Harnessing Big Data for Social Security

By Chandana N. Athauda
Head of Solutions
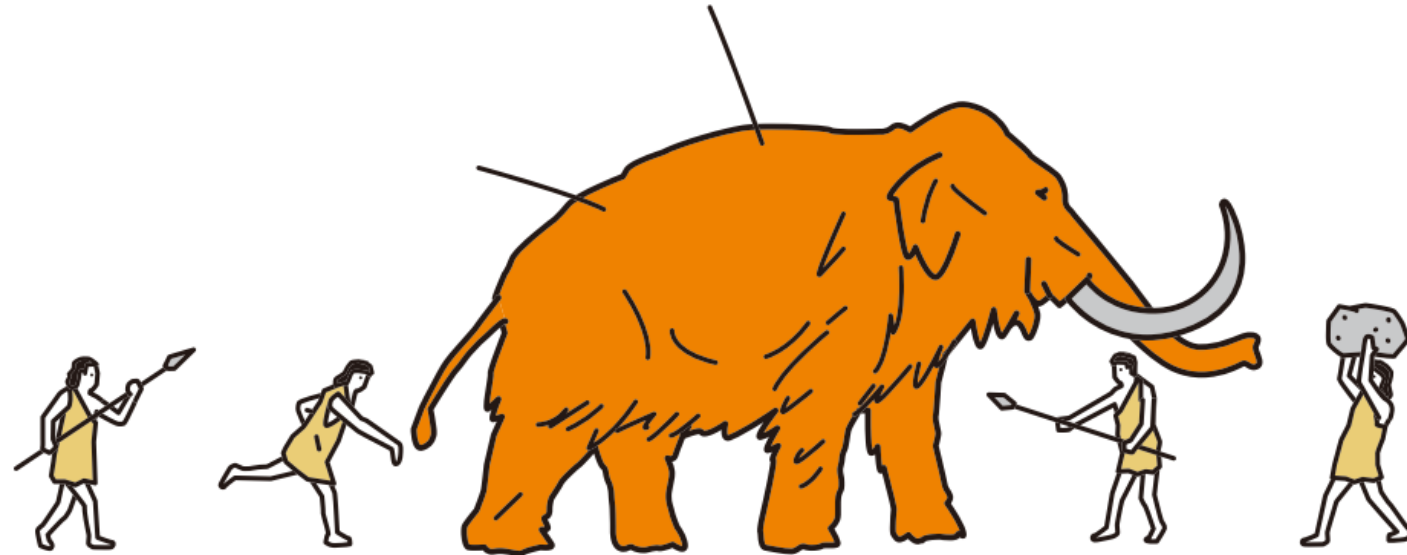Dynamik Technologies

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Agenda

- Road to Society 5.0
- Why Society 5.0?
- How Society 5.0 Works?
- How Society 5.0 will Change the World?

