Broadsheet for Metro Natural Areas project – Project Overview & Deliverables

Overview

The Natural Areas division of Metro's Sustainability Center is responsible for protecting and enhancing the region's natural assets for future generations. Two different bond measures (1995 & 2006) provided funding for acquiring land in target areas.

The main objective of this project is to examine and evaluate Metro's existing Natural Area Land Management information system (e.g. Access databases, spreadsheets, paper), and to identify improvements and alternatives to it. This includes assessing the feasibility of various alternatives and creating a prototype of the leading recommendation.

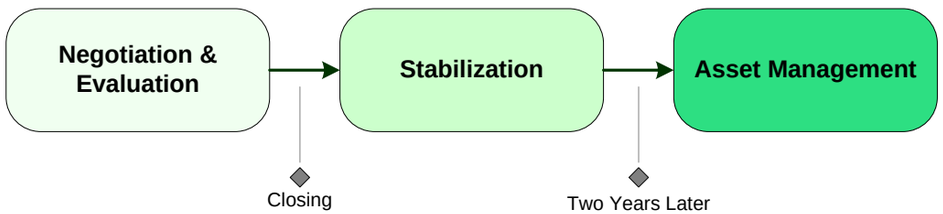
Customers

- Metro Natural Areas team
- Local Partners (e.g. County Planners, Local Share)
- Citizen Oversight Committee

Stakeholders

- Metro Council
- Metro Auditors
- Voters / Taxpayers
- Senior Leadership Team

Simplified Land Acquisition Workflow



Summary of Problems Today

- **Operational inconsistencies** – "Processes and paperwork are not followed… Too many people doing data entry."
- **Operational inefficiencies** – entering the same data multiple times in multiple places, problems finding information – "We all save data in various places, it's a mess."
- **Lack of capability** – e.g. can not query both databases at once, can not automatically calculate performance measures (neither budget ones or oversight committee ones).
- Inaccurate data – "Access databases have glitches… click on something and you end up somewhere else."
- Lack of transparency – pointed out by Metro auditors in 2007 (*however, unclear who is affected by this – voters? Metro mgmt?*)

Deliverables

A. Vision Statement, Success Factors, Work Plan - Done
B. Data Source Analysis - Done
C. Constraints Identified – Done
D. Propose Alternatives, Create Prototype, Evaluate Feasibility – Done
E. Develop Work Program – Done

Project Vision & Success Factors

VISION: Identify ways to harness existing Natural Areas data sources into a more efficient, consistent, and capable information system.

PROJECT SUCCESS FACTORS:
I. Metro mgmt can weigh clearly stated information system options
I. NA Team can better understand their options for operational improvements
I. NA Team can evaluate the prototype of the leading option and provide feedback

SYSTEM SUCCESS FACTORS:
II. NA Team operations are more consistent and efficient
II. NA Team has shared & appropriate visibility into property lifecycle from the start
II. NA Team can quickly access a wealth of property information and trusts it
II. Stakeholders enjoy greater visibility and real time reports about the NA Program

User Profiles

Data Steward – Responsible for entering data and maintaining the NA databases, related spreadsheets and GIS layers. Fields requests for information, which sometimes is found in existing reports, other times requires querying the database or using GIS tools to create maps. At times goes to physical files to get information. Today this is Carrie Belding and Tommy Albo.

Legal Staff – Focused mostly on pre-acquisition, specifically helping with Due Diligence and Closing. Maintains and uses templates for easements, licenses, permits, closing papers; for example the "Acquisition Approval Form" used for ordering a title report.
Today many people serve in this role (Karen Starin, Paul G., Ashley ?)

Negotiators – Primary contact with seller. Makes offers on behalf of Metro. Serves as focal point in pre-acquisition phase, coordinating with Legal Staff and Science team, and third parties (appraisers, consultants doing "environmentals", etc.).
Today many people serve in this role (Hillary Wilton, Leif Anderson, Barbara Edwardson, Fritz Paulus).

NR Scientist / Tech – Participate in defining refinement maps, consult during due diligence and performance evaluation phases. Develops and implements stabilization plan and reports. Responsible for long term natural areas management, wants improved information systems for tracking restoration.

Property Manager – Manage structures on acquired properties, long-term maintenance and leasing of resources (e.g. buildings, agriculture, water rights, mineral rights, towers, etc.).

