Virtual Worlds Moving towards the “Multiverse” Era
—New Business Outlook Seen in “Second Life”—

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Since around the end of 2006, increased attention has been given to Second Life (an Internet-based service in the US). A three-dimensional (3D) space such as Second Life is called a “virtual world.” In Second Life, users can interact and conduct economic activities such as creating and selling/purchasing objects in a way similar to that in the real world.

Unlike conventional websites, the virtual world enables users to experience a high sense of reality and share real-time experiences. Some companies have started to use virtual worlds for their businesses.

The number of Second Life users has been expanding rapidly. At the beginning of 2006, the number of users was 100,000 throughout the world, and exceeded 7.5 million by the end of June 2007. The total money supply based on virtual currency has also been increasing, creating a virtual economic bloc amounting to more than ¥1.1 billion.

In addition to Second Life, various other virtual worlds have been appearing on the Internet. We are nearing a new era that can be referred to as the “multiverse era” where Internet users can select multiple virtual worlds according to their specific needs.

The arrival of the multiverse era will accelerate the emergence of new technology and/or services, such as technology for communication between multiple virtual worlds and between virtual worlds and the real world as well as financial services to transfer virtual currencies among different virtual worlds.

With the expansion of virtual worlds, the lack of legal systems that are available in the real world will constitute a problem. The sound development of virtual worlds will require the establishment of legal systems appropriate for the multiverse era and the forming of agreements on various matters.
I Emergence of Virtual Worlds

1 The Rise of Virtual Worlds as Seen in Second Life

Since around the end of 2006, Second Life, which is an Internet-based virtual world, has been attracting increased attention. Linden Research, Inc. (called Linden Lab) provides the service in which users log in to a three-dimensional (3D) space on a server through the Internet and enjoy various activities in a virtual space.

A user operates a humanoid character called an avatar to walk around virtual streets and/or within buildings that are created with a high sense of reality and to enjoy chatting with other avatars operated by other users.

At the initial stage, Second Life was often introduced as one of the Massively Multiplayer Online Games (MMOG). However, it is clearly distinct from ordinary games because Second Life does not provide users with any predetermined usage purposes. Online games usually provide a designated scenario or mission (searching for a treasure, defeating an enemy, competing with other users, etc.) at the beginning of the game, and the company operating the game specifies how to act in the world it offers.

In contrast, Second Life does not give users a purpose of “Do this” for participating. Its intent is to simulate the real world on computers. What the users do in this environment is up to the users themselves. This is the reason why Second Life is called a virtual world, rather than a game. Its focus is placed on the development of a “world.” The virtual world as represented by Second Life is also referred to as a “metaverse” by combining the terms “meta” and “universe.”

Users conduct a wide variety of activities in this virtual world. Typical activities include: (1) interacting with other users, (2) experiencing the world, (3) creating things, (4) owning virtual property/land and (5) exchanging/trading properties (Figure 1). The following sections explain each of these activities.

(1) Interacting with other users
A user can interact with other users by manipulating avatars. Specifically, these activities include text-based chatting with avatars located nearby via the Internet and instant messaging between two avatars or between the members of a group for private conversation (real-time message exchange on the Internet).

(2) Experiencing the world
Because a group of 3D objects (solid figures created by the use of computer graphics), rather than mere images, is collectively used to create elements that make up the virtual world (items such as the clothes worn by the avatars and structures such as buildings), the screen offers a high sense of reality. Furthermore, unlike conventional websites where users simply view information within sites, users can control 3D objects. For example, an avatar can open a door and enter a building that is a copy of a historical building, ride in a virtual car and see the car’s interior from within the car.

(3) Creating things
Linden Lab, which operates Second Life, supplies nothing used directly in the virtual world, and users are free to create virtual buildings, products (objects), etc.

Because Linden Lab provides written instructions on how to create objects and no special development tools are necessary, users can continuously create new properties. The copyright of an object created by a user belongs to the user, and the user is free to trade the object. This point is what completely distinguishes the virtual world from an online game, and constitutes a factor in attracting creative users.

(4) Owning virtual property/land
A user can have its own land within Second Life, and can build a virtual house. A company that wants to have a presence within Second Life can purchase land on the unit of an “island (referred to as a “sim;” one sim is managed by one computer).” The amount of this virtual land has been rapidly expanding.

