



*by Donnell Systems, Inc.*

# Visualizing Information Using Report Extractions and Microsoft Excel Templates

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**OCIE® - Information Management, Delivered as a Managed Service**

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# Introduction

With rising operational costs and changing regulatory compliance needs, business leaders are faced with increasing pressure to optimize their workflows to stay relevant in highly competitive markets. According to a recent edition of The CFO Survey<sup>1</sup> conducted by Duke University's Fuqua School of Business, one of the most comprehensive surveys of financial decision makers, nearly sixty percent of companies have implemented software, equipment, or technology to automate tasks that previously relied on manual input from employees.

Additionally, a systematic review of the impact Big Data has on small and medium-sized enterprises (SMEs) conducted by the University of Johannesburg<sup>2</sup> revealed that while Big Data offers significant benefits to enterprises of all sizes, SMEs struggle to fully leverage the potential of Big Data due to limited financial, personnel, and IT resources. Without proper data visualization methods, SMEs are failing to realize the true potential of their data. The results are clear: workflow and process automation along with solid data visualization practices allow organizations to optimize how they utilize finite employee resources while ensuring they remain in compliance with audit and regulatory needs.

How an organization chooses to go about implementing these workflow optimizations is just as important as the numerous benefits they provide. Many industry-specific automation tools exist but these tools are often rigid and complex, forcing companies to adapt existing processes to fit within the tool's framework instead of adapting the tool to fit the organization's needs. Additionally, changes in regulations can leave organizations in limbo as they wait for a third party to adjust their product to meet compliance needs.

This document aims to inform the reader on the use of the OCIE Information Management Suite to take greater command of their data and how they utilize it. OCIE enables organizations to create optimization and analytical solutions tailored to their own needs, realizing the benefits of improved processes and decision making without the headaches and unknowns presented by a one-size-fits-most solution.

## Big Data

The rapid adoption of digital technologies caused an immense surge in the amount of data generated across platforms. This phenomenon, known as Big Data, challenged the capabilities of traditional data management systems.

Organizations who take advantage of the potential contained within these massive datasets can overhaul their decision-making capabilities, provide hyper-personalized customer experiences, and identify internal inefficiencies to drive down operational costs.

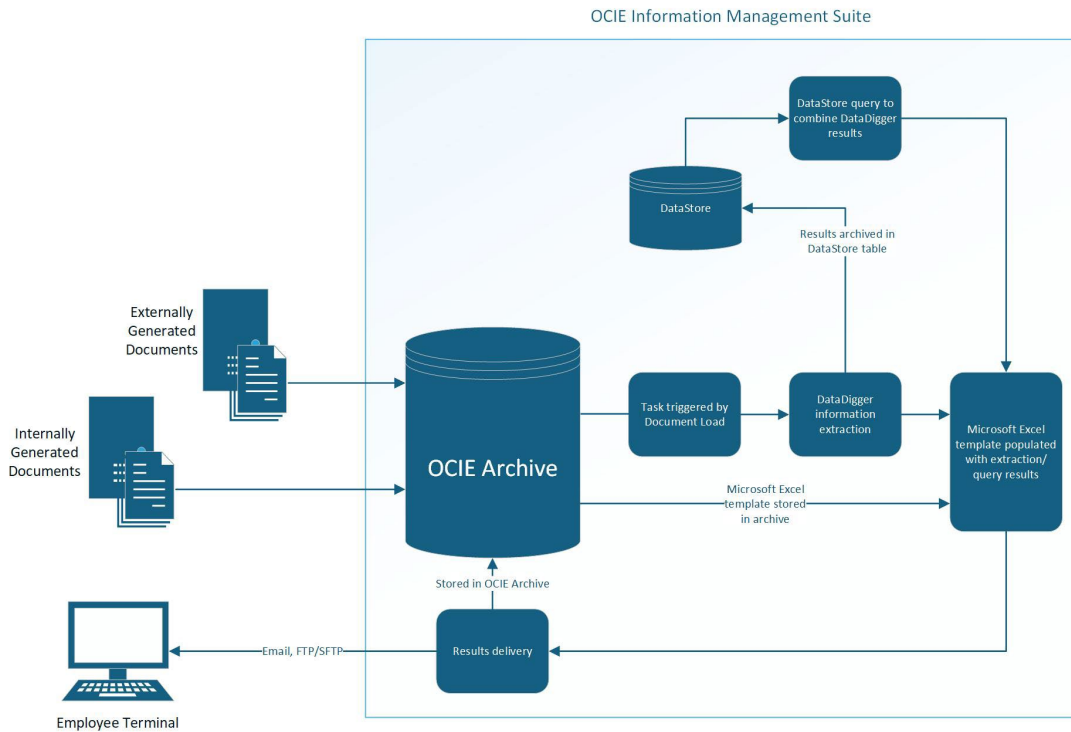
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<sup>1</sup> Duke University and the Federal Reserve Bank of Richmond. (2024, March). *Special Questions on Automation*. The CFO Survey. [https://www.richmondfed.org/research/national\\_economy/cfo\\_survey/data\\_and\\_results/2024/20240327\\_data\\_and\\_results](https://www.richmondfed.org/research/national_economy/cfo_survey/data_and_results/2024/20240327_data_and_results)