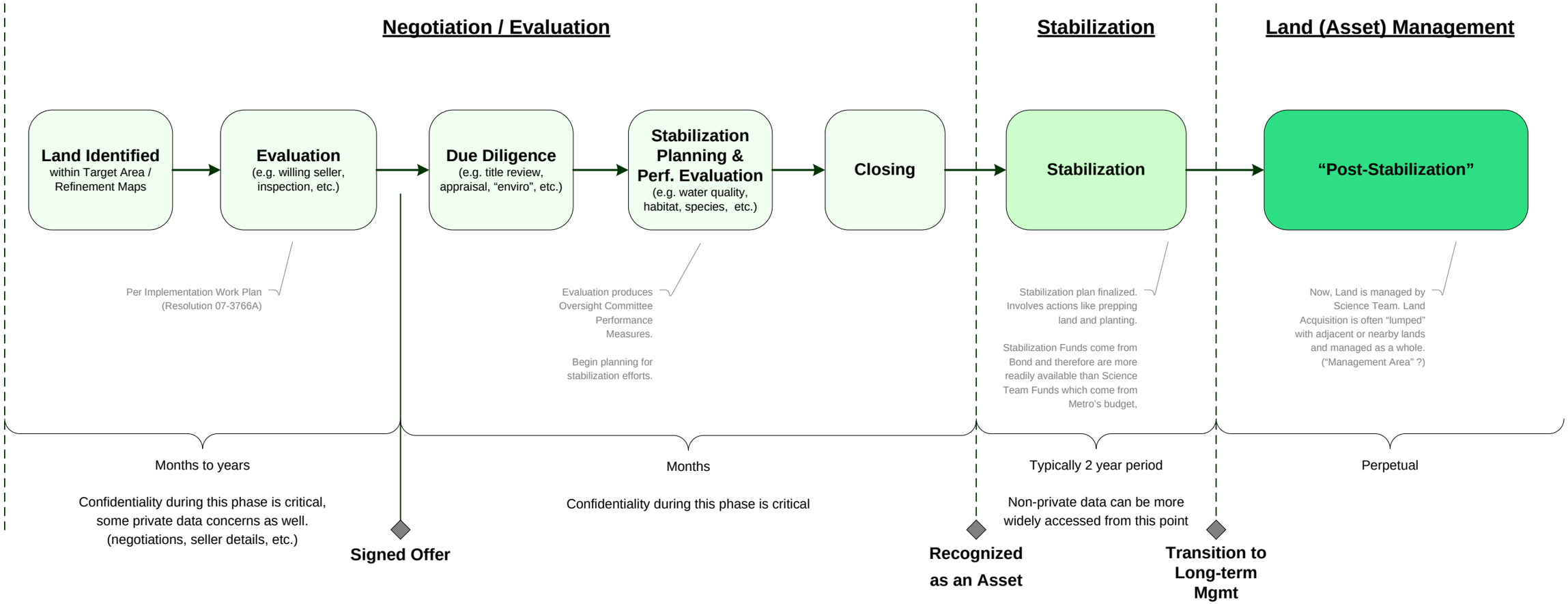
Metro Manager – During Negotiation and Stabilization, wants status, provides approvals. Needs ad hoc type of information – e.g. prepping for a City Club meeting and wants "everything purchased in Forest Park with 1995 and 2006 Bond Measure funds."

Auditor – Recommends improved NA program transparency with a more comprehensive set of performance measures that are systematically captured and reported. Use program data and information to drive continuous improvements in the program.

Finance Manager – Oversees accounting, invoices, and expenses; calculates (manually) performance measures for annual budget. Ensures proper tracking in accounts payable and asset management systems.

External Partner – Needs information about Metro acquisitions for analysis and reporting.

