SUSTAINMENT MANAGEMENT SYSTEM (SMS)

ARMY MDI IMPLEMENTATION
SMS SUMMIT 2024

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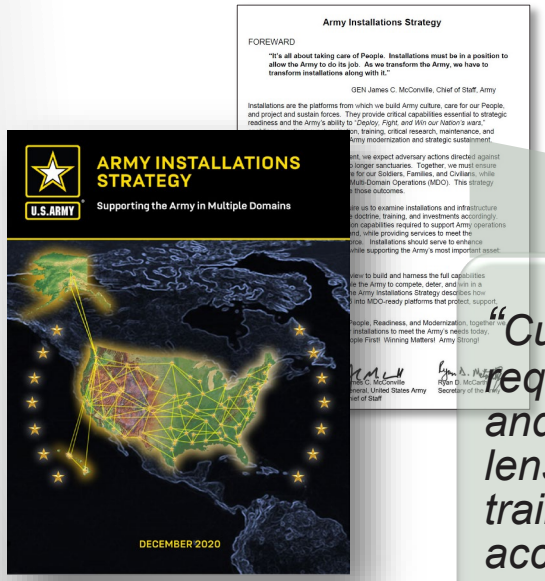
ERDC
ENGINEER RESEARCH & DEVELOPMENT CENTER

WHY ARE WE HERE?

- Large, Complex Inventory
  - ~400k assets
- Geographically dispersed
  - Over 130 installations world-wide
- Support a variety of mission sets
- Leadership emphasis on importance of improved approach



"Current and emerging trends require us to examine installations and infrastructure through a new lens – we will revise doctrine, training, and investments accordingly."

- The Army has more facility requirements than available funding leading to a growing deferred maintenance
- Prior to MDI, prioritization processes focused primarily on engineer-based metrics (FCI, Functionality, Quantity) and utilized proxy information for mission-related insights.
- This requires the Army to devise a way to **systematically manage risk** caused by resource limitations to optimize mission readiness.

IMPACT	LIKELIHOOD			
	Extremely likely	Likely	Unlikely	Very unlikely
?	High	High	High	Medium
	High	High	Medium	Medium
	High	Medium	Medium	Low
	Medium	Medium	Low	Low

