

Volume 02

## {Are you talking to me?

Enhancing access to public  
services with chatbots

Inspired by  
CIVICANorthStar\*



# Welcome to Perspectives\* Volume 2

We're living through times where we have seen unprecedented demand put on our public services. Where they've had to pivot to completely new demands, or seen unforecasted demand for existing services. And technology is a big part of the answer.

I'm delighted to be part of this Perspectives\* series as it explores how technologies can help build more innovative public services - a goal shared with us at Microsoft.

The use of technology, specifically automation and chatbots, has played a pivotal role in helping services providers quickly respond to increased demand. A good example is Aberdeen City Council who deployed chatbots from within Microsoft Teams to answer employee queries while they shifted to home working and continued to deal with council services.

In Perspectives\* Civica has outlined many more great examples to inspire you to consider where this can be used with your customers.

While we may be moving out of the pandemic, citizens now expect the simplicity of the services delivered through automation and conversational AI. There is no going back to the old way of doing things!

Please enjoy this volume and we look forward to hearing your reflections on social media using [#PerspectivesFromCivica](#)



**Glen Robinson**  
National Technology Officer  
Microsoft UK

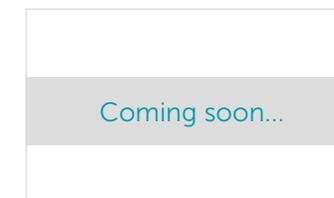
Perspectives\* explores four themes throughout 2021:



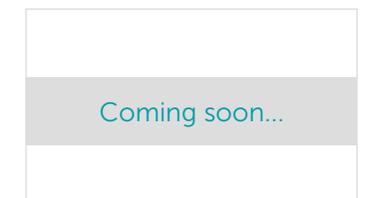
1. Immersive technologies  
([download here](#))



2. Conversational AI  
(this volume)



3. Advanced data analytics  
and machine learning



4. Augmented collective  
intelligence

# Executive summary

We're interacting with chatbots daily, sometimes without even knowing. From asking Alexa to "play that song", to Cortana helping on your desktop, bots are now a part of our everyday lives. It's no longer 'the bots are coming', they are here.

Chatbot technology, first launched 50 years ago in a Massachusetts Institute of Technology lab, is not new, but adoption has sky rocketed with [100 million smart home devices](#) connected to Alexa and growing. Whereas once your chat window would have connected you to a human, nowadays, you are likely talking to a bot. They have seamlessly infiltrated our lives and are delivering immense value.

From the basic rule-based FAQ-bots that help users quickly find answers, to digital assistants that can include AI to automate tasks, bots are able to solve problems and complete tasks more quickly than humans, and if done well, at a fraction of the cost. Looking ahead, self-learning abilities and human-like interfaces ('digital human') present an exciting glimpse of what an AI-enabled future can offer.

In volume 2 of Perspectives\*, we delve into the type of bots available, and examine the positive impact they are adding across public services. But we don't stop there.

We give you a simple three step guide to drive value with chatbots: starting with defining and prioritising the 'job to be done' by your bot, then how to pick the best bot for that job to maximise return of investment, and finally how to manage the bot and embrace it as a member of your team. Three simple steps to help deliver real value to our communities.

In short, our view is that chatbots are a valuable technology for public services; they are easy to implement, save money, free up time, and can even save lives. **You can't afford not to.**

As our world becomes increasingly digital, chatbots are enabling people to interact with systems using human-like conversation.

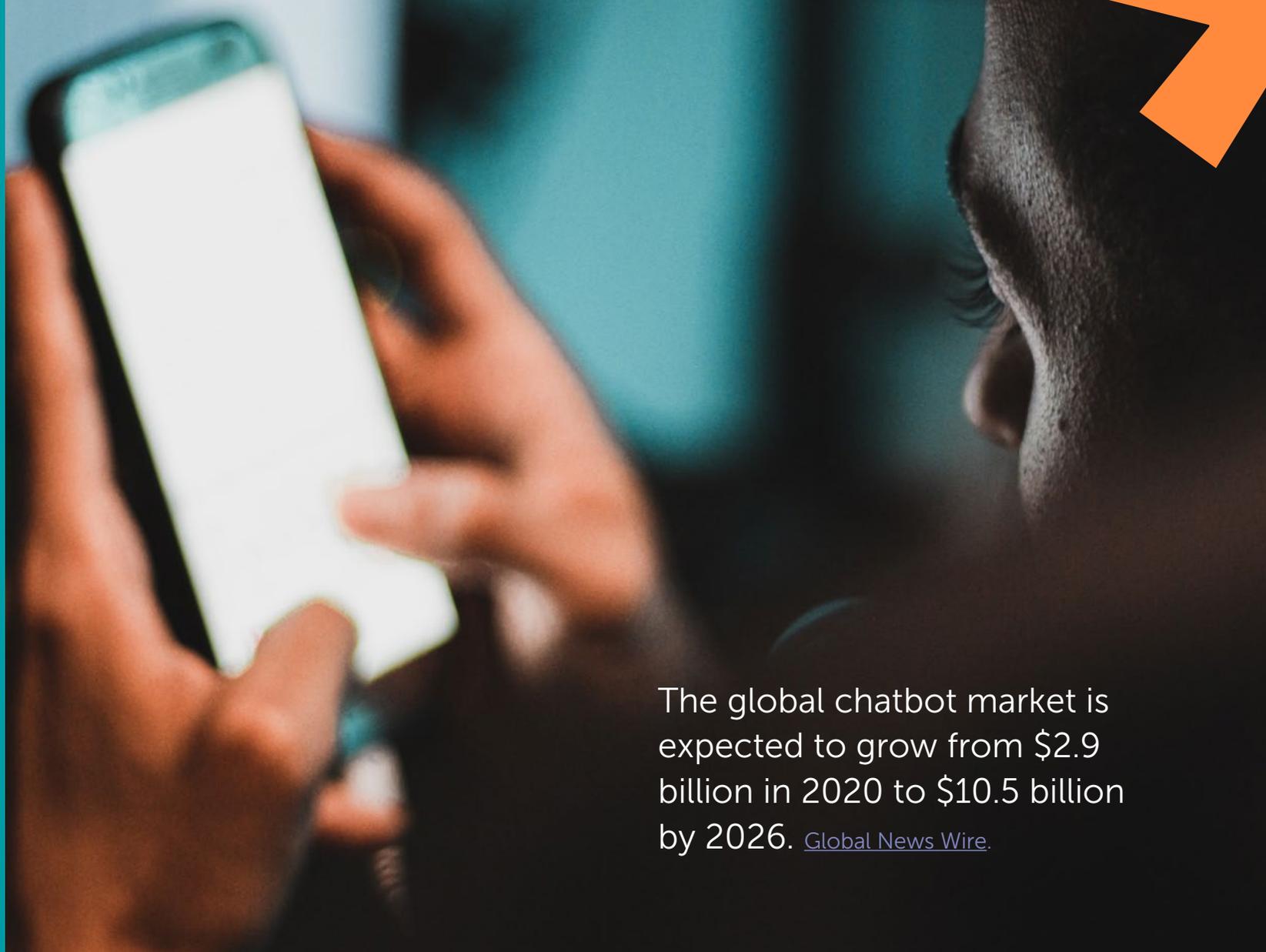
From the first chatbot, [Eliza](#), in 1966 using text pattern matching to simulate dialogue, to the personal voice assistants like [Siri](#), [Google Assistant](#) and [Alexa](#) - chatbots have captivated society.

70%

of customer interactions will involve technology such as chatbots by 2022. [Gartner](#).

{ Look  
who's talking





The global chatbot market is expected to grow from \$2.9 billion in 2020 to \$10.5 billion by 2026. [Global News Wire](#).

Chatbot is a generic term used to describe a conversational AI, but it comes in many different forms and offers varying levels of capability. Traditional chatbots often claim to have conversational capabilities, but humans have to write scripts and dialogues behind the scenes: the chatbot is told what to say in response to specific keywords. The bot needs to be trained for every scenario. In contrast, an AI-enabled chatbot needs less scripting and progressively teaches itself through reinforcement learning.

