

# DATA DATA Here and There!

Automating labor-intensive extraction of LPS and AOD sub-system and PDF bank data for fast and easy retrieval

**Audrey R. Adams**

South Carolina State Housing Finance and Development Authority

February 1, 2018

	18	19	20	21	22	23-24-25	24	25	26
237 602									
253 535	1 781	315 153							
287 813	8 384	315 438							
337 206	44 961	320 036							
375 549	69 338	332 847							
388 736	74 115	337 539							
378 176	70 818	329 103							
341 601	47 405	319 508							
340 835	44 292	320 567							
313 109	41 144	316 148							
298 664	34 839	311 210							
271 840	24 077	266 847							
259 998	24 304	246 697							
257 215	26 747								
254 979									
250 677									



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## **CPM PROJECT 2018**

*Audrey R. Adams*

Senior Accountant

**South Carolina State Housing Finance and Development Authority**

300-C Outlet Pointe Blvd.

Columbia, South Carolina 29210

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## **Introduction**

Did you know that "every day, we create 2.5 quintillion bytes of data — so much that 90% of the data in the world today has been created in the last two years alone?" "The volume of data created by U.S. companies alone each year is enough to fill ten thousand Libraries of Congress."

"70% of data is created by individuals – but enterprises are responsible for storing and managing 80% of it." <sup>1</sup>

"As more millennials hit the workforce, businesses are forced to adapt their antiquated processes to accommodate for this tech-savvy, educated group of individuals. As a result, businesses now more than ever are investing in automation technology to streamline manual, cumbersome tasks — allowing their staff more time to focus on strategic operations." <sup>2</sup>. Such is the case for South Carolina State Housing Finance and Development Authority.

The Housing Authority's mission is to promote and provide safe, decent and affordable housing for the citizens of South Carolina. In the Finance Division we are many members working in a collective effort to produce accurate financial documents for internal and external reporting. Shared data is a key element in the process to produce the accurate financial documents needed for sound financial decision making to accomplish the agency's mission. We depend on others in our department, in other parts of the agency as well as outside entities for the

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<sup>1</sup> (2014). "Exciting facts and findings about Big Data". Retrieved from <http://bigdata-madesimple.com/exciting-facts-and-findings-about-big-data/>

<sup>2</sup> Heavner, Samantha. (2014). "Interesting Automation Facts". Retrieved from <http://blog.esker.com/interesting-automation-facts/>

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information that is needed to get the job done. At the same time, we are depended upon to work in a timely manner so that we don't slow down or stop progress for the information that is needed in the process.

## **Problem Statement**

There is a need for process improvement to better handle the extraction of shared data from monthly Lending Portal System (LPS) and Application Oriented Design (AOD) (our sub-systems for loan servicing and accounting) reports and pdf bank statements at SC State Housing Finance and Development Authority (the Authority). A labor-intensive workflow has led current staff to a state of continually putting out fires instead of being efficient. As a result, the current data extraction processes sometimes causes staff to miss or barely meet deadlines.

The need for workflow analysis is extremely important to identify areas that are causing slowdowns and to develop workable solutions to streamline and automate processes to achieve accurate and timely reporting to assure that the agency's mission is efficiently met.

The current process of data extraction from the LPS and AOD systems and keying data from pdf bank statements is time consuming and inefficient and needs to improve significantly to reduce process time and improve productivity.

## **Data Collection**

Data collection for improving processes to better retrieve and utilize shared data for financial reporting and decision making at the Authority involved several different methods. Three methods were used to review data collection for our institution. Interviews of users and

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management at the Authority as well as outside financial institutions were used along with a user group meeting (with follow-up emails and one on one verbal discussion) and finally direct and indirect observations. Methods chosen were believed to be the most effective ways to take an in-depth look at the current data retrieval processes and to analyze problems and potential pitfalls of our current systems. The intended outcome was to streamline unnecessary data collection processes and possibly centralize and create more efficient and less time-consuming processes for financial reporting and decision making for the future. The improved processes will be first implemented for testing within the Investment and Debt area of the Finance Division with potential to be used agency wide if needed.

