

# Woven City Press

VOL. 01  
Feb. 2023 Edition



Inventors' Interview ①

**Mobility of Information Enables  
the Lifestyle of the Future**

Inventors' Interview ②

**Spreading the Joy of Mobility**

# Woven City – A mechanism for exploring well-being that benefits others

At the heart of the Toyota Group is a young man who wanted to help his mother live a better life. Sakichi Toyoda invented the automatic power loom to make his mother’s weaving work easier.

His commitment to taking action for the sake of others’ happiness is the core of the philosophy that has driven Toyota for decades and continues to propel us forward. Caring for others has been important as we evolved from a loom manufacturer to a car maker, and is critical to our transformation into a mobility company.

Today his legacy is dedicated to improving the overall quality of life on the planet. Motivated to deliver the freedom and joy of movement to everyone – Mobility for all. We’ve replaced outdated transportation concepts with a new set of mobility principles and dynamic approaches that allow us to invent a mechanism to generate well-being that goes far beyond what has been possible until now.

Woven City is an important model of our efforts to benefit all humanity and make well-being accessible to all. Unlike hypothetical theory, fantasy, or science fiction, we are working with partners to build a real-life test course for mobility. There we will pilot experiments and develop innovations that can propel society forward and form the future fabric of life. The innovations we make today, and through the endless evolution of Woven City going forward, will expand the possibilities of mobility.

We hope you’re as excited about our ever-evolving city and the future as we are!

Q. What sort of well-being do you aim to create and for whom?

Q. How can the “mechanism” of Woven City be utilized?



## Inventors’ Interview

Toyota Group Developers

Corporate Developers

Start-ups / Entrepreneurs

The Residents of Woven City

Woven City is an exploratory mechanism, an integrated system of various elements, all working together to weave the future fabric of life. This unique structure composed of Toyota group developers, partner corporations, startups, entrepreneurs, and residents of all ages exists to develop inventions that benefit all people in their everyday lives.

Everyone living in Woven City is an inventor, jointly devoted to helping realize innovations that benefit all people. These diverse pioneers are encouraged to imagine ways to make life better, easier, and more enjoyable for all. Imagine if your dreams could become reality. How would you improve society? What can you imagine that would enhance well-being for all? Unleash your creativity as you think about the possibilities within the exciting experiment of Woven City.



[Toyota Group Developers]  
Infotainment Team



[Start-ups / Entrepreneurs]  
KOMA Inc. CEO  
Takamitsu Ikoma



## Mobility of Information Enables the Lifestyle of the Future

Woven City is the first-of-its-kind exploratory mechanism dedicated to fostering happiness, sustainability, and well-being for all humankind through mobility. Inventors will all work collaboratively within this mechanism to develop technologies and services. Before launching the infrastructure for Woven City's Phase 1, some inventors from Toyota Group company will focus on optimizing communications between the dispersed collaborators. What kind of happiness are they trying to achieve with the new technology?

With "Mobility for All" as a major theme, Woven City is approaching the idea of expanding mobility from a variety of angles. One of the teams tackling that big topic is the Infotainment team which is responsible for driving R&D for next-generation remote communication with a focus specifically on "mobility of information." We asked two members of this team, Aiko Tani and Jorge Pelaez, for details about the kinds of projects they're working on and what gets them excited every day.

**Q:** What does "Mobility of Information" mean?

**Aiko Tani:** Sharing the same space helps people form personal bonds, enables us to strengthen heart-to-heart connections, enriches us, and makes us feel happier. But what do we do when we can't be in the same room?

Although studies say that over 80% of interpersonal communication is non-verbal, modern-day online communication is still primarily limited to direct language exchange. During remote communication, those missing touches and shared experiences are difficult to replicate and so far, few attempts have been made toward filling in those blanks through digital technology.

What if we could 'mobilize' the missing information between people to enhance communication? We can! In fact, every day we combine new R&D research with information from robotics R&D at Toyota. By analyzing remote conversations between people and those between robots and people we are making great strides toward realizing a more deep and fulfilling way to communicate virtually.

**Q:** How can the "mobility of information" bring about happiness?

**Jorge Pelaez:** I came to Japan by myself for work, but I often make video calls home to my family still living in Spain. I have found that even when both the audio and video quality are high, a lot is lost. It's not the same as being home. Although there will always be a degree of connection that can only be conveyed when sharing the same space, I believe that this technology will help bridge that divide. In today's world, meeting virtually has become a normal part of life and being physically in the same space is sometimes impossible. I am confident that by improving these heart-to-heart connections and continuing to humanize virtual exchanges, we will increase human joy for people like myself who are not always able to be in the same space as their loved ones.