Chatbots can respond to multiple languages and local dialects, which improves accessibility and inclusion for all members of society. 'Conversation' with bots can be initiated via text chatbot on a website, making a phone call, or using a personal voice assistant on a smart speaker or computer.

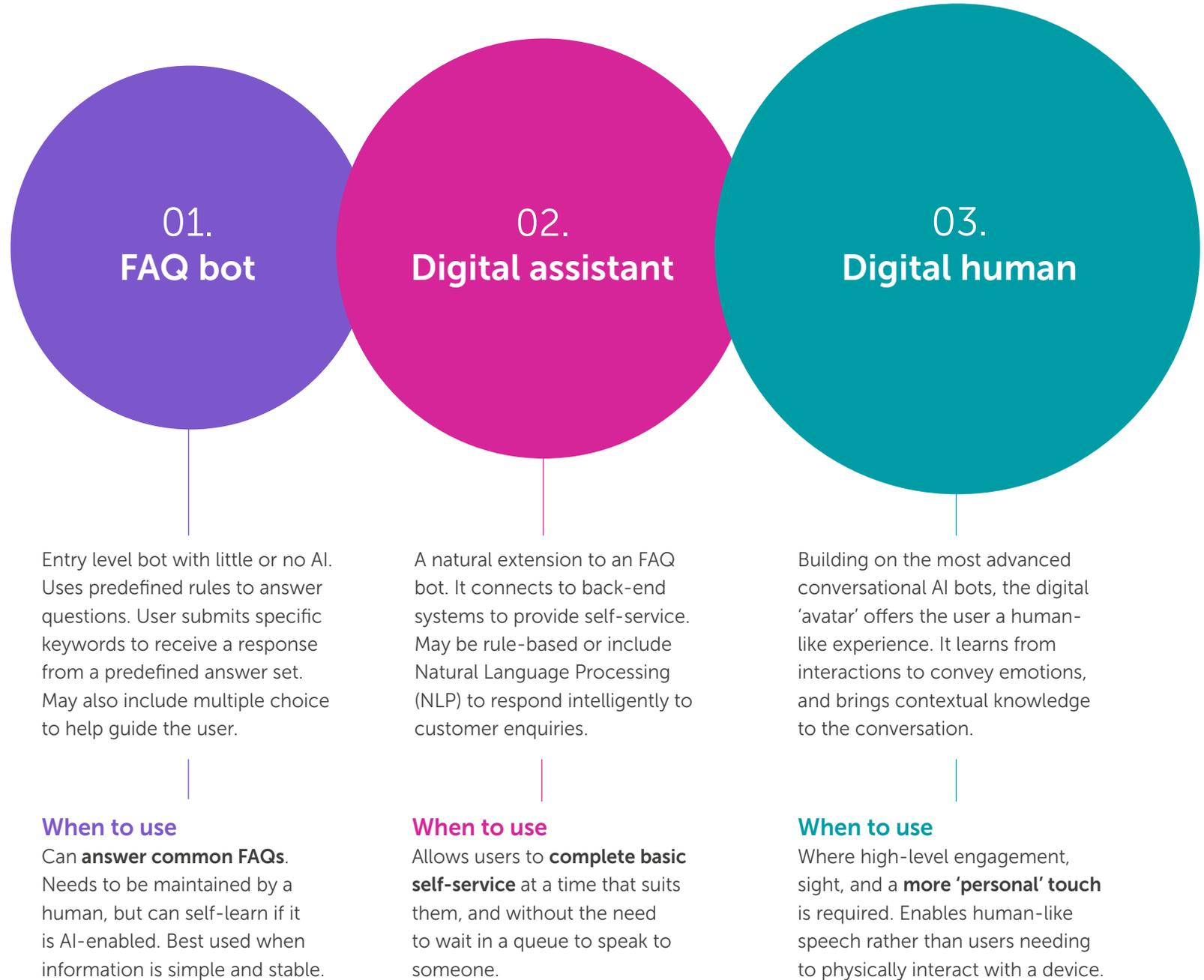
# { Under the hood



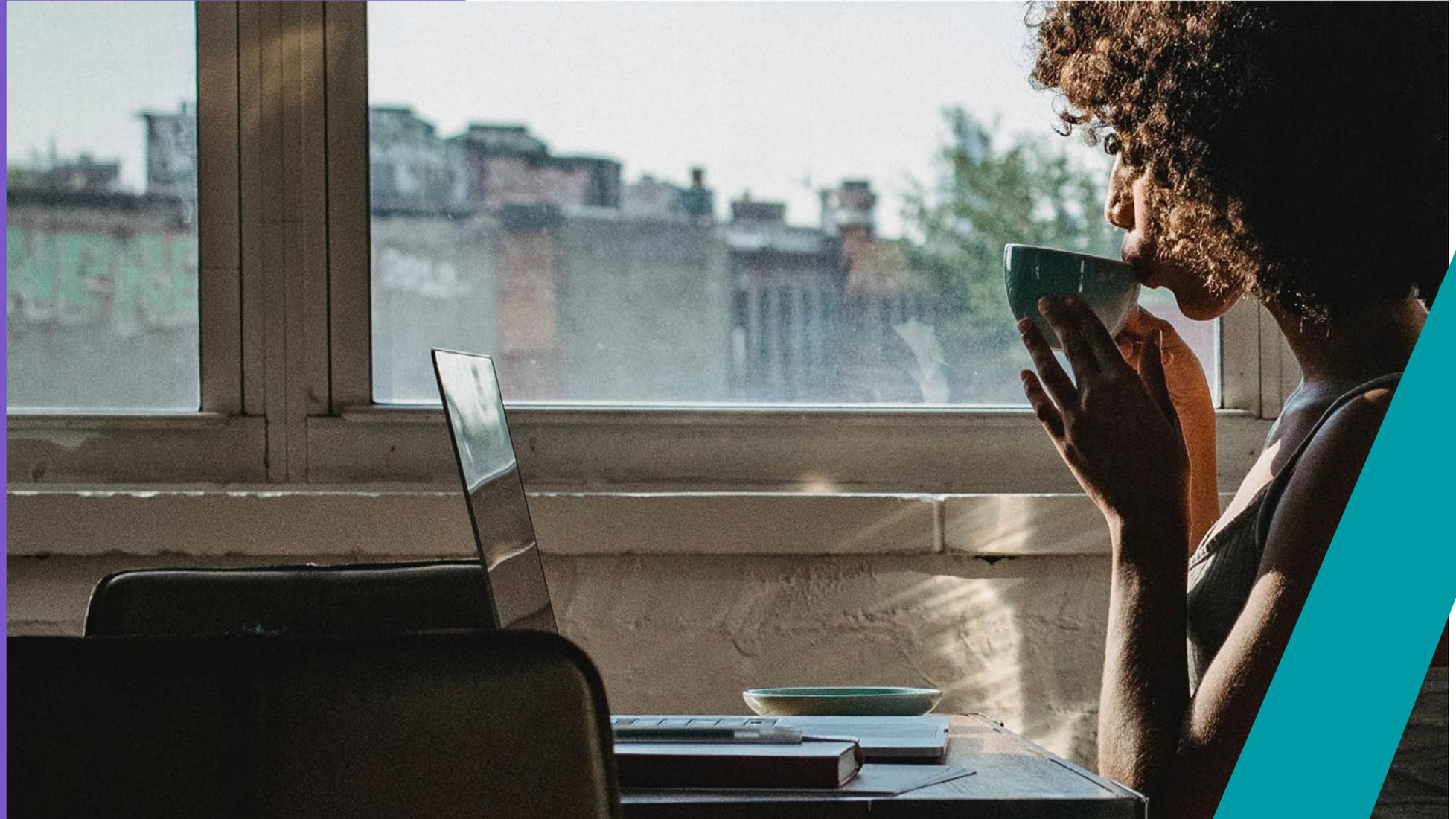
- What are the main types of chatbots?
- How do we interact with them?
- And how they are helping us?

# Types of chatbots

There are many different ways of defining chatbots. We see three main types.



