



CENTER FOR  
ADVANCES IN PORT MANAGEMENT  
**LAMAR UNIVERSITY**

**STRATEGIES FOR ENHANCED PORT AND  
TRANSPORTATION NETWORK RESILIENCY**

**AAPA EXECUTIVE MANAGEMENT CONFERENCE  
RANCHO BERNARDO, CA  
MAY 7, 2019**

**ERIK STROMBERG, EXECUTIVE DIRECTOR, CAPM**

MEMBER THE TEXAS STATE UNIVERSITY SYSTEM™

# CENTER FOR ADVANCES IN PORT MANAGEMENT

**Mission:** To better prepare the port and marine terminal operating industry for the challenges and opportunities that lie ahead through advanced education and industry relevant research.

**Description:** Collaboration between the colleges of Engineering and Business, housed in CICE, integrally linked with the port and marine terminal operating industry to meet its current and future needs, blending theory and practice.

**Advisory Board:** Port and terminal industry experts

# DEGREES; PROGRAM STATUS

- Degrees/Concentrations:
  - Masters of Science in Port and Marine Terminal Management
  - MBA and Masters of Engineering Management with Concentrations in Port and Marine Terminal Management
- All academic approvals in place in time for 2017/2018 academic year
- Now in second full year with 12 working professionals accepted
- Full recruitment mode—selling education!

# PORT AND MARINE TERMINAL MASTERS DEGREE CURRICULUM

- Introduction to Port and Marine Terminal Management
- Strategic and Master Facility Planning
- Economics of Ports and Trade
- Freight Transportation Systems
- Decision Making and Critical Thinking
- Legal Framework for Ports and Marine Terminals
- Marine Terminal Operations
- Capital Planning and Project Development
- Safety, Security and Resilience
- Leadership and Team Building
- Communication and Negotiating Skills
- Port Property and Asset Management

# INDUSTRY CERTIFICATIONS

- Approved:
  - Ports, Trade and Global Logistics;
  - Port and Marine Terminal Capital Planning and Development;
  - Port and Marine Terminal Management and Operations.
- In development:
  - Port and Maritime Cyber Security.
- Planned:
  - Freight-based, Port-proximate Economic Development
  - Risk Analysis;
  - Strategic Asset Management;
  - Oil and Gas Supply Chain Management (major university initiative).

# INDUSTRY RELEVANT RESEARCH

- CAPM funded projects: 32 over \$600k value
- Numerous industry supported projects: value--millions
- Input from business and industry and government continue to drive CAPM research agenda

# BRIEFLY HIGHLIGHT THREE CURRENT CAPM INITIATIVES

- eTextbook on Port and Marine Terminal Management
- Workforce development and port industry awareness
- Enhancing Resiliency of the Sabine Neches Waterway and Connecting Freight Transportation System

