

2022-23 Asset Management Technical Assistance Project

Milestone #1

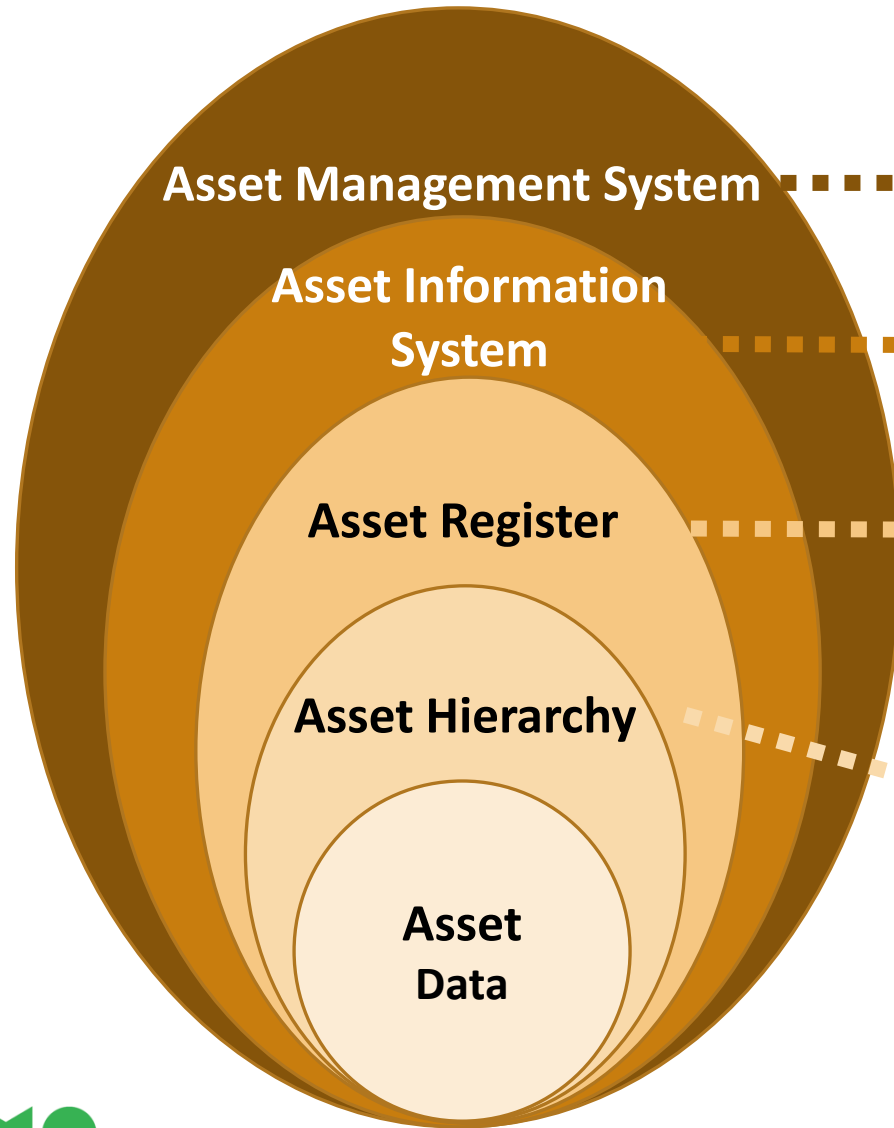
Service to Asset Hierarchies and Asset Information

August 24, 2022

Eastern Ontario

Cohort 3

Definitions



AMS – Interrelated elements including AM Policy, goals, strategies, processes, systems and governance

AIS – Is a system where information is stored to support AM activities and decision-making processes

