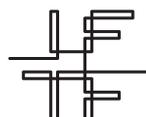


ORGANIZING FOR FUTURE READINESS

Anticipating the future
of science and technology

MAP OF THE DECADE | 2020-2030



VANTAGE

As we enter the 2020s, the digital transformation that remade our global systems will continue to disrupt, mature, and accelerate—a process being kickstarted by the demands of adapting to COVID-19. But technical change won't just come from digital technologies—it will also be driven by combination of advances in biology, energy, and materials science, which will open new frontiers in innovation and organizational strategy as well present profound risks to civic society and Earth's natural systems.

These advances are taking place in an environment in which short-term competitive pressures have never felt more intense or urgent. These pressures threaten to erode organizational abilities to take the long view, build the capacity to lead, and prepare for the daunting challenges of the next decade.

These challenges are multiplying. Decades of IT innovations have left our technical systems vulnerable to crippling cyberattacks that come without warning. Inequality has reached levels that have historically led to warfare, with disruptions to social and political order. Data privacy dilemmas are reshaping business and personal life. We'll have to look beyond incremental improvements and change how we use science and technology to pursue opportunities. Our growing need for rare earths and resource intensive materials will increasingly be met through advances in R&D that enable materials to be customized down to the molecular and cellular level. We will begin to reassess traditional boundaries of human-machine collaboration as advances in robotics and machine learning give rise to a world in which intelligent agents permeate our work environment. And as the next decade unfolds, organizations will begin to fundamentally rethink the purpose of value creation—with a mandate that goes beyond short-term growth to include longer-term resilience.

Of course, these challenges are emerging within the context of the growing climate crisis, which is requiring us to restructure where and how we organize our work, create value, and measure success.

To explore *Organizing for Future Readiness: Anticipating the Future of Science and Technology*, refer to the **HOW TO USE THIS MAP** on the back page.

REDESIGNING ORGANIZATIONAL CAPACITIES TO BUILD FUTURE READINESS

Future-ready organizations prepare for shocks by building resilient systems to both minimize risk and pursue emerging and unexpected opportunities. Building future readiness will involve redesigning familiar capacities for the decade ahead.

PLANNING AND DECISION-MAKING RECALIBRATING ANTICIPATION

Over the next decade, organizational leaders will have to grapple with an increasingly wider and longer-term set of strategic and technical questions and manage decision-making across multiple time horizons. While advances in information technology help us anticipate short-term changes, the most meaningful advances for organizational planning may be in predictive analytics for anticipating long-term change and systems models for understanding the cascading impacts of individual decisions.

LOGISTICS REBALANCING EFFICIENCY AND RESILIENCE

Research is finding that slack—that is, spare capacity—is undervalued. And when it's coupled with predictive analytics, slack enables organizations to withstand shocks and, at times, even operate more efficiently. With climate events escalating, political conflicts making global trade less predictable, and some raw material resources becoming more scarce, supply chains will need to be reconfigured to withstand the shocks of the next decade. Advances in materials science and coordination technology will enable organizations to create more sustainable production inputs and more adaptive supply chains.

INNOVATION REINVENTING PRODUCTION

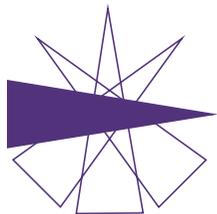
Advances in materials science and biology are giving organizations the ability to manipulate physical objects at molecular and genetic levels. These capabilities will be advanced by continued improvements in scientific simulation, cross-disciplinary analytics, and bioinformatics, increasing the rate at which we can create novel solutions and avoid dead-ends in the innovation process. But even as this takes place, several factors—from increased scrutiny on external costs of production to a scarcity of raw materials—will create pressure to reinvent current production practices.

COLLABORATION RETHINKING BOUNDARIES

Digital assistants, already ubiquitous in consumer devices, will increasingly be deployed in enterprise and organizational contexts. This will not only create new ways of integrating digital technologies into human teams; it will open up new ways for devices and products to learn, grow, and collaborate with end users. Even as these new kinds of collaboration are taking place, systemic issues—ranging from climate change to regulation of emerging biotechnologies—will challenge organizations to look beyond their own walls and work at larger scales of collaboration and value creation.