▼ Road to Society 5.0
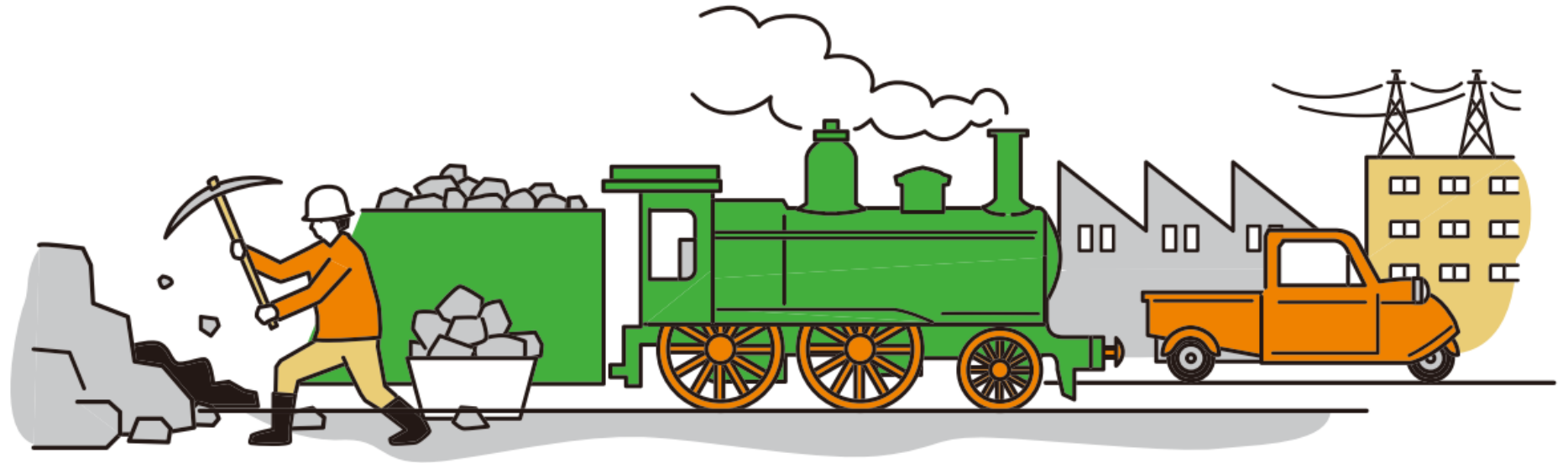
Society **1.0**
Hunter-Gatherer Society

