# WHEN EVERYTHING IS **MEDIA**

## THE FUTURE OF **AMBIENT COMMUNICATIONS**

INSTITUTE FOR THE FUTURE

TECH FUTURES LAB | iftf.org

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Today, matchmaking is conducted through smartphone apps, shopping can be as easy as pressing a button on our refrigerators, office work can take place anywhere, and teens can become worldwide celebrities by shooting YouTube videos from the comfort of their homes. All these recent transformations in the ways we build relationships, exchange information, and organize markets can be traced back to the 1960s when a group of engineers—including Paul Baran, one of the founders of the Institute for the Future—envisioned a move from centralized communications to a distributed network architecture. In these systems, nodes automatically route packets of information to final destinations across the globe. That technical and intellectual shift defined the way we've communicated since the dawn of the digital age.

Once again, technological advances are converging to transform how, when, where, and with whom we communicate. Haptics and virtual reality are creating multisensory, immersive experiences and shaping experiments in fields ranging from entertainment to health care. New understandings of our biometrics and digital footprint—captured and mined through improvements in computer vision and machine learning—are lending an increasing level of precision to the ability to adapt messaging and marketing beyond demographic characteristics to current emotional states. As billions of objects such as toys, speakers, and food packaging come online, our material world is becoming increasingly programmable, animating objects with communications experiences that blend into the rhythms of our everyday lives.

From always-on smartphones and networked teddy bears to digital interfaces integrated into our own bodies, we're becoming immersed in a cloud of data and communications. We're moving into a world in which every interaction can be captured, stored, displayed, and mediated by digital technology—and the technologies of the next decade are creating an ambient communications environment that's embedded, illuminated, anticipatory, multisensory, and programmable. Although our intentions when we communicate will largely remain the same, new capacities of technology will demand new literacies to get the most out of a world in which everything is media.

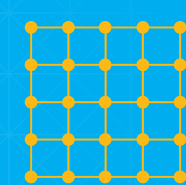
**What is beyond social media?** To understand the future of communications, we look at how **historical technology shifts** created the communications experiences that build on each other to form an increasingly complex, multifaceted landscape.

## MASS EXPERIENCES

On January 19, 1953, actress Lucille Ball gave birth to her son, Desi Arnaz, Jr. on the same day that her character Lucy Ricardo gave birth on the show, "I Love Lucy." That morning, the issue of Newsweek that appeared on newsstands across the country carried the story and in the evening, 72% of U.S. TV audiences tuned in to watch the episode. From the birth of Desi, Jr. to achievements such as the moon landing, the advent of mass communications marked the first time a global audience could witness and share an experience—one that could only be created and broadcast by a handful of media makers.

## SOCIAL EXPERIENCES

With the rise of mobile computing and social media in the early 2000's, the range of creators and communications expanded exponentially. In extreme cases, this enabled online photos of a few protestors to create global impact through events such as the Arab Spring in 2010. YouTube celebrities, Instagram sensations, and Snapchat exhibitionists became commonplace in a media environment where the world's biggest content curator, Facebook, creates no original content—phenomena that would have been almost unthinkable in previous decades. These shifts drive many of today's challenges, from targeting affinity groups to monetizing social information streams.



## AMBIENT EXPERIENCES 2016–2026

The rapid deployment of the Internet of Things, advances in network speed, and emerging immersive media platforms are transforming our communications experiences. Communications infrastructure will be embedded into our physical world, with messaging and interactions that adapt to contextual needs and anticipate future moves. They will engage our whole bodies in multisensory ways, illuminate invisible information, and enable us to program our communications streams to optimize interactions and outcomes.

As ambient technologies add new complexity to communications, we're challenged to rethink assumptions and reinvent practices for a rapidly changing world.

### Use this map to explore

**Technologies that matter:**
New Capacities of Ambient Communications Networks—five capacities of technologies that seamlessly merge our digital and physical worlds

**Forecasts:**
Ambient Communications Experiences—nine forecasts emerging from significant shifts in media, science, and technology

**Why we communicate:**
Amplifying Intentions in a World of Ambient Communications—key opportunities within eight communications intentions

