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"OPEN THE POD BAY DOORS, HAL"

Talk about a voice command that caused all sorts of commotion.

In 1968, the movie 2001: A Space Odyssey presented a vision of the future in which advanced technology unflinchingly, unblinkingly viewed us mere mortals as a problem. And for many decades, shouting commands to an ephemeral computer remained the stuff of science fiction.

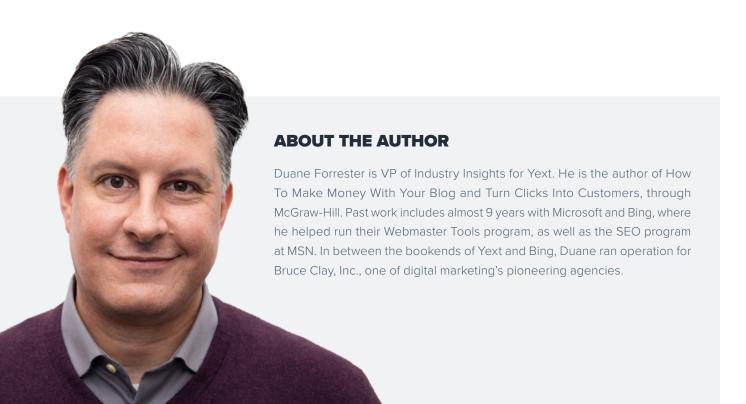
Today, however, you probably find yourself comfortably addressing Alexa, Cortana, Google, and Siri in similar terms. Chances are, you don't actually ask them to open your pod bay doors. But you've likely asked one of these intelligent personal assistants to tell you the weather, read you your

calendar, play some music, turn on the lights, make a call — or complete another of the hundreds of commands they can currently execute.

For businesses, intelligent services that leverage voice present a complex set of challenges — and voice search presents one of the greatest challenges yet. In this eBook, I'll explain why it's so important for you to get right.

7711

Duane Forrester





BEHAVIOR:

What is voice search and why does it matter?

Put into the simplest terms, *voice* search is the ability to talk to a device and get answers back. Ask Alexa what the weather is, and she'll tell you the current temperature and forecast for your location. Ask Google for the news, and it will read off the latest headlines to you. This is powerful stuff.

In fact, Andrew Ng, formerly of Baidu, estimates that 50% of all searches will be completed via either speech or image search by 2020.¹ And eMarketer shows that the use of voice-enabled speakers will grow by 130% in the next year.²

Generally, humans can speak four times faster than we can type. So on one level, voice search feeds our need to move fast. On another level, it's about ease. Voice search is very natural. It's just so much easier to ask for something out loud than it is to type. Believe it or not, people can be lazy at times — and voice search feeds into this behavior perfectly.

Voice search is in the palm of your hand. It's in your car, either through an embedded system, or through systems like Apple Carplay and Android Auto. It's sitting on your shelf, in the form of an Amazon Echo, a Google Home or an Apple HomePod. In China, it's the Ling Long Ding Dong (yes it's really called that), and literally dozens more voice-activated competitors are pouring into the Chinese market.

And as you'll see in the final section here, this is only the beginning. Soon, we'll be shouting at an ever increasing array of devices.

THE USE OF VOICE-ENABLED SPEAKERS WILL GROW BY 130% IN THE NEXT YEAR.



- ¹ Baidu World 2014, Gigaom
- www.emarketer.com/Article/Alexa-Say-What-Voice-Enabled-Speaker-Usage-Grow-Nearly-130-This-Year/1015812

TECHNOLOGY/TACTIC THAT U.S. MARKETING LEADERS SEE AS "THE NEXT BIG THING" IN SEARCH MARKETING, MAY 2017

% of respondents

31.8% AI/MACHINE LEARNING

31.4% VOICE SEARCH (DIGITAL ASSISTANTS)

27.0% MOBILE OPTIMIZATION

2.8% 5G MOBILE SPEEDS

2.4% APP INDEXING

4.8% OTHER

Note: n=252

Source: BrightEdge, "The Future of Content Marketing" conducted by SurveyMonkey, June 20, 2017

Voice search matters on several levels.

