



# Future of Technology-Enabled Strategies for Health Promotion & Disease Prevention, 2040

Annotated graphic summary of two expert workshops for the Vitality Institute Commission

## WORKSHOP 1

THE ROLE OF TECHNOLOGY IN HEALTH PROMOTION AND DISEASE PREVENTION

Institute for the Future | Palo Alto, CA

September 30, 2013

## WORKSHOP 2

TAKING TECHNOLOGY-ENABLED STRATEGIES TO SCALE

New York Academy of Sciences | New York City, NY

October 21, 2013



INSTITUTE FOR THE FUTURE

## Introduction

The Vitality Institute’s mission is to apply knowledge about the evolving science and art of prevention and health promotion to building healthier societies. The purpose of the Vitality Institute Commission is to raise public awareness of the potential of promotion and prevention and to recommend specific actions to increase the U.S. level of investment in these approaches.

In September and October, 2013, the Institute for the Future (IFTF) conducted two expert workshops on behalf of the Vitality Commission that convened leading thinkers and doers to explore the future of technology-enabled health promotion and disease prevention strategies and project them out to 2040. The workshops were co-moderated by IFTF’s Richard Adler and Miriam Lueck Avery, and included the leaders and members of the Vitality Institute Commission along with IFTF researchers (in Palo Alto) and outside experts from academia, nonprofits and industry. The workshops were designed to provide input into an IFTF forecasting process that will create a graphic “map of the future” that identifies the most promising tech-enabled strategies for health promotion. In addition, two video scenarios will present contrasting future visions of the evolution of technology and the market and policy decisions that will shape strategies to support health and well-being. These provocative pieces of foresight will be publicly available in 2014 as part of the Commission’s findings.

This document summarizes the results of the two IFTF/Vitality expert workshops. It consists of reproductions of large-scale visual recordings of the discussion made by graphic recorder Anthony Weeks during the meetings along with annotations that summarize the key points from the workshops.

about the ...

### **INSTITUTE FOR THE FUTURE**

Based in Palo Alto, CA, the Institute for the Future is an independent, nonprofit strategic research group celebrating 45 years of forecasting experience. The core of our work is identifying emerging trends and discontinuities that will transform global society and the global marketplace. We provide our members with insights into business strategy, design process, innovation, and social dilemmas. Our research generates the foresight needed to create insights that lead to action and spans a broad territory of deeply transformative trends, from health and health care to technology, the workplace, and human identity.

**WORKSHOP 1:**

# The Role of Technology in Health Promotion and Disease Prevention

Institute for the Future | Palo Alto, CA  
September 30, 2013

This initial workshop focused on understanding the role of technology in supporting innovative new practices and strategies for health promotion and prevention. A cross-disciplinary group of external experts in public health, habit design, gaming, health technology startups and behavioral medicine joined IFTF health and technology researchers for this full-day session. Participants explored emerging technologies that support health and well-being today and that hold the most promise for the future, particularly in terms of impacting tobacco and alcohol use, diet, physical activity, stress and mental health, and adherence. The discussion ranged from technologies that are focused on addressing specific risk factors to approaches such as habit design and behavioral economics that support broader strategies for health promotion.

**Participants:****IFTF**

- **Richard Adler**, Distinguished Fellow, IFTF
- **Miriam Lueck Avery**, Co-Director, Health Horizons, IFTF
- **Rod Falcon**, Director, Technology Horizons, IFTF
- **Marina Gorbis**, Executive Director, IFTF
- **Brad Kreit**, Co-Director, Health Horizons, IFTF
- **Adam Elmaghraby**, Research Manager, Health Horizons, IFTF

**Vitality Institute**

- **Derek Yach**, Executive Director, Vitality Institute
- **Will Rosenzweig**, Partner, Physic Ventures; Vitality Commission Chair
- **Neil Adamson**, Development Manager, Discovery Health

