



Asset Management

Asset Management means different things to different people. Two widely accepted definitions of Asset Management come from:

The International Infrastructure Management Manual (INGENIUM, 2002) which defines it as "The combination of management, financial, economic, engineering and other practices applied to physical assets with the objective of providing the required level of service in the most cost-effective manner."

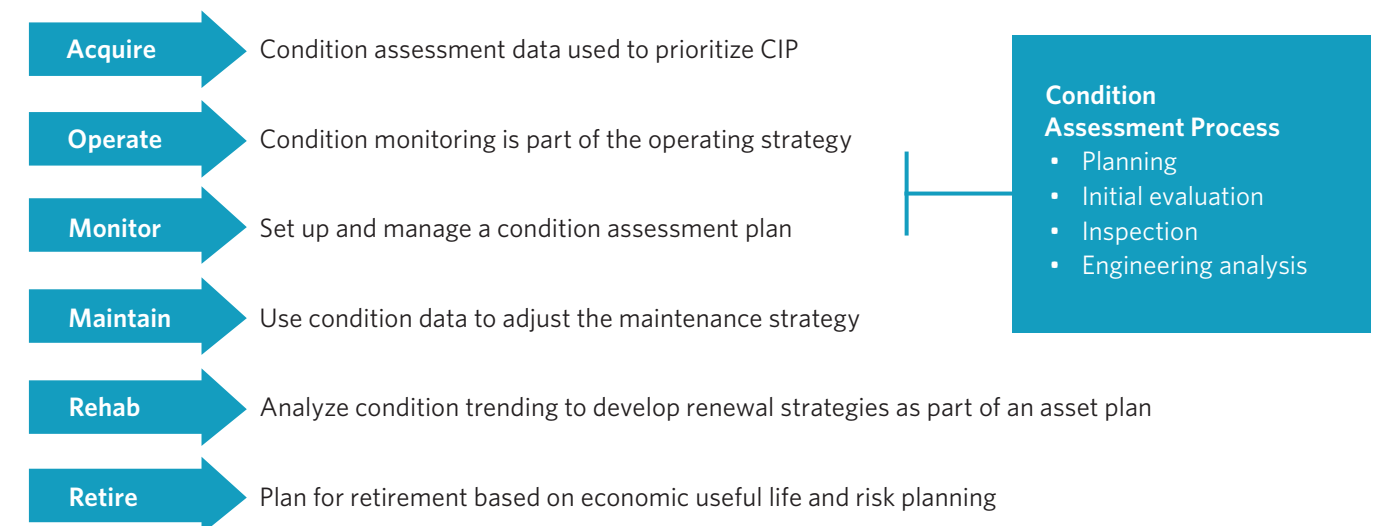
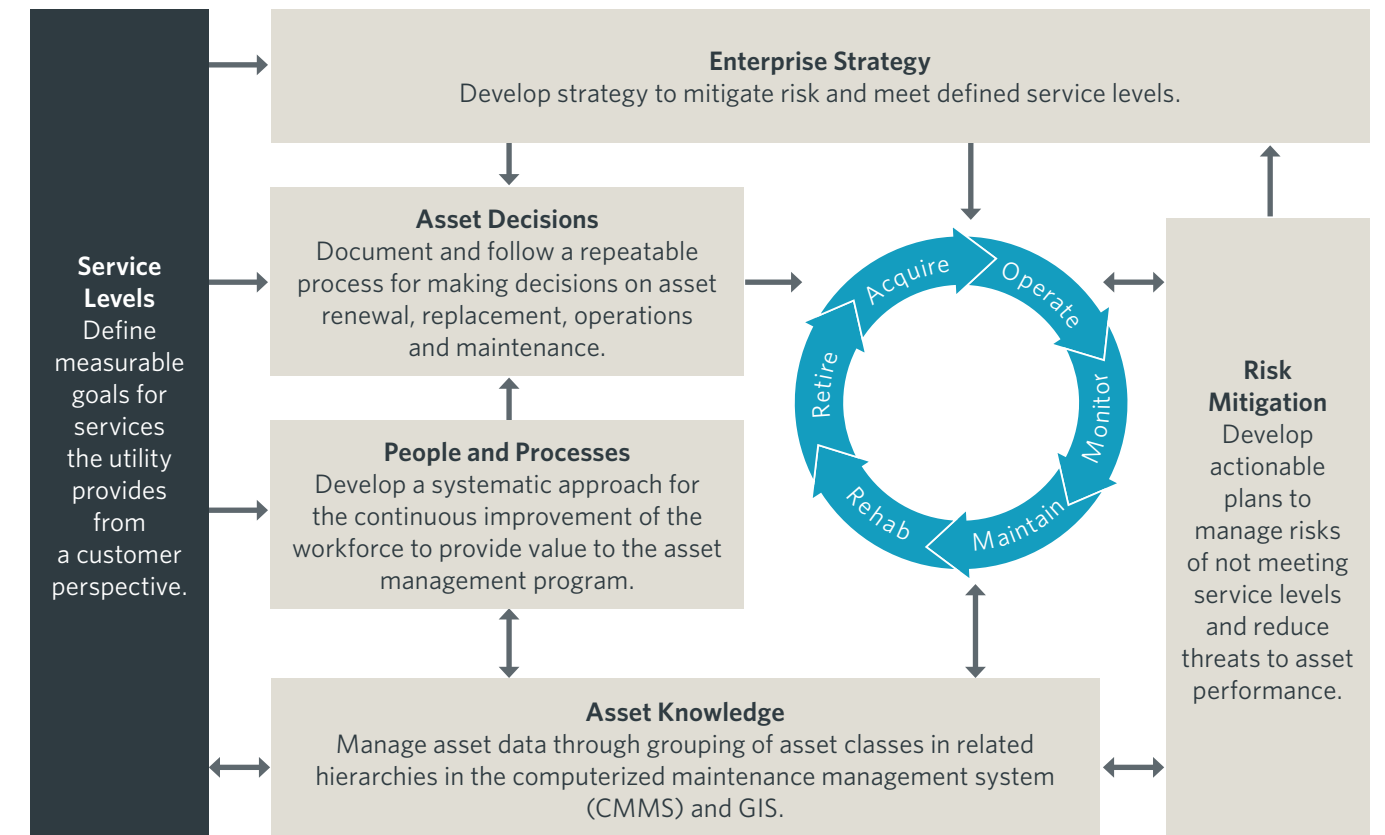
Managing Public Infrastructure Assets (NACWA (AMSA), AWWA, WEF, AWWA, 2001) defining it

