You Say You Want a Revolution:
Content Strategy Across Connected Devices

By Brandon Carson and Michelle Lentz

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Research provided by Yahoo! Insights and IDC, 2010-2011
Overview

Ubiquitous connectivity is transforming almost every aspect of our lives, from how we work and play, to how we connect with each other professionally and personally. Always-on connectivity has made our world smaller, while at the same time, making it more complex -- including how we access and filter the unending stream of data coming our way. In the middle of this information revolution sits our newly discovered love affair with small and embedded connected devices that patiently serve our every data-fueled whim. In just a few short years, we have glommed onto our mobile devices, falling completely under their spell. These powerful mini-computers have almost overnight become as inseparable as our right arms. As we have quickly adopted and integrated them into our lives, they have altered how we interact with data and with each other. Clay Shirky argues that “the [Internet] revolution is less about connecting to technology, and more about connecting to each other.”

As more and more connected devices come online in various configurations (smartphones, tablets, cars, glasses, appliances) we are finding life is becoming impossible without them, yet more possible with them. Moving between multiple connected devices in short activity bursts is becoming the primary way people access the mobile web, which brings about interesting problems to solve for content developers. With near real-time access to data in the palm of their hand, mobile users are now making big demands on the systems they rely on for information -- and not just technical demands -- demands for up-to-date, credible information that helps them perform tasks at time of need, answer questions, get to appointments on time, converse with loved ones, colleagues, and even take classes and create and publish their own content. No longer do content developers have the luxury of time to formulate plans for release -- you have to publish on-demand, ‘round the clock, and in formats that are accessible and usable across a myriad of devices. How do you design and deliver content optimized for these devices and operating systems while compensating for diverse consumer behavior? Why is a content strategy important for your organization? As consumers move to connecting to the Internet through mobile devices first, it is imperative for content designers and developers to understand the challenges and constraints of the mobile ecosystem, and to design effective content strategies to ensure your audiences can access and consume your data at their time of need, on whatever screen they are in front of.

In this eBook, we will discuss how connected devices have permanently altered your relationship with your content consumer. Your new reality is based on the fact that the average consumer owns and/or carries multiple devices across multiple platforms. You must adapt to the multi-platform reality where one person might use a PC running Windows, a smartphone running Android, a web-connected PlayStation game console, an Internet-enabled refrigerator, and a tablet running iOS. It's imperative to learn how platforms, products, and services interact as part of an ecosystem we can't control, but must provide content for.
Introduction

We are currently living in the largest increase of expressive capability in human history brought to us by the Internet. Only in four previous eras have there been communication transformations of this scale:

- The invention of the printing press and movable type
- The invention of the telegraph and telephone
- The invention of recorded media (photography, sound, and movies)
- The ability to transmit sound and images through the air

Over the next decade, mobile devices will become the primary way people connect to the Internet. In many areas of the world, it already is. Recently, smartphones and other devices such as tablets, GPS devices, TVs, game consoles, e-readers, even automobiles — collectively known as “connected devices” — have revolutionized how people consume, create and share content experiences, and are transforming the way we live and work.

Simple, low-cost devices that are constantly connected to the Internet help propel ubiquitous connectivity. This, combined with inexpensive chips, make the connected devices of today more powerful catalysts for the post-PC era.

A mobile experience revolves around a seamless integration of hardware, software, services, and social interaction.

It’s critical for content designers and developers to better understand how and why consumers interact with connected devices, including application usage, to gain a deeper understanding of the mobile consumer’s behavior. Understanding not just the technology, but the context in which mobile devices are used, will better inform the design and development of scalable content experiences across the multiple connected devices that consumers now use.

The Mobile Lifestyle

Disruption comes from places you might least suspect. Consider Africa. Seven African nations are now in the top ten list of the fastest growing economies in the world. By 2020, mobile banking is predicted to replace ATMs completely in Africa. Mobile learning is already playing a vital role in Africa’s formal and informal education. People in Africa will be educated via their connected devices, in large part, because the devices will be ubiquitous, and because education via connected devices will make it easier and will reach more people. [Source: Mobile 2020 Trends - Africa].

