Insights on intelligent automation of knowledge work

Cognitive knowledge and data quality are critical success factors to accelerate the shift to a digital business model

In this thought paper, we reveal Emergn insights into ways of working that are accelerating the successful automation of knowledge work. See the sources of business value. Understand the differences between the human and data sides of the intelligent automation equation. And learn why everything should begin and end with your use case.

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Commentators frequently report on the potential return on investment from automation. The promise is often framed in terms of delivering services faster and at lower costs. While standard automation can save time and resources by speeding up routine or manual tasks, it doesn't deliver the transformational benefits of intelligent automation. However, intelligent automation is complex as it often requires a specific mix of technologies and skills that is dependent on the use case and organizational context. Just like any other technology investment, intelligent automation also raises a key question for decision-makers...

How will we get the most business value out of intelligent automation?

The answer from every expert, of course, tends to start with "It depends…" And it really does. No two business models or activities are the same. So they cannot be automated the same way. Yet there are ways of discovering where the potential pay-offs are greatest for the automation of knowledge work.

After implementing intelligent automation for enterprises across a wide range of sectors, we have built up a clear picture of how to uncover the highest sources of business value. In our experience, knowing where to look should start with your area(s) of competitive advantage. Since differentiation is increasingly moving towards providing better experiences to customers, many sources of value from intelligent automation are most likely to be found within customer services. This was demonstrated in the 2021 Emergn Report that surveyed technical leaders.
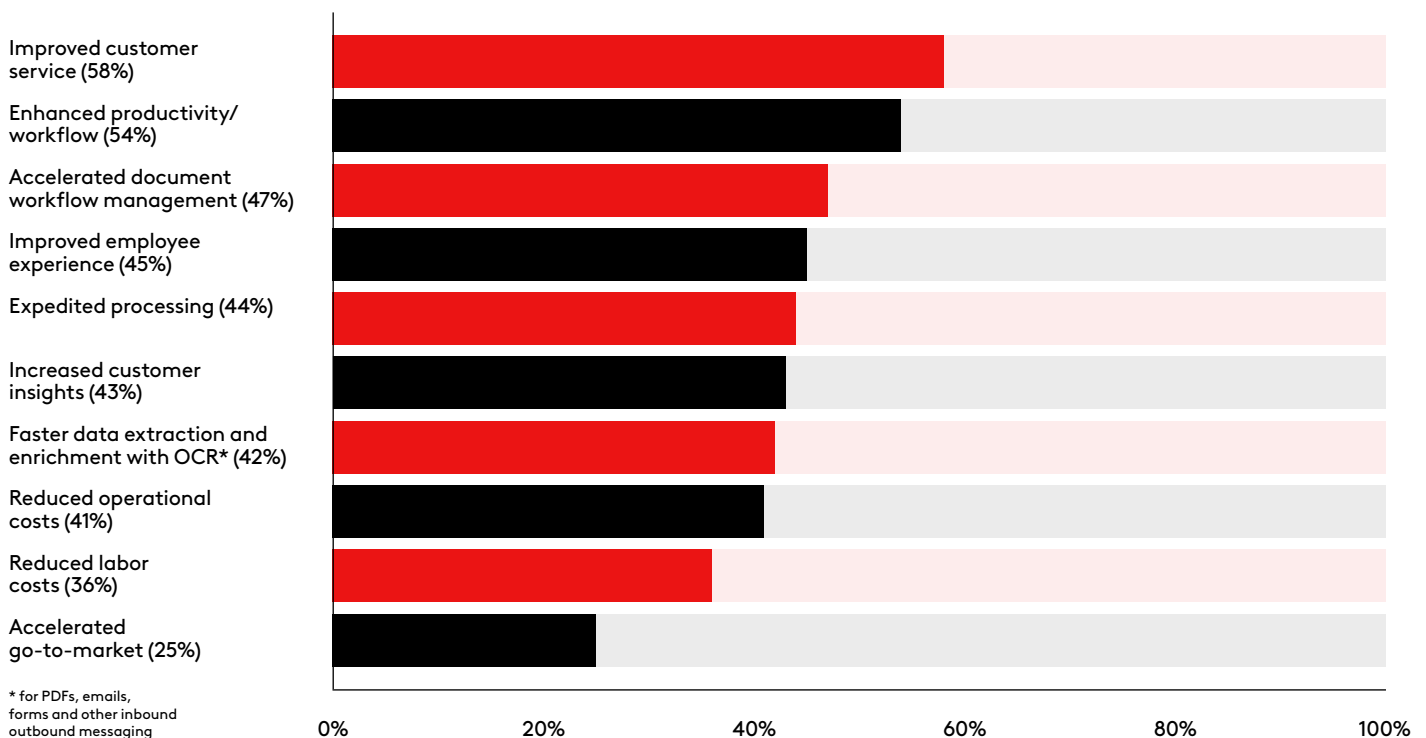
CUSTOMER SERVICE IS #1

Customer service is also a top – or the top – use case for intelligent automation across industries and countries.