<sup>2</sup> Kgakatsi, M., Galeboe, O. P., Molelekwa, K. K., & Thango, B. A. (2024). The Impact of Big Data on SME Performance: A Systematic Review. *Businesses*, 4(4), 632-695. <https://doi.org/10.3390/businesses4040038>

# The OCIE Visualization and Automation Pipeline

OCIE allows organizations to create robust optimization and data visualization pipelines. OCIE accepts documents generated by both internal and external reporting sources, providing a centralized, authoritative, and auditable archive of information. Once these documents are loaded into OCIE they can be mined for essential information via **DataDigger**, all while preserving the original documents. The execution of these DataDiggers can be automated via **Task Manager**, with a variety of trigger criteria to complement any process. The **DataStore** can be utilized to accumulate information extracted with DataDiggers into a database, which can be queried to export data from various documents into customized **Microsoft Excel templates**. These templates provide streamlined access to whatever information a business process may require along with the ability to automatically input said information into visualization aids like charts and graphs. Strong access control protocols are in place throughout the entire pipeline, ensuring only appropriate individuals can make changes to the underlying business logic while also archiving any changes to produce a solid audit trail.



1:Diagram of The OCIE Visualization and Automation Pipeline

# Transform Overwhelming Data into Valuable Information with DataDigger

## Structured and Semi-Structured Documents

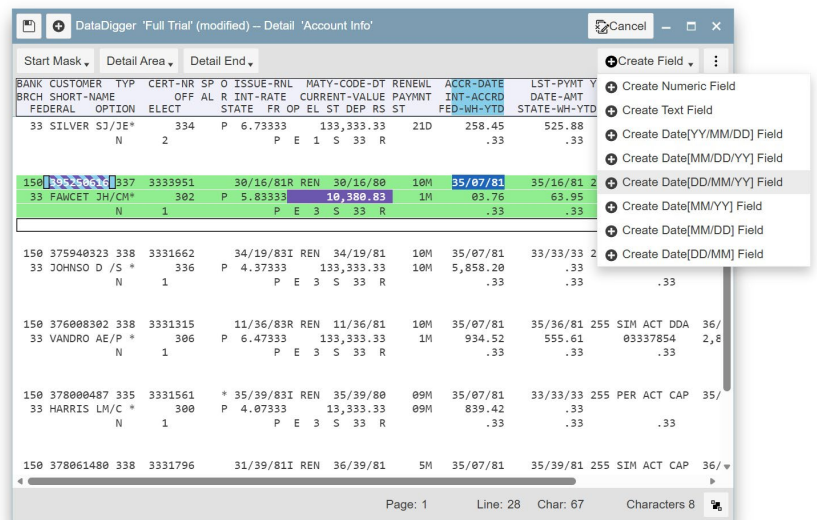
Structured documents adhere to a rigid and well-defined schema, with a standardized organizational format shared between documents of the same category.

