Deloitte.

The Disruptive Chat Bots
Sizing up real opportunities for business

How can I help?

Bot

Print 2 copies of the attached

Me

No problem. Same spec as last time? Full colour on A4 paper?

Bot

Yes, that's it.

Me

Perfect – coming out on Printer 2, 1st floor, 2nd in queue.
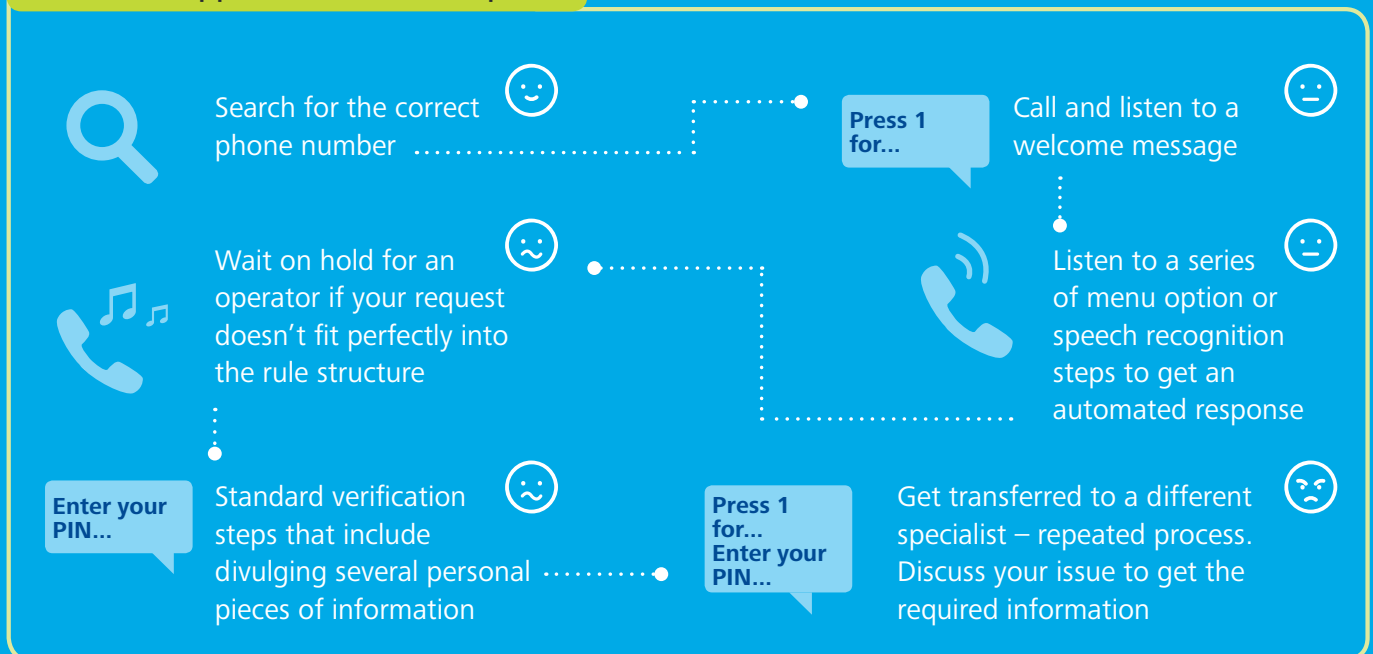
Bot

