Transforming Utilities Asset Management Through Data-Driven Strategies

Swathi Young
Chief Technology Officer
swathi.young@allwyncorp.com

Executive Summary

In today's increasingly complex utilities landscape, companies face significant challenges in managing infrastructure assets efficiently while ensuring data integrity to meet regulatory demands and maintain competitiveness. This whitepaper presents a detailed case study of how Allwyn partnered with one of the largest utility companies in the U.S. to improve operational integration and asset management, specifically in the sewer rehabilitation process. Allwyn led a comprehensive analysis of data flows, data quality, and operational workflows, identifying key inefficiencies and data leakage issues.

By developing a 3-year roadmap aligned with the client's FY '25-'27 strategic plan, Allwyn presented a roadmap that includes advanced data management, automation strategies, and organizational change management (OCM) to optimize operations, improve asset reliability, and enhance decision-making. This whitepaper highlights the key methodologies and strategic recommendations that organizations can adopt to drive digital transformation, streamline processes, and achieve measurable improvements in efficiency and resource allocation.

Introduction:

As part of this initiative, Allwyn identified key inefficiencies in the Sewer Rehabilitation project, including data fragmentation, manual processes, lack of system integration, poor data management practices, reliance on outdated systems, and organizational silos. Allwyn's three-year roadmap aims to streamline operations, enhance data management, and lay a clear foundation for digital transformation. By addressing these challenges, the Utility company can strengthen its asset management, reduce business risks, and improve decision-making, all while aligning with its strategic objectives for 2025-2027. In addition, the organization would be laying the foundation for AI readiness, positioning itself to leverage advanced technologies for predictive analytics and smarter decision-making in the future.

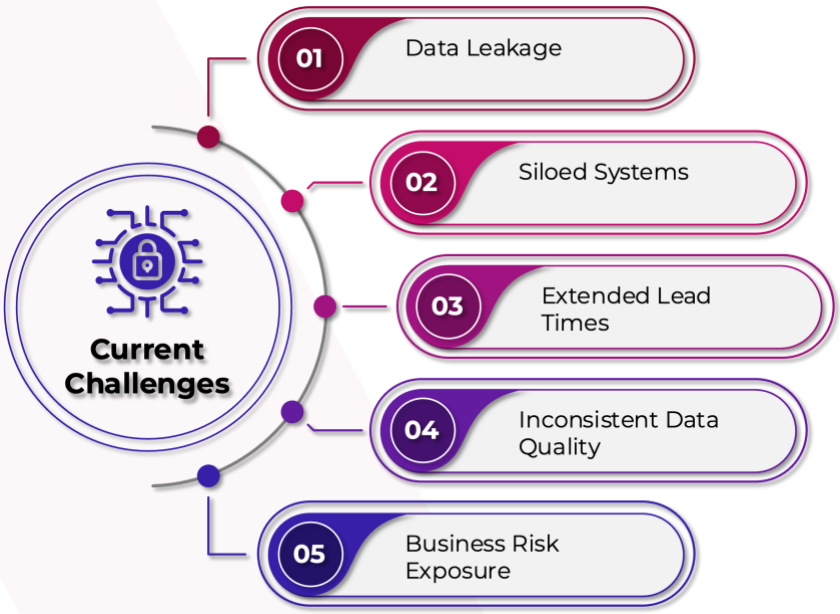
1. Current Challenges:

The project's key findings revealed a series of challenges impacting operational efficiency and data quality:

- **Data Leakage**: Approximately 96% of the sewer rehabilitation data flows involve manual entries or email exchanges, leading to substantial data leakage and inefficiency.

- **Siloed Systems**: Different departments rely on disconnected systems such as Excel, emails, and paper-based processes, resulting in data silos that impede data sharing and collaboration.

- **Extended Lead Times**: The average lead time for sewer rehabilitation projects **is 814 days**, with **only 18.6% of that time being value-added work**. The remaining time is consumed by inefficiencies in managing and processing data.



