

REWORKING HEALTH

NEW AUTHORITIES IN A WELL-BEING ECONOMY

WHO will people trust to help them make health decisions?

WHAT new interventions will emerge to transform health in a rapidly expanding marketplace?

HOW can you use new authorities to improve health in a decade of contested change?

In recent years, traditional health care players have begun expanding their reach outside of clinical settings and into our homes and workplaces while new players have ventured further into the health domain. This rapid explosion of new tools and services has already reshaped how people interact with doctors and other health providers, and enabled new entities—from our online social networks to food retailers and even self-tracking services—to play an increasingly critical role in influencing our health and well-being decisions.

And the process is accelerating. Microwork platforms are enabling startups, individuals, and community groups to crowdsource a range of tasks from caregiving to diagnosis of rare diseases. Increasingly accessible sensor technologies are enabling people to quantify health information outside traditional health settings, while at the same time health practitioners are gaining the ability to measure and use emotional states to develop new kinds of health interventions.

These forces aren't simply disrupting traditional health authorities. They are creating opportunities for individuals, communities, and organizations to tackle persistent health challenges in new ways.

This map is your guide to the new tools and resources that can augment traditional health work—as well as the new health and well-being authorities that will emerge from unexpected places. Use the map as a tool to identify the skills and capacities your organization can develop to rework health in the coming decade.

Disruptive forces creating new health authorities

The health and well-being economy is the expansion of health beyond health care. It is a bustling marketplace of health and well-being goods, services, and experiences directed at enhancing people's overall feelings of comfort, satisfaction, health, and wellness. Five converging forces are supporting this economy by disrupting traditional relationships with doctors and other care providers, and enabling new players to emerge.

To understand the context from which new authorities will emerge, it's important to understand how these forces are destabilizing the health and well-being landscape.

Expanding definitions of health and well-being are disrupting how we measure and define health

The last decade has seen individuals, communities, organizations, and governments moving from a single focus on improving physical health to improving quality of life as well. Already, efforts are under way to remedy the social, economic, and psychological conditions that influence our sense of well-being. These kinds of interventions require connections across disciplines and reallocate diverse resources to produce outcomes that enhance both biomedical measures as well as subjective, qualitative experience. These expanding definitions of health and well-being are creating opportunities for new players to enter the health space, from athletic apparel companies to retailers to workplace health initiatives.

Ubiquitous health measurement and interpretation are moving health information out of the hands of experts

Health data has long been collected and stored in clinics, universities, and other institutional settings. But the diffusion of sensors, communication devices, and processing power into everyday objects and environments is unleashing an unprecedented torrent of data and moving authority over that data into the hands of everyday people, as well as into the cloud. Sensors ranging from wearable devices that measure health states to sensing tools embedded in our floors, computer screens, and cars are creating new capabilities to pinpoint the factors in our lives that contribute to health and well-being. They are also transforming health measurement from an occasional activity performed in health care settings into a constant, passive activity performed anywhere and driven in large part by individuals and organizations not traditionally associated with health.



Increased chronic health conditions continue the shift toward anytime, anyplace health

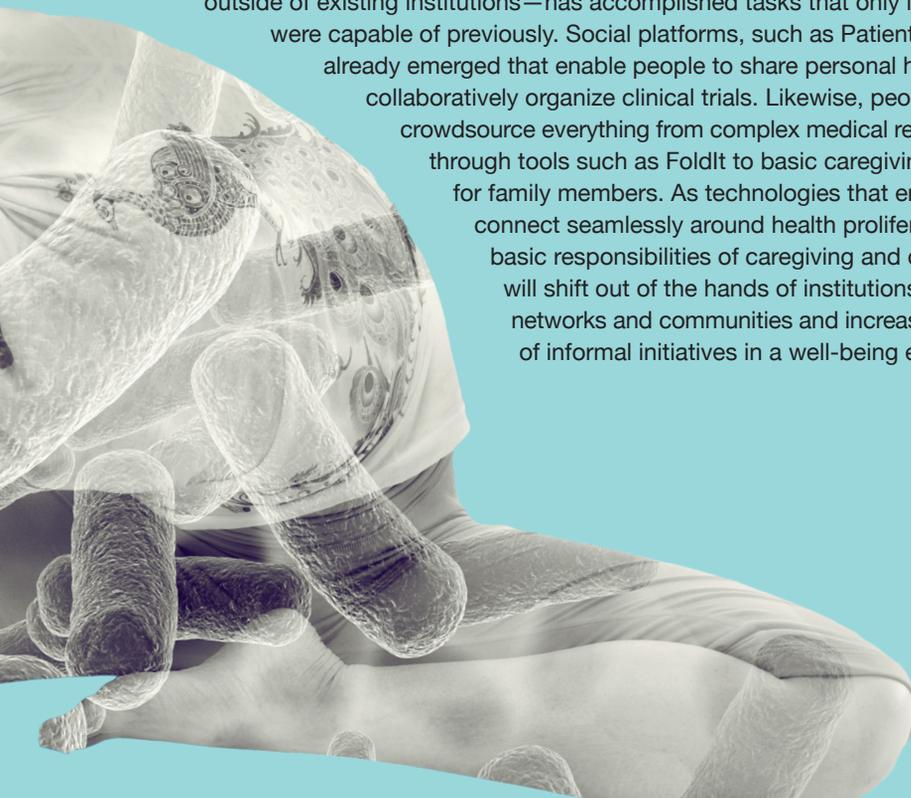
The slow but steady rise in obesity and chronic illness, a similarly steady increase in age-related conditions such as dementia, and staggering rates of diagnosed mental health conditions are driving a need for continuums of care that go beyond clinical settings and nursing facilities. This increase, coupled with new financial pressures from the Affordable Care Act, are driving physicians, hospitals, and other traditional health care institutions to improve coordination and communication with each other. While these changes are not new, they will continue to drive the shift from acute to chronic health management, as well as move health and well-being decisions out of the context of the clinic and into everyday lives and settings. These shifts will continue to create space for new authorities to emerge and interact with consumers when and where they need health advice.

