

*Digital mobility
drives you –
You drive digital
mobility*





***Digital mobility –
what it means***

Digital mobility is perhaps the most important trend since the term Web 2.0 was first coined. Mobility enables consumers and the workforce to interact with, and contribute to, sources of information, knowledge, content creation and entertainment—anywhere, anytime.

The digital channel has already touched all industries and is dramatically enhancing the ways that companies conduct business and consumers buy goods and entertain themselves. New experiential technologies and applications continue to burst onto the scene, driving new growth opportunities with lots to look forward to in 2011 and beyond.

The future of consumer and business technologies resides in borderless digital communication designed for people who are looking for “feel good technologies”, as well as faster and more secure information they can access and contribute to on demand. No longer just part of a captive, mass audience, today’s consumer is unique, demanding, engaged and, most important, participative—they’re “Selfsumers.” More and more, they want devices and applications close by that they can use 24/7 to conduct their business and relax with multimedia entertainment; have location, directionally and movement aware capabilities; and personalize and cross-link experiences.

New technologies and applications to address this demand will either transform conventional applications, which build on prior innovations, or they’ll be disruptive by being completely

different. While disruptive technologies are exciting to use and offer a range of business and enjoyment opportunities, PwC’s 2011 Report on Emerging Software Companies highlights two areas that could be perceived as concerns initially, but that can be addressed by implementing well thought-out mobile strategies:

- Integrating mobile services and applications with legacy in-house and/or new cloud IT systems and services
- Security, confidentiality, compliance and privacy.

Neither of these areas is a showstopper, but each should be considered in organization and project plans. They’re not problem areas totally unique to mobility and have been met and handled before by organizations when adopting a new paradigm of technology or business strategy. PwC has long recognized this and works closely with its clients to enable successful transitions and implementations.

New and engaging technologies will quickly influence and change the lifestyles, work and spending habits of Selfsumers, as we move towards a digital society. How Canadian companies are prepared to meet the challenges of providing easy-to-use, reliable applications and services to meet this increasingly fast-paced, competitive environment will determine their future success. Are you ready to go digital?

How important is mobility for your company's future?

Enabled by smartphones, tablets, laptops, game consoles, consumer devices and cloud computing, digital mobility is receiving increased attention in business and society, as it moves beyond classic internet capabilities. It's expected to be the main technology and applications driver in digital transformation and emergence in the years ahead, in partnership with cloud applications and services. Digital mobility was also recognized as an emerging technology trend in our 2011 Emerging Canadian Software Companies report.

What are the trends?

Mobile commerce is becoming quicker and more secure for consumers, making it easier to shop and order securely, particularly when making smaller transactions. Secure and quick-click checkouts from a mobile device will give buyers the ability to make on-the-go payments and to stay logged in while they surf for more goods to buy.

Around the world, Selfsumers are increasingly using the power of the "electronic wallet" to send and receive

money—from scanning with their smartphone to purchasing a public transportation ticket on the spot to ATM withdrawals. They're also taking advantage of mobile commerce platforms to make bigger purchases to order, bid, negotiate and pay through online marketplaces—all through the power of smartphones.

Before the advent of high-speed wireless and smart mobile devices, Selfsumers were dependent on being in a fixed spot to seek and view information via the internet. Now, with the evolution and progression of wireless, such as Wi-Fi connections, HSPA Cellular, WiMAX, the emergent 4G Cellular, LTE and public and private cloud applications, Selfsumers can do more than just view information whenever and wherever they want.

From electronic books, mobile payments and mobile shopping, to mobile health records, consumers and workforces are evolving very rapidly into Selfsumers. Businesses in all fields, as well as governments, are rapidly developing digital mobility strategies to make sure they're at the forefront in retaining existing customers, and engaging new ones too.

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Digital mobility today— or was it yesterday?

“Information on the run, anytime, anywhere” was the promise of early versions of mobile data applications and devices. As mobile devices (e.g. smartphones and tablets, high-speed connectivity, cloud applications) developed and enhanced, mobile people now have the ability to access and create information, knowledge and entertainment at any time. As Selfsumers are increasingly determining how their content should be delivered, businesses are working much harder to stay relevant and be engaging in order to retain them.

