2022 GUAM-CNMI MARITIME TRANSPORTATION SYSTEM REGIONAL RESILIENCY ASSESSMENT PROGRAM (RRAP)

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RRAP Overview

- The goal of the Regional Resiliency Assessment Program (RRAP) is to generate greater understanding and action among public and private sector partners to improve the resilience of a region's critical infrastructure
- Resolves infrastructure security and resilience knowledge gaps
- Informs risk management decisions
- Identifies resilience-building opportunities and strategies
- Improves critical partnerships among stakeholders

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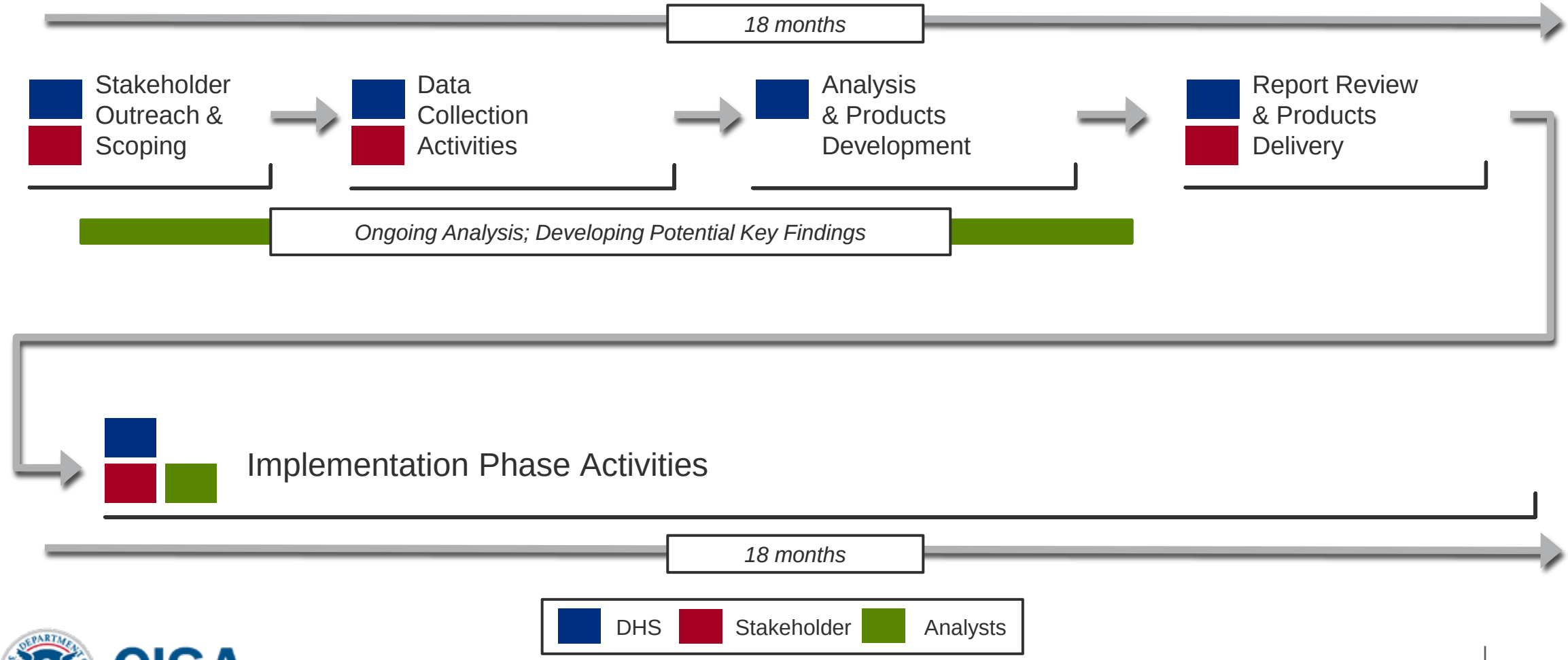
General RRAP Timeline