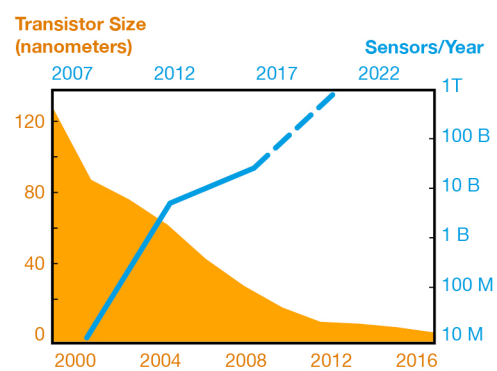
# technologies that matter:

## NEW CAPACITIES OF AMBIENT COMMUNICATION NETWORKS

Breakthroughs from a variety of science and technology fields will converge to lay foundations for an information-rich ambient media environment that extends beyond television, smartphones, and computers to include objects, surroundings, and living things. This ubiquitous, all-encompassing communications infrastructure will seamlessly merge our digital and physical worlds, combining configurable wireless networks, embedded sensors, cloud computing, and artificial intelligence to add layers of meaning and responsiveness to human-to-human, machine-to-human, and machine-to-machine interactions. It will ceaselessly operate in the background, often invisibly, pulling information from our gestures, biometric signals, and body language to generate streams of intelligent, highly personal media.

## **EMBEDDED:** from extrinsic to intrinsic

Computation is a three-part act: accept an input signal, process the signal, and output the result. Computation has gotten cheaper, faster, and smaller over the decades. We've gone from multi-ton, multimillion-dollar mainframes in the mid–20th-century to $300 wristwatches embedded with a microphone, altimeter, accelerometer, gyroscope, optical pulse sensor, ambient light sensor, touch sensor, microelectromechanical system actuator, gigabytes of storage, and wireless Internet. Now imagine the functions of a smartwatch embedded into everything from eyewear to clothing to cereal boxes, eventually even into our bodies. In the coming years, the combined trends of Moore's Law and sensor fusion will enable the proliferation of tiny super machines connected by configurable mesh networks, embedded with artificial intelligence, sensors, and local data sets, which will generate and summarize metadata, perform translation and local analytics, and enable an immersive communications experience that's ubiquitous, hyperaware, and invisible.

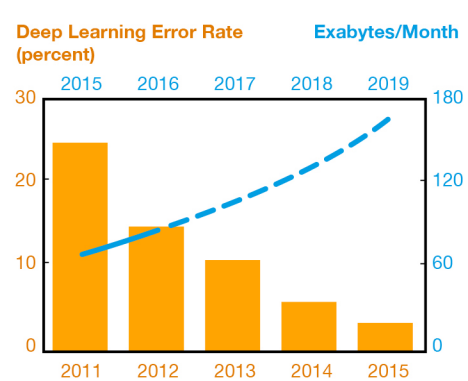



**Shrinking transistor size is driving exponential growth in sensor adoption**

Linley Group; Trillion Sensor Project; IFTF analysis

## **ILLUMINATED:** from heuristic to optimal

Yesterday's home thermostats used timers as non-optimal best guesses to control room temperature. Today's smart thermostats learn about the changing behavior of a building's occupants to establish an optimal temperature schedule. The next decade will see the rise of smart things that collect and analyze multiple streams of data to unveil previously hidden troves of understanding. Improvements in pattern recognition, computer vision, and artificial intelligence technology will shine a light on the dark matter of our individual and group behavior. AIs and robots will learn from us—and from each other—and will begin telling us new things about our homes, bodies, cities, and personalities. We'll tune into any combination of many layers of pervasive augmented realities, allowing us to see formerly invisible patterns, which will help us—and our automated proxies—make better decisions about our work schedules, travel plans, health regimens, and financial investments.

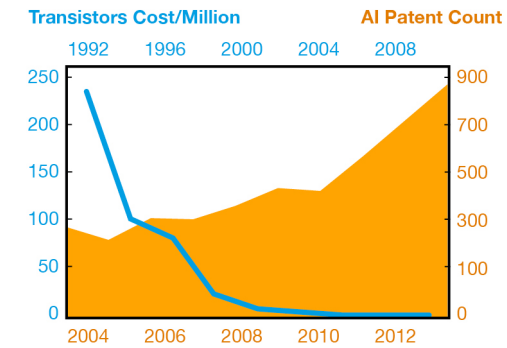



**Trained on ever-more data, improvements in deep learning are finding hidden patterns and connections**

Statista; ImageNet, Stanford Vision Lab; IFTF analysis

## **ANTICIPATORY:** from reactive to proactive

Deeply linked information streams and improved machine intelligence are giving computational systems the ability to anticipate our needs and deliver advice and information in a timely and context-appropriate manner. For instance, applications such as Google Now scan our email for package deliveries, appointments, and interests to create highly personalized reports of actionable information. In the next decade, everything visible and tangible in immersive experiences will be activated, enriched, and supported by machine intelligence in ambient communications networks. Networks will make use of advanced deep learning to combine and analyze unstructured big data sets and construct computer-based models of the world. They will spot patterns within large data sets and infer what action may occur or be most effective. Such networks have the potential to craft messaging specifically to individuals or to identify trends even before they achieve conscious awareness among humans.