Broadsheet for Metro Natural Areas project – Land Acquisition Workflow



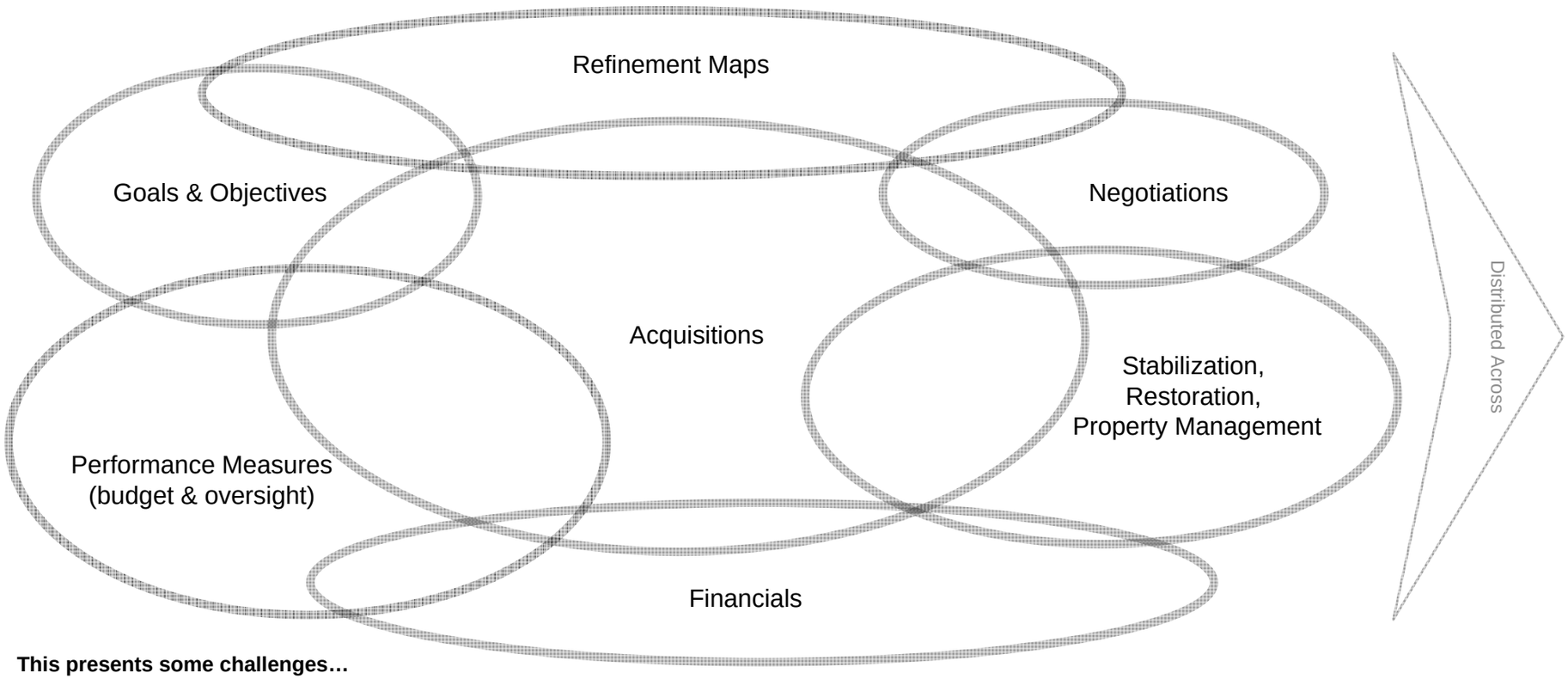
User Profiles

	Land Identified	Evaluation	Due Diligence	Stabilization Planning & Perf. Evaluation	Closing	Stabilization	"Post-Stabilization"
NEGOTIATORS							
FINANCE					FINANCE		FINANCE
LEGAL STAFF				LEGAL STAFF	LEGAL STAFF		
NR Scientist	NR Scientist	NR Scientist	NR Scientist / Tech			NR Scientist / Tech	NR Scientist / Tech
DATA STEWARD		DATA STEWARD				DATA STEWARD	
PROPERTY MANAGEMENT		PROPERTY MANAGEMENT	PROPERTY MANAGEMENT			PROPERTY MANAGEMENT	PROPERTY MANAGEMENT

Lead

Broadsheet for Metro Natural Areas project – Subject areas: data is fragmented across many data sources

The conceptual data model is fragmented and spread out across many data sources. No clear responsibilities are defined between the data sources



This presents some challenges…

…important business processes do not have a cohesive, well understood source of data.

"Processes and paperwork are not followed… Too many people doing data entry."

...pieces of key business entities (e.g. Acquisition, Stabilization Plan, etc.) are stored in various locations, causing repeated data or incomplete data.

"We all save data in various places, it's a mess."

...inconsistent access to the different data silos leaves key stakeholders with incomplete views and a propensity to keep their own records.

"Access databases have glitches… click on something and you end up somewhere else."

...higher level analysis (e.g. Program Reporting, Performance Measure Roll-ups) and streamlined business processes cannot be developed across the existing set of disparate data stores.

"What portion of the program is spent on stabilization? Let me search through my Outlook folders for the answer."

…data privacy and security concerns are not uniformly and centrally enforced.

…trust in existing data sources other than one's own is very low.