Abundant data is creating new kinds of expertise around connecting, mining, and synthesizing diverse information streams

While expertise was defined in the past by deep, specific knowledge of a single subject, the sheer volume of health information becoming available demands new ways of connecting disparate ideas. Already, more academic institutions are fostering open, transdisciplinary learning. They are reorganizing research structures to enable translational scientific breakthroughs, which are changing what we know about our bodies. Meanwhile, data-mining tools are allowing everyone from large insurance companies to retailers and small start-ups to experiment with using new quantitative analytics to rethink the basic process of producing health knowledge, at times giving evidence to new kinds of health interventions, and at times challenging long-standing assumptions about health.

Socialstructuring health services creates opportunities to reimagine how we organize health work

In recent years, “socialstructuring”—using social technologies for collaboration and exchange outside of existing institutions—has accomplished tasks that only large institutions were capable of previously. Social platforms, such as PatientsLikeMe, have already emerged that enable people to share personal health data and collaboratively organize clinical trials. Likewise, people have begun to crowdsource everything from complex medical research questions through tools such as FoldIt to basic caregiving responsibilities for family members. As technologies that enable people to connect seamlessly around health proliferate, many of the basic responsibilities of caregiving and decision making will shift out of the hands of institutions and into networks and communities and increase the importance of informal initiatives in a well-being economy.



New authorities in the well-being economy

The forces disrupting traditional authority will reshape many existing relationships in health and health care. Who does what for whom will be up for grabs. The answers to these questions will come from **four sources of authority**—**COMPUTATION** | **NARRATIVES** | **NETWORKS** | **AMBIENCE**. These sources of authority are driving the forecasts of 12 new interventions and will each require new skills in order to support health and well-being.

You can use the process below to inform and inspire your thinking about new ways you can intervene to produce health among patients, consumers, employees, and communities.

1 CONSIDER THE DISRUPTIVE FORCES that are destabilizing authority in health and well-being.

2 CHOOSE A CASE TO REWORK to consider a familiar health challenge in new ways.



CREATE CONTINUOUS CHRONIC CARE

by engaging with people when and where they are to improve self-efficacy.



ENHANCE EARLY CHILDHOOD HEALTH

by identifying upstream interventions that will create long-term success.



SUPPORT END-OF-LIFE CARE

by combining health and well-being interventions to meet personal needs.



OPTIMIZE WORKPLACE WELLNESS

by finding new ways to enhance long-term performance and health.



BUILD COMMUNITY HEALTH CAPACITIES

by working with networks and communities to reach populations in new ways.

3 EXPLORE THE SOURCES OF AUTHORITY in the booklets for Computation, Narratives, Networks, and Ambience that can be used to create new interventions and offerings in the well-being economy.

4 FOCUS ON THE FORECASTS OF NEW INTERVENTIONS that are emerging from each source of authority to find inspiration to address your case.

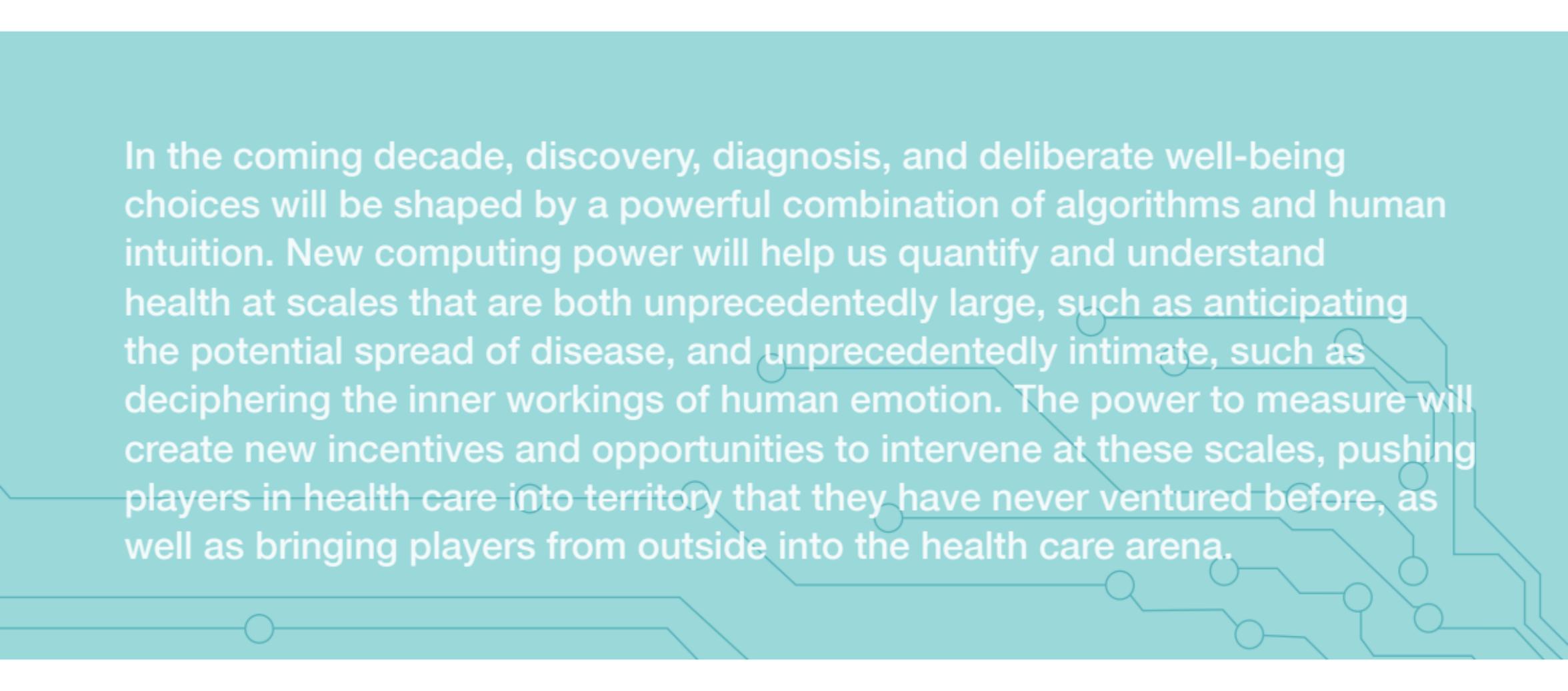
5 IDENTIFY THE NEW SKILLS that your organization can cultivate to enhance your work.

