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Mapping Strategy: Understanding the Digital Battleground

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If there's one thing historical maps have taught us, it's that those who define boundaries also have control of the resources and services that live within those borders. This is also true within the digital world, as mobile giants such as Google and Apple quarrel over the best mapping system for consumer consumption. But why has there been such a rush by operating systems, advertising companies and search engines (by trade) to trail-blaze their way into what would seem to be a

cartographic or publishing matter?

Aside from the two goliaths that have dominated news coverage in recent months, others such as Nokia, AOL and Microsoft are realizing that navigation is a significant factor in a mobile user's experience, and it's fast becoming a priority for businesses wanting to take advantage of the possibilities. In fact, mapping and navigation have grown to become an expected standard feature of mobile operating systems and platforms as much as Web browsing and e-mail. The mapping experience has become so integral that it's now one of the things that users take into account when evaluating the purchase of a new mobile device or upgrading a mobile operating system.



A U.S. Forest Service worker uses a mobile mapping app on an open range.

As a result, in the last two years alone, many of these mobile companies have created their own mapping systems with a hope of luring customers into wanting a better mobile experience. While doing so, they have paid close attention to the programming blunders of their competitors—some arguably major—as each races to produce tools that enable users to get from point "A" to point "B" as well as provide apps that fits neatly into their lifestyle. Quickly, the accessibility of GPS and GIS devices in cars and smartphones made mapping technology less of a desired gimmick and more of a measurable consumer priority, need or expectation.

Changing Roles

At the onset of digital mapping, consumers quickly took notice of how relatively simple it was to access directional information online. It was convenient and straightforward. However, in the last decade, technology has changed the role that maps have played to become more than just a location-guidance tool for consumers.

A map isn't directly considered to be a valuable commodity until it provides the ability to engage in an activity. Because of this, maps have created an insatiable "need" for information as GPS and GIS devices become more user-friendly, and mobile devices become more consumer-centric.



A map of Brooklyn's New York City Transit can be viewed on Avenza's PDF Maps app.

Based on the latest direction maps have taken on the digital roadmap, they've developed from a convenient feature in its infancy to an advanced digital utility upon which apps and other commodities have become dependent. Just a few years ago, an in-car navigation system was considered a luxury option that drove the price of high-end vehicles upward by \$5,000 or more. Now, navigation systems are ubiquitous, much as the CD player or the air-conditioning that comes standard when purchasing an affordable sedan. The stakes to lay claim in the mapping world are high for mobile titans, because much of the industry's potential future revenue will be determined on knowing the mobile user's location and understanding how to monetize the information.

Reliant Users

Today, mobile users find themselves reliant on digital devices for entertainment, communication, general social awareness and interaction. At the core, digital maps are used to help consumers plan a trip, avoid congestion, reduce traveling time and increase fuel savings.

Nonetheless, the emergence of lifestyle apps and services to help find the best restaurants and closest movie theaters based on a user's current location—not to mention finding out where one's friends and family are at any given moment—are increasing the pressure to produce geo-services with added value. To make these apps functional for the consumer, many of these lifestyle platforms (e.g., Yelp, Zagat, Poynt and Foursquare) are associated with a geo-service to complete the mobile experience—in essence, "show me an activity, find the location, and tell me how to get there based on my current position." In the mobile world, information is valuable but probably not as desirable unless it's accompanied by a map.

However, mapping isn't solely an issue driven by the needs of mainstream America. Major technology companies and businesses are keeping a keen eye on the development of digital maps and geo-related services with good reason. U.S. businesses rely heavily on geospatial services for planning and operational services, with a workforce of more than 5.3 million using some type of location service on a daily basis. Globally, 50 percent of Internet users in the five largest European economies access maps online, with 35 percent of smartphone users accessing maps on their devices, according to Google. Each day, the demand to access location-based information to work more effectively is growing exponentially.

