



## GPS, Unlike Scotland, Is Not Free

By Mark Stout

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Mel Gibson, prolific father and Hollywood man about town stamped his signature line on the movie Braveheart, when with blue face and matted wigage he famously proclaimed “Scotland is free!!” Here in America and recently appearing before the Strategic Forces Subcommittee of the House Armed Services Committee, General Robert “Bob” Kehler, Commander of Air Force Space Command, also dropped the ‘free’ word. Amongst the topics addressed in his prepared testimony, General Kehler said the Air Force provides position, navigation, and timing (PNT) signals--better known as the Global Positioning System, or GPS--as “a free global utility” (emphasis added).

A more expanded version of the simply stated concept of ‘free’ is this: as a result of U.S. national policy, codified into law, no direct user fees are charged for GPS signals to be distributed as a global utility. Given the free lunch fallacy though, we know that *somewhere, somehow, somebody has to pay*. Over the next five years, GPS will cost United States taxpayers about \$5.8 billion--far from free. Despite this significant cost, however, GPS remains a sound investment for the military, bringing tremendous benefit to defense applications. But GPS has expanded far beyond mere military utility and now puts the Air Force in the role of providing a worldwide commercial service – perhaps akin to a modern AT&T monopoly—without the profit. In General Kehler’s testimony he stated that GPS influences the global economy by more than \$110 billion annually. It has become essential to defense, banking, transportation, and emergency services.

When satellite-based navigation was first envisioned, it was to meet ICBM guidance needs. In the 1990s, GPS evolved to meet tactical needs, and when selective availability was discontinued in 2000, GPS accuracy to all users improved up to tenfold, allowing commercial applications to grow rapidly. Back in the day, GPS was considered an exotic “space technology” and because of that, receiver subscription fees were never imposed. But even as GPS applications have matured and proliferated, allowing businesses to profit greatly, there remains no subscription cost for these highly-valued GPS signals.

Since most users don’t have to pay for anything other than a receiver, the PNT data that comes from GPS has become integral to national security, worldwide transportation, safety and even the global economy. There is now no reasonable way to turn it off or back out of it. In fact, GPS has become totally ubiquitous; you may not even know when you’re using it. These PNT capabilities are so important that Russia is reinvigorating their system, GLONASS, the

European Union is developing their version, Galileo and the Chinese are going to build a GPS-like system, Compass. Perhaps a dependency on 'free' capabilities controlled by the U.S. Air Force, rather than being attractive, has become somehow disconcerting?

Fast-forward to today; the Department of Defense, through the Air Force and Air Force Space Command, may be on the edge of committing itself to providing another "free global utility" in the form of space situational awareness (SSA) and ultimately perhaps, space traffic management. The recent collision in space of a functional Iridium satellite with a dead-but-still-in-orbit Russian satellite left many wringing their hands about the deficiencies in the U.S. Air Force-operated space surveillance system, the necessary precursor to SSA. Although still the world's best, Air Force space surveillance can be improved significantly by adding sensors, fusing data, and providing more manpower to the task. While the military needs SSA, and some level of "free" capability will likely be provided to support U.S. policy goals of safe and responsible use of space, how much "free" service will there be and how will creep--as happened with GPS--be avoided?

AFSPC's Commercial and Foreign Entities (CFE) is an initiative to reduce the possibility of space collisions by providing conjunction assessments (CA). As space becomes more contested and more crowded, there will be an increasing demand for CA services, even as overall defense budgets are broadly expected to decrease. Will CA be available free-of-charge to international commercial satellite ventures and governments of other nations? If that is the intent, there should be many discussions regarding international investment, cost, and liability sharing. If the Air Force isn't careful, it will end up providing yet another commercial service, recapturing little of the original investment costs—or ongoing operating costs--from those who would use it 'free-of-charge.'

The world has found incredible ways to take advantage of GPS, far exceeding the designers' original intentions and the same could prove true for space traffic control in the future. National policy makers should consider subscription fees or—horror--even privatization options to help sustain GPS. Intuitively, there should be a cost associated with receiving the world's most reliable and accurate PNT signal. What other utility is provided 'free' to the world's commercial markets because the military has need for it in operations?

Regarding CFE and CA, those who are looking forward to a U.S. funded/universal space surveillance, space situational awareness, or space traffic control system should prepare to share both money and information. If these services are important enough to have, they should also be important enough to pay for. While the Defense Department and Air Force are not businesses, neither should they be philanthropists.

*Mark Stout is a researcher and analyst at Air University's [National Space Studies Center](#) and sometimes posts at the blog [Songs of Space and Nuclear War](#). The opinions expressed here are those of the author alone and may not reflect the views and policies of the US Air Force or the Department of Defense.*