Analytics

Use Case Scenario: Customer Support

Chat bots are set to cause immediate disruption in customer support. The current use of helplines to resolve customer issues leaves a lot to be desired. A typical Interactive Voice Response customer support interaction has many, often frustrating, steps such as illustrated below.
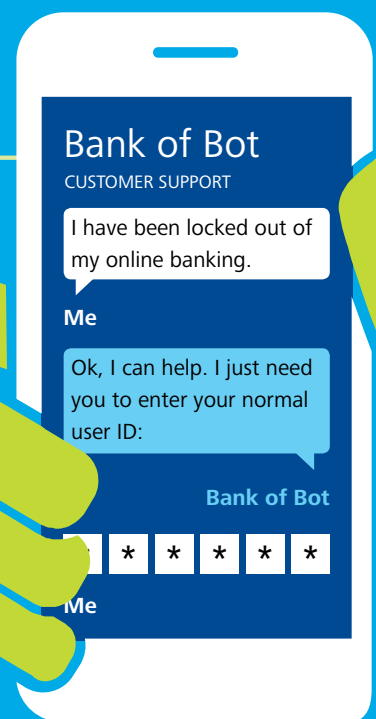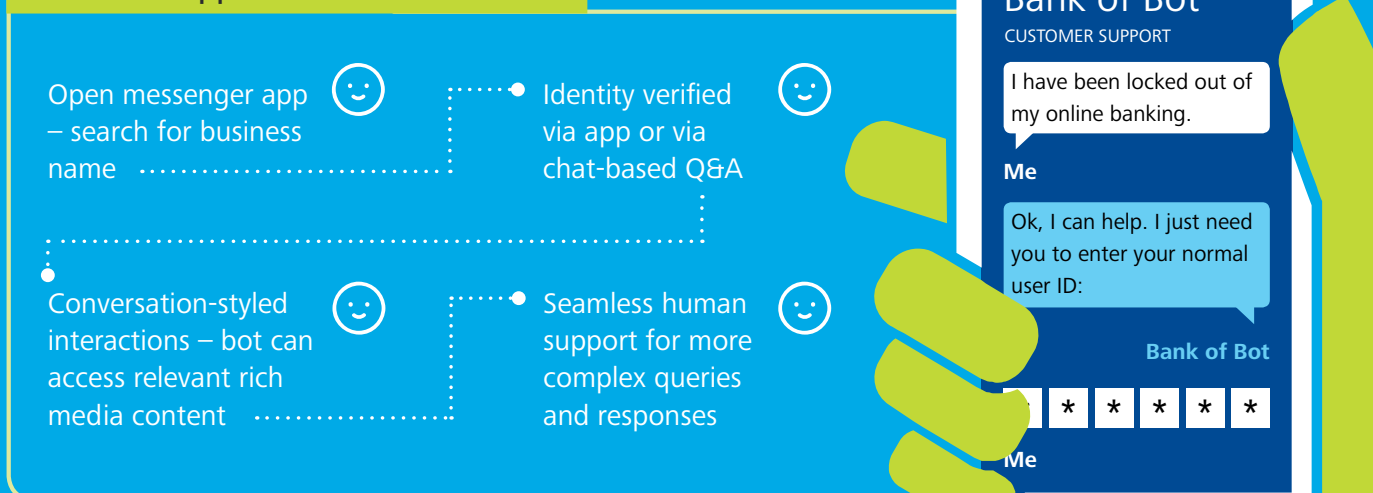
Customer Support with Voice Response

☺ = Customer mood

Search for the correct phone number

Call and listen to a welcome message

Press 1 for...

Listen to a series of menu option or speech recognition steps to get an automated response

Wait on hold for an operator if your request doesn't fit perfectly into the rule structure

Standard verification steps that include divulging several personal pieces of information

Enter your PIN...

Press 1 for... Enter your PIN...

Get transferred to a different specialist – repeated process. Discuss your issue to get the required information

Imagine customer support with Chat Bots...

Customer Support with Ms. Chat Bot

Open messenger app – search for business name

Identity verified via app or via chat-based Q&A

Conversation-styled interactions – bot can access relevant rich media content

Seamless human support for more complex queries and responses

Bank of Bot
CUSTOMER SUPPORT

I have been locked out of my online banking.

Me

Ok, I can help. I just need you to enter your normal user ID:

Bank of Bot

* * * * * *

Me

Human-like intelligence

Developing machines capable of exhibiting human-like intelligence has been the goal of artificial intelligence (AI) research since its inception in the mid-1950s. The Turing test, designed to examine a machine's ability to exhibit intelligent behaviour indistinguishable from that of a human, popularised this research domain.

Since then AI has had its up and downs, its periods of hypes and disappointments. In hindsight, unrealistically high expectations combined with underestimating the cost and complexity of building and maintaining large systems added to the booms and busts experienced by all involved.

Several factors have now converged to bring AI back to the forefront of research. More importantly, AI today promises to power solutions and services that can directly contribute to an organisation's bottom line.

Leading the way in this new wave of AI-powered disruption is a particular type of autonomous agent – a Chat Bot.

Meet Ms. Chat Bot

A Chat Bot ("bot" being short for "robot") is a program that mimics conversations with people using artificial intelligence techniques such as natural language processing (NLP), image and video processing, and audio analysis. Most importantly, these chat bots learn from their past interactions, improving their responses over time to more accurately accomplish their tasks.

