Effective Strategies for Enterprise Facility Assessment Programs

Lance Marrano
Program Manager, Sustainment Management Systems
USACE, Engineer Research & Development Center

Alain Bernier
Chief, Infrastructure Assessment Branch
USACE, Fort Worth District

17 Sep 2013

US Army Corps of Engineers
BUILDING STRONG®

Focus / Objective

To share lessons-learned and best practices for enterprise assessment programs

- *Consistent - even across multiple teams*
- *Efficient - look for opportunities to perform multiple assessment*
- *Low impact – get in/get out*

Outline

- Scope/Background
- Pre-Visit Preparation
- Site Visit
  - Visit Initiation
  - BUILDER™ Sustainment Management System
  - Quality Control
- Post-Visit Activities
  - Quality Assurance
- Conclusions

CASE STUDIES

SCOPE/BACKGROUND

Defense Logistics Agency

- **Scope**
  - *Real Property Inventory (RPI) for CFOA readiness*
  - *Facility Condition Assessments*
    - *Includes Accessibility, Fire Protection, and Energy Screening*
  - *Environmental Assessments (added)*
  - *885 locations worldwide*
- **Schedule**
  - *Original: 2011 – 2016*
  - *1st Acceleration: Complete by Sep 2015*
  - *2nd Acceleration: Complete by Sep 2014*
- **Challenges**
  - *Limited on-site facility personnel*
  - *Large number of locations*
  - *1 week time limit for all visits*
- **Accomplishments**
  - 436 Site Visits / 13,663 assets / 106 million SF completed as of 30 Jun 2013

US Air Force

- **Scope**
  - *Conduct assessments (RPI, FCA/RPIE, EAII/HPSB, Space Utilization)*
  - *68 Installations (12 overseas)*
    - *Options pending for 27 additional installations*
- **Schedule**
  - *Oct 2012 – Dec 2014*
- **Challenges**
  - Breadth of information required
  - Scope / Timetable of requirement
- **Accomplishments**
  - *Site visits completed – 40*
  - *Real Property Inventory – 19,318 facilities visited*
  - *Energy Audit Level II – ~29M SF*
  - *Facility Condition Assessments – ~62M SF*
  - *Real Property Installed Equipment – ~53.8M SF*
  - *Space Utilization – ~28M SF*

Customs and Border Protection

- Scope
  - *Conduct Facility Inventory and Condition Assessments at current GSA-owned Land Ports of Entry (LPOEs)*
  - *102.5 LPOEs in 7 regions*
- Schedule
  - *Phase I (Pilot) – 18 sites in 2 regions (FY 2012)*
  - *Phase II – 84.5 sites in 5 regions (FY 2013)*
- Challenges
  - *Scope/Schedule of requirement*
- Accomplishments
  - *Field work completed on all sites*
  - *Reports to be completed by 15 Oct 2013*

PRE-VISIT PREPARATION

Pre-Visit Coordination

- **Production Office**
  - Program Manager, site coordinators and support team responsible for preparation, execution, and follow up
  - Number of coordinators determined by number of simultaneous site visits
- **Schedule**
  - 90-day trigger
  - Notification – Local Installation and enterprise resources
  - Resourcing (right sizing)
    - Asset counts determine size / team count
    - Enterprise pool of resources
  - Itinerary
- **Team Makeup**
  - Site Coordinator
  - Site Lead for each product line
  - QA Lead for each product line
  - Assessment Members

Pre-Visit Coordination (cont'd)

- **Coordination / Logistics**
  - Identify required support from installation
    - In-brief / Out-brief
    - Conference room(s) for team "command center"
    - Security officer
    - Building access - mechanical room(s), roof(s), etc.
    - Camera passes
    - Goal is to minimize demands on local personnel
    - Special security or process considerations

Travel orders/transportation(ground & air)/lodging
- Consolidate rentals to minimize costs
  - SUVs are good choices for multiple team member plus luggage plus gear
- Coordinate team arrivals to support consolidation
- Reduce lodging costs with room blocks

  - Prepare as much information on the assets as possible
    - Maps / GIS
    - Facility List/Execution Plan ("Tracker")

Pre-Visit Coordination (cont'd)

