

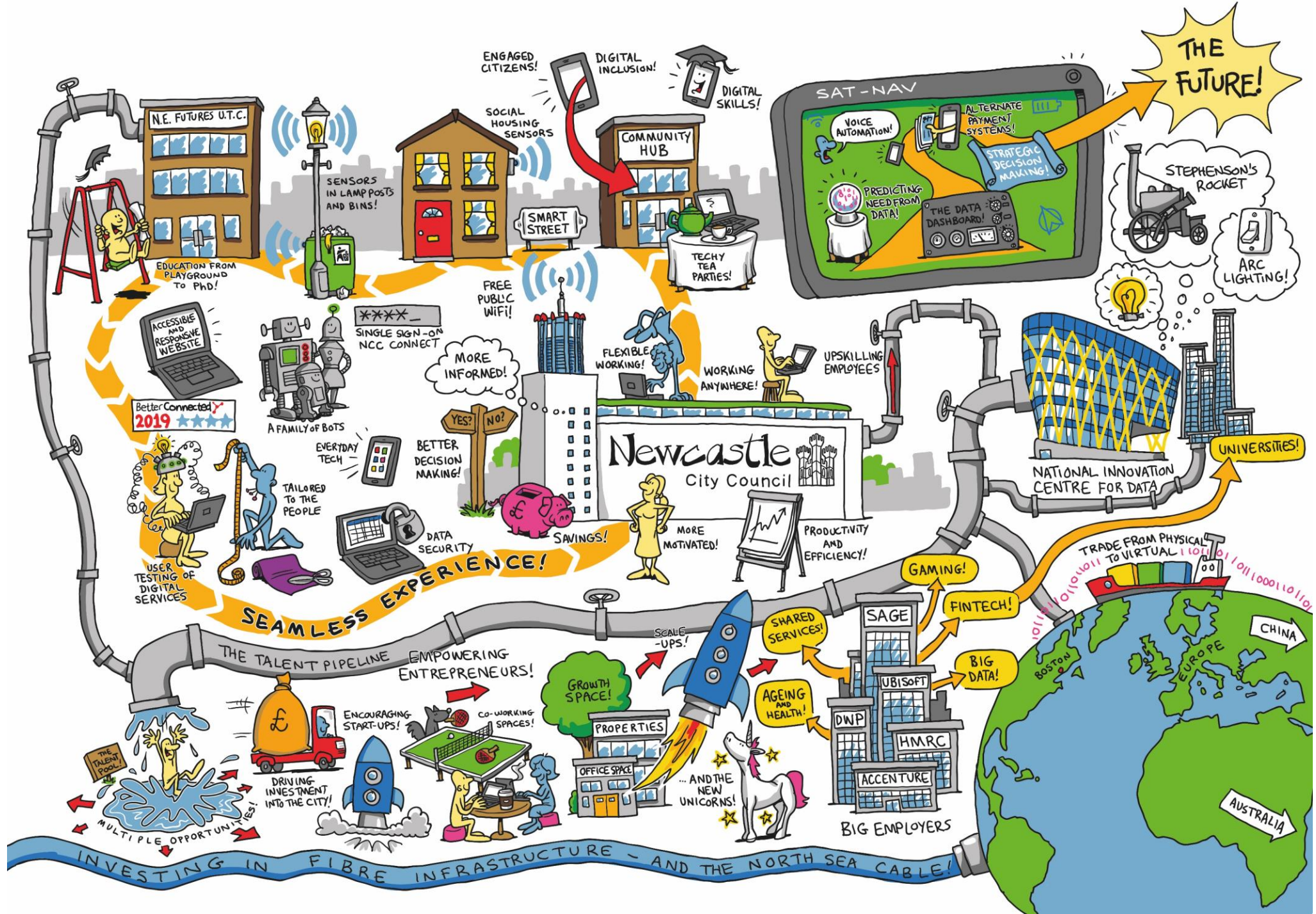


Innovation in Chatbots

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@eighty5

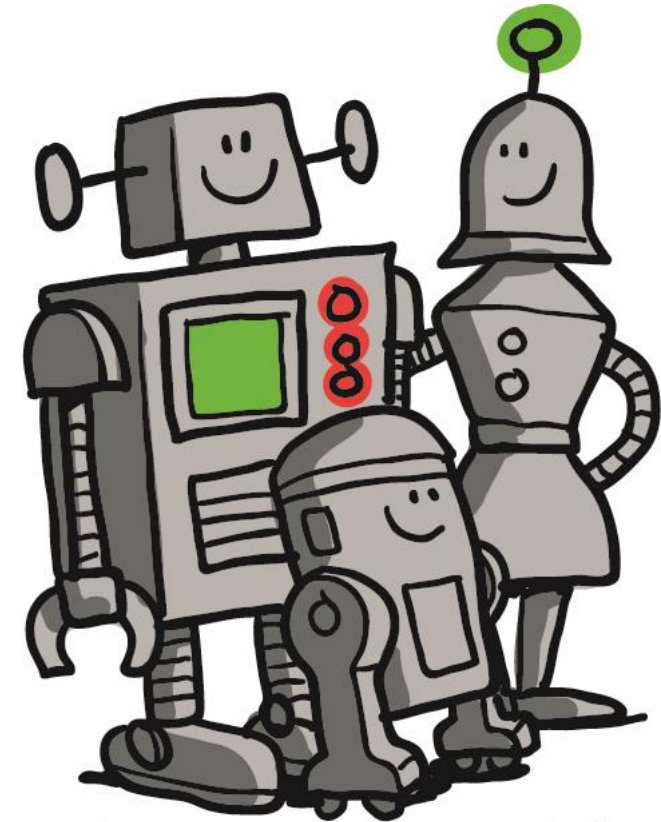


What is a Chatbot?



