Electronic O&M manuals can provide rapid access to essential information while meeting regulatory requirements for facility documentation.

Sustaining institutional knowledge is essential across all utility operations. The industry and regulatory trend toward maintaining baseline operation and maintenance information is the electronic medium—primarily web-based information systems. Knowledge capture helps bridge the gaps created by changing workforces while providing information in a format more common to the people entering the water treatment operations field.

Carollo teams with owners and operators in the planning and design of an EOM. Our approach helps make sure content is applicable to user’s needs with consistent organization and a familiar user interface. Carollo’s Microsoft SharePoint®-based EOMs also include many features specifically designed for this application, including search functions, streaming video libraries, and dynamic image mapping for hotspots and links.

“We were reluctant to change our process from the way it had always been. Steve patiently explained to us that our position may hold for the short term, but in the long term a comprehensive upgrade would be needed to meet the more restrictive nutrient removal criteria in permits that were on the horizon. He pointed out that the capital impact to the ratepayers would be much less now than in the future, and that we would have time to learn and understand how to operate the processes before we were forced to. His advice was solid, and convinced us to make the leap.”

– Marco Pedraza
Public Utility • Division Manager
Wastewater Operations • McAllen Texas
Carollo has provided numerous EOMs for water and wastewater facilities across the country. Our Operations Assistance Group supports the development of EOMs with the goal that the content of each EOM is comprehensive and usable by front-line staff in day-to-day operations and maintenance. While the EOM helps staff effectively operate, maintain, and manage day-to-day operations, it also provides a means to capture institutional knowledge through all stages of a facility’s life cycle.

The EOM establishes a documentation standard that owners can include in specifications for vendor and contractor submittals on future projects. EOMs are “living documents” created with industry-standard software, providing owners with a sustainable, user-friendly platform. Our EOMs can be installed on existing server hardware, reducing initial software costs for organizations that have Microsoft Windows Enterprise Software licenses. Carollo also has options for internet-based hosting of the EOM during development and for long-term operations. The cost of content development is similar to paper-based O&M manuals.

Information utilization requires flexible options that leverage multiple data sources. Carollo’s enterprise class Microsoft SharePoint® approach allows integration with other information systems such as computerized maintenance management systems, SCADA, laboratory information management systems, geographical information systems, and financial information systems. SharePoint® provides a mature, web-based platform that is supported by Microsoft and a large community of end-users, developers, and trainers. Carollo’s EOM design employs SharePoint® security, versioning, and integration with Microsoft Office software, enabling system administrators to manage role-based access for knowledge holders to proactively manage content using basic computer skills. We can produce EOMs in other formats, typically web-based. The OAG is also able to produce EOMs in other formats using multiple software platforms, typically web-based.

**BENEFITS OF EOMs INCLUDE:**
- Data safeguard for important O&M documents
- Familiar web-based user experience
- Centralized single point of reference
- Scalable to any facility or operation
- A baseline for troubleshooting
- Integrates with other systems
- Always current
- Fully searchable
- Can create accurate print copy
- Multimedia capabilities including graphics, photos, videos, and 3D
- Version control, approval workflows, and change history available for advanced editing

EOMs can provide rapid access to a wide variety of O&M information. Examples include:
- Standard Operating Procedures
- Area Procedures and Expectations
- Theories of Operation
- Troubleshooting Guides
- Equipment Set Points
- Alarms and Alarm Responses
- Vendor Equipment Manuals
- Maintenance Information
- Design Data
- As-Built Drawings
- Safety Data Sheets
- Operator Quizzes
- Construction Photos

**INTERRELATION BETWEEN O&M INFORMATION SYSTEMS**