

Utility Analysis and Improvement Methodology (UAIM) Workshop #2 Report

WEFTEC 2017

September 30, 2017

Chicago, IL



Prepared for:

Water Environment & Reuse Foundation

LIFT for Management (LIFT17T16)

December 2017



Table of Contents

Introduction	5
Water Sector Value Model, Version 1.0	5
Business Process Model and Notation	6
WSVM Levels 1 & 2	6
WSVM Level 3.....	8
Specialization of Utility Processes at Level 4+.....	9
Lessons Learned.....	10
Next Steps for the Water Sector Value Model	11
Phase 2: Defining the Teams and Planning the Work.....	13
Team 1 Breakout Session Report	13
Overall Mission for Team 1	13
Breakout session participants for Team 1.....	13
Summary of the breakout session for Team 1	14
Phase 2 Action items for Team 1.....	14
Team 2 Breakout Session Report	15
Overall Mission for Team 2	16
Breakout session participants for Team 2.....	16
Summary of the breakout session for Team 2	17
Phase 2 Action items for Team 2.....	19
Team 3 Breakout Session Report	19
Overall Mission for Team 3	19
Breakout session participants for Team 3.....	21
Summary of the breakout session for Team 3	21
Action items for Team 3	23



Introduction

The LIFT for Management project, which is sponsored by WE&RF, is intended to improve water and wastewater utility management by developing a business process model and methodology to understand and document the processes that deliver value to utilities through metrics and benchmarks.

The project is supported by direct financial contributions and extensive in-kind support by Utility Partners, including San Francisco PUC, MCES (Minneapolis), DC Water, Clean Water Services OR, Toho Water FL, King County WA, City of Charlotte, Louisville MSD, Avon Lake OH, Grand Rapids MI, Orange County FL, Alexandria Renew VA, VCS Denmark, Washington Suburban Sanitary Commission (MD), Hampton Roads Sanitary District, and Watercare (New Zealand). Consulting partners providing support for the project include CH2M, EMA, and Raftelis.

The project was started in December of 2016 and is structured in two phases. The project is scheduled to be completed in December 2018. Phase 1, which is almost complete, involves the development of the Water Sector Value Model (WSVM). Phase 2 involves the development of the Utility Analysis and Information Methodology (UAIM) and it is the subject of this workshop report.

The project schedule includes four important all-day workshops that include participation of the project team, utility partners, consulting partners, and the sponsoring organizations:

- Workshop 1 (held at the 2017 Utility Management Conference). This workshop produced the value chain model, and the top level of the Water Sector Value Model.
- Workshop 2 (held at 2017 WEFTEC). A summary of progress on the development of the Water Sector Value Model version 1.0 was presented and finalized the work on Phase 1. The workshop also included breakout sessions to plan Phase 2.
- Workshop 3 (scheduled for the 2018 Utility Management Conference). This workshop will be a working session and it will include progress reports from the three teams, as well as breakout sessions to plan the remaining work in Phase 2.
- Workshop 4 (scheduled for 2018 WEFTEC). This workshop will include the summary of progress on the project.

This workshop report provides a summary of the outcomes of Workshop 2. The report is organized around the workshop agenda, which is included as Appendix A.

Water Sector Value Model, Version 1.0

Achieving the goals of improving water and wastewater utility management requires a thorough understanding of how a utility works. A clear, cross-utility specification of processes that deliver value is often elusive because of overlapping processes, metrics and benchmarks that limit comparison, differing organization roles between utilities, and process interactions that create complexity. The Water Sector Value Model (WSVM) is designed to address these deficiencies through a systems approach using standard business process modeling methods,

notation, and tools. The goal is a framework or “reference model” that identifies common processes organized hierarchically, aligns metrics top to bottom in the process hierarchy, indicates roles and responsibilities for each process, and makes explicit the interaction points between processes.

Business Process Model and Notation

Water and wastewater utilities implement and coordinate a diverse set of business processes to manage the people and treatment technologies that realize the goal of delivering value to ratepayers, communities and the environment. The business process model and notation (BPMN) is a widely accepted standard specification for graphically representing business process models (www.bpmn.org). BPMN supports business process management including definition of concepts, methods, and techniques to support the design, administration, configuration, enactment, and analysis of business processes. BPMN is prescriptive. With sufficient detail, it enables analysis of business processes, including what-if simulations of different alternatives and real-time business process automation.

The goal of business process models is answering questions that water utilities ask every day:

- Which activities constitute a business process?
- Which decisions are taken?
- Which event starts a process?
- What is the ordering of events, decisions, and activities?
- What are the possible outcomes of the process?
- Who is responsible for conducting which activities?
- Where are the handovers of work in the process?
- Who takes which decisions in the process?
- Which errors can occur, and how do we react to them?

BPMN allows us to answer these questions and many more. Moreover, since it is a common reference, the WSVM can serve as a repository for the growing knowledge base of how high-performance water utilities work.

BPMN allows for high-level specification of processes in *process landscapes*, which the WSVM applies to depict high-level processes (i.e. at Levels 1 & 2). Process landscapes are handy at these levels as it is unnecessary to graphically depict complex work flow patterns, decisions, and responsibilities.

WSVM Levels 1 & 2

At Workshop 1, utility managers and consultants participating in the Lift for Management project identified a comprehensive set of business processes specific to water sector utilities. For several months after the conference, weekly meetings of six different research groups established the full breadth of relevant business processes, defined the organizational roles involved, and identified the metrics impacted by process performance. In August 2017, this information was consolidated into the Water Sector Value Model shown in Figure 1. The value

chain elements comprising the managed treatment systems are depicted in blue at the top of this figure, and the six major **Level 1** business processes are shown in green at the bottom. The value chain identifies the value components for a Water Treatment Utility and for a Wastewater Treatment Utility: on a high level, this is what customers and stakeholders expect to get from water sector utilities.