A 'bot' is a term used for software that automates a task

A 'chatbot' does this through conversation



A FAMILY OF BOTS

WasteBot



The Brief



Help the service make efficiency savings by developing an **online permit process** to replace existing manual and paper based processes.



Up to **14 days** to get a permit



High volume of manual paperwork



Missing information on forms



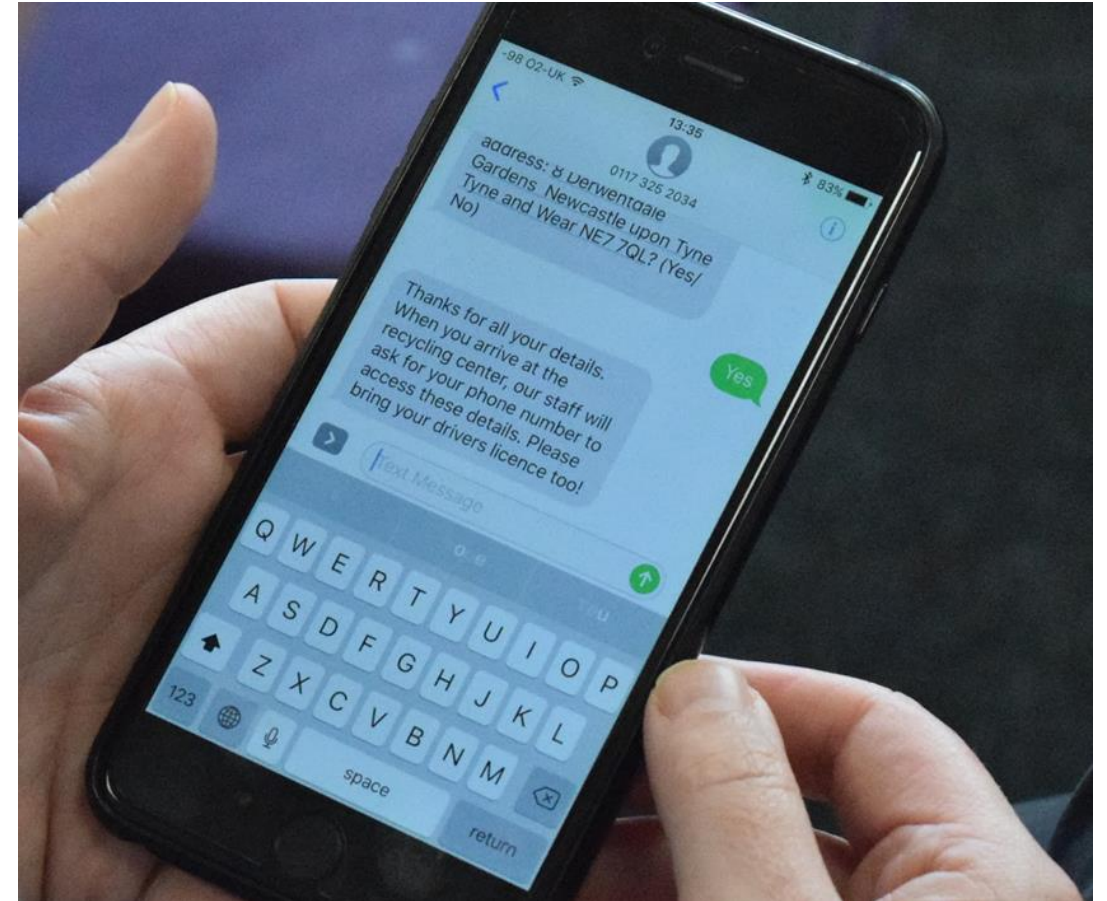
Difficult to use the data to manage the service