For the search engine

Faster interaction leads to greater consumer retention and engagement (when the results are accurate).

For the consumer

In some cases, it's simply faster. In other cases, it's about our inherent desire to do less and receive more. Still other times, laws guide our actions (think about distracted driving laws).

For a business

Consumer behavior and search engine investments often go hand-in-hand. Those rich experiences we have on mobile devices, and the faith we put in a single spoken answer, come from the trust a search engine has established with us — that it has THE best answer for our needs. Search engines earn that trust by establishing shared systems of structured data (Schema.org), that when implemented by businesses, lead to better answers to queries. By complying with those best practices, businesses become a part of that circle of trust around the content showcased to consumers.

For the big players

For the main providers of hardware and services in this space, the fight is on for consumer loyalty. Amazon wants you to stay engaged with them and shop through them. Google sees this as a natural extension of their ability to answer all questions anywhere, anytime. All of this engagement equates to billions of dollars in revenue for the leaders in the space, which is a pretty big incentive to have a play in this area.

SOME OF THE BIG NAMES IN THIS SPACE ARE WELL KNOWN TO MOST PEOPLE:



Siri and HomePod





Assistant
(Home devices and
Pixel Android Phones)





Cortana & speaker w/Harmon Kardon called Invoke



SAMSUNG

Bixby assistant on Samsung phones





Alexa on Echo, Show, Look and Spot devices





Watson Experiences



So exactly what's in it for the Big Players?



FOOTPRINT

Access to more proprietary devices and third-party products drives growth. Amazon is partnering with Ford for automobiles and LG for consumer goods (like refrigerators). Amazon's approach is to be the go-to provider of voice-enabled services across a wide range of Internet of Things (IoT) devices — both third-party, and Amazon-branded.

Amazon has also recently partnered with Microsoft, allowing Alexa and Cortana to interact together, and enabling features like Skype calling via Echo devices. This allows cross-platform use and access to services. It also allows both Microsoft and Amazon (who both failed to capture a significant share of the mobile market) to bolster a combined competitive position against both Apple and Google.

Google is also partnering with LG to embed Google Assistant in a variety of upcoming consumer devices, most notably in-home speakers. These partnerships ensure that each company gains a foothold as consumers buy more smart products. Think of it as a sort of digital



CUSTOMER JOURNEY

Google sees the move into voice search as a natural extension within the current customer journey. A consumer might verbally ask a question to their Google Home. The Google Home captures that information and not only speaks the answer out loud, but also shares those results with the accompanying app on the consumer's phone. Later, that consumer looks up something via Google Maps, seeking to understand where that product they researched earlier can be purchased near them.

Google sees this as a way to be more ubiquitous and own the customer journey. Google also sees this as part of a long-term investment and growth strategy. Given they have such a huge percentage of the operating system marketplace for mobile devices, they have a readymade platform across which to deploy their products and services.



DATA FOR IMPROVEMENT

For these voice assistants to reliably work well, voice recognition needs to improve. Background noise, accents, dialects, and so much more can impede any of these systems. They're getting better, but need to improve if they are going to capture truly mainstream attention. Companies like Microsoft are going to great lengths to gather that data, literally renting apartments in a variety of cities around the globe. All this so they can record native speakers in a home-like environment, complete with background noise such as busses, trains, sirens, traffic and so on.

Baidu is focused on collecting gigabytes of data across every dialect in China. Amazon is uploading voice data daily from its systems to teach — in (almost) real time — it's Al more and more. From your mouth to a digital deity's ear, quite literally. And while 95% of something would usually be considered good, 95% accuracy for voice recognition is considered a baseline. Each company knows 1% is the true target error rate, and each is working feverishly toward that goal.





EXPECTATIONS:

How does voice search impact your business?