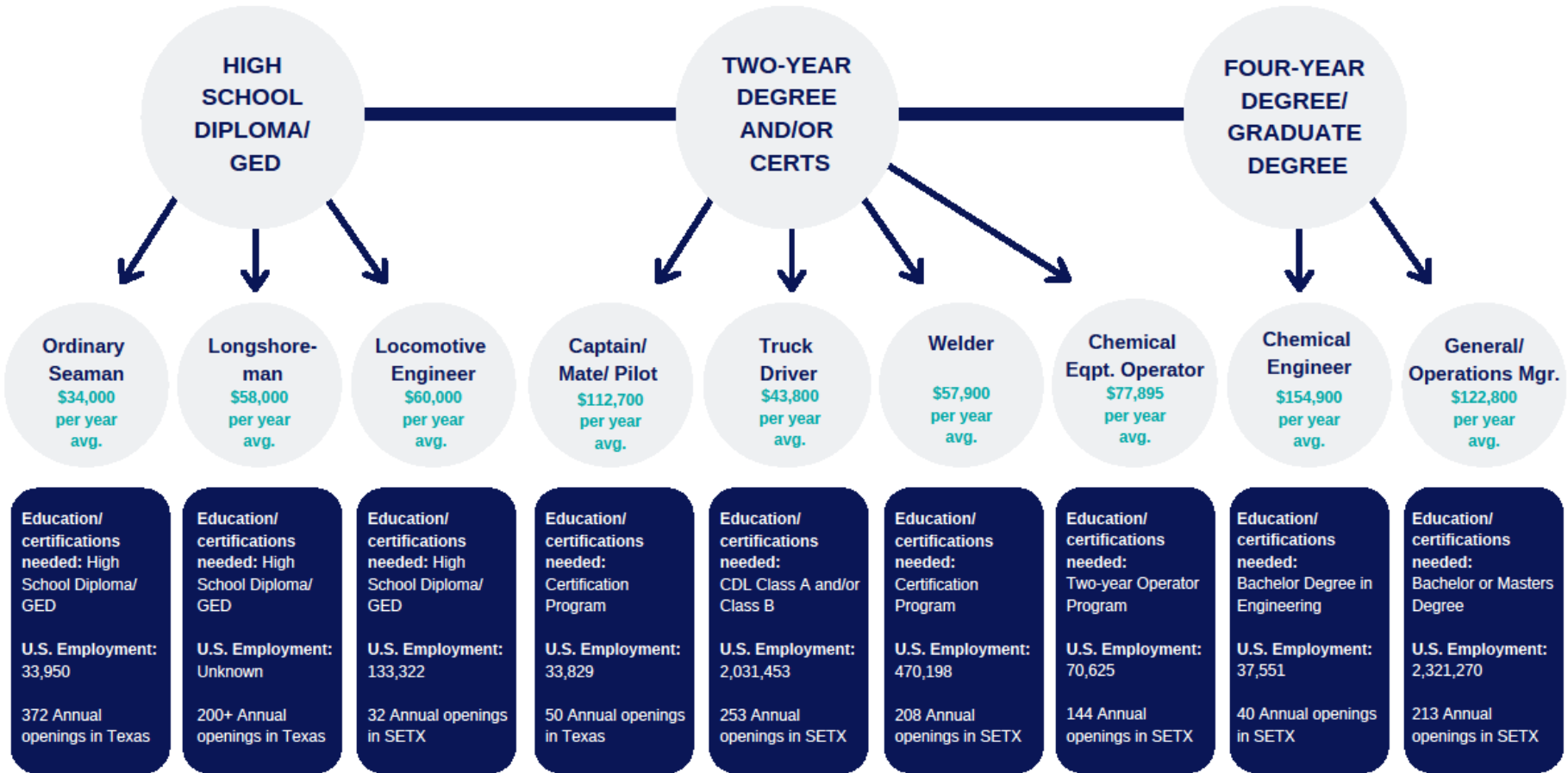
# WORKFORCE DEVELOPMENT: SETWAC WATERWAY AWARENESS S/C

- The Waterway Awareness sub-committee will provide SETWAC members with a platform to showcase the growth and development taking place along the Sabine-Neches Waterway.
- The goal of this committee is to make facts and statistics related to economic development and the maritime industry easily accessible and part of our daily conversation.
- The subcommittee plans to re-vamp SETWAC's website so it is a resource for not only industry professionals, but the general public.
- Chaired by Sade Chick, Director, Corporate Affairs, Port of Beaumont





# POTENTIAL CAREER PATHS



# WHAT IS ASSET MANAGEMENT?

- Strategic Asset Management is the “...coordinated activity of an organization to realize value from assets.” (ISO 55000)
- Basically, strategic asset management links the organization’s assets to its strategic and business goals
- It is not a project.
- It is a process—a business process, that demands for its success the engagement of the entire organization.

# WHY INITIATE THE SAM JOURNEY?

## DEFENSIBLE, AUDITABLE, TRANSPARENT AND REPEATABLE POLICY AND DECISION-MAKING

- **Aging infrastructure**—Uncertain condition and life expectancy
- **Insufficient capital resources** – Scarce public K, cautious private K, inadequate internal K
- **Capital planning**—Ad hoc investment prioritization
- **“Preventative maintenance”** --Typically ‘run-to-failure’ with higher costs and greater service disruptions
- **Deferred maintenance**--Substantial but too often unknown (‘don’t want to know’)
- **Build Board, customer and stakeholder confidence in management**—Minimize emergency expenditures
- **“Deficient and silo’d data** — Not enough, not the right kind, not in the right places
- **Uncertain level-of-service requirements**—What performance is required? By whom? For how long?
- **Establish defensible lease or monetization values**—Based on knowledge of asset value
- **Leaseholder responsibilities**—Ill defined, and not monitored
- **Human resources**--Retiring ‘Boomers’ and loss of institutional knowledge
- **Optimize risk management policies**—Again, with understanding of asset value