We looked at the amount of time that it currently takes users to retrieve needed data for financial reporting also the actual time that it currently takes to process daily, weekly and monthly tasks that lead to the financial decision-making transactions necessary for sound reporting. We also examined the different types of formats for the data necessary to be retrieved in completing necessary tasks.

The Authority uses Microsoft Excel to upload data for tasks and most reporting outcomes; therefore the need now is to convert all incoming data sources to a format compatible to be downloaded to Excel creating a simple and user-friendly system for day to day tasks and for reporting.

The process started with a consultation with my direct supervisor contemplating a need to revamp integration to improve connections between our current systems. I also got advice on moving forward with the steps necessary to improve our systems.

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Data collection kicked off with a user group meeting involving four Investment and Debt staff users, one who is the manager of this area of the Finance Division. A brainstorming session led to identification of some of the tasks that are the most time consuming and the group briefly considered methods to observe samplings of durations of the 10 tasks as they currently exist. At this point the user group will remain small to allow for easier testing and implementation of the new process into daily workflow. Successful implementation within the user group would warrant accessibility of this new system in our entire division and agency-wide as needed.

To encourage busy users to participate, an observation method was introduced to the group that would allow hands-free recording of process times for tasks keyed into Excel. Microsoft Outlook Journals automatically record timing of actions whenever an Excel document is opened. The timing is kept in a timeline in Outlook Journal and is available for documentation as needed. Not having used the Journaling system prior to this project, our group learned and most of the group successfully used this method for observation for most of the 10 relevant tasks. Unforeseen circumstances or tasks that fall outside of the two month observation period caused a few of the tasks to be observed manually or required interviewing the user for historical timings. Observations were monitored over a two-month period to effectively view all the tasks at least once to get an idea of the time that it takes with the current systems to complete data retrieval.

As processes are now, the approximately Eighty-eight BONY bank statements give us monthly cash, investment and debt receipt and disbursement transactions for Journal Entries that are required to be keyed and uploaded into the South Carolina Enterprise Information System

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(SCEIS). To accomplish this, each of the statements are manually annotated and the appropriate data is transferred to Journal entry spreadsheets for the uploads. Data is also manually retrieved for cash, investment and debt reconciliations and for required disclosure reporting as well as debt service analysis and financial statement month end and year end transactions.

The Authority's contact, Vice President at the Bank of New York (BONY), one of the Authority's largest and most used external data sources was interviewed about formatting for the bank statements received from them monthly. These bank statements currently don't successfully convert in a useable format for Excel. This means manual keying of data from those statements monthly by each person in the user group for different tasks and reporting needs. Discussions led to BONY introducing an Excel document that was of little use to us because the data was not the same as the monthly statement data that we use for our day to day workflow. BONY has since scheduled an in-house training and demonstration workshop for January 2018 that will introduce a new system, NEXEN (currently being used by Florida Housing Authority) (screenshot APPENDIX C), an online system that should allow us to get the data that we need from them in an Excel format and should allow daily real-time transaction updates. If successful, this new system may meet our needs for conversion for this data source. We are currently successfully converting needed data from First Citizens Bank and Wells Fargo Bank. What would then be needed is an automated and possibly centralized process to upload the data from these sources as well as the data from in-house AOD and Black Knight Financial Services (BKFS) and SCEIS GL into Excel document(s) for easy retrieval.

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## **Data Analysis**

“The McKinsey Global Institute has been conducting an ongoing research program on automation technologies and their potential effects. A new MGI report, *A future that works: Automation, employment, and productivity*, highlights several key findings.

