



WHITE PAPER

USING ARTIFICIAL INTELLIGENCE (AI) TO MAKE BETTER USE OF YOUR DATA

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 IRON MOUNTAIN **INSIGHT**®

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DATA – YOUR BEST ASSET AND YOUR BIGGEST CHALLENGE

IN THE DIGITAL AGE, DATA IS THE FUEL OF BUSINESS

Information is everywhere, so getting hold of it isn't the challenge. Many organizations already have more of it than they know what to do with.

The amount of data in the world is increasing exponentially and will continue to do so as more and more of our working life and social activities are carried out online and in digitally connected spaces.

Today, cars are connected, constantly streaming information backwards and forwards from the cloud, as well as from other nearby vehicles and devices carried by pedestrians. We live in smart cities where public services and transportation systems are all digitally enabled, so utility providers can plan and deploy services more effectively. When we shop online, the way we click through products and services is measured to provide insights for marketers. A visit to the mall means being tracked by cameras and RFID sensors.

We have become experts at monitoring the world around us and capturing information. It's predicted that by 2025, 463 exabytes of data will be

generated every day¹. Already four petabytes of data are created every day by people just uploading their lives and stories to Facebook. And the current generation of connected cars generates up to 10 terabytes each of information every day via the array of cameras, sensors, and scanners they carry.

So the problem clearly is not that we don't have enough data. Without a doubt, we can access the specific information we need to solve whatever business problems we are facing. This might be understanding our customers' behavior, our own position in the market, our competitors, or the inner workings of our own organizations.

Usually the problem is that we don't know what data we need and how to extract the value that we need from that data. This is because as much of 90%² of the data generated today is unstructured.

Structured data is information that is labelled. A straightforward example is to imagine a report on the number of cars that pass along a stretch of road, where the time and color of each

463 EXABYTES

PREDICTED AMOUNT OF DATA THAT WILL BE GENERATED EVERY DAY BY 2025¹

passing car is recorded manually by hand by a person watching. The result is structured data, and you can easily feed it into a computer and run an analysis to tell you what time of day the road is busiest and what color the passing cars were.

On the other hand, if you were to put up cameras and film the road, you'd still end up with data on how busy the road is and what color cars are passing by. But the data would be unstructured – just moving images. This means that everyday computer tools like spreadsheets and databases would be useless for trying to make sense of it. Without specialized tools, or someone sitting through it and labelling it manually, it can't tell us anything worthwhile.

¹World Economic Forum – [How Much Data is Generated Every Day?](#)

²CIO.com – [AI Unleashes The Power Of Unstructured Data](#)

10 EUROS OR
2% OF GLOBAL
TURNOVER

AMOUNT OF IMPOSED
FINES ON EUROPEAN
BUSINESS GIVING
EUROPEAN CITIZENS
ROBUST RIGHTS OVER
WHAT CAN AND CAN'T
BE DONE WITH THEIR
PERSONAL DATA ³

Unstructured data is everywhere in business. It's in legacy archives, customer support records, chat logs, legal documents, social media posts, location data, invoices and purchase orders, voice recordings, staff appraisal forms, HR documentation, and a multitude of other places.

Data is often siloed away under the stewardship of different departments – usually by whomever collected it. Others who might find it useful, whatever their role, have no way to access it or aren't even aware of its existence.

This means that a huge amount of the value our data contains is effectively locked away from us – either because we don't know where or what it is or we don't have the tools to digitally analyse and understand it.

And the problems don't end with missed opportunities. Data storage is expensive. Some organizations still spend huge amounts of money maintaining physical premises for storing paper records or magnetic media like tapes and disks. Typically, this is because they need to hold on to the records, but it would take many years and be even more expensive to digitize them and structure the data they contain.

Unstructured data storage is particularly expensive. Think of the difference in file size between

a daylong video recording of a stretch of road and a simple tabulated chart listing the time, make, and color of each vehicle. Both would give you the same information, but the video is likely to stretch to many gigabytes or terabytes of data, while the table could be represented in just a few kilobytes.

