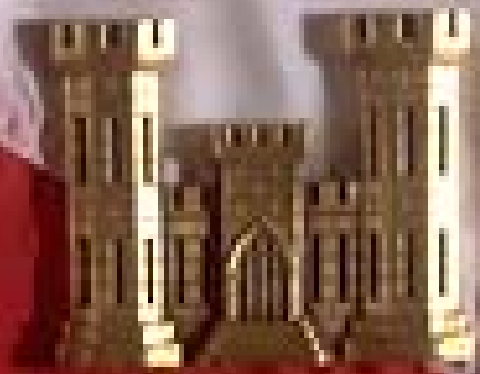
US Army Corps of Engineers

Asset Management

Infrastructure Risk and Reliability

August 15, 2006



Sandra Knight
Team leader, Asset Management, HQUSACE

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Why Asset Management?

WE OWN IT → WE MANAGE IT

"Short list"
43,000 Structures
285000 Tracts of land
12000 Buildings

Includes:
1000 Coastal Structures
600 Dams
2500 Recreational Areas
250 Locks
75 Hydropower

VALUE: $200 BILLION+

Lifecycle Infrastructure Management:
Campaign Goal 3c- The Right Business Practices

Executive order 13327- Right-sizing inventory

Budget Performance Integration- Program Assessment Rating Tool
Right performance

IT's the RIGHT thing to do!

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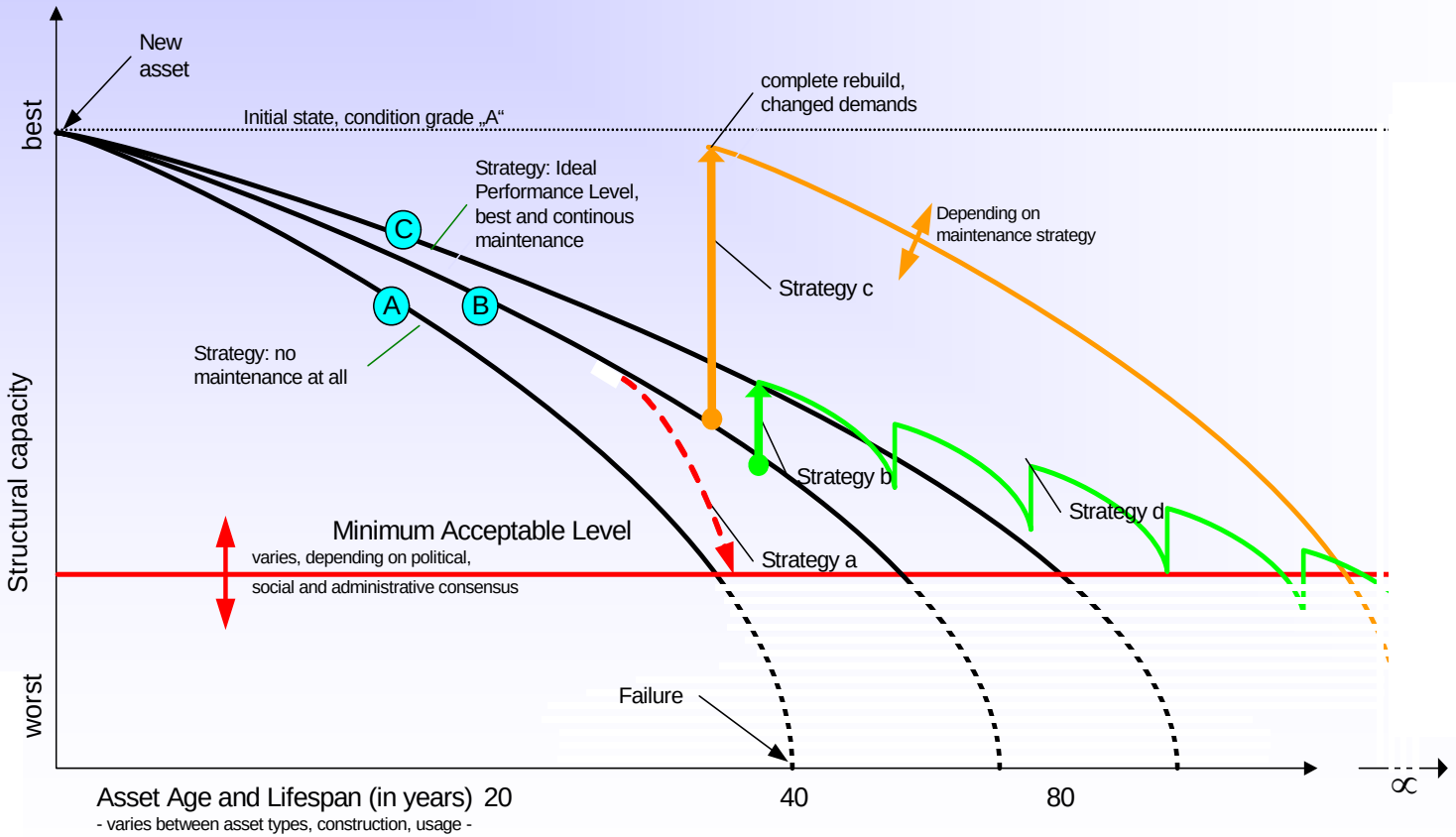
What is Asset Management?