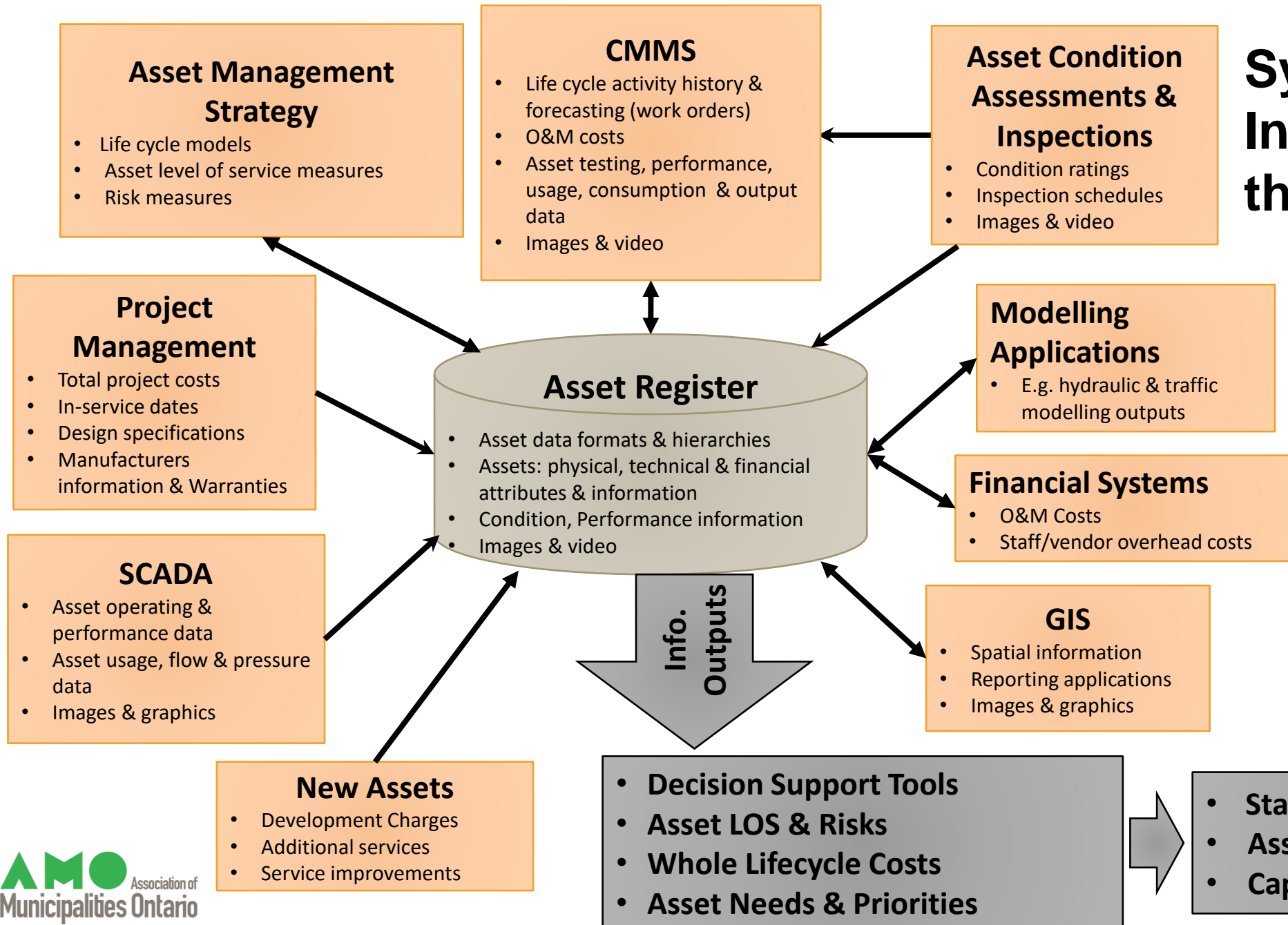
Asset Register – Is a centralized source of asset information. An asset register includes asset records at multiple levels that represent assets in the field.

Asset Hierarchy – A key component of the asset register. It is a method of organizing and viewing asset information in a set of logical groupings and sub-groupings.

The Asset Register

- The heart of the Asset Information System
- The repository for essential asset data & information
- The source of data 'truth'
 - All asset data is sourced from & fed back to the Asset Register
 - Each asset must have a unique ID number.
 - Critical if asset data attributes appear in multiple systems
 - The Asset Register may be dispersed across multiple specialized systems
 - Can reside in a CMMS, GIS or other Asset Management system
- System integration with the Asset Register should be a key objective for efficient data management

System Integration with the Asset Register



Service to Asset Hierarchies

- Everything starts with having the right information organized in the right way
- Asset hierarchies create a 'line of sight' between the assets & associated services
- Asset hierarchies create the format of how the assets are segmented in the asset register
- Creates consistent naming & numbering conventions for asset planning & reporting needs
- Maps asset relationships & creates consistent definitions & data formats
- Facilitates analysis & decision making at all levels of the organization for strategic & tactical (operational) planning