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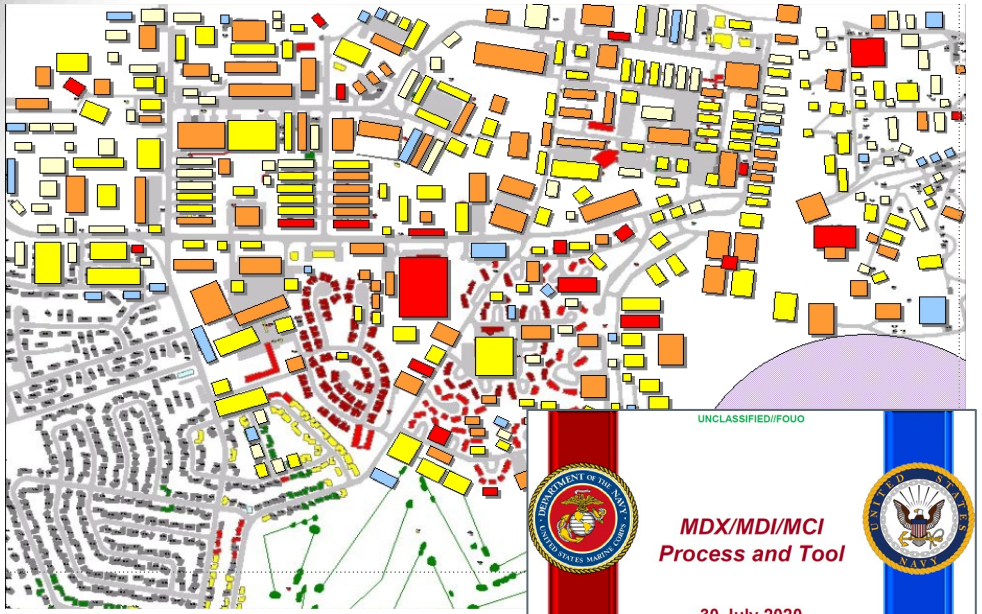
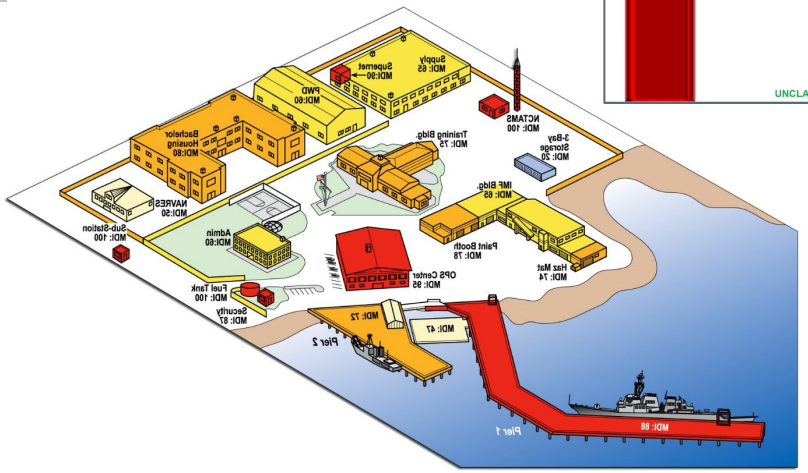
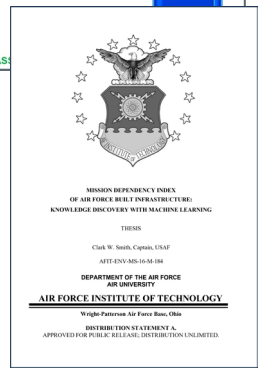
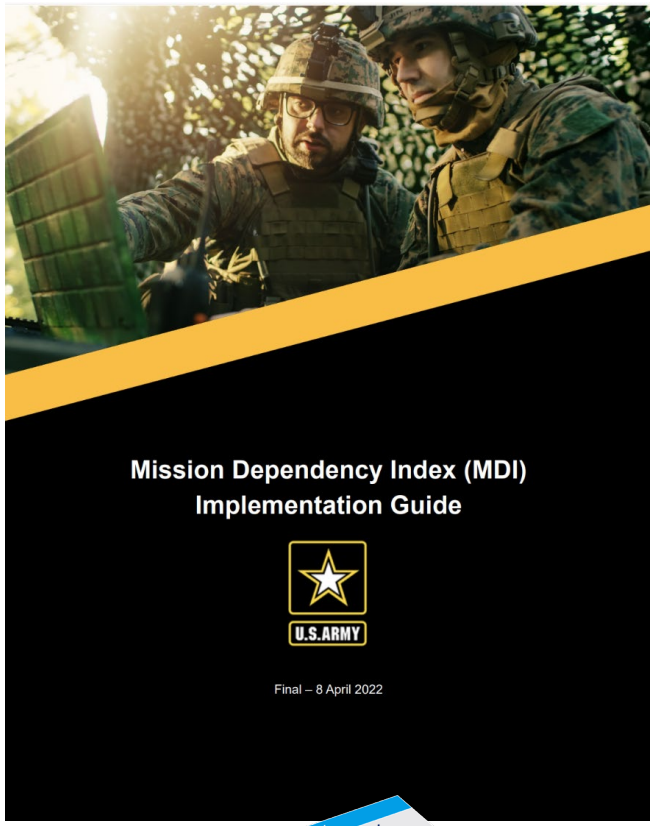
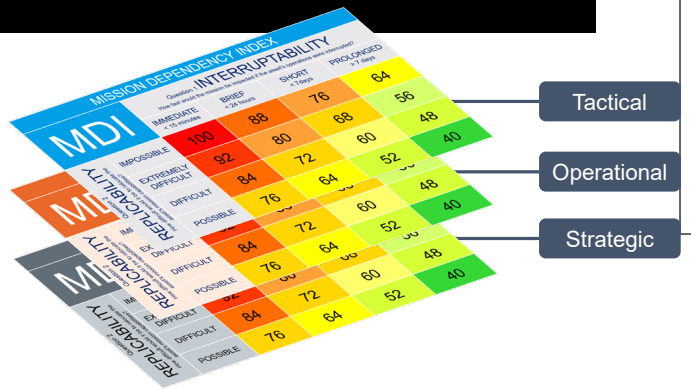
MDI IMPROVEMENTS – 20+ YEARS IN THE MAKING