And mobile disruption is not just occurring in Africa: mobile centric living is already the reality for many of the earth’s people. In Indonesia, the majority of people access the Internet from mobile devices already. IDC projects more than 186.5 million mobile Internet users in the U.S. by 2014, a 163% increase since 2010.
Mobile also isn’t necessarily always mobile — fully one-third of mobile activity happens in the home. Connected devices have literally become viewing companions enabling people to research actors, vote for talent or check air times, all without missing an episode of their favorite show. Fully one in three people multi-task at home, commonly using their connected device to shop online, chat with friends, or research commercials, all while watching TV.

Fully one-third of mobile activity happens in the home.

Growth drivers behind this fast uptake include an ever-expanding library of mobile apps, a broad array of slick devices with bigger screens, more bandwidth and power, user-friendly capabilities, and a wide variety of carrier plans that make Internet access affordable on almost every budget.

The Mobile User

Almost two-thirds of smartphone owners state that “my mobile device allows me to access information that helps me in real life circumstances.” Fully 65% agree that their mobile device quickly provides the answer to questions when they need an immediate response. A recent study found that 9 out of 10 consumers have accessed the mobile web while in a retail store [Source: Yahoo! Insights 2011].

Over the next 5-10 years more people will be typing on glass than keyboards.

Perhaps most importantly, mobile phones fulfill a predominant “meta need,” a desire to share and communicate with others. Users talk about their devices with real emotion, viewing their mobile phones as extensions of themselves. As the mobile revolution spikes, we predict that over the next five to ten years, more people will be typing on glass than keyboards.

Peak Mobile Usage

Most mobile owners are active during the peak times between 8:30 a.m. and 1:00 p.m. But the average 47 minutes per day spent with mobile isn’t restricted to this window. More than half of consumers surveyed said they “snack” on mobile content throughout the day, taking advantage of breaks in their routine.

Compared to a year ago, consumers spend 54% more time with their connected devices, 49% more time talking and texting and 29% more time watching videos. Together, more capabilities and more advances in mobile technology have driven smartphone penetration to 35% of U.S. mobile subscribers as of May 2011 [Source: Yahoo! Insights 2011].
A Short Mobile Timeline

In 2007, Apple introduced the iPhone and ushered in the smartphone revolution. Other innovative technologies continue to emerge and shape the connected device market. This short timeline shows how mobile devices have evolved:

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1888</td>
<td>First patent for an electronic tablet awarded</td>
</tr>
<tr>
<td>1992</td>
<td>IBM Simon introduced as the first “smartphone”</td>
</tr>
<tr>
<td>1999</td>
<td>Microsoft re-introduces the “tablet PC”</td>
</tr>
<tr>
<td>2001</td>
<td>Palm introduces the Kyocera 6035 — the first widespread mobile device in the US</td>
</tr>
<tr>
<td>2001</td>
<td>The Blackberry is introduced — the first widespread mobile device for e-mail</td>
</tr>
<tr>
<td>2007</td>
<td>The iPhone is released</td>
</tr>
<tr>
<td>2008</td>
<td>The Android OS is released</td>
</tr>
<tr>
<td>2010</td>
<td>The iPad is released</td>
</tr>
</tbody>
</table>

2012-2020

Technology often moves much quicker than the average person’s interest. People end up bending technology to meet their own needs, but are often resistant to move at the pace of industry. Before mass adoption, people have to acquire familiarity with technology and find meaningful ways to integrate it into their lives.

The immediacy of the mobile convergence is astounding when you consider it took the telephone over 80 years to become ubiquitous. By 2020, more than 50% of the population in developed markets will own a smartphone [Source: IDC]. The following technologies and trends are in their infancy now, and over the next decade will mature based on people’s familiarity and adoption:

- Web vs. native vs. “hybrid” apps
- NFC (Near Field Communication) for mobile payment, coupon offers, and customer loyalty
- Consumer-led mobile health for monitoring, diagnosis, and wellness
- Corporate adoption of tablets for workforce productivity
- Sub-$50 smartphones
- Sub-$25 feature phones
- “SoLoMo” — Social / local / mobile convergence
Mobile Hardware and Software

Consumers choose their devices based on affordability, features, and wireless coverage. Three device types currently make up most of the market: feature phones, smartphones, and tablets.