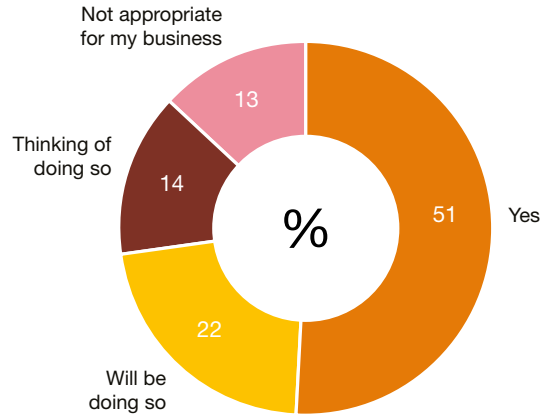
Take for example, the paper-based publishing industry. Hard-copy paper documents are still used when and where most appropriate, but e-books, e-news, e-reports and e-magazines are becoming more common. The huge interest in and use of mobile tablets or “pads” is already driving new multimedia applications—and big revenues. But while current e-books transform the conventional paper format into an electronic book, the next generation will provide an enhanced and interactive audio and visual experience for the reader. The e-book of the future will cross-link to other digital forms, including videos, social media and web cams. Imagine reading a soliloquy from Macbeth on your e-book, and by simply touching the passage you’ll be able to watch a live performance of the soliloquy acted out by a professional actor. You wouldn’t need to turn to another digital platform to do this—it would all be incorporated

into the e-book. Now what if you could then record a video of yourself acting out the soliloquy to send it to an acting critic? Future e-books will have the power to introduce such new multimedia experiences to the consumer. The age of “cross-linking of multimedia experiences” is beginning.

The full impact of mobile tablets in “natural application fields,” such as insurance, banking, education, training and healthcare, currently can only be guessed. What is certain is that smart mobile devices and services are now sufficiently powerful, easy-to-use and financially accessible to transform these fields in ways never before contemplated.

Selfsumers are generally avid online shoppers and they’re increasingly making buying decisions and seeking specific information about where and when to purchase through mobile devices. Mobile social networking enables them to share, compare and contrast user experiences, views on fashion, entertainment, travel, fine dining, shopping and much more. Google Inc. reported that the number of shopping searches it performs that are initiated from mobile devices has grown by 30 times in the past three years. A survey conducted by the Mobile Marketing Association in October 2010, revealed that 59% of mobile phone users were planning to use their devices for holiday shopping, excluding phone calls.

Are you developing mobility applications for use by customers/clients?*



According to the *2011 Report on Emerging Canadian Software Companies*, 51% of emerging software companies are developing mobility applications for use by customers and/or clients.

With the rise in the number of Selfsumers who make decisions on the best information, best prices and group-deals available, businesses are moving beyond traditional advertising and marketing methods to ones that engage their customers on-the-go over mobile platforms using techniques that enable participation and cross-link experiences.

Location-based advertising services and applications are the beginning of new marketing trends that are enhancing the e-commerce transformation, as businesses and organizations seek innovative ways to advertise their services and products, not only to attract new customers, but also to maintain brand loyalty. Location-based, mobile marketing services and offers are already changing the consumer retail experience.

Small- to large-sized businesses are focusing on using and developing mobile marketing platforms and applications including group-based techniques to deliver pertinent, location-based offers, to not only drive, but incent

Selfsumers, to purchase their products. Businesses are now able to market their services and products to more targeted audiences, and through tracking features can stay current on customers' behaviors. Compare that to traditional marketing methods, where companies were uncertain whether their ads were reaching targeted audiences and having the desired stimulatory effects.

What types of mobile applications are you/will you be developing?

Increasingly, organizations are beginning to partner with application developers and mobile application providers to increase consumer and business touch points through mobility.

For example, assisted by application and interface developer IdentityMine, mobile users in Switzerland can now use their handsets to pay for metro tickets and plan trip details. This demonstrates an increasing trend amongst travellers, in moving beyond traditional means of decision making and purchasing to the convenience of mobile.

Recognizing the rising number of tech-savvy customers, Toyota Motor Sales USA Inc. recently partnered with mobile application platform provider Kony Solutions Inc. to develop and

*2011 Emerging Canadian Software Companies Survey

implement an on-device mobile shopping application. In this way, Toyota is enabling customers to shop for their products at anytime and anywhere.

While these applications and services are predominantly consumer facing, they're also being driven by businesses as they seek to increase their revenues and profits. What's more, social networking, mobility and group-based buying are beginning to find applications within enterprises and their networks of business partners. The "company's buyer" is also changing into a Selfsumer.

