



Technology White Paper

Rich Presence: A New User Communications Experience

Instant Messaging (IM) emerges as a powerful communication tool, not just for teenagers but also in the enterprise. After enjoying the early benefits of the “raw” presence IM provides, we are now beginning to leverage the power of presence in combination with telephony and collaboration tools. Most “information workers” today routinely use a computer and a telephone. Implementing rich presence in the enterprise infrastructure enables people to improve their communication experience by using these two devices in a coherent manner, with fluid interactions between both. This not only delivers more productivity (faster interactions) but also more creativity in the way users manage incompletely formalized business processes or find missing data. Rich presence will become the “dial tone” of the 21st century.

J. Jachner, S. Petrack, E. Darmois, T. Ozugur

RICH PRESENCE: A NEW USER COMMUNICATIONS EXPERIENCE

Rich presence brings additional flexibility and creativity to the management of user interactions, making it a prime example of how user-centric technologies deliver a competitive advantage.

The communication interface that enterprise workers use daily has changed regularly over the years. Some of these changes, such as Dual Tone MultiFrequency (DTMF) dialing for telephones in the 1960s and the World Wide Web (WWW) for the Internet, have generated entire new businesses and driven fundamental changes in the way individuals behave. The latest evolution of the communication interface is linked to the emergence of *Instant Messaging* (IM) and *Presence*, which have similar potential to instigate change and create new business opportunities.

IM has been made popular by teenagers using simple clients, like those from Microsoft and AOL. One key reason for IM's success is that it offers a simple way to display the presence of "buddies" (i.e. the contacts registered in the IM client). Presence in IM is real-time information on the relationship of a user (a buddy, a colleague) to one or more devices and/or networks (on-line, off-line, busy, etc).

Even this simple form of presence alters the way in which users communicate by introducing a more interactive and less formal approach (even than e-mail!). Nevertheless, despite its appeal, the acceptance of presence and IM in enterprises depends on key issues being resolved, such as ease of use, security and accuracy.

Two concurrent approaches are being used to develop the role of presence. One is to combine presence information from computers and telephones to integrate voice and computer communication tools. This has started, an example being the Instant Collaboration System (ICS) that Alcatel has acquired from eDial, and which is being integrated into several products. The other is the extension to *Rich Presence*, which is the aggregation of presence from many sources and the intelligent management of user and enterprise preferences. Together, these approaches will expand users' communication potential and broaden the range of instant decisions they can make.

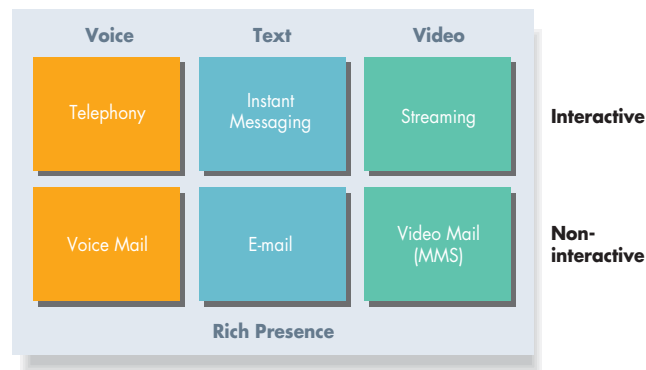
■ Presence and the New Communication Interface

The range of communication tools available to enterprise users has widened over the years from basic telephony, to e-mail with the rise of the personal computer, and now with the rise of always-connected broadband to new interactive tools: currently IM, with video starting to emerge. This has created business opportunities for *collaboration*, that is, for groups of users to communicate on-line and share information, create and edit documents, etc. Today, *on-line collaboration* is the fastest

growing sector of communication in both numbers of users and numbers of minutes. This trend is largely driven by the increasing number of geographically distributed teams that need to work together.

However, the growth in communication media and supporting devices, and in the huge amounts of information they generate, is creating communication chaos for the user. Better integration of media and devices is therefore required: presence will play a central role in this unification, as illustrated in *Figure 1*.

