



Tele Atlas Find more.™

White Paper: The Future of Digital Maps

Plotting a Route to the Holy Grail

“If you don’t know where you’re going, any road will do.” The Cheshire Cat’s remark in *Alice in Wonderland* is as true today as it was 120 years ago.

Of course, most people know where they’re going. They just need help getting there.

As a leading digital mapmaker, Tele Atlas has been helping people find their way for more than 20 years.

Today, it’s exciting to be part of a future where advances in technology and growth in the community of digital map users are making it possible to approach the mapmaker’s Holy Grail: delivering a map that accurately mirrors the reality of the customer’s world.

A Richer and More Accurate Map

Digital maps have become increasingly accurate since they were first made available in the late ‘80s. A 2007 survey by an independent global marketing information firm showed that Tele Atlas’ digital maps achieved near perfect scores in the areas of address availability and route guidance.¹

That accuracy comes from data gathered and reviewed by more than 2,000 cartographers and a fleet of sophisticated survey vehicles. Tele Atlas also uses more than 50,000 independent data sources, ranging from zoning boards and public safety officials to construction companies and truck drivers.

The future of digital maps, however, lies in their ever-increasing richness, as they evolve to reflect *more* of reality. Tele Atlas has already partnered with hundreds of companies to add more than

30 million points of interest (POIs) globally, including the most popular food, gas, lodging, shopping, and retail establishments.

But it is the growing community of map users that will make the most exciting contributions to the richness of digital maps. These users will contribute more historic and dynamic data, as well as more personal information.

In fact, it is through this growing body of map users, together with rapid technology advancements, that Tele Atlas can harness the power of a global user community millions of users strong. By tapping into the places they go, connecting users to the people and places they care about, and delivering a map that reflects *every user’s* current reality, Tele Atlas is delivering on its promise to provide the best possible customer experience.

Today, it’s easier than ever for digital map users to connect with the global navigation community through Tele Atlas and through its partners around the world—making connections and enjoying an optimized navigation experience. For example, customers’ historical speed data is now being captured by Tele Atlas partners so that customers can plan their trips more intelligently. Since historical speed data more accurately predicts travel times, customers can engage in more intelligent travel planning.

Current-day GPS technology also allows users to improve maps by responding in real time to changes in the road network, such as blocked or unblocked streets, reversed one way traffic, or new street names. They can also submit new POIs or even contribute opinions regarding existing POIs. Users are now submitting tens of thousands of map improvements every day.

Advances in technology and the growth of the digital map community means Tele Atlas can more quickly compile and verify fresh map data and update underlying databases while making more accurate and richer maps available.

More Intelligent Routing

This level of community involvement, or “mass collaboration,”² allows each member of the community to contribute to the creation of richer digital maps in a way that benefits both the entire group and each individual.

When millions of users share their historical speed data, Tele Atlas and its partners can use that data to improve the accuracy and quality of every navigation route chosen by every user, on any road, at any time of day.

Let’s look at an example of how this would work. On the map depicted in Figure 1, a driver is considering three options to get from point A to point B at 8:30 a.m. All of the available roads have a 50 km/hour speed limit. Traditional, sophisticated mapping calculations, which account for road type, speed rating and known delays such as stop signs and traffic lights, predict that the shortest route through the round-about should be the quickest, at four minutes. The “top” route should be a minute slower, since it includes two stoplights. And the longest, “bottom” route should be slowest, requiring six minutes to complete.

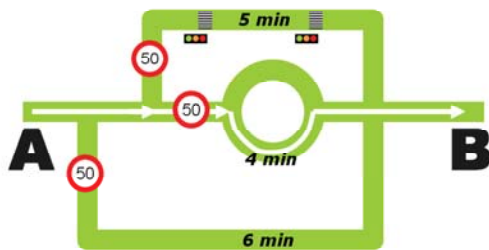


Figure 1. Predicted time to travel from A to B

But by factoring in historical speed data shown in Figure 2, which takes into account thousands of trips by drivers on these very roads at all hours of the day, it becomes clear that heavy traffic at the round-about during the morning commute means that it takes an average of seven minutes to go from A to B, rather than four minutes. And it takes nine minutes to travel the top route

due to extended delays at the traffic lights. But the bottom route remains a six-minute trip in real life, so defying logic, the longest route is the quickest.