**External Experts**

- **Michele Barry**, Senior Associate Dean for Global Health and Director of the Center for Innovation in Global Health, Stanford School of Medicine
- **Stacy Feld**, Partner, Physic Ventures
- **BJ Fogg**, Director, Stanford Behavior Design Lab
- **Marion Zabinski Handler**, Senior Manager of Global Employee Health Services, Qualcomm
- **Michael Kim**, Founder and CEO, Kairos Labs
- **Diana Laurent**, Stanford Patient Education Research Center
- **Jan English-Lueck**, Professor of Anthropology, Associate Dean, College of Social Sciences, San Jose State University; Distinguished Fellow, IFTF
- **Kendra Markle**, Stanford Prevention Research Center
- **Margaret Morris**, Clinical Psychologist, Senior Researcher, Intel
- **Kevin Patrick**, Professor of Family and Preventive Medicine, UCSD; Editor-in-Chief, *American Journal of Preventive Medicine*
- **Dennis Schmuland**, Chief Health Strategy Officer, Microsoft US Health and Life Sciences division; Vitality Commission Member
- **Doug Solomon**, IDEO Fellow
- **Alex Tam**, Senior Interaction Designer, Frog Design

**Graphic Recorder**

- **Anthony Weeks**

**Observers**

- **Gillian Christie**, Analyst, Vitality Institute
- **Robert Gourley**, Veneer Group





