

WHITE PAPER

Driving Mobile Messaging ARPU with Advanced Haptics

Sponsored by: Immersion Corporation

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IDC OPINION

Despite the phenomenal growth of mobile services in the past decade, average revenue per user (ARPU) is declining due to the commoditization of voice. Mobile network operators (MNOs) are largely turning to data services to offset this drop in ARPU. In 2007 more than \$28 billion was generated by mobile short message service (SMS), multimedia message service (MMS), and instant messaging (IM) services between Western Europe and the United States alone. If email is also included, more than half of all mobile data revenue in these regions is currently derived from messaging, and double-digit growth rates are anticipated in 2008 and beyond. Mobile messaging is the foundation of most MNO data strategies.

In addition to person-to-person (P2P) messages, SMS and MMS alerts have recently emerged as an important market element, and a share of these alert services generates premium fees. IDC survey results show entertainment- and business-related premium alerts were most popular with U.S. consumers and that premium SMS alert ARPU averages about \$2.50. Revenue streams from premium alerts appear poised to grow significantly in the coming years as the number of services of this type from MNOs expands. While the volume of traffic generated by premium mobile messaging services is a fraction of the standard rate totals, IDC research suggests the per-message premium alert profit margins can be several times greater.

Common characteristics among many premium mobile messaging services are that they're fun and entertaining, can be highly personalized, include user-generated content (UGC), and deliver rich multimedia experiences that help connect people in a powerful new way. Examples of these services include:

- ☒ **MMS Funny from the Portuguese MNO, TMN.** This service allows users to create, send, and receive animated "talking face" MMS messages based on quirky images and personalized voice recordings. Messages cost €0.59 to send in addition to content and application charges.
- ☒ **AT&T's pings!** This mobile greeting cards service uses licensed content such as *Peanuts* comic strip characters. MNO executives report a positive return on investment (ROI) from this kind of service.

- ☒ **Verizon Wireless' Animated Messaging.** Also offered by AT&T as My Veepers Messaging, this service is similar to MMS Funny except customers can also upload their own photos for animation. The highly personalized service has attracted more than 300,000 primarily younger fans in the United States, and MNOs report that it has become a profitable service and one that drives follow-on messaging and Web/WAP traffic.
- ☒ **MMS News Alerts offered by an innovative Western European MNO.** This service supplies breaking news alerts and images with links to more in-depth coverage on a hosted content provider news portal.

Many of these and similar premium mobile messaging services reviewed by IDC started with a text orientation and evolved to include rich media formats such as animation, sound, and, most recently, user-generated content. MNOs aiming to take mobile messaging to the next level might consider a new media type: haptics. IDC research suggests it's possible that adding advanced vibration features to standard rate or premium mobile messaging services could help fuel the next phase of market growth. Tactile feedback, such as the standard handset vibration mode consumers have relied on for years, has advanced to the point where it can produce distinctive, meaningful, and more engaging sensations that can enhance premium mobile messaging services. The MMS Funny service, for example, would likely be more compelling if its animated faces also conveyed an emotion such as love via a heartbeat vibration. My Veepers Messaging would be more engaging if messages expressing joy were accompanied by the tactile equivalent of laughter.

Unfortunately, few haptic systems provide this sort of fine control or the requisite developer tools. Immersion Corporation's VibeTonz platform supports a range of advanced haptic feedback features that can be integrated into a wide variety of existing mobile services and handsets. The VibeTonz system delivers subtle control over touch feedback frequency, duration, intensity, and waveform. Leading MNOs around the world such as Verizon Wireless, T-Mobile, Orange, Vodafone, SK Telecom, China Unicom, and TATA Indicom have deployed VibeTonz-capable handsets and applications over the past three years to provide tactile feedback for touchscreens, dialing cues, games, ringtones, movie trailers, and other critical functions. IDC research suggests the VibeTonz system can help deliver more differentiated, personalized, and satisfying user experiences that MNOs can leverage to increase customer loyalty, decrease churn, and drive new revenue streams. Applying advanced haptics to premium mobile messaging services in particular would be a natural extension of proven touch feedback use cases that should help MNOs increase data revenues and provide their customers with more personalized and "sticky" communication services.

METHODOLOGY

The mobile messaging revenue, subscriber, and traffic totals included in this White Paper were derived from a variety of sources including MNO quarterly public filings, industry trade associations (including CTIA in the United States and Ofcom, ARCEP, and Die Bundesnetzagentur in Western Europe), and primary mobile subscriber and customer surveys. Related data has been previously published in separate studies such as IDC #206665 and IDC #209961. Additional methodological information is included in these studies and is available upon request.

In terms of primary survey data, this White Paper draws on the results of the *U.S. Mobile Teen and Adult Consumer Subscriber 4Q07 Survey*, which recorded the combined responses of 4,193 wireless subscribers and customers via a Web-based survey in December 2007. In a handful of questions, outlying respondents were excluded from the final results to account for a small number of respondents who perhaps did not understand the question, mistyped their responses, or, for some other reason, entered numbers outside the range of reasonable likelihood. Prior to fielding the survey, IDC set two quotas. In terms of age, the goal was to obtain at least 500 completed surveys from teenagers (13 to 17 years old) and 500 completes from young adults (18 to 24 years old). Older subscribers and customers were allowed to fill naturally until the overall goal of 4,000 respondents was achieved. Second, we required that each of the top 10 largest wireless service providers hit a minimum quota of at least 75 customer completes so that a reasonable level of statistical validity would be associated with each MNO's results.

Once the survey was out of the field, three weights were applied to the raw data. Age weights were applied so that the results aligned with the latest U.S. Census Bureau data. Second, the subscriber/customer market shares for the top 10 MNOs and an aggregated rest of market figure were applied so that the results aligned with the reported market shares as of 3Q07. A third weight, income, was also applied based on the most current U.S. census data. As this was a Web-based survey and regular Web users tend to come from more affluent households, it was necessary to weight the data in a manner that reflected overall U.S. income levels more accurately. Additional methodological detail is included in IDC #210642 and is available upon request. The result of these quotas and weights is that the vast majority of the survey data included in this White Paper has a margin of error of +/- 5%.

The case studies included in this White Paper were compiled from in-person or phone-based interviews with executives from leading European and U.S. MNOs as well as service providers. Additional information about these services and their implementations at leading MNOs was culled from Web sites and other publicly available marketing collateral. While IDC endeavored to verify the data in these case studies by obtaining two sources for all data points, some of these details might be inaccurate and should therefore be interpreted as directional rather than definitive.