FIGURE 1

Problems and opportunities addressed with automation

From Emergn's survey of technical leaders on the use of intelligent automation (May 2021)

- Improved customer service (58%)
- Enhanced productivity/ workflow (54%)
- Accelerated document workflow management (47%)
- Improved employee experience (45%)
- Expedited processing (44%)
- Increased customer insights (43%)
- Faster data extraction and enrichment with OCR* (42%)
- Reduced operational costs (41%)
- Reduced labor costs (36%)
- Accelerated go-to-market (25%)

0% 20% 40% 60% 80% 100%

* for PDFs, emails, forms and other inbound outbound messaging

Emergn surveyed 320 technology leaders from different industries about the state of intelligent automation within their enterprises. When asked, "What business problems/opportunities has intelligent automation been applied to address?" Improved customer was the most frequently selected.

Evidence from working alongside clients shows intelligent automation use cases involving customer-centric decision processes are commonly more valuable than the standard automation of business process tasks.

If uncovering where the value can be found is relatively straightforward, the opposite is true for understanding how. Through experience and dedicated research, the method we have arrived at involves analyzing human activities as well as quality data.

Starting with the business perspective

The goal is to improve the performance of business processes. Business processes depend on defined inputs, defined processing steps producing that produces a defined output. The key input is data, both initial data and data refined through the process steps. The key processing is knowledge, in either formalized or in human form.

The success of automation comes from understanding it as an approach to the design and improvement of business processes. Automation needs to be more than a replacement for manual tasks. For automation to create sustained competitive advantages, organizations will need to transform processes to be digital first, or using popular terminology, compete with digital operating models. This requires effort, knowledge, and deep understanding of the context – the business use case.

Our survey shows that 90% of companies have already started to adopt some form of automation in their businesses. More than half reported that they have workflow automation, robotic process automation (RPA), and intelligent chatbots in place. Yet, 98% of leaders report being challenged by the skills gap in automation. And the majority (56%) are still actively seeking better methods for implementing intelligent automation.

The blended approach

Simply maximizing the level automation in business processes does not automatically improve the efficiency of the process. For example, directed chatbots using automated translation do not guarantee to improve the customer's experience.

Today's technologies and requirements do not yet make it possible or even necessary to fully automate most customer services. Therefore, the best approach to intelligent automation is not to think about how to remove human knowledge. But instead start from empowering the human with automated processing steps. Combined in the right amount, they improve speed, accuracy, and productivity to generate better experiences.

What makes automation intelligent?

Applying advanced technologies such as machine learning (ML) and artificial intelligence (AI) to automation does not make it intelligent. Intelligent automation for us is the subset of automation where the primary goal is to automate cognitive tasks and improve data quality in digital business operations.
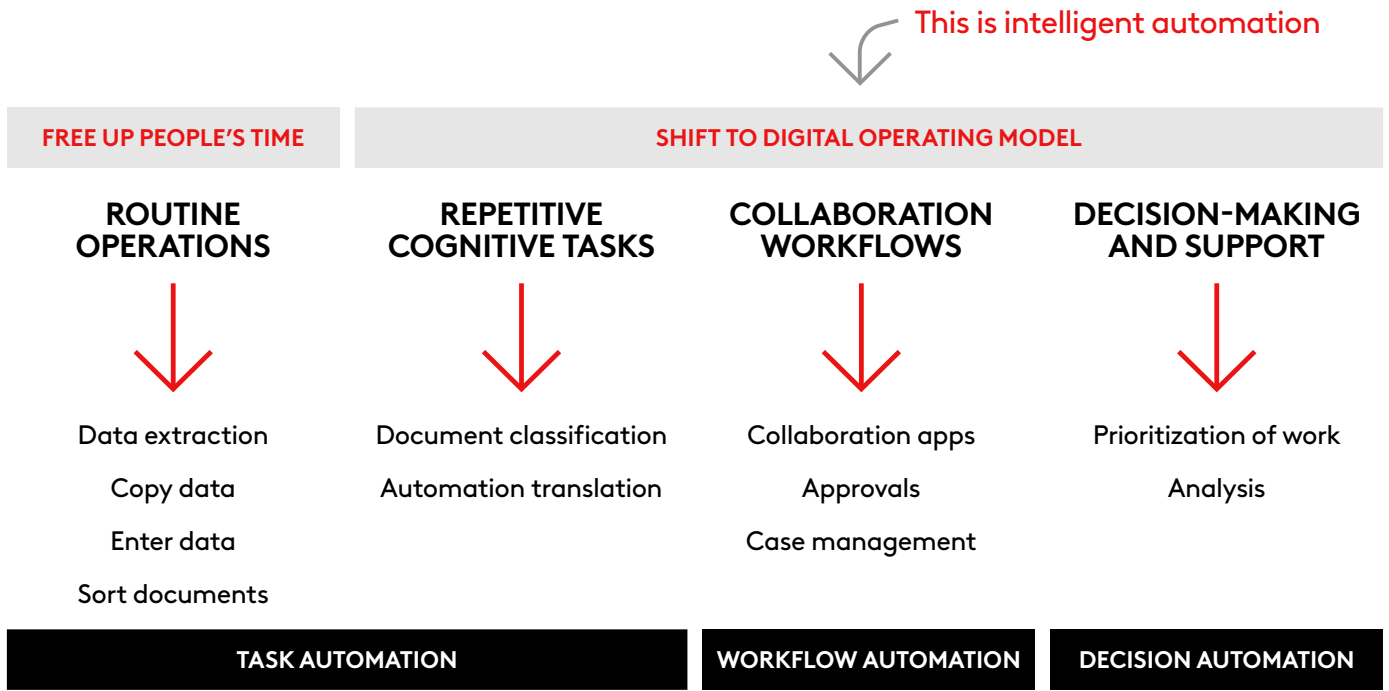
90%

