Web Ubiquity Calls for an "Experience Tier"

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Highlights

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Executive Summary

The rapid adoption of smartphones and tablets has initiated the era of *ubiquitous computing*. Computers and computing services are now literally always at hand; consumers switch freely and frequently between fixed and mobile devices according to convenience, context, and task requirements.

Virtually all of these devices are also connected – to the internet, to the cloud, to other users via social sites and apps, and to other devices. This *ubiquitous connectivity* enables *ubiquitous content consumption*; consumers now have access to content in all its varieties – web site information, entertainment, social exchanges, apps, etc. – wherever and whenever they desire. Marketers and their organizations might welcome such non-stop access to customers and prospects, but it comes at a high price. Firms must produce significantly more content, manage it more intelligently, and, above all, deliver it to an increasing number of devices and channels.

So far, the leading approaches to delivering content on multiple devices – responsive design and dedicated mobile web sites – have largely concentrated on "right-sizing" browser content and experiences for different screen formats. But as the variety of devices and interaction touchpoints continues to multiply and morph (think of smartwatches, retina displays such as Google Glass, connected mirrors and other smart appliances), organizations should think in terms of an "experience tier" that cleanly separates the preparation of content and customer experiences from delivery and consumption on one or more devices.

The specific characteristics of the experience tier are still emerging. It is certainly not yet a solution that you can purchase – indeed, it is as much about processes and the organization of content and customer experience management as it is about technologies. Implementing an experience tier will help customer experience teams to do the following:

- **Disengage from the web browser paradigm.** Responsive design and mobile sites preserve the two-decades-old web browser publishing paradigm. Smartwatches, heads-up displays (HUDs), digital signage, and other emerging interfaces will require a more flexible approach to content publication.

- **Better organize the customer experience management workloads and the software ecosystem.** The experience tier serves as an organizing principle to harbor and coordinate people, processes, and technologies for customer experience management.

- **React flexibly and quickly to new experience creation and delivery requirements.** Agility and flexibility become ever-greater sources of competitive advantage as the pace of change accelerates. The experience tier aids agility by severing the linkage between experience management and delivery, and by organizing experience workloads around service benefits rather than technology categories.

Mobile Shift: Ubiquitous Access, not Mobile Devices

The "mobile shift" is the most profound and wrenching technological transformation since the advent of the personal computer. It is also one of the most widely misunderstood. The discussion of a "shift" encourages us to believe that it is about a transition *away* from desktop and laptop computers (aka "fixed devices") and to handheld mobile devices such as smartphones, tablets, and, increasingly, the twisted offspring of the two in the form of "phablets."[1] Pundits regularly announce the death of the fixed PC and of the associated fixed web browser, and they urge the adoption of a "mobile first" design approach that prioritizes creation of rich user experiences on small-format mobile screens and deprecates or even ignores fixed devices.[2]

The stunning pace of smartphone and tablet adoption in the last few years seems to validate this understanding of the mobile shift. However, the numbers simply don't add up. A recent study by Tata Consultancy Services projected that by 2015, customer interactions over mobile devices would range from about 40 percent in North America to 60 percent in APAC. Impressive statistics, but they indicate that nearly half of all interactions worldwide still will be supported by fixed PCs and other channels such as call centers.[3]

In addition, rather than shifting their usage exclusively to handheld devices, people are increasingly using multiple devices, either sequentially or simultaneously (see Figure 1). For example, in a study of the use of smartphones, tablets, or laptops while watching TV, Google found that 77 percent of US respondents reported engaging in such "multiscreen" behavior.