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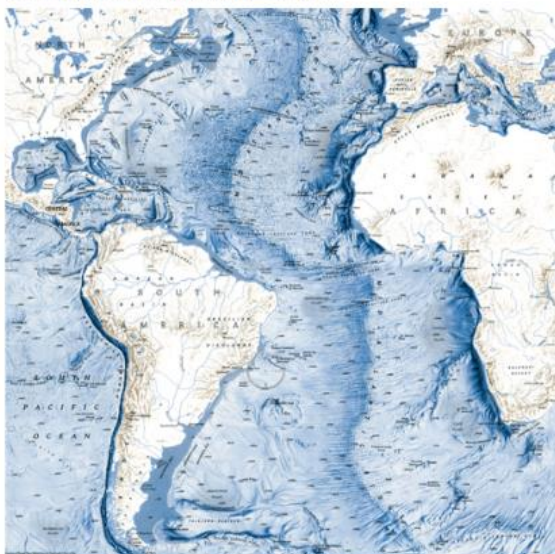
Balloonists used digital maps to navigate over Albuquerque, N.M., for the largest international ballooning festival.

As technology continues to speed along, it's becoming more apparent that the struggle to chart digital grounds has less to do with a determination to map the Earth accurately and more to do with the attempt to seamlessly overlay the abstract world with a geographical one that creates a rather large world of commercial opportunity. In the near future, digital maps will become even more essential for businesses as apps begin to streamline the process of delivering information accurately based on a user's immediate surroundings. To communicate with potential patrons and maintain existing customers effectively, businesses will need to incorporate interactive advertising and marketing incentives into their budgets to successfully draw in an upwardly mobile customer base.

Map-Making Hurdles

So what are the difficulties in reaching the point where digital maps and geo-services work cohesively to produce significant return for consumers, businesses and mobile giants? One would be the constantly changing nature of maps.

Paper map publishers will be the first to say that print and distribution costs are significantly high, all of which must be front-loaded each time changes are made. Aside from the length of time it would take to get the updated version of a paper product to market, paper-map publishers still are confronted with overhead costs and distribution margins, all of which are happening in a consumer marketplace that's arguably shifting toward digital consumption of maps and geographic information.



A portion of the Atlantic Ocean floor map is detailed by National Geographic.

Although the digital format removes some of those costs, the fact remains that if a map isn't up-to-date and accurate, there will ultimately be a backlash of consumers similar to the one felt by Apple when it introduced its own map app in lieu of the Google platform when the iPhone 5 was introduced. Moreover, if the map isn't available as a digital product, then the traditional map publisher is effectively conceding that customer to the aforementioned digital map and service providers or potentially forcing the 21st century map consumer to acquire a product in a possibly less-desirable format.

Given the nascent space, another early hurdle digital mapmakers will need to address is the variety of content offered to an audience of users who want to expand their travels beyond the "left-turn, right-turn" urban environment. As mentioned, lifestyle apps connect to geo-services that assist in completing an action.

Currently, many of those apps flourish in locations that are well mapped and serviced. However, as mobile users venture beyond the local coffee shops and into areas such as deserts, mountain ranges, bodies of water or outside their home data areas, connectivity and data cost become issues.

The 'Now' Generation

Developers of geo-services will need to contend with developing a variety of accurate maps for an audience that may need to work with a different set of standards based on several factors in an uncontrollable environment. To use many of today's digital maps, cell reception is needed to download and stream a constant flow of updated map images, much of which can be extremely data intensive and costly when away from home.



A National Geographic reference map of Panama can be downloaded from Avenza's PDF Maps app.

A prime example of digital maps and GPS tools causing confusion rather than providing direction would be using an in-car navigation system while driving through a national park. The system may show the most heavily traveled road through the park, but, more than likely, certain landmarks and topographic details that would normally be featured on a paper map—such as points-of-interest or trailheads—would be non-existent. Although connected GPS tools may still be able to function, it's a useless instrument if one can't locate surrounding features.

It used to be that cartographers were held responsible for maps' accuracy and detail, but as the digital age feeds into the demand of the "now" generation, mobile giants are using the speed of the Internet to their benefit by allowing the communication of map details to come directly from those who request them: consumers. First there was OpenStreetMap, followed by others such as Google and its Google Map Maker, and Nokia with its Nokia Map Creator—all of which work on the premise that novice cartographers who have their own inexpensive portable satellite navigation devices can add and edit their own contributions to the growing web of digital maps.

The digital landscape has made today's map a little more complicated than the "X" that marks the spot of yesterday. Although the "treasure" still eludes many of the major players, mobile companies know that the goal is obtainable, and unlocking the right map solution can be profitable. There's a strategy to it, and many are mapping out their own course to get there. Because if there's one thing historical maps have taught us, it's that those who define the boundaries also have control of the resources and services that live within those borders.