The automation of activities can enable businesses to improve performance by reducing errors and improving quality and speed, and in some cases achieving outcomes that go beyond human capabilities. Automation also contributes to productivity, as it has done historically. At a time of lackluster productivity growth, this would give a needed boost to economic growth and prosperity. It would also help offset the impact of a declining share of the working-age population in many countries. Based on our scenario modeling, we estimate automation could raise productivity growth globally by 0.8 to 1.4 percent annually “<sup>3</sup>. Based on this scenario modeling, I projected a conservative 0.5 percent growth in productivity (time saved) for our tasks after automation.

Data from our completed observations were entered in an Excel log for analysis. Results were achieved based on the variance between the estimated process times once automation is implemented which tells us the work hours that could be saved for each task.

Due to heavy work schedules, we were only able to get 35 good observations possibly causing

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<sup>3</sup> Manyika, James; Chui, Michael; Miremadi, Mehdi; Bughin, Jacques; George, Katy; Willmott, Paul and Dewhurst, Martin. (2017). “Harnessing automation for a future that works”. Retrieved from <https://www.mckinsey.com/global-themes/digital-disruption/harnessing-automation-for-a-future-that-works>

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the negative low number in our outcome (based on estimations projected that automation would save at least half the time of manual entries). I used 0.00 as the low since work hours can never be below zero. 8.5 minutes was the most occurring number of work hours saved (mode) with our middle value (median) being 15.5 minutes.

Although any time saved is beneficial to the agency and staff involved, I believe observations from this collection were not sufficient to predict actual outcome from automation. I am eager to see and anticipate that the testing phase will produce better numbers than the projected process times presented with this data collection and will reveal added time savings.

*APPENDIX A* shows the data retrieval flowchart as processes are now and the data observation log along with the charted results.

## **Implementation Plan**

Data retrieval establishes the foundation for sound decision making and reporting throughout the Authority. For this reason, the Finance Department teams up with financial institutions, financial advisors, upper management, our in-house Servicing Department, Authority program areas and other support sections to gather information and data that we need to update systems for financial statements and for internal and external reporting. Currently data is received from financial institutions in pdf formats. Emerging technology requires data uploads that cannot support pdf formats which makes it labor-intensive to get the needed data from BONY bank statements as presented to us currently.

With two of the three financial institutions successfully converting as discussed under the Data Analysis section, the plan is to get the pdf data converted for the BONY financial information.

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The goal is to get the data in more technology driven formats such as Excel, txt, csv and xml for successful uploads.

In a follow-up email with our contact at BONY, I requested details about the NEXEN system talked about previously and inquired how we can get access as soon as possible. Because of the email and after a fellow user group member's telephone discussion with our BONY contact scheduled a telephone conference call for January 30<sup>th</sup> to discuss the possibilities with this system for the Authority's technology needs. Joining the call was two BONY professionals and from the Authority: the Investment and Debt Accounting Manager II, the Investment and Debt Accounting Manager I, the Investment and Debt Senior Accountant (Project Lead), and the Investment and Debt Accountant.

Staff from the Authority mentioned above is also the implementation team for the new processes. This project started with the Investment and Debt area of Finance. A representative from the GOF area of Finance is collaborating with the team because he is the point of contact for a new financial statement software that is being put into service in the Finance Department. He discussed the potential BONY format changes and the needs for the new financial statement software briefly in a user group meeting with the implementation team. This new system requires data from BONY statements and needs to utilize converted data through our conversion process to upload to the new financial statement system. AOD and Black Knight systems successfully convert to Excel, therefore conversion requirements are satisfied for these systems.

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Members of the user group are the actual users of the data. This group acts as custodian for the intended data and has the necessary skills to begin a rapid implementation plan that targets March 31, 2018 as a place in service date for a new upload system.