Society 2.0
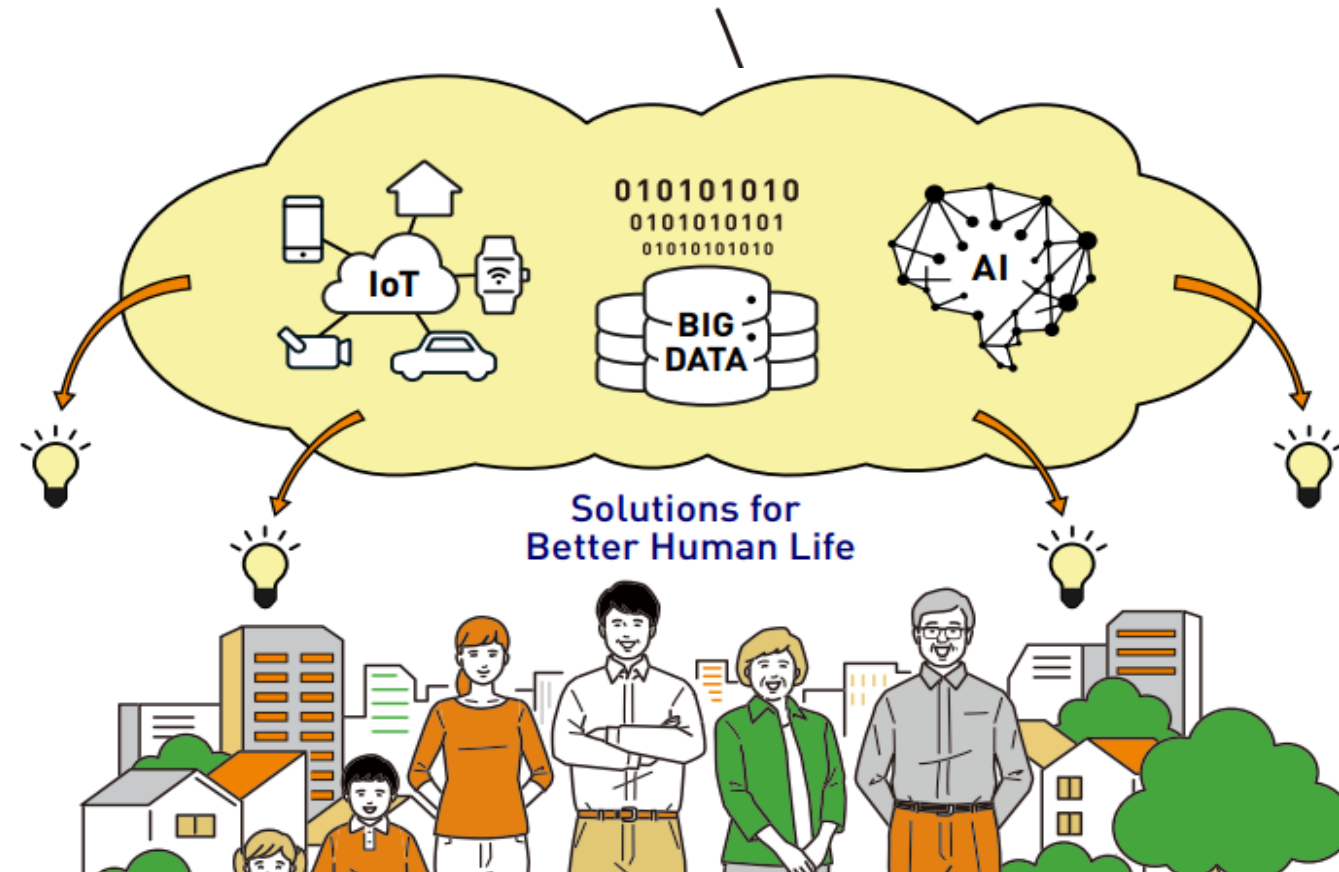**Agrarian Society**

Society 3.0
Industrial Society

Society 4.0
Information Society

Society 5.0

Society 5.0 achieves a high degree of convergence between **Cyberspace** (virtual space) and **Physical Space** (real space).

In the Information Society (**Society 4.0**), people would access a cloud service (data) in cyberspace via the internet and search for, retrieve, and analyze information or data.

In Society 5.0, a huge amount of information from sensors in physical space is accumulated in Cyberspace. In Cyberspace, this Big Data is analyzed by Artificial Intelligence (AI), and the analysis results are fed back to humans in physical space in various forms.

▼ How Society 5.0 Works ?

How Society 5.0 Works?

Society 4.0 (current) the generation of knowledge and intelligence is done by humans with the help of technology; in **Society 5.0** the generation of knowledge and intelligence will come from machines through Artificial Intelligence at the service of people.

How Society 5.0 Works?

In the Information Society (Society 4.0), cross-sectional sharing of knowledge and information was not enough and collaboration was difficult.

Because there is a limit to what people can do such as:

- The task of finding the necessary information from overflowing data.
- Analyzing a big data set was a burden.
- The labor and scope of action were restricted due to age and varying degrees of skills.
- Social restriction such as a decreasing birthrate and aging population.

How Society 5.0 Works?

Industry 4.0 features effectiveness of using automated machines while Society 5.0 focuses on theeffectiveness of optimizing knowledge workers assisted by intelligent machines.

Society/Industry 4.0 is about how to get the job done while Society 5.0 is emphasizing on how to "optimize the man-hour responsibility to get the job done.

Industry 4.0 is about computerized communications by all means and Society 5.0 is harmonizing of work with the help of intelligent machines for the benefit of the knowledge workers.

Society 5.0

Current society
Knowledge and information are not shared and cross-sector value is difficult to create.

IoT will connect all people and things, all sorts of knowledge and information will be shared, and totally new value will be born.

Current society
A variety of constraints exists with respect to social problems such as the aging society and regional depopulation making a sufficient response difficult.

Social issues will be overcome and humans will be liberated from various types of constraints.

AI will free humans from the burdensome work of analyzing huge amounts of information.

The possibilities open to humans will expand through the use of robots, automatic-driving cars, etc.

Current society
With an overflow of information, the work of finding and analyzing the information desired is difficult and burdensome.