Digital mobility is also enabling mobile payments, which PwC forecasts to be a key emerging trend for 2011. As mobile commerce becomes quicker and more secure for both businesses and consumers, mobile payments will become mainstream, making it easier to shop and order securely through mobile platforms. Consumers are comfortable with paying for content on mobile devices because of the ease of use, particularly for smaller transactions where there is a lesser need for high security. According to Juniper Research, the global mobile payments sector is anticipated to grow from \$170 billion (in 2010) to

approximately \$630 billion in 2014, due to the increased use of smartphones and traffic through app stores. The increased confidence in mobile payments, and mobile interactions in general, is partly due to the use of cloud computing/ cloud models.

Accessing software, systems and applications in "the cloud" began with software as a service (SaaS) and is quickly accelerating as confidence in the technology grows. Companies are now using time- and security-critical solutions outside of their firewalls. Mobile computing is an important new impetus for use of the cloud and versatile mobile devices are becoming pervasive "thin clients", ideal for accessing cloud solutions when and where they need it.

Cloud computing is becoming central to the IT fabric of the future. But, it's not just a technological solution that will make IT less expensive and more agile; many companies are using the technology to partner with other service providers that operate in the cloud to quickly integrate business processes and reap new revenue by expanding business prospects. Implementing easy-to-use mobile cloud applications is creating a powerful cloud-mobile symbiosis and helping businesses increase their success. This trend is already quite visible and sustained.

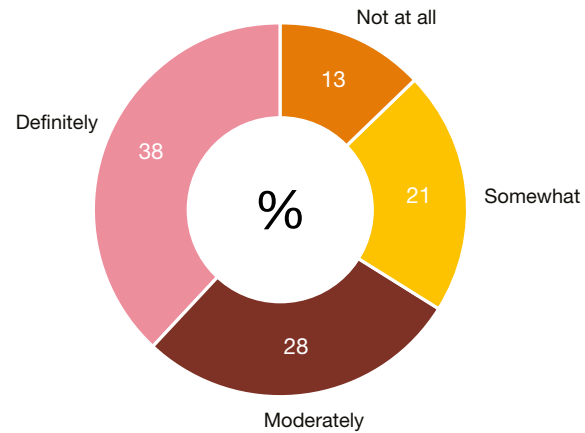
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Future of Digital Mobility



Will mobility require organizations (your company, vendors, customers) to change significantly in the next three years?*

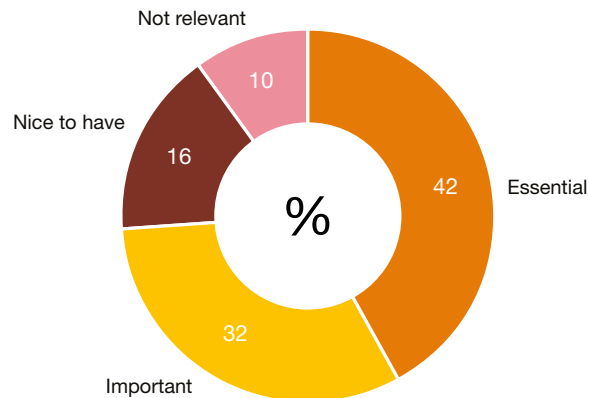


PwC forecasts that by 2014, 39% of mobile Internet subscribers will connect through smartphones, compared to only 13% today. And that's only smartphones. If we consider the increase in the number of users of other mobile devices such as enhanced phones, tablets and laptops, a major percentage of the world's population will be tapping into the mobile internet to access and contribute to information and knowledge.

So what does this mean for businesses, governments, and society as a whole? What will a future in which individuals spend most of their time transacting business, reading, purchasing, and socializing through mobile platforms look like? Does it mean that hard print will completely disappear to be replaced by digital mobile formats and platforms? What strategies should businesses be developing, and what can consumers expect?

PwC forecasts that by 2014, 39% of mobile users will connect through smart phones versus only 13% today

Overall, how important is mobility for your company's business future?*



Information in the form of hard print will not become obsolete. But, a digital transformation is occurring, where Selfsumers seek immediacy when searching for information, making purchases, transacting business and receiving the most current updates on matters important to them. Companies need to innovate and restructure their business models in order to maintain a competitive advantage and continued revenues and profit increases. In our recent survey of emerging technology companies, most of the respondents (74%) indicated that mobility is essential or an important factor for their future.

Publishing is one example of an industry adapting to the increased popularity of digital media platforms. While there's still a substantial demand for print, there's also a significant preference among customers to use digital platforms, with a combined

product offering of news, research and support tools. At the same time, while there are some who oppose the digital transition (primarily due to fears of lower revenues), leading publishers are incorporating digital trends to enhance print media and establish themselves as trusted sources of accurate and current content to strengthen customer relationships. In this manner, publishing companies will be able to develop revenue generating models, involving customer payment for online/mobile content, as Selfsumers become reliant on receiving their content through these platforms.