Existing Data Sources

- Target Area Refinement Plans
- Confidential tax lot maps
- Active deals list
- Acquisition physical legal file
- Acquisition criteria scoring
- PeopleSoft Financials
- GIS database and layers
- Natural Areas Databases
  - 1995
  - 2006
- The "Book"
  - property acquisition summaries
  - closing memos
- Stabilization Timeline Spreadsheet
- Acquisition File Numbers Spreadsheet
- Master Local Share spreadsheet
- Personal Data Stores
- Outlook Folders
- Network Shares
- Local File Systems
- Property Management
  - Physical File w/ Incident Reports
  - Rental Properties Spreadsheet
  - Rental property information sheets (book)
  - Asset Mgmt Photo Inventory
- Scientific Tracking System (Re-veg)
- Stewardship Categorization
- Stabilization Report
- Negotiation Form
- Preliminary Environmental Review
- Due Diligence Checklist
- Escrow deposits
- Title Report Log
- Status of Structures
- Environmental Report
- Performance Measure Reports
- Metro Public Web Site
- Auditors Reports
  - 2007
  - 2009

Broadsheet for Metro Natural Areas project – High Level Data Model: Defining the nervous system of the Program

From a loose collection of information and data, distilling a set of core business entities understood and used by all begins to provide a lingua franca of the Natural Areas Program. This set of strong business entities begins the process of systemizing the information needs of the program. As user tasks interact with the data model, consistent data collection occurs which is leveraged into more efficient operations. Institutional memory is enhanced and interaction between participants is improved.

Green Spaces Master Plan
Trail Master Plans
Council Resolutions

- Bond Measure
- Program
- Trail Gap

Target Area

- Budget
- Refinement Plan
- Map

- Negotiator Contact
- Acquisition Pipeline
- Party(Org or Person)
- Contact
- Partner Jurisdiction (IGA's)

Acquisition

- Acq. Number
- Acq. Name
- Acq. Method
- Closing Date

- Expenditure

AP System
Asset Management

- Notes / Discussions
- Correspondence
- Document
  - Environmental Review
  - Environmental Report
  - Title Review
  - Appraisal
  - Site Maps
  - Cultural Inventory
  - Photos
  - Various Letters
  - Various Contracts

Document Retention Policy
Document Management

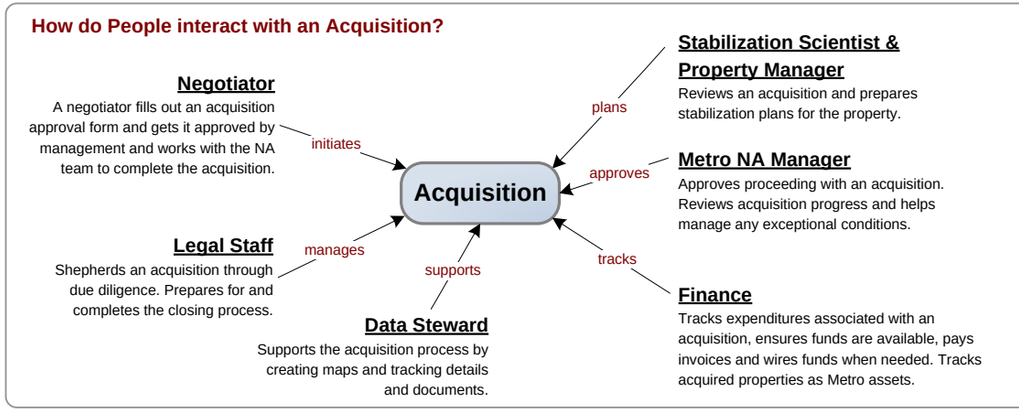
Property

- Acres
- Stream Miles
- Trail Miles
- Legal Description
- Geographic Polygon
- Ownership Type
- Ownership %

- Partner Jurisdiction (IGA's)
- Stabilization Report
- Structure
- Water Right
- Agriculture Resource
- Lease
- Improvement
- Contract
- Document

Asset Management
Facilities Management

How do People interact with an Acquisition?



Management Site

- Management Unit
- Stewardship Classification Zone
- Restoration Action
- Contract
- Project
- Document
- Contact
- Partner Jurisdiction (IGA's)

Monitoring
Sampling
On-going Evaluation

Performance Measure

Report

- Money Memo
- Acquisition Fact Sheet
- Appraisals Summary
- Property proximity report
- Bond funding forecast
- Cost/Acre analysis
- Structure & facility list
- Due diligence checklist
- Potential Acquisition Ranking
- Bond progress reporting
- Target Area Summary report
- Local Share progress report
- Deals that fell through
- IGA status
- Quarterly Progress
- Closing Memo

Published Reports
Public Web Content

System

- User
- Role
- Privilege

IT Infrastructure
User Management

Main Entities

Target Area – A geographic region that organizes and focuses acquisitions on strategic and targeted natural resources

Acquisition – Represents the activity of acquiring a property

Property – An area of land defined with a legal description acquired by the Natural Areas program for a specific use