Current society

Image. Realizing Society 5.0, https://www.japan.go.jp/abenomics/_userdata/abenomics/pdf/society_5.0.pdf. Accessed 10 Sep. 2019.
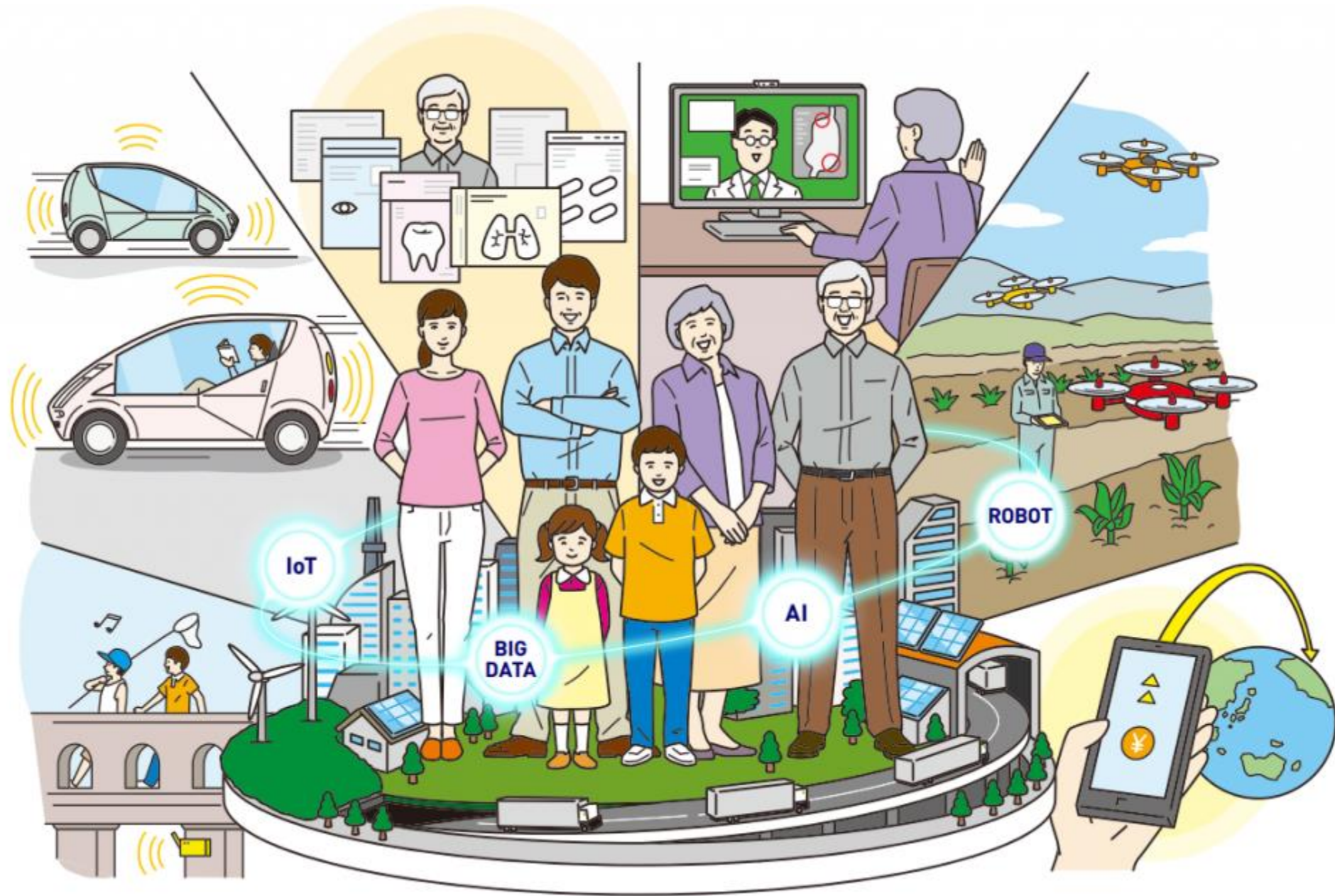
▼ How Community Live in Society 5.0

How Community Live in Society 5.0

In **Society 5.0**, humans must remain central actors. Traditionally, innovation driven by technology has been responsible for social development, but in the future, we will reverse our way of thinking, focusing on how to build a society that makes us happy and provides a sense of worth.