*IMPLEMENTATION TASK SCHEDULE*

<b>TASK</b>	<b>Projected Begin Date</b>	<b>Projected End Date</b>
Meet with User group/Stakeholders-discuss potential formats	Jan 19, 2018	Jan 19, 2018
Project Lead-contact BONY to inquire about NEXEN reporting system-formatting possibilities	Jan 16, 2018	Jan 19, 2018
User group meeting with BONY contact to discuss format possibilities, how to access and the cost	Jan 30, 2018	Jan 30, 2018
Project Lead-schedule access (or download) for NEXEN system at SHA	Jan 30, 2018	Feb 5, 2018
Project Lead-Demo NEXEN system at SHA	Feb 5, 2018	Feb 15, 2018
Download NEXEN system to entire user group	Feb 15, 2018	Feb 20, 2018
Project Lead-get technical assistance from the IT Department if needed	Feb 20, 2018	Feb 25, 2018
Project Lead-establish written NEXEN system procedures	Feb 25, 2018	Feb 28, 2018

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<b>TASK</b>	<b>Projected Begin Date</b>	<b>Projected End Date</b>
Project Lead/BONY staff-Train entire user group on NEXEN system.	Mar 1, 2018	Mar 5, 2018
User group-Integrate new NEXEN system into data retrieval processes	Mar 5, 2018	Mar 31, 2018
Project Lead-review implementation to assure data is being accurately accessed from the BONY NEXEN system in Excel, txt, csv and xml formats. If so, then implementation was successful.	Mar 31, 2018	Mar 31, 2018
If NEXEN system does not satisfy formatting requirements, stop implementation, continue using old manual system and look at purchasing a subsystem that will convert data as needed thru the Procurement Department.	Jan 30, 2018	Mar 31, 2018

After meeting with BONY, it was determined that the new system would support download of real-time cash and securities activity in any of the flat file formats that we requested. There is also potential to generate and schedule custom reports. The Authority has had a long banking relationship with BONY. There is no additional cost to the Authority for use of this service. Successful completion of implementation times above depends on the NEXEN system being

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user friendly. A short learning curve is expected for us to meet timelines as outlined. Should unexpected difficulties with use of the system prevent us from moving forward in a timely manner, we will rely heavily on assistance from BONY complimentary technical support. One of our user group team members had a prior ID and password for an old BONY connection that is no longer accessible. Since the meeting, she has successfully reactivated her login for the new system. Access will be granted to the entire user group and to an IT Department representative within a week of BONY receiving an email from our group with names of all users. The Investment and Debt Manager is contacting the IT Director to get the name of the IT representative. Once systems are loaded on all user group member computers, the Authority's Training Room will be used for an initial overhead screen remote demo and general training for the user group prior to implementation of the system. User group members are outfitted with desktop computers at each workstation that will accommodate use of the new system and further BONY individual training by remote will be utilized as needed for the user group. Excel, the spreadsheet used for data uploads is installed on each workstation and users have the necessary skills for successful uploading. No further resources are needed for use of the system. SHA's IT Department would oversee any special requirements for loading the systems at each work station if needed and for protection of sensitive data thru the agency's computer security policies. Upon Successful completion of implementation, the focus team members will each begin using the system to download required data from BONY's NEXEN system daily, monthly and annually as needed.

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## **Evaluation Method**

The goal for implementation of this automated data retrieval process is to duplicate the data submitted to us from the pdf bank statements received monthly in formats that would allow elimination of manual keying of transaction data and would speed up the steps by using automated processes. After the first few months' successful download of bank data, user group members will operate on dual systems and will compare pdf bank statement activity to NEXEN downloaded data spreadsheets. The Project Lead will track successes and inaccuracies on an Excel spreadsheet for the first 3-month period after integrated into processes and will work with BONY staff and user group members to modify system and processes as needed.

## **Summary and Recommendations**

The initial energy and time that it takes to set up and establish automated systems can be overwhelming with today's demands and schedules to keep but the reward out ways the temporary inconvenience. We often lose production and the ability to innovate business practices because we fall behind when it comes to technology and automation. Because automation is designed to assist with completion of tasks, user group members are then allowed to spend their time more effectively which saves on labor costs.

