WRF Webcast
Planning and Implementing CIS and AMR/AMI Projects
August 23, 2016
advancing the science of water
Presenters

Lynne Powers, CPA
Director
EMA, Inc.

Gary Wiest
Superintendent
Greater Cincinnati Water Works
Lynne Powers

- Lynne has over 20 years of consulting and management experience
- Has extensive knowledge of utility billing, customer service, finance systems, and best practices
- Brings experience from the water and telecommunications sectors
- Extensive project experience with total project life cycle, including rescuing “challenged” billing systems - has seen what works and what doesn’t
- Leads EMA’s customer service practice
Gary Wiest

- Gary has 26 years of experience in the water industry
- Deeply understands customer service and the meter to cash cycle - including IT and metering experience
- Gary’s responsibilities include leadership, direction and strategic planning with a focus on customer service across the total enterprise
  - Managing and further developing the strategic direction of the Commercial Division
  - Accountable for performance of GCWW’s wholesale and retail customer service (meter-to-cash) contracts
  - Oversees GCWW’s Billing & Contact Center services for multiple water sector customers
Other Key Participants

Utility Participants

• Sponsoring Utility: Greater Cincinnati Water Works
  – Gary Wiest

• Participating Utilities
  – City of Baltimore: Rudy Chow and staff
  – City of Regina: Debbi McCaig-Paisig, Brent Knaus
  – City of Winnipeg: Wanda Burns
  – El Paso Water: Mark Bolduc

WRF and PAC Members

• Water Research Foundation
  – Linda Reekie, Project Manager

• Project Advisory Committee (PAC)
  – East Bay Municipal Utility District: Andrew Levine
  – San Jose Water Company: Bob Day
  – Charlotte Water: Doug Groce
  – Arcadis: Esteban Azagra
The Project...

1. Updated 10-year-old research related to selecting and implementing a water utility CIS
2. Conducted new research regarding maintaining, upgrading and using a CIS
3. Conducted new research related to implementing or upgrading AMR/AMI (AMS) systems and related benefits
4. Looked at vendor management related to CIS and AMS projects and systems
5. Included a “State of the Industry” overview
Today’s Agenda

1. Report Overview
2. Meter-to-Cash Overview
3. Typical Project Phases
4. Organizational Considerations
5. State of the Industry Highlights
6. Tools & Checklists
7. Case Studies
8. Next Steps
9. Questions/Discussion
Report Overview

Over 250 pages, packed with educational material and practical tools
Overview
- Meter-to-Cash description
- Organization considerations

CIS description
- Typical functionality
- Optional functionality
- Interfaces
- CIS Considerations
- Trends

AMS description
- General description of AMR and AMI
- Data transmission
- Meter Data Management Systems (MDMS)
- Trends
Report: CIS and AMS - Deeper Dives

CIS
1. Secondary research
2. Organizational considerations for CIS project
3. Typical project phases
4. Preparing for CIS project*
5. Preparing for CIS go-live
6. Challenges and potential remediation steps*
7. Warning signs of project in trouble
8. Checklist to enhance chances of success
9. Project Health Assessment*

AMS
1. Secondary research (water and electric)
2. Organizational considerations for AMS project
3. Typical project phases
4. Preparing for AMS project*
5. Challenges and potential remediation steps*
6. Warning signs of project in trouble
7. Checklist to enhance chances of success
8. Project Health Assessment*

*Contains tools you can use

Project #4583: Planning and Implementing CIS and AMR/AMI Projects
Meter-to-Cash Cycle Overview
Water Utility Meter-to-Cash Cycle & Technologies

Manage Customer Account Data
- CIS
- Telephony
- IVR
- ACD/Whisper/Callback
- Wall boards
- Synchronized screen/audio capture
- Workforce management
- Address verification
- Document management
- Credit history checks
- CMMS integration
- Mobile
- Customer self-serve
- GIS
- Analytics

Read Meters
- Touch read
- AMR/fixed network/AVL/mobile dispatch
- AMI/fixed network
- MDMIS
- CIS
- Workflow management
- Mobile
- GIS

Calculate Consumption & Manage Rates
- CIS
- Workflow management
- Analytics

Prepare & Deliver Bills
- CIS
- Workflow management
- Bill print/mail
- Electronic presentation
- Document management

Process & Record Payments
- CIS
- Direct draft
- Lockbox
- Cashier station
- Internet banking
- Cell phone app
- Credit/Debit card
- Payment processing
- Kiosks
- Workflow management

Manage Credit & Collections
- CIS
- Workflow management
- Credit checks
- CIS/FIS integration
- Robocall
  - Bill due reminder
  - IVR/payment integration
- Mobile
- Analytics