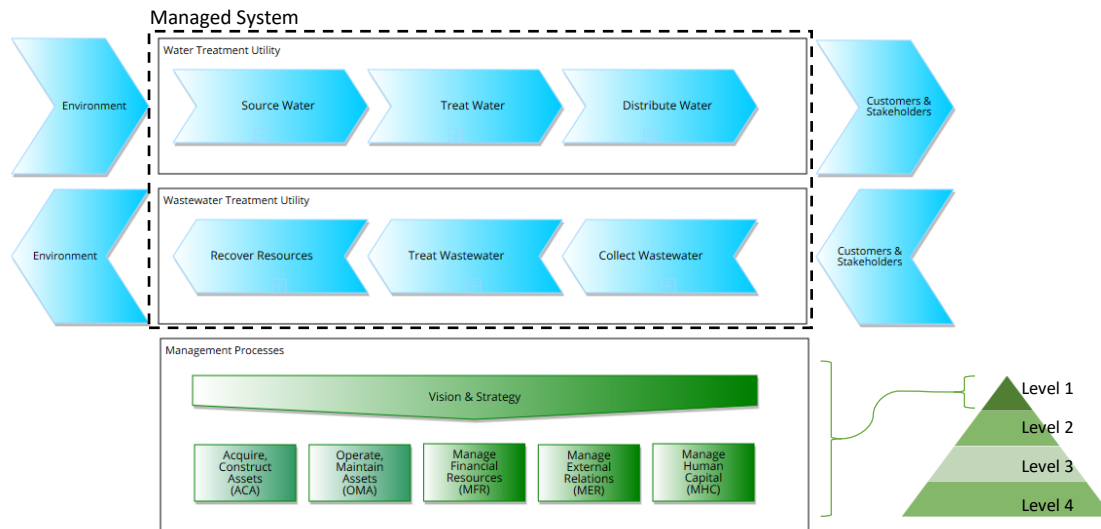


Figure 1. Water Sector Value Model Version 1.0, Level 1. Each process in green disaggregates in a hierarchy of sub-levels.

Management business processes, shown in green in Figure 1, include:

1. Vision and Strategy – processes that define utility vision and guide all other business processes by setting strategic directions
2. Acquire, Construct Assets (ACA) – processes that manage designing and building of managed assets
3. Operate, Maintain Assets (OMA) – real-time operation and maintenance processes,
4. Manage Financial Resources (MFR) – processes for management of funds needed to accomplish the utility mission
5. Manage External Relations (MER) – processes for creating and communicating information with utility customers and stakeholders
6. Manage Human Capital (MHC) – processes for managing the people in the utility including workforce acquisition, training and management

These six processes are hierarchically decomposed into additional levels to create the WSVM process model hierarchy. An important outcome of the August consolidation was a recognition that the models at **Level 2** can be represented by a similar structure (Figures 2-4).

Vision & Strategy Level 2 (Figure 3), an essential process in all utilities, sets the stage by creating *strategic plans* starting from the organization's vision statement. The other five major processes at Level 2 take these strategic plans and *develop programs* that align with the plans,

then *execute* and *manage* these programs. The Vision & Strategy process starts whenever a new vision is created, or external or internal events motivate a reassessment of strategic plans for the utility. Once complete, a new strategic plan is the trigger that informs the other five Level 1 processes to develop or adjust their programs.



Figure 2. Level 2 for the 5 major processes (ACA, OMA, MFR, MER, & MHR)

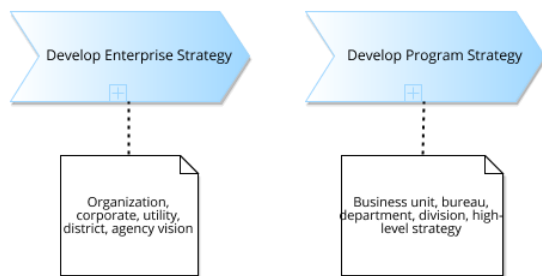


Figure 3. Level 2 for Vision & Strategy process.



Figure 4. The three main processes of ACA, each following the pattern of Figure 2.

At Level 2 for each of the six Level 1 processes, programs are developed, executed and managed for the main focal areas of that Level 1 process. For example, Acquire and Construct Assets (ACA) comprises three main processes; (a) asset management, (b) planning for and acquiring assets, and (c) design and construction of assets. Thus, for each of these ACA processes, the pattern of Figure 2 is adopted as shown in Figure 4.

WSVM Level 3

An important aspect of the WSVM is the explicit definition of the flow (sequence) of tasks for activities. For this reason, at all levels of the WSVM sequential or parallel work flow is indicated, either using chevrons in process landscapes for Level 1 & 2 processes (Figures 1-4), or as directed arrows connecting tasks in BPMN diagrams. At Level 3 and below, all WSVM processes are specified in BPMN diagrams¹.

In BPMN diagrams, the following 6 graphical components are essential;

1. *Tasks* or activities
2. *Gateways* or decision points
3. *Events* that start or stop processes
4. *Flows* of tasks
5. *Data* required or produced by tasks

6. Roles separated into “swim lanes”

¹ This was not completed for all processes in WSVM 1.0, and is the subject of additional work in Phase 2 of the UAIM project.

Each of these may be present in diagrams and while not all are required, a properly specified diagram will include these for clarity and to accurately describe a process.

Level 3 diagrams exhibit a process pattern across each of the six major processes as shown in Figure 5 for the ACA Develop Asset Management Program.