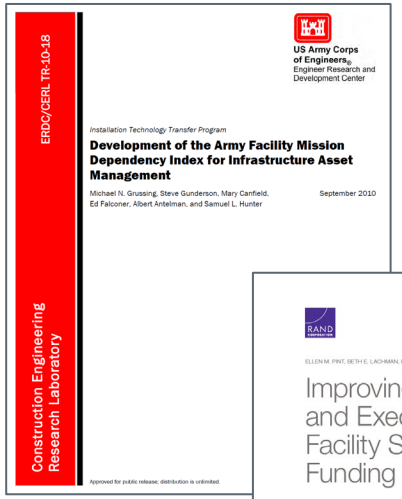


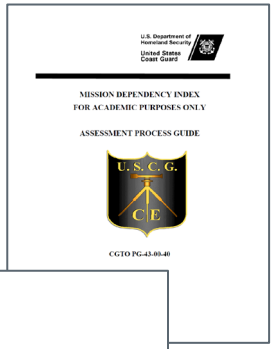


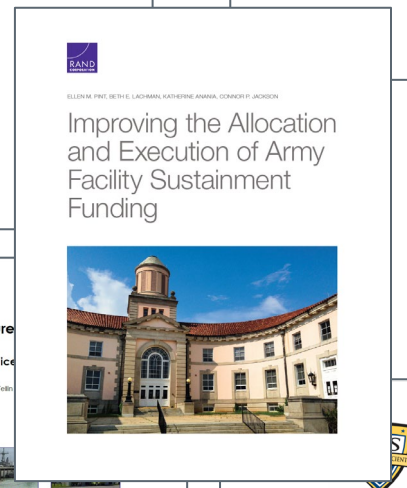
Tactical

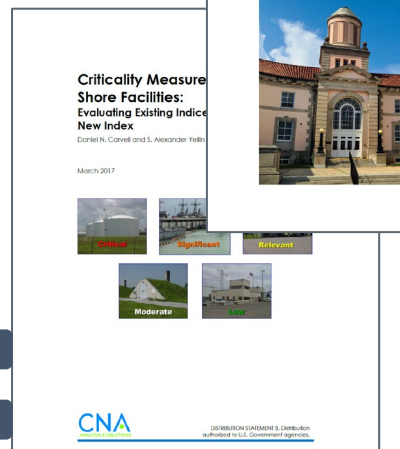
Operational

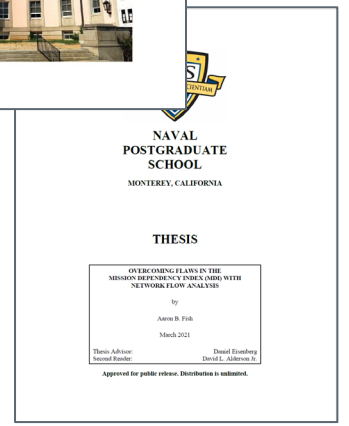
Strategic











MDI IMPLEMENTATION

- USAF Implementation
  - USAF began utilizing the CATCODE MDI. CATCODE MDI is based on an average MDI score calculated for each CATCODE grouping and assigned to each RPUID based on its CATCODE
  - The USAF determined that the CATCODE MDI, which they had been using since 2008 was not adequately supporting SRM requirement prioritization. They re-baselined their real property inventory utilizing an interview-based process (Tactical MDI / T-MDI). T-MDI is based on direct input from operational and mission support leadership at each installation. T-MDI that is generated through surveys and logic rules to assign a unique MDI score to approximately ~60,000 RPUIDs (focus on buildings and priority structures).
- For MDI development, the following principles and criteria have been formulated:

MDI data acquisition requires the risk-based perspective of a single, senior executive decision maker (e.g., senior commander at an installation)

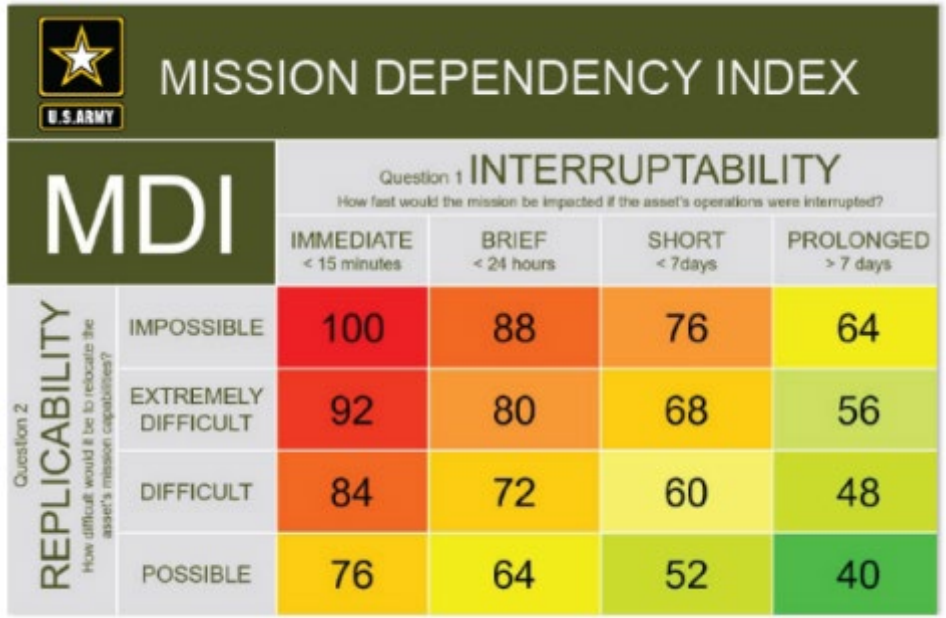
MDI requires a facility inventory boundary condition (e.g., installation's fence line)

MDI requires a mission context as seen from the single, executive decision maker's perspective (e.g., tactical missions executed under the Senior Commander's authority (which includes mission support to tenant units))

MDI SURVEY FRAMEWORK

Scenario

The following two questions are answered in the context that an occupant is asked to move out of a building as a result of long-term deferred maintenance, and not because of catastrophic unplanned events. One asset goes offline at a time.