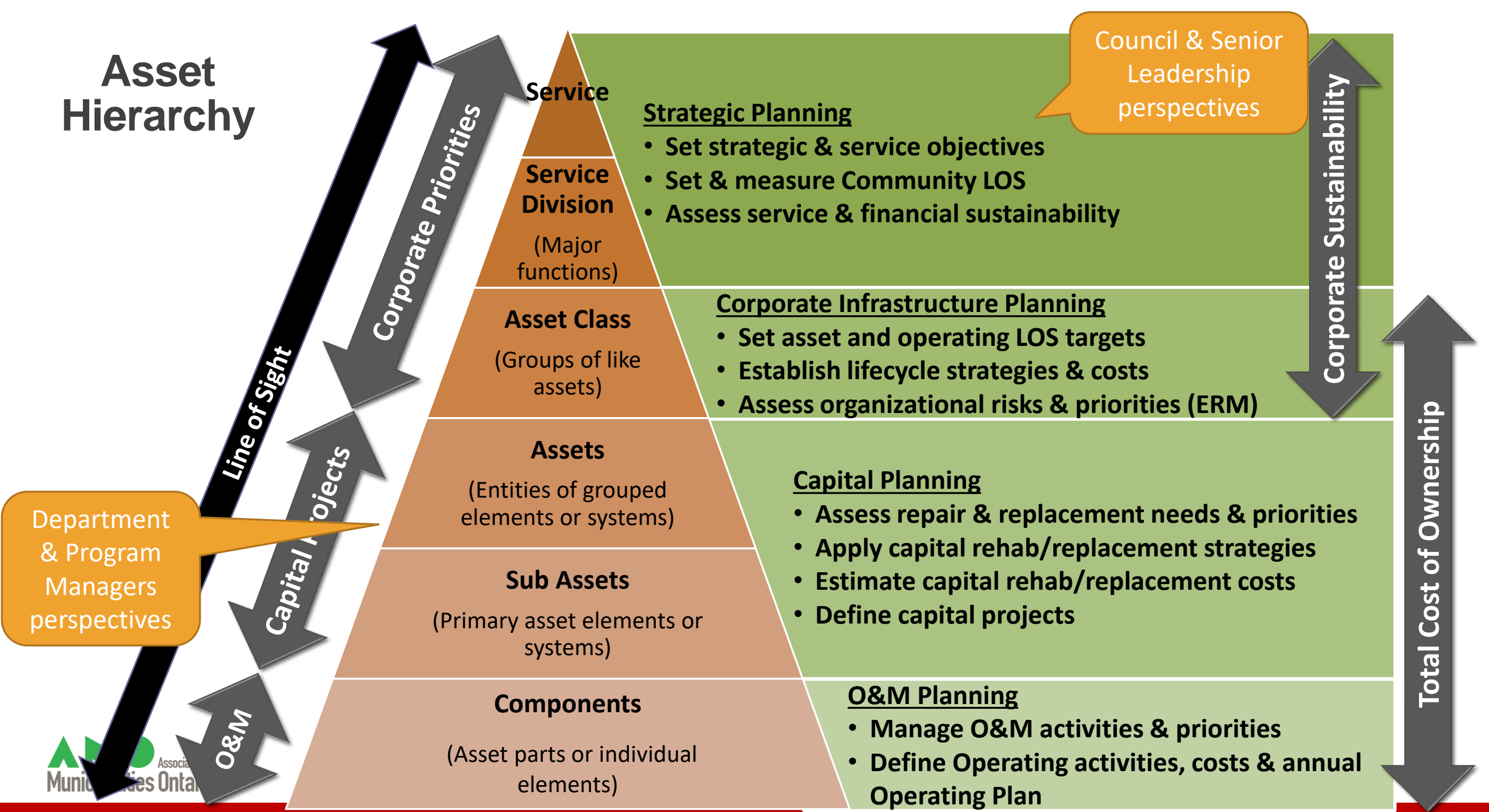
Establish a Common Hierarchy Framework

- It a team effort
 - Must meet the planning needs of stakeholders from the Service Areas, Finance and Leadership
- Important to first establish a common hierarchy framework for the organization's portfolio
 - Establishes how the assets will be organized for consistent & comparative cross-organizational analysis, planning & reporting
- The hierarchies will vary by municipality
 - Should be developed according to each municipality's portfolio planning & reporting needs
 - E.g. What is required for capital & operating plans, identifying capital projects, maintenance planning, assessing strategic priorities etc.