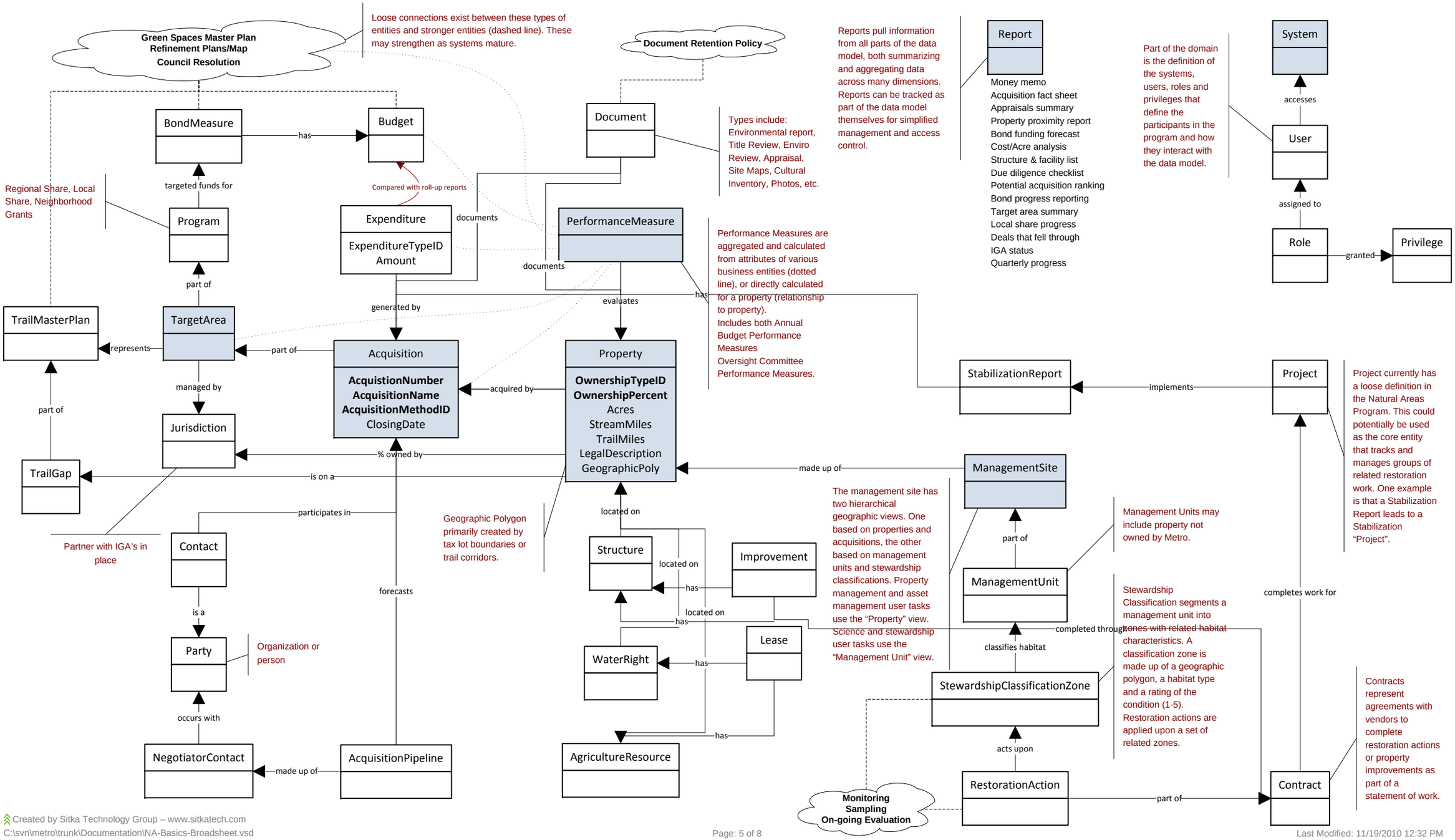
Management Site – A group of properties that are managed together by the Science and Stewardship team. Management sites are divided into management units and stewardship classification zones to facilitate restoration activities and on-going evaluation of restoration progress

Performance Measure – A quantitative or qualitative metric designed to measure progress towards the Program's goals. There are two main types; Budget Performance Measures and Oversight Committee Performance Measures.

Report – Provides insights into the operations and results of the Program. Includes views that assist participants in the program and summary views that accurately characterize how the Program is performing.

System – Represents the information systems, users, roles and privileges that are part of the Program

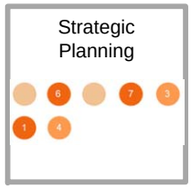
Broadsheet for Metro Natural Areas project – Mid Level Data Model: How does everything relate?