Semi-structured documents have a slightly looser schema, where some elements may be consistent between documents of the same category while others may vary in position and format.

One of the key features provided by OCIE is the ability to extract targeted data from documents via DataDigger. DataDigger allows organizations to define the details and fields they need from the documents stored within OCIE and extract the required data from any structured or semi-structured document with a matching schema: giving clients easy access to the information they need, when they need it. DataDiggers achieve this extraction without altering the document from which they are querying the required information; they are simply filtering out the noise and returning the necessary information.

**With comparable effort to manually searching through a document for the information they require, clients can create a DataDigger that will give them that information on demand for any documents of that type that have or will be generated.** This eliminates manually searching for task specific information whenever a new day's document is loaded, improving efficiency while reducing human error. DataDiggers empower clients by automating their data acquisition and validation, allowing them to focus on more critical tasks.

DataDiggers turn document text into extracted data-types (text, numbers, dates) with a deterministic, repeatable methodology ensuring accurate results. Because DataDiggers do not alter the documents they operate on, organizations can rest assured that the integrity of their document archive and audit trail is maintained. The results produced by a DataDigger are compiled into a CSV file or custom Microsoft Excel template that can be stored within OCIE for archival purposes, emailed to relevant parties via Task Manager, or combined with other DataDigger results in the DataStore.

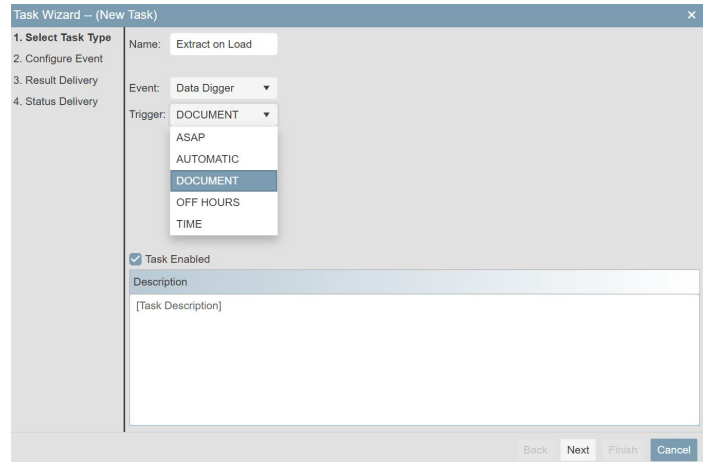


2: Fields being created in a DataDigger Detail

## Automate Data Extraction with Task Manager

A crucial step in optimizing workflows with OCIE is automating DataDigger execution with Task Manager. Task Manager is a powerful scheduling module within OCIE that allows clients to create automated tasks based on events and triggers. **With Task Manager, organizations can run DataDiggers on customized time schedules, consistently during off hours, or as soon as a document associated with the DataDigger is loaded into OCIE.** Tasks can deliver their DataDigger results to multiple clients within an organization directly via email, to an SFTP location, or store them within the organization's OCIE Archive. This makes the results available to tools and personnel soon after the underlying documents are available.

Task Manager has varied levels of client access via privileges, allowing organizations to fine tune which of their OCIE clients have access to creating and rescheduling tasks. Each task features robust process logging, providing a transparent record of the task's functions for any auditorial and compliance requirements. Task Manager allows organizations to streamline their workflows based on their needs while ensuring their processes are still converting data into validated information.