Design

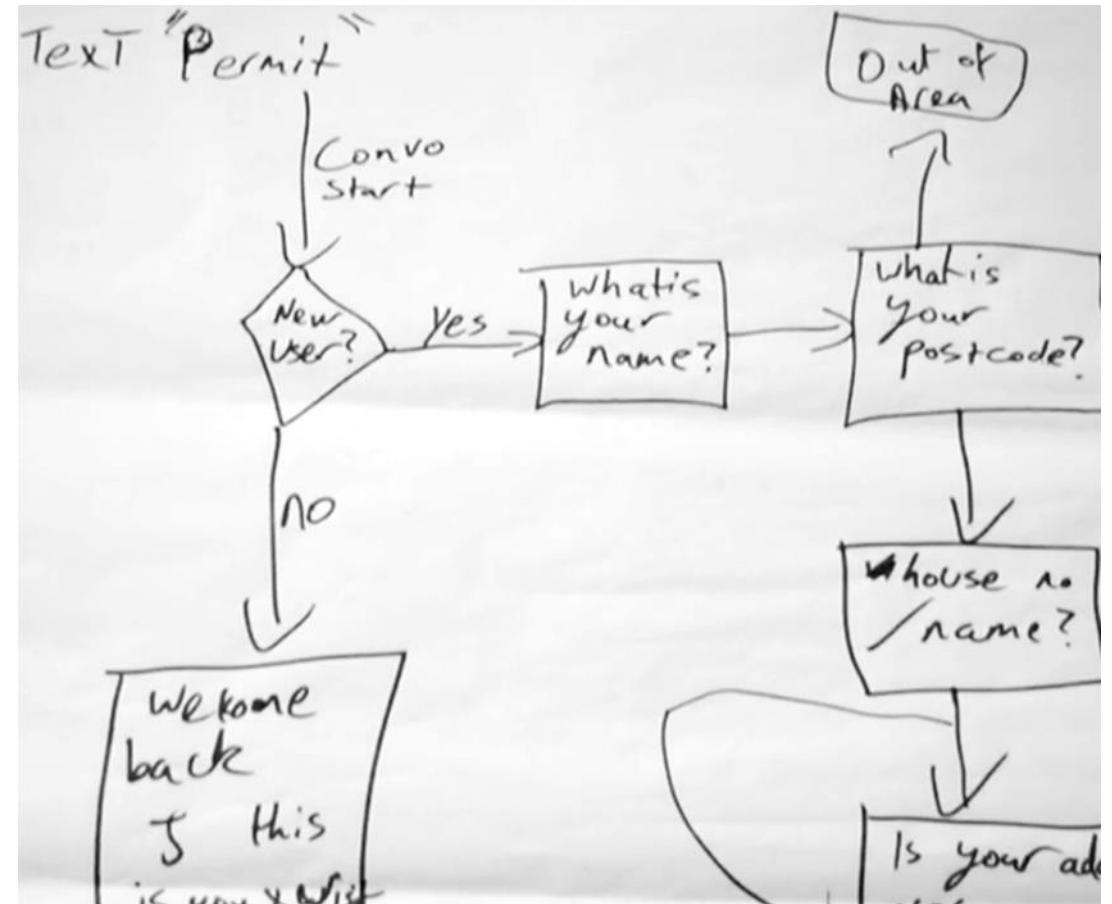
An SMS application process for users that also supported the service staff to verify on site.

- Confidence that users and staff had access to a phone with SMS
- Eliminated issues with connectivity on site
- Removed manual administration
- Quick and easy for users



Prototyping

Sketched out conversations in a flowchart and created a clickable prototype.



Testing



Tested with a range of users
in the City Library to help
iterate language and flows.



What We Developed



A SMS service where you can apply and receive permits on their mobile phone

✓ Went live in November 2017

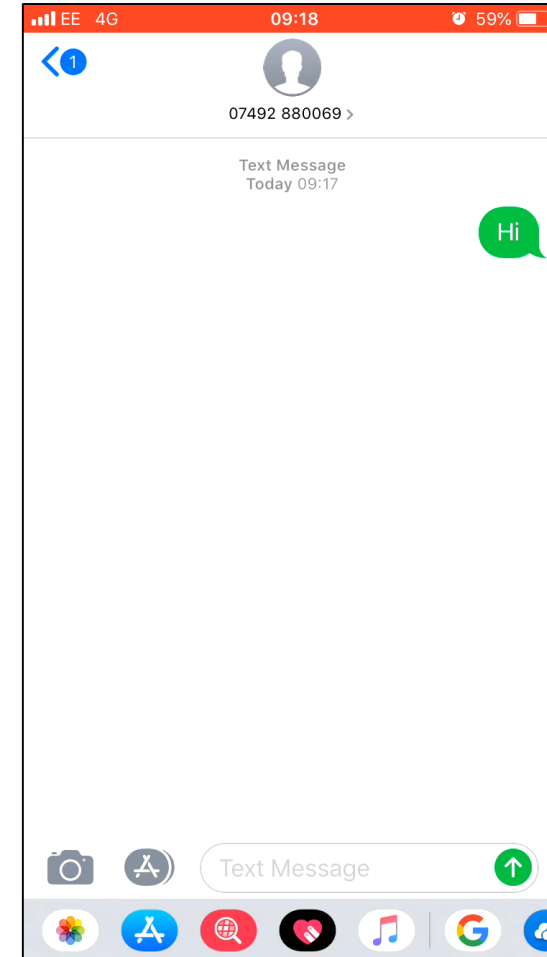
- Connected to back office systems
- Checks against past applications/permits
- Non-mobile users can still get a permit
- Allows staff to refuse entry and capture data



Wastebot Demo

Try it for yourself!

Text **WASTE** to **07492880069**



HWRC Permit Usage Report

Last Refresh Date

Accounts:

Registered Properties Registered Customers Closed Customer Accounts

4904

5195

135

Last 30 days

Permit Usage:

Last 30 Days

All Time

Site Counts

Approved	Declined	Total
654	25	679

Approved	Declined	Total
9446	340	9786

Site	Approved	Declined	Total
Brunswick	2066	12	2078
Byker	2878	67	2945
Walbottle	4502	261	4763
Total	9446	340	9786