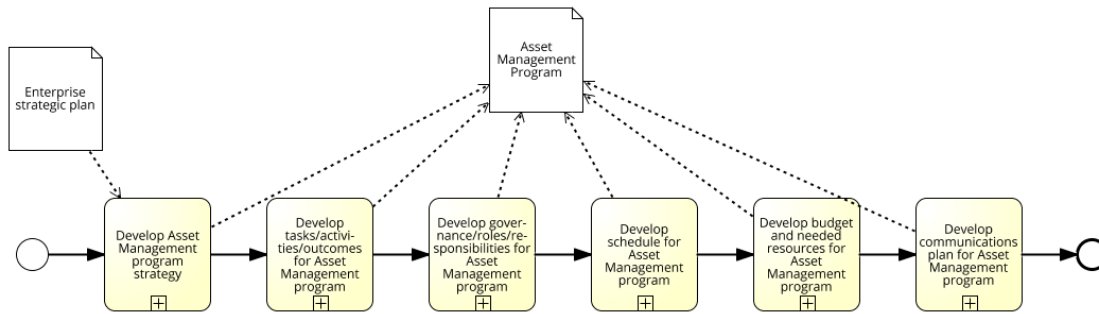


Figure 5. Level 3 BPMN diagram for ACA Develop Asset Management Program.

Figure 5 shows this Develop Program pattern. The process takes the Enterprise Strategic Plan as input data and in sequence develops a program strategy, defines tasks and expected outcomes, decides governance processes and the responsibilities of each role, prepares a schedule, agrees upon a budget, then communicates the program to others in the utility. The major output of this process is an Asset Management Program detailed with the results generated from each process task. Similar diagrams with this structure are defined for each “Develop ... Program” process in the WSVM.

Figure 6 shows the Level 3 Execute and Manage pattern. This process follows a Develop Program that creates the Program that serves as input to Execute and Manage. The process includes tasks for executing the program, monitoring and reporting on program process, performing QA/QC and reviewing results of program monitoring to evaluate if any changes are needed. The feedback from the final ‘review’ to ‘execute’ task allow for continual improvement of utility programs. Similar diagrams with this structure are defined for each “Execute and Manage ... Program” process in the WSVM.

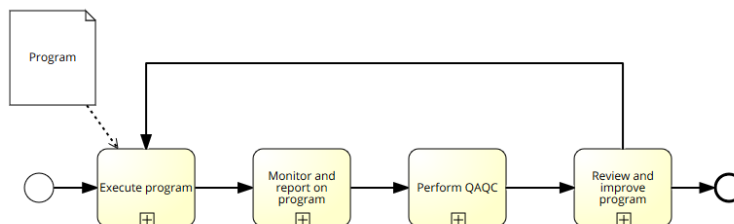


Figure 6. Level 3 Execute and Manage pattern.

Specialization of Utility Processes at Level 4+

Levels 1 through 3 define generic processes that exist in a utility and, through use of patterns, organizes these into a reference framework that can be applied to any utility. This is convenient

for comparison purposes; however, the question of how to specialize the WSVM must be addressed so that the unique features of a utility can be accommodated. Extending the WSVM through specialization in Levels 4 and below meets this objective.

Project utility partners defined a rich set of specialized processes for their individual utilities, many of which will be further elaborated in Phase 2 of the UAIM project. An example is the OMA “Identify and develop Budgets and Budgeting” process shown in Figure 7. This BPMN diagram clearly identifies start and stop events, data inputs and outputs, decision gateways, the flow of activities, and the roles responsible for each task.

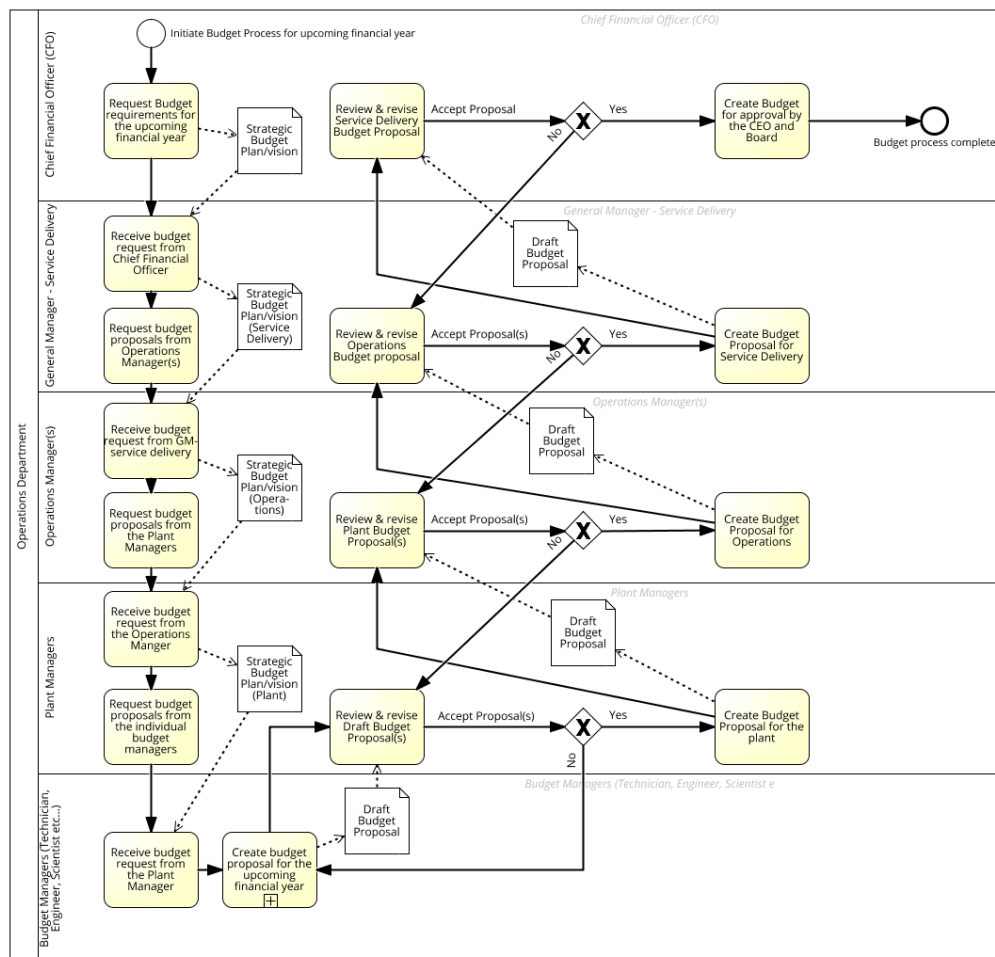


Figure 7. Operate and Maintain Assets (OMA), Identify and develop Budgets and Budgeting process.