Question 1 - Interruptability

How fast would the overall installation's mission capabilities be impacted if the ability to accomplish the specific functional capabilities in building ___ were interrupted? (Assume complete unavailability.)

Immediate:
- Mission capabilities are immediately impacted
- Response action is automatic and would occur in less than 15 minutes
- Facility is manned 24/7 or is always available for operation

Brief:
- Mission capabilities are measurably impacted, but manageable within a 24-hour window
- Response or mitigating actions would absolutely occur within 24 hours, including over weekends
- Response actions require decision-maker authorization

Short:
- Mission capabilities are impacted and reasonably managed within a seven-day window
- Mitigating actions would occur within a week
- There is time to optimize or schedule response actions

Prolonged:
- Mission impact is minor
- Only minor mitigating actions may be needed
- Response action may be delayed for more than a week

Question 2 - Replicability

How difficult would it be for the installation to relocate or replicate functional capabilities if this facility's operations were interrupted? (Non-fixed equipment could be moved.)

Impossible:
- An alternate location is not available
- Mission readiness is severely impacted for the foreseeable future

Extreme Difficult:
- An alternate location exists with minimally acceptable capabilities
- A significant in-house effort in terms of money and man hours would be required
- Other mission-enabling capabilities would be measurably disrupted

Difficult:
- An alternate location exists with acceptable capabilities and capacity
- A measurable, unbudgeted level of effort in terms of money and man hours are required
- Mission readiness would not be compromised in the process

Possible:
- An alternate location is readily available with sufficient capabilities and capacity
- The level of effort is budgeted for and/or may be easily absorbed

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ARMY MDI OBJECTIVE

Objective: Implement a sustainable MDI solution that transforms Army's enterprise risk management approach for infrastructure investment decisions. The MDI solution will capture and evaluate MDI ratings and be used to prioritize facility investment decisions.

Guiding Principles:

- Metric is not a DPW planning exercise, success hinges on mission / operator input
- Army intends to implement a hybrid approach by utilizing a seed dataset to predict remaining MDI results. Solution will include ability for installations to provide direct input.
- MDI will leverage existing and emerging real-time data sources (e.g., real property asset data as a baseline)
- MDI intended to be utilized as an input to support resourcing and readiness decision-making. Allows Army ability to shift from worst first prioritization.

MDI is tied to the Mission, not the Facility

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MDI IMPLEMENTATION

This effort is a multi-phase effort:

Phase 1	Phase 2	Phase 3	Future Phase	Future Phase
Data Driven Baseline MDI	**Initiate Army Tactical MDI & Framework Established**	**Develop MDI Solution**	**Expanded MDI Solution**	**Sustainment**
› MDI Baseline created utilizing USAF Tactical MDI results and Army FRD, Installation Category and On Hand Asset Ratio Score › Pilot completed at Army Installation	› Establish Tactical MDI Framework › Conduct Tactical MDI surveys at selected installations › Focus is primarily buildings and priority structures › Develop methodology for predicting Tactical MDI scores	› Develop sustainment solution	› Conduct additional surveys at select installations › Expand scope of Tactical MDI scores (include remaining structures and linear assets)	› Sustain Tactical MDI Scores for all reporting organizations – Installations have ability to directly update MDI scores

Follow-on phases will fully develop the MDI program.

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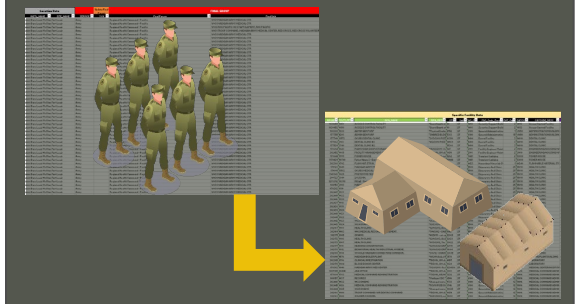
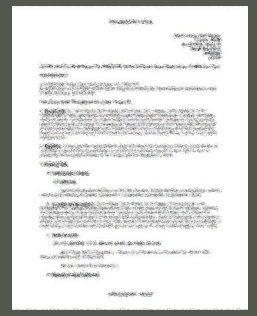
MDI SURVEY PROCESS

Initiation Activities

- ✓ Determine Installation POC
- ✓ Validate Real Property and Unit Information
- ✓ Survey Coordination



Alignment of Units /Groups to Facilities



Installation MDI OPORD

Pre-Survey Activities

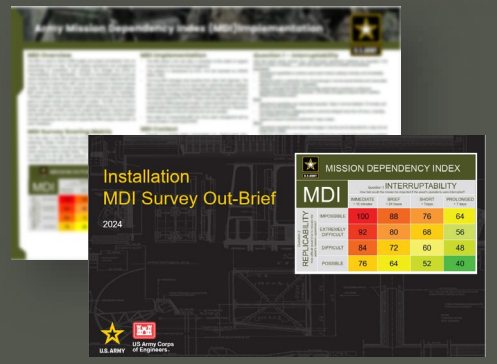
- ✓ Confirm Survey Week Schedule
- ✓ Final Coordination Call