How Community Live in Society 5.0

When entering the **Society 5.0**, all data collected since the Society 4.0 period will be processed and converted into a new form of intelligence by **Big Data** engines and **Artificial Intelligence (AI)** and spread to all sectors of people's lives. Human life is expected to be more comfortable and stable because people will get supplies of products and services at the right amount and the right time.
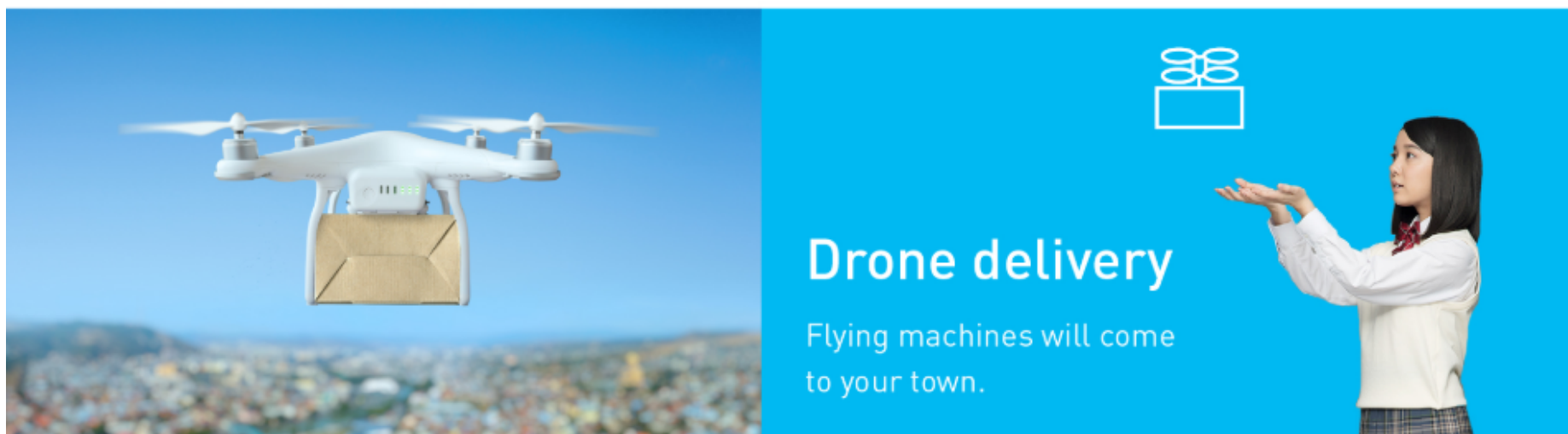
Image. Realizing Society 5.0, https://www.japan.go.jp/abenomics/_userdata/abenomics/pdf/society_5.0.pdf. Accessed 10 Sep. 2019.

Daily life | Work

Daily life will change.

I can receive deliveries anytime, anywhere?!

Autonomous drones will deliver your packages at any time and place you designate. People in underpopulated areas will be able to receive goods unavailable in nearby stores faster than by human-based delivery. Such dreamlike stories can actually be achieved in your neighborhood.

Drone delivery

Flying machines will come to your town.

Daily life | **Work**

Work will change.

Can this solve the labor shortage in logistics?

Shortening delivery time resolves the shortage of workers. Drones perform "last mile" logistics that connect the delivery base and the receiver, the most difficult link to automate. Compared to traditional delivery methods, the cost required for new entrants will be less. The world in which safe and convenient drones fly around the sky is near at hand.

Daily life | Work

Daily life will change.

The refrigerator will tell me all that?!

A refrigerator suggesting meals using seasonal ingredients, or even recipes using ingredients on hand... Is this appliance a master chef, or a wise and frugal grandma? The refrigerator monitors stocked foods, cutting down on waste. Since you can confirm the foods in your fridge while at the store, you'll never forget an item on your grocery list.

AI Refrigerator

Smart home appliances will make daily life more pleasant.

Daily life | Work

Daily life will change.

I can have an online exam from the comfort of my home?!

A special computer tablet or device will allow a doctor to examine you at home, sparing you frequent hospital visits. Creating the ideal combination of online care and actual visits to your doctor will yield high-quality medical care with fewer clinic visits and transportation costs...good news for seniors with mobility issues.

