

# USE CASES - 2023

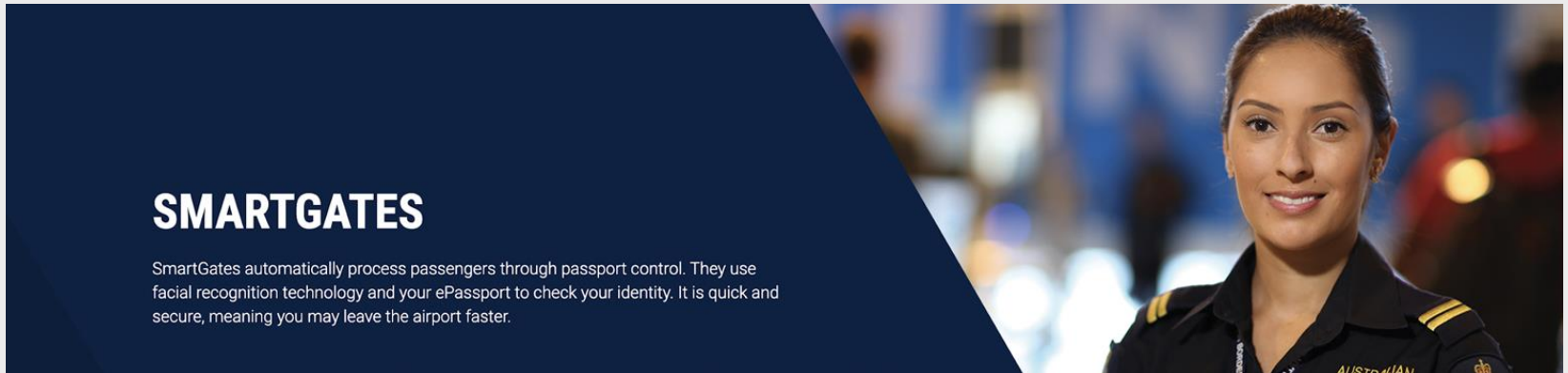
Australia, China, Israel,  
Singapore

Australia

# Use cases – Australia SmartGates

## 1. AI empowered the Australian Border Force (ABF) application

- ✓ AI is used in many ways to improve customer's and citizen's interactions with government and support government decision-making. The Australian Border Force (ABF) uses SmartGates which allows for the biometric identification of travellers and rapid facilitation of low-risk travellers through the border. By using facial recognition software and ePassports, powered by AI, to process individuals, this enables the ABF to focus their efforts and resources on high-risk travellers.



China

# Use cases - Government Online-Offline Shanghai



## 1. AI empowered “two exemptions from submission”

- ✓ This service has greatly reduced the number of documents that must be provided to complete several administrative services. All the documents, certificates, licenses issued by Shanghai government agencies are exempted from submission. Materials for which has a digital version are exempted from the submission of paper versions.
- ✓ Applicants can retrieve from the GOS website or the “Suishenban” App the digital documents needed for their applications (e.g., ID cards, business licenses, construction permits, etc.). When applying for services, such documents can be shown at the counters of the administrative service centers by using the “Present Certificate” (亮证)
- ✓ AI Enabler - machine learning to retrieve and verify the data contained in the municipal database of electronic certificates and associate them to the applicants; the use of OCR, Natural Language Processing (the capacity of machines to interpret, classify, manipulate, and generate language), robotic process automation (automating tasks that are largely rule-based, structured and repetitive using software robots), and algorithmic systems that automatically pre-check the information without human intervention.

# Use cases - Government Online-Offline Shanghai



## 2. AI empowered “enjoy without applying” (免申即享)

- ✓ This is an application for predictive service delivery that leverages big data analytics and AI to identify enterprises and citizens eligible to enjoy policy benefits, such as students in difficulty, the disabled, the elderly or retired soldiers. Shanghai is planning to progressively extended this application to other users, so that eligible parties can enjoy policy benefits and public services automatically or after confirming their willingness to apply, without any other initiatives being required.
- ✓ AI Enabler - robotic process automation (automating tasks that are largely rule-based, structured and repetitive using software robots), and algorithmic systems that automatically identify who are eligible for the policy and will push the policy benefit to the citizen and enterprises.