Establishing a Common Hierarchy Framework

- Establishing the hierarchy can be challenging
 - Different interpretations
 - Different information requirements
 - Requires input from all stakeholders (e.g. Engineering, Finance, Planning, Service Operations)
 - It will evolve – not perfect the first time
- Avoid going too granular
 - Difficult & costly to manage all of the data
 - Provides little additional value for analysis, decision-making & planning
- Avoid going too high level
 - Excludes some important analysis & planning capabilities
- Avoid overreliance on financial definitions
 - Disconnected from the purpose of the asset

Asset Hierarchy



Council & Senior Leadership perspectives

Corporate Sustainability

Department & Program Managers perspectives

Total Cost of Ownership

Facilities Asset Hierarchy

Line of Sight

Service Parks & Recreation

Service Division Facilities

Asset Class Recreation Centres

Assets Anytown Recreation Centre

Sub Assets
Interior & Exterior Spaces: Auditorium, Meeting Rooms, Common Areas, Washrooms, Parking Area, Playground
Mechanical, Electrical & Structural Elements: Uniformat Levels 1 – 4
HVAC & Plumbing Systems, Foundations, Superstructure, Roofing

Components
Uniformat Levels 4 – 5 Windows, doors, sinks, wiring, valves, pipes, pumps, motors, fans, ducts etc.



Available Facilities Funds = \$400K
Available Park & Rec Funds = \$1.5M

10-year Sustainability

Required Operating Budget = \$350K
Required Capital Budget = \$400K

10-year Cost of Ownership

Parks & Rec

Service Objectives

"Clean, safe accessible services"

Facilities

User experience?

Community LOS: How the residents experience the services

"Facilities are reliable, efficient, safe and accessible"

Recreation Centres

What does it look like for the assets?

ALOS Targets

- FCI > 5% (Good to Very Good)
- Meets AODA requirements
- Back up power in place
- Meets GHG targets

O&M LOS Targets

- Clean three times weekly
- Interior paint bi-annually
- Inspect and test electrical & fire system annually

Anytown Recreation Centre

How do the assets measure up?

Current ALOS

- FCI = 10% (**Fails ALOS**)
- Meets ADOA (**Passes ALOS**)
- No back-up power (**Fails ALOS**)
- Does not meet GHG targets (**Fails ALOS**)

Non-Technical Measures

- # customer complaints

Sub Assets

What are the Capital Project needs?
What are the O&M Activities?

Capital Projects

- Roof repairs required (**\$200K**)
- Install standby power generators (**\$150K**)
- Replace inefficient HVAC system (**\$50K**)

O&M Activities

Test electrical and fire suppression systems (**\$50K**)

Components

What are the O&M activities and affected components?

O&M Activities

- Painting services (**\$50K**)
- Janitorial services (**\$150K**)
- Normal replacements of faulty electrical and fire suppression components (**\$100K**)

Data & Information

Evaluating Data Quality

- **Accuracy** — Does the data correctly represent the asset it relates to?
- **Completeness** — Are all assets & required attributes populated?
- **Consistency** — Does the same asset have the same identifier & formatting across all data sets?
- **Uniqueness** — Is each asset recorded only once?
- **Timeliness** — What is the time delay between a change to an asset & the corresponding data change?