Broadsheet for Metro Natural Areas project – User Tasks by Functional Area

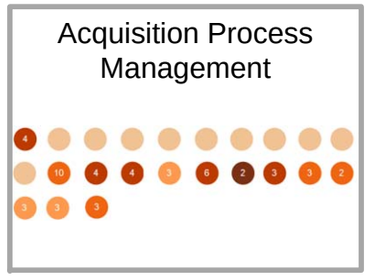
Clustering user tasks by functional or subject area gives us a view of how tasks are related and where the priorities are focused. So far we identified 85+ user tasks.
A dot below represents a single user task, color represents criticality, numbers represent frequency. Refer to the user task analysis spreadsheet for a list of all user tasks:
http://projects.sitkatech.com/projects/metro/source/HEAD/trunk/Documentation/UserTasks.xlsx and to the summary for an alternative visual representation:
http://projects.sitkatech.com/projects/metro/source/HEAD/trunk/Documentation/UserTaskAnalysisSummarization.pdf

e.g. Determine if potential acq is within target area

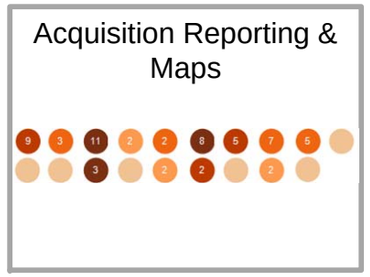


e.g. Rank potential acqs by particular attribute or quality

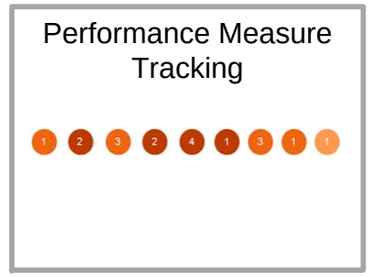
Core Functional Areas:



e.g. Check status - view due diligence checklist



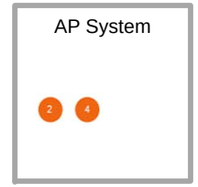
e.g. Analyze & determine avg. cost/acre



e.g. Report quarterly progress

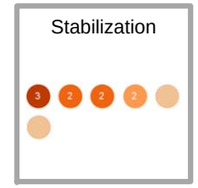
e.g. Keep early, confidential notes on acq

e.g. Find out other negotiators have "been down the road" on acq

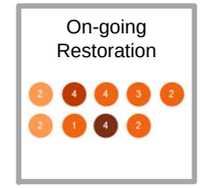


e.g. Add acq and stabilization expenditures to the AP system

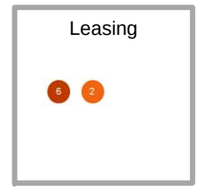
e.g. Recognize a property asset at closing