Figure 1

Share Of Device Page Traffic Over A Day:
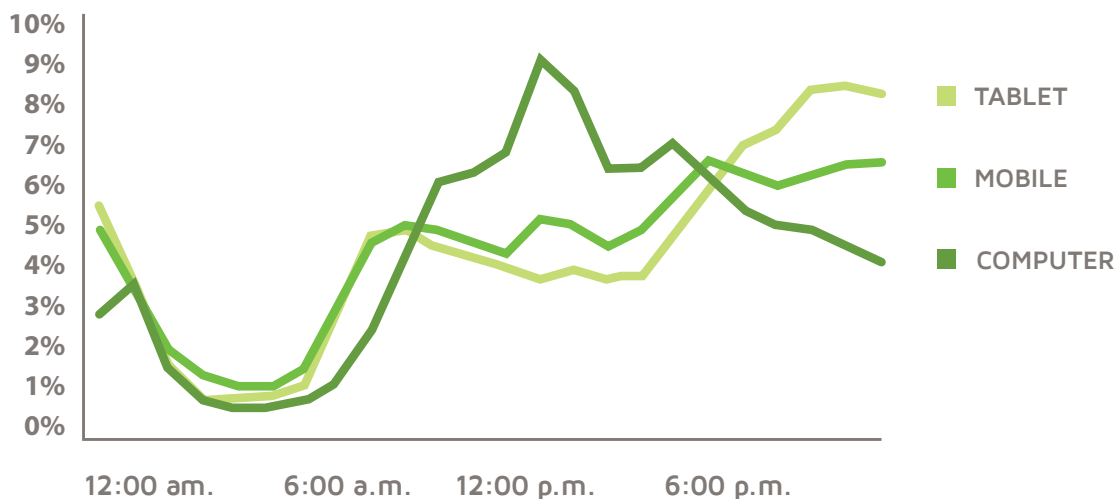
Adapted from BI Intelligence. Source: comScore, Telefonica, Macquarie Capital (USA), December 2011

The approaching wave of wearable computers – smartwatches and other displays such as Google Glass – will further increase the number of networked devices owned by a typical individual, create new forms of multiscreening behavior, and undeniably establish the era of the always-available, perpetually connected consumer.

In short, we misapprehend the mobile shift when we think of mobile as a physical object and the shift as a zero-sum game from fixed desktop and laptop PCs to smart handhelds. It is, rather, about the shift from scarce and restricted access to computing services to *ubiquitous access*. It is not about a type of computer, but a mode of consumption. Not a different kind of thing, but a different mode of being. As the director of global marketing for a major consumer goods company said recently, brands need to learn "to value the idea of *mobility* more than [that of] mobile" as a device and screen format.[4]

Connectivity, Communications, and Consumption

The word "ubiquity" is derived from a Latin construct meaning "everywhere." It was originally used mainly to designate the omnipresence of God – which would no doubt please Steve Jobs, since the most famous products developed under his god-like control of Apple, the iPhone and the iPad, have done more than anything to establish the era of digital ubiquity.[5] But ubiquity does not mean only that computing services are available regardless of where you are and what you are doing. Six years after the introduction of the iPhone, and three years after the iPad, we begin to see that such devices create an accelerating cycle of accessibility, connectivity, and content consumption, because of the following (see Figure 2):

- **Multiple devices ensure access.** By mid-2012, the average U.S. household owned five connected devices, and more than six percent already owned fifteen or more.[6] With PCs, smartphones, tablets, and the emerging wearable devices, a computer is always at hand and always on.

- **Accessibility creates ubiquitous connectivity.** PCs persist because they best support time-consuming and detailed work such

as reports, spreadsheets, and presentations with applications that are mostly used offline. Mobile computers, in contrast, are defined by connectivity. The prevailing use cases involve real-time connectivity by way of radio or wifi, or the consumption of content (e.g., video) and services (e.g., apps) that were downloaded from and may be regularly updated via the cloud. In the era of ubiquity, consumers are perpetually and pervasively connected to the internet, to the cloud, and to each other.

- **Connectivity promotes context- and task-oriented interactions.** Ubiquitous connectivity means that people can *immediately* access the information that they need or desire. As a result, interactions become increasingly task-oriented, context-specific, and real-time. Consumers can find the closest bank branch while walking down the street, confirm the gate for their connecting flight while rushing through the airport, and send their insurance agent a report compiled with their smartphone app minutes after a car accident. And because the tasks