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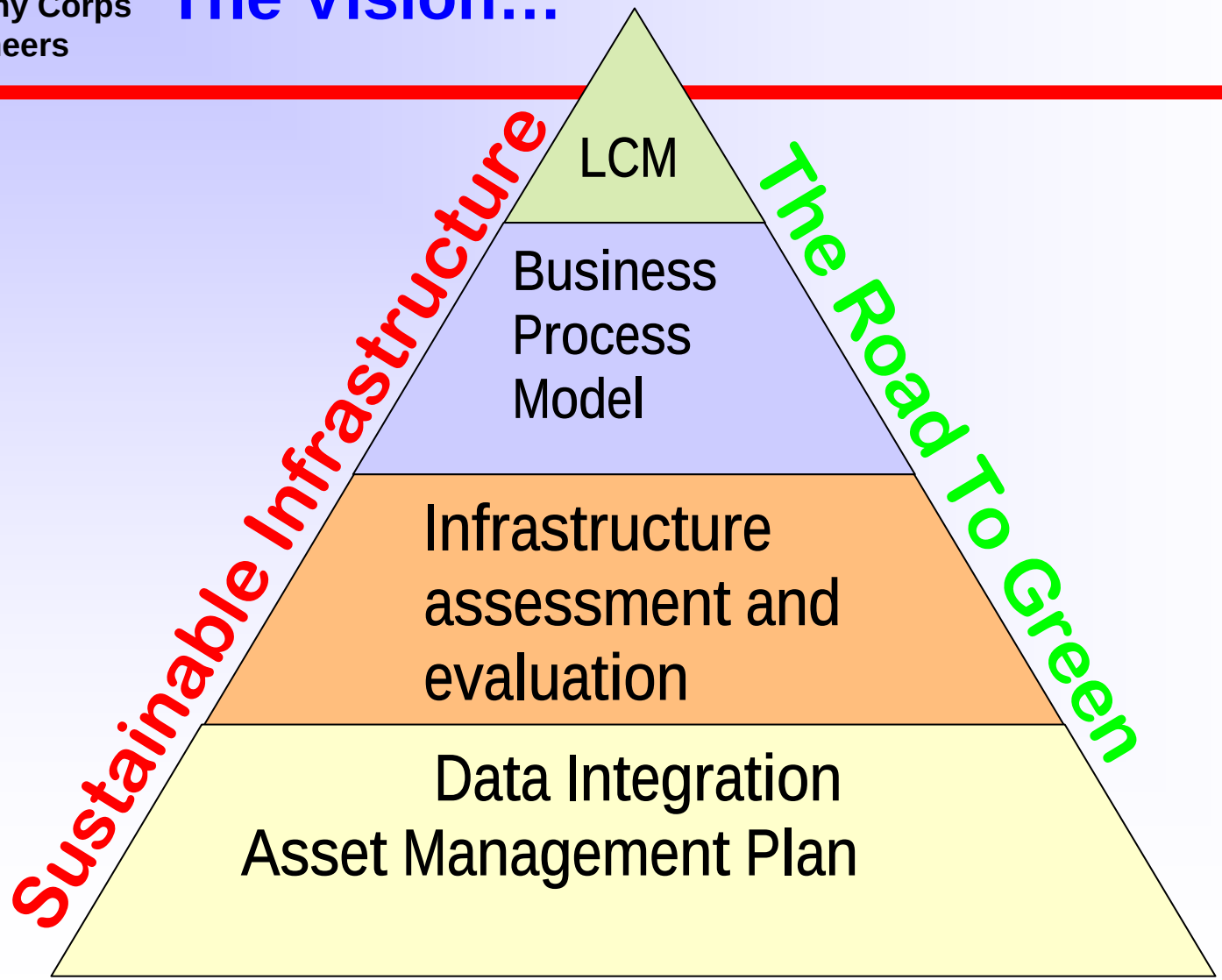
What will we achieve? The Vision…



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Data Integration

ISSUES

- Fundamental to success (Lean Six Sigma)
- Multiple sources (function, business line, program)
- Costly (especially when paid for multiple times)
- Must be collaborated
- Must have enterprise approach
- Must move to geospatial format

APPROACH

- REMIS- Real Estate Management System
- Research (review of all “inventory” data bases)
- Set Requirements (business line, programs, OMB, DOD)
- Identify Funding Sources
- Develop communication plan (HQ champion and PM’s work with PDT’s)

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Infrastructure Assessment and Evaluation

COMPONENTS

- Standards and Criteria
- Condition Assessment
- Risk and Reliability analysis/models
- Inspection and Monitoring

ISSUES

- Most complex piece of strategy
- Will be broad in scope (simple to complex)
- Will be tailored to business line issues
- Will involve many players with diverse approaches