Guam-CNMI RRAP Project Overview

Purpose: Identify and assess the efficacy of alternate port concepts and foreign and Compacts of Free Association (COFA) mutual aid protocols and capabilities

- Baseline Scenarios
  - Port Authority Guam's infrastructure has suffered a catastrophic event and is anticipated to take over 30 days to restore functionality
  - Commonwealth Ports Authority infrastructure has suffered a catastrophic event and is anticipated to take over 30 days to restore functionality

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Project Overview

Research Focus

How can Guam and CNMI better prepare for, respond to, and more quickly recover from a catastrophic incident affecting the Maritime Transportation System?

Key Questions

- What are the requirements, timelines, and limitations for implementing an alternate port system concept in Guam?
- What are the requirements, timelines, and limitations for implementing an alternate port system concept in CNMI?
- How can Guam, CNMI, and other Micronesian governments support a shared alternate port system? *
- What is the process for Guam & CNMI accepting foreign aid after a major MTS disaster?

Potential Project Activities

- Stakeholder Interviews
- Site Visits
- Literature Review
- Data Collection, Modeling, Analysis
- Small Group Scenario-Based Facilitated Discussion
- Interactive Tool Development
- Exercise or Workshop

Questions

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Vessel Routing & Suitability Tool (VRST)

Overview

Battelle Energy Alliance manages INL for the
U.S. Department of Energy's Office of Nuclear Energy

Idaho National Laboratory

Audience Feedback Requested

3-minute survey on the Vessel Routing & Suitability Tool

Please complete during this presentation

https://www.surveymonkey.com/r/CQ8ZF5S

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Rapid Response Critical to Civil Order, Public Health, and Restoration Initiatives

After a maritime emergency degrading port infrastructure & capabilities responders need to enable port traffic as soon as possible.

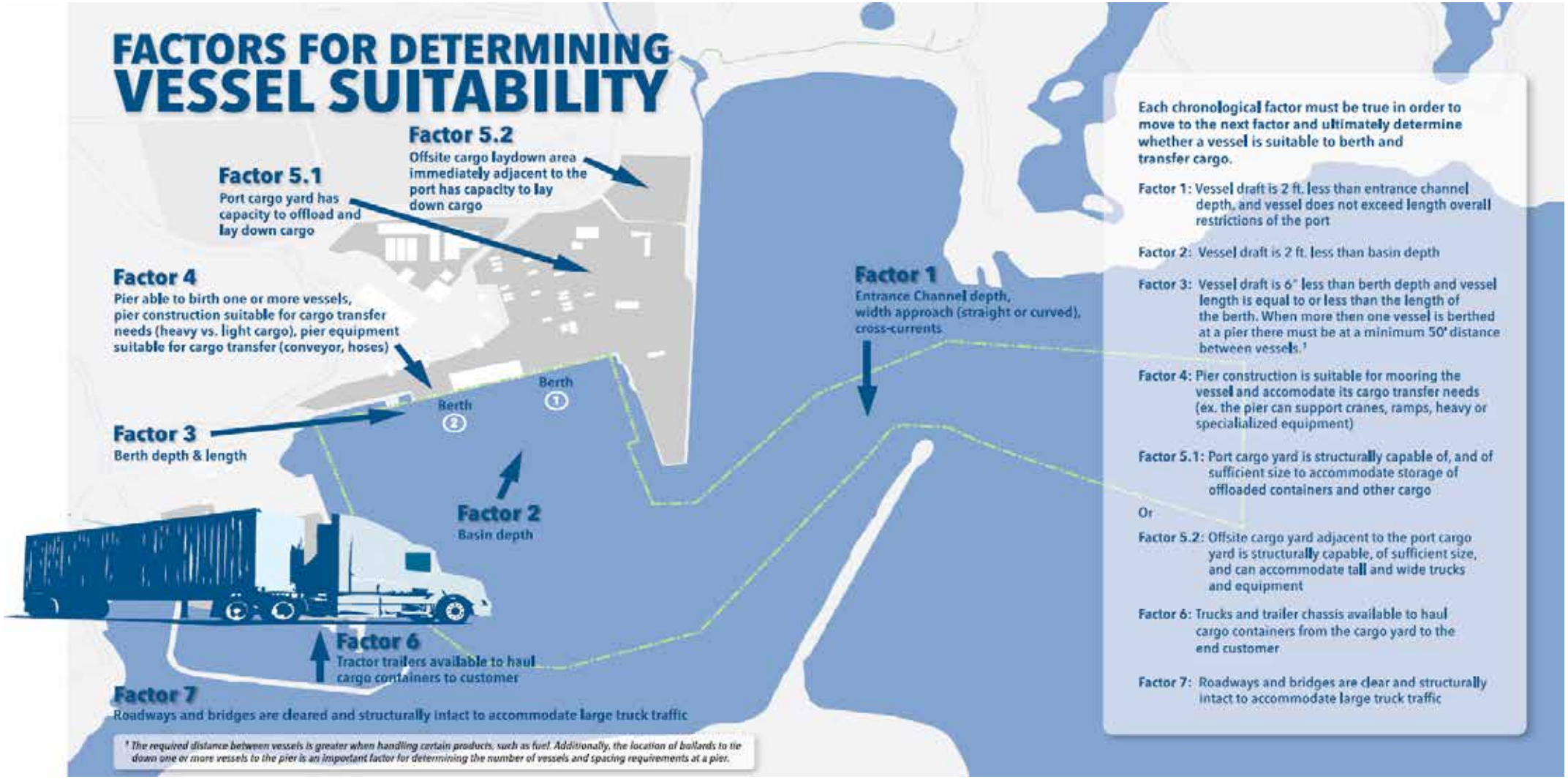
Perspective: Hawaii and other remote ports would be out of food and water within 3-5 days without incoming cargo to its ports.

