Leveraging IRM & QSM for Full Spectrum Resilience

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America's Challenge - - - and Solution

- **The Challenge**
  - **Efficient & Effective Preparedness & Response for CIKR**
  - **In more direct terms: COST**
    - **Cost of Prevention & Protection**
    - **Cost of Response & Recovery**
- **The Solution**
  - **Integrated Risk Management**
  - **& Resilience**
  - **Except . . . This is not working well**
- **What Else Can We Do**
  - **Leverage IRM better**
  - **Leverage concepts of Quality Systems Management as well**

[1]Foot Notes: 9 pt. Arial Italic

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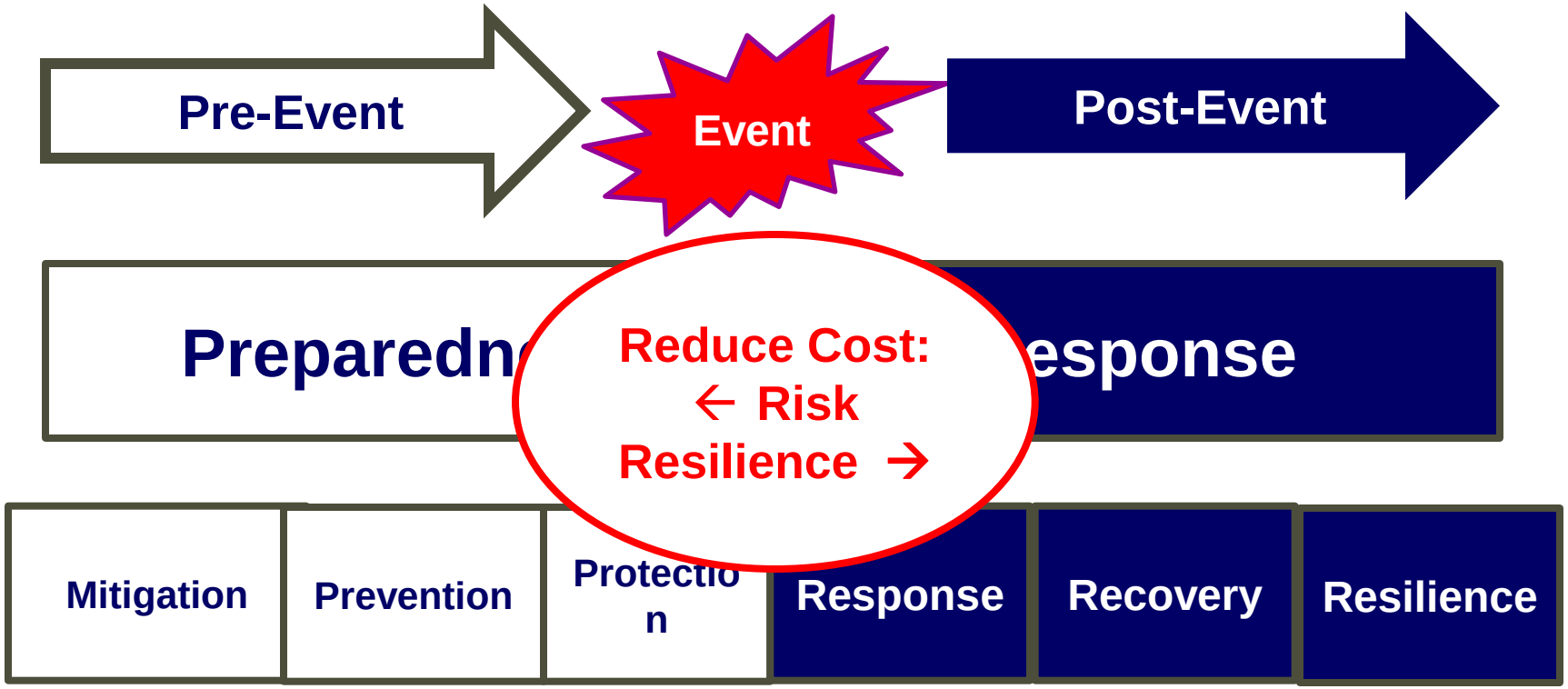
The Context for Resilience

Thinking about Homeland Security Actions has evolved over time. Today, actions are generally divided into:



Example:
National Infrastructure Protection Plan

Example:
National Response Framework

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The Core Problem

- Figuring out the Objective
- Figuring out a Process to get there
- Knowing where we are
- Continuous Improvement

