



U.S. Position Regarding GPS/GNSS Civil Signal Intellectual Property



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September 18, 2013



Overview

- *Law, Policy, and Principle*
- *U.S. Position on GNSS IP*
- *Status of U.K. MOD IP Related to GPS Signals*
- *Summary*



U.S. National Space Policy

Space-Based PNT Guideline: Maintain leadership in the service, provision, and use of GNSS

- Provide civil GPS services, free of direct user charges
 - Available on a continuous, worldwide basis
 - Maintain constellation consistent with published performance standards and interface specifications
 - Foreign PNT services may be used to complement services from GPS
- Encourage global ***compatibility*** and ***interoperability*** with GPS
- Promote transparency in civil service provision
- Enable market access to industry
- Support international activities to detect and mitigate harmful interference



U.S. Policy Promotes Global Use of GPS Technology

- No **direct user fees** for civil GPS services
 - Provided on a continuous, worldwide basis
- **Open, public signal structures** for all civil services
 - Promotes equal access for user equipment manufacturing, applications development, and value-added services
 - Encourages open, market-driven competition
- Global compatibility and interoperability with GPS
- Service improvements for civil, commercial, and scientific users worldwide
- Protection of radionavigation spectrum from disruption and interference



Law, Policy, and Principle Relevant to U.S. GPS Signal IP Policy

- U.S. Law: Title 10, U.S. Code Section 2281
 - Make GPS civil signals (SPS) available worldwide **free of direct user fees**
- U.S. Space-based PNT Policy, December 2004
 - Provide **open, free access to civil signals and information** necessary to develop and build equipment to use GPS
- U.S. National Space Policy, June 2010
 - Engage with GNSS providers to promote compatibility, **interoperability and transparency**
 - Use foreign GNSS services that compliment GPS
- International Committee on GNSS (ICG) Principle of Transparency, 2010
 - GNSS Providers should **publish signal and system information for open services**



U.S. Position on GNSS Intellectual Property

- U.S. has a longstanding commitment to provide civil open service signals, and technical information necessary to develop and build equipment to use these signals, **available to worldwide users at no direct cost**
- The GPS **open service civil signals**, L1 C/A, L2C, L5 and the planned GPS III L1C are/will be provided as a **public service**
- All **intellectual property** related to U.S. GPS civil signal designs and their broadcast from GPS and other global navigation satellite systems will be in the **public domain** - www.gps.gov/technical



U.S. Position on GNSS Intellectual Property

- **We encourage civil GNSS signals from other GNSS to be provided in the same manner**
- **Private entities** or entities that wish to patent technologies or techniques that are specific to receiver design and application development are free to do so
- This approach to civil signal service provision maximizes private sector **innovation** and has promoted new applications and great **economic benefits**

GPS civil signals will remain perpetually free and openly available for users worldwide



Economic Benefits of GPS in U.S.

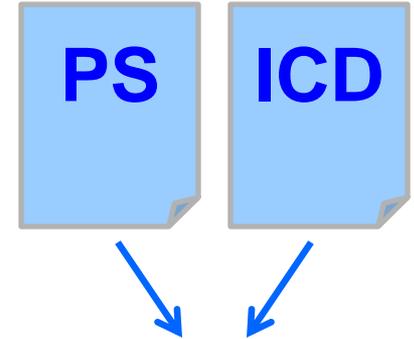
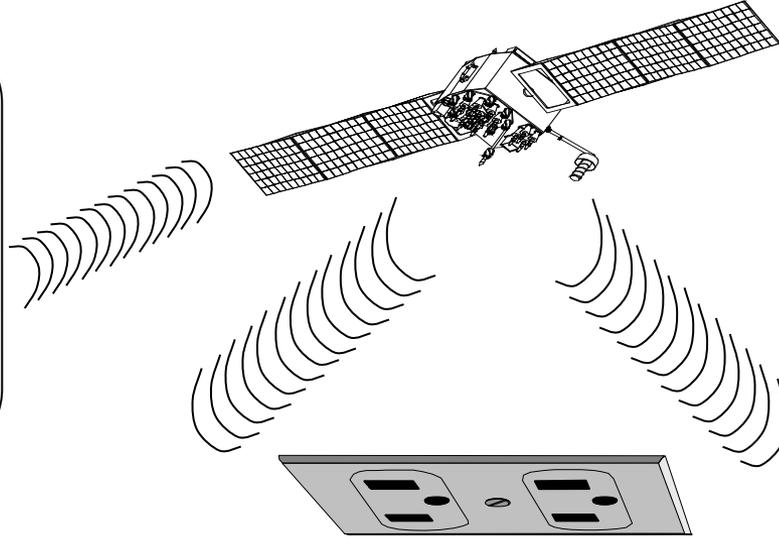
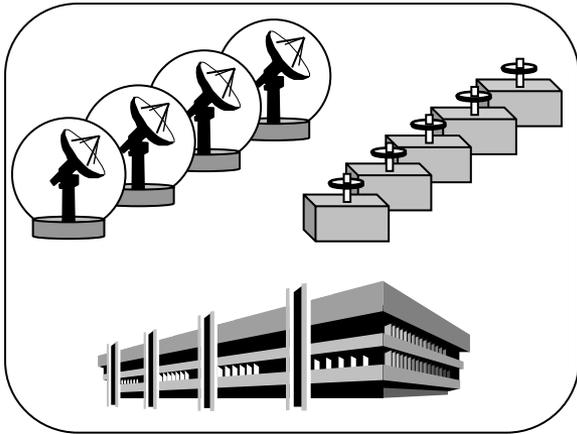
Excerpted from NDP Consulting report commissioned by the "Save Our GPS Coalition" in 2011

