

Artificial Intelligence in Action: Intelligent Process Automation (IPA)

Case Study: Xtracta

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TOWARDS OUR INTELLIGENT FUTURE TE ARA MŌ TĀTOU ATAMAI O ĀPŌPŌ

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Special Study

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Robotic process automation (RPA) is a fast-growing class of software to automate repetitive tasks. This enables human workers to focus on more creative work and the human touch with customers.

RPA is gaining traction as enterprises target efficient operations and greater productivity. A 2018 IDC survey notes that medium and large enterprises rank automation in the top three capabilities they expect from their digital workplace environments. IDC research shows strong enterprise plans for RPA across sales and marketing processes, and IT processes. RPA for sourcing and procurement processes is also gaining traction.

RPA utilises pre-programmed rules, historically the majority of automation use this type of programmed automation. The real game changer is Intelligent Process Automation. Developers combine cognitive technologies and advanced analytics with RPA. Intelligent Process Automation challenges the well-known "80/20" rule by dramatically reducing the effort in managing the "long tail" of high volume, low value work.

INTELLIGENT PROCESS AUTOMATION FOR DOCUMENT PROCESSING AND DATA ENTRY: XTRACTA

In this study, we examine intelligent automated data capture and data entry services provided by New Zealand company Xtracta. This type of system uses AI technology to read and process documents. For example, receipts, invoices, contracts, and other paper based or electronic documents. More than optical character recognition (OCR), organisations can train an AI system to detect specific data from complex documents by itself.

This solution addresses a multi-industry AI value case for finance functions such as accounting, accounts payable/receivable or procurement. There are also potential applications in other verticals such as healthcare or education.

Customer Example: McCallums Group

McCallums commercial laundry company saves 90 hours per month using intelligent automation. The company uses ABM accounting software in combination with intelligent automation software provided by Xtracta. Stakeholders upload or email invoices, orders and remittances into the system. ABM Billfeeds automatically extracts and processes data from business documents into ABM software. Documents such as supplier invoices, customer orders and remittances are scanned and uploaded or emailed directly to the system. Once a document

is uploaded or emailed into ABM, its data is read and available for review and approval. This saves time, increases productivity and increases accuracy of the data entered.

Customer Example: Ryman Health Care

Ryman Healthcare builds and operates retirement villages in New Zealand and Australia. It uses Xtracta's API with MYOB's Greentree eDocs to digitise physical invoices. This dramatically reduces the need for manual data input. This solution has automated the processing of around 15,000 invoices per month. Xtracta estimates Ryman Healthcare saves at least ten hours manual work per day through the automated processing.

TRADITIONAL ROBOTIC PROCESS AUTOMATION (RPA) VS INTELLIGENT PROCESS AUTOMATION

With traditional RPA, developers configure software to find specific document data. For example, the developer tells the software to look for the word "Total" and return the value 50 pixels to the right. An invoice containing a field called "Gross Total" with the value printed below would need a separate definition.

With Intelligent Process Automation, artificial intelligence can be taught how to identify data of interest. The AI uses data from supervised learning and feedback from analysing previous documents to evaluate each new document. The system determines the most likely match for the information it is asked to provide. In the example above, the system would identify the most likely value for the 'total' using a number of factors – for example, a 'total' is often at the bottom right of a page, usually in a currency, usually the largest amount on the page and the field is often called 'total', 'gross total', 'amount due', or 'balance'. An interesting dimension is that for current AI calculations, it is often difficult to identify the actual combination of factors the system uses to determine its answer.

HOW AI HELPS

While automation enables faster document processing, the integration of AI data classification, extraction and validation streamlines and extends typically manual configuration processes to support general use cases with much less work. Xtracta's product supports:

- **Document Classification:** AI can be trained to identify different document types. It can tell a receipt from an invoice, an employment contract from a sales contract.
- **Data Extraction:** Data is often only semi structured or non-structured – for example, a company may receive many different types of invoice in many different formats. The system can be taught how to recognise data such as an invoice number, without precise information such as where it is positioned on a document.
- **Data Validation:** An AI powered system can also be trained to validate the data it has extracted before committing it into enterprise systems.

