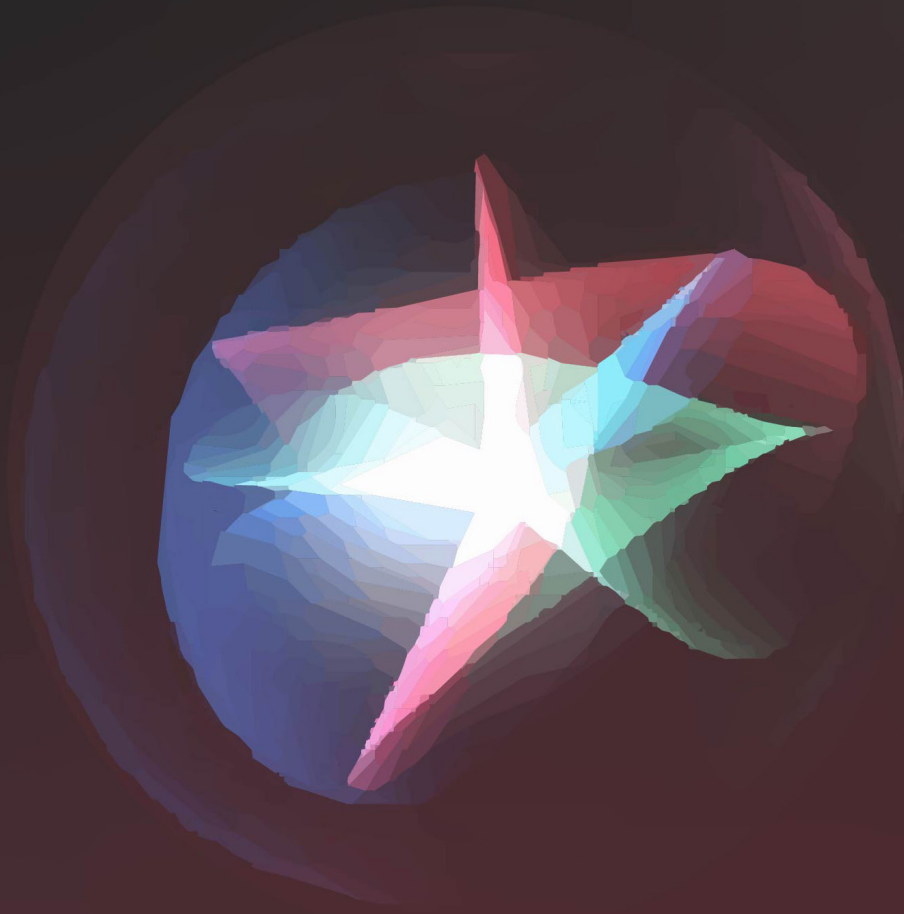


*Marina Cheah*

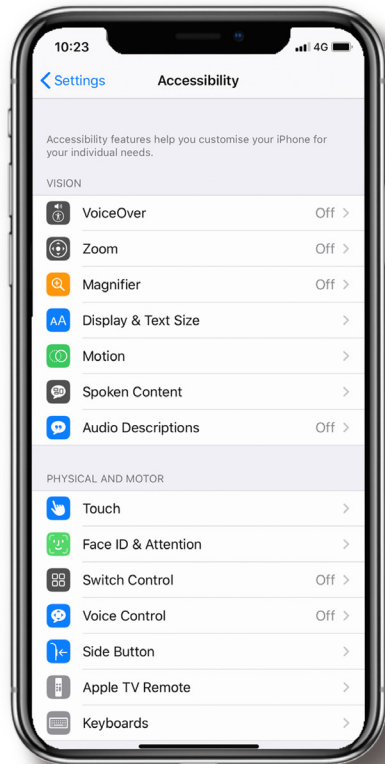
# I Can't See

How the visually impaired navigate  
the era of buttonless smartphones?



# I Can't See

Marina Cheah



The first iPhone, released in 2007, revolutionised the phone and is often nominated as the first true smartphone. The iPhone pushed smartphones into the mainstream, spawning an industry amounting to a global revenue of 522 billion USD in 2018, radically shifting the foundation, direction, and momentum of society.

Apple's success, however, was fundamentally hinged to the iPhone's touchscreen display. Pre-existing smartphones with fixed plastic control buttons and keyboards didn't offer the necessary user interface (UI) flexibility. A solution constructed from the interplay of hardware and software presented itself through a full-face glass display with a singular button.

While critics and the general populous raved over the world's first pocket computers, the visually impaired community, more or less, were sent into a panic. As if turning a blind eye to these individuals, how were the visually impaired supposed to navigate this new visually

saturated 2D realm? When society is moving towards screens with 0 physical differentiation, were the blind going to be left in the dark?

Thankfully, the answer was *"No."* Roughly, 6 months after the iPhone's release, Apple announced, 3GS, an updated operating system that included a new standard feature called VoiceOver, the saving grace for the visually impaired. VoiceOver reads the contents of the screen out loud, allowing users to browse apps, open links, and type, virtually allowing the blind to use the phone like the sighted. However, 3GS' release wasn't until 2009.

Other aids that assist the visually impaired include text to speech, accessibility shortcuts such as magnifier, larger text and audio descriptions, and Siri. However, this article specifically focuses on Siri.

2 years after VoiceOver, fantastic news was to come again when the 4S was released (2011), revolutionising the technological world again through Siri. Apple's voice-controlled assistant, Siri, lets consumers carry out handsfree operations.

But more importantly, it serves as the primary source of assistance to the visually impaired. Unlike the VoiceOver function, Siri not only acts as text to speech but is an AI. Being of voice-recognition AI, Siri is more adaptive. Siri can learn and adapt to your speech patterns, the more you use it, answering questions, making recommendations, and performing actions more diligently than ever before.

What Siri is now, derived from Apple's 1980s concept, Knowledge Navigator, a fictitious system that carries out natural conversations. The proposed avatar looked and sounded entirely human, conducting flawless conversations to help plan your schedule, communicate to others and access various networked information. Currently, Siri is composed of 2 technologies, "*speech recognition*" and "*natural language processing*" (NLP), but hasn't yet met the technological standards of Knowledge Navigator.

Speech recognition converts analogue human speech into digital data in the form of text. Once Siri has understood what

you're saying, the converted text is sent to Apple servers for further processing. Apple servers then run NLP algorithms on the text to understand the intent of what the user is trying to say. In action, the user may say "Siri how do I get to [destination] by [transportation method]?" Siri would then understand to access maps and direct you.

Despite the initial reaction to flat-screen phones, Apple has taken these concerns and produced new mediums of communication for those suffering from disabilities that were overlooked. For the visually impaired, the iPhone has 2 digital assistants and a multitude of accessibility shortcuts. Matter of fact, the iPhone, and on a larger scale, contemporary technologies, have opened many doors in areas such as learning and navigation that brail couldn't fulfil. For instance, when travelling, brail signage and tactile paving are provided. However, a digital map with provided audio navigation and real-time data is much more reliable than sparsely located tactile indicators.



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# Smart Phone Voice Assistant Popularity

Australia, Jan 2019

# 60.9%

of Australian adults have used a voice assistant on their smartphones.



Siri

41.4%



Google Assistant

31.3%



Bixby 9.5%



Cortana 9.5%



Alexa 8.2%



For the 60.9% of the population that has used a voice assistant, the popularity of the voice assistants is as followed below.

# Smart Phone Voice Assistance Use

4.3 m

Australians are estimated to have a disability, that's 1 in 5 people or 16.9% of the population.



## Voice Assitant Productivity Use