**Q:** Could you further describe how this works from a more technical standpoint?

**Jorge Pelaez:** We know that people form bonds when they have the same experiences at the same time. Our hypothesis is that if we could implement this same idea through remote communication, it could deepen the connection between two (or more) people who are not in the same location.

Toyota is a manufacturing company that owns many technologies which sense object movement and make them move. If we utilize those and combine them with 3D technology, I believe that we can communicate the movement of people and objects to the other side of the conversation and recreate the experience of being together despite being apart.

**Q:** Could you share with us, in concrete terms, how you intend to use Woven City as a mechanism to enhance human connection?

**Jorge Pelaez:** In order to improve our services and make our solutions more precise going forward, collaboration with people from all kinds of backgrounds (researchers, entrepreneurs, investors, residents, and other users) will be indispensable. Woven City will be able to cultivate original ideas and test them against viewpoints from completely different fields of expertise and new ideas from users. I believe that this way of exchanging ideas will accelerate development and provide significant advantages to solving future social challenges.

**Aiko Tani:** We created a remote prototype for communicating the physical brush strokes used in calligraphy and gave school children the opportunity to try it out in a workshop. A few of the children participating said they found their school's calligraphy class boring. However, they got excited to learn when our virtual technology made it feel like their classmates and teachers were right next to them!

Initially, I was anxious about letting people experience our unfinished technology but the children loved the idea of "kaizen" and treasured being a part of making continuous improvements. The workshop reaffirmed that using input from

actual future users is an important part of the development process. Working with all kinds of people to produce something enjoyable and valuable is exactly what Woven City is about!

We don't see this as a battle between digital communication and face-to-face communication. Instead, we are focusing on future potential and using the concept of "mobility of information" as a gateway to completely redefine what communication can be. With the Woven City experiment operating at the full scale of a town, we will be able to directly reflect the voices of our users as we generate new solutions and standards for better living, now and into the future.



### Aiko Tani

- Worked at Toyota as a country manager as well as a product planner
- Since 2021, started involved in this project at Woven Alpha

### Jorge Pelaez

- Graduated university as an infrastructure engineer (Spain)
- Developed AR game (Spain)
- Since 2020, started involved in software development at Woven Alpha (Japan)

## Spreading the Joy of Mobility

An industrial designer named Takamitsu Ikoma developed a light foldable motorbike called the TATAMEL BIKE. It folds up into a small convenient square and can be stored under a desk. Even with the increasingly common emergence of micro mobility projects, this one really stands out! Imagine the lifestyle and transportation infrastructure possibilities if everyone had a motorbike like this one.



How often do you need to travel a distance that's a bit too much for a walk and a bit too close for a drive? Micro mobility is a fun resolution that comes into play for those in-between distances. Instead of overdoing it on foot or squandering resources on a drive, solutions such as the TATAMEL BIKE, a foldable motorbike designed by Takamitsu Ikoma, offer short enjoyable outings where you can feel the wind in your hair as you get where you need to go without stress.

### Q: How does the TATAMEL BIKE foster happiness and human well-being?

**Ikoma:** Babies and toddlers often have those mini cars that they love playing around with, right? Basically, kids just love things that they can ride on. As we grow up, most of us still want to experience the joy of the ride but in urban areas we rarely have that opportunity.

I grew up in Azumino City (Nagano Prefecture) in Japan, and the motorbike I rode after I graduated high school was incredibly fun to take around. But once I entered the workforce, I no longer had many opportunities to do so. Especially when it comes to urban areas where you need to find parking—the financial burden is no joke! That's why I decided to develop something affordable and compact that could be stored conveniently. **This motorbike brings back the joy of the ride and allows people to experience their childhood love of riding things.**

### Q: Can you describe some of the features of the TATAMEL BIKE?

**Ikoma:** The greatest feature of the TATAMEL BIKE comes straight from its meaning in Japanese—it can *tatameru*, or be folded and change shape. But even beyond its sheer function, a

lot of emphasis has also been placed on how much fun the bike is to use.

On the surface, it can be customized to your personality and preferences by swapping out the bike's side panel design. This is great for those wanting to show off their unique style or for those wanting to ride coordinating with their friends. For example, there are many Toyota owners who like to customize their Land Cruiser and HiAce models. That kind of joy and culture of really embracing your lifestyle and showing off to each other just isn't something that many small motorbike users are doing yet.

To be honest, for me it feels a lot like putting together a Mini 4WD model race car. I'm aiming for the same level of fun and simple customization. However, on the other hand, pushing customization as a salespoint can only go so far. It's clear that we're now in an age where the fun factor alone isn't enough to make a vehicle take off in popularity. For that reason, I think a more practical salespoint is that it's an EV with a smart battery.



