# What Can I Help You With?

## Project Virtual Assistant:

*Designing a blueprint for the virtual assistant of the future*

# *Designing a blueprint for the virtual assistant of the future*

## Key Findings

As we stand on the brink of the third wave of computing, the concept of a virtual assistant (a digital service looking after a range of our needs) is fast becoming a reality.  As artificial intelligence and machine learning progress at pace, virtual assistants are set to become our gateway to the internet and know more about us than we do ourselves. Siri and Google Now are just the beginning. We set out with consumers and experts to design a blueprint for the virtual assistant of the future, designing what it will do, how will we interact with it and where its boundaries will lie. This report outlines our findings and five key conclusions:

1.  *Consumers are looking for a virtual assistant service capable of being accessed from a number of devices. While smartphones will dominate usage in the short term, in the longer term we can expect virtual assistants to be accessed through smart watches, wearables, cars and other connected devices*

2.  *Consumers expect a modular service, capable of bolting on additional specialist functionality to the core virtual assistant to fulfill specific needs*

3.  *There's an openness to an ad supported VA business model, with 'paid recommendations' offered to the user alongside 'organic recommendations'*

4.  *The VA has the potential to be our next gateway to the internet, delivering services that span every aspect of our lives. The research identifies five core service areas: Personal; Community; Economy; Crowd and Environment*

5.  *Communicating to potential consumers will be a big challenge for brands in a VA intermediated world. But we expect two key channels to emerge:*

    •  *Paid for recommendations similar to paid search*
    •  *Branded utility modules built into the VA*

# Open the pod bay doors, Hal

## Introduction

The prospect of a virtual assistant (VA) anticipating and responding to our every need has long been an alluring one. From Star Trek to KITT in Knight Rider, science fiction is littered with examples of faithful digital assistants serving their masters' every need.

Now, as we stand on the brink of the third wave of computing, where machines become capable of learning and of self reflexively developing knowledge about the people and objects around them, the virtual assistant is becoming a reality.

Already we have seen pioneering steps in this field with services launched from the big beasts of the digital landscape – Google Now, Apple's Siri and Microsoft's Cortana. These are only the beginning, barely scratching the surface of the emergent possibilities, and to date have seen fairly slow uptake. Yet, as we have found, there is strong latent interest in the concept of a virtual assistant  - 62% of smart phone users are interested in a VA (*see Fig 1*).

**Figure 1 -  Interest in a virtual assistant**

Based on the possible services of a virtual assistant, how interested are you in using one?
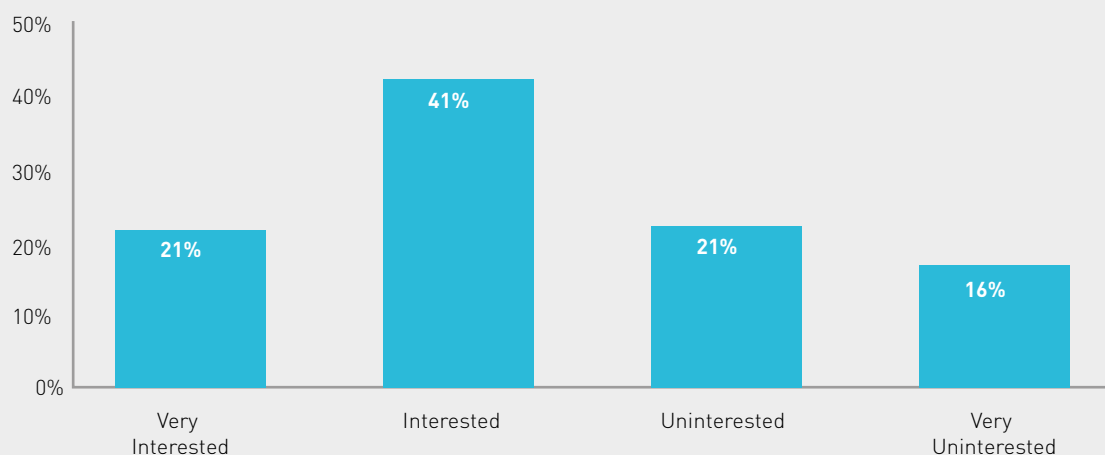


Source: Mindshare VA survey of smartphone users; N=1071

Project Virtual Assistant (VA) is a research effort between Mindshare, Seven and Dr Jenn Barth and Dr Chris Brauer of the Centre for Creative and Social Technologies (CAST) at Goldsmiths College, University of London.  The project aims to explore and understand the opportunities and challenges of bringing the virtual assistant of the future to life for both users and service suppliers.

We set out to co-design with consumers a blueprint for an idealised virtual assistant, answering the key design questions:

| | |
|---|---|
| **What services should a virtual assistant provide?** | **How should it behave?** |
| **What are its limits?** | **How is it paid for?** |

Finally, we considered what the implications are for brands and marketers in a world where consumer decision making is intermediated by a virtual assistant.