(5) Exchanging/trading properties
Because users are allowed to have ownership rights of virtual properties and land, they can sell and/or buy their own properties and/or land.

For trading, Second Life’s virtual currency, the Linden dollar, is used. The fact that the Linden dollar is exchangeable for US dollars is the major feature of Second Life that has attracted considerable attention.

Figure 1. Second Life’s Usage Screen and Major User Activities

- Interacting: Chats and instant messaging between avatars
- Experiencing: Touching, moving and riding in virtual buildings, products and vehicles
- Creating: 3D objects are combined to create things.
- Owning: Users carry things they created or acquired and own virtual houses and land.
- Trading: Virtual currency is used to trade properties with other users.
The exchange rate as of April 2007 is US$1 = 270 Linden dollars.

As explained above, users not only enjoy an alternative life through their humanoid avatars, but also obtain revenue based on the virtual currency through economic trading by conducting creative activities. Most notably, the revenue that is obtained based on the virtual currency can be exchanged for real economic value, which encourages many creators and entrepreneurs to participate in Second Life. Consequently, the amount of attractive content will increase within Second Life, increasing the appeal of the site and facilitating the participation of more and more users.

Second Life has no doubt brought about a virtual world where users participate and have mutually fascinating experiences. However, what’s more, this world is a place that is equipped with an economic system that brings out the creativity of its users and enables them to stimulate one another through trades among users, while expanding the world itself. The high degree of freedom that people cannot experience in the real world constitutes another feature, bringing in many people and adding vitality to the site.

II Advantages of the Virtual World and Examples of its Use in Business

An increasing number of companies are opening their stores in the rapidly growing Second Life. Currently, in many cases, they are simply opening their virtual stores for the purpose of advertising as the first step. However, the pace at which companies are opening their own shops is somewhat remarkable. If companies are successful in finding ways of using the virtual world that make the best use of the advantages unique to the virtual world and that are different from those of using conventional websites, this expansion is likely to further accelerate.

In an attempt to identify what advantages the virtual world can offer that are different from those of conventional websites, the following sections examine cases of actual usage.

1 A High Sense of Reality Enhances the Value of Experience

The most notable characteristic of the virtual world is a significant improvement in terms of the volume of information provided and the quality of experience as compared to conventional websites.

The virtual object shown at the upper part of Figure 2 is the virtual car, the “Nissan Sentra,” that is provided for the test course of Nissan cars within Second Life. Nissan distributes this virtual car free of charge to Second Life users. An avatar (user) can actually ride in and drive this car. As this car is created with nearly the same size as that of a car in the real world, a user can see the interior and confirm the expanse of the field of vision while riding in the car.

In addition, a user can open the door and turn on the lights. Furthermore, multiple avatars can ride in and drive the car. On the conventional website (shown at the lower part of Figure 2), the use of the Flash software that enables the handling of multimedia content such as sound, image and video via a web browser has made it possible to see an image of the car interior by rotating it 360°. However, the Flash video is essentially no more than showing pre-taken photos. In contrast, Second Life enables users to change the levels of their eyes and to peer into the inside of the car from the outside. Enabling
users to freely change their perspectives is a unique feature of the virtual world.

2 Real-Time Interaction Facilitates the Sharing of Experience

Another feature of the virtual world, which can be described as the “simultaneity of experience,” is that real-time interaction with other users is possible (Figure 3). With respect to conventional portal sites such as Yahoo! and Google, which are used by many people, the user views the screen alone and does not interact with other users viewing the same screen on a real-time basis.

In contrast, in the virtual world, users (via avatars) get together and can simultaneously experience videos and events, during which users can chat with other users and jointly participate in activities.

An example of making use of such a feature of the virtual world is its application to distance learning at universities, etc. During distance learning in the virtual world, students gather at a virtual lecture hall and have their avatars seated. A prerecorded lecture is called from the website and shown on the screen of the lecture hall via streaming delivery (video transmission via the Internet). While viewing the lecture video, students can discuss the content with other students and/or ask questions of the instructor on the podium.

