

## ► BUILDING CAPACITY



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## Build Capacity by Automating the Boring Stuff

**Editor's Note:** A need exists within environmental health agencies to increase their capacity to perform in an environment of diminishing resources. With limited resources and increasing demands, we need to seek new approaches to the business of environmental health. Acutely aware of these challenges, the National Environmental Health Association (NEHA) has initiated a partnership with Accela called Building Capacity—a joint effort to educate, reinforce, and build upon successes within the profession using technology to improve efficiency and extend the impact of environmental health agencies.

The *Journal* is pleased to publish this column from Accela that will provide readers with insight into the Building Capacity initiative, as well as be a conduit for fostering the capacity building of environmental health agencies across the country. The conclusions of this column are those of the author(s) and do not necessarily represent the views of NEHA.

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I came across a book with a provocative title, *Automate the Boring Stuff With Python: Practical Programming for Total Beginners*, by Al Sweigart. Python is a programming language and this book serves as the entry-point for new programmers. But just ignore that for a moment.

It's the premise that I love: Automate the boring stuff.

I would never deride anybody's chosen craft or all the hard work that goes into its daily execution, so I'll pick apart my own job for a moment. There's the exciting stuff that gets my heart pumping and then there's the boring stuff:

- Finding time on others' calendars, especially outside of your organization.
- Spending time on expense reporting, time-tracking, mileage reports, and the like.
- Weeding through my inbox.
- Making simple, routine, and repetitive responses to emails.
- Maintaining my to-do list.

Alright, so what about environmental health professionals? What is the boring stuff that could be automated?

- Scheduling inspections.
- Coordinating with operators.
- Following up on inspection documentation.

- Writing out the details for common violations along with the corrective actions.
- Organizing photos.

Most data systems automatically schedule routine and follow-up inspections for you. Hopefully that's covered. Many systems also allow your department or bureau to create a library of standard comments and paragraphs that can be pasted and edited. But perhaps we could do better with automation.

### Remember Machine Learning and Artificial Intelligence?

Worldwide businesses are leaning in on artificial intelligence (AI) and machine learning (ML). In short, these concepts mean that instead of hiring a programmer to code the behavior of a system based on a specification, we can train a system by feeding it millions of examples of historical desired behavior. Train, not code.

In the April 2020 Building Capacity column, *Experimenting With Artificial Intelligence to Build Capacity*, we investigated how ML and AI could be used to “score” or predict the likelihood of food safety violations and perhaps, by extension, the likelihood of food-borne illness ([www.neha.org/sites/default/files/jeh/JEH4.20-Column-Building-Capacity.pdf](http://www.neha.org/sites/default/files/jeh/JEH4.20-Column-Building-Capacity.pdf)). We explored training the model with years of inspection history, inspector commentary, and additional factors such as facility ownership and longevity in the program.

### Automating Routine Communications

I'm warming up to the predictive text feature recently added by Google's Gmail (branded Smart Compose) and Microsoft Outlook 365

FIGURE 1

### Example of Predictive Text

No irreversible temperature| registering indicator for high temperature dish machine.  
Corrective actions: Obtain thermolabels or similar device to verify surface temperature of dishes reaches 160 °F.

*Note.* In the example above, the inspector began by typing “No irreversible temperature” and the system proposed the light grey text as a possible finish. To accept the completion, the inspector presses the tab key and moves on to compose the next sentence. The proposed language was learned by previously entered comments.

(branded Text Predictions). Maybe you’ve noticed it. The system predicts the rest of your sentence as you type (Figure 1). If you like the suggestion, you can press the tab key to accept the proposal and, voilà, you’ve added a computer-generated response right into your communications!

If you choose to ignore the suggest text, you can continue to type out what you had in mind. The system abandons its suggestion and learns just a little bit more about how you like to respond in different contexts.

In these and similar features, the machinery is trained in advance by feeding it millions, maybe billions, of common language phrases. Depending on the computing power, the system might offer only the next likely word. In more powerful applications, the system could propose the exact next sentence or even the next paragraph.

In one example I studied, the system was trained with the complete works of Shake-

spere. This exercise yielded a very strange result, indeed. Or I should say, “This did yield a v’ry strange result, forsooth.”

### Automating Inspector Comments and Office Communications

To apply this concept to our space, we must begin with examples of well-formed communications. Guess what? Most health departments, having been computerized for 10–20 years, have years of inspector comments and other communications.

In fact, one large inspection database to which I have access includes over 250,000 inspector comments! When we train a model using an environmental health professional’s distinct language, the system begins to make recommendations that are in line with the type of communications we need to express on our inspection reports.

You might ask, “What about variability?” or “What about the rogue inspector who

didn’t adhere to the department ‘style guide’ for inspector comments?” The answer is twofold. First, if those authors are known, they can be explicitly excluded. Second, the “poor practices” of the minority of authors is quickly overshadowed by the preponderance of good examples. Further, as inspectors decline poorly worded suggested text, the model learns that they (the poorly written communications) are out-of-favor, essentially downvoting them out of existence. So, it’s not a one-time configuration—it’s learning.

I have one more aspiration for this feature request: facility-specific comments. If I’m at a facility that lacks a walk-in cooler, then no proposed text should ever reference a walk-in cooler. If I just took five temperature readings, then the proposed narrative should insert those readings interstitially into the proposed comment.

### Conclusion

The examples above are aspirational today, but they are not science fiction, It’s a matter of applying the available tech to more and more precise job functions. In the coming months and years, you might be invited to train, evaluate, and influence automation that can reduce keystrokes and improve automation. Remember that improving the underlying systems has a multiplier effect on the output of all its operators. 🐛

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