# WHO IS DOING (OR EXPLORING) SAM?

- Global: Port of Melbourne and Port of Rotterdam (best in class)
- North America (partial list):
  - Numerous Canadian port authorities, highlighted by Port Metro Vancouver
  - Port of Portland
  - Port of San Diego
  - Port of Houston
  - Port of Longview, WA
  - Ports America
  - NW Seaport Alliance (Ports Of Tacoma And Seattle)
  - Port of Baltimore
  - Port of New York And New Jersey
  - North Carolina Ports Authority

# SABINE-NECHES WATERWAY PORT AND TRANSPORTATION SYSTEM RESILIENCY

- SNWW CRITICAL TO REGIONAL, STATE-WIDE AND NATIONAL PROSPERITY AND SECURITY
- APPROACH: BUILD ON 2009 USCG 'PORT-WIDE RISK MITIGATION STUDY' (ONE-TIME, NATION-WIDE INITIATIVE)
- SUPPORTED BY WIDE ARRAY OF PRIVATE AND PUBLIC STAKEHOLDERS AT REGIONAL, STATE AND NATIONAL LEVELS

# Demystifying Resiliency

## *Uncertainty & Decision Making*

Lynette Cardoch\*, PhD, LEED AP  
Director of Resilience & Adaptation

*lcardoch@moffattnichol.com*



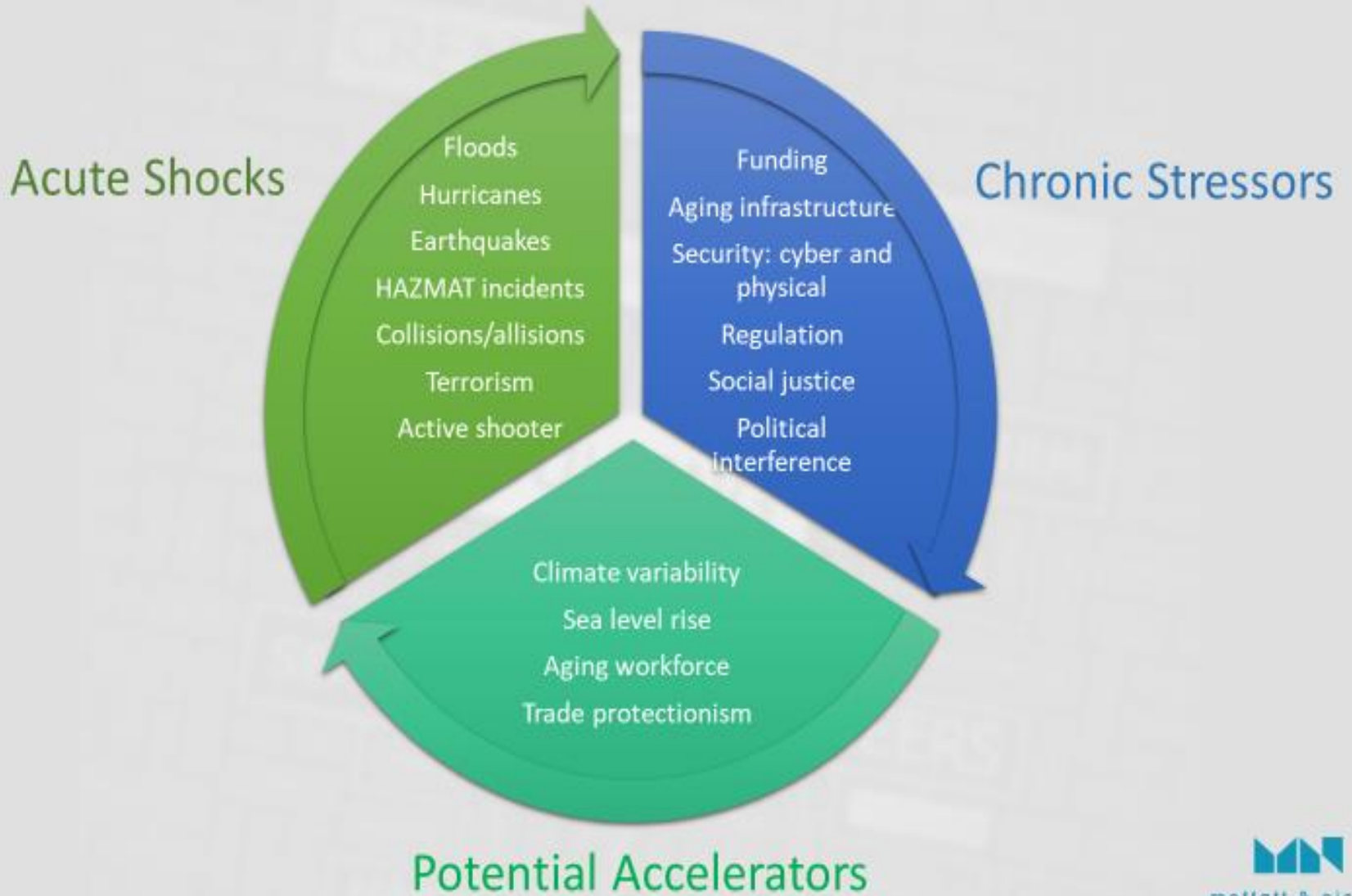
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# CREATIVE CAPACITY



