Where It's At

Mapping Battle Highlights New Era of Revenue and Development Models

Greg Goth

On the surface, the well-publicized errors in the Apple Maps application launch in September 2012 put the spotlight on a rare stumble for a company renowned for historically providing elegant and functional technology. Secondarily, it offered industry observers an opportunity to contrast the two industry leaders in "eyeballs" accessing digital maps, Apple and Google.

Taken more in depth, however, the Apple Maps issue can also provide an impetus for exploring both mobile apps' enterprise potential and a view toward an incredibly wide range of development models. Veteran industry observers say we're at the very dawn of a mobile-dominated Internet in which geolocation and mapping platforms will drive ever-increasing profits — and spending.

For the rising generation of young adults, says Mike Dobson, former chief technologist for Rand McNally and current president of consultancy TeleMapics, "There is a fundamental focus on 'It's about me.' People want their media focused on them. When they think about their everyday experience, it is quite reasonably 'about me,' and the one thing about 'me' that is a constant truism is location. So media creators need to focus on location — what's around me, what the opportunities are for me. I need to know where I might shop or have a meal or meet friends."

In consequence, Dobson says, this fabric of location and geography is rising to the forefront of almost every Internet application, "because there are very few things any of us do that aren't somehow tied to location."

If analyst forecasts are anywhere close to correct, the commercial potential for mobile geolocation is immense. According to Wokingham, UK-based research firm MobileSquared, the number of mobile device users in Europe who used a mobile mapping service rose from 12.5 million to 35.4 million between February 2009 and February 2011. The firm also predicts that mobile advertising in the US will more than triple between 2011 and 2014, from US$1.4 billion to $5.1 billion, and that geolocation as an accelerant of mobile ad spending will skyrocket to nearly $905 million in 2014, compared to $162.7 million in 2011.

Through the potential of mobile location and mapping, Dobson says, "We are fundamentally changing the nature of what we can do, what we can know, and what we can present about places. The effect is [to help] reduce the friction of distance. You are able to get to places easier, you know more places, and I think that, culturally, has a chance to be a game changer."

For these forecasts to come close, however, the maps that are the base of these mobile location services must be accurate. The intriguing questions surrounding the overall development of the mapping ecosystem include, What existing strength — such as Google's unparalleled amount of data versus Apple's reputation for user-friendly hardware and brand loyalty among users — might emerge as the dominant factor in driving market share? To what extent will "boots on the ground" development methodologies have to complement algorithmic technologies? Given the immense amount of publicly available data, will open source efforts such as OpenStreetMap (OSM) ever provide a mapping equivalent of Linux, driving an OSS ecosystem of geolocation services? And, is there an opportunity for mapping applications on top of existing enterprise platforms to any market-making extent?

Everybody in the Pool

In the weeks following the Apple Maps fiasco (which resulted in an open letter of apology from CEO Tim Cook and was likely the reason for the departure of Scott Forstall, the leader of Apple's iOS efforts), numerous players in the technology industry have scrambled to carve out some kind of niche in the "map app" game. Within days of each

1089-7801/13/$31.00 © 2013 IEEE

News in Brief

A new study indicates that the market forces supporting Internet sustainability in developed countries are also key to success in the developing world. The **Anaysys-Mason study, *How the Internet Continues to Sustain Growth and Innovation,*** looks at how the Internet responds to increased demands for new services, and how that response fuels its growth. The study, which was commissioned by **ISOC**, also explores the impact of new technology, increased capacity, and changing content distribution models on Internet development in the world's poorest countries.

More information is available at www.internetsociety.org/how-internet-continues-sustain-growth-and-innovation.

With the launch of **Bowser, Ericsson Research** is putting **WebRTC** to the mobile test, letting developers experiment with creative uses of real-time video and audio for Android and iOS devices. Supported by **Google, Mozilla**, and **Opera**, WebRTC is open source and uses simple Javascript APIs to give Web browsers real-time communications (RTC) capabilities.