**Project Virtual Assistant**
*Introduction video*
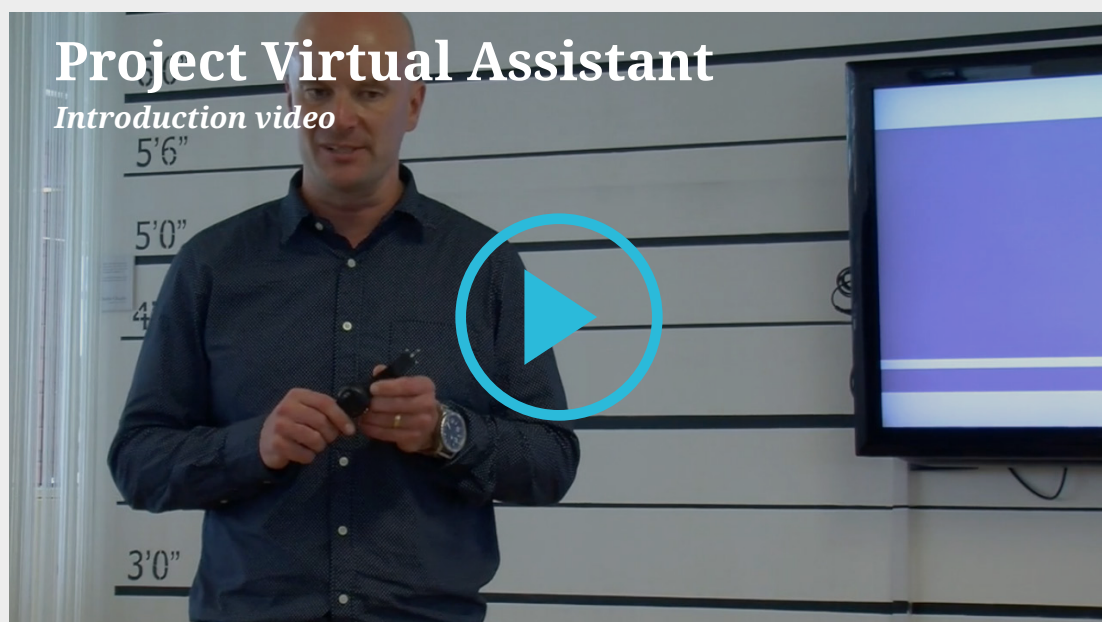
# *What we did*

## Key findings

The research uses an innovative methodology and ethnographic service design. This harnesses the power of ethnographic experiments to allow the researchers to track the use of digital services among respondents in their daily life, alongside workshops to co- design a virtual assistant service blueprint.

Twelve dedicated participants drawn from the general public took part in a month of workshops and experiments between 10 June and 2 July 2014. Each participant completed a pre-and-post-survey, used different VA style tools during their daily life, sent the research team regular notes and updates via WhatsApp, and participated in storytelling service design workshops.

Alongside this intense fieldwork, the team also interviewed a series of subject matter experts, including senior leaders from IBM, AI academics and technology commentators from the BBC and Wired magazine. These interviews were used to provide longer term perspective on the marketplace and to refine the designs produced with our respondents.

Finally, the insights from the ethnographic service design were verified quantitatively through a survey amongst a sample of 1,000 nationally representative smart phone users.

# *The VA service design blueprints*

## Key findings

Service blueprints are produced collaboratively, incorporating perspectives of service suppliers and users, through simple graphic representations. They describe and outline all of the elements that are contained within a service, revealing both the processes behind the service and the user experience.

We have created two types of blueprint. The first, a general service blueprint, focuses on the service usage lifecycle from when the user discovers the service, creates, lives and finally leaves it.

The second, more detailed blueprint, focuses on the consumer experience of living with the VA service.

**DISCOVERS** > **CREATES** > **LIVES** > **LEAVES**

# CREATING THE VIRTUAL ASSISTANT EXPERIENCE

In designing and creating their VA our respondents faced three key considerations:

- Selection of the core service including the **physical form** of the service and the provider
- **Configuration** to personalise the service including key features, communication and characteristics
- Set up including **privacy** settings, data management and by implication **payment model**

## Physical Form

Understandably, there's an expectation that in the short to medium term the VA's core service would exist primarily on the smart phone (*see Fig 2*). The VA would then communicate with and manage other devices, both wearables that monitor the individual and also other connected devices in or out of the home.

**Figure 2 - Proportion of VA interactions by device**

What proportion of your interactions do you think would take place on the following devices?
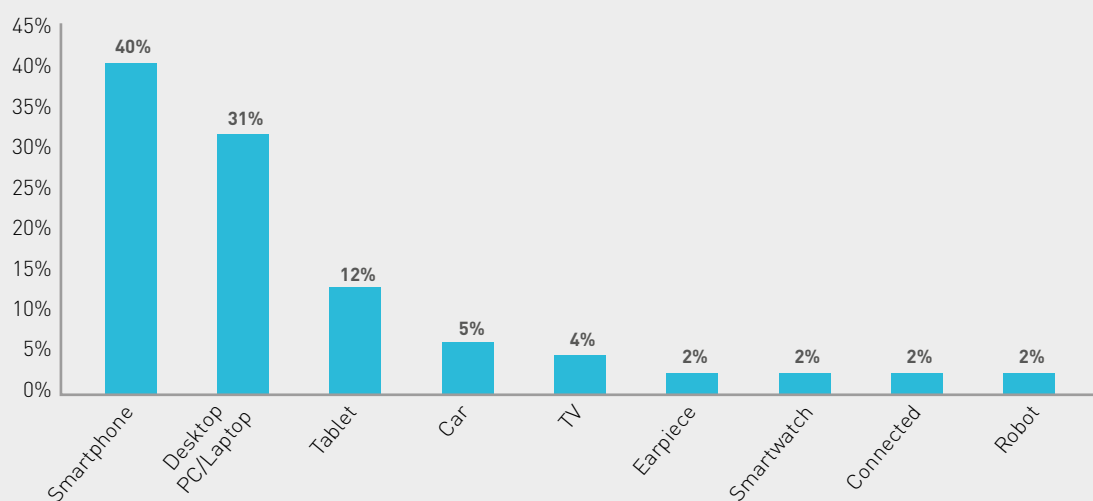


Source: Mindshare VA survey of smartphone users; Base of those interested in VA services (N= 664)

## ❝ I see it more as something that will become part of a device, part of a phone and maybe integrate wearables like a smart watch ❞

There is a desire for the VA to exist across platforms allowing it to be accessed from any number of devices, both traditional computing devices, such as the laptop but also wearables, such as a smart watch, or other connected displays such as in car.

Looking to the longer term, some respondents also expressed an interest in the VA taking on its own physical form within the home, as a domestic robot (similar to the recent development of emotional robot Pepper in Japan).

### Configuration

There was an overwhelming sense that there should be a core service and the ability to add services as required. The core service would cover basic functionality applicable to almost everyone, such as calendar and email integration, weather alerts and location services, and there would be the capability to add on more specific services that were relevant to each individual's needs.

## ❝ It would start out as it was manufactured but slowly obtain quirks like all products in the same way my bike reflects my personality ❞

Respondents expressed a preference for flexibility in the means of interaction with the VA, with voice interaction likely to become increasingly important over time (*see Fig 3*).

As voice interaction grows, an interesting question of the VA's tone of voice arises. Respondents looked again for flexibility and contextual understanding, so someone trying to quit smoking would want a firm voice while someone with an anxiety disorder might want a more reassuring tone. Some had a preference for a clear master-servant relationship with the VA.

