



The Tech User Experience Needs an Upgrade

Personalization meets AI

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EXECUTIVE SUMMARY

The user experience is deteriorating. As the baby boomers age into their 80s over the next few years, their dependency on tech access will grow – for services that are no longer in-person experiences. These include financial management, healthcare access, social networks and more. Most of the 65+ today own smartphones in addition to other tech tools. However, the management of those tools may seem more complicated, and not designed with them in mind, as recent surveys of older adults have shown. User interfaces for the same application vary across devices. Access methods have been optimized by the businesses striving to outsmart hackers. And new kiosks and QR-code enabled interaction are designed to reduce dependence on employees, moving the task burden and associated steps over to the user. Beyond tech, complicated user experiences can be found in cars, stoves, microwaves, TV remote controls and washing machines.

The user's experience with a technology has been turned over, in many cases, to product developers. The use of focus groups, empathic and empathetic design practices are giving way to more frequent releases, some poorly thought out, bug-ridden and needing to be called back. Managing the collection of internet-connected devices in a home has become a burden, with frequent upgrades, bug fixes, and replacements. Users who are not technically proficient increasingly will rely on family members and outside services to troubleshoot their Internet-connected TVs, smartphones, wearables, tablets, computers, and smart home technology. And accessibility of technology, both in-home, online, and out and about appears to be a hit-or-miss proposition.

Artificial intelligence (AI) tools are emerging that can improve the user experience, including access to an opt-in profile for use with our multiple applications and tools. Personalization of technology can begin at the point of purchase, using our preferences and characteristics, our accessibility needs, and enabling streamlined sign-on for subsequent use. Conversational AI tools will remember our preferences and make suggestions that match them. Face and voice recognition, if available, will be used to make sign-on and access easier and personal. AI technology will enable organization of many tasks into a single directive

As the pace of inevitable tech change collides with an aging demographic, companies will again seek user input as to what works, what is too much, and how best to utilize tech that can help older adults obtain what they need. This will be particularly required in healthcare, with an aging population consuming more time and needing more care. Accessibility features will simply become technology features, ending the distinction in time for this population to use tech that is optimized for them. Training offerings will be widely available and online so that users can learn about new procedures before they need to use them.

WHO SHOULD READ THIS REPORT?

- **Investors and funds that focus on older adults**
- **Senior living organizations**
- **Professional home and health care companies**
- **Vendors within or considering entry into the remote care technology categories**
- **Technology platform providers and resellers**
- **Telecommunication carriers and network service providers**
- **Social services and non-profits with focus on older adults**
- **Healthcare professionals**
- **Pharma and med tech companies**
- **Home electronics and appliance companies**

ACKNOWLEDGEMENTS

This report is based on interviews held with 26 experts across multiple domains, all of them engaged in one or more aspects of user experience, design, and technology. In particular, I would like to thank Jane Sarasohn-Kahn, THINK-Health and Amy Stapleton, Opus Research for their thoughtful insights.

FRUSTRATION AND OBSTACLES AWAIT OLDER ADULTS

Is the user experience deteriorating? Tech user experience experts tend to [focus on everyone except older adults](#). But there’s a problem: from [AARP’s tech trends survey from 2024](#) and their [2023 guidance from AARP](#) on inclusive design practices, it’s clear and as the AARP report notes, “No one prefers badly designed, over-complicated products.” Despite preferences, surveys show that today’s user experience for older adults is more problematic than ever. All are confronted with buggy software and [frequent bug fix releases](#), such as a problem on iPhones that an embarrassed Apple redirected software work towards fixing.

Smartphone and smartwatch adoption highlight user interface (UI) inconsistencies. Broad older adult adoption of smartphones has inadvertently introduced more, not fewer barriers to achieving digital competence. As the screen size shrank in comparison to PCs, Macs, and iPads, the differences between user interfaces became more obvious. Developers have adjusted features to utilize more icons and fewer words, creating confusion. And the same app on a PC, iPhone and Apple Watch are strikingly different, assuming the app interface is even visible on the watch. But the sign-on process that is difficult may be impossible on a smartphone. To verify that you are you, an authentication process requires two devices to log in – one of which is a phone – [cumbersome enough to invite satire in the Wall Street Journal](#) (see **Figure 1**).

	Smartphone ownership	Tablet Ownership	Wearable
All adults	90%	More than 40%	49%
Age 65+	76%	32%	27%

Figure 1

Source: Pew Research and Rock Health (2024)

*“The requirement for two-factor authentication to do simple online tasks can baffle older adults. And it is a hassle when trying to finish work. – Mary Furlong, **Mary Furlong and Associates***

Convenience and portability today compete with clarity and usability. There is no turning back the clock – [older adults will own smartphones](#). They need them to function outside the home – and they will learn enough to do those required tasks on whatever apps are required: GPS directions, chat with a grandchild, book a restaurant. You may have observed a couple in which one of them is more proficient and assigned those tasks. But even the proficient will be frustrated by forced change. They will delay the upgrade to a new phone because of the hassle factor. They will wish for a simpler time, when they sat in front of a (relatively) large screen. They used relatively few apps and the login processes were simple, passwords were short and easily reused.

Non-technological options are disappearing. Not just the local bank branch – many of the required tasks of life have moved online. Getting a medical appointment or test results can be a nightmare. One example: consider a health practice that permits online scheduling of appointments, but will only cancel them by telephone, where the wait time is intolerable.

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Surveyed older adults know that designers don't consider them. Consider that 69% of the 65+ surveyed by [AARP](#) answer No, technology was not “designed with their age in mind.” From the survey: “Users have to teach themselves platform updates” and there are “too many steps to set up devices, with too many unnecessary options that are confusing.” As for online access: “the processes are complicated.” Perhaps they were thinking of Two-Factor Authentication (2FA or MFA), which adds a text messaging step to the login process, adopted by 87% of the tech industry. Other industries have varying [levels of adoption](#), healthcare and government lagging behind banking and insurance (see **Figure 2**).

