

# Expanding Agency Capacity Through Data Management

## **Rhode Island Housing**

Management Innovation: Technology

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## Summary

RIHousing's team of IT and research/data analysis professionals, developed and maintains a dedicated server managed by a cross-departmental team for all RIHousing program data that acts as the agency's data warehouse. The effort, which has spanned over 4 years, has evolved into a critical resource, and has allowed the Agency to expand and improve its operations, reporting, and analysis of housing insights and trends.

## Challenge and Opportunity

RIHousing has multiple divisions that serve the diverse and complex housing needs in Rhode Island, from mortgage origination and servicing, financing of affordable developments, to asset management of our affordable rental portfolio. Throughout the years, individual departments adopted various software platforms with the goal of modernizing and streamlining our business operations without much thought as to how the stored data would be accessed and used.

While updated software resulted in more efficient day-to-day operations for frontline staff, the result was siloed data that was difficult to access for reporting and did not allow for integrated data analysis across multiple departments. RIHousing staff had to manually retrieve and compile information to create complex reports, which compromised the reliability of the data and limited our ability to look at the agency's data as a whole. Historically, data was extracted from systems and analyses were performed in Excel spreadsheets that sat on local desktops. The IT department had copies of the data on local servers, but staff did not have the tools or know-how to access this data directly. Datasets used for reporting and communication with the public rarely included information about what the data meant, what criteria were used when pulling it from the source system, or when the data was pulled from the source system, which led to inconsistencies depending on how or when a question was asked.

The solution was to create a centralized system, where all program data would be stored and could be accessed by program staff and the policy and research team using front-end data analysis tools. This prompted the creation of the data warehouse, and a dedicated data analysis team within the Executive division to oversee data integrity.

## Innovation

In order to ensure the data warehouse functioned efficiently and aligned with the business needs, RIHousing created a hybrid team of IT and research and data analysis professionals. Where the IT department was already storing data locally, the data warehouse team transformed the data into a more intuitive format and set up a process for updating it regularly. Where a local copy of the data did not exist, the IT members of the data warehouse team created the back-end automation- extracting data from various software, transforming them to communicate with the front-end data analysis software (Tableau) and loading it to the server. They were also tasked with the oversight of the data server itself. A dedicated data analysis team, knowledgeable about the various lines of business within the Agency determined how the extracted data was structured based on business needs.

This hybrid team structure has proven to be extremely successful. The divided expertise ensures that the data warehouse continues to be functional while the quality of the data is thoroughly considered. This also enables the Agency to continue to update and improve its data warehouse based on changing needs.

## **Improvement on Agency Operations**

With the data warehouse and its dedicated staff, RIHousing is better able to understand our performance and foresee trends. This allows us to develop and improve programs to better suit the needs of Rhode Islanders. We are easily able to follow the success of our mortgage clients, as mortgage origination information and loan servicing information can be pulled together for comparison purposes and analysis. We can also track if any RIHousing mortgage clients received lead remediation funds or other community loans in just a couple steps. Stakeholders and decisionmakers receive accurate data quickly, which helps the Agency make evidence-based decisions and continue to stay nimble.

The centralized data allows the Agency to implement Business Intelligence (BI) visualization tools such as Tableau to quickly draw and visualize data. These user-friendly data analysis tools allow the Agency to create live reports of data collected on specific programs. RIHousing is now able to quickly create innovative and informative dashboards as demonstrated by the COVID-19 rental and homeowner assistance programs that we administered. In these instances, it was critical for stakeholders and interested parties to receive up-to-date and accurate information including application processing time, spend, demographic data, and progress towards program benchmarks. The data warehouse became the key tool used to measure program performance and simplified the program reporting required by Treasury.

The data warehouse also streamlined the development funding process monumentally. The centralized data system allowed the Agency to begin implementation of ProLink HFA, an application that manages data on developments from pre-approval through the asset management process. It will allow RIHousing to connect financing data to occupancy data and debt service information. It will also provide a centralized location for staff from several departments to complete tasks and inform the work of other departments.

