



# Without batting an AI:

Using technology to ease Covid-19  
vaccination scheduling



# Introduction

While artificial intelligence (AI) is usually marketed as the technology to provide the step change in the way we conduct our lives (think self-driving cars), its true beauty lies in the fact that mundane everyday tasks – those that may be supremely complex, but rather tedious and inefficient for the average human – can now be automated. The low hanging fruit on this tree is particularly bountiful. Take for example the number of appointments required in any given year; everything from car servicing, dentist appointments, broadband installation, kids' piano lessons. According to research, the average person will spend nearly 43 days of their life waiting on hold<sup>1</sup> and that's even before talking to the correct person and attempting to resolve your issue. Now imagine having to call-in, and being put on hold, during this pandemic while you're trying to book vaccination appointments for your family.

---

1. <https://www.westuc.com/en-gb/blog/managed-voice-services/research-reveals-how-much-time-we-spend-hold>

Being able to keep track of everything one MUST do, plus the activities consumers WANT to do (eg. book restaurant reservations, theatre tickets, vacations), takes a tremendous amount of focus for the individual and you can't help but wonder if you can make people's lives a bit easier by proactively automating these bare necessities. It may not be futuristic, robot butlers, but the time and the associated mental effort that can be saved is invaluable.

This comes into much sharper focus in the new reality of the pandemic when applied to Covid-19 vaccinations. In an unprecedented effort in human history, it is necessary to vaccinate hundreds of millions of individuals, in different geographies with their own set of distinct issues and it all needs to be done now. Any bit of help towards making this process more efficient is not merely desirable, but a moral imperative.

### Context is king

As ever, definitional differences rule the roost so we should ensure everyone is on the same page with regards to what AI means in the context of customer service.

Given the glut of data that is now at our disposal, supervised machine learning is predominantly the lay of the current artificial land. In layman's terms, an algorithm is trained by manually categorizing increasing amounts of data, thus helping it to identify patterns, thereby automating the process in the future. And as it turns out, human beings are creatures of habit. So, while it is nigh on impossible to understand 100% of customer questions/responses, a majority of these can and do relate to certain broad categories, and thus could lend themselves to be resolved without human intervention. This approach is used widely in the inbound space (think chatbots), but its real value comes in the outbound or proactive engagement sphere. If we apply supervised machine learning methodologies to proactive engagement, where the objective of a conversation is explicit, the customer responses on the back of that are able to be categorized to a much larger extent.

Unfortunately, only 10% of customers ever get proactive communications from companies <sup>2</sup>. If that number isn't staggering by itself, combine it with the fact that only 9% of customers fully resolve their queries in a reactive realm <sup>3</sup>, while this number is >90% for those engaged via proactive paths. There aren't many clear and obvious choices that we make in our daily lives, but surely the math speaks for itself here.



2. <https://www.contactengine.com/insights/delineate-customer-effort-index-whitepaper-you-keep-me-hanging-on/>

3. <https://www.gartner.com/smarterwithgartner/dont-miss-the-opportunity-for-cost-savings-offered-by-self-service/>



### Coordinating appointments for Covid-19 vaccinations

Which brings us to our immediate imperative: setting up and executing hundreds of millions of appointments for people to be vaccinated. Scientists have been able to devise this vaccine at an incredible pace and dispensing that stupendous work to the public now comes to the forefront.

The elements that lend themselves to automation via AI exist here; namely:

#### 1. Clearly defined goal

The government or local organization needs to vaccinate the entire population efficiently in order to stop the spread of coronavirus. This is to be done by providing two doses to each individual

#### 2. High volume of interaction

The vaccine needs to be administered throughout the population and so the numbers involved in this endeavour are in the hundreds of millions

#### 3. Numerous channels of contact

There are a number of channels via which this effort could be coordinated. In addition, there is immense inherent complexity in reaching out to people at the right time, and being available to them when they respond

#### 4. Expected categories of response

Given the goal above, the questions related to these are equally predictable. In other words, the clarity of the objective narrows down the types of responses we can expect to receive from individuals, and those can be categorized for more efficient automated resolutions. For instance, these categories may include

- a. Scheduling/rescheduling appointments for each dose
- b. Confirmation of appointments (to track those who have received the dose vs. not)
- c. Request for information primarily regarding the vaccine, its side effects, and how individuals are prioritized (eg. by age, profession, vulnerability)

#### 5. Widely available communication technology

SMS technology is imperative here given that it covers the **vulnerable** segment of the population including older people who may be underinformed about newer technologies as well as the **underprivileged** with scarcer access to hi-technology

To simply be able to reach each individual is a mammoth task in “normal” times but add to that the fact that call center capacities are reduced due to the virus’ impact, and we have the potential for inefficiency at best and chaos at worst.

