Practical Uses For **AI In the Public Sector**

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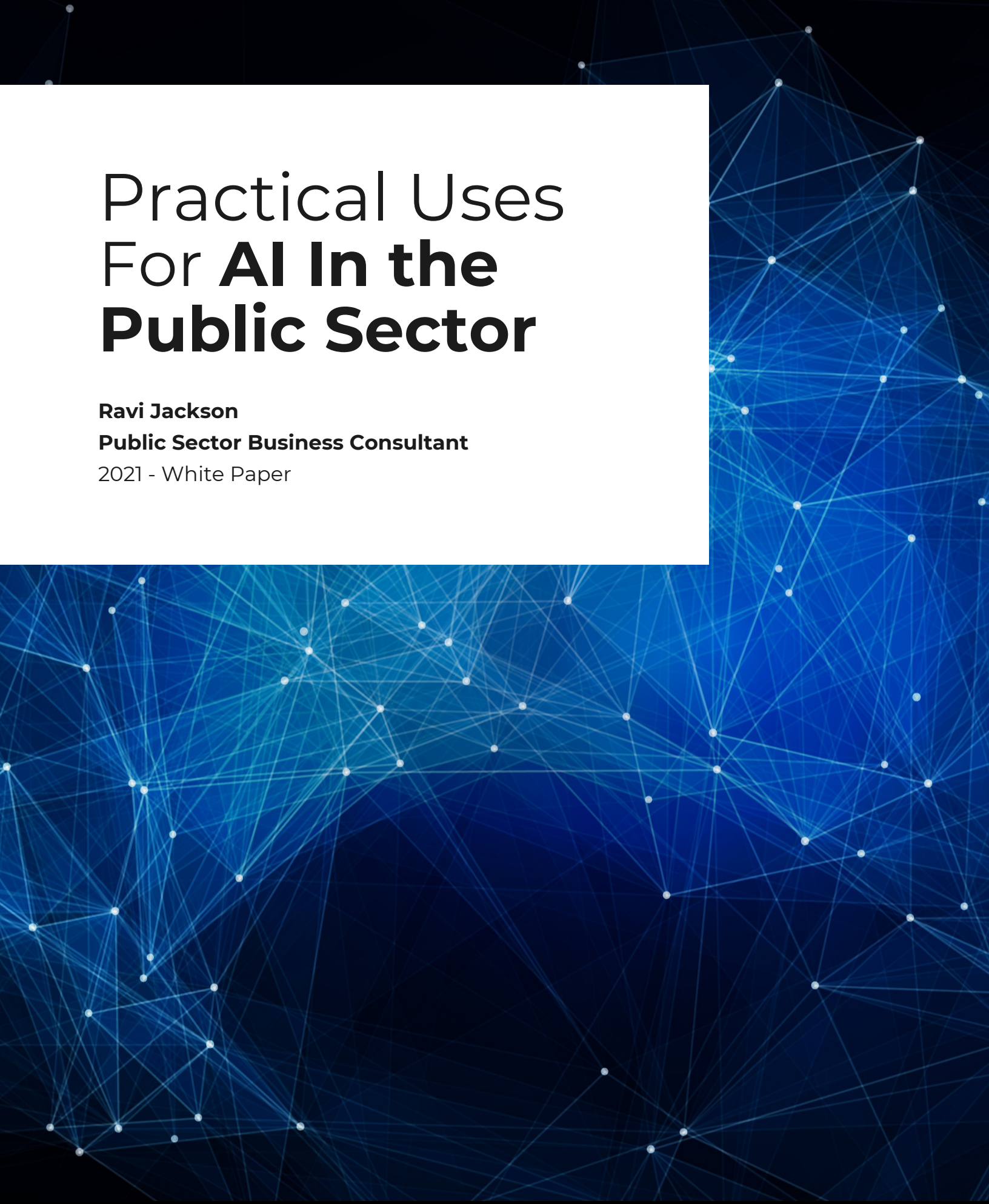


Contents

Abstract: AI tools can increase efficiency

AI applications make service delivery more efficient and information easier to access.