Property: Distinct Count

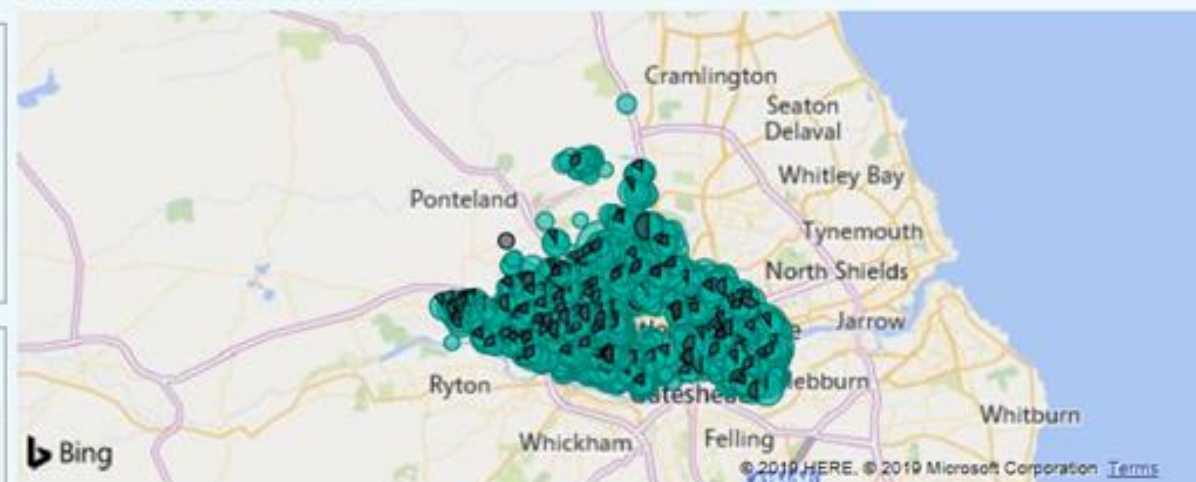
Customer: Distinct Count

Approved	Declined	Total
3611	298	3647

Approved	Declined	Total
3725	300	3762

Permit Usage Count by Account Postcode

Visit Status ● Approved ● Declined



Visit Count by Year, Month and Visit Status

Visit Status ● Approved ● Declined



Visit Date Slicer

Y Q M W D
Week

W46 2017 - W17 20

2017

Q4

Nov

Dec

W46

W47

W48

W49

W50

W51

W52

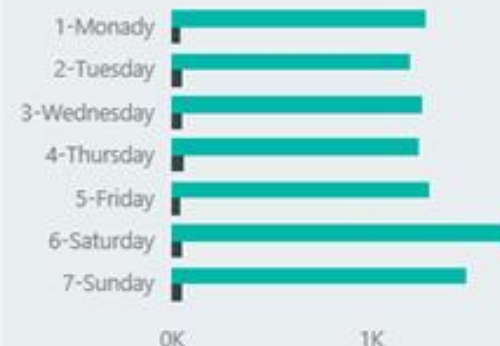
W53

Permit Usage By Ward

Ward	Approved	Declined	Total
Lemington	630	40	670
Newburn	596	33	629
Castle	605	11	616
Westerhope	552	22	574
Blakelaw	518	32	550
Fenham	525	22	547
Denton	521	25	546
Woolsington	515	23	538
Benwell and Scotswood	465	13	478
Walker	441	7	448
Walkergate	438	7	445
Byker	374	7	381
Kenton	375	5	380
Total	9446	340	9786

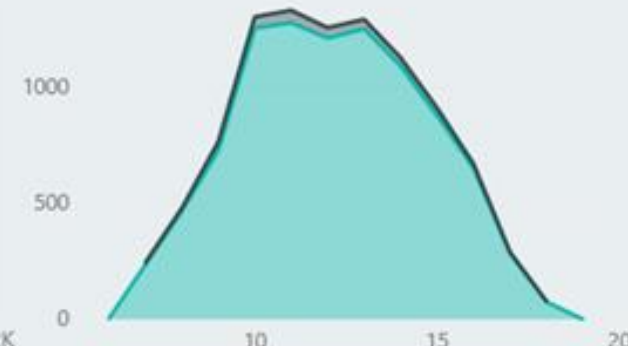
Day of the Week

Visit Status ● Approved ● Declined



Time of Day

Visit Status ● Approved ● Declined



Impact



5000+

Users to date

**14 days to
90 secs**

Reduced time to
get a permit

**Almost
100%**

Channel shift with
no complaints

80%+

Positive user
satisfaction to date

476 requests via contact centre (2017) vs. 30 (2018)

Financial savings of circa £25k

Resource redeployed to focus on data analysis, adding more value

Impact



Engagement of initially sceptical workforce

Improved **detection of fraud** and inappropriate use of the sites and paper permits leading to **less on-site conflict**

Easier Process more efficient for users

Less time needed to interpret documents and validate permits

More time to assist residents with waste on-site.

“...lots of good feedback from staff...the old system was too easy to compromise.”

“It’s dead straight forward.”

“...reduced the amount of people who were giving false details on the old system. ...now staff can double check using the bot”

ASC Bot



The Brief



Help **reduce the high-volume of calls**
to the adult social care contact centre.

Help improve **visibility of non-NCC** care options

Lots of avoidable contact about low level enquiries

- Majority of calls are for general information. About 22% result in no services provided
- People rely on the council for information and guidance that is also available elsewhere.
- Information is available elsewhere but can be hard to navigate
- People are not always aware of the services that can help them.

What are people asking when their need is around equipment?

Is it about equipment straight away or about problems they experience?
What keywords or terms are people using and for what?
What do they need help with? Is it different for different types of users?



What are the things you need the customers needs?

What queries and tasks for financial support, etc. Take a post-it note and

I need a shower how do I go about it.