OF COMPANIES HAVE ALREADY STARTED TO ADOPT SOME FORM OF AUTOMATION IN THEIR BUSINESSES

You can download a copy of our survey report at emergn.com/2021-report/

FIGURE 2

Different types of automation

This is intelligent automation

FREE UP PEOPLE'S TIME	SHIFT TO DIGITAL OPERATING MODEL		
ROUTINE OPERATIONS	**REPETITIVE COGNITIVE TASKS**	**COLLABORATION WORKFLOWS**	**DECISION-MAKING AND SUPPORT**
Data extraction	Document classification	Collaboration apps	Prioritization of work
Copy data	Automation translation	Approvals	Analysis
Enter data		Case management	
Sort documents			

TASK AUTOMATION	WORKFLOW AUTOMATION	DECISION AUTOMATION

In short, intelligent automation for us is when we operate collaborative and decision-making processes with limited or no human input and instead rely on data and rules provided by AI and ML. Automation with the purpose of freeing up people's time can be supremely valuable for a business. It just wouldn't be intelligent automation.

Such use cases shouldn't be confused with simple tasks that can be automated using popular technologies, like machine translation or information extraction. These rarely lead to significant business value. Instead, you need to select your use case(s) after an end-to-end review of the existing human decision-making and data quality required to achieve strategic business outcomes.

So, what does this actually involve? In the following section, we explore how the human element of knowledge work will influence your approach to intelligent automation. We then analyze the data side of equation. In particular, the importance of data quality.

To get the full potential of intelligent automation and understand how to leverage AI/ML technologies best; business process analysis should be based on the understanding of the quality of the data, and how the data is used in combination of human knowledge work to make decisions.
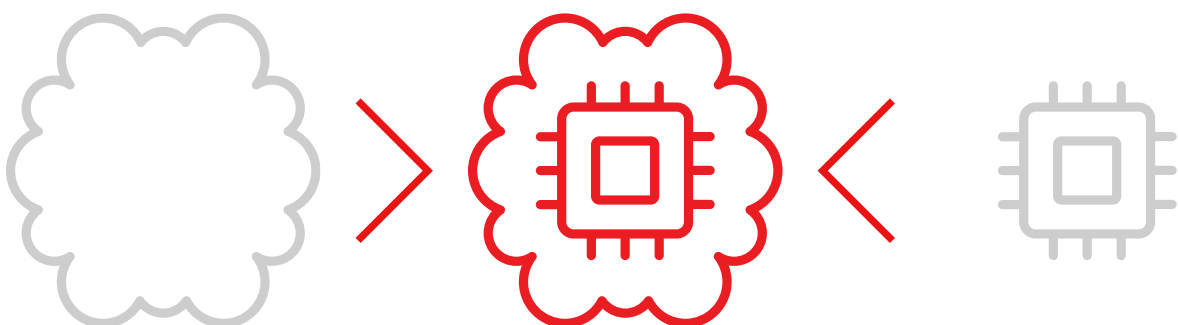
Incorporating the human element of knowledge work

A clear understanding of human subject matter expertise (the 'knowledge'), is the key to successful intelligent automation in knowledge work. However, the formalization and description of human knowledge is a very complex and costly process. Often because of knowledge contents, the number of collaborators, and variation in the inputs. Standardization is hard and often the extent of knowledge content only becomes visible when the knowledge worker in question is removed or replaced in the business process.

