

Magic Quadrant for Web Conferencing

Gartner RAS Core Research Note G00158950, David Mario Smith, Jeffrey Mann, 29 July 2008, R2824 08042009

The Web-conferencing market continues to be marked by both consolidation and fragmentation, as vendors prepare for shifting market realities, driven by end-user requirements and technical developments.

WHAT YOU NEED TO KNOW

As collaboration tools continue moving into the infrastructure, we expect Web conferencing to follow suit. This will put the incumbent e-mail/instant messaging (IM) vendors in a stronger position than those without an established presence in the broader collaboration market. Web-conferencing products are predominantly delivered as a hosted service and, typically, sold into lines of business. IT departments in many organizations are beginning to factor in Web-conferencing decisions alongside e-mail and IM. In 2007, IBM added hosted Web-conferencing support to its on-premises Web conferencing in Lotus Sametime through its acquisition of WebDialogs. And Microsoft introduced on-premises Web conferencing in Office Communications Server (OCS) 2007. These vendors are the incumbent e-mail infrastructure providers in most enterprises.

On-premises deployments will increase, which will cause an increase in hybrid deployments, as on-premises solutions will often be deployed alongside existing hosted implementations, leading to an increase in hybrid use cases. Enterprise decisions on Web conferencing have to align the types of meetings to be supported and the number of participants (internal, external or both) with the appropriate deployment option for specific meetings.

The overall collaboration market has been quite fragmented, with major vendors continually seeking to integrate collaboration services on a core platform. Enterprises should develop their strategy for Web conferencing as a component of their overall collaboration strategy from an infrastructure perspective, to maximize integration possibilities with other platforms such as learning management systems and business applications such as CRM.

STRATEGIC PLANNING ASSUMPTIONS

By 2011, Web conferencing will be available to 75% of corporate users as a standard facility, alongside e-mail, presence, calendaring, IM and other collaborative facilities.

By 2011, 40% of all Web conferences will be operated using on-premises deployments.

By 2011, 60% of companies using Web conferencing will acquire this capability as part of a larger suite of applications.

MAGIC QUADRANT

Market Overview

Web-conferencing products support real-time collaboration interactions over a network between participants in multiple meeting formats. The main cost benefit is measurable savings on business travel, especially when participants are in various geographic locations. When meeting participants cannot travel because of security or other individual or environmental reasons, Web conferencing is used to facilitate important meetings that would not be possible in person. Increasing environmental concerns and initiatives for "green" IT are also leading organizations to Web conferencing. Some vendors are beginning to provide green calculators to enable companies to track the amount by which travel was reduced and the carbon dioxide emissions prevented by not traveling. The market for Web conferencing will grow at a compound annual rate of 23% through 2011.

Real-time collaboration support is becoming a primary requirement, after e-mail, for efficient enterprise communications. Web conferencing not only allows people to collaborate virtually and share information, it also provides facilities to record and capture formal or ad hoc collaborative interactions for later tracking and reuse. As organizations develop their collaboration strategies from a technical and people perspective, Web-conferencing penetration rates will increase because of the cost savings and productivity improvements Web conferencing brings.

The following is the minimum set of functions that needs to be included in a Web-conferencing product:

- **Presentation delivery:** All participants can see an online presentation (usually delivered by Microsoft PowerPoint), which is under the control of one participant designated as the presenter.
- **Desktop or application sharing:** All participants can see, but not directly interact with or modify, the presenter's desktop or a specific application on the presenter's system. Some Web-conferencing products deliver presentations by sharing a presentation application, rather than using embedded presentation facilities.
- **Text chat:** Participants can exchange real-time text messages with other participants or the presenter using an IM-like interface.
- **Shared whiteboard:** A meeting participant can add annotations – that can be viewed by all – by typing or drawing on a specific whiteboard application, or on top of a presentation or shared application window.
- **Basic security:** Encrypted data transfer and password-protected meetings.
- **Remote control:** Useful for technical support. It gives one participant control of applications or the desktop on another system.