PERFORMANCE REIMAGINING VALUE

As organizational stakeholders' influence increases over the next decade—coupled with greater scrutiny on organizational outcomes and impacts—the next decade will see a variety of new efforts to reimagine organizational performance, that is, how value is created, captured, and measured. In this context, organizations will make use of advances in science and technology to go beyond incremental improvements and realize new kinds of value that address the needs of a wider set of stakeholders and issues—whether that includes the climate crisis, economic inequality, or human health.



SCIENCE AND TECH BUILDING BLOCKS

Breakthroughs in energy, materials science, biology, and information technology will migrate from labs into organizations' operating cores. As these breakthroughs emerge, these technology foundations will provide the building blocks for future-ready organizations to reinvent familiar capacities.

IT: Supercomputing at Every Node

The spread of computing technologies has been, perhaps, the biggest story of the 21st century. This story will continue as possibilities that once seemed fantastical become practical at scale and efforts to outfit the world with sensors and processors continue apace. Paired with advances in AI, and low-latency, high-speed networks, organizations will need to prepare for a world in which pervasive supercomputing is central to everything we do.

Hyperconnected Abilities to Augment the Workforce ► Machine learning and purpose-driven AI will play key roles across organizations, using big data and simulation to improve business processes. Individual workers will be augmented by cobots, digital twins, virtual agents, and other forms of centaur tech.

Extended Reality Workplaces ► The blending of digital and physical using AR and VR will create seamless, multisensory operating environments. Computing and actuation will power intelligent work environments—enhancing human-machine collaboration and value creation.

Cyber-Resilience ► Exploits like breaches of sensitive databases, intellectual property theft, and disabling critical infrastructure will persist and increasingly be used by competitors, hackers, and governments. Designing resilient IT systems, which can limit the damage from attacks and recover and adapt quickly, will be critical to mitigating risks.

Materials: Atoms Are the New Bits

Novel materials developed using computational modeling will give organizations new ways to achieve desired outcomes and optimize processes. One-dimensional and two-dimensional materials will be stacked and combined to produce new kinds of programmable matter that deliver custom properties on demand. Climate change urgency will drive materials science innovation by spurring the development of clean fuels, inexpensive means to store energy, and building materials that reduce energy requirements.

New Frontiers for Materials ► By owning most rare earth ores and the capacity to process them into usable materials, China wields tremendous power to set prices and control access. Propelled by technical advances, entrepreneurs are looking at outer space, the ocean floor, and to new laboratory techniques to source or invent the materials needed to keep civilization running.

When Matter Merges With Data ► A combination of computational processes to discover material properties and new molecular structures that allow for programmable properties are making matter more fluid. Programmable materials open new possibilities for energy, fertilizer, drugs, building materials, communications, computation, and more.

New Materials for a Climate in Crisis ► Materials science will play several important roles in addressing climate change and its effects. From emerging techniques to capture and reuse atmospheric CO₂ to building materials that reduce energy needs, materials science will be a key building block in a clean economy.

Biology: An Emerging Biotech Stack

In IT, the concept of a tech stack represents the combinations of programming languages, tools, and frameworks used to create applications. Similarly, biology has its own emergent biological systems stack, which includes advances in data analysis and computing that will make sense of complex biological systems and harness new ways to work with them.

Bioprospecting ► Driven by improved capabilities from 3D printing, gene editing, and other technologies, the ability to produce biopolymers, biofuels, and more will open up new design and innovation opportunities across a range of industries.

Optimizing Ecosystem Services ► Ecogenomics is the discipline at the intersection of ecology and biology. Although still early in research maturity, ecogenomics has the potential to enable organizations to design with whole ecosystems in mind. Realizing this potential will require new literacies and metrics, and will demand a foundational re-understanding of what kinds of externalities are truly external.

New Systems for Governing and Sharing Risk ► Genetic testing has already created myriad privacy risks that can never be reeled back in. These risks pale in comparison to emerging challenges related to CRISPR and other genome editing techniques, some of which are cheap and easy enough for individuals and citizen biohacking groups to use. As their capabilities increase, we'll need new ways to mitigate and share risk.

Energy: Climate-Driven Evolution

The need to move from carbon-intensive fossil fuel power systems to zero-carbon and renewable energy systems will drive all other changes in the world of energy and its uses. The need to adopt renewable power as swiftly as possible will lead to major disruptions of local, regional, and national power grids. It will drive the development of new energy storage and production systems even as legacy players work to maintain increasingly out of date systems.