Voice search radically changes the way results are provided to consumers. The consumer asks a question and hears an answer, which means there is essentially just one spoken result. Unlike traditional web-based search, where many results are displayed as a list — encouraging exploration, engagement, and choice voice search is all about the one best answer. This means the pressure has never been greater to get your house in order, to optimize correctly and to employ every option you can to secure an engine's trust. Ideally, if you've done everything you can and gained the trust, you'll be the one answer trusted enough to be spoken out loud.

But don't think that once you reach this goal, it's cemented forever. Just like in regular search, the engines are always testing — always seeking to refine and present even better "best" answers to their searchers.

While this high level is important and should be pursued, there is another layer here. For each system providing voice results, an app backs them up. In that app, more results are shown. And even in a consumer's living room,

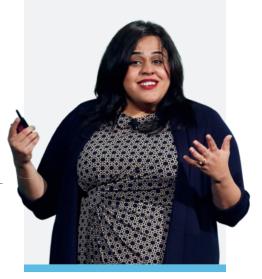
they are free to ask their voice assistant to tell them the next result, so while the goal is to be number one, not being number one isn't an immediate death sentence. These apps become a kind of filing cabinet for your journeys. Everything you ask, seek, explore or question is collected with answers immediately on hand.

There is more pressure to be at the top of the stack as voice search brings back the one answer. And integration in the results that voice assistant-paired apps show is a new battleground for businesses to work on.

Consumers are being taught how to ask devices for answers, which is a very natural extension of their current behaviors — this lowers the barrier to adoption and helps account for the large growth in voice-based queries today. People type questions differently than they say them out loud. This is because we can speak more words per minute than we can type, and also because we are less deliberate with our words when we speak, than we are when we type out a traditional query. So we see the rise of conversational search spreading.

"YOU CAN TYPE 38-40 WORDS PER MINUTE ON A MOBILE DEVICE, BUT YOU CAN SPEAK AT LEAST 150 WORDS PER MINUTE."

Purna Virji, Senior Manager of Global Engagement, Microsoft



Deeper adoptions by older generations starts at home through Alexa and Google Home. These devices make it easier for people with growing, age-related challenges to accomplish simple tasks. Order more dog food, check the weather, understand their calendar for the day, and so on.

Younger generations start with mobile devices and transition everywhere easily. Today's teens and children know of no time in their lives when they didn't have access to the internet, and most have always had access through a mobile device. It's critical to understand the behaviors of younger generations — and how they are using voice search.

Hardware sales (led by Amazon) will continue to grow — as will integrations within IoT devices. Brands need to monitor the changing marketplace to know where to plug in beyond the Alexa/ Google/Siri/Cortana stacks. There is an increasing movement toward smart homes, and the big brands in the search space are investing now to be the control interfaces for these life-attached experiences. And from locking a door remotely, to turning off the lights or even changing the color of the lighting in a room, voice is leading the way for how we will all interact with this technology. Using voice controls is a logical shift from typing, and it will prove to be the next frontier as mass adoption by consumers continues to expand.





CONTEXT:

Do you understand your customer's journey?

Businesses must understand the customer's journey to thrive in today's environment. This well-covered concept remains a true test of a company's ability to position itself. The goal is pretty simple — position yourself at locations along the customer's journey where you provide useful information, products, or services. Search engines invest in this area themselves — and watch to see if others align.

How well you align impacts how the search engines rank you. If you prove to be more useful to an engine's customers, then you rank well, and more frequently. If you provide a less than ideal solution to portions of the customer journey, the engine holds you back and tests others in higher positions. Therefore, it's vital you understand where you fit in the context of what a searcher is trying to accomplish.

Voice search, within the larger picture, understands a lot of context these days. Essentially, the systems powering voice search are getting smarter. Ask a question about the Empire State Building such as, "What is the address of the Empire State Building?" and it's pretty straight forward, obvious, and easily understood. But if your next question is, "How tall is it?" just a few years ago, our voice systems would have struggled to connect "it" with "the Empire State Building." Humans do this easily, but it's actually a very complex task for machines.

THE NUANCE OF VOICE SEARCH

"WHO IS HARRY POTTER?"



"WHAT IS HARRY POTTER?"