## **Benefits Outweigh the Costs**

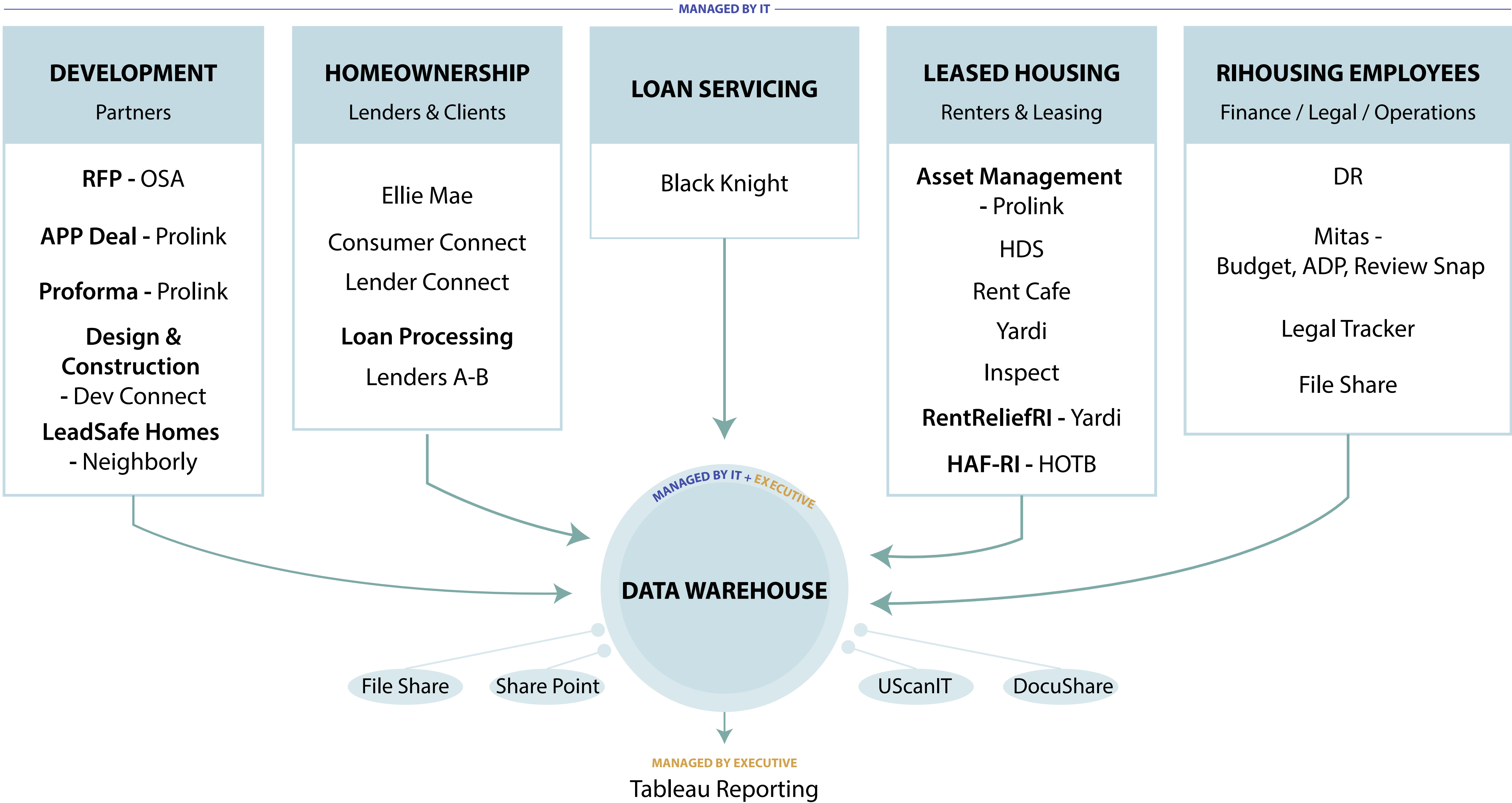
The team behind the data warehouse was lean. Two talented and dedicated staff – one IT professional and a data and research professional under the Executive team – worked together on the implementation. An Analysis and Research Specialist was added to the team soon after implementation to continue utilization of the warehouse and deliver relevant data analysis to the Agency. The cross-department effort cultivated a collaborative environment that benefit the Agency in its entirety.

Once the data warehouse was established as an effective tool to improve data use and accuracy, a group of staff members from each department was brought together for a week-long training on using Tableau with the data warehouse. The goal of this training was to begin to move staff from their old practices using data exported into Excel and saved locally to a new practice of using shared, standardized datasets. Full adoption of the data warehouse will allow data to be shared across the Agency much more easily and with significantly less room for misinterpreting data and analysis done by another team member.

## **Conclusion**


Ultimately, creating the data warehouse has allowed RIHousing to produce research-backed strategic plans. Because the data warehouse was created by an in-house team, flexibility for expansion and innovation was built into the capabilities without sacrificing integrity of functionality. With the data warehouse and the team behind it, RIHousing is now positioned as the capable and reliable source of housing data and insight in Rhode Island.

# RIHOUSING APPLICATIONS TO DATA WAREHOUSE FLOW



The dashboard below provides a snapshot of the status of applications to the HAF-RI program and basic demographic information on applicants.

The information in this dashboard will be updated bi-weekly on Tuesdays and Fridays.

 <div>Data as of: April 18, 2023</div> <div>Next Page →</div> <div>Applications Submitted</div> <div>3,902</div> <div>Applications Decisioned</div> <div>3,573</div> <div>Applications in Process</div> <div>243</div>	Loan Status		Reason for Denial	
	In Default	999	Applicant non-responsive	709
	In Forbearance	1,188	No material financial hardship	402
	Applications by Property Type		Household income exceeds program limits	98
	Single-Family	1,429	Unable to verify an eligible hardship related to COVID-19	96
	Multi-Family (2-4 unit)	396	Modification completed without HAF-RI assistance	27
	Condominium	59	Unable to cure delinquency with HAF-RI funds	17
	Mobile Home	5	Other	543
			Withdrawn	132





Reason for Denial	
Applicant Non-Responsive	4,857
Withdrawn	2,510
Other	8,244
Over Income or Not Eligible	2,774