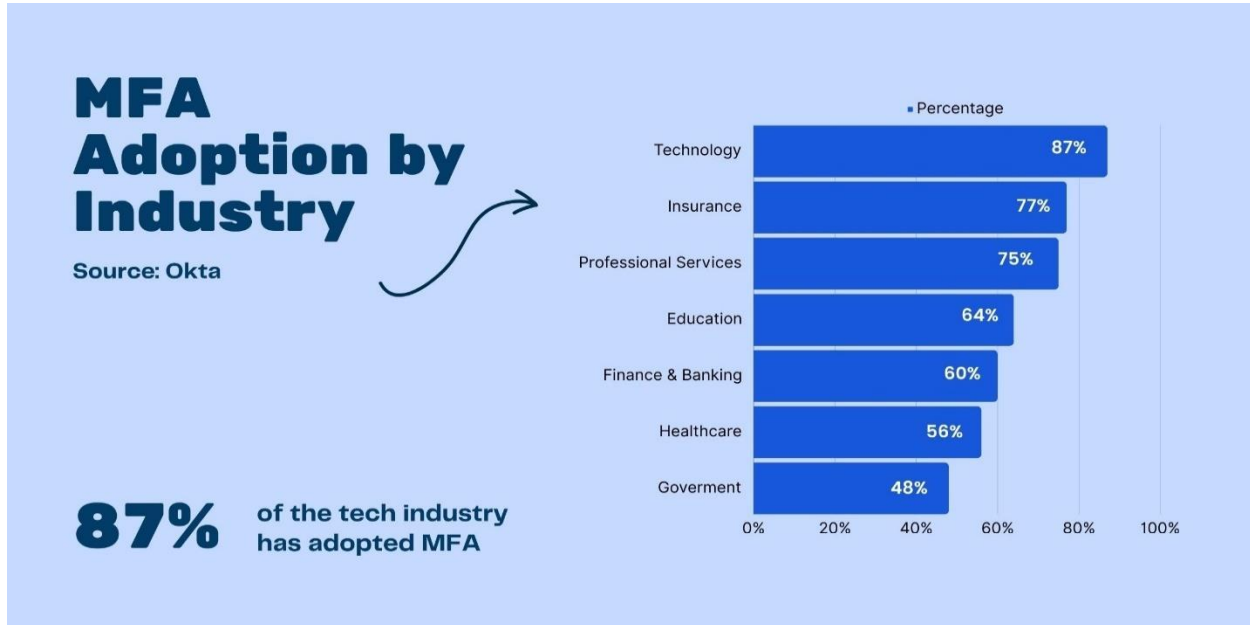


Figure 2 Multi-factor authentication adoption by industry

Source: Resmo, Nov 2023

“We have lost our way in terms of empathic design as features multiply. To access them and use to full capabilities – the goal is 2-3 clicks and it is now at least 4-5 clicks.” – Shea Gregg, FallCall Solutions

No surprise, access methods have been optimized from the business' lens. Businesses believe that 2FA provides [critical digital security protection](#). Some companies, like Google, intend to mandate it. But caution, as with nearly all tech, [hackers have found a way to bypass it](#), ironically just by annoying users with repeated requests. QR Codes are becoming a Covid-era relic in menus. That doesn't mean they have fully disappeared, but they [irritate customers](#) who don't want to pull out their phones in a restaurant – and actually enjoy speaking with the wait staff. In theaters or ballet performances, the QR code is optimal for presenters, if not the audience. It is the key to providing additional information about the audience, as well as marketing other services and events. It may seem odd to pull out a phone in the dark to read the program, but audiences will likely be retrained (as with menus) to print what they need in advance.

Kiosks everywhere, whether they are used or not. [Self-service kiosks provide great benefits](#) in ‘Quick Service Restaurants’ – McDonald's lead the way with 70,000 of them worldwide,

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removing cashier services in all locations. Although they are widespread, older adults may be [unwilling to use them or become confused and leave](#). Some restaurants in locations that serve a largely older population may permit cashier-ordering as well as kiosks and other restaurants are enabling tablet-ordering systems at the table. The Higi station kiosk is well accepted for checking blood pressure and can [be found in 6500 locations nationwide](#).

Bad Tech User Experiences Are All Around

User experience non-design transcends tech – view the stove’s control panel. Or study the screen plus button choices on a new Microwave, one wonders who tested this interface? Did they really think that [the combinations were self-explanatory and intuitive](#)? Or is the convention of poor design so [inherent in microwave, oven, and washing machine interfaces](#), that this complexity is expected (both by the vendor and the user)? Of course, maybe ‘cockpit’ would be a better term – imagine a pilot sitting down in the left seat of an airplane with zero training on what to touch first.

Mull over the car which also has a ‘cockpit’ approach that requires training. The [history of tech user interfaces is instructive](#) – resulting in today’s ‘less is more’ approach. Then there are cars, most requiring training. There are some [ridiculous designs](#), but car dashboards that are intended to be used by everyone are only somewhat better – note the [two screens on the Honda Prologue](#). Then there’s the [BMW Instrument Cluster issue forum](#) or the ‘innovation’ from Mercedes [to put a third screen](#) in the car. Note the [guide to Toyota warning lights](#) – and [decoding the Chevrolet dashboard](#). Some countries [have enforced tough laws about using a cellphone and driving](#). But will that help a driver shift into reverse on a Tesla Model 3 (see **Figure 3**)?



Figure 3 The Dashboard of a Tesla Model 3

Source: [US News](#)

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“I would not say the user experience has gotten worse – it has improved, but our expectation levels are greater now than in the past.”—Sherwin Sheik, Founder of CareLinx

Consider the user interface of televisions. The reason there are eas(ier) to use TV remote control devices is a result of the evolution of complexity in the device, first invented by [Robert Adler in 1956, introduced as Zenith’s Space Command](#). After that, TV remote controls deteriorated into a [complexity nightmare of multiple purpose-built devices](#), followed by the introduction of the poorly-named ‘[universal’ remote](#), one that universally requires some programming. Having a smart TV plus sound bar, streaming media player or variants, may have shrunk the number of devices in the basket. For now. Grabbing the wrong device, tapping the highly sensitive wrong button and trying to figure out how to back up – that’s now typical.

Washing machines – designers don’t know what to do, so they load modes and options.

Ask ChatGPT about user interface design flaws in washing machines. Sigh. See **Appendix I** for its summary – and note how many of these issues apply to other products, devices, and designs (see forum about [Nest Thermostats](#)). Do customer complaints work? Apparently not in the case of the thermostat.

Patient portals may confound. Patient portals are now required for access to personal health data and to minimize clipboard use – so there is a raft of [advice available for creating them](#). However, the lack of standards for creation has resulted in multiple styles and formats for [different physician practices](#) (with the clipboard still alive and well). Observers contend that they are [built primarily for businesses](#). Vendors want to help them [implement user-friendly patient portals](#) – which older adults are willing to use, but may need help (see **Figure 4**):

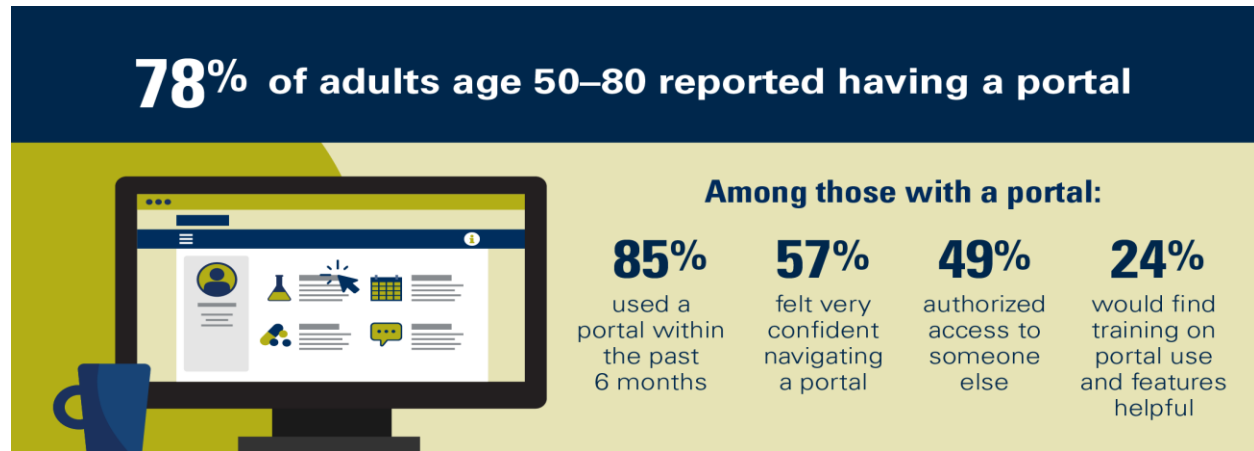


Figure 4 Adults reporting experience with a portal

Source: [NPHA Healthy Aging 2024](#)

“Trust will be with the physicians’ group – not with the insurance company. When a chronically ill older person successfully uses a portal and trusts the system, they more effectively engage in their care, showing up for appointments and attending to self-care and medication adherence.” – Jane Sarasohn-Kahn, THINK-Health LLC and Health Populi blog

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Digital health tool usage is growing among older adults. Although digital health tool usage is growing among the 65+ according to a recent 8000-person study by [Rock Health](#), health portal access will likely increase per the latest information from Rock Health. As of 2023, 70% are participating in some form of virtual care, 67% of older adults are looking for online health information and 27% of the 65+ own a wearable. Willingness to share health information with a clinician is surprisingly high (89%) for the population aged 75+. Given that only 40% are tracking their health status online, training could make the difference between looking for health information and finding it (see **Figure 5**).

