



## Don't Touch!

Due to COVID-19, consumers are wary of using public touchscreen devices, including ATMs, beverage dispensers and self-service checkouts. In this two-part series, we explore voice and gesture interfaces as touchless options to develop for interacting with needed devices, as well as offer guidance for effectively cleaning currently deployed public touch devices to limit risk from the novel coronavirus.

*By Mark Hatch and Stephanie Van Ness*



## COVID-19 Gives Voice and Gesture UIs New Relevance

A glance around any ER, OR or hospital ward and it's clear that touchscreen technology plays a prominent role in patient care. From AEDs to infusion pumps, most of these highly sensitive and often lifesaving devices are controlled by a user interface (UI) that requires it to be touched by a human hand.

Until now, that's been a great thing. **Touchscreen interfaces have vastly improved how we operate and interact with critical devices.** Well-designed interfaces deliver exceptional UX, or user experiences, so it's much easier for say an oncologist to precisely deliver radiation therapy or for a nurse to quickly check a patient's vitals. And, touchscreen control has improved the safety of medical devices, leading to better patient outcomes.

But...

**Improperly or infrequently cleaned touchscreens can also be the source of infectious diseases.** Scientists have found a plethora of bacteria on touchscreens, including *Enterococcus faecalis* (*E. faecalis*), which causes a soaring number of hospital-acquired infections. According to the World Health Organization, 99,000 deaths annually in the U.S. are attributed to HCAs at a cost of \$6.5 billion. And potentially deadly COVID-19 can easily be spread by touching a surface like a touchscreen that has infected respiratory droplets on it and then touching your face.

Ick.

Now, I'm certainly not trying to make the case for eliminating touchscreens. The lifeblood of my firm, Integrated Computer Solutions, involves designing UX/UI for touchscreen devices, and developing the custom software that runs these touch devices. **Touchscreens are an integral part of our daily lives and in most use cases touch tech is the most practical, reliable, readily available, efficient, cost effective and intuitive option.**

What I am saying is this: in today's age of novel coronavirus, where every surface is a potential contaminant and personal protective equipment is traded on the black market like illegal drugs, **medical device makers in particular should explore touchless interfaces like voice and gesture far more aggressively than they have in the past.**

## The Role of Touchless Interfaces in Healthcare Environments

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In non-sterile settings like patient rooms, nursing stations, long-term care facilities and elsewhere, there's a place for gesture and, even more so voice, interfaces. They can help healthcare workers access medical records and deliver patient care quickly, conveniently and, moreover, safely.

Researchers at Fraunhofer, Europe's leading application-oriented research organization, a few years ago developed a smart "proxemic monitor" for hospital ICUs that displays data from connected medical devices and can be controlled from a distance, without contact, via either gestures or voice commands. Without the need to touch a device, the risk of transmitting pathogens is nearly eliminated.

Certainly, in environments like operating and emergency rooms, which may be loud and chaotic, voice tech might not be the right choice. Alexa might not be able to clearly hear instructions over the din, which could negatively impact a patient. Or, she might not understand the specialized vocabulary of medicine and execute a command incorrectly, which could be disastrous.



***But, there's clearly a role for at least gesture tech in these situations, and for both voice and gesture tech elsewhere in the healthcare ecosystem.***

In the operating room, **surgeons could, for instance, use gesture interfaces to access information and imaging pertinent** to the procedure while maintaining a strict boundary between what is and isn't sterile. A gloved surgeon could call up a patient's MRI or chart with simple hand gestures and add notes by "writing" in the air.

So here's the bottom line.

No, voice and gesture tech aren't a perfect fit for every environment. And no, **touch technology has not outlived its usefulness**. For most applications, it's still the best choice as it provides exact control of devices and input. That's something voice and gesture have not yet achieved.

But, the global pandemic we're suffering through reminds us as device makers that we need to consider all use cases and match the best solution to each. In many cases **in the medical realm, that may mean increased relevance of devices with touchless interfaces**.

## **References:**

WHO report on the burden of endemic healthcare-associated infections worldwide, 2011.

