



CompressionX uploads Time-Critical LiDAR data to the Cloud directly from an Airplane

LiDAR is key to data collection and analysis in Geo-Business. It is a method for measuring distances by illuminating the target with laser light and measuring the reflection with a sensor. Differences in laser return times and wavelengths can then be used to make digital 3D representations of the landscape.

Instant data access is commonplace in areas such as messaging, audio and video streaming. The Geo-Business market, which boasts some of the world's most advanced processing technologies, is still reliant on the LASZIP compression format for LiDAR which only works when all the data is gathered meaning real-time transfer of time-critical data is not possible.

There is a 'data value gap' creating a massive missed opportunity. SISP believes that ALL Geo-Business LiDAR data captured by sensors has business and societal value which can only be realised if all of it is streamed in real time to the Cloud and mined using AI and Machine Learning driven data analytics.

Now, with CompressionX lossless compression, time critical LiDAR data can be streamed to the Cloud directly from an aircraft flying over infrastructure in real-time.

Working with partners, SISP's CompressionX lossless compression solution is the key to bridging that data value gap and realising the full potential of the data-driven Geo-Business market.

The problem

In preliminary work with a partner, it became apparent that LiDAR needs a new storage and transmission solution to enable real-time transmission of LiDAR data.

Currently, data must be collected (in its entirety) before it can be compressed and sent for analysis and manipulation. The industry standard format used for LiDAR is LAS which has its own compression format known as LASZIP.

To manipulate the data in LASZIP format the entire compressed file needs to be decompressed. After the LAS file has been altered then it can be recompressed into LASZIP format.

Another issue with LAS files is that instead of a single file, each LAS file is used separately and to access multiple LAS files a LAS dataset needs to be created.

CompressionX LiDAR data is treated as a database that stores trillions of point data records and new recorded data can be added to it without first decompressing.

The Solution: real-time 3D representation of the LiDAR is possible

3D mapping using LiDAR sensors equipped to aircrafts will be invaluable in mapping the world in which we live. CompressionX achieves 75%+ compression on LiDAR.

CompressionX is capable of processing 1 million LiDAR records per second. SISP is unique amongst lossless compression solutions for LiDAR data, it compresses and transmits sensor data in real-time.

Data can be communicated from a moving aircraft either via mobile or satellite. In both cases, CompressionX can facilitate real-time data transmission.

In the former, it is transmitted via ground-based mobile broadband towers, which send signals up to an aircraft's antennas (usually on the base of the fuselage). As the plane travels into different sections of airspace, the plane automatically connects to signals from the nearest tower, so there is (in theory at least) no interruption to the signal. But if the plane is passing over large bodies of water or particularly remote terrain, connectivity can be an issue.

With satellite technology, aircraft connect to satellites in geostationary orbit which send and receive signals to earth via receivers and transmitters.

In both cases using CompressionX, LiDAR gets compressed and transmitted in real-time. With our partner, who has one of the fastest solutions for handling LiDAR and can categorise the data in around 30 minutes, a real-time 3D representation of the LiDAR is now possible.

Meeting the industry need

SISP's CompressionX has the following key features and benefits:

- Modelled against generic compression
- Fast prefix encoding
- Flexibility and sustainability
- High compression ratios
- Rapid decompression.

Working with partners, SISP's CompressionX lossless compression solution is the key to getting real-time Geo-Business data. Let us enable real time access to the value extracted by applying Cloud-based analytics to all your sensor derived data.