Patient portal proliferation – does it improve the user experience? As of late 2023, 60% of patients accessed some health information via a patient portal. However, if they saw specialists across multiple practices, that could represent multiple patient portals. In 2023, doctors began charging patients for emails and text messages sent to a health professional – this could generate a charge to patients or payers of as much as \$50 due, presumably, to the time it takes for the provider to answer. While interaction with a patient portal can [improve patient outcomes](#), too many portals can be confusing, eroding patients’ trust with the physician or the health system.

“Self-service has merits in some cases, but now that people are pushed to use a virtual-first or virtual-only interface, we have to be careful that these solutions do not impede the access to or quality of care.” – Michael Skaff, **Vayyar**

Privacy (or its lack) is becoming a major concern. As necessary tasks move primarily online – banking, health portals, all types of reservations – the greater convenience of these transactions is matched by a tradeoff of the loss of control of protected information – and the well-publicized abuse of that information contributes to a sense of alarm for the less technically-proficient.

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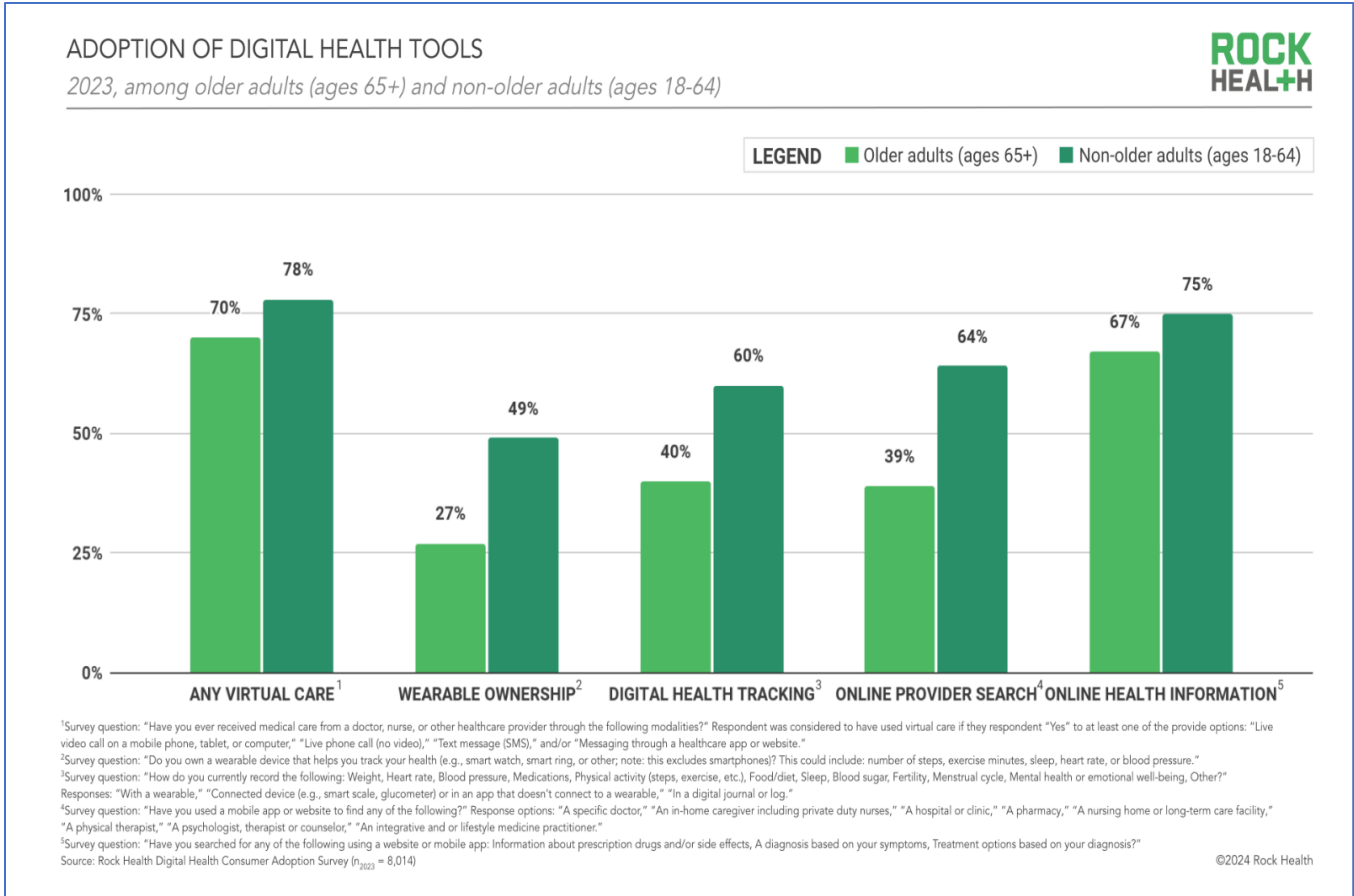


Figure 5 2023 Survey of 8000 adults use of digital health tools

Source: [Rock Health](https://www.rockhealth.com)

USER EXPERIENCE IS NOT PART OF PRODUCT DEVELOPMENT

The mindset of ‘get the product out the door’ sets the stage for poor user experience. For market researchers, there are many [data-driven ways to gauge consumer preferences](#), and tech companies can choose [among surveys, interviews, focus groups and customer observation](#). [Product life cycles in newer tech categories are shrinking](#), with consumers expecting to replace devices that still work with newer models. And they are conditioned to upgrade frequently, hence the apparent ‘Ready, Fire, Aim’ tech cycle (see **Figure 6**).

