

# The State of Where 2.0

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**T**HE Internet eats everything it touches. Back in 2004, when “local search” was interesting but not yet real, the O'Reilly Radar—that combination of instinct, murmurs from the alpha geeks, and unexpected data—was picking up signals about the emergence of geospatial data on the Web. We committed to the first Where 2.0 Conference, held in June 2005, and shortly before it took place, a slew of announcements confirmed that much was brewing in net-connected location-based systems.

One year later, with Google Maps, Google Earth, Local Live, MapQuest, NASA World Wind, Yahoo!'s local ad platform, Open Street Maps, and the enormous GIS industry rapidly moving into the area, the signal is coming through loud and clear.

The space is interesting because it's about location, which is something tangible and real. We technologists live much of our lives in a haze of ethereal abstract metaphors and high-level tools, so we get a visceral reaction when we actually do something that connects us to the real world around us. We like mapping and location because of this real world connection.

And because it's useful, there's money around it. The money in the past has tended to steer the services away from the useful and toward the commercial. For example, there was the pitch of “Wow, our phones will point us to competing cheaper stores on the other side of town!” But there's a word for that kind of incessant commercial electronic messaging: spam. Another example: the first local search applications were all about the yellow pages data because it was easy and because the portals were keen to build a local search business. This premature monetization limited their

uptake. Not too many people build their lives around shopping, though, so the new applications revolve around friends, social connections, and events, leaving room for commerce when it arises but wanting their product to become part of your life.

There are several trends appearing in the industry now. Most obvious to consumers is the ability to view desired data on a map and the creation of new location-aware, social data. We are also seeing a rising need for open standards. Users are more willing to share their data if they know that it can be used elsewhere when they (or others they grant rights to) desire. As this desire to pull in more data and to have it be more accurate increases, people are turning to the desktop for a richer application experience and are beginning to rely on location sensing to keep their current position up-to-date.

## Data Visualization

Google Maps was where the action was in 2005, and we've certainly seen it inspire a lot of mash-ups. The silent contender has really been Google Earth (and its non-commercial open source peer, NASA World Wind). Google Earth offers a rich environment for visualizations and presentations, albeit in a desktop setting. For an example of what Google Earth can do, check out Declan Butler's visualization of avian flu outbreaks. Points on the map are visually coded by how recent the outbreak was, whether it was bird or human, and whether it was fatal. You can see at a glance the extent of cases, and using the annotations you can track down the sources and precise details for each case. Microsoft's just released MapCruncher is also built for data visualization.

Declan's using Google Earth as a data visualization tool, and that's appropriate: Google Earth is really just a pure data visualization tool. That's all Google Maps is, too. Mashups are simply adding in their own data to Google

Maps, the same way Declan added his own data to Google Earth. So we're fascinated by the data business around Where 2.0.

## Social Data

One class of mash-up that's particularly interesting in data terms are the "pushpin apps," sites that let you build your own collections of places that you can view on a Google, MS, or Yahoo! Maps. Frappr is probably the best known of these; it's becoming almost the MySpace of the mapping space. They have made it easy for anyone to create their own map, share it, and chat about it. Their traffic demonstrates people's desire for this type of control that none of the larger portals have handed over—yet. Again, lifestyle first, rather than the immediate rush to pure commerce, seems to be the winning recipe.

Most importantly, though, the pushpin applications are gathering data. We've noticed again and again that the Web 2.0 idea that a user's data is valuable is one that's hard for traditional data companies to understand. They are heavily invested in driving streets, and spending many millions of dollars to generate their data based on real ground truths. They're very uncomfortable with the idea that the intangible emotional associations of place ("where I was first kissed," "best steakhouse in New York City," "this butcher always overcharges his customers," "important places in the Missy murder case") are also valuable. We believe they are and these companies will end up gathering the information that lets them produce fascinating tours of cities and applications that tint your sense of place with the emotional coloring of thousands of previous visitors. The established players have been watching mash-up developers and are opening up their own data APIs.

