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Asset Utilization Use Case Supported by TetraScience: Example Savings

Laboratory organizations are increasingly asked to improve their productivity while reducing their investments like capital expenditure (CapEx). One way to minimize these costs can be optimizing the usage of laboratory equipment.

This requires visibility into data across the enterprise about the number, types, location, and usage of instruments and consumables. But obtaining the required metrics of lab instruments is complex and labor-intensive and often prevents organizations from tapping into the potential of lab asset optimization.

Challenges

Companies face several challenges in collecting and leveraging lab instrument data:

- **Inefficient and incomplete data collection:** Instrument utilization data is often gathered manually and extrapolated—a slow and error-prone process, if done at all.
- **Limited insights:** Many organizations lack access to consolidated data on instruments and consumables across the enterprise, making it difficult to compare scheduled and actual usage.
- **Unnecessary downtime:** Instruments experiencing frequent and unpredictable disruptions due to unnecessary maintenance or unexpected instrument breakdown lower productivity and efficiency.
- **Suboptimal capital spending:** CapEx decisions are made with little knowledge of the current productivity of lab equipment.

Solution

Organizations that leverage TetraScience to support their asset utilization use case, will be able to utilize their instrument-related data to get an overview of the utilization of their lab equipment fleet. The Tetra Scientific Data and AI Cloud automatically collects data from the instruments about the:

- **Instrument:** which instrument and which consumable (i.e. chromatographic column) has been used
- **User:** who ran the experiment
- **Date/time:** when the measurement has been performed
- **Method:** what procedure was used
- **Run duration:** how long the experiment ran
- **Result:** what data has been acquired

This data is then transformed and made available for:

- Visualizing instrument usage
- Trending instrument and method performance
- Tracking consumable usage

Value

With TetraScience, organizations can:

- Gain visibility into enterprise-wide instrument and consumable usage.
- Improve the productivity of their laboratory instruments.
- Adapt investments in maintenance contracts based on actual instrument usage.
- Optimize CapEx deployment by avoiding or delaying new instrument purchases or by investing into heavily used equipment based on instrument utilization and performance.
- Surface data that enables predictive maintenance resulting in less unplanned downtime and avoiding potential compliance issues.

We identified the following key savings areas:

1. **Eliminating unnecessary maintenance contracts:** Organizations can identify instruments with little or no usage and eliminate redundant service contracts based on business criticality.
2. **Reducing maintenance contract levels:** For instruments with low usage, companies can adjust the level of service contracts.
3. **Avoiding unnecessary downtime:** Insights allow predictive maintenance that helps avoid downtime due to unnecessary maintenance and unplanned instrument downtime due to failure.
4. **Optimizing instrument investments:** Relocation or repurposing of underutilized instruments and identifying redundant equipment can reduce the need for new purchases.

Example calculation of expected savings*:

	Eliminating unnecessary maintenance contracts	Reducing maintenance contract levels	Avoiding unnecessary & unplanned downtime	Optimizing instrument investments
Basic info	2,000 instruments	2,000 instruments	2,000 instruments	
Applicable to	75% of instruments (25% are simple instruments, not under contract)	75% of instruments (25% are simple instruments, not under contract)	⅓ of instruments' downtime is unnecessary	
Costs	$5,000 per year per instrument for contract on average	$5,000 per year per instrument for contract on average	$7,500 per year per instrument lost on productivity	$15 M investment budget for instruments
Expectation	15% of contracts can be eliminated due to low / no usage identified	⅓ of current maintenance contracts can be reduced by 50% due to low usage identified	Uptime can be increased by 51% through predictive maintenance**	8% of instrument purchases can be avoided by repurposing/ relocating
Savings per year:	$1,125,000	$1,250,000	$2,550,000	$1,200,000
Total savings per year:			$6,125,000	

* Customer reported estimates

** How Much Money Can Predictive Maintenance Save An Industrial Company?

Conclusion

Laboratory organizations that have access to their instrument-related data and can use them for analytics and visualization are able to gain actionable insights into instrument usage and performance. They can reduce unnecessary costs for maintenance and make strategic decisions on instrument allocation and purchase while increasing lab productivity.