Conduct General Ledger & Revenue Analysis
- CIS
- FIS
- FIS/CIS integration
- Analytics
  - Revenue
  - Trending

Source: EMA, Inc. 2016. All rights reserved.
Typical Project Phases
Implementing a CIS or an AMS is More than Implementation

Typical CIS Project Phases
1. Define Needs and Strategy
2. Prepare for CIS Project
3. Select and Contract
4. Implement Core CIS
5. Implement Additional Functionality
6. Sustainment/Continuous Improvement

Typical AMS Project Phases
1. Define Needs and Strategy
2. Prepare for AMS Project
3. Select and Contract
4. Implement Core AMS
5. Sustainment/Continuous Improvement

Foundation for success starts with defining business needs and project strategy
Implementing a CIS or an AMS is More than Implementation

Typical CIS Project Phases

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Typical AMS Project Phases

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**Typical CIS Project Phases**

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**Typical AMS Project Phases**

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*Foundation for success starts with defining business needs and project strategy*
Organizational Considerations
Typical Project Organization Chart

Clearly defining roles and relationships on these projects is important.
Other Organizational Considerations

- Staffing levels (current, future)
- Job responsibilities
- Policies, rules, regulations
- Incentives, rewards
- Union issues and needs
- External stakeholder communications (infrastructure location and access, for example)
- Change management
Additional Organizational Considerations

CIS-specific
- Backfilling or not, and if so, how
- Impact on daily operations
- Preparing daily operations staff to use the new system and policies
- Project team location
- Project team work schedule

AMS-specific
- External stakeholder communications
- Workforce impact as the system is implemented and work is eliminated
State of the Industry Highlights

CIS

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Respondents Reflect Wide Industry Cross-Section

Survey Respondent by Accounts

Number of Accounts (in 1,000s)

Number of Utilities

- Under 50: 39
- 50-99: 22
- 100-149: 7
- 150-199: 10
- 200-249: 8
- 250-299: 2
- 300-349: 3
- 350-399: 2
- 400-449: 3
- 450-499: 1
- 600-649: 1
- 800-849: 1
Clear Trend Towards More Frequent Billing

% of Responding Utilities

- Monthly: 51% (2005), 66% (2015)
- Every Two Months: 26% (2005), 22% (2015)
- Quarterly: 23% (2005), 21% (2015)
- Annual: 0% (2005), 5% (2015)
Interest in Outsourcing is Increasing

Currently outsourced services

Additional within 2 years
Selected Social Media Channels Being Used Today

- Facebook: 62.64%
- Twitter: 46.47%
- YouTube: 28.29%
- Instagram: 4.4%
- Other: 2.2%
- Pinterest: 1.1%
Utilities are Moving to Provide Field and Back-Office with Near-Real-Time Data

- Yes: 44%, 31
- In process: 9%, 6
- No – Plan to offer within the next two years: 23%, 16
- No – No plans to offer: 24%, 17
Most CISs are Integrated with Other Key Applications

- AMR or AMI for at least some accounts: 59% (2015), 65% (2005)
- Electronic Billing Presentment and Payment (EBPP): 0% (2015), 60% (2005)
- Interactive Voice Response (IVR) system: 41% (2015), 57% (2005)
- Geographic Information System (GIS): 30% (2015), 49% (2005)
- Computerized Maintenance Management System (CMMS) or a field work...: 33% (2015), 44% (2005)
- Other: 10% (2015), 0% (2005)
State of the Industry Highlights

AMS

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Drive-By AMR is Most Widely Implemented AMS

- Drive-by AMR: 42
- Fixed Network AMR: 7
- AMI Two-way: 6
- AMI One-way: 3

# and % of Responding Utilities
But More Utilities are Piloting AMI

- Drive-by AMR: 8
- Fixed Network: 5
- AMI: 17
Many Utilities did not Conduct AMS Business Cases

Was your Business Case for AMS Achieved?

- Yes, the business case was achieved: 24 utilities
  - AMI: 4
  - Fixed Network AMR: 5
  - Drive-by AMR: 15

- No, the business case not achieved: 1 utility
  - AMI: 1
  - Fixed Network AMR: 1
  - Drive-by AMR: 0

- It is too early to tell: 2 utilities
  - AMI: 2
  - Fixed Network AMR: 1
  - Drive-by AMR: 0

- There was no business case done: 16 utilities
  - AMI: 16
  - Fixed Network AMR: 2
  - Drive-by AMR: 0
Potential Benefits of AMS