Figure 1. Magic Quadrant for Web Conferencing



The Magic Quadrant is copyrighted July 2008 by Gartner, Inc. and is reused with permission. The Magic Quadrant is a graphical representation of a marketplace at and for a specific time period. It depicts Gartner's analysis of how certain vendors measure against criteria for that marketplace, as defined by Gartner. Gartner does not endorse any vendor, product or service depicted in the Magic Quadrant, and does not advise technology users to select only those vendors placed in the "Leaders" quadrant. The Magic Quadrant is intended solely as a research tool, and is not meant to be a specific guide to action. Gartner disclaims all warranties, express or implied, with respect to this research, including any warranties of merchantability or fitness for a particular purpose.

© 2008 Gartner, Inc. and/or its Affiliates. All Rights Reserved. Reproduction and distribution of this publication in any form without prior written permission is forbidden. The information contained herein has been obtained from sources believed to be reliable. Gartner disclaims all warranties as to the accuracy, completeness or adequacy of such information. Although Gartner's research may discuss legal issues related to the information technology business, Gartner does not provide legal advice or services and its research should not be construed or used as such. Gartner shall have no liability for errors, omissions or inadequacies in the information contained herein or for interpretations thereof. The opinions expressed herein are subject to change without notice.

Increasingly, Web-conferencing products are being augmented by more-advanced, optional features, such as:

- **Integrated public switched telephone network audio:** Users can dial into an audioconferencing bridge that is linked into the Web conference. Participants can “see” who is speaking and presenters can control individual phone connections (for example, they can make them mute or give presenter rights).
- **Integrated voice over Internet Protocol (VoIP) audio:** To remove or reduce the need for telephone-based audio, some products can use a PC’s speaker and microphone (or a headset) to enable participants to listen to a presentation or – more rarely – to speak and listen.
- **Videoconferencing:** Some products can show live video feeds of participants or the presenter, which come from a desktop Web camera or a dedicated video installation.
- **File sharing:** Participants can exchange files during the conference.
- **Application/document sharing:** Participants can write directly into the presenter’s application or document.
- **Advanced security:** Extra features that are required for sensitive meetings. These features include: participant-level passwords to prevent sharing, forcing new passwords for every meeting; the ability to block anonymous users, limiting participants to those with specific IP addresses; and automatic purging of online documents after the meeting.
- **Archiving:** Audio and interactive portions of the conference can be recorded for later viewing. Participants can “sit in” on the conference if they were not able to attend in real time. Archiving mandated by regulatory audit trail requirements is on the rise.
- **Feedback:** Participants can indicate whether they want the speaker to slow down, speed up, answer a question and more.
- **Polling:** A quick survey of participants can be conducted to answer a specific question in real time.
- **E-learning:** Specific functionality to support online and blended learning scenarios, such as participant testing, teacher monitoring of student desktops and learning management system integration.
- **Mobility:** Specific support for mobile phones and PDAs.

Users have three deployment options for these applications:

- **Software-as-a-service (SaaS) model** – Web-conferencing software runs on the vendor’s (or a partner’s) systems on a multitenancy basis, and the user accesses the capabilities over the Internet (see Note 1).
- **On-premises model** – Installs software on systems owned and operated by the enterprise.
- **Blended model** – Combines the SaaS model and the on-premises model.

Typical internal everyday meetings are run using on-premises facilities, and unusually large meetings use software running on external servers. The SaaS model has been the predominant model in the Web-conferencing market and has led to the ease of entry of many smaller vendors into this space.

Note 1

Software-as-a-Service Definition

Gartner defines SaaS as “software that’s owned, delivered and managed remotely by one or more providers.” The provider delivers an application based on a single set of common code and data definitions. The application is consumed in a one-to-many model by all contracted customers at anytime on a pay-for-use basis, or as a subscription based on use metrics.

Market Definition/Description

Web-conferencing products are typically sold into lines of business first, then they may be picked up by the IT department for more strategic deployments. With the two dominant e-mail and IM vendors, IBM and Microsoft, fully in the market, Web-conferencing services are becoming a related additional requirement as organizations begin to evaluate unified communications (UC) and collaboration offerings.

Typically, companies use a separate telephone bridge for audio in conjunction with Web conferences. Most of the vendors in this Magic Quadrant have their own VoIP capabilities, which eliminates the need for sending out separate bridge telephone numbers and IDs. But bandwidth is a concern and can affect audio quality. Other important concerns are difficulties provisioning PC accessories (such as headsets), configuring and maintaining them, and being able to bridge VoIP and plain old telephone service for the odd participant who doesn’t have a PC microphone. Increasingly, bandwidth concerns also apply to video. Although there is increased interest in video, use is not very high. Most vendors support video via Universal Serial Bus (USB) Web cams during Web conferences. Adobe may be the best so far for desktop video because Adobe Flash is less intensive on bandwidth.