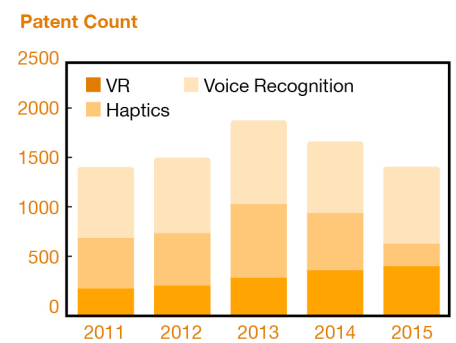



**Cheap computation is making the anticipatory power of machine intelligence accessible anywhere**

Deloitte; S&P Capital IQ; IFTF analysis

## **MULTISENSORY:** from visual to embodied

For decades, computational output was limited to visual data—blinking lights, words punched onto teletype paper, green phosphor shapes floating across screens. Graphics grew more sophisticated and were joined by sounds. Today we experience synthetic realities at resolutions rivaling the real world. Until recently, this high-fidelity communication was limited to outputs—people could input information only by entering machine-readable characters one at a time. Now computers are acquiring sensory organs, making natural forms of input possible. Siri and Alexa are ears connected to a natural language system that hears what we need and delivers it digitally or orders it shipped. Google Glass and other smart eyewear devices see things we're looking at, including things we don't notice, and provide contextual information. Ambient communications networks will engage our entire body by becoming more responsive to voices, gestures, emotional states, skin, and eventually thoughts. With holographic displays and haptic interfaces, our media won't merely connect with us, they will envelop us.

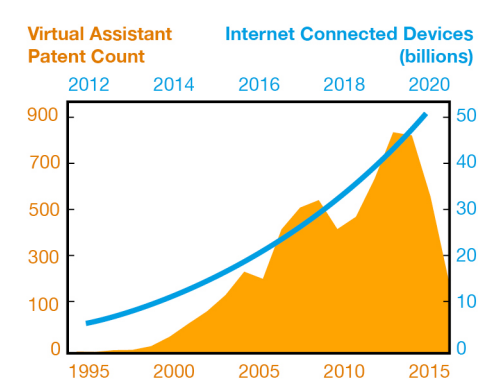



**Research and investment are driving an expansion of VR, haptic and voice-based interfaces**

Thomson Reuters; Quid; IFTF analysis

## **PROGRAMMABLE:** from solo to symphony

On their own, each of these emerging technology capacities will advance ambient communications experiences. When orchestrated collaboratively around the world, using distributed automated workflows and high-speed fiber interconnection and mediated by intelligent agents, they'll effect tremendous social transformation. Interfaces will customize themselves for the user through machine learning. Blockchain technology will become integrated into devices and networks to conduct transactions and generate records, allowing us to autonomously transact on a peer-to-peer basis with every entity from friends, doctors, and financial advisors to trusted AIs. Every person, thing, place, idea, and media object will have one or more intelligent layers of data. Configurable device protocols will connect these layers through a common language, enabling new information systems to flourish. We'll enlist an array of machine-based systems to carry out our intentions. Because of their varied utility, ambient communications networks will be adopted even more rapidly than preceding information technologies.



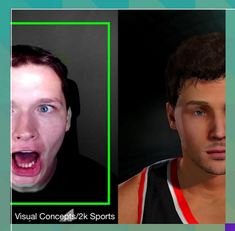

**Connected devices, powered by virtual assistants, enable anyone to orchestrate massive communications resources through simple commands**

Cisco; Thomson Reuters; IFTF analysis

# machine-orchestrated entertainment

### toward algorithms in writers' and composers' rooms

For decades, data have informed the creation of entertainment content. The music and movie industries have long relied on focus groups to tailor films and albums for mass appeal. As algorithms get better at inferring what people like, and why, we'll come to use them much earlier in the creative process to illuminate what elements to add or remove to a story or song to appeal to the widest audience. Eventually, algorithms will become collaborators in content creation. The writer or composer will define a set of parameters, and the computer will create an endless supply of new and unique work programmed to please a specified mass, or niche, audience.