Hardware

Feature Phones
Feature phones still hold a major share of the market — 80% of new handset sales as recently as 2010. Feature phones are the least technologically advanced; essentially they’re the halfway point between a basic cell phone and a smartphone. Although their adoption is decreasing, hundreds of millions of users still use feature phones, and they will continue to be a major source of new-to-net users in the coming years [Source: Yahoo! Insights 2011].

Smartphones
Early smartphones were little more than cell phones with keyboards and the ability to access the web. Now most experts define a smartphone as one that runs a complete OS platform for third-party application development. As the smartphone evolves, the market is an explosion, with 55% year over year growth in 2010 and almost 30% growth in 2011. By 2014, smartphone usage will double globally, representing 22% of all connected devices. Smartphones will represent 60% of all connected devices in North America and 38% in the EU [Source: Yahoo! Insights 2011].
### 2011 Smartphone Sales

<table>
<thead>
<tr>
<th>Rank</th>
<th>Brand</th>
<th>Units</th>
<th>Market Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Apple</td>
<td>93.1M</td>
<td>19.1%</td>
</tr>
<tr>
<td>2</td>
<td>Samsung</td>
<td>90.9M</td>
<td>18.7%</td>
</tr>
<tr>
<td>3</td>
<td>Nokia</td>
<td>77.3M</td>
<td>15.9%</td>
</tr>
<tr>
<td>4</td>
<td>RIM</td>
<td>52.5M</td>
<td>10.8%</td>
</tr>
</tbody>
</table>

(Source: Tomi Ahonen Almanac 2012)

### Tablets

While tablets have been around since 2001, they've recently gained steam in the marketplace, thanks to the introduction of the iPad. Tablet sales increased 147% in 2011. IDC now expects iOS to grab 62.5% of the tablet market in 2012, up from 58.2% in 2011. IDC now sees a worldwide market of 107.4 million units, up from its previous forecast of 106.1 million units. IDC also revised upward its 2013 tablet forecast number from 137.4 million units to 142.8 million units. And by 2016 worldwide shipments should reach 222.1 million units. [Source: IDC, June 2012].

### 2011 Tablet Sales

<table>
<thead>
<tr>
<th>Rank</th>
<th>Brand</th>
<th>2011 Market Share</th>
<th>2012 Market Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>iPad</td>
<td>58.2%</td>
<td>62.5%</td>
</tr>
<tr>
<td>2</td>
<td>Android</td>
<td>38.7%</td>
<td>36.5%</td>
</tr>
<tr>
<td>3</td>
<td>Blackberry</td>
<td>1.7%</td>
<td>1.0%</td>
</tr>
</tbody>
</table>

(Source: IDC, June 2012)

### Operating Systems

While functionality, price, and size are still the determining factors in how a user chooses a connected device, consumers also consider the device’s operating system. Apple and Google are the market share leaders with Research in Motion and Symbian falling behind.

### Symbian

When Apple launched the iPhone, the only other advanced OS for a mobile phone was Symbian, created in the late 1990s and acquired by Nokia in 2008. Symbian devices have fallen to 17% of the mobile market. Symbian is still alive because of the strong second-hand appeal of Nokia smartphones in Africa and less affluent parts of Asia and Latin America.

### iOS

iOS is Apple’s mobile operating system used for iPad, iPhone, iPod touch, and Apple TV. iOS smartphones currently account for over 19% of the market in terms of units sold.
Android

Late in 2007, Google, in alliance with nearly 80 other firms, introduced Android, which is based on Linux. Android is driving record growth in smartphones. By 2016, the number of smartphones in Asia will double to over 200 million, with most of them running Android. Android has already become the dominant OS in Africa. In Kenya there are more than nine smartphone models running Android, with the least expensive retailing around $200.00. Soon there will be sub-$50 smartphones available using the Android OS. In the U.S., Android is leading the OS wars with over 33% of the smartphone market.

Windows Phone and Windows Mobile

In 2010, Microsoft announced Windows Phone 7, and in February 2011, Microsoft and Nokia formed a partnership to combine their mobile operating systems into a new mobile ecosystem. The partnership will result in a significant reduction in shipments of Symbian-based handsets as Nokia transitions to Windows Phone as its primary smartphone platform. However, Nokia still expects to ship 76 million Symbian-based handsets through 2016. At this time, Windows Phone and Windows mobile have just at 1% market share.