In less time than it takes to drink a coffee, further your chatbot knowledge



When you see a QR code, click it to learn more. Or why not immerse yourself by scanning with the camera on your smart device.



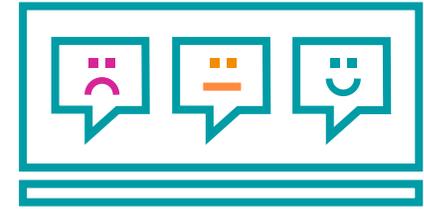
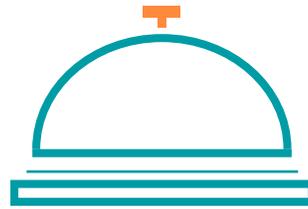
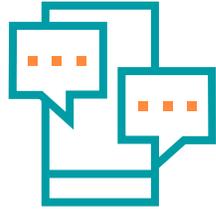
## Text vs Voice

Personal voice assistants are increasingly present in our lives. Instead of typing a message, the smart speaker becomes your interface - listening and talking back to you.

Voice is just another way to access a bot. It uses the same mechanisms as a text chatbot, but the input is spoken not written. You can upgrade any existing text chatbot with voice as the functionality is typically included in modern platforms.

27%

of the global population use voice search on mobile. [Google](#).



# How are chatbots helping?

Chatbots give immediate, round-the-clock self-service support to citizens, freeing up staff to focus on those tasks which are more complex or require more empathy.

At present, we believe there are three main areas where chatbots are making an impact.

## Access tailored information

Chatbots can ensure quick delivery of concise and accurate information for both citizens and employees.

Using predefined answers they provide tailored information, and augmented through AI learning, they can deliver improved accuracy and service.



### Directing passengers online

Amtrak

Please scan me

## Improve self-service

Chatbots can enable users to perform simple transactions like booking a doctors appointment, requesting a housing repair or paying a tax bill.

They are widely used within the public sector but also banking, telecoms and insurance to help customers self-serve and free up human agents.



### Improving customer services

Vodafone

Please scan me

## Enable rapid feedback

Chatbots can help citizens engage by voicing their concerns in their own words, and provide input and feedback.

They focus on citizen engagement with the most advanced able to detect sentiment and respond with empathy, or even redirect to human support.



### Quickly resolving complaints

Philippine Central Bank

Please scan me



250%

increased usage of chatbots during the COVID-19 pandemic. [Gartner](#).

# Now is the time

The pandemic has increased citizens' expectations of what can be done online. We're now used to digital services that can provide immediate response.

In the post-pandemic era, bots are a must-have to manage the 'new normal' and enable us to build back better. They are essential to free up the resources needed to cope, but also to meet the citizens' expectations for self-service and round-the-clock support.

We have passed the 'bots are coming' stage. If you don't have one yet, you need it! Now is the time to act to improve public services for everyone. To help, we've examined their impact across five key sectors to inspire further conversations.



# { Health and care

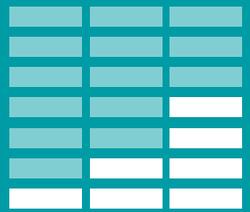


“Chatbots will ease the burden on doctors in primary care and help patients learn to take care of their health responsibly.”

Dr. Bertalan Mesko,  
Director, The Medical Futurist Institute

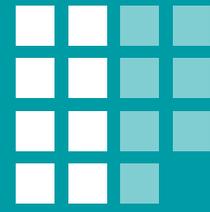
Source: [The Medical Futurist](#)

## What's driving the opportunity?



124.9<sub>M</sub>

outpatients in 2019/20 - all of whom needed to book or reschedule an appointment. [NHS Digital](#).



87%

of health and care leaders confirmed chatbots have the potential to benefit their sector. [Civica](#).

# Making a positive impact

We've hand-picked a few examples to show where chatbots are making an impact. But what else is possible? Continue the conversation and [share your perspective](#).



## Access tailored information

### Inclusive health education ●

Chatbots can provide [advice and information](#) to those in countries where some health subjects are taboo in the family or community. The Australian Government department for health [offers a chatbot](#) to help citizens locate health resources.

### Managing patient experience ●

Personalised chatbots can help patients address concerns about invasive medical procedures such as [colorectal exams](#). Better support can reduce 'no-show' rates and increase early detection.

### Medical advice ●

The [UK's National Health Service \(NHS\) trialled a chatbot](#) for dispensing medical advice, with the aim of reducing the burden on its 111 non-emergency helpline.



## Improve self-service

### Triage "as-a-service" ●

Chatbots can make medical diagnoses faster and easier. Online NHS linked GP practices are [using chatbots to triage conditions](#) and provide either advice or appointment bookings with the right care provider. Chatbot technology can also help to [identify deviations in speech and conversation patterns](#) that may help with dementia diagnosis.

### Mental health and therapy ●

In 2018 a [global study](#) was conducted looking at mobile-based chatbots to offer the first line of support for mental health patients. Using the principle of talking therapy these apps aimed to increase the reach of clinical services. Several apps were piloted by the NHS, but not formalised, as there were concerns about whether the app could appropriately [raise flags for vulnerable users](#).



## Enable rapid feedback

### Staff engagement ●

Hospitals are using chatbots to engage staff and keep them informed of latest COVID-19 information.