As it's a complex undertaking, maximum value from intelligent automation is rarely achieved from the very first implementation. It requires an iterative and incremental approach together with impact analysis across other parts of the value chain. This is especially true when automating customer experiences or other processes with complex cognitive tasks and decisions.

How intelligent does the automation of a use case need to be?

Preparing the use case for intelligent automation requires the same amount of business understanding as if you were creating a new business process or undertaking process re-engineering. Rather than trying to automate the use case, you need to look at the use case in the business context and how intelligent automation contributes to the business process. This requires a very structured approach.

When we design solutions for the intelligent automation of knowledge work, we use a knowledge work spectrum for the initial analysis and understanding.

Intelligent automation is adding decision making to business process – not putting intelligent technology into use cases.

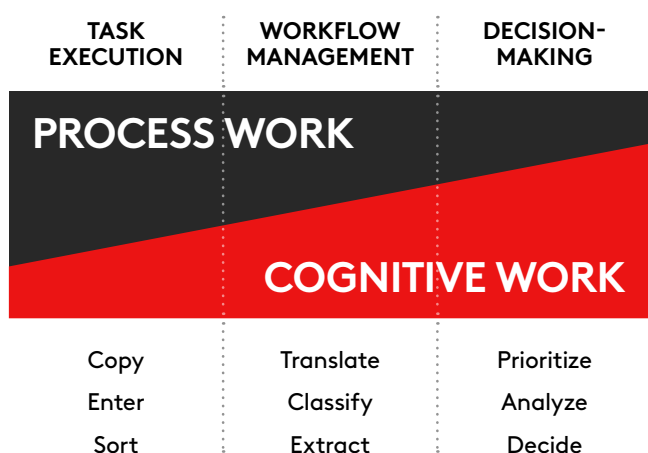## Most value is found in the heavy end of the knowledge work spectrum

Where work is highly dependent on extensive human knowledge and analysis, the temptation is to automate to scale up the accuracy of a few experienced knowledge workers. The value-adding approach to automation comes from investing in the analysis of the work itself. Like uncovering how it is executed and what tasks make up the flow of work.

This is where the knowledge work spectrum is useful. In short, knowledge work execution falls into two content categories: process work contents and knowledge work contents.

Process work involves transporting and transforming information. Typical tasks are to copy, sort and enter information. Knowledge work involves interpreting and acting upon information. Heavy knowledge work includes analysis, classification, translation, and – most importantly – decision-making.

FIGURE 3

The knowledge work spectrum with typical activities

TASK EXECUTION	WORKFLOW MANAGEMENT	DECISION-MAKING
PROCESS WORK		
		COGNITIVE WORK
Copy	Translate	Prioritize
Enter	Classify	Analyze
Sort	Extract	Decide

The knowledge worker spectrum also includes three types of activities: task execution, workflow management, and decision-making. Intelligent automation as we define should be designed to increase the productivity of the knowledge workers in the cognitive part of spectrum. Therefore, it is important to understand the differences between roles and classifications of work and apply different types of automation accordingly.

Automation of task execution activities

To the left of the spectrum, knowledge workers are typically executing routine, non-cognitive tasks. These fall outside of what we classify as intelligent automation.

These tasks can be easily (even fully) automated and implemented by available technologies. Here, the recommended approach is to separate such tasks and automate the exact activities that are bottlenecks in whatever business process they belong to.

Automation of workflow management activities

In the middle of the spectrum, where time spent on process work is roughly the same as knowledge work, we often find office managers. Their tasks require both business acumen and understanding of collaboration and processes. They are responsible for managing information flows in the company through workflows and information processing.

In addition to the usual business process analysis of actors and activities for automation purposes, we recommend paying specific attention to the data flows and the quality of the data throughout the process.

Automation of decision-making activities

To the right of the spectrum, we find the decision-makers who lead the business. Their tasks have high knowledge work content and come with high cognitive demands. To compensate for difficulties in observing and understanding decision-making, a detailed analysis of the data and information is crucial. The reason for this is straightforward, yet often underestimated. Decisions are made based on data. Or, more precisely, data is processed and interpreted as information and that information is a major factor in human decision-making.

Focusing on the data element of knowledge work

Business process performance directly correlates with the quality of the data inputs to the process. This is nothing new. But understanding this becomes even more important for automated processes as there are fewer opportunities to correct or add data when those processes are up-and-running.