6 REWORK HEALTH by using the sources of authority, interventions, and skills to address your case. The questions to the right will help guide you through imaging a new response.

COMPUTATION

Ubiquitous measurement and analytics transform health



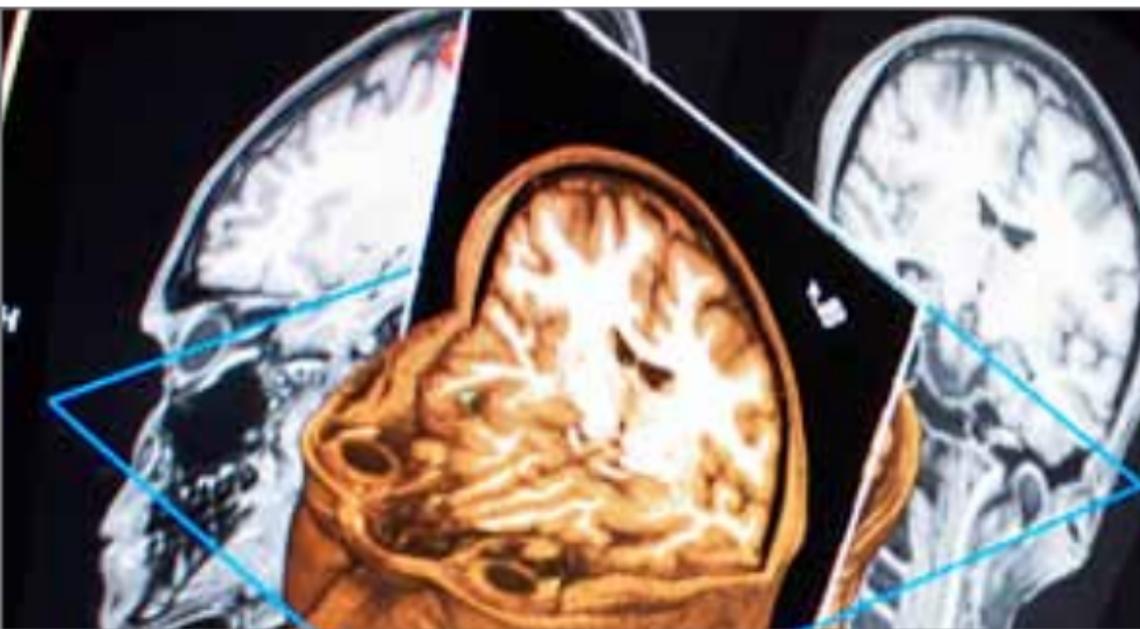


In the coming decade, discovery, diagnosis, and deliberate well-being choices will be shaped by a powerful combination of algorithms and human intuition. New computing power will help us quantify and understand health at scales that are both unprecedentedly large, such as anticipating the potential spread of disease, and unprecedentedly intimate, such as deciphering the inner workings of human emotion. The power to measure will create new incentives and opportunities to intervene at these scales, pushing players in health care into territory that they have never ventured before, as well as bringing players from outside into the health care arena.

Calibrating pain

Emotional quantification opens the door to evidence-based alternative therapies

New measurement tools will enable physicians to more objectively quantify pain, thereby shifting authority away from the individual's subjective experience. Multifaceted assessments will combine physiology-based measurement with data from clinical encounters and daily life to reveal a holistic, individualized view of pain. Alternative therapies will emerge as legitimate when backed by numbers proving positive outcomes. At the same time, these tools also create potential new dilemmas around privacy and understanding subjective experience.