Ask the same contextually nuanced questions to



Google Home Pass

Understands the difference between both questions and delivers individual results which make sense contextually.



Amazon Alexa Pass

Understands the difference between both questions and delivers individual results which make sense contextually.



Apple Siri

treats them as the same thing, returning the same result for each query. Further, Siri does not read the answer, but displays the Wikipedia content on your phone.

Understands each question, but



Microsoft Cortana

Understands each question, but reads an answer to "what", while only displaying a Wikipedia entry for "Who".

Try these other queries with each service, and see how they compare:

- "What are the three laws of Robotics?"
- "Where were you born?"

¹ Questions posed on October 2nd, 2017

But all that's largely in our past. Today, the systems powering voice search understand context. In the example above, your device would say the street address, then answer the next question by telling you the official height of the building. And this leap is no mere parlor trick. A wide variety of data points exist to feed these knowledge-based systems — your physical location, the time of day, your past questions,

"AS A BUSINESS, YOUR ABILITY
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EXIST FOR AN INDIVIDUAL,
AND TO MEANINGFULLY MAP
YOURSELF TO THEM, WILL
DETERMINE YOUR LEVEL OF
SUCCESS WITH VOICE SEARCH."

and what you're doing on your mobile device at the moment (searching the web, looking for images, using maps, in your calendar, if you're in a particular app, and so on).

Our digital assistants can be controlled vocally, and can not only perform simple search activities for us, but can also control functions of our device (or other devices if linked), extending our ability to use voice controls in an ever widening sphere within our lives.

As a business, your ability to understand these moments of context that exist for an individual, and to meaningfully map yourself to them, will determine your level of success with voice search. For almost a decade, search has been a race between businesses to try to claim top rankings on select keywords. That made sense at the time because people searched online, on desktop computers. Today — and moving forward — these trends are changing. It's still important to focus on what people want, but the focus extends well beyond just keywords.

Now it's all about context. The systems, networks, connectivity, and devices give us a deep, rich understanding of much context today. The last mile is understanding how you fit into the mix. What do you bring to the table and how do you benefit the consumer. If the last decade was a race for keyword relevancy, the next decade is going to be a race of contextual relevancy. And the adoption of

voice control is changing the landscape quickly.

From basic keyword research to true digital agents, consumer behavior is changing — and to gain supremacy means being contextually valuable. The upside is that with this shift, the concept of *context* opens up so many new ways for a business to bring relevancy... way more than being simply keyword-relevant ever could. Essentially, it opens the playing field much wider, enabling big brands to expand into new niches, and for startups to claim a new space and cement a hold on their future. Small business, big business — the playing field is much more level now.

Context is king.



Major Smart Speakers & Services for Voice Search



Echo (Amazon)

Price: \$99.99 USD

Music sources:
Amazon Music
Spotify
Pandora
iHeartRadio
TuneIn

SiriusXM

Assistant: Alexa Activation:
"Alexa"
"Echo"
"Amazon"
"Computer"

Availability: USA, UK, Germany



Echo Plus (Amazon)

Price: \$149.99 USD

Music sources:
Amazon Music
Spotify
Pandora
iHeartRadio
TuneIn

SiriusXM

Assistant: Alexa Activation:
"Alexa"
"Echo"
"Amazon"
"Computer"

Availability: USA, Others TBA



Echo Dot (Amazon)

Price: \$49.99 USD

Music sources:
Amazon Music
Spotify
Pandora
iHeartRadio
TuneIn
SiriusXM (US)

Assistant: Alexa

"Alexa"
"Echo"
"Amazon"
"Computer"

Activation:

Availability: USA, UK, Germany



Echo Show (Amazon)

Price: \$229 USD Music sources:
Amazon Music
Spotify
Pandora
iHeartRadio
TuneIn

SiriusXM

Assistant: Alexa

Activation:
"Alexa"
"Echo"
"Amazon"
"Computer"

Availability:USA, UK,
Germany



Echo Spot (Amazon) Price: Music sources:

\$129.99 USD

Amazon Music Spotify Pandora iHeartRadio TuneIn Audible **Assistant:** Alexa

"Alexa"
"Echo"
"Amazon"
"Computer"

Activation:

Availability: USA, Others TBA



Google Home

Price: \$129 USD

iHeartRadio Spotify Google Play Music Youtube Music TuneIn Pandora

Music sources:

Assistant:Google Assistant

"Hey Google"
"Ok Google"

Activation:

Availability: USA, Canada, UK, Germany, France, Australia



Google Home Mini Price: Music

\$49 USD

Music sources: iHeartRadio Spotify Google Play Music Youtube Music TuneIn Pandora **Assistant:**Google Assistant

Activation:
"Hey Google"
"Ok Google"

USA, Canada, UK, Germany, France, Australia

Availability:



Google Home Max Price: Music sources:

Price: \$399 USD

iHeartRadio
Spotify
Google Play Music
Youtube Music
TuneIn
Pandora

Assistant:Google Assistant

"Hey Google"
"Ok Google"

Activation:

USA (Dec. 2017)

Availability:



HomePod (Apple) Price: Music sources:

\$349 USD

Apple Music Others TBA **Assistant:** Siri Activation: "Hey Siri" **Availability:**USA, UK, Australia
(Dec. 2017)



Invoke (Harman Kardon) Price: Music sources:

TBA (sub \$200 USD)

iHeartRadio
Pandora
TuneIn
Spotify

Microsoft Groove

Cortana

Assistant:

"Cortana"

Activation:

USA

Availability:



LF-S50G (Sony) Price: Music sources:

\$199 USD

TBD

Assistant:
Google Assistant

Activation:

"Hey Google"

Availability:

USA at launch



INVESTMENT:

What can you do to keep your business competitive?

1. Gain control over your digital knowledge.

Before you can expect digital assistants to know the facts about your business, you need to make sure you know them yourself. The foundation of any voice search strategy is organizing and centralizing all the public facts about your people, products, and locations in your own knowledge graph. It's important to have a central source of truth so you can easily make updates and maintain consistency. But technology alone will not address this underlying need. You also need great people — and a great process — to work together to source and actively manage your digital knowledge. In fact, it's time for a new role — the *Digital Knowledge Manager*.

A Digital Knowledge Manager is someone capable of reaching across various internal groups within your company. It's someone capable of arbitrating internal sources of customer-facing digital facts about your brand. Someone capable of managing all the digital assets a company has (or has yet to build) in a way that extracts the most value from each and every element.

The payoff for this role can be large. A Digital Knowledge Manager identifies new trends, technologies, and techniques that position your business as a leader, not a follower. As intelligent services like voice search continue to change the digital landscape, you must have someone who can properly align your programs, processes, and people to ensure the information about your business is accurate on every device, service, and platform consumers use today.

2. Actively manage your knowledge.

Your business is dynamic, and so are the facts about it. Store relocations, seasonal changes, special promotions, weather closures — it's all in flux. That means managing your brand's knowledge isn't a 'one-and-done' project. And both your customers and intelligent services — like voice search or intelligent assistants — expect increasingly

rich knowledge about your business (i.e. whether you are LGBTQ-Friendly, or if you offer WiFi). It's time to start actively managing your knowledge both inside your organization, and publicly — everywhere consumers look.

3. Publish your knowledge.

As soon as you organize your knowledge, publish it to all the places intelligent systems look to supply answers to voice searches — that means intelligent services themselves, wherever possible, plus your website, apps, and any internal systems. Anytime a piece of knowledge changes, publish again. This is an active process. And it isn't simply about consistency. It's about providing the most accurate, up-to-date information everywhere, all while offering an excellent consumer experience.

4. Refocus your website and digital assets on the conversational long tail.

Search engines don't work miracles. If you hide your content, or make it difficult to discover, it won't show up when people search for it. Your website, videos, and other content are key to contextualizing the public facts about your business for intelligent services... but only if those intelligent services can find and understand it.