The use of the virtual world enables the creation of a status in which it is as if all users are having the same experience in the same location without being conscious of where they actually are in the real world. Through such an experience, users can enjoy a high sense of presence and simultaneity that they cannot have with conventional websites. In addition, users become acquainted with one another and exchange opinions, which will increase their satisfaction and encourage them to visit the virtual world again. As a result, it is fair to conclude that the sharing of these experiences improves the value of the place itself.

3 Freedom in Creating, Owing and Exchanging Value Increases the Worth of a Virtual Place

The content created by a user is called UGC (user generated content). In many virtual worlds, users are permitted to freely create, own and exchange UGC.

As stated in Chapter I, all users can generate new goods and buildings in the virtual world without the need to install special software, which gives rise to a new creation cycle in which users participate and which serves as a successful factor in attracting more and more users by increasing the appeal of the site.

The virtual currency circulated among the users in the virtual world also encourages them to demonstrate creativity. In particular, the existence of virtual currency such as Second Life’s Linden dollar, which is exchangeable for real-world currencies, brings about compensation for the creations of talented creators and facilitates the circulation of attractive content.

Many virtual worlds provide all users with a means of creating content and also provide virtual currency as a means of settlement for the circulation of such content. This is a new feature that was not available with conventional websites. Some companies joining Second Life ask its residents (users) to design virtual products and buildings by paying with virtual currency. They incorporate such ideas in their virtual land and/or buildings. These companies are now seeking ways in which such mechanisms as virtual currency and UGC can be used effectively to facilitate user participation and to tap user needs.

Figure 3. The “Sharing of Experience” Enabled by the Virtual World

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III Expanding Virtual Worlds

1 Virtual World’s Increasing Population

Linden Lab launched the prototype version of Second Life in 2003. Subsequently, as shown in Figure 4, the number of users remained at a level of several tens of thousands up until 2005. In January 2006, however, the number exceeded 100,000 persons. Since May 2006, when Newsweek reported the emergence of a billionaire in a virtual land trade at Second Life, the number of users started to increase rapidly. As of the end of June 2007, Second Life had more than 7.5 million users. Because this figure represents the number of avatars, the number of actual real-world users was estimated at around 3.76 million as of April 2007. The number of users participating from Japan is estimated to be 240,000, which account for 3.38 percent of all users.

Because this figure represents the number of avatars, the number of actual real-world users was estimated at around 3.76 million as of April 2007. The number of users participating from Japan is estimated to be 240,000, which account for 3.38 percent of all users. The rapid growth of the user base all over the world is eye-opening. Currently, participation in Second Life requires the use of a PC with high graphic performance. Therefore, not everyone can easily participate in Second Life. Even with such a restriction, Second Life has been showing a high growth rate. This high pace of expansion suggests that when PC performance is further enhanced in the future, the number of users who can participate will increase, which is highly likely to accelerate the expansion of scale.

2 Expansion of the Virtual World Economic Bloc

With the increase in the number of users, the scale of economic activities through virtual currency has also been expanding rapidly. Figure 5 shows the growth of the total money supply of the virtual currency, called Linden dollars, which is used within Second Life for trades. For shopping in the virtual world, a user first procures virtual currency by using a real-world credit card. Accordingly, the more the number of users participating in Second Life increases and the more economic activities are vitalized, the more will US dollars flow into the virtual world.

According to Figure 5, since around November 2006, the total money supply of Linden dollars has increased sharply. The total money supply as of April 2007 was about 2.6 billion Linden dollars. Because the exchange rate at that time was US$1 = L$269, we can estimate the market size as being about US$9.55 million. This market size will no doubt expand as the virtual world population increases in the future.

Backed by such an increase in the number of users and the accompanying expansion of market size, we see
the stably increasing presence of an “economic bloc” that was artificially developed. Such an expansion of the virtual world spurs companies to participate in this world for expanding their businesses. At the same time, the US government has suggested the possibility of taxing the economic activities within Second Life. As such, relationships with the real-world economy are becoming topics of research.

IV Virtual Worlds Moving towards the “Multiverse” Era

1 Virtual Worlds Appearing One after Another

While so far I have used Second Life as an example for analyzing the process toward the growth of the virtual world, various other virtual worlds are now emerging. In the US, “There.com,” has been operating a similar virtual world as that of Second Life since 2003, and already has more than 500,000 users. This growing trend can also be seen in Japan. Since the spring of 2007, projects of developing virtual worlds targeting Japanese have been launched one after another (Table 1). It is true that Japanese feel somewhat reluctant to use virtual worlds that are built in other countries such as Second Life because of language barriers and avatars (character design) that do not look like Japanese. In addition, some people have pointed out that annoyances attributable to the excessively high freedom that is available constitute barriers.