2011 Operating System Market Share for Smartphones

<table>
<thead>
<tr>
<th>Rank</th>
<th>Brand</th>
<th>Market Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Android</td>
<td>43%</td>
</tr>
<tr>
<td>2</td>
<td>iOS</td>
<td>19%</td>
</tr>
<tr>
<td>3</td>
<td>Symbian</td>
<td>17%</td>
</tr>
<tr>
<td>4</td>
<td>Blackberry</td>
<td>11%</td>
</tr>
</tbody>
</table>

(Source: IDC, June 2012)

Due to how quickly the market changes, it’s important to build OS-agnostic mobile experiences that can have the widest reach on any connected device.
Mobile Behavior

The Mobile Modes

Although it’s important to understand the technology consumers hold in their hand, it’s more important to understand the context in which they use the device to better inform how you design and develop rich content experiences.

What are consumers thinking and doing when using a mobile device? Recent research has segmented mobile behavior into seven “modes”: Connect, Search, Entertain, Manage, Inform, Shop and Navigate. We cannot stress the importance of knowing your audience and their behavior, as well as understanding the deeply personal connection people have with their connected devices. Your content strategy needs to consider the technology required to deliver your content, as well as the context in which users will be accessing and consuming your content. The mobile user’s modes vary during a normal day, making it difficult to easily classify your target audiences’ behavior, but you can more easily determine how to design a content experience that is relevant to their situation if you understand the modes they traverse.

Not surprisingly, the most popular mobile mode, representing 38% of mobile activity per day, is Connect. Connect includes activities such as e-mail, instant messaging, Facebook and Twitter. People spend roughly 18 minutes each day connecting with family, friends and associates via their mobile phone. Comparing mobile browsing activity with computing activity highlights similarities in content consumption patterns, with Connect, Search and Entertain modes dominating. The Inform, Shop and Entertain modes represent more leisurely browsing while the Navigate, Manage and Search modes involve more utility-oriented, goal-driven behavior.
Native Apps vs. Mobile Browsers

In addition to allocating time differently across modes, how people access information changes by mode as well. Consumers are more likely to use a native app when in Connect, Inform or Navigate modes, while mobile browsers such as Safari and Chrome are more popular options in the Shop, Search and Entertain modes. Understanding how consumers approach apps vs. browsers on mobile devices may greatly affect your content strategy.

Individuals exhibit different mindsets when they're operating in different mobile modes, and they have different expectations when it comes to native apps vs. web apps. A majority of individuals think native apps perform better and are more secure than web apps, although this may not be true.

While in inform mode, individuals experience a feeling of involvement and engagement.

While in Inform and Entertain modes, individuals experience a feeling of involvement and engagement as they play interactive games or access content from trusted sources. The two modes differ in that Inform is associated more strongly with a sense of curiosity and exploration while Entertain delivers a feeling of being immersed and absorbed in the activity. These motivational differences reflect distinct content differences between the two modes, with Inform delivering new stories for the first time and entertain serving-up familiar games and music. The search mode, although strongly task-oriented, includes browsing.
elements as well. While engaging in search sessions, mobile users present high levels of exploring and irritation, a natural feeling when looking up new information.

<table>
<thead>
<tr>
<th>Consumer mindset differs by mode, impacting the tone of voice for advertising</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connect</td>
</tr>
<tr>
<td>Involved (i.e. engaged, immersed)</td>
</tr>
<tr>
<td>Exploring (i.e. curious)</td>
</tr>
<tr>
<td>Sense of happiness (i.e. happy, entertained)</td>
</tr>
<tr>
<td>Sense of purpose (i.e. efficient, fulfilled)</td>
</tr>
<tr>
<td>Unengaged (i.e. distracted, bored)</td>
</tr>
<tr>
<td>Concerned (i.e. anxious, guilty, upset)</td>
</tr>
<tr>
<td>Irritated (i.e. confused, frustrated)</td>
</tr>
</tbody>
</table>

This chart captures the likelihood of experiencing various emotions across all seven mobile modes and indexes that to a total emotion score across all mobile activities.