Data quality is also essential for intelligent automation because the human influence in decision-making is almost entirely removed. For example, current technology of does not (yet) compensate for human compassion and intuition factors in decision-making.

For the intelligent automation of knowledge work, we recommend analyzing the input data the business process relies on from three viewpoints: quantity, quality, and speed.

Quantity of data to make decisions

Your data set should provide the **complete** data required for decision-making. Knowledge work regularly starts with an initial set of data that needs to be subsequently researched and enriched to the point of proving enough information to act upon. Business process analysis should result in an overview of all input data elements the business process depends on.

Quality of data for results to be trusted

For analysis, recommendations, and decisions to be accepted, just having complete sets of data is not enough. Data quality (data being complete, accurate, readable, and verifiable) is imperative. However, humans do not excel in understanding data quality in the way machines do. In fact, they tend to excel in compensating for lack of quality. Yet data quality is the crucial element for ensuring that the decisions and outcomes of an automated business process can be **trusted**.

Speed of data to provide an automated service

The **timeliness** of data is important because automated processes are able to provide instant responses if they have the right inputs. Through analysis, you can uncover which data elements are critical to each step and how long it takes to source them.

Perhaps the best way to illustrate how the combination of analyzing the cognitive and data elements of knowledge work makes for successful intelligent automation is to select a common example.

An ideal example:
insurance claims

The success of the intelligent automation of a customer-centric process lies in the combination of the process performance and quality of the data. In many industries, increasing data quality across the value chain is already a primary business goal. A good use case example from the insurance industry is from claims. Claims processing is all about collecting and improving data quality until a reasonable decision can be made.

We see the intelligent automation of claims processing rapidly becoming an important element of business competitive advantage in the insurance industry.

Firstly, we know it can be automated. But not fully automated, because humans still play an important role in all exception scenarios. They are often required to accept the prepared information and suggestions as the recorded decision-maker.

Secondly, as each new claim case is created, the initial data must be subsequently enriched with a lot of additional information until a final decision is made. Common additional information includes other parties, related policies, and identity validation. Not to mention the mandatory checks for fraudulent behaviors.

The most efficient customer service is the one that is not needed. But self-service comes a close second. In claims, self-service without waiting times for decisions or payouts is a distinct possibility. Especially when intelligent claim processing is based on analysis of human interactions in combination with thorough understanding of data quality.

Having conducted the original human and data analysis, the speed and accuracy of data in the intelligent automation process not only lowers risk and costs but meets the strategic business objective of differentiation through better customer experiences.

Emergn perspective

Implementing intelligent automation

The simple automation of tasks for increased digitization can be viewed and managed as a fairly quick technology solution. All too often, this is the way that people approach intelligent automation.

At Emergn, we see this as doomed to failure. The intelligent automation of knowledge work and business processes requires intelligent inputs and an additive approach. It's not about a specific technology. It's about changing the business model using the advantages of technology. This is especially true when automating differentiating experiences like customer service, where intelligent automation should be seen as part of business process design.

In our experience, the most successful intelligent automation implementations are those that involve experimentation, learning, and incremental delivery. So we focus on helping organizations to appreciate the full power of intelligent automation and understand the ways of working required to apply it with the maximum impact. This may sound like a significant undertaking. But Emergn has a proven way to guide you through the steps, delivering benefits early and often.
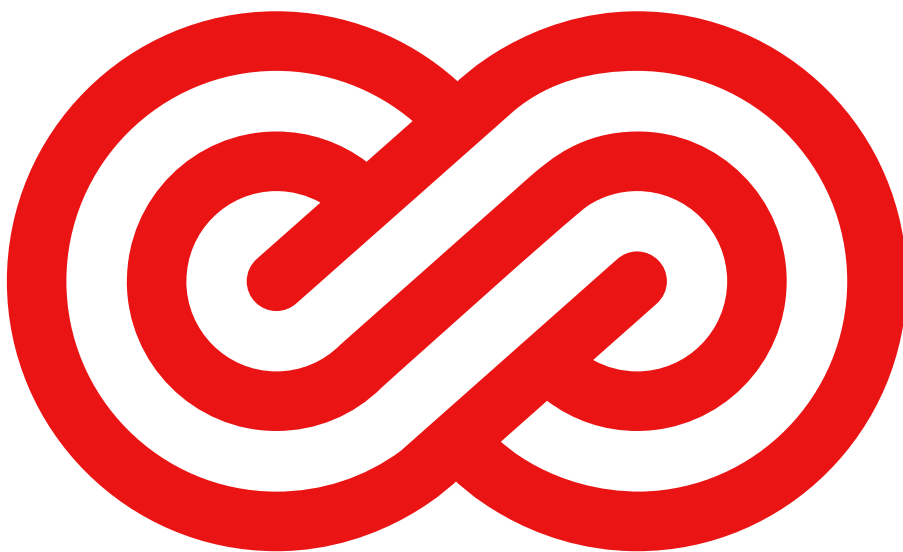
Working with use cases

When it comes to implementing intelligent automation, instead of focusing on selecting technologies, our approach starts with your use cases.