# Understanding Marine Transportation System Resilience – An Overview of Activities from the 2017 Hurricane Season

Katherine Chambers  
US Army Corps of Engineers  
Engineer Research and Development  
Center



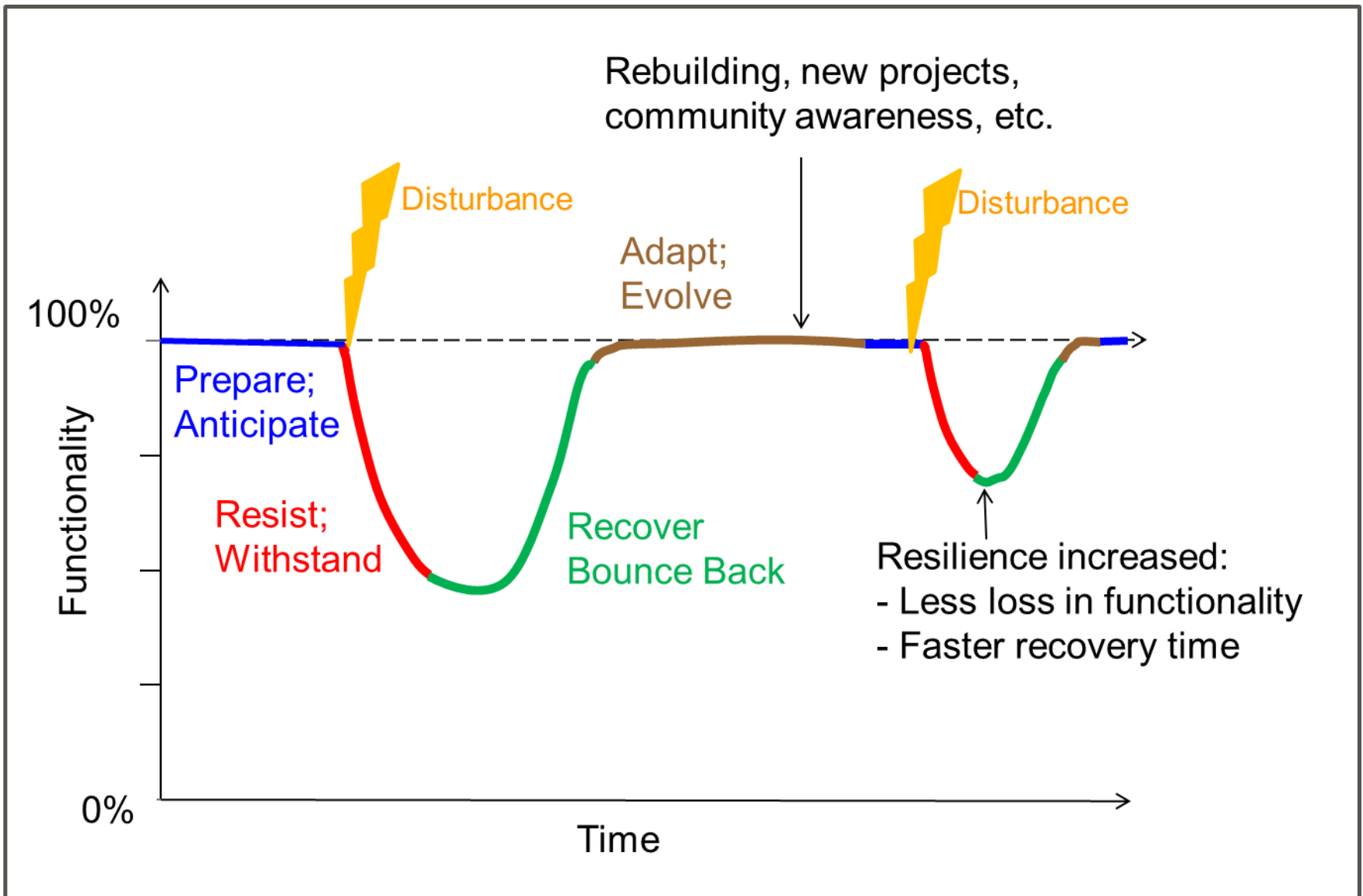
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# Resilience Over Time