It’s in the area of VoIP, video, flexible pricing options, integration with learning management systems and other business applications that vendors are looking to differentiate, as this market has matured quickly in the past two years. But the market’s maturity is leading to less differentiation, as newer or lesser known players are just a version away from adding extra functionality. The major differentiation is becoming the viability of the companies.

This Magic Quadrant covers enterprise use of Web conferencing, so we will not address consumer-based vendors, except to say that enterprise vendors offer scaled-down versions of their Web-conferencing services. Examples include IBM’s Lotus Sametime Unyte Share and Adobe’s ConnectNow in beta with limits of two to three participants. Microsoft offers SharedView for the Windows Live consumer market and MeetingSpace in Vista for free. It’s an interesting strategy to “seed” the low end of the market and position the brand.

Inclusion and Exclusion Criteria

For inclusion in this Magic Quadrant, we used the following criteria:

- The product provides at least the minimal functionality described in the Market Overview section.

- The product supports at least five participants. Products that support one-to-one interaction or small groups are generally aimed at the consumer or other specialized markets not covered by this Magic Quadrant.
- The vendor must market the Web-conferencing product on a stand-alone basis, or as a component of a larger collaboration suite that may include presence and IM.
- The vendor must have at least \$10 million in annual revenue from sales of Web-conferencing products.
- Sales and marketing efforts connected with the product are not limited primarily to a particular vertical industry or horizontal process (such as training).
- The vendor must develop and market the primary Web-conferencing product, not resell a “white label” product produced by another company in an OEM relationship. The product can also be the result of an acquisition.

The vendors of the following products are evaluated in this Magic Quadrant:

- Adobe Acrobat Connect Pro.
- Alcatel-Lucent OmniTouch My Teamwork.
- AT&T Connect (formerly Interwise Connect).
- Cisco Unified MeetingPlace and WebEx Web Meeting applications (Meeting Center, Sales Center, Event Center, Training Center and Support Center).
- Citrix GoToMeeting and GoToWebinar.
- Dialcom Spontania Unified Collaboration.
- Elluminate Live.
- Genesys Meeting Center.
- IBM Lotus Sametime Standard and IBM Lotus Sametime Unyte.
- iLinc 10.
- InterCall Web Meeting.
- Microsoft Office Live Meeting 2007 and OCS 2007.

- Netviewer one2meet.
- Premiere Global Services Netspoke Professional.
- Saba Centra Suite.

Added

We have added four vendors to this year's Magic Quadrant:

- Premiere Global Services, which acquired Netspoke in 2005.
- AT&T, which acquired Interwise in 2007.
- InterCall, which acquired Raindance in 2006.
- Alcatel-Lucent, which acquired eDial in 2004 and has had success in the small or midsize business (SMB) market.

Dropped

We have dropped WebEx and WebDialogs from this Magic Quadrant because of their respective acquisitions by Cisco and IBM.

Evaluation Criteria

Ability to Execute

Several factors contribute to the vendors' execution ratings (see Table 1). We evaluated the capabilities of the vendors' products separately for basic and advanced functionality. Because this market includes many small vendors with uncertain futures, financial viability was an important factor. We evaluated pricing in terms of comparative price levels and vendors' flexibility in supporting the kinds of pricing models that customers want (such as concurrent user, named user, per-minute and flat rate). We judged user experience by speaking with our customers who use the product or by calls with users supplied as references by the vendors.

Completeness of Vision

We evaluated the completeness of vision (see Table 2) by looking at user requirements for use and purchasing and how the products align with those. To evaluate vendors' marketing and product strategies, we looked at how they position their products and whether their products adequately address the chosen positioning.