- **Coordination / Logistics (cont'd)**

Be Self-Sufficient

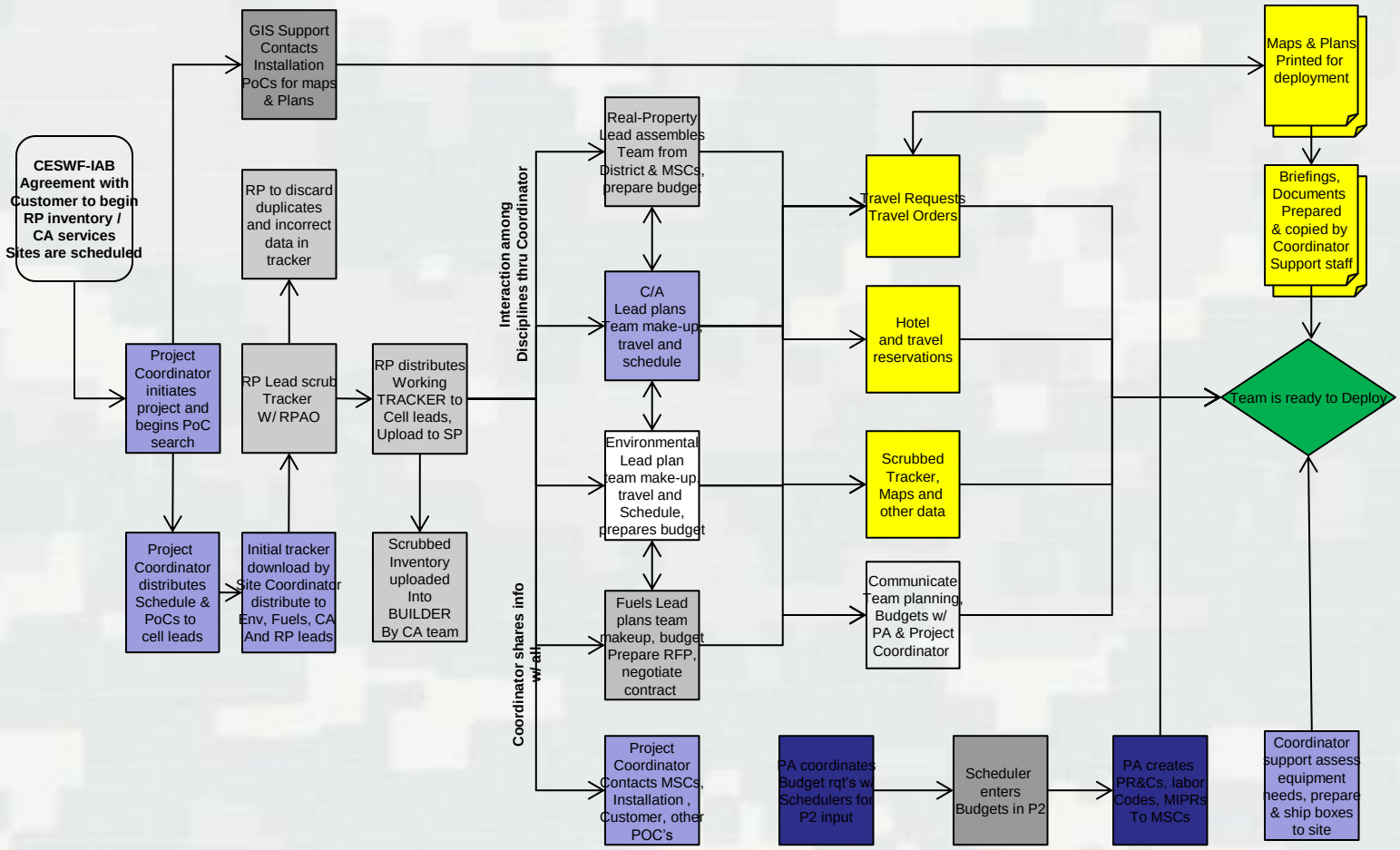
- Consider capabilities of site to support assessment team
- "Battle Boxes" contain networking, input and output equipment, office, and field supplies

Identify most economic solutions for contingencies

- OT discussions
- Split teams
- Team to Team coordination (refer to master schedule)
- Flexibility – ability to adjust on the move (site coordinator's function)

Site Coordinator Planning Phase pre-Site Visit

Version. 1 **30 January 2012**



Initial Preparation

Project preparation begins with the gathering of data from the government's real property inventory (RPI) and data currently in EBS. Once the data is imported into the initial tracker document, it is analyzed and distributed to stakeholders for verification and initial planning.

Further analysis is performed by RP lead in cooperation with RPAO, and inaccurate data is removed from the document. Once reviewed, a working tracker is produced and data imported into BUILDER by C/A team . Coordinator distributes Tracker to RP, Fuels, C/A, Environmental Chiefs / Cell Leads, CERL/SharePoint.

Logistical Preparations

Basic tasks to be accomplished during Planning Phase :

- Project Coordinators w/ GIS collect maps and other information for logistical analysis, begin trip planning, share info w/ Cell leads
- Coordinator prepares agenda, contacts & notifies installation, coordinates with all stakeholders and team members
- Real Property, Environmental, Fuels, C/A team leads and members are selected and assigned by Chiefs / Directors
- Coordinators finalize travel arrangements, flights, hotel, autos, and distribute to Cells
- Cell Leads assign team members, prepare budgets, make travel arrangements, coordinate back to Project Coordinator
- Fuels Lead executes Task Order per ea Project, coordinates with PA
- RP lead updates Tracker to SharePoint & Coordinator

Each of the basic tasks require a great deal of communication

Site Coordinator Pre- deployment tasks

- Analysis of travel routes, air, car and other for cost effectiveness and optimal use of resources
- Locate best hotel for visit, make block reservations for entire team. Coordinate with all cell leads and PA.

Recommendations:

- Research security requirements through POCs at site
- Set up meetings and briefings with leadership at installation
- Arrange for meeting and work area through POCs
- Update P2 bi-weekly
- Prepare travel requests

Costs for deficiencies related to linear assets, and Energy recommendations are calculated and included in the final reports.

