The Case for Data Integration

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Utilities have traditionally used some combination of technologies, tools, and processes for utility vegetation management (UVM). This includes manual, paper-based approaches, basic desktop or online data and mapping tools, and high-end, custom-developed systems which cost millions of dollars. While it's rare to find two utilities with identical VM programs, they are all but guaranteed to share one common characteristic. They are driven primarily by the current state of utility technology adoption. Almost every aspect of UVM is being forced to function in highly fragmented silos of data. This isolates analysis, organizations, decision-making, and workflows. The issue is that these are not typically integrated holistically into one system. The pervasiveness of these silos has severely affected the efficiency and effectiveness of practically every UVM program.

The solution is to break down the silos through the "integration" of existing applications and systems. Integration, as defined in this context, means bringing together the separate applications and systems to perform a more complex task that cannot be done by any individual application or system. There are many factors in UVM which drive the need for integration as UVM shifts away from routine line clearance towards tailored approaches focused on reliability and condition-based maintenance strategies. One factor is the need for large, more diverse data sets from different sources like micro weather stations and remote sensing data. Another factor is the increasing demand on the functionality and capabilities of what UVM should deliver, as in the case of the fires in California.

The proper integration of existing technologies and business processes will benefit utilities and improve UVM in many ways. It will improve data sharing, collaboration, and work hand-offs between departments and contractors, reducing the need for the manual handling of data. A sharable knowledge base with a single point of access also leads to greater efficiency in processes for individual UVM programs, including herbicide and pruning.

An interesting case study of integration in action is the collaboration of Davey Resource Group (DRG) and EcoLayers to develop unique solutions for integrated UVM. One of the early implementations will be at the

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City of Palo Alto, California, which owns and operates its own power distribution network. The City's Urban Forestry Section of the Public Works Department is responsible for both utility vegetation and urban forestry management.

The dilemma for them is that these two areas, which already struggle to find an appropriate middle ground on disparate goals, have been managed as separate programs. Their data was kept entirely in "silos" using paper-based processes and other legacy systems. For many years, the city used DRG's TreeKeeper platform to manage the urban forestry and track work on street and park trees. Utility line clearance used a variety of systems, including pen and paper, to document and manage the work performed.

The city has recently adopted Eco-Layer's Tree Asset Manager (TreeAM) for its UVM. TreeAM is a software platform for the systemic management of vegetation as environmental assets. Its key capabilities include content aggregation from diverse sources, data and process integration, stakeholder collaboration, sophisticated modeling and analytics, customizable workflows, and an enterprise-grade asset management system. This aids in the integration of UVM with urban forestry, which is an important objective. Now and in the foreseeable future, urban forestry programs will continue to be managed in TreeKeeper, with utility programs managed in TreeAM.

From the City's perspective, both street trees and utility trees are part of the same urban forest, which suggests the need for the integrated management of these two programs. This scenario makes a compelling case for the integration of TreeAM and TreeKeeper, as conceptually illustrated in the figure below.

The primary integration objective is to enable the exchange and sharing of data between TreeKeeper and TreeAM through the use of application programming interfaces (APIs). The integration will also address the frequency of data transfers, compatibility between the data structures and organization, and data security, among other issues.

This one-time integration effort will provide recurring, long-term benefits to the city from the combined capabilities of both systems. Urban forest programs can continue to be managed using TreeKeeper. TreeAM will enable the integration between UVM and urban forestry based on the most current data, with the ability to bring in new data sets in the future (e.g., LiDAR, weather), improve data sharing and collaboration across the organization, and apply a new class of analytical and decision support tools.

As Peter Bollinger, Program Manager at the City of Palo Alto, said, "The integration of TreeKeeper and TreeAM is something we here in the City of Palo Alto Urban Forestry Section are very excited about. Our city staff and field crews are very comfortable working in the TreeKeeper framework. Adding the modeling and analysis capabilities of TreeAM to the TreeKeeper user interface brings us the best of both systems without having to train users on a new program. This increase in functionality, along with a reduction in data silos, will play an important part in our transition from a cycle-based UVM program to a more risk-focused UVM program."

Integration of existing data and systems can be one of the most cost-effective strategies for many utilities to improve their UVM programs.

Technology Integration: Working with Existing Systems