- "We estimate that the value to the U.S. economy of the productivity gains and input cost reductions alone amounts to between \$68 billion and \$122 billion per year, or 0.5 to 0.9 percent of annual U.S. gross domestic product."
- The report estimates **\$67.6 billion in direct economic benefits** due to annual productivity increases and cost savings in precision agriculture (\$19.9 billion), engineering construction (\$19.9 billion), transportation (\$28.2 billion), and other commercial GPS uses (\$28.2 billion).
- "In addition, GPS technology creates direct and indirect positive spillover effects, such as emission reductions from fuel savings, health and safety gains in the work place, time savings, job creation, higher tax revenues, and improved public safety and national defense.
- Today, there are **more than 3.3 million jobs that rely on GPS technology**, including approximately 130,000 jobs in GPS manufacturing industries and 3.2 million in the downstream commercial GPS-intensive industries."

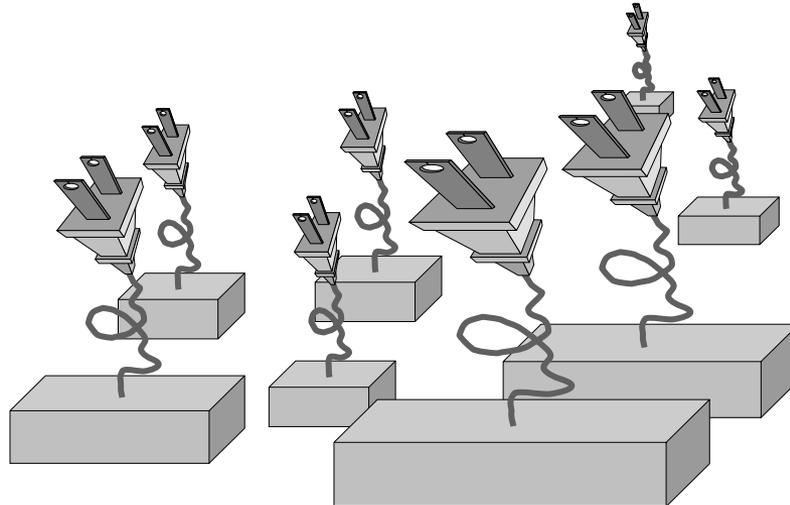


Service Line of Demarcation

Courtesy of Karl Kovach, The Aerospace Corporation



SIS INTERFACE





At the Line of Demarcation

- SIS interface is line of demarcation where GNSS service provider responsibilities end and receiver manufacturer/ user responsibilities begin
- IP at the line of demarcation is in the public domain to encourage innovation by manufacturers and users
- Above the line, space and control segment prime contractors and subcontractors may hold IP related to satellite and control segment design and manufacture
- Below the line, receiver and associated goods manufacturers and value-added service providers may hold IP related to receiver technology and application techniques



Status of U.K. MOD IP Related to GPS Signals

- Discussions and Diplomatic efforts led to mutual understanding between the U.K. and the U.S.
 - Supported by interagency coordination and feedback from industry
- January 2013 Joint U.S. and U.K. Statement
 - U.K. commitment to dedicate all patents to public domain
 - Joint commitment to free/openly available GPS civil signals
- U.K. requests for patent or application surrender or revocation have been submitted to all jurisdictions worldwide
 - Confirmation that administrative actions have recently been completed in all remaining outstanding jurisdictions is underway

Joint United Kingdom–United States Statement Regarding Global Positioning System (GPS) Intellectual Property

January 17, 2013

The Governments of the United Kingdom and the United States of America today announced that they had reached a common understanding of intellectual property rights related to the Global Positioning System (GPS) and will work together to address broader global navigation satellite systems' intellectual property issues.

This understanding is part of a broader shared effort to advance compatibility and interoperability among civil satellite navigation systems and transparency in civil service provision. The two governments affirmed their joint commitment to ensuring that GPS civil signals will remain perpetually free and openly available for users worldwide. As part of this effort, the UK is dedicating all government held patents and patent applications relating to U.S. GPS civil signal designs and their broadcast from GPS and other global navigation satellite systems to the public domain. The UK has committed to not pursue or assert intellectual property rights over any aspect of these signals, now or in the future.

<http://www.gps.gov/policy/cooperation/uk/2013-joint-statement/>



Result of U.K.-U.S. Understanding Regarding GPS Signal Design IP

- Manufacturers of GNSS receiving equipment are free to receive and process any open service GNSS signal using BOC(1,1) or TMBOC spreading modulations **without the need to pay fees or royalties**
 - Ensures receiver manufacturers can use **interoperable, open-access signal tracking methods**
- GNSS providers are free to transmit any open service GNSS signal using BOC(1,1) or TMBOC spreading modulations without the need to pay fees or royalties
 - Beneficial to multi-system **interoperability**



Summary

- GPS civil signals are in the public domain, as are the technical specifications for their transmission and reception
- Open access policy has fostered innovation and numerous GPS applications
- Receiver industry can obtain IP rights for its own unique receiver design elements
- The U.S. encourages other operators of GNSS to make their civil open service signals available at no charge to users, while maintaining the technical information necessary to develop and build equipment to generate and transmit and receive these signals in the public domain



THANK YOU!

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