To overcome such barriers, most of the emerging virtual worlds targeting Japanese are trying to build an original world highlighting features that are not available in existing virtual worlds, such as providing designs familiar to Japanese, ensuring communication with a sense of security, and building a virtual world imitating actual life in Japan.

This trend is not limited to Japan. A similar phenomenon can also be seen in China, which has a plan to provide services targeting Chinese by making use of software to build a virtual world available in Europe and the US. For the time being, we will see virtual worlds being developed for each country in response to a wide variety of needs.

2 Advent of the “Multiverse Era”

In the coming one to two years, we will see newly emerging virtual worlds chasing after and competing with Second Life in acquiring users. Beyond such competition, however, we will see even greater changes (Figure 6 shows the development phases of virtual worlds moving towards the multiverse era).

The largest change we can predict is the arrival of an era when anybody can build a virtual world that only a limited number of people can create now. Multiple virtual worlds designed for meeting specific needs will be built and users will use them according to their specific needs.

Table 1. Virtual Worlds Targeting Japanese Being Launched One after Another

<table>
<thead>
<tr>
<th>Name</th>
<th>Operating company</th>
<th>Features</th>
<th>Startup date</th>
</tr>
</thead>
<tbody>
<tr>
<td>S! Town</td>
<td>SoftBank Mobile</td>
<td>Mobile phones are used to access this virtual world designed to provide a place for communication.</td>
<td>October 2006</td>
</tr>
<tr>
<td>Splume</td>
<td>Splume</td>
<td>Users can freely develop 3D spaces and can connect with those created by other users.</td>
<td>March 2007 (beta service)</td>
</tr>
<tr>
<td>Cyber MEGACITY – Tokyo Zero</td>
<td>SBI Robo, Beyond C, Archive Gate</td>
<td>This virtual world aims to connect economic activities via virtual currency with real-world financial transactions</td>
<td>Planned for 2007</td>
</tr>
<tr>
<td>meet-me</td>
<td>Co-Core (a company jointly established by transcosmos, Sankei Shimbun and From Software)</td>
<td>This virtual world reproduces the city of Tokyo and aims to provide a place that can be used safely by eliminating content that is contrary to public order and morals.</td>
<td>Planned for 2007</td>
</tr>
</tbody>
</table>

Figure 6. Development Phases of Virtual Worlds Moving towards the Multiverse Era

- **Beginning of virtual worlds**: Recognizing virtual worlds, setting up a platform for value creation.
- **Spread of virtual worlds**: Emergence of multiple metaverses (multiverses), increase in value within virtual worlds.
- **Evolution of virtual worlds**: Diversification of virtual worlds, spread of virtual worlds operated by individual companies/communities.

- Support for participation in virtual worlds, creation of virtual shops and virtual products.
- Tie-up with existing websites and corporate systems, providing marketing expertise.
- Seamless communication platform, reuse/porting of objects, exchange of virtual currency.

Virtual Worlds Moving towards the “Multiverse” Era
purposes. Nomura Research Institute (NRI) calls such a situation the “advent of the multiverse era.” The term “multiverse” stands for “multiple metaverses.”

We believe there are two factors that usher in the multiverse era. The first factor relates to the emergence of “virtual world platform vendors” that sell the actual mechanism to build virtual worlds and support companies to build their own virtual worlds.

For example, Makena Technologies, which operates There.com, provides services to build a customer’s original virtual world by customizing its virtual world There.com for its customers’ needs. Actually, MTV, a cable television network started in the US, is offering its original “Virtual Laguna Beach” based on There.com’s virtual world platform.

Virtual Laguna Beach is a virtual world based on the Laguna Beach TV program that MTV broadcasts in the US. In this virtual world, users control their avatars to walk around the streets of the TV program’s stage, to listen to music and view motion pictures that are related to the TV program offered by MTV and to participate in live events.