Telemedicine

Tireless helpers will soon come to the assistance of caregivers and care recipients.

Daily life | **Work**

Work will change.

I can enjoy improved medical services?!

In the past, those with mobility issues had to rely on a doctor's willingness to make a house call. The advent of telemedicine will reduce travel requirements as well as the frequency of house calls, enabling medical examinations regardless of mobility. Use of electronic medical records will enable shared medical information among doctors, enhancing medical care. These groundbreaking initiatives will ease the burden on doctors and patients alike.

Daily life | Work

Daily life will change.

Walk alone with the help of a robot?!

Once nursing robots evolve and spread, those receiving home care will be able to perform tasks alone; no more waiting for family or caregiver assistance. AI robots will offer companionship as well as rehabilitation support. Robots will also be trusty helpers for families providing constant care for loved ones.

Nursing Robots

Tireless helpers will soon come to the assistance of caregivers and care recipients.

Daily life | Work

Work will change.

Nursing robots "helping the helpers?!"

Lifting an adult is mentally and physically hard on caregivers. With robotic assistance, a caregiver can maintain eye contact with the care recipient and focus on delivering more meticulous assistance. As our young adult population declines and our seniors increase in number, we await the day when robots "help the helpers."

Daily life | Work

Daily life will change.

Monitoring for 24 hours a day, even from a distance?!

Families living distant from a senior can monitor their loved one's health using cameras, sensors, and other tools. Diversified monitoring methods serve a variety of lifestyles. They warn us immediately when something is amiss. These new monitoring methods allow families to increase phone and e-mail contact, keeping families psychologically closer.

Monitoring Service

Tireless helpers will soon come to the assistance of caregivers and care recipients.
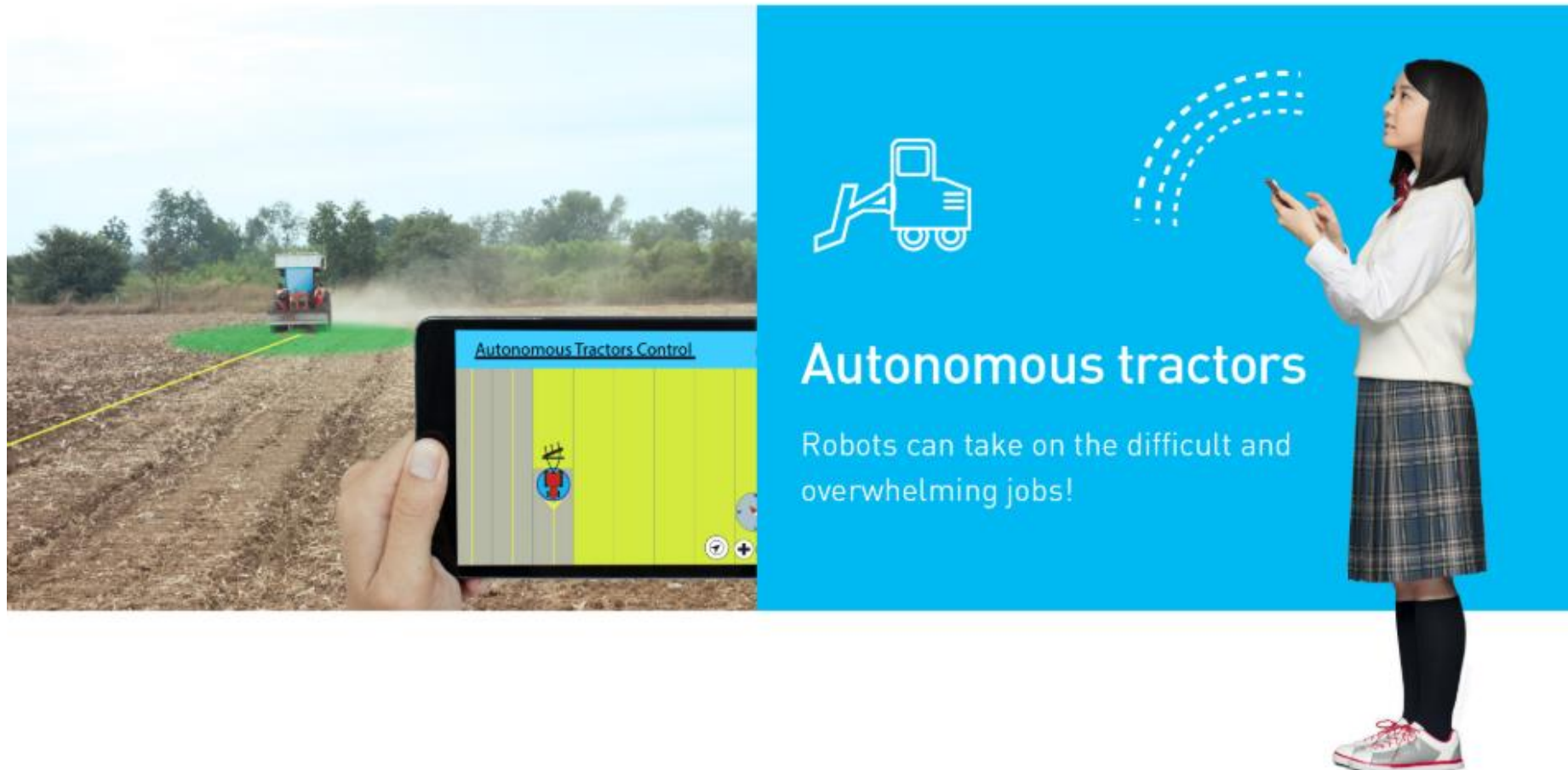
Daily life | **Work**