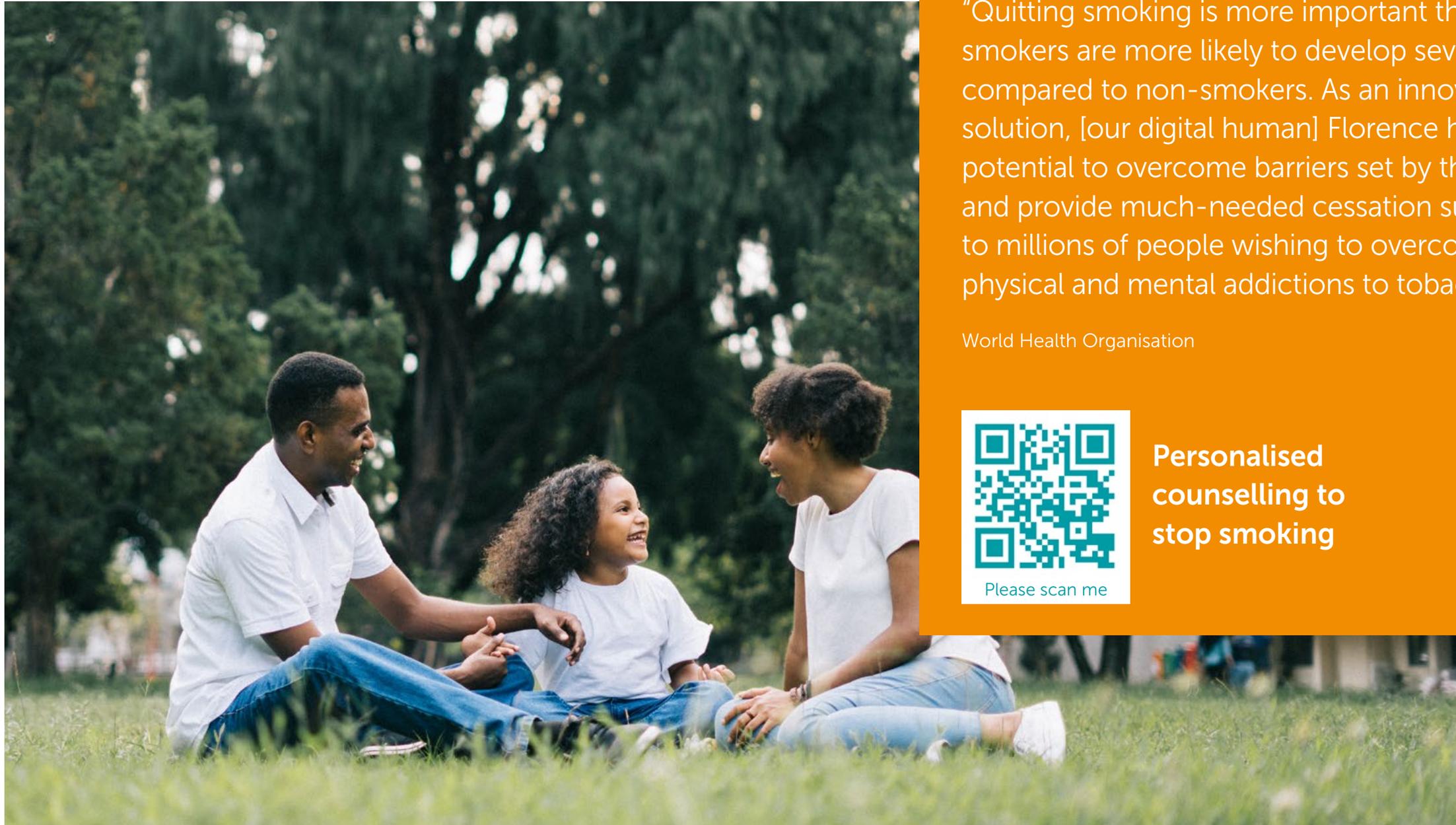
### Improving front-line response ●

The [Department of Health in N.Ireland](#) integrated a chatbot into its front-line response during COVID-19. The insight enabled new information being requested from public to be added. While learnings improved user journeys and aided the development of a triaging script to reduce demand on helpline services.

### Improving patient documentation ●

Both [South Tees](#) and [Homerton](#) NHS Foundation Trusts have trialled conversational AI technology (activated via mobile or smart speaker) to add to electronic patient records. This can increase levels of engagement with patients by removing the need to type or write notes. Further benefits include infection control by removing the need to use a physical touchpad.

● **Established:** already making an impact    ● **Emerging:** starting to make an impact



“Quitting smoking is more important than ever, as smokers are more likely to develop severe COVID-19 compared to non-smokers. As an innovative digital solution, [our digital human] Florence has the potential to overcome barriers set by the pandemic and provide much-needed cessation support to millions of people wishing to overcome both physical and mental addictions to tobacco.”

World Health Organisation



Please scan me

**Personalised  
counselling to  
stop smoking**

# { Local government

“We have found that people have used our chatbot because they want to maintain anonymity. It enables citizens to access information about sensitive areas like homelessness or food banks without needing to present face-to-face.”

Emma Jackson, Digital Programme Manager, Monmouthshire Council



## What's driving the opportunity?



£180K

anticipated savings by councils from chatbots, with 90% expecting to have a strategy in place within the next 12-18 months. [Agile Datum](#), Feb 2020

87%

of local authority leaders confirmed chatbots have the potential to benefit their sector. [Civica](#).

# Making a positive impact

We've hand-picked a few examples to show where chatbots are making an impact. But what else is possible? Continue the conversation and [share your perspective](#).



## Access tailored information

### Website navigation ●

Chatbots can support website navigation and help guide citizens to quickly find the right answer or process, whatever the time of day or night. [Monmouthshire County Council](#) offers a chatbot that can answer a range of common questions about key services.

### Handling planning enquiries ●

London Borough of Redbridge has implemented a [planning chatbot](#) that can answer 250 related planning questions. Chatbots can direct citizens to information and provide status updates. The complex and emotive nature of planning means that the majority of cases would still need to be handled by humans. However, it's estimated that the technology could free up 15% of capacity.

### The human touch ●

Enfield Council undertook an [evaluation of a digital human](#) who could provide information whilst offering an interaction that feels like talking to a real person, 24/7.



## Improve self-service

### Municipal services ●

Simple services such as waste collection and [waste permits](#) can be managed using chatbots. Chatbots may even be configured to send proactive notifications about status updates. Stoke-on-Trent City Council are piloting a voice enabled chatbot on their IVR system to handle citizen phone enquiries about waste. In Dubai, citizens can apply for services, track applications and file complaints all via the [web and mobile chatbot - Fares](#).

### Licensing and permits ●

Chatbots can enable citizens and business owners to self-serve for items like café licences and street permits. Newnham Council have implemented a [parking chatbot](#) to assist with parking permit and penalty charge queries and payments. The system supports the diverse local community by operating in multiple languages.



## Enable rapid feedback

### Environmental issues ●

Chatbots hosted on messaging platforms like Twitter, WhatsApp and Facebook enable collection of information from concerned citizens. From [fly-tipping](#) in Waltham Forest to the [state of local roads](#) in Bengaluru, India.

### Community consultation ●

The [States of Guernsey](#) used an anonymous interactive chat platform to enable local citizens to share their views on road safety and identify their priorities. The [Scottish Government](#) has also used chatbots alongside formal consultation to boost engagement.

● **Established:** already making an impact    ● **Emerging:** starting to make an impact



“We didn’t just want a chatbot to duplicate the website search function, we wanted citizens to be able to book services and report issues all in one place.”

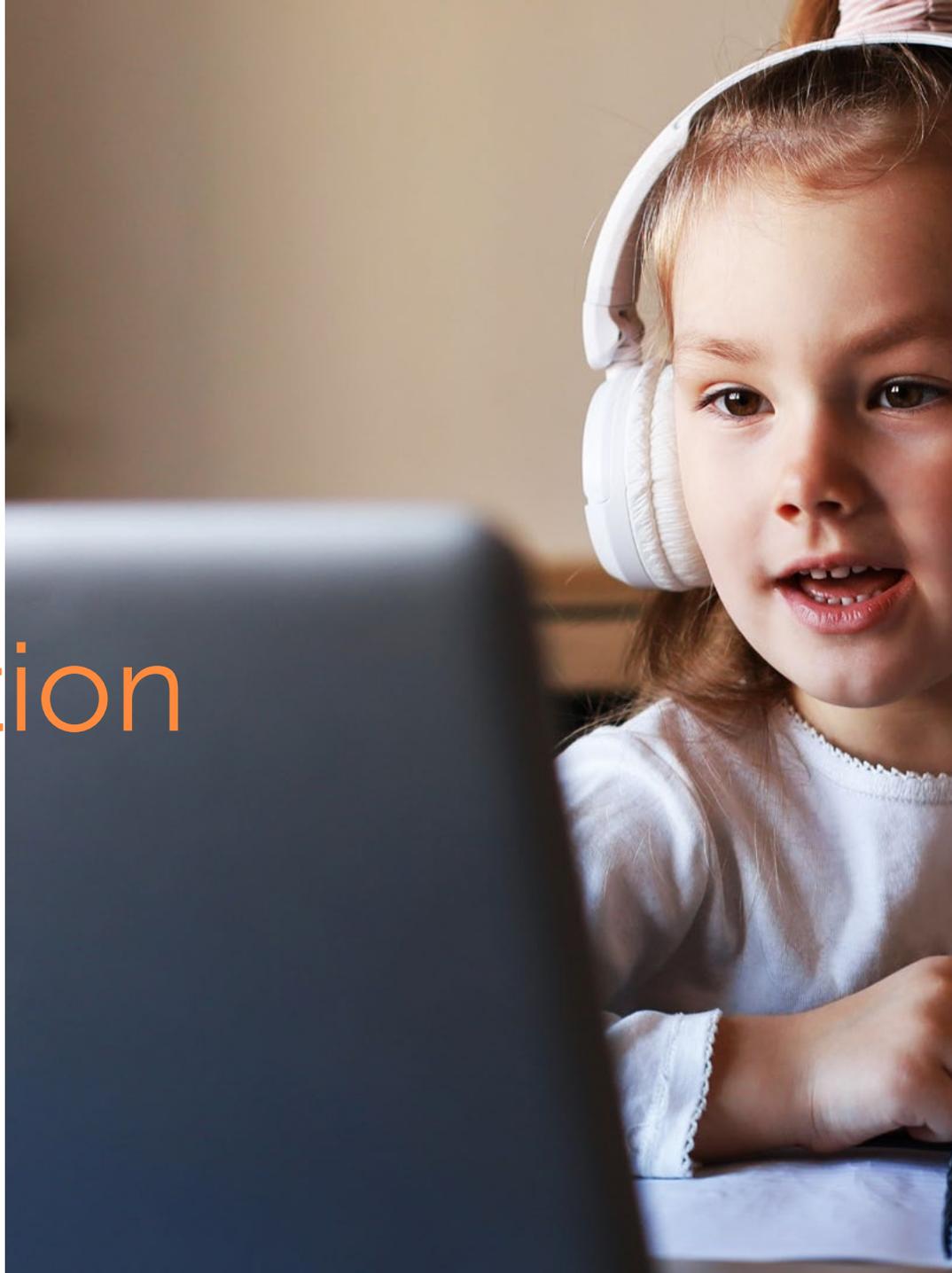
Ben Rive, Project Manager – Chatbot Development, Cardiff Council



Improving waste  
and recycling  
self-service

Please scan me

# { Education



“Technology can change learning forever and we need to embrace it and manipulate it to our advantage.”