Lessons Learned

WSVM version 1.0 achieves the objective of a common framework and support for specialization within a standard for business process modeling. The following is a shortlist of items that, while supported by BPMN, were not included in Phase 1 of the UAIM project (each of these will be addressed in more detail during Phase 2):

- **Metrics & benchmarking** - Related work over many years has resulted in comprehensive sets of metrics². Examination of the existing metrics shows a natural alignment with the WSVM model structure. As indicators of process health and performance, metrics are an essential element of any reference model and established metrics need to be harmonized within the WSVM framework. An important outcome of this metric alignment process will be generalizable metrics; measures that can be more readily compared between utilities. Using tools provided by BPMN, what-if simulations can be conducted to examine the impact of process transformations on key process indicators and across utilities.
- **Dictionary of Concepts** - Roles, systems, organizational units, tasks, documents and events are often common amongst utilities. For example, the organization charts of utilities define common units and these guide the definition of major processes in the WSVM. Similarly, there are common documents such as budget spreadsheets, strategy prospectuses, operations charts and program descriptions. Wherever these common concepts can be identified, they need to be included in a Dictionary that can serve as a repository for these definitions. Creating a common vocabulary for concepts enables easier comparison and a common reference point, and eliminates confusion in communications.
- **Decisions** - Utilities make thousands of decisions every day. These can be difficult to capture and to understand whether data required for a decision are sufficient or necessary. BPMN enables clear specification of the data that drive decisions and the impacts that result, reflected in metrics aligned within the WSVM. Analysis of decision-making processes can highlight areas where more/fewer data are required and where technology might be applied to improve performance.
- **Interactions and Overlaps** - Interactions between business processes creates complexity that is hard to understand when observed without the context of a structured business model. In Phase 1 many utility partners expressed concern about capturing these interconnections and enabling better understanding to manage complexity. Teams in Phase 2 of the UAIM project will be tasked with modeling interactions more carefully, including descriptions of impacts across the WSVM that help bring clarity interdependencies.

Next Steps for the Water Sector Value Model

The UAIM project will deliver documented business processes, hierarchically organized and described using standard BPMN. The long term vision for UAIM is grow the WSVM and make it accessible to utilities through a web-based, collaborative **portal and knowledge repository**. This

² For example, see the Water Services Association of Australia, Asset Management Customer Value (AMCV) project (www.wsaa.asn.au/publication/asset-management-customer-value-amcv).

repository will provide easy access to the models and methods developed in this WE&RF research and through on-going applications of the WSVM for utility improvement.

The portal will provide utilities with access to:

- Utility business process models – the hierarchical description of how utilities perform their work
- Transformation methods that apply these models to improve utility efficiency and effectiveness
- Descriptions of specific work tasks (e.g. developing Capital Improvement Program)
- Metrics that are impacted by specific business processes
- Examples and case studies of using the models to improve processes
- Descriptions of different process implementations and best practices
- Training materials to help new users learn how to describe, analyze, and improve processes

Examples of the content and capabilities that will be available through the portal include:

- **Decisions processes** – descriptions of the utility business rules that drive and specify best practices
- **Benchmarks** – a better way to compare one utility to another since metrics are based on a rational system model
- **New models** – models that take a broad view of water sustainability by including other organizations that share water resources to ensure maximum environmental benefits
- **Simulation** – capabilities to dynamically simulate a utility to improve understanding, and
- **Automation** – information on ways to maximize use of big data, the internet of things, cloud computing, social connectivity, and artificial intelligence technologies
- **Collaboration hub** for examining the hierarchical WSVM at all levels as well as attached comments, related documents, dictionary items, organizational roles, and input/output business objects or documents used in the models
- **Best practices** descriptions for each business process, organized along a maturity continuum
- **Business rules** used in important WSVM decision processes
- **Use cases** with WSVM models customized and expanded to model specific utilities, results of transformation efforts, and project documentation
- **Dynamic simulation** capability to enable properly-configured models to be used for process analysis with user data
- **An upload and download area** for submitting relevant documents and obtaining WSVM-specialized (e.g., future software developments such as a mobile app for model reference and 3rd-party tools that use the WSVM, etc.) and open-source software for modeling and analysis
- **Training resources** including materials to describe the WSVM and UAIM transformation methods, research and publication links, and executive briefings
- **User login and customization** features that enable users to tailor the site to their needs

Phase 2: Defining the Teams and Planning the Work

The first part of Workshop 1 was focused on the main deliverable from Phase 1: the Water Sector Value Model. The main goal of the WSVM is to document how utilities perform their work, and to provide a link between the execution of the business processes (documented by the WSVM) and the value chain. Models of business processes include the metrics (the parameters that define the value that a utility delivers to their customers and stakeholders) that are passed on up through the WSVM hierarchy to the value chain. This first version of the WSVM is certainly not intended to be the final or complete description of everything that a utility does. However, it contains sufficient information to provide a foundation for analysis of utility performance.

The second part of the workshop was focused on Phase 2 of the UAIM project, and included three breakout sessions. The overall goal for Phase 2 is to define methodologies that leverage the WSVM to analyze utility performance, and to design improvements. The scope of work for Phase is divided into three concurrent/parallel efforts, to be undertaken by three teams:

- Team 1 will focus on business process improvement.
- Team 2 will focus on application of technology for improving utility performance.
- Team 3 will focus on people, organizational, and governance aspects of utility performance.

The reports from the three breakout sessions are provided below.