Fig. 1 Rich presence unifies interaction across media and devices



Rich presence offers opportunities and raises issues for the users and managers in an enterprise. On the positive side, it provides users with accurate real-time information about their contacts: there is no longer a need for "are you busy?" messages. It also enables them to change more readily to the most suitable communication mode (see *Figure 2*) and reduces communication overload.

Expected benefits for the enterprise are increased employee productivity (less time lost in missed interactions) and increased group productivity (groups can instantly generate the information or make the decision required for the continuity of a business process).

However, presence raises users' concerns about ease of use ("I do not want to learn to use a new set of complex tools"), privacy ("I do not want to be under permanent scrutiny") and time management ("I do not want to be invaded by unsolicited interactions"). There are concerns about security for the enterprise (company information must

remain confidential) and about enterprise policy enforcement (employee behavior must comply with company rules). There is also a need to bridge unrelated “silos” of presence coming from various sources. All these concerns are addressed by the emergence of a *rich presence infrastructure*.

This infrastructure must support basic key services, like transparency, availability, scalability and serviceability, which are already offered by the current solutions. In addition, providing rich presence will require the *ad hoc* solutions developed for “raw” presence to be turned into more sophisticated architectures.

■ Presence, SIP, Voice: Multimedia, Multi-party Collaboration

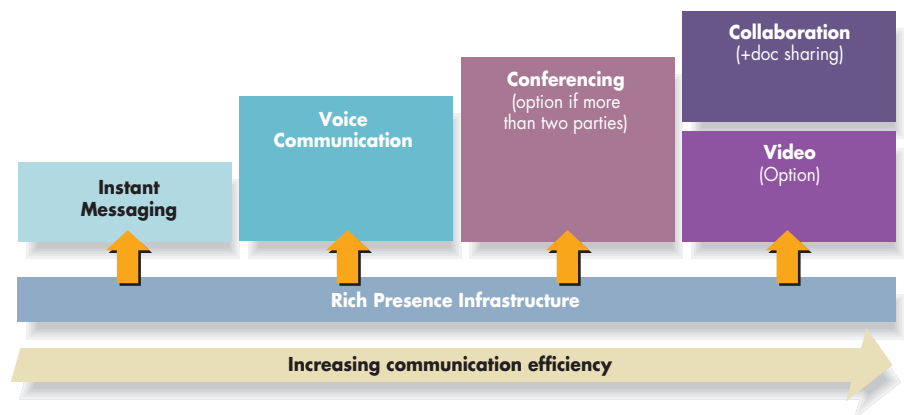
In essence, *collaboration* is a multimedia communication: users need to share, edit and create information, and must communicate with other users simultaneously in order to do so. Numerous communication media are available (voice, video, text IM, etc), as well as many types of information (text, graphics, presentations, spreadsheet information, computer desktop application data, etc). Clearly, it is cumbersome, if not impossible, to use the voice channel of a phone call to determine what capabilities and tools each participant has. For example, one participant might have had calls routed to a mobile phone, and will therefore have no tools available. From the collaboration point of view, this user’s presence is that he or she has *nothing* available but a voice channel.

To complicate matters, this kind of collaboration might be required at any time. If users need to start up a special “meeting tool” to get their work done with remote colleagues, collaboration will always be relegated to a niche, scheduled existence within the enterprise workflow.

Two technology components are needed to resolve this dilemma: a simple and intuitive Graphical User Interface (GUI) for communication, and a signaling protocol that can transport rich presence information along with the communication and collaboration signaling. The “rich GUI” for communication must be available at all times, but not be intrusive. It must let users see quickly and simply what modes of communication and what multimedia tools are available to them and to other users, both before and once a call is in session. The signaling protocol needs to be lightweight enough to scale up as densely as phone call signaling in speed and volume, while being rich enough to handle a dynamically changing set of people and terminals. Fortunately, both problems have field-proven solutions.

Numerous user interface metaphors have been tried. The most common are a “meeting-table” (with avatar-like users sitting around a table), and a “tools” approach (which presents a dashboard of tools from which a user can choose). Both are poor choices. The idea of a “web meeting” is flawed as most knowledge workers list meetings as the least productive part of their work. Consequently, the idea of reproducing a meeting room on-line is doomed to fail. Also, most people do not think about what tools they need; they simply use them!