Flickr user: Ars Electronica

Researchers at the Stanford School of Medicine are using fMRI scans to objectively measure pain.

med.stanford.edu



© Hunter Hoffman, vrpain.com

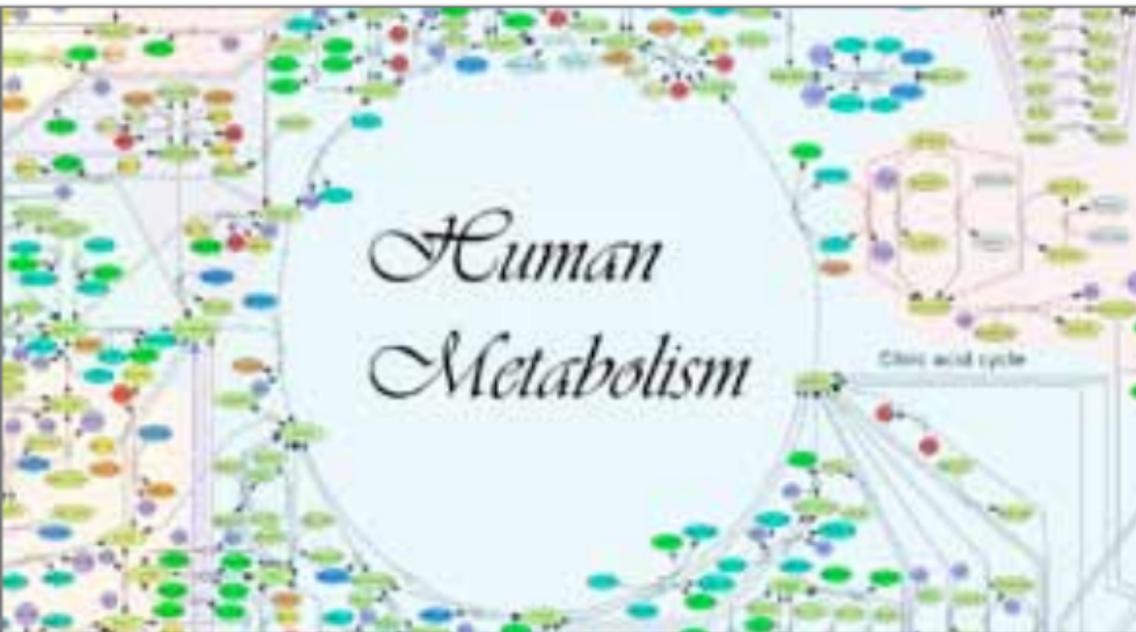
Studies have shown immersion in virtual reality worlds relieves pain for burn patients.

scientificamerican.com

Translating siloed research into medicine

Computationally assisted intuition pulls insights from disparate data

The translation of science into medicine will increasingly rely on technology tools that enable productive interplay between artificial intelligence and human imagination. As the sheer volume of data grows, machine learning will help researchers and health professionals parse through the overabundance of information to connect diverse ideas and blend research concepts. Artificial intelligence will also aid in identifying connections between people and ideas, encouraging creativity and cross-domain expertise, and advance the creative search for new hypotheses.



humanmetabolism.org

Recon 2, “a community-driven global reconstruction of human metabolism,” gives researchers a shared computational context. humanmetabolism.org

crowdmed.com

CrowdMed invites curious individuals to use intuition blended with prediction market algorithms to diagnose volunteers. crowdmed.com

Automating media therapy

Programming media streams to improve health outcomes

As monitoring technologies uncover new connections between media consumption and health, we'll see the emergence of efforts to use media to enhance health outcomes.

Streaming music and movie services, as well as video game manufacturers, will generate data-driven playlists, recommendations, and gaming experiences for specific well-being goals and health events. Customized, therapeutic media will increasingly find its way into many traditional health contexts, such as hospitals, clinics and gyms, as health providers experiment with using the influence of media to improve health.



Flickr user: jaredpolin

Music and Memory is a project that uses personalized music therapy to reconnect people with dementia and other chronic cognitive and physical impairments to their family, friends, and caregivers. musicandmemory.org



Flickr user: ceejayoz

The journal *Pediatrics* has published several studies that suggest music therapy has clinical benefits, including calming the heart rate and breathing of premature infants. pediatrics.aappublications.org

MEASUREMENT

NEW SKILL FOR COMPUTATION

Enhancing measurement capabilities is critical to channeling computational authority. In the future, effective measurement will mean knowing what data to capture, finding ways to integrate that information with other findings, and using this comprehensive knowledge to optimize interventions.

NARRATIVES

Empathy unlocks persuasive communication



As many tasks associated with caretaking and clinical care become partially or wholly automated, the role of humans in medicine will shift more and more to the realm of narrative—making sense and meaning out of the deluge of data generated by automated systems. We will design services with a new recognition of the role narratives play in turning clinical information into something more understandable, memorable, and persuasive. At the same time, we'll also begin to realize how personal or community narratives impact health outcomes directly.

Uncovering empowering identities

Co-creating healthier narratives for improved outcomes

People's narrative identity, how they see themselves and their place in the world, has profound effects on their health outcomes. For instance, research has shown that asthma sufferers who feel stigmatized are less likely to use their inhalers and suffer worse, and more costly, outcomes. Likewise, subscribing to certain conceptions of masculinity prevents many men from seeking care. The next decade will see a shift in focus toward understanding how to help people create empowering narratives that improve their health and well-being.



Flickr user: Commander, U.S. 7th Fleet

Research shows that asthma sufferers who feel stigmatized are less likely to use inhalers and have worse outcomes. sciencedaily.com



Flickr user: erink_photography

Study finds that people's mental health improves when they rewrite their narratives to give themselves more agency. ncbi.nlm.nih.gov

Amplifying the positive

Strategically engaging patients in exploring positive emotions

As health systems move from focusing exclusively on treating illness toward a more person-centered approach to well-being, traditional health providers will be augmented by new kinds of professionals who focus on amplifying what is going well. Based on using play and narrative at precise points when they are most likely to meaningfully improve health and well-being outcomes, these efforts will expand the ways that health providers use positive emotions to engage patients.