as an integrated optimization process of "managing infrastructure assets to minimize the total cost of owning and operating them, while continuously delivering the service levels customers' desire, at acceptable levels of risk."

Managing assets is a process that requires a structured approach, defined resources and an ability to adapt to the changing needs of the system. HDR's approach is flexible and tailored to fit your needs. We succeed when you can make confident and defensible decisions based on your data.

Integrating Condition Assessment into Your Overall Asset Management Program

Asset management is a structured, data-driven approach to optimizing the lifecycle cost of asset ownership and focuses on providing reliable and dependable levels of customer service. Condition assessment is an integral part of the asset management process.





Collect the right data. When a pipe is exposed (e.g. break response, new tap installation, pipe renewal, and appurtenance renewal), it provides a unique opportunity to cost effectively gather condition assessment data (e.g. pipe samples, photos, soil samples) that can be crucial in making effective pipe management decisions.

Asset Management = Smart Investment

Successful asset management enables the efficient, strategic allocation of limited resources toward sustainable capital and operational programs. Infrastructure and public works managers face increasing pressures to continue to provide high quality services to their customers. HDR believes that asset management is not just about a single project. It is about developing the tools to leverage the data about the condition of your assets with your institutional knowledge to achieve organizational objectives.

The Asset Management Process Ask Yourself:

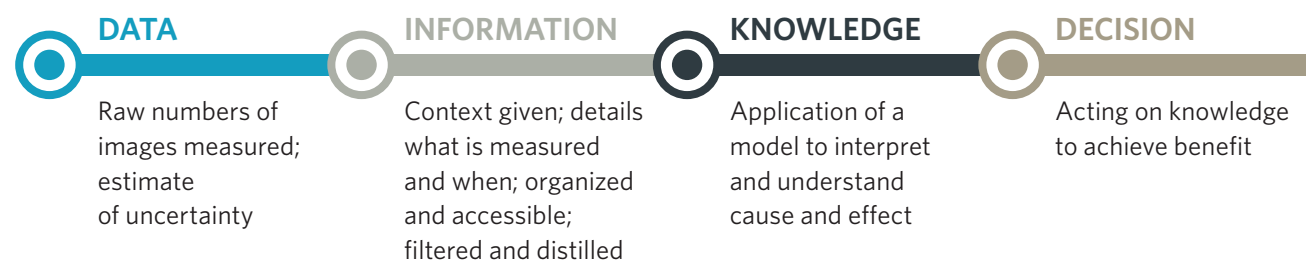
- What is the current state of my assets?
- What is my required level of service?
- What assets are critical to performance?
- What are my best investment strategies?
- What is my best long-term funding strategy?