**Figure 3 - VA interaction methods**

How would you want to interact with a virtual assistant?
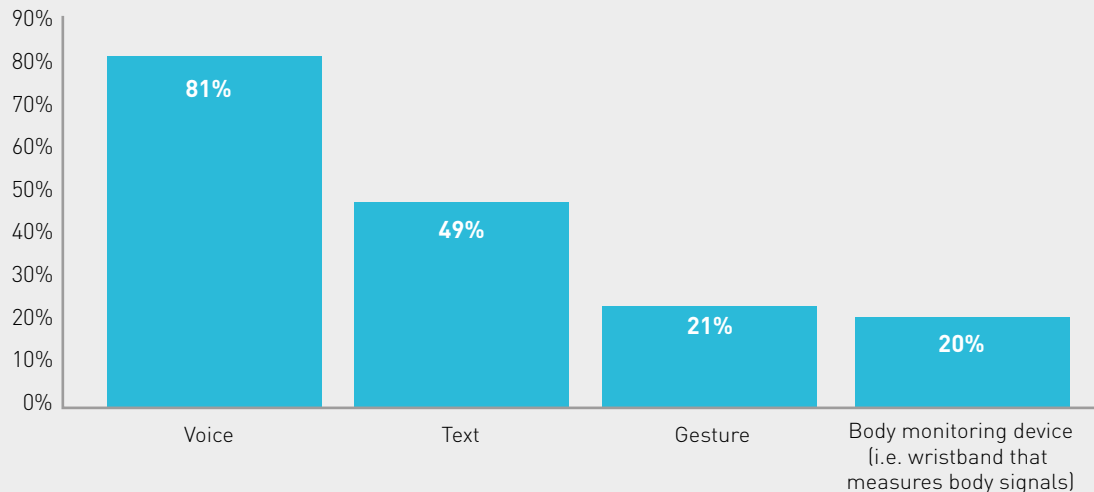


Source: Mindshare VA survey of smartphone users; Base of those interested in VA services (N= 664)

## ❝ I would want mine to be an 18th century British butler ❞

### Privacy & Payment Model

The VA and its ability to become smarter as it collects and collates more of our data points means that the user can't anticipate what outcomes



Sally Annereau
*Data Protection lawyer, Taylor Wessing*
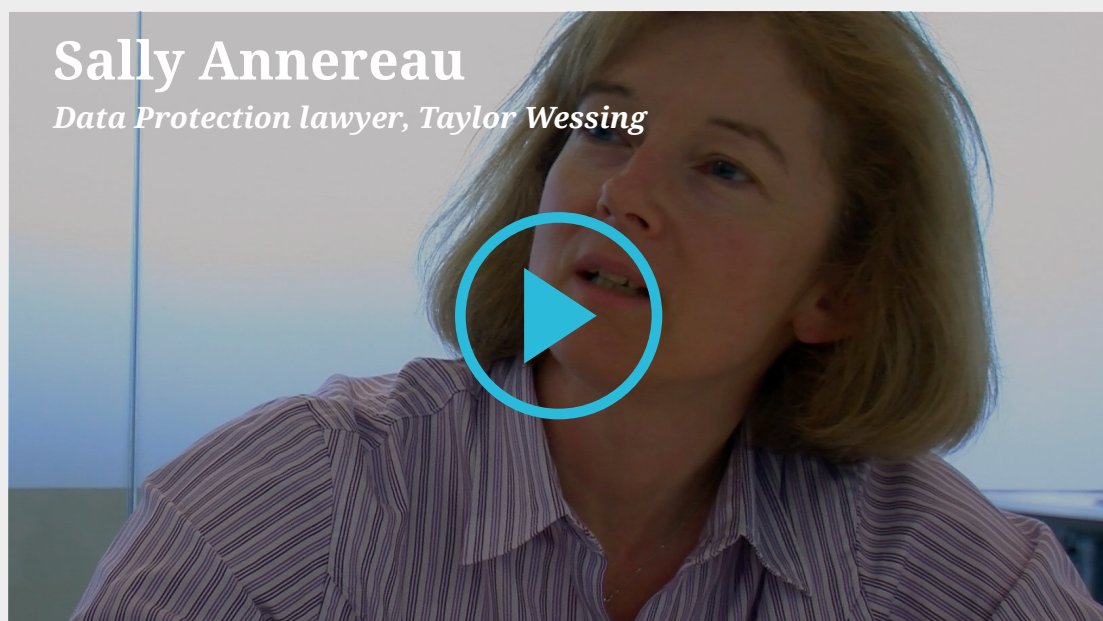
the analysis will drive, and therefore cannot give truly informed consent to data collection. This proposes key challenges for the law but may also open up more useful possibilities. Experts in this area are questioning whether consent can really work in this situation and it seems transparency and giving individuals greater control is a better and more likely long term direction.

For our participants, knowing where the data is used and by whom is crucial. But given the inability to fully know how data will be used by the VA, the key to success of the service will be more about whether the user feels they have control and trusts the VA to act in the user's interests.

Transparency will be critical here. Showing the user in an intelligible way how data is being used and giving them the capability to take back or cede control of their data, will be key drivers of trust.

Related to the privacy question, is of course, how the VA is funded. While there was some enthusiasm for a paid for, ad free, model amongst our participants this was not borne out by our quantitative research with only 18% of those interested preferring to pay for a VA.

There was an expectation that as the VA gained more knowledge about the user, ad funded recommendations could be introduced that were genuinely useful to the user, in a similar manner to paid for search results.

**Figure 4 -  VA payment methods**

Which payment option would you choose for a virtual assistant service?
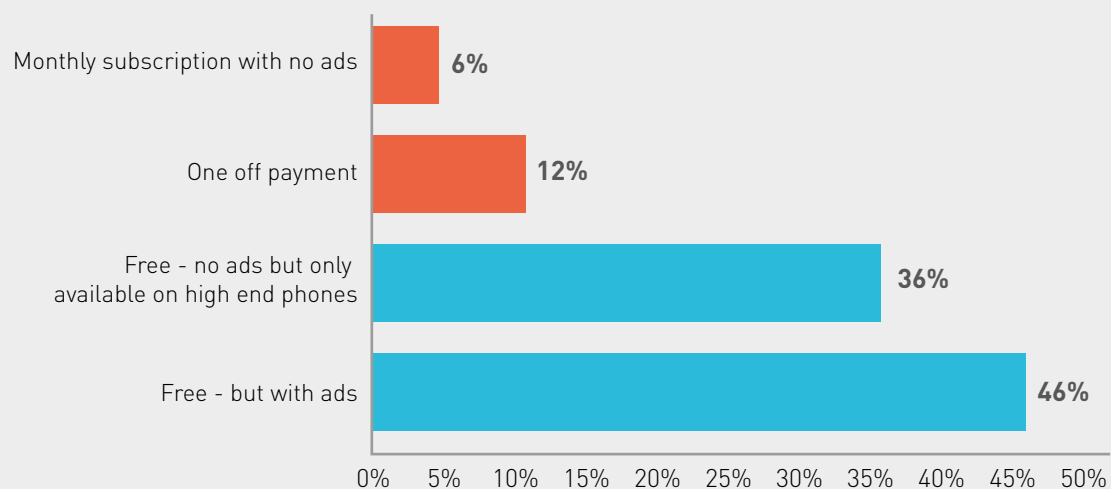


| | |
|---|---|
| Monthly subscription with no ads | 6% |
| One off payment | 12% |
| Free - no ads but only available on high end phones | 36% |
| Free - but with ads | 46% |