Facing a Fragile Grid ► For much of the post-industrial world, the electric grid was built on two key assumptions: that the use would be predictable, and the flow of power would be one-way. Neither assumption holds true today. Over the next decade, everything from the rise of electric cars to the emergence of small-scale solar will strain today's legacy infrastructure and will make energy systems unreliable.

New Storage Technologies ► As legacy systems become more fragile, organizations will be looking for autonomous, decentralized ways to store energy locally. These efforts will be driven by multiple factors, including a need for better energy density and limit on the availability of raw materials and rare earths critical to energy storage systems.

Shift to Renewables ► Pressures—from regulatory oversight to activist demands to long-term investors—are accelerating efforts to move toward cleaner fuels. This global push, while in its infancy, will be increasingly critical to mitigating the most significant dangers of climate change while simultaneously creating new opportunities to reinvent global energy markets.

REINVENTING ORGANIZATIONAL CAPACITIES with science and technology

SIMULATING FUTURE CONSEQUENCES OF TODAY'S ACTIONS

The combination of machine learning, context awareness, and increasingly powerful simulations will lead to new tools for examining alternative possibilities across multiple scales, from narrow organizational forecasts to systemic analyses of business ecosystems. These tools will strengthen organizational resilience by illuminating potential consequences of current choices, including latent risks and previously obscured opportunities.



Getty Images

Simulating Security Risks to Improve IoT Reliability

Jitsuin, a company focusing on risk management and transparency for industrial IoT, addresses security issues with "Digital Security Twins" that use big data and regulatory policies to secure trust and transparency across operations.



Emerson

VR Digital Twins Enable Simulation Based Training

Emerson has created a software called Mimic Field 3D that converts existing 3D models of industrial plants and facilities into a digital twin, which is then used to train workers on safety and other work-related scenarios in immersive virtual reality environments.

TARGETING INVISIBLE INTERVENTION POINTS

New simulation and systems analysis tools will give stakeholders a higher resolution view of long-term costs and benefits. For example, substantial research indicates that human performance is greatly diminished by the lack of a healthy environment, poverty, and other factors. Decision-making tools that take this into account could identify new intervention points to create more optimal work environments for organizational resilience.



Invisible Women by Caroline Criado Pere



Twitter

Mining Data to Improve Equity

In her book *Invisible Women: Data Bias in a World Designed For Men*, Caroline Criado Perez highlights the myriad ways that a "gender data gap" adversely impacts women, with potent examples of how to reduce discrimination while improving public health and saving money in the process.

Late Night Twitter Use Hinders Job Performance

Researchers combined two public datasets—basketball box scores and public behavior on Twitter—to analyze whether late night social media use made professional basketball players perform more poorly. The results showed that staying up late had adverse impacts on shooting percentage, points scored, and rebounds.

EXPANDING DISTRIBUTION WITH AUTOMATED SUPPLY CHAINS

While transportation and warehousing are already poised for automation, smart manufacturing will leverage breakthroughs in robotics and artificial intelligence to transform supply chains, making them fully automated in many cases, and often much shorter. Some automation processes requiring human supervision today will become fully automatable within the decade. Autonomous delivery drones will make substantial gains and become particularly useful in previously hard-to-reach areas. Fully automated businesses such as grocery stores, restaurants, and perhaps even medical clinics will likely be viable in a decade, greatly expanding organizations' ability to reach previously difficult-to-serve populations.



Amazon Go



Nuro

Unmanned, Autonomous Retail Enables Broader Reach

Amazon has launched Amazon Go, a series of retail stores that replace registers with sensors and computer vision. Customers check in at the store's entrance with an app, pick the items they want, and carry them out the door.

Special-Purpose Autonomous Delivery Vehicles Automate the Last Mile

Nuro is an autonomous delivery vehicle for last mile deliveries of groceries and pizza on fixed routes. Rather than bolting autonomous features onto a standard vehicle, the Nuro is "half as wide as a compact sedan," according to the *Wall Street Journal*, in order to be more maneuverable and reduce damage in the event of an accident.

Enforcing Long-Term Oriented Operations

The Long-Term Stock Exchange (LTSE) has recently gained approval from the SEC to operate as a listing exchange. Companies on the LTSE have agreed to develop operational policies that comply with the exchange's Five Long-Term Principles, including longer-term success metrics, compensation structures, and stakeholder engagement plans.