1. Eliminates estimated reads, leak investigations, move-in/out reads
2. Changes nature of conversation with customers - immediate credibility
3. Enables custom billing dates
4. Enables more frequent readings
5. Enables consumption alerts
6. Aids rate design analysis
7. Supports conservation efforts
8. Reduces meter reading injuries
9. Reduce carbon footprint
10. Creates “virtual” meters - understand distribution system health
11. Enables improved demand forecasting
12. Identifies meters that aren’t properly recording (failure, theft)
13. Analyze consumption across similar industries in detail
14. ID flow rates above meter warranty
15. ID over-irrigation
16. And more benefits will come as the technology matures!
Tools & Checklists
# CIS Project Readiness Assessment

<table>
<thead>
<tr>
<th>Item</th>
<th>Level of Readiness</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Key staff is knowledgeable about what the CIS project will involve</td>
<td>Strong</td>
</tr>
<tr>
<td>2. Project leadership has been established. There is a clear Project</td>
<td>Acceptable</td>
</tr>
<tr>
<td>Sponsor, the Steering Team membership has been mostly defined, and</td>
<td></td>
</tr>
<tr>
<td>a strong Project Manager has been identified</td>
<td></td>
</tr>
<tr>
<td>3. The project purpose and expected outcomes have been clearly</td>
<td>Weak</td>
</tr>
<tr>
<td>defined. This involves clearly defining and documenting the business</td>
<td></td>
</tr>
<tr>
<td>goals the project will accomplish, and what is not in the project</td>
<td></td>
</tr>
<tr>
<td>4. A sufficient budget has been established. Items to consider are:</td>
<td>Seriously lacking</td>
</tr>
<tr>
<td>Consulting costs (to develop the RFP, support or manage the</td>
<td></td>
</tr>
<tr>
<td>implementation, quality assurance, change management</td>
<td></td>
</tr>
<tr>
<td>support, and/or staff development)</td>
<td></td>
</tr>
<tr>
<td>CIS vendor’s solution (licensing, professional services,</td>
<td></td>
</tr>
<tr>
<td>travel/expenses, and maintenance)</td>
<td></td>
</tr>
<tr>
<td>....</td>
<td></td>
</tr>
</tbody>
</table>
## AMS Project Readiness Assessment

<table>
<thead>
<tr>
<th>Item</th>
<th>Level of Readiness</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Identify and address meter locations with infrastructure issues</td>
<td>Weak</td>
</tr>
<tr>
<td>2. Understand number of lids, sizes, and materials</td>
<td>Acceptable</td>
</tr>
<tr>
<td>3. Record and mark meter locations, particularly if more than one</td>
<td>Seriously lacking</td>
</tr>
<tr>
<td>meter in a pit, or when meter boxes are grouped</td>
<td></td>
</tr>
<tr>
<td>4. If large commercial meters will be replaced, determine in</td>
<td>Seriously lacking</td>
</tr>
<tr>
<td>advance if extra plumbing will be required and if the meter vault</td>
<td></td>
</tr>
<tr>
<td>has sufficient space for the work to be completed</td>
<td></td>
</tr>
<tr>
<td>5. Consider the ability of the CIS system to handle the additional</td>
<td>Strong</td>
</tr>
<tr>
<td>information that AMS requires such as a field to store the</td>
<td></td>
</tr>
<tr>
<td>endpoint number, installation data, existing field status</td>
<td></td>
</tr>
<tr>
<td>information, ability to manage inventory by meter serial number,</td>
<td></td>
</tr>
<tr>
<td>and lack of billing codes and billing multipliers for high</td>
<td></td>
</tr>
<tr>
<td>resolution meters (meters with dials displaying usage as low as</td>
<td></td>
</tr>
<tr>
<td>one cubic foot)</td>
<td></td>
</tr>
<tr>
<td>6. ...</td>
<td></td>
</tr>
</tbody>
</table>
## CIS Challenges/Remediation Tactics

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Possible Remediation Tactics</th>
</tr>
</thead>
</table>
| 1. Unclear vision, goals, and measures | • Use the Project Sponsor and Steering Team to clarify the business and technical vision, goals, and desired outcomes of the project  
• Hang a large poster of the vision, goals, and desired results in the project team room  
• …                                                                                                                                 |
| 2. Untimely or vacillating decisions   | • Empower the Project Team to make decisions. Define clear guidelines for making and communicating the decisions, and for developing recommendations for a higher authority to consider  
• Assign dates for decisions and owners of the decision  
• Keep a decision log, review status regularly                                                                                                                                 |
| 3. Workload/ lack of staff availability| • Increase the project duration  
• Hire local minority business enterprise to backfill or provide project support  
• Review resourcing needs monthly (both current and forward looking) to identify constraints and hard to get resources  
• …                                                                                                                                 |
| 4. Poorly run meetings                 | • Provide training  
• …                                                                                                                                                           |
### AMS Challenges/Remediation Tactics