More information is available at https://labs.ericsson.com/blog/bowser-the-world-s-first-webrtc-enabled-mobile-browser and www.webrtc.org.

In its first look at **cybercrime costs** beyond the US borders, the **Ponemon Institute** found that, compared to companies based in **Australia, Germany, Japan**, and **the UK**, companies based in the **US** were much more likely to be hit by malicious code, malicious insider attacks, and Web-based incidents — all of which are the most costly types of cyberattacks. Australian and UK companies were mostly likely to be hit with denial-of-service (DoS) attacks. German companies were least likely to experience DoS and malicious code attacks, and Japanese companies were least likely to experience insider and Web-based attacks. The study also found that the US led in overall average costs of cybercrime, with a total of US$8.9 million per

cont. on p. 9

other in November, Nokia announced a major revamping of its mapping platform, and TomTom announced that it would make its location-based database available to developers.

The Nokia platform, branded HERE, allows registered users to make changes such as adding streets — as well as making corrections to mistakes they notice in the map — via its MapCreator feature. The company is covering all its bases: in addition to an iOS version of HERE, Nokia announced a strategic partnership with Mozilla to develop the platform on Firefox, and said a third-party SDK would be available for Android developers; both these initiatives are scheduled for 2013.

The TomTom platform, which is offered on a free trial basis, includes a map toolkit API that provides access to a map display Web service; a geocoding Web service, enabling both free text-forward geocoding (find a location by entering an unstructured address, place, or point of interest) and reverse geocoding (identify a location from a pair of latitude and longitude coordinates); a routing Web service, which provides point-to-point routing and route recalculation using TomTom's algorithms; a traffic Web service, using TomTom's HD Traffic to deliver real-time traffic incident and delay information; and management tools — all based on what TomTom calls "cloud-based performance and scalability."

But one veteran industry observer, Boston-based developer and systems analyst Vincent D'Amico, says it's time to think beyond the "usual suspects" of device makers and legacy navigation firms when thinking about the potential for maps. D'Amico, who calls himself a "heavy" user of salesforce.com, says both the company's iterative development practices and its vast array of enterprise-geared data could serve as a prime example of a "nonmapping" company that could be a resource for third-party developers to exploit.

In fact, an exemplar map-based app, Geopointe, is already available on salesforce.com. Developed by Orange, Calif.-based Arrowpointe, Geopointe mashes up data from various sources and maps from either MapQuest or Google on the force.com platform (one of its latest layers features US census demographic data from Google and Nielsen, which, the company says, will let users compare their own salesforce.com information to the demographic data on their maps). In differentiating Google and MapQuest base maps, Arrowpointe says the Google version offers Street View as well as demographic layering, and Google is priced $3 more per month per user than the MapQuest-based version.

The open source mapping community — or perhaps, to be more precise, knowledge of the open source mapping community — is also experiencing explosive growth. OSM (www.openstreetmap.org), the premier global open source mapping collaboration, saw its registered user base more than double between August 2011 and November 2012, from 450,000 to 920,000 (at the same time, OSM says its number of "highly active users" has declined from a high of approximately 14 percent in 2007 to 2 percent). Numerous enterprises, including MapQuest and Apple, have used OSM data for part of their maps, but Dobson says, the true potential of open source mapping might be inhibited by the secrecy in commercial mapmaking efforts. Although the ISO has adopted a series of standards for geographic information (www.iso.org/iso/home/store/catalogue_ics/catalogue_ics_browse.htm?ICS1=35&ICS2=240&ICS3=70&t), Dobson says the big players in mapping have adopted a closed development model that doesn't include talking about development best practices, common interest, or compatibility of disparate data sources.

Wild West Situation

"It's a Wild West situation," he says. "There is the ISO standard and many navigational data-based standards for the auto industry. But the reality is, I don't see any of the companies involved in Internet mapping doing anything other than perhaps reading the standards to get smart about what they ought to be thinking about. I don't see any of them adhering to the standard or spending too much time on standards committees. They're interested in putting together data that advantages them in the marketplace, and they are not interested in sharing ways they find to do that with anybody else."