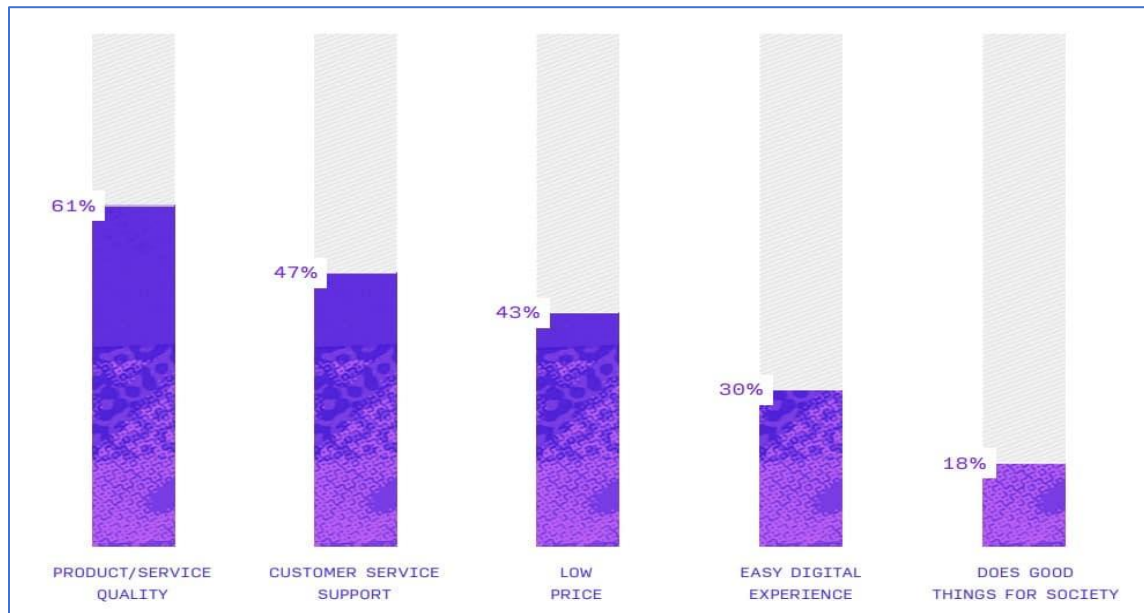


Figure 6 What’s driving consumer purchases in 2024

Source: [Qualtrics](#)

Empathetic design – long gone. [Popular in the 1990s](#), it was based on observation in the customer’s own environment. But it has gone out of practice, along with [empathic design](#) – once used with wheelchairs, for example. [User-centered design](#) emerged and was also superseded by today’s [user experience design](#). But as we have seen from numerous failed and recalled launches, user experience design has largely been superseded and power transferred to product designers.

“The bigger assumption is that user experiences are informational. But most are looking for help. The information could be accurate, but not helpful.” – Neal Sofian, **Tuzag Inc.**

Product team oversight – ready, fire, aim? The [Google Gemini ‘Woke’ humiliation](#) will soon be forgotten, as will the [Apple bug fix fiasco](#), but both point to the lack of focus on quality or perhaps the absence of team oversight in large tech firms. But they may also point to the growing skill at [finding and exploiting bugs in software](#). Unfortunately, it is not obvious how to hold tech companies accountable for quality when the user population is so loyal and dependent on their products.

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The why and benefit of upgrades. With more connected home products in the marketplace, consumers may feel pressure to respond to insistent upgrade demands so that they can get the latest benefit from them or at least end upgrade harassment. However, among the oldest adults, they may not grasp why there are so many and so frequent (see **Figure 7**).

“Older adults are frustrated by the update process – Apple updates all the time and nobody knows why – older adults are not conditioned to this.” **Suzanne Viox, Link-age Connect**

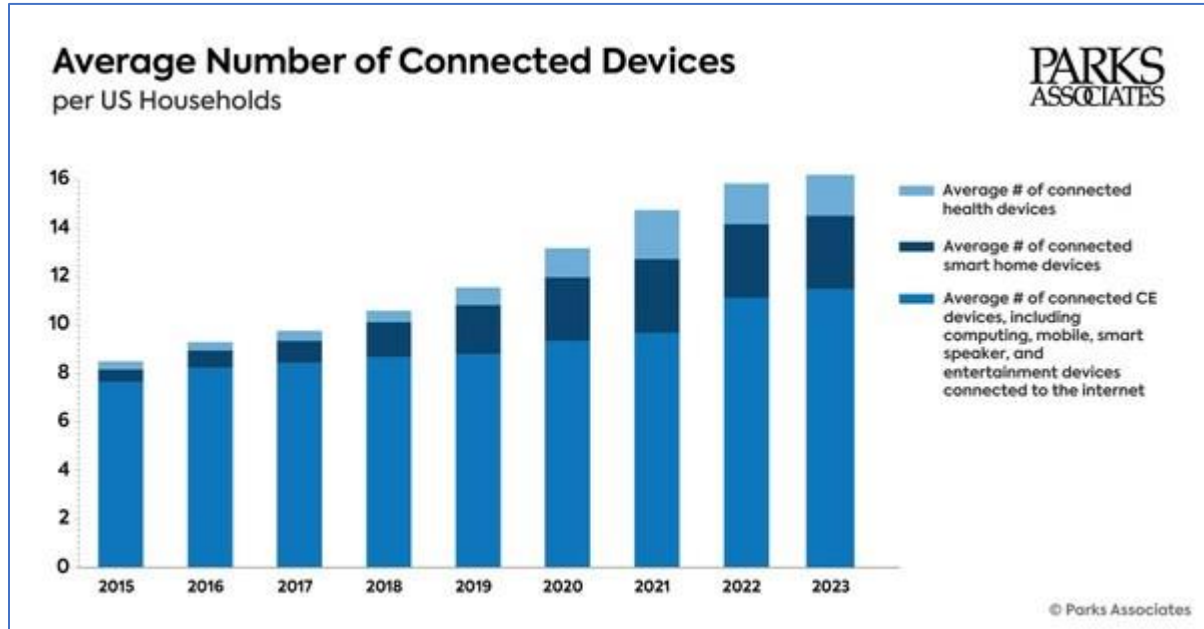


Figure 7 Average of 17 devices in 2023 means more upgrades **Source:** [Parks Associates](#)

Accessibility is still an afterthought – or no thought

Even with [ADA](#) and website usability guidance, accessibility needs are unevenly met across devices, websites, or groups of users – the features are well-hidden under alternate menus. Designs are fragmented and when viewed as a whole, appear uncoordinated. Consider website versus app versus phone versus watch software – there is no accepted way of discovering useful details on small screens. A blind friend’s observation:

“Websites and apps that were perfectly accessible are “updated,” and then they are not. Medical establishments use inaccessible tablets for registration. Too bad for people who can’t find or use the tablets! Appliances are increasingly inaccessible unless you intend to run everything from your phone.”

Searching for accessibility features – where are they? As people age, issues with sight, hearing, dexterity, or other limitations may arise. But due to lack of visibility (or poor design) of accessibility features, according to some experts, we are at a stage where people lose access to financial and healthcare services that are only available online.

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“Vendors of apps or games are not required to tell you whether they are accessible. And there are not enough testers of technology who have either a physical disability or hearing loss.” – Matt Ater, Vispero

Are site designers considering blind or low-vision patients? Patient portals and other healthcare websites may be difficult or impossible to use, [especially for blind or low vision patients](#). While the users may have screen readers, the color contrast is poor; they lack [alt-text for images](#); or they lack captioning for videos or transcripts for audio, and online forms are inaccessible.

“Assistive technology is not easy to find. And the touch experience is not intuitive – consider an older person’s drying fingers.” – Ginna Baik, Senior Executive, Amazon

The in-home tech user experience is dis-integrated

Little device integration exists – competition results in a product ignoring all others. Even with Alexa, Smartphones, Tablets, Wearables, Smart TVs, Ring Doorbell – each is a single point solution, fragmenting the user experience. And there is no motivation to integrate today, considering that there is no control panel view of a house. Each vendor wants to own the control panel. The tension prevents useful APIs and software that could mask different vendor practices.

User frustration is increasingly well-publicized

Consumer surveys and online forums today assist with our product selection, driven by feedback about products ranging from TVs to cars to washing machines. But for captive audiences (for example, users of iPhone or Android phones), it will be up to tech companies to care enough to reduce whining or avoid embarrassment. Consider the [Apple redirect of its staff in November 2023](#), instructing staff to focus on fixing bugs – translate that – complaints were too loud to bear.