Team 1 Breakout Session Report

Overall Mission for Team 1

In Phase 2, Team 1 will prioritize the "As Is" business processes that have been identified and developed in Phase 1, and select specific processes that are important for each of the utilities on Team 1. Each utility will then refine and add detail to their own specific business process models (using BPMN), to further define the "As Is" state of the process. After completing the "As Is" models, utilities will develop "To Be" (improved) business processes that reflect best practices. These specific case studies will be conducted concurrently by each utility, aided by the project team subject matter experts. The goal is to demonstrate the benefit of business process improvement via the UAIM.

Breakout session participants for Team 1

Name	Affiliation
Shane Morgan	Watercare Services Limited, New Zealand
Zonetta English	Louisville MSD
Sarah Neiderer	DC Water
Charlie Logue	Alex Renew

Barry Liner	WEF
Jennifer Crosby	Metro Vancouver BC
Janeane Giarusso	CH2M
Scott Haskins	CH2M

Summary of the breakout session for Team 1

The participants in the breakout session accomplished the following:

- Identified business process challenges common to Utilities.
- Drafted a step-by-step methodology to support Utilities with defining improved processes.
- Created a form to support Utilities with following the step-by-step methodology and documenting the improved business processes.
- Identified four Utilities that will serve as case studies and that will report out results at the Utility Management Conference 2018.

Phase 2 Action items for Team 1

Each utility engaged on Team #1 will review the "As Is" business processes that have been identified and developed in Phase 1, and select those specific processes that are important for their utility at this moment. Each utility will then refine the models for the processes that they had prioritized and selected. Using BPMN, they will further define the "As Is" state of these processes, and include detail to adequately describe the workflows and define the metrics impacted by each process. After completing the "As Is" models, utilities will be developing "To Be" (improved) business processes that reflect best practices. These specific case studies will be conducted concurrently by each utility, aided by the project team subject matter experts. The overall goal is to add value to each of the utilities by improving the processes, and also demonstrate the benefit of business process improvement via the UAIM.

Several case studies of business improvement were outlined at the breakout session, including the following:

1. Louisville MSD: Water and Wastewater Utility Interlocal Agreement
 - a. Interaction between Louisville MSD, Louisville Water Company, and integration of processes for One Water organization.
 - b. Explore opportunities for sharing back-office services, achieving better efficiencies and reduction in overall costs.
2. Watercare Services Ltd: Exploring improvements in Energy Efficiency Program

- a. Develop detailed business process models for the current (“As Is”) state; define metrics including annual savings.
 - b. Develop detailed business process models for the desired (“To Be”) state.
3. DC Water: examine implementation of reliability centered maintenance (RCM)
 - a. Develop detailed business process models for the current (“As Is”) state (corrective maintenance). Define performance metrics.
 - b. Develop detailed business process models for the desired (“To Be”) state – preventive maintenance.
4. Metro Vancouver: Explore improvements in utility performance management
 - a. Establish formal framework
 - b. Define linkages from strategic plans and goals to day-to-day processes
 - c. Define linkages to asset management
 - d. Establish clear roles and responsibilities (e.g. RACI matrix)
 - e. Create a performance focused culture
5. San Francisco Public Utility Commission: Explore Improvements in Main Sewer CCTV Inspection Process (Internal)
 - a. Develop detailed business process model for the current (“As Is”) state. Define and calculate performance metrics to create a baseline.
 - b. Develop detailed business process model for the desired (“To Be”) state. Document which process improvements were made and why.
 - c. Implement the desired (“To Be”) business process. Calculate performance metrics under the new business process and evaluate value added from the business process improvement effort.
6. San Francisco Public Utility Commission: Explore Improvements in Sinkhole Inspection Process (Interagency)
 - a. Develop detailed business process model for the current (“As Is”) state. Define and calculate performance metrics to create a baseline.
 - b. Develop detailed business process model for the desired (“To Be”) state. Document which process improvements were made and why.
 - c. Implement the desired (“To Be”) business process. Calculate performance metrics under the new business process and evaluate value added from the business process improvement effort.

Overall Mission for Team 2

Team 2 is focused on identifying how technology can be used to improve performance of a utility. Different types of technologies have been implemented extensively in many different parts of water sector utilities. Traditionally, technology has fallen into several categories:

- a) Process equipment (e.g., motors, pumps, valves, gates, etc.)
- b) Instruments/sensors (e.g., flow meters, level sensors, dissolved oxygen sensors, etc.)
- c) Operational Controls Technology (e.g., Industrial Control Systems, SCADA, DCS, etc.)
- d) Operations Support Technology (e.g., CMMS, LIMS, etc.)
- e) Business Information Technology systems (e.g., Financial systems, HR, payroll, etc.)

The traditional lines of division between these areas are getting blurred; as part of rapid advances in digital technology, computers are becoming embedded into sensors, and into mechanical and electrical equipment. For the purpose of this project, the primary focus will be on “digital” technologies in categories c, d, and e listed above.

Team 2 will explore how digital technologies can be used to:

- a) Improve execution of specific business processes through automation.
- b) Provide information and analytical tools to support management decisions.

The detailed BPMN diagrams of the “As Is” business processes will be studied and analyzed, providing the basis for designing “To Be” states that includes automation and the improved data integration and analytics. Utility Partners working on Team 2 will select specific business processes that they are interested in automating, and demonstrate how improvements can be brought about through implementing technology.

In addition to improvement of specific business processes, Team 2 will also be working on developing general guidelines for managing information in a utility, including recommendations related to best practices for developing an Enterprise IT Architecture for a utility.