SITUATION OVERVIEW

Wireless telecommunications has enjoyed remarkable growth in the past decade. The industry will achieve a watershed this year, at which point more than half of humanity will be using mobile services. IDC forecasts the number of cellular subscribers and customers should approach 4 billion by the end of the decade. Worldwide revenue is expected to grow nearly 20% from \$644 billion in 2007 to \$782 billion in 2010. While voice will continue to generate the lion's share of revenue, wireless data is expected to make up more than a fifth of the total by 2010.

Despite these impressive achievements, the ARPU from voice is declining. Indeed, even with the growth of mobile data, IDC forecasts overall mobile ARPU should drop about \$2.00 globally between now and the end of the decade. Due to competitive pressures from inside and beyond the industry, technological advances,

regulatory changes, and other factors, MNOs are increasingly feeling pressure to retain existing customers and subscribers, let alone win new ones. Since voice is becoming a commodity available on an unlimited basis for a fixed monthly fee, data services are the main area of focus for MNOs. While a number of novel services have been brought to market in recent years, it's clear mobile messaging has emerged as the cornerstone of mobile data usage and revenue.

Mobile Messaging in Western Europe and the United States

IDC research shows SMS, MMS, and mobile IM services generated over \$28 billion between Western Europe and the United States in 2007, as shown in Figure 1. If corporate and consumer portal email access is also included, it's fair to say that over half of all mobile data revenue in Western Europe and the United States is currently derived from mobile messaging of one type or another. Double-digit growth rates are also expected for at least the next few years. Messaging, in short, is as close to a "killer app" as mobile data services get.

Between Western Europe and the United States, some 404 million postpay subscribers and prepaid customers sent at least one SMS in 2007. This translates into 56% of all mobile subscribers and customers in these regions. Together with MMS, IM, and email, it's likely that two-thirds of mobile users leverage mobile messaging at least once every three months. The volume of messages delivered is equally staggering. As Figure 1 shows, IDC research found the number of combined SMS, MMS, and IM messages sent in Western Europe and the United States topped 436 billion in 2007.

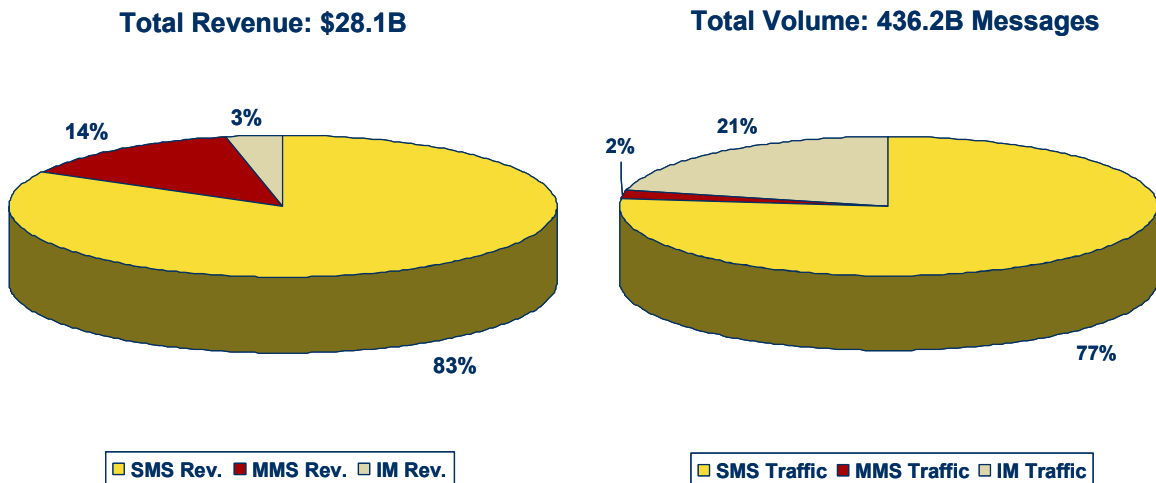
About 70 SMS messages per month were sent by SMS users, roughly six picture/video messages were sent per month per MMS user, and over 200 IMs were sent per month per IM user. SMS and MMS ARPUs were each in the \$3.25 to \$4.25 range in Western Europe, although IM ARPU was rather low. In the United States, monthly SMS ARPU was over \$7.00 and MMS and IM were in the \$2.00 to \$3.00 range. While the volume of MMS messages sent is modest compared with that of SMS and IM, it's worth pointing out that picture/video messages on average cost five or six times as much to send as text messages. And even at just 2% market share by volume, the number of MMS messages sent in 2007 in these two regions still approached 9 billion (MMS revenues were \$3.8 billion, or an impressive 14% of the total).

Leading U.S. MNOs from a subscriber and revenue perspective include AT&T, Verizon Wireless, Sprint Nextel, T-Mobile USA, and Alltel. Their European counterparts include Telecom Italia, T-Mobile in Germany and UK, Vodafone in Germany and Italy, O2 in the United Kingdom, Orange and SFR in France, and Telefonica Moviles in Spain. As with MNOs in Asia/Pacific, many European and North American MNOs leverage intercarrier messaging arrangements that allow messages to be sent internationally regardless of origin. Virtually all leading operators also distinguish between standard rate messages and premium rate messages. The vast majority of messages sent from person to person are charged standard rates, which, for SMS, as an example, averages \$0.03 to \$0.08 per message depending on the plan.

Above these standard rates is another layer of premium messaging that tends to be delivered on an application-to-person (A2P) basis. This means associated content is typically being sent from a server on the Internet to individuals who have opted into premium services such as text alerts on sports scores, stock prices, or weather forecasts or who have purchased premium content such as a ringtone, graphic, or game that may cost \$2.00 to \$10.00 on top of the standard message. Additional mobile messages tend to require relatively little in the way of resources such as bandwidth or infrastructure, which means MNO margins on these services can be quite healthy. IDC research suggests messaging is indeed generally quite profitable for most operators.

FIGURE 1

Western European and U.S. Mobile Messaging Revenue and Traffic, 2007



Source: IDC, 2008

As suggested earlier, SMS and MMS alerts in particular have emerged as an important component of MNO messaging strategies. Leading categories include sports, news, entertainment, health, and business/finance. As part of a 4Q07 survey of over 4,000 U.S. mobile subscribers and customers, IDC inquired about text message-based alert preferences and usage habits. The survey concluded that about 40% of SMS users also currently receive at least one type of text alert. These customers received an average of about one text alert per day (31 per month). This result translates into an impressive 8.9 billion text alerts delivered to U.S. consumers in 4Q07 alone.