I want a Ramp for my Scooter

I need buy it -

How long do I have the equipment for!

Give Professional option to access Referrals form

Most people are calling on behalf of Someone else

- Often it is not the end service users themselves who contact the service, but their relatives, carers or professional workers
- Many carers aren't seeking support, perhaps because they don't think they are a carer or know what is available for them.



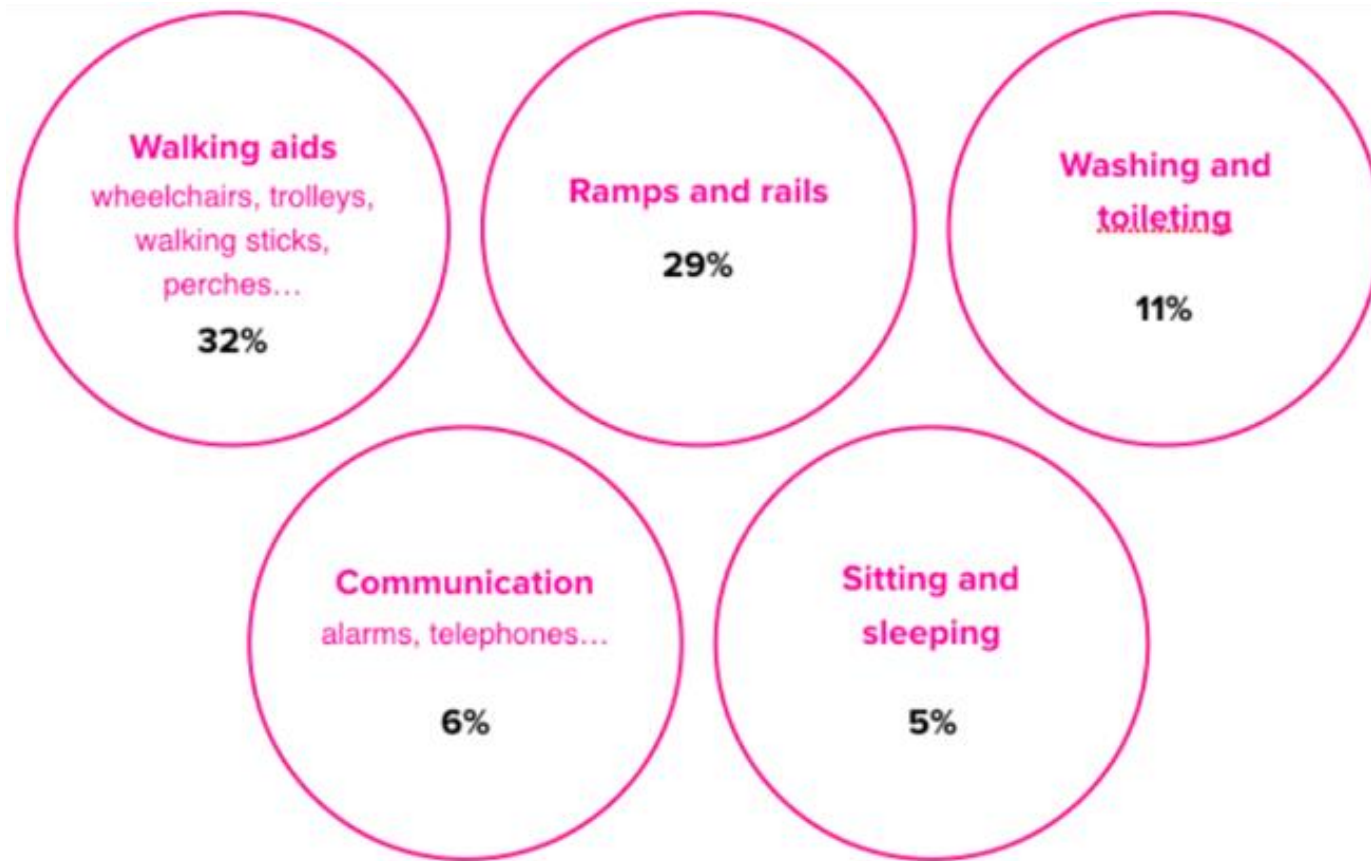
Hypothesis



For many, the information and support services can already be accessed without having to contact the council.

By enabling those able to, to access these services and information sources by themselves, social care teams can spend more time with those who need extra help.

Understanding Needs



Interaction and Conversation



We wanted it to be more open so that we can learn how people would and wanted to talk to it.

We did a bit of a mix of both open and closed.

Open to capture initial concern and enquiry, closed to help guide people through information and advice.

Open

VS

Closed

People talk / type
Whatever they want

Conversation is
scripted and people
select options

Learning and AI



What we say...

**Walking
aids**

What users say...

**Zimmer
frame**

What we say...

**Mobility
problems**

What users say...

**Trouble
moving around**

What we say...

Domiciliary

What users say...

