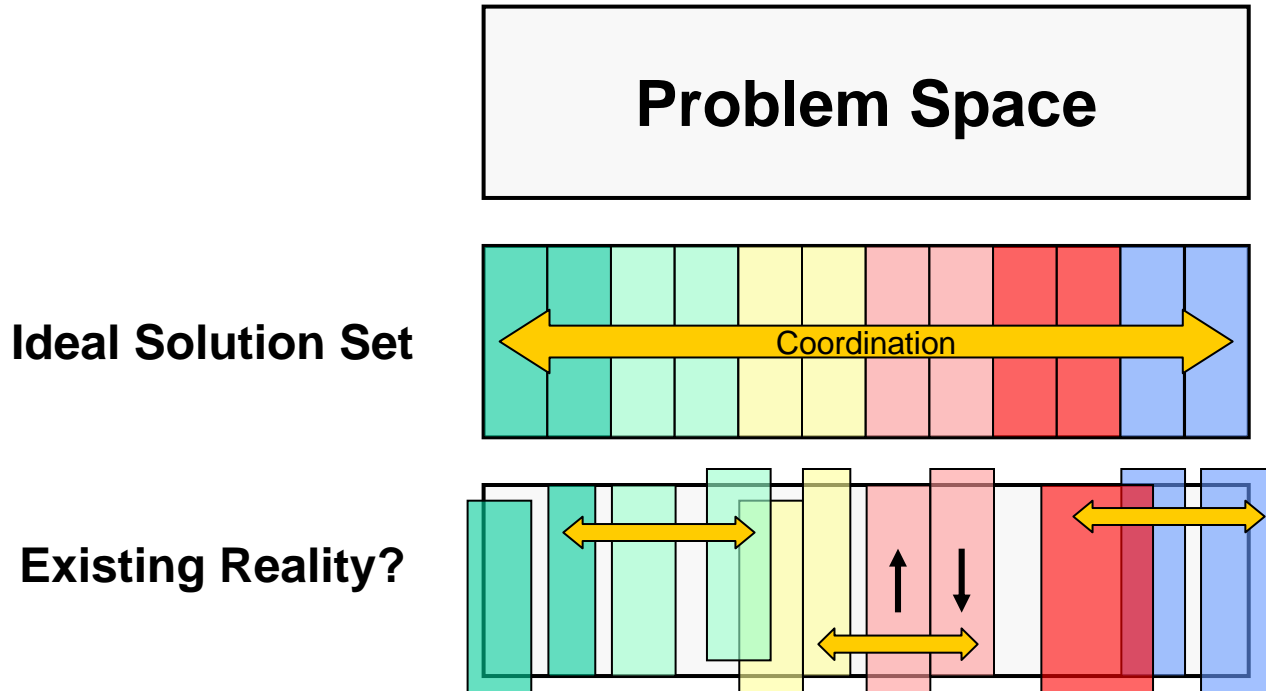
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Leadership and Management Challenges



Leadership Challenges

1. Define the Problem
2. Develop Solutions

Management Challenges

1. Identify and Close the Gaps
2. Identify and Resolve Crossed Purposes
3. Identify and Eliminate Overlaps (unless deliberate)
4. Ensure Smooth Coordination between Programs
5. Ensure Effectiveness and Efficiency within Program Operations and Activities