Flickr user: Chris Kealy

Study finds women undergoing IVF have greater likelihoods of getting pregnant if visited by a clown who can help the patient de-stress.

reuters.com



© Chris O'Shea

An interactive game enables hospitalized kids to simulate play, painting, and other childhood activities. chrisoshea.org/woodland-wiggle

Contextualizing science in retail settings

Retail settings create direct-to-consumer health innovations

In recent years, genetic testing companies such as 23andMe have been bypassing traditional medical providers to bring advances in medical and biological sciences directly to consumers. With fewer requirements to prove efficacy, and more leeway to move beyond medical necessity, technology and apparel companies will launch consumer health products and new retail models focused on helping consumers understand the information generated from new health technologies and advances in biological science.



Bonnie Kenaz-Mara ChillMama.com

Marbles, a self-described “brain store,” almost exclusively carries brain fitness products.

marblesthebrainstore.com



Flickr user: wilbertbaan

The Quantified Self community ran a story on its blog highlighting the rapid rise of self-tracking products at Best Buy and the Apple Store. quantifiedself.com

EMPATHY

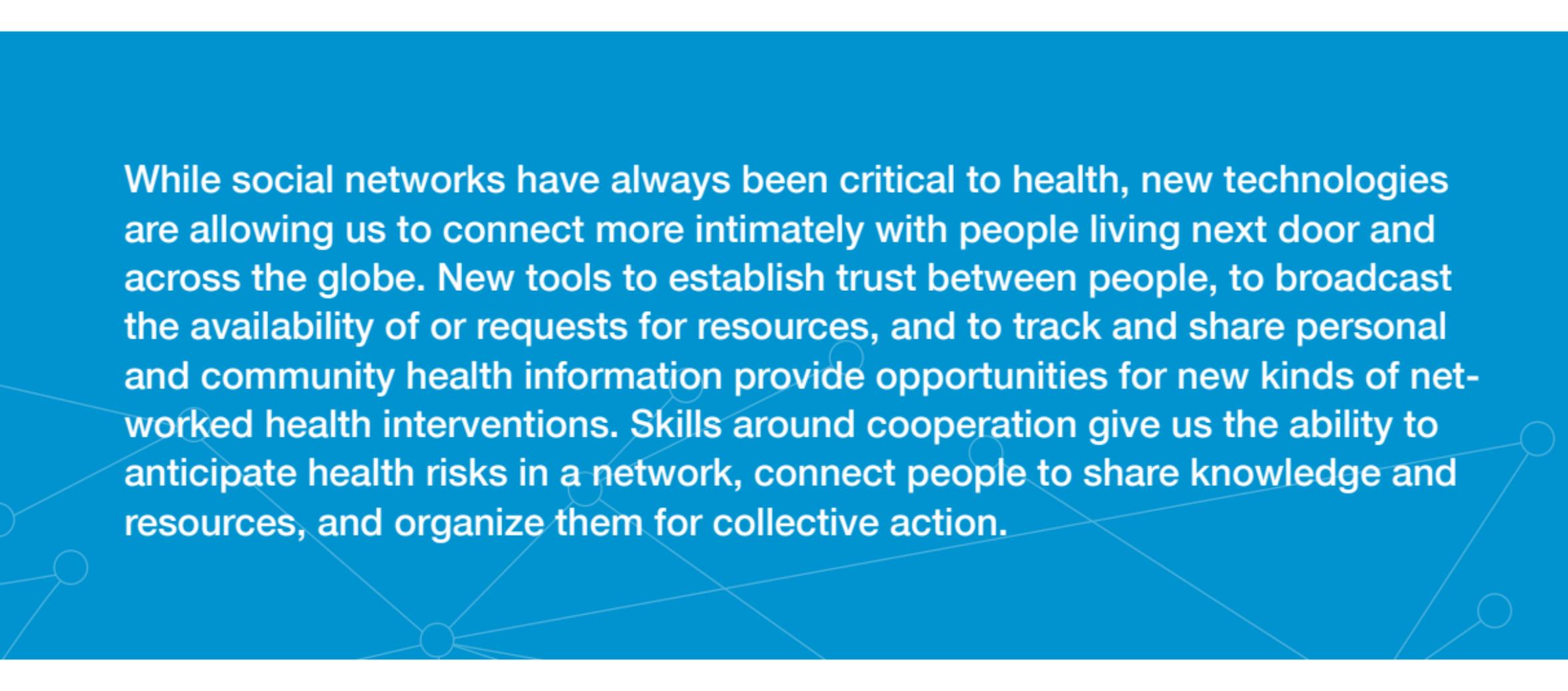
NEW SKILL FOR NARRATIVES

To tap narrative authority, it is critical to first practice empathy. Empathy—the ability to not only listen to, but identify with narratives that shape health—can unlock the ability to engage with people in more culturally agile and effective ways.

NETWORKS

Cooperation activates previously untapped capacities





While social networks have always been critical to health, new technologies are allowing us to connect more intimately with people living next door and across the globe. New tools to establish trust between people, to broadcast the availability of or requests for resources, and to track and share personal and community health information provide opportunities for new kinds of networked health interventions. Skills around cooperation give us the ability to anticipate health risks in a network, connect people to share knowledge and resources, and organize them for collective action.