# Use cases – One Net for Urban Management

## 1. Flood Management

- ✓ Shanghai Municipal Urban Operation Center coordinates relevant agencies and units through this One Net for Urban Management Platform.
- ✓ Data has been collected in real time from 157 water level monitoring points, 550 rainfall monitoring points, 26 meteorological collection points, and video surveillance cameras. This information is combined with data from 1,418 drainage pumping stations, nearly 28,000 kilometers of underground drainage pipe network, 736 evacuation points, 64 flood-prone points, 14,000 residential communities, and more than 100 flood control teams and vehicles that are connected to each other through the Internet of Things.
- ✓ AI Enabler – AI algorithms suggests the optimal routes for dispatching the pump trucks to the flooded areas according to early warnings and the data analysis from the Urban Management platform; In some cases the algorithms may judge whether the flood was caused by the leave covered rain grate.



Israel



# Medical Committee Data Base Recommendations POC

- Medical committees make decisions about what's needed for a patient. These committees are made up of various kind of doctors and there are 25 -30,000 committees)
- An AI model was developed to look at past decisions and recommendations to doctors . By analysing the historical data, patterns and trends can be identified. These patterns might include factors that contribute to certain medical conditions, risk factors for complications, responses to different treatments, and more.
- Based on the patterns and insights derived from the data, healthcare professionals can create more personalized treatment plans for patients. For example, if historical data indicates that patients with similar characteristics have responded well to a particular treatment, that treatment might be recommended for a new patient with similar characteristics.

## What was the action or solution to help solve the challenge?

- The process involved structured patient data present in various documents, including PDFs, which proved insufficient to train the model directly. These PDFs were of varying quality. To address this, the team first converted the PDFs into text format and then filtered out documents that were irrelevant. The team established a structured process to extract the required data. This data served as the foundation for building an AI model. The aim was to comprehend the workings of this process and assess its efficacy. As the project progressed, the process was refined to enhance its accuracy.
- One crucial aspect was matching medical terms, like connecting "lumbago" with "lower back." We developed a working prototype that's operational and continuously improving. We accumulated a substantial volume of medical records and employed term matching, leveraging historical data to predict future trends.
- Privacy concerns were not a major issue as the data that citizens already give to national security, rather than being stored in the cloud. Patient interest is integral, as they can cross-check their documents, while doctors benefit from consistent decision-making.
- The landscape might evolve, considering a significant infrastructure project in the pipeline to implement cloud technology. This could potentially alter the approach and enhance the existing framework.

## **Benefits**

### **Work is progressing on establishing the benefits but early evidence shows that**

- Historical data can help healthcare professionals tailor treatment plans to individual patients based on their medical history, response to treatments, and other relevant factors. This is leading to more effective and efficient care
- Past data provides a foundation for evidence-based decision-making. Healthcare practitioners are using the data to support their clinical judgments and make informed choices about diagnostics, treatments, and interventions.
- tailoring treatment plans based on past data can reduce trial and error in finding the right treatment, leading to shorter hospital stays, fewer unnecessary tests, and potential cost savings.

### **Possible general risks**

- Medical practices and knowledge evolve over time. What worked in the past might not be the best approach today due to advancements in medicine and changes in disease patterns.
- Healthcare decisions are often complex, involving a mix of medical, ethical, and patient preference factors. Relying solely on past data might oversimplify these decisions.

Singapore

# SUPPORTING THE STAFFING OF REPLIES TO PARLIAMENTARY QUESTIONS WITH LARGE LANGUAGE MODELS (LLMs)

PROJECT SPONSOR | MCCY

USE CASE | Operations

OUTCOME | Manhours saved, reduced cognitive load, improved inter-ministry coordination

## Challenge

- Officers from the whole of government, including MCCY, are required to draft replies for parliamentary questions (PQs) raised during monthly parliamentary sittings. In 2022 alone, MCCY received more than 150 PQs.
- PQ staffing is time-consuming and cognitively heavy. Officers use the Hansard website to get responses to similar past PQs, try to understand the MP's interest in filing the specific PQ, and craft the response and supplementary information. This often requires **~10 hours of intense mental activity. If given a tight timeline, officers will have to work overtime or conduct less research.**

# Action

The “PQ Assistant” tool that Singapore built includes the following: **Q&A bot:**Tapping on LLMs and Langchain, the bot semantically identifies relevant past PQs based on the question posted and develops a response from the past PQs identified. This ensures that the response provided is aligned with past government positions, rather than quoting sources from open sources e.g. Wikipedia.

**Langchain** is an open-source framework that allows developers to combine LLMs with external data. First, it converts large amounts of text data into embeddings and stores them in vector databases. These embeddings can then be used in conjunction with the LLM, allowing the LLM to reference entire databases when coming up with its answers. This enables LLMs to have access to more up-to-date and specific data and to be used for more customised purposes.