3: A task being scheduled to execute a DataDigger on document load

## Compile DataDigger Information with DataStore

When a process requires information from multiple documents, DataStore is an essential tool to combine that information into a single source. DataStore provides organizations with an interface that allows them to easily populate an SQL database with data elements extracted via DataDiggers. The DataStore can then be queried for the required DataDigger results, combining previously separate extracts into a single CSV file ready for analysis. **DataStore queries can also be exported as custom Microsoft Excel templates, allowing fields to be integrated into custom business logic, which enables near endless workflow optimization possibilities.**

DataStore allows organizations to collect the information they need from their data archive so it's ready the moment they need it. When combined with Microsoft Excel templates, DataStore provides a comparable data collection benefit to more complex business intelligence solutions without significant IT resource requirements. With DataStore, organizations can easily collect and archive their extracted information to streamline any number of business processes.

# Visualize Extracted Information with Microsoft Excel Templates

The benefits of DataDigger results and DataStore queries can be further amplified by integrating them with custom Microsoft Excel templates. Templates grant organizations the ability to define formatted worksheets customized to fulfill whatever information requirements a business process may have, eliminating the need to build workbooks from scratch. Templates provide consistent presentation and ease of access to vital information. While templates are beneficial on their own, manual data entry is still an inevitability once they've been integrated into an organization's workflow. With OCIE, templates can be stored within an organization's OCIE Archive, where they can be auto-populated with information extracted by DataDiggers or DataStore queries.

*It cut down about 90% of the time it takes me to fill out that report, because now I'm able to just open and compare it as opposed to manually filling it out.*

*Christopher Bennett  
Investor Reporting Specialist  
Pulte Mortgage*

Templates that utilize the information extraction capabilities of OCIE have two primary components: an information worksheet where the extracted information is stored, and a visualization worksheet where the desired information is displayed and operated on. The information worksheet is created within the template, where tabular data is populated by field values produced from DataDigger or DataStore queries. These field values are then linked to reference names to be used in the visualization worksheet. The reference names are placed in the appropriate cells of the visualization worksheet, where they are replaced by the extracted field values when the template is exported from OCIE. The reference names can be used directly, or in part of a business logic formula to generate

whatever synthesized information an organization may need. **Templates can also be structured to incorporate the imported information into graphical displays like charts and graphs, enabling seamless data visualization capabilities. The result is a completed worksheet with all the requisite information ready to go as soon as it's generated by OCIE.**

All templates integrated into the solution become immutable inside the OCIE Archive, providing an auditable history of the business logic contained within the template if changes need to be made. This ensures clients can rest easy knowing the template they're using is up to date and doing what they expect it to do, while also providing a record of the template for audit and compliance needs.



## Loan amortization schedule

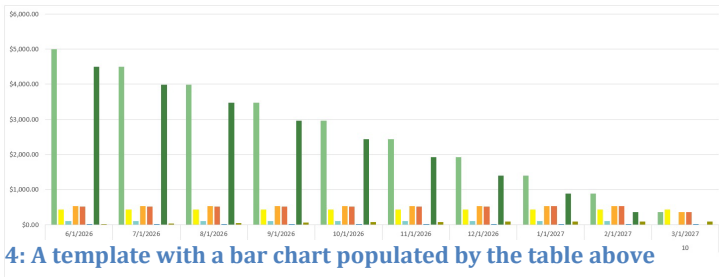
### Enter values

Loan amount	\$5,000.00
Annual interest rate	4.00%
Loan period in years	1
Number of payments per year	12
Start date of loan	6/1/2026
Optional extra payments	\$100.00

### Loan summary

Scheduled payment	\$425.75
Scheduled number of payments	12
Actual number of payments	10
Total early payments	\$900.00
Total interest	\$89.62
Lender name	Woodgrove Bank