In addition to There.com, many vendors offer platforms to build a virtual world chiefly in the online 3D game industry. We predict that the number of companies offering services by building their own virtual worlds based on a platform provided by such vendors will increase.

The second factor that is thought to accelerate the multiverse trend is the move toward the development of open source software for virtual world platforms. As if stimulated by the success of Second Life, multiple projects have been launched to develop open source server software that comprises virtual worlds to build original virtual worlds.

Linden Lab, which operates Second Life, also announced the possibility of releasing open source server software within a few years. With open source servers, there are ample possibilities that consumer and/or citizen groups respectively build their own virtual worlds as places for communication and/or collaborative work, in addition to companies offering virtual worlds as part of their profit-making activities.

The increase in the number of virtual worlds will bring about a variety of changes. Even now, when the number of virtual worlds is limited, various conflicts, discrepancies, etc. have been happening among users having different senses of value and/or different purposes for participation. In addition to whether pornographic content is permitted, these complications include the coexistence of companies that want to provide services and users who do not want the participation of such companies.

In the multiverse era, however, users can select a virtual world according to their specific purposes. If necessary, a user or a company can build a new virtual world on its own. In this sense, the emergence of multiverses will serve as new development platforms for virtual worlds.

On the other hand, however, because users can participate in multiple virtual worlds, the time spent in any one virtual world is inevitably shortened, which may cause unexpected incidents such as discrepancies in communication and/or the dispersion of virtual currency or virtual goods purchased in the virtual world.

V Emergence of Multiverses Brings about New Technologies and Businesses

As we move toward the multiverse era, the issue that must be overcome is to realize a seamless flow of “persons (identities), objects and money” among multiple virtual worlds. In technical terms, this can be described as securing interoperability among multiple virtual worlds. In pursuit of this goal, we predict that new technologies as well as a wide variety of associated business opportunities will emerge.

1 Seamless Communication among Multiple Virtual Worlds

When Internet users register in multiple virtual worlds, the time that they can spend in each virtual world is limited. Therefore, a person who has logged into a virtual world is unable to talk with people in other virtual worlds. In a sense, the places of communication are dispersed among multiple worlds, and a person’s existence is divided into pieces.

While the emergence of multiverses causes such communication problems, advances in information technology will promote the development of technologies and services to resolve such a problem. One such example would be a relay service for communication in which a user logged into Second Life could chat with an avatar in There.com.

Actually, Second Life is now beta testing voice chat (via headsets) among avatars. Before this test, Linden Lab signed a partnership agreement with a company providing voice communication services for online games based on its VoIP technology (enabling voice communications by using the Internet rather than telephone lines). This company had originally been providing voice communications supporting multiple games. If, based on this technology, communication is enabled between Second Life and other virtual worlds, the opportunities to use virtual worlds will be significantly expanded.

We also predict that seamless communication will become possible between not only different virtual worlds but also between virtual worlds and the real world.
Figure 7 is a screenshot of MPK20, a virtual workplace under development by Sun Microsystems. MPK20 is an experimental environment where employees who are teleworking away from the head office and other employees organically use a virtual space as their workplace.

MPK20 features a linkage between the virtual world and the real world. In Figure 7, avatars gathered in the virtual world are shown in the foreground of the screen and a real office conference room is shown at the back of the screen. If this type of communication, which is called “mixed reality,” were realized, virtual worlds would serve as places for business communications beyond the current usages as services for consumers. The MPK20 project also involves the testing of other possibilities assuming the use of virtual worlds connected with the real world such as the collaborative writing of office documents.

Efforts to develop services to enable communication that transcends the boundaries between virtual worlds and between virtual worlds and the real world will bring about a wide variety of business opportunities that combine virtual worlds with an array of technologies, such as IP telephony and video conferencing, in addition to the software of virtual worlds.

2 Financial Activities in Virtual Worlds

As users enjoy communication and various activities in virtual worlds, economic values such as virtual currency and virtual land will inevitably be accumulated in the respective virtual worlds. If their activities extend over multiple virtual worlds, their assets might also need to be transferred in accordance with their actions. Some venture companies have already started to support these transfers of virtual assets in the form of currency.

