

## White Paper

# Ricoh's Unified Communication brings Renovation to Collaboration

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Diverse businesses have improved competitive power by introducing diverse work styles. The workforce is now dispersed, restricted by neither time nor place. Because of this dispersion, various systems have appeared to support collaboration. One such system is the video conference system. This document clarifies new value brought about by the unified communication that Ricoh proposes.

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# 1. Changing Communication Environment

## 1.1. Diversified Work Styles

Business organizations are significantly revising conventional work styles. These changes resulted from the intensified competition that followed business globalization, accelerated business speed, pursuit of labor productivity, and transitions in value standards. Beyond that were societal demands to reduce environmental impact and create a work-life balance. By adopting new work styles, business enterprises achieve improved efficiency and productivity. At the same time, they will achieve a more satisfied workforce, e.g., a free address system with no need for a fixed desk, teleworking, childcare and nursing-care, satellite offices to alleviate the load of remote commutation, or work-sharing to mutually share job opportunities .

As we all know, diversified work styles became possible thanks to the expansion of IT technologies, such as high-speed network environments and the proliferation of media-rich mobile devices. With this new environment, everyone can access information anytime and anywhere, and they can do it quickly through high-speed optical networks and wireless LAN (Wi-Fi). Convenience of use has also increased with the appearance of mobile devices, such as netbook PCs, tablets, and smartphones, which are easy to use and comparable in performance to conventional desktop PCs. Cloud services have also been expanded.

### **Main advantages of work style diversification**

- Reduced cost and time for commuting and business trips
- Reduced administrative and maintenance expenses for office space and equipment
- Global business without worrying about time-zones
- Accelerated business, faster decision making and improved labor productivity
- Improved job-retention by the adoption of working arrangements adapted to individual convenience
- Reduced carbon-dioxide (CO<sub>2</sub>) emission by cutting down on travel

## 1.2. Group communication becomes complex

With the diversification of work styles, it becomes difficult to promote the close communication needed for collaboration work. Much effort is required for a dispersed workforce to adjust schedules and prepare for meetings and conferences. Frequent phone calls and emails are needed to make adjustments and much time and money are needed for people to meet in one place. A one-hour conference often entails a two-hour commute plus another three hours for adjustments.

Beyond that, the domain of collaboration work has expanded. More agile business configurations are coming to fore, such as cross organizational task forces, new business promotion together with associated companies or with companies in other industries, and the development of new products or services in collaboration with the customer. Communications have spread over divisions, companies, districts and national borders. A holistic view of communications to fit the dispersing business environment is crucial.

Accelerated business speed requires fast decision making. When everyone is in the same division or company where they can easily assemble, immediate negotiation to reach a decision is possible. But in a dispersed environment, decisions are often late. A new communication environment is needed to promote high-level collaboration, including decision making.

### **Main subjects in group communication**

- Call a face-to-face meeting increases load on dispersed workforce
- Schedule adjustment for a conference often takes more time than the conference
- Expanded participation of external, cross-industrial, and overseas collaboration workforce is difficult
- Fast response to opportunities needing quick decisions, most often the case today, is difficult

## 1.3. IT integration of communication tools to face the challenges

With growth of the IT environment, the use of network communications tools has also expanded. Many companies are expanding their communications base (infrastructure) to include video conferencing, web-conferencing and social media, such as SNS,

Twitter, and video sharing services. These are beyond established tool groups like groupware, bulletin boards, FAQ sites, WiKi, email, and instant messaging (IM). The conventional tools group that includes white boards, electronic white boards, and projectors are also being adapted to IT, which has significantly increased convenience.

The move to achieve highly productive collaboration that systematically integrates communication tools has started. We call it unified communication. This concept makes it possible to combine the most optimal tools that correspond to the scale of communication, and allows the dispersed workforce unrestricted communication with each other, whether inside or outside the office.