CASE STUDY: XTRACTA'S INTELLIGENT DATA ENTRY SYSTEM

Xtracta's solutions combine OCR, cloud and AI technologies to automate the entry of documents into systems. Founder Jonathan Spence says he formed Xtracta as a response to the lack of smart OCR technology available in 2010. At that time Spence was the IT manager for a family business focused on document scanning services. The business was starting to expand vertically into processing the data within the documents. The company tasked Spence to find suitable software, but little was available to meet the business' need. The solutions on the market cost too much, weren't smart enough and there was a lack of support available.

Xtracta commenced its first product iteration in late 2010, launching the product in mid 2014. A lack of capital hindered product development and extended time to market. Once launched, Xtracta raised a 'considerable' amount of capital to hire a larger team. By 2015, Xtracta had a number of live customers on board and was building awareness in the marketplace. Spence says the company has been growing at an average rate of >100% YoY ever since.

A key enabler was a strategy shift from selling to end user organisations to selling to software vendors. Xtracta licenses vendors, such as MYOB and ABM to integrate the technology into their own products.

In recent times, as an increasing number of large enterprises have begun to look at RPA solutions, Xtracta's business is shifting towards larger enterprise deployments. Its customers now include government departments and listed companies.

The Xtracta Solution

Xtracta clients take a photo of a document or forward a digital version into the system. In the design phase, the client defines the data to extract, for example, line items, invoice number, receipt number, date and time of expense. Once deployed, employees take photos of their receipts and forward them into Xtracta. The system reads the data and allows the claim to then be quickly completed. This removes the need to manually read, interpret, and enter data for documents. The system uses several types of AI, including Natural Language Processing, image processing, and Xtracta's own algorithms.

Xtracta's system uses machine learning in a two-step process to analyse customer data. The first step is data mining. The service generates learnings at multiple levels. The first level is across the entirety of the Xtracta data set and identifies relevant links and structures within the same document types. These features are collated into a "knowledge pool"; a constantly changing information source. The second is at a customer level with any specific training the customer makes creating a private knowledge pool that takes precedence over the global knowledge pool. The second step relies on evaluating each incoming customer document against the knowledge pools. The system does this in real time through cloud-based processing servers.

The learning repository represents a significant element of the IP investment which enables Xtracta's value proposition. It can be challenging for a competitive new entrant to reproduce.

OVERCOMING CHALLENGES: XTRACTA'S LEARNINGS

Spence noted he didn't get a lot of good advice as a new business owner. He had a lack of awareness around services such as business mentoring. Looking back the business may have grown faster if Spence had more director level support in place.

Xtracta says a key challenge for clients is to overcome pressure from 'organisational empires'. This is where people create unofficial dominions in workplaces that can become resistant to change. For success, organisations must break down empires while ensuring staff feel comfortable with change.

Finding employees with the right skillsets remains difficult. Software developers and data scientists are in high demand. This has become easier over time as Xtracta gains a better understanding of the skillsets required.

Raising capital was tough for Xtracta. The company pitched to venture capitalists but received little interest. Today, Spence says venture capitalists' have a stronger interest in investing in IPA companies. This is likely due to a combination of factors; increasing understanding of the benefits of IPA, the maturing of AI for enterprise and Xtracta's market maturity in 2019.

THE BENEFITS

According to IDC's AI Use Case Taxonomy the key benefits of implementing an AI powered automated data entry system are:

- **Operational efficiency/cost reduction.** Humans can be redeployed to higher value work. AI does not require a salary for its work.
- **Continuous service.** Artificial Intelligence doesn't need to sleep or take meal breaks.
- **Improved Customer Satisfaction.** Eliminate human error, faster processing.
- **Document processing quality, accuracy, auditability.** Ability to trace processing steps and to improve the system

- **Flexibility in managing peak workloads.** AI can step in at a moment's notice to cover peak periods.

THE RISKS

One risk of automating document processing is the potential for fraud - for example, where an entity submits false invoices for payment. A human may notice an anomaly or fraud-marker but that AI might not. The mitigation for this risk is to build in processes to teach the AI to recognise potential fraudulent activity.

Another risk is that the data captured could be incorrect. For example, if the AI system 'learns' an action incorrectly, such as categorising a particular line item, then there could be many incorrectly categorised line items automatically processed into the system before a human recognises the problem. If a human makes a processing mistake, people see this as a single user error. When this happens with AI, there is potential for people to lose trust in the system.