There definitely will be time savings due to automation and that amounts to cost savings for the Authority which actual savings remains to be seen. APPENDIX D shows potential annual cost savings based on user group task frequency that will benefit the Authority.

This process has helped with the realization that the major problem was the BONY statements, which maintains the bulk of our transactions. Looking back, AOD and LPS systems were not

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really the problem as we thought because they are easily converted to an Excel document and satisfies upload requirements. With the new NEXEN system, this sets all data sources to a standard Excel format making upload from a central document(s), a much-needed reality. Once implementation is complete, a future objective would be to create and link the Excel data spreadsheets to Journal Entry and other upload spreadsheets to take automation to another level. We are working with our inhouse IT Department to achieve the link and upload results; however, their state of backlog lessens the possibility of getting the needed programming in a timely manner.

Whenever workload demands it, I create spreadsheets that are macro and formula driven and other team members are creative with formulas that automate workflow for better efficiency and to help avoid errors. These helpful tools speed up processes and help very much with time management. To expedite implementation of future linking of the spreadsheets for automatic uploads, members of the user group will work together to either create excel systems that with formulas and macros (similar to Deposit Log macro APPENDIX B) will retrieve appropriate data from all bank statements and generate excel spreadsheets that will sort the information and load the appropriate JEs or reports as necessary or if unsuccessful, we will incorporate an outside system through the procurement process that will accomplish the uploads and produce less manual processing.

Going through this process has been a major learning experience. I appreciate this opportunity and value the chance that our user group had to provide better services for the Finance Department and for the Authority as a whole. Not only to identify what areas were causing

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slowdowns for tasks and production, but to observe the great team effort that our user group produced to come together to solve the issues that were identified. It was rewarding to see how there truly is no “I” in Team. Every member brought their expertise and contributed significantly to this effort. As our user group continues forward with the implementation and integration of this automated system into our workflow, this will make it considerably easier to be about the business of the Authority, HOUSING SOUTH CAROLINA.

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***Glossary of Terms -***

*South Carolina State Housing Finance and Development Authority - the Authority*

*Bank of New York, Florida - BONY*

*South Carolina Enterprise Information System - SCEIS*

*Information Technology Department - IT*

*Application Oriented Design (Loan Production sub-system) - AOD*

*Black Knight (Loan Servicing sub-system) - LPS*

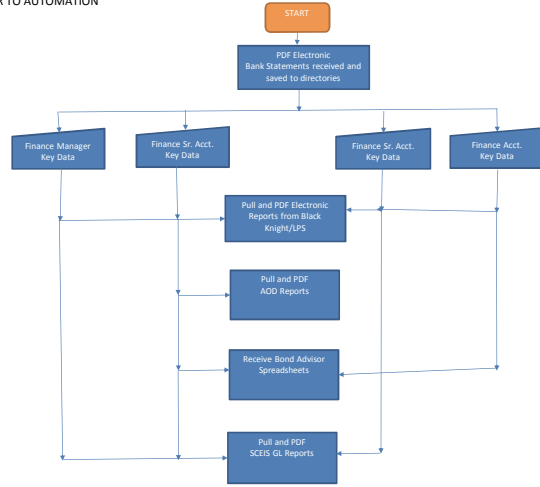
*Black Knight Financial Services - BKFS*

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**DATA COLLECTION LOG**

PRIOR TO AUTOMATION



Data Collection:

No	DATE	USER	TASK	[ projected time savings of 50% with automation ]		(7.5 hr workday)		(Charted)		
				PROJECTED AUTOMATED WORK MINUTES	PROJECTED AUTOMATED WORK HOURS	ACTUAL MINUTES WORKED	ACTUAL HOURS WORKED	ACTUAL DAYS WORKED	Work Minutes Saved	Work Hours Saved
1	Wed 9/13/2017	ARA	Wells Fargo Bank Statement Data to Excel	15.5	0.15	31	0.31	0.069	15.5	0.011
2	Wed 9/20/2017	ARA	Wells Fargo Bank Statement Data to Excel	10.5	0.10	21	0.21	0.047	10.5	0.007
3	Thu 9/21/2017	SA	FC Checks Issued	29.5	0.29	59	0.59	0.131	29.5	0.020
4	Thu 9/21/2017	SA	FC Checks Issued	8	0.08	16	0.16	0.036	8	0.006
5	Thu 9/21/2017	SA	Call-Ins	16.5	0.16	33	0.33	0.073	16.5	0.011
6	Thu 9/21/2017	SA	FC WF Check Upload	4.5	0.04	9	0.09	0.020	4.5	0.003
7	Thu 9/21/2017	SA	FC WF Check Upload	9	0.09	18	0.18	0.040	9	0.006
8	Thu 9/21/2017	SA	Call-Ins	8.5	0.08	17	0.17	0.038	8.5	0.006
9	Wed 10/4/2017	PL	Renaming/filing the BONY Stmt	30	0.30	60	1.00	0.133	30	0.021
10	Wed 10/4/2017	PL	Transforming WF Bank Statement into one JE (troubleshooting)	450	7.30	900	15.00	2.000	450	0.313
11	Wed 10/4/2017	PL	Transforming the STO interest report into JEs	30	0.30	60	1.00	0.133	30	0.021
12	Mon 9/25/2017	ARA	Key BONY August balances into Excel Reconciliation spreadsheet	34.5	0.34	69	1.09	0.153	34.5	0.024
13	Mon 9/25/2017	ARA	Key WF bank data into Excel spreadsheet	8.5	0.08	17	0.17	0.038	8.5	0.006
14	Thu 10/26/2017	ARA	Key split purchase data into spreadsheet for WF Recon	108	1.08	136	2.16	0.302	68	0.047
15	Wed 9/13/2017	ARA	Copied and pasted Wells Fargo Bank Stmt data into Excel	15.5	0.15	31	0.31	0.069	15.5	0.011
16	Thu 10/19/2017	HM	Updated Net Purchase spreadsheet	5.5	0.05	11	0.11	0.024	5.5	0.004
17	Thu 10/19/2017	HM	Repurchase Breakdown to Finance	3.5	0.03	7	0.07	0.007	3.5	0.001
18	Thu 10/5/2017	HM	Net Purchase spreadsheet	22.5	0.22	45	0.45	0.100	22.5	0.016
19	Thu 9/21/2017	SA	Disbursements JE - FC Checks issued	29.5	0.29	59	0.59	0.131	29.5	0.020
20	Thu 9/21/2017	SA	Disbursements JE - FC Checks issued	8	0.08	16	0.16	0.036	8	0.006
21	Thu 9/21/2017	SA	Call-Ins	16.5	0.16	33	0.33	0.073	16.5	0.011
22	Thu 9/21/2017	SA	Disburse FC - Prepare check	4.5	0.04	9	0.09	0.020	4.5	0.003
23	Thu 9/21/2017	SA	Disburse FC - Prepare check	9	0.09	18	0.18	0.040	9	0.006
24	Thu 9/21/2017	SA	Call-Ins	8.5	0.08	17	0.17	0.038	8.5	0.006
25	Wed 11/1/2017	PL	Transforming WF Statement to JE	30	0.30	60	1.00	0.133	30	0.021
26	Thu 11/2/2017	PL	Rename/ile Bank Statements	45	0.45	90	1.30	0.200	45	0.031
27	Fri 11/3/2017	PL	Keying MBS balances for JE	45	0.45	90	1.30	0.200	45	0.031
28	Thu 11/9/2017	SA	Purchase Letters	15	0.15	30	0.30	0.067	15	0.010
29	Thu 11/9/2017	SA	Disbursements JE - FC Checks issued	15	0.15	30	0.30	0.067	15	0.010
30	Thu 11/9/2017	SA	Call-Ins	30	0.30	60	1.00	0.133	30	0.021
31	Wed 11/1/2017	ARA	Key Purchase breakdown into spreadsheet for WF Recon	40	0.40	80	1.20	0.178	40	0.028
32	Wed 11/1/2017	ARA	Copy/Paste WF Bank Statement data into Recon spreadsheet	8.5	0.08	17	0.17	0.038	8.5	0.006
33	Wed 11/1/2017	ARA	Key Deposit numbers for WF Recon	7	0.07	14	0.14	0.033	7	0.005
34	Wed 11/1/2017	ARA	Key Purchase into Recon spreadsheet	31	0.31	62	1.02	0.138	31	0.022
35	Thu 11/30/2017	HM	Key data into Bonds Payable Recon	119.4	1.19	238.8	3.58	0.531	119.4	0.083