Tricia McLaughlin, RMIT School of Education

Source: [RMIT University](#)

## What's driving the uptake?



69m

teachers will need to be recruited by 2030 to provide every child in the world with primary and secondary education. [UNESCO](#).



96%

of education leaders confirmed chatbots have the potential to benefit their sector. [Civica](#).

# Making a positive impact

We've hand-picked a few examples to show where chatbots are making an impact. But what else is possible? Continue the conversation and [share your perspective](#).



## Access tailored information

### Interactive learning ●

Chatbots can help students explore information and gain knowledge through a two-way 'conversation' which can be more engaging than reading text books. Education technology apps that allow students to learn through "chat" interaction have supported many [students during global lockdowns](#).

### Library services ●

Stonnington Library in Melbourne, Australia is trialling chatbots as part of its library management system to [catalogue and search more than 10,000 images](#) - helping people discover new content and insights.

### Learning management ●

Using chatbots to handle questions about schedules, daily tasks, and [relevant online learning](#) can free up teachers to provide education rather than administrative support.



## Improve self-service

### Personalised adaptive learning ●

Chatbots and AI can support personalised learning for students, allowing them to progress at their own pace. Many educational apps use FAQ bots as the basis of their functionality, helping the student to navigate content and make progress.

### Specialist support ●

Chatbots may be able to provide every student with a [virtual teaching assistant](#) that understands the student's capabilities and can tailor instructions. This may help meet demand for [specialist subjects](#) for SEN teachers as well as supporting remote learning.

### Fast food ●

Chatbots can help school catering teams to operate smoothly by allowing catering staff to 24/7 self-service for ordering and repairs, rather than having to wait for support desks to open. This can reduce down-time, ensuring that meals are served on time.



## Enable rapid feedback

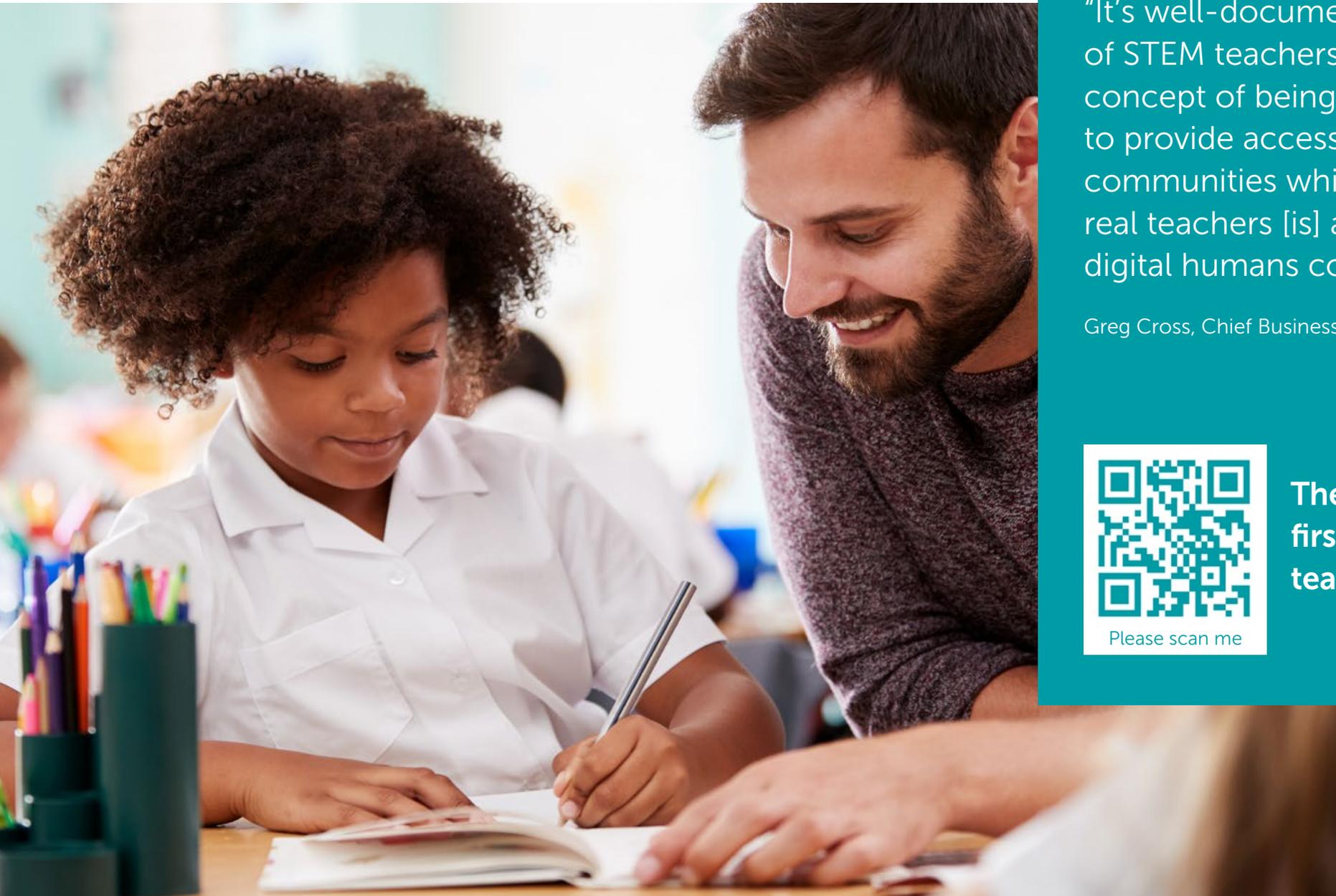
### Making feedback smarter ●

Feedback is an important aspect of the process of learning both for students and teachers. Chatbots can aid the process of giving and receiving feedback to improve the overall learning experience. Schools in China are [embracing conversational AI technologies](#) to support marking and feedback.

### Student enrolment and wellbeing ●

Chatbots can also be designed to [promote course applications](#), check in with [student wellbeing](#), and [provide information](#) on COVID-19. In Bolton College, chatbots are supporting student enrolment, and are credited with improving student retention.

● **Established:** already making an impact    ● **Emerging:** starting to make an impact



"It's well-documented there are a shortage of STEM teachers in high schools today. The concept of being able to use digital teachers to provide access to teaching for kids and communities which might not have access to real teachers [is] a hugely important role these digital humans could play."

Greg Cross, Chief Business Officer, Soul Machines



Please scan me

The world's  
first virtual  
teacher

Source: [Newsroom](#)

# {Housing

“Chatbots provide an opportunity to enhance our digital service. The 24/7 customer self service provides automated responses for hundreds of queries. The artificial intelligence technology is intuitive and customer focused.”

Gary Haldane, Interim Digital Director, Kingdom Housing

## What's driving the uptake?



38%

of housing complaints in 2020 were about poor response to repair requests. [Housing Ombudsman](#).



92%

of housing leaders confirmed chatbots have the potential to benefit their sector. [Civica](#).

# Making a positive impact

We've hand-picked a few examples to show where chatbots are making an impact. But what else is possible? Continue the conversation and [share your perspective](#).



## Access tailored information

### Rapid advice ●

During the pandemic, housing providers like [Housing Solutions](#) and [Clarion Homes](#) used chatbots to provide support and advice to residents on common topics, such as repairs, permissions, and payments and finances.

