



# RPA accelerated healthcare collections & revenue cycle management

Robotic Process Automation improves medical billing pace, precision and performance.

# Introduction



The first man to create a machine run on data input by a human operator was arguably French silk weaver Joseph Jacquard.<sup>1</sup> He built an automatic loom in which the instructions for weaving a given pattern were put on punch cards that controlled the actions of the rods carrying the threads into the machine. In 1886, Herman Hollerith built a machine that automatically counted the results of the U.S. Census. Data entry operators punched survey information from the census onto cards which were fed into the machine. Ever since then and right up until today, computers have depended on human operators' manual efforts as the first critical step in performing their functions. But in the 21st century, such manual unstructured processes are being automated to speed data-related tasks and reduce errors virtually to zero. In this context, automation is the linking of disparate systems, applications and software so that they become self-acting and self-regulating. To replace human operators with software-driven performance, the IT functions that must be automated are data entry and data maintenance.<sup>2</sup>

<sup>1</sup> Robert Bly, *Computers: Pascal, Pong, and Pac-Man*, Banbury Books, 1984, p. 36.

<sup>2</sup> <http://searchcio.techtarget.com/definition/IT-automation>



# The problem with human operators

The problem with the traditional methods of data entry and maintenance by human operators is threefold.

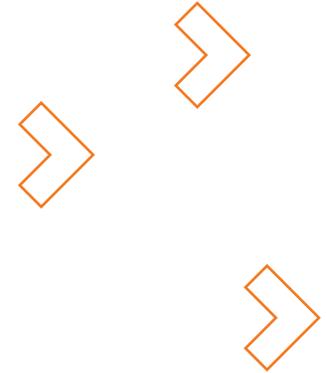
First, human data entry is slow. Even for a fast typist, top speed is around 1,000 characters per minute. Our own limitations are the bottleneck to maximum productivity in virtually every data-related task. Worse, humans generally work in 8-hour shifts. Even if you employ two shifts, one-third of a 24-hour-day will go unused for data entry and maintenance. And the speed of human data entry is variable. Most workers have peaks and valleys of productivity during their shifts. They don't work at top speed all or even most of the day. They take coffee, meal, and bathroom breaks as well as vacation and sick days.

Second, humans make mistakes. The error rate for human data entry is 0.5%.<sup>3</sup> A team of human operators performing plan updates on 10,000 customer records will probably make at least 50 errors – which to your business, and certainly for those 50 customers, is problematic. In practice, data entry and maintenance error rates are often higher. In one data center, there were 2,584 changes required for 41,568 pages entered into a health database. Of these changes, 71.1% were necessitated because of errors in the initial data entry.<sup>4</sup>

<sup>3</sup> <http://panko.shidler.hawaii.edu/HumanErr/Basic.htm> Ray Panko, professor of IT Management at Shidler College of Business, University of Hawaii, Honolulu: Basic Error Rates, 2008.

<sup>4</sup> <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3777611/> NIH, Drug Information Journal, July 2011, vol. 45, no. 4, pp. 421-430: Evaluation of Data Entry Errors and Data Changes to an Electronic Data Capture Clinical Trial Database

Third, data errors are expensive. For example, a data-entry error in a claim may make it impossible to process the document automatically. The American Medical Association estimates that some payers suffer rework on over 20% of claims.



With costs for re-processing a claim up to four times higher than one that makes it on the first pass, it is imperative that payers ensure the accuracy of each adjudicated claim at the onset. The Healthcare Billing and Management Association found that the frequency of overpayments, rejections, and denials of health insurance claims often reaches 50%, mainly due to manual data entry errors and the high complexity of claims.<sup>5</sup>

In one white paper, an analyst looked at a scenario in which professionals performing data entry and maintenance updates made 200,000 keystrokes per day entering data into five systems. The operators therefore made 40,000 daily keystrokes per system. The error rate was 0.5% resulting in 1,000 total daily errors. The analysis assumes that 90% of the errors are discovered during data entry at a cost of a dollar per error found. Only 5% of errors are discovered during operation of business at a cost of ten dollars per error found. The remaining 5% of errors are discovered through customer complains at a cost of \$100 per error. For the above scenario, the total cost of the 1,000 errors is \$6,400 a day!<sup>6</sup>