We often hear, however, that unified communication, although introduced, is not used because of limitations or numerous restrictions, which make it hard to master the functions. Common complaints are that operation is complicated, much effort is needed and cost for maintenance and control is high. Under continuously dispersed and extended collaboration work, the scale and range of communications also continually change. Many systems are unable to respond to such dynamic changes, which may also have increased the load on manipulation, operation or control. To bring unified communication to reality, it must be easy to introduce, capable of responding flexibly regardless of scale and area, easy to manipulate, operate and control, and be able to deliver high quality at low cost.

**The main advantages of introducing unified communication**

- It releases you from the complications that go with diversified equipment and systems, with timely adaptation to the communications scale.
- It improves the workforce satisfaction as it enables them work in and outside the company or at home.
- Customer satisfaction improves as prompt action becomes possible with enhanced cooperation between relative departments and customers.

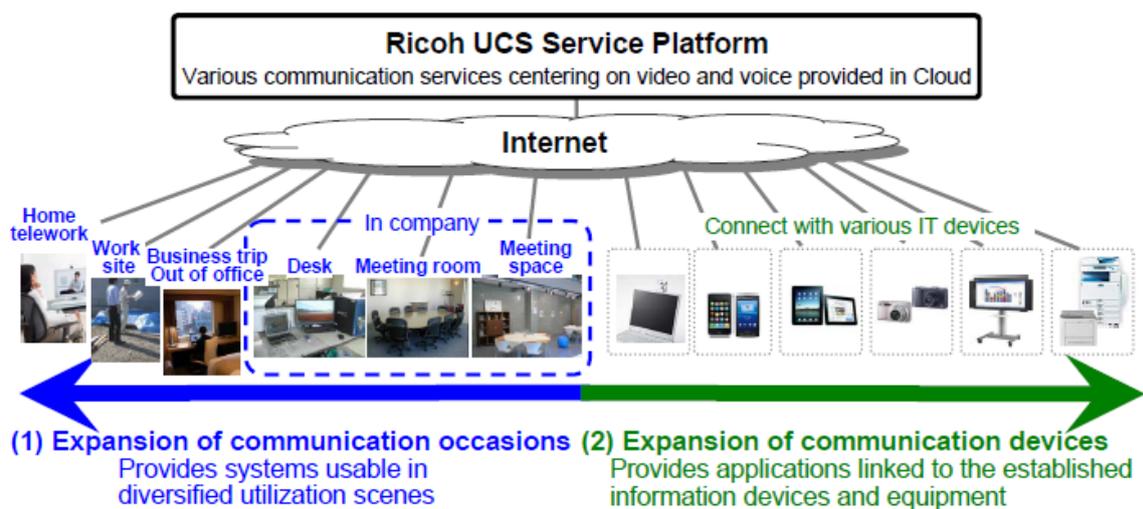
**Points when introducing unified communication**

- Can the system be used across the full scale of actual communications?
- Are the necessary functions and features available; conversely are they excessive or redundant?
- Is there an added load on manipulation, operation or control?

## 2. Ricoh's Concept of Unified Communication

### 2.1. Customer-oriented unified communication possible only from Ricoh

Ricoh's approach to unified communication focuses on achieving success by enabling quick decision making. This is done by increasing the density of group communication regardless of the team scale (number of members), place, or time. Comprehensive know-how cultivated through many years of communication assistance in the office is efficiently employed. Established systems based on IT technologies like email, instant messages (IM), Internet telephony (VoIP: Voice over Internet Protocol), video conferencing, and web-conferencing, meet IT literacy requirements. Ricoh also integrates the tool groups used in real communications applications under a new network environment, beyond the boundaries of the IT tool group. Ricoh offerings include projectors, media boards, and handwriting tablets that everyone can use in a convenient network environment. This enables natural group communication that comes close to face-to-face meetings. Ricoh's unified communication is not an integration of IT tools; rather, it is a reconstruction of real group communication using IT.