Finally, data brings with it issues of compliance and regulation. Laws around the collection, storage, and use of data are becoming stricter, a good example being the introduction in recent years of the European General Data Protection Regulation (GDPR). This legislation gives European citizens robust rights over what businesses can and can't do with their personal data, wherever it is located in the world, and imposes fines of 10 million euros or 2% of global turnover³. As this regulation became active, many organizations found it necessary to undergo costly audits of the data in their custody.

At the root of all these issues is the sheer size and variety of data that organizations have at their disposal and, in particular, its messy and unstructured nature. Manually formatting, cleaning, and structuring it is one possible solution for datasets up to a certain size – but this will usually be expensive, time-consuming, and open to human fallibility. For other solutions, we can look to new and emerging technology.

³ EU- [What Are the GDPR Fines?](#)

WHY AI IS THE SOLUTION TO THIS PROBLEM

Artificial intelligence, or AI, the term used in business today, refers to computer software that can become better and better at carrying out tasks, that is, by repeating a process and learning from its mistakes without human intervention.

A more precise term for what we are discussing here is machine learning (ML), which refers to a subset of AI technologies that simulate, as closely as is currently possible, the learning and understanding faculties of humans and animals.

These technologies include computer vision – training computers to analyze and understand visual information – such as the video recording of road traffic we mentioned previously. They also include natural language processing, which allows computers to understand and process human language, either spoken or in text, and respond to it using the same language. This technology is already in everyday use in consumer products such as Amazon Alexa or Apple's Siri.

Both of these technologies, as well as others made possible by machine learning, operate by taking messy, unstructured data (video or text) and structuring it by analyzing it according to sets of rules, referred to as

algorithms. These algorithms can improve themselves; by monitoring their own output, they can learn to adjust the weighting they apply to different factors that influence the decisions they make. This ability to learn is why these technologies are considered to fall under the heading of "artificial intelligence."

For the purpose of the simple example we have been using, an AI solution to the problem of recording information about cars travelling along the road would be to use computer vision algorithms to extract the time of journey and color of the car and convert it into structured data. Then, natural language processing is used to report the results of the analysis in language we can easily understand and act on.

These principles can be applied to convert virtually any data that a business is gathering or storing into valuable, actionable insights. Customer service departments can analyze the content of however many thousands of hours of call logs they have to understand what issues occur most frequently and what fixes are most effective. Insurers can assess claims records more accurately when their data is structured and then provide fairer coverage and

ARTIFICIAL INTELLIGENCE (AI):

The simulation of human intelligence in machines that are programmed to think like humans and mimic their actions. The term may also be applied to any machine that exhibits traits associated with a human mind such as learning and problem-solving.

THANKS TO THE RAPID EMERGENCE AND MATURATION OF CLOUD-BASED, AI-AS-A-SERVICE TOOLS, MACHINE LEARNING PLATFORMS AND TOOLS ARE WITHIN THE REACH OF BUSINESSES OF JUST ABOUT ANY SIZE.

identify fraud. Manufacturers can understand more about how their products are used and how they perform in real-world situations by structuring and understanding social “chatter” around them.

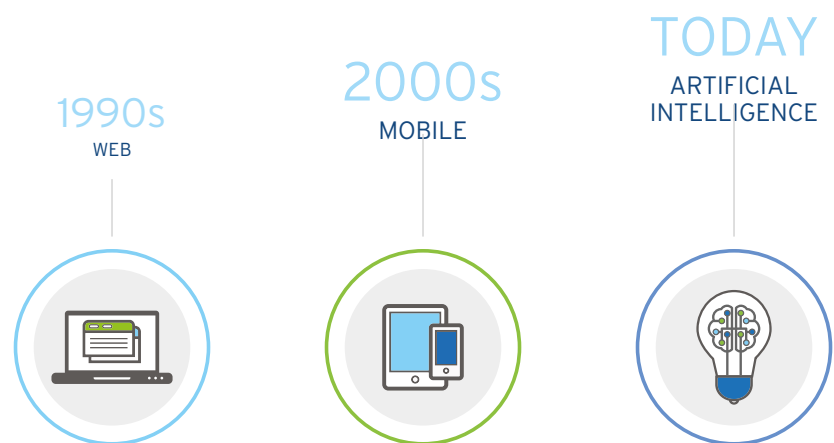
Additionally, many businesses have found they have been able to create new revenue streams by building subscription-based services around their data insights. Online advertising platforms collect data from people using apps and websites and package it as insights for marketers to help them with their customer targeting. Producers of industrial and agricultural machinery collect data on the operation of their products globally and use it to give their customers insights into when their machines may need servicing or replacing.