**Help at
home**

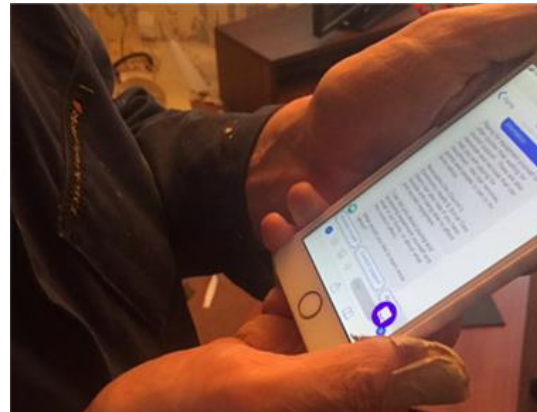
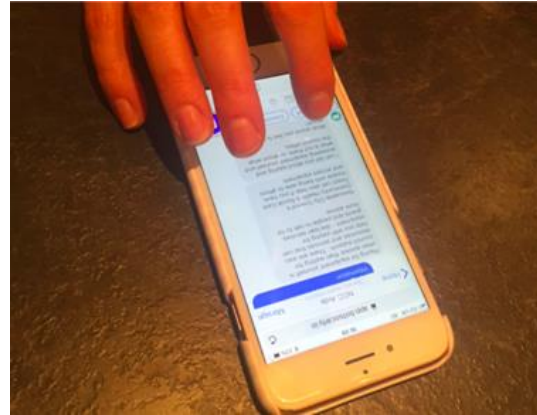
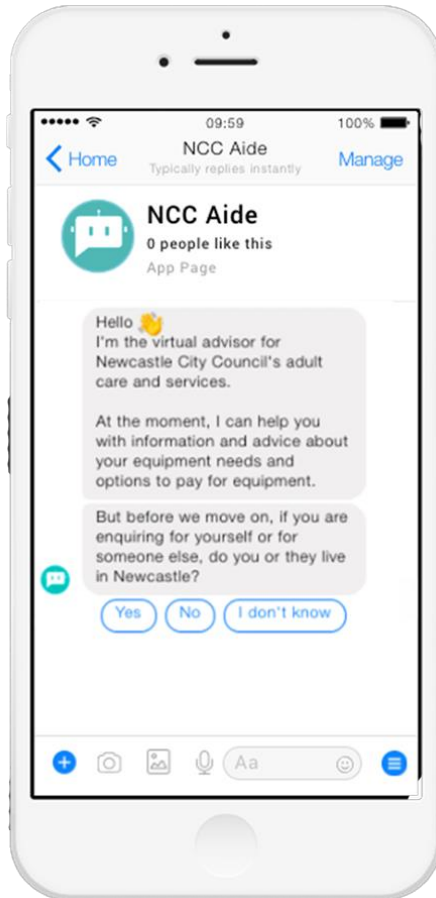
What we say...

Grab rail

What users say...

**Hand rail/
banister**

Prototype and Testing



I could sit in bed and do this.
- older adult

This is going to
replace me...
- staff at contact
centre

I don't want to
speak to anyone.
- young carer

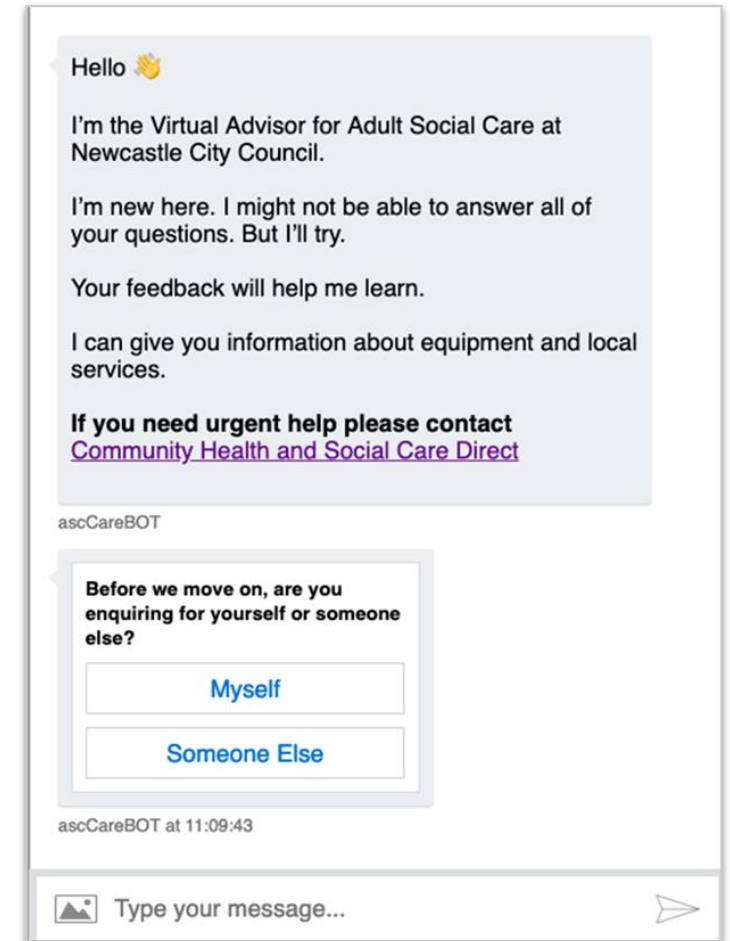
Where do I say what
I'm looking for?
- older adult

What We Developed

A virtual advisor chatbot that signposts and provides people with non-urgent advice.

✓ Went live in May 2018 (but not widely publicised)

- Signpost to types of equipment and services based on issue/input
- Provided information and advice about how to get equipment
- Carers journey built in
- Emergency cases to signpost to the right people
- Other areas added as we learned more



ASC Bot Demo



Try it for yourself!

<https://ascwebchat.azurewebsites.net/>

Start Again

Hello 🤖

I'm the Virtual Advisor for Adult Social Care at Newcastle City Council.