# Outcomes

The MCCY Forward Deployed Team (FDT) developed a “PQ Assistant” web tool to support officers on the PQ staffing process. The tool achieved the following:

- 1. More than 8x reduction of research effort and cognitive load in drafting first cut PQ reply:** Officers can now have the tool propose a first cut reply for the upcoming PQ and/or answer relevant questions as part of officers’ background research work. The tool will also cite the list of past PQs and budget cuts that it is basing the reply on, enabling officers to fact check and make amendments as necessary.
- 1. Significantly improves sensemaking and policy coordination through visualisation and trend analysis:** Officers can also tap on the tool to support their day-to-day sensemaking work. This facilitates proactive policy coordination. For instance, with the charts provided, officers can get an overview of the MPs that have been actively filing PQs to each Ministry over a given time frame. They can also do a keyword search and get a sense of the ministries that have provided PQ responses related to the keyword.

While the problem statement and proof of concept were first developed by the team in MCCY, DSAID intends to develop this as central product to serve agencies across the whole of government.

Type your question here.

What are the Singapore government's support for [busking](#)?

Select answer format [?](#)

Quick answer  Detailed response

Proceed

## Key points:

1. The National Arts Council administers the busking scheme in Singapore, with over 300 registered buskers in 2020.
2. Buskers are allowed to perform at more than 70 designated busking locations island-wide, with plans to introduce new busking zones at the Singapore River and Ang Mo Kio.
3. The Singapore government provides targeted assistance to lower-income Singaporeans through schemes such as the permanent GST Voucher scheme, S&CC rebates, and Public Transport Vouchers.
4. Support measures for buskers include online busking sessions, subsidies for performance rights fees, and an honorarium.
5. NAC is working on an online system to enhance access to busking locations and time for all buskers, and has rolled out various alternative platforms and initiatives for buskers to bring their performances into the digital space.

## Expanded response:

The Singapore government provides support for busking through the National Arts Council's busking scheme, which includes access to designated busking locations, opportunities to showcase their talents, and support measures such as online busking sessions and subsidies for performance rights fees. There are over 300 registered buskers in Singapore, and the government is working on introducing new busking zones at the Singapore River and Ang Mo Kio. The government also provides targeted assistance to lower-income Singaporeans who need support for their basic living expenses through schemes such as the permanent GST Voucher scheme, Service and Conservancy Charges (S&CC) rebates, and Public Transport Vouchers. NAC has been working on an online system to enhance access to busking locations and time for all buskers, and has rolled out various alternative platforms and initiatives for buskers to bring their performances into the digital space.

## Research outline

### 1. What is the definition of busking in Singapore?

The National Arts Council (NAC) administers the busking scheme in Singapore, which aims to enliven the city life and energize urban spaces. There were about 300 registered buskers in 2020, and since the resumption of busking in March 2022, the number of registered buskers has returned to pre-pandemic levels. Buskers are allowed to perform at more than 70 designated busking locations island-wide, and NAC continues to actively work with venue owners to grow the number of busking locations across Singapore. NAC provides support measures to the buskers, including encouraging them to explore the digital space to engage their audiences, organizing online busking sessions, subsidizing the performance rights fees, and providing each participating busker with an honorarium. The Singapore government also provides targeted assistance to lower-income Singaporeans who need support for their basic living expenses through schemes such as the permanent GST Voucher scheme, Service and Conservancy Charges (S&CC) rebates, and the Public Transport Vouchers. The definition of busking in Singapore is not explicitly stated in the given content.

#### Sources:

1. [\[6/2/2023\] Update on National Arts Council's Busking Scheme](#)
2. [\[8/3/2022\] Plans and Timeline to Implement Busking Zones](#)
3. [\[11/1/2022\] Reasons for Recent Rise in Costs and Measures to Help Singaporeans Cope](#)

### 2. How does one apply for a busking license in Singapore?

The National Arts Council (NAC) administers the busking scheme in Singapore, which aims to enliven the city life and energize urban spaces. There were about 300 registered buskers in 2020, and since the resumption of busking in March 2022, the number of registered buskers has returned to pre-pandemic levels. Buskers can now busk at more than 70 designated busking locations island-wide, and NAC continues to actively work with venue owners to grow the number of busking locations across Singapore. The Singapore government provides targeted assistance to lower-income Singaporeans who need support for their basic living expenses through schemes such as the permanent GST Voucher scheme, Service and Conservancy Charges (S&CC) rebates, and the Public Transport Vouchers. There is no information provided on how to apply for a busking license in Singapore.