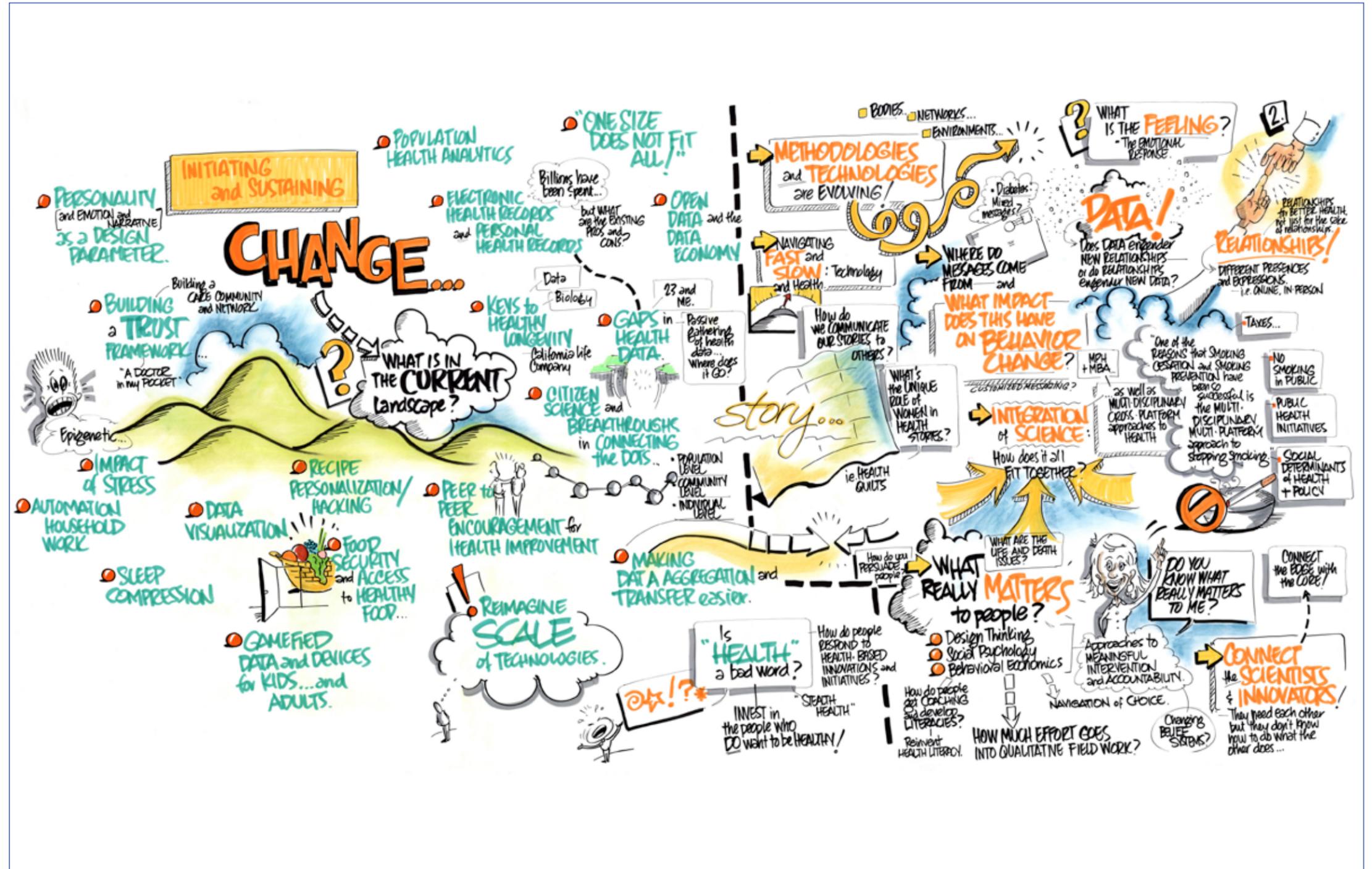
# Initiating and sustaining change

This discussion approached the challenge of bringing about change on two levels: first the challenge of inspiring positive behavior change in individuals (or groups of individuals) toward healthier lifestyles; and second, the larger challenge of changing the practices of health promotion and disease prevention on a level that will result in measurable improvements in the health outcomes of populations.

The group discussed the gap between what really matters to people, which might be their energy level or physical appearance, and medical issues such as smoking cessation and medication adherence. As we integrate more technologies and stakeholders, we see that human elements become crucial. Social connection and the positive impact of relationships on health constitute a tool with many expressions online and offline. Where messages come from, and how they embody insights from behavioral economics, are big factors in determining how effectively they impact behavior change.

Imagining change at different scales, from peer-to-peer encouragement to a neighborhood's access to healthy food, allowed the group to think about how technologies and methods are evolving and how they might have greater impact in the future. Although there are still many gaps, the group saw a shift away from isolated, highly targeted interventions toward greater data and application integration, social storytelling as a motivator in health, and the emergence of more emotionally intelligent technologies—which were all seen as having greater potential for triggering and sustaining positive behavior changes.

Central to the discussion of bringing about change were how to encourage multi-disciplinary approaches to designing interventions and how to bring the edges of practice to the core of health promotion and wellness.



# BJ Fogg on the science of behavior change and habit design

BJ Fogg is a lecturer at Stanford University and the founder of the Persuasive Technology Lab whose research is focused on behavior change, particularly in the area of health. He presented some of his latest research and his approach to achieving successful behavior change.

BJ believes that the most practical approach to behavior change is to “help people do what they want to do”—that is, to focus on those who already have the motivation to change but have not yet moved to take action. The most effective behavior change systems support building small incremental actions that move towards larger behaviors that people want to change. The three basic components of behavior change are motivation plus abilities plus triggers, which yield behavior change (B = MAT). This so-called Fogg Behavior Model is intended to guide practitioners to identify precise behaviors, find a way to make the behavior easy to do, and then put a timely “trigger” in place to prompt people to adopt the new behavior. By building an incremental profile of the behaviors that are relevant to the final outcome, designers can build success momentum through practice, revision of behaviors, small steps, and appropriate rewards.

BJ also argued for a shift from viewing change as coming from fear to coming from hope. By building systems that catch people when they are highly motivated and able, designers can promote hope, which increases the odds of bringing about meaningful and sustainable behavior change.