Source: Mindshare VA survey of smartphone users; Base of those interested in VA services (N= 664)

❝ The VA starts to know who you are, starts to know the brands that you consume, the products that you like and then it can say - hey you bought such and such product they're on offer at the moment at Tesco. That would probably be fed in by the advertisers - that's where the advertising would be useful rather than just the traditional ad ❞

However, the tension was acknowledged that if the VA is ad funded then its interests may not be fully aligned with the user, and given the degree of trust placed in the VA for decision making that proved an issue for some participants.

# Living with your virtual assistant

## The core service areas

Our ethnographic fieldwork helped us to identify the core service areas that a virtual assistant is likely to fulfil. By asking our participants to contact our researchers via WhatsApp whenever they were looking for assistance and trialling existing service apps, we were able to simulate some of the potential services of a VA. This allowed us to identify the need states being fulfilled by a VA and the likely service areas. These broke down into five broad themes:

**Economy**     **Community**     **Environment**

**Personal**     **Crowd**

## PERSONAL

Participants understood the personal functionality as the main entry point for signing up to use the VA service. The personal relates to your own individual **Health, Behaviour** and **Daily Living**, but would require careful configuration to suit each user.
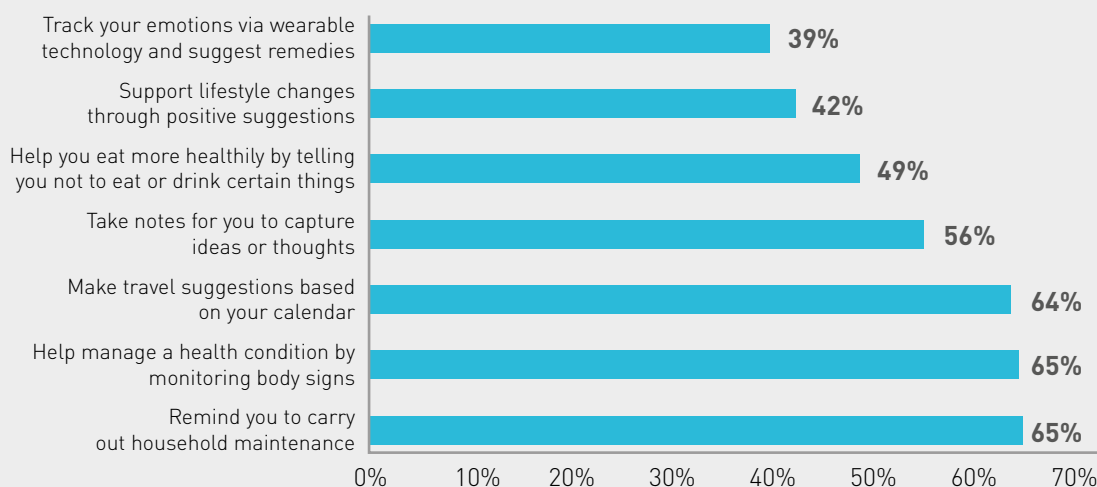
**Health** – participants saw a strong role for the VA in monitoring personal health, including emotional wellbeing, on a regular basis and syncing to necessary medical information. 'Help manage a health condition by monitoring body signs' proved the most appealing personal service with 65% finding this appealing (*see Fig 5*). A strong component of that was diet and helping people stick to lifestyle changes.

**"** I wish the app could tell me what foods I'm going to eat are ok for me. I'm always trying to eat a low foodmap diet (gluten free, lactose free and a few other things too) but it's so hard to know which foods are ok and which are not **"**

**Behaviour** - The VA could also help the user to adapt to new lifestyles, or think differently about their lifestyle by helping understand moods and emotions.

### Figure 5 - Appeal of 'personal' VA services

Please look at the following services that a virtual assistant could provide for you. Indicate how appealing they are to you.



| Service | % |
|---|---|
| Track your emotions via wearable technology and suggest remedies | 39% |
| Support lifestyle changes through positive suggestions | 42% |
| Help you eat more healthily by telling you not to eat or drink certain things | 49% |
| Take notes for you to capture ideas or thoughts | 56% |
| Make travel suggestions based on your calendar | 64% |
| Help manage a health condition by monitoring body signs | 65% |
| Remind you to carry out household maintenance | 65% |

Source: Mindshare VA survey of smartphone users; N=1071

❝ One thing that has crossed my mind on multiple occasions is the idea that a VA could gauge my mood, a VA could then remember things I did to create that mood, or things I did to change that mood and could then make suggestions. E.g. Last time you were stressed whilst working you listened to bonobo and went for a walk, that calmed you down/made you more productive ❞

**Daily Living** - As with many of today's VAs, the need for life management functionality was strongly recognized. Participants wanted the VA to manage 'dull' bureaucracies allowing for more efficient running of daily life including communications, syncing diaries and travel arrangements. Reminders to carry out household maintenance was also joint most popular with 65% finding this appealing.