Until relatively recently, working with this technology was expensive and resource heavy. Because every organization’s data needs are different, there has generally been a need to buy the talent and technology necessary to implement a data strategy and then deploy a bespoke solution fitting the organization’s requirements.

For this reason, it’s usually been global enterprise-scale organizations that have been able to show they can effectively leverage artificial intelligence to improve their success with data initiatives.

Today, all that has changed. Thanks to the rapid emergence and maturation of cloud-based, AI-as-a-service tools, machine learning platforms and tools are within the reach of businesses of just about any size. Rather than a vast initial outlay on skills and infrastructure, they can simply tap into the existing architecture of service providers to use AI tools as and when they need them on a pay-as-you-go basis.

Iron Mountain InSight® is an example of such a service, and in the next section we will present some use cases, as well as lessons learned by clients on their journey to digital transformation.



SUCCESS STORIES AND THE LESSONS LEARNED

TODAY, FOR EVERY TYPE OF UNSTRUCTURED DATA A BUSINESS CAN GENERATE, THERE ARE AI TOOLS THAT CAN MINE IT AND EXTRACT INSIGHTS. IN THE FOLLOWING EXAMPLES, WE OVERVIEW INDUSTRY-SPECIFIC USE CASES WHERE AI ANALYSIS OF BIG OR UNSTRUCTURED DATA ENABLED ORGANIZATIONS TO OVERCOME REAL-WORLD CHALLENGES.



ENERGY

The oil and gas industry generates vast amounts of data during exploration, extraction, and supply. As a result, its analysts spend a large amount of time searching through and classifying data. Datasets, including geological samples, seismic images, well logs, and lithographic surveys, hold the key to accurately assessing and realizing the value of wells and the companies that operate them.

One project involved using AI to scan and extract information from 15,000 documents relating to 500 wells. This information was needed by an oil company seeking to identify potential targets for acquisition. If done manually, it was assessed that this task would have taken several months, and even then there would have been no guarantee that all of the data would be evaluated.

Another multinational power infrastructure provider wanted to identify and classify sensitive records detailing construction of facilities. The data could have been anywhere within six kilometers of binders stored across five premises. Iron Mountain deployed technologies, including computer vision and natural language processing, to locate the relevant information so that it could be securely stored or disposed of, as appropriate.



MORTGAGE LENDING

Approving mortgages is a process that can take months and requires the completion of a sizeable amount of paperwork by both the applicant and the lender. When this data is collated and classified manually, it is time-consuming and mundane work, and errors can have serious financial implications for both parties.

Iron Mountain has shown that this process can be automated with the deployment of automated classification, extraction, and metadata validation techniques. This has led to a reduced cost of customer acquisition to the lender, faster approval times (and therefore improved customer satisfaction), and more accurate risk profiling and fraud detection.

Another lender wanted to know how many documents related to LIBOR it had in its possession as the interbank interest rate approaches retirement this year (2021). Thousands of lending notes had to be examined individually to check whether they held LIBOR-specific information that must be changed. Using AI technology, this was accomplished in a fraction of the time that it would have taken for a manual review.



INSURANCE

In this sector, Iron Mountain has successfully deployed AI to decrease the risk posed by inaccurately assessed coverage, as well as to speed up the processing of claims and to drive increased customer satisfaction.

Insurers thrive or falter based on their ability to accurately assess risk. In order to do this, they must have constant access to the most up-to-date information. Often this information is provided by customers when they make a claim and are asked to submit forms, photographs, and statements backing up their losses.

Automated document classification means all the information contained in customer claims can be swiftly evaluated and analyzed, leading to quicker outcomes and increased customer satisfaction. The ability to analyze legacy data alongside newly generated claims also assists in identifying fraudulent claims. Another use case in this sector involves predicting the rate of policy cancellation experienced during economic downturns, which allows for better business planning.