# Imagining the brightest futures

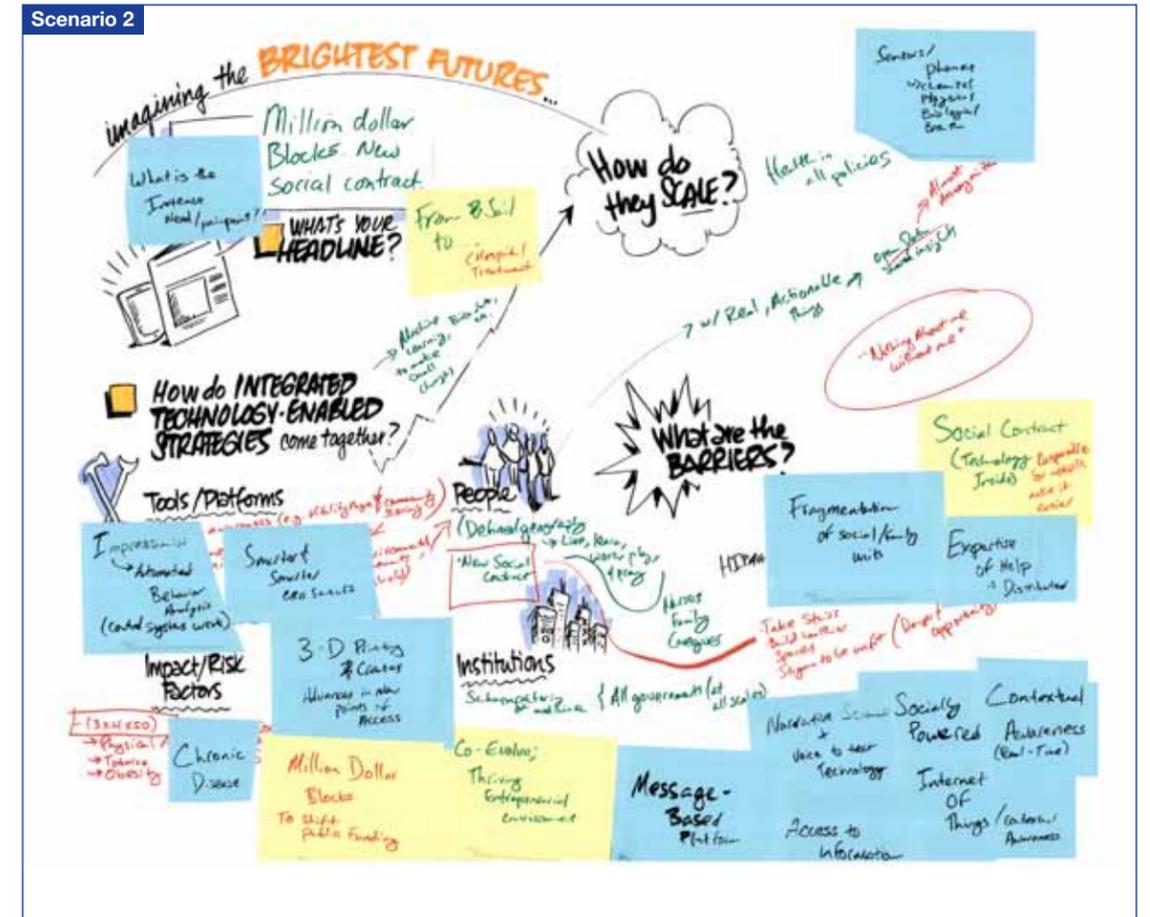
Finally, the participants were broken up into three small groups to generate scenarios for “the brightest future” of how technology could be used most effectively to bring health promotion initiatives to scale:

## Scenario 1: People's Olympics

The People's Olympics is an international competition in which millions of people compete for the highest levels of population health. The idea started with a small number of participants in 2016, but grew steadily after that. In 2036, when a record number of countries were participating, the People's International Olympic Committee formally approved the Life Plus System for health monitoring and support for use by entrants.

## Scenario 2: Million Dollar Blocks/New Social Contract

Technologies from exosensors to automated behavior analysis are used to address fragmentation in society and family units. Health is addressed in every policy, with an emphasis on inclusion (for example, the disability community's adage, “nothing about me without me”).





**WORKSHOP 2:****Adoption of  
Technology-Enabled  
Strategies**

New York Academy of Sciences | New York City, NY  
October 21, 2013

This second workshop focused on identifying the drivers of widespread acceptance of technology-enabled health promotion and disease prevention strategies and creating several scenarios for their adoption in the coming decade. Participants were a cross-disciplinary group with experience in research, health and well-being start-ups, health policy, and health promotion.

**Participants:****IFTF**

- **Richard Adler**, Distinguished Fellow, IFTF
- **Miriam Lueck Avery**, Co-Director, Health Horizons, IFTF

**Vitality Institute**

- **Derek Yach**, Executive Director, Vitality Institute
- **Will Rosenzweig**, Partner, Physic Ventures; Vitality Commission Chair

**External Experts**

- **Michael Hufford**, Chief Medical Officer, e-Nicotine Technology
- **Steven Jencks**, Consultant, Healthcare Safety and Quality
- **Mireille McLean**, Program Manager, The Sackler Institute for Nutrition Science, New York Academy of Sciences
- **Lexie Komisar**, Director, Technology and Media Strategy, Clinton Health Matters Initiative
- **Shivan Mehta**, Director of Operations, Penn Medicine Center for Health Care Innovation
- **Lori Melichar**, Senior Program Officer, Robert Wood Johnson Foundation
- **David Rose**, MIT/Vitality (Glowcaps)
- **Greg Simon**, Poliwogg, former SVP, Pfizer
- **Unity Stoakes**, Founder and President, StartUP Health
- **Harlan Weisman**, Chairman and CEO, Coronado Biosciences
- **Paula Wilborn-Davis**, Health Promotion and Education, Kaiser Permanente

