

Solving the Information Puzzle: Why Asset Information is key to improving Asset Management at NYPA

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The New York Power Authority (NYPA) is the largest state public power organization in the United States, with 16 generating facilities and 1,400 circuit miles of transmission lines. As part of its 2014-19 Strategic Vision¹, NYPA identified Asset Management as one of its six Strategic Initiatives. Under that initiative, in 2015 an assessment was performed of NYPA's Asset Management maturity, which provided a maturity score in each of the thirty-nine subjects of Asset Management adopted by the Global Forum for Maintenance and Asset Management (GFMAM) and the Institute of Asset Management (IAM). Four of the thirty-nine subjects relate to Asset Information (Asset Information Strategy, Asset Information Standards, Asset Information Systems and Data & Information Management), and the assessment identified several related opportunities for improvement.

In response to the assessment, NYPA established an Asset Information Group, headed by an Asset Information Director, who made the development of an Asset Information Strategy a key first step for his new group: the remainder of this article describes the approach NYPA took to develop its Asset Information Strategy, along with some of the key findings and next steps. The approach NYPA took can be summarized as:

1. Define the scope of Asset Information
2. Identify Asset Information stakeholders, their needs and challenges
3. Compile and prioritize key recommendations and develop an Asset Information Strategy

1. Define the scope of Asset Information

Like gasoline in a car, information is the fuel for an organization. Without good information, the organization risks grinding to a halt: the right decisions cannot be made in a timely manner, and necessary activities cannot be completed. However, not all information in an organization is Asset Information – agreeing on the scope of Asset Information was an important step at NYPA to avoid “boiling the ocean”.

The IAM defines Asset Information as the “combination of data about physical assets used to inform decisions about how they are managed, both for short-term operational purposes and for long-term strategic planning”. Based on this definition, at NYPA we identified ten different categories of information used to support short and long-term Asset Management decision-making.

This included static or slowly-changing information, such as:

1. Assets – including nameplate, condition, criticality, install date and location

¹ <http://www.nyopa.gov/-/media/nyopa/documents/document-library/governance/strategic-vision-2014-2019.pdf>

2. Opex planning – including maintenance plans, job plans, and labor categories (crafts)
3. Capex planning – including planned capital and non-recurring O&M work
4. Financial – including budgets, cost centers and fixed asset registers.