Digital transformation projects are accelerating. Many are adopting Artificial Intelligence (AI) tools to increase operational efficiencies and improve user experience. Taking the lead from the private sector, AI is increasingly being adopted by public sector agencies to make service delivery more efficient and information easier to process and access.

Still, the questions remain. Are AI tools as pervasive as the hype would have us believe, and are public sector agencies being left behind? Or is it true that we haven't yet figured out how to use AI very effectively?

In this paper, we will explore what these AI tools can do, and how organizations can use them to improve outcomes.

The term AI is a catch-all for a variety of intelligent technologies that are woven into the fabric of automated tools we use every day, such as Google Assistant, Amazon Alexa, and Apple's Siri.
Types of AI include:

- Machine Learning (ML)
- Natural Language Processing (NLP)
- Data Lakes
- Robotic Process Automation (RPA)
- Generative Pre-Trained Transformer 3 (GPT3)

Are AI tools really as pervasive as the hype would have us believe, and are public sector agencies being left behind?

The answers to these questions lie in sorting through the AI hype to find solutions that can work in the public sector right now. We will address three relatively easy-to-implement use cases for government agencies:

- Personalizing content
- Moderating content
- Connecting users to content

These AI solutions can help agencies to operate more efficiently, and reduce the friction for users as they engage with both content and government services.

We are seeing the latest versions of website management software emerging with AI/ML either baked right in, or seamlessly integrated. One major benefit is that repetitive tasks can be automated, with either no need for human interaction or modest oversight. This means staff can reallocate their time to more important tasks.

For instance, AI page builders can greatly reduce the effort of compiling new content management system pages by automating layout work and teeing up relevant content. Machine vision can analyze images and recommend ALT tags for accessibility. It can also tag media for SEO and search, and extract usable content from PDFs.

Additionally, chatbots can handle repetitive questions that a live person would otherwise need to answer. This frees up specialists to provide more detailed human responses.

Simply put, AI enables computers to do repetitive tasks so humans can focus on the work they enjoy doing. AI, ML, and related technologies are also becoming cheaper, which means they can now be used in a wider range of situations. To make full use of these tools, government organizations should first assess where their biggest pain points are, and then determine how, and where, these technologies might be able to help.

The examples in this paper offer further insight into viable ways AI can be adopted to make a difference for government agencies.

55%

of enterprises

report increased customer-related satisfaction or resolution when using AI technologies.
–*Cisco* [1]

To clarify the nuances, we've compiled a quick glossary of the more unique terminology used in this discussion:

Artificial Intelligence - Pattern driven data analysis that learns and solves problems and quickly performs routine tasks.

Machine Learning - Algorithms and training data that identifies patterns, makes decisions, and improves system functions.

Natural Language Processing - Human-like interaction and speech that learns terminology, phrases, and responses.

Robotic Process Automation - Rule-based triggers, computer vision, and machine learning that automates repetitive tasks.

GPT3 (Generative Pre-Trained Transformer 3) - Produces more sophisticated, human-like text/speech.

Data Lakes - Data from raw, semi-structured, and structured sources including emails or pdfs, CSV files, and data warehouses.

Part 1: Personalizing Content

Automation can deliver a personalized experience.

Automated systems that use AI/ML are capable of providing enhanced and personalized experiences. They do this by leveraging available data to determine which information will be most relevant users.

These tools access large volumes of data (from a data lake) to study trends and provide predictive analytics that help the individual with their request in conjunction with any information the user has previously provided. This is similar to how Netflix and Hulu make suggestions for what to watch. It is also how Google surfaces results for each user based on previous searches.

Statistics from IBM and Cisco [2]:

99%
of respondents report an increase in customer satisfaction as a result of using virtual agent technology

96%
of respondents have exceeded, achieved, or expect to achieve a return on investment for their virtual agent technology implementation

30%
of enterprises surveyed want to enhance customer self-service options with AI

AI/ML can deliver the best content, components, layouts, and conversations to meet the specific needs of each individual visitor.