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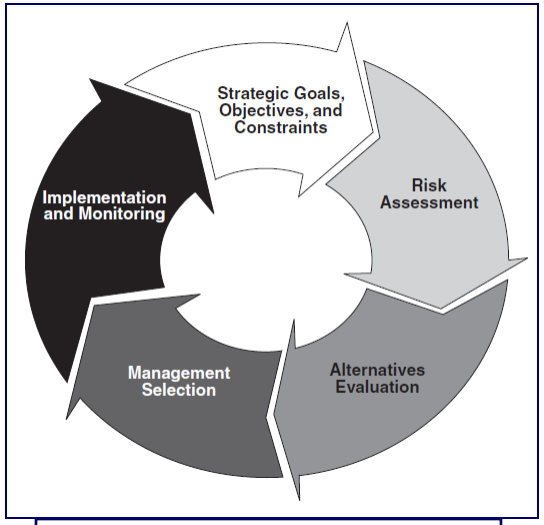
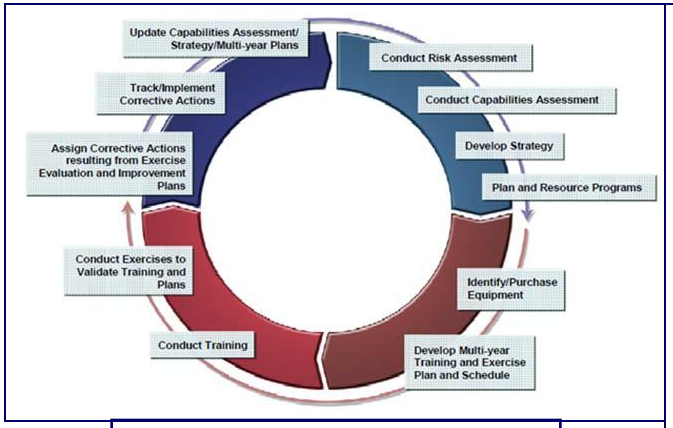
from *Operationalizing Resilience: A systems-based approach to emphasizing risk management* (Oct 2011)

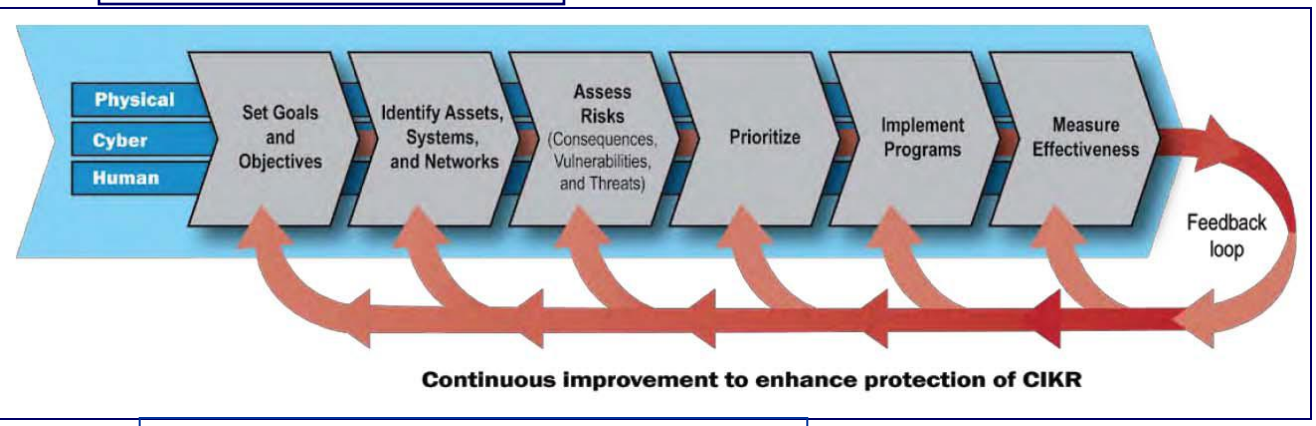


GAO Risk Management Framework



Preparedness Cycle: Target Capabilities List

RMA Risk Management Process



NIPP Risk Management Framework

THE GEORGE WASHINGTON UNIVERSITY
HOMELAND SECURITY POLICY INSTITUTE

What else?

