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PROMOTION OF MARKET-DRIVEN INNOVATION IN GLOBAL NAVIGATION SATELLITE
SYSTEMS

Abstract

The Global Positioning System is the most widely available Global Navigation Satellite System today. It is a vital space capability that provides reliable benefits to users worldwide. It is an increasingly vital part of several critical infrastructures for air transportation, maritime shipping, electrical power, communications, natural resource management, and emergency responders at national and local levels. The position, navigation, and precision timing capabilities of GPS have enabled the infusion of information technology productivity into traditional physical infrastructures in both developing and developed countries.

Emerging international systems such as Galileo in Europe and Beidou in China have the potential to complement GPS and benefit all GPS users if care is taken to ensure there is no radio frequency interference to current users in the global installed base and commercial innovation continues to be market-driven. Per U.S. policy guidance, the State Department has taken a leading role in crafting cooperative relations with Japan, India, Russia, and Europe. China is also an increasingly important part of these multilateral discussions among satellite navigation providers.

As new GNSS providers implement their systems and offer new application, it is useful to understand the policy decisions that enabled the successful introduction of GPS. GPS has been characterized as a public good rather than a narrow aerospace, consumer, or sector-specific service. GPS has benefited from stable policy support across multiple U.S. Administrations and sessions of Congress and is a notable example of domestic as well as international cooperation. This success has been due to an enlightened sense of national self-interest that include civil as well as military concerns and a willingness to encourage market-driven innovation through open, stable technical standards. Challenges facing GPS and other GNSS systems can be placed into three general categories:

1. System Modernization and Market Acceptance: This included fielding satellites with multiple open signals to benefit civil and aviation users and what terms and conditions might be imposed.
2. Spectrum Protection: The radio spectrum used by GNSS providers must be protected from intentional (e.g., hostile) or unintentional (e.g., commercial) interferences. GNSS systems operate in spectrum used for public safety so international cooperation is important to maintain regulatory protections.
3. Standards and Trade Relations: Discussions with the European Union are seeking to resolve questions on whether timely access to Galileo information will be implemented in a non-discriminatory manner to manufactures worldwide or whether preference will be given to European-based firms.