<https://info.debgroupp.com/blog/touchscreens-vectors-of-infectious-disease>

<https://www.fraunhofer.de/en/press/research-news/2016/February/medical-monitor-with-eyes-and-ears.html>

[https://www.mpo-mag.com/contents/view\\_online-exclusives/2019-12-02/dont-touch-gesture-tech-is-reshaping-how-we-interact-with-devices/](https://www.mpo-mag.com/contents/view_online-exclusives/2019-12-02/dont-touch-gesture-tech-is-reshaping-how-we-interact-with-devices/)



## Lose the Ewww: How to Clean Customer-Facing Touchscreens to Reduce COVID-19 Risk

We live in a touchscreen society. From ATMs and grocery store checkouts to airport ticket kiosks and fast-food self-serve ordering stations, there are public touchscreen kiosks and point-of-service (POS) touchpads everywhere. They're popular because they offer exceptional convenience, allowing people to quickly get the information or item they want without having to wait for human assistance.

But, in our current climate, where the mere mention of coronavirus germs cause heightened anxiety, are touchscreen kiosks safe to use?

The short answer is yes...*if*.

If they are cleaned frequently and properly.

### Touchscreens are a Better Alternative to Human Interaction

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The novel coronavirus may survive on some surfaces up to (and perhaps longer than) nine days – and you can catch COVID-19, the disease caused by the virus, simply by touching a contaminated surface and then touching your eyes, nose or mouth. So, it may seem counterintuitive that touchscreen technology can actually enhance safety and deliver peace of mind. But that's the case if proper care is taken to ensure these surfaces are free of contaminants.

**“Using properly cleaned touch kiosks and POS systems rather than interacting with humans is good practice in terms of limiting the spread of germs, even without the specter of coronavirus,”** explained Peter Winston, CEO of ICS/ViewPoint Interactive. “For instance, using a credit card and touchpad at the grocery store, or Apple Pay on your phone, means you don't have to hand the cashier cash. Not only is the **currency filthy**, but the cashier's hands may be as well – even if they're periodically cleaned using alcohol-based hand sanitizer. And you can also sufficiently distance yourself, which is essential when not every person out in public is wearing a protective mask.”

**Of course, the benefits of avoiding humans in favor of touchscreens only pan out if those screens are cleaned often.** (In the current environment, “often” translates to “between every customer.”)

Here's why.

Even though touchscreen technology is providing consumers with desired convenience, touchscreens and touchpads *can be vectors of infectious diseases* (if not cleaned properly). Scientists have found a plethora of bacteria on touchscreens, from staphylococcus, which causes nasty and often antibiotic-resistant infections, to *Enterococcus faecalis* (*E. faecalis*), which causes a soaring number of hospital-acquired infections. (According to the World Health Organization, 99,000 deaths annually in the U.S. are attributed to HCAs at a cost of \$6.5 billion.)

London Metropolitan University in 2018 found that touchscreens in some McDonald's restaurants carried traces of feces. “It is a serious issue since most customers eat immediately after placing their order and grabbing their bag of chicken nuggets and fries,” Winston said. “Of course, the problem is not unique to McDonald's.”

It applies to any outlet that sells food that will be eaten without utensils. Hungry customers are extremely unlikely to not wash their hands after touching the ordering kiosk and before eating their food.”

And, the issue is not unique to food service. Research by Insurance Quotes found an average of 253,857 colony-forming germ units per square inch on airport check-in screens. Enterococcus faecalis bacteria, even listeria, have been found on public screens, including those in many hospitals. An E. faecalis infection may cause fever, fatigue, headache, chills, vomiting, and diarrhea. And in more severe cases, can lead to meningitis or urinary tract infections. Listeria in pregnant women, if left untreated, can cause miscarriages and stillbirths.

And, let’s not forget that the germs that cause colds and flu – and the potentially deadly COVID-19 – easily can be spread by touching a surface like a touchscreen that has respiratory droplets on it and then touching your face.

***So how do you clean touchscreens kiosks and protect yourself and your customers using these devices of modern convenience?***



## How to Clean Effectively Without Damaging Your Device

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If you’re using a touchscreen, the focus should be on frequent and effective hand washing, as well as disinfecting personal items like credit cards and mobile phones (especially mobile phones, which harbor 10x the germs of toilet seats!) after use. Here’s a helpful tutorial on how to clean your phone without damaging its oleophobic and hydrophobic coatings, which prevent water and oil from damaging the display. (If you have an iPhone, Apple recommends using a 70 percent isopropyl alcohol wipe or Clorox Disinfecting Wipes to gently wipe hard, nonporous surfaces. Avoid bleach.)

