THE VISION of Health and Wellbeing is HUMAN BY DESIGN

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BEGINNING a journey from healthcare towards human-friendly HEALTH AND WELLBEING

A strategy towards a human-friendly, trustworthy, knowledge-driven and technology-enabled world of health and wellbeing requires transformational action. The shift in focus from clinical outcomes to desired and personalized long-lasting results means creating a holistic and supportive health and wellbeing ecosystem. In the ideal world, the individual, together with all agents of the health and wellbeing industry and broader community stakeholders, plays a critical role in designing and implementing better ways to live well.

People are seeking new ways to learn about and participate in their health and wellbeing. Responsibility for health and wellbeing sits with the individual. It speaks to a lifestyle shift and commitment, leveraging science and technology in a way that has not been available before. Every day presents the opportunity to focus on wellness, not just when you are sick or a patient.

The individual cannot do this in isolation. They need support from a collaborative and extensive ecosystem that stretches across every facet of society, with empathy, ethics, resilience, respect and transparency at every touchpoint. Any systemic and structural changes are complex. Communities play an essential role in accelerating the individual and collective shift towards human-centric health and wellbeing.

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HEALTH AND WELLBEING as a LIFESTYLE

The journey towards better health and wellbeing begins with a focus on wellbeing and prevention rather than diagnosis and prescriptions. If we are to live well, absent of disease, we could consider creating a personal contract or a life-long commitment between ourselves and a holistic lifestyle **(Figure 1).**
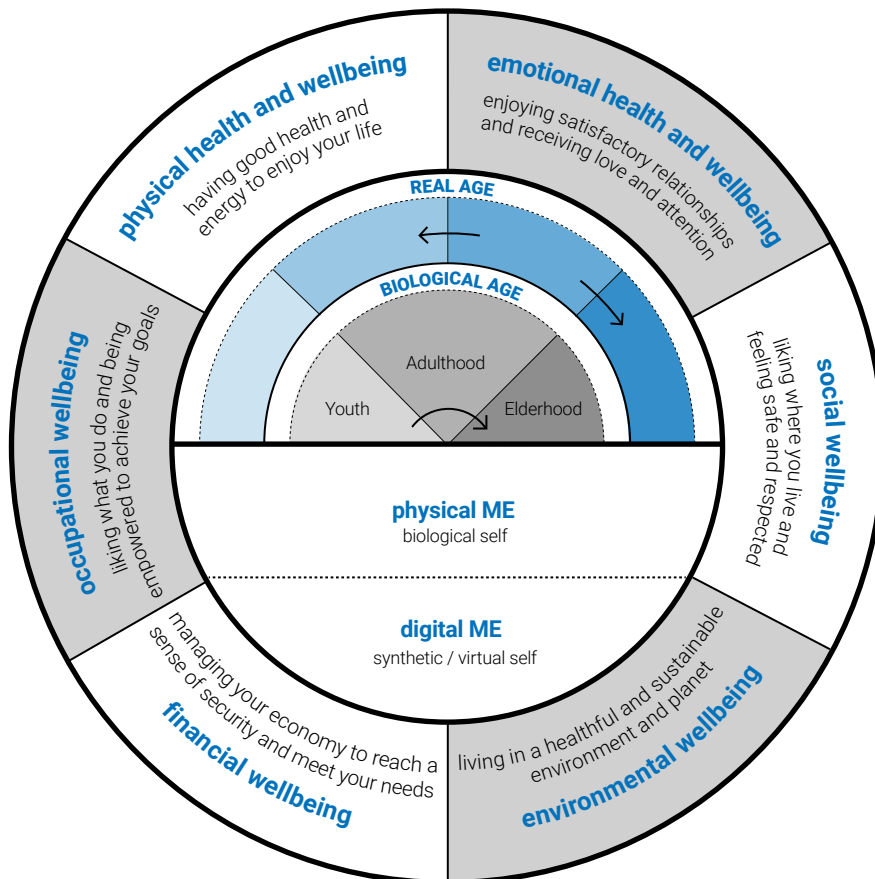

Figure 1. Lifelong and holistic health and wellbeing

> *People should integrate health and wellbeing as part of their normal daily life, so that, it becomes part of our legacy for the coming generations.*
>
> **Craig Hinkley**

While this view is not a new concept, several challenges make achieving a healthier lifestyle complicated. Sharing knowledge and information is a critical step to understanding why a healthy lifestyle is so important. Explaining the opportunities and creating a stronger dialogue around health and wellbeing disciplines, such as behavioral science and preventive medicine, and digital technologies, such as bio-digital twins and immersive technologies, will enhance people's understanding.

