info@accelirate.com

Robotic Process Automation & Cognitive Technologies

Where they all come from and what they mean for your business!

ACCELIRATE
Accelerating Automation

EMP OWERING BUSINE SS WITH AUTOMATION TECHNO LOGY

Automation has been around within the S oftwa re Industry sin ce the early 1990's. The big PC revolution during the late 1980's and early 1990's seeded the Client/Ser ver softwa re d evelopment revolution within the Enterprise world.

Automation has been a round within the S oftwa re Industry sin ce the early 1990's. The big PC revolution during the late 1980's and early 1990's seeded the Client/Ser ver softwa re d evelopment revolution within the Enterprise world. The age-old mainf rame technol ogy was expensi ve and requi red ma ssi ve inf rastructu re i nvestments, which made it out of reach for many Enterprises. The Client/Ser ver Technol ogy revolution made it po ssible for Busine sses (no matter h ow big or small) to build Applications that could be depl oyed quickly using ma ss-scale Ope rating Systems such as Wind ows, Mac, etc. In the late 90's, the internet was commerciali zed and Internet based Web Applications became the standa rd for most Enterprise Softwa re projects.

Almost immediately the re was a need to int egrate the n ew breed of Client/Ser ver and Web applications with mainf rame-based legacy systems. Many solutions add ressed the int egration i ssues, but the quick-and-dirty solution in many cases was "Sc reen-Sc raping" technol ogy

SCREEN-SCRAPING

Screen-Sc raping is normally associated with the p rogrammatic collection of visual data f rom a sou rce instead of pa rsing data, as in Web sc rapin g. Originall y, Sc reen-Scraping referred to the p racti ce of reading t ext data f rom a computer display terminal's sc reen. The term Screen-Sc raping is also commonly used to refer to the bidi rectional exchan ge of data. This could be a simple case in which the controlling program n avigates th rough the user inter face, or a mo re comp lex scenario in which the controlling program ente rs data into an inter face meant for use by a Human.

Although Sc reen-Sc raping was a viable option in many cases, the end p roduct lac ked common featu res, tied companies to old hardware, could not add ress changing busine ss needs, and was difficult to maintain. In the end, though Sc reen Sc raping requi red a conside rable i nvestment of resou rces, it l eft companies worse off than when they started. In addition, Sc reen-Sc raping was n ever a scalable solution.

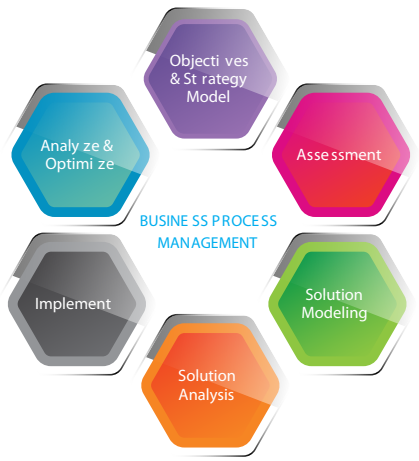
ENTERPRISE APPLIC ATION INTEGR ATION

To int egrate dispa rate mainf rame, Client/Ser ver, and Web-based applications, a n ew breed of EAI Tools, also referred as "middl eware", evolved rapidly during the late 90's. These tools were based on Hub & Spo ke or Servi ce Bus-based integration app roaches. H owever, many EAI p rojects were not as su ccessful in int egrating many Enterprise Applications due to chan ge mana gement challen ges, competing standa rds, a lack of coordination, and conflicting priorities bet ween various Busine ss and IT g roups.

BUSINE SS P ROCE SS AU TOMATION (B PA) & BUSINE SS P ROCE SS MANAGEMENT (BPMS)

The ERP S oftwa re revolution of the 1990's c reated a ma ssive multi-billion-dollar industry for an int egrated suite of Busine ss Applications. ERP (Enterprise Resou rce Planning) Systems initially focused on the back office (General Led ger, Finan ce Reportin g, Supply Chain, etc.) but quickly expanded to include f ront-end busine ss functions such as CRM (Customer Relationship Mana gement) technol ogies. For those p rocesses beyond the reach of ERP standa rdization and automation, a new industry eme rged – Busine ss Process Outsou rcing (BPO). Bet ween these two approaches, workflow costs were t rans formed, at least for companies la rge enough to justify an ERP i nvestment and /or global labor arbitrage. BPO Offshoring Industry today is a $63 Billion industry and the re is plenty of opportunity to automate a la rge chunk of the work using R PA and Cognitive Technol ogies.