APPROACH

- Establish vision/end points
- Set achievable deliverables within each program
- Conduct workshops on condition assessment and risk-based analysis

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The Business Model

COMPONENTS
- 5-yr perspective plan
- Performance Metrics
- Customer/stakeholder expectations
- Decision support process/tools (top down)
- Watershed and System-scale
- National plan

ISSUES
- Mandated by Executive office
- Critical to success of Corps Strategic plan
- Will vary according to customer and business line

APPROACH
- Driven by business line teams
- Executed by RBC's
- Continue top-down evaluation (LRD example)

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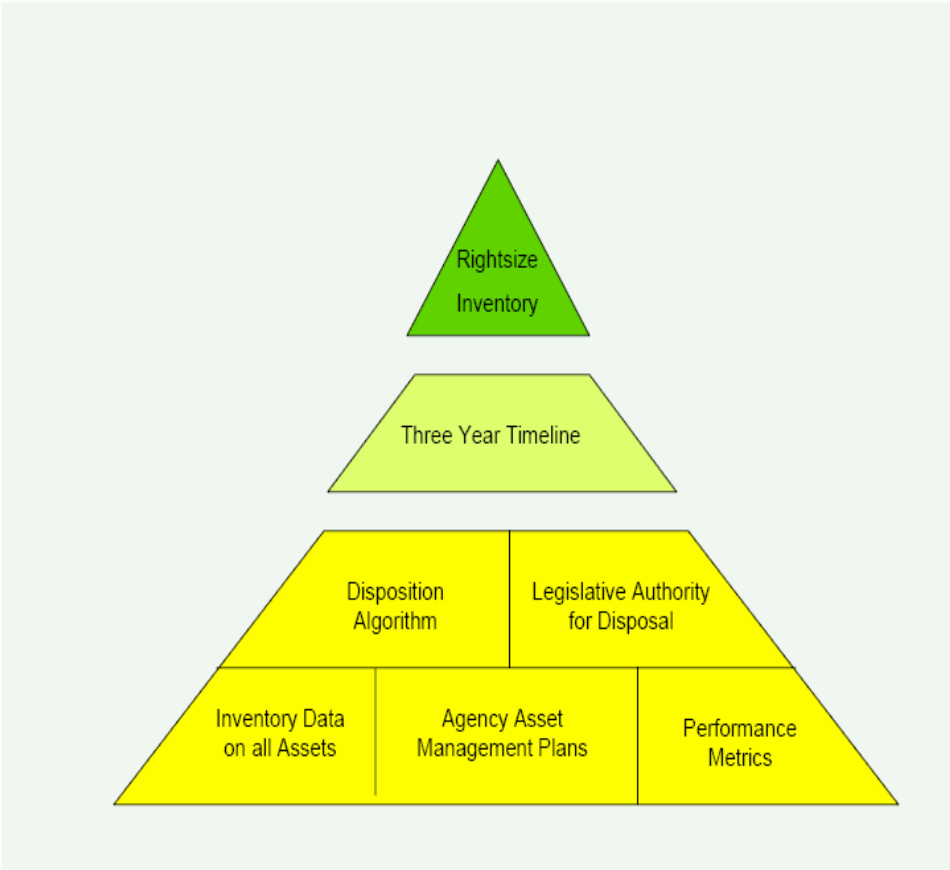
What are drivers? Executive Order 13327

The Real Property initiative can be thought of as a layered pyramid, where each successful layer builds upon the developed tools and measures to create a rightsized Federal inventory.



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What are EO metrics?

1) Utilization: Currently only applies to buildings (ratio of occupancy to design capacity)

2) Facility Condition Index: (1- $repair/PRV) x 100

Plant Replacement Value: The cost of replacing the asset at today's standards

Repair Needs: $ needed to restore asset to a condition substantially equivalent to originally intended capacity, efficiency, or capability