RETAIL BANKING

One European bank reduced the time it takes to process and approve auto loans from seven to twelve days to just two to three days. This was achieved by deploying AI to automate processing and review functions that were formerly carried out manually. It led to a greater understanding of their workflow, which was subsequently streamlined in order to improve customer experience, and it also increased their detection rate for application errors.

Retail banks are also facing increasingly stiff competition from fintech challengers that are typically highly proficient at deploying disruptive technology and are unencumbered by legacy data issues affecting established players. AI technology enables a level playing field where they can compete to offer their customers innovative new products and personalized services, at scale, while still complying with all regulatory requirements.



CONTRACTS

The language used in contracts can be pivotal to establishing the outcome of many types of dispute and litigation. Therefore, thanks to inconsistent and changing practices or compliance requirements, it is a big problem when archived contracts are siloed or spread across numerous databases.

AI can be used to automatically extract all relevant metadata from contracts, whether they are on paper or in digital storage. Every document, PDF, or spreadsheet can then be made indexable and searchable through a visual database, meaning questions such as whether or not a document represents the most up-to-date agreement, or how many nonstandard clauses are included, can be answered instantly. This has improved operational efficiency for our clients. It also opens new avenues for revenue generation, as contracts can be sorted according to how close their renewal date is. This means sales agents can focus on upselling customers who are nearing renewal.

Automated insight mining can also be used to mitigate risks. One use case required analyzing documents to accurately assess exposure to risk through agreements which conferred unlimited liability, and take action to manage the risk.



REAL ESTATE

A client in this sector required access to payment data and documents from their internal mailroom to allow for continuation of business during a shutdown period during the Covid-19 pandemic.

By deploying Iron Mountain InSight they were able to use Google's AI and cloud technology, including Google Vision, to identify, capture, and store data from 7,000 images and 834 documents. The data was then made available to the business units that required it but were now working remotely. This meant there was no break in service to the real estate firm's customers, and it could continue to process payments on time. In this use case, the client's business infrastructure was streamlined, and access to data for its partners was improved.



PHARMACEUTICALS

When creating and trialing new drugs, pharmaceutical companies require access to massive amounts of information gathered during previous clinical trials, clinical use, and regulatory procedures. There is often no standard format for recording this data, and researchers must work across data recorded in a myriad of forms and permutations by different corporations and governmental bodies.

Using machine learning, data stored in just about any format can be quickly classified and retabulated in the required format, making it ready quickly for analysis and review. This leads to improved patient outcomes, as drugs and treatments can be developed and delivered more accurately.



MEDIA & ENTERTAINMENT

Media companies need to protect their assets by guarding against copyright violations and other infringements of their intellectual property. This is often no easy task, since just about anyone in the world can now upload and distribute any content they want over the internet.

Artificial intelligence can be used to analyze any dataset, no matter how large – such as the 500 hours of video uploaded to YouTube every minute – and automatically identify copyright breaches. In a world where independent content creators, such as filmmakers and musicians, rely on monetizing their content through streaming services, this would be an impossible task to carry out manually. But because it can be automated using AI, artists and creators have a fairer chance of getting paid for their work.

USING MACHINE LEARNING, DATA STORED IN JUST ABOUT ANY FORMAT CAN BE QUICKLY CLASSIFIED AND RETABULATED IN THE REQUIRED FORMAT, MAKING IT READY QUICKLY FOR ANALYSIS AND REVIEW.

HOW TO START USING AI TO GET VALUE FROM DATA

Every organization should consider these few key points before taking their first steps on the journey towards AI-driven insights.

Fit Technology to Your Business – Not the Other Way Around

This simply means identifying the problem that needs solving, then finding the data and tools needed to do it. Organizations often approach this the other way around, first identifying a technology they believe they should be using and then looking for an opportunity to use it in their business.

Another way to put it is that it's essential to have a solid strategy and a clear business goal before starting to consider what data, technologies, and skills need to be deployed.

Look for quick wins with demonstrable ROI

Over the years, many AI data projects have faltered due to insufficient buy-in among all stakeholders to secure the necessary commitment and investment. Today, the availability of as-a-service AI and ML means it is possible to deploy quick-win initiatives that demonstrate how simple it can be to generate ROI with data and automation. This is best done by looking for

repetitive, mundane tasks that take up the time of staff who could be more productive if they were doing other things.