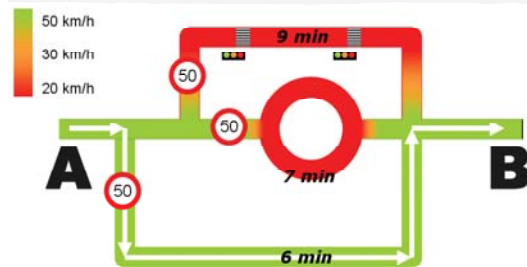


Figure 2. Measured average time to travel from A to B

On a larger scale, Figure 3 shows the travel speeds on all the roads around a major city, in this case Amsterdam, with its prominent outer and inner “rings.” In the map on the left, the speeds were predicted by traditional mapping calculations.

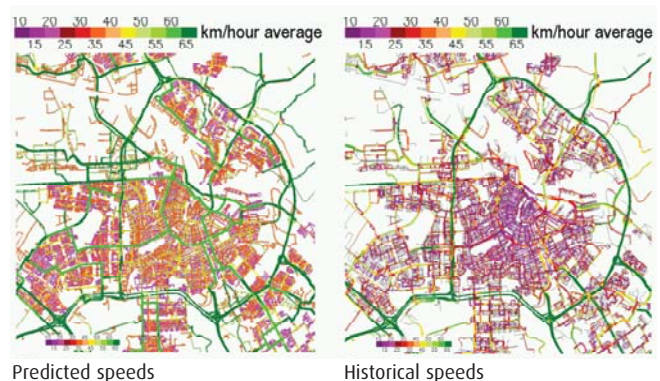


Figure 3. The color of each road indicates the average speed on that road. Purple is bad, yellow is ok, green is good.

In the map on the right, the speeds displayed are those of an actual weekday, based on historical speed data. Look closely and you can see that traffic on the inner ring road moves very slowly—30 km/hr less than predicted. This is something every resident of the local community would know. And by capturing historical speed data, it is now possible for Tele Atlas to ensure that all the members of its global user community are aware of it as well.

History as It Happens

The next step in navigation will be real-time traffic updates, provided on always-connected devices. As with historical speed profiles, meaningful real-time traffic updates will require capturing data from a large and active user community.

The eagerly anticipated Dash Express has already created significant buzz by promising to gather traffic information from users in the company's driver community and combine it with other data sources to provide all users with an accurate picture of current traffic conditions.

In addition, TomTom and Vodafone are jointly developing a real-time traffic information system that will provide accurate, up-to-date information on the speed and direction of cars traveling on all major roads across the UK.

Eventually, real-time traffic services will even be "personalized" for specific events. Users will be able to avoid traffic around a sporting event or find the best route to a parking spot at the local mall during the holiday shopping season, for example.

This same two-way communications channel will one day provide the means for the entire worldwide digital map to be updated on a daily basis. Ultimately, Tele Atlas foresees a future where digital maps are hosted centrally and only the freshest, most relevant portions are downloaded to local, connected devices.

My Life, My Map

The final dimension of the future of digital maps is personalization. In addition to capturing direct, factual observations from the user community, new applications will be layering more and more personal opinions and location data onto digital maps.

This will enrich the quality of users' lives by connecting them with friends and family more frequently, in locations they enjoy more.

One example is Autodesk's Family Minder, which aims to bring safety and peace of mind to family members by allowing them to locate each other using wireless technology offered by their cell phone carrier. Family Minder enables parents and guardians to view the real-time location of their loved ones from a web site or an application downloaded directly to a handset.

Another is Planet 9 Studios' RayGun™, which claims to be the industry's first 3D navigation, friend finding and social networking application. RayGun enables users to share their mobile position, see their friends as 3D avatars and communicate with them via SMS or VOIP.

Finding More, Together

It's an exciting time to be at the forefront of the rapidly growing digital mapping industry. Today, users everywhere play an important role in helping Tele Atlas provide the richest, most accurate maps.

More than navigating from point A to point B, Tele Atlas is helping users navigate their lives. Digital maps and dynamic content have the power to connect users to the people and places around them, whether it's their small circle of friends or the millions of people around the world who are traveling the same roads, going to the same destinations, and seeking the same new experiences.

With a twist on the Cheshire Cat's directional quip, only Tele Atlas can say: "If you tell us where you've been, we can tell you where you need to go and help you find more along the way."

1. Tele Atlas news release, "Tele Atlas Announces Industry Benchmark for Digital Map Accuracy," March 1, 2007.
2. Wikipedia, 2008.