A premium rate is associated with a minority of these text alerts. Particularly popular premium SMS alert types include those that are entertainment related (i.e., alerts involving celebrities, comedy, or dating) or business/finance related (i.e., stock prices and potentially enterprise-specific alerts for field service workers). IDC estimates that

5.5 million U.S. consumers paid additional premium fees for SMS alerts in 4Q07. Mean premium SMS ARPU fees averaged \$2.50, which on an annualized basis translates into \$236 million in revenue. Adoption skewed toward young adults in the case of entertainment alerts and toward 25- to 44-year-olds in the case of business and financial alerts. Teens had reasonable usage levels as well, however. Premium alert usage skewed toward males by a modest but statistically significant margin and was also associated with higher-functioning mobile handsets such as cameraphones and converged mobile devices (CMDs) or "smartphones."

It's possible the premium rate SMS market may be eroded over time as CMD penetration rises and mobile Web subscriptions increase. Premium rate text messages may also be undermined to an extent moving forward by the availability of ad-subsidized or standard-rate messages of similar quality and variety. Still, at well over \$200 million in annual revenue and growing, this market quite likely will have "legs" for years. While the results of this survey focused on the United States, both standard and premium rate SMS and MMS alerts are also a significant element of the mobile messaging market in Europe and Asia/Pacific.

Premium Mobile Messaging-Oriented Case Studies

As impressive as the rapid emergence of premium rate SMS and MMS alert services may be, other innovative mobile messaging services have been brought to market by MNOs in recent years. As the following case studies suggest, premium mobile messaging-oriented services are taking both A2P and P2P messaging to the next level in North America and Western Europe.

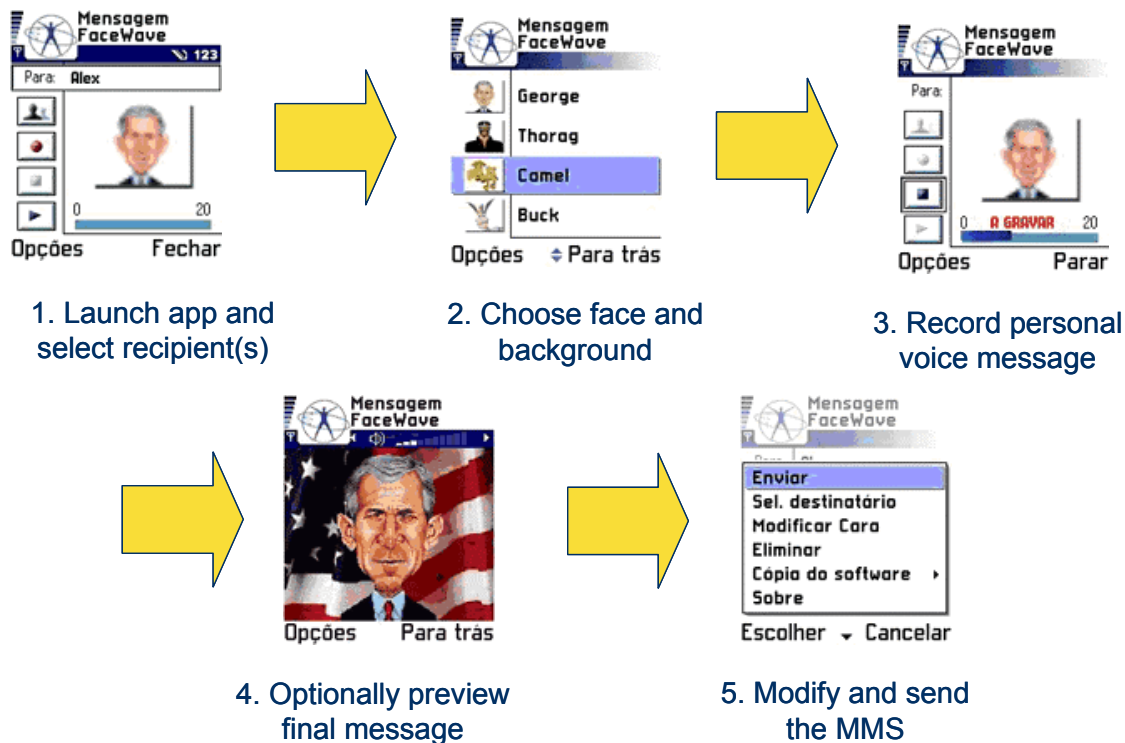
TMN's MMS Funny

TMN, an MNO in Portugal founded in 1991 that today enjoys about 50% market share in that country, decided early on that for MMS to be viable and widely embraced, multiple usage scenarios would have to be commercialized. Although peer-to-peer MMS allows users to combine rich content with text messaging, TMN felt more could be done in the way of enabling users to express themselves in witty and personalized ways while adding value to its services portfolio and generating higher MMS ARPU. To this end, MMS Funny was introduced in August 2004.

In a nutshell, the service allows users to create and send fully animated "talking face" messages based on an image and a voice recording. When the message reaches the receiving party, the "talking face" becomes animated and articulates the prerecorded message. The message creation process is shown in Figure 2. Prospective users need to register by sending a text message to an abbreviated number (i.e., a Short Code) and downloading a small application from FaceWave. Users can then choose from a library of predesigned faces such as cartoon characters, animals, and celebrities. For each face purchased, users pay €2.00 plus any applicable data airtime fees. If users prefer to have their own pictures animated, they can alternatively download FaceWave Snap. (Both applications run on Nokia phones with the Symbian operating system and cost €3.00 to download.) Each message sent to national and international mobile numbers is charged at €0.59 and €0.90, respectively.

FIGURE 2

MMS Funny Message Creation



Source: TMN, 2008

The service targets younger users, and so far the value proposition has primarily appealed to 16- to 25-year-olds. TMN markets the service using regular MMS-based campaigns and highlights the service on its mobile and wireline Web portals to drive additional adoption. The ability to demo the service for free has also helped increase the customer base. By and large, users appear quite pleased with this unique and amusing service, and TMN reports being highly satisfied with not just the resulting above-average MMS ARPU but also the response-driven voice calls and follow-on messaging traffic. When customers receive an MMS Funny message, TMN reports that it's common for the recipient to start a chat session with the sender or to forward the content to a third person because of its funny visual aspects.

A revenue-sharing agreement exists between TMN and FaceWave. Every time a user downloads an application or purchases a predesigned face, each party receives a percentage of the proceeds. Plans for 2008 include reinforcing the partnership by expanding the library of predesigned faces and having the FaceWave and FaceWave Snap applications be compliant with more TMN-capable mobile phones. TMN reports that MMS Funny has a "viral" aspect in that many recipients go on to send their own premium messages.

Mobile Greetings from AT&T, Verizon Wireless, and Sprint Nextel

The nature of electronic greeting cards has changed significantly over the past few years, and United Kingdom-based Sharpcards Ltd. has been at the forefront of this evolution in many respects. Since its founding in 2000, Sharpcards has pushed the boundary of enhanced messaging to keep ahead of changing consumer expectations and tastes. After establishing an Internet-based greeting card business centered on static images, the company moved to animated greetings and then expanded into videos, enjoying higher adoption at each stage in this evolution. While technological advances are clearly part of the story, Lorraine Stephenson, Sharpcards' director of U.S. operations, believes consumers are always on the lookout for richer communications experiences. "People are always trying to take communications to the next level, to be more expressive and personal," says Stephenson. "Everything we've done as a company has been predicated on helping them do this."

