Asset Integration Assessment:

A Framework for Planning, Sourcing & Integrating Analytical Instrumentation in the Laboratory

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Abstract

The framework described herein is useful for laboratory managers who are responsible for maximizing the useful life of analytical instrumentation in their laboratory, and who can benefit from a methodical approach that takes into consideration multiple factors that enable the successful integration of additional analytical instrumentation into their laboratory.

The Asset Integration Assessment (AIA) framework is an objective approach to optimize instrument planning, sourcing and procurement, along with the integration of instrumentation into the lab workflow for high performance and efficiency. The AIA approach was developed through an understanding of the myriad of factors that effect instrumentation lifecycle value and assists in the decision making that can have long lasting scientific and business impact. The framework is applicable for laboratories in all industries. It is also useful for firms developing capital plans for sourcing analytical instrumentation to meet the scientific mission of the organization regardless of economic conditions, lab size, structure or stage of development.

In this brief, the AIA framework is discussed with respect to instrument service management, replacement, redeployment and disposal.

Comprehensive in scope

The AIA framework takes into account specific factors which are weighted or ranked, along with business factors, training, method development and other considerations to determine the best fit for a lab facility and organization.

- **Manufacturer(s) instruments & performance**
- **Costs and terms**
- **Warranty**
- **Facility**
  - Mission
  - Science
  - Go to Market plan
  - Capabilities
  - Finances, and more
- **Maintenance/Operations**
  - Service record
  - Age and condition
  - Utilization level
  - Clinical acceptability
  - Technology status
  - Parts availability (current & future)
  - Projected annual maintenance costs
  - Projected reliability (utilization, user training)
  - Spare parts

Factors of convergence and divergence

AIA helps in the decision making process, as it takes into account factors that can converge – or diverge – over time:

- **Retention, purchase, disposition decision improvement**
- **Financial limitations**
- **Anticipate major repairs conducted or known**
- **Competitive pricing considerations**
- **Standardization**
- **Known parts availability problems**
- **Training and in-house maintenance**
- **Utilization rate (and redundancy, if needed)**
- **Footprint in facility (space limitations)**
- **Technology status**

The AIA process is conducted in 3 phases

Phase I: Initial Assessment

The initial assessment consists of a needs analysis used to inventory the current laboratory assets taking into account age, condition, software, value, criticality, utilization and service record. The facility and its structure are also taken into account. As part of this phase, a contextual understanding is reached to ensure that the business needs are aligned with the science plan.

Phase II: Operational Canvas

The second phase is a review of the various factors affecting laboratory asset acquisition, installation and integration. Not surprisingly, knowing which factors to sort, rank, and weigh leads to priority determination of the most important factors to take into consideration. Knowledge of each factor transforms raw data into insights (some more important than others in terms of their effect) within the operational canvas.

Business intelligence is then realized through a ranking process which takes into account factors such as training, software, the age of the asset, business terms, utilization, service record, footprint, instrument condition and criticality. The importance of one factor over another helps to define scope as well as direction of any actions to be taken. There are no off-the shelf solutions, and analysis will vary widely during this phase prior to full implementation through the asset plan phase (see below).

It is through the AIA framework within the Operational Canvas phase that all considerations are articulated and brought forward into the discussion.

Phase III: Optimized Integration Asset Plan

With factors prioritized according to different criteria, customized to each business entity, a framework is realized that ensures development of an asset plan that fits the organization. The AIA framework results in an asset plan that is well-conceived leading to an optimized asset integration. While certain future influential events can rarely be anticipated, knowledge of the industry trends and drivers, histories and technologies, can provide important insight that impacts decision making, and the eventual asset plan creation and implementation.

The sum total of the three phases: initial assessment, operational canvas, and optimized integration asset plan are a well-conceived, structurally sound and coherent approach to the acquisition, integration and utilization of high value analytical instrumentation assets found in the laboratory.

The outcome realized from this multi-phased initiative is a comprehensive, integrated resource optimized strategy.

Summary/Conclusions

Integration of analytical instrumentation is a function of many factors. An Asset Integration Assessment framework ensures a successful integration of instrumentation into the laboratory using a holistic performance lifecycle perspective.

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Factors Affecting Laboratory Assets Acquisition, Installation & Integration

Considerations when technology should be replaced

- **Safety and regulatory**
- **When it fails at an inopportune time, i.e., putting a critical income stream in jeopardy**
- **When the technology is understood to be obsolete, i.e., putting competitor in a better position to do the science that you do, etc.**
- **When it's at the "end of its useful life" or perceived to be**
- **When the cost to own it is too high**
- **When an innovative new technology is introduced**

As technological advancements accelerate over time, so do the requirements to make decisions based on a number of complex interrelated factors affecting the value and effectiveness of assets that are crucial to the success of the operation.