Content personalization can take the form of deciding what content is shown to an individual visitor, the way in which the content is displayed, or conversely which content is not displayed. Content can be dynamically curated based on the user's behavior, or targeted to a department's business objectives. This is achieved via the user's individual persona, search history, or in combination with departmental priorities.

Just as commercial content providers already use predictive data, public departments can recommend different programs and services relevant to each visitor profile based on interests, age, and demographics. This allows an organization to automate many features while simultaneously providing a highly tailored user experience.

63%

of leaders surveyed

view AI as "very" or "critically" important to their business success, and that number is expected to grow to 81% within two years.
–*Deloitte* [3]

A practical example for this technology in the public sector might involve suggesting specific information for a visitor with features such as, "based on your recent interaction, you might also be interested in..." or "you may also qualify for...". These simple suggestions can help personalize the service delivery experience for citizens.

In many cases, the state already knows a significant amount of user information, including the ways in which users interact with government services. With this information, the department can use AI tools to anticipate potential user needs. For instance, if a milestone birthday is coming up, a profile might suggest that the user is now eligible for Medicare, or offer service recommendations and pre-qualification for benefits like TANF, SNAP, or Medicare.

Although citizens need to give consent to apply for these services, the process is easier because they can verify or update information they provided in previous applications. If applications are easier to complete, agency staff can spend less time providing routine assistance.

When done well, these strategies not only make tasks more efficient for the site visitor, but also for the agency staff.

Part 2: Moderating Content

Machine learning can support content management.

It's inevitable that AI will play an increasingly important role in the future of content management systems (CMS) for many government entities. Agencies are beginning to take advantage of AI tools that empower content creators by making recommendations on design, layout, imagery, icons and even wording, enabling content creators to communicate with audiences quicker and more effectively.

These AI tools can be used to assemble content pages dynamically. For example, they help content creators by recommending components that highlight certain content on a page.

AI can also build CMS pages on the fly based on relevance, recommendation, and personalization engines. Furthermore, as discussed in the previous section, they can suggest the most effective content strategies for audiences to reach the content they want, based on analytics, data sources, and user feedback mechanisms (e.g. "did you find what you were looking for?").

While AI still struggles with specialized terminology and grammar that is particular to each use case, it can none-the-less provide organizations with a basis of language consistency and coordination in their CMS.

AI is beginning to help content creators by suggesting written content, providing summaries of long documents, and selecting relevant images.

In conjunction with the CMS, automated media labeling can help staff create more useful and consistent content for audiences. For instance, AI can suggest ALT tags for an image via checkboxes that provide synonymous terms. In this way, when different users access information from a department, consistent options are retrieved. This type of automation can also offer better adherence to accessibility requirements.

We can foresee that AI may furthermore help content creators by suggesting written content, providing summaries of long documents, and selecting relevant images. This technology already exists for short-form content, and is beginning to work for larger articles, blog posts, and press releases. While AI may not yet produce perfect prose, these tools can provide content managers with a foundation from which to begin.

As media becomes enriched with higher quality metadata, new opportunities to search and find media become available. AI can undertake the heavy lifting in the effort expended by departments to make the thousands of files and documents on government websites findable in search results. When an agency has to meet new legislative mandates, reorganize their department operations, or launch a new site, it often requires a review of information to be migrated. These changes can be challenging and time consuming, and getting it right impacts the future success of the department. However, with the strategic use of AI tools, many of these challenges can be addressed more easily.