3) Mission Dependency: Critical, Dependent, Non-dependent

4) Annual Operating Costs: recurring maintenance, utilities, janitorial, grounds

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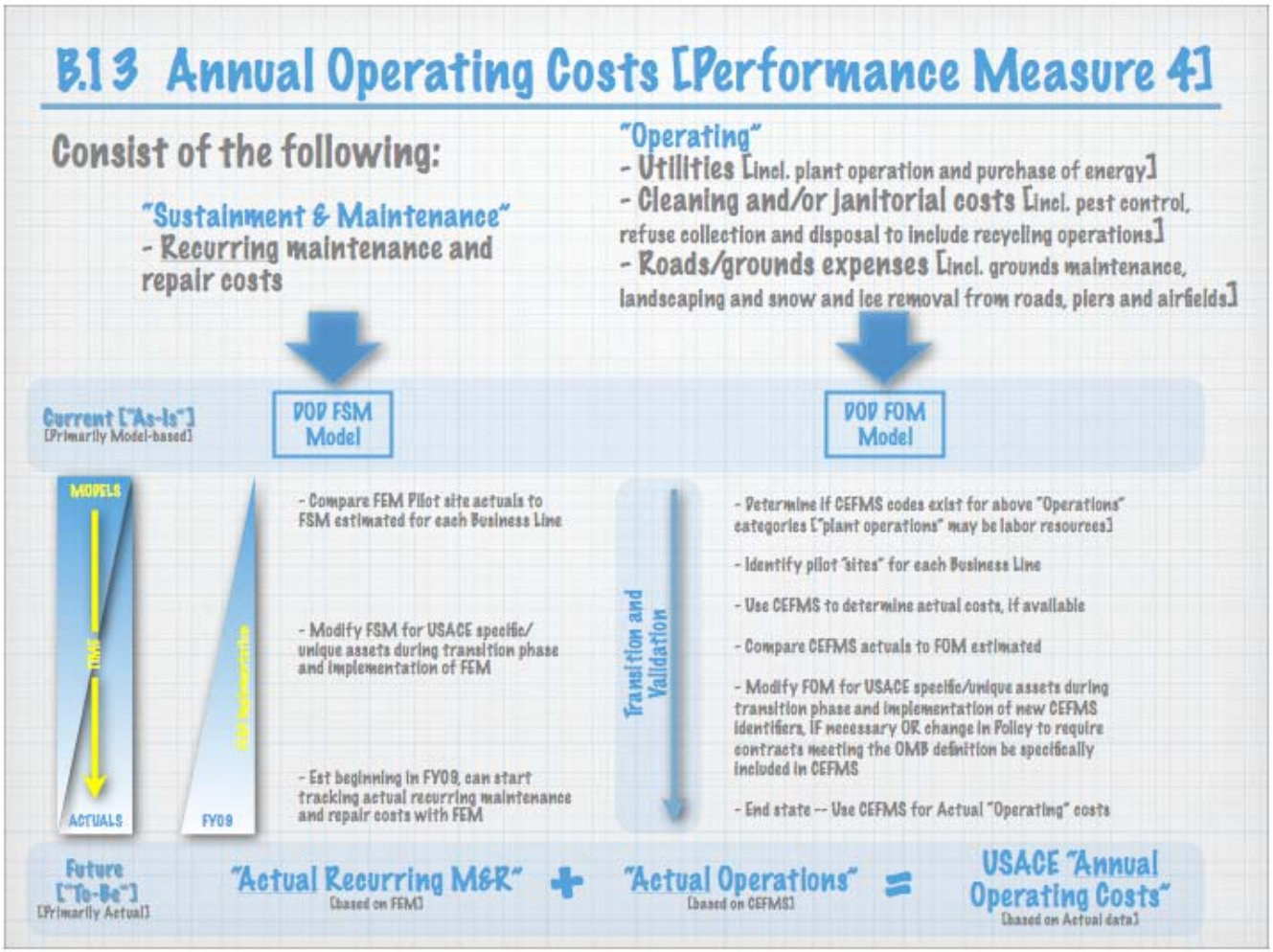
Getting the Metrics right



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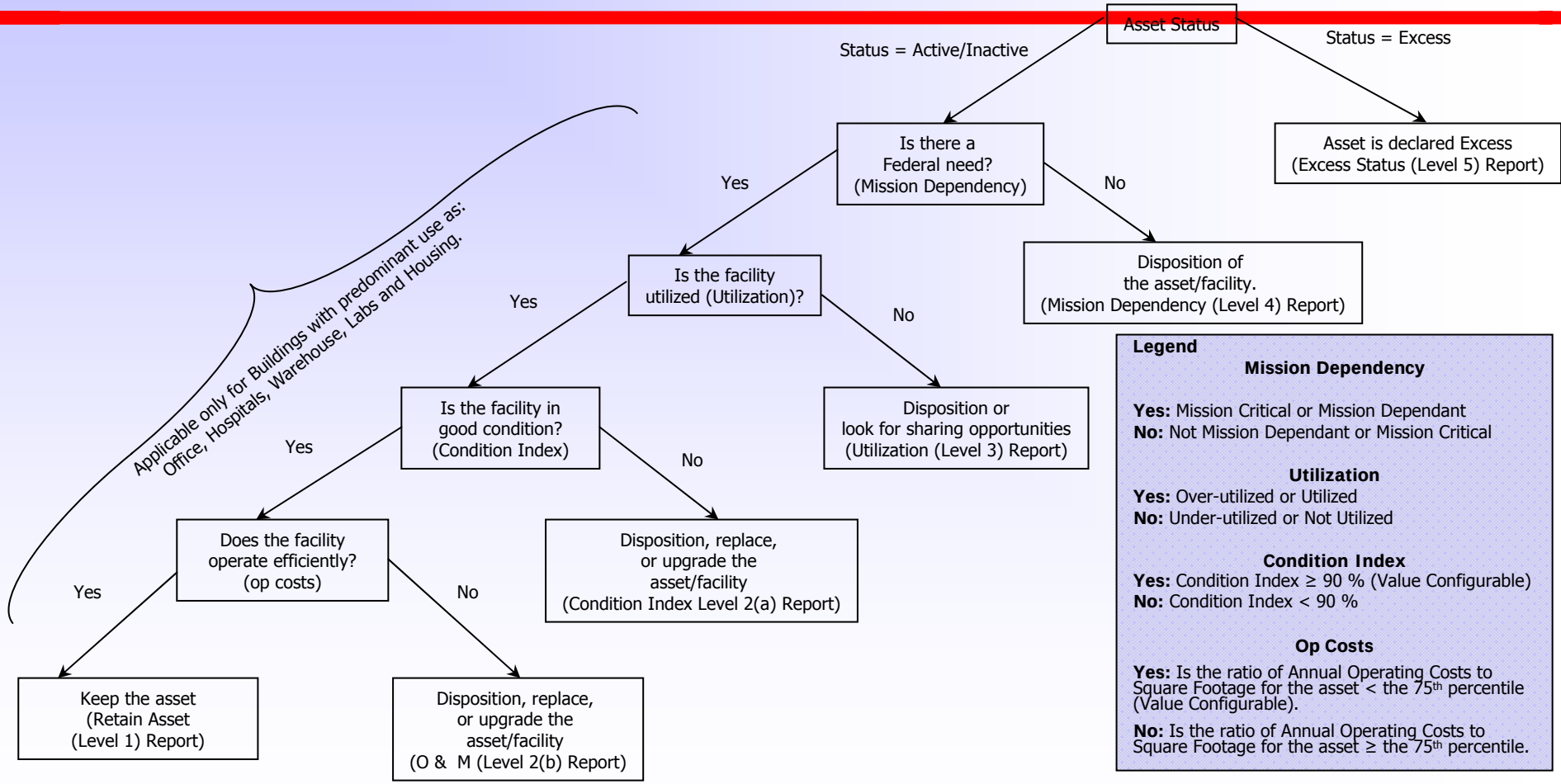
Disposition Decision Tree