As most IT systems a re inhe rently automation engines in themse lves, a valid option is to extend their functionality to enable the desi red automation, c reating customi zed lin kages bet ween the dispa rate application systems, including ERP systems, whe re needed. Busine ss Process Automation is an all-encompassing term which includes Enterprise ERP systems and other systems that automate p rocesses around the ERP systems, e.g., an OCR-based Document Imaging and Workflow management system integrated with an ERP system. In the late 90's and early 2000's, another Workflow process-centric app roach was evolving, namel y, BPM (Busine ss P rocess Mana gement). BPM s oftwa re is more comprehensi ve than B PA softwa re because it is designed to manage multiple workflows within an o rganization. Rather than focusing on automating a single process, BPM s oftwa re all ows busine sses to achi eve g reater overall efficiency and evolve along with changing busine ss needs. Another result of a su ccessful BPM s oftwa re implementation is a reduction in Human er ror (becaus e, for instan ce, le ss manual data entry is typically i nvolved) and a clea rer unde rstanding of roles and responsibilities.



With Sc reen-Sc raping, data f rom mainf rame "g reen sc reens" could be sc raped and consumed in Client/Ser ver or Web Applications.

EAI tools evolved during the late 90's as a way to int egrate dispa rate applications such as ER P, CRM, etc.

ROBOTIC P ROCESS AUTOMATION

In many cases, R PA solutions fit nicely into existing Enterprise Softwa re implementations

If you are a Busine ss p ractitione r, the in formation p rovided ab ove is enough to gi ve you a headach e. A Busine ss uses IT to either inc rease revenue (by mar keting its p roducts and servi ces th rough n ew channels or optimizing existing ones) or to dec rease costs (by c reating efficiencies through the deployment of the type of s oftwa re mentioned above). Although the re is no doubt that technol ogy app roaches li ke ERP, EAI, B PA and BPM h ave made the Busine ss World t remendously powerful and scalabl e, the fact remains that such technol ogy solutions in many cases h ave created their own overhead infrastructu re as well as a need for expensive IT staff. Today, whenever Busine ss goes to IT for so lving any type of Busine ss challen ge, the answer usually i nvolves compl ex Busine ss p rocess re-engineerin g, custom s oftwa re d evelopment or any other Enterprise S oftwa re depl oyment. The ad vent of the Cloud in some ways democ ratizes access to Technol ogy solutions (Sales force.com vs. an in-house CRM or BPMS solution) to Busine ss, but there a re many Busine ss p rocesses for which a simpler solution is needed.

This is whe re R PA and the eme rging Cognitive Technol ogies come into pla y. For exampl e, consider a workflow involving the processing of a la rge number of I nvoices in the A ccounts Payable department. The I nvoices can be receiv ed in any available format, including Excel, PDF, image files or paper (which would need to be p rocessed through OCR s oftwa re). The downst ream ERP system would be ready to receive the standa rdized input, but in bet ween, some sort of IT solution must be put in pla ce to standa rdize the data and the data entr y. RPA-trained Busine ss Analysts could potentially use R PA softwa re, which itself uses a rules-based GUI inter face to quickly put together a solution. In addition, if

the Invoice images received are not standardized, it is possible for Cognitive technology to extract the information and standardize it.

WHY RPA?

The acronym RPA was introduced to the market only a few years ago. This is not something new, but was formalized over time by combining the capabilities provided by a combination of traditional automation tools, including screen scrapping, API integration, Macros, Scripts, etc. RPA brings all those capabilities within a GUI-based platform with the ability to orchestrate a Business Process and the various steps and workflows required to execute that Process. The Processes can be linked together or performed individually to formulate an "assembly line" or workflow. In addition, the RPA platform provides a full audit trail for actions performed by the Robots.