# *What can I cook for dinner with what I have got at home?*

Example Process Diagram #1

Dinner

Sainsbury's

Check contents of last online grocery shop

allrecipes.com

Cross reference with recipe database

Refine with Joe's historic prefrences

Suggests Shortlist
- Shepherd's Pie
- Spaghetti Bol

Shepherd's Pie selected

User Response

*The VA knows Joe like a glass of wine*

Look for suitable wine

wine.com

Google Maps

Find wine recommendations for Shepherd's Pie

Identify retailers on route home

Select closest with wine in stock

Tesco Sainsbury's wine Merchant

Present recomen-dations and route

INPUT

ACTION

OUTPUT

## COMMUNITY

The community service area is about providing services that connect you with people and places that you know: family, friends, work colleagues and others. It might be a central tool of a family or a way to network with colleagues. Community is divided into two core categories: **Socialising** and **Family**.
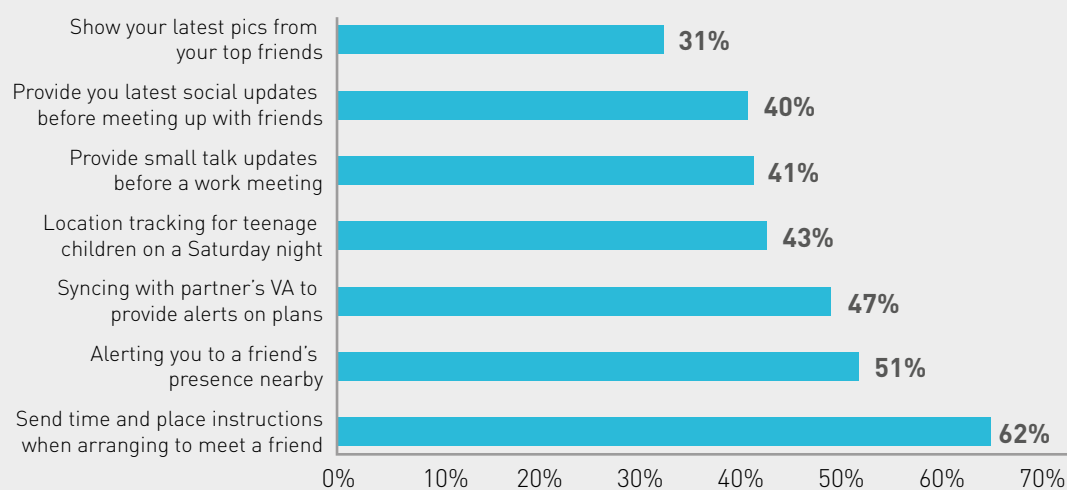
**Socialising** – The VA has the potential to facilitate social interaction and lubricate social relationships in a number of ways. On a practical note it was seen as a means of sharing time and place instructions prior to meeting up with a friend, or a way of alerting the user to a friend's presence nearby. This was the most popular communication service example with 62% finding this appealing (*see Fig 6*).

> ❝ [What about] if it interacted with your friends VA? So it could go, oh Johns just down the road or Karen down the road is thinking of going for a cycle ride do you all want to go for a cycle? ❞

Participants also envisaged a role for the VA to give you a 'conversation briefing' on what a friend had been up to (holidays, gigs, music listened to) drawn from social feeds, before actually meeting up in person. Although this proved less popular with only 41% finding this concept appealing.

**Figure 6 – Appeal of 'communication' VA services**

Please look at the following services that a virtual assistant could provide for you. Indicate how appealing they are to you.



| Service | Appeal |
|---|---|
| Show your latest pics from your top friends | 31% |
| Provide you latest social updates before meeting up with friends | 40% |
| Provide small talk updates before a work meeting | 41% |
| Location tracking for teenage children on a Saturday night | 43% |
| Syncing with partner's VA to provide alerts on plans | 47% |
| Alerting you to a friend's presence nearby | 51% |
| Send time and place instructions when arranging to meet a friend | 62% |

Source: Mindshare VA survey of smartphone users; N=1071

Based on the nature of the conversation with a friend, the VA could also remind you of shared moments (e.g. 'remember that time when...') by drawing from historic social data or photo albums.

**Family** - The VA could act as a family connection point, providing a general management tool bringing together children's and parents' schedules. It could sync with a partner's VA to provide alerts on work, social, family plans (e.g. 'Your wife is delayed at work, you should pick the kids up'). Almost 50% found this concept appealing.

It could also be used by the more security conscious as a means of alerting parents to the whereabouts of their children, for example if teens move from an agreed location on a Saturday night.

Interestingly, participants saw a value in being able to inherit and access a family member's VA after death, to act as an interactive record of their lives and help remember them.

# ECONOMY

The economy service area relates to two broad sets of economic activities: **Transactions** and **financial management**.
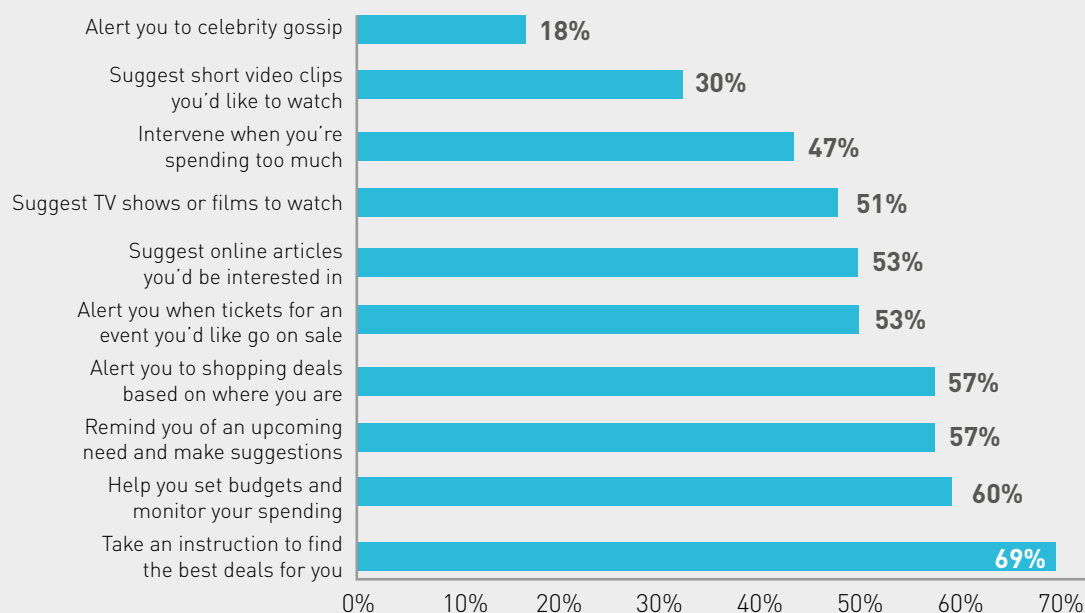
**Transactions** – the VA would act as a 'shopping buddy' to fulfil a number of services on behalf of the user. It would give recommendations in response to a specific request from the user (e.g. 'Tesco's have the best deal on Fosters this week for that BBQ on Sat'). This proved the most popular potential application with 69% finding this appealing (*see fig 7*).

It would spontaneously alert the user to products or services that might be of interest (e.g. 'New coffee shop 50m away has offer on your favourite Colombian beans').