Table 1. Ability to Execute Evaluation Criteria

Evaluation Criteria	Weighting
Product/Service	high
Overall Viability (Business Unit, Financial, Strategy, Organization)	high
Sales Execution/Pricing	standard
Market Responsiveness and Track Record	low
Marketing Execution	standard
Customer Experience	high
Operations	low
Source: Gartner	

Table 2. Completeness of Vision Evaluation Criteria

Evaluation Criteria	Weighting
Market Understanding	high
Marketing Strategy	high
Sales Strategy	standard
Offering (Product) Strategy	high
Business Model	standard
Vertical/Industry Strategy	low
Innovation	high
Geographic Strategy	low
Source: Gartner	

We rated flexibility to support SaaS and on-premises deployment more highly than a strategy of concentrating on one model only. We also evaluated vendors' product innovation and ability to address trends we expect to see in the Web-conferencing market.

Leaders

Vendors in the Leaders' quadrant have achieved significant market share while demonstrating their ability to respond to customers' needs. Leaders have robust, scalable products with a wide range of features, a large installed base, acceptable financial performance and good distribution. Leaders do well today and are prepared for the future.

Challengers

There is only one vendor in the Challengers' quadrant this year. Vendors in this quadrant are characterized by operational excellence or a good standing in the market. But, compared with vendors in the Leaders' and Visionaries' quadrants, their products lack some features or they do not have long-term road maps.

Visionaries

Visionaries typically have an important, unique or well-developed technical capability and provide key elements of innovation that illustrate the future of the market. However, they have not yet developed sales and support capabilities to address or influence the complete market.

Niche Players

Niche Players may have good technology, but are limited by their size, product line breadth, market track record, vertical or horizontal focus, geographic niche or financial circumstances. Some have chosen a niche strategy (for example, regional vendors with a local focus or targeted functionality intended to run on top of, or with, other technologies).

Vendor Strengths and Cautions

Adobe Strengths

- Based on Adobe Flash, the company's Web-conferencing offering can be deployed easily. It has resizable screen displays for users, authoring capabilities and less intensive bandwidth requirements for video.
- Native integration with Adobe Acrobat enables document-centric real-time collaboration with Web conferencing from within the document.
- Adobe's product provides compliance features, with logging and tracking of use and communications.

Cautions

- Adobe has to maintain its focus on enterprise sales execution.
- Its current server support is for Windows servers only.

Alcatel-Lucent Strengths

- Alcatel-Lucent offers integrated, on-premises, carrier-grade audioconferencing and Web conferencing (from its acquisition of eDial in 2004, which included IM and presence) as part of its UC capabilities.
- It has been successful in the SMB market.

Cautions

- Alcatel-Lucent's offering does not integrate with learning management systems.
- Customers typically procure the company's offering as a bundled communications solution and not primarily for its Web-conferencing capability.

AT&T Strengths

- Following the company's acquisition of Interwise, AT&T has rebranded Interwise Connect as AT&T Connect. The product offers on-premises and SaaS deployment models, with a blended option to combine the two in a flexible way.
- It offers converged IP/time division multiplexing (TDM) capability and converged conferencing capabilities, including VoIP, integrated audio bridge, video and PBX integration.
- AT&T's portfolio of options includes TDM and IP voice conferencing services, plus managed audioconferencing, Web conferencing and videoconferencing.

Cautions

- AT&T's portfolio has grown as a result of its acquisition of Interwise. It now has overlapping product lines and it needs to focus on executing with the acquired Interwise product.
- Its product and sales approach is less suited to SMBs.

Cisco Strengths

- Cisco has a strong converged Web-conferencing offering that focuses on UC.
- The company's acquisition of WebEx has given it the leading Web-conferencing product in terms of market adoption.

Cautions

- Cisco has to rationalize its communications and collaboration portfolio, which may lessen the emphasis on MeetingPlace in favor of the acquired functionality in the WebEx product.
- Cisco must gain credibility in the market as a collaboration software company.

Citrix Online Strengths

- Citrix Online focuses on ease of use for its primary SMB market rather than on advanced or rich features.
- Its flat-fee pricing is attractive to smaller companies that want to conduct unlimited meetings and webinars at one set rate.

Cautions

- It does not provide support for advanced enterprise user requirements, such as multiple language versions, video for all participants in a conference via USB Web cams or room-based video system.
- The company's primary focus is on the SMB market; a lack of advanced features will limit enterprise penetration.

Dialcom Strengths

- Dialcom offers advanced functionality with converged VoIP, providing integration with multiple PBX vendors such as Cisco, Avaya and Nortel.
- Its adaptive bandwidth management feature supports better performance and higher-quality video.