Fig. 2 Presence (availability) of multiple media facilitates the initiation or escalation to multimedia



Ironically, the essential element in successful collaboration is to make it go away. People don’t want to go to meetings or collaborate or use tools – they simply want to get their work done, and need to communicate with others to achieve this. The most popular way to locate others and communicate when they are already on-line is via instant messaging. The IM interface is a list of “buddies”, or contacts, with an indication of their presence; this is a simple and natural way to implement all real-time communication. This user interface metaphor is immediately understandable to anyone who might already be using IM, and is easily expanded to include a rich set of presence indicators.

The ICS GUI is based on this simple idea. It shows the user all the complex multi-dimensional presence information in a way that is so intuitive that users don’t realize that it is “rich”. For example, in tests, users are often happy to discover that they can see if someone is “on the phone” even if they are off-line, but they don’t think of this in terms of two-dimensional presence. *Figure 3* shows a sample screen shot of an ICS user’s console.

Users have a rich set of communication choices at their disposal: they can phone, exchange instant messages, participate in conferences, share applications, etc. These choices are made clear by the simple presentation of rich presence information. In a sense, IM becomes a sort of “interactive Caller ID”, making it possible to work with remote on-line colleagues, rather than just schedule a web meeting.

A great deal of user-centric technology is inherent in many of the implicit choices displayed on the GUI. In a sense, such GUIs represent the next evolution in dialing technology, forty years after touch-tones revolutionized the telephone user interface.

On the signaling front, ICS makes extensive use of the Internet Engineering Task Force (IETF) Session Initiation Protocol (SIP) standard. SIP was designed with the needs of multimedia multi-party sessions in mind. In fact, the use of SIP for two-party telephony was first suggested by one of the authors (Scott Petrack), because two-party audio-only calls seemed to be a trivial degenerated case of collaboration. Similarly, the use of SIP for IM and presence signaling stemmed partly from the similarity of general asynchronous notification signaling to asynchronous telephone call state notifications (ringing, disconnected), and partly from the fact that communication / collaboration signaling has the greatest need for presence notifications.

SIP is naturally multi-party, multimedia and mobility aware. Most importantly, it is an Internet-friendly protocol, which integrates with all the other IETF protocols. Consequently, a SIP-based infrastructure, such as ICS, can ensure that collaboration applications no longer have a “niche” status, by integrating them naturally with other connected Internet user applications.

Evolution to an Intelligent, Rich Presence Infrastructure

Current presence-enabled systems have proved the value of presence in modeling user availability and facilitating multimedia interactions. The initial deployments have also provided an insight into issues of user experience, and concerns about privacy, security and administrator policy. The next generation of systems is enhancing basic presence systems with a richer presence model together with intelligent processing to address these concerns. *Figure 4* illustrates the functionality of the Intelligent Rich Presence (IRP) infrastructure.

Rich presence expands the basic set of presence states, such as *active*, *on-line*, *off-line*, *on the phone*, *in a meeting*, *out to lunch*, etc. Proposed IETF standards to extend the presence states (Rich Presence Extensions to the Presence Information Data Format; RPIDS) enrich the basic set with states that are applicable to the broad consumer market (e.g. *steering* to denote the user is driving). Rich presence states also need to be flexibly redefined to adapt to individual vertical markets or enterprise requirements, for example, *on a customer call*, *on the road* and *working remotely*.

“Rich presence expands the basic set of presence states, such as active, on-line, off-line, on the phone, in a meeting, out to lunch, etc... Rich presence states need to be flexibly redefined to adapt to individual vertical markets or enterprise requirements, for example, on a customer call, on the road and working remotely.”

Rich presence aggregates user information from multiple devices, networks and applications to provide a more comprehensive and accurate view of user status. For example, *on the phone* is an aggregate of all a user’s voice devices: desktop, mobile, remote office and Voice over Internet Protocol (VoIP) terminals.