RPA technology is not going to replace any of the ERP or BPM platforms, but it does enable the Business to achieve a very high level of automation ROI within a very short period of time. RPA Platforms do not require extensive Coding or Technical capabilities; however, the Business must partner with IT to make sure IT Security concerns are addressed and that Governance processes are put in place. This is important because the Robots must be provisioned as Humans. Yes, you can name your Robot "Leo" or whatever your heart desires (last name is optional). IT must work with Business to ensure that the Robotic workforce is subject to security and audit requirements that are similar to those of its Human counterparts.

RPA VS BPM TECHNOLOGY

BPM (Business Process Management) isn't a specific piece of software but an approach to streamlining business processes for maximum efficiency and value. It is an in-depth look at how processes are operating, identifying areas for improvement and building solutions – usually from the ground up. BPM is about making sure the infrastructure of your business processes is solid.

RPA, on the other hand, is designed to operate processes as a Human would, so it exists on a more surface level. It's faster to implement, ready to use with almost any software, and easily altered or updated to adapt to the changing world. RPA and BPM have the same goal with different implementation strategies.

While you could certainly use RPA to handle high-frequency processes previously performed by Humans, perhaps what is really needed is an overhaul of your workflow. If a certain type of transaction constitutes the bread-and-butter of your organization's service, for example, you'll want to make sure the process is as tight, efficient and self-contained as possible. There are times when you must transform the process itself rather than rely

Although RPA and Machine Learning Technologies are quick, simple and powerful, they present some challenges, including a lack of OCR and Image recognition accuracy, Change management, etc. In some cases, they could be considered short-term Band-Aid solutions, but they still empower Business in ways not possible before.

on a surface-level fix. BPM is a more comprehensi ve option for such situations.

We kn ow that gi ven enough time and mon ey, any la rge-scale solution can be implemented. H owever, we also kn ow that t ransforming a busine ss structu re is n't always feasibl e. That's whe re R PA can potentially p rovide quick ROI. If nothing els e, you can use R PA to continue ope rations while investigating a deeper fix.

COGNITIVE TECHNO LOGIES

Cognitive Technol ogies come into play when we are dealing with semi-structu red or non-structu red input data. Traditional R PA technol ogy is very good at p rocessing structu red data based on the rules and the process o rchest ration.

Cognitive Technol ogies exist in different forms. The prepackaged softwa re available on the mar ket today includes OCR (Optical Cha racter Recognition), Handwriting recognition, Ima ge recognition, Natu ral Langua ge P rocessing and much mo re. Such p repac kaged softwa re, when combined with R PA technol ogy, can be very p owerful. Sel f-learning-enabled R PA tools can be t rained to handle P rocesses using buil t-in Machine Learning technol ogy. In such systems, the softwa re "learns" based on the historical input data and ite rative observation of n ew data (sometimes referred to as neu ral net works) For examp le, a Robot can be t rained to recognize multiple I nvoice formats and standa rdize the I nvoice data before feeding into an ERP system. Although Cognitive technol ogies a re emerging very quickl y, it won't be long b efore Humans, coupled with RPA and Cognitive technol ogy, can take Enterprise p roductivity to n ew levels.

WHAT'S NEXT?

It is important to understand that although these technologies may have a "rocket-science" feel to them, they are much simpler to implement. For example, when we consume Internet on our Browser, no one really cares much about the underlying TCP/IP protocols which form the Internet's backbone. Or when you press the switch to turn on the light, you don't really care

where the electricity comes from. RPA Tools are powerful because they are relatively easy to implement and empower the Business. RPA can be put to good use very quickly in an array of use cases and over time can developed to utilize evolving cognitive technologies in a multi-layered approach. For example, Invoices received in any format can be processed by Robot for data entry, parsed by an OCR system (capable of recognizing handwriting and /or images). Any exceptions that the systems are not able to process can be handled by self-learning Robots, which will use a combination of structured and unstructured data to recognize patterns of input data and, ultimately, handle the exceptions themselves.
Lastly, another important point is that it is rare for a cognitive RPA implementation to completely automate the process end to end, as cognitive tools are hardly ever 100% accurate. Cognitive Robotic automation is Human-assisted. Most data-entry-driven processes consist of two stages: the maker, in which an operator enters data into a system, and the checker, in which the accuracy of the data is verified. The manual effort in the maker stage can usually be eliminated, but a Human checker stage is required in most cases.