Visual Concepts/2k Sports

**Scan your face into a game**

EA Sports' game NBA 2K16, which lets players scan their faces and create a character using that scan, signals a future where personalized content gets seamlessly integrated into what we see as mass media.

**Create unique music**

U.K.-based JukeDeck enables users with no musical talent to produce unique soundtracks based on specifications around mood and length. Aimed at giving social media producers high-quality, royalty-free tracks, such technologies can fuel personalized music online and offline.


JukeDeck

# expanded sensorium

### toward a networked global presence

Our sense organs—eyes, ears, nose, skin, tongue—are becoming wirelessly connected to our networks in ways that will allow us to deploy our senses on demand nearly anywhere on our planet. Telepresence robots will send our eyes and ears into the air, under the surface of the ocean, or to places that could make us sick, such as areas contaminated by radioactive leakage. Haptic interfaces will give us arms thousands of miles long with hands that can touch things halfway around the world. Eventually, wireless sensors will transmit multisensory information that enable us to smell and taste cuisine being served on another continent and sense experience a new place.


Mixed Reality Lab

**Using haptics to bridge connections**

Singapore researchers designed a system to allow a chicken owner to pet their bird remotely through a toy chicken. When the real chicken moves, the toy moves in response.

**Viewing underwater remotely**

The OpenROV Trident, a laptop-sized under water drone, feeds live video to an operator above the surface. Essentially a tethered submersible eyeball, the Trident expands possibilities in dive site and sunken ship exploration, marine biology, and boat inspection.


OpenROV

# searchable matter

### toward a searchable, sortable physical world

Advances in computer vision, natural language processing, and machine learning are automating the process of tagging people, places, and objects in photos, video, and audio. For instance, a critter-cam can take photos of animals, identify species, and create image folders that different computer systems and APIs can understand. Going forward, machines will gain powerful, though imperfect, abilities to identify real-world phenomena—making the world searchable and sortable in unprecedented ways. From remotely searching the contents of your fridge or identifying the least congested dog park to programming automated business inventories or capturing demographics and preferences of a customer base, learning about our physical world will become as easy as making a web query.

**A clickable world**

Clarifai's visual recognition API processes images and video on demand, creating videos where every object in the frame is clickable. Eventually this technology could combine with mixed-reality tech to create a clickable layer on our world.

Modified from image by the National Science Foundation


Microsoft Research

**Virtual, narrating eyes**

The Seeing AI in development at Microsoft Research uses advanced computer vision and natural language to give visually impaired users an almost real-time interpretation of the physical world using only a cell phone and smart glasses.

# machine-curated memories

### toward meaningful surveillance

As smartphones have become ubiquitous, the number of photos and videos we take has expanded to more than a trillion globally per year. Over the next decade, we'll see the rise of wearable cameras and systems that go beyond simple capture to actively curate cherished moments of our lives. Already, wearable cameras such as the Graava use a combination of sensors to understand multisensory information in a video—including emotional reactions of the wearer—to edit together compelling moments into finished videos. As new and existing players compete over how best to curate memories on our behalf, we'll face new questions about how we capture, author, curate, and share our own memories.


Kapture

**Record moments after they happen**

Time flows from the past to the future, but new wearables like Kapture record and save a continuous buffer of audio conversation, enabling a wearer to tap the bracelet and effectively record the past in the present.

**Share travels without writing about them**

PolarSteps sorts your photos and automatically captures, curates, and shares vacation memories without any intervention from you, tracking your location and automatically publishing to a webpage to generate a personalized travel diary with no personal effort.


PolarSteps

# digital speciation

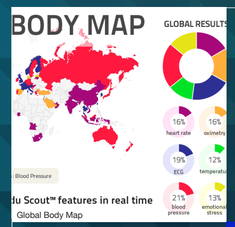
### toward ubiquitous cognitive assistance

The protagonist in the film Her falls in love with his computer's operating system, a brilliant bot he names Samantha. A meditation on loneliness and intimacy, "Her" anticipates a future in which personal computers become personable computers. Soon it won't just be mobile devices that feel alive—we'll call our kitchen and ask it to prepare dinner, chat with our cars about the day's news, and ask our mattress to tell us a bedtime story. At work, we'll ping our projects to be ready for review and guide the team to the next milestone. Eventually, though, each of us may forego multiple bots for a single, omnipresent AI of our own.