Legend

Mission Dependency

Yes: Mission Critical or Mission Dependant
No: Not Mission Dependant or Mission Critical

Utilization

Yes: Over-utilized or Utilized
No: Under-utilized or Not Utilized

Condition Index

Yes: Condition Index ≥ 90 % (Value Configurable)
No: Condition Index < 90 %

Op Costs

Yes: Is the ratio of Annual Operating Costs to Square Footage for the asset < the 75th percentile (Value Configurable).

No: Is the ratio of Annual Operating Costs to Square Footage for the asset ≥ the 75th percentile.

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Campaign Goal 3: Enhance Life-cycle Infrastructure Management

3a – Reinvent MILCON and Real Estate processes to meet DoD transformation needs

3b – Reduce security risks to critical military and civil infrastructure

3c – Improve the reliability of water resources infrastructure using a risk-based asset management strategy

3d - Provide innovative solutions to civil and military infrastructure problems

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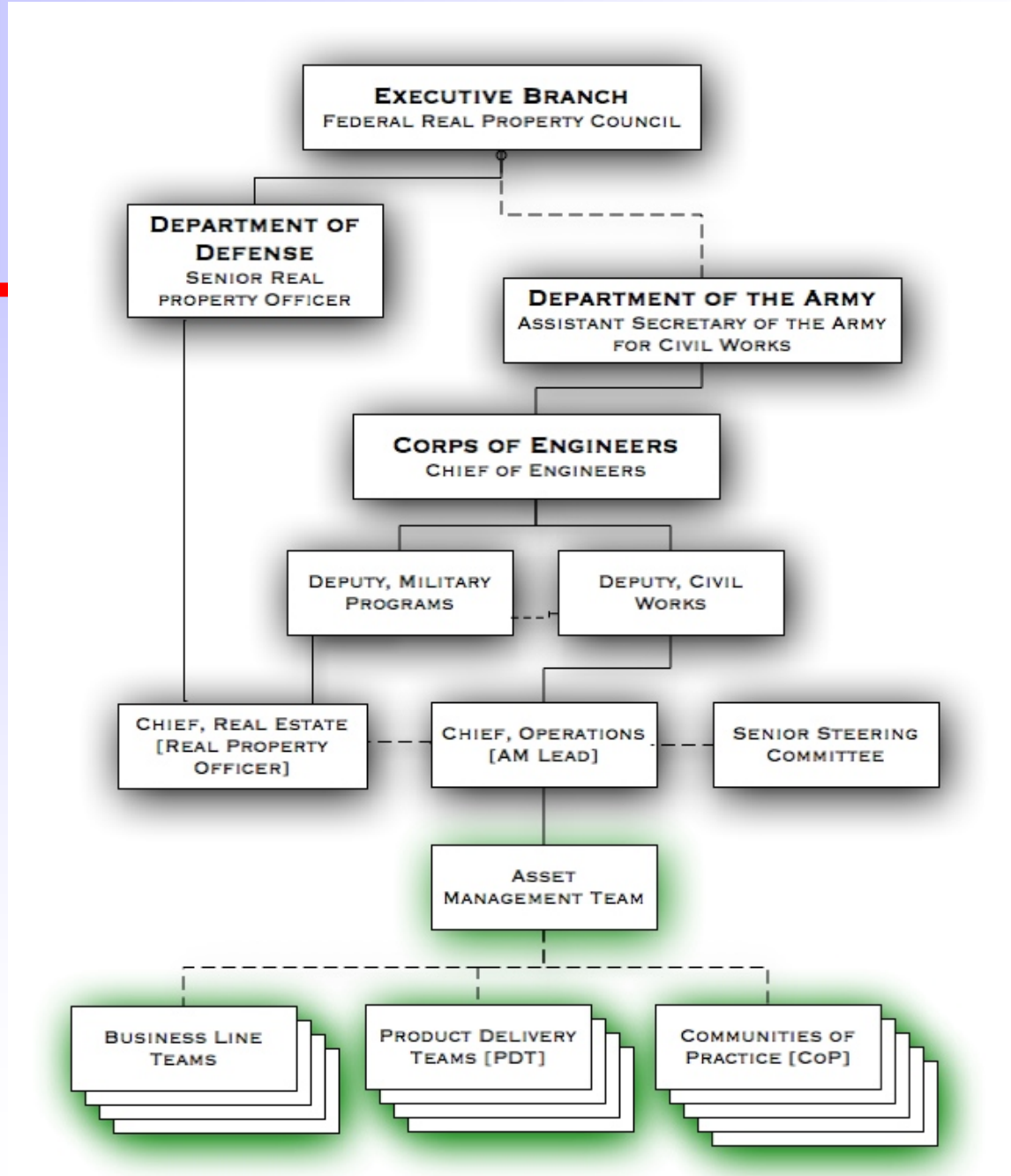
Who is executing for Corps?