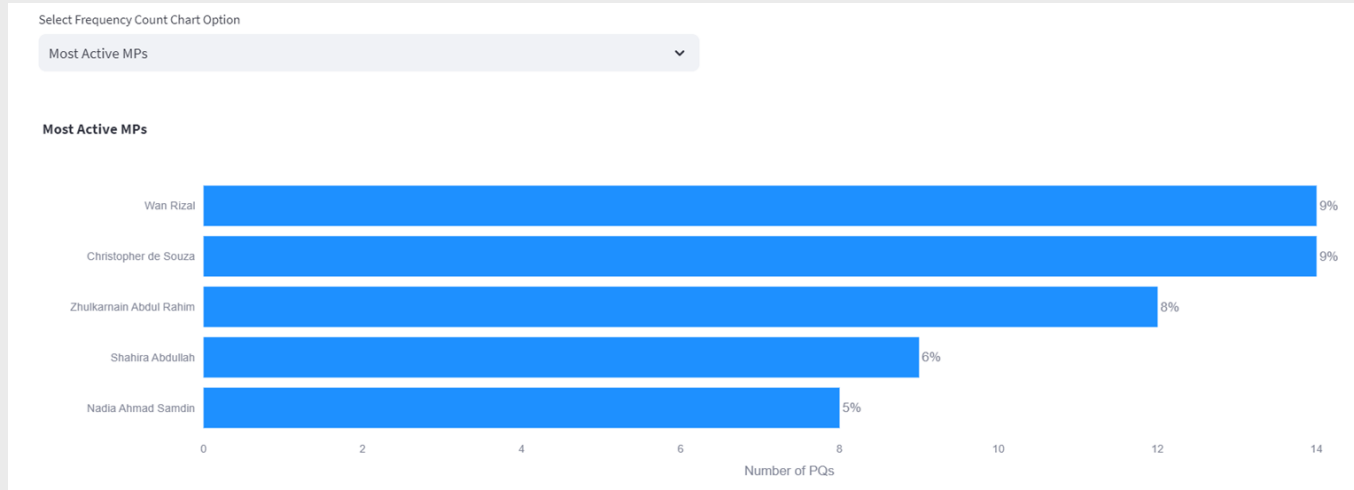
#### Sources:

1. [\[6/2/2023\] Update on National Arts Council's Busking Scheme](#)

*Figure 1: Example of response provided by the PQ Assistant. The bot will provide a draft response to the PQ. Under the Research Outline section, it will also identify a list of questions and responses related to the PQ and cite the relevant sources from past PQs and budget cuts. This significantly reduces the research effort and cognitive load required from officers to draft the first cut PQ reply.*



**Summarisation and Data visualisation** (Figure 2). We also tapped on LLMs to summarise the past PQs of interest to officers. Along with the charts developed, this allows officers to get headliners and an overview of developments to help identify emerging issues and improve policy coordination.




Since ChatGPT plugins were announced in March 2023, companies like Expedia, Kayak and OpenTable have used them to enable individuals to access their services via ChatGPT. These plugins are APIs that ChatGPT can call to retrieve external information, which it can then use to respond to users. This enables ChatGPT to go beyond its training data when formulating responses and reduces the likelihood of hallucinations.

To test out the possibilities of LLM-powered chatbots for the delivery of jobs and skills insights (e.g. for citizens or career coaches), we experimented with ChatGPT plugins. Specifically, we developed two plugins to deliver jobs and skills insights and support job or course searches.

### **What we did**

- Using course data from MySkillsFuture portal and SSG's proof-of-concept (POC) knowledge graph that links occupation and skills data based on Singapore's national skills taxonomy, the DSAID FDT at SSG developed a plugin that enabled ChatGPT to pull SSG's skills insights while in conversation with users.
- For example, when a user asks ChatGPT whether one should switch from an accountant to a data scientist role, ChatGPT can intelligently call
- SSG's knowledge graph to reply with skills and salary insights (see Figure 11).

 I am an accountant. I am interested to work in the tech industry. My friend suggested data scientist. Is that a good career pathway?



Used NJSI Beta by SSG



Used NJSI Beta by SSG



Used NJSI Beta by SSG



Transitioning from an Accountant to a Data Scientist can indeed be a promising career pathway, especially if you're interested in the tech industry. Here are some insights based on the comparison between the two roles:

1. **Skills:** As an accountant, some of your existing skills such as "Communication", "Microsoft Office (Excel)" could be beneficial in a data scientist role as well. However, there are several new skills you would need to acquire, such as "big data analytics", "SQL", "Python", "customer data analysis", and "research and information synthesis".
2. **Data Science Skills:** The skills that set apart data scientists from accountants include proficiency in "big data analytics", "SQL", and "Python". These are areas you might want to focus on when considering a transition.
3. **Salary:** The starting salary for a data scientist is generally higher than that of an accountant. The typical salary for a data scientist is also higher, which indicates a greater earning potential in the long run.