**Mobile mindset by mode**

## The Connected Convergence

*We are moving quickly to a world where all our stories are going to be told across multiple media platforms.*

Media companies are now telling their stories via different touch points; however, individuals are gaining more control of broadcasting their own stories by leveraging multiple media platforms. People are traversing multiple connected devices to build their own custom experiences. Facebook is ingenious at providing a platform with which to construct personal, content-driven experiences (native apps, web apps, desktop PC apps, and the Open Graph set of APIs). Regardless of what screen is handy, an individual can have their own Facebook page with them at all times and can design cross-platform experiences based on their context.

This means that you now have a more complex relationship with your mobile audience. Building content from the top-down — the way you're used to building it — is quickly becoming less relevant. Audiences expect bottom-up, participatory content — content that is contextually relevant, consumable with whatever screen is handy, trusted, and sharable.
Mobile technology is evolving separately from how people interact with mobile devices. The two do not necessarily coincide. At some point, convergence requires compromise; however, the mobile industry is still in the "figuring it out" stage. For example, the Siri voice-activated technology in the iPhone 4S turns the device into a personal assistant that will complete tasks "on command." Do people want to converse with their device to aid in consuming content? The Samsung Galaxy III device "watches" you to see if your eyes are looking at it. If so, it won’t dim the screen, assuming you’re reading. It knows you’re not tapping on its screen, yet it knows you're gazing into it -- informing it that you’re close to it, which could lead to other behaviors it can manifest, such as changing notifications.

First and foremost, the type of devices that will succeed will offer people the ability to keep in touch with their network of friends, family and colleagues. That type of connection will take precedence over technology and applications that offer information access and use.

People want contextually relevant access to information, and that access plays a major role in how people use their devices, but it takes a less significant role to fostering personal connections with others. This carries implications for the type of devices people carry and the types of services they desire. This is why understanding the mobile modes and behavior is key to developing a scalable content strategy. It’s less a paradigm shift for mobile consumers, and more of a transformation for content developers.

**Delivering Elastic Content Experiences**

The last five years of web innovation heralded a frenzy of content creation. With the rise of mobility, how we develop content has become crucial to its discoverability and the elasticity of the experience.

People want experiences that bend to their specific requirements. Your goal as a content developer is to create engaging experiences for screens that are convenient — not simply to convert an existing experience to small screens. Converting content that was optimized for a different modality to a mobile format is an exercise in futility.
Great mobile experiences are created, never ported.

It’s time to begin conceptualizing mobile first content, rather than desktop first. All your web products should be designed for mobile first (even if a mobile version is not initially planned.)

Content Agility With a CMS

To drive quicker access to domain expertise, provide information in near real-time, and re-use and share content across groups or business functions, you should consider becoming agile in your content development. Agile is built on the foundation of Continuous Integration (CI), and will help you deliver faster products, test new ideas, and iterate faster to deliver the optimum experience for your audiences.

Most of the content that’s going to be developed over the next decade is going to be designed for mobile devices.

Continuous Integration is a software development practice where members of a team integrate their work frequently, leading to multiple integrations per day. Many work teams find that this approach leads to significantly reduced integration problems and allows a team to develop more rapidly. If your content supports products or services that change frequently, you definitely need to explore the idea of CI in your development. Although modeled for software development, CI and Agile can be leveraged for almost any type of content development.

It’s no longer scalable for you to develop content for one device — you may find you need to support multiple devices, including different phones and operating systems, tablets, and desktops. Currently, there are over 4,000 feature phone models and operating systems on the market. While you may not need to support that many devices, your content strategy will more than likely need to consider at least two, if not more.

A content management system (CMS) can deliver a wide array of user experiences across multiple devices. A CMS is usually a hosted, multi-tenant solution that leverages one code-base and reusable content templates. A typical CMS consists of a combination of libraries, protocols and solutions that collectively provide a uniform stack on which to host content, widgets, applications and properties, serving all your devices ranging from desktops to mobiles. The driving reason behind implementing a scalable CMS is the increasing need for transportable experiences, personalization and near real-time content updates.

The CMS’s back-end uses a content engine to ingest, process and store all of its data on the content grid. The content is aggregated and enriched in the cloud and available to all users on the network. The content engine is the data store. By having all the data in one central store, relationships are created between related data across the network — not only can a user access information about something, they can also see what others in their network are viewing and contributing. You can then provide more relevant and engaging content based on user behavior and history.
We no longer create content; we create content applications optimized for multiple devices and user contexts.