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Who are they?

Steering Committee

Lead: Barnes
Members: Loew, Basham, Hecker, Waters, Calcara, Tornblom, Berwick, Martin, White

Business Team Leads

Navigation, Flood, Recreation, Hydropower, Environmental, Emergency, Water Supply
HQ and MSC rep

AM PDT Central

Lead: Knight
Reilly (POA)
Ellsworth (CERL)
Ercums (HQ-RE)
Glenn (SAM)
Jones (HQ-RE)
Weyer (RA)
Koontz (HQ)

HQ Champions/Portfolio Leads

Data Integration (Blyer)
Risk and Reliability (Halpin)
Security (Heidi)
O&M (Verna)
Emergency (Jensen)
R&D (Syriopoulou)
Real Estate (Kuhn)
Resource Management
Logistics Management
Corporate Information
Campaign Plan Goal 3 (Peckins)
BIM (Banks)
PART (Lea)

Task PDTs

Data Integration (IWR, ITL,AM Central)
Executive Order (AM Central)
Campaign Plan (AM Central)
OMBIL (Lichey/Pankow)
REMIS (Glenn)
FEM/MAXIMO (Krahenbuhl)
DSPRA (Halpin, Niles)
CISP (Seda-Sanabria)
RECBEST (Jackson)
National Levee Program (Durrett)
ORNIM (Schaaf)
IPET (Pope)
CMTS (Grier)
ICW (Pommer, Hannon)
R&D Program (Sharp, Clausner)

Advisory Team

Internal (District/Division)
External (BOR, NPS, Navy, Academia, CMTS, stakeholders, partners, etc.)

