

GPS and the Art of Navigation

There was a time when finding your way about town meant having to stop and ask passers-by, or getting tangled in a foldout map. Thanks to technology, you now have a new option – using a handy gadget or app to tell you where you are and where you wish to go. That is the magic of GPS

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The days of relying on strangers, street signs and paper maps to find your way about town are coming to an end, all thanks to a new technological superhero called geo-positioning. Once the preserve of just a few niche devices, GPS is now available in just about every smartphone and tablet, and is making its way to notebooks. What's more, even personal navigation devices (PNDs) are getting mainstream now and are more affordable than in the past – you can get one for less than Rs 10,000 now.

Directions from satellites in the sky

Navigation devices and apps today not only help you locate a place but give you further detailed information, ranging from restaurants to historical monuments to bank ATMs and public libraries and hospitals. If something

is important enough to be mentioned in a map, it is a fair chance that you will be able to see it on an app or a device. The main motive behind these is simply to simplify the complexities of mapping.

Although initially used by defence forces, GPS-driven devices now are steadily going mainstream. These work on signals received from dedicated satellites that help locate the device's location with surprising ease, serving up latitudinal and longitudinal information. When you enter the name of the destination, the system would locate the route and sometimes, also would suggest the best amongst all possible routes you should opt for. There are devices that give voice commands on turn-by-turn directions with visual displays of the route as you follow the directions men-

tioned. A new development is the emergence of A-GPS or assisted GPS. While GPS works purely on radio signals from satellites, A-GPS has the extra provisions to make use of mobile network resources that help locate and utilise signals from satellites in low signal conditions as well. A-GPS resolves these signal problems by using data available from a network provided by a third party, and works a whole lot faster than conventional GPS, although it does tend to work effectively only when a cellular network is present. Rare is the smartphone today that comes without GPS or location-based services that allow you to share your

location or provide information based on where you are.

PNDs, ANSs, and phones

GPS navigation devices for consumers include PNDs and automotive navigation systems (ANSs). PNDs are actually mini computers that are based generally on a smartphone OS (Windows CE is the most preferred option) and come with positioning capability as well as navigation functions. They often come embedded with maps provided by companies such as TomTom, i-GO, Map My India, and SATNAV. An ANS, on the other hand, is based on satellites for functioning and is designed keeping in mind the navigation requirements of an automobile - these generally come fixed with cards. They use GPS to obtain the position of the user and surroundings as per the information fed in the map database given in the unit. But stand-alone navigation devices have of late been facing stiff competition from smartphones that come with GPS/A-GPS and give the user to install a variety of mobile based navigation applications. Many cell-phones in fact even come preloaded with their own maps and navigation software - Nokia was one of the pioneers in providing free navigation on its phones. Viral Oza, marketing director, Nokia India says, "Navigation services like Nokia Maps are adopted for ease of use and faster and better performance to find places and the best way to get there. Such services have been appreciated by consumers in India."

Phone or PND?

PND manufacturers, however, claim that smartphones pose no threat to them. "Possessing expertise in standalone navigation device for over 20 years now, we think that though smartphones provide navigation app, they are not as professional as a GPS navigator. We are dedicated devices and work on a single device and thus, offer services in better ways. Moreover, we fix issues about sunlight reflection and provide a bigger and better display screen. Also, navigation apps on mobile phone often do not work in no signal zones", says Tony An, marketing director for Garmin Asia. "We are optimistic about demands of stand-alone navigation devices. People are still willing to purchase a camera even though their mobile phones have a built in camera", said he.