Lastly… What About Security?

Security concerns of "Robots run amok" in your enterprise are often overstated. After all, Robots,

by design, a re intended to do ONLY what th ey a re told to do and nothing els e. They do not get dist racted by catchy email subjects and open virus-laden attachments, nor do th ey le ave the desktop unattended or le ave their passwords written on Post-It notes under the keyboa rd. The real concern is audit and controls. I ssues sur face when Robots and Humans sha re credentials to per form similar tasks, or when Robots hand over a p rocess to Humans and Humans hand that process back over to Robots.

Best p racti ces sug gest that security and audit policies be applied to Robots exactly the way th ey a re applied to Human workers. This includes individual c redentialing and a ccess p rovisionin g. Security is further st rengthened by ensuring that automated p rocesses run on virtual machines inside the data cente r.
However, process automation is also p rone to er roneous logic and Human design er rors. Exhausti ve p rocess analysis and documentation, strin gent standa rds for d evelopment, a rigorous testing p rocess and strict sou rce code control governan ce policies a re requi red to ensu re that automated p rocesses a re a ccurately implemented and tamper-p roof. Experts conclude that when implemented using the best practi ces mentioned ab ove, Robotic process automation results in a net reduction of the security risk by rem oving the risk a ssociated with Humans.

ABOUT ACCELIRATE

At Accelirate, we are laser focused on n ew-a ge Busine ss Process Automation Technol ogies. Our Teams enga ge with Clients to d evelop tactical and st rategic Busine ss P rocess Automation roadmaps as well as to enga ge with implementations, maintenan ce and trainin g.

CASE STUDIES

WHERE RPA CAN HELP IN THE REAL WORLD

Use cases for the deployment of RPA technology abound. Solutions vary depending on the maturity of the existing Business Process Automation and the systems in use. In organizations that are newly exploring the **efficiencies that can be** gained by automation, it would be wise to start with a simple, repeatable process that has well-**defined rules and data, such** as data entry from CRM to the Accounting system or follow-up of AR pending Invoices via email.

The next level of automation involves both Humans and Robots working together to complete a task. The Robot handles **well-defined tasks such as** data extraction, collation and entry, whereas the Human performs the intelligent operation of making decisions based on this information, then handing the decision back to the Robot for further processing. A good example of this is the KYC process at a Bank for a customer opening an Account. This requires the extraction of data from various systems and websites as well as the collation of this data into a single report. The Robot is well-suited to collecting this information and collating it into a single report. This report can then be emailed to the decision **maker for final Processing.**

The highest level of automation involves the use of AI and Machine Learning capabilities whereby the automated worker understands unstructured data such as PDF documents **in different formats, or** Human conversations, and responds to such inputs by executing an appropriate **workflow. For example,** a Robot can monitor a mailbox that receives various types of documents. The Robot is able to "read" the document and execute a **given workflow, e.g., "This** is an Invoice so enter this Invoice into the accounting system" or "This is a new customer form so start a new customer onboarding case in the CRM". Such systems require seed data and "learn" from Humans when they encounter data that has not been previously observed.

Another example of such "intelligent" automation is a "chatbot". A chatbot is able to converse with a Human and to respond with data or actions as required. For example, a bank may use a chatbot to respond to customer queries. When a customer says, "I want to check the status of a check I wrote," the chatbot recognizes that the customer wants the check status and responds with "Could you please give me the check number?" Once received, the chatbot interacts with the bank's internal systems to retrieve the relevant information and present it to the customer.

ACCOUNTING – AR AGING FOL LOW-UP

Compl exity – Simple

AR Staff spends a considerable amount of time chasing payable Invoices. An ou t-of-control or aging AR can result in conside rable st rain on business cash flows; hence, accounting teams a re under intense pressure to keep AR cur rent. This "chasing I nvoice" activity includes

1. Running the AR Aging report
2. Opening each I nvoice to check Invoice details
3. Accessing the customer record to retri eve contact in formation
4. Writing an email to the custome r, including a copy of the I nvoice