Provides communicating system unifying diversified information (document, text, handwriting inputs, etc.) focusing on video and voice, and the Cloud services to interconnect them

### Ricoh Unified Communication

Ricoh's concept of unified communication, holding the line against conventional concept, is as follows:

- At any convenient time
- In a vacant space
- Easily and at will
- With anyone and with varied devices

### **2.1.1. At any convenient time: at any time**

As business speed increases, so does the value of time. Although commutes and business travel have no intrinsic value, the workforce must bear the time and cost; worse yet, they bear the physical and mental load. Although time saving is an important problem connected directly to management cost in a business environment where high labor productivity is demanded, there is a limit to the time savings that can be achieved when the workforce must travel. The realistic solution for a dispersed workforce is to promote the effective use of time. In addition, as globalization progresses, overseas communication in different time zones increases, making onsite time management even more important. Business enterprises must concentrate more on effectively using non-productive time such as waiting, travel time and time-zone differences. Ricoh will change the time saved to productive time for collaboration work.

### **2.1.2. In a vacant space: anywhere**

A conference requires time and effort to prepare, regardless of scale. Business tasks increase but with no accompanying increase in support staff. Which means that scheduling, reserving the conference room and various other sundry tasks fall on the shoulders of workforce members. Companies need to pay more attention to the mental load on busy workforce personnel who have to take time out of their regular jobs to prepare. One time consuming task in preparing for a conference is the reservation of facilities and equipment. The participants' convenience and availability of a conference room must be taken into account; preparation may then be complicated even further if a room with video-conferencing equipment is needed. Moreover, with a dispersed workforce, there is also the load of travel to and from the place. It may be akin to wagging-the-dog if physical constraints with facilities or equipment increase the workforce load to such an extent that delayed decision making results in lost business opportunities. Conferences should be handled in such a way that workforce members need not travel. That is the unified communication Ricoh will provide.

### **2.1.3. Easily and at free will: anyone**

In the 1990s when the IT environment began to spread quickly, knowledge and experience were required to access information, and information disparity (the digital divide) was a worry. With progress, however, many tools to ease information access appeared. Today, the IT environment is within the reach of all. Commoditization in consumer hardware has taken over user interfaces—if you've learned the interface for one device or application, you've pretty much learned them all. Systems for esoteric applications, however, which have undergone a unique evolution like video conferencing, are still not easy to handle. Special knowledge is frequently needed, not only at hookup time, but also when operating or making adjustments during a conference. We must often ask for help from the local workforce when a conference is held. Of course, the same load is generated on the other end as well. There may be the cases where the system is seldom used because operation is troublesome—the expensive system sits idle. Ricoh considers it important that communication can be begun casually with simple operation.

### **2.1.4. With various devices: with anyone**

A conference should not be merely a field of report, correspondence or counseling for the dispersed workforce. It must be a field of high-level decision making that is difficult to reach with only text or sound. For that reason, an open environment is needed, where anyone can quickly contact another when necessary, allowing members to exchange opinions and share the conclusion, regardless of time or place. The field must allow members to communicate with each other as if they are sitting across from each other in an office, regardless of the kind of network environment or type of devices being used. Stagnation of communication is a vital problem connected directly to stagnation of business for dispersed workforces. Business readiness must not be disturbed because the network environment or devices are down. Ricoh provides versatility, seamlessly linked with various devices.