**Graphic Recorder**

- **Anthony Weeks**

**Observers**

- **Elle Alexander**, Vitality Institute
- **Gillian Christie**, Vitality Institute
- **Shahnaz Radjy**, Vitality Institute
- **Barbara Ravage**, Medical Communications Specialist

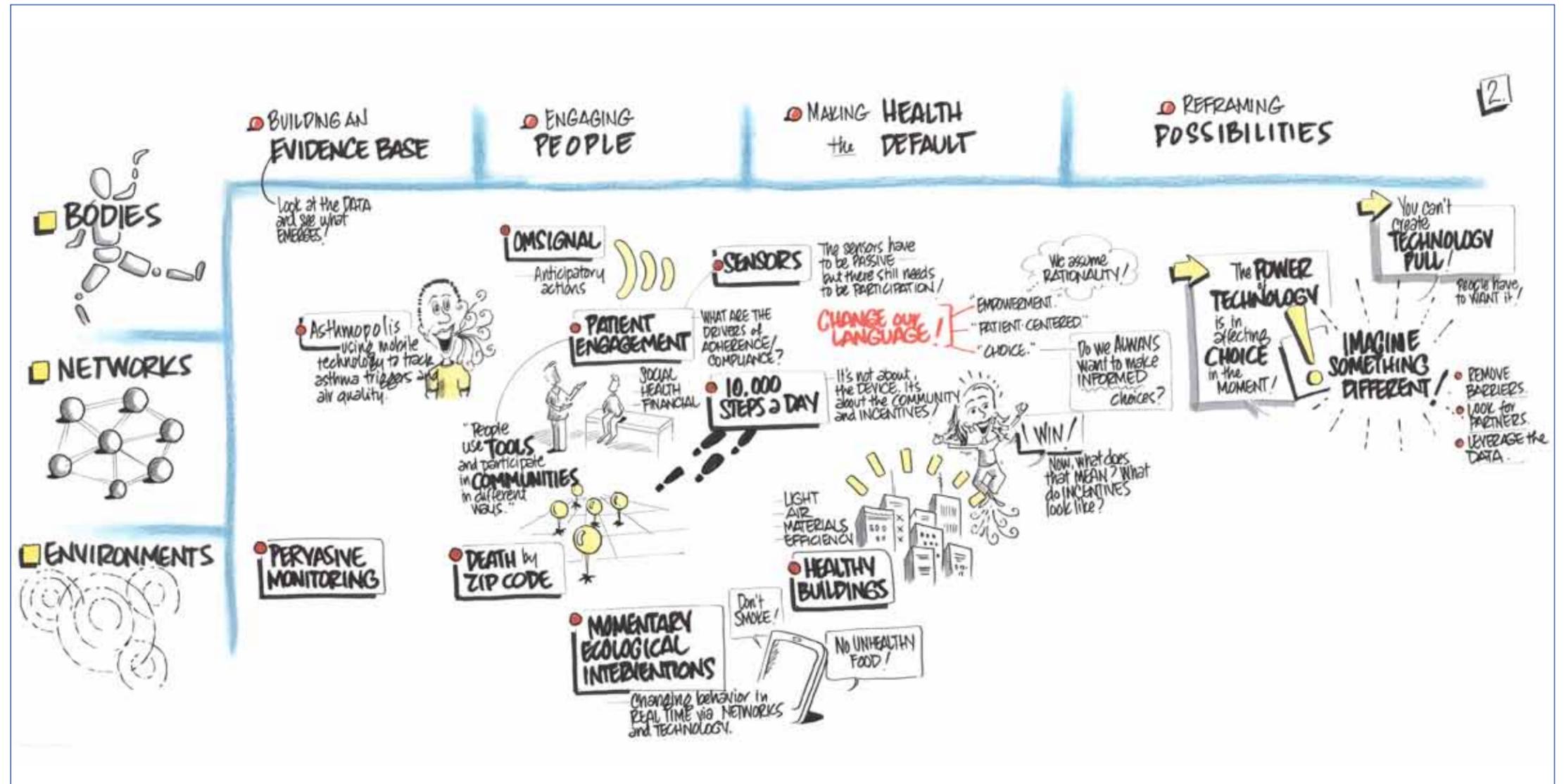


## Building a system of prevention/promotion

The New York workshop then turned to review the results of the earlier workshop in Palo Alto, presented in the form of a matrix that positions various technology alternatives in terms of the behavioral dynamics that they are intended to leverage. The vertical axis of the matrix is structured around three scales of change (Bodies/Networks/Environments), while the horizontal matrix is divided into four areas of impact (Building an Evidence Base/Engaging People/Making Health the Default/Reframing Possibilities), with examples of different technologies and technology-enabled approaches in the various cells.