Training to help users with technology is hit-and-mostly-miss

Today it is up to the user to seek and find the training they need. In-store training exists and there are plenty of online videos available, but people may not know where to look later when they are stuck or have a question. This is particularly concerning when the tech they need to learn is specifically related to their wellbeing or healthcare access – and they lack confidence in their tech skills (see **Figure 8**).

“The meteoric rise of digital health innovation is colliding with the stubborn challenge of the ‘digital skills divide’ for seniors.” – Neal Shah, CareYaya

Multiple device interfaces hide features and confuse the user. One example is the completely different settings functionality in the smartphone version of Gmail (131 million users in the US) versus the web version (See all settings under **General**). Or consider the consumer on Amazon who buys a product on a tablet but is unclear using a computer how to return it. And her tablet is not connected to a printer to print a confirmation of the return. Other features are easy to use once you know they are there – not knowing is frustrating.

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“My Mom wanted to forward pictures to my aunt. She found the text that I sent, downloaded the picture to her photos and was unsure about how to send it.” – Samantha Neufeld, Care Daily

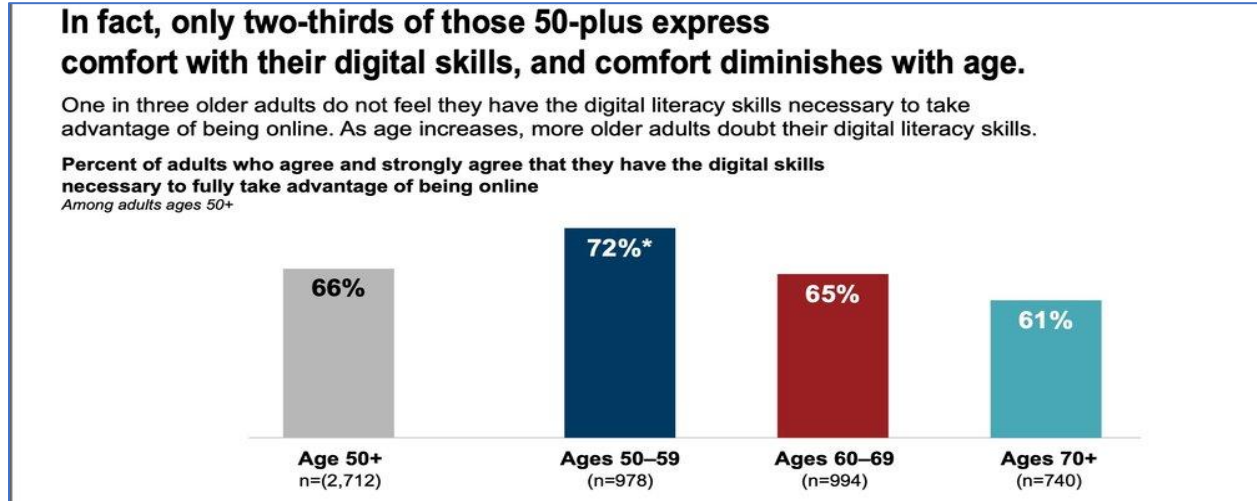


Figure 8 AARP 2024 Tech Trends and Adults 50+

Source: [AARP](#)

“People can’t use anything when they they are stuck in one place. Product companies can re-invent how people learn to use new technology. Imagine AI-enabled prompts and guides through the user journey, integrating into devices and services to ensure a gentle learning curve.” – Michael Phillips, AARP

“One techie person in the household is required to program it.” Smart home technology can be of [great value to older adults](#) according to a Forbes article. But despite predictions that they would be more [widely adopted by 2025](#), today it seems unlikely. There are still obstacles, including lack of awareness, per the most recent AARP study (above), as well as limited adoption. As of now, there is no integrated service that enables a homeowner to ‘subscribe’ to a smart home suite. And even if it were properly programmed, it’s unclear if individuals of all ages and tech skills would be able to use it without training.

HOPE FOR THE TECH USER EXPERIENCE

Opt-in profiling will enable personalization

The decline of our tech experience was slow – barely noticeable for a while. Then device proliferation in homes and the corresponding frustration became too obvious to miss. At the same time, innovation in new categories like Conversational and GenAI, machine learning and AI-enabled prediction have emerged and can help improve experiences if deployed properly. Over the next five years, it is highly likely that:

Our preferred tech platform will provide an agent that acts on our behalf. A profile about our preferences and tech behavior can easily be assembled and accessed with our permission. This profile can drive our experience, from the refrigerator to the doorbell to the car. We will be able to customize it to create an agent that acts on our behalf, freeing us to use our own words and in our own way. The agent will know our agreed-upon terms of service, sources to retrieve our data and a contact list to use in the software.

“You could have a curated lifestyle set of tech counselors, an alter ego with suggestions. This store is specifically good for you and your sensibilities.” – Arlene Harris, **Dyna LLC**

Device unboxing will be age friendly. Whether in the store or at home, unboxing a device will offer the opportunity to access a profile if one exists. Imagine turning on a device and having a few basic accessibility questions asked and suggestions made – use this link or speak a request to learn more about ease-of-use features of this product, one of which could be training a device to learn your voice. Another guides adjustment of color contrast or font size.

“In areas where tech is being distributed, age-friendly support should be provided in real time, perhaps with a QR code and telephone number if you need help.” – Thomas Kamber, **OATS**

Device startup. Personalization can occur at the point of purchase – incorporating the profile at appropriate points in the setup, bringing in the apps identified, and authenticating the user as feasible. Once a profile is available, the device (such as a phone, tablet, PC, Mac or Smart TV) will start up with profile-specific characteristics incorporated.

Conversational AI will be there to help

Despite predictions that [AI is entering Gartner’s Trough of Disillusionment](#), as with all tech hype cycles, it will pass and be followed by broad acceptance (see **Figure 9**). Over the next five years, expect that consumers will become more comfortable conversing with AI-enabled tools that encompass conversation and images, whether directly or because these are underpinning a user’s points of access. Just as Microsoft Word automatically fills in next word options, so too will these tools suggest a completion to your query, basing it on a user’s characteristics and predetermined preferences drawn from an appropriate profile.