Assets that are found on site (FOS) are surveyed and input

Deliverables

- Installation Maps with required data
- Travel Maps to/from hotel, installation, hospital, restaurants
- Hotel, air, auto reservations
- Building Plans
- Scrubbed Tracker
- In/Out Briefings
- Systematic Plan of approach
- Project file structure set up in SharePoint
- Funding in place for all participants

VISIT INITIATION

SITE VISIT

Site Visit

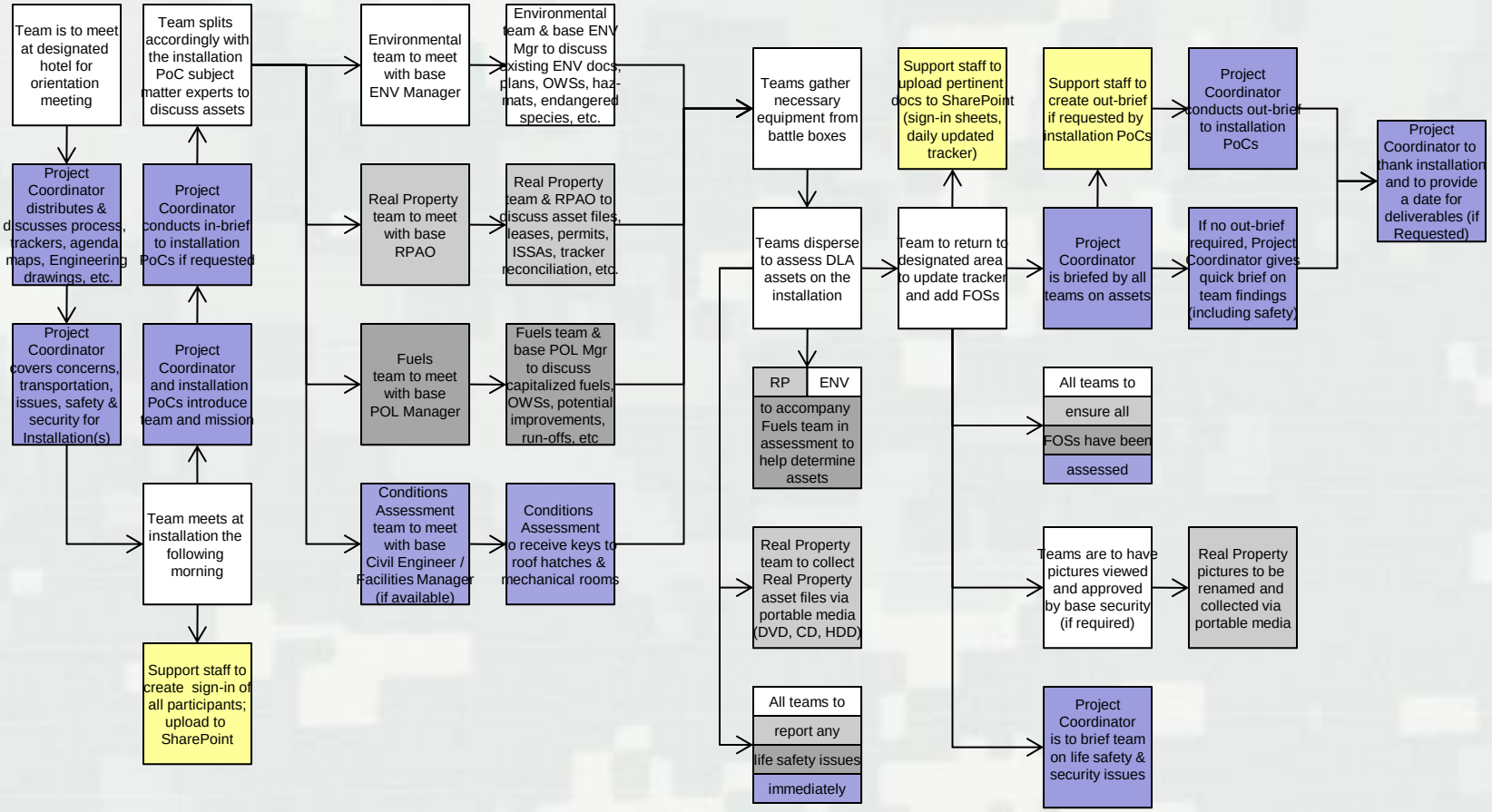
- **Schedule**
  - Short visit schedules may require travel on Sunday in order to position team
  - Orientation Meeting on preceding evening
    - Team introductions
      - Site Coordinator, Planner(s), Team Leads and supporting resources
    - Set departure time to meet at gate and receive passes
    - Discuss process document
    - Conduct safety orientation
    - Distribute maps, trackers, POC List
    - Discuss latest lessons learned
    - Daily Reporting Requirements
    - Team breaks into disciplines to perform detailed planning and adjourns

Site Visit (cont'd)

- **On-site Coordination with Installations**
  - After receiving gate passes, meet at designated work room
  - Introduce team to installation staff, receive camera passes, security orientation from security officer & share contact information
  - Site Coordinator performs in-brief to Command
- **Team Make Up**
  - One Assessor Team Lead per product line per site visit
  - Multiple Assessor "Cells" per team
  - 3-5 members per cell, depending upon assessment rqmts.
    - Typically includes architect, mechanical, electrical, etc.
  - Cell Lead typically cross-trained

Site Coordinator Execution Phase – Site Visit

Version. 1 **30 January 2012**



Orientation Meeting

Project Coordinator to designate a meeting area at hotel
the night prior to real property inventory assessment:

- Distribute agenda/itinerary, process document, site visit trackers, installation maps, and engineering drawings.
- Discuss lessons learned, action items, and process and how they relate to one another.
- Cover transportation to and from location, hospitals, spoke-and-hub routes if necessary, safety, and installation security topics.