The matrix was intended to highlight currently deployed technologies that are being used to promote health as well as to help identify gaps where more development is needed. It provided a basis for workshop participants to consider how technology-enabled strategies might reach full-scale implementation and contribute to the creation of a more prevention- and promotion-focused healthcare system.

One topic of discussion sparked by the matrix was the proper definition of individuals: is it appropriate to identify them as “bodies,” or is it more useful to identify them as beings who have other dimensions than just the physical (for instance, emotional, cognitive, or social)? Another topic focused on the most effective strategies for “engaging people.” There is currently a lot of interest in “patient-centered care,” which involves paying attention to the interests and needs of patients, rather than just providing treatments. A similar approach could be relevant to health promotion programs: that is, asking target audiences 1) if they understand the messages aimed at them, and 2) if they find the message compelling. For example, incentives, financial or otherwise, work well with certain groups, but may not be effective in every context. A key to designing successful



interventions is understanding individuals’ decision-making processes and intervening with targeted messages at critical moments.

A third topic was the power of families and communities to inspire and support healthy

behaviors. These can be seen as types of networks, but may differ in important ways from virtual communities supported by online social networks. This is an example where more research is needed to establish the potential value of technology.

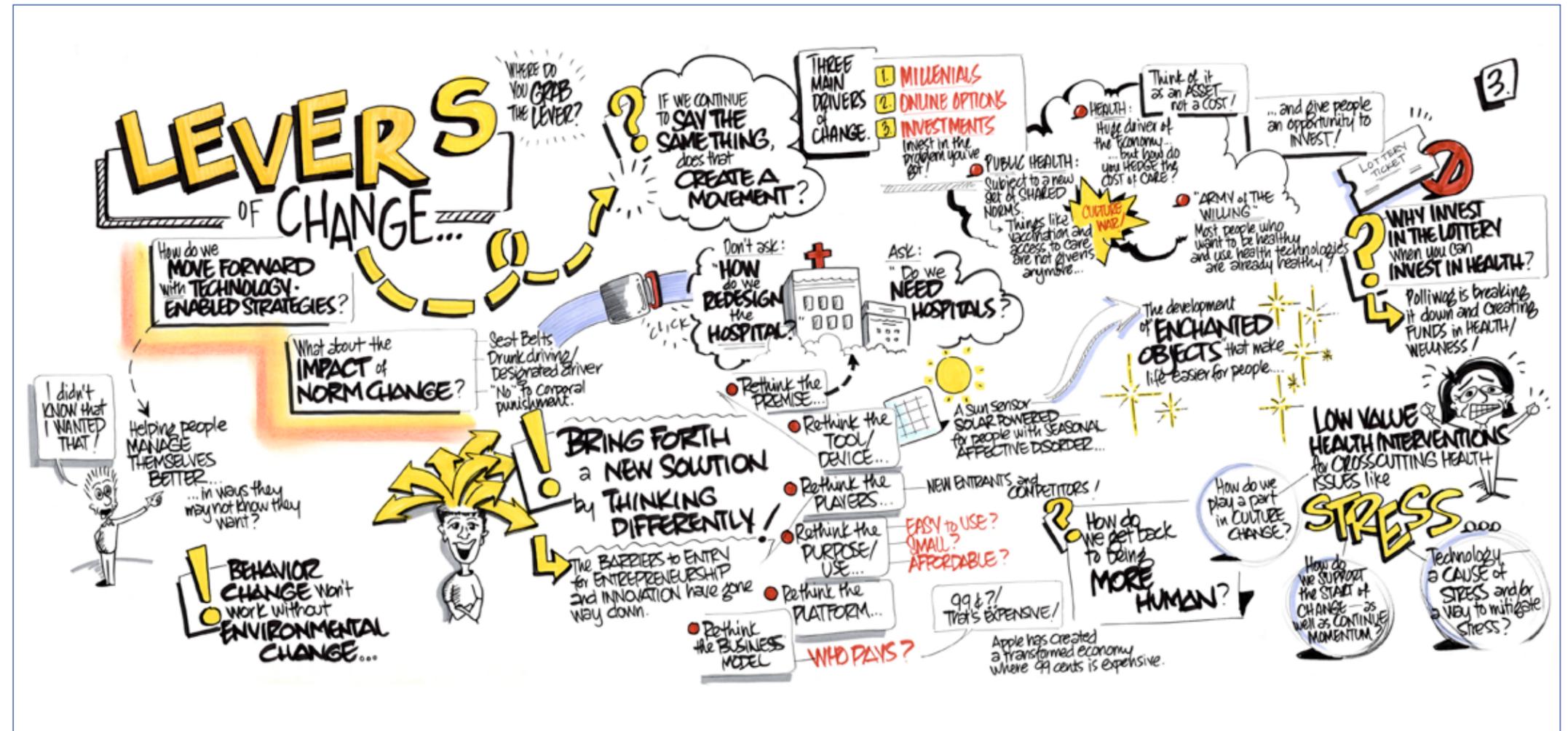
# Levers of change

The workshop participants worked together to explore the emerging technologies and technology-enabled strategies that hold the greatest potential for improving health on a large scale and the “levers of change” that could propel them into broader acceptance.

The group identified a number of drivers that could support the wider use of technology in health promotion, including changing demographics and economics. Greg Simon identified three factors that he believes will have a big impact: the Millennials reaching age 35\* (and becoming more health conscious); the rapid rise of social media that have the potential to spread new ideas about health (among many other things); and new mechanisms that expand opportunities for funding start-up ventures (such as the JOBS Act). A better understanding of the true costs of health will also contribute to more rational investments in health promotion strategies that work.

Several participants suggested that the American “industrial technological culture” is broadly responsible for generating stress and promoting unhealthy lifestyles. The lessons from successful pro-health campaigns (smoking, seatbelts, drunk driving) suggest that social messaging can be effective, but only when linked to economic and regulatory changes that reward good behavior and discourage bad behavior. It was also suggested that science can help in “deconstructing” the components of change to promote desired outcomes. In every case, motivating people to become more engaged in taking responsibility for their health is a critical challenge.