MDI Schedule

Conduct Survey

- ✓ Leadership In-Brief
- ✓ Two questions, all facility mission-enabling functions covered. Focus on Mission/Risk systems' perspective
- ✓ Senior Commander Out-brief

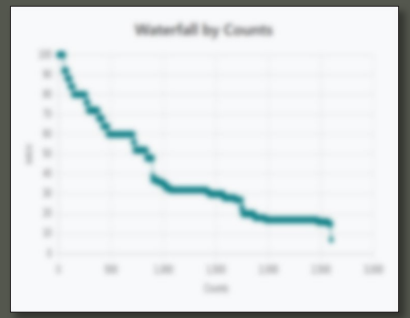
Capture of MDI Data



MDI Placemat & MDI Survey Out-brief

Post Survey

- ✓ Interim Report Submission
- ✓ Close out Action Items
- ✓ Submit Final Report



MDI Waterfall

MDI Heatmap

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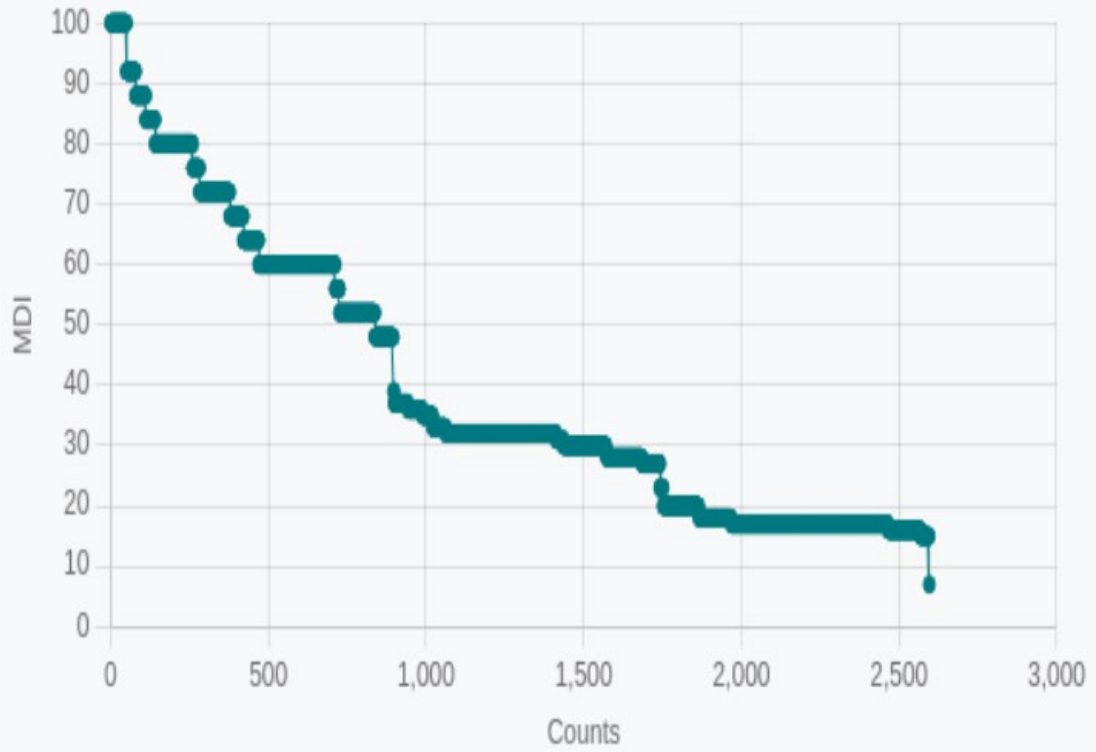
EXAMPLE SURVEY HIGHLIGHTS