Potential Post Incident Variables

Each variable change exponentially complicates vessel suitability to berth and offload critical cargo.

- 200% Increase in vessel traffic
- Debris blocking the entrance channel
- Heavy sedimentation at cargo piers
- Pier structure weakened or destroyed
- Incoming vessels of a size incompatible for available ports & piers
- Insufficient cargo yard laydown area to offload cargo

Factors for Determining Vessel Suitability



Vessel Routing & Suitability Tool

What problems does the VRST solve?

The VRST is a single data repository and analysis tool enabling rapid decision-making for maritime transportation emergencies

- No single data repository for ports, piers, berthing options, container yards, vessels, and land transportation routes
- Many data sources require internet and/or network connectivity to obtain
- No efficient method for tracking Maritime Transportation System (MTS) variables after a disaster
- VRST provides a simple platform for updating variables

Vessel Routing & Suitability Tool

Potential Users

- Maritime Transportation System Recovery Unit (MTSRU) personnel in a planning or emergency response phase
- Federal, state, and local planners

Technology Readiness Level

- 6 – Pilot-scale prototype to real-world integration

Programming Languages & Dependencies:

Electron, Angular, TypeORM, SQLite

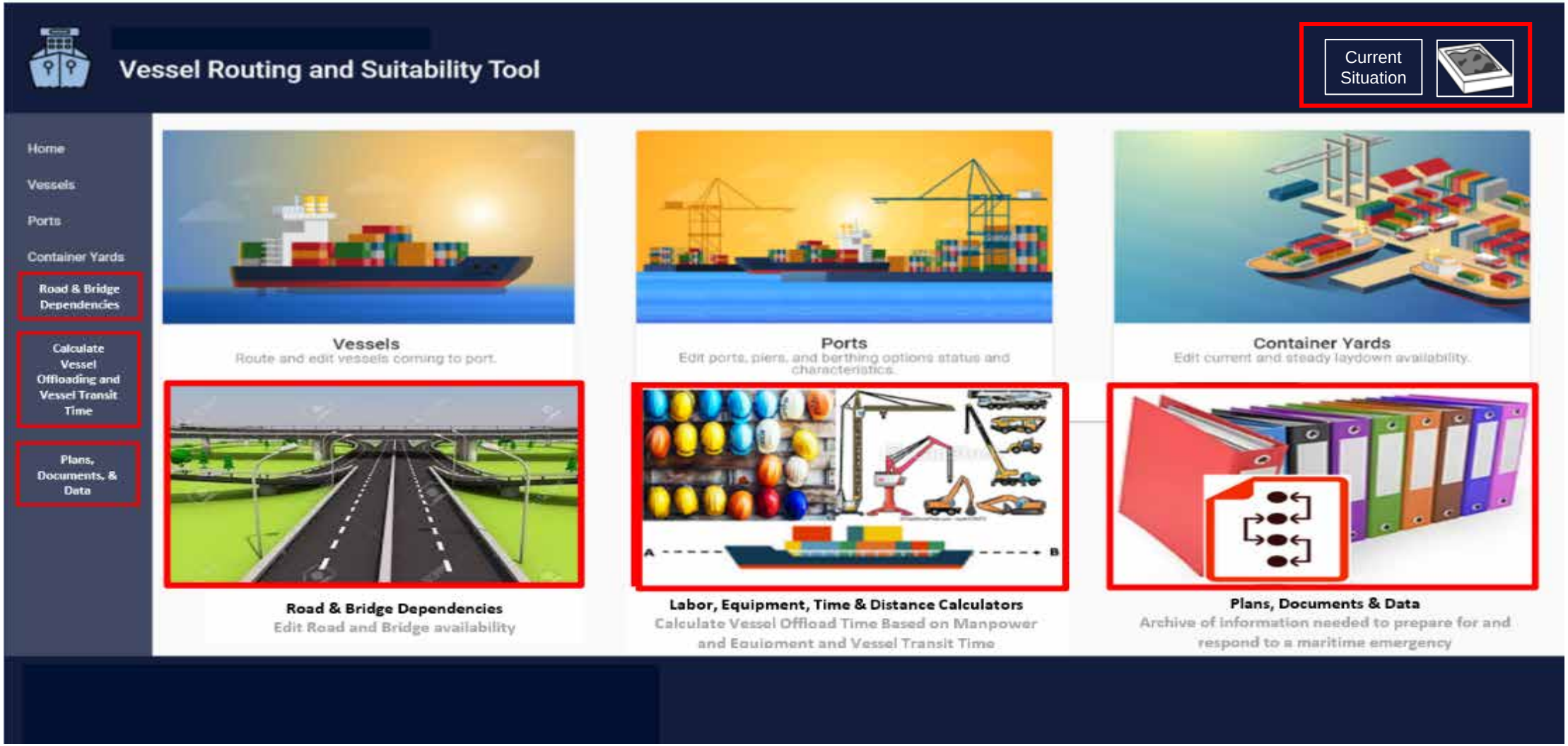
Operating System Requirements:

The current version of the application is built for Windows and is structured for data to reside on the user's computer device, The user can share data through the Data & Document Management function with other users.

Price of Product/service in U.S. Dollars:

Free to customer, potential for future licensing to other customers

Updated Landing Page Features



Expanded List of Pre-loaded Vessels

Vessels

Filter

Add Vessel | View Berthing Options

Name	Picture	Foreign Flag	Country	Type/Class	Length	Width/Breadth	Draft/Draught MT Steady State	Draft/Draught MT Current	Draft/Draught VT Steady State	Draft/Draught VT Current
ACACIA MING		Yes	Panama	Container Ship	420	63	21.98	21.98		
ADM Callaghan		No	USA	Vehicle Carrier/RoRo Cargo Ship	694.5	91.9			29	29
Altair		No	USA	Logistics Naval Vessel FSS / ROS-5 / C-2 Crane Ship						
AMERICAN CHALLENGER		No	USA	Tug	131.23	32.81	8.2	8.2	83.66	83.66
AMERICAN CONTENDER		No	USA	Tug	88.58	29.53	13.12	13.12	42.65	42.65
AMERICAN EMERALD		No	USA	Tug	134.51	32.81	7.87	7.87	19.36	19.36
AMS 250		No	USA	Deck Barge	250	70				