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Figure 2

The Cycle of Connectivity and Content Consumption
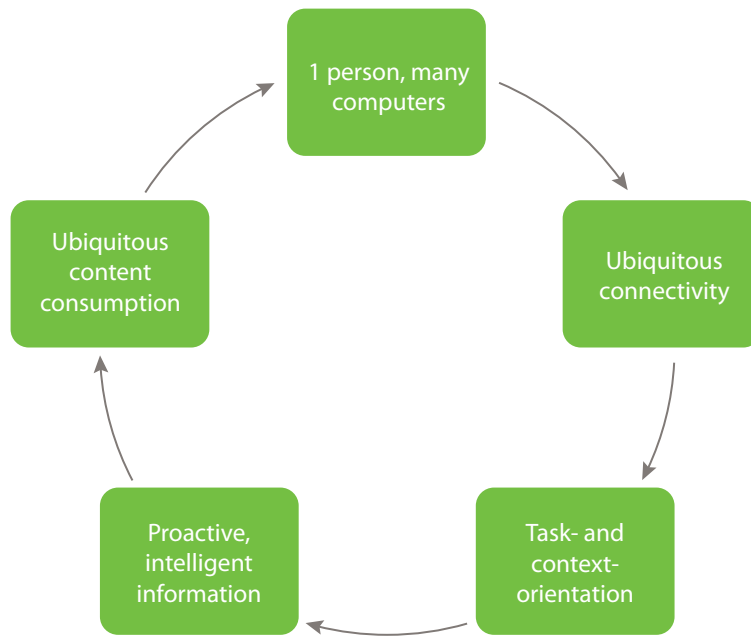
are most often specific to an individual, these interactions increase the need for personalized and relevant content.

- **Context invites proactive and intelligent information flows.** Many tasks are repeated (e.g., the daily commute, a weekly conference call) or predictable (e.g., picking up a coffee on the way to a meeting, checking one's flight status before leaving home). Such regularized processes will increasingly be supported by information flows triggered by machines, and based on analytics, sensors, and inter-machine communications. For example, your smartphone could alert you to leave ten minutes earlier for the next meeting due to heavy traffic, or an app could research and

book an alternative flight even before your delayed connection has reached the gate. Sensors in your kitchen and your smartwatch can monitor your health, plan a menu based on your past preferences, determine a shopping list, and coordinate with the cloud to have the items bought, paid for, and delivered to your home – all without your knowledge or intervention.

- **We become immersed in "ubiquitous content."** Although they didn't exist until mid-2007, smartphones are now already considered indispensible. Infamously, nearly 50 percent of young adults in the U.S. said they would rather have a smartphone than a car.[7] A 2011 survey by TelNav asked people what they

would rather give up for a week instead of their mobile phones. Seventy percent said they would sacrifice alcohol; more than half were willing to do without caffeine or exercise; and fully one-third said they would give up sex for a week rather than be without a phone.[8] Of course, what people are so reluctant to give up is not the physical device itself but the content and connectivity it delivers. The more content we have, the more we want, the faster we want it, the more relevant we want it to be, and the more insatiable our appetite becomes.

- **Ubiquitous content must be delivered to more and more devices.** This cycle is self-perpetuating and accelerating because, first, the appetite for content (information,

entertainment, app engagement) is not only growing, it is also growing more sophisticated, refined, and precise. Second, the number and variety of devices that people turn to for content and connectivity is constantly expanding. As the director of a global digital agency noted, the problem isn't so much the speed with which a new delivery channel appears and is adopted (say, smartwatches); it is that nothing disappears in exchange. "It's as if you had to optimize your web site," he said, "for *every browser* that has every existed."[9]

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Impact on Content Management

This cycle of ubiquitous connectivity and content consumption is a major force in the transition from web content management (WCM) to customer experience management (CXM or CEM, but note that the names and thus the intialisms for this post-WCM category still vary widely). Like every evolutionary process, changes in the environment (i.e., requirements and demands of end-user organizations) can be read in the adaptations made by the organisms the environment sustains (that is, content management vendors). To varying degrees, nearly all of the leading vendors have developed or acquired functionality in areas such as targeting and segmentation; testing, analytics, and optimization; multichannel delivery (including email, print, social, and mobile); rich media support (digital asset management [DAM] and rich internet applications); and general integratability with other enterprise systems. These adaptations express the new and emerging requirements of end users, which in turn are driven by consumers' demand for more engaging, relevant, social, and cohesive interactions across web-sites, as well as other channels.