Coordinating caring communities

Fostering community for healthy starts and ends to life

New imperatives for upstream preventative interventions and end-of-life care will require the activation of resources outside the traditional health care system. For instance, initiatives such as public health nursing, which integrates traditional nursing with community involvement, children's wellness centers, and trauma-informed learning environments, are becoming increasingly connected as a way to prevent trauma—which affects 25 percent of children, and increases lifetime risk for cancer and heart disease. This approach will be used at the end of life as well, with networks of caregivers, communities, and professionals coordinating to control pain, improve advance care planning, and comfort patients and families.

Peace ⁴ Tarpon

TRAUMA INFORMED COMMUNITY INITIATIVE

peace4tarpon.org

The City of Tarpon Springs is actively trying to become the first “trauma-informed” community by designing social and physical environments that enhance feelings of security and do not trigger residual trauma. peace4tarpon.org



Flickr user: Pollbarba

A compassionate community network project has health professionals mentor patients and caregivers to engage their social networks.

spcare.bmj.com/content/1/2/129.abstract

Activating community health libraries

Lending programs become curators of health resources

Religious groups, government agencies, community hospitals, and health centers have begun experimenting with lending programs where individuals can borrow durable medical equipment such as wheelchairs and hospital beds. Over the next decade, activated networks will leverage new social technologies to transform these often underfunded, understaffed programs into robust community health libraries. These libraries will curate health resources, not only lending equipment but also providing a public space for people to share health experiences and strategies.



Town of Shandaken

The volunteer-run Medical Lending Shed in Shandaken, New York, loans medical equipment to residents. shandaken.us



Pass It On Center Facebook

The Pass It On Center's IQ-AT Reuse tool allows medical equipment libraries to take self-assessment tests and share them as a way of exchanging best practices. passitoncenter.org



Commoditizing bodyworks

Crowd-certification brings bodywork to the masses

The ability to use citizen web reviews and word-of-mouth recommendations to establish credibility will allow an influx of Chinese bodywork practitioners, with no formal American certification, to bring pampering, well-being services, and palliative care within reach of American health consumers. As evidence of the health benefits of low-cost bodywork and alternative health traditions grows, as well as consumer demand, authority—and risk—will shift from overwhelmed local and federal regulators to networks of practitioners and clients.



Ben Hamamoto

The number of new bodywork businesses is growing exponentially across the country.

commericalappeal.com



Flickr user: Nick J. Webb

Research on massage therapy has revealed that it boosts immune function in women with breast cancer and improves symptoms in children with asthma.

online.wsj.com

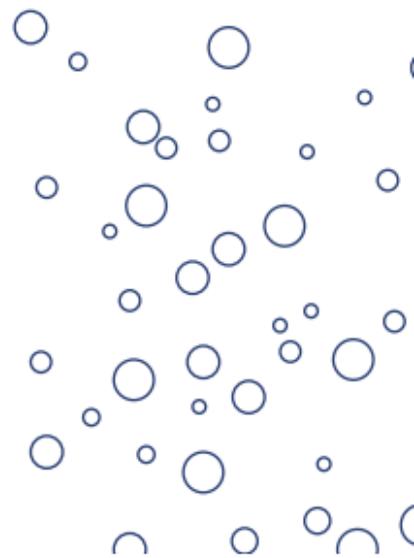
COOPERATION

NEW SKILL FOR NETWORKS

Learning to cooperate and collaborate across diverse networks is critical to using networked authority. Cooperation across traditional boundaries will engage new players in the work of producing health and enable community-based health responses.

AMBIENCE

Design enhances encounters and environments

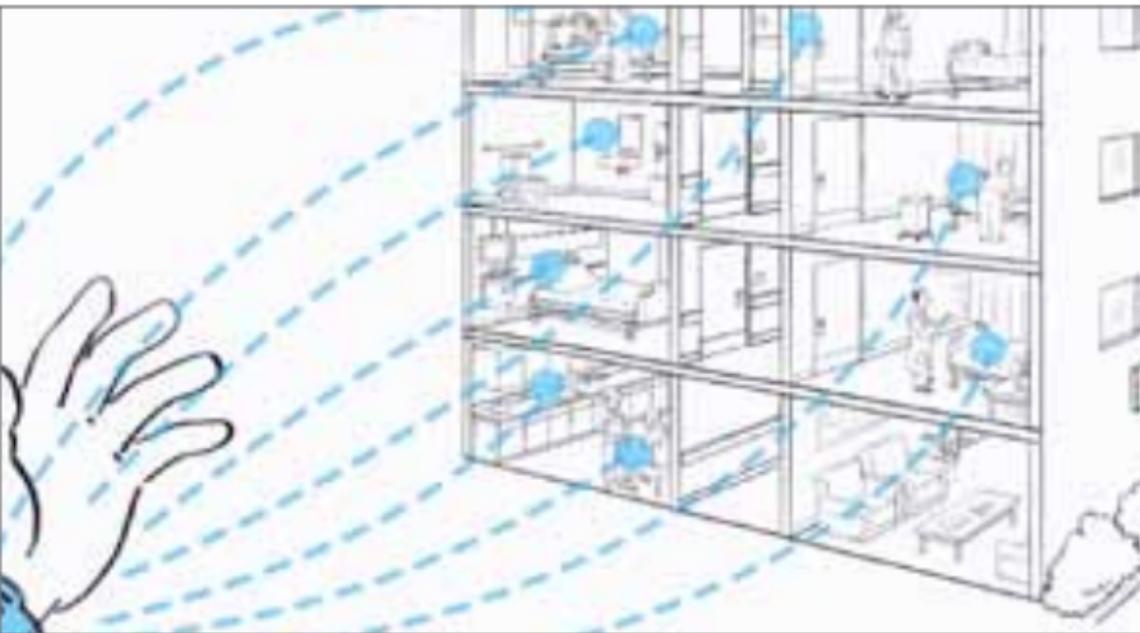


In the next decade, growing acceptance of the role that social, built, and natural environments play in the overall health of individuals and communities will lead to new opportunities to use the environment to intervene. The advent of ubiquitous sensors will allow us to create dynamic physical environments that can be tailored to meet individual and community health and well-being needs. New tools to quantify the effects of social norms, and platforms to broadcast this information, as well as changing demographics will rely on skills to design our environments for ambient health and well-being.