# biomedia

### toward systems that respond to biomarkers

Already, wearable devices and off-body sensors can observe, measure, and record our locations and behavior as we eat, dance, shop, wait in line, read, or interact with other people. Increasingly, multisensory systems will track, store, and respond to our biometric data—such as body temperature, heart rate, perspiration, and saccadic eye movement—in private and public contexts. These data points will be transmitted in real time to marketers, musicians, urban planners, and others, who will analyze them to better understand what we're doing, where we're doing it, and why. Results of these analyses can be used as feedback to change our experiences instantly, optimizing them from a user's or system's viewpoint.

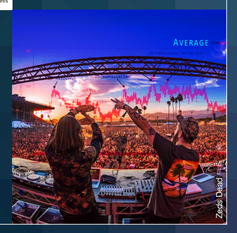



**Global bio-media database**

Global Body Map's collection of over 20 billion biometric data points from around the world lets you compare body temperature, blood pressure, and heart rate among Scanadu Scout users in different countries and U.S. states.

**Intelligence from audience heart rates**

Zeds Dead attached heart rate monitors to fans to learn which songs increased heart rates. Musicians will use biometric data in response to songs to help them create shared moods and engaging sets.



Chris Gaffney

# body rights management

### toward securing body media

In the early days of the quantified self movement, practitioners described the phenomenon of tracking and analyzing personal data as applying concepts from business management to self-management. As wearable computing enables more information to be captured from and communicated directly to our bodies, we'll also need to manage our data outputs and more carefully control personal digital permissions for how, when, and what kinds of information get embedded and communicated through and from our bodies. Even as we manage the information streams from our bodies we share with others, organizations will be challenged to develop narratives and value propositions, tools and practices, to illuminate and manage communications designed for digitally mediated bodies.

**Automatically upgrading self-knowledge**

Fitbit recently released a firmware update for its Flex tracker that automatically enables a new feature allowing the device to track a user's sleep—hinting at kinds of body information and permissions we'll need to manage.


Fitbit

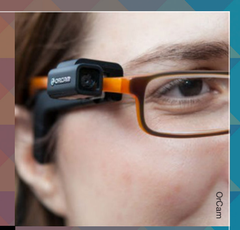

HRL Labs

**Learning from brainwaves of pilots**

In a research study, pilots in training received noninvasive electrical stimulation of their brains to improve performance. Positive results suggest a future in which neuroanalysis and interventions could become personal data streams to capture, measure, manage, and control.

**Whispers in our ears**

MyMe, a cognitive assistant that observes you through a clip-on camera, verbally shares relevant information via a Bluetooth earpiece. This tool, which developer OrCam calls augmented attention, points toward a future of embedded digital Cyranos whispering in our ears.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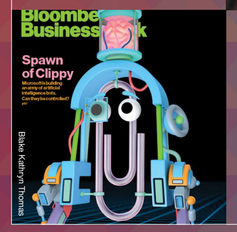


Blake Kathryn Thomas

**Agents over apps**

Beyond interacting with multiple single-purpose apps, tomorrow's intelligent agents will understand what you need—from a night out to a new deck for your house—and liaise with myriad web services, bots, and networked objects to do the job.

# shareable presence

### toward embodied and shared mixed reality experiences

Early efforts with virtual reality focused on immersing us in simulated worlds and isolating us from the other people and even our own physical experiences of reality. Over the next decade, advances in haptics, augmented reality, and processing capabilities will allow us to break free from the flatness of virtual space and experience digital overlays in co-present, fully-physical ways. For instance, Facebook recently demonstrated that two researchers, miles apart, could use off-the-shelf equipment to interact in real-time, pinning virtual objects onto each other, and even taking selfies in a mixed-reality environment. As these shared experiences of mixed reality emerge, they will enable us to experience shared physical presence across time and space, giving our finite physical spaces the vastness of virtual reality.

**Augmented reality collaboration**

The Daqri Smart Helmet enables users to control industrial infrastructure through gestural interfaces. In early demonstrations, it has enabled expert welders to provide guidance to a novice employee through audio and telestration directly into their field of view.