Xtracta uses data validation to avoid incorrect data capture. Another common approach in AI systems is the use of confidence scoring. This is where a score indicates the likelihood of an AI decision being correct; results which the AI is less confident in are then flagged for user review.

KEY PREREQUISITES FOR ORGANISATIONS PLANNING TO IMPLEMENT

To be ready for Intelligent Process Automation within your business, Xtracta's Jonathan Spence notes that Centres of Excellence are effective for driving initiatives. The centre's mandate should be to promote initiatives which add whole of organisation value rather than to protect empires. Centres of Excellence can build influence and autonomy to improve action and results.

WHO ELSE OFFERS INTELLIGENT PROCESS AUTOMATION SOLUTIONS?

Several companies such as Leverton, Cinnamon, and Infrd use AI to compliment OCR technologies and provide document analysis solutions. Corporations like Google are also taking an interest in this field. Google hosts a 'Detect Text' protocol in its Cloud Vision API.

An example of a service that utilises googles Cloud Vision API is Box. Box provides both optical character recognition with AI integration as well as image recognition. This allows for searchable image keywords and handwriting recognition.

WHAT THE FUTURE HOLDS

The company is looking at raising capital to increase its sales resources. The spotlight is on building up market position rather than enhancing the product. However, Xtracta is looking at improving its capabilities. The company is researching how to process more complex documents and poor quality documents.

Intelligent process automation is in IDC's Top 10 use cases by five year CAGR (Compound Annual Growth Rate) according to the company's Worldwide Artificial Intelligence Systems Spending 2018–2022 Forecast. IDC projects that spending on Intelligent Process Automation worldwide will grow with a CAGR of 43.6% between 2017 and 2022. IDC expects robotic process automation to continue to grow well in the region as enterprises focus on the importance of task automation. There is strong capital infusion into the market and IDC expects vendors to deliver innovation into this market at a rapid pace.

Spence isn't quite as enthusiastic on the pace at which New Zealand enterprises are adopting Intelligent Process Automation. There is a sense that New Zealand companies are more conservative than other markets and have a longer sales cycle.

IDC'S GUIDANCE

Guidance for Vendors

RPA automates repetitive tasks and offers compelling business value for some business functions. The real value of RPA is not in piecemeal automation but in integrated deployment at scale. Content workflow solutions vendors should integrate offerings with leading Cognitive RPA solutions.

Job replacement is not always a leading benefit. RPA is often deployed to augment human tasks, rather than replace. In a recent IDC survey, only 7% of respondents expected the deployment of RPA to result in workforce redundancy; 53% expected to see employees reskilled/transferred and 33% said technology helps employees “work smarter”.

RPA vendors are building credibility by delivering proven use cases and helping enterprises define clear road maps to deploy AI-enabled process automation.

Based on IDC's conversations with several RPA vendors IDC believes vendors are prioritising partner ecosystem growth. This is not only from a sales perspective but also to co-innovate solutions for their mutual customers. Xtracta's focus on software vendors is a clear example.

Some RPA technology vendors are leaning towards a vertical-specific go-to-market (GTM) approach. Although most solutions are vertical-agnostic, customisation and business-specific context-building has helped vendors get decision makers attention in specific industries.

Guidance for Enterprises

Enterprises should address how RPA will augment the business and coexist with human labor. Decide what automation can do and what only humans should do. Decide on the governance methods necessary to take advantage of these innovations.

Enterprises should consider RPA implementations of a single process within a single business unit. Next, build a road map that allows for scaling.

Look for vendor partners that have the deepest experience in using these technologies. The vendor should have the required change and risk management advisory skills to ensure project success.



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The rapid development of AI technologies presents major opportunities and challenges for our country: from creating world leading AI businesses, nurturing a pool of talented AI engineers, applying AI technologies to our agriculture, government, manufacturing and service industries to holding a meaningful national debate on the broader implications for society, New Zealand needs to actively engage with AI now in order to secure our future prosperity.

The Forum brings together citizens, business, academia and the government connecting, promoting and advancing the AI ecosystem to help ensure a prosperous New Zealand.

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