Fig. 3 A simple, intuitive user interface clearly shows a wealth of aggregated presence information

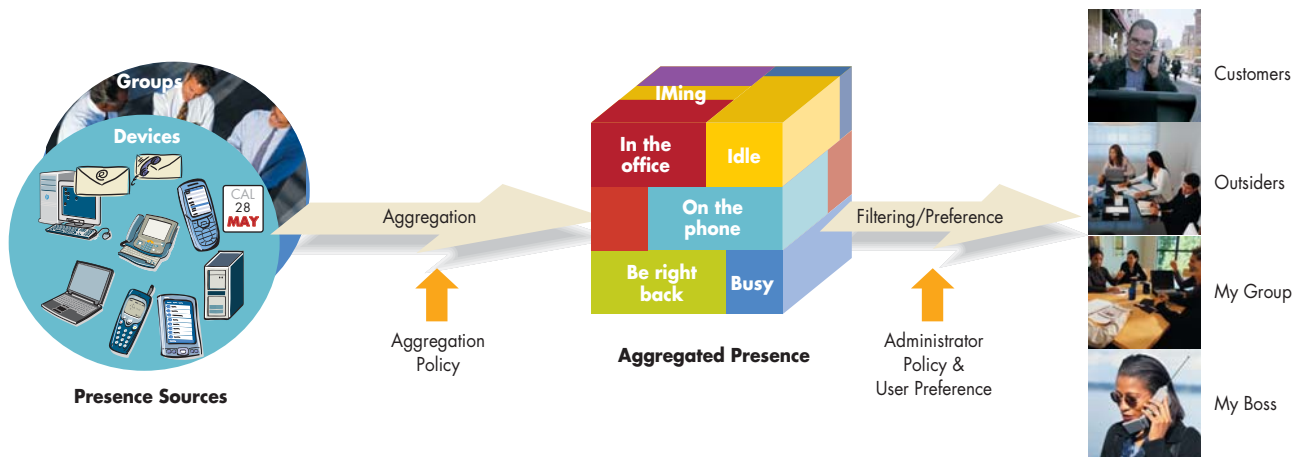


Applications such as IM and calendar provide important user status information, such as *on-line* or *in a meeting*.

Multimedia presence is aggregated to a composite user availability, tailored to individual or enterprise preferences. For example, a user engaged in a voice interaction might accept an IM interaction, but if also using video would prefer to be *busy* for any other interactions to avoid appearing inattentive. The traditional definition of “busy”, which leads to redirection to an assistant or messaging system, needs to evolve to take account of multimedia systems.

Intelligent aggregation automates user presence so that users don’t have to manually set and update their presence

Fig. 4 Intelligent rich presence: aggregation, policy and preference filtering



state. The transparent aggregation of presence from all available sources is essential for widespread usage.

Aggregation of presence is also useful when a communication does not have to be answered by a specific individual, but by any member of a group, for example, at a travel agency or in a customer support team. The aggregation of presence information from several users into *group presence* might display information such as the current waiting time for service, and even the skill levels of the available service agents (e.g. 5 minutes for voice service in English, 8 minutes for voice service in French, immediately by IM, etc), thus facilitating more effective interaction with the group.

Rich presence information must also be distributed intelligently as user and administrator acceptance depends on the implementation of privacy, security and policy. For example, an administrator might impose security restrictions on the distribution of presence information imposing a presence “fire-wall” to protect the enterprise. An enterprise might impose presence distribution policies based on hierarchy; a manager might be allowed to view his staff’s presence, while the viewing of executives’ presence is restricted. An employee concerned about privacy might prefer to restrict viewing of his or her presence, but this could be overridden by the employer’s requirements during business hours.

Intelligence is also required in how subscriptions to presence sharing are managed, beyond the current model of mutual consent between “buddies”. The mutual consent model is vulnerable to *spam*: for example, a relentless stream of invitations to be a buddy of “ACME Hair Replacement” would degrade user satisfaction with a presence system. Spam detection and control need to be implemented. Alternative subscription models might be better suited to enterprise needs, such as administrator-defined distribution groups with appropriately restricted

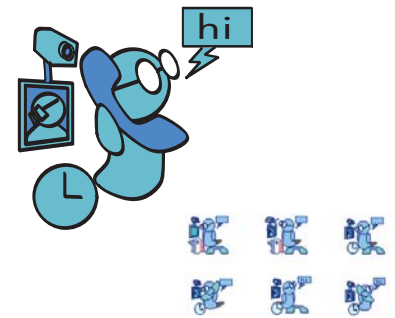
“Rich presence information must also be distributed intelligently as user and administrator acceptance depends on the implementation of privacy, security and policy.”

presence, whether the group includes all the enterprise employees, or is a specific work group formed flexibly as needed.