Supporting customer experience management requires a broad ecosystem of functional capabilities and corresponding software categories. No vendor yet offers a comprehensive, end-to-end suite for experience management. However, solutions with a foundation in WCM will continue to occupy a central and privileged place within CEM. The reasons for this are many, and beyond the scope of this discussion. In short, it is because the fundamental WCM workloads – namely, the creation, management, and distribution of digital assets – persists at the core of experience management.[10]

Content Management Fundamentals Return to Haunt Experience Management

But wait – don't we constantly hear that the content management fundamentals have been solved? That they have, in fact, been commoditized (with vendors moving up to higher-level differentiators around customer experience managment as a result)?

The answer is yes and no. It's true that the processes for authoring (or otherwise creating/syndicating) content for the web, managing content for the web, and publishing content to the web have been largely systematized – although certainly not perfected; significant differences also remain among vendors' approaches and how they match to users' needs.

But the cycle of connectivity and content consumption illustrated in Figure 1 exposes how these fundamentals can again become major challenges and hurdles when organizations expand from the web to multichannel experience management in the era of ubiquity. Providing a given consumer with the content and services that are relevant to *their* context and task orientation, and are optimized for consumption on the *specific* device they choose to use, means that organizations must:

- **Produce much more content.** From the perspective of the consumer, relevance means less. Relevance is achieved by *subtracting* irrelevant content – product descriptions, messages, offers, and even entire navigation elements, site sections, and marketing

campaigns – and focusing on the relatively few things that matter to the specific consumer in a particular context. But for the brand and the organization, relevance is purchased by producing more – more content in more variants, for more precise messaging in more frequent interactions. Ubiquity ensures that consumers are "always addressable," but that accessibility can be a burden for a brand that, like a nervous suitor, now has to be always prepared to say the right thing at the right time.[11] Content creation is well supported by most vendors. (Most content is syndicated or otherwise produced outside of the CMS, in any case.) The challenge is securing the resources. "This is the single biggest problem for our clients today," one agency executive said. "Budgets and resources are restricted, but they need to ramp up content production for personalized interactions."[12]

- **Make content smarter.** The owner of an independent bookshop may know where every volume is located. The manager of a large superstore or of an online bookstore backed by massive warehouses has to have sophisticated processes for identifying, tagging, and tracking every item. Similarly, as content production and inventory increases, assets need to become semantically "smarter." Richer metadata and well-designed tagging practices can enable organizations to find, track, and reuse content elements across numerous combinations, delivery points, and engagement scenarios. Solid support for taxonomy definition, metadata management, and content tagging already exist in many CEM solutions, but they are rarely used systematically. In the era of ubiquity, rigorous metadata practices and policies could become a competitive differentiator.

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- **Enable agile and adaptable content delivery.** Content delivery is arguably the primal question that web content management software addresses: "How do we make stuff appear on a website?" For static pages, the answer now looks like child's play – create pages in HTML, store them on a server, and deliver them upon request. Dynamic delivery, in which pages are partially completed only at runtime (in order to support personalization or other business rules), is considerably more complicated but manageable within the web channel. But ubiquity imposes the huge challenge of multichannel delivery, the unsolved burden of coordinated "omnichannel" engagement, and the Sisyphean task of delivering experiences to an endless variety of connected devices. Whereas the problems of making more and smarter content can be addressed largely within the current paradigms of experience management, agile delivery seems to require fundamentally rethinking the established models (see Figure 3).

Figure 3

The Fundamental Content Challenges For Experience Management

Challenge	Arises because...	Degree it is addressed in current solutions	The Real Problem
Produce more content	Relevance is purchased by a greater variety of content	High – Insofar as content is produced within the system	**Resources** Creating partnerships and acting like a publisher
Make content smarter	Assets and aggregations are not fidable or trackable	Medium – Existing tools are underutilized	**Governance** Creating taxonomies and enforcing tagging
Enable agile delivery	Ever more connected devices	Low	Need to **rethink delivery** paradigms and models

Current Efforts to Accommodate New Formats Retain Old Paradigms

Content may be consumed today via fixed browsers, smartphones and tablets, Internet TV, game consoles, digital signage, and interactive kiosks; tomorrow via smartwatches, HUDs, and car interfaces; and soon via household appliance displays, clothing, windows, and who knows what else. Moreover, organizations need to account and prepare for the massive variety within each category – hundreds of popular smartphones, dozens of tablets, smartwatches from Sony, Samsung, Google, Apple, and others. Since ubiquity is enabled by perpetual connectivity – that is, by the fact that consumers can access the Internet and computing services with virtually whatever device lays close at hand – it is no surprise that delivering content to every possible device, in the proper format, with the desired task orientation, and while taking advantage of the devices' functionality, has become a critical issue.