A healthier lifestyle is difficult to achieve when the systems that support your health and wellbeing are transaction-based. There are also economic obstacles, affordability, accessibility, business models and social constructs. A better approach is a relational model where there is a continuous connection of actions that result in better health and wellbeing outcomes. The current transactional model also slows down the services that new and improved disciplines offer.

MAKING Health and Wellbeing HUMAN-FRIENDLY

Traditional models and systems have historically not been human-friendly. Humanization permeates every facet of society as we become more sensitive and aware of the kind of experiences we want. Shaping human-friendly health and wellbeing systems should address six essential requirements.

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> *For many years, Healthcare as an industry has grown focused on the concept of "sick patients", and not on the idea of "healthy individuals". This has introduced many underlying conditions in the healthcare model understanding.*
>
> *Lisa Esch*

- **1** **From system-centric to user-centric: breaking the silos to create an end-to-end enjoyable user experience.**

  One of the main challenges in health and wellbeing is the existence of multiple disintegrated and conflicting systems, operating as silos, unable to talk to each other. Shifting from system-centricity to user-centricity is the first step to break down these silos and create end-to-end improvements. This user-centricity directly connects to the User Experience (UX) discipline, which is applied to rethink the end-to-end experience in numerous industries and domains. UX is a cohesive set of experiences that work together seamlessly. Many organizations are already considering ways to improve the health and wellbeing experience, for example, rethinking the end-to-end patient experience in a hospital and the employee experience in a company.

- **2** **From user-centric to human-centered: creating empathic and affective human experiences.**

  Human-centered design is an approach to create products and services which take inspiration from real people and considers every touchpoint as an opportunity to surprise, delight and deliver benefits to users. It is about building a deep empathy with the people who will engage with the process and outcomes. The emergence of new technology focused on digital compassion and emotion-based behavioral science (such as relational AI, affective computing, and sentiment analysis and mood hacking) will further enable empathic and affective human experiences across health and wellbeing systems.

- **3** **Paving the way for ethical, resilient, respectful, and transparent human experiences.**

  Human design is a novel field and practice of designing systems so that users experience dignity throughout the system and are at the core of its purpose. Humane design is a direct reaction against the disturbing tech-for-bad trends, such as the invasion of data privacy, patients as products, surveillance capitalism, tech addiction, racially biased algorithms, and new digital divides. Humane design intrinsically considers ethics, resilience, respect and transparency. This result can systematically bring people both dignity and delight without undermining organizations' bottom lines.

- **4** **Human-friendly lifecycle management**

  Designing human-friendly health and wellbeing systems will require keeping in mind the whole process of finding, selecting, acquiring, onboarding, owning, supporting, troubleshooting and discontinuing systems.

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> *Many times, when we talk about "healthcare human- friendly providers", what we really mean is "human- friendly systems". HWB professionals are already "friendly" and human-centric.*
>
> **Mary Edwards**

- **5 Human-friendly both for today and tomorrow**

  Any human-centered design should also focus on future needs and solutions. While user-centricity is essential for incremental innovation, focusing too much on the user may limit radical innovation and disruption. Health and wellbeing are currently in the middle of accelerated digital disruptions. New approaches will need to present human-friendly strategies looking at today's world and tomorrow's outlook to achieve these new opportunities and improve outcomes.

- **6 Friendly with both the care recipient and caregiver.**

  The above five considerations should be applied equally and fairly to the person receiving the service (e.g., a care recipient) and those who are providing it (e.g., a caregiver). The pandemic has vividly revealed how human-unfriendly existing health care and social care systems lead to dramatic levels of stress, situations of complete collapse, or unnecessary overload and overwork. Human-friendly systems take into consideration all the users of the system.