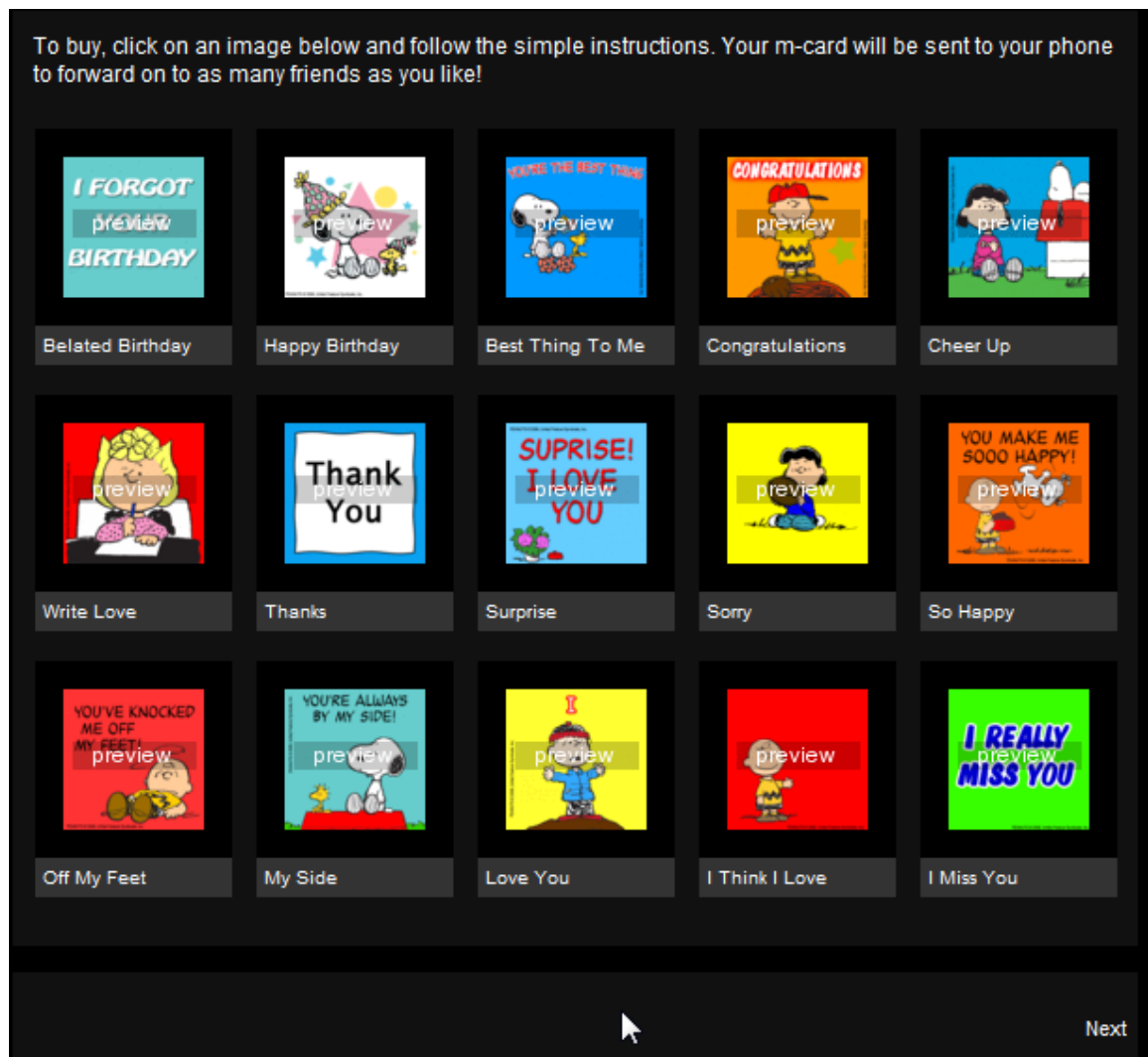
Perhaps the biggest step in this direction was the company's 2004 move into mobile, when it announced Mcards in the United Kingdom and Australia, and an equivalent product, pings!, in the United States two years later. Since 2004, Sharpcards has delivered an impressive 4 million mobile greeting cards. In the next few years, the company expects growth to top 25% annually. In the United States, Sharpcards' mobile greeting services are offered by AT&T, Sprint Nextel, and Verizon Wireless. With cards typically priced at \$0.99 each, key customer segments include teens and college-aged individuals, particularly females in these age groups. According to Sharpcards and executives at leading U.S. MNOs such as AT&T, much of the traffic in the United States revolves around holidays such as Christmas and Valentine's Day. However, as pings! gains traction, Stephenson expects U.S. usage patterns to more closely mirror the "everyday usage" pattern prevalent in the United Kingdom.

While Sharpcards' early mover advantage is an important factor in its competitive position, wise product decisions have also played a critical role. Sharpcards extensively leverages branded content, such as characters from the *Peanuts* comic strip in its portfolio (see Figure 3), which enhances the value of its cards. Localized content also reflects regional tastes. "We do a lot of research to ensure that our content is relevant and stylistically on target," says Stephenson. "We see it as a key factor in our success and key source of competitive differentiation."

Favorable placement on MNO portals, as well as promotions, has been an important ingredient in the growth of pings!. From the MNO perspective, the success of these services hinges on direct service revenue as well as ancillary text messaging traffic that mobile greetings tend to spawn. On this front, pings! has been a clear success story, according to IDC research. The service requires just weeks to deploy, has minimal setup costs (i.e., premium billing integration), and no additional infrastructure on the part of the operator. Each pings! card generates around \$0.40 for the MNO, with the remaining \$0.60 split between Sharpcards and any associated content provider (to whom Sharpcards pays a royalty). In addition to direct premium revenues, each mobile greeting card typically generates one or more back-and-forth text messages, adding to MNO revenue incrementally.

FIGURE 3

Sample pings! Mobile Greeting Cards



Source: Sharpcards, 2008

The U.S. market also differs from the Western Europe market in terms of cross-carrier infrastructure standardization, most notably with respect to MMS deployment. Sharpcards therefore offers a couple of different "flavors" of its service to MNOs. The most straightforward approach is to provide access through MNOs' WAP portals, a process in which the customer searches through different categories of content on the portal such as birthday greetings or congratulations; then selects, purchases, and downloads the card; and finally sends it via MMS to a specified recipient with an accompanying text note. The typical \$0.99 charge per card for AT&T customers shows up as an item on their monthly bill. An alternative MNO model is for users to download either a BREW or a Java client, which enables an even more streamlined and higher-functioning user experience. Stephenson acknowledges a somewhat higher rate of adoption in Western Europe but believes the U.S. market may ultimately represent a more fertile territory for services such as pings!.