As the publishing industry shifts toward digital platforms, it also demonstrates the need to move past the "walled gardens" concept. To satisfy consumers' demand to access content across multiple platforms, publishing companies need to identify areas/partners for collaboration and cooperation, with those who were once strictly competitors.

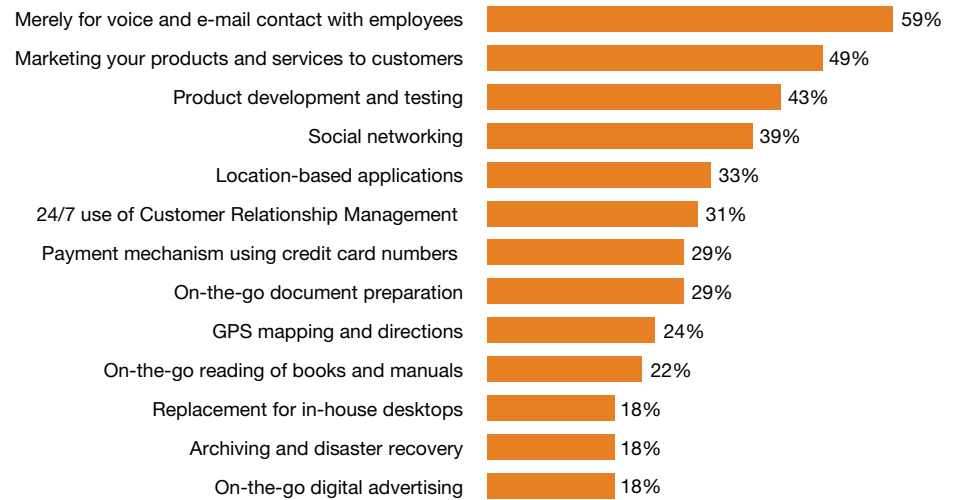
The experiences of the publishing industry provide some insight for other industries as they adapt to a digital future. Each organization is different: service driven, product driven, public, or private. No matter what stream, it's now the Selfsumers who determine what they want, how and where they want it and how they want to participate. Future success lies not only in developing innovative ways to adapt to digital platforms, but ensuring that these innovations are Selfsumer-focused at every level.

How are you using/ would you use mobility for your company?*

It's clear that digital mobility will enable and see growth in more targeted

Selfsumer marketing. Social profiling and optimizing social media will be key factors in this i.e. what do certain age demographics like better, male vs. female, etc. In a recent online survey of more than 200 business professionals and leading business publishers and advertisers, PwC found that leading organizations are developing creative ways to incorporate social networking and other user-generated content sites into their business model, to enhance lead generation and content development.

Combining social media strategies and mobile platforms will enable companies to more accurately market their services/products to the appropriate Selfsumers. In our survey of emerging technology companies, 49% indicated that digital mobility is useful for this very purpose.





The future of digital mobility will also see increased machine-to-machine communication

Video is often referred to as the mobile “killer app” of the future. But, traditional videos (including webcasts) can be dull and boring when they’re used simply to push mainly verbal content and often are not used in the most effective way. The future lies in making videos more experiential for the Selfsumer. Imaginatively created, videos can engage viewers by involving them emotionally in the subject matter and inviting their participation to capture their intention (to work, purchase, travel, eat, etc.) rather than merely their attention. This is key for businesses to consider when using mobile video and other mobile content going forward.

As more of the global population accesses the internet through smartphones and mobile platforms, it’s incumbent on both governments and telecommunication companies to enhance wireless data networks, providing greater speed to access information, including remote regions. This will truly allow mobility to transition from being the main driver of digital economies—to creating digital societies. Mobility will no longer be used

only for entertainment, purchasing, and advertising; it will also be the means by which health records are accessed, taxes are filed and disaster alerts are communicated, among other areas.

The future of digital mobility will also see increased machine-to-machine communication, where before connectivity was just between people and networks. This has been established by the vastly increased number of computer-based Selfsumer gadgets requiring connectivity to allow participative experiences. This is already quite well established using technologies that include web services, service-oriented architectures, radio-frequency identification (RFID) and near field communication (NFC). Some industries already beginning to leverage machine-to-machine connections include healthcare and automotive, with benefits expected in areas such as supply chain management, inventory control, quality control, and service provisioning and billing. Imagine the convenience and comfort for both patients and doctors to remotely monitor a patient’s condition after a medical procedure. Or consider the ability to pay parking meters with your cell phone. A future with endless possibilities lies before us.