Waterfall by Counts

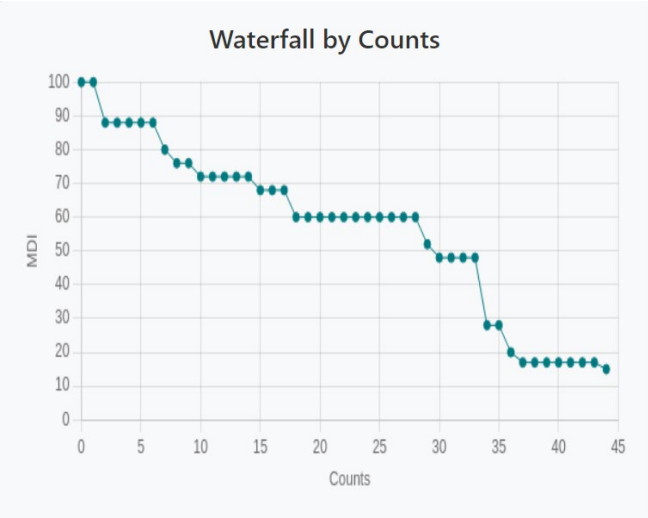


Heatmap by Counts

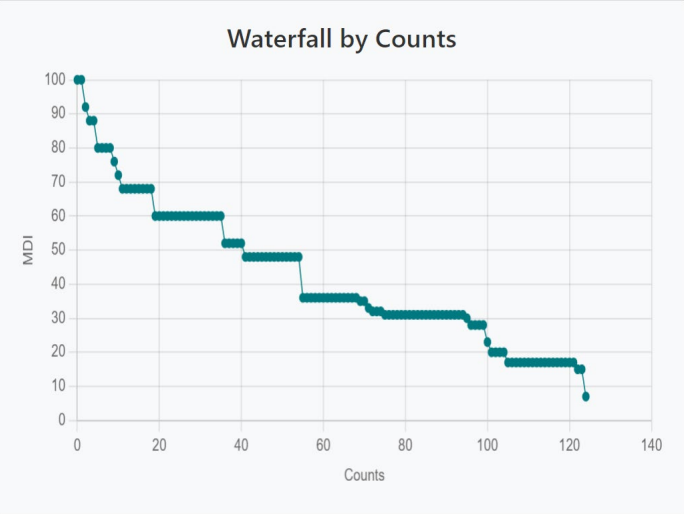
MDI		INTERRUPTABILITY			
		IMMEDIATE	BRIEF	SHORT	PROLONGED
REPLICABILITY	IMPOSSIBLE	52	32	6	30
	EXTREMELY DIFFICULT	29	125	75	14
	DIFFICULT	30	96	247	60
	POSSIBLE	16	19	115	1721

EXAMPLE SURVEY INSIGHTS

Unit Profile

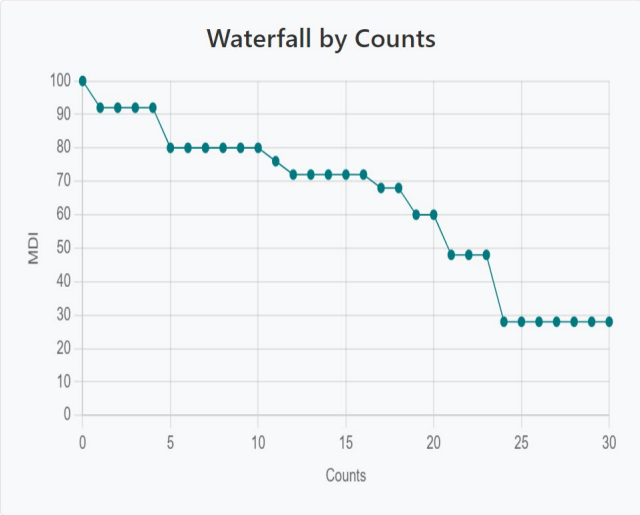


Unit 1

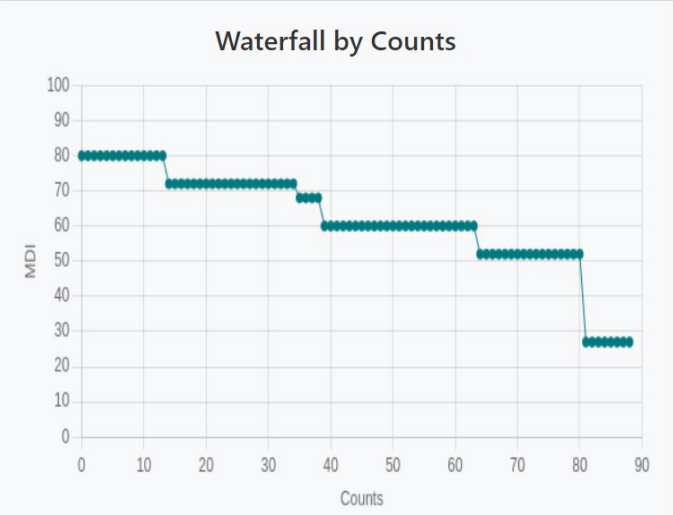


Unit 2

Facility Type Profile



Facility Type 1



Facility Type 2

MISSION DEPENDENCY INDEX

MDI

Question 1 INTERRUPTABILITY
How fast would the mission be impacted if the asset's operations were interrupted?

Question 2 REPLICABILITY
How difficult would it be to relocate the asset's mission capabilities?