# Cycle of Resilience

Through data and experts elicitation, we can gather information on *how* the MTS was able to **Resist** and **Recover** to inform future **Adaptation** and **Preparation**



- Key actions or decisions
- Datasets to aid critical actions and decisions
- Interdependencies with non-feds
- Best practices
- Opportunities to increase resilience



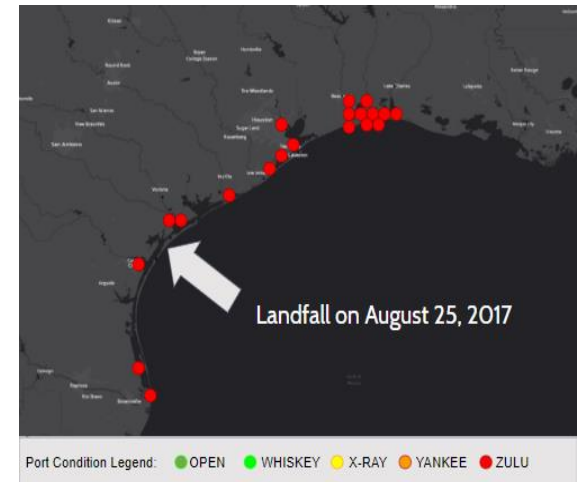
# Hurricane Harvey

- **Challenges**

- Flooding caused indirect impacts to supporting infrastructure
- Lack of knowledge management and collaborative tools regarding port condition or status
- Redundant information requests

- **Successes**

- Early communication
- Centralized information distribution
- Pre-prioritized resource placement
- Execution of drills and training
- Early closure of energy facilities
- Efficient restoration of ATONS following storm
- Cross agency communication
- Engagement with public sector for resource needs
- Delegation of FEMA mission assignments