Breakout session participants for Team 2

Name	Affiliation
Nicole Pasch	City of Grand Rapids
Sam Paske	MCES (Minneapolis - St. Paul)
Michael Stall	City of Grand Rapids
Ana Peña-Tijerina	Ft. Worth
Barbara Wilson	MWRD - Denver
Marcelo Kenji Miki	SABESP
Yangshuo Gu	Singapore PUB
Jeff Puuri	Tensing

Priscilla Bloomfield	CH2M
Keith Tyson	WSSC
William Kaiser	City of Grand Rapids

Summary of the breakout session for Team 2

Team 2 identified several issues related to technology that are common to utilities, including the following:

1. Improvements are needed in data management, especially in system/data integration.
2. Effective management reporting and dashboards are lacking.
3. Acquisition of technology needs to be based on well-defined business needs.
4. Hardware and software need regular updates.
5. Staff not willing to share “their” data.
6. Lack of policies for enterprise content management .
7. Data may exist “somewhere” but is not available for decision makers.
8. Increased push for mobile applications.
9. Risks related to cyber security .
10. Need to keep up with rapid technology advances (e.g. Internet of Things).

Team 2 documented needs and gaps related to Information Technology and Operational Technology, using the UAIM Matrix format; the notes from the breakout session are provided in Figure 8.

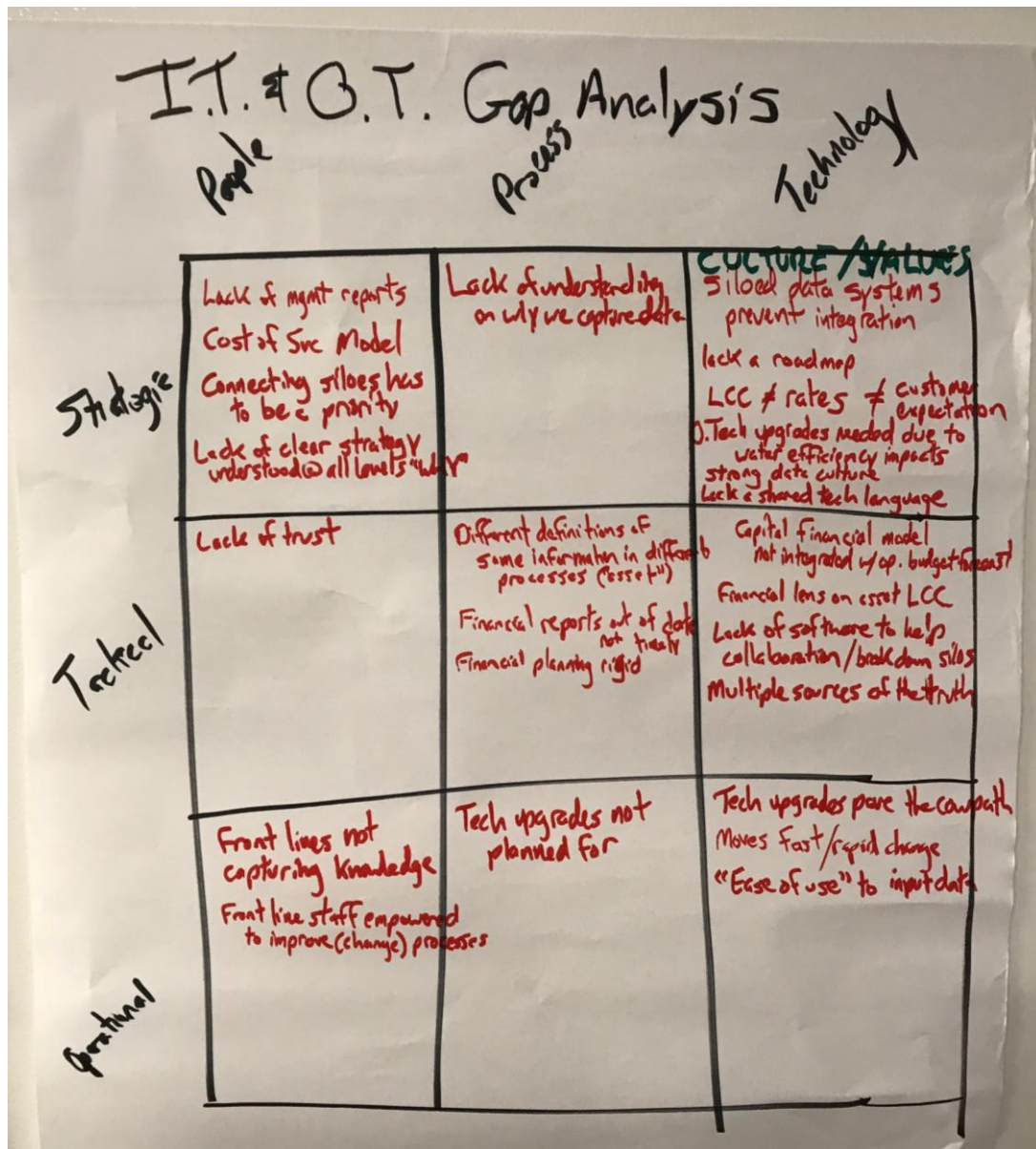


Figure 8. Team 2's IT and OT Gap Analysis (notes from Team 2 breakout session).

Team 2 identified the goals for (or the desired benefits from) the work to be done by Team 2 in Phase 2 of this project, and assigned priorities. The goals are listed below, in order of priority:

1. Clearly defined data and reports to better make decisions tied to the business process.
2. Improve training and knowledge management: help all staff see the big picture and get more out of our technologies.
3. Better connect "business" and "IT".
4. Get buy-in from the users on why changes make sense.
5. Develop a technology road map.
6. Focus IT resources (staff, dollars) on the highest priorities.
7. Help performance management.

The deliverables from Phase 2 were defined as follows:

1. List of data items required for priority business processes.
2. Define smart objectives for business processes that include critical decisions, and the data needed to inform those decisions.
3. Visual of how technology systems fit together with business processes to enable information sharing and results, to help all staff understand how their own role supports the organization. Includes a communication plan in plain language.
4. Guidance for effective technology sponsorship/ownership; includes training approach for sponsors and leads, and execution model for developing strong support and buy in and realizing benefits of technology investment.
5. Standard business case evaluation approach to guide technology investment decisions.