- VRST is currently loaded with 176 US government & civilian vessels
- Updated version will include all MARAD, RRF, Transcom and civilian US flagged cargo vessels
- Foreign flag and other vessels can be added as needed

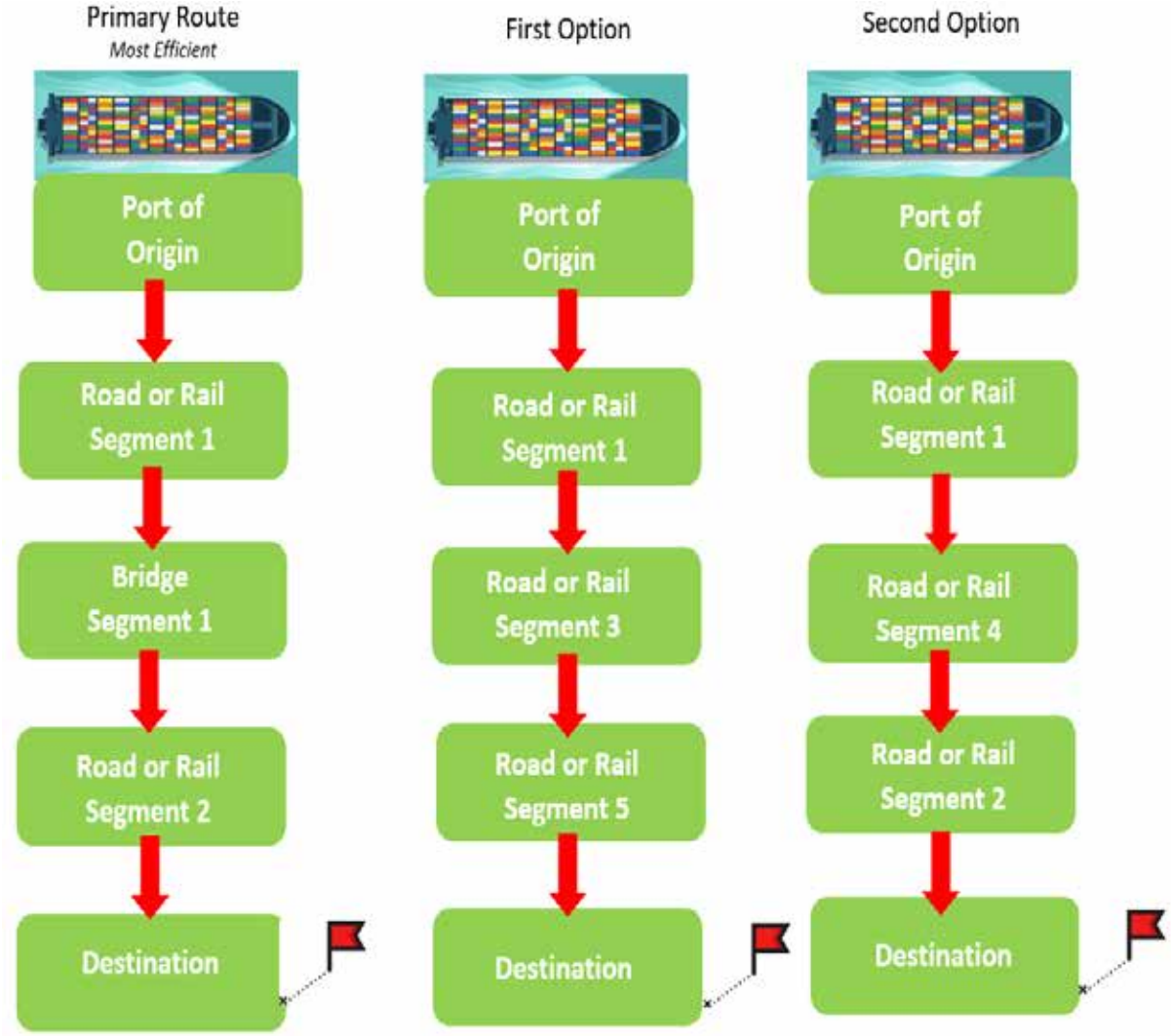
Create Your Port Network

Note: *The user's port network should be based on each USCG Sectors' area of operations. This construct follows normal MTSRU operations and partnerships during an emergency.*

User Created Road, Rail & Bridge Dependencies

User Inputs Routes and Normal Travel Time

Primary Route	Travel Time 30 min
First Option	Travel Time 1.5 hours
Second Option	Travel Time 50 min
Third Option	



Vessel Offload Time Calculator

Cargo Offloading Mechanism (Dropdown Menu)	Choose Estimated Efficiency (Dropdown Menu)	Hours Per Workday Available for Offloading Operations	Result Hours Needed to Offload	Result Workdays Needed to Offload
Gantry Crane	High	User Enters Value	**X Hours**	**X Days**
Ro-Ro	Medium			
Shoreside Crane	Low			
Other				

Efficiency may be impacted by wave action, high wind, rain, congestion at the port, stevedores from another port, user capability or familiarity with equipment, etc.

Emergency Operations Stevedore Labor Calculator

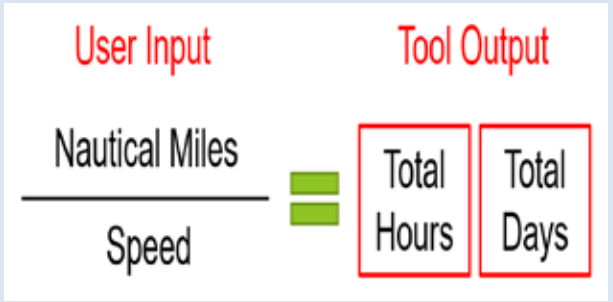
Position (Dropdown Menu)	**How many hours per day does this position need to operate?** (Dropdown Menu)	**Length of Employee Shift For Position** (Dropdown Menu)	**Result Number of Employees Per position**
Gang Boss	8	8	X
Crane Operator	10	10	X
Stevedoring Superintendent	12	12	X
Pier Superintendent	18	16	X
Ship Hold TEU Loader	20	18	X
Hatch Tender	**Enter custom #**	**Enter custom #**	X
Forklift Driver			X
Dockworker			X
Yard Truck Driver			X
Mechanic/Equipment Repair			X
Tractor Driver			X
Safety Lead			X