"Messaging may be more entrenched in Western Europe, but the U.S. consumer has shown a stronger appetite for the richness of experience that multimedia messaging brings," says Stephenson. "We expect this underlying demand to drive deeper penetration in the U.S. market and to fuel our efforts to take video messaging to the next level." Despite the Western European lead, North American MNO executives report that users of this service send an average of more than two cards per month, which IDC calculates leads to additional MMS ARPU of roughly \$2.00 per month per user. MNOs also indicate pings! has demonstrated a positive ROI since its launch.

Western European MNO: MMS News Alerts

This innovative MNO, which wished to remain anonymous, moved beyond simple text news alerts in early 2003 and began researching the possibility of multimedia content delivery. The underlying plan was to aggregate and push content that would function as a teaser for more in-depth material on its mobile portal. By following hyperlinks embedded in MMS alerts, users would be able to initiate highly relevant mobile Web browsing experiences. In the months that followed, the MNO negotiated a content partnership (an equal-split revenue sharing agreement with a leading newspaper publisher) and upgraded its multimedia message service center, or MMSC, to handle the additional capacity required to quickly deliver breaking news.

A platform to manage service subscriptions and to facilitate the XML-based delivery from the content provider was also deployed. Since different mobile phones process MMS messages differently, the MNO created distinct message models that specified items such as the maximum amount of headline characters, the amount of text, the structure of the message body, where text and images should be placed, the maximum size of images, and where links to other news items should be placed.

In July 2003, the MMS News Alerts service was introduced with six categories: News, Stock Exchange, Sports, Weather, Erotic, and Cinema Premieres. In the News category, which is the most popular, customers receive the latest news on international, economic, sporting, political, and cultural events. Customers can also receive a front-page image from the newspaper and respective text headlines. To subscribe to MMS News Alerts, customers may visit the MNO's Web site or mobile portal, call the integrated voice response center, or respond to a Short Code. If an alert cannot be read for some reason, a link is also provided to a mobile page where the message is rendered in a mobile browser. Broadly speaking, no change on the handset side is required. One message per day on average is delivered to active users. The content provider sometimes sends more than one daily message in the case of a significant event. Customers are charged €0.25 per message. Any streaming or browsing involved with clicking on embedded links is charged separately.

The MNO reports that with male customers aged 25 to 34 with moderate to high income, the MMS News Alerts service has ranked higher than any other multimedia service (including content and services such as games, ringtones, music, and mobile TV) on price acceptability, quality of content, and quality of service. Not only did the MNO achieve positive ROI in the first year, but the service has had a considerable effect on brand awareness and customer retention and in driving use of mobile Web browsing as well. The MNO is planning changes for 2008. As the service has reached

maturity, the MNO plans to include sound clips and more hyperlinks, as well as introduce free ad-sponsored subscriptions. To this end, it's already involved in a number of discussions with ad agencies and potential advertisers.

My Veepers Messaging and Animated Messaging from AT&T and Verizon Wireless

One of the elements that sets premium messaging apart from preceding services such as plain "vanilla" text messaging is that it delivers a qualitatively different experience, one that's significantly more emotive and engaging. Since their introduction, My Veepers Messaging from AT&T and Animated Messaging from Verizon Wireless have emerged as two of the most popular premium messaging services in the United States. Developed by Pulse Entertainment, this optionally white-labeled "animated greeting service" is deeply grounded in humor and entertainment. What makes Pulse's approach stand out from similar offerings is the way the service directly engages users to create content.

From the operator's WAP deck, consumers have the option of either selecting a character (either animate or inanimate but usually not human) from a catalog on the site or uploading a photo of themselves or another person. Once the image is selected, the user types in a custom message or selects from a library of preset messages that will be sent to the recipient. Upon submission, these two inputs (image and text) are sent into a telco-grade media production and delivery platform known as the Veepers Media System (VMS), which dynamically generates an animated image in which the selected person, animal, or object appears to speak the message. In effect, the VMS functions as an automated self-contained "factory" for creating personalized, user-generated content. In Pulse's parlance, these characters are known as "virtual personalities," hence the name "Veepers." The service sends recipients a WAP Push message informing them they have a message and provides an associated link (the message can be technically delivered over MMS). In addition to a WAP-based service, Pulse offers a Java download and plans to roll out a BREW client in 2008.

While Pulse is not the only company offering mobile animation services, Jim McLaughlin, Vice President of Business Development, believes that the technical capabilities of the Veepers animation engine provide a truly sustainable competitive advantage because of its high-quality user experience. "Because the Veepers Media System renders on the fly, it does a better job of true-to-life animation than any of our competitors," says McLaughlin. "It's a more lip-synchronized process, less cartoonish."

Over the past few years the company has built a customer base of 8 million in Japan. While relatively new in the United States, My Veepers Messaging and related offerings are on pace to reach more than 10 million global customers by the end of 2008, with teenagers of both genders the primary adopters. McLaughlin expects the popularity of the service to spike in the United States for the same reasons it took off in Japan. "In the same way that text messaging is better than email, premium messaging is better than text messaging — only more so," explains McLaughlin. "Veepers Messaging offers a truly unique and compelling way of communicating by combining immediacy and personal expression to essentially create a new medium, and that's very exciting."

Pulse is currently pricing the service at \$0.99 per message with AT&T (recipients are charged standard rate MMS fees), while Verizon is currently promoting Animated Messaging services through a free trial. Ultimately, McLaughlin expects some combination of per-message pricing and subscription-based pricing in the vicinity of \$1.99 per month to be adopted by MNOs. He believes the latter case may make more sense because it encourages more use of the service, thus building loyalty and generating more overall messaging activity. "For premium content, the appeal of subscription pricing is not only more perceived value for the consumer but also that it reshapes the way consumers think about using these services," says McLaughlin. "If the idea is to make premium messaging an everyday thing, subscription pricing is the way to do it."

MNOs wishing to deploy Pulse's Veepers Messaging Service have two basic deployment options. The first and simplest approach is for Pulse to host the service platform — principally an advanced content management and animation rendering system — on its own servers. In this case, integration, which is handled by Pulse, is the only requirement, and turnaround time is approximately a month. For MNOs that prefer to manage the service themselves, the Veepers Media System engine is available as a turnkey on-premises solution. Since the service can be deployed on existing servers, the MNO incurs little in the way of additional infrastructure costs. Under either scenario, modifications to the service, such as patches and updates, are highly automated and impose little or no burden on the operator. The core of the business model is revenue sharing. These agreements depend on a number of variables, such as who hosts the service, the complexity of billing integration, and MNO pricing schemes. Built into this revenue-share model is a license fee the operator pays Pulse for the use of its animation engine, which is the core of the Veepers Messaging Service, and for associated content.