Phase 2 Action items for Team 2

Next steps for Team 2 (to be executed by February 2018) are as follows:

1. Form a team
2. Identify priorities
3. Plan what can be accomplished
4. Complete it during the week before Workshop 3.

Team 3 Breakout Session Report

Overall Mission for Team 3

Team 3 will focus on issues related to organizational and “people” issues that are represented in the left column of the UAIM matrix shown in Figure 9.

Figure 9: Team 3 focus in Phase 2.

The overall goal for Team 3 is to research methods for aligning the efforts of the individual with the goals of the organization (see Figure 10).

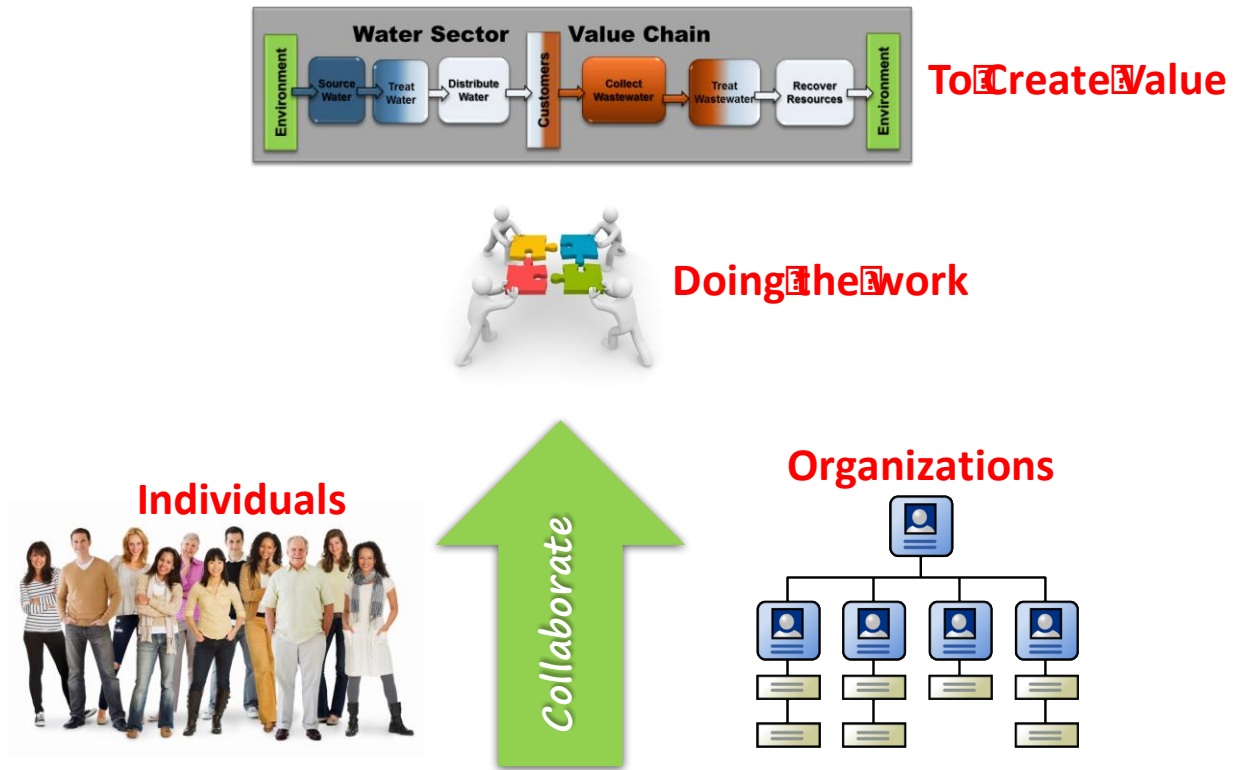


Figure 10. Aligning individual goals with the goals of the enterprise

The key goal of this research will be to identify methodologies for assessment and improvement of components that impact collaboration, including:

1. On the level of individuals:
 - a. Motivation
 - b. Capabilities
2. On the level of organizations:
 - a. Communication between individuals and across the organization
 - b. Governance

Breakout session participants for Team 3

Name	Affiliation
Todd Danielson	Avon Lake Regional Water
Jean Creech	Charlotte Water
Mark Poling	Clean Water Services
Robert Tovar	King County
Mike Sweeney	Toho Water Authority
Per Henrik Nielsen	VCS Denmark
Todd Swingle	OC Florida
Aik Num Puah	Singapore PUB
Aditya Ramamurthy	Hazen and Sawyer
Terry Brueck	EMA Inc.
John Schiebold	EMA Inc.

Summary of the breakout session for Team 3 (from the flip charts and notes)

The team explored several areas of potential study for phase 2 of the project. We asked and answered questions to identify issues and how to proceed with the work.

Question #1: If we could change one thing that increased interaction?

- Staff Empowerment: What am I allowed to do? What is the consequence of making the wrong choice?
- Setting boundaries: there is a often a lack of clarity around role and authority. There is also a need to balance between necessary “rules” and removing “rules” to enable employees to own outcomes and responsibilities (control what matters).
- Knowledge retention and transfer.
- Documents process/SOP’s (use case studies (e.g. Singapore PUB); develop a repository of knowledge).
- Structured training (engage long term employees to capture experience and knowledge).
- Develop Succession Plans that include both a technical track and a leadership track.

Question #2: What role/impact does organizational purpose, culture, and procedures have on employees?

- Organizational Purpose:
 - How well do we communicate it?
 - We are typically fiscally conservative so that needs to be part of it.
 - Each employee should see their role and responsibilities in it.