# Resilience for Port Stakeholders

**Where do we start** with understanding MTS resilience?

**What information best facilitates decisions** about resilience improvements?

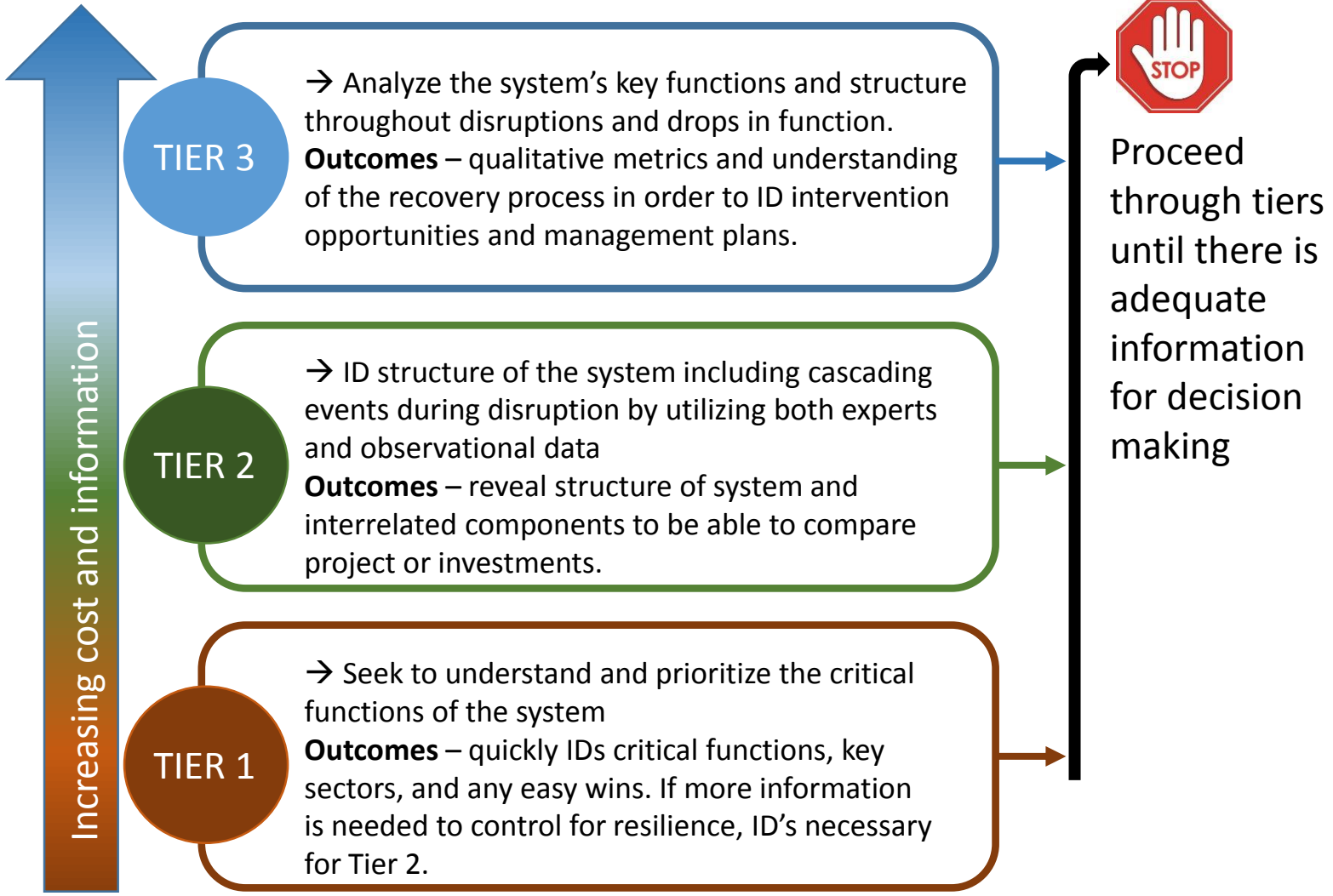
How do we analyze critical infrastructure dependencies and cascading failures?

How do we benchmark progress?

How can this information best be disseminated to stakeholders?



# Port Resilience Assessment and Decision Guide



# SNWW RESILIENCY STUDY: APPLICATION OF SAM METHODOLOGY

- Outcome: Identification through a data-driven, risk-based process, critical infrastructure projects and process improvements necessary to enhance the resiliency of the SNWW, ports and terminals, and the connecting freight transportation systems.
- Approach: Engage public and private owners, users, customers and stakeholders, system-wide.
- Process:
  - Define system goals and objectives
  - Identify risks—all hazards
  - Identify critical assets and processes—including dependencies and vulnerabilities
  - Assess asset condition/life cycle and process practice (especially communication networks and protocols)
  - Define asset/system/process required level of service
  - Undertake gap analysis
  - Risk assessment to prioritize projects/process improvements
  - Estimate costs
  - Recommended list of capex and process improvements—one year, five year, ten year.
  - Feedback and continuous improvement

# Q&A

- Contacts:

- Erik Stromberg, [rstromberg@lamar.edu](mailto:rstromberg@lamar.edu), [rolferikstromberg@gmail.com](mailto:rolferikstromberg@gmail.com); 409-880-7114, 910-617-6800;
- Candice Moore, Administrative Director, [cmcormier@lamar.edu](mailto:cmcormier@lamar.edu), 409-880-7121.