Embedding care protocol adherence

Automating adherence and quality standards through the Internet of Things

Over the next decade, demands for process improvements in health care, coupled with the rise of the Internet of Things, will usher in a landscape where minute details of providers' and caregivers' behavior, such as whether they remember to wash their hands, can be measured and corrected. Digital tools will create an always-on layer of guidance and nudges aimed at improving care delivery, transferring responsibility away from health workers and onto automated, smart systems.



intelligentm.com

Intelligent M, a bracelet that tracks doctors' hand washing, aims at improving medical hygiene.

psfk.com



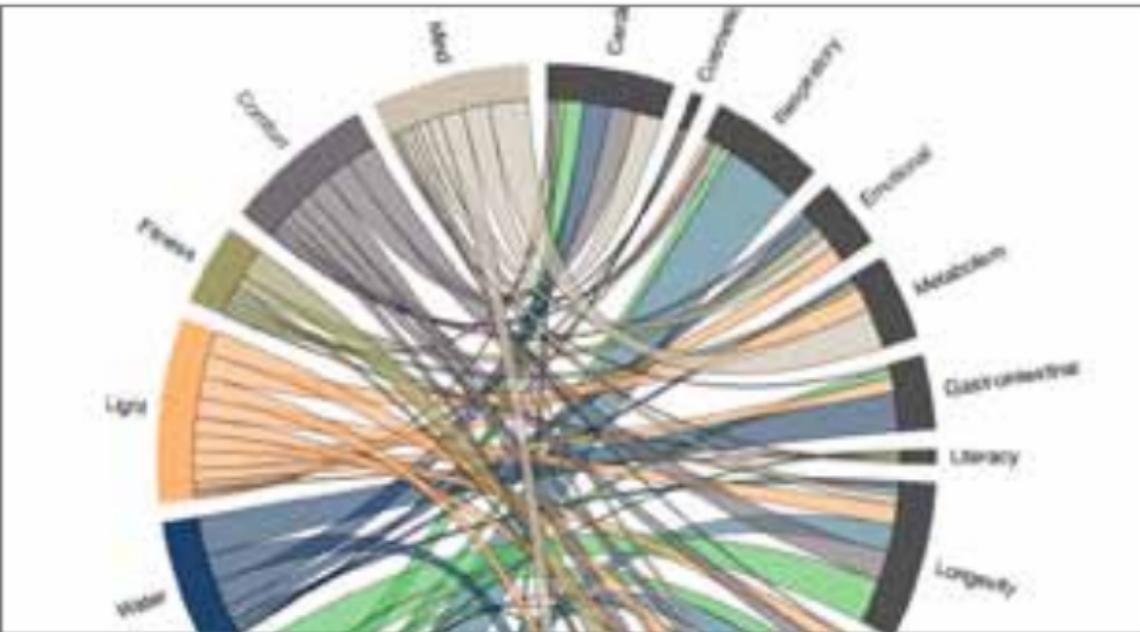
gawande.com

In *The Checklist Manifesto*, Atul Gawande argues that implementing basic process lists can significantly enhance care. gawande.com

Personalizing space for mindfulness

Workers design their own spaces for workplace wellness

New technologies to customize our ambient environments will intersect with increasing demands for well-being in the workplace, allowing workers to redesign their workspaces to promote health, well-being, and productivity. Workplace improvements such as yoga and nap rooms, natural light, and creative collaboration spaces will no longer simply be perks to attract and retain top knowledge workers. Real opportunities will emerge through a both/and approach to environmental nudges and stress-reducing, capacity-building mindfulness.



DelosLiving.com

Delos, pioneer of Wellness Real Estate™, has assembled a comprehensive database relating domains of health to aspects of the built environment. delosliving.com



openideo.com

Adding a health culture rating system to glassdoor.com wins an OpenIDEO challenge to create healthy communities. openideo.com

Optimizing the care effect

Strategically deploying rituals of care in clinical settings

Recent research reveals that the effects of biomedical treatments can be enhanced, or in some cases attributed entirely to, displays of empathy by the practitioner and other ritual aspects of medicine. As we begin to quantify the effects of care and other non-biomedical aspects of treatment—such as the appearance of facilities—and understand their nuances, new experiments and best practices to use the entire sensory environment strategically to improve the potency, and therefore cost effectiveness, of treatment will abound.



Flickr user: World Bank Photo Collection

Wired Magazine details the “care effect,” citing how the circumstances of care can influence outcomes. wired.com



Flickr user: sean dreilinger

A review of recent research suggests that placebo effects result specifically from healing rituals. ncbi.nlm.nih.gov

DESIGN

NEW SKILL FOR AMBIENCE

Developing subtle but persuasive design cues is critical to tapping ambient authority. Using design to create coherent experiences across physical and virtual environments allows health interventions to become continuous and immersive.

computation
narratives
networks
ambience

1 TAP A SOURCE OF AUTHORITY

IDENTIFY the source of authority that can most immediately help you address your case.