Welder			X
Carpenter			X
Security Officer			X
Enter Custom Position Name			X

Calculates Maximum Surge Capacity Labor

- Assumes extended shifts
- Assumes some employees can function in multiple roles
- 7-day Operations
- No Vacation Time
- No Breaks

Time-Distance Calculator

	Booby Island	Goods Island	Cape Flattery	Euston Reef	Cairns	Lucinda	Palm Passage	Townsville	Abbot Point	Hydrographers Passage	Mackay	Hay Point	Port Alma	Gladstone	Bundaberg	Point Cartwright	Newcastle	Sydney	Botany Bay	Port Kembla
Port Kembla	1787	1770	1388	1280	1276	1221	1174	1179	1132	1050	1015	944	939	784	747	700	508	105	43	32
Botany Bay	1756	1739	1360	1251	1245	1190	1143	1148	1100	1019	984	915	910	753	716	669	478	73	11	
Sydney	1747	1730	1351	1240	1236	1181	1134	1139	1092	1010	975	906	906	744	707	660	468	62		
Newcastle	1692	1675	1296	1185	1181	1126	1079	1084	1037	955	920	851	846	689	652	604	418			
Point Cartwright	1285	1268	889	780	774	719	672	675	631	548	511	445	440	283	244	198				
Bundaberg	1134	1117	738	632	623	573	521	521	475	397	362	292	288	199	79					
Gladstone	1059	1042	661	551	546	493	446	448	404	322	287	218	210	44						
Port Alma	1026	1009	630	521	515	459	413	414	370	289	254	185	177							
Hay Point	864	847	468	358	353	297	251	253	209	127	122	12								
Mackay	859	842	462	353	347	294	246	246	205	122	121									
Hydrographers Passage	934	917	547	-	425	371	321	-	279	199										
Abbot Point	738	721	347	235	230	177	127	125	86											
Townsville	670	653	274	164	159	105	54	68												
Palm Passage	652	635	261	-	143	91	46													
Lucinda	617	600	226	114	110	57														
Mourilyan	567	550	170	60	55															
Cairns	514	497	116	28																
Euston Reef	534	517	138																	
Cape Flattery	398	381																		
Goods Island	17																			