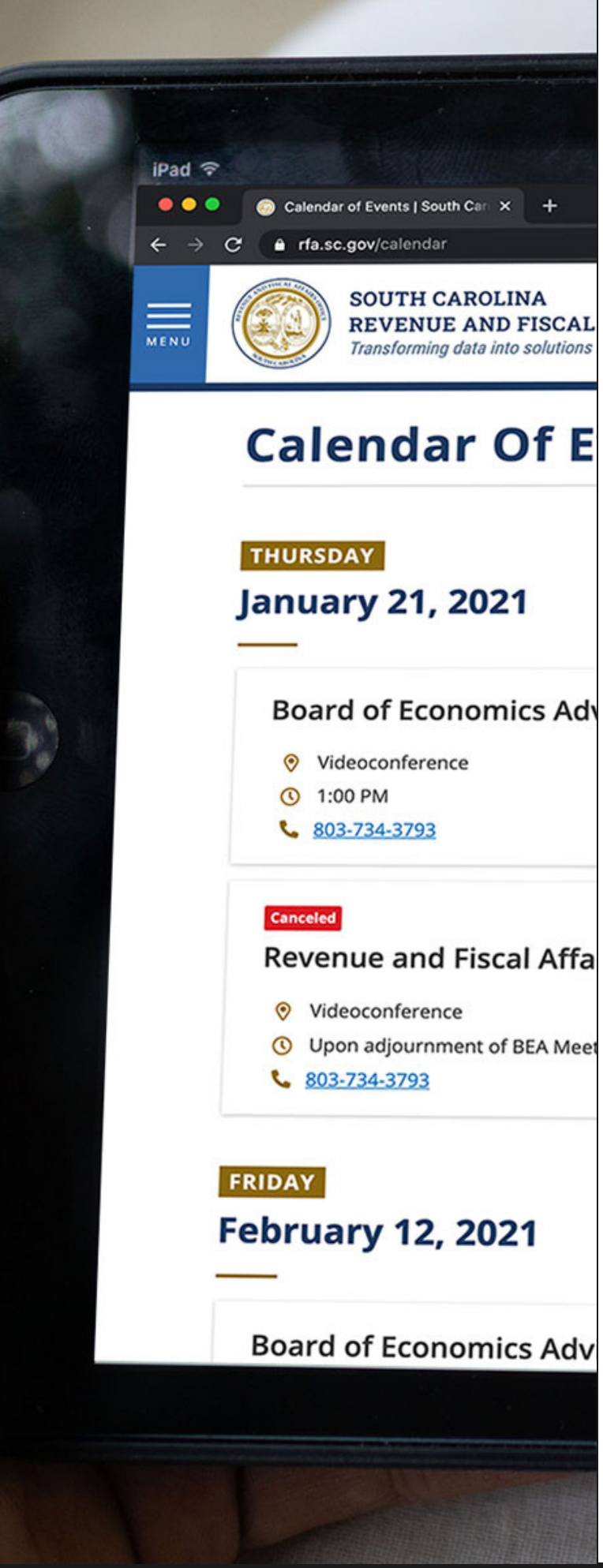
For example, our company recently worked with the South Carolina Revenue and Fiscal Affairs Office, using AI to automatically extract semantic content out of their Legislative Impact Statements, and then populate the data in their CMS.

As noted in the following case study, this saved a lot of valuable staff time, and more importantly, it helped reduce friction for site users seeking information because they could easily find and filter the documents needed.

30%

of digital content

will be produced with the aid of AI content-generation techniques by 2022.
–*Gartner* [4]



SCDRFA wanted to establish a central place to access valuable information locked away in files.

CASE STUDY: SOUTH CAROLINA

The Department of Revenue and Fiscal Affairs (SCDRFA) is responsible for providing a wide range of fiscal and statistical analysis services and reports for public consumption.

The department needed a central place for legislators, policymakers, researchers, service providers, and the general public to access valuable employment information relating to healthcare, poverty, and other data that had been locked away in files. Their main priorities included:

- Intuitive organization of content and enhanced search to make content easier to locate
- Increased availability and visibility of data
- Improved administrative experience for creating and maintaining content

For departments with a lot of data and/or documentation that they need to migrate and make easily to find, AI tools can make a difference.

AI tools can more quickly and consistently migrate content, saving time for content managers.

Our solution for SCDRFA embraced the effective use of AI and OCR tools to more easily migrate PDF content into a structured and findable format, while labeling and categorizing it in the process.

AI also enabled the team to add extra context and background information to the migrated data. By identifying discrete data such as ‘author’, ‘subject’, and ‘date introduced’, we were able to cut down the process of classification for each document, making publication faster and more consistent. We additionally used another specialized AI tool to analyze text, and provide automatic summaries of the content. This saved a lot of time for content producers.