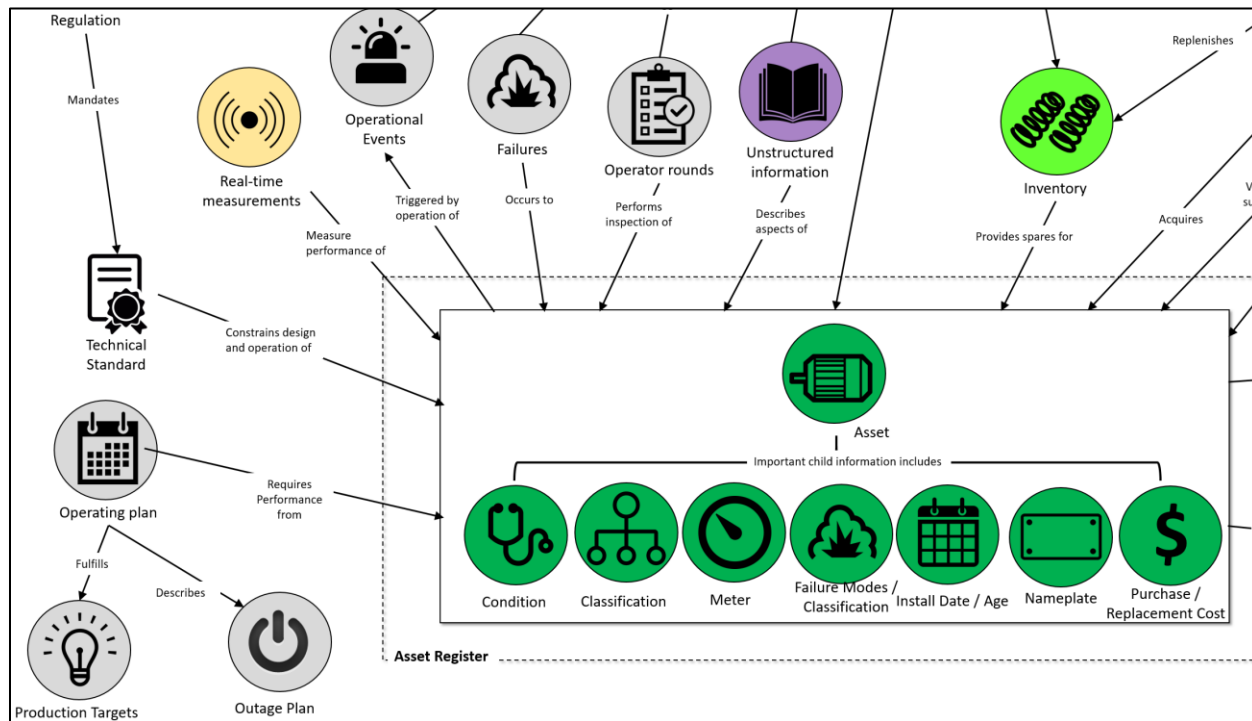
Dynamic information, such as

5. Real-time – including temperature, pressure, and vibration.
6. Operational – including operating plans, operational events and asset failures
7. Work management – including work orders and failure codes
8. Supply chain – including inventory and purchase orders

We also identified two other categories:

9. Unstructured information, including PDF drawings, photos and manuals
10. Derived information, which results from combining the other nine categories of information and includes performance trends, whole-life cost information, and investment priorities.

We developed a Conceptual Information Model that identified the different Asset Information entities at NYPA and the relationships between them. This model can form the basis for future, more detailed, logical data models and provides an excellent “business level” overview of what constitutes Asset Information at NYPA. An extract from our model is embedded below:

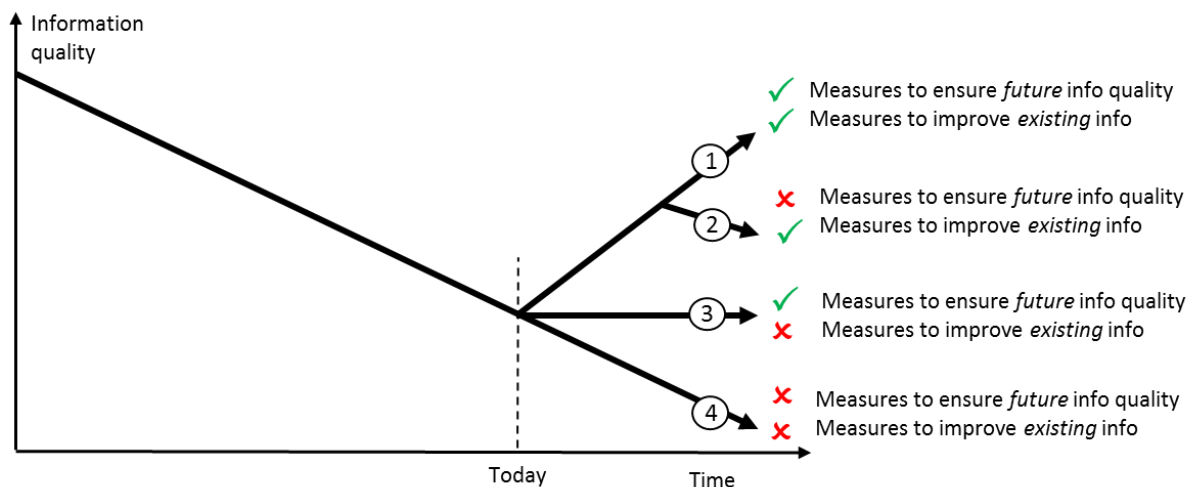


2. Identify Asset Information stakeholders and determine needs and challenges

Considering the scope of Asset Information at NYPA helped us to identify who worked with Asset Information. We held twenty-five interviews around the organization to understand what asset-related decisions or activities these stakeholders were responsible for, what Asset Information they needed to support those, what systems held the information, and what information-related challenges they were facing. Such interviews helped us to further understand and refine our Conceptual Information model, which in turn led us to explore new avenues with new stakeholders – it was an iterative process.