Cautions

- Dialcom is a smaller company and will continue to have challenges selling to enterprises.
- Its main market presence is in Europe, but it has slowly increased its presence in North America.

Illuminate Strengths

- Illuminate supports most of the major server and client platforms (such as Windows, Macintosh, Linux and Unix).
- Its core strength is in e-learning, including testing facilities and integration with several course management systems.

Cautions

- The predominant use case is for e-learning.
- Illuminate does not integrate with PBXs or provide support for audioconferencing bridges.

Genesys Conferencing Strengths

- Genesys Conferencing's product is proven to scale in large enterprise deployments.
- Genesys has its own R&D arm and offers customization for larger enterprises.

Cautions

- The company still lacks an on-premises deployment option.
- Market pressure has made Genesys the subject of a tender offer by West.

IBM Strengths

- IBM offers an integrated real-time platform in IBM Lotus Sametime with on-premises IM and Web conferencing.
- It provides native integration with Lotus Notes and integration with Microsoft Outlook.
- Following its acquisition of WebDialogs, IBM now offers a hosted SaaS Web-conferencing service (IBM Lotus Sametime Unyte), which will aid in penetrating the SMB market and further push into non-Lotus-Notes environments.

Cautions

- IBM is a new player in the SaaS market and has not focused much on SMBs.
- There is currently no integration between IBM Lotus Sametime Unyte and the on-premises IM and presence functionality in IBM Lotus Sametime Standard.

iLinc Strengths

- The company provides full integration with multiple learning management products.
- iLinc has added its Green Meter tool, which tracks carbon dioxide emissions prevented, travel reductions made and costs saved by meeting online rather than traveling to meetings.
- It made a strategic move by selling its audioconferencing assets to Premiere Global Services in May 2008 for \$4 million.

Cautions

- iLinc is a fairly small vendor and we expect it to experience some revenue decline with its recent switch to focus on SaaS subscription-based Web-conferencing services.
- It currently lacks integration with Lotus Notes, IM and UC clients, but it does support Outlook, and Web service application programming interfaces are available.

InterCall Strengths

- InterCall bundles its own audioconferencing bridge with its InterCall Web Meeting product from its acquisition of Raindance in 2006.
- It provides event conferencing services, with dedicated specialists helping to set up and manage events.

Cautions

- InterCall resells Microsoft Office Live Meeting 2007, Cisco WebEx Web Meeting applications and other Web conferencing products, as well as selling InterCall Web Meeting and Mshow for event conferencing.
- It does not offer support for multiple languages.
- The company does not provide integration with learning management systems.

Microsoft Strengths

- Microsoft now has two options for business Web conferencing, with Microsoft Office Live Meeting 2007 deployed via a SaaS model and OCS 2007, which now offers on-premises Web conferencing in addition to IM and presence.
- Both of Microsoft's business Web-conferencing products provide deep integration with Microsoft Office and with Microsoft SharePoint as a repository for Web-conferencing content.
- The company's products offer improved video and VoIP support.

Cautions

- The on-premises OCS version supports only the Windows platform for Web conferencing.
- Drawbacks are the new pricing model for Microsoft Office Live Meeting and Microsoft's overlapping conferencing products.

Netviewer Strengths

- Netviewer provides both on-premises and SaaS deployment options.
- Based in Germany, Netviewer has good traction in Europe, which represents most of its customer base.
- It provides added support for Macintosh users.

Cautions

- The company currently lacks support for audioconference bridges, although this is planned for 4Q08.
- Netviewer mainly targets departments and will be challenged targeting enterprises.

Premiere Global Services Strengths

- Premiere Global Services uses its strength as an audioconferencing service provider to build its Web-conferencing business (a result of its acquisition of Netspoke).
- It provides each customer with a Conferencing Hub (a centralized Web site location) to manage all phases of a conference, from premeeting to post-meeting.

Cautions

- Premiere Global Services' offering lacks integration with learning management systems, but this is planned for 2009.
- Macintosh support is not available but is planned for 2009.
- It resells Microsoft Office Live Meeting 2007 and Cisco WebEx Web Meeting applications in addition to its own Netspoke offering.
- It does not support multiple languages for its Netspoke Web-conferencing product.

Saba Strengths

- Saba's Web-conferencing product provides deep integration with its learning application and other learning management systems, such as those from SumTotal and Plateau.
- It provides integration with Blackboard's course management system suite for academic institutions.
- Saba's product has proven strength in virtual classrooms and other e-learning use cases.