e.g. Delineate the habitat zones / mgmt units on a property



e.g. Capture/track actions on a property

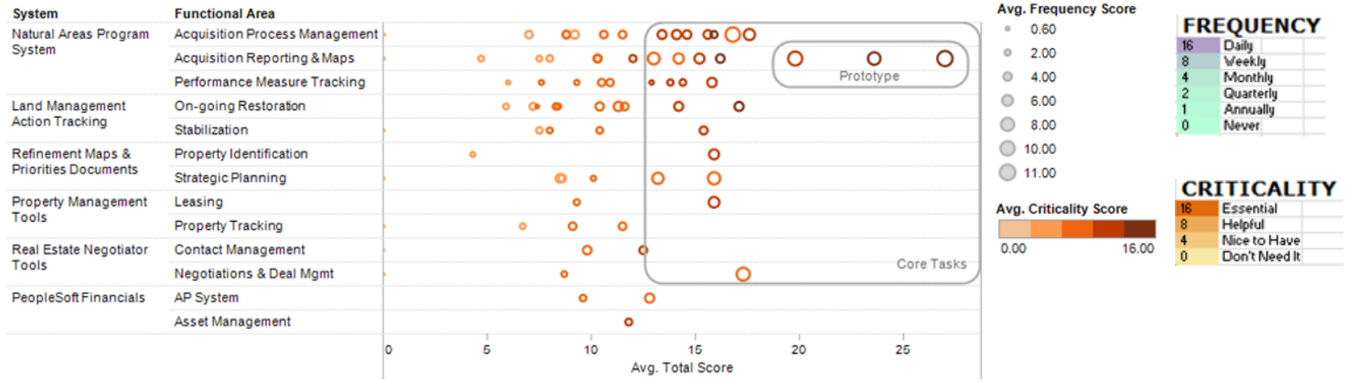


e.g. Manage leases for a property

e.g. Project costs to improve properties

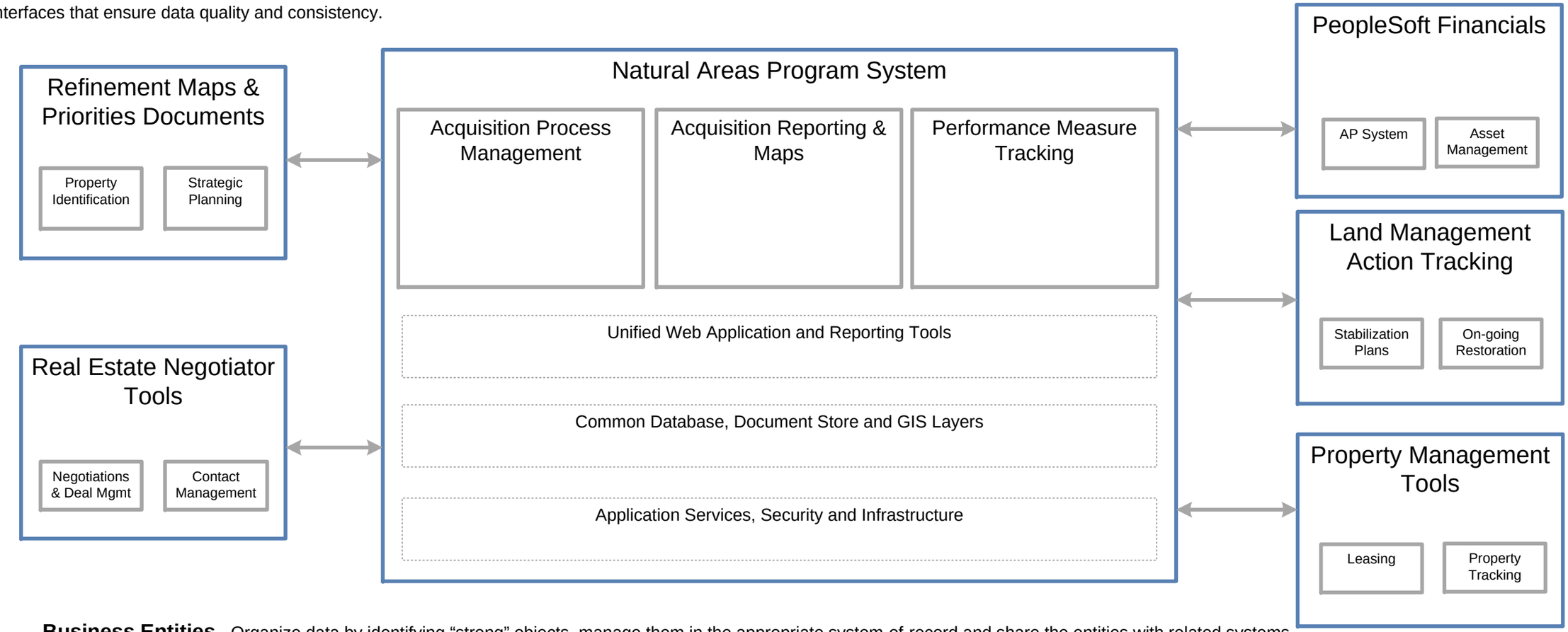
Each of the core team members classified the tasks by criticality and frequency. The colored circles represents the average criticality of the tasks in the functional areas, the number inside the circle indicates the average frequency. Light colored circles without a number were not classified by the team. For details, refer to UserTasks.xlsx.

Conclusions:
The results of this classification confirms the importance of many of the tasks in the core functional areas. There are additional high criticality tasks in related functional areas that should be considered during the implementation scoping and prioritization process.

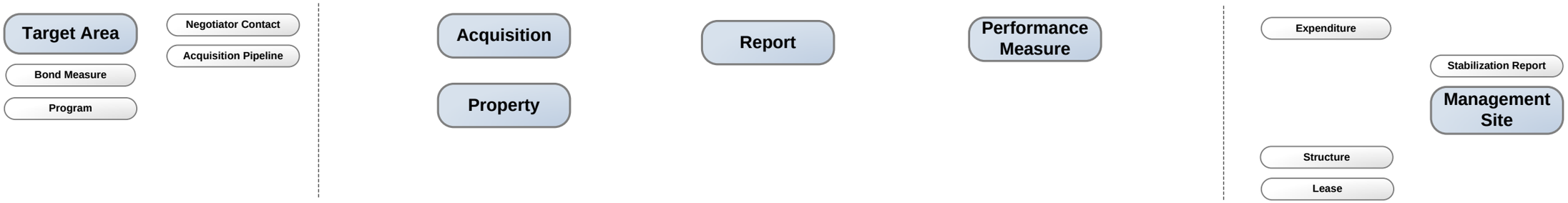


Broadsheet for Metro Natural Areas project – Logical Systems View of Metro's Natural Areas Program and Functional Areas