The fact that this is such a compact vehicle and can supply power anywhere, even without special charging infrastructure, is one of the greatest benefits. The TATAMEL BIKE

could be used for many different situations such as outdoor leisure activities like camping, after a natural disaster, or you could even bring it on a boat to an island without gas stations. In fact, you could even power it by fixing solar panels to the side! The future potential is huge and we already have an abundance of exciting and practical ideas about how to expand its usage.



### Q: Which plans for the Woven City mechanism are you most excited about?

**Ikoma:** **When making something new, you inevitably run into challenges and go through a series of trial and error. What's most important isn't avoiding the challenges but shortening the path between the developmental stage, learning from the failures, and eventual success. To achieve that goal, it's crucial to have the right environment that readily welcomes new challenges.**

Conditions are always frantic at a start-up and details often get lost in the shuffle. Woven City, with the benefit of Toyota's wealth of accumulated knowledge when it comes to building vehicles, is the perfect opportunity to thoroughly investigate those details. In this era where micromobility itself has changed, I can't help but think about how it will continue to evolve, and I wonder just how far that evolution can go. I'm looking forward to testing the limits on this specialized test course.

There's also the benefit of being able to receive advice about manufacturing from an informed and objective perspective. The other day, I had the opportunity to exhibit our work at

Woven Planet, and we were able to get some incredibly high-level feedback from several engineers. Although the real voices of actual users at regular events are crucial and helpful, **hearing the expert opinions and critiques of experienced engineers who have an "inventor's mind," is an important advantage. For me, having the opportunity to utilize the exploratory mechanism of Woven City and to receive this breadth and depth of feedback is especially valuable.** In addition to working on the hardware side, I'm also very much looking forward to working with the many highly talented software developers at Woven City. It's difficult for start-ups like us to take on large-scale software development and I look forward to collaboration on multiple fronts in the development of Woven City.

### Q: And finally, what are your ultimate goals?

**Ikoma:** Small-scale manufacturers like us make most of our progress by fumbling forward. However, through Woven City, I hope to gain the know-how to reliably, yet rapidly, take the project from 1 to 100. If we can do that, then I am certain that we'll be able to use micro mobility to improve the quality of life for everyone.



## Takamitsu Ikoma

ICOMA Inc. CEO/Product Designer

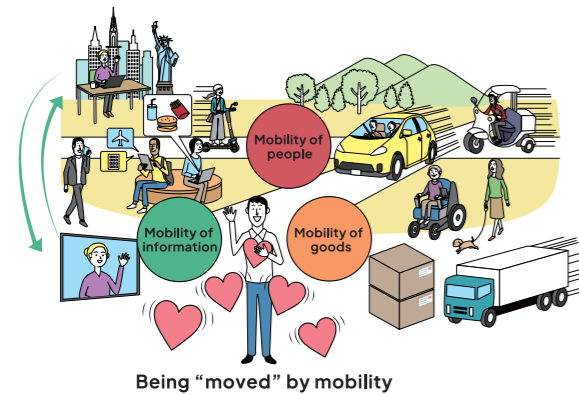
After working at a toymaker involved in designing transformable robots, Ikoma designed and developed robots as an engineer at two hardware start-ups. In 2020, he established ICOMA. His TATAMEL BIKE has received honors in the CES 2023 Innovation Awards.

# What is Woven City?

## An exploratory mechanism for **expanding mobility** and well-being to **build the future fabric of life**

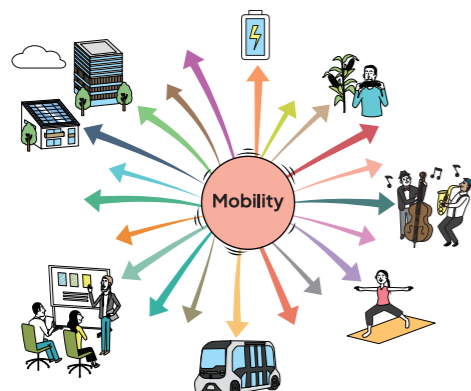
### Mobility: A new way of thinking

A global shift in transportation thinking has occurred and Toyota has fully embraced its transformation into a mobility company. Dedicated to contributing to a thriving society, we are enhancing the many ways that people, goods, and information move on the planet. By improving the safety and efficiency of daily experiences like getting where we need to go, receiving packages, and virtually connecting with others, our goal is to enable greater global harmony by fostering everyday joy and satisfaction thereby making the goal of well-being for all a reality.