An article in American Medical News reports that, despite the criticism of doctors' illegible handwriting on prescriptions, data entry is the fourth leading cause of medication mistakes, accounting for 13% of errors reported. Bad handwriting was 15th and only caused 2.9% of the medication error.<sup>7</sup> A paper presented before the American Medical Informatics Association found that the error rate for data entry in clinical databases ranges from 2.3% to 26.9%, and such errors can lead to adverse events.<sup>8</sup>

<sup>5</sup> HBMA Edition, July 2007

<sup>6</sup> [http://www.pcr.com/files/PCR-360\\_White\\_Paper\\_12.pdf](http://www.pcr.com/files/PCR-360_White_Paper_12.pdf) PCR-360 Enterprise-level Communications and Technology Management, white paper: Integrated versus Independent Operational Support System (OSS)

<sup>7</sup> <http://www.amednews.com/article/20050124/profession/301249959/4/>

<sup>8</sup> <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2656002/>



# The search for solutions to data entry errors and bottlenecks



Various solutions have been attempted to reduce error rate in human data entry, with varying results. One common technique for improving accuracy is called double data entry (DDE). In a North Carolina clinical study of 609 participants at 4 clinical sites, DDE was partially credited for a reduction in errors, improving data integrity, and identifying difficult forms.<sup>9</sup>

In one 12-month study applying Six Sigma quality control methods to data entry and maintenance, a tclinical laboratory achieved a reduction of an average 166 errors per month.

The average cost of identifying and fixing these data entry mistakes was about \$16.25 per error, yielding a cost savings of \$2,698 per month.<sup>10</sup>

But the biggest benefit of applying Six Sigma or any other methodology to data entry error reduction is the human factor. To overcome that limitation and achieve an order of magnitude improvement in data entry accuracy and speed, a new solution is required.

Nintex has introduced a pioneering software solution proven to improve the accuracy and speed of data-related task performance for healthcare payers and plans. This software, called Foxtrot, can intelligently automate the routine and repetitive tasks of data entry, maintenance, integration, migration, aggregation, and testing – essentially any manual unstructured data process.

The software can perform these tasks in a wide range of platforms and applications including spreadsheets, Windows-based programs, green screens (legacy systems), and web-based applications. In short, enrollment, claims reprocessing, plan updates, panel changes, and more can be completed automatically and accurately, regardless of what core system your organization uses now.

<sup>9</sup> DOUBLE DATA ENTRY QUALITY CONTROL IN URECA ... - Rhot

<sup>10</sup> [http://ajcp.ascpjournals.org/content/138/Supplement\\_1/A195.full.pdf](http://ajcp.ascpjournals.org/content/138/Supplement_1/A195.full.pdf) American Journal of Clinical Pathology, October 2011, vol. 136, pp. A195-A199: Reducing Data Entry Errors and Costs in a Clinical Laboratory in Uganda: Utiliz



Because Foxtrot punches keys and clicks a mouse, and makes real-time decisions in much the same way as a human being, the software has been called an “automated employee.”

Automated employees automatically perform repetitive time-consuming data-related tasks faster than human operators and with 100% accuracy. After a simple training and scripting process, this automated employee can move data between disparate systems seamlessly, with little-to-no help from IT, vendors, or temps. Though Foxtrot can be used by both IT and business users alike, it empowers the business users in particular to solve their own problems today, eliminating dependence on IT to get the job done. The two keys to making automation of data entry and related tasks practical are (1) software that allows the application to perform the data-related tasks now done by human operators and (2) the ease with which the knowledge workers or their supervisors can “teach” the software to do their jobs correctly. Foxtrot meets both requirements with flying colors.





# Creating your automated employees

The first requirement for making automated employees practical was empowering claims personnel and knowledge workers to teach the software how to perform a task, without help from IT or doing any custom programming.

This is accomplished via a scripting center. It provides a drag-and-drop tool with intuitive wizards that enable non-technical users to write and run custom scripts. These scripts change, integrate, and enter data automatically by following the same routine as the human operator, thereby automating the task. Unlike a macro, which enters and changes data based on its position on the screen, automated employees look for specific objects and handles errors on its own.

So no matter how a button, field, or screen might change, data is always entered in the right place and Foxtrot always performs the right action. Plus, there is no coding with an automated employee. All jobs are performed through the presentation layer (i.e. the user interface), so business rules and audit trails are maintained.

By scripting their tasks just one time, workers “teach” their automated employee to do the job. When the scripts run, the data is automatically entered into the database or other system. It replicates precisely the keying in of data and pulling up of records the operators do one by one. Only the automated employee does it infinitely faster and virtually 100% error-free.