DAQRI


Microsoft Research

**Shared presence heightens productivity**

In its Room2Room project, Microsoft Research demonstrated that by using low-resolution augmented reality to project two individuals into the same space, participants' problem solving abilities improved significantly over Skype and other video conferencing software.

# animation and reanimation

### toward living likenesses for brands

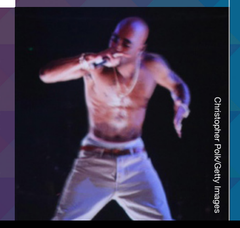
Seemingly ephemeral communications—from emails to stage performances—are getting captured, mined, remixed, and stitched to create bots and other lifelike media forms. For instance, chatbot-based and conversational commerce are shifting brand management from centralized to distributed communications strategies—animated proxies engage in personalized conversations with consumers through ambient communications networks in social streams and persuasive objects. Meanwhile, advances in augmented reality are enabling experimenters to construct new performances from musicians and comedians using old videos. In this world of proliferating communications partners, companies and individuals will have to balance the benefits of increasingly personalized, anticipatory interactions with the need for broadly coherent messaging.

**Bots as brand managers**

Companies from Sephora to Taco Bell are launching bots to interact with potential customers on chat platforms such as Slack and Kik. These bots will become increasingly central to how we interact with and understand brands.

**From screens to physical representations**

Augmented Reality Holographic Technology, the force behind the hologram Tupac show, creates "humagrams," human holograms of living, deceased, and fictional characters. In a near future, we can imagine humagrams populating our advertising and marketing workforce.


Christopher Polk/Getty Images



WHEN EVERYTHING IS **MEDIA**

THE FUTURE OF **AMBIENT COMMUNICATIONS**

"The technologies of the next decade are creating **ambient communications** experiences that are embedded, illuminated, anticipatory, multisensory, and programmable."

# why we communicate:

## INTENTIONS IN A WORLD OF AMBIENT COMMUNICATIONS

As ambient communications technologies emerge and mature, new opportunities will amplify ways we communicate to achieve goals across a range of eight intentions.

### COLLABORATION

**How will we co-create and generate new value?**

As communications experiences get embedded into the world around us, we'll collaborate with human and machine intelligence. This seamless combination of human and machine collaborators will create new opportunities to rethink how we assemble teams, define roles, and distribute routine and creative work.

- **Embodied virtual collaboration:** Haptics, virtual reality, and other multisensory technologies will create opportunities to give remote collaboration experiential qualities of interactions in physical space.
- **Digital assistant team members:** Advances in digital assistant technology will turn machine intelligence into a shared collaborator that works as part of a team.
- **Emergent environments:** With built-in communications infrastructure, our physical world will be overlaid and embedded with interactions that create enormous value as knowledge gets captured and accessible in place.

### EMPATHY

**How will we experience and see the world through other people's eyes?**

Social media gave us windows into lives of billions worldwide. These static views will become more immersive and visceral, enhanced by situational and contextual information. These factors will create opportunities to reinvent how we build broad empathy—from grassroots movements to customer service calls.

- **Persistent witnessing:** With cameras and recording devices everywhere, activists will have amplified capabilities to draw attention to their causes.
- **Multisensory appeals:** When communications experiences become full-bodied, sharing captured moments—like a heartbeat communicated directly to a wearable—will create new kinds of empathic experiences.
- **Context-aware customer service:** As more interactions are captured and tracked, our data will enable customer service and sales representatives to dynamically understand broader context and program interactions.

### CONTROL

**How will we secure our identities and privacy?**

Strategies to prevent privacy loss with new communications technologies range from falsifying information in databases to investing in blockchain technologies. In a world where virtually every action is captured, stored, and analyzed, we'll increasingly seek to control our digitally constructed identities and privacy.

- **Ephemeral communications spaces:** Ephemeral approaches to media, like SnapChat's self-destructing photos, will move into workplaces to enable playful, imaginative innovations.
- **Lower barriers to assert control:** Empowering us to control the use of personal data and information in simple ways will build trust to enable new kinds of communications interactions as privacy norms shift.
- **Machine-aided views of ourselves:** Efforts to give us views into how algorithms perceive our digitally mediated identities will empower us to control our own experiences.

### ENGAGEMENT

**How will we harness participation and attention?**

Engagement ranges from long-stretches of deep focus to tiny moments of passing interaction. Continuing advances in fields such as neuroscience and psychology bring new insights into how to harness our engagement and make the best use of this range of attention to precisely target participation.