All the content ingested through the CMS back-end uses a common framework to deliver the data necessary for the front-end to render the content to the user based on their current device. We have a massive web of objects that are scalable to the user’s context.

**Web Application Frameworks:**
**Your Content is Now an App**

A web application framework (WAF) is a software framework designed to support development of dynamic websites, web applications and web services (Wikipedia, 2011). There are multiple web application frameworks. Some content management systems are looked at as WAFs because they provide similar functionality. For example, both Drupal and Joomla’s structure provides a minimal core whose function is extended through modules that add or extend functionality. The line between these platforms as “content management systems” is becoming blurred because add-on modules now enable these systems to function as fully fledged applications beyond the scope of typical content management.

Because user behaviors are different based on the device, you may want to leverage one content data store and one code base; however, the goal is for audiences to get the optimal content experience the device can offer.
Content Elasticity

Decisions on which content to deploy should be made based on user context — because you can create templates for the various devices you want to support. Remember that much of your audience may not complete their experience on one device. They may traverse from a tablet to a desktop PC, and back to a smartphone. An overall content strategy goal should be to enable “content elasticity” across multiple devices. To enable your user to begin their experience on one device, continue on another, and/or have multiple devices in use simultaneously, you need a server-centric architecture that serves up different views based on the screen in hand. With user authentication in the cloud, information is saved on the server, enabling the user to continue interacting where they leave off regardless of the device they choose to use.

This should also change the way you think about developing content. In this model you construct or reuse content “views” that combined end up creating an overall experience. The experience is constructed by placing the content into views that leverage templates optimized for the supported devices to deliver content based on the user’s context.

Users can then access the experience from multiple devices, with different views. Your content needs to be created to reflect these varying devices, considering that not all interactions will be supported across each device. This means your users may experience different interactions, even when traversing multiple devices, while still able to achieve the overall goals of the content experience.

Native, Web, and Hybrid Apps

Often the first question asked in product development is “native or web app?” When deciding which way to go with your content strategy for learning and development, you should fully understand the differences because they are crucial to consumer engagement.

Native Apps

Native apps must be installed on the device; they are either pre-installed or they can be downloaded from app stores. Native apps are written specifically for the operating system so they can take advantage of the device’s functions, such as the camera or GPS.

It is much easier for the mobile user to conceptualize what this means in practice with the download app: click (pay) – download – install – click on icon – run. With the web app it’s not as clearcut: you visit the mobile site and it does things for you. Isn’t that just a mobile site? In the real world this shouldn’t matter; yet the world has become obsessed by apps – in part because of the power of Apple’s marketing and due to inaccurate reporting. Consumers will play a game, music or video or update their social networking page on their desktop; it might be installed locally, via disk or download, or accessed via the web, but no one considers whether or not the experience is through an application. On a mobile device, the same consumers believe they want apps, making much of the delivery about the “packaging.”

Web Apps

Web apps reside on a server and are accessed via the Internet. Web apps can be coded once to work across multiple operating systems, rather than being developed separately. This means that the same application can be used by most devices that can surf the web (regardless of the device).
Which App to Develop?

If your app requires use of a native API or native graphics, a native app may be a better choice. Studies by the Nielsen Norman Group show that native apps have higher usability than web apps. Jakob Nielsen points out that many web apps have awkward input systems, download delays and badly designed interfaces [Source: Nielsen Norman, September 2011]. Users also perceive native apps to perform better than web apps, even though this may not be true. Take a look at the following table, and determine which app is better suited to the characteristic listed.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Native</th>
<th>Web</th>
</tr>
</thead>
<tbody>
<tr>
<td>Downloaded to the device</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coded in a language specific to the device OS Objective C, Java</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Runs in a browser</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coded in HTML, JavaScript, and CSS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distributed via an app store</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full use of device hardware and APIs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limited access to device hardware and data, as well as user data</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

You should also consider the following when determining which type of app to publish:

- **Maintenance**
  - Will you need to frequently update the app content?
- **Cross-platform support**
  - Do you need to offer your apps across multiple operating systems and devices?
- **Distribution and Discoverability**
  - Will your apps need to be “discoverable” in an app store?
- **Online/Offline**
  - Do you need to provide offline support?
- **Media**
  - Do you want to provide media-rich experiences?