The VA would also remind you of an upcoming need and make suggestions (e.g. 'It's your mum's 70th in two weeks, why don't you buy her this coat?') or prompt you to make a grocery purchase based on the contents of your fridge and your location (e.g. 'you're running low on milk, buy some at the Tesco's at the station on the way home'). These functional more administrative applications again proved most appealing.

**Figure 7- Appeal of 'communication' VA services**

Please look at the following services that a virtual assistant could provide for you. Indicate how appealing they are to you.



| Service | Appeal |
|---|---|
| Alert you to celebrity gossip | 18% |
| Suggest short video clips you'd like to watch | 30% |
| Intervene when you're spending too much | 47% |
| Suggest TV shows or films to watch | 51% |
| Suggest online articles you'd be interested in | 53% |
| Alert you when tickets for an event you'd like go on sale | 53% |
| Alert you to shopping deals based on where you are | 57% |
| Remind you of an upcoming need and make suggestions | 57% |
| Help you set budgets and monitor your spending | 60% |
| Take an instruction to find the best deals for you | 69% |

Source: Mindshare VA survey of smartphone users; N=1071

> ❝ Just remembered its Fathers Day Sunday, where can I get a card and make sure it arrives on time? ❞

> ❝ A grocery reminder would have been very useful. Woke up several times without milk for tea which sort of derails my morning (real creature of habit) ❞

The line between recommendations from the VA based on your perceived needs and advertiser funded recommendations was very blurred here but respondents seemed broadly accepting of this in principle on the basis that the ad funded recommendations would be of genuine use.

**Financial Management** – Participants also saw a strong role for the VA in managing personal finances, help with tax returns and managing household bills.
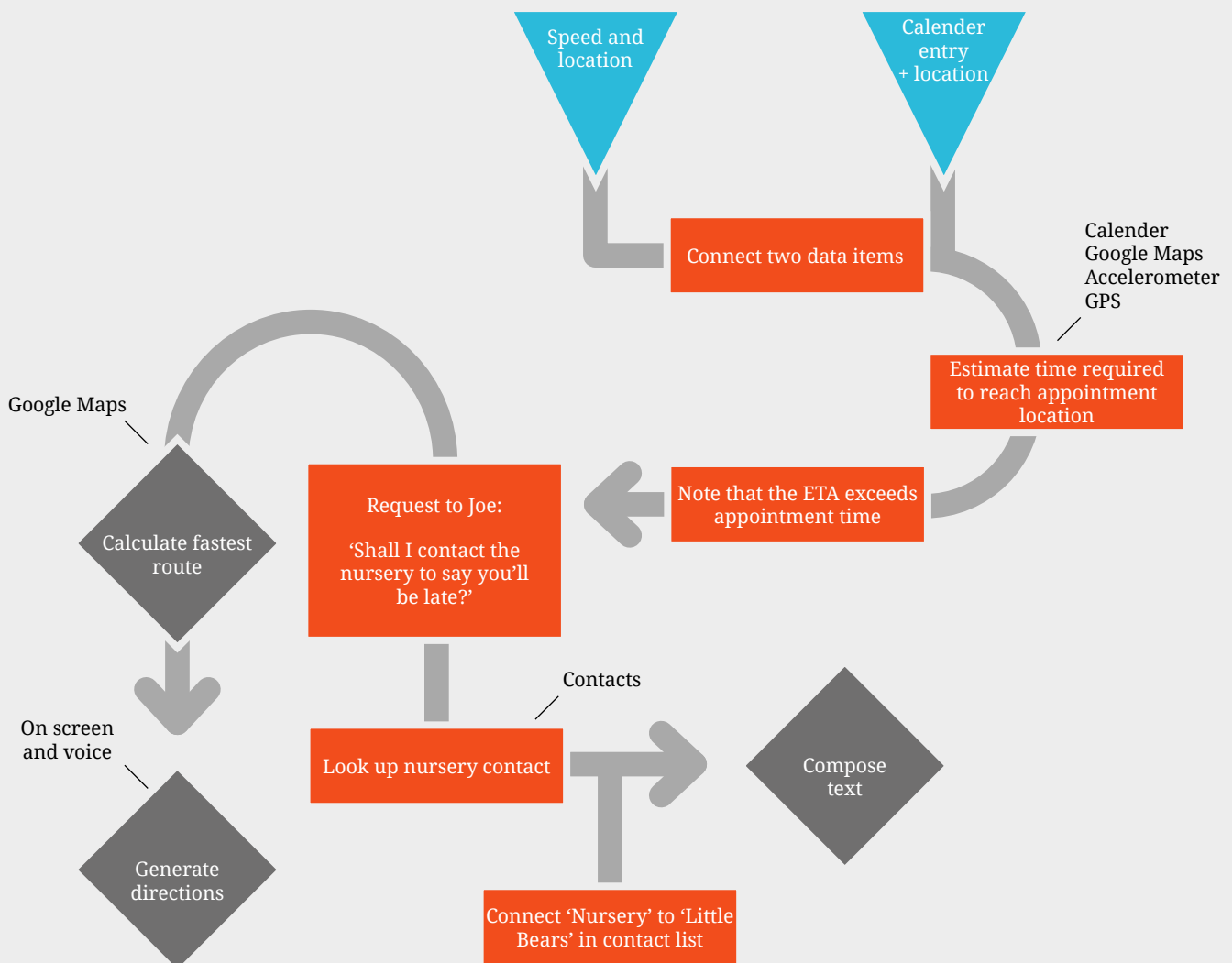
> ❝ I would love the VA to review my utility service companies, mobile usage etc. to ensure that I am getting the best deals ❞

> ❝ Back home to work on taxes for my meeting with my accountant on Wednesday. VA could be doing loads of prep work for me, involving spread sheets, accruals etc ❞

The VA could also act as a brake on spending should you wish to instruct it in that way (e.g. 'do you really need that? You've only got £100 to last to the end of the month') or provide alerts about energy consumption through connection to smart household meters or cheaper tariffs.

# *Push notification from the Virtual Assistant*

Example Process Diagram #2

Speed and location

Calender entry + location

Connect two data items

Calender
Google Maps
Accelerometer
GPS

Estimate time required to reach appointment location

Google Maps

Calculate fastest route

Request to Joe:

'Shall I contact the nursery to say you'll be late?'