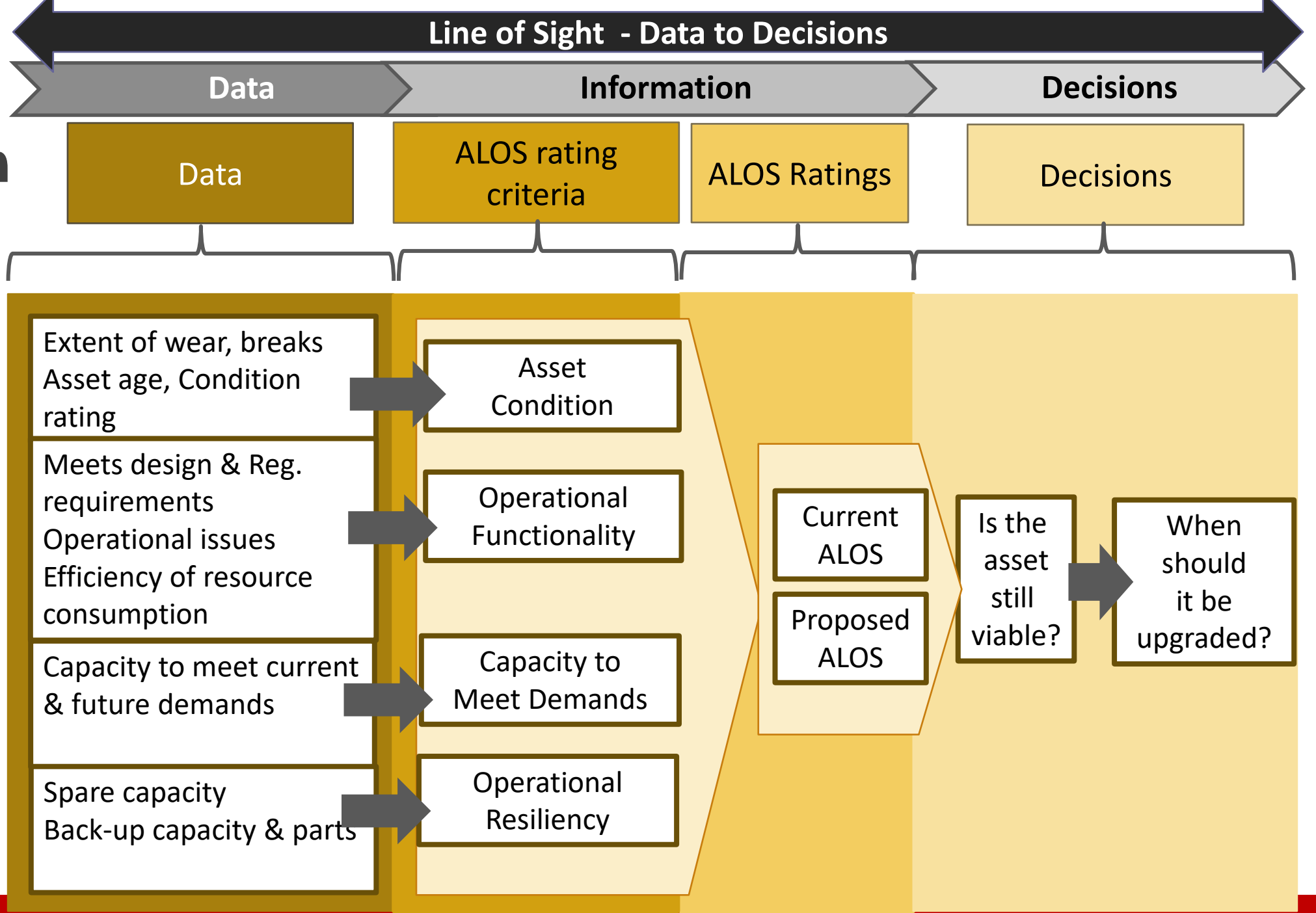
Collecting Asset Data

- Knowing how asset information will be used & the decisions that need to be made will shape data collection:
 - ❑ What asset information do we need to support decision-making?
 - ❑ How can we efficiently collect the relevant data?
 - ❑ How will this data be processed to deliver useful information?
 - ❑ How will the information or analysis of data be shared to support various levels of decision-making?
 - ❑ What is the cost-benefit in terms of resources to collect & analyze the information vs. value to decision-making?

What the Asset Data needs to Answer

- What assets do we own, where are they & what are they worth?
- What services are the assets providing?
- How old are the assets & what condition are they in?
- How are the assets performing & are they satisfactory?
- What is the asset maintenance & rehabilitation history?
- What are the costs to operate, repair & replace the assets?
- When should the assets be repaired or replaced?
- What are the priorities for repairs or replacement?
- Are the assets technically & financially sustainable?