Mean (Avg.)	35.14
Median	15.5
Mode	8.5
Standard Deviation	75.55596368
Standard Error	12.77128883
Standard Error x 2	25.54257767
Low Value	-19.64
High Value	35.14
Range	54.78

\*\*Used 0.00 as the low value, work hours can never be below 0.

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## APPENDIX B

The screenshot shows an Excel spreadsheet titled 'AA Deposit Sheets FY2018'. The main content is a 'Multifamily Deposit Log' for February 2, 2018, covering the period from July 1, 2017, to June 30, 2018. The spreadsheet includes a header with 'DEPOSIT INSTRUCTIONS' and a summary of transactions: \$3,571,406.27 remitted, 28 transactions fiscal year to date. There are four callout boxes: 'PROCESS LOAN SERVICING (097, 098, DPA, Tracker) MSP Interface Offset', 'PROCESS DPA PROCEEDS (NOT HTF)', 'PROCESS HOME/HTF DEPOSIT', and 'PROCESS HTF DEPOSIT'. The data table has columns: No., By, Date Received, Deposit Date, Check Number, Project Name, Payor, Program, Type, Amount Remitted, Deposit Number, Principal, Interest, Escrow, and Other.

No.	By	Date Received	Deposit Date	Check Number	Project Name	Payor	Program	Type	Amount Remitted	Deposit Number	Principal	Interest	Escrow	Other
36	SA	1/19/18	1/4/18		SH97-Loan Serv		ProgFund	SH97	7,900.12	MF26				7.5
37	SA	1/19/18	1/4/18		SH98-Loan Serv		ProgFund	SH98	1,630.25	MF26				1.6
38	SA	1/19/18	1/4/18		DPA-Loan Serv		ProgFund	DPA	102,991.44	MF27				102.9
39	SA	1/19/18	1/4/18		MFAM HOME Reg Amort-Loan Serv		GOF	HOME	186,430.47	MF28				186.4
40	SA								0.00					
41	SA								0.00					
42	SA								0.00					
43	SA								0.00					
44	SA								0.00					
45	SA								0.00					
46	SA								0.00					

Sub ProcessHomeProgFundDepUpload()

' ProcessHomeProgFundDepUpload Macro  
' Macro recorded 1/15/2010 by adama

ActiveSheet.unprotect

Sheets("Deposit Data").Select

Rows("5:12").Select

Selection.clear

Sheets("Deposit Log").Select

Selection.Copy

Sheets("Deposit Data").Select

Range("A5").Select

Selection.PasteSpecial paste:=xlPasteValues, Operation:=xlNone, SkipBlanks \_

:False, Transpose:=False

Sheets("Deposit Log").Select

Range("A2128").Select

Selection.PasteSpecial paste:=xlPasteValues, Operation:=xlNone, SkipBlanks \_

:False, Transpose:=False

Application.CutCopyMode = False

With ActiveSheet.PageSetup

.PrintTitleRows = ""

.PrintTitleColumns = ""

End With

Range("A2128:AI2135").Select

Selection.ClearContents

ActiveWindow.SmallScroll ToRight:=-27

ActiveWindow.SmallScroll Down:=-14

Range("C2128").Select

With ActiveSheet.PageSetup

.PrintTitleRows = "\$1:\$9"