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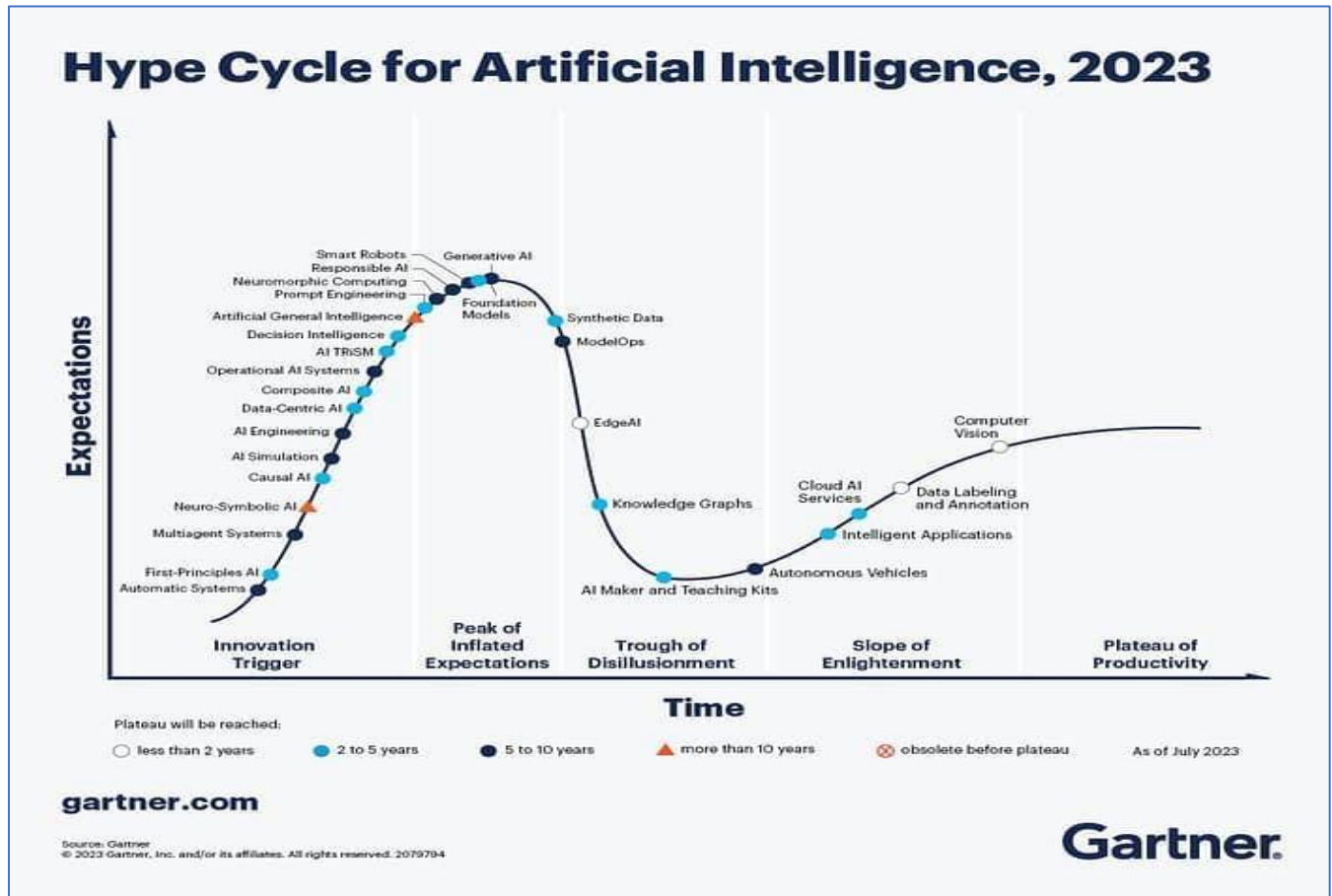


Figure 9 Gartner Hype Cycle for Artificial Intelligence

Source: [Gartner, July 2023](#)

Accessibility features, part of the profile Q&A, will be the default. If the user has confirmed their accessibility limitations – such as vision, hearing, dexterity, those will be reflected in both the basic commands as well within the user’s preferred apps. This local ‘intelligence,’ armed with the profile information, will behave (and possibly speak) differently depending on the person’s settings.

“We filed a patent, creating a customized personalized assistant for people with accessibility challenges. The voice used should be tuned to my needs, speaking in my accent and dialect.” – Isaac Lien, **GrandPad**

Memory of prior usage will be applied to tasks. Moving forward, the profile will be applied to tasks for the purpose of simplifying them – such as making a payment, looking up an account, viewing recent actions or making an appointment. We are generally pleased when software remembers our prior behavior and we need to do fewer steps to accomplish a task. To quote [Don Norman](#), “I don’t want to do word processing, I want to write a letter.”

HUMAN ORIENTED TECH CHANGE IS UNDERWAY

Today's fragmented tech experience offers behaviors based on a disconnected set of profiles – a Starbucks profile knows what coffee I like, a Gmail profile knows about my Inbox preferences, and Marriott knows what kind of room or bed is preferred. In the future and with the assistance of AI tools, the user should be able to override those and specify a profile that spans all tech interactions, acting as a complexity-hiding agent that acts on the user's behalf. In the future:

Face and voice recognition enable ease of use

Facial recognition profiles today enable easy device authentication. In the future their use will be expanded. When a profile is used by a device, capabilities like face recognition/unlock can enable bypassing of sign-on steps on smartphones and tablets. Because the users have already given permission, personality preferences can be saved and remembered. Just as it is already available on various banking and hotel applications, facial recognition will increasingly be available across the most frequently used consumer applications, enabling easier authentication for those who provide permission to use it.

Voice-enabled personalization is increasingly viable with AI. With the [dramatic improvement in speech recognition](#), users are finding it easier in 2024 to be understood. If the user is identified, the content presented can be personalized, either through questions to verify the speaker, or through a profile associated with the device and software. The value of personalization has already been quantified for [consumer purchasing](#) and [travel recommendations](#). Within the next few years, more tech experiences will be personalized with willingly provided profile data which can then be used to tailor responses to inquiries, particularly valued by today's millennials (see **Figure 10**).

“The marginal utility of voice is at an all-time high. Domain-specific LLMs and machine learning will soon support proactive voice chatbots that are capable of both monitoring and supporting your aging relatives and transforming your own online experience!”

– Stuart Patterson, **PLC Advisors**

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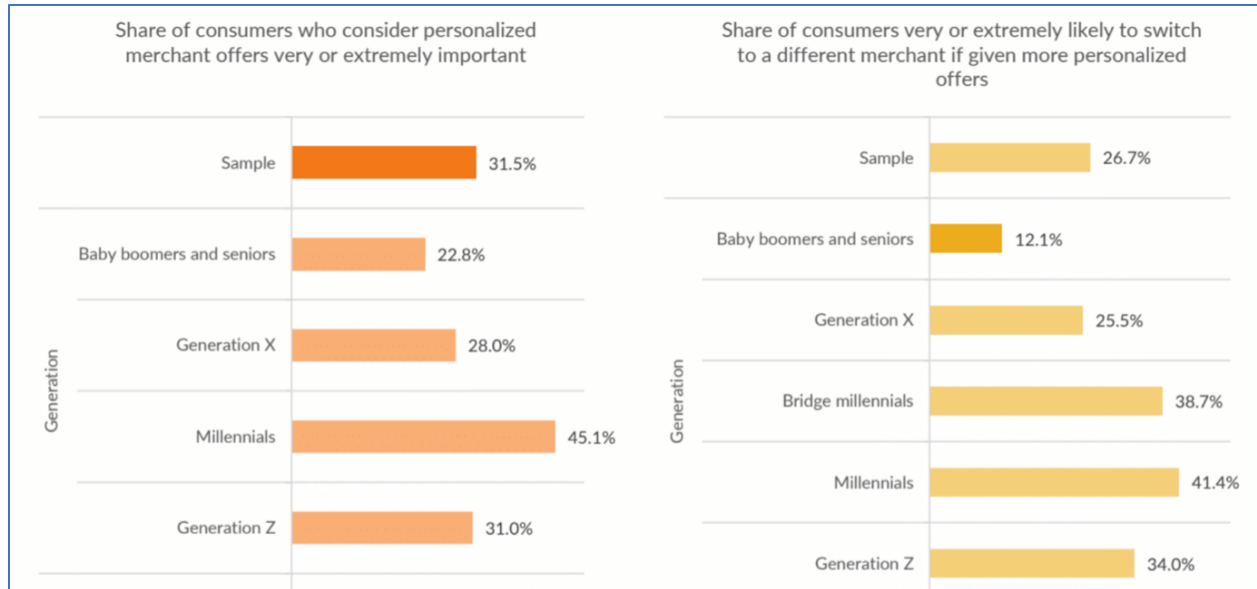


Figure 10 Millennials especially value personalized offers

Source: [PAYMTS](#), Jan., 2024

Simplification via AI will be a design motto

It may be hard to believe that there are 200 in-home devices potentially operating inside a home or building. But these devices can drive building occupants crazy with too many easily ignored warnings. So Care Daily, for example, is attempting to organize up to 200 devices via [a Large Action Model](#) focused on accomplishing tasks, including organizing and minimizing alerts.