As presence information becomes richer, the ergonomic aspects of the display become vital for user acceptance and usage. Complexity is to be avoided, even though the presence system is becoming more sophisticated. Human-like forms or avatars intuitively convey user status. *Figure 5* shows a human icon being used to display aggregated multimedia presence. Furthermore, as intelligence is applied to selectively filter and distribute presence information to different users, the presence application needs to provide intuitive feedback as to what is being distributed and to whom.

Rich presence enables media blending in both the setup and interaction phases. Setup is facilitated by rich presence. For example, if rich presence indicates voice and text capability, the initiator might

Fig. 5 Use of a “human icon” to display rich presence information, including multimedia status (voice, IM, video) and even location or time zone



IETF Presence Standards

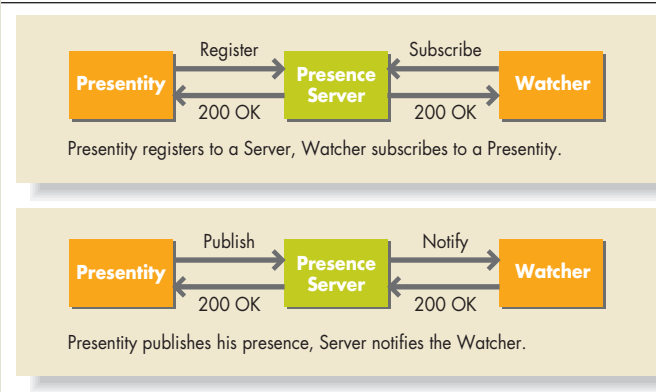
Under the umbrella of IETF, the working group on SIP for Instant Messaging and Presence Leveraging Extensions (SIMPLE) is focusing on applying SIP (RFC 3261) to the suite of services collectively known as instant messaging and presence. The requirements of a presence infrastructure are defined in RFC 2779, and a presence framework in RFC 2778. A new SIP method, known as *publish*, is defined in RFC 3903 for publishing presence state. The *publish* mechanism allows a user to create, modify and remove the user’s state in the presence server, which manages the presence state for the user. RFC 3856 describes the use of SIP for subscriptions and presence notifications.

Figure 6 illustrates a simple presence system. A *presentity* (an entity that provides presence information that is to be stored and distributed) registers with a presence server. A *watcher* subscribes to the presence server to receive the presentity’s presence information. When the

presentity publishes this information to the presence server via a *publish* message, the server notifies the watcher via a *notify* message.

Interoperability between different presence servers is an important issue addressed in several RFCs, but not yet deployed in practice. RFC 3859 defines common semantics and data formats for presence information, referred to as a Common Profile for Presence (CPP), to facilitate interoperability between presence services. Moreover, RFC 3863 defines the Presence Information Data Format (PIDF) as a common presence data format for CPP-compliant presence protocols,

Fig. 6 Illustration of presence framework



allowing presence information to be transferred across CPP-compliant protocol boundaries without modification. As the presence framework is standardized, the applicability of presence is expanding from being simply an enabler for instant messaging in first-generation presence-enabled systems to being a rich presence enabler for any communication.

provide a *call subject* text, such as “Urgent we discuss contract today”, to enhance the recipient’s willingness to respond. Furthermore, the recipient might provision an away message which responds to incoming interaction requests with an appropriate

“Rich presence enables media blending in both the setup and interaction phases.”

text message, such as “I’ll be unavailable until 2.00 pm.” Alternatively, the recipient might provision a video clip to be played to callers who have video display presence. For example, a travel agency could show a clip of the hotel, beach and sunsets at the destination on promotion this week to customers with on-line PCs who are on-hold waiting to speak to an agent.

Once the interaction has been established, rich presence facilitates multimedia enhancements, such as text for passing notes between participants, application sharing for more efficient collaboration, and desktop sharing for remote support. It is easier to set up video conferences, as well as to escalate to video based on mutual capability and the agreement of the participants. The integration of all available media (even on different devices) into a single rich presence view enables participants to escalate (or de-escalate) to the most suitable medium.

