



The City of Stuart, Florida, Creates Its Own Utility Billing Solution

BY LOUIS J. BOGLIOLI III

Surprisingly, one of the most overlooked and underemphasized aspects of any system is its reporting capabilities — until the reports from the system are not adequate to meet the demands of the users, at which point reporting can become critical. The most important reporting function of a utility is the bill it sends to its customers. When the City of Stuart, Florida, made changes that created unexpected problems with its utility billing, the city had to develop a solution quickly and inexpensively. The answer in this case was to put something together in-house.

BACKGROUND

The City of Stuart, a small coastal city in Martin County, provides police, fire, and most other general municipal services, along with utility services: award-winning water, water reclamation, residential and commercial sanitation, yard trash collection, recycling, and storm water maintenance. Though the city uses third-party products for the actual meter reading and some work order functions, the remainder of the billing, receipting, collections, and meter maintenance is handled by an enterprise resource planning system that is tightly integrated with the receipting and accounting modules. The system is designed with a common database of service locations and addresses for all the modules, as well as a common listing of customers. The ERP system uses tables in a unified database structure to maintain customer information — services, history, rates, consumption and usage, and all the related financial data pertaining to their accounts. The system even generates ACH payment information and all the journal entries that interface with the accounting module of the system, and prints customers' utility bills.

The city's ERP system offers many features and handles almost every aspect of its operations, in one way or another. It includes a wide array of reports and even allows users to generate some custom reports, manipulate the standard reports provided, and save almost every report as an exported text file. Users can extract information, rearrange the layout of the reports produced, and combine reports to bring together information from the outside. The only area where these features are not available is on those reports, or

forms, that are not normally meant to be manipulated, such as accounts payable checks, payroll checks, and, of course, utility bills.

Stuart's constant goal is to provide excellent services to its customers and citizens, as well as excellent customer service. Over the years there had been some suggestions about improving the monthly utility bill, the language and layout of which was not always entirely clear to every customer.

Of course, improvements had been made over the years — originally, the bills were printed on continuous sheets of post cards which had to be physically cut apart by a machine that can only be described as resembling a large deli meat slicer with multiple blades — but as printing technology advanced, so did ways of presenting the information. Formerly, the bills went directly from the ERP system to a printer that was physically connected, or at least networked to it. The information and layout of the bill, or

the "print string," went directly to the printer and was controlled solely by the ERP system. Then Stuart acquired a system that included "smart printers," whereby a processor was attached to a printer. The printer would receive the print jobs from the server and read the print string to detect which

custom form and layout was needed. When the utility bills were sent to the printer, it selected the utility bill form, which included boxes, underlines and shaded areas to highlight information on the bill, and duplicated certain pieces of information multiples times, such as printing the account number on several sections of the mailer. In later years, the city moved to a type of software that collects, manages, and produces custom layouts for all forms from the server and allows users to print to any printer in the network. Over the course of all these changes, though, the print string from the server remained the same. What got printed was what the billing system sent out.

THE CHANGE THAT CHANGED EVERYTHING

This past fiscal year, Stuart began an expansion of its water reclamation system, or sanitary sewer service. As an incentive to entice new customers into the program, the city offered

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customers the option of interest-free financing, allowing them to pay for the sewer installation over time via a monthly surcharge added to their utility bills. This option was publicized to citizens, customers, and the public at large, but no one asked the people who produced the bills if it could be done. Once the program began, the city attempted to use its current print management software to accommodate the new feature request, but this added a new wrinkle to existing limitations, and some of the bills did not show the correct account balances or the actual amounts due. (See Exhibit 1.) Not only did these problems have to be corrected, but the system also had to be modified to provide a new level of reporting that had not previously been possible — and it needed to be

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done before the new round of bills went out to customers the following week.

One problem was that the print string was basically still the original information the billing system had been sending out for nearly 20 years. It was still formatted for the original post card size layout, so if customers had more than eight lines of detail on their service listings, the system “rolled

it up” to simply say “other services.” The payment plan was an unanticipated scenario.

FINDING THE RIGHT ANSWER

The city could have taken care of this situation by paying the software provider to customize the utility billing system,

Exhibit 1: The City of Stuart’s Original Utility Bill

Avoid late penalties and service shut-offs - pay on time.
Visit www.cityofstuart.us for complete Delinquent Policy.