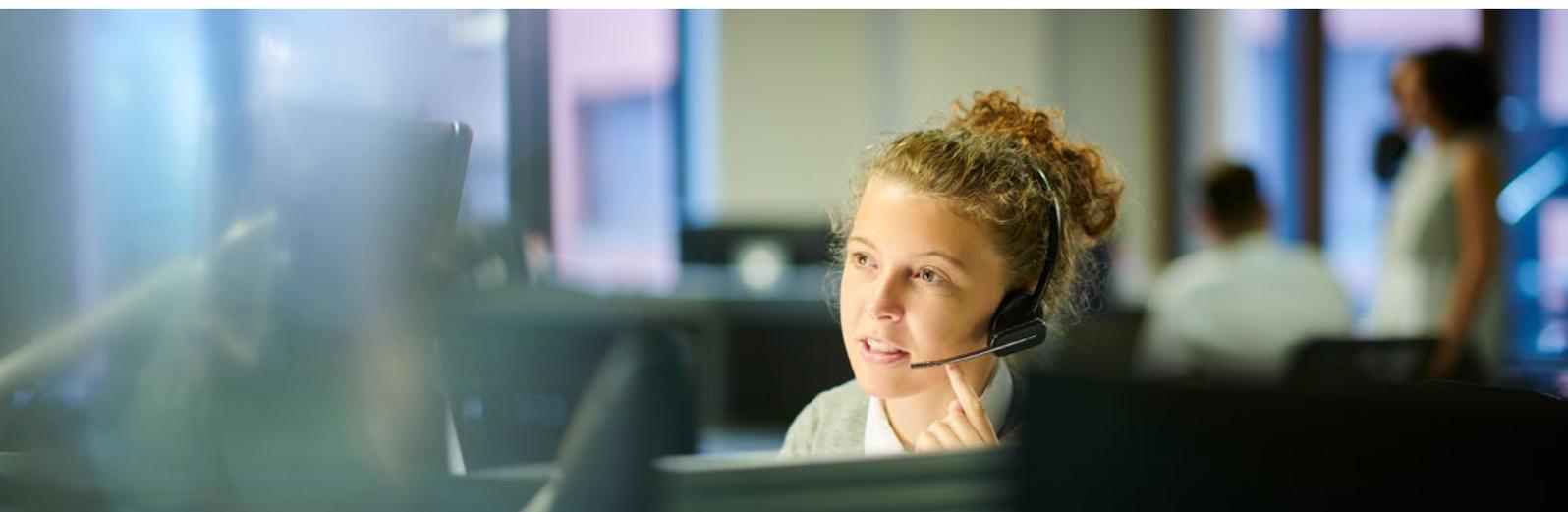
## The role of AI

The core use of AI in the field of customer service relies on recognizing incoming messages from customers (whether these are initiated by the customer or triggered by proactive communication), deciphering the correct intent(s), thus being able to either a) respond with the data that solves the issue for the customer, or b) recognizing it as an issue that needs human interaction and escalating it accordingly. In other words, AI technology would be standing as a front line of defense to triage the volumes of incoming messages, particularly given the population of this endeavour.

In general, non-Covid related use cases, it's important to note here that the end goal of utilizing this technology depends on the management philosophy of each organization. It is absolutely true that this COULD help reduce the number of call center agents required in the short-term. However, those focusing on strategic long-term goals will see that allowing the same number of agents MORE time to solve the truly complex issues requiring human deduction is what provides an amazing customer experience. This in turn ensures customer loyalty and translates into recurring patronage and increased profits.

In the context of healthcare, this becomes invaluable when comforting scared individuals. If this technology allows a call center agent to spend a few extra minutes reassuring a vulnerable senior citizen, it'd have served its purpose.

There is a slew of variables to keep in mind when discussing the prospects of the use of AI in the reality of vaccination appointments. For instance, the medium of communication. As stated above, SMS messaging is still the most ubiquitous technology to connect with the majority of individuals. However, voice, email and other channels can be valuable as well, especially when combined into a cohesive communication schedule. One can then look at permutations including the time of communication, day of the week, language of the message, terminology used, the list is long and labyrinthine. This complexity is where AI can truly help us in this pandemic. While the human cohort attend to the actual administration of the vaccinations, comforting those in need, taking care to not succumb to the virus ourselves, AI can help coordinate that which we don't need to.



## Proactive engagement

When referring to engagement here, we mean the act of starting a dialogue with a customer. It'd be a relatively simple task to say "Hello, Ms.X, you are scheduled to receive the first dose of your Covid-19 vaccination on Friday February 26, 2021". Not only would the linguists balk at the coldness of this message, it's a one-way communication and leaves no room for the individual to come back with questions, alterations, etc. This will logically lead Ms.X to seek out the helpline and call in for the simple task of rescheduling the appointment to a later date. This not only ends up costing additional money but more importantly, prevents those who are in desperate need of an intelligent human interaction. Any delay caused by inefficiencies in this process means additional time taken to reach the entirety of the population and puts lives at risk.