Through the interviews, a set of key Asset Information challenges began to emerge. Chief among them was that the quality of information residing in our Asset Information systems (including, but not limited to, Maximo) was hindering key Asset Management activities, such as the development of Asset Management Plans, the optimization of our capital portfolio and our need to combine Maximo information with real-time data from asset sensors to enable improved operational decision-making.

We realized that tackling this challenge would require a two-pronged approach: improvements must be made to low-quality information that has already been collected, and measures must be put in place to ensure the quality of information remains sufficient going forward. The diagram below illustrates this conceptually. Taking no action (4) will see information quality continue to decrease over time. Implementing measures to ensure future information quality (3) will maintain steady level of quality moving forward but will not address poor quality historical records that are already captured. Improving existing information but not implementing measures to ensure future information quality (2) will see an initial improvement in information quality, but over time information quality will start to decrease again. It is only through the combination of improving existing information *and* implementing measures to ensure information quality going forward (1) that information quality will trend upwards over time.



3. Agree key recommendations and develop an Asset Information Strategy

Techniques to improve existing information quality will vary according to the type and priority of that information. Some information might warrant more expensive, targeted interventions, such as updating individual records via field-based inspections using handheld devices. Some information might be better suited to office-based review and update on an individual record-by-record basis. Some information could be improved through batch-updates based on business rules, such as assuming all assets over a certain age to be in poor condition. Our chosen approach will likely comprise a combination of all three and we are currently performing the analysis to make this determination based on priority, cost and resources.

Measures to ensure NYPA's information quality remains sustainably high in the future, comprise three categories:

- a. Developing **standards and specifications** for Asset Information. Although NYPA has some Asset Information standards today, through this process we have identified several opportunities for improvement. Based on the needs and priorities we have gathered through the interviews, we plan to develop standards that define what information we need to collect, in what format and to what quality. Building on the standards, will be more detailed specifications including a Data Dictionary and Excel-based Data Load Templates for Maximo.
- b. Ensuring our **Asset Information systems** meet our needs. NYPA has over 300 systems and applications spread across the business, and we identified about twenty of these as being our core Asset Information systems – this includes Maximo, SAP, MS Project, Primavera P6, SharePoint, real-time sensors and systems, and several internally-developed outage management systems. Our goal in this area is to ensure the systems meet the information needs of the business, and we plan to develop a roadmap for our Asset Information Systems, particularly as we increase the real-time data feeds from our assets and move to handheld and cloud-based computing environments.
- c. Developing appropriate **Data and Information Management**. Key to ensuring good long-term Asset Information at NYPA is the implementation of management processes and structures. These will include regular information quality audits to ensure the new standards are being adhered to, restructuring and adding resources to the Asset Information Group, clearly defining the roles and responsibilities for Asset Information across NYPA, putting in place a new Asset Information sub-committee, updating our training materials to match the new standards and seeking opportunities to optimize related processes.

An important document for the Asset Information Group is our **Asset Information Strategy** (AIS), which describes the scope of Asset Information at NYPA; our information stakeholders' needs and challenges; an As-Is and To-Be state for our standards, systems and management; and a two-year Roadmap of activity to reach our desired To-Be state. Following internal review and outreach, we have now finalized our AIS and it forms the key strategic plan and justification for the Asset Information Group's work.

NYPA has been an information-intensive organization for decades, and now with strategic emphasis on asset management, NYPA aims to become the first digital utility. With the development of an Asset Information Strategy, and associated Roadmap, we now have a clear plan for improving our historical Asset Information and ensuring its quality remains high in the years to come through the tailored application of standards, systems and management processes.



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Simon Smith helps asset-intensive, operationally-complex organizations address their critical issues through the tailored application of Asset Management, Systems Engineering and Business Analysis principles. He has worked with public agencies across North America and UK including the New York MTA, NYPA, PANYNJ, MARTA, Denver RTD, BART, SFMTA, Highways England and the UK Department for Transport. Simon has a first-class degree in Mathematics from the University of Leeds and is currently a Principal Consultant at AMCL, the world's leading specialist Asset Management consultancy.