METER #	DIAL	DATE READ	CURRENT READING	PREVIOUS READ DATE	PREVIOUS READING	USAGE (x100)
70095010	1	09/25	885520	08/28	860856	2466
70095010	1	09/25	25889	08/28	25727	162

WATER	COMMERCIAL WATER INSIDE	870.41
SEWER	SEWER IN CITY COMM	1,456.53
MNT CHR	INS WTR CONSUMER SERV CHR	1.48
MNT CHR	INS SWR CONSUMER SERV CHR	1.02
STORMWTR	STORMWATER MANAGEMENT	3.89
RECYCLE	95 GAL BLUE RECYCLE CART	38.24
REDUCED	2 YD MULTI/COMM REDUCED	135.36
REDUCED	3 YD MULTI/COMM REDUCED	304.56
REDUCED	4 YD MULTI/COMM REDUCED	135.36
REDUCED	6 YD MULTI/COMM REDUCED	1,218.24

Previous Balance	4,276.16	Current Charges	4,165.09
Payments	4,276.16 cr		
Balance Forward	0.00	Total Account Balance	4,165.09

DUE BY 10/28/13

***** YOUR BILL WILL BE PAID BY BANK DRAFT**

Pay online at www.cityofstuart.us - go to E-Services, then Utility Payments
To activate account, enter the information below exactly as it appears:

Account Number: [REDACTED]
Customer Address: [REDACTED]

CITY OF STUART UTILITIES
121 SW Flagler Avenue
Stuart, FL 34994-2139

MAKE CHECKS PAYABLE TO THE ABOVE:

Balance Forward 0.00
Current Charges 4,165.09
Total Account Balance 4,165.09

DUE BY 10/28/13


**** YOUR BILL WILL BE PAID BY BANK DRAFT**

ACCOUNT # [REDACTED]

[REDACTED]

CUSTOMER SERVICE DEPT 772-288-5317

DETACH AND RETURN THIS STUB WITH PAYMENT



but this tends to be an expensive, time consuming option that results in an additional annual maintenance fee to keep the customization moving forward with the product. The customizations sometimes become part of the baseline product, eliminating the annual maintenance fee, but only if enough other customers decide they like and want the customized feature as well. Another factor in the decision was the possibility of more changes ahead; the utilities department was beginning to offer further options for the expansion program, so the layout of the bill might need to change again.

City officials had already been looking into what is commonly known as “informative billing,” which includes historical consumption information, statistical measures, additional financial information, and possibly some sort of graphical display. Informative billing was incompatible with the existing system, however, since the existing print string included the current charges, account balance, and consumption related to the current bill, and nothing more. The city wanted to show not only the past 12 months of consumption, but also total deposits being held on the account. This information was stored by service on the ERP system and did not even exist as a single field that could be selected, even if that option were available. And now the city needed to combine payment plan information with the current charges and amount due, which essentially called for extracting and combining data from different tables and sources to produce a unified bill. The answer to this challenge was open database connectivity, structured query language, and a commercially available database program.

With open database connectivity, users could see the data tables within the city’s ERP system just as if they were any other table in the database. Then, structured query language can be used to create queries that select data or information directly from the tables of the billing system and bring them together. Most of the work is done by the database program, and the user needs a roadmap showing which tables contain what information, providing some common ele-

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ment between the tables to link them. Without a map per se, some simple exploration will suffice. For example, the table containing the service address information may have the customer’s account number as a data field, and the table containing the customer’s consumption history probably has that same account number as a data field. Once that is established, the user can now combine the service location information with consumption history.

Taking into account all the data elements city officials had for so long wanted to be included in Stuart’s informative billing, and now spurred on by the need to correct the bill to accurately incorporate its sewer expansion payment plans, the city began to write the queries in a database that was linked to the utility billing module via open database connectivity. The queries pulled together information from the consumption history tables to provide the previous 12 months of consumption information for each account. The city was also able to provide a detailed accounting of the financial transactions affecting the account and add

all the separate deposits posted to different services into one lump sum amount by account. The database program allows users to graph all this information with one click.

The utility billing personnel in customer service still operate the same way they did before, right to the point of pressing the print button in the ERP system. The only difference now is that once they have calculated the bills for the

period and generated the record, they go into a custom database menu, again created with one click, and choose "print bills." This generates something the city never had before: a print preview of the job. The print job can then be saved as a PDF, e-mail, or one bill, or sent on to the printer. The city will soon be able to offer electronic billing, offering customers the option of receiving PDFs of their bill rather than mailed paper copies. (See Exhibit 2 for the new bill.)

Exhibit 2: The City of Stuart's Updated Utility Bill

Account # [REDACTED] **Your Bill will be paid by ACH**

Prior Consumption

Prior Month	Consumption (100's)
12	2800
11	2500
10	2500
9	3200
8	2800
7	2800
6	4500
5	3500
4	3500
3	3000
2	3000
1	2800

Meter ID	Previous Read Date	Previous Reading	Current Read Date	Current Reading	Used in 100's	Days
70095010 A	8/28/2013	860856	9/25/2013	885520	2466	28
70095010 B	8/28/2013	25727	9/25/2013	25889	162	28

[REDACTED] To avoid penalties and shut off, pay on time.
Complete Disconnect Policy online at www.cityofstuart.us