On-Site Pre-Assessment Actions

Teams will need to meet with subject matter experts in the field according to their corresponding areas of expertise:

- Real Property team to meet with RPAO to reconcile tracker and gather asset files, leases, permits, ISSAs, etc.
- Environmental team to meet with Environmental Manager to attain PoC information, as well as discuss existing Environmental documents – Surveys, site assessments, prevention and response plans, resource plans, permits, maps, drawings, radioactive/hazardous materials, chlorinated pesticides, wastes, UXO, endangered species, etc.
- Fuels team to meet with POL Manager to discuss capitalized fuels, environmental compliance, OWSs, potential improvements, run-offs, etc.
- Conditions Assessment team to meet with Civil Engineer or Facilities Manager to receive keys to roof hatches and mechanical rooms. Get PoC information to be able to report life

Assessment Actions

Upon daily completion of inventory assessment, teams are to meet back at the designated location.

- Real Property and Environmental to accompany Fuels assessment team to reduce redundancy.
- Teams to update site visit tracker and annotate all FOS assets
- Teams to ensure that all FOSs have been assessed by all four teams.
- Real Property and Condition Assessments to follow photo requirements on base. Potential necessity to have installation security verify all photos.
- Real Property to rename pictures according to procedural requirements.
- Asset Files and Pictures to be copied via removable storage media.
- Teams are to report any life safety issues encountered

Inventory Assessment Completion

Project Coordinator is to brief the installation upon completion of site visit.

- If out-brief is required, support staff will aide Project Coordinator in consolidating team data into a PowerPoint presentation Template designed for Out-Briefs.
- Reiterate safety issues to installation PoCs
- If deliverables are promised to installation PoCs, Project Coordinator is responsible for this task within the agreed upon timeframe.
- Project Coordinator thanks installation PoCs.

BUILDER™ SMS

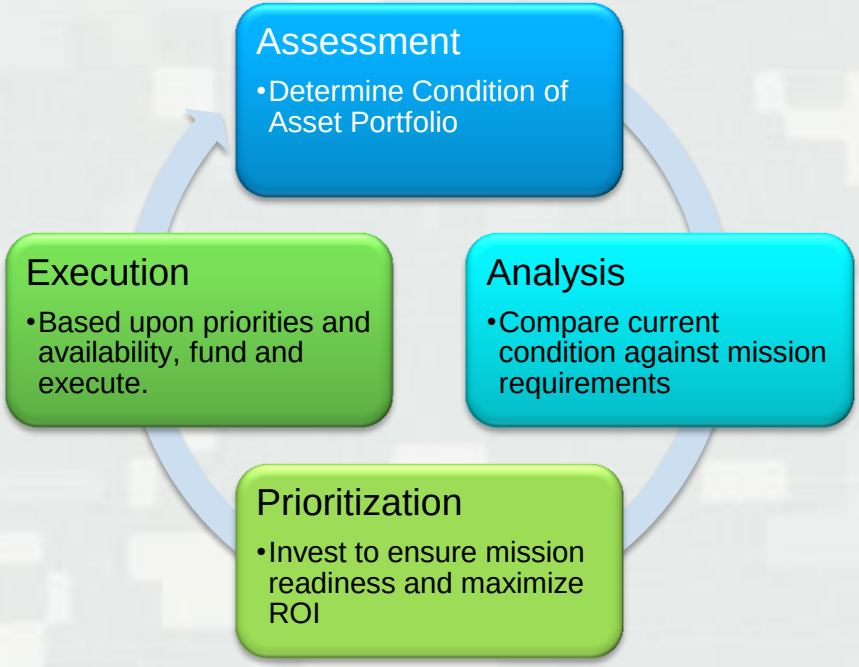
SITE VISIT

Facility Managers' Need

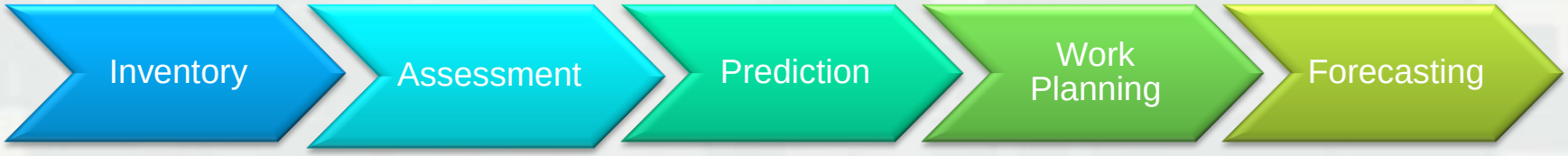
Engineered Asset Lifecycle Management Tools

Provide investment guidance to:

- **Objectively** assess infrastructure across the enterprise
- **Consistently** analyze investment requirements and prioritize scarce resources
- **Track** investments to ensure key stakeholder requirements are addressed
- **Forecast** the investment requirements for budget defense and course of action analysis