ANSWER the questions across the matrix to apply new skills and imagine interventions.

2 STRETCH YOUR WORK

IMAGINE what you can do with the other three sources of authority. Push your responses beyond the immediate to address your case in new ways over the coming decade.

3 DRAW THE CONNECTIONS

CONNECT your answers to create a new system of interventions that works seamlessly across settings and over time. What can you do to connect your efforts? Describe your vision.

4 REWORK HEALTH

START MAKING THE FUTURE NEW by describing actions you could begin taking today toward your long-range vision.

COMPUTATION

NARRATIVES

NETWORKS

AMBIENCE

MEASUREMENT

EMPATHY

COOPERATION

DESIGN

SKILLS

WHO decides what to measure ?

WHAT tools make sense of diverse data ?

HOW do we measure success ?

WHO creates the new narratives ?

WHAT narratives motivate change ?

HOW do we listen to the narratives ?

WHO needs to participate in health decisions ?

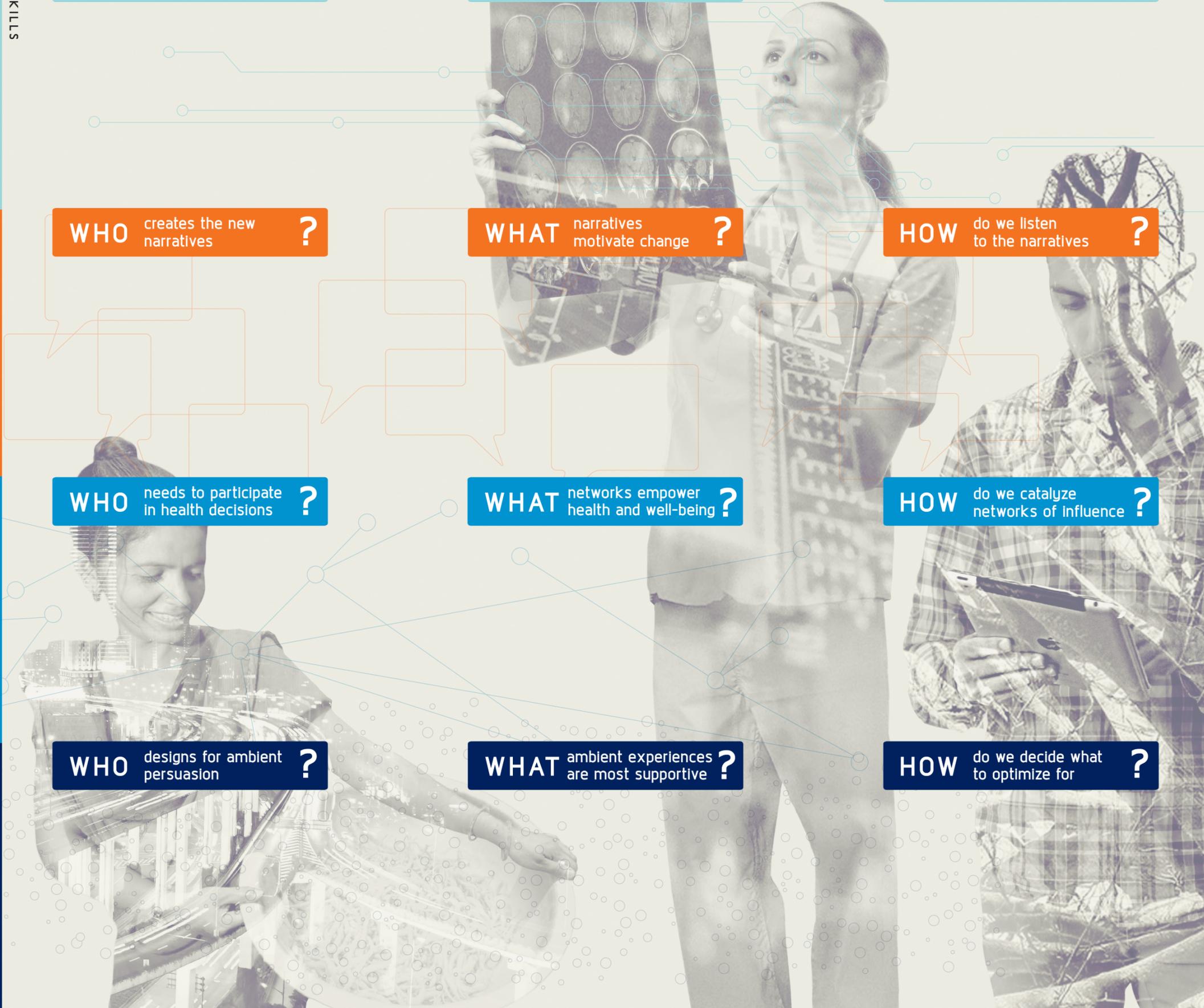
WHAT networks empower health and well-being ?

HOW do we catalyze networks of influence ?

WHO designs for ambient persuasion ?

WHAT ambient experiences are most supportive ?

HOW do we decide what to optimize for ?



About this map

ITTF's Health Horizons Program created this ten-year forecast map to orient you to a decade in which a variety of forces are destabilizing our traditional relationships in health, and creating new tools and opportunities to intervene. Use it as a tool to inform and inspire your thinking about how to augment your current health work—and innovate new kinds of responses.

For more information on ITTF's Health Horizons Program, contact Dawn Alva at 650-233-9585 or dalva@ittf.org.

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