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Possible Remediation Tactics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Lack of money</td>
<td>• Consider all benefits, not just meter reading costs</td>
</tr>
<tr>
<td></td>
<td>• Consider joint venture with electric or gas utility</td>
</tr>
<tr>
<td>2. Contract issues</td>
<td>• Attach schedule and detailed work plan to contract and make it part of the contract</td>
</tr>
<tr>
<td></td>
<td>• Do not agree to the contract until it addresses every concern</td>
</tr>
<tr>
<td></td>
<td>• Include penalties missed deadlines and not meeting quality standards</td>
</tr>
<tr>
<td></td>
<td>• Contract should include a contractor managed phone number for complaints and scheduling</td>
</tr>
<tr>
<td></td>
<td>• Include an expected complaint response time and hold the contractor to meeting that time demand</td>
</tr>
<tr>
<td>3. Unexpected field</td>
<td>• Assign a field crew to make repairs to vaults and other meter locations so that system implementations can occur smoothly</td>
</tr>
<tr>
<td>conditions</td>
<td>• Ensure other organizations touching metering equipment (for example, other Public Works organizations) know the criticality of replacing meters exactly as they were (facing the right direction and returning the same meter to the same property)</td>
</tr>
<tr>
<td>4. ...</td>
<td>• ...</td>
</tr>
</tbody>
</table>
Warning Signs of a CIS Project in Trouble

Projects do not suddenly go from successful state to a failed state. There are many indications of trouble. The report lists 11 warning indicators.

1. **A project that starts out troubled** because goals, schedule, budget, and staffing are unrealistic, or the selected solution does not meet required core functions

2. **Governance** of project has been inadequately developed, as shown by:
   a. Lack of an effective project sponsor or champion
   b. Lack of a project charter
   c. Undocumented or informal change requests/change orders
   d. Project goals are not clearly understood
   e. Ineffective or inconsistent decision making
   f. Steering Team does not address issues they have been presented
   g. Lack of, or inconsistent, project direction regarding tasks, priorities, timelines, or requirements

3. **Inadequate budget** as indicated by:
   a. Several unpaid invoices from vendor/consultants. This can also indicate an issue regarding performance of the vendor/consultant
   b. …
Warning Signs of AMS Project in Trouble

Projects do not suddenly go from successful state to a failed state. There are many indications of trouble. The report lists 9 warning indicators. Many are similar to CIS. Others include:

1. **Contractor performance issues**
   - Contractor arrives at customer location without notice (this is especially important when the meter is located inside of the home or business)
   - A large number of leaks occur after contractor has changed out meters
   - Contractor is not following the agreed-upon work steps such as taking pictures or recording GPS location
   - Meter serial numbers and endpoint numbers do not correspond to records
   - There are consistent issues with the RSR as defined in the contract

2. **Customer Service is not engaged**
   - Customer service representatives are not using data as system goes live
   - Training sessions are missed
CIS and AMS Checklist to Enhance Chances of Success

The following areas are vital to a successful project:

1. Develop and maintain strong governance
2. Prepare thoroughly for the project
3. Understand staffing impacts and provide additional resources as needed (particularly for CIS)
4. Provide effective project management
5. Provide effective risk management
6. Carefully select and nurture the project team
7. Have a clear project methodology
8. Ensure ongoing, meaningful, operational involvement

Report describes each; includes an assessment exercise for both CIS and AMS)
Case Studies
## 5 Utility Case Studies

<table>
<thead>
<tr>
<th>Utility</th>
<th>AMS</th>
<th>CIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albuquerque Bernalillo County Water Utility Authority, NM</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>City of Baltimore, MD</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>City of Bismarck, ND</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Los Angeles Department of Water and Power, CA</td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>New York City Department of Environmental Protection, NY</td>
<td>●</td>
<td></td>
</tr>
</tbody>
</table>

*Case studies include variety of large utilities, small utilities, and governance structures. They are full of interesting lessons learned*
Next Steps
Next Steps

This report is useful to the extent it is used! So please:

1. Provide a copy to every member of your Steering Team and to your Project Manager
2. Apply the tools to your specific situation
   A. AMS or CIS
   B. Phase of project (strategy development, preparing for project, contracting, implementing, …)
   C. Carry out the self-assessments, apply the checklists
   D. Build checkpoints into your project plan to refer to the self-assessments and checklists
Questions/Discussion
Tailored Collaboration

Planning and Implementing CIS and AMR/AMI Projects

You can find the report at:
http://www.waterrf.org/Pages/Projects.aspx?PID=4583
Thank You

Comments or questions, please contact:

lreekie@waterrf.org
lpowers@ema-inc.com
Gary.Wiest@gcww.Cincinnati-oh.gov

For more information visit:
www.waterrf.org