I'm new here. I might not be able to answer all of your questions. But I'll try.

Your feedback will help me learn.

I can give you information about equipment and local services.

If you need urgent help please contact [Community Health and Social Care Direct](#)

ascCareBot-Staging

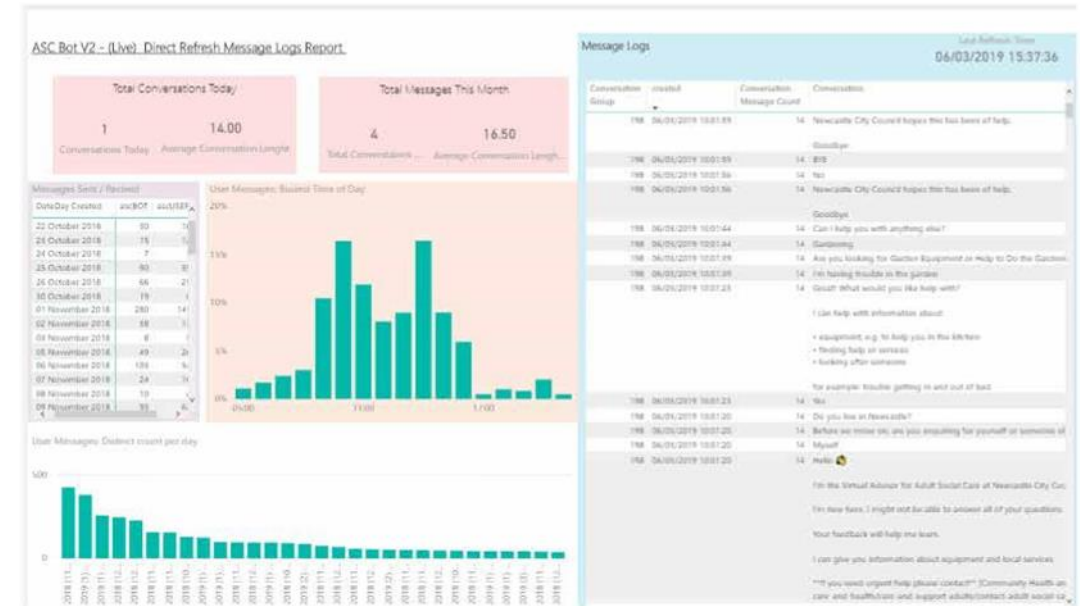
Before we move on, are you enquiring for yourself or someone else?

ascCareBot-Staging at 13:24:52

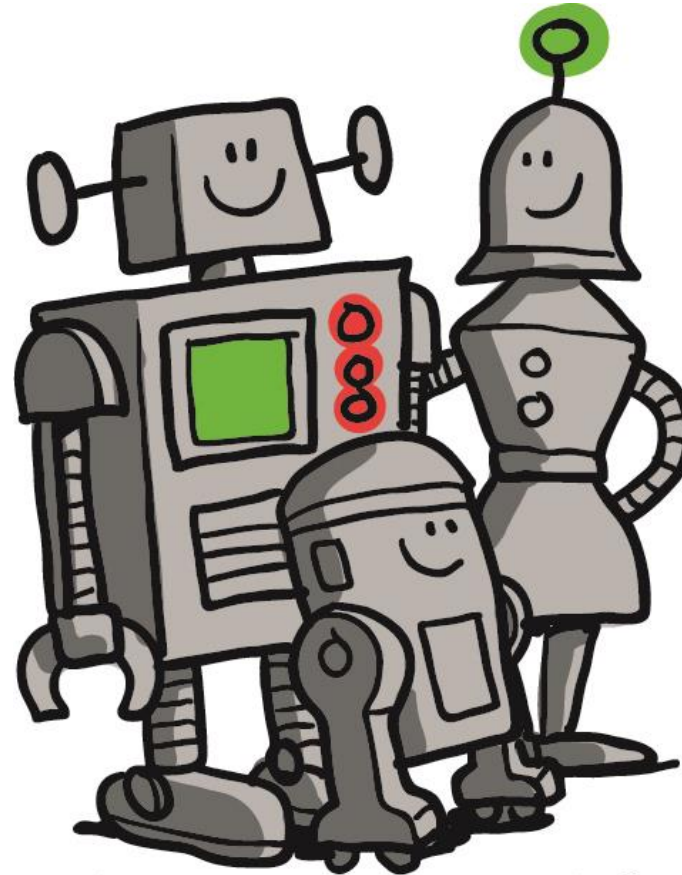
 Type your message... 

Learning

- Open conversations are difficult and understanding the scale and scope is important
- People were happy to interact with a bot
- People will surprise you in how they might use the bot
- People found it and tried to use it for mental health related enquiries. We had to build additional journeys for this
- Calling it a 'Virtual Advisor' confused some people



Wider Family in Development



A FAMILY OF BOTS

Design Principles



- All conversations must refer to the T&C's which will also provide an 'opt out' alternative.
- Must highlight that you are speaking to a bot e.g. "Hi I'm Ro, a virtual advisor. How can I help?"
- If a user input is not understood after 3 attempts they should be passed to a help dialogue.
- If the LUIS intent score a help message should be displayed. "Did you mean?"
- Conversations should be as simple and as efficient as conversing with staff directly.
- User research should be at the heart of development with UX given the highest priority.
- Customer data input is kept to a minimum.

