

REBUILDING TRUST and TRUSTWORTHINESS



TOWARD Human-Centric HEALTH and WELLBEING

If we are to reimagine our health and wellbeing towards a more human-empowered, knowledge-driven and technology-enabled approach, we must rebuild trust and create trustworthiness. Many of us lack confidence in today's technology and how it enables our digital lifestyle. We seek more trust in and reliability of the information we receive from governments, institutions and organizations. Focusing on prevention, better outcomes, lower costs and improved health and wellbeing experiences requires support from an intuitive ecosystem of knowledge, trust and resources.



The rate of growth in health-related data collection continues to accelerate. When leveraged and optimized, data produces remarkable, even life-saving insights that promise to prevent rather than just prescribe - changing the game in healthcare and improving our overall wellbeing.

Doing so requires new levels of trust and trustworthiness among all players, including individuals, healthcare providers, insurers, pharmaceutical companies, public health and any entity that touches or handles data. We see three elements as being crucial to creating these new levels of trust in helping data to be used for good:

1. Moving from an approach built on "data from you" to one focused on "data for you" while providing new data security levels.

2. Ensuring the health and wellbeing of all systems with transparency and user-friendliness.
3. Creating digital trust across governments, businesses, healthcare providers, schools and other institutions.

In this paper, we examine all three elements, diving into the requirements for implementing them along with the expected outcomes and benefits of doing so.



DATA from YOU

We are constantly giving up our data. Every time you visit a new website, information about your locations is shared, and that's even before you hand over your email address. Similarly, the growing digitization in healthcare means fitness trackers and other apps are constantly collecting data from you. Some of these companies share your data with others – without necessarily telling you directly and clearly. They can do it because by signing up for their app or service, you agree to a detailed privacy policy that provides permission to share your data.

Most of these companies share your data for a single purpose: enabling a profitable business model. But in so doing, you are at risk of having your information transmitted through a data breach. We've all heard examples of such breaches. Imagine if, in a few years, this trove of data includes genetic or DNA data. Now a breach could mean details about your health area shared, far and wide, and perhaps not for your benefit.

DATA to YOU



To achieve human-centric health and wellbeing, we need to give individuals more control over their data. We can design services, systems and applications that create trust, transparency, privacy, and user-friendliness.

CREATING TRUST BY DESIGN

Trust by design means embedding trust into services and apps from scratch, not as additional and reactive layers. This approach gives total control to end-users, who provide and revoke rights to different applications and services based on their needs and preferences.

Tim Berners-Lee, who created the World Wide Web standards, is now involved in an open-source software project, [Solid](#), focused on data privacy. Solid specifications detail how to develop secure Pods, which are decentralized data stores. By storing their data in a Pod, individuals can control which people and applications can access the data. An individual may send a bank a secure link to a Pod to access credit data for processing a loan. The bank could then see the data it needs, but it would not store it. The fact that the bank can't store the data means it can't share it later, thus giving the individual a level of trust that it will only be used for the specific intended purpose.

In the healthcare space, [eSante](#) in Luxembourg uses Data Lakes for high peak performance and data analysis accuracy. Data is organized, maintained and transformed into actionable insights for providers and patients in the public cloud. No patient data leaves the critical systems and platforms' boundaries using identity asset management, with security levels individually maintained.

PROMOTING TRANSPARENCY AND PRIVACY

Individuals should own their data, even if generated elsewhere. They get to dictate exactly which bits of it they are willing to share with others. Regulation is now forcing the issue of giving users more control over their data. The California Consumer Privacy Act and the European Union's General Data Protection Regulation were both passed with this goal in mind. To fully realize the goal, however, will require advanced technology.