Outside of fixed browsers, most attention so far has focused on deploying content to mobile devices, particularly smartphones (since the screen of an iPad-sized tablet can accommodate a fixed browser format in most instances). Consider the two prevailing approaches to deploying content to smartphones. One, responsive design, is a sophisticated and well-structured set of design principles and practices for producing web sites that dynamically respond to the characteristics of a given device (mainly the width of its browser). Content items, including navigation elements, are reconfigured or shed entirely to optimize the site experience within the constraints imposed by the display.[13]

Responsive design is often the best solution for the mobile web. Yet it has a number of widely-recognized limitations as well, including the following:

- **Slow page loads.** Responsive design often loads images and page elements that are then resized on the device or not displayed at all.[14] The resulting burden on the CPU and memory slows the load time of a site. A study by the Marketing Technology Blog found that 40 percent of consumers will abandon a web site that takes more than three seconds to load, and that every one-second in page response can result in a 7 percent reduction in e-commerce conversions.[15]

- **Poor support for dynamic and highly interactive sites.** LinkedIn reported that responsive design could not support their highly personalized interactions on their mobile site, which aimed to create different experiences based on device type, use case, and context.[16]

- **Inability to accommodate the differences between fixed and mobile web browsing.** A responsive site retains the fundamental architecture of the primary site. Users on a mobile site, however, often have different and more pronounced task orientations – such as quickly finding a store site or checking a price.

The second approach for delivering content to handheld devices is to create dedicated mobile sites (DMSs). This avoids the limitations of responsive design but creates the burden of additional design,

management, and maintenance of the sites. It is also simply not scalable across dozens or even hundreds of device formats and capabilities.

Aside from their respective limitations, both responsive design and dedicated mobile sites are *tactical* reactions to the question of how to present web browser experiences on small-format smartphone displays. This is indeed a very big issue, and billions of dollars are at stake for those who get it right. But in the bigger picture, responsive design and DMSs are like game preserves set up to protect an endangered species – namely the presentation paradigm of the web browser. This paradigm is endangered, not because it will soon be extinct, but because it will struggle to accommodate forces released by ubiquitous content consumption, including:

- **Emerging devices break the "monitor" mold.** The smartphone is not the end of history. How will these approaches help us deal with one-inch square smartwatch screens? Or with wall-sized windows that double as displays? Or with Google Glass, whose retinal projector effectively overlays your entire field of vision (that is, your entire visual reality) with content and application functionality?[17]

- **The publishing model is undermined by (self) aggregation.** For all of our progress, the web browser is still fundamentally based on a 19th-century publishing model, with sites (think volumes or issues), "pages" with highly structured content elements, and "gatekeeper" publishing schedules (the site owner determines which content is available where and when). Contrast this with content aggregators that enable consumers to piece together their own content collections – whether authorized (e.g., Rockmelt, which has agreements with major media organizations) or bootleg (e.g., Pinterest and Tumblr).