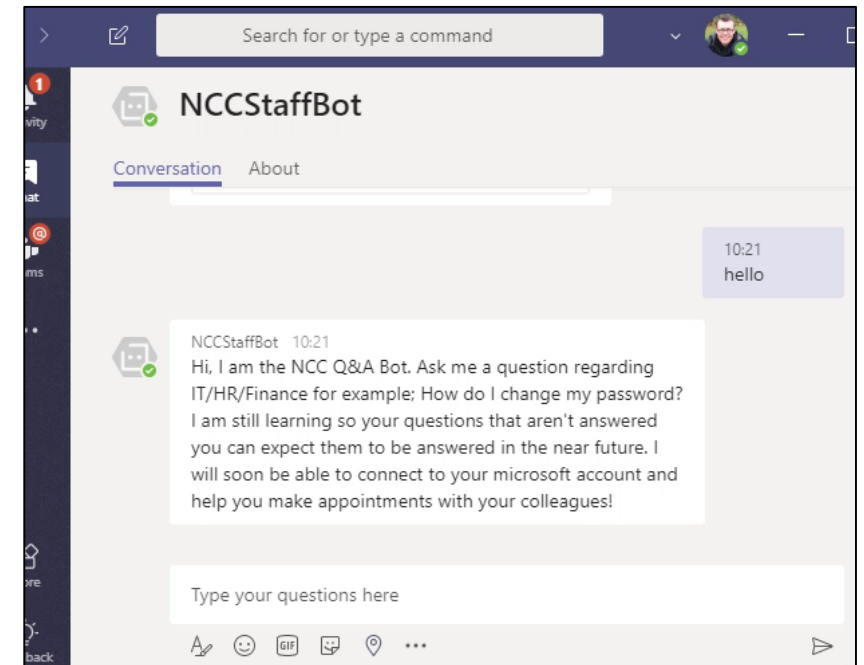
Use of Artificial Intelligence



“AI technology can be used to help replace task-based processes and for process automation but should never be used to replace a thought process. For Thought Workers, AI technology must only augment the decision-making process empowering enhanced informed data centric decisions”

StaffBot Demo

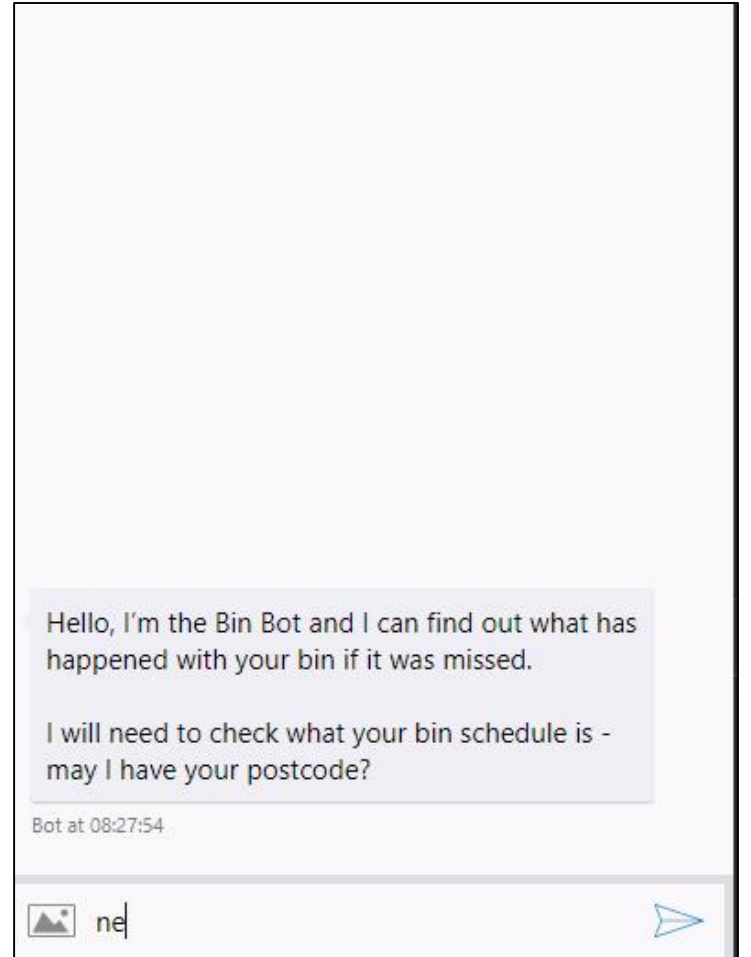
- Staff bot deployed to 4500 staff using a custom MS Team App answering IT, Finance and HR questions
- Built by two apprentices
- Real-time power BI reports give insight as to what is asked and the accuracy of the response given.
- Enhancing existing self-service offering and answering high-frequency/low complexity questions



POC BinBot Demo



- POC bot service to query if a residents bin has been collected
- Connected to data from in-cab devices and vehicle tracking solutions
- Missed bin/next collection information passed directly to customers
- Enabling Self Service



Upcoming Events



Innovation in Chatbots

Webinar, Monday June 17th 10:00-11:00

<https://www.eventbrite.com/e/webinar-innovation-in-chatbots-tickets-61222686704>

Smart City Showcase

Newcastle Helix, Tuesday 18th June 09:00-12:30

<https://www.eventbrite.com/e/smart-city-showcase-newcastle-tickets-61090057005>