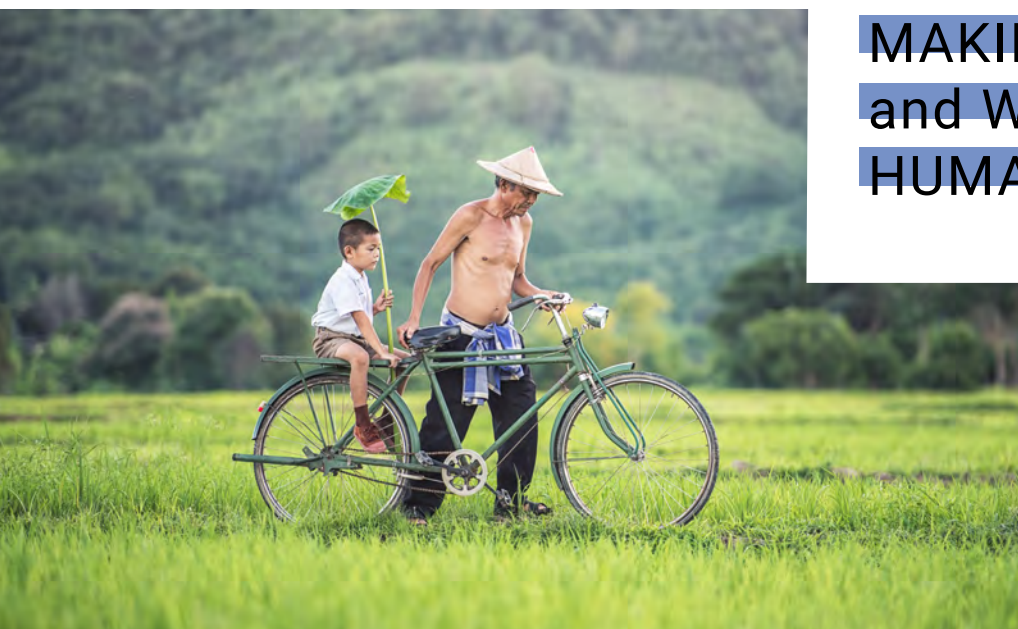
Today, we essentially take an "all or nothing" approach to data privacy, says Dr. Hoeteck Wee, a Senior Scientist at NTT Research. Traditional encryption technology is like putting data in a box and putting a lock on it. If you want to grant someone access to your data, you pass them a software key. With that key, they can access all of the data; they can access none without it.

Dr. Wee is part of a team at NTT Research focused on technologies including attribute-based encryption that allow for more fine-grained control. "It's like creating a box with many possible keys for different entities," he says.

For medical data, you may want to let a doctor access your health records. At the same time, the hospital business office needs to access your health coverage, and insurance companies can see what procedures were performed. Similarly, healthcare providers may compile data on numerous patients but give insurers access only to data showing what percentage of people over the age of 50 have a given condition, Dr. Wee says.

HUMAN FRIENDLY BY DESIGN

As technology such as attribute-based encryption emerges from research labs, the next opportunity will be to create trust with users when interacting with technology that is "friendly by design." The goal is to make it easy for users to precisely share the data they want and stop as they see fit. That requires a sea change from today's reality, where companies have little incentive to make it easy for individuals to control their data.



MAKING Health and Wellbeing HUMAN-FRIENDLY

Another crucial element in creating trust involves the health and wellbeing of the systems we live with every day. It's clear from examples such as the [Blue Zones Project](#) that the environment in which people live impacts their health. The project involves providing communities with tools to transform their environment toward better physical, mental, social and professional wellbeing.

The first Blue Zones city was Albert Lea, Minnesota., a city of 18,000. Beginning in 2009, the city took steps to create more active and healthy living environments. They included nine miles of new sidewalks and three miles of bike lanes, resulting in a 38% average increase in biking and walking. New policies and environmental changes aimed at smoking cessation reduced from 23% of adult residents in 2009 to 14.7% in 2016. That alone saved the city \$8.6 million in annual health care costs. New businesses opened downtown, leading to a 25% increase in property values. One of the goals of such programs is to make a healthy choice the easy choice.



This is a journey that everyone needs to go on; all aspects of society, individuals, communities, government, business and organizations must cooperate and contribute.