## 3. Ricoh Unified Communication System P3000 Leads Collaboration Work to Success

### 3.1. Visual communication renovates business process

Ricoh's unified communication solves the problems of the past: dependence on the room, high initial cost, and complicated manipulation. Ricoh solves the problems from the view point of customer side. It achieves high-density communication, providing the key to collaboration work. Ricoh, with rich experience in providing a communication environment centered on office document, has now begun to move toward achieving innovative unified communication; it will allow anyone to hold high-density communication casually with anyone and with varied devices at any time and anywhere. As the first step, Ricoh has released a portable type video conferencing system "Ricoh unified communication system P3000 (P3000)" in the summer of 2011 in Japan.

|  | Telepresence  | Video conference room                                    | Portable type   | Web-conference                                 |
|--|---|--|---|--|
| Image of connection  | Connecting bases                                      | Connecting bases   | Connecting groups   | Connecting individuals                         |
| # of participants  | about 5-20 persons                                    | about 5-20 persons                                       | about 3-5 persons   | about 1-2 persons                              |
| Place  | Dedicated conference room (Corporate boardroom, etc.) | Dedicated conference room                                | Meeting corner, Meeting space                                   | Own desk                                       |
| Initial investment (per base)                              | 10 mil. to 100 mil. yen (including construction cost) | about 1 mil. to 5 mil. yen (including construction cost) | hundreds of thousands yen (or no initial cost as rented).       | About 30,000 yen. (camera/speaker/microphone)  |
| Monthly running costs (Connection charge, maintenance fee) | about tens of thousand yen (Maintenance fee)          | about tens of thousand yen (Maintenance fee)             | about tens of thousand yen (Connection charge, maintenance fee) | about tens of thousand yen (Connection charge) |

#### Unified communication Ricoh proposes

##### 3.1.1. Small lightweight and user-friendly visual communication system

The P3000 is a small visual communication system as light as a netbook PC. It can be used anywhere. Merely power it up and specify the destination through the Internet. And it can connect to up to 20 bases. High quality visual communication is available not only in your company, but also in other companies, at home, in satellite offices and at overseas business trip destinations. With its super-wide-angle lens and

high-definition image sensor, the system can also flexibly respond to conferences of various scale. A conference with the P3000 progresses as if you are meeting in the office, sharing materials without stress—all made possible by Ricoh's unique new technologies.

### **3.1.2. Realization of high-density communication to accelerate collaboration work**

The P3000 is especially powerful with small-scale group communication. In collaboration work, mobility and productivity increases as the group scale becomes smaller. Until now, there were no tools to enable a dispersed workforce to achieve highly concentrated communication in a small group. In cases where it is difficult to hold a face-to-face meeting, until now the video conference or the web-conference was used. The video conference needs a facility and equipment, thereby increasing cost. The participants' load is about the same as attending a face-to face conference, as members must travel to the video conference facility. Web-conferencing has become prevalent recently, but the number of participants is limited and there is always the problem of unsatisfactory or spotty communication quality. The P3000 responds to situations where mobility is needed and flexibility is required regarding the number of participants or bases.

### **3.1.3. Outstanding extendability to increase communication quality**

The P3000 is designed to deliver its functions efficiently in a network environment. And communication quality can be increased by having it act wirelessly in concert with Ricoh's "PJ Series" projection system. The P3000 makes still more diversified work styles possible as it enables anyone to achieve dense communication with anyone, anytime, anywhere—all with little effort. With its quick & rich visual communication system, the P3000 provides the optimal collaboration for all in the dispersed workforce.

## **3.2. Technologies supporting Ricoh unified communication system P3000**

Ricoh unified communication achieves an easy to use, stress-free and media-rich environment of realistic sensation with the following new technologies.<sup>1</sup>

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<sup>1</sup> Refer to the technology introduction "Unified Communication System" of the Ricoh Web site for technical details. <http://www.ricoh.com/about/company/technology/tech/039.html>. M2M is the

- M2M (Machine-to-Machine) transmission control technology
- New generation video coding technology SVC
- Cloud service platform

### **3.2.1. M2M transmission control technology: Connectable anywhere**

Until now, the number to identify (IP address) the communication equipment using the Internet changed every time the network environment changed, which happens when moving from one location to another. To reconnect, the identifier allocation (name resolution) operation was needed at every move. To eliminate such intricacies and to create an environment that allows anyone to communicate anywhere at any time, Ricoh built a new M2M (Machine-to-Machine) platform using the M2M communication technology and cloud technology. This is a transmission control technology for connecting network equipment; it was achieved using an original protocol developed by Ricoh. With the M2M transmission control technology, connection between equipment on the IP network and name resolution are made automatically. That means workforce members can begin communicating with other members no matter where they are. Group communication is possible anywhere in the world an Internet connection exists. It's as easy as using a portable cellular phone, with no worry about connection constraints.

