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When the European Union and China agreed to cooperate to develop the E.U. Galileo Satellite System in 2003, the United States reacted with strong skepticism since Washington was against the sharing of sensitive dual-use technology (with civilian and military applications) with China. In the past, the United States had tried unsuccessfully to impede the European Union's ability to set up Galileo, which is an alternative to the U.S.-established Global Positioning System (G.P.S.). At the time, U.S. analysts questioned why Brussels was spending money (3.6 billion euros) to duplicate an existing system that was available "for free," and why it was eager to accept Chinese participation in the program.

Galileo satellite

Four years later, the E.U.-China "maturing partnership" has evolved toward a more complex network of common and contradictory interests, as the transatlantic links have slowly recovered since the U.S.-led intervention in Iraq. Moreover, China has begun to develop its own Global Navigation Satellite System (G.N.S.S.) -- the Beidou-2. At the same time, the Galileo deployment has suffered a crisis due to disagreements among the industries that were awarded the concession to build and deploy the first four satellites of the Galileo system. Public funding may save Galileo, but the best case scenario for a successful program is for the actors involved to pursue a more realistic approach. In addition to China's announcement of upgrading Beidou to mass market applications, Russia has also decided to complete its own G.N.S.S., called Glonass.

In the face of these developments, what will be the impact of developing the Chinese G.N.S.S. for E.U.-China cooperation and to the commercial feasibility of Galileo?

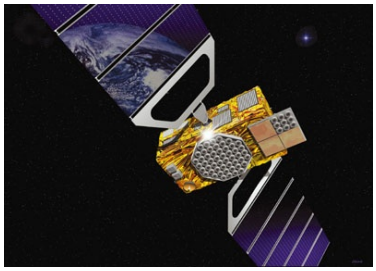
Galileo: Europe's Great Leap Outward

The European Union and the European Space Agency (E.S.A.) made the decision to create its own G.N.S.S. due to a combination of factors that imply political, economic, technological, social and military gains. Politically, Galileo has been portrayed as a guarantee of independence and autonomy from the U.S.-established G.P.S. This perspective became more evident in the aftermath of the Kosovo War when European forces were fully dependent on the U.S. system, a limitation that has worried the actors involved in the development of a European Security and Defense Policy (E.S.D.P.), especially the member states that stand for the modernization of autonomous E.U. military capabilities.

Galileo Global Navigation System

Since the beginning of the definition phase of Galileo, the European Community (E.C.) papers have noted the importance of Galileo for its Rapid Reaction Force, the E.U. peacekeeping missions and, separately, the realm of activities related to the "Petersburg Tasks," the latter of which are a set of security and military tasks in the field of peacekeeping and stability operations, agreed upon in 1992 among the E.U. members.

It is noteworthy to underscore that the defense-related justifications for Galileo have been downplayed by the E.U. institutions. The E.U. institutions have highlighted the economic benefits of a G.N.S.S. Requested by the E.C., the consultancy company Price Waterhouse Coopers drew a business plan for the Galileo project, which was submitted to the European Council of Ministers. According to this study, by involving private sector actors, Galileo "should generate revenues for the operator rising from some 66 [million euros] in 2010 to over 500 [million euros] in 2020." Definitively, Galileo would create a "virtuous cycle" through a spin-off effect in several sectors of the European economy. Moreover, Galileo has been portrayed as an instrument to create thousands of jobs and as a way to avoid the brain drain in the realm of aerospace, aeronautics and satellite industries.



Galileo imaging system

The claim: Galileo's new technology will revolutionise our transport systems, increasing safety and improving efficiency; this will make for better quality of life and less pollution in our cities. Galileo will also bring benefits in other aspects of everyday life, with precision farming raising yields, improved information for emergency services speeding up response times, and more reliable and accurate time signals underpinning our most vital computer and communications networks.

Undoubtedly, Galileo signifies independence and autonomy from the United States and the ownership of cutting-edge technology. Galileo has been regarded as a key instrument not only in the process of modernization of the Common Foreign and Security Policy and E.S.D.P., but also part of the ongoing integration of the European Union's defense industry.

The U.S. Response

U.S. opposition to the European G.N.S.S. can be understood in two different, but complementary, perspectives: economic reasons (in terms of market share of G.N.S.S. services) and security and military concerns. In 2001, the former U.S. Deputy Secretary of Defense Paul Wolfowitz addressed the central problem in Washington's perspective by expressing, in a letter to the N.A.T.O. member states, the concern that Galileo could interfere with U.S. military operations guided by G.P.S. Wolfowitz also expressed the willingness of the Pentagon to take part in the development of Galileo, justifying this position with the fact that N.A.T.O. enjoyed the benefits of G.P.S.

After Washington's "diplomatic offensive," analysts thought that the birth of Galileo was in danger. Yet in March 2002, there was a breakthrough and Galileo saw the green light during the Barcelona Summit of Heads of State and Government. After failing to put Galileo on the backburner, Washington started to emphasize concern over the interference of signals between the two G.N.S.S.s. This problem was solved in June 2004 with the interoperability agreement between the United States and the European Union. Yet even before, in October 2003, another problem came into sight when Brussels and Beijing signed the cooperation agreement on the development of Galileo.