And make sure your site is mobile-friendly. This matters less when a consumer is using Google Home or Amazon Alexa, but since phones are still the bulk space for voice interactions, having a mobile-friendly website still matters a great deal. Responsive websites with clean code and a robots.txt file result in new voice search answers that highlight your brand.

5. Embrace Schema markup.

Your website and digital assets should leverage Schema. org markup to ensure proper association of your content with categories that the engines understand and elevate in answers and results sought by searchers.

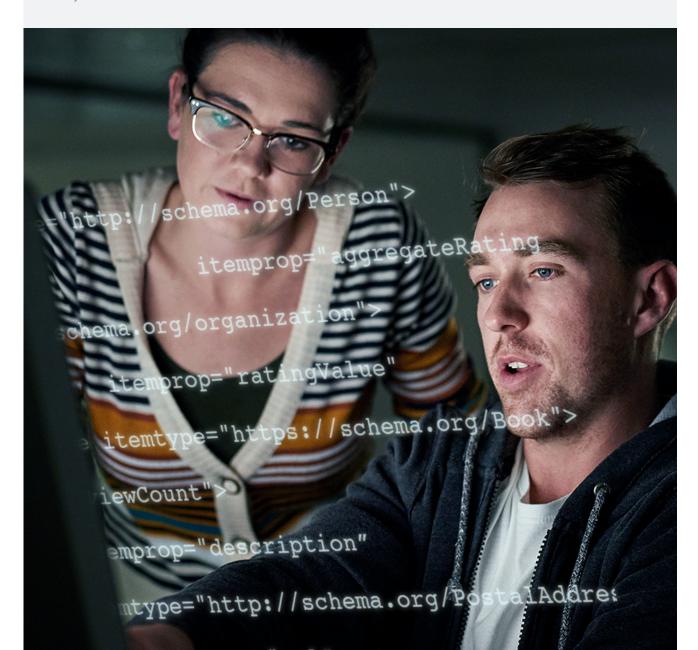


MAKE YOUR WEBSITE INTELLIGENT.

Intelligent services rely on structured data to provide rich experiences — so you need to ensure the data about your brand is structured in a way these services understand.

Schema Markup helps your website speak the language of intelligent services so they can understand, categorize, and structure the information about your brand.

With Yext Knowledge Tags, you'll make your website the most reliable source of information about your brand. Easy to implement using a Javascript library, Yext Knowledge Tags let you add Schema to your website with just a single line of code.

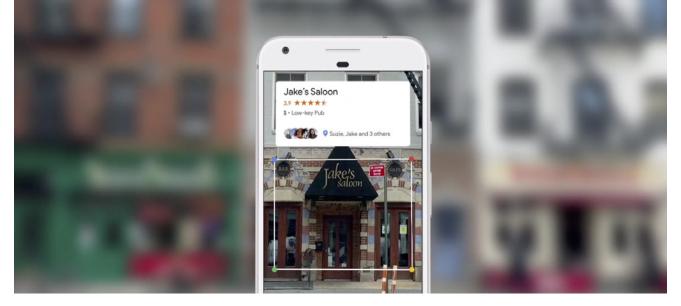


THE FUTURE:Ready for visual search?

We've already witnessed Amazon moving into the visual search space with their Echo Look, Spot, and Show products. These devices solve a major issue with retailing products in the era of voice search — how can the consumer be certain that what they asked for is what they will get? Will it be what they expect? This is a current hurdle when using Alexa to shop. Alexa can describe the product all day long, but at the end of the day, a picture is still worth a thousand words.

This is the space the Echo Show fits into perfectly. Talk to it, and it shows you the product you're discussing. This dramatically increases consumer confidence that what they're ordering is actually what they want. The Amazon Echo Look exists for a couple of other reasons. Driving sales is definitely a factor for them, but so is being seen as helpful. The Look's job (wait for it) is to look at you. It sees what you're wearing and offers guidance on style. *This top, those pants, these shoes*, and so on. Because this puts Amazon directly in the path of the customer's personal journey to look good, there's a good chance that consumer will develop an affinity for the product — one that may even develop into reliance.