TECHNOLOGY innovations that will enable human-friendly HEALTH AND WELLBEING

New digital technologies are now available to support the application and execution, making health and wellbeing human friendly.

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TECHNOLOGY	WHAT IT DOES	PROMISE FOR HUMAN-FRIENDLY HEALTH AND WELLBEING
FROM SYSTEM-CENTRIC TO USER-CENTRIC		
1. Big Data Fabrics	Seamlessly integrate and manage all health and wellbeing data across the ecosystem.	Integrated and consistent access to health and wellbeing data (from EHR and vital signs to genomics and sentiment analysis) to quantitative big data (e.g., for new drug discovery, public health, or pandemic management).
2. Integration Fabrics	Produce a "virtual web" connecting all the processes and infrastructures of a system.	Enable a digital nervous system that breaks all the silos of the health and wellbeing ecosystem, delivering end-to-end experiences to the demand-side and integrated management and analytics to the supply side.
FROM USER-CENTRIC TO HUMAN-CENTERED: CREATING EMPATHIC AND AFFECTIVE HUMAN EXPERIENCES		
3. Affective Computing	An interdisciplinary field to develop systems and devices that can recognize, interpret, process, and simulate human affects.	The ability to give machines emotional intelligence, including simulating empathy, the device should interpret humans' emotional state and adapt its behavior to them, providing an appropriate response to those emotions.
4. Immersive Technologies	Enable richer multi-sense experiences through immersive devices or spaces.	Pulling via technology individuals/groups of people into new realities (VR), augmented realities (AR), or mixed realities (MR) to enhance HWB and everyday life by making it more engaging or satisfying.
5. Relational AI (Artificial Intelligence)	Create intelligent machines (physical robots or virtual bots) able to build digital relationships with humans.	Evolve from transactional AI (e.g., smart speakers, chatbots, virtual assistants) to new generations of AI agents which nurture high-adherence, empathic and trustworthy relationships with users, becoming health and wellbeing digital companions (e.g., health concierges, wellbeing coaches, anti-loneliness agents).
6. Smart workplaces	Deploy new generations of workforce-centric, intelligent and sustainable workspaces (physical, virtual, or hybrid.)	Transform workspaces into HWB catalysts and platforms for all involved users (clients, employees, admins), increasing safety and comfort, enhancing engagement and productivity and activating all configurations (in-person, remote, hybrid).
PAVING THE WAY FOR ETHICAL, RESILIENT, RESPECTFUL AND TRANSPARENT HUMAN EXPERIENCES.		
7. Bio Digital Twins	Create digitized models of biological elements (from an organ to a full body).	The broad range of digitized applications, including unloading the burden of experimentation on doctors and patients, preventing acute diseases, improving chronic disease management and more.
8. Digital Ethics	Field of study concerned with the way technology is shaping our political, social, and moral existence.	Study how to be ethical and professional via online and digital mediums and describe the moral principles governing the behaviors and beliefs about using technology.
9. Digital Privacy	Promote advocacy on behalf of individual privacy rights in digital and electronic services.	Regulate and protect individuals' and communities' information and knowledge that are either used or created by a technological system of any kind.
10. Digital Trust	Increase the trust of humans in digital technologies and systems.	Reducing the actual risks and threats of any health and wellbeing system or environment to increasing its perceived resilience, habitability, and ergonomics, enabling more friendly and safer experiences.

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COMMUNITY collaboration to enable IMPROVED OUTCOMES.