Payment number	Payment date	Beginning balance	Scheduled payment	Extra payment	Total payment	Principal	Interest	Ending balance	Cumulative interest
1	6/1/2026	\$5,000.00	\$425.75	\$100.00	\$525.75	\$509.08	\$16.67	\$4,490.92	\$16.67
2	7/1/2026	\$4,490.92	\$425.75	\$100.00	\$525.75	\$510.78	\$14.97	\$3,980.14	\$31.64
3	8/1/2026	\$3,980.14	\$425.75	\$100.00	\$525.75	\$512.48	\$13.27	\$3,467.65	\$44.90
4	9/1/2026	\$3,467.65	\$425.75	\$100.00	\$525.75	\$514.19	\$11.56	\$2,953.46	\$56.46
5	10/1/2026	\$2,953.46	\$425.75	\$100.00	\$525.75	\$515.90	\$9.84	\$2,437.56	\$66.31
6	11/1/2026	\$2,437.56	\$425.75	\$100.00	\$525.75	\$517.62	\$8.13	\$1,919.94	\$74.43
7	12/1/2026	\$1,919.94	\$425.75	\$100.00	\$525.75	\$519.35	\$6.40	\$1,400.59	\$80.83
8	1/1/2027	\$1,400.59	\$425.75	\$100.00	\$525.75	\$521.08	\$4.67	\$879.50	\$85.50
9	2/1/2027	\$879.50	\$425.75	\$100.00	\$525.75	\$522.82	\$2.93	\$356.69	\$88.43
10	3/1/2027	\$356.69	\$425.75	\$0.00	\$356.69	\$355.50	\$1.19	\$0.00	\$89.62



4: A template with a bar chart populated by the table above

# Application of the OCIE Visualization and Automation Pipeline

## The Edit Error Report Solution

Rectifying discrepancies between accounting and reporting data is a daily inevitability of mortgage servicing. The onus is on servicers to immediately respond to any inconsistencies they encounter in order to ensure compliance under federal, state, and investor guidelines. These discrepancies are delivered through various reports that range from loan-level summaries to portfolio-wide snapshots, resulting in a labor-intensive process that must be performed every day.

Report ID	Field Name	Total Errors	Email Group
E003	E003TotalErrors		A
E009	E009TotalErrors	1	A
E010	E010TotalErrors		A
E011	E011TotalErrors		A
E013	E013TotalErrors		A
E015	E015TotalErrors		A
E018	E018TotalErrors	2	B
E023	E023TotalErrors		B
E027	E027TotalErrors		B
E05T	E05TTotalErrors		B
E098	E098TotalErrors		B
E0EK	E0EKTotalErrors		B
E0FD	E0FDTotalErrors		B
E0N1	E0N1TotalErrors		B
E0N2	E0N2TotalErrors		B
E0NP	E0NPTotalErrors		B
E0XN	E0XNTotalErrors		B
P100	P100TotalErrors	5	B
P113	P113TotalErrors		C
T39S	P121TotalErrors		C
T39S	P124-1TotalErrors		C
T39S	P124-2TotalErrors		C
T39S	P125TotalErrors	1	A

5: The Edit Error Report Solution

The Edit Error Report Solution developed by Donnell Systems leverages the power of OCIE to automate the process of addressing these discrepancies: removing the need to manually check through each individual report while ensuring the right people are notified if and when a problem must be addressed. As error reports are loaded into an organization’s OCIE Archive, DataDiggers extract targeted error fields automatically via the Task Manager. The DataStore combines the DataDigger results into an SQL table, ready to be queried by management to export a Microsoft Excel workbook containing all the information employees need to address the day’s discrepancies. The template not only lists which reports have errors that require immediate action, but also allows the organization to automatically send emails through Microsoft Outlook notifying the responsible parties that there are inconsistencies they need to address.

A process that once required hours of skimming reports each day is now a task that presents itself only when action is required:

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*It keeps our people from having to go in each day and look at every report to track errors. They really only need to track it if it pops up with an error and they get an email that says, “Hey, you need to look at this.”*

*Kristin Graham  
Post Closing System Administrator  
Pulte Mortgage*

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With the Edit Error Report Solution, organizations are able to drastically reduce the labor footprint of a necessary daily business process and deliver action items in a controlled manner; enabling their employees to focus on more impactful tasks while maintaining compliance with industry guidelines.