Large Action Models can act as an agent for a set of tech tasks. In the future, with more of these [LAMs](#) built to accomplish multiple task steps required to accomplish a single task – such as a managing in-home devices or organizing a vacation that requires a plane reservation, hotel reservations, and renting a car. These multiple steps today could utilize an existing profile, such as preferred airline, hotel brand, and car rental agency, enabling a back-and-forth conversation like that offered by a travel agent.

“Our Large Action Model thrives on collaboration, integrating and learning from over 200 connected devices on Care Daily’s open AI platform, collectively enhancing our ability to deliver intelligent AI Caregiver solutions that span the continuum of care.” – David Moss, **Care Daily**

The user experience will be a conversation with a memory of previous interactions. As in the simple travel example, prior travel interactions could be remembered and offered as part of the conversation. This concept could also be applied to health care appointment scheduling – for example, when pre-requisite tests are required, booking lab appointments followed by doctor visits could be applied, with a memory of the last time the user did these tasks.

“Research shows that providing older adults with a step-by-step view, including the ‘why’ could improve the tech user experience – here’s the next thing you need to do.” – Howard Pyle, **Experience Futures**

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AI Prompts will be designed for guidance beyond “Did you know you can ask me this?” To help demystify complex tasks or devices, AI prompts in the future will enable a follow-up question to ensure understanding. For example, health appointment scheduling could be followed up with a question – would you like to learn more about that just-scheduled lab test? This could include directions to the location, explanation for understanding the results, or follow-up reading.

“We need to translate intent to outcome. I want to walk up to a technology and say that I want to accomplish a task and have that tech inform me if it can help me in any way, and if it can, then assist me in realizing that desired outcome.” – Stephen Eyre, VP Partner Ecosystem, **Calix**

Voice is the preferred user interface. The number of smart speakers in the US has grown, with up to [75% of US households having one by 2025](#). Although that represents 100 million households, their use is limited, possibly due to lack of awareness of what can be accomplished. Today most individuals prefer voice search on a smartphone, with Siri, Google or new AI tools like ChatGPT or Perplexity. In fact, 60% of internet users have used voice search at least once in the past month. And voice access through a phone may be an access on-ramp for health information – note the 40% below using their voice to search for healthcare and wellness below. See the chart below (see **Figure 11**).

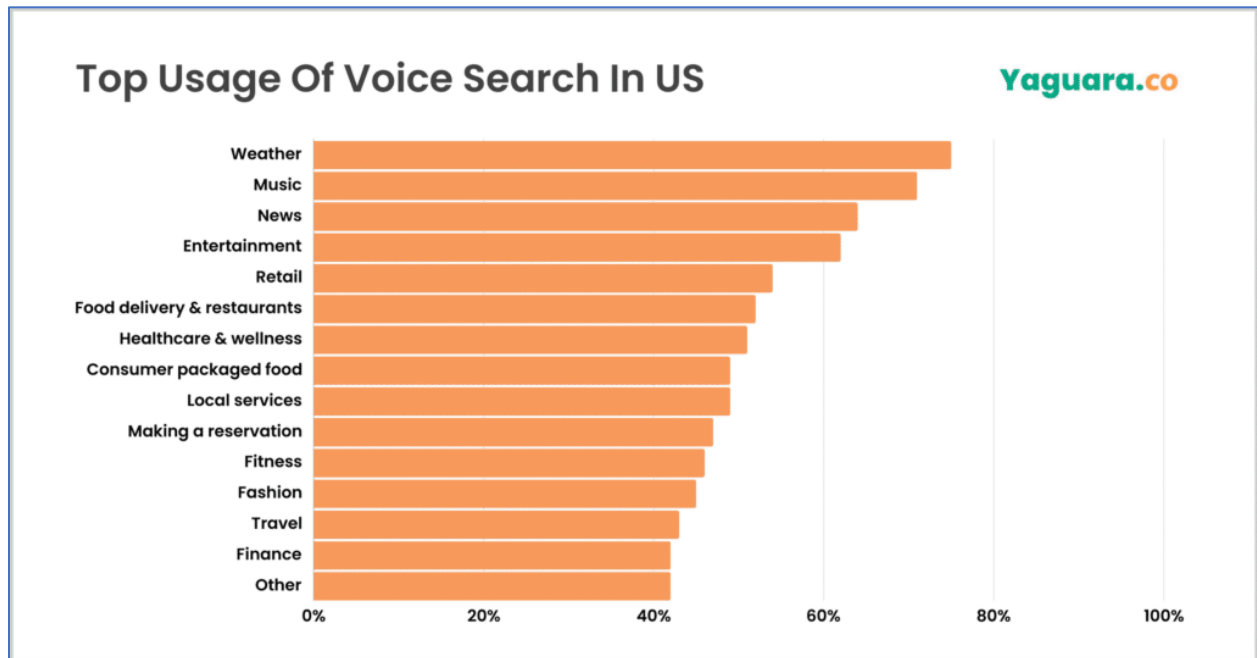


Figure 11 Voice Search uses as of 2024

Source: [Yaguara.co](https://www.yaguara.co)

“People are talking to these “AI’s” via iOS and Android mobile apps because they find talking to Perplexity, for example, so much easier. Plus, the results they get back are better, don’t have ads, and cite the sources of the information.” – Amy Stapleton, **Opus Research**

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Voice speech will be analyzed to address health conditions. Today research has shown that it is feasible to detect health conditions through analysis of a person’s voice. According to [Pfizer](#), subtle changes in speech, for example slurring or vocal cord tremors, may be early signs of disease or illness like Parkinson’s disease, depression, cardiac problems, and concussion. “People with depression, for example, speak with a flattened monotone and patients with concussions speak with distorted vowels, imprecise consonant pronunciation, and hypernasality.”

“A single interaction with a patient in a clinic or in a telehealth call could provide objective and actionable information improving the quality of care and reducing the length of the call, providing underlying information about the health status of a person based on their voice –

Henry O’Connell, Canary Speech

Privacy protection is required. With an opt-in profile, it will be feasible to inquire and get our consent to share data with a selected set of participating organizations. In the future, in the healthcare world for example, the plethora of portals should not be required, since we will have already agreed to share data with these selected organizations and the systems they use – these systems will remember our prior interactions.

Accessibility and usability features will be easily found on devices. If the user needs an accessibility feature of a smartphone, there are many (examples: [iPhone](#) or [Samsung Galaxy device](#)). But if the so-called nominal user is a 20-30-year-old able-bodied individual, designers will miss the aging population that needs these features. [And they will also miss those with physical limitations](#) – for example consider the poor design of kiosks and touchscreens. Although there are standards for [web content accessibility](#), enforcement is left up to developers.

“Close captioning was created for the deaf community (the first show was Julia Child), but today we all use it. Firms should optimize for disability and older adults first – the corner case – then solve for the nominal user automatically.” – Dhaval Patel, Lotus Labs

Externally run accessibility reviews will publish results. There is no benefit to an organization that has an accessibility section of its website if there is no way to give feedback. Instead, organizations will engage outside reviewers to regularly evaluate websites and apps with the frequency of their updates, looking at the specific characteristics published in the most recent guidelines and matching them to what they note in newer versions (see **Figure 12**).