Note that the ETA exceeds appointment time

On screen and voice

Contacts

Look up nursery contact

Compose text

Generate directions

Connect 'Nursery' to 'Little Bears' in contact list

INPUT

ACTION

OUTPUT

# CROWD

The Crowd service area is the integration between the VA and data associated with people the user does not necessarily know. This includes searching for comments, reviews and advice; crowdsourcing recommendations and connecting to new ideas outside of the user's community. The key categories are **Recommendations** and **Connecting**.

**Recommendations** - The VA would provide recommendations based on the integration of anonymised crowd data (e.g. Trip Advisor) with personal data (e.g. personal preferences, debit card use).
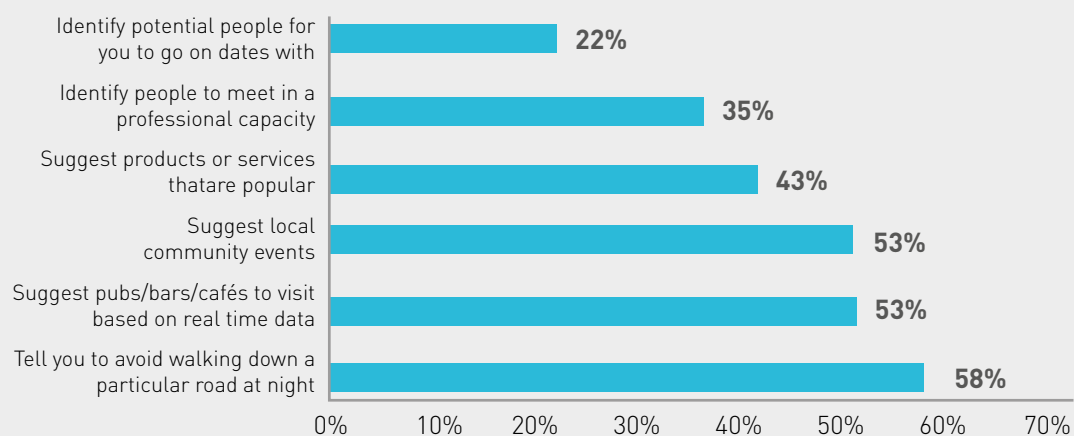
> ❝ I need a venue for pre drinks at 7, preferably quiet and classy but not extortionate... ❞

> ❝ Tumblr just emailed me about the 5 blogs I should be following - list didn't do it for me. VA could have done a better job and actually connect me to them. Ditto twitter and LinkedIn ❞

It could also access publicly available data about a particular location to make real time recommendations to the user (e.g. 'Don't walk down that road at this time because it has a high crime rate') or identify points of interest (e.g. 'The Rolling Stones played one of their first gigs in that pub')

**Figure 8- Appeal of 'crowd' VA services**

Please look at the following services that a virtual assistant could provide for you. Indicate how appealing they are to you.

| Service | Appeal |
|---|---|
| Identify potential people for you to go on dates with | 22% |
| Identify people to meet in a professional capacity | 35% |
| Suggest products or services thatare popular | 43% |
| Suggest local community events | 53% |
| Suggest pubs/bars/cafés to visit based on real time data | 53% |
| Tell you to avoid walking down a particular road at night | 58% |

Source: Mindshare VA survey of smartphone users; N=1071

Page 21

**Connecting** - The VA would allow users to take control of the data shared with the crowd, understand what it is used for, how they may benefit, and allow users to turn this feature off if desired.

It is expected that the VA will be used to help people connect with strangers around areas of interest. It could help professionals network at a conference by identifying people with a common interest. The VA could be used by people looking for dates to alert them to people of interest. This ability to help users connect with strangers proved less popular than the more practical applications, with only 35% or less finding these appealing (*see Fig 8*).

# ENVIRONMENT

The Environment service area monitors environmental factors including weather, allergies, pollution, and advice relating to these indicators. Despite an increase in awareness of environmental influences on our health and wellbeing, this area remains an undervalued function of the VA (*see Fig 9*). In the future this aspect could be connected to automatic environmental information and city-based sensors to give accurate accounts. Our research found that most divided this area into **indoor** and **outdoor** environment.
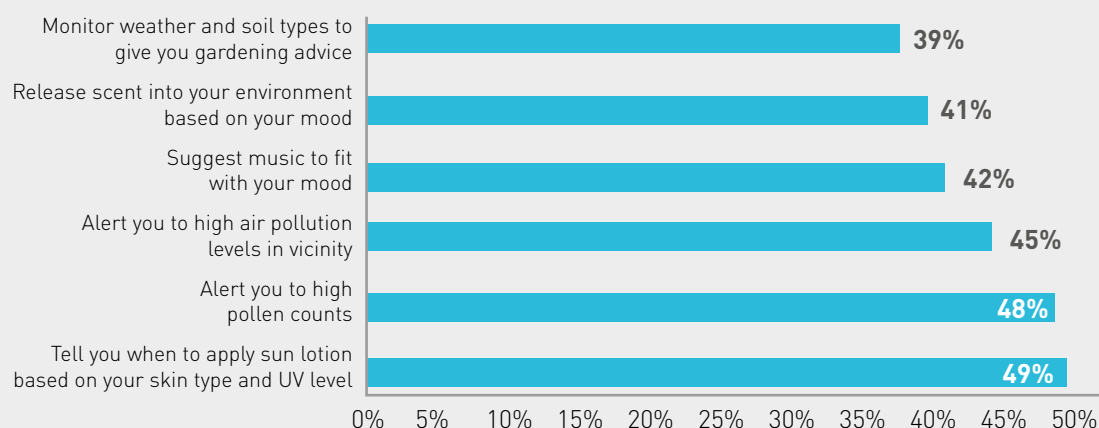
**Indoor environment** - The VA would control the domestic environment by managing the efficient running of all utilities and appliances in the home.

> The idea of having a VA that can manipulate my environment would be amazing, if my house could be run almost completely through one device (opening/closing windows, locking/unlocking house and car doors, turning heating/hot water on/off, controlling the TV, and so on)

It would also have the ability to manipulate the scent and music in the home to help alter the user's mood.

