‣ **BUILDING CAPACITY**

Building Capacity With Voice First

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Introduction

The term "voice first" refers to the emerging practice of using natural voice speech as a primary means of requesting services, getting information, and making orders. You've certainly seen its possibilities in consumer devices such as the Apple HomePod, Google Home, and Amazon Echo.

Natural speech, featured in science fiction and much anticipated in technology, proved difficult in practice. Voice presents several inherent challenges, including the ability to discern all spoken words and context, and conclude meaning. Consider all the prominent accents and nuanced communications to support. The modern-day transformative technologies overcoming these challenges are increasingly faster computer processing and connected cloud computing.

Note that there exists just a tiny bit of circuitry on each device. It's just enough to identify the wake word (e.g., "OK, Google," "Hey Siri," or "Alexa"), record the commands that follow, connect to your network and Internet, and receive/voice a response. It's your connection to the Internet that makes the difference as those voice recordings are rapidly transmitted to ultra-powerful computers in the cloud. And it is the cloud computing power that parses your command and composes the proper response.

I attended a conference of city and county chief information officers recently. We identified both threats (e.g., security, privacy, workforce) and opportunities (e.g., cloud-cloud, analytics, and artificial intelligence/machine learning). The most memorable presentation declared that local government systems must be prepared to be where its residents live. That is, if mobile is at critical mass, be on mobile (noting that many health departments have embraced mobile). If voice is at critical mass, be available for voice.

During the National Environmental Health Association's (NEHA) 2019 Annual Educational Conference (AEC) & Exhibition this July in Nashville, Tennessee, we had a lot of fun with an educational session jokingly titled, "Alexa, Should I Eat at Big Billy's Drive-In?" In this session, we posited that health department staff and residents are ready for voice and that using voice is not out of reach for forward-looking health departments.

We used inspection data already published to the web and built and demonstrated a modest project using Amazon Echo, a device that is both inexpensive and popular. Our selection is not an endorsement of the product, rather it was based on the reasons previously stated. We then demonstrated how one could ask for inspection results and details for a named retail food facility. We also coded the "skill" with extra information that might help residents and health department staff.

Several examples follow:

- **Command:** "Alexa, ask my health department how Big Billy's Drive-In did in its last inspection."
  Response: "Big Billy's Drive-In was last inspected on September 30, 2019. The result was good with no violations."

- **Command:** "Alexa, ask my health department for its address."
  Response: "The XYZ health department is located at 123 North Main Street and is open weekdays from 9:00 a.m. to 5:00 p.m."
- **Command:** "Alexa, ask my health department for a food safety tip."
  Response: "Surfaces should be washed with hot soapy water. A solution of 1 tablespoon of unscented liquid chlorine bleach per gallon of water can be used to sanitize surfaces." (Source: U.S. Department of Agriculture, www.choosemyplate.gov/ten-tips-be-food-safe.)

Other ideas (not implemented) included an inspector reviewing prior violations on the way to an inspection, a food safety self-audit survey for operators, and voice-based consumer complaints.

One can appreciate how a small demonstration project like this one can potentially help renew interest in the health department's mission—it gives health department inspectors and restaurant staff a relaxed way to start a conversation that ends in a meaningful message and awareness. It's also fun and brings the spotlight back around to your department and your passion.

Elements of a Voice-First Demonstration Project

Select a Platform (or Platforms)
The path forward is different for each of the three major platforms: Apple, Google, and Amazon. In our project, we considered which platform had the most users and was easy to approach.

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We selected the Amazon Echo for its market penetration and its enthusiasm for businesses, governments, and hobbyists building additional capabilities like ours. See the Resources sidebar to begin your project journey.

Catalog Available Data Sources
There exists a plethora of public facing sources of inspection data. For our project, we selected a local health department with publicly available inspection history, violations, and ratings. We avoided the permissions issue by beginning with open data.

For your project, first check with your information technology (IT) department or software vendor and ask how your data could be made visible to devices like Amazon Echo.

Build, Market, Evaluate, Iterate
The build required some programming, trial, and error. Thankfully, the Internet provides a universe of tutorials and examples. Still, it is a task oriented towards the aspiring or working programmer as the final result required

some JavaScript programming (although other languages are supported).

Before you release your project to the outside world, you'll have ample opportunity to test it with your own device. This testing is what we did at the NEHA 2019 AEC.

When you are confident of its usability, there's just one more step to make the skill visible to the outside world and to launch your marketing campaign. You need to complete a short checklist of best practices. Publish a YouTube video showing how it works. Who knows, it might go viral!

As we advanced our project, we found more and more ways to add capabilities. Repeating food safety tips was not among our first goals. As we followed tutorials, we got excited to see the possibilities for public health advocacy. 🐾

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