### **3.2.2. Adoption of new generation video coding technology SVC: Vision of realistic sensation**

An important subject when using video conferencing is the question of video quality. Video turbulence or delay puts stress on conference participants, and obstructs communication. These problems are caused by changes in transmission speed or band frequency. This kind of quality degradation remained with the video encoding technology until now. Ricoh, with its focus on media rich unified communication, considers video quality an important subject that influences communication quality. Toward that end, the company adopted video encoding standard specifications H.264 SVC<sup>2</sup> (Scalable Video Coding). SVC controls the resolution, frame rate and regulating ratio of video to the optimal conditions that correspond to changes in communication traffic. This enables stabilized video to be exchanged in both directions even under an

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technology to compress (code) and restore (decode) video information to and from digital data to allow treatment on a network.

<sup>2</sup> SVC is the technology standardized by ITU-T and ISO/IEC in November, 2007 as "H. 264/AVC Annex G."

unstable network environment like Wi-Fi. Ricoh's persistent pursuit of quality has continued through the many years the company has provided image associated equipment. SVC also has efficient multipoint video composition processing functions, which enables smooth communication between multiple bases.

### **3.2.3. Cloud service**

The concept of values has greatly changed "Utilization from Possession" and "Product plus Service." The diffusion of cloud services brought about a transition in the market. In the past, the introduction of unified communication required a structure using expensive leased lines that guarantee QoS<sup>3</sup> (Quality of Service). QoS is not guaranteed for IP networks using the Internet, but the Internet is ubiquitous—in offices, homes, airports, or cafes, because it is inexpensive. The service for Ricoh unified communication is the high quality and superbly reliable cloud services, which can treat various communication platforms, such as video, voice, and text, regardless of network scale or kind of equipment. It allows users to receive communication services of the same quality anywhere on earth—multiple business locations, satellite offices, homes, migration destinations, etc. It allows you to concentrate on collaboration work to create value, without wasting time on network operation and control.

### **3.3. Real group communication also to the world of IT**

Ricoh will continue providing unified communication devices, systems and applications of outstanding usability as observed in the P3000. Our concept focuses on "high-density communication anytime, anywhere, and with anyone with little effort." We understand the true desire of our customers because we have continually been concerned with customer workflows and business processes as we provided office equipment, system, and services over the years. We will create solutions that are customer-oriented, not because we have hardware or systems, but because Ricoh is oriented toward unified communication to renovate collaboration work using an approach apart from existing hardware and applications. Count on us for the evolution of future unified communication business.

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<sup>3</sup> QoS is the technology to secure a zone in order to process a specific communication preferentially in an IP network.

### **Ricoh Unified Communication System P3000 also Demonstrated Power in Emergency**

The Great East Japan Earthquake and Tsunami occurred March 11, 2011 when the P3000 was under development. Although the P3000 was still in the prototype stage, as an extension of in-house testing, it was put into operation at multiple bases in Ricoh. Although most public telephone networks were disconnected immediately after the Great Earthquake, the Internet was still alive. We were able to do rehabilitation work by coalition with integrated production departments and other production bases, thanks to P3000, receiving video reports from bases that suffered damage. Although several months were expected to pass before operation could resume in stricken areas, almost all bases had resumed full-scale operation in only a little less than a month. While facing this unprecedented risk, we were able to secure the business continuity plan (BCP). This success proved that the P3000 delivers superbly reliable and quality output under any environment.