However, there is a third type of app to consider.
Hybrid Apps

Hybrid apps are written in native languages, downloaded to mobile devices, and able to access the device’s APIs, but the content is pulled from the web. Hybrid apps can bridge the gaps between the capabilities of native apps and the ease-of-development of web apps.

A hybrid app combines the best of what native apps offer with the flexibility of the web. Some hybrid apps contain a native “shell” that can provide the “chrome” necessary to invoke a native-like experience, while relying on web services to provide the content. This allows you as the publisher to access the device’s system functions (camera, GPS, etc.) as necessary, but also provide the most up to date content experience possible, and use one content store. Some developers think of native apps as traditional “client-server” architectures, and web apps as “thin client” architectures.

One Size Fits All Is Dead

The need to provide contextual relevance by integrating social services into a user’s content stream is one reason many companies develop hybrid apps. Many of the digital newsstands enable users to consume their favorite content based on their personal interests. That means, very specifically, that every user can select his or her individual content library from a wide variety of constantly varying content. The content will be personalized based on interests, time of day, and location. “One size fits all’ is no longer up-to-date. Many newsstand apps are optimized for tablets, but the underlying content management system enables publishing to multiple devices.

Designing Mobile Interactions in Context

If you decide to leverage a content management system with flexible publishing layouts, you still have to design appropriate experiences to match your user’s context. To design effective experiences for mobile devices, combine what you learned about the mobile modes with how users hold and interact with their device. When creating mobile experiences, you are designing for people in relation to what they are doing because rarely are they static when holding their device.

Design Tips

The blending of people’s digital life and who they really are, the things they do, and what they need is the real mobile revolution. It’s a new form of communication, adopted en masse because of its naturalness to our daily lives. Consider each of the following when designing for mobile devices:

- Design for multiple screen sizes
  - Define the device groups you will support
  - Create a default reference design for the devices and know your device capabilities
  - Define rules for content and design adaptation
  - Opt for web standards and a flexible layout

Content Strategy Across Connected Devices
- Consider performance optimization. Think of mobile devices as appliances. With authentication and data moving to the cloud, more processing will occur there instead of on the device itself, but you still need to maximize performance for both over-the-air and on the client.
- Become more aware of touch targets, gestures, and actions
- Consider leveraging location systems
  • Always prototype
    - Consider using the content agility development processes mentioned. Iterate often to get feedback. With a more agile process, your concepts will evolve much quicker and you will adapt to what users really need and want. Without prototyping, you will have limited insight into the effectiveness of your design.
  • Always consider context
    - Create experiences based on “quick bursts,” which is how people use their mobile devices
    - Remember that most people use smaller devices one-handed and tablets with both hands
  • Touch
    - Simplify your user interface
    - Don’t count on hovers
  • Orientation
    - Does your experience need to support both portrait and landscape orientation?

Conclusion

As technology evolves, and our need to support a smarter workforce grows, we should have a flexible and scalable content development model. It’s becoming prohibitive in time and resources to continue to develop one-off content experiences that are designed for one device. Furthermore, audiences now expect more contextually relevant content experiences designed for their own personal interests.

Many people are still thinking about content from a desktop/browser perspective. They start with thinking about delivering via a website first, and then how to cram that into a mobile device. Many content development processes and structures are focused on delivering to non-mobile devices. We have almost a generation of history and workflows to change. Evolve your workflow away from what your traditional systems dictate and move toward what content creators need when supporting mobile audiences. Apply the same principles and techniques to your workflow design as you do to your content design.

The next three years for mobile will focus on the increasingly parallel use of technology and multiple devices. People are using media in a more convergent way — they watch television while surfing the web via a laptop or iPhone, or browse through a magazine on an iPad. Recognize that mobile is the only platform for which you should be developing content — even if you’re not yet delivering on mobile.

You need to embrace a scalable content management and distribution system for the business imperatives you support. You need to be able to move with velocity, while designing and delivering quality content experiences. Determining how to leverage the capabilities of mobile technology to deliver worthwhile content experiences in this fashion is a critical component in an overall content development strategy.