- **Inconsistent Data Quality**: Critical data elements such as the Asset Number were recorded inconsistently across systems, leading to an overall **data accuracy of just 1.8%.**

- **Business/Operational Risk Exposure**: The absence of a unified data system exacerbates operational risks, delays, and project cost overruns.

2. Key Insights from Value Stream Analysis:

Disconnected Data Processes: Our analysis identifies significant operational silos, as indicated by the disconnected data sources across various processes. This fragmentation is a primary contributor to inefficiencies in sewer rehabilitation efforts.

Value Added Time: Of the total 814 days required for urgent sewer rehabilitation, only 152 days (18.6%) contribute value-added work, highlighting inefficiencies in the current workflow.

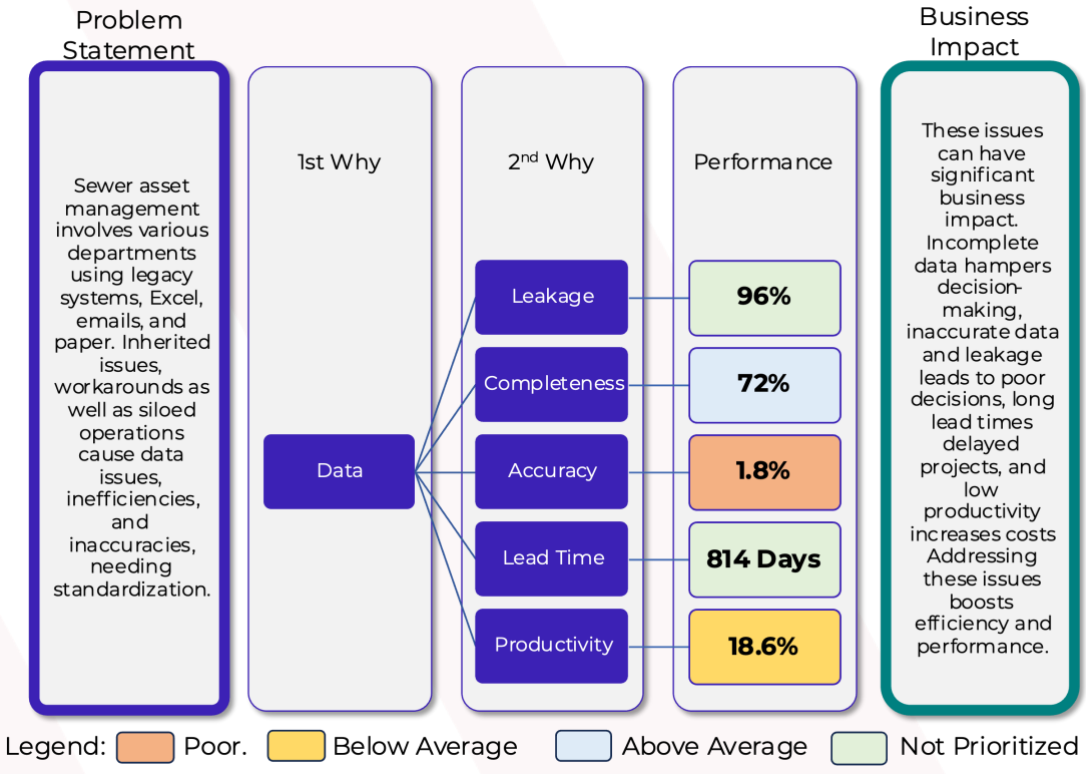
Prime Pass Yield: The analysis alarmingly shows a prime pass yield of only 1.8%, translating to a 98.2% chance of process failure from start to finish.