Conclusion

Some have referred to presence as the “dial tone of the 21st century” since it is a pervasive and fundamental part of the emerging communication infrastructure. From the user’s viewpoint, presence will replace the dial tone indication of *network availability* by the more pertinent indication of *desired user(s) availability* before a communication is initiated.

The first instance of this new infrastructure is evident in the ICS system, which makes it simple for on-line knowledge workers to locate one another and communicate by the most suitable and useful means in order to resolve issues and complete work more quickly. By combining on-line presence with telephone presence in a simple yet meaningful way, and by integrating collaboration tools into the simple phone call experience, users can leverage what they are already doing (IM and

phone calls) to waste less time. ICS makes a measurable difference to the productivity of users who are on-line and near a phone by using SIP to realize a seamless, integrated infrastructure that combines the Private Branch Exchange (PBX) with on-line communications.

The ICS solution is integrated in the Alcatel offering, in particular in the Alcatel Omni-Touch Unified Communications application suite. Its powerful SIP and presence server combined with a GUI using the IM metaphor described earlier are the main elements of *My Teamwork*, the conferencing and collaboration application.

Alcatel is using rich presence to enhance ICS with presence from multiple sources to model availability more accurately, and intelligence to address concerns about privacy, administrator policy and security.

Addressing user preferences relating to presence distribution is a first step on the road to intelligent communication agents, which would model the role played by human assistants in managing enterprise communication. Thus “Intelligent Rich Presence” is a key ingredient of the future communication infrastructure, integrating the management of multimedia sessions of voice, text, video and application sharing.

Presence: Communicated state information such as a user’s availability and capability to communicate.

Instant Messaging (IM) enables users to communicate in real-time over the Internet with other on-line users; it is analogous to a telephone conversation but using text-based communication. Typically, small iconic pictures (called ‘emoticons’ or ‘smilies’) and HTTP hyperlinks can be included in IM as well as plain text.

Collaboration refers to a set of people that are using telephones and IP-connected applications to perform some task together.

Typically, it involves a group of people who are using audio, video, and/or data conferencing tools to produce a set of finished documents.

Reference

- [1] Ph. Lasserre, D. Kan: “User-Centric Interactions beyond Communications”, *Alcatel Telecommunications Review*, 1st Quarter 2005, pp 67-72 (this issue).

Bibliography

- [1] RFC 2778: “A Model for Presence and Instant Messaging”.
- [2] RFC 2779: “Instant Messaging / Presence Protocol Requirements”.
- [3] RFC 3856: “A Presence Event Package for the Session Initiation Protocol (SIP)”.
- [4] RFC 3859: “Common Profile for Presence (CPP)”.
- [5] RFC 3863: “Presence Information Data Format (PIDF)”.
- [6] Draft-Ietf-Simple-Rpid-04: “RPID: Rich Presence Extensions to the Presence Information Data Format (PIDF)”.
- [7] RFC 3903: “Session Initiation Protocol (SIP) Extension for Event State Publication”.
- [8] RFC 3428: “SIP Extension for Instant Messaging”.



Jack Jachner is Senior Director of Intelligent Rich Presence, one of Alcatel’s internal ventures, in

Plano, Texas, USA.
(Jack.Jachner@alcatel.com)



Emmanuel Darmois is Vice President, Unified Interactions Management, in the Alcatel Enterprise

Solutions Business Division, in Colombes, France.
(Emmanuel.Darmois@alcatel.fr)



Scott Petrack is Divisional CEO of the eDial division of Alcatel, in Boston, Massachusetts, USA.