	IMMEDIATE < 15 minutes	BRIEF < 24 hours	SHORT < 7days	PROLONGED > 7 days
IMPOSSIBLE	100	88	76	64
EXTREMELY DIFFICULT	92	80	68	56
DIFFICULT	84	72	60	48
POSSIBLE	76	64	52	40

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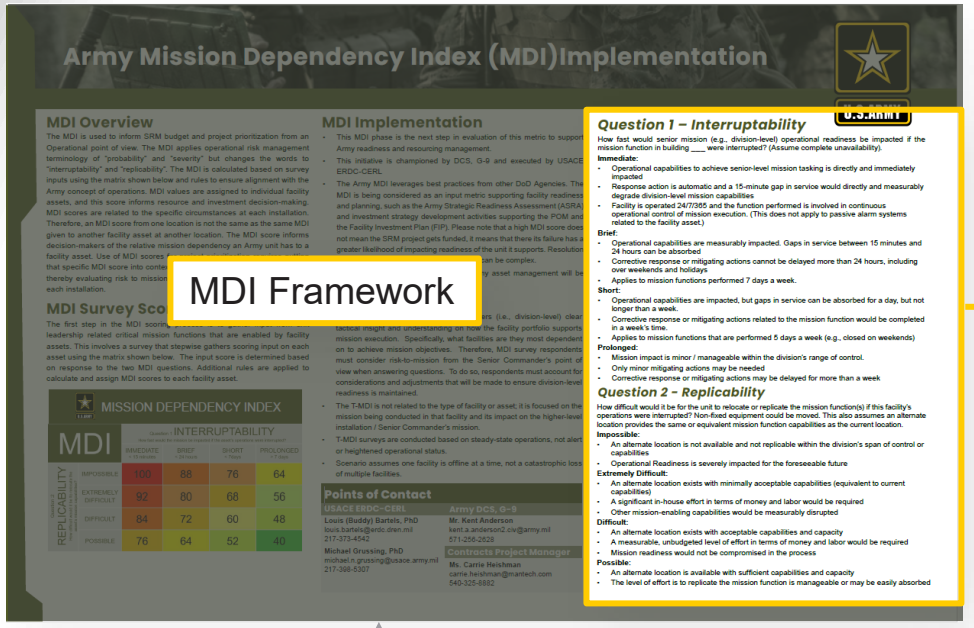
HYBRID APPROACH



1. Direct Survey Score

Question 1 Response + **Question 2 Response** = **MDI Survey Score**

MDI Scores are foundation to predicting remaining Army MDI results

Remaining Army Installations will receive Extrapolated scores

Extrapolated (Modeled) scores are informed by how directly surveyed units (e.g., infantry unit) responded to Question 1 and Question 2 for each real property type (e.g., vehicle maintenance shops, hangars, etc.)

2. Extrapolated (Modeled) Survey Score

Question 1 Response

Question 2 Response

Senior Commanders will be asked to review & validate extrapolated MDI results

Real Property Data (HQIIS) + **Unit Information (ASIP, FMSWeb)**

All MDI scores utilize enterprise real property and available unit information as the foundation

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UTILIZATION OF MDI

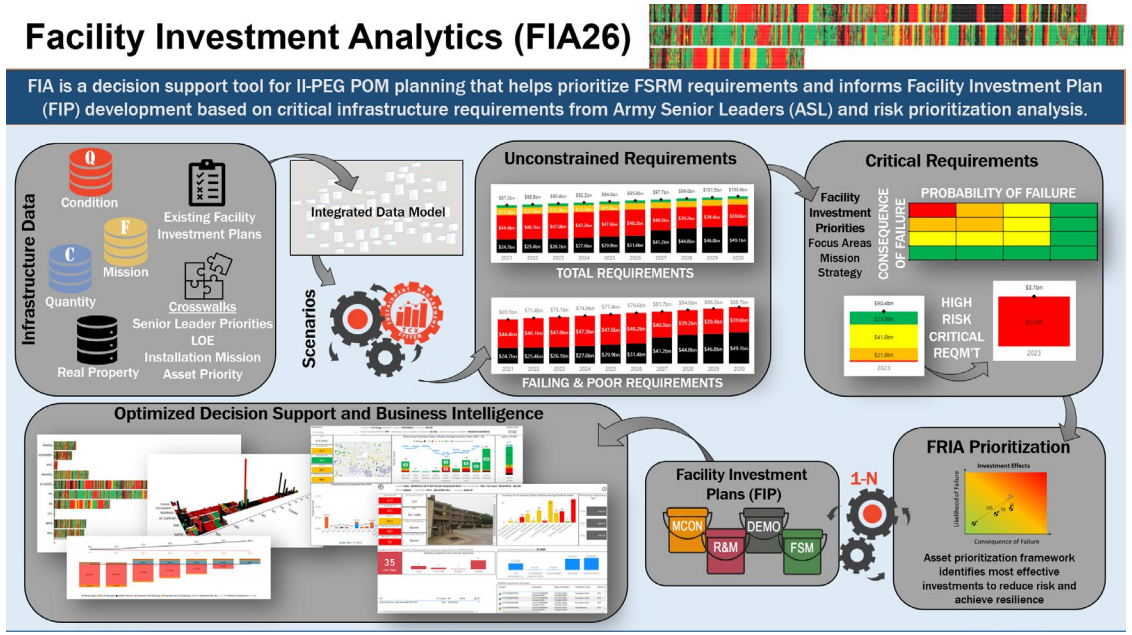
The Army values mission-oriented, risk-based decision making, including decision making that delivers facility-based, mission-enabling capabilities.