Supporting communities, both physical and digital, play an essential role in accelerating collective approaches towards human-centric health and wellbeing. There's much potential to broaden the impact of health and wellbeing around the world. In addition to the importanc of improving its members' lives, communities help to expedite the whole ecosystem's transformations.
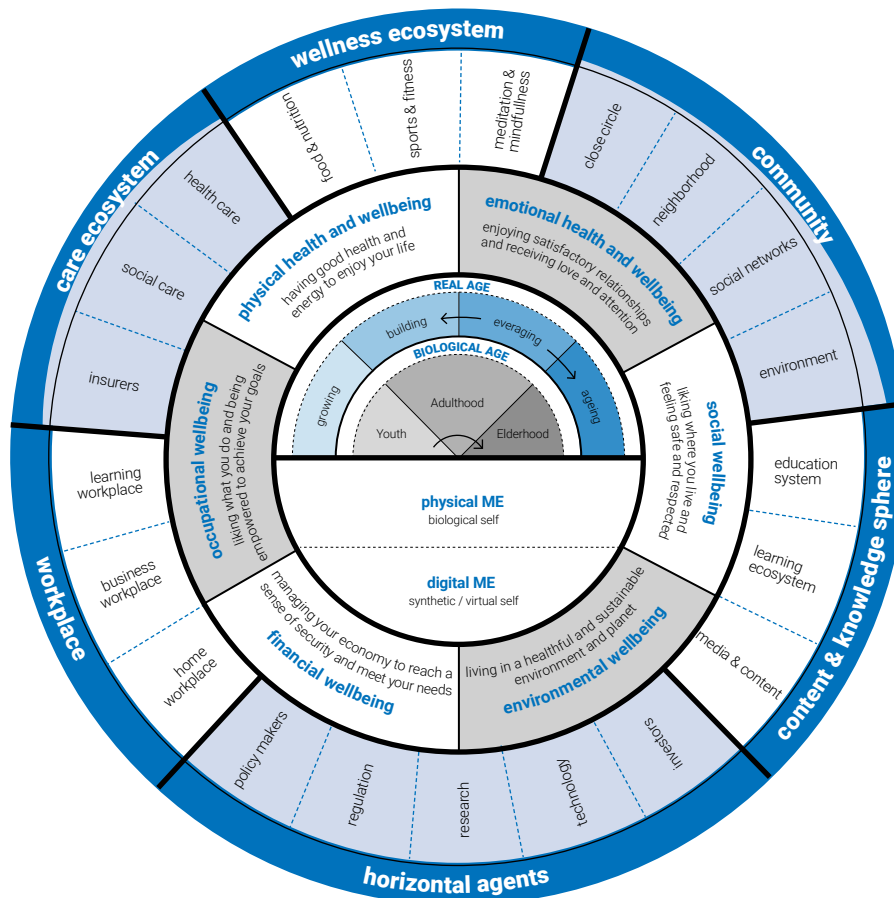

Figure 2. The community and ecosystem serving human-centric health and wellbeing

> *The health system that the people need is far from being a one-size-fits-all. It must take into consideration the realities many people are living in. For example, unemployment or problems at home. And if we think about non-western countries, these differences will get even broader.*
>
> **Chris Shaw**

In the journey toward holistic health and wellbeing, the role played by the community ecosystem is of vital importance. This ecosystem directly connects to Social Determinants of Health (SDoH). Following the WHO definition, SDoH is the non-medical factors that influence, positively or negatively, health outcomes. They are the conditions in which people are born, grow, work, live, age, and the broader set of forces and systems shaping daily life conditions. These forces and systems include economic policies and procedures, development agendas, social norms, social policies and political systems.

WHO's examples of Social Determinants of Health

- Income and social protection
- Education Unemployment and job insecurity
- Working life conditions
- Food insecurity
- Housing, basic amenities and the environment
- Early childhood development
- Social inclusion and non-discrimination
- Structural conflict
- Access to affordable health services of decent quality

Social Determinants of Health apply at four levels: individual, interpersonal, community and societal, each playing an important influence on health inequities. WHO's research shows that they can be more important than health care or lifestyle choices in influencing health. For example, studies suggest that SDoH accounts for between 30-55% of health outcomes. Also, estimates show that the contribution of sectors outside health to population health outcomes exceeds the health sector's contribution. Addressing SDoH is fundamental for improving health nd reducing longstanding inequities, requiring action by all sectors and civil society.

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In CLOSING

We have the opportunity to move from patient engagement to human empowerment and shift the focus towards prevention, predictions, participation and personalization. As we look towards creating healthier lifestyles supported by human-friendly systems, models, and behaviors, we need support from the health and wellbeing value chain and wider society. By sharing knowledge, creating better experiences, and leveraging new technologies, we're empowering individuals on an improved lifestyle journey.

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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

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