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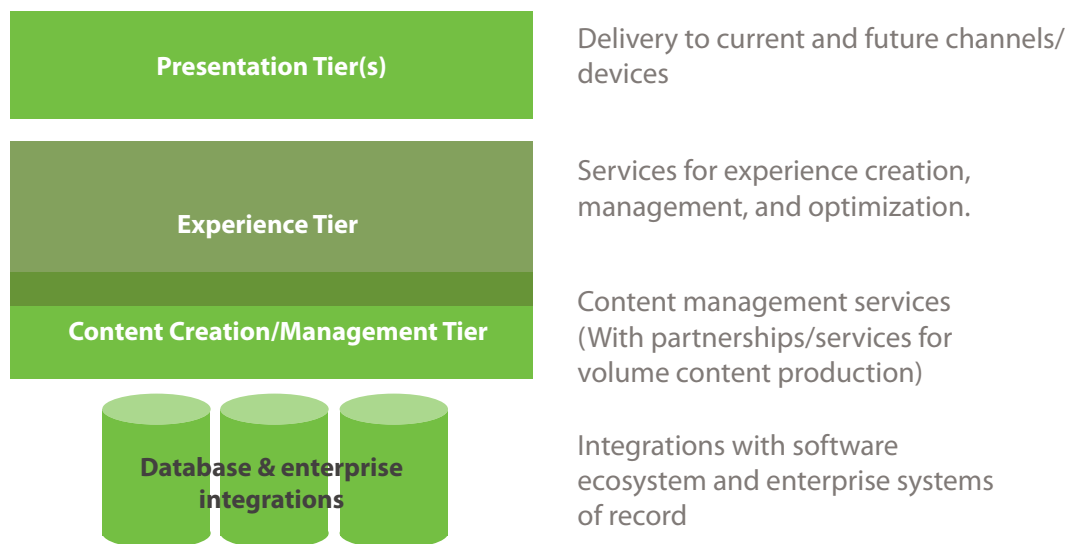
The Need for an "Experience Tier"

It is likely that the browser paradigm will remain prevalent for some time in both its structures (pages) and standards (HTML5, URLs, etc). But in order to serve ubiquitous content consumption across the increasing number and variety of known and emerging channels and devices, content professionals need to separate the preparation of content and customer experiences from delivery and consumption on one or more devices. *Ubiquity necessitates an experience tier that clearly separates experience creation and management from the "presentation tier" of the individual channels.*

The experience tier is not an architectural layer, but it can be visualized as a zone that overlaps with traditional content creation and management services, supplements and enhances these with the emerging services to support customer experience management, and specifically does not extend into publication on any given channel or device (see Figure 4).

The established content management principle of the separation of content and presentation dictates that web content should be created and stored without any formatting conventions, such as HTML code

Figure 4

The Experience Tier As Organizing Principle For Experience Management

Presentation Tier(s) — Delivery to current and future channels/devices

Experience Tier — Services for experience creation, management, and optimization.

Content Creation/Management Tier — Content management services (With partnerships/services for volume content production)

Database & enterprise integrations — Integrations with software ecosystem and enterprise systems of record

that stipulates font size or color. The templates in the presentation tier determine the look and feel. In the era of ubiquitous content and multiplying devices, it becomes imperative to elevate this principle to the separation of experience management and delivery.

By enforcing this distinction and creating a zone for experience creation and management, the experience tier can also:

- **Clarify the relationship between content management and experience management.** As noted earlier, content management practices remain at the heart of customer experience management. But treating experience management simply as an extended version of content management can encourage teams to overlook how the consumer demands for relevance, rich media, real-time interactions, and social dimensions fundamentally complicate and transform most Web content management practices. As an organizing principle, the experience tier articulates how content management workloads – such as the creation and combination of large volumes of content – relates and contributes to experience management.

- **Combine and coordinate experience management workloads.** Understood as an organizing principle, the experience tier harbors technologies and toolsets, as well as processes, skill sets, and workloads. It enables more effective coordination between these elements and provides more coherence for the practice of customer experience management, which often seems to be dispersed between a number of software solutions and employee teams.

- **Encourage teams to think in terms of "services" rather than "technologies."** Experience management involves a large ecosystem of software applications. The number and variety can confuse and distract experienced professionals. By coordinating workloads, the experience tier helps teams to shift their focus to services and intended benefits rather than software toolsets. For example, relevancy services might draw upon

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behavioral targeting logic, segmentation tools, recommendation engines, CRM data, and much more – but the service abstracts from the individual technologies and allows teams to concentrate on what is essential: namely, to understand a user's context and needs and deliver the relevant information or functionality. According to their specific business needs, teams might define other services around optimization, commerce, social, intelligence (analytics and tracking), etc.

- **Enable rapid and agile responses to new requirements.** The experience tier can help organizations accommodate changing requirements with flexibility and minimum disruption. The separation of management and delivery simplifies the addition of new devices and formats for content consumption, especially in combination with emerging content delivery platforms. And the general approach of an experience tier based on services eases the disruptive impact of new technologies.