It is this ability to converse in a natural manner while learning on-the-fly that is getting companies excited.

Moving on from rule and key-word search-based automated Q&A interactions with your customers to the promise of human-like interactivity without the associated costs and overheads sounds like real disruption at scale.

Example scenario:
Chatting with your printer

The Past

```
print /d:LPT2:
C:\local\files\project\autoexec.bat
```
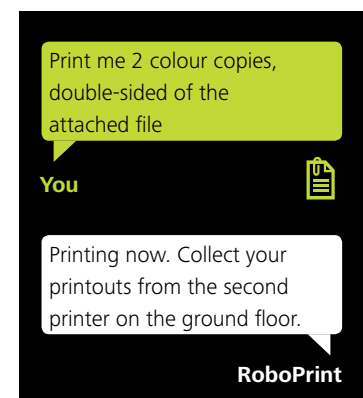
Command line-based systems relied on specific commands to enable printing. Files names and locations, along with explicit syntax knowledge was required.
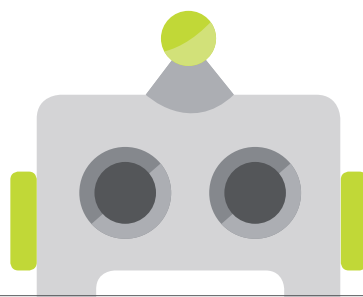
The Present

Graphical user Interfaces (GUIs) are currently the most common way of accessing a printer across a network.

The Future

> Print me 2 colour copies, double-sided of the attached file

You

> Printing now. Collect your printouts from the second printer on the ground floor.

RoboPrint

A chat bot may provide a more flexible way to interact with your printer, especially when using a mobile device.

What makes chat bots unique?

From research projects to cutting-edge business propositions, chat bots are bundling together a number of exciting innovations:

- The digitisation of data into big data is providing the raw information required to power these programs.
- Machine learning algorithms such as natural language processing (NLP) processing and deep neural networks have now matured enough to provide the tools and techniques to convert big data into actions.
- Open source communities are further accelerating the development of products & services through collaboration
- Cloud computing and the availability of cheap hardware is providing access to the physical infrastructure required to run these information hungry programs.
- Finally, the mobile revolution is bringing all the above advances into the hands of everyone, everywhere.

Combine the above advances in technology with industry trends and chat bots are offering a unique proposition for organisations, especially when it comes to interacting with their customers.

Chat bots are promising organisations the ability to engage their customers in the right place, at the right time, with the right information in a cost-effective manner.

Chat bots clearly have some advantages over traditional apps:

- They are capable of engaging with the end user in a natural, friendly and easy-to-understand manner
- Through open APIs or developer platforms, chat bots can interact with customers through apps that the customers are familiar with, such as Facebook chat, thereby enhancing customer experience.
- They are more appealing to the next generation of users.

In some scenarios, they can even out-perform humans:

- Chat bots are likely to provide more comprehensive, up-to-date information as they have the capability to filter through a large search space at speed.
- Chat bots have the potential to provide a 24-7 service, and a downtime that is mostly scheduled.
- Finally, chat bots don't suffer from human traits such as mood swings, tiredness, etc.

Can chat bots do anything?

While chat bots hold a lot of promise, there is still some way to go before they can completely replace humans. Currently, they are more likely to support human interactions by making them more efficient.

- Language is an extremely complex instrument and chat bots are yet to master the subtle nuances that exist in various languages. Detecting sarcasm, double-entendres and colloquialism is still beyond the reach of most chat bots, although ongoing research holds promise.
- Chat bots need to not just understand meaning, they need to understand context and this involves a semantic analysis and understanding of internal process flows, customer journey maps and deep products/services information that are specific to the organisation they represent. Understanding and capturing such know-how is often challenging.

Importantly, chat bots are not useful in all scenarios, as not all interactions lend themselves to a chat interface alone. As an example, navigating your way through a complex task should involve a combination of text, visual cues and menu options to increase efficiency and reduce the time required to get your message across and results back.

Chat bots in action – Now we're talking!

We think that you should just be able to message a business in the same way you message a friend. You should get a quick response. And it shouldn't take your full attention like a phone call would. And you shouldn't have to install a new app.
Mark Zuckerberg, onstage during Facebook's developer conference 2016.