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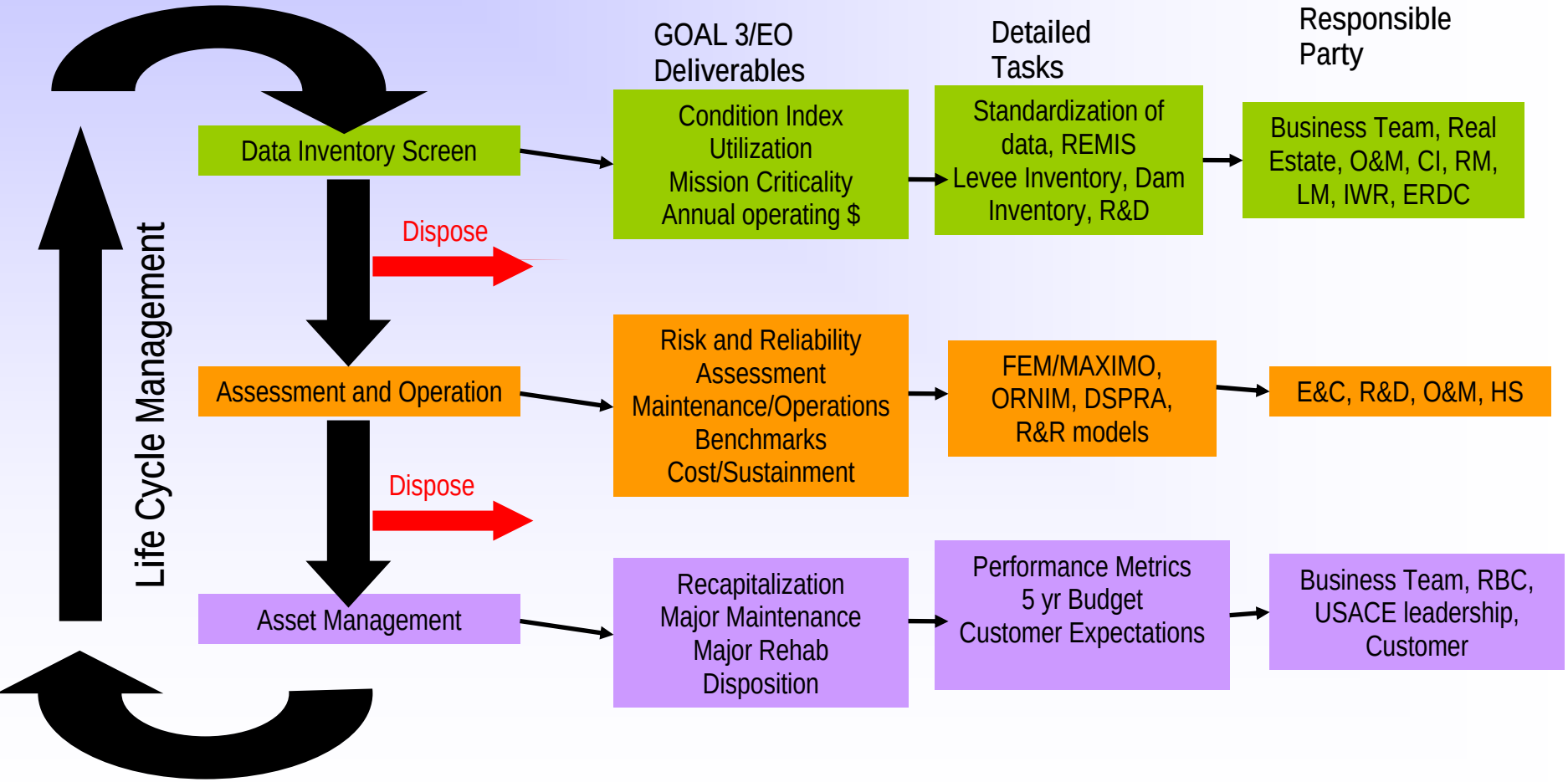
How does it work?



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Condition Assessment

- Condition Index: snapshot vs. risk-based
- Buying Down Consequences (risk) - Buying up Service (reliability)
- Not a one-size fits all
  - Component to system (miter gate to Ohio River)
  - simple to complex (screening to monte-carlo)
  - Business line (drivers/consequences)
  - Functional purpose (planning, engineering, O&M)
  - Multi-objective (water supply, hydro-power, security, navigation, environmental, flood)
  - Operational (HydroAmp) to business support (5 yr budget)

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Frequency of inspection in years

Consequence of Failure Grade		Condition Grade: V Good A	Good B	Acceptable C	Poor D	Bad E
	Low 1	20	20	10	10	5
	2	20	20	10	10	5
	Medium 3	20	20	10	5	5
	4	10	10	10	5	2
	High 5	10	10	10	5	2