Long-Term Stock Exchange

DEFINING VALUE FOR THE LONG-TERM

Today, we're starting to recognize the environmental and social trade-offs of short-term financial metrics and incentives. Going forward, the same technologies that allow us to take a systems perspective and simulate outcomes will power new ways of measuring value beyond financial performance, including organizations' direct and indirect impacts on the social, economic, and environmental health of their workers, their communities, and their larger worlds. As such metrics continue to mature and become mainstream, organizations will be able to assess policies based not just on their perceived ethical value, but on how they sustain the operating environment and, ultimately, the bottom-line.



BlackRock

BlackRock CEO Anticipates Rapid "Reallocation of Capital"

Larry Fink, CEO of BlackRock, the largest asset manager in the world, focused his annual letter on how climate risk has become a priority for their clients, and announced plans to integrate sustainability into their risk analysis and develop new investment products that avoid fossil fuels.

ENABLING CONTINUOUS IMPACT ACCOUNTING

Over the next decade, we'll see the proliferation of tools for monitoring and assessing organizations' social and environmental impacts, including new forms of tech-enabled enforcement. For example, many governments today use data analytics to identify tax evaders, and a number of citizen projects leverage arrays of sensors to monitor environmental pollution. These technologies will be combined with simulation and systems analysis tools to push beyond simply catching law-breakers, empowering organizations to demonstrate positive impact on the planet and communities.



Amazon

Amazon Carbon Accounting System Forms Back-End for Carbon Reduction

Amazon has built a "comprehensive" carbon accounting system using a complex combination of sensing, massive-scale computation, data aggregation, and analytics. As the leading logistics company in the world, Amazon has an ability to set standards—and perhaps be able to sell compliance as a service in the future.



NOAA Fisheries

Monitoring Systems for Stewardship and Sustainability

A project from NOAA and the Alaska Fisheries Science Center uses computer vision to automatically document fish as they are caught to create real time accounting and enforcement of catch limits, addressing a long-standing tragedy-of-the-commons issue.

DEPLOYING DIGITAL AGENTS IN THE WORKPLACE

Advances in context awareness, machine learning, and data analytics will make digital agents robust enough to become pervasive in our organizations. We're likely to see the widespread use of organizational agents—bots with an image, voice, and persona that represent some aspect of the organization. In some cases, these agents will be digital doubles of workers who can extend their presence by attending low-stakes meetings and answering questions on their behalf. The way these bots will be trained and used creates new questions around what defines labor, IP, and privacy—and future-ready organizations will have to be proactive in how they respond.



Andrew Yang

Former Presidential Candidate Developed Hologram to Appear on His Behalf

Former United States Presidential Candidate Andrew Yang developed a prototype hologram that would enable him to appear to be in multiple locations at once. Their plan, never executed, was to take the hologram technology on a truck to different locations for campaign rallies.



English AI Anchor

AI News Anchor Points Toward Enterprise Uses for Synthetic People

China's state-run press agency Xinhua has created "AI anchors" modeled on the bodies and voices of real reporters to deliver the news on TV in alternative languages. These kinds of synthetic humans will become increasingly practical to deploy for enterprise use.

PERFORMANCE REIMAGINING VALUE

PLANNING AND DECISION-MAKING RECALIBRATING ANTICIPATION

LOGISTICS REBALANCING EFFICIENCY AND RESILIENCE

R&D AND INNOVATION REINVENTING PRODUCTION

COLLABORATION RETHINKING BOUNDARIES

VALUES-DRIVEN RESOURCE INNOVATION

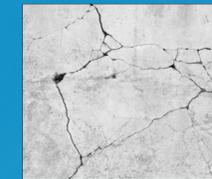
Advances in material and biological sciences, coupled with increasing political and environmental instability, will drive the search for new materials, resources and processes in production chains. The demand for more flexible, sustainable, and ethical sourcing will push organizations to find or create fundamental materials and goods—from lab-grown substitutes for cattle and palm oil, which devastate the environment, to alternatives for cobalt, palladium, and tantalum, which often rely on toxic production methods including child slavery. Not all impacts will be immediately good: resource substitution could lead to the economic collapse of developing countries who depend on these exports today.



WoodDoo

"Augmented Wood" Turns Low-Grade Wood into Premium Building Materials

Materials science company WoodDoo describes this as "augmented wood," which can be used as an alternative to heavier, more expensive building materials. This kind of effort—augmenting basic natural resources—will drive new efforts to expand the range of useful building materials.



labiotech.eu

Self-Healing Concrete Reduces Resource Demand

Dutch biotech company Green Basilisk has developed a self-healing concrete by using bacteria. The bacteria helps heal cracks and other damage in a similar manner to how our human skin heals, requiring less maintenance and putting less pressure on resources.