- **Skin-based interfaces:** The Navigate Jacket, which uses haptic feedback embedded in the jacket's shoulders to provide GPS information, highlights pathways of engagement that minimize cognitive work.
- **Immersed attention:** Virtual reality and other fully immersive interfaces won't simply capture our attention but will filter out unwanted or non-urgent communications streams.
- **Shared experiences through objects:** As we gain the ability to embed communications and interactions in physical objects, new opportunities will transform our shared spaces and objects into points of shared experiences.

### PRODUCTIVITY

**How will we optimize work and get things done?**

Traditional definitions of productivity focused on measures of output. In a world of digital assistants and constant connection, productivity will be defined by coordinating and programming work and communications flows and balancing human and machine labor.

- **Embedded learning and production:** Advances in mixed reality will enable us to learn and perform physical tasks seamlessly on demand, collapsing the boundary between acquiring and acting on information.
- **Machine-optimized scheduling:** As past performance gets captured, new kinds of machine-curated scheduling efforts will better integrate our life and productivity goals, enabling us to reach goals including professional output.
- **Intelligent focus:** As we receive more communications streams from people and machines, detaching smartly—to reimagine problems and solutions—will become increasingly central.

### INTIMACY

**How will we enhance physical and emotional connections?**

As more communications streams vie for our attention, digital techniques that re-create subtle, meaningful communications—such as a parent holding a child's hand for security—and enable them to take place asynchronously, will allow intimacy to emerge even when asynchronous communications occur in different locations.

- **The body as a communications medium:** Wearable communications technologies will create new interface and interaction designs that enable us to share nonverbal, nonvisual, digitally-mediated messages.
- **Enhanced self-knowledge:** As our own biological data become part of our communications streams, new opportunities will emerge to help us get to know ourselves.
- **Digital representations:** Our digital representations will become more persistent, get embedded into objects and environments, and create increasing perceptions of closeness across time and place.

### PERSUASION

**How will we shape behavior change?**

When objects and hardware take on the cloud's machine intelligence, the persuasive techniques built into online advertising and media will be accessible and embedded in our physical environments. This will create new ways to supercharge how we persuade people, including ourselves, in achieving goals.

- **Persuasive objects and environments:** Merging digital communications streams with physical objects will create new persuasive environments, such as kitchens that use fitness data to lock our refrigerators.
- **Conversational optimization:** With the rise of digital assistants, we'll see increasingly sophisticated efforts to capture and analyze sales conversations—and apply these tools in real time.
- **Marketing to biomarkers:** The rise of biomedia will accelerate efforts to measure and design communications optimized to our subconscious and biorhythms, timing communications to when we're most receptive.

### FUN

**How will we provoke imagination and enjoy ourselves?**

We each define fun differently, from passive relaxation to delight, surprise and exhilaration. The ability to anticipate what any person might find fun—and embed such experiences into the world around us—will continue to drive innovative approaches to creating fun moments in our lives.

- **Interstitial entertainment:** Uber Trip Experiences—which enable riders to program news, music, or serendipitous media into their trips—points toward accelerated efforts to provide entertaining micromoments.
- **New digital fun 'species':** Advances in bots and virtual assistant technology will usher in new kinds of entertainment, ranging from holographic musical performances to toys with synthetic personalities.
- **Biometrically-enhanced interactions:** From facial-recognition data to heart rates, integrating biometrics into our communications streams will enable algorithmically optimized fun tailored to individuals as well as crowds.

## INSTITUTE FOR THE FUTURE

IFTF is an independent, nonprofit research group with more than 48 years of forecasting experience. We work with a broad range of organizations to help them make better, more informed decisions about the future by providing the foresight to create insights that lead to action. We bring a combination of tools, methodologies, and a deep understanding of emerging trends and discontinuities to our work with companies, foundations, and government agencies. **www.iftf.org**

## TECHNOLOGY HORIZONS PROGRAM

IFTF's Technology Horizons Program combines a deep understanding of technology and societal forces to identify and evaluate discontinuities and innovations in the next three to ten years. We help organizations develop insights and strategic tools to better position themselves for the future. Our approach to technology forecasting is unique—we put people at the center of our forecasts. Understanding humans as consumers, workers, householders, and community members allows IFTF to help companies look beyond technical feasibility to identify the value in new technologies, forecast adoption and diffusion patterns, and discover new market opportunities and threats.

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