MDI helps the Army remain strategic, agile, and efficient in managing its MILCON/FSRM annual budget in support of mission objectives.

The MDI metric directly supports strategic readiness and resiliency initiatives.

Benefits:

- Improves Army Mission Readiness
- Reflects voice of mission owners
- Better manages operational risk
- Better prioritizes limited SRM



MDI gives Senior Mission Commanders a voice in facility project prioritization using the interview-based Tactical Mission Dependency Index (T-MDI) by capturing the mission that the facilities support.

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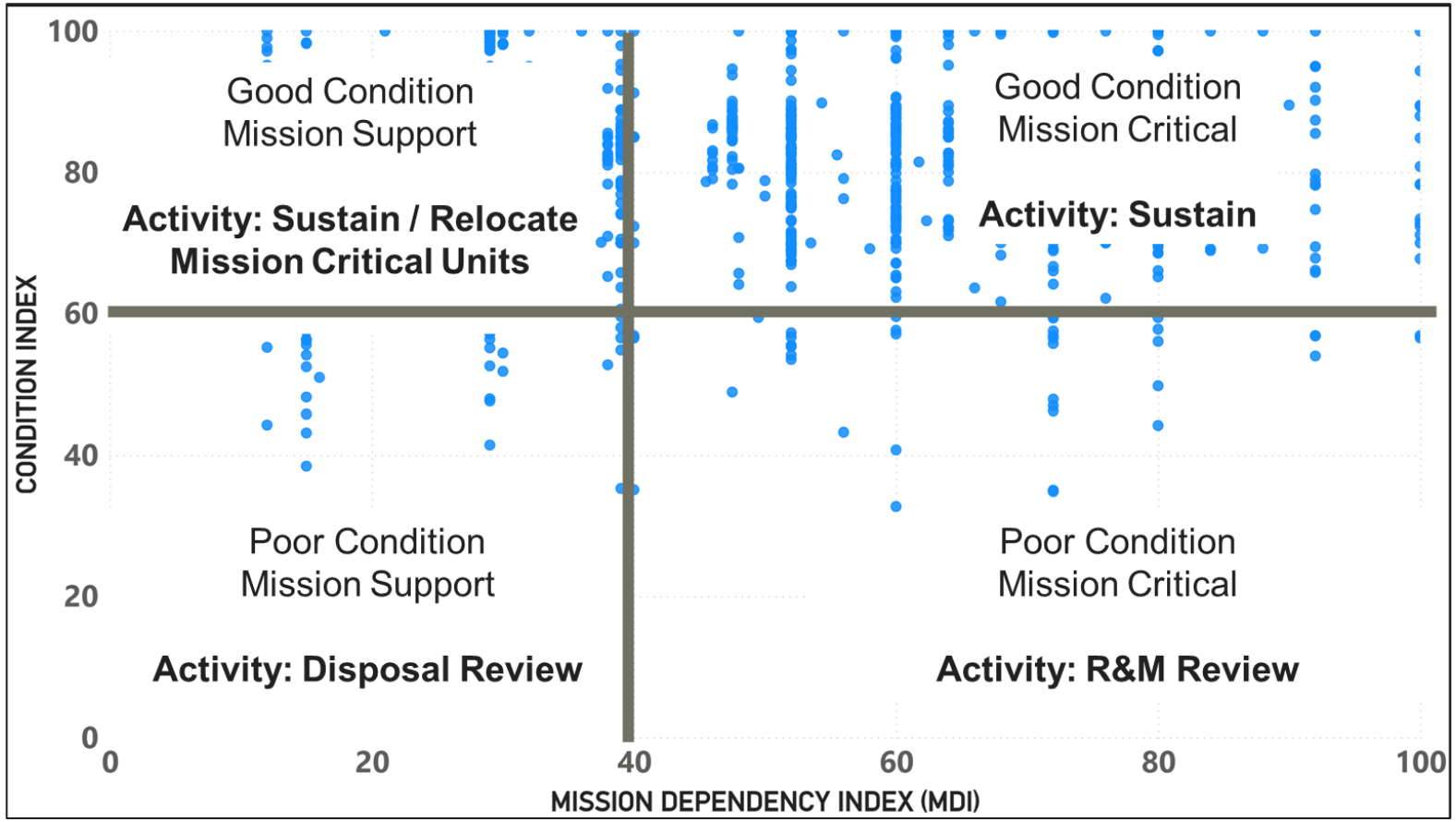
NEW WAY OF LOOKING AT INVESTMENT STRATEGY

- Tactical MDI **is measurably different and better** than proxy metrics
- **Overwhelmingly positive** feedback from local operational commanders
- Senior Commander **risks and operational needs clearly communicated**
- **Improves communications and risk management** across facility life cycle management



FINAL CONSIDERATIONS

- Principles
  - Decision-maker
  - Boundary conditions
  - Mission Context
- Approach
- Sustainment

- Feedback / Collaboration on MDI

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