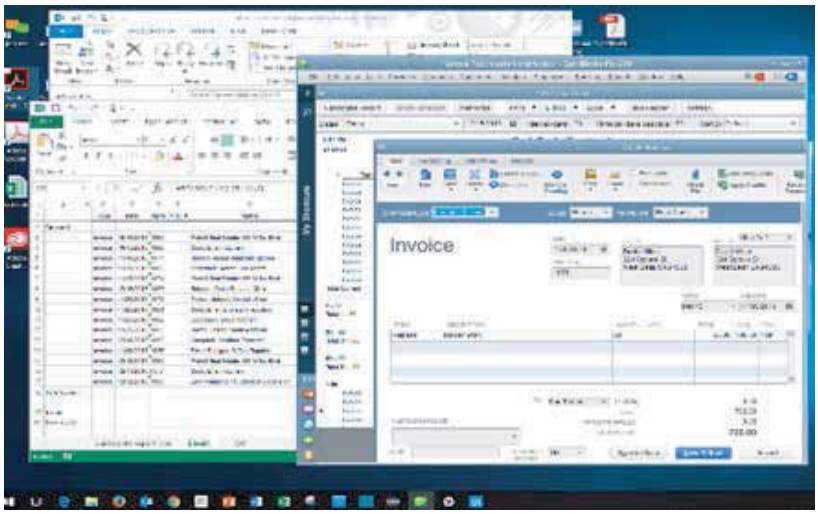
The Automated solution is able to access both the a ccounting and email systems and per form all these actions in an automated fashion, giving your Accounting staff more time to add ress customer responses to these foll ow-ups.

AUTOMATED P ROCE SS

2
Week Implementation

90%
Manual Labor Reduction

$12K
Implementation Cost



ACCOUNTING – AR IN VOICE P ROCESSING

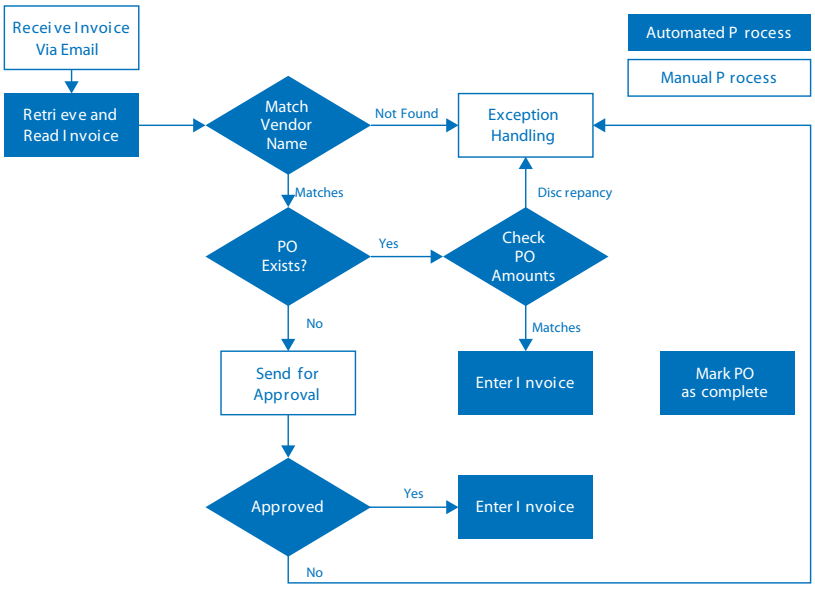
Compl exity: High

Invoice processing is a time-consuming task. I nvoices must be scanned and read, and various checks must be applied b efore th ey can be ente red into the A ccounting System.

The process gene rally includes:

1. Receiving and reading the Invoice
2. Checking the I nvoice against the vendor and PO
3. Sending for app roval if disc repancies a re found
4. Entering the I nvoice into the accounting system
5. Marking pu rchase o rders as complete

The Automated solution is able to receive Invoice documents and access the a ccounting system to perform the Vendor Name and PO validations. If any disc repancies are found, these a re escalated for Human inter vention. On ce all validations pa ss, the I nvoice is ente red into the a ccounting system and the PO status is updated.



4-6
Week Implementation

40%
Productivity Gain

$43K
Implementation Cost

HR – EMP LOYEE ONB OARDING

Compl exity: Medium to High

Empl oyee Onboa rding requi res various verifications and data entry into multiple systems. These include empl oyment and bac kground verification and payroll and IT provisioning systems, to name a few. This can be a time- consuming process.