IDC research concludes that the Veepers Messaging Services are producing significant benefits for AT&T and Verizon Wireless, including a general rise in mobile messaging traffic and associated ARPU. The number of recurring users in the United States has surpassed 300,000, and users send about 1.5 My Veepers Messaging and Animated Messaging messages per month, which translates into an ARPU "bump" of about \$1.50. MNO executives further confirmed My Veepers Messaging is clearly "in the black" from a profitability perspective. Pulse's McLaughlin sees the service providing a range of longer-term, more strategic benefits for operators. "Ultimately, services like this are going to help operators drive broader data service adoption among consumers, which will change the character of their business," explains McLaughlin. "Moreover, features like animated messaging also provide a rationale for consumers to trade up to higher [functioning] phones, which in turn gives operators a window to upsell consumers and strengthen their relationship with them."

Case Study Highlights and Takeaways

Regardless of geography, these case studies suggest that certain types of advanced, premium rate mobile messaging services resonate with consumers. Common key characteristics of these and similar services are that they:

- ☒ **Focus on personalized entertainment.** These services are fun and are designed to put a smile on the face of the recipient. To be sure, these content and alert types can express frustration, fear, sorrow, or emotionally neutral information, but by and large, the aim is to convey a sense of affection or humor with a highly personalized and individually customizable twist.
- ☒ **Support increasingly immersive multimedia experiences.** Most of these services began as fairly simple mechanisms to deliver text and/or static images. Over time, sound, video, and animation were added to create more sophisticated services that deliver a more powerful user experience. This evolution is likely to continue, which should result in rising customer interest and satisfaction.
- ☒ **Are services for which consumers are willing to pay a premium.** While standard rate P2P and A2P text and MMS messages and alerts provide some value, it's worth stressing there's indeed a viable market for advanced, premium mobile content and messaging-related services for which (collectively) millions of consumers are willing to pay several dollars or euros per month. These aren't ad-driven services; they fill a unique need that less sophisticated services can't match.
- ☒ **Align with the emerging user-generated content (UGC) phenomenon.** These services tend to not just offer a handful of preset options but rather incorporate individualized content and messages, which appeal to younger demographic segments in particular. YouTube and other Web phenomena such as blogging and social networking sites have demonstrated that younger consumers are eager to express themselves. UGC services achieve a higher level of investment on the part of contributors and recipients. Cell phones are personalized devices, and the value of UGC fits naturally into the mobile paradigm.
- ☒ **Help generate additional messaging and/or mobile Web traffic for MNOs.** Most of these services are "viral" in that either consumers receive content and messages directly from people they know, which may induce a reply, or the content and messages are sent by a machine but can be forwarded to friends, family members, and coworkers as needed. Since many of these services require mobile Web access to function properly, this drives additional Web/WAP usage and revenue. These relatively "sticky" services have a data-centric halo effect for MNOs.
- ☒ **Exhibit clear ROI.** By and large, these advanced messaging services require little in the way of capital expenditures on the part of MNOs. Most of them leverage existing MMS infrastructure and/or Web/WAP gateways. Handset clients are often optional, and development in any event largely falls under the purview of service/content partners. Billing integration is generally handled by established third-party integrators such as mBlox and m-Qube as well. The rapid rollout and revenue-sharing arrangements (either on a per-use basis or as part of a subscription plan) mean MNO risk is relatively low and positive ROI can be established in months.

As satisfying as the multimedia experiences provided by premium messaging-related services may be, there's an important sensory element these services generally don't leverage: touch. Understanding how tactile information is similar to and indeed synergistic with these kinds of advanced messaging services is helpful in rounding out the picture of how mobile multimedia experiences can be even more compelling and valuable to consumers. These case studies demonstrate that millions of consumers are willing to pay premium fees for fun messaging services that deliver a compelling multimedia experience. Nonvoice mobile communication options have grown much more sophisticated over the past five years, and this evolution appears likely to continue. Touch feedback in this light is a natural extension of today's premium messaging and alert services and is a technology with which many consumers are already familiar (many mobile phones support simple vibration functions when standard messages arrive). Adding advanced vibration features to premium messaging services could help fuel the next phase of market growth.

Introducing Advanced Haptics

Touch is arguably the one sense people can't live without. It's indispensable in terms of how we interact with the world. From feeling extreme heat and cold to experiencing the most subtle and intimate moments, touch conveys certain types of information incredibly effectively and efficiently. In the context of mobile handsets, touch sensations are created via programmable *haptic* mechanisms (the term is derived from the Greek word *hapesthai*, meaning "to touch"). Most of us have mobile phones with a vibration mode — the technology has been a fairly standard component of mobile phones for over a decade — typically employed when ringtones are inappropriate such as in a class or meeting. Millions more of us enjoy the shaking and rumbling of "force feedback" in our console videogame controllers.

Haptics can provide value in additional mobile contexts, however. Research conducted at the University of Glasgow, which was presented at the Computer/Human Interaction (CHI) Conference in 1H07 in San Jose, California, concluded that adding tactile feedback to touchscreen keyboards on PDAs — similar to the Apple iPhone and other newer mobile devices — resulted in significantly fewer entry errors and faster text input.¹ In short, there's clear evidence that haptic feedback contributes to higher productivity with mobile handsets and higher customer satisfaction. Apart from academic research studies, haptics garnered an increase in attention from the wireless industry in early 2007, as Samsung and then LG shipped phones that provide tactile feedback in response to touchscreen presses. Comparisons of these phones with the Apple iPhone were generally favorable.