- We start by applying a systematic approach to use cases by identifying, prioritizing, and evaluating them against your wider strategic business objectives.

- Then we design intelligent automation based on the tools and platform that will provide the task, workflow, and decision automation capabilities you need to implement the use case(s).

- Finally, we establish a Center of Excellence covering the operating model, infrastructure, and capability you need to run intelligent automation and realize business value.
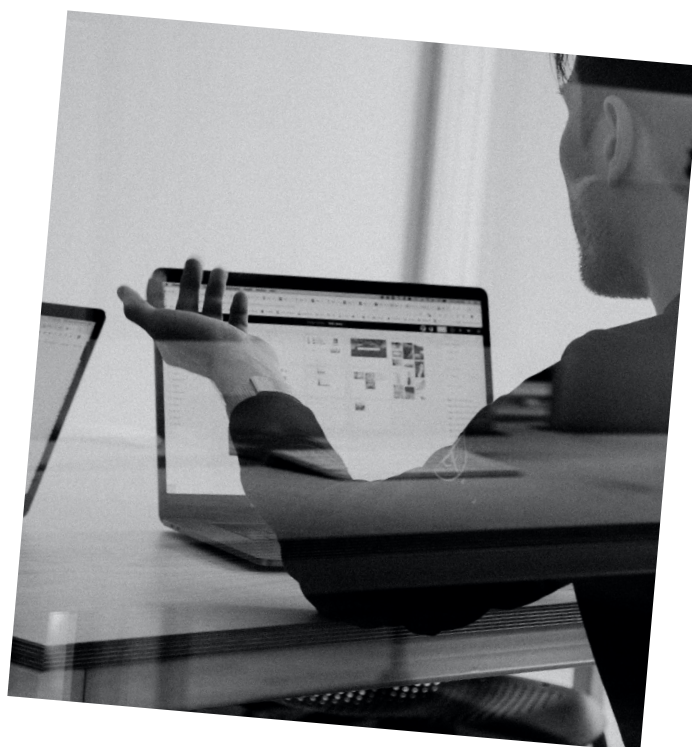

FIGURE 4

The Emergn approach to implementing intelligent automation, from use cases to operation

MANAGE **USE CASES**	TO BUILD **SOLUTIONS**	TO RUN **OPERATIONS**
Identify	Task automation	Operating model
Prioritize	Workflow automation	Center of Excellence
Evaluate	Decision automation	Infrastructure
TOWARDS THE GOAL	**WITH TOOLS & PLATFORMS**	**TO GENERATE BUSINESS VALUE**

The successful implementation of intelligent automation also rests on several key considerations: understanding your customer journeys, process mining, and automation technologies.