Yoginder Yadav, a trekker echoes this sentiment. "While navigation services on mobile phones are undoubtedly handier and easily accessible, the dedicated PND are exclusively for navigation based services and thus, work best to serve the purpose especially in outdoor locations. Also, one cannot rely on live mobile navigation in low signal or dead zones

due to the limitation of network, which often occurs in remote villages and hill side towns," he points out. "Unlike phones, there is no call or message to disturb the continuity in the connectivity which results in a better user experience", explains Jitendra Sharma, a rigorous traveller. However, Harsh Rathore, an IT professional, feels that mobile phones can do the navigation task pretty well too. "Being new to the city I need to look into the navigating application on my phone for help for some or the other reason, and thus it is of great use. When the purpose is being served on my mobile phone, why would I carry another device for help or invest so much in a dedi-

cated navigation device? Also, I think a phone is more convenient to use," he says.

Both devices have their plus and minus points. While dedicated navigation devices are better at catching satellite signals and tend to lock on to your location a whole lot faster, mobile phones with GPS receivers perform more than adequately in urban, well-connected areas and save the user from the need to carry an extra device. What's more, the Internet connectivity of mobile phones let you share your location on social networks or mail your location directly from the device. Perhaps this is why many developers have started coming out with map solutions for mobile phones as well



as PNDs. Whether you opt for a dedicated device or an app for a cellphone, one thing you will not lack is choice. There are a number of dedicated PND manufacturers offering several models of such devices across different price segments, while several cellphones today come preloaded with navigation software, and also come with a wide selection of apps that can be downloaded to them. Many of them, like Google Maps, are even free of cost.

And of course, there are other innovations taking place in the space. "We are always innovating and bringing better features at even better prices. We have recently supplied almost 650 devices of a connected 4-in-1 PND for the

Bihar Government," reveals Amit Prasad, MD and CEO of SatNav Technologies. "The device has Navigation, Tracking, Logging and can also be used as a tablet/phone! We are the only company in the country to have such a product today. We have also added the lost mobile protection software as a bundled offering with our navigation software for smartphones. Thus, the customer gets all-India navigation, and at the same time also gets a tool to protect his smartphone from getting lost."

Update issues

But it would be naive to assume that these devices are infallible. Let it not be forgotten

that they depend heavily on the maps installed on them to pinpoint your location as well as serve up routing facilities. In a country like India where constant construction is the rule rather than exception, roads often get blocked and routes diverted, it does take long for a GPS-driven device to get out of date, simply because its maps are not updated quickly enough. Data providers say that collecting data in India is a challenge in itself due to the unplanned division of areas into segments. Names of roads and monuments change frequently, and new ones pop up at the rate of knots - the Commonwealth Games held in Delhi made almost every PND in the country obsolete as they came with new roads, routes and landmarks. Moreover, the addressing system is again not very systematically done creating difficulties for data collectors - it is still very difficult to search for addresses on mobile devices!

In these circumstance, updation of data at regular intervals becomes a necessity for the service providers. "We use the best of the technology as per the geographical and climatic conditions of the area, and localised team of well educated professionals to work on field for collecting data. The updated data collected is send to the R&D centre in Mumbai where at regular intervals the final updation in every segment of our mapping solutions takes place. You can find our updated versions of solutions every quarter", says Rajat Tandon, country director-sales, NAVTEQ. SATNAV's Amit Prasad concurs on the need to update information. "Updating maps is a continuous exercise. Other than our workers on field, we have a dedicated group of 'citizens mappers' who are our GPS enthusiast and give map inputs about their city on regular basis," he told us.

But in spite of these challenges, prospects for GPS devices in India remain bright. Rajat Tandon, country director-sales, NAVTEQ points out "About 70 per cent of the people are aware of navigation services. However, many have still never used these. As per our reports, out of this 70 per cent, about 24 per cent have actually used GPS devices or navigation based mobile application. This percentage is expected to rise in the coming years. The in-car GPS device manufacturers feel that the Indian automobile market is gaining momentum with every year. The volume of manufacturing units is increasing year by year and we think that the market would keep growing."

The day is not far off when you will ask a mobile device rather than a stranger for directions. That is the magic of GPS allied with great navigation software and maps. ■

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