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Requirements for a sound asset management system are laid out.
Specific considerations in infrastructure management are highlighted, but recommendations extend across capital asset classes.
Characteristics of a sound asset management system are detailed.

the private sector, but is more closely akin to resilience in public, and for that matter, privately owned infrastructure.

This Executive Insight focuses on five questions:

1. What is asset management?
2. What are the characteristics of a sound asset management system?
3. What are the impediments or obstacles with respect to achieving its strategic intent?
4. What tactical challenges exist?
5. How is success defined and achieved?

While there is a primary focus on infrastructure asset management, many of the conclusions and recommendations here are more broadly applicable. Effective asset management arguably begins at the planning stage, but in new assets the population of the initial asset database begins in the engineering and construction phase.

The classical definition of asset management is “the management of fixed capital assets to minimize the total cost of owning and operating them while providing the desired level of service at an acceptable level of risk.” Typically, risk is calculated as a cost and often is not managed separately.

This definition increasingly will prove inadequate or, at the very least, incomplete. A shift towards “life cycle analysis” occurs when:

1. Not only risk but uncertainty associated with long project delivery durations and increasingly longer asset lifetimes must be recognized and reflected in the analysis and management of capital assets. Are the assumptions made today assured of continued validity throughout a 100-year lifetime? How are capital assets provided and optionally preserved in the face of an unknowable future?
2. Life cycle performance, often measured by life cycle cost, is not a sufficiently adequate measure of an asset's performance. Increasingly, however, the environmental and social performance attributes over its full lifetime must be considered. Nowhere may this be more important than in public infrastructure, where a “sweet spot” must be found on financial, environmental, and social performance. This change alone suggests an expanded and increasingly important role for proactive management of infrastructure assets.
3. The true measure of a well-managed asset is not just one configured to provide the lowest life cycle cost, but rather the highest life cycle returns. This means delivering an asset that is positioned to

maintained. This sustained resilience is an essential objective of asset management systems in the near future.

Consider two descriptions of an asset management system:

The first impediment to a sound asset management system may be an inadequate definition of what it is. True success must first be recognized in order to have any chance of achieving it.

Asset management must be not only systematic. It must be systemic. The asset management focus must consider total asset portfolio performance, not just individual elements. This is particularly true when higher level system characteristics such as resilience are considered.

Sound asset management systems exhibit several characteristics, such as:

- Clearly defined and well-communicated strategic business objectives.

- Executive recognition of the value that asset management brings and a commitment to making it successful.

- A focus on addressing the strategic-level impediments that may exist.

- Clarity in identifying and removing the tactical-level impediments that such programs face.

- Recognition of what success looks like.

Asset management, with its strategic focus across an entire asset portfolio and its use of quality information, fosters decision-making process that encourages preventive strategies rather than reactive "worst-first" approaches.

Major impediments that a comprehensive asset management strategy faces can be categorized simplistically into strategic and tactical. Of the various strategic impediments faced, the first is a lack of clarity on what is meant by asset management. It is not a maintenance program on steroids. Rather, it is much more, going to the strategic business objectives of the asset owner. In considering strategic impediments, it is useful to consider "gaps" that are often encountered in the asset owner's approach either when setting out on implementation or in programs not delivering adequate results.

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Inadequate asset surveys	Data quality and transition
Inadequate maintenance records	Limited system users
Weak data entry protocols	

making and driving asset management. In today PPPs, the provider is compensated for being able to run a train within say a six-minute window or is only paid for every lane-mile available to move traffic.

Asset management processes are regularly monitored as well as the data it produces. An effective asset management system underpins not only day to day maintenance activities, but longer-term strategic investment decisions. These processes support the case for funding requests in ways not previously possible. As they demonstrate achievement and improvement in outcomes, the processes become fundamental to strategy development, operational management, and reinvestment case development.

Asset-by-

1. A key goal is reducing asset ownership costs. Asset management accomplishes this through the classical plan/act/measure/control cycle. Asset management works by preparing plans for assets, carrying out the plans, measuring the results, and updating the plans accordingly.
 2. Having cost of ownership plans for all significant assets means the asset owner can accurately forecast aggregate ownership costs well into the future, giving a solid foundation for long-range funding plans.
- Asset Planning has three objectives:
 - 1.

- 2. Define condition monitoring program
- 3. Integrate condition monitoring with other management and work processes

Asset financing is facilitated by more readily identifying refurbishment and replacement needs.

Asset financial reporting has the following two objectives:

- 1. Improve consistency of asset accounting database.
- 2. Improve change management procedures in fixed asset records.

Successful asset management programs provide strategic and tactical benefits such as those summarized in Table 2.

Improved reliability	Reduced labor costs
Empowered workforce	Reduced materials/spare parts costs
Streamlined organizational structure	Increased productivity
Achieved business case for the improvement investment	St431.44 reW*hBT/F4 10.98 Tf1 0 0 114 ref5