Cautions

- While Saba supports Jabber's IM, it does not support other enterprise IM or unified communications clients, such as OCS 2007 and IBM Lotus Sametime.
- Saba has to continue executing on its comprehensive people-centric vision and strategy for unifying collaboration, UC and organizational productivity. It has to focus on integration with an organization's presence engine, tied to identity, which is the key enabling component of the real-time infrastructure.

Vendors Added or Dropped

We review and adjust our inclusion criteria for Magic Quadrants and MarketScopes as markets change. As a result of these adjustments, the mix of vendors in any Magic Quadrant or MarketScope may change over time. A vendor appearing in a Magic Quadrant or MarketScope one year and not the next does not necessarily indicate that we have changed our opinion of that vendor. This may be a reflection of a change in the market and, therefore, changed evaluation criteria, or a change of focus by a vendor.

Acronym Key and Glossary Terms

IM	instant messaging
IP	Internet Protocol
OCS	Office Communications Server
SaaS	software as a service
SMB	small or midsize business
TDM	time division multiplexing
UC	unified communications
USB	Universal Serial Bus
VoIP	voice over Internet Protocol

Evaluation Criteria Definitions

Ability to Execute

Product/Service: Core goods and services offered by the vendor that compete in/serve the defined market. This includes current product/service capabilities, quality, feature sets and skills, whether offered natively or through OEM agreements/partnerships as defined in the market definition and detailed in the subcriteria.

Overall Viability (Business Unit, Financial, Strategy, Organization): Viability includes an assessment of the overall organization's financial health, the financial and practical success of the business unit, and the likelihood of the individual business unit to continue investing in the product, to continue offering the product and to advance the state of the art within the organization's portfolio of products.

Sales Execution/Pricing: The vendor's capabilities in all presales activities and the structure that supports them. This includes deal management, pricing and negotiation, presales support and the overall effectiveness of the sales channel.

Market Responsiveness and Track Record: Ability to respond, change direction, be flexible and achieve competitive success as opportunities develop, competitors act, customer needs evolve and market dynamics change. This criterion also considers the vendor's history of responsiveness.

Marketing Execution: The clarity, quality, creativity and efficacy of programs designed to deliver the organization's message to influence the market, promote the brand and business, increase awareness of the products, and establish a positive identification with the product/brand and organization in the minds of buyers. This "mind share" can be driven by a combination of publicity, promotional, thought leadership, word-of-mouth and sales activities.

Customer Experience: Relationships, products and services/programs that enable clients to be successful with the products evaluated. Specifically, this includes the ways customers receive technical support or account support. This can also include things such as ancillary tools, customer support programs (and the quality thereof), availability of user groups and service-level agreements.

Operations: The ability of the organization to meet its goals and commitments. Factors include the quality of the organizational structure including skills, experiences, programs, systems and other vehicles that enable the organization to operate effectively and efficiently on an ongoing basis.

Completeness of Vision

Market Understanding: Ability of the vendor to understand buyers' wants and needs and to translate those into products and services. Vendors that show the highest degree of vision listen and understand buyers' wants and needs, and can shape or enhance those with their added vision.

Marketing Strategy: A clear, differentiated set of messages consistently communicated throughout the organization and externalized through the Web site, advertising, customer programs and positioning statements.

Sales Strategy: The strategy for selling product that uses the appropriate network of direct and indirect sales, marketing, service and communication affiliates that extend the scope and depth of market reach, skills, expertise, technologies, services and the customer base.

Offering (Product) Strategy: The vendor's approach to product development and delivery that emphasizes differentiation, functionality, methodology and feature set as they map to current and future requirements.

Business Model: The soundness and logic of the vendor's underlying business proposition.

Vertical/Industry Strategy: The vendor's strategy to direct resources, skills and offerings to meet the specific needs of individual market segments, including verticals.

Innovation: Direct, related, complementary and synergistic layouts of resources, expertise or capital for investment, consolidation, defensive or pre-emptive purposes.

Geographic Strategy: The vendor's strategy to direct resources, skills and offerings to meet the specific needs of geographies outside the "home" or native geography, either directly or through partners, channels and subsidiaries as appropriate for that geography and market.