As this project demonstrates, AI tools can more quickly and consistently migrate content, making the process easier for content managers. At the same time, AI can make it possible to incorporate additional information that improves search functionality.

Part 3: Connecting Users to Content

Chatbots can further personalize user interactions.

Many organizations are successfully implementing conversational AI tools such as messaging, voice responsive applications, and chatbots. Chatbots are rapidly becoming one of the most common and visible uses of AI.

Forrester Consulting found that 89% of customer service entities believe chatbots and virtual agents are useful technologies for personalizing customer interactions. Close to $4.4 billion was spent on chatbots in 2020, and is set to grow to $13.9 billion by 2025 based on data from Markets and Markets. Accordingly, NASCIO ranks AI-powered tools in the top 10 priorities for government CIOs.

According to Review42:

- 50% of all searches were voice activated in 2020
- 55% of households in the US are expected to own a smart speaker by 2022
- 20% of mobile queries are currently done with voice search

Projects that implement Smart Content Connectors, or “chatbots,” often deliver higher returns on the investment. This is because these tools can dramatically reduce the time it takes for government agencies to resolve issues, make decisions, and interpret large amounts of data.

Virtual assistants (chatbots) can help a user to navigate through multiple and complex hierarchies of content.

Chatbots make it possible to streamline team operations. They can also help to automate the way citizens access information and services. Support staff often deal with a number of questions for which they are repeatedly supplying the same answer. A chatbot can easily become a first point of contact for these types of questions and answers, thereby helping a user to navigate through multiple complex hierarchies of content. At each step, a chatbot can direct the visitor to the desired information. This allows human resources to focus on more complex matters.

Integration of these tools is improving user satisfaction, reducing costs, and increasing employee productivity.

89%
of agencies

believe chatbots and virtual agents are useful technologies for personalizing customer interactions.
–Forrester Consulting [5]

A recent survey by MIT Technology Review concluded that nearly 90 percent of respondents reported measurable improvements in the speed of complaint resolution with chatbot support. Moreover, 80 percent noted enhanced call volume processing using virtual assistants.

In fact, these tools have become so common in recent years that some departments have several bots deployed for different purposes. They may have different levels of complexity and depth, and may or may not be interoperable with one another. Some of the more robust examples may use NLP and ML to automate many aspects of service delivery.

Other connectors are designed to handle routine, or frequently asked questions in order to free up call center staff or simply reduce the friction for users to find the information they seek. They all help future proof government sites by allowing users to find content how and where they want to access it.

Most importantly, the goal of chatbots and related technologies is to remove the inherent friction that standard visual interfaces can put between a user and their objectives.

Conclusion: Covid-19 has accelerated the shift to AI

AI is a powerful force multiplier to support digital transformation efforts.

As a rising tide lifts all boats, shifting consumer expectations are forcing a response from the public sector as it considers how to deliver services. For many private sector companies, Covid-19 has accelerated the shift to a digital-first approach and this is mandating a similar shift by government agencies.

Agencies will need to change how they create, package, and distribute content. As in-person services become harder to deliver, agencies have had to innovate, and for many, AI is proving useful to bridge the way to digital transformation.

In summary, AI can:

- Make sense of data to provide personalized experiences for users
- Assist with the speed and quality of content generation
- Improve search functionality
- Enhance customer service with chatbots

If government agencies are serious about emulating the private sector and using AI tools to drive the next wave of change, the use cases outlined in this article are very obtainable and will certainly move the needle forward.

Endnotes

1 - Artificial Intelligence (AI) in the Customer Journey, GlobalData, sponsored by Cisco

2 - The value of virtual agent technology, IBM and Artificial Intelligence (AI) in the Customer Journey, GlobalData, sponsored by Cisco

3 - Insights from Deloitte's State of AI in the Enterprise

4 - Gartner Predicts 2019: In Search of Balance in Marketing

5 - April 2019 survey from Ada and Forrester Consulting

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