.PrintTitleColumns = ""

End With

Range("D12:D2052").Select

Selection.SpecialCells(xlCellTypeBlanks).Select

ActiveSheet.protect DrawingObjects:=True, Contents:=True, Scenarios:=True

ActiveWorkbook.Save

Sheets("Print").Select

Range("BA1").Select

End Sub

# APPENDIX C

https://nexen.bnymellon.com/apps/login?TYPE=33554432&REALMOID=06-000f21e6-f27a-141c-aeed-2f7b0a00809a&GUID=&SMAUTH

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[support@bnymellon.com](mailto:support@bnymellon.com)

**Internal Employees**  
[Internal Employee Support](#)

**Americas**  
(855) 284 9065 (Toll Free)  
+1 615-457-5589

**Europe, Middle East, Africa**  
+44 (0) 20 7964 6161

**Netherlands**  
+31 (0) 76 760 2333

**Germany**  
+49 (0) 69 12014-2014

**Asia Pacific**  
+800 2265 6369 (Toll Free)  
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# NEXEN System Requirements

## Windows Operating Systems:

- Windows 7
- Windows 8
- Windows 8.1
- Windows 10

## Mac Operating Systems:

- Mac OS X Tiger, Leopard and Mountain Lion

## Software Requirements:

- Adobe Acrobat Reader 9+

## Web Browsers:

- Internet Explorer - 11 and above
- Firefox - 44.0 and above
- Chrome - 48.0 and above \*
- Safari - 9.0

\* Certain legacy reports with charts & graphs may not render properly in Chrome.

## Mobile Browsers:

- iOS Safari – 9.2
- Android Browser – 47
- Opera Mobile - 33
- Chrome for Android – 47
- Firefox for Android - 44
- IE Mobile - 11
- UC Browser for Android – 9.9

APPENDIX D

Time saved / day (in hours):	5.2	Weeks worked on Tasks / year	28	Sonus 2012Q1 data	Overhead Hours:	435.06	Annual Hours Saved:	728
	Salary Distribution	Base Salary	Gross Compensation	Hours worked per week	Hours worked per year	Total Hours Paid	Hourly Rate	Annual Savings per employee
Under \$50k	25%	45,000	58,500	38	1050	1485	39.39	\$ 28,678
\$50k to 90k	75%	230,335	299,436	113	3150	3585	83.52	\$ 60,805
\$90k to \$120k	0%	-	-	0	0	435	-	\$ -
Over \$120k	0%	-	-	0	0	435	-	\$ -

Company Size	132			
% of workforce who are knowledge workers	3%			
Salary Range	% of KWs in this range	KW workers	Annual Savings per employee	Annual Savings
Under \$50k	25%	1	\$ 28,678	28,675
\$50k to 90k	75%	3	\$ 60,805	182,396
\$90k to \$120k	0%	0	\$ -	-
Over \$120k	0%	0	\$ -	-
Total:	100%	4		211,071

Estimated % of time saved:

0.5

Task	Minutes Spent per day	Potential Time Recovered per day
WF recon spreadsheet data	205	102
FC Checks Issued	60	30
Call-Ins	53	27
FC WF Check Upload	27	14
Renaming/Filing the BONY Stmt	38	19
BONY recon spreadsheet data	35	17
Key MBS balances for JE	45	23
Purchase Letters	15	8
Key data into Bonds Payable recon	119	60
Updated Net Purchase spreadsheet	30	15
		0
Minutes / Day	626	313
Hours / Day	10.4	5.2

Task	Days Spent on Task per month
WF recon spreadsheet data	2
FC Checks Issued	9
Call-Ins	5
FC WF Check Upload	1
Renaming/Filing the BONY Stmt	1
BONY recon spreadsheet data	1
Key MBS balances for JE	1
Purchase Letters	5
Key data into Bonds Payable recon	2
Updated Net Purchase spreadsheet	1
Days / Month	28