- **learnaboutrisk.org**
- **Various point solutions**

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The Risk of Risk *(Dave McIntyre HSI White Paper)*

- **PPD-8 / DHS documents direct that IRM Management be used as the basis for HSD planning & funding**
- **Because IRM can help "See the Threat" (Hazard) and "See the Solution" and thus prioritize**
  - **Without it we are Blind as a Bat**
- **But IRM can actually create additional Risk**
  - **By narrowing vision and promoting over confidence**
  - **Miss Black Swans: Low Probability but INEVITABLE High Consequence Disasters**
  - **Miss Red Motorcycles: Disasters you see but don't recognize as a serious threat**
- **Solution:**
  - **Use the tools of Risk Management in new ways**
  - **To BROADEN NOT NARROW leader understanding.**

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Aggregate for Simplicity; Disaggregate for Clarity

- RISK DISPLAY TABLE(s)
  - This is a simple list of 4 columns.
  - RISK = T x V x C
  - Then group by R, by T, by V, by C
- TARGET LIST
  - Group by type: CIKR, people, recovery cost, government, private, etc.
- TARGET MAP
  - Same as TARGET List but overlaid on GIS info
- THREAT TABLE
  - Grouped by type of threats and hazards (CBRNE, Natural Disaster, 15 scenarios, etc.)

- THREAT PROBABILITY TABLE
  - Grouped by Likelihood of threat (or hazard) (3 groups? 5? 7?)
- THREAT PROBABILITY MAP
  - Display threat probability in colors and analyze geographic relationships
- THREAT RESPONSE Table
  - Group threats and identify response capabilities - across jurisdictions. What do you need? What do you have?
- THREAT RESPONSE MAP
  - Display Threat Response data showing geographic relationships, agreements, etc.

The fundamental idea is to list and group data in a variety of ways to discover relationships – rather than simply rank ordering risk

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Examples: Better Inform Decision Makers

- RISK MATRIX (High/Low)
  - 4 cell matrix with Vulnerability x Consequence on the X axis, and Threat on the Y axis.
- VULNERABILITY <u>REDUCTION</u> DISPLAY
  - How selected measures reduce grouped Vulnerabilities
- CONSEQUENCE <u>REDUCTION</u> DISPLAY
  - How Whole of Community Actions can reduce Contagion / Cascade
- IMPACT TABLE
  - By Target and Type of Attack Show Variety of IMPACTS ($, Health, Legal, Long Term Recovery, Environment, etc)
- CASCADE MATRIX
  - Show how loss of one target impacts others
- SEVERITY TABLE
  - Show Risk + Cost of Prioritized Response
- CORRELATION EXPECTATION TABLE
  - For every coordinated action proposed, How it will influence Consequence, Vulnerability, Threat and Risk Overall?
- RISK REDUCTION TABLE
  - For Plans Show: Target, Risk, Planned Action, Anticipated Change to Risk
  - For Evaluation Show: Target, Old Risk, Action Taken, Actual Risk Reduction, New Risk

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What else can we do? Leverage QSM

Definition of Quality: Meeting Customer Expectations

- Maximize operational effectiveness
- Reduce Waste
- Achieve measurable improvement and tangible results
- Quality must be measurable and repeatable.
- Therefore, Convert customer qualitative desires into quantifiable performance measures
- Identify and apply systems to achieve those measures.
- Manage the entire process.

Quality is a Moving Target:

- Customer expectations change
- Better Products → Higher Expectations
- Problems Sneak In
- And you may be facing a ThinkingEnemy
- So Producing Quality is a <u>Continuous Process</u>

You should be able to Measure Quality with Data

- So Done Right, Quality should give you *Success You Can Measure*

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Leveraging QSM

Note: NOT Quality Control; NOT Quality Assurance; Quality SYSTEMS

- **Start with Customer, National and International Standards/ Goals**
  - **Start with customer identified shortcomings**

- **Process to agree w/ leadership on quantitative measures for qualitative goals**
  - **Agree on Analysis of Shortcomings**
  - **Agree on corrective actions to identified shortcomings,**
  - **Convert into qualitative measures, Identify and Address problems,**
  - **and improve the process thru the cycle . . . and thereby the outcome**

- **QSM offers Established Techniques to achieve those measures**
  - **Customer requirements matrix**
  - **Process mapping**
  - **Establishing as is process**
  - **Value stream mapping**
  - **Principles of QSM**
  - **Benchmarking best practices from other organizations**
- **Standards and Measurements are Key**