Process



- Real Property Inventory
- Component Inventory

- Condition Assessment
- Functionality Assessment

- CI Prediction

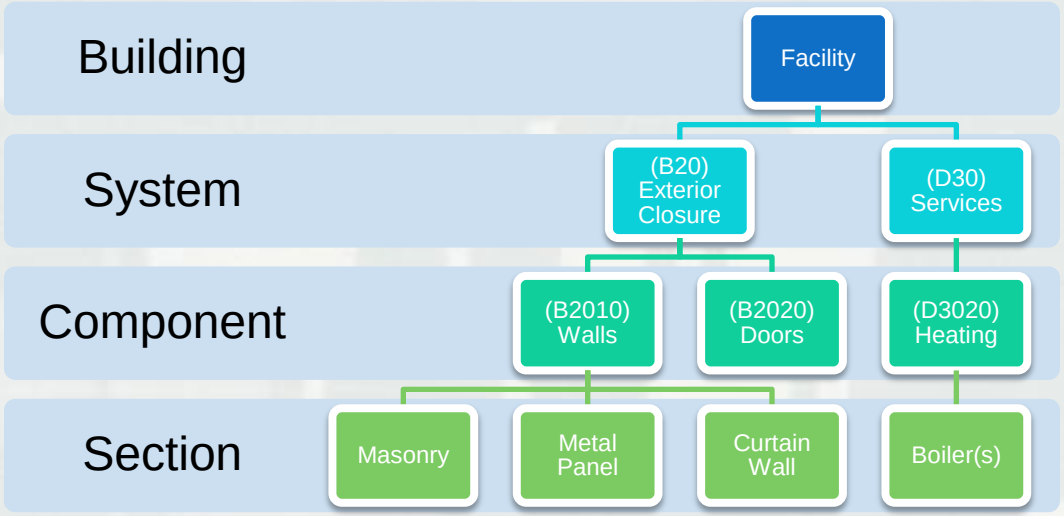
- Work Generation
- Work Prioritization

- Course of Action (COA) Analysis

Inventory

- Performed once, with initial assessment
- Supports DPW tactical actions (e.g. replace roof, repair doors, replace HVAC, etc.)
- Group assets for lifecycle investment management, reduces assessment requirements
- Immediately supports asset performance predictions

Example Building Hierarchy



Condition Assessment

Capture the lifecycle rating of an asset

- [Performance] Requirements may change, but measurement should be constant
- Inspectors are “human sensor” and do not provide opinion/interpretation
- Models the rating given by an expert based upon engineering principles for consistency across an organization
- Assessment frequency and level-of-detail are tailored to mission risk and lifecycle condition (Knowledge Based Inspections)

Traditional **vs.** **SMS**

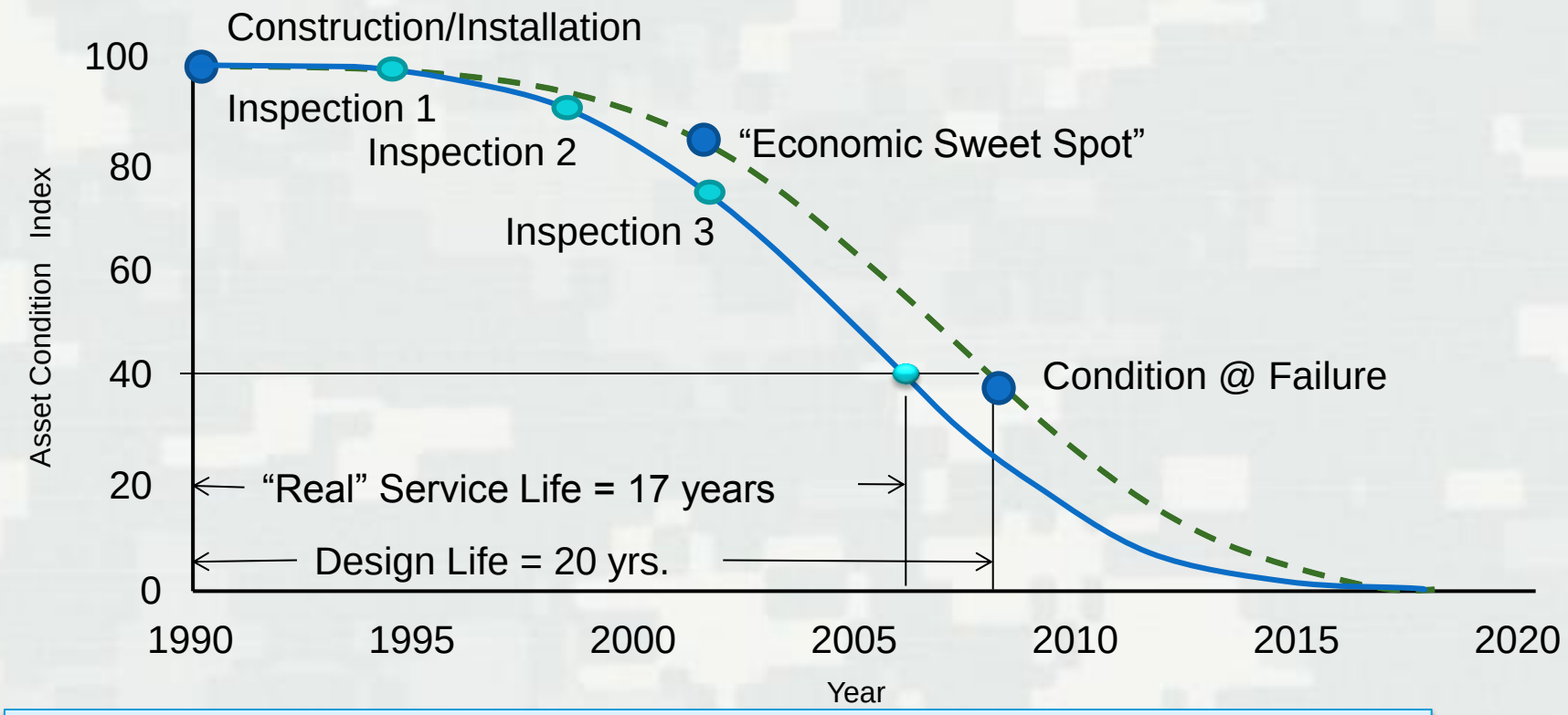
Deficiency: Re-point b...
Work Quantity:
Scoping F...
3

Work is the input

Distress Type(s): Deteriorated ...
Severity Level(s): ...
Quantity/Dens... ...d 12 LF
...2

Work is the output

Condition Prediction



Adaptive model predicts performance of **each** unique asset; identifies best time to invest

Work Generation

Standards

Generic threshold definitions that trigger investments for assets that fail to meet performance level

Policies

Rules to apply different standards to different assets

Work Plan

Generate repair and replace work items for assets failing to meet assigned standards. Estimate costs and optimize ROI.