By following best practices, it is possible to disprove common misconceptions that hamper the uptake of AI within an organization – such as concern that it is hugely expensive, requires the recruitment of highly trained specialists, or threatens to replace human workers in their jobs.

Buy Versus Build?

One of the most important questions that needs to be addressed is whether it is within the organization's best interests to develop AI technology in-house, or whether it is best to work with a vendor partner.

In-house development undoubtedly requires higher amounts of up-front investment, so budget will be a key consideration when addressing this issue. But building an in-house solution also allows a company to retain complete ownership of its data and technology. Where initiatives are designed to increase competitive edge, this could be another important consideration. Also, if a task is specialized, it may

be necessary to carry out some elements of the development in-house in order to meet its specific requirements.

On the other hand, going to a partner who has a pre-built solution that can be supplied as a service is likely to result in far quicker deployment and ROI. Routine factors, such as ongoing maintenance and data security, are carried out by the partner behind the scenes with no impact on your business operations. Additionally, overrunning development deadlines and under budgeting for development costs can easily kill promising AI initiatives that could very well have been valuable if the deployment was more effectively managed. This is less likely to be an issue with a prebuilt or as-a-service solution.

CHOOSING THE RIGHT PARTNER

Organizations that go down the road of partnering with AI solution vendors should look carefully at the options available to them. A good first step is to have the vendor prove how effective they have been in delivering solutions to other clients with similar requirements. With any AI project, quantifying the results should be straightforward, and a provider should be able to demonstrate the ROI they have achieved for existing clients or the impact they have had on other significant metrics.

Just as important is to examine a service provider's methodology in detail. They should be capable of clearly explaining each step of the process that is necessary to deploy and run the project, what the deliverables will be at each stage, and what metrics will be used to understand the project's impact, as well as how quickly they expect to achieve time to value.

When working with any partner, data security should also be a primary consideration. An organization is likely to be held liable for losses arising from sensitive data being lost or stolen,

even if it happens when the data is in the custody of a third-party contractor. Particularly when an AI project involves the processing of personal customer data, every effort must be made to ensure clients are compliant with best practice security protocols, as well as all data stewardship regulations in the relevant jurisdictions. A prospective partner should always be able to explain every step that is taken to ensure that data is safe while it is on their premises or in their cloud.

The Skill Gap And Building a Data-Literate Culture

The term "skill gap" refers to the current situation in which there are simply not enough trained specialists as needed to work with AI to unlock the value locked away in data.

There are several ways to address this: One is simply to spend a sufficient amount of money on recruitment and retention so that an organization becomes an attractive destination for the talented pool of workers. Doing this means offering the six-figure salaries and attractive benefits packages that make tech companies the preferred destination of AI engineers and data scientists.

Partnering with service providers can help to bridge the knowledge gulf within an organization. In tandem with this, it's often useful to implement a policy of encouraging data literacy at all levels. Analytical tools that let workers leverage data to gain insights are available for all business functions, from automated marketing tools to "smart" financial tools found in popular accounting packages to tools that enable automation of processes in HR and logistics. Encouraging and rewarding use of these tools can be useful in steering an organizational culture towards becoming more data literate. This means encouraging staff at all levels to think about what data and tools they can use to do their individual jobs more efficiently.

Bernard Marr is a world-renowned futurist, influencer and thought leader in the field of business and technology. He is the author of 18 best-selling books, writes a regular column for Forbes and advises and coaches many of the world's best-known organisations. He has 2 million social media followers and was ranked by LinkedIn as one of the top 5 business influencers in the world and the No 1 influencer in the UK.



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ABOUT IRON MOUNTAIN

Iron Mountain Incorporated (NYSE: IRM), founded in 1951, is the global leader for storage and information management services. Trusted by more than 220,000 organizations around the world, and with a real estate network of more than 85 million square feet across more than 1,400 facilities in over 50 countries, Iron Mountain stores and protects billions of information assets, including critical business information, highly sensitive data, and cultural and historical artifacts. Providing solutions that include secure storage, information management, digital transformation, secure destruction, as well as data centers, art storage and logistics, and cloud services, Iron Mountain helps organizations to lower cost and risk, comply with regulations, recover from disaster, and enable a more digital way of working. Visit www.ironmountain.com for more information.

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