### Improved 'move-in' experiences ●

Chatbots can be on hand to help people settle into their new home, supporting everything from information on local amenities to how appliances work. If the bot is designed with AI then it can learn from previous tenant enquires and get better at predicting when help may be needed.

### Managing rent accounts ●

Chatbots can help the process of checking the status of rent accounts. They can also send automated notifications and reminders directly to residents.



## Improve self-service

### Repairs and maintenance ●

[Kingdom Housing](#) and [Havebury Housing Partnership](#) are examples of housing associations using rule-based chatbots and automation to improve the self-service offer and ensure tenants can access services 24 hours a day. Tenants can report repairs and schedule appointments, all at the click of a button.

### Assisted living ●

Voice enabled chatbots can [help older adults to live independently for longer](#). Bots can enable basic transactions to be performed using the spoken word and can offer verbal guidance for daily tasks and activities. Interactive human-like communication may also help address loneliness and isolation.

### Automating applications ●

Chatbots can support automated form filling to enable citizens to make housing enquiries / applications, quickly and effectively through their mobile phone.

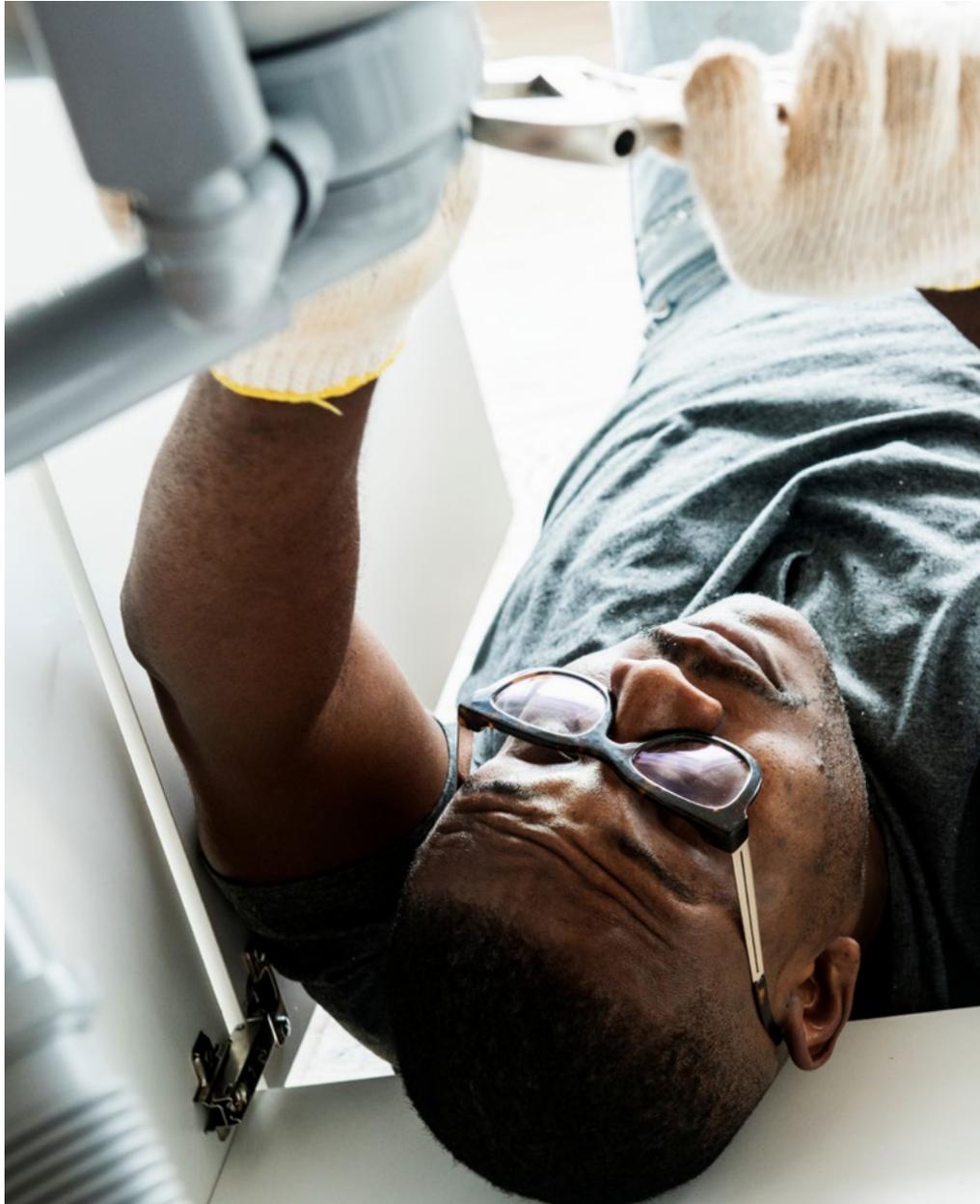


## Enable rapid feedback

### Tenant surveys ●

The [social housing charter](#) demands that all tenants have their voice heard by their landlords. Chatbots can provide engaging ways to invite feedback and conduct surveys.

● **Established:** already making an impact    ● **Emerging:** starting to make an impact



“As we enter a digital era, it’s crucial that we innovate our infrastructure in order to engage better with our customers.”

Sue Sutton, Executive Director of Operations, Salix Homes



**Book and  
track repairs  
in real-time**

Please scan me

Source: [PlaceTech](#)

# { Government and justice



“Staff at State unemployment offices found themselves spending much of their day answering questions instead of processing or adjudicating claims. All believed the use of chatbots on State government websites will continue long after the pandemic.”

National Association of State Chief Information Officers (NASCIO)

Source: [NASCIO](#)

## What's driving the uptake?



515k

calls to the police non-emergency number (101) in N.Ireland during 2019. [Police Service of Northern Ireland](#).



90%

of government leaders confirmed chatbots have the potential to benefit their sector. [Civica](#).

# Making a positive impact

We've hand-picked a few examples to show where chatbots are making an impact. But what else is possible? Continue the conversation and [share your perspective](#).

 Access tailored information	 Improve self-service	 Enable rapid feedback
<p><b>Finding information</b> ●</p> <p>The Ministry of Communications and Information (MCI), Singapore launched a Facebook Messenger chatbot to help visitors locate information about the government's agencies.</p> <p><b>Tax doesn't have to be taxing</b> ●</p> <p>The <a href="#">Australian Taxation Office offers a chatbot</a> to provide virtual assistance for tax queries - making it easier for citizens to get answers to their personal tax queries.</p> <p><b>Providing tailored content</b> ●</p> <p>The UK's <a href="#">Ministry of Justice trialed a chatbot</a> to support users in crisis. It found that citizens (especially when under pressure) were more likely to engage with tailored content delivered as a conversation compared to flat information (e.g. website).</p> <p><b>Personalised service</b> ●</p> <p>The government of India is developing <a href="#">a voice activated AI-chatbot</a> to help citizens access services and information and will analyse data about interactions to personalize future experiences.</p>	<p><b>Improving self-serve options</b> ●</p> <p>The UK's <a href="#">Driver and Vehicle Licensing Agency</a> added a rule-based chatbot to automate frequent customer service enquiries including vehicle taxation, registrations and licenses.</p> <p><b>Virtual immigration services</b> ●</p> <p><a href="#">EMMA</a> developed for the U.S. Citizenship and Immigration services of Department of Home Land Security, handles 1 million interactions for requests from immigration services, green card and passports.</p> <p><b>Asset management</b> ●</p> <p>Voice enabled chatbots can support officers undertaking asset management surveys. The use of voice activation can enable note free reporting in real-time and with integration into the back office.</p> <p><b>Police non-emergency</b> ●</p> <p>Police forces are exploring chatbots to <a href="#">handle responses</a> to the local 101 service, <a href="#">report crime or traffic collisions</a>. They have allowed citizens to report crime, ask questions and obtain news, using use voice activation via Alexa or text messaging platforms.</p>	<p><b>Political engagement</b> ●</p> <p>Chatbots may be able to support voters to keep up to date with information relevant to issues that matter to them. Chatbot owners would gain insights on what stories are resonating with potential voters and tailor and refine its content.</p> <p><b>Citizen voice</b> ●</p> <p>Chatbots can be deployed to help people across all demographics to speak out about urgent needs in their communities.</p> <p><b>Identification of threat</b> ●</p> <p>Voice enabled conversational systems may provide benefit in public spaces to detect emotion, tone and threat in language used. Whilst the use invokes privacy questions, the systems could alert staff or security to emerging threats.</p>

● **Established:** already making an impact    ● **Emerging:** starting to make an impact



"This project could revolutionise service delivery in community legal centres by reducing the bottleneck of simple queries."