The China Dimension

On September 18, 2003, the E.C. announced that China was to join the Galileo undertaking and finance it as a preferential external partner. According to the agreement, China would contribute at least 230 million euros. From Washington's point of view, this partnership posed several dangers to the transatlantic relationship and especially to the security and economic interests of the United States. Basically, by involving China in the development of Galileo, the European Union was indirectly helping the modernization of the People's Liberation Army (P.L.A.), an act that is regarded as unacceptable by many analysts and politicians in Washington.

Indeed, it would be almost impossible to prevent the transfer of technology to the Chinese. This has been a very sensitive issue at a time when the United States is increasingly preoccupied with the military capabilities of China. In addition, the Europeans could be, in practice, contradicting the arms embargo imposed on Beijing in the aftermath of the Tiananmen Massacre.

In the worst case scenario -- a war between China and Taiwan -- the P.L.A. would be using the European G.N.S.S. in a war against Taiwanese military forces. The possibility of the P.L.A. using the Galileo system was ruled out by E.U. authorities since the most accurate signal, the Public Regulated Service (P.R.S.), is encrypted and can only be used by specific entities: the European Police Office (Europol), the European Anti-Fraud Office (O.L.A.F.), civil protection services, safety services (Maritime Safety Agency), emergency response services, humanitarian response teams and the E.U. peacekeeping forces involved in the "Petersburg Tasks" missions.

In any case, the United States was not convinced with this guarantee and spurred the development of a new generation of G.P.S. satellites. In 2004, a British media report unveiled that the United States was developing anti-satellite systems capable of wiping out E.U. Galileo satellites if they were being used against U.S. troops.

For the European Union, the partnership with China represents an attractive opportunity to have access to a promising transport and telecommunication market. Right after the signing of the E.U.-China agreement, Loyola de Palacio, the former E.C. commissioner for transport and energy, made Europe's stand very clear, stating that "China will help Galileo become the major world infrastructure for the growing market for location services."

This level of cooperation can only be understood in light of a Sino-European "maturing and comprehensive partnership" based on intense economic and political linkages. Simultaneously, the European Union has been projecting itself as a global player -- for some analysts, a rather civilian power -- with ambition to develop its autonomy and independence from the United States in terms of military capabilities.

Growing Competition from China and Russia

In China's eyes, cooperation in the Galileo project is seen as part of a strategy of strengthening China's position in the international arena, by cooperating in a sensitive technology that disrupts U.S. hegemony in G.N.S.S. In addition, this cooperation appears to be a golden opportunity to benefit from the transfer of expertise and technology in such a sensitive asset. This would be extremely useful in tandem with the Chinese Space Strategy.

In 2000, China published the White Paper on Space Activities, declaring that the creation of an independent satellite navigation and positioning system was a priority. The embryo of this system was already in orbit when China and the European Union agreed on the partnership. The Beidou system consisted, at the time, of three geostationary satellites, whose positioning and navigation coverage and accuracy was far behind what Galileo aimed for.

The Beidou system

Analysts believed that the future Beidou-2 (also called Compass System), a 35-satellite constellation, would only be used by the military -- this would justify the decision of investing 230 million euros in the Galileo system. In November 2006, however, China's official news agency, Xinhua, unveiled that the Beidou system would provide, from 2008 onward, commercial open services with a ten-meter accuracy. It was noted that this service could be "free of charge" for the Chinese people and to other countries that would sign agreements with China.

In addition to Chinese pressure, Russia announced in May 2007 that its own G.N.S.S., the Glonass system, which had been only partially operable, would be fully operable and available "for free" to customers in 2009 after the deployment of the remaining satellites of a 24 constellation. Meanwhile, the process of deployment of the first four Galileo satellites went into crisis, due to strong disagreements between the national industries of consortia responsible to build and deploy those satellites. Until July 2007, only one satellite -- Giove A -- was deployed (in December 2005). The whole process is delayed and what was supposed to be in orbit and operable in 2008 was postponed to 2011-2012. In face of these hurdles, the E.U. transport ministers asked the European Commission to draw a plan to "bail out" Galileo through public funding.

Conclusion

Currently, the European Union faces growing pressure from the other major space powers in the realm of satellite positioning and navigation. With the new developments of the Beidou system, the promise of profitable access to the Chinese transport and telecommunication market may be in danger. What was deemed to be strategic cooperation may become strategic competition.

The progress in the Beidou system implies that Chinese authorities were aware of its probable limitations in seizing the military benefits of the transfer of technology. At this moment, it is not clear how the E.U.-China partnership will evolve, given that it faces a complex network of common and contradictory interests. It is plausible that both parties may reach a solution to share the market through consultation. It is important, however, to bear in mind that the E.U.-China relationship is still, to some extent, a consequence of the other parts of the triangular equation: the U.S.-China relationship and the U.S.-E.U. transatlantic alliance.

The rapidly announced development of the Chinese Beidou system and the Russian Glonass has put pressure on E.U. authorities to solve the imbroglio and spur the deployment of the remaining satellites. As a reaction to the foreseeable competition, Brussels has been eager to set up agreements with other countries. In June 2007, the E.S.A. paved the way to satellite cooperation with Africa through a cooperation agreement with the Agency for Security of Air Navigation in Africa and Madagascar. Previously, Israel, Ukraine, India, Morocco, Saudi Arabia and South Korea had signed agreements to become partners and join the Galileo project.

In the meantime, even if there are some doubts on the commercial feasibility, it is becoming clear that the defense and military applications are, per se, a strong reason to use European taxpayer money to save Galileo.

This Power and Interest News Report by José Carlos Matias was published on July 17, 2007. Posted at Japan Focus on July 17, 2007.

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