Prioritization

Score each work item according to enterprise metrics for risk, consequence, financial benefit, etc. Rank highest to lowest score.

Budget

Budgeting can identify funding sources and create rules for how the work plan items use the funds

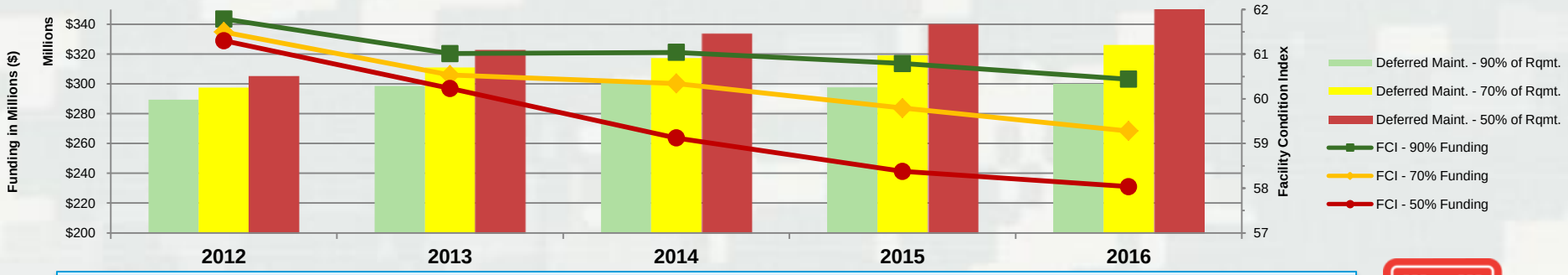
Enterprise-defined rules generate **consistent requirements** Service-wide

Forecasting

What-If capability allows changing inventory, policies, prioritization, funding, and forecast period to determine different outcomes. Supports:

- Budget Creation
- Budget Defense
- Course Of Action Analysis
- Out-year strategic condition trends
  - Will levels meet current mission requirements?
  - Will levels meet future mission requirements?

Impact on Portfolio of Funding at 90%, 70% and 50% of the Requirement



Actionable intelligence built from the asset up

Quality Control

SITE VISIT

Quality Control

Conduct “all-hands” meeting at end of day

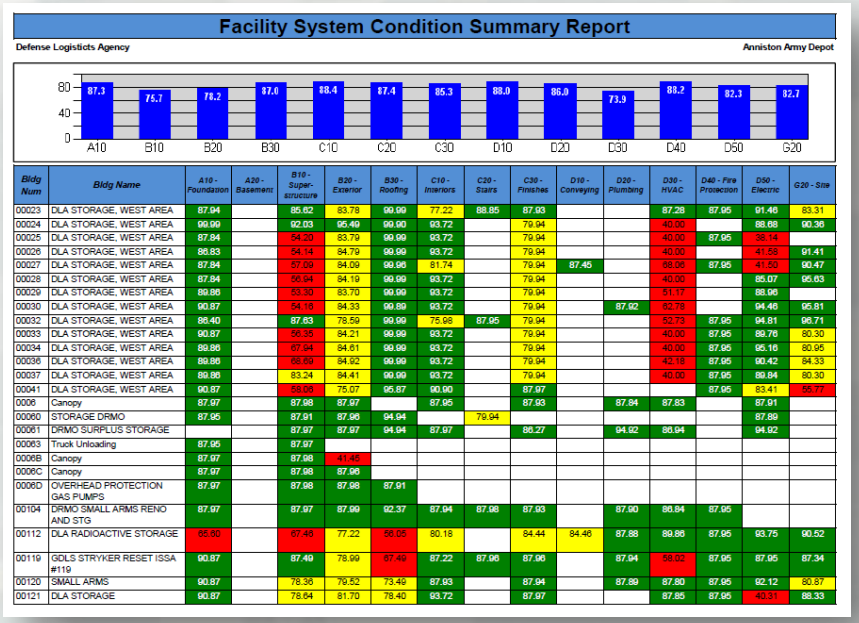
- Inter-team communication (phones/radios) can be challenging
- Share accomplishments, data, and lessons learned between teams
- Determine next day’s activities
- Report safety concerns to installation, if any

Monitor data collection

- Leverage QC reports to monitor field collection live
- Establish and review data against guidance
  - Naming/labeling conventions (inventory, locations, equipment, etc.)
  - Assessment requirements
- Establish fallback guidance for inventory and condition assessment when site conditions don’t allow for data collection

Quality Control

- **Conduct AAR meeting after each visit**
  - Identify follow-up issues before they are lost
  - Identify new lessons-learned early
  - Resolve issues & reinforce guidance before next visit
- **Conduct regular lessons-learned discussions with entire team**
  - Quarterly schedule
  - Conduct by product line
  - Share organization news with external teams too