The social data layer isn't the only thing coming from users. Both the Open Street Map project and the Mumbai Map project take data contributions (usually in the form of GPS traces and manually typed notes) from users and make them freely available. As the tools become better these types of projects will increase in number and scope.

## The Need for Standards

This year we are seeing a lot more platforms. With diversity of platforms inevitably comes the need for standards. In the GIS world, the Open Geospatial Consortium (OGC), for example, has a raft of standards for sharing maps and points of interest.

As mapping becomes more prevalent, the need for open standards is increasing. The hackers are pushing for open standards for their applications. GeoRSS, an RSS extension, has become the first open standard to gain widespread adoption from the major industry players with Yahoo!, Google, and Microsoft all having committed to supporting it.

Of concern is whether there will be an open standard for a richer set of data. Currently the most prominent format is KML (Keyhole Markup Language) which is owned by Google. It came to them via the acquisition of Keyhole and is used to describe 3-D spatial data. It is a highly regarded standard, but it is not an open one. GML is the closest thing to an open standard that competes with KML, and is based on RDF, but it does not support the full functionality of KML.

## Movement to the Desktop

We're seeing a lot more interest in the desktop. Google Earth is just the tip of the iceberg, and it has just been followed by the aforementioned MapCruncher. Google Maps is still the purest internet platform, based as it is in the web browser (the Internet's fertile crescent) but now that Google Maps has shown the world how easy it can be to make sense of location data, users are becoming more receptive to desktop applications. This moves the game towards established players like ESRI, as well as towards a lot of open source tools. We'll see advanced features work their way from the GIS world to the consumer world through Google Earth and other desktop tools first.

The desktop applications open the door to open source. We'll have GDAL (the data-converting glue between a lot of commercial and open source tools), GRASS (a very long-lived, full-featured GIS system that rivals the best commercial offerings), and UDIG (a desktop GIS toolkit for developers and companies to build their own desktop GIS tools from).

There are interesting moves afoot as AutoDesk opens its major Enterprise map product and works with the open source community to birth the Open Source Geospatial Foundation to encourage the use and development of open source geospatial tools. Interesting things will happen as these grassroots projects work together to challenge the establishment.

## Location Sensing

We've talked about displaying location, but the other side of the location coin is determining location. GPS has long been the standard bearer here, and it'll continue to be the benchmark. But GPS has some significant obstacles beyond the specialized hardware required, the most notable being that it doesn't work indoors. The cell carriers have your location, but most do not make it available for application developers.

Plazes and Skyhook are addressing this by turning to wi-fi. Skyhook's Loki, for example, sends all the signals it can see to the Skyhook servers which then return your most likely location. Skyhook needs a big central database of the location of access points, so they're another example of data being critical—they have 50-100 drivers on the streets at any one time gathering this info. Plazes on the other hand relies on its users to label where they are when they are on a wireless network. Some mobile application creators are relying on a tie to the Web and the accuracy of their users to feed them useful location data.

Location privacy will also become a larger issue over time. Skyhook's central servers know your location, Plazes actually lets users publicly display their recent movements on the Web. These kind of services broach questions about privacy. How exposed are people? Is this information subpoenaable? Can the government packet-sniff your location from your toolbar's interactions with the Skyhook servers? How can we protect ourselves?

It's mostly quiet on the RFID front this year. There are companies rolling out local area sensing networks (within buildings and parking lots), but we expect RFID to rise in prominence as it becomes known that the equipment is becoming cheaper. Already a hobbyist antenna can be bought online for under 50 dollars.

We're seeing a lot of movement in the Where 2.0 space, but we aren't seeing solutions to two related challenges that face the industry: how to make something that's compelling for users and at the same time sustainable. The world is full of failed companies predicated on lining their pockets rather than helping the user. While we can only learn from them what not to do, there's a lot more to be learned from artists, research groups, non-profits, and other groups more focused on people than on money.