Chat bots are slowly taking over the world. Not quite, but there are beginning to automate tasks that are often repetitive and time consuming freeing up resources for more productive efforts.

Also, a small ecosystem of start-ups and established vendors are offering chat bot APIs and platforms to support custom apps.

Chat bots in business

- **CNN, the Wall Street Journal, and Quartz** are all using chat bots to deliver news to customers interactively, serving the headlines and allowing customers to ask for more depth

- **Bank of America** is currently working with Facebook engineers to create a comprehensive AI for customer enquiries

- **TD Bank Group** in Canada is engaging with customers through Facebook, though all enquiries go to human operators for the moment

- **Genesys**, a customer service company, will use IBM's Watson system to better handle its clients' customers' needs

- With a focus on improving internal processes, bots such as **Attentive** (http://attentive.us) integrate with existing CRM tools to monitor news feeds. As an example, if a potential client gets positive coverage in the news, Attentive nudges the right team by sending them a message (such as the Sales Team) to let them know that it might be a good time to get in front of the customer again

Chat bot Startups:

MagicX.co – a chat enabled AI platform which strives to personally assist you with your daily tasks.

x.ai – a personal assistant who schedules meetings for you.

GoButler – a 24/7 on-demand flight assistant (pivoted from an everything assistant)

Chat bot APIs / Platforms:

Kik – a messaging app that boasts over 300 million registered users now has a bot developer platform

Telegram – a bot-enabled popular cloud-based mobile and desktop messaging app with a focus on security and speed

Facebook – now has a chat bots API for Messenger (currently augments its own bots with human support)

IBM Watson – offers the ability to build bots that are powered by its extensive AI capabilities.

Wit.ai – Natural Language for developers (Build bots easily)

api.ai – conversational UX platform for mobile apps, wearables, robots, automotive, smart home and smart TV channels.

Realising business values

It's time to start thinking about chat bots as disruptors. With chat bots adding greater functionality to already popular messaging apps, there is a possibility to lose direct contact with your customers.

One way to continue to engage them in the right place, at the right time, with the right information in a cost effective manner is through the proactive incorporation of chat bots into the heart of your products and services.

Here are some tips that may be helpful when considering chat bots as potential agents of change within your organisation. Start with a Proof of Concept that has the following 4 properties.

1. **Clearly articulated value proposition**
Chat bots can be deployed to provide basic customer support by themselves, support human interactions with detailed facts, highlight and drive sales opportunities or streamline internal processes. Be sure to understand and articulate what your chat bots are for early on.

2. **Focus on specific products/ services**
Aim to limit the scope of what your chat bots can do by focussing on a product/service to start with. Only engage the chat bot when the conversation turns to the chat bots speciality, while augmenting this conversation with a person. Slowly, expand the chat bots knowledge base by feeding it more relevant information over time.

3. **Ensure all relevant data is available**
A chat bot needs to have all the relevant information about the products/ services it is supporting. Ensure that your chat bot has been exposed to the relevant internal process flows, specific customer journey maps and deep products/services knowledge that is required for it to answer queries and automate responses.

4. **Learn & Adapt**
Use the data obtained from these chat bot-centric interactions to further refine the chat bots themselves. Have processes in place to harness these learnings to improve the very products and services that chat bots support.

Let's chat!

Chat bots are poised to disrupt the way we interact within our organisations and with our customers. Now is the time to start to harness this technology – **so let's chat!**

Prag Sharma
Senior Manager
Deloitte Analytics Ireland
psharma2@deloitte.ie

Richard Southern
Director
Deloitte Analytics Ireland
risouthern@deloitte.ie

David Dalton
Partner
Strategy & Operations
Consulting, Ireland
ddalton@deloitte.ie

Dublin
Deloitte
Deloitte & Touche House
Earlsfort Terrace
Dublin 2
T: +353 1 417 2200
F: +353 1 417 2300

Cork
Deloitte
No.6 Lapp's Quay
Cork
T: +353 21 490 7000
F: +353 21 490 7001

Limerick
Deloitte
Deloitte & Touche House
Charlotte Quay
Limerick
T: +353 61 435500
F: +353 61 418310

www.deloitte.com/ie

FSC
www.fsc.org
MIX
Paper from
responsible sources
FSC® C001512