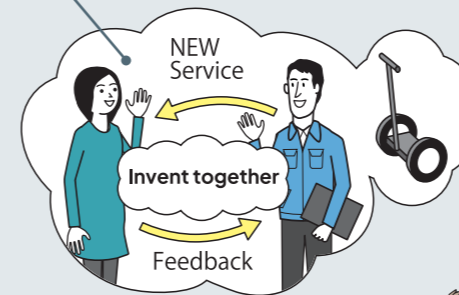
### Exploring new possibilities in the mobility of information, goods, and people

For us at Toyota, Woven City is a living laboratory for exploring ways to expand how mobility can enrich humanity. Our researchers will test ideas related to the mobility of information, goods, and people in fields such as food and agriculture, energy, healthcare, education, entertainment, and more. Through these experiments, we plan to develop ideas that move and inspire people and refine them before integrating them into the daily living of the future.



### A city of innovation where everyone is an inventor

Despite coming from broad and diverse backgrounds, everyone living in Woven City is an inventor. Some are employees of Toyota and partner companies, some are independent developers, and others are ordinary residents, from children to senior citizens. In Woven City, to qualify to be an inventor you only need a desire to make a positive difference in the lives of others. The constructive input from all of these inventors, inspired by their personal experiences, helps build a strong foundation for a future of societal well-being.



### About Woven City 01

### A real-world proving ground for new ideas

Inventors are constantly tackling multiple aspects of a new idea; What's the best execution? How will it perform in practice? Typically, this type of exploration and experimentation occurs through simulations developed from behind a desk. In Woven City, inventors test their ideas in a full-scale urban environment flowing with real life. Finally, incremental improvements can be made based on real-time feedback reflected in the real world.



## Well-being for all

We aspire to make well-being through mobility accessible to everyone while meeting individual needs. This journey starts with Woven City.

### About Woven City 02

### An environment that nurtures innovation and accelerates development

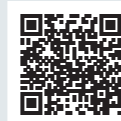
All inventors eventually hit a wall—a point that is difficult to get past without outside help. From knowledge-sharing to business startup and expansion assistance, a wide range of material and digital resources are provided to the inventors in Woven City. By taking advantage of this support, inventors can rapidly develop ideas for inventions inspired by the situations they come across in their daily lives.



President of Toyota Motor Corporation

# Akio Toyoda

President of Toyota Motor Corporation, Akio Toyoda believes, "As a global society we need to come together to heal, grow, learn, and create new possibilities for a collective future." He also stated, "It is only through partnership and collaboration that we will realize the dream of not just mobility for all but a better quality of life for all. In fact, if it were up to me, I would add an 18th goal to the SDG's list -Happiness!"



Scan the code to read more

CEO of Woven Planet Holdings

# James Kuffner

Woven City aspires to become a unique proving ground to accelerate innovation and deliver the world's future mobility at scale. Through software and services, we will expand mobility and continue to make products that people love, and we will work together to create benefits for society.



Scan the code to read more

## Weaving the future from threads of the past

For Toyota, Woven City is not only a bold leap forward but a tribute to what has come before. This site in the city of Susono in Shizuoka Prefecture, Japan was once home to the Higashi Fuji Plant, where Toyota led Japan's motorization and manufactured many of its iconic cars for over half a century. In November of 1966, Toyota completed construction of the automotive proving grounds (later the Toyota Motor Corporation Higashi Fuji Technical Center), and a year later in May of 1967, operations began at their passenger car assembly plant (later the Higashi Fuji Plant). There, 40 models of automobile were manufactured, including the Mark II series, Crown Comfort, and Century models. The Higashi Fuji Plant made incredible accomplishments for the automotive industry.

However, its doors closed for the final time in December of 2020. Instead, after the Great East Japan Earthquake on March 11, 2011, Toyota decided to set up another plant in the Tohoku region to create jobs, contribute tax dollars, and provide long-term support towards recovery in the area. Up until its closing, the Higashi Fuji Plant employed a cumulative total of 7,000 workers and produced 7,520,000 motor vehicles. It had long driven the motorization of Japan while supporting the livelihood of many. Situated on the former site, Woven City is also a realization of the promise between Akio Toyoda and the plant's employees who always put their colleagues and the feelings of others first. The vibrant history, spirit, and legacy of the Higashi Fuji Plant will always be part of the origin story of Woven City. At this site, the Woven City inventors will weave life-enriching ideas into the future fabric of life.



## An endlessly evolving city

Woven City construction has already begun and a variety of mobility-related pilot experiments for this ever-evolving city are scheduled to begin sometime between in 2024 and 2025. Our approach is to continually test new mobility initiatives and use the learnings from each trial to drive a never-ending improvement cycle.



Conceptual Art for Phase One



WOVENCITY Web site



WOVENCITY Facebook



WOVENPLANET Web site