Mark Speakman, New South Wales Attorney General

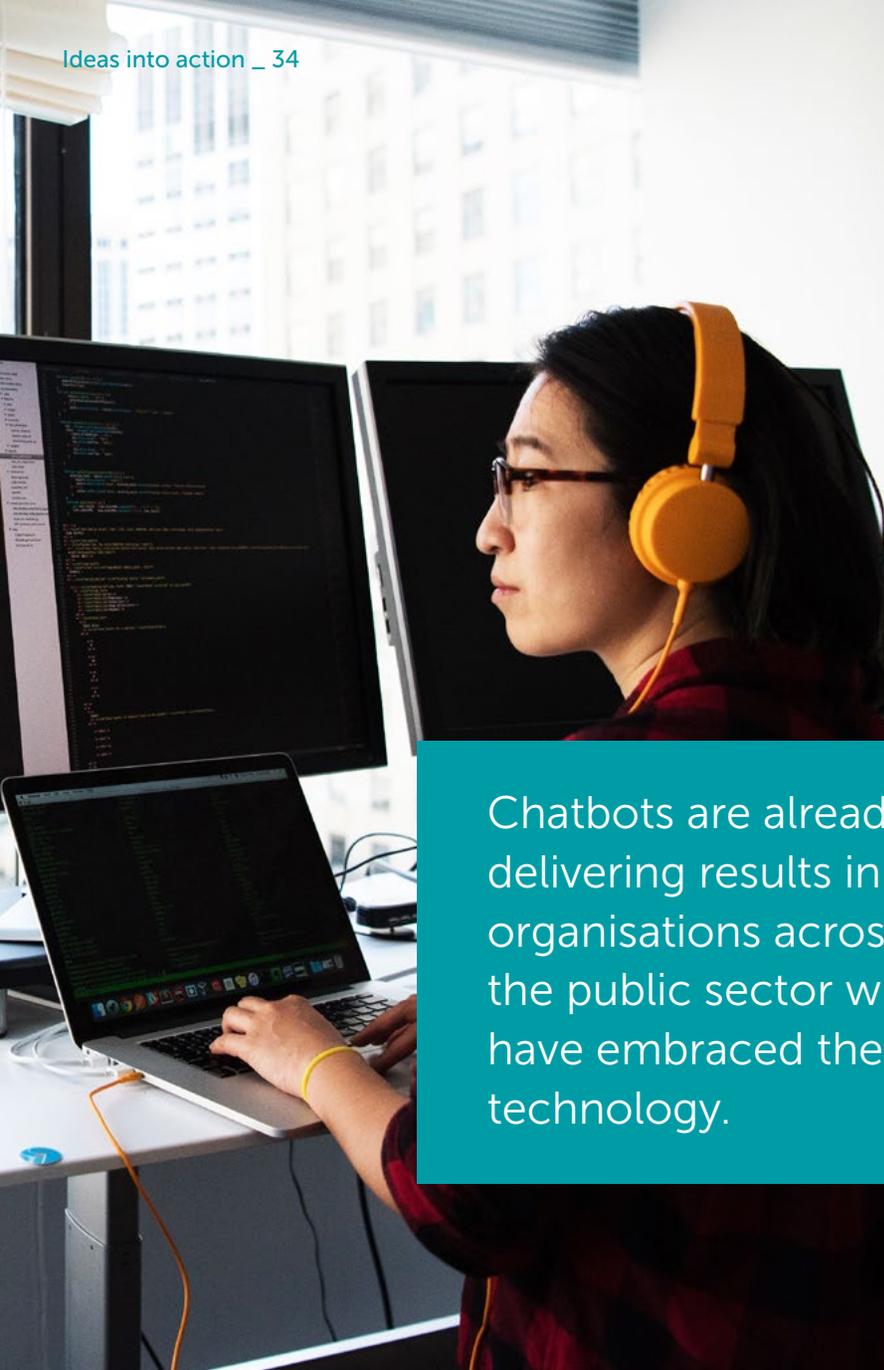


Please scan me

Reducing  
barriers to  
accessing justice

{ Ideas  
into  
action





Chatbots are already delivering results in organisations across the public sector who have embraced the technology.

From health and housing, to education and government, we've found examples of chatbots handling information requests and taking on routine self-service tasks; freeing up humans to provide one-to-one engagement.

Driven by COVID-19, many organisations have rapidly moved to a digital first delivery. This has stimulated a significant number of pilots of FAQ bots and non-AI digital assistants. These simple systems can be launched quickly as they're setup based on already known scenarios and outputs.

As we start to move back to varying levels of face-to-face interaction, there is an overwhelming desire to retain the digital progress made.

To ensure that the long-term business case for chatbots stacks up, we need to think beyond 'trailing the tech' and address how they integrate as part of long-term IT and engagement strategies.

To help cut through the noise and invest wisely, we've developed a simple three-step process:

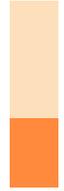
1.

## Define your desired outcome

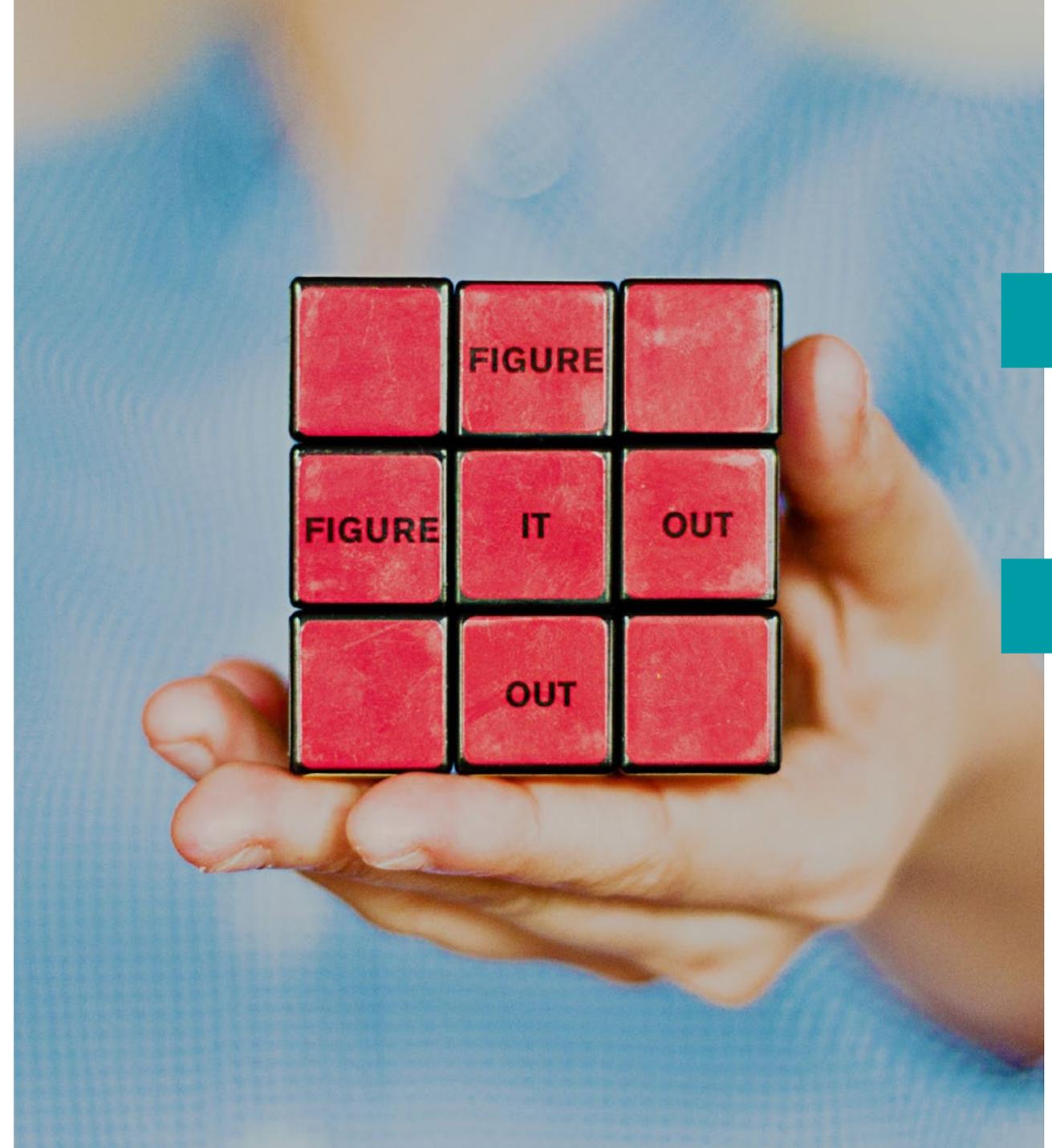
Firstly, decide what you want to achieve. Is it providing 24/7 support? Better self-service options? Reducing the burden on call centre teams? Or something else?