Work will change.

Changes in manpower-intensive caregiving facilities?!

Constant patrol of individual rooms is a heavy burden on caregivers during lightly-staffed nighttime hours. Sensors and devices monitoring vital signs and sleeping conditions help alleviate caregivers' workloads while allowing patients quieter, more comfortable sleeptime.

Daily life **Work**

Work will change.

Autonomous tractors ending the labor shortage?

GPS is used for car navigation and other purposes. "Michibiki," Japan's Quasi-Zenith Satellite System (QZSS), will reduce GPS calculation errors down to units of a few centimeters. These will, for example, result in autonomous tractors helping end labor shortages for farmers needing to plow and seed a field.

Autonomous tractors

Robots can take on the difficult and overwhelming jobs!

✕

Entrust dangerous working conditions to robots?!

Work will change.

There are countless areas humans cannot easily clean, such as skyscrapers, steel towers, and ultra-cold or widespread areas. Cleaning robots controlled by AI can execute unmanned cleaning. The result will be immeasurable improvements in safety, efficiency, and more.

Cleaning Robots

Robots can take on the difficult and overwhelming jobs!

Daily life | Work

Daily life will change.

Can seniors stop worrying about life without a car?!

Mobility in the wake of abandoned bus and train routes is a major worry in underpopulated areas. Seniors feel forced to drive, and an upswing in accidents is now a social problem. Autonomous buses would allow passengers to reach their destinations in any given time slot. Regional cities are already testing automated buses and have cleared all saftey issues. Full implementation is right around the corner.

Autonomous buses

A new hero is emerging on the scene in logistics and transportation

Daily life | Work

Work will change.

Creation of new routes?!

Autonomous buses would reduce both labor costs and unavoidable human error, such as falling asleep at the wheel or choosing the wrong route. Autonomous buses would allow service expansion in underpopulated areas as well as at night, to the benefit of a wider range of users.

▼ Summary

Summary

In contrast, Society 5.0 achieves advanced collaboration between cyberspace and physical space, enabling AI-based on **Big Data** and robots to perform or support as an agent the work and adjustments that humans have done up to now.

Humans will **NOT** be replaced by machines, but humans will become the center of social life and machines will become a supporting system around them. Artificial intelligence will help make alternative choices for humans and humans will make decisions.

Q & A

Thank You