- How does purpose bring people to your organizations? When recruiting and hiring new staff is important to link organizational purpose as well as desired organizational culture to the process.
- How do we cultivate the passion of existing and new employees for our purpose?
- What experience do employees need at work to convert their knowledge, skills and abilities into a passion for them and for the organizations purpose?
- There is a need for good management. Your immediate supervisor has a great impact on whether you stay or leave an organization.
- Need workplace where people find and get what they seek (could be purpose and could be other needs/wants).
- Create a workplace where employees perform at their best and choose to stay with the organization.

Question #3: What keeps employees from doing their best work?

- Issues:
 - Do they have the necessary tools: data; technology?
 - Organization structure at times gets in the way.
 - Some external stakeholders influence over the organization may redirect employee efforts.
 - Political pressure from elected officials (long term planning versus four year elections).
 - Lack of effective marketing/advocacy of our work
 - Relying on siloed, dysfunctional services to help us meet our needs, e.g. centralized IT, Fleet, etc.
 - Optimizing for the local group versus the larger organization (e.g. Lencioni's Five Dysfunctions of a Team).
- Potential Solutions:
 - Assess properly where there are issues through the use of assessment tools.
 - Identify drivers affecting the issues (using tools like the "5 Why's").
 - What changes are needed to move in the proper direction?
 - What procedures/regulations drive bad behaviors at local and/or organizational level?
 - What metrics can we use to identify issues?
 - What are our risks from an employee standpoint (see Figure 11)?

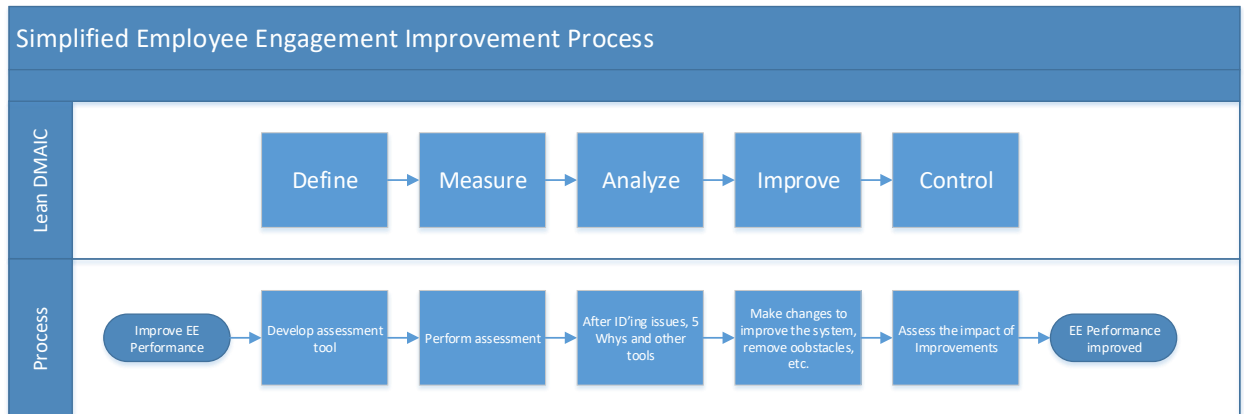


Figure 11. Simplified Employee Engagement Improvement Process

Action items for Team 3 (from flip charts and notes)

The Team 3 work plan includes the following major activities:

1. Before UMC, the team will work on identifying organizational assessment methodologies for:
 - a. Motivation (work force)
 - b. Capabilities/skills
 - c. Communication (between people, business units)
 - d. Governance
 - e. Culture
2. Milestone in February 2018: Methodologies will be presented and discussed during Workshop 3.
3. Between Workshop 3 and WEFTEC 2018, utilities will test and implement the organizational assessment methods; case studies will be prepared.
4. Finally, based on the results from the organizational assessments, improvement strategies will be identified and tested; use cases will be prepared and submitted as final project report. The goal is to also provide access to the case studies through the UAIM portal.

Appendix A: Workshop 2 Agenda

LIFT for Management – WE&RF Research Project

WEFTEC 2017, Chicago IL

Saturday, September 30th 2017

McCormick Place – Room S104a, South Building – Level 1

Objectives: The goal of the meeting is to close out the first phase (Water Sector Value Model) of the LIFT for Management project and launch the second phase (Utility Analysis and Improvement Methodology (UAIM)). During the workshop, the project team and the Utility Partners will summarize the results of the Water Sector Value Model phase and launch the UAIM phase 2 via group pairings and breakout session brainstorming and discussions.

Time	Content	Presenters
08:00 – 08:15	Breakfast	
08:15 – 08:20	Introduction to the program/project	Jeff Mosher & Fidan Karimova, WE&RF
08:20 – 08:30	Summary/Overview of Water Sector Value Model	Cello Vitasovic
08:30 – 09:30	Model status: Utility Partner Presentations 1. Vision & Strategy 2. Operate & Maintain Assets 3. Manage External Relationships 4. Manage Finances, Manage HR 5. Acquire & Construct Assets	Sarah Neiderer Shane Morgan Robert Tovar Mark Polling Keith Tyson
09:30 – 10:00	Model reconciliation	Puuri, Bloomfield
10:00 – 10:15	Next steps for Water Sector Value Model	Jeff Mosher
10:15 – 10:30	Break	
10:30 – 10:40	Introduction to Phase 2: UAIM Scope & Work Plan	Cello Vitasovic
10:40 – 10:45	Preparing for breakout sessions: focus, scope, groups	Cello Vitasovic
10:45 – 12:00	Breakout sessions: discussion of Phase 2 scope	Facilitators/Leads: Team 1: Morgan Team 2: Paske Team 3: Polling
12:00 – 01:00	Lunch Break	
01:00 – 02:00	Continue breakout sessions	All teams
02:00 – 03:00	Reports from breakout sessions. discussions	Each team
03:00 – 03:15	Break	
03:15 – 03:45	Finalizing work plans for Phase 2, forming teams	All
03:45 – 04:00	Workshop summary & conclusion	Jeff Mosher & Cello Vitasovic