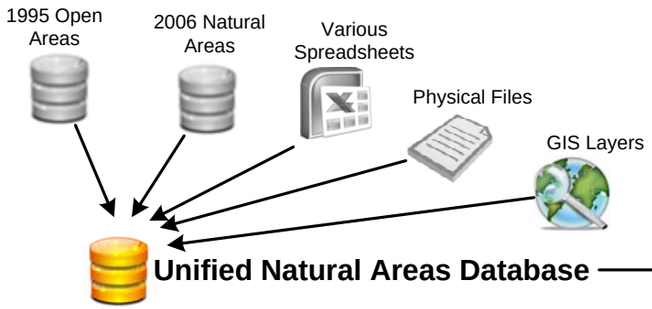
Looking at the cluster of user tasks and the life-cycle of different business entities suggests possible system boundaries. Each system (big box) and functional area (small box) is responsible for supporting multiple user tasks and the data generated and used by those tasks. Data can then be shared between systems with clear interfaces that ensure data quality and consistency.



Business Entities - Organize data by identifying "strong" objects, manage them in the appropriate system-of-record and share the entities with related systems.



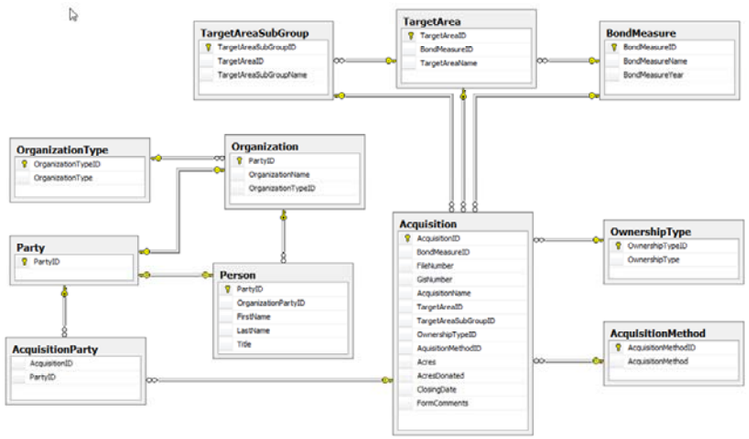
Broadsheet for Metro Natural Areas project – Potential Building Blocks for Natural Areas Data Management



Utilize Existing Data Sources

The current data sources contain a wealth of information about the Natural Areas Program. These sources of information, documents and forms need to be harnessed and utilized as the base of a new unified Natural Areas Database.

Unified Natural Areas Database → Unified Natural Areas Web App → Unified Natural Areas Reporting



Create the Unified Database

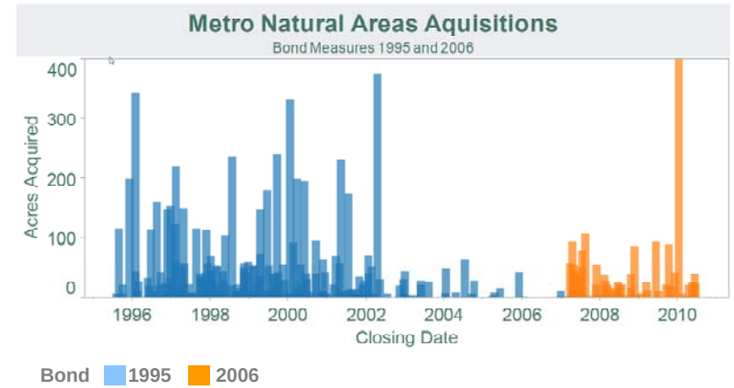
Model and populate a new database based on the existing data structures, enhancing and improving the model to support system goals.

This unified model represents what the kernel of the new data structure might look like.

Build Web-based Tools

Create tools to help maintain and analyze Natural Areas data. These tools can be built to integrate into the acquisition business process, supporting and tracking efforts across the whole team. As an acquisition proceeds, the system would provide a secure digital record that can be used for later reporting and performance measure tracking.

This form is a mock-up of adding a new acquisition into the system.



Unified Analysis and Reporting

With the data for each bond measure now combined and the tools in place to track and keep the data current, sophisticated reporting and analysis products can be built that meet the needs of the varied stakeholders. Performance measures, financial reports, bond measure progress, internal operations and other subject areas can take advantage of these new insights.

This prototype report shows the acquisition timing by acre for both bond measures. This report uses the prototype database shown above.