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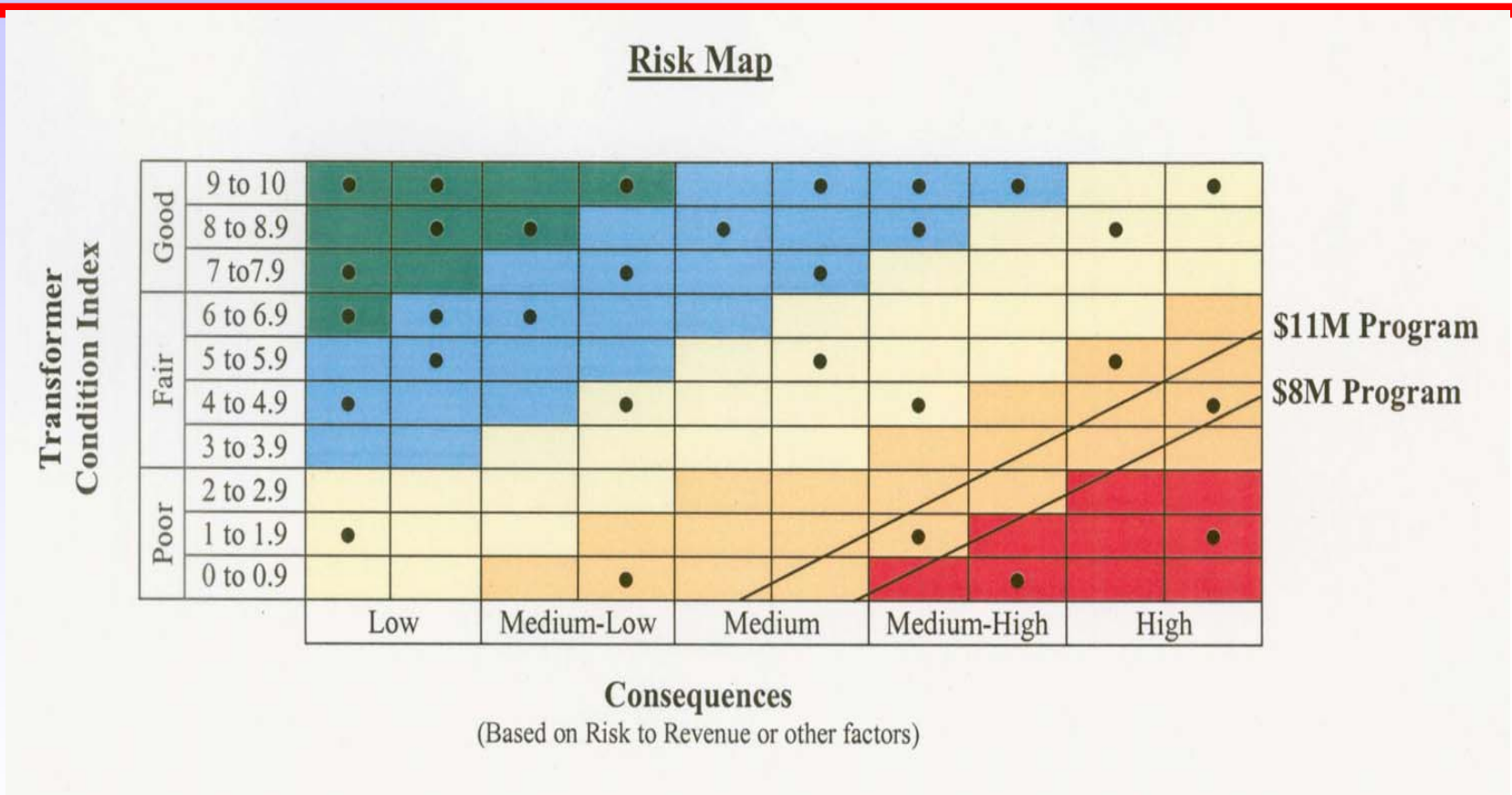
Example: Influence Diagram (Risk Map) for a Population of Transformers



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Challenges

- The inventory (standardization of terms, definition of asset)
- The metrics (constructed level to system)
- DoD requirements
- Condition assessment
- Integration of programs
- Integration of business lines
- Expectations (users, stakeholders, OMB, Congress, etc.)
- Resources

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The Way Ahead

Short Term

- Disposition plan
- Inventory revisions/ Data scrub
  - Assets vs Records (business line)
  - Complete data gap for 5-25k
  - Align plan with DOD requirements
- Risk and Reliability Workshop (August 15-17)
- Program Integration (Gant Chart / Track progress)
- Permanent HQ structure for AM

Long Range

- Roadmap for AM
- 3-yr time- EO 13327
- 5 yr development plan – Goal 3c
- Sustainable Infrastructure

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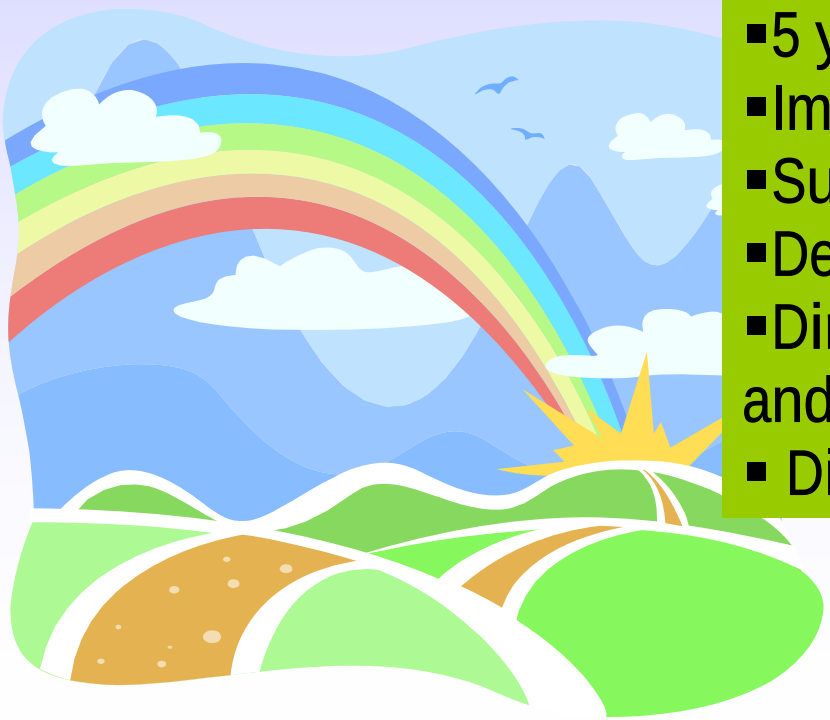
Life Cycle Management



The Goals:

- Standardization of practice
- 5 yr perspective
- Improved customer satisfaction
- Sustainable comprehensive approach
- Defensible budget
- Direct link between investment decision and level of service (performance)
- Disposition- right sizing

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Questions?

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