Google

The Echo Spot is designed both literally and figuratively to fill a space between devices in the Echo line, occupying a smaller physical footprint, which allows it access to more places in your home - like your night stand.

As we see more augmented (and virtual) reality solutions start to materialize, the blending of data once only shown in search results will become commonplace across visual interfaces. Be that your phone, glasses, flexible screens embedded in our clothes, and so on. All that data that you've invested in, marked up, and curated will be useful across an entirely new ecosystem of solutions. Apple recently released it's ARKit for developers, a platform enabling developers to build for the augmented reality capability in upcoming iPhones. And Google recently released ARCore, its developer platform for AR development on Android.

Then there's Google Lens. Lens will give consumers the ability to search in reverse, by taking a picture of something that they're curious about and discovering information about the object in the photo. So instead of searching for a known item and finding an image of it, the customer will take a picture of an unknown object, learn about it, and then potentially take action based on this information.

To connect with emerging consumers as they grow into their prime purchasing power, businesses will have to increase their level of focus on visual engagement. While YouTube has been a force for years, in the near future it's going to be the SnapChats and Instagrams that take over time-engagement metrics (with platforms like Twitter and Facebook flattening). We've seen the growth of these visual-first spaces steadily increase, and now predictions

indicate there will soon be a tipping point. To paraphrase a well known song, the future's so bright, we gotta wear shades. Smart shades of course.

Now if we look beyond even visual search, we start to see the rise of digital agents. Today's consumers are already familiar with digital assistants. It's essentially what we all have in our phones — Siri, Cortana, and Google Assistant are the primary examples.

Digital agents are a big step beyond this. A digital agent would work more like an actual personal assistant. For example, a digital agent could book your travel for you. It would have access to your airline of choice, your frequent flier information, seat preferences, and it would be able to book the seat you want on a flight. This means it would have access to, and authority to use, your credit card information. A digital agent would verify your calendar, book the ticket, and only come back to you with a confirmation once the task was complete. When we reach this stage, a shift will happen with consumers (again), as our individual digital agents begin to take over more and more of our daily life-tasks. Ordering food, ordering groceries, online shopping, juggling a family's busy schedule, and so on.

So we've come from 2001: A Space Odyssey's Hal to Iron Man's J.A.R.V.I.S.

J.A.R.V.I.S., in theory, has our best interests in its virtual mind. At that point, we'll have a virtual entity that we can see and hear, handling most of our mundane tasks in the background. For businesses hoping to make it through that virtual gate managed by our digital agents, it's going to be critical to show how you provide value to the consumer.



ARE YOU ADAPTING TO INTELLIGENT SEARCH?

Intelligent search is changing everything. Today, the biggest change by far is being driven by voice search and the increasing popularity of those devices that harness it. Artificial intelligence is behind the growth of voice and visual search — and the data these systems collect from your everyday actions makes them smarter by the minute.

We will soon reach a point where those not investing in **Part 4** above will begin to fall behind the curve. It's an obvious opportunity for fast movers and early adopters — and a cautionary tale for those still deciding when and where to invest in intelligent search.

The time is most definitely now.

Just ask Siri...

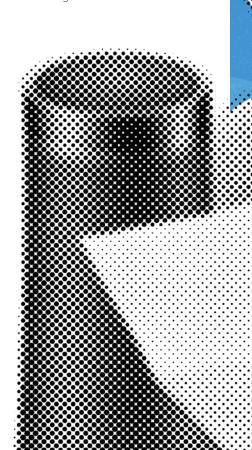
or Alexa...

or Google...

or Cortana...

or Bixby...

or Yext at voice@yext.com





About Yext

Yext is defining a new category called digital knowledge management, which helps businesses manage all of the public facts that they want consumers to know across the digital ecosystem. The Yext Knowledge Engine[®] lets companies manage their digital knowledge in the cloud and sync it to over 100 services in the PowerListings[®] Network. Yext Listings, Pages, and Reviews help businesses around the globe facilitate face-to-face and digital interactions that boost brand awareness, drive foot traffic, and increase sales. Learn more at **yext.com**



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