Customer journeys

For intelligent automation to effectively improve customer experiences, you need to factor in your customer journeys and focus on specific pain points that need to be addressed. In addition to qualitative business analysis techniques such as 'jobs to be done' and personas, we recommend enriching the customer journey models with quantitative process data.
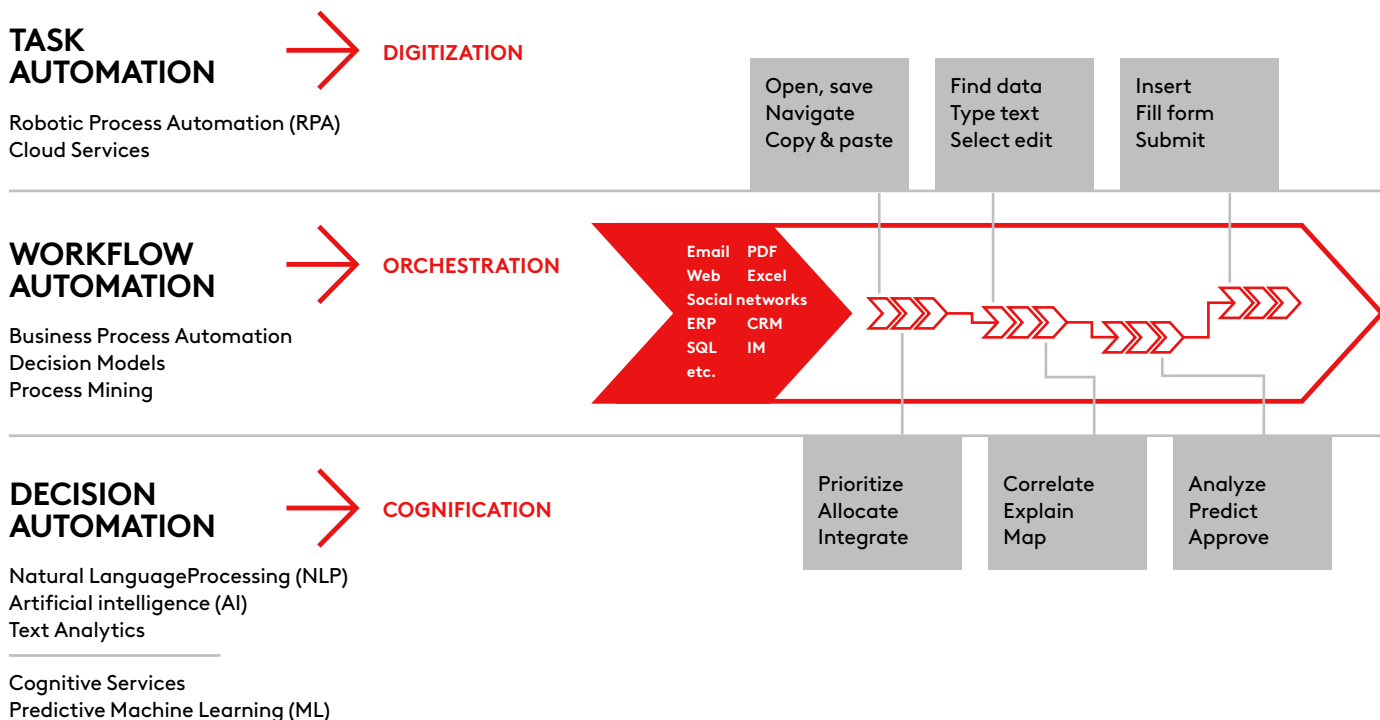
Process mining

Process mining is the quantitative analysis of event data so you can undertake process discovery and analysis using machine learning. Data from process mining gives you a better understanding of how business processes really work and will help you calculate the business case or returns from automation.

Process mining is rapidly becoming an important part of the intelligent automation domain. The advantage is that process mining techniques aid the design of automation as well as how to monitor the impact once it is up and running.

FIGURE 5

Illustration of the interconnected domains of task, workflow and decision automation

TASK AUTOMATION → DIGITIZATION

Robotic Process Automation (RPA)
Cloud Services

| Open, save Navigate Copy & paste | Find data Type text Select edit | Insert Fill form Submit |

WORKFLOW AUTOMATION → ORCHESTRATION

Business Process Automation
Decision Models
Process Mining

Email PDF
Web Excel
Social networks
ERP CRM
SQL IM
etc.

DECISION AUTOMATION → COGNIFICATION

Natural LanguageProcessing (NLP)
Artificial intelligence (AI)
Text Analytics

Cognitive Services
Predictive Machine Learning (ML)

| Prioritize Allocate Integrate | Correlate Explain Map | Analyze Predict Approve |

Automation technologies

We see automation technologies as existing on a scale. Selecting the right ones depends on what you need to achieve, from simple task automation via RPA tools right through to complex decision automation via AI and ML. This enables us to connect and optimize technologies to provide the most value to our clients. By starting small, we can quickly realize the opportunities within your organization that low-code tooling and cloud services provide without losing the power and depth that comes with traditional IT development.
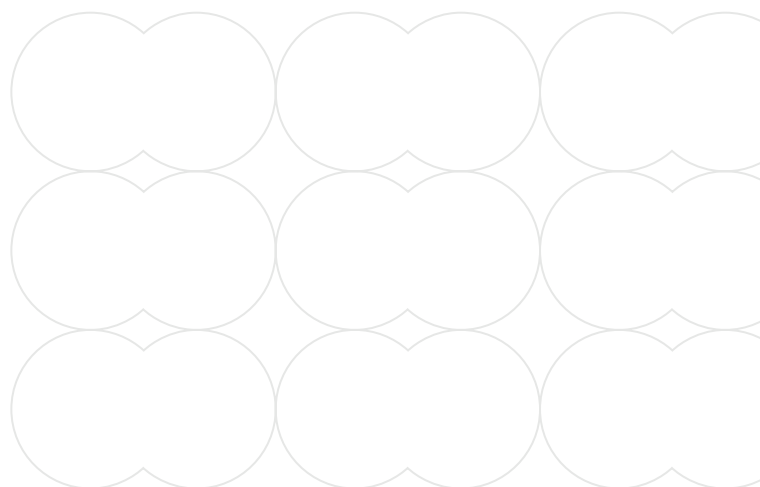
Summary

This paper is borne of our own experiences in intelligent automation. Taking lessons from successful implementations, we hope to show how automation is vastly more effective when the focus is squarely on the use case and end-to-end business processes. In particular, when you combine analysis of the human, cognitive contents of knowledge work with analysis of the quality, quantity and timeliness of the data involved.