Your strategic goals, budget constraints or citizens expectations (e.g. anonymity) will help determine where the biggest need is.

Once your goals are defined, seek out a solution that is proven to meet your desired outcome. Also, identify key metrics that can help you track you are making progress.

 30%

of customer service costs can be reduced by chatbots. [IBM](#).

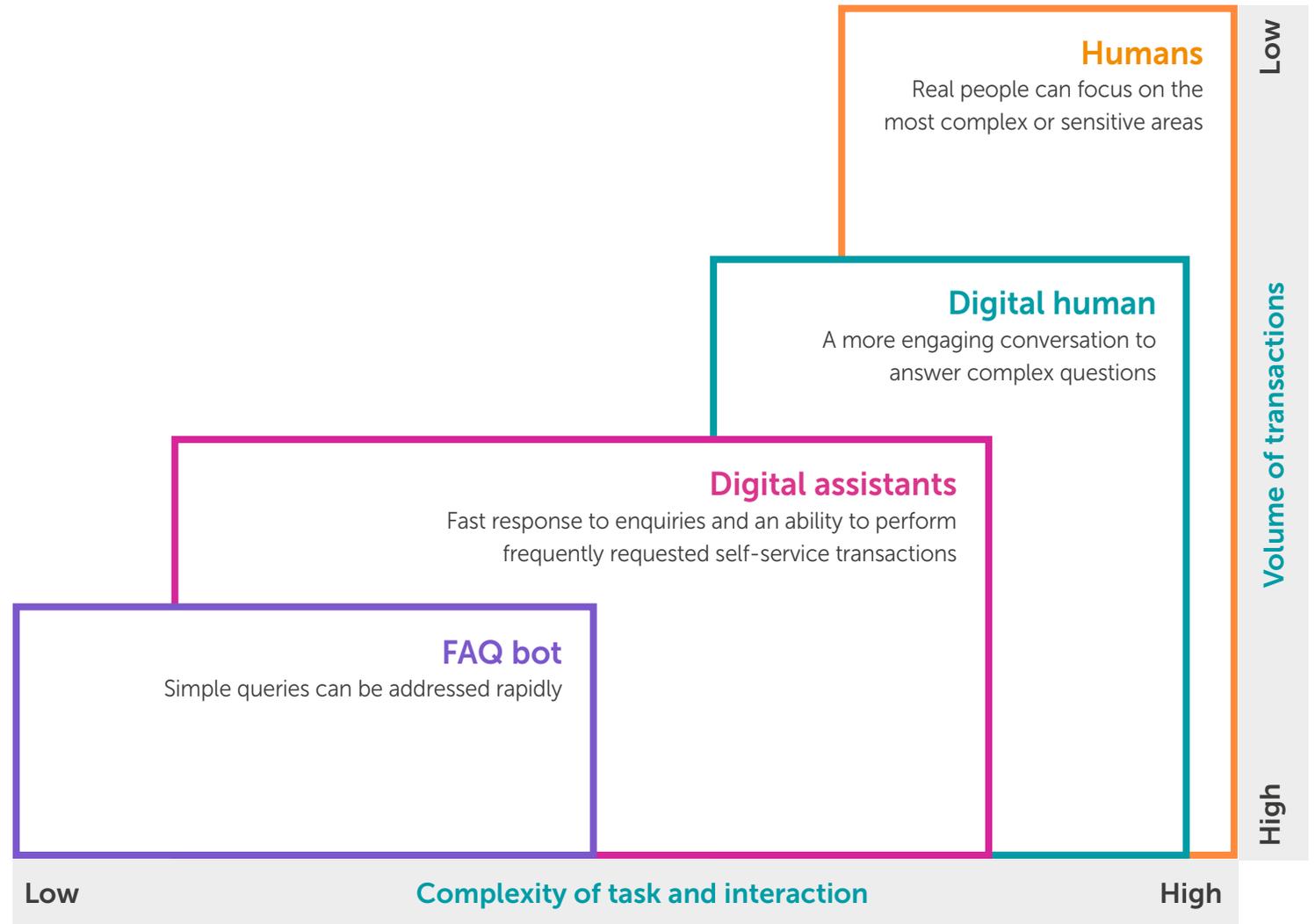


## 2. Choose your bot

In the spirit of not using a sledgehammer to crack a nut, the next step is choosing the right tool for the job.

There are lots of providers and models to deploy bots available. But before jumping in, our view is that you should carry out a proper assessment to ensure you pick the right partner, and only invest in the tech that helps you solve your problem.

The maturity of your data and processes will also influence your bot choice. There is no value in using a bot to automate a process that you haven't fully defined.



The best way to think of your bot is as a member of your team. They need onboarding, supervision and continuous learning.

While rule-based chatbots can be implemented quickly, in rapidly changing or complex environments they need to be improved and updated to stay relevant and increase satisfaction and service level.

Self-learning chatbots take time to train and build. Using the organisations data at first, and then real-time as they interact with users. Ultimately, data is the food of bots. If you give them a balanced diet of quality data – you will prevent them growing up to be a problem child.

### 3. Embrace your newest employee

 34%

of executives say the time freed up by chatbots allows them to focus on deep thinking and creating. [PwC](#).



## Continue the conversation

Are you an innovator, a thinker or a leader driving change in public services? If so, we'd love to hear your thoughts. Learn more and get involved at [civica.com/perspectives](https://civica.com/perspectives)



# About us

Civica is one of the UK's largest software companies, with over 30 years of proven expertise in delivering improved outcomes for public services around the world.

Through our commitment to turning ideas into action, we help over 2.5 million professionals deliver the public services of the future, every day.





At Civica, innovation is in our DNA. We take great pride in putting together exceptional teams and a genuine purpose-driven culture to help everyone be an innovator.

Our innovation lab, [Civica NorthStar](#), is focused on creating enhanced outcomes for public services by applying fresh ideas around data, automation and new technologies.

Working with our customers, we harness new thinking and innovative technologies to create enhanced outcomes for our communities.

## United Kingdom & Ireland

Southbank Central  
30 Stamford Street  
London SE1 9LQ

10 Weavers Court  
Belfast  
Co Antrim  
BT12 5GH

## Australia & New Zealand

163-175 O'Riordan Street  
Mascot, Sydney  
NSW 2020

## Singapore

6 Harper Road  
Leong Huat Building #04-08  
Singapore 369674

## India

Notus Pride, Sarabhai Campus  
Bhailal Amin Marg  
Vadodara 390007

## USA

52 Hillside Court  
Englewood  
OH 45322

 [civica.com/perspectives](https://civica.com/perspectives)



 [northstar@civica.co.uk](mailto:northstar@civica.co.uk)

[#PerspectivesFromCivica](https://twitter.com/PerspectivesFromCivica)