Reasons to Create an Asset Management Strategy

RISK MANAGEMENT	DESIRED OUTCOMES
<ul style="list-style-type: none"> • Aging infrastructure • Uncertainty about when & where to invest • Encourage a thriving community • Loss of knowledge from an aging workforce 	<ul style="list-style-type: none"> • Predictable, prioritized investment levels • Predictable performance • Improved ability to engage stakeholders • Sustainable infrastructure • Regulatory compliance • Informed decision-making process

Transforming Condition Data into Actionable Decisions

HDR develops asset management decision support tools by building a practical and structured process for transforming data into actionable decisions. Our tools store data in an analyzable format to streamline development of reporting dashboards.

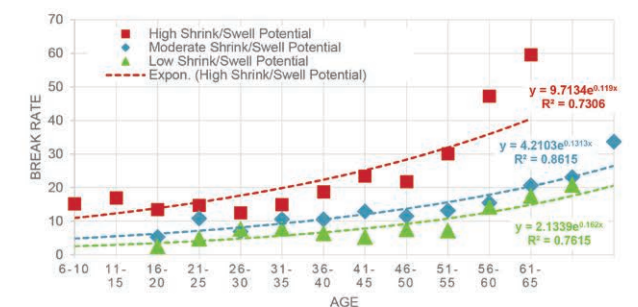
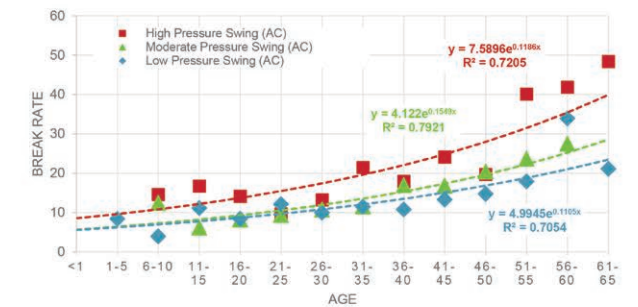


Asset Management and Water Distribution Systems

Extending asset life varies among utilities and depends upon factors such as system performance, size and effectiveness of a utility's historic renewal program and physical characteristics such as material quality, construction quality, system age, strength of deterioration sources, and stresses (internal and external). These characteristics and condition assessment data can be evaluated to identify priorities and cost saving alternatives to replacement such as pressure reduction and corrosion protection.

Recent advances in analytical techniques can support utilities to better understand and communicate investment scenarios by forecasting level of service several decades into the future including breaks per year, break response staff needs, customer outages and flow not delivered.

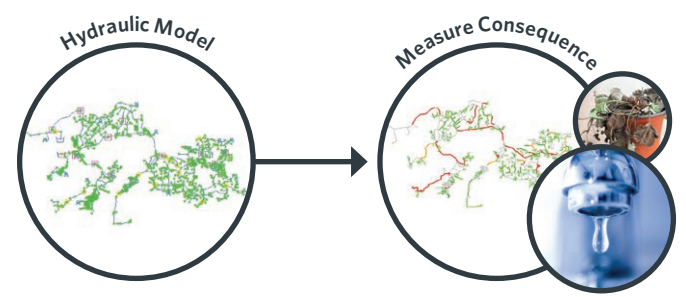
As utilities evolve, implementation of utility-wide condition assessment and renewal strategy is appropriate to cost-effectively sustain desired service levels while avoiding future rate shock when addressing aging infrastructure.



Variation in deterioration rates can be measured using historic break data to quantify which factors drive some pipes to deteriorate faster than others. At this utility, pipes exposed to excessive ground movement (high shrink/swell) and pressure variations (high pressure swing) deteriorate faster and will have a shorter life.

Water distribution utilities in the US replace approximately **0.37 percent** of their pipelines each year (AWWA, 2003, AWWA 2011).

At this pace, it would take a utility roughly **270 years** to replace its entire system.



Not all failures are created equal. By fully leveraging an existing hydraulic model, utilities can cost-effectively quantify the consequence of failure for each pipe in the systems in terms of customer outages, critical customer outages, water lost and demand not delivered.



With competing goals, asset management helps manage complexity and use resources efficiently.



Asset Management and Wastewater Collection Systems

The true renewal need for wastewater systems varies widely from utility to utility and depends on system performance, regulatory drivers and system characteristics. Age alone is not a good indicator of investment needs for replacement or extending asset life. Analytical tools and decision logic can be applied to wastewater condition assessment data to support improved decision making for managing assets by balancing cost, risk and level of service.

Effective programs incorporate condition assessment data and risk to optimize operations and maintenance. Condition data can be applied to increase or reduce the frequency and type of preventative maintenance programs to manage risk, extend asset life and save resources.