The only recognized means of currency exchange provided by Linden Lab in Second Life is the issue of checks to exchange Linden dollars for US dollars. However, beside such formal service, some companies have started to offer services to exchange Linden dollars for other currencies such as euros and yen. It is highly likely that services will start to transfer the currency used in a virtual world to that in other virtual worlds without exchanging it to real-world currency. In Japan, NetMile, which provides a point service, has already announced its plan to start a service to exchange Linden dollars for NetMile points.

If the circulation of economic value by transcending the boundaries of different virtual worlds becomes a reality, there is a fair chance of the start of financial businesses in the virtual worlds, such as asset management using exchange rate differences and management services for the virtual currencies themselves. Actually, as shown in Figure 8, a virtual stock exchange and a virtual bank that use virtual currency have already appeared in Second Life.
VI Legal Issues to be Resolved for the Evolution of Virtual Worlds

The number of users of virtual worlds has been increasing and new virtual worlds have been emerging one after another. Nevertheless, the current situation has not yet reached the stage where ordinary Internet users participate in virtual worlds. Therefore, difficulties among residents have not yet become serious.

However, in the process of economic growth, discussions are needed on the issue of systems including laws for using virtual worlds safely as a life/business infrastructure.

The most fundamental matter relates to legal jurisdiction, that is, which country’s laws are applicable to a virtual world. About ten years ago when the Internet became publicly available and a vast amount of information began to flow around the world, the very same concerns were raised.

In the virtual world, people interact, humanoid avatars “live” and goods and services are provided. Furthermore, we can also predict the emergence of completely new service content and formats including those that do not exist in the real world. To facilitate a sound evolution of virtual worlds, we must keep our attention on discussions about the key issues of virtual worlds.

What most users are interested in is virtual currency. In the real world, the government of a nation is where the responsibility for currency lies, and international frameworks are in place if any problems occur. However, virtual currency is electronic data that is traded on a web server provided by an operating company, and its legal nature and security are still unknown.

Partly due to this ambiguity, an answer cannot be easily formulated to, for example, a question of what is the value of real estate acquired by a company in the virtual world as an asset in terms of financial accounting in the real world. This issue might be an unexpectedly profound problem if we imagine the era where multiple metaverses emerge and people and goods flow freely.

In addition, as the economic sizes of the virtual worlds expand, new services will appear, such as banking services and securities transactions based on virtual currencies, as explained in Chapter V. This situation will present a number of problems that must be resolved such as the matter of licensing such businesses. Actually, Ginko Financial, a bank for handling virtual currency transactions within Second Life, suddenly ceased operation in August 2007, eliciting much public discussion on how to treat virtual assets within a virtual world. Discussions are also necessary for most legal fields such as the Criminal Act, Criminal Procedure Act, etc., to say nothing of the Act for Intellectual Property Rights and the Antitrust Act.

The resolution of these problems is no doubt essential for the expansion of virtual worlds. This is because if progress is made on discussions and then on forming a consensus regarding legal systems, safe and sound virtual worlds can spread, where many more people will gather and economic transactions will easily be implemented.

However, to the question of whether virtual worlds will cease to expand if we are unable to provide such solutions, the answer is “no.” It is an undeniable fact that the Internet world has developed so far even while facing a variety of problems. In this field, in the transitional period after the emergence of a new technology or service until a “correct” way of using that new technology or service is accepted by the public, it is not uncommon that such new technology or service is used in an unstable manner. Nevertheless, it is also true that even while experiencing temporary confusion, we have been seeking a new order.

In the short term, virtual worlds may also follow a similar path. However, the strong desire that we want to have an alternative life even in a virtual world comes from the extremely deep thinking of human beings. This is the very reason why interest in virtual worlds has been increasing so rapidly, and we project that this technology and market will achieve major growth.

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As a leading think tank and system integrator in Japan, Nomura Research Institute is opening new perspectives for the social paradigm by creating intellectual property for the benefit of all industries. NRI’s services cover both public and private sectors around the world through knowledge creation and integration in the three creative spheres: “Research and Consulting,” “Knowledge Solutions” and “Systems Solutions.”

The world economy is facing thorough structural changes led by the dramatic growth of IT industries and the rapid expansion of worldwide Internet usage—the challenges of which require new concepts and improvement of current systems. NRI devotes all its efforts to equipping its clients with business strategies for success by providing the best in knowledge resources and solutions.

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