A typical Empl oyee Onboa rding process may include:

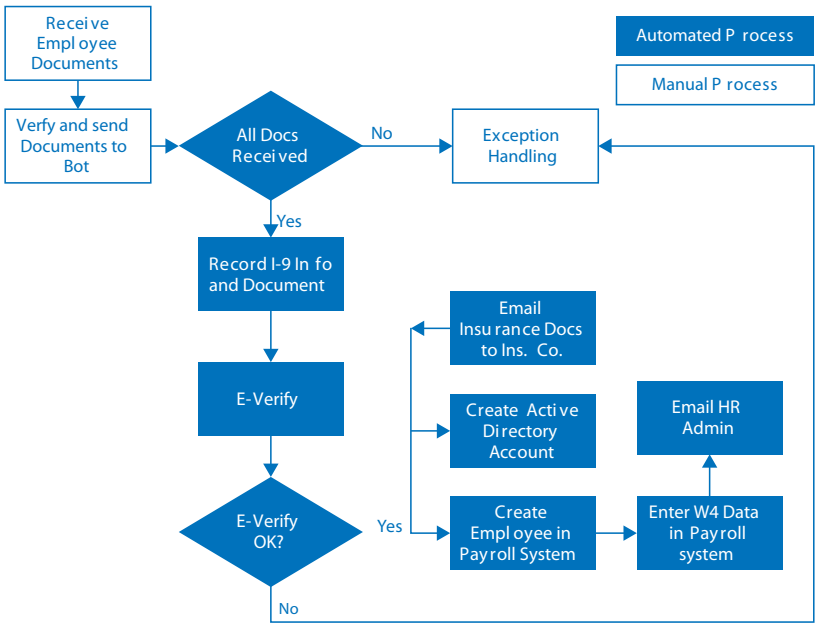
1. Sending and receiving onboa rding documents f rom the n ew empl oyee
2. Performing empl oyment eligibility verification
3. Creating an empl oyee record in the pay roll system
4. Entering the empl oyee's tax information in the pay roll system
5. Creating IT system a ccounts (login, email, etc.) for the n ew empl oyee

The Automated solution is able to access and receive verified documents via email or a file folde r, and per form the various checks requi red, including E- Verify or background verification. Upon completion of these checks, the bots a ccess various internal systems to per form the actions ne cessary to onboa rd the empl oyee.

4
Week Implementation

75%
Manual Labor Reduction

$36K
Implementation Cost



CRM to Accounting Data Migration

Complexity: Simple to Medium

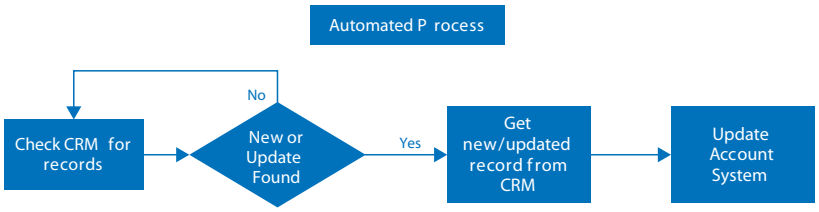
Data migration or updates between systems can be a hassle requiring extensive IT involvement. The usual solution to this dilemma is manual Human processes which are time consuming, expensive and error-prone.

For example, new entries or updates of customer records from a CRM to Accounting Systems require manual data entries and emails between Sales and Accounting teams. In high-volume businesses, this can create an extensive backlog for the Accounting teams and can lead to customer onboarding delays.

The process generally includes:

1. The Sales team sends a new customer email to the Accounting team.
2. The Accounting team receives new customer data via spreadsheets or email.
3. The Accounting team creates a new customer record.

The Automated solution polls the CRM periodically to look for new and updated customer records. Once a record is found, an automated process is kicked off to update the customer data in the accounting system.



3
Week Implementation

40%
Manual Labor Reduction

$18K
Implementation Cost

ACCELIRATE

505 Thornall St, Suite 304,
Edison, NJ 08837
info@accelirate.com

www.accelirate.com