Facility System Condition Summary Report

Defense Logistics Agency — Anniston Army Depot

Bldg Num	Bldg Name	A10 - Foundation	A20 - Basement	B10 - Super-structure	B20 - Exterior	B30 - Roofing	C10 - Interiors	C20 - Stairs	C30 - Finishes	D10 - Conveying	D20 - Plumbing	D30 - HVAC	D40 - Fire Protection	D50 - Electric	G20 - Site
00023	DLA STORAGE, WEST AREA	87.94		85.62	83.78	99.99	77.22	88.85	87.93			87.28	87.95	91.46	83.31
00024	DLA STORAGE, WEST AREA	99.99		92.03	95.40	99.99	93.72		79.94			40.00		88.68	90.36
00025	DLA STORAGE, WEST AREA	87.94		54.20	83.79	99.99	93.72		79.94			40.00	87.95	38.14	
00026	DLA STORAGE, WEST AREA	88.83		54.14	84.79	99.99	93.72		79.94			40.00		41.58	91.41
00027	DLA STORAGE, WEST AREA	87.94		57.09	84.09	99.99	81.74		79.94	87.45		68.08	87.95	41.50	90.47
00028	DLA STORAGE, WEST AREA	87.94		56.94	84.19	99.99	93.72		79.94			40.00		85.07	95.63
00029	DLA STORAGE, WEST AREA	89.86		53.30	83.79	99.99	93.72		79.94			51.17		88.96	
00030	DLA STORAGE, WEST AREA	90.87		54.16	84.33	99.99	93.72		79.94		87.92	82.78		94.46	95.81
00032	DLA STORAGE, WEST AREA	86.40		87.83	78.59	99.99	75.98	87.95	79.94			52.73	87.95	94.81	96.71
00033	DLA STORAGE, WEST AREA	90.87		56.36	84.21	99.99	93.72		79.94			40.00	87.95	89.76	80.30
00034	DLA STORAGE, WEST AREA	89.86		57.94	84.61	99.99	93.72		79.94			40.00	87.95	95.16	80.95
00036	DLA STORAGE, WEST AREA	89.86		58.69	84.92	99.99	93.72		79.94			42.18	87.95	90.42	84.33
00037	DLA STORAGE, WEST AREA	89.86		83.24	84.41	99.99	93.72		79.94			40.00	87.95	89.84	80.30
00041	DLA STORAGE, WEST AREA	90.87		58.06	75.07	95.87	90.90		87.97				87.95	83.41	55.77
0006	Canopy	87.97		87.98	87.97		87.95		87.93		87.84	87.83		87.91	
00060	STORAGE DRMO	87.95		87.91	87.96	94.94		79.94						87.89	
00061	DRMO SURPLUS STORAGE			87.97	87.97	94.94	87.97		88.27		94.92	88.94		94.92	
00063	Truck Unloading	87.95		87.97											
0006B	Canopy	87.97		87.98	41.45										
0006C	Canopy	87.97		87.98	87.96										
0006D	OVERHEAD PROTECTION GAS PUMPS	87.97		87.98	87.98	87.91									
00104	DRMO SMALL ARMS RENO AND STG	87.97		87.97	87.99	92.37	87.94	87.98	87.93		87.90	88.84	87.95		
00112	DLA RADIOACTIVE STORAGE	65.80		67.48	77.22	56.05	80.18		84.44	84.46	87.88	89.86	87.95	93.75	90.52
00119	GDLS STRYKER RESET ISSA #119	90.87		87.49	78.99	87.49	87.22	87.96	87.96		87.94	58.02	87.95	87.95	87.34
00120	SMALL ARMS	90.87		78.36	79.52	73.49	87.93		87.94		87.89	87.80	87.95	92.12	80.87
00121	DLA STORAGE	90.87		78.64	81.70	78.40	93.72		87.97			87.85	87.95	40.31	88.33