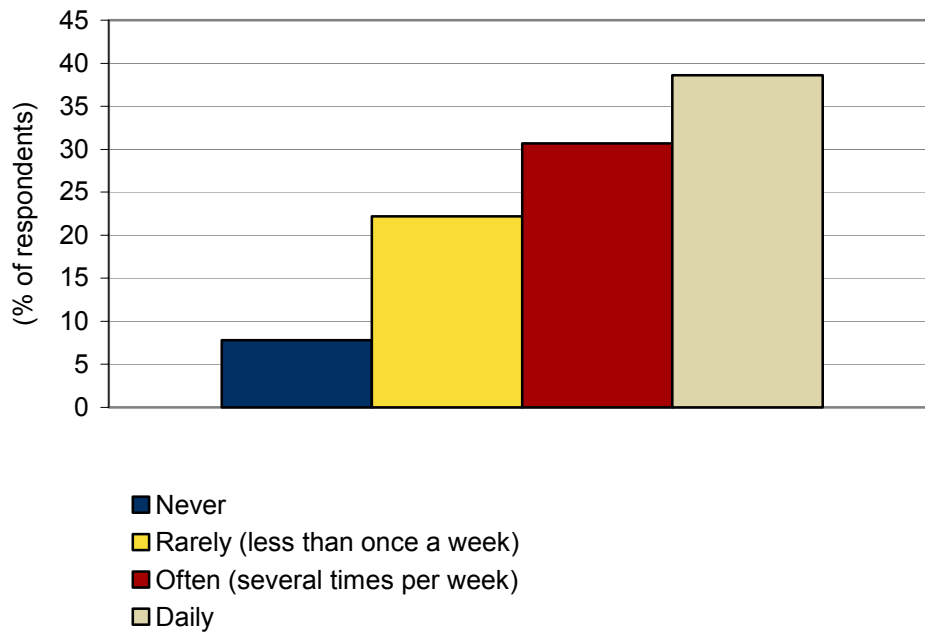
¹*Tactile Feedback for Mobile Interactions*. Stephen Brewster, Faraz Chohan, and Lorna Brown. Glasgow Interactive Systems Group, Department of Computing Science, University of Glasgow. 2007. See www.chi2007.org/.

As part of a 4Q07 survey of U.S. consumers, IDC inquired about usage of haptics and awareness of advanced haptic features. When asked how frequently they use the vibration mode on their cellular phone, a remarkable 39% of respondents indicated that they use the feature on a daily basis, as shown in Figure 4. Only 8% of respondents indicated they never use vibration mode, and a plurality of these individuals were over 45 and had less advanced handsets. The clear inference is that the vast majority of consumers already derive significant value from haptics.

In terms of awareness of advanced mobile touch feedback mechanisms — defined as distinctive vibrations that produce realistic touch feedback when playing games, scrolling through a list, or pushing a touchscreen button — IDC found a quarter of the respondents were aware of these features despite their limited availability. This awareness was highest among young adults and lowest among those over 45. Awareness was also twice as high among smartphone/PDA owners as among monochrome screen owners. Males and females showed similar awareness of these capabilities. This finding suggests advanced haptics are similarly likely to find a receptive audience.

FIGURE 4

U.S. Vibration Mode Usage Frequency



Source: IDC, 2008

The VibeTonz Platform

Immersion Corporation's VibeTonz system is an enabling platform that supports a range of advanced touch feedback features that can be integrated into a wide variety of mobile services and applications. Comprising a mobile phone player and SDK that includes an authoring tool, the platform produces high-fidelity vibration effects that vary in frequency, duration, intensity, and waveform. The platform can be used in conjunction with the user interface (UI), applications, and services such as messaging on virtually any handset. Both P2P and A2P messages and alerts can utilize VibeTonz effects to further distinguish the source (i.e., a different email, SMS, MMS, or IM vibration for one's spouse versus one's boss or child) and priority of messages (emergency versus high versus standard). Navigating messages in a list could be made easier and more efficient if distinct vibrations informed users as they moved over friends, unread messages, or from the top to the bottom of the queue. Actual or potential uses of the VibeTonz technology beyond mobile messaging include:

- ☒ **UI features.** Keypad or touchscreen presses; call sent, waiting, dropped; scrolling; link select verification; Web page section boundary
- ☒ **Device/service status.** Vibrotactile low battery or roaming notifications
- ☒ **Personal productivity applications.** Vibration-based calendar reminders, navigational cues, or buddy finders
- ☒ **Gaming.** Feel the difference between a gunshot and hitting a wall or between raindrops and footsteps
- ☒ **Music.** "Subwoofer" vibes as songs play; controls
- ☒ **Advertisements.** MNOs and brands could create "signature" touch feedback effects that consumers may unconsciously remember

The VibeTonz platform allows for a variety of settings in all these areas based on personal preferences. Similar to raising and lowering ringtone volume, the technology is flexible enough to allow individuals to easily raise or lower vibration intensity. VibeTonz technology has been embedded in select mobile handsets from LG, Samsung, and other leading manufacturers. In North America, Verizon Wireless, MetroPCS, Alltel, Sprint Nextel, and Telus subscribers and customers can enjoy VibeTonz effects already. In Western Europe, Orange, T-Mobile, and Vodafone subscribers and customers can also access Immersion's advanced haptic platform. In Asia/Pacific, leading MNOs such as SK Telecom, KTF, LGT, China Unicom, and TATA Indicom have deployed the technology.

FUTURE OUTLOOK

Particularly as premium mobile messaging services become more sophisticated and as new capabilities such as mobile Web/WAP browsing move from niche services into mainstream usage in the coming years, extending the value of haptics to these services broadly appears a natural MNO device strategy. As the mobile Web and rich messaging experiences evolve, so too will haptic capabilities. Touch feedback is a proven technology already highly valued by tens of millions of mobile subscribers around the globe; leveraging this technology in premium messaging should help MNOs increase associated revenue streams due to the inherent value we all put on the sense of touch.

TMN's MMS Funny service would likely be more compelling if its animated "talking faces" could help communicate emotions such as love via a heartbeat vibration. An AT&T pings! greeting card showing Charlie Brown landing flat on his back could have more impact if accented by a sensory "thud." The UGC-based "virtual personalities" of My Veepers Messaging could be more engaging if laughter were accompanied by a vibrational equivalent. IDC research suggests there are dozens of similar services from the likes of Lavalife, Jumbuck, Intercasting, Trilibis, and Hands-On Mobile. Over time, rich mobile multimedia Web/WAP community and messaging-oriented services appear likely to grow in popularity and bleed across national boundaries. Jumbuck's Spanish-language Chat Del Mundo service has already attracted well over 1 million paying mobile users from the United States (on Sprint Nextel) and multiple South American MNOs.

Even standard rate SMS, MMS, IM, and email alerts and messages could have more impact if emotional cues were conveyed via touch feedback. Assuming sender and receiver handsets had advanced haptics technology, a handful of simple "haptic emoticons" could accompany messages. A "Party tonight!" message might be augmented with a tactile "spike" of excitement, while "I'm feeling blue" could be sent along with the touch feedback equivalent of sobbing. Expressions of joy over IM might include a "smiley face" emoticon and a rumba beat. Customers could feel the crack of the bat when a home run text alert arrives or feel the roar of the crowd when an MMS clip displays a soccer goal or a touchdown. Stock trade and airline flight change notifications would additionally benefit from distinct sensory cues.