One of the great challenges to bringing about large-scale change in population health is that health is heavily related to wealth, geographic location, and socio-economic status: the sickest Americans are typically poor, poorly educated, and live in rural areas,



which makes them difficult to reach with traditional health promotion programs. Too many health promotion programs target those who are already fit and open to change. What will it take to reach everyone else? Effective programs need to start early and run through the life course of individuals and must appeal to people’s core values (not an abstract notion of “good health”). There was also a consensus that the most effective campaigns need to

operate at a “mundane” level—that is, be embedded in everyday lives, in the design, for example, of work, transportation, and leisure activities. One interesting idea that emerged from the workshop was to recast health as *an asset* rather than as a cost. Giving people an opportunity to invest in health, using mechanisms made possible by the JOBS Act, could flip the way people think about health.

\*The Millennial generation is generally considered to be those born after 1980.



# Scenarios for the future

Participants were asked to work together to generate scenarios that describe how far-reaching positive change could be accomplished. Each solution tackled a particular challenge in the healthcare system from regulation to how to better reach consumers. One of the biggest challenges is the increased political dysfunction in central government. As we look at ways to create better health solutions, we will become more social, based on regional/geographic similarities and on other kinds of affinities. The healthcare industry will have to become more entrepreneurial, focusing on conducting more experiments and creating lower-cost solutions. Networked-based health will build a new kind of awareness that can redefine the role of influencers in shaping health practices: the wisdom of the crowd (with proper provision for quality control) will supplement if not replace the wisdom of authority.

Open-source solutions will provide tools to enable people to build their own awareness about health, reinforced by transparent information and peer-to-peer support. This kind of responsive “just in time” health promotion system could create more powerful feedback loops among individuals, organizations, and communities.

These solutions stretch the current scales of change. Some of the greatest challenges to making them real will be creating interoperability between the current scales of change, allowing both large institutions and small, perhaps entrepreneurial, groups to have greater impact on individuals and communities.