Systems health and wellbeing are based on four key factors, as follows:

- 1. Healthy food and nutrition** involve working with grocery stores on layouts that increase awareness of healthy foods and drinks. It also involves a growing trend to personalize food and nutrition plans. Personal preferences are based on and informed by the unique microbiome and DNA profiles, and this technology is becoming more mainstream.
- 2. Fitness and wellness** focus on deploying green and safe areas to promote natural movement to encourage healthier lifestyles. Many apps are likewise available to promote natural movements, such as by counting steps and physical activities.
- 3. Mindfulness** involves the idea that reducing stress can have a profound impact on our health. A [2004 study](#) showed stress could even cause aging. The study focused on 58 mothers of young children and showed the most stressed among them had indicators that translated into an extra decade or so of aging compared to the least stressed. It's little wonder, then, that [more than 80% of consumers](#) say mental/emotional balance is as important as physical health.
- 4. Social care** focuses on using Social Determinants of Health (SDoH) to identify those who need help. The range of impacts coming from SDoH is widening, and society creates new problems, especially for elders and mid-aged people. Stress and isolation are prime examples.

Successfully implementing health and wellbeing systems involves the support of some critical information technology (IT) requirements:

- Employing an appropriate IT fabric. Such a digital fabric should be right-sized for normal operations but elastic enough to grow or contract as needed. Additional capacity may be required for security image processing during an event at a city park. Cloud computing makes such fabrics relatively easy to deploy. A scalable system.

- Reducing the data gathering burden on IT. As health and wellbeing efforts continue to be technology-enabled, large amounts of data are required to track results consistently and feed predictive analytics engines. So, on top of the IT digital fabric, communities need to deploy automatic data gathering facilities.

CREATING digital TRUST



With so much data at stake, ensuring digital trust requires all organizations to focus on resilience and cybersecurity.

Resilience is the capacity of an organization to absorb unexpected scenarios that can interrupt operational or financial continuity. That may include natural disasters such as blizzards or hurricanes that cause power outages. Companies need disaster recovery and business continuity strategies in place to deal with such issues. Cloud services again provide an effective solution here. Providing proper cybersecurity is crucial to resiliency since it's all about dealing with threats. "Security is key to securing, protecting and improving the resilience of the digital fabrics that are fundamental to modern enterprises," says Craig Hinkley, CEO of NTT Application Security, an NTT company offering managed security services.



Trust and security in digital business models and customer experiences is no longer option; it is a fundamental requirement.

Security is likewise paramount when the goal is to build trust, he notes. "Trust and security in digital business models and customer experiences is no longer optional; it is a fundamental requirement."

Too many companies are falling short on the security front, simply unable to keep up with the number of cyber threats. By a nearly 4:1 margin, the source of failure is organizational, not inadequate security technology, according to a [Boston Consulting Group \(BCG\) study](#) of 50 major security breaches. "In the vast majority of cases—72%—the breach was the result of an organizational failure, a process failure, or employee negligence," BCG says.

"One of the challenges organizations face is that they cannot get the necessary security talent to define, build and operate a security strategy inside their organizations," Hinkley says. "At the same time, adversaries are continuously evolving their tactics and techniques for finding and exploiting vulnerabilities."



TIME for ACTION

With individuals parting with and essentially losing control over their data, the current situation is untenable if we're to achieve a health and wellbeing model that focuses on humans first and foremost. Addressing the fundamental requirements, implementing "data for you" instead of "data from you," ensuring the health and wellbeing of systems and creating digital trust throughout the ecosystem will help us get there.

Through its various divisions, NTT is working on some of the fundamental elements required to achieve the goal, including advanced cryptography, AI-based cybersecurity and human-like natural language processing in the form of Jibo.

To learn more about what NTT has to offer, visit: global.ntt/healthandwellbeing



LEADING THE WAY to a better life of HEALTH AND WELLBEING

NTT believes in resolving social issues through our business operations by applying technology for good. We help clients accelerate growth and innovate for current and new business models.

Our services include digital business consulting, technology and managed services for cybersecurity, applications, workplace, cloud, data center and networks – all supported by our deep industry expertise and innovation.

As a top 5 global technology and business solutions provider, our diverse teams operate in 80+ countries and regions and deliver services to over 190 of them. We serve over 80% of Fortune Global 100 companies and thousands of other clients and communities around the world.

<https://www.global.ntt/healthandwellbeing/index.html>