The tool will be pre-loaded with NOAA & NGA publications documenting distances between global ports. User enters distance and speed into the calculator and receives an estimate of the hours and days it will take for a vessel to transit from the port of origin to destination. **The tool does not calculate preparation and loading time, only transit time.*

Users may create their own time-distance matrix for port specific shipping distances based on geography and/or partnerships with foreign and COFA ports.

Plans, Documents, Data-Sharing

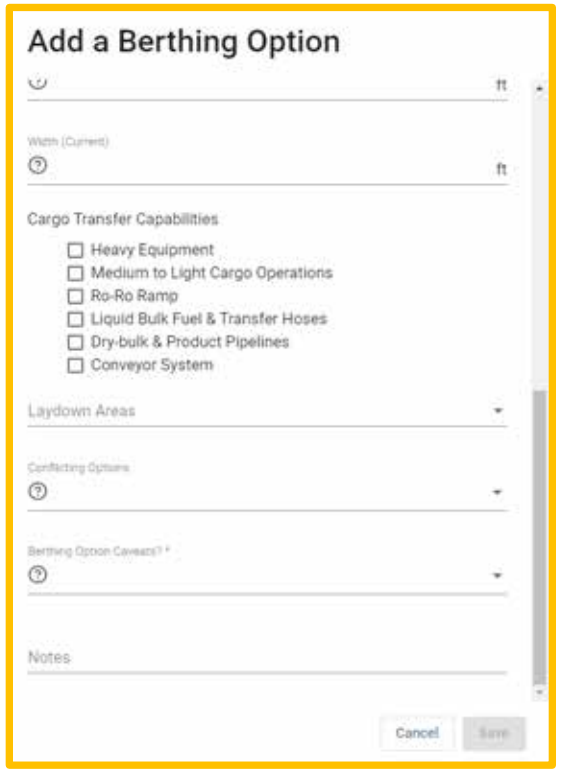
- Emergency Plans
- Job Aids
- Standard Operating Procedures
- Contact Lists
- Memorandums of Understanding
- Contracts
- Work Schedules
- Forms
- Draft After Action Review Input

If the local network is down, the tool can store important documents needed for emergency operations. Must be uploaded prior to network outage.

- Tabletop Exercise Scenarios
- Pre-planning Scenarios
- Current Emergency Scenarios

This feature ensures that steady state data is not overwritten by scenarios, and time spent building scenarios is not overwritten by steady state data.

Plans, Documents, Data-Sharing



Customized Templates for User Data Inputs

- Port & Port Partner
- Pier Capabilities
- Berthing Options
- Landside Routes
- Local Maritime Time-Distance

Photo Library

- Partner Logos
- Maps & Satellite Images
- Baseline Infrastructure photos
- Current Situation Photos

(User Uploaded Photos)

- MTSRU Shares Master of Current Situation Data
- Planner Shares Scenarios

If email or network is offline for a period of time, the master data set can be shared via email once communications have been restored or the master data set can be shared updates are received from the field or shared via secure drive while network is down.

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