When Smart Homes Go Dumb

Mid-future neutral scenario

Smart spaces aren't always so smart. Because nearly every place we frequent, including our homes and offices, are digital environments, technological failures have become an increasingly frequent, and occasionally devastating, problem. With a range of devices and systems at work that don't always properly communicate with one another, breakdowns are not uncommon: Control panels suffer outages, digital locks freeze up, and appliances go dark when you need them most. To limit the fallout from these breakdowns, new smart buildings are retrofitted with low- or no-tech fail-safes. The latest wave of smart spaces are constructed with an analog mode that kicks in when smart features fail so that users can interact with their environments manually, unencumbered by malfunctioning tech. Engineers and designers conceal physical switches and buttons beneath seamless digital interfaces, and include manually charged power sources for critical system components. That way even if we're lulled into complacency by the convenience of smart tech in the built environment, we're not left powerless next time we're forced to snap back to reality.

Scenarios

1ST YEAR ON THE LIST

Neighborhood Mesh Networks

Amazon's Sidewalk program is creating mini-mesh networks in neighborhoods.

KEY INSIGHT

A mesh network is a group of devices in close proximity to one another that allows for fast and efficient data routing. Amazon's Sidewalk program is a location-tracking mesh network operating at the scale of a neighborhood.

EXAMPLES

Amazon Sidewalk plans to link smart home devices, such as its Ring and Echo, as well as other Amazon products using Bluetooth low-energy, 900Mhz spectrum and other available frequencies. For every device with Sidewalk turned on, internet bandwidth is pooled for a half-mile. The more neighbors who contribute, the more bandwidth available. The mesh network can transmit software and security updates, too. And if consumers are outside their homes but within the mesh, their devices should be able to connect. One early use case: If a consumer loses her keys and has a Tile attached, she can use the Sidewalk network to automatically locate her keys.

DISRUPTIVE IMPACT

The convenience factor is certainly compelling. If, for some reason, a consumer's Wi-Fi goes down, he can temporarily continue to stay online. Amazon has said that bandwidth usage by each mini-mesh network is capped at 80 Kbps (a fraction of what it would take to stream a video on Prime). Consumers can opt out of the service, but they must know how, because Sidewalk is turned on by default. Sidewalk needs internet service providers to function, but it also siphons some of the consumer relationship from those providers. If Sidewalk is a success, it could influence the future of the cable and telecom industry, including forcing positive changes in the industry's notoriously problematic customer service.

EMERGING PLAYERS

- Amazon Sidewalk
- Sidewalk Developer Console

1ST YEAR ON THE LIST

Rollable Screens

The Oppo X 2021 smartphone includes a rollable screen.

KEY INSIGHT

Rollable screens are flexible and adaptable, and they unroll to become larger. Imagine a retractable scroll that can unfurl and snap back into place. Rollable screens are being developed for next-generation mobile phones and portable entertainment (screens for reading, watching videos, and everyday computing).

EXAMPLES

Chinese electronics manufacturer TCL has developed a phone and a tablet with a rollable screen. A flexible OLED display is tucked away inside the device; a motor expands the chassis to reveal a larger screen. Users pull the phone to expand it, effectively doubling the screen real estate. The Oppo X 2021 is a smartphone with a continuously variable OLED display that automatically adjusts the aspect ratio of what's being viewed. LG is developing a suite of rollables, including televisions and a phone. Its rollable OLED TV is already in the market, though the $87,000 price tag will keep it out of the mainstream. The company has said that more rollable devices will go on sale in 2021.

DISRUPTIVE IMPACT

The initial slate of rollables are prototypes and concepts, but the technology has attracted so much attention that companies are rushing to patent their inventions. Oppo applied for 122 patents already, and a dozen cover the scroll mechanism alone. Rollables will continue to evolve, with components shrinking over time. In the future, this could mean rollable smartphones the size of pencils.

EMERGING PLAYERS

- Oppo
- TCL
- LG

Application

STRATEGY

For chief strategy officers working in consumer electronics, it's time to rethink interoperability and forced obsolescence. Newly elected U.S. officials will pursue antitrust suits against the big tech companies, and the Biden administration is arming the U.S. Federal Trade Commission and the U.S. Consumer Financial Protection Bureau with aggressive teams. This could have a downstream effect on consumer electronics manufacturers. CSOs should model plausible outcomes for the next three to five years and develop alternative business models and pricing strategies.

INNOVATION

Right now, Home of Things (HoT) devices are intended for general use—which means that everyone living in a shared space must agree on the settings. Innovation teams can develop personalized use cases and models. For example, a coffee machine connects to your alarm clock and brews a cup of coffee that's the right size and strength just as you're waking up—and then an hour later, it brews a different version when your roommate wakes up. Better yet: A coffee machine that also connects to fitness wearables can titrate just the right amount of caffeine per serving. Automated personalization options for shared appliances will unlock new products and consumer demand spaces.

R & D

This is an exciting time to develop the next generation of smart home technologies. A multitude of breakthroughs in flexible displays, ultrasonic detection, micro-mesh networks, 5G deployment, and metadata scraping—combined with consumer demand for IoT devices—presents a strong argument for continued R&D in home automation. One immediate need: What happens to the HoT if the power goes out and consumers don't own battery backups or generators?

RISK

The HoT presents numerous risks for ICT companies, internet service providers, platforms, and device manufacturers. Consumers are simply not aware of vulnerabilities. This is an opportunity for hackers as well as for chief information security officers: Securing the HoT should be a top priority for companies in the ecosystem. The U.S. government is creating security standards for IoT devices through the National Institute of Standards and Technology, but companies will need to move faster than the speed of government to protect consumers.

Key Questions

We recommend using this report to support your strategic foresight activity in the coming year. Every executive team should begin by asking these questions about the futures of smart homes and consumer electronics:

1

Is our company tracking disruptions outside of our immediate industry?

What does the emergence of rollable screens tell us about our business?

2

In a world in which smart homes are ubiquitous and neighborhoods have their own mesh networks, what assumptions must hold true for our current strategy to succeed?

How will we make needed changes?

3

What new opportunities does the Home of Things create for our company?

And what new competitors and vulnerabilities will emerge?

How could new business models introduced by new entrants pose a threat?

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