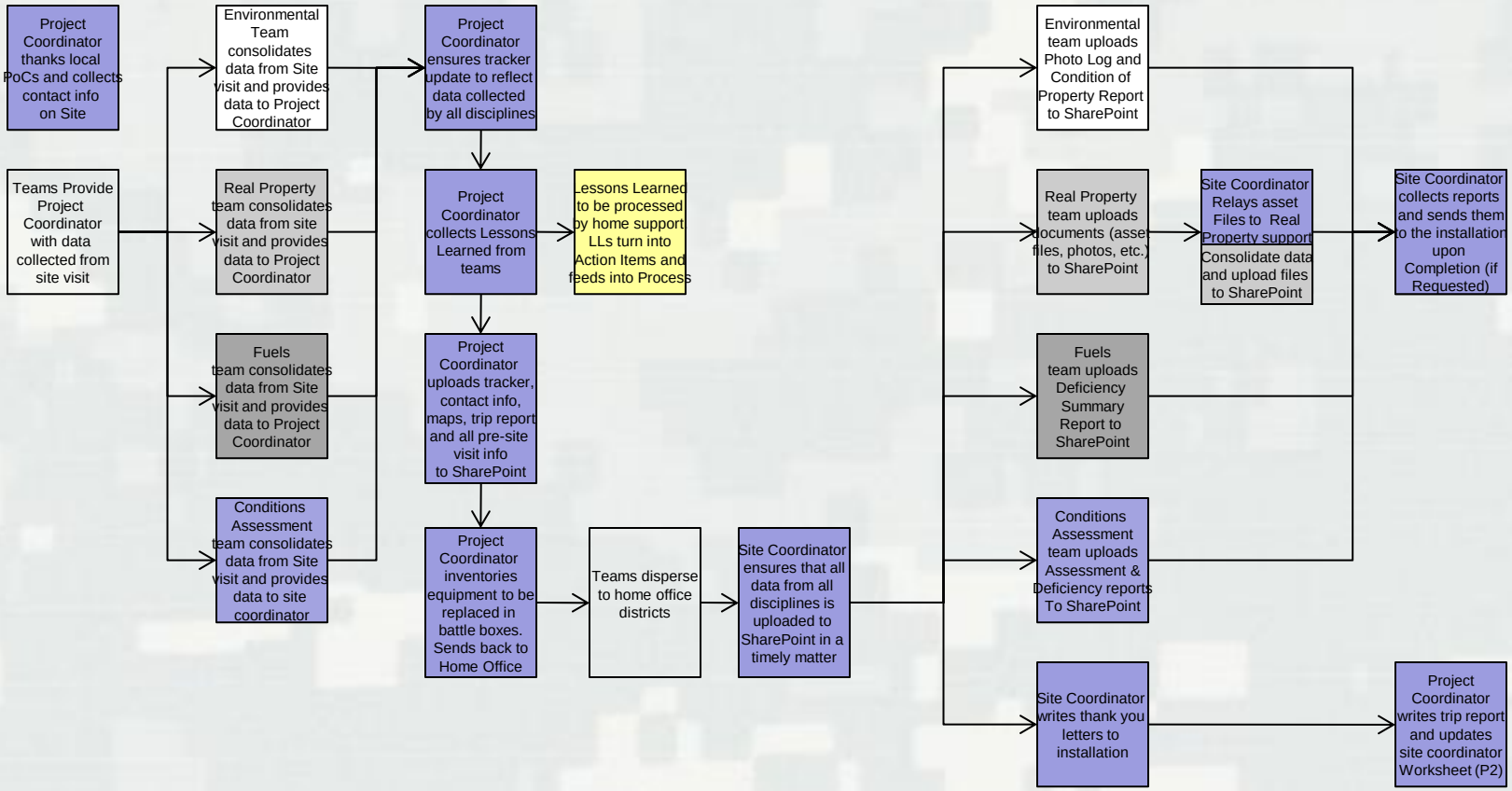
POST VISIT ACTIVITIES

Post-Visit Activities

- Assessment team(s) QC data before finalizing for review
- Produce “output”
  - Reports
  - Action Plans
  - Investment Plans
- Workflow/Tracking vital to ensuring completion
  - SharePoint/InfoPath used for DLA program
- Perform QA with review team 60-90 days after site visit

Site Coordinator Post-Site Visit

Version. 1 **30 January 2012**



Site Coordinator Post-Deployment tasks	Deliverables
• Send battle boxes back to home duty station • Make list of what needs to be replaced in battle boxes • Update/Upload SharePoint with necessary documentation • Get with each discipline and make sure reports are uploaded to SharePoint • Email district brief summary and appreciation • Email Installation final reports • Send thank you letters to installation • Lessons learned update • Process update • P2 Site Coordinator Worksheet	• Installation Maps with required data • Building Plans • Updated Tracker • In/Out Briefings • Project file structure set up in SharePoint • Upload all required documents to Sharepoint • Lessons Learned • POCs information from Installation

Quality Assurance Review

- **Allow reviewers to quickly identify data which need closer inspection and data review**
- **Run reports multiple times until all exceptions are removed, or approved**
- **Report Examples**
  - *Missing/Low Inventory in Facilities*
  - *Inventory Classification Exceptions*
  - *Inventory Naming Discrepancies*
  - *Inventory Quantity and Age Exceptions*
  - *Missing/Low Equipment*
  - *Missing/Low Equipment Images*

Quality Assurance (cont'd.)

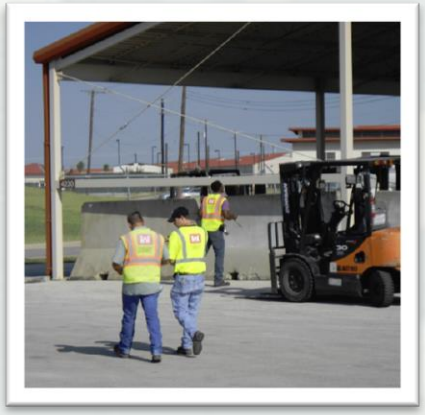
- **Report Examples (cont'd)**
  - *Sections with Missing Inspections*
  - *Equipment with Missing Inspections*
  - *Inventory/Equipment Discrepancies*
  - *Missing Inspection Information*
  - *Inventory Condition Analysis Exception Report*
    - ***Initial Condition Discrepancies***
    - ***Abnormal Adjusted Service Life (too short or too long)***
  - *Inspector Trend Matrix*
    - ***Detect inspector skew***

Don't forget inter-product reviews!

CONCLUSIONS

Conclusions

- Establish a Program Office
  - Oversees program
  - Centralize logistics
  - Responsible for Quality Control / Assurance
- Leverage regional and local assessment resources to reduce logistics costs
- Regularly share updates and lessons-learned with assessment team
- Implement QA Reports on field data to call out exceptions to data standards
  - Leverage lifecycle data to detect when assessment results are out of range



Multiple assessment teams can produce consistent results

More Information

Mr. Lance Marrano
SMS Program Manager
ERDC-CERL
Champaign, IL
(217) 373-4465
lance.r.marrano@usace.army.mil

Mr. Alain Bernier
Chief
Infrastructure Assessment Branch
Ft. Worth, TX
(817)
alain.j.bernier@usace.army.mil

http://sms.cecer.army.mil

- SMS Resources

http://www.erdc.usace.army.mil

- Installation Operations (more products and expertise from the Engineer Research & Development Center)

http://sites.nationalacademies.org/DEPS/FFC/DEPS_047399

- Previous BUILDER presentation to FFC Operations & Maintenance Committee (MAR 2012)