Mobility is also feeding the desire for greater physical freedoms in controlling devices and leading to the rise of gaming consoles without handheld controls that rely purely on interactive 3D visuals, sensors and gesturing. This is yet another example of “borderless mobility”, the result of borderless thinking. Combining gesturing and physical or “haptic” feedback will have applications well beyond gaming. The possibility to “reach” into the computer display and “grasp” electronically-generated objects is one such innovation. For instance, in the education sector, new medical students could learn the difference between healthy and diseased organs by simply feeling them as electronically-generated objects. Artists could create works of art through different mediums without the use of conventional supplies. As time goes on, we’ll have the ability to experience many more real-world sensations through haptic feedback using “feel-good” applications on mobile devices.

We refer to smart mobile devices as “intimate devices”—after all is said and done they’re with Selfsumers 24/7. Accordingly, they could become the ultimate out-of-home advertising medium, outperforming even electronic billboards and in-store screens. Smart shopping carts with built-in mobile screens linked wirelessly to store inventory and shoppers’ purchasing patterns and preferences could also become widespread.

Tablets and new technology

As costs decrease, it is also expected that tablets will become strong siblings of PCs and smartphones. The PwC Technology Consulting viewpoint is that tablets may well surpass both these as the tool of choice for business users in the near future. They will likely also be the preferred device by which people view TV shows; read books, newspapers and magazines; make telephone calls; and make social status updates. The multitude of Android devices, along with iPad, Windows 7 devices and RIM’s new PlayBook with its QNX operating system, will ensure that the “age of experimentation in mobility” that we’re now experiencing, will continue for several years. But the last word has not been said on tablets. Already we’re hearing about the possibility of a non-Android device from Google emerging soon, as well as seeing experimentation with more-than-one-screen tablets. They may now be a little clunky and heavy, but enable the user to compose and view business documents and presentations on one screen while simultaneously making printed or hand-written notes on another.

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Thinking ahead



Innovation in mobility is likely merely at its beginning, certainly nowhere near its end. The rise of Selfsumers is changing the landscape of how businesses interact with their customers and their own workforce. Adopting digital mobile solutions is also a necessity for companies to compete for attention and market share from all types of users. The solution? Think about how digital mobility fits into your growth strategy. Focused experimentation and innovation will go a long way to meet stakeholder expectations, realize growth opportunities and ultimately succeed in this ever-changing world.

Suggested PwC reading

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A Look at the Future of Mobile Data

2011 and Beyond – Consumer technology trends

Technology Forecast – Unleashing enterprise mobility

Technology Forecast – Transforming collaboration with social tools

Unlocking Tacit Knowledge with Social Networking

The Maturing of Social Networking into a Business Discipline

The future of eBooks – Turning the page

Security among the clouds

Outlook for B2B publishing in the digital age

Newspapers and the new technology

2011 Report on emerging Canadian software companies

Global entertainment and media outlook: 2011-2015

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Dr. David Jacobson is Director – Emerging Technologies in PwC's Technology Consulting group. He assists PwC and its clients with the discovery and evaluation of emerging technologies, including their commercial applications and prospects. David is the Canadian member of PwC's International Global Technology Centre of Technology Resources. A contributor to PwC's *Technology Forecasts* and advisor to the Center for Technology and Innovation, his engaging thought leadership presentations are much sought after by clients and event organizers.

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PwC Technology Consulting Services

Mobile Enabling the Enterprise

We believe that recent advances in mobile technologies (devices and platforms) powered by powerful networks have created a unique and compelling opportunity for organizations. This ability to mobile enable the knowledge worker can create a myriad of efficiency and effectiveness benefits. Balancing these benefits are new operational and security implications.

What we do:

From business transformation to technology delivery, PwC helps you realize business value from your IT investments. We can help your technology team enable business transformation and improve the ROI on technology spend by increasing the performance of your IT function, or developing an IT governance structure that is right for your business.

We find opportunities to improve your business value in five broad areas:

- **Technology Advisory:** Providing a suite of strategic consulting services to improve the efficiency, effectiveness and alignment of your IT function.
- **Information Management:** Working with you to develop analytical and technical tools to unlock the value of information within your system.
- **Sourcing:** Addressing the issues that come with alternative sourcing models to achieve value that goes well beyond cost savings.
- **Security:** Helping you manage, transform and protect your organization's most critical information assets to enable new strategies, technologies and processes, effectively govern risk, and meet compliance demands.
- **Enterprise Applications:** Leveraging our solution-specific skills to help you realize business results from your investments in enterprise applications.

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