**Figure 9- Appeal of 'crowd' VA services**

Please look at the following services that a virtual assistant could provide for you. Indicate how appealing they are to you.
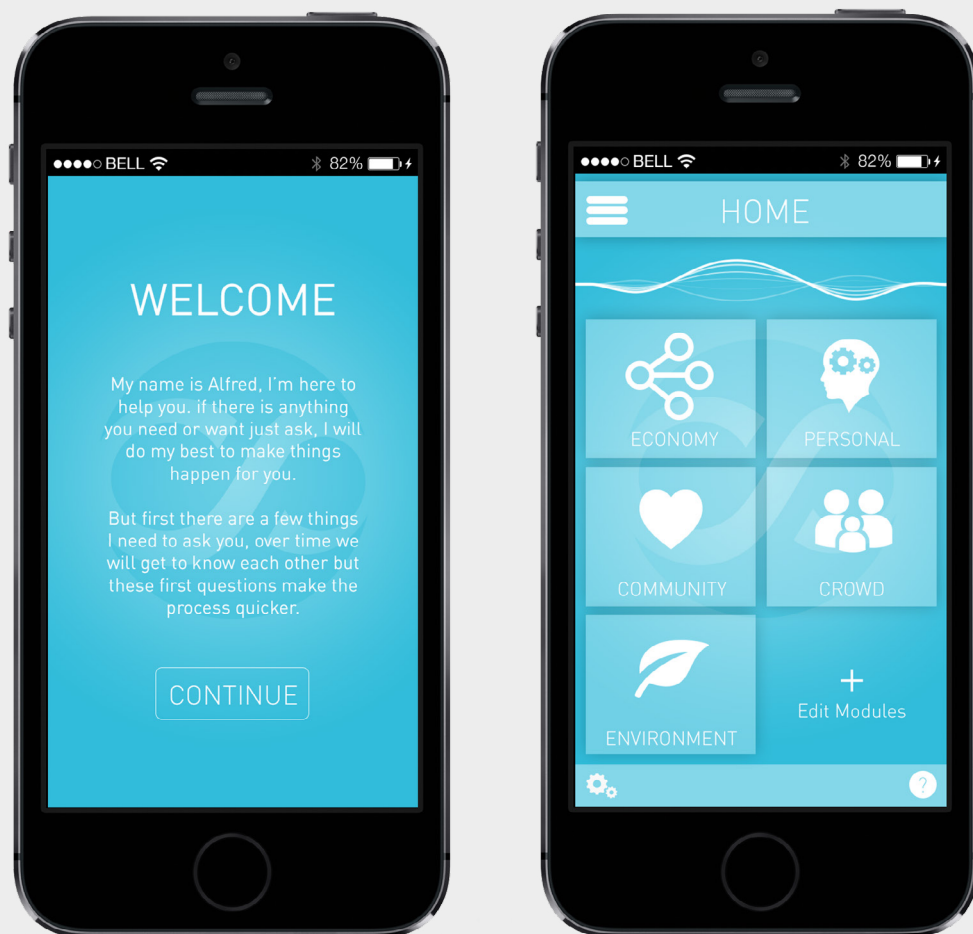


| Service | % |
|---|---|
| Monitor weather and soil types to give you gardening advice | 39% |
| Release scent into your environment based on your mood | 41% |
| Suggest music to fit with your mood | 42% |
| Alert you to high air pollution levels in vicinity | 45% |
| Alert you to high pollen counts | 48% |
| Tell you when to apply sun lotion based on your skin type and UV level | 49% |

Source: Mindshare VA survey of smartphone users; N=1071

FUTURE_
MEDIALAB

> ❝ ...the idea of having facial recognition detect when you are getting fed up of work and suggesting you do something else, for example listen to music, it could then monitor the music effect and if the effect is positive it could suggest it again in the future. Essentially learn what makes you feel better over time ❞

**Outdoor environment** - The VA would connect with publicly available localised weather, pollution and pollen data to alert users pre-emptively.

> ❝ My journey was not great too many cars and buses at this time of the day. I wish I knew the back streets to get around from Streatham to Shooters hill with less pollution ❞

**What a VA might look like simulated on an iPhone**

# *Implications for marketers*

A world in which the consumer is guided by her VA is a radically different world for brands to operate within. But brands, products and services will still need to connect with customers, so how might brands behave in this environment?

## Huge disruption to the consumer journey

The prospect of a super-computer agent acting on behalf of the consumer suggests huge disruption to the consumer journey and purchase decision making. It presents the prospect of the role of emotion in decision making diminishing as the VA weighs up product alternatives in an ultra-rational way – would a VA ever suggest Neurofen at six times the price over the chemically identical own brand ibuprofen? Brands in every market could face the commoditisation challenges that price comparison sites have presented to categories with seemingly interchangeable brands such as insurance and utilities.

Brands will still play a role in helping consumers choose from the recommendations the VA placed before them in the same way that consumers choose the cheapest insurance provider that they've heard of on a price comparison site. But, as emotion takes more of a back seat and recommendations from the VA become increasingly honed around prior preferences, it is likely to be increasingly hard for new or niche brands to break into established markets. We may find that the VA helps to enforce the market positions of the incumbents.

## Still a role for paid media

It seems likely that a 'paid for recommendations' will find a place in the VA environment. Certainly, the threat to Google's core search business if VAs become the gateway to the internet, is such that they will ensure that a paid ad model is integral to Google Now. Other VAs, notably Siri, may not offer a 'paid for recommendations' model since it does potentially undermine the VA's alignment with the user's interests.

FUTURE_
**MEDIALAB**

As Ben Hammersley from Wired put it:

❝ Virtual assistant paid for advertising can be really dangerous - Google Now is an advertising company so there isn't a trust there that it's impartial and working for me. It's not Google's assistant, it needs to be mine ❞

**Ben Hammersley**
*Writer & Futurist*

We expect there still to be an opportunity to reach consumers through the VA at the point of intent. There may be fewer opportunities in comparison to the existing search model, but they should be more effective given the greater intelligence offered by the VA. Advertising within the VA has the chance to become the 'service' that data driven targeting has promised for so long.

## Branded utility

We expect VAs to be modular, highly personalised services. As users modify their VAs by bolting on additional specialist features there is a big opportunity for brands to provide those services and genuinely provide a use in consumers' lives. The classic branded utility example, of the Michelin guides of the 1930s, could be reinvented as a high end restaurant plug-in integrated into the VA and personalised to the user. Flora could create a cholesterol monitoring module that connects wearable tech with the VA, to help users manage their cholesterol levels. Brands with a strong association and credibility with a particular area will be the best placed to take advantage of these VA branded utility opportunities.

## VA as the gateway for content distribution

The VA effectively acts as a filter of information to the user, presenting what it thinks is of value to the user's needs at any given moment. While that will likely act as a block to broadcast brand communications, it will still provide a distribution point for brand content if that content is considered by the VA to be of value to the user. In this scenario, will we see a world where search engine optimisation is usurped by virtual assistant optimisation?