# Putting your automated employees to work

With Foxtrot, payers can rapidly teach the solution how to perform data entry and other routine tasks once, and then have their digital workforce take over these tedious chores from human operators from that point on. By enlisting the help of an automated staff, payers can significantly reduce administrative costs associated with claims adjustment and other activities, helping to preserve or even lower Medical and Administrative Loss Ratios (ALR, MLR).

At New Bedford Corporation , a company offering billing and coding for health care providers, their staff entered up to 1,000 records daily, each with as much as 40 different pieces of information. Taking up to 30 seconds per record, New Bedford's team required up to 8 hours a day to load patient and billing data by hand.

New Bedford invested in Foxtrot and taught their new automated employee how to perform the patient and billing data entry automatically. Once implemented, the software entered data at a rate of up to 6 records per minute, a 62% time savings. Automating this data entry eliminated the need for two fulltime employees, saving the company an estimated \$70,000 per year in labor costs. Geisinger Health Systems uses Foxtrot to eliminate the time-consuming process of entering premium rates into their core system. By putting their Foxtrot automated employees to work, Geisinger Health System reduced the time required to enter rates from 5 minutes to 90 seconds per file. The automated employee not only has a 100% accuracy in data entry, but also saved the company \$50,000 a year by eliminating extensive overtime and seasonal employees.

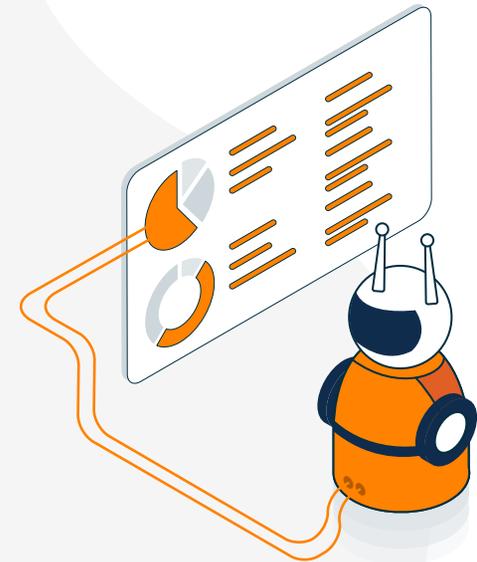


# Is an automated employee in your future?

With Foxtrot, nearly 500 organizations in financial services, healthcare, manufacturing, and eleven other industries are using automated employees to automate laborious, repetitive, time-consuming data entry, maintenance and related tasks.

These automated employees never take sick or vacation days. They don't get bored or tired. They don't make mistakes, so data quality improves geometrically. And, they perform the data-related task longer and faster than any human employee can, enabling the work to get done in a fraction of the time it used to take doing the work by hand – freeing your lower-level IT personnel to concentrate on other tasks with greater value.

Take a look at your data centers. What processes are bottlenecked by slow data entry or handling? For which applications is the highest accuracy in data entry mission critical? Enormous gains in productivity, efficiency, cost savings, and data quality can be gained by enlisting the help of Foxtrot to take over. With Foxtrot, nearly 500 organizations in financial services, healthcare, manufacturing, and eleven other industries are using automated employees to automate laborious, repetitive, time-consuming data entry, maintenance and related tasks. These automated employees never take sick or vacation days. They don't get bored or tired. They don't make mistakes, so data quality improves geometrically. And, they perform the data-related task longer and faster than any human employee can, enabling the work to get done in a fraction of the time it used to take doing the work by hand – freeing your lower-level IT personnel to concentrate on other tasks with greater value.



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# About Nintex

Nintex, the trusted global standard for process management and automation, enables both IT and BDMS to more quickly and easily create and manage simple to sophisticated business processes from back to front-office. More than 8,000 customers in 90 countries turn to Nintex's workflow automation platform to drive productivity and accelerate business results. We have the fastest way to build applications, lowest total cost of ownership, and the highest overall satisfaction among our peers.

In 2018, Microsoft awarded Nintex Workflow for Office 365 with Best Overall App and Nintex Forms for Office 365 with Most Business Value. Nintex also won Microsoft Office and SharePoint Application Partner of the Year award.

We welcome the opportunity to discuss your business needs and demonstrate our unique approach to workflow automation. We are happy to offer the following services:

- A business requirements discussion with one of our workflow experts and our partners
- Solution demos and proof of concepts tailored to your requirements
- A comprehensive response to your RFI/RFP
- Customer testimonials

Learn more at [www.nintex.com](http://www.nintex.com)