Usability features will be reviewed with an all-ages panel. As the millions of baby boomers move into their 80s, they will want to take their technology tools with them. Those organizations and businesses who want to include them as product users need their feedback to ensure that a product or service isn’t abandoned because it is too annoying to use.

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“We have an end user community, engaging them in a specific innovation. The first thing that we hear – that’s a lot of clutter – too many buttons, bells and whistles.” – Shusmita Rashid, CABHI

Healthcare organizations will review portal utilization by older adults. There is no reason for the frustration that some older adults experience moving from one site to another – sometimes within the same health system – such as scheduling a lab test, canceling an appointment, or obtaining results. Portal purpose, redundancy, and integration possibilities must all be reviewed to move portals from being there ‘for the business’ to being ‘for the patient.’

“I’d like to see industry collaboration across hospitality and healthcare, enabled by more open-source development. Users should be able to choose enhancements without replacing a whole system – that will extend the platform or system’s life. – Sarah Thomas, Delight By Design



Figure 12 Web Content Accessibility Standards

Source: [Sonix.ai](https://sonix.ai)

THE FUTURE OF THE TECH USER EXPERIENCE BY 2030

Most agree that the competitive nature of innovation and app development encourages differentiation and new features. By 2030, the baby boomers, born 1946-1964, will be aged 66-84 and number 61 million people. And there will be 9 million people characterized as the oldest old, born prior to 1946. Because so many other in-person alternatives have disappeared, those 70 million people will be increasingly dependent on technology that must improve to meet their needs. The technology they use will offer as standard practice (see **Figure 13**):

A single startup experience will span sites and devices. Imagine the purchase of a new smartphone or computer. Technology users have preferences they set on device after device, website after website, upgraded app after app. These include passwords, language preferences, keyboards, font sizes, color contrast, captioning, or spoken content. With an individual's permission, profile, and a tech company's assistance, AI tools can be used to sweep up these preferences. When an app is launched or a new website is joined, just as accessibility settings might be applied, the profile preferences will be applied to the new site or app. What has been a chore of conversion tasks becomes straightforward.

"We are entering an opportunity window for intelligent user experience personalization via embedded company systems: demographic data + design thinking best practices + persona characteristics linked to a front-end profile for better usability." – Heidi Culbertson,

Think.Move.Play

Facial recognition technology broadens uses. Today a facial ID is one of the sign-on options for devices like smartphones and tablets – and increasingly used in airports at security locations in conjunction with a driver's license. In the future, permission-based facial recognition authentication could become a sign-on method for apps and websites – replacing QR code and kiosk ordering in restaurants, theaters, and physicians' offices.

AI-enabled interfaces will ask if user training would be of benefit. With the use of AI, possible user interaction issues can be noted – in advance from a profile, if provided, otherwise from observation during the interaction. Like making accessibility features more prominent, user training specifics could be suggested through a chatbot that pops up at the first sign of struggle.

"The healthcare companies think they already offer a good user experience – even though a relatively small percentage of the population uses their portal." – Lawrence Kosick, **GetSetUp**

Task consolidation will be suggested and provided. The multi-step processes of today, for example, health appointment scheduling, could be consolidated. Or in-home management of new smart home devices could be configured into one-step routines or suggestions. Today's smart speaker software often tries to make suggestions to regularly schedule tasks that the user has repeatedly requested. Once an individual understands and then realizes a benefit, these suggestions will be standard practice in device software.

The Tech User Experience Needs an Upgrade

Today's Tech User Experience	Future of Tech User Experience
Fragmented across sites, devices	Profile-driven across sites, devices
Difficult to find accessibility features	Accessibility features configurable in primary apps and sites
Facial recognition beginning to be utilized to authenticate	Facial recognition becomes standard authentication
Previous interactions forgotten	AI enables previous interactions to be retained
Separate health portals for each organization	Health portal fragmentation hidden
Users unaware of training options	Referrals for training are prominent
Single task at a time	Multiple tasks combined with single action

Figure 13 The Future of the Tech User Experience

*“My belief is that the hundreds of apps on smartphones, TVs, and watches will all go away to one big app, driven by artificial intelligence that brings up functionality that is highly personalized to the user.” – Kent Dicks, **Life365***

The Tech User Experience Needs an Upgrade

People, Organizations That Provided Insights for Report

Michael Phillips	AARP
Ginna Baik	Amazon
Shusmita Rashid	CABHI
Stephen Eyre	Calix
Henry O'Connell	Canary Speech
David Moss	Care Daily
Sarah Thomas	Delight by Design
Arlene Harris	Dyna LLC
Howard Pyle	Experience Futures
Shea Gregg	FallCall
Lawrence Kosick	GetSetUp
Sherwin Sheik	Verily, CareLinx
Isaac Lien	GrandPad
Amy Stapleton	Opus Research
Kent Dicks	Life365
Suzanne Viox	Link-age Connect
Mary Furlong	Longevity Venture Summit
Dhaval Patel	Lotus Labs
Samantha Neufeld	Microsoft Research, Care Daily
Heidi Culbertson	Move.Think.Play LLC, Amazon
Tom Kamber	OATS
Stuart Patterson	PLC Advisors
Jane Sarasohn-Kahn	HealthPopuli.com, THINK-Health
Neal Sofian	Tuzag
Michael Skaff	Vayyar
Matt Ater	Vispero

Appendix I – ChatGPT: Washing Machines User interface flaws

User interface design flaws in washing machines can significantly impact usability and user experience. Some common flaws include:

1. **Complexity:** Overly complex interfaces can confuse users, especially those unfamiliar with advanced technology. Too many buttons, knobs, and settings without clear labels or organization can make it difficult for users to understand how to operate the machine effectively.
2. **Poor Visibility and Feedback:** If the display or indicators are small, dimly lit, or located in awkward positions, users may struggle to see important information such as cycle status, time remaining, or error messages. Lack of audible feedback or unclear feedback can also make it hard for users to understand if their selections have been registered or if there are any issues with the machine.
3. **Inconsistent Controls:** Inconsistent placement or operation of controls across different models or brands can confuse users who are accustomed to a particular layout or sequence of actions. For example, if the start button is in a different location or operates differently from other appliances, users may inadvertently press the wrong button or struggle to start a cycle.
4. **Overwhelming Options:** While having multiple wash cycle options can be useful, too many choices without clear distinctions between them can overwhelm users. Simplifying the interface and grouping similar options together can help users quickly find the setting they need without feeling overwhelmed by unnecessary choices.
5. **Lack of Accessibility:** Washing machines should be usable by a wide range of individuals, including those with disabilities or limited mobility. Interfaces that rely solely on small buttons or touchscreens can be difficult or impossible for some users to operate. Providing alternative input methods such as voice commands or tactile controls can improve accessibility.
6. **Inadequate Error Handling:** When errors occur, such as a door not closing properly or an unbalanced load, the interface should provide clear and actionable instructions for resolving the issue. Vague error codes or generic messages can frustrate users and make it difficult for them to troubleshoot problems effectively.
7. **Poor Language or Iconography:** Language barriers can make it challenging for users to understand instructions or settings, especially if they are presented only in text without accompanying icons or visual cues. Clear and universally understood iconography can help users navigate the interface more easily, regardless of their language proficiency.

Addressing these design flaws can improve the overall usability and user experience of washing machines, making them more intuitive and accessible to a wider range of users.