*Figure 11: Using ChatGPT to provide answers about a possible occupation transition. The boxes "Used NJSI Beta by SSG" indicate that ChatGPT queried the plugin. ChatGPT paraphrased the information returned by the plugin to answer the user.*

Alongside the skills and salary information, ChatGPT – drawing on our plugins – can follow up to ask if the user would be interested in relevant courses and introduce those from the MySkillsFuture portal (Figure 12). These are hyperlinked directly to the relevant MySkillsFuture course pages.

Remember, transitioning to a new career involves a learning curve and it's important to be prepared for that. You might want to consider taking courses on the new skills required for a data scientist role. Would you like me to find some relevant courses for you?



Yes please



Used NJSI Beta by SSG



Used NJSI Beta by SSG



Used NJSI Beta by SSG



Here are some courses that you might find useful in acquiring the skills needed for a Data Scientist role:

### Big Data Analytics:

1. [Big-Data Analytics Technology](#)
2. [Big Data & Analytics](#)
3. [Harnessing the Power of Big Data as the New Normal for Professionals\(Synchronous e-learning\)](#)

Figure 12: Using ChatGPT to retrieve courses

If users want to find out what available jobs there are from MCF, they can also discover this in conversation with ChatGPT (see Figure 13). This draws on another plugin developed centrally by DSAID that links to the latest MCF job posts.

TE

Can you show me some job postings?



Used Jobs UNVERIFIED



Here are some job postings for the role of "Data Scientist":

#### 1. **Data Scientist** at **Tech Mahindra Ltd**

- Location: Singapore
- Salary: \$5,000 - \$10,000 Monthly
- Job Description: The candidate will be responsible for developing predictive models, creating efficient algorithms and improving data quality. The candidate should have a strong background in data analysis, machine learning, and programming.
- Skills Required: Python, Machine Learning, Data Analysis, Algorithms, Predictive Modelling

#### 2. **Data Scientist** at **AIA Singapore**

- Location: Singapore
- Salary: \$4,500 - \$9,000 Monthly
- Job Description: The candidate will be responsible for analyzing large amounts of raw information to find patterns, build data products to extract valuable business insights,

Figure 13: Using ChatGPT to retrieve jobs using the job search plugin

The plugin is shown as "unverified" as it has not been approved by OpenAI for use by a general audience. Unverified plugins can only be used by a limited number of users with ChatGPT+ "developer" accounts

Figure 14 illustrates how these plugins work.



Figure 14: Steps for using the jobs and skills plugin on ChatGPT

## What we did

Experimenting with these plugins enabled us to explore how LLMs could be used to deliver more personalised and efficient user experiences. However, these experiments also revealed important caveats:

- **Limited accessibility:** Only ChatGPT+ users with paid accounts can use plugins and only those with plugin developer access (granted by OpenAI) can develop plugins.
- **ChatGPT sometimes calls the plugins incorrectly:** ChatGPT as a black-box AI model decides whether and when to use the plugins, based on the context of the conversation and what it knows about the plugins. Sometimes, if ChatGPT fails to understand the context or plugins, it calls the plugins incorrectly.
- **Risk of hallucination remains:** Sometimes, ChatGPT will make up answers when the plugins are incorrectly called and do not return any information. In other instances, when ChatGPT gets confused about the conversation, it disregards information from the plugins and simply makes up its own answers. As such, the risk of hallucinations, while minimised, remains.

As LLMs and generative AI continue to develop rapidly, the potential for using them to enhance the delivery of insights and services to citizen will only grow. We will continue to work with jobs and skills agencies to understand and consider how such technologies could potentially transform service delivery, and we invite other agencies to do the same.

## **MSF Social Report Companion: Improving Efficiency for Case Workers with GPT-4**

- The COVID-19 pandemic has impacted many areas of our lives, and one significant area is the increase in demand for social services. MSF has been at the forefront of providing support to those in need. However, the increased caseloads have put a strain on MSF's case workers.
- MSF's Transformation Division is collaborating with the LaunchPad team to develop a social report drafting prototype called the Social Report Companion (SRC). The prototype leverages the latest GPT-4 model to convert officers' point form case notes into structured reports. One of the key features of the SRC is its ability to handle Restricted/Sensitive-Normal information and its automated personal identifiable information (PII) detection and redaction capabilities, ensuring that sensitive client information is protected.
- By reducing time spent on paperwork, this enables MSF case workers to spend more time on actual interventions for their clients. MSF will be running a pilot with a group of beta users to gather more feedback on the prototype. If successful, the SRC has the potential to revolutionize the way social reports are written, allowing case workers to focus more on their clients' needs instead of the paperwork.