Addressing the discrepancies in data sources might also be a result not of community collaboration, but of the legacy players cementing their position, according to Dobson — after all, lots of advertising money is likely on the line.

"Today, the data for points of interest, which would seem like one of the simplest things on maps, is in disarray because nobody in the supplier market does a good enough job to give you complete confidence that they have all the places you need in your database," he says. "So frequently, companies like Google will license data from two or three companies, and all of a sudden they'll have two or three addresses for the same place that are all slightly different.

"And often they don't know they're different because the metadata that was collected aren't in the same categories. So, often you'll find on a map that there may be three hamburger places right near each other that are in reality all the same place. That's a crucial problem."

One way Google is strengthening its position in acquiring this data, Dobson says, is through its Street View initiatives, which show definitively that the three different hamburger stands are in fact one.

Dobson is also concerned that public perception of where the data originates could inhibit crucial data-gathering efforts. Dobson says he recently had a conversation with a public employee who said his supervisors were wondering why they had to spend money collecting geographic data when Google was so ubiquitous.

"I told him if you hadn't given the data to Google, there would be no Google," Dobson says. "For these service companies, advertising is king, not the information local communities need to know about things like wetlands. Local people need to digitize that to analyze it, and unless they do it, nobody's going to do it. And that may come back to bite Google in the leg because the people who provide it may not get funding, because they think Google already has it."

D'Amico says what might emerge is a kind of dichotomy in which outdoor mapping is a combination of public and private data sources and user input to deliver almost real-time corrections such as blocked streets (in addition to the TomTom traffic app, traffic mapping application Sigalert.com currently offers such near real-time maps for interstate highways in numerous locales based on constant device check-ins), and a blank slate exists for indoor mapping applications in locales such as malls.

"I think that has more potential than outdoor mapping," he says. "Somebody owns the indoor map as it were. It's not public, you can't take photos of it from a satellite. It becomes a very different problem, and maybe it will force people to change the way they think about mapping and the way they think about controlling mapping data. The industry is going to need to mature some to get us past that and enable us to share information in a way that still allows companies to generate revenue. We want them to be profitable; we need them to be profitable. But we want them to do it in a way that benefits all of us."

Greg Goth is a freelance technology writer based in Connecticut.

News in Brief

cont. from p. 8

year, while the UK had the lowest total average cost at US$3.3 million.

The report is available for download at www.ponemon.org/local/upload/fckjail/generalcontent/18/file/2012_US_Cost_of_Cyber_Crime_Study_FINAL6%20.pdf.

The **European Network and Information Security Agency (ENISA)** has issued a new report focusing on technical issues related to users' right to have their digitally held personal information deleted. This "right to be forgotten" is a key element of proposed **European Commission** regulations that are pending in the **European Parliament**. The report identifies key issues, technical limitations, and the need for legal clarifications and clear definition of terms. Among the report's findings are that a technical solution alone is insufficient to enforce this data-deletion right, and that an interdisciplinary solution is needed; it also recommended exploring an approach that would require search engine operators to filter references to "forgotten" information stored inside and outside the EU region.

The report is available at www.enisa.europa.eu/activities/identity-and-trust/library/deliverables/the-right-to-be-forgotten.

Spurred by the increasing importance of vertical markets, government and private-sector leaders and standards community representatives urged the **ITU** to both create standardization mechanisms to serve vertical markets and lead information and communications technology education and innovation efforts in the developing world. Meeting at the **Global Standards Symposium** in Dubai, participants advocated for flexible mechanisms that will facilitate collaboration and innovation in e-health, transportation, and smart grid systems; they also encouraged further ITU work in closing the standardization gap between industrialized and developing markets.

More information is available at http://wtsa12.wordpress.com/2012/11/20/gss-adopts-its-conclusions-and-calls-for-strong-collaboration-mechanisms.