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Gaining Insights from Big Data in Research Laboratories

As Professor Gary King at Weatherhead University noted, "It is not the quantity of data that is revolutionary. The big data revolution is that now we can do something with the data¹."

Scientific research laboratories face the challenge of managing not only the data generated by many diverse instruments, but also the asset operational data collected from the instruments themselves. Scores of companies report that they are still struggling to navigate through all of the data and are unable to extract insights that can lead to increased efficiencies².

A company's ability to capture, connect, and extract value from operational data is critical to its ability to run efficiently³. Through the use of sophisticated analytics tools, companies now have the ability to correlate instrument usage, service data, and instrument age to extract actionable insights that lead to improved efficiencies and laboratory optimization. We have identified three key areas of opportunity where this data can be exploited.

Capital Expenditure Planning

Managers of R&D labs are continually tasked with increasing the efficiency of their labs with smaller budgets. By correlating instrument asset with service data and age, lab management can:

- Identify equipment for decommissioning or repurposing based on real data
- Through instrument lifecycle analysis, identify assets that should be replaced along with hard data justification (Figure 1)

By then taking the appropriate actions, laboratory managers can decrease operating costs and minimize instrument downtime to improve productivity.

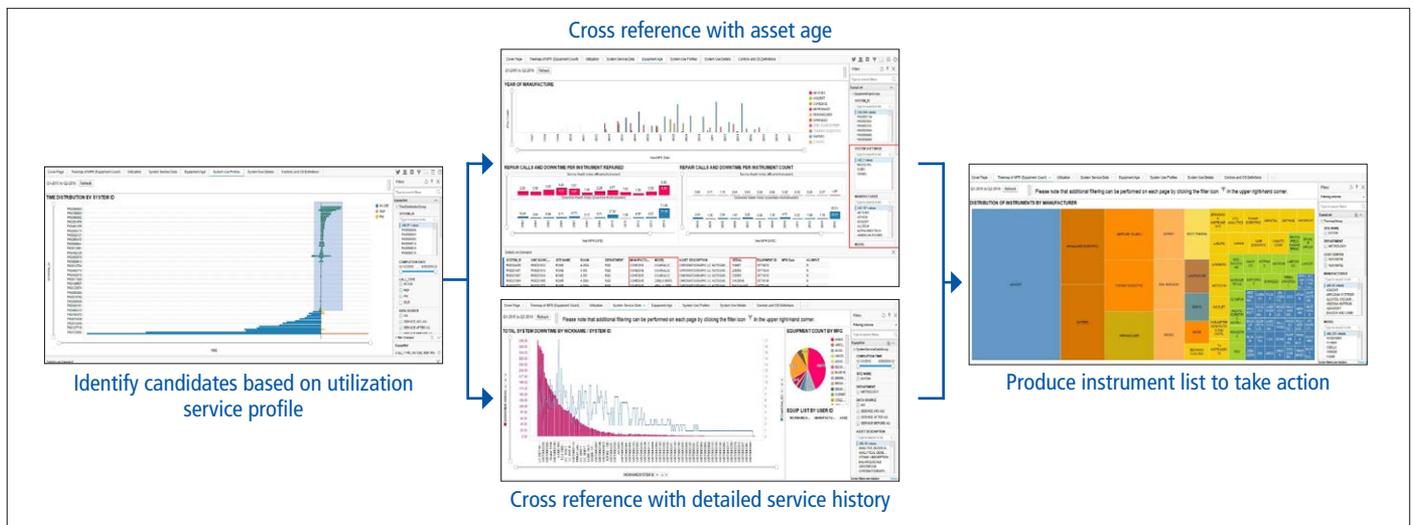


Figure 1. Instrument Lifecycle Analysis.

Equipment Resource Management

Laboratory management is often faced with the challenge of supporting unexpected research needs. In addition, changes to business priorities can impact sample throughput needs for different laboratories in different ways. To better understand the impact on lab workflow, management now can analyze utilization data to support instrument load balancing to identify which analytical systems are needed to support new requirements, and in which labs. The result is a more even distribution of instrument utilization that leads to increased efficiencies.

Maintenance Plan Optimization

Implementing condition-based maintenance programs helps to ensure appropriate service levels. Together, procurement management and lab management can make decisions based on real data to optimize service contracts or switch to on-demand time and materials maintenance. Furthermore, data can be used to schedule preventive maintenance prior to heavy use cycles.

Informatics and Analytics Tools

How does the data become transformed into valuable insights?

We believe there are four enabling capabilities:

- The ability to capture, integrate, and visualize instrument usage data and operational / service data
- The service, domain, and site-specific experience needed to assure appropriate context is applied
- Template-driven, smart workflows that seamlessly highlight opportunity areas
- The optional ability for a service partner to deliver data-driven recommendations and preferred outcomes by deriving insights from integrated operational and asset utilization data.

References

1. Gary King, "Why 'Big Data' Is a Big Deal," Harvard Magazine (March-April 2014), <http://harvardmagazine.com/2014/03/why-big-data-is-a-big-deal>
2. Angela Hausman, "Analyzing Big Data: Handling the Avalanche," Business To Community (February 16, 2014), <http://www.business2community.com/big-data/analyzing-big-data-handling-avalanche-0779623#!PDcGF>.
3. Glyn Milliams and Dr. Paul Denny Gouldson, "Informatics: The Same Old Problems, Just Bigger," Drug Discovery World (Winter 2013/2014), p.29.

For more information about how we can help you optimize your instrument lifecycle performance, contact your local OneSource representative or visit www.perkinelmer.com/OneSource

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