3. Root Cause Analysis

To identify the core drivers of inefficiency, Allwyn conducted a thorough root cause analysis using the "5 Whys" problem-solving technique. The primary findings included:

- **Fragmented Data Systems**: Data was often incomplete and inaccurate due to manual workflows and the absence of a central data repository.
- **Manual Processes**: The reliance on unstructured, manual workflows, such as paper-based data entry and project management, hindered operational efficiency.
- **Organizational Silos**: Different departments worked in isolation, creating inefficiencies, duplicate efforts, and misaligned data, where the same information was recorded differently in different systems.

These issues significantly increased costs, extended project timelines, and lowered overall productivity. The following figure represents the key issues identified, the "5 Whys" methodology used, and the resulting business impact.



4. Recommendations and strategic solutions:

The visual below illustrates how fragmented data systems and siloed operations hinder the overall data transformation process, leading to inefficiencies such as incomplete data synthesis and reliance on manual workflows. These challenges directly impact operational transformation, underscoring the need for strategic interventions to streamline processes.

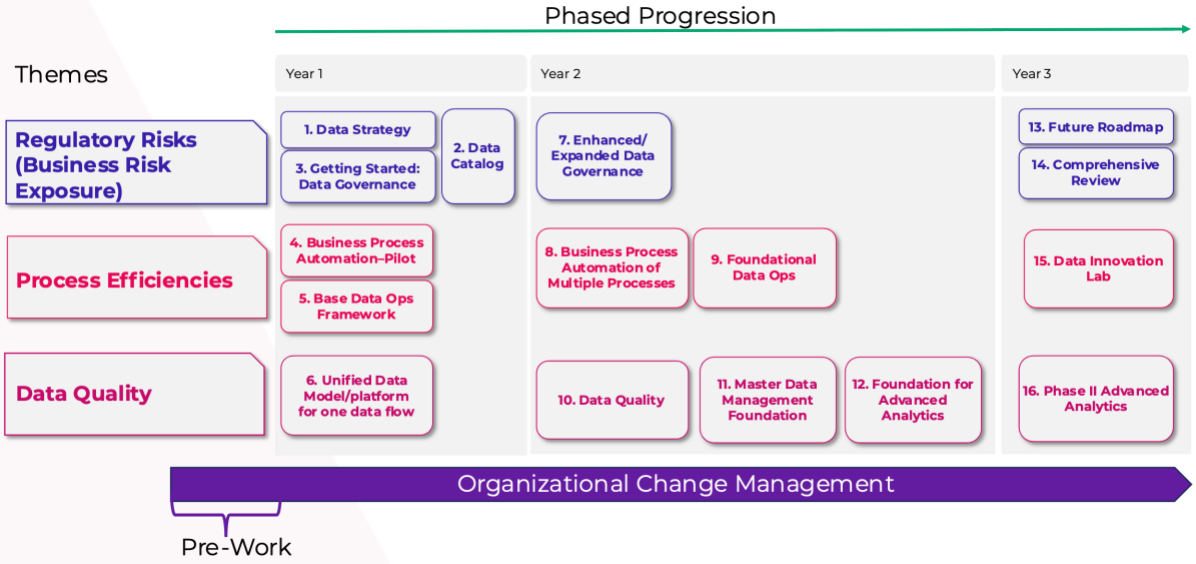
Our recommendations focused on seven pillars: ***data governance, process automation, data integration, master data management, data quality framework, change management, and risk reduction.***