Simply distinguishing the source of incoming calls via haptics might significantly enhance customer satisfaction. As IDC's survey research showed, roughly four in ten consumers put their phones on vibration-only mode for at least part of each day. Being able to distinguish a call from one's mother versus one's best friend without having to physically remove the handset from one's pocket affords the individual social discretion and saves time and effort. An advanced haptics platform could similarly present vibration-only mode distinctions between an urgent text message from one's significant other and a lower priority SMS news alert. A 2007 Immersion survey found the ability to distinguish incoming callers and texters was the leading haptic feature respondents wanted on their phones.

Eventually, haptic emoticons and other designed touch feedback effects could give way to user-created haptics. An advanced haptics platform could support an onscreen vibration effect editor by which users could craft their own effects within minutes. Assuming their friends and family have haptics-capable devices as well, these customized effects could be exchanged like simple pieces of content.

CHALLENGES/OPPORTUNITIES

While the future of advanced haptics appears bright, challenges must be addressed before this technology can become pervasive. One of these hurdles is that while usage of simple haptics is widespread, it's unclear whether most consumers will be willing to pay an additional incremental or monthly service fee to solely access advanced haptic capabilities. IDC research suggests it's plausible that the VibeTonz platform, however, if associated with premium messaging and alert services such as

the ones profiled in this White Paper, could help generate additional revenue streams for MNOs and thus help underwrite wider deployment costs, assuming MNOs were so inclined. As suggested by the case studies, ROI for these types of services can be realized fairly quickly, and this revenue could be used to subsidize rollout across handset portfolios, creating a win-win scenario for customers/subscribers and MNOs.

Another challenge is that the VibeTonz technology must be present on both ends of a P2P message for its full potential to be realized. Anytime a new capability requires changes to multiple handsets there are associated costs and logistical challenges. As this White Paper has demonstrated, however, advanced haptics can add incremental value to a wide range of services and save people significant time and effort. While additional premium message and Web/WAP session revenues may ultimately pay for inclusion of this technology, once VibeTonz effects are on the handset, customer satisfaction may be positively impacted in a number of ways that reach far beyond SMS, MMS, IM, email, and Web surfing. Still, unless MNOs incorporate the VibeTonz platform across at least their lineup of high-end handsets moving forward, the value of the technology may be significantly constrained. Integration of the VibeTonz effects into messaging, caller ID software, and so on would also require time and effort.

A third challenge is that most consumers, some 63% of them according to IDC survey research, remain unaware of advanced haptic capabilities. Basic market education will likely be key for many years. It may take the combined effort of MNOs, platform and service providers such as Immersion, and content and advanced messaging service providers to overcome this awareness deficit. If there is early success around mobile messaging and "hapticons," it could provide a beachhead from which consumers could also inform each other in a viral fashion, as the case studies suggest.

Opportunities for advanced haptics abound despite these challenges. Apart from applications around premium mobile messaging and caller ID, advanced haptics can add value to gaming and Web/WAP surfing sessions and bring new depth to mobile advertising. Just as most leading companies — including MNOs — have logos and simple jingles, associating a distinctive vibration with these existing assets would further underscore brand identity. As MNOs continue to innovate around data services to offset declines in voice ARPU, the VibeTonz platform could be an important element in differentiating their services and lowering churn. If VibeTonz effects drive additional use of premium mobile messaging services, as appears reasonable based on the case studies and usage scenarios included in this White Paper, associated ARPU from these services could move from €3.00 to €4.00 (or \$2.00 to \$3.00). This incremental increase in data revenue may substantially improve the profitability of that customer or subscriber for that MNO.

Although several companies have developed advanced haptic systems for mobile handsets, the VibeTonz platform is arguably the most complete system available today in terms of the haptic player and haptic authoring capabilities and tools. The platform enjoys significant marketplace momentum as three of the top five handset makers are under license, and the technology is the only one of which IDC is aware that's available to all OEMs and that operates across networks. This cross-carrier capability could prove to be a strategic advantage for Immersion since MNOs increasingly recognize the value of intercarrier services and media types, which might include advanced haptics moving forward.

CONCLUSION

MNOs are increasingly turning to messaging services as a means of offsetting voice ARPU declines. Premium mobile messaging services such as MMS Funny, pings!, My Veepers Messaging, Animated Messaging, and MMS News Alerts are examples of next-generation content and messaging services that have attracted a loyal and growing user base both in Western Europe and the United States. Haptic technologies can be a standalone addition to messaging upgrades or used in a complementary way alongside premium mobile messaging services. Even without animation or graphics, conveying congratulations with a haptic representation of "hooray" provides a richer kind of communication. Signaling the identity of a text sender or the priority of a message with a distinctive haptic alert could emerge as an important new messaging function as well.

On a complementary basis, TMN's MMS Funny service would likely be more compelling if its animated faces also conveyed an emotion such as love via a heartbeat vibration. AT&T's My Veepers Messaging could also be more engaging if messages expressing joy were accompanied by vibrotactile "laughter." Immersion's VibeTonz platform is the only platform of which IDC is aware that delivers such fine control over touch feedback duration, frequency, intensity, and waveform that, together with third-party application support and associated authoring tools, can bring emotional depth to mobile messages. The VibeTonz platform can also add value around dialing/answering cues (such as distinct caller ID or message vibrations for different contacts), personal productivity applications, gaming, Web/WAP browsing sessions, and content and advertisements.

While the future of advanced haptics appears bright, IDC identified several challenges that must be addressed before this technology can become pervasive. Although usage of simple haptics is widespread — IDC survey research found 39% of U.S. respondents use the vibration mode on their cell phones daily — it's unclear how many consumers would pay additional incremental/monthly fees solely for advanced haptics. A reasonable strategy therefore appears to be to integrate the VibeTonz platform into premium messaging and alert services on high-end device lineups, which should help drive additional revenue streams, which could help defray wider VibeTonz technology deployment costs and create a win-win scenario for customers/subscribers and MNOs.

Another challenge is that VibeTonz technology must be present on both ends of a P2P message for the full potential of the platform to be realized. IDC research suggests advanced haptics can add incremental value to a wide range of services and save consumers significant time and effort, however. While additional premium message and Web/WAP session revenue may pay for wider distribution of the technology, once VibeTonz effects are on handsets, customer satisfaction may be positively impacted in a number of ways. Integration of the VibeTonz effect into other on-device software assets and applications would also require time and effort that could be considerable.

Despite these challenges, the balance of evidence suggests advanced haptics not only can add value to existing services but also are likely to boost productivity and reduce keypad and touchscreen entry error. IDC's assessment is that the VibeTonz platform can help deliver more differentiated, personalized, and satisfying user experiences that MNOs can leverage to increase customer loyalty, decrease churn, and drive new revenue streams. The VibeTonz platform should ultimately help provide more entertaining and satisfying services to mobile consumers while buttressing MNO ARPU.

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