If your business owns customer or employee-facing touchscreens – information kiosks, pay-at-the-table credit card processors, handheld and fixed-tablet POS touchscreen systems – the cleaning task is more involved as this equipment rarely gets the same level of sanitation attention as other surfaces in a facility, such as countertops.

Proper touchscreen cleaning requires a frequent sanitizing protocol using suitable disinfectants and cleansers that will not harm your valuable devices. Jeff LeBlanc, Director of User Experience at touchscreen kiosk manufacturer Advanced Kiosks, says the company tells its customers that hand sanitizer can be used to clean almost all monitors and components to ensure a clean touchscreen. “We recommend they use a damp cloth to wipe the monitor. They’re told not to saturate the cloth or surface of the monitor or any components, and to avoid any openings or ports.”

LeBlanc’s firm developed detailed instructions on how to safely clean a variety of touchscreen monitor types, including surface acoustic wave, projected capacitive and infrared. For instance surface capacitive

touchscreens, commonly found in retail environments, have a transparent electrode layer on the top of a glass panel, covered by a protective layer.

“When an exposed finger touches the monitor screen, it reacts to the static electrical capacity of the human body, which allows the screen to pinpoint the position of the finger,” LeBlanc said.

### **This is how his firm recommends cleaning these types of monitors, using a soft lint-free cloth:**

- ◇ The cloth may be used dry, or lightly dampened with a mild cleaner. For example, you can use a mild soap and water solution, a 50% isopropyl alcohol mixed in 50% water solution, or a disinfectant product such as Virex.
- ◇ Be sure the cloth is only slightly dampened, not wet. Never apply cleaner directly to the touch panel surface; if the cleaner is spilled onto the touch panel, soak it up immediately with absorbent cloth.
- ◇ The cleaner must be neither acid nor alkali (neutral pH). A small amount of hand sanitizer can work.
- ◇ When using cleaner, avoid contact with the edges of the film or glass.
- ◇ Wipe the surface gently, and wipe in small circles.
- ◇ Never use acidic or alkaline cleaners, or organic chemicals such as: paint thinner, acetone, toluene, xylene, propyl or isopropyl alcohol, or kerosene.
- ◇ Use of incorrect cleaners can result in optical impairment of touch panel and/or damage to functionality.

“Regardless of the type of customer-facing touchscreen your business utilizes, as the owner the onus is on you to make sure your restaurant’s Coke Freestyle beverage dispenser or your bodega’s digital cash register or your fuel franchise’s gasoline pump – or any other public screen you control – is clean and ready for customer use,” Winston said.

“Touchscreens are of immense benefit to businesses, their customers and their employees in terms of convenience, ease of use and easy access to essential information,” Winston stressed. “Let’s make sure they don’t become a source of anxiety or disease transmission.”

#### **Mark Hatch, Chief Operating Officer**

Mark joined ICS, which owns ViewPoint, in 1995 as VP of Marketing and today oversees operations for the company’s mainline Qt business. He has over 30 years experience in the development and business aspects of software development tools. Previously, Mark was VP of Marketing for a networking middleware company, as well as Manager of Software Marketing for Apollo Computers where he played a key role in the formation of a number of key industry groups, including the X Consortium and the Open Software Foundation. Mark has a Masters in electrical engineering and computer science from the University of California, Berkeley, and an MBA from Boston University.

#### **Stephanie Van Ness, Assoc. Director of Marketing Communications and Chief Storyteller**

Head of content development at ICS and ViewPoint, Stephanie is an experienced copywriter with a Boston University J-school degree. She covers user experience (UX) design and innovations in technology, from self-driving vehicles to gesture-controlled medical devices. Her work has appeared in a number of industry publications, including *Medical Design & Outsourcing*, *Mass Device*, *Connected World*, *Medical Device + Diagnostics*, *UX Collective* and *Prototypr*.

#### **About ViewPoint**

ViewPoint leverages powerful touchscreen technology to create interactive kiosk experiences – from gamification applications to immersive corporate environments – that help organizations deepen engagement with their audiences.