DESIGNING FOR REINCARNATION

Advances in our functional understanding of biology, ecosystems, and evolution will catalyze "design for reincarnation," in which products' components are readily disassembled with minimal waste and become reusable—not just as replacement parts, but across a spectrum of products, even if those new uses are not yet known. The fashion industry, with its emphasis on brand narratives over price, offers early champions of this approach. Increased resource and energy pressures, combined with improved capacity for identifying and tracing individual parts over their lifecycle, will make this model attractive for organizations of all kinds.



GearJunkie

"Worn Wear" Clothing Stores

Patagonia is opening its first permanent worn wear clothing store in Boulder, Colorado. The idea of the worn wear store is to upcycle old clothes that can no longer be worn and redesign them into something new. The upcycle process and movement points to a future beyond recycling, and towards a more sustainable reuse of materials.



San Antonio Business Journal

Ikea Charts Path Toward Circular Economy Furniture

Furniture giant Ikea has put in place a ten-year plan to remake its entire product line as a circular economy business. In addition to reducing carbon and financial costs, Ikea believes a circular product line will improve its brand identity with consumers.

EXTENDING REACH THROUGH ROBOTICS

By 2030, serverless supercomputing will enable sophisticated telepresence robots to perform mundane tasks in the workplace and at home. Remote-controlled robots capable of tasks like searching cupboards, then identifying and opening a container, will likely be commonplace—initially with human oversight. These robots may bring organizations and their workers into our homes in the same way Alexa and Ring did for Amazon. Making effective use of robotic telepresence will require forethought about the implications for security, liability, labor rights, and privacy.



Mira Robotics

Remote-Controlled Domestic Workers

Mira Robotics has created a remote-controlled domestic helper robot that is capable of folding laundry and doing other household chores—at the direction of a trained operator who controls multiple robots at the same time.



Emerald Cloud Lab

Cloud Laboratory Democratizes Access to Lab Equipment

Emerald Cloud Lab rents remote access to its automated laboratory, containing robots that scientists can instruct to conduct life sciences experiments from afar. Emerald's robots are capable of conducting experiments much faster and more precisely than humans.

ORGANIZING FOR FUTURE READINESS: INDUSTRY FORECASTS

As part of our research this year, we developed in-depth forecasts looking at how different industries will build future readiness through the reinvented capacities highlighted in this map. These opportunities will manifest in different ways across industries but will be built by using science and technology to redesign core organizational capacities. This section highlights some of these findings.

PLANNING AND DECISION-MAKING RECALIBRATING ANTICIPATION



Food: Production Becomes a Climate Solution

The food system plays a huge role in the climate crisis—so business-as-usual is no longer an option. Future-ready food organizations will proactively lead the shift away from carbon-intensive agriculture and toward practices that actually help fight climate change. A food company that is able to go carbon negative—while most are still struggling to go carbon neutral—will have a leadership advantage.



Health: Health Ecosystems Expand

The full ecosystem of health data includes inputs from phone sensors and other smart devices that facilitate preventive diagnostics, genetic data that enables better target drug development, and insights on social determinants of health. These inputs, integrated into a cohesive system, will drive new approaches to prevention and help identify new ways to treat those who get sick.

LOGISTICS REBALANCING EFFICIENCY AND RESILIENCE



Mobility: Logistics Become More Flexible

Future-ready organizations will face growing challenges, but also expanding opportunities, to revamp their mobility operations and logistics in a holistic and expansive way. These challenges and opportunities will exist at multiple scales—from reconsidering the mobility of resources around the globe to identifying new solutions to wring out efficiencies at the scale of the warehouse.



Communications: Objects and Supply Chains Communicate Their Needs

Increasingly, organizations will find it essential to be in constant communication with things. Advances in simulation will spur the development of sophisticated digital prototyping and digital twins up to the scale of the entire organization. Communication of usage patterns and sensor data from objects deployed in the field will support continual model refinement and enable a tight coupling between real-world objects and their digital counterparts.

INNOVATION REINVENTING PRODUCTION



Retail: Shopping Floor Meet Sustainable Fabrication Lab

Some retail sectors—like fashion, sports, and furniture—will find huge sources of untapped value in their capacity to live up to customers' expectations for real-time, highly personalized, and on-demand products. The availability of small-scale automated production equipment that uses sustainable materials will enable hybrid recycling and manufacturing in retail spaces.