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Leveraging QSM

- Quality Systems Management: Focus on the Process of Production and Delivery
  - Anticipatory, NOT focused on ID of final failures
  - Address with DMAIC
    - Define
    - Measure
    - Analyze
    - Improve
    - Control
  - Also, Plan-Do-Check-Act Cycle (PDCA)
    - Plan the Improvements
    - Do the Improvements
    - Check the Improvements
    - Act on what you find.
  - Measure: Is the Process Contributing or Not Contributing
    - Bad Parts and Bad Processes Contribute to Non-Conforming Products
    - Key Issue: Does Your Program Produce a Conforming Product at Acceptable Cost?
    - Standards and Measurements are Key
- Note: Quality Control is Tactical; Quality Systems Management is Strategic

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Leveraging QSM

- The Importance of Statistics
  - Clarifies – specifics not generalities
  - Identifies variations in process
  - Identifies Cause and Effect
  - Identifies Leverage (small changes with big implications)
- BUT Right Measures, Right Data, Right Interpretation are ESSENTIAL

- Introducing Quality is Hard
  - Quality is Expensive in the Short Term
  - Requires Strong Support from Leaders and Stakeholders
  - Requires a Sponsor who Can and Will Communicate the Need
  - Requires All to See Need for and Benefits of Change
  - Requires Training of All Involved
  - Requires Visible Success – so Pilot Projects help.

So . . . Projects must be real, work related, completed quickly

Quality requires a Culture Change

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Implementing Culture Change

- Establish a Sense of Urgency
  - Include crises, potential crises and opportunities
- Create a Guiding Coalition
  - Charge a group WITH POWER to push the change as a team
- Develop a Vision and Strategy
  - What does success look like? What path will get there
- Communicate the Vision and the Change Required
  - The actions of leaders speak louder than their words
- Give people in the system the power to make the changes work
  - Find out what gets in the way of risk management, and get rid of it
- Plan for some short term wins
  - Show examples of successes and give credit where it is due
- Leverage these gains to encourage more change
  - Use the credibility gained to repeat the success
- Anchor the changes into the long term culture
  - By planning for succession

From: John Kotter
Leading Change

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Leveraging QSM

You can make Quality Less Expensive

- Lean Processes eliminate – Repair – Rework -- Redo

You can make Quality More Visible

- Value Stream Mapping and other visualization techniques
- Rapid Improvement Events and other tools for Ownership and Motivation
- Lean Approaches (a little at a time)
- 6S Method
  - Organization, Neatness, Cleaning, Standardization, Discipline, Safety

Special Problems and Situations call for Special Techniques

- Six Sigma --intense statistical analysis of variation to "break through" tough problems

Find common or systematic causes, not special causes (1 time)

- Quality Function Deployment
  - Detailed map: customer needs →product characteristics, w/ all workers
- Total Quality Management
  - Promoting quality culture by minimizing variation
- Theory of Constraints
  - Identifying designs, policies or measures/values constraining quality

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Leveraging QSM

ALSO NOTE:

Different approaches speak to different customers differently.

- **Example:**
  - **TQM too "soft" for the military**
  - **Lean 6 Sigma too "mechanical" for health care community.**

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Look Familiar?
PRINCIPLES OF CONTINUOUS QUALITY IMPROVEMENT

- Continuous Quality Improvement is not a project. It is a linear process, with the goal of creating better outcomes.

- The success of organizational CQI depends upon the goals established and the processes used to achieve these objectives.

- The goals of CQI must be defined by those who benefit from enhanced outcomes, not by those who deliver the services. *

- CQI is the result of analyzing accurate data over time, at real locations, among real conditions. Differences are measured and compared to the past, to set standards, and to other organizations.

- CQI programs will encounter both organizational and individual resistance, which must be overcome in order for efforts to have a positive impact. This requires employee education and training in CQI principles and techniques.

- Progress in CQI will lead to new challenges that can be addressed in subsequent efforts. CQI is a loop.

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QSM *with* IRM – The Bottom Line

- Implementing Quality Systems Management looks much like implementing Integrated Risk Assessment
- Both promote Full Spectrum Resilience
- Requires you to investigate and define customer desires, and identify the cause and effect relationships that will produce the outcome the customer desires.
- The customer must be shown (through quantitative analysis) that the cost of failure is greater than the cost of improvement.
- Key to achieving Quality is identifying and measuring the right parameters, collecting the right data, correctly interpreting the data collected, and conceptualizing changes to achieve customer satisfaction at an acceptable cost.
- Quality is best achieved by the continuing application of theory to practice and the continuing implementation of resulting lessons learned.
- Applying well known and well tested concepts of Quality to emerging fields like Homeland Security can provide both striking insights and dramatic improvements at reasonable cost.

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