Conclusion

Thanks to the ubiquity of always-available, always-connected devices, consumers now inhabit an environment of pervasive content consumption. They are virtually never without access to content – information, data, services, and apps. To compete in this environment and to stand out among the myriad choices available to consumers, organizations must be prepared to deliver relevant content at the time and device or channel, of the consumer's choice.

This requirement means that organizations must create content in larger volumes, and tag and track its consumption with greater precision and efficiency. Above all, it means that they must ensure deliverability to the ever-expanding variety of smart connected devices. So far, such devices have been almost exclusively smart phones and tablets, and a combination of responsive design and dedicated mobile sites has sufficiently accommodated content delivery. However, new device formats, such as smartwatches and Google Glass, and new contexts, such as screens imbedded in household appliances, will expose the inadequacy of these approaches and highlight the need for an experience tier that cleanly separates customer experience creation and management from the presentation tier.

The specific characteristics of the experience tier are still emerging. It is certainly not yet a solution that you can purchase – indeed, it is as much about processes and the organization of content and customer experience management as it is about technologies. Implementing an experience tier will help customer experience teams to:

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Endnotes

1   The term "phablets" combines "phone" and "tablet." In practice, phablets are large phones rather than small tablet computers. Devices with screens with dimensions between five and seven inches are widely considered as phablets, although there is no standard definition. See http://www.zdnet.com/phablets-not-going-away-as-ihs-predicts-shipments-to-double-in-2013-7000009903/.

2   See Digital Clarity Group's November 2012 Insight Paper, "Understanding the 'Mobile Shift': Obsession with the Mobile Channel Obscures the Shift to Ubiquitous Computing." It can be downloaded at http://www.digitalclaritygroup.com/blog/research/research-papers/.

3   See Tata Consultancy Services' September 2012 report, "The New Digital Mobile Consumer: How Large Companies Are Responding" available at www.tcs.com/digitalstudy.

4   The quote is from Adam Kmiec, director of global digital marketing and social media, Campbell Soup. See http://www.digiday.com/brands/mobiles-next-big-opportunity/.

5   The notion of ubiquitous computing was first formulated by Mark Weiser at Xerox PARC in 1988. See http://en.wikipedia.org/wiki/Ubiquitous_computing.

6   Consulting firm Chetan Sharma surveyed 1,000 US households in late 2012. The study defines connected devices as any device that can connect directly to the internet, including PCs, smart phones, tablets, gaming consoles, e-readers, energy meters with wireless connections, etc. See http://www.chetansharma.com/connectedconsumer.htm.

7   See http://business.blogs.cnn.com/2011/12/08/car-or-internet-toss-up-for-young-adults/ .

8   In a 2011 US survey, 33 percent of respondents said they would rather give up sex for seven days rather than go without a smartphone within reach. See http://www.digitaltrends.com/mobile/one-third-of-americans-prefer-their-smartphone-over-sex/.

9   Quoted from the research for Digital Clarity Group's upcoming report on the role of agencies, system integrators, and other service providers in customer experience management projects.

10   The role of WCM in emerging CEM solutions and processes will be analyzed in detail in an upcoming DCG Insight paper.

11   The concept of the always-addressable consumer has been coined by Melissa Parrish. See http://blogs.forrester.com/melissa_parrish/12-08-08-officially_introducing_the_always_addressable_customer.

12   See endnote 9.

13   See Ethan Marcotte's seminal article on responsive design at http://alistapart.com/article/responsive-web-design.

14   For example, see "11 Reasons Why Responsive Design Isn't That Cool" at http://www.webdesignshock.com/responsive-design-problems/.

15   See the infographic on page-loading speed and visitor behavior at http://www.marketingtechblog.com/page-load-time/.

16   See "Mobile Apps: The Trouble With Using Responsive Design" at http://www.forbes.com/sites/ciocentral/2012/11/18/mobile-apps-the-trouble-with-using-responsive-design/.

17   For a similar argument, see Matt Waite's "The year responsive design starts to get weird." Waite writes: "Think it's hard to adapt your content to mobile, tablet, and desktop? Just wait until you have to ask how this will also look on the smart TV. Or the refrigerator door. Or on the bathroom mirror." See http://www.niemanlab.org/2012/12/the-year-responsive-design-starts-to-get-weird/

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