Food: Designing Circular Systems, Not Just Products

For decades, food companies have been able to externalize many of their environmental and social costs. However, as the twin forces of climate change and public backlash against climate change increase, future-ready organizations will reckon with re-internalizing those costs to ensure long-term viability. Under these circumstances, R&D will shift from focusing on individual products to designing for larger systems.

COLLABORATION RETHINKING BOUNDARIES



Manufacturing: Humans and Machines Will Learn to Work Together

Humans and robots are kept apart on factory floors because industrial robots are fast, powerful, and not intelligent. The factory of the future will be one of human-machine collaboration, where people and robots combine their unique talents to increase throughput without sacrificing quality or safety. Humans will also be augmented with visual, haptic, and auditory assistants to guide them through complex assembly and maintenance operations.



Finance: Discovering New Ways to Create Value

New digital techniques will create new ways for capital and talent to come together to generate value. These opportunities will range from neighborhood to planetary in scope and scale, from unlocking financial capital in small businesses through micro-bonds to unlocking the value in satellite data by combining it with financial data. The key to these opportunities is coordination to identify novel data sources and measures of value.

PERFORMANCE REIMAGINING VALUE



Retail: Inventories Will Make Room for Immersive Experiences

As shopping becomes radically transformed by hyper-personalization, on-demand supply chains, and automated customer journeys, the retail industry will face an existential reckoning. What is retail, after all? Over the next decade, the value proposition of the industry will complete a transition that is already well underway: from a focus on inventories to one on experiences powered by mixed reality, holographic displays, and smart things.



Health: Targeting the Determinants of Health to Improve Outcomes

As new players enter health—including big tech, startups, retailers, and more—traditional health organizations will not simply need to reevaluate the kinds of partners they work with. They will also have to expand the kinds of issues that they take responsibility for, either by directly developing lifestyle and environmental interventions or partnering with others to coordinate this expanded focus.

HOW TO USE THIS MAP

IFTF Vantage's Map of the Decade provides an executive summary of our research on *Organizing for Future Readiness: Anticipating the Future of Science and Technology*. It takes a ten-year view of the science and technology landscape by examining four key areas:

- ▶ Start by exploring the **Building Blocks** to learn about the future of Information Technology, Materials Science, Biology, and Energy in the coming decade.
- ▶ Next, identify emerging and unexpected opportunities that combine these building blocks through reinvented **Organizational Capacities** that future-ready organizations will use to develop resilient systems.
- ▶ After that, familiarize yourself with the **Industry Forecasts** emerging from the new organizational capacities, which lay out how industries will achieve future readiness.
- ▶ Finally, turn to the **Map** side to learn about early signals that point to a future in which advances in science and technology will play leading roles in radically reshaping the way we organize and interact with larger systems.

Organizing for future readiness involves developing and maintaining a point of view about long-term possibilities through **foresight**—and using that point of view to develop insights about what these possibilities might mean in order to shape **action** in the present.

For the detailed forecast summarized by this map, please visit IFTF Vantage Point at vantage.iftf.org.

ABOUT IFTF VANTAGE

Institute for the Future (IFTF) is the world's leading futures organization. Its signature program, IFTF Vantage, is a unique partnership of innovative global leaders that harnesses over 50 years of IFTF global forecasts and pioneering research to navigate volatility, identify emerging imperatives and opportunities, and develop future-ready strategies. IFTF Vantage partners represent businesses, governments, and social impact organizations from around the world that require the most comprehensive view of future forces directly affecting their organizations. To learn more about how IFTF Vantage generates organizational readiness for a world in flux, visit www.iftf.org/vantage.

TEAM

Robin Bogott, Jorge Camacho, Quinault Childs, Rod Falcon, Susanne Forchheimer, Mark Frauenfelder, Jean Hagan, Ben Hamamoto, Dylan Hendricks, Maureen Kirchner, Jeremy Kirshbaum, Brad Kreit, Trent Kuhn, Mike Liebhold, Karin Lubeck, Vanessa Mason, Scott Minneman, Carol Neuschul, Colleen O'Conner, Sara Skvirsky, Sarah Smith, Robin Weiss



201 Hamilton Avenue, Palo Alto, CA 94301
650.854.6322 | www.iftf.org/vantage