



# Location Based Services and Privacy

There continues to be an explosion of location based services to consumers and commercial users. However Stephen Graham Co-Founder and VP Marketing at Air Semiconductor argues that a failure to address the privacy issue might stifle the growth of otherwise attractive services because consumers do not necessarily want to feel they are being tracked by their network company or others. Air has developed technology to support location based applications that can protect users' privacy.

Contrary to what you might expect from someone in my position, I am very concerned about privacy issues related to location. Even if users are given 'complete control' over how their location is used, most will not fully understand what they are opting into and so the ability to control is meaningless. For most users there will be a long learning curve and along the way I am concerned that there will be casualties. However, on the other hand, the potential benefit of location based services (LBSs) is too mind-blowing to ignore. The applications that LBSs will enable have the potential to revolutionise the way we use a variety of portable devices such as cellphones, laptops and cameras.

Technology has a key role to play in finding a solution to the privacy issues associated with location based services.

Firstly, the method used to ascertain the location of a terminal such as a cellphone or laptop should be independent of the network used (for example, the cellphone network or the internet). Choosing a technology which is independent from the network puts control of location information back into the hands of the user and this clearly points to an unassisted GPS solution as a preferred technology. Other technologies such as network triangulation and assisted-GPS involve the network in the location calculation and so the network is inherently aware of the user's precise location. An unassisted GPS solution, however, must overcome issues of Time To First Fix (TTFF) and indoor positioning to be useful for LBSs. Air has developed technology to solve these issues and its stand-alone GPS receiver can operate independently from the network.

Secondly, it will be far more intuitive for the user to be in control of location information at the point of service delivery. There are times when we are all more sensitive about releasing our location than at other times, and the user needs to be empowered to choose when it is worthwhile

trading their location information in return for a particular service.

However, to be of value, services need to be delivered proactively based on location, and hence there is a potential chicken-and-egg problem whereby the network needs to know your location before it can ask if you are willing to release your location to receive a service. Air's Hot Zones technology enables proactive location based applications, whilst at the same time solving the chicken-and-egg problem, by storing locations relevant to particular services in the terminal. The network doesn't discover your precise location until you have decided that you want to receive the service.

Finally, location information should be encrypted before transmission to allow only the intended recipient to see it. So for example, if you call a taxi, you may want the taxi firm to know where you are but there's no particular reason why your network operator needs to discover your precise location.

It is already evident that the privacy issue needs to be robustly addressed to allow location based applications and services to flourish. Companies such as Yahoo!, cellphone network operators and others in the market that will provide platforms for location based services, need to be very concerned about privacy issues and to make technology choices that inherently protect their customers' location information. If this is not done, incidents involving the invasion of privacy resulting from the intrusive use of location data will stimulate a fear of location based services which will stifle their growth.

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