- **Data Governance Framework**: Establish a framework defining data ownership, stewardship, and accountability. This includes the introduction of master data management to ensure consistency and accuracy across the organization.
- **Process Automation Pilot:** Implement low-code platforms for automating routine business tasks to reduce human error, increase process efficiency, and minimize reliance on manual processes such as email workflows.
- **Unified Data Platform:** Integrate all data sources into a single data hub, enabling universal access and better decision-making capabilities. This would also involve setting up data pipelines to reduce leakage and streamline data flows.
- **Master Data Management (MDM) framework:** This will ensure consistent and accurate data across all systems, which will improve decision-making and reduce redundancies. In terms of process efficiency, low-code automation can automate routine tasks such as project tracking, invoicing, and data entry, reducing human errors and improving efficiency.
- **Data Quality Framework:** This framework will correct inaccuracies at the source by profiling data for completeness and accuracy. This will be supported by a Data Fabric Approach, which integrates structured and unstructured data, improving reporting and analytics for more informed decision-making.
- **Organizational Change Management:** This step will be critical to align stakeholders across IT and non-IT departments. This will involve a comprehensive OCM plan to manage resistance, coupled with Training Programs to ensure employees can effectively adopt new systems and workflows. Together, these solutions aim to improve data governance, automate key processes, enhance data quality, and manage organizational change effectively.
- **Risk Mitigation Strategies:** Implement risk analysis tools, including Failure Mode and Effects Analysis (FMEA) and FAIR (Findability, Accessibility, Interoperability, and Reusability) scoring to identify top risks and apply corrective measures for improving data reliability and security.

5. Roadmap for Implementation

Target State (2025-2027)

The proposed roadmap outlines the transition to a future state that emphasizes reduced business risk exposure, higher data quality, and enhanced operational efficiency. Key milestones include:



- **Year 1:** Establish foundational data governance, create a data catalog, and pilot business process automation.
- **Year 2:** Scale successful automation efforts across the organization and enhance data operations through increased maturity in data governance.
- **Year 3:** Implement advanced analytics tools, such as predictive and prescriptive algorithms, to drive better decision-making and operational improvements.

The end goal is a fully digitized operational environment, aligned with the Utility Company's strategic objectives of optimizing asset management, reducing lead times, and improving overall process efficiency.

Results and Business Impact

By following the outlined roadmap, the Utility Company can expect to:

- **Reduce Data Leakage:** From 96% to near zero through the implementation of automated data workflows and a unified data platform.
- **Improve Data Quality:** Ensure critical data elements, such as asset numbers, are consistently accurate and reliable.
- **Enhance Decision-Making:** By integrating data across departments and systems, the organization will gain access to more accurate and timely insights, improving operational decisions.

Conclusion

This case study demonstrates how Allwyn helps organizations leverage digital transformation to address critical operational challenges. By improving data governance, automating workflows, and integrating data through advanced platforms, organizations can enhance efficiency, reduce risks, and achieve strategic goals.

For more information on how Allwyn can support your organization's digital transformation efforts, please contact us at info@allwyncorp.com.

Contact Information

Sid K. Hasan
Chief Growth Officer (CGO),
Allwyn Corporation
+1 (415) 377-0693
Sid.hasan@allwyncorp.com

Swathi Young
Chief Technology Officer (CTO),
Allwyn Corporation
+1 (703) 638-2538
Swathi.young@allwyncorp.com

About Allwyn Corporation

Allwyn Corporation (www.allwyncorp.com) is a forward thinking, innovative software solutions company, headquartered in the Metropolitan Washington DC area. Allwyn was founded in 2003 with a mission to help organizations address complex technology challenges by providing industry-leading tools, technologies, seasoned professionals, and proven methodologies. We are proud to be certified for ISO 9001 (Quality), ISO 27001 (Security), and ISO 20000 (Service Delivery).
With a team of ~200 professionals, Allwyn delivers high-quality services to a wide range of clients in the public and private sector.

Allwyn has been providing leading-edge IT professional services to various government agencies through the GSA MAS Schedule. We are also on the FAA eFAST, GSA OASIS+, and GSA STARS III contract vehicles.

Allwyn has experience with implementing Artificial Intelligence and Machine Learning solutions and Modernizing Applications using Low Code Technologies. Our relationships with AWS, Appian, ServiceNow, Microsoft, Databricks, Informatica, Salesforce, etc. strengthen our ability to support our customers in their Digital Transformation journey. We are already supporting several of our customers in the public as well as commercial sector with their cloud adoption strategies and Artificial Intelligence and Machine Learning implementations. For additional information on Allwyn's full range of services, please visit our website at www.allwyncorp.com.