Intelligent automation should not be approached from the perspective of simply putting 'intelligent' technology solutions in place. It should become the way to (re)design and (re)build processes to digitally transform business operations. And it should always be driven by strategic business objectives that contribute to your company's competitive advantage.

A case in point

Challenge

Horwich Farrelly is one of the leading providers of legal and handling services to the UK general insurance claims sector. It has ambitions to be more innovative and grow within the market.

However, a mountain of admin was taking valuable time away from its lawyers' ability to focus on high-value client work.

The administrative and support staff were also swamped by the time-consuming admin of processing claims cases, involving multiple channels and documents. New fraud detection work was adding to the administrative burden.

The process of entering and validating the information is manual and requires different people at each step to execute separate tasks. This process is not only time-consuming, but prone to error.

The end of the process requires input from key decision-makers and lawyers. This slow and costly process delays the flow of claims through the system.

Approach

Emergn implemented Dynamic Claim Management with Intelligent Document Processing as a cloud-first solution.

Our approach automates Horwich Farrelly's administrative processes, powered by cloud and machine learning. This radically reduces the time spent on managing new cases by automatically extracting the required information from documents and emails, and refilling forms. This automates the manual workflow, while integrating with legacy systems.

Horwich Farrelly users will also be able to easily add requested changes from the clients, via Excel spreadsheets hosted on SharePoint. This automates the creation of new claim types – such as fraud detection – making it dynamic and customizable for all users. It also delivers intelligent risk management by identifying potential fraud cases, presenting similar cases, and highlighting trends.

> **"** In Emergn we have a trusted partner who has helped us blend modern ways of working with technology expertise to deliver the business outcomes we need to transform. We value their contribution as we grow our business, and we look forward to developing the relationship further. **"**
>
> **Michael Rimmer**
> Legal Operations Director/Partner, Horwich Farrelly

Impact

This intelligent automation approach is expected to reduce time spent on case administration by 70%.

Time spent on adding new claims will be reduced from weeks to a few hours, reducing costs and also enabling the team to quickly add new business opportunities.

It will also completely remove the burden of administration from lawyers – freeing them up to focus entirely on legal work.

More client stories

DEUTSCHE BÖRSE GROUP

We designed and built a bespoke, low-code automation platform for self-service and reduced call volumes to the service center.

SAP

We identified customer demand and created a product roadmap for capturing user behavior using NLP and NLU to improve business decisions.

Getting started with
intelligent automation

1

Do you need to build a new strategy?

The best use cases for automation are aligned to strategic business outcomes. We will help you evaluate what you want to do against a clear benefit model. We'll work from the top down to review use cases with high potential. We'll also set out success metrics so you can monitor progress.

APPROACH
Intelligent Automation Strategy Workshop

TIME TO VALUE
2-4 hours

OUTCOMES
Processes that are ready for automation, success metrics and suggested benefit model

2

Are you looking to justify automation use cases?

Automation opportunities are typically easy to find but hard to quantify. They also tend to be specific to individual business functions. We use a blend of analysis and ideation to create a prioritized list of automation use cases. Through interviews, process mapping and checklists, we also highlight the potential impact.

APPROACH
Automation Use Case Identification

TIME TO VALUE
5-10 days

DELIVERABLES
Backlog of use cases, recommendations on the order of implementation and estimated benefits

3

What can your data tell you could about what to automate?

The way that processes are executed in reality is usually very different from how they were designed. Errors, inconsistencies and differing instructions all contribute to variations. We use process mining and mapping, data analysis and interviews to categorize which use cases are ready for automation.

APPROACH
Data-Driven Automation Assessment

TIME TO VALUE
10-15 days

DELIVERABLES
Dashboard visualization of opportunities for automation, rationalization and digital transformation

4

Are you looking to automate key decision-making?

The key to decision automation is formalizing the knowledge that decision-makers use on top of the data. We can help define the problem and form a hypothesis. We receive, process and analyze your data. We then use a proof of concept to test out which combination of data and algorithm yields the best result.

APPROACH
Decision Automation Proof of Concept

TIME TO VALUE
2-6 weeks

DELIVERABLES
A proof of concept, including data visualizations and conclusions for implementing a full use case