(Scott.Petrack@alcatel.com)

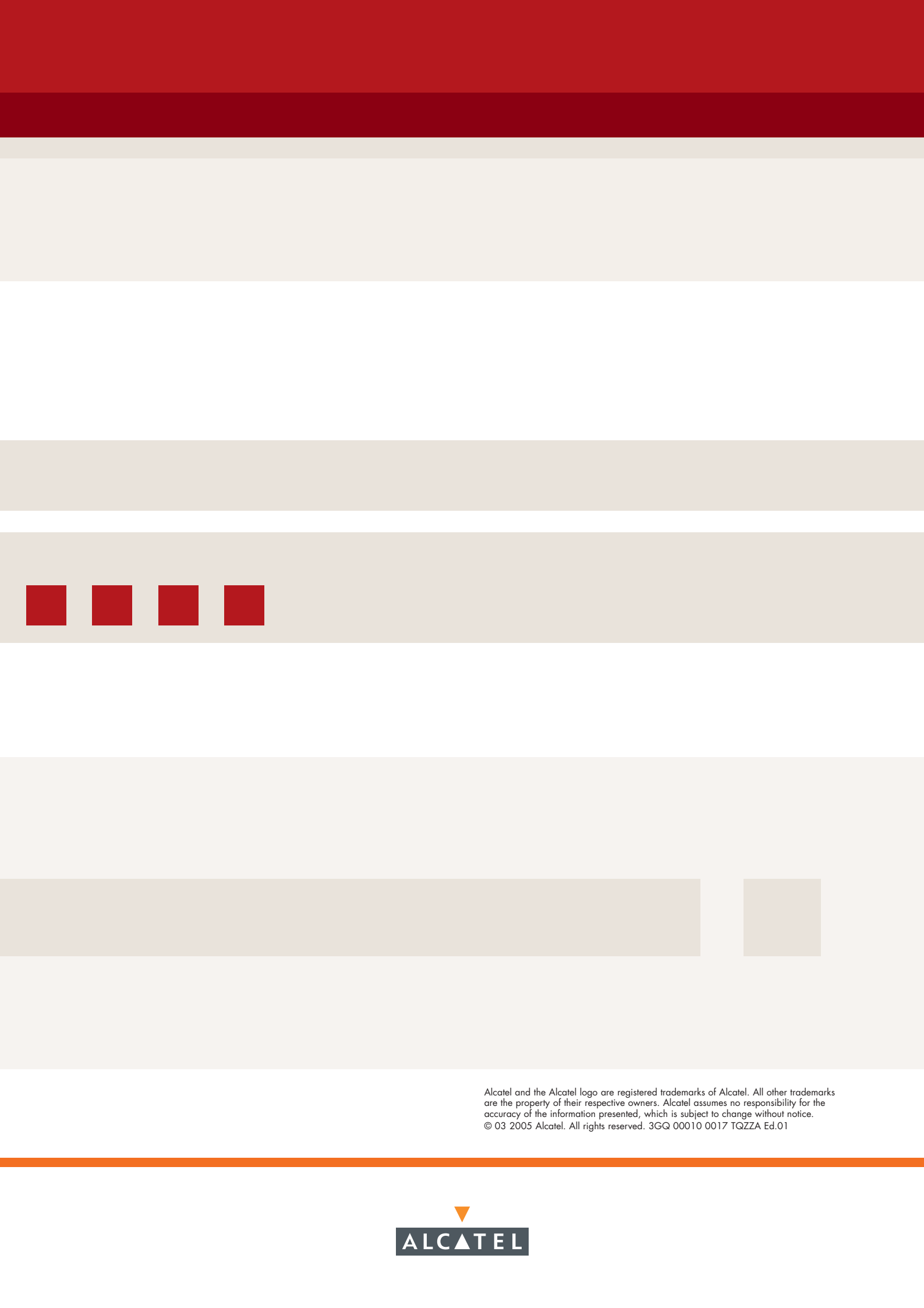


Tim Ozugur is Manager of Intelligent Rich Presence, one of Alcatel’s internal ventures, in Plano,

Texas, USA.
(Tim.Ozugur@alcatel.com)

■ Abbreviations

DTMF	Dual Tone MultiFrequency
GUI	Graphical User Interface
ICS	Instant Collaboration System
IETF	Internet Engineering Task Force
IM	Instant Messaging
IP	Internet Protocol
IRP	Intelligent Rich Presence
PIDF	Presence Information Data Format
RPIDS	Rich Presence Extensions to the PIDF
SIMPLE	SIP for Instant Messaging and Presence Leveraging Extensions
SIP	Session Initiation Protocol
UC	Unified Communications
VoIP	Voice over Internet Protocol
WWW	World Wide Web



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