Previous Billing	Services	Current Charges
Prev Bal 4,276.16	WATER COMMERCIAL WATER INSIDE	870.41
Payment -4,276.16	SEWER SEWER IN CITY COMM	1,456.53
Penalty 0.00	MNT CHRG INS WTR CONSUMER SERV CHR	1.48
Adjust 0.00	MNT CHRG INS SWR CONSUMER SERV CHR	1.02
Refund 0.00	STORMWTR STORMWATER MANAGEMENT	3.89
Credits 0.00	RECYCLE 95 GAL BLUE RECYCLE CART	38.24
Dep Due 0.00	REDUCED 2 YD MULTI/COMM REDUCED	135.36
	REDUCED 3 YD MULTI/COMM REDUCED	304.56
	REDUCED 4 YD MULTI/COMM REDUCED	135.36
	REDUCED 6 YD MULTI/COMM REDUCED	1,218.24
	Sum of Current Charges	4,165.09
	Assessments/Payment Plans	
Bal Fwd 0.00	Total Current Charges	4,165.09
Was Due 9/26/2013	Current Charges Due By	10/28/2013
Deposits on File 1,856.00	Total Account Balance	4,165.09

City of Stuart Utilities
121 SW Flagler Avenue
Stuart, FL 34994-2139

Account # [REDACTED]
[REDACTED]
[REDACTED]

Balance Forward 0.00

Was Due 9/26/2013

Current Charges 4,165.09

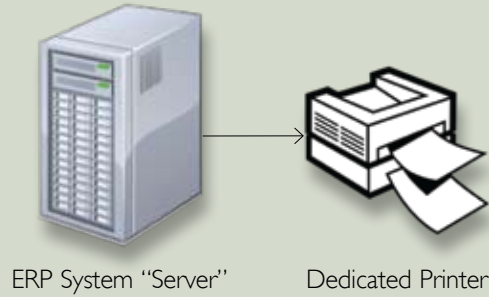
Current Charges Due By 10/28/2013

Total Account Balance 4,165.09

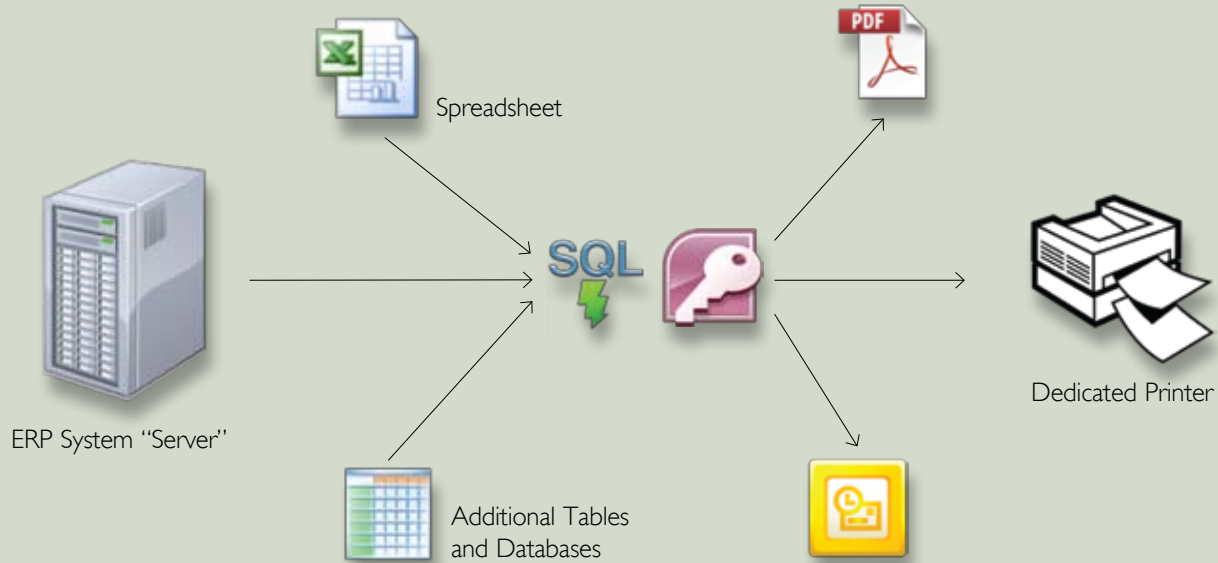
Customer Service - (772) 288-5317

Exhibit 3: Taking Control of the Billing Process

Before



After



After gaining complete control over the layout of its utility bills, the city addressed the “newsletter” portion. This section had to be converted from a word processing program into another format, which involved the IT staff and did not allow much latitude for changes. With the new process, customer service employees simply save the word processing document to the same folder each time there is an update, and the database form pulls in the newsletter in real-time to print on demand. (See Exhibit 3.)

CONCLUSIONS

The changes the City of Stuart has made eliminated two employees and another department from the utility billing

function, and improved response time. The process is also more flexible; theoretically, files from the city’s commercially available spreadsheet program could also be included, along with files from other sources, if needed. Since the initial release of the new utility bill, the city has created several new versions and is on what employees jokingly refer to as Bill 3.0. The level of customization these results would have required to the ERP system would have cost approximately \$10,000 in upfront expenses, as well as additional annual maintenance for the foreseeable future.

It is well known that one way to be successful is to emulate others who have had success. In this case, Stuart looked at how other utilities provide billing information to their



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customers, but their solutions were all well outside the city’s budget. The solution the city achieved instead provides everything the city’s contemporaries provide, however, at just the cost of the man hours that went into its development. |

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