The Information Hierarchy

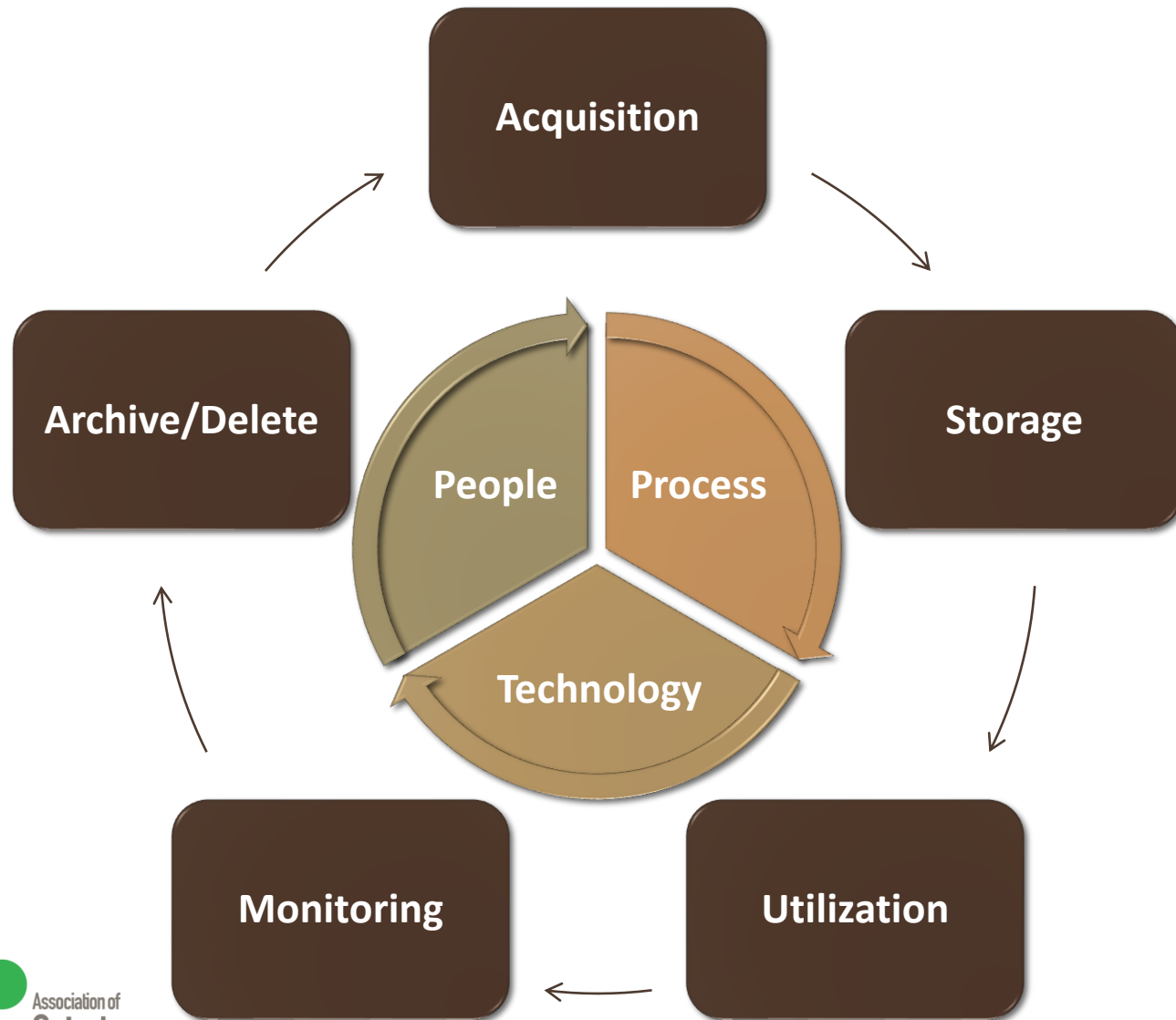


Examples of Data Inputs to Measure the State of the Assets

Infrastructure Type	Condition Data/Sources	Performance Data/Sources
Roads	Pavement Condition Index (PCI), Bridge Condition Index (BCI), visual assessments & ratings	Geometrics, site lines, platform widths, lane capacity, cross-section environment, adequate ditching & sub base drainage, adequate roadside safety devices
Water	# pipe breaks, hrs service interruption, system leakage, visual assessments & ratings, vibration analyses	Flow & pressure monitoring, back-up power, building/electrical code compliance, water quality monitoring, hydraulic modelling, site security
Wastewater	Pipeline Assessment Certification Program (PACP) ratings, infiltration rates, # pipe breaks, visual assessments & ratings,	Flow monitoring/flow capacity, I&I rates, back-up power, , building/electrical code compliance, # system overflows (basements & environmental), draw-down tests, hydraulic modelling, site security
Storm Water	Pipeline Assessment Certification Program (PACP) ratings, # pipe breaks,	Flow capacity & SWM modelling, excessive overland flooding incidences, pump tests, back-up power
Facilities	Building Condition Assessments (BCAs)	Energy audits, GHG targets, space use studies/capacity, building technology requirements, HVAC adequacy, wayfinding analysis, parking requirements/capacity, compliance with AODA, building and fire code compliance, back-up power, flood plain mapping, building security evaluations

Asset Data Management:

Managing Asset Information around the Data Life Cycle



Data governance & management polices ensure clear processes, roles and responsibilities for continuous asset data management

Questions