Thus, choosing a technology that not only informs but rather opens channels via which Ms. X can have her questions answered is vital to this process. Think of the sheer number of stages to the process. At a minimum, these include:

- 1. Appointment for first dose**
  - a. Potential rescheduling
  - b. Questions about standard information
- 2. Appointment confirmation** (so that no spots go unfilled, and people do not have to wait in lines excessively)
- 3. Confirmation of successfully receiving the first dose**
- 4. Post Appointment care:** including answering questions about potential side-effects
- 5. Appointment for second dose**
  - a. Same as above
- 6. Confirmation of successfully receiving second dose**

Given the elements to this process and the extended period of time over which it goes, that ability to converse and be kept up to date with minimal effort from both ends (the individual as well as the healthcare provider) is a necessary feature.

## Psychological context

During the best of times, being directed to a call center agent can be a dissatisfying experience, so much so that nearly 75% of customers are frustrated after such interactions <sup>4</sup>. This is a combination of many factors including the fact that customers are most likely in a negative frame of mind to begin with (further discussion for which can be found here <sup>5</sup>).

---

4. <http://www.mattersight.com/resource/please-hold-for-a-reality-check-real-reasons-consumers-are-fed-up-with-call-centers/>  
5. <https://www.contactengine.com/insights/why-call-centers-continue-to-frustrate-customers/>

And we can all agree these are not the best of times. With over two million deaths, 96 million confirmed cases worldwide <sup>6</sup> (and that's just based on those who have been tested), along with the fact that the world has been semi-sequestered for the better part of a year, cut off from friends and family, this is definitely (and hopefully) the nadir of our times.

Research around the initial psychological impact of Covid-19 and the associated social distancing norms have found reactions such as pervasive anxiety, disabling loneliness, and uncontrollable fear of infection in the general population. In addition, the study suggests that one of the significant risk factors exacerbating the above impact is "...poor or inadequate information from public health authorities..."<sup>7</sup> From a psychological perspective then, people have an increased need for being informed about the process, having their fears allayed, and getting reassured that they will receive their vaccination doses in due time. Furthermore, the mere act of proactively opening a dialogue allows individuals to know there is an avenue on which to reach out for more information if desired. If AI can help reduce the added burden of having to think of the mundanities related to this pandemic such as booking vaccination appointments for oneself and one's families, then it's incumbent on us to use the tools at our disposal to their fullest extents.

## Conclusion

AI, in the context we've defined above, is a nascent but fast-growing technology that is already entering our homes on a regular basis. Virtual Personal Assistants like Alexa, Siri and the like are already learning to do the basics for us. At the least, they can allow us to set reminders to book an appointment. At the other end of the gamut are tools like Google Duplex which will just call and make your restaurant reservation for you <sup>8</sup>.

In a time of tumult, we shouldn't shy away from the use of this technology but rather lean towards it. At its core, the standalone act of setting up an appointment for vaccinating against this virus is simple. However, if you account for the psychological state of individuals who have been constantly battered with news of the deadly effects of this pandemic for nearly a year, even the most basic of tasks can take an immense amount of effort. If we can shed this burden using technology, then we must use it to help as many people as we can.

Either way, it's clear that human ingenuity is simply scratching the surface of such technologies and perhaps in the future, we may actually be able to spend those reclaimed 43 days of life on eight more weeks of vacation.

In the meantime, we are facing a crisis the likes of which we haven't seen in a century, but this time we are better equipped with tools to aid in the fight.

---

6. <https://www.ft.com/content/a2901ce8-5eb7-4633-b89c-cbdf5b386938>

7. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7337855/>

8. <https://ai.googleblog.com/2018/05/duplex-ai-system-for-natural-conversation.html>



**Visit** [contactengine.com](https://contactengine.com)

**Follow on Twitter** [@contactengine](https://twitter.com/contactengine)

**Follow on LinkedIn** [/contactengine](https://www.linkedin.com/company/contactengine/)

**Email** [info@contactengine.com](mailto:info@contactengine.com)

## **About**

The report is published by ContactEngine Inc.

Registered Office: 6849 Old Dominion Drive, Suite #315, McLean, VA 22101

ContactEngine is a Conversational AI technology that enables organizations to proactively engage customers/citizens in conversations that fulfill business objectives. ContactEngine automates outbound individual engagement across all channels and generates unique insights into the changing patterns of communication by applying demographic and intent analysis, linguistics and ground-breaking artificial intelligence principles to mass volumes of raw data. ContactEngine transforms the way organizations engage with their customers/citizens – saving organizations millions and making their constituents happier. For more information, visit [contactengine.com](https://contactengine.com)

For more information, visit [contactengine.com](https://contactengine.com)