Xeos Technologies Inc.

Tech Note

A Comparison of Iridium vs Argos Technology in Xeos Location Beacons

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The Technology: Argos-2 is a unidirectional message-based satellite service that consists of platforms (beacons), 7 polar-orbiting satellites and 3 main receiving stations (two in USA, one in Norway). The receiving stations store data from passing satellites and resend the data to the appropriate satellites when they pass.

Iridium SBD is a multi-directional message service that consists of 66 low earth orbit satellites. Iridium satellites provide pole-to-pole coverage and are overhead for 10 minutes at a time. They have the capability of handing off messages from one satellite to another and do not make use of Earth-based reference stations like Argos does.

Position Accuracy: Based on the technology used in Xeos products, Iridium allows for a much more accurate position than Argos. The Iridium-based products are paired with a highly-accurate GPS engine and antenna that measures the position of the platform or beacon. The position message is then relayed by the Iridium modem in the device. In Argos products, the position is estimated by the doppler effect and thus much less accurate. In Xeos Iridium products, the GPS position is accurate to 1.5m, while the Argos positions are generally accurate up to 50m. Argos beacons have an advantage in that since they do not use GPS to geo-locate the platform, they are much more immune to 'jamming' frequencies that plague GPS systems.
Jamming frequencies are used by military, government, or other organizations during training or covert operations to prevent their positions showing up on mapping applications. This can pose a problem for asset recovery tools that rely on GPS geo-location in GPS-denied environments that can be encountered at sea or in coastal locations.

Message Latency Times: Due to the nature of the satellite networks and their capabilities, the message delivery times differ between the two systems. Iridium SBD messages have a data rate of up to 2400 bps in good conditions while Argos can achieve up to 480 bps. While both types of transmitters take ~1s to send a message, the Iridium network takes less than 20s to deliver a message to the user, while Argos can take up to 2 hours. This is due to Argos' inability to send messages from one satellite to another.

Technical Support: Argos technology is operated by the CLS group, a subsidiary of Centre National d'Etudes Spatiales (**CNES**). They own the rights to all accounts that use Argos service and therefore are the only party that can service end-user platforms. If positions are not

reporting, or are reporting improperly there is no way for Xeos Technical Support to troubleshoot the problem. While we are happy to service your requests, all issues regarding Argos service are to be resolved by CLS.

Iridium products issued by Xeos have the luxury of being part of the XeosOnline web platform. This is a free service offered with purchase of Iridium products and service that allows users to communicate with their device in real time while in working conditions, and see their positions on a mapping application. Along with this web interface, Xeos has the ability to sell and service Iridium SBD accounts as an Iridium value-added reseller. If there are problems with message transmissions from your device, we are able to look into the problem right away at the source. Unlike Argos messages, we are authorized to check message logs from each device and satellite. This allows for a faster turn-around time and solution to problems your devices may encounter.

Subscription Rates: Iridium SBD and Argos have different billing structures. Iridium charges by messages (or bytes) and has options that allow the user to choose how much data they want included in their plan and pay a fee for extra data used on top. Argos has a system that charges for every day that there is at least one transmission from an Argos device.

For a base plan, Iridium charges $13 USD per month, and Argos charges $15 USD per month, neither include any data. To compare pricing, the table below displays costs incurred by both Iridium and Argos service if both units were set to transmit positions at the same interval and on Plan A ($13/mo) for Iridium and Argos Science ($15/mo). All costs are in USD.

Days of Transmission	Messages sent/day	Iridum Plan A	Argos Science
1-31	0	$13	$15
1	1	$13.04	$21
1	24	$13.92	$21
7	1	$13.27	$57
7	24	$19.45	$87
14	1	$13.55	$87
14	24	$24.85	$87
31	1	$14.24	$87
31	24	$41	$87