# The Daily Cash Balancing Solution

Daily cash balancing is an incredibly time and resource heavy task faced by mortgage servicers: information found on dozens of different reports must be extracted and reconciled on a daily basis to ensure the servicer has an accurate snapshot of their financial standings. For many servicers, this process can be a roadblock preventing them from making crucial, time sensitive decisions:

*We used to spend a lot of time just figuring out where things stood at the end of the day, and by then it was already too late to really act on anything.*

*Tony Gandini  
VP, Mortgage Servicing Administration  
TruHome Solutions, LLC*

The Daily Cash Balancing Solution developed by Donnell Systems demonstrates the workflow optimization possibilities enabled by OCIE. The requisite daily reports are stored in the organization’s OCIE Archive. These reports are mined for the required data using purpose built DataDiggers, triggered via the Task Manager on document load. The output of these DataDiggers is directed to a DataStore table to funnel the disparate results into a single location. All of the information the organization needs to complete their balancing—including values derived from business logic contained within the template—is now ready to be queried at the start of the day, where it can be exported as a custom Microsoft Excel template to auto-populate their daily cash balancing workbook.

A necessary, but tedious daily task reduced to a few clicks at the start of the workday. Since the template workbook can be modified as needed, the Daily Cash Balancing Solution is adaptable to an organization’s unique needs, while providing a controlled process pipeline within an unchangeable OCIE Archive. When utilizing the Daily Cash Balancing Solution, organizations can confidently say their daily balancing data comes from an authoritative source, ensuring a proper auditing history is maintained and good business decisions are made.

Work Of	REPORT NAME	
Today's DATE: October 4, 2022		
REPORT: May 29, 2026		
<b>Summary of Deposit or GL Tickets</b>		
E-007 - Tran 710-714, 766 Corporate Advance		\$1,200,651.90
E-008 - Tran 081, Paid-In-Full		\$497,010.02
E-013 - Tran 060-069, Special Deposits		\$153,602.85
E-027 - Tran 070-073 Payments		\$2,443,570.68
E-027 - Tran 071, Lockbox Payments		\$1,202,341.96
E-027 - Tran 071, Lockbox 2 Payments		\$0.00
E-027 - Tran 071, Drafts Auto Debits		\$608,341.66
P-1GF -2 - Trans CHG, Recovery activity		\$0.00
P-1GH -2 - Trans CHG, Recovery activity		\$0.00
E-0LQ - Proceeds Deposit Edit Report		\$1,862,649,005.00
System Control		
S-200 System Control Yesterday's Trial Balance - Net Principal		\$1,862,649,005.00
S-200 System Control Today's Balance FWD - Net Principal		\$14,948,260.60
S-200 System Control Yesterday's Trial Balance - Net Escrow		\$14,948,260.60
S-200 System Control Today's Balance FWD - Net Escrow		\$9,729,740,283.87
T-300 System Control Yesterday's Trial Balance - Net Principal		\$9,729,740,283.87
T-300 System Control Today's Balance FWD - Net Principal		\$55,955,485.33
T-300 System Control Yesterday's Trial Balance - Net Escrow		\$55,955,485.33
T-300 System Control Today's Balance FWD - Net Escrow		\$1,546,142.73
T-300 System Control Trial Balance - Suspense		\$1,200,651.90

6: The Daily Cash Balancing Solution

## Conclusion

As competitive pressure continues to build across markets and SMEs struggle to adapt to staggering volumes of data, industry leaders are on an endless search to optimize their operations for competitive advantage. If an organization wishes to thrive in this ever-evolving landscape, they must seek out new ways to streamline and automate their existing workflows while discovering new insights to better inform key business decision makers.

By utilizing the OCIE Information Management Suite and custom Microsoft Excel templates, organizations have the ability to transform previously labor-intensive processes into modernized automated pipelines. OCIE provides its customers with both an authoritative and auditable archive of their information and cost-effective tools to achieve greater command of their data.