A service generator to increase value of the Global Lightning Data

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1. INTRODUCTION

The presentation will describe the possible organizations of the combined system Cats+GLD360, and the available services in both real time and archived logic. It develops the scalability of the system from a simple visualization until a complete, multi service and failsafe configuration. Technical issues solved during the last year by various optimizations will be presented such as the management of different origin of data (GLD stream versus a local detection network), speed constraints in real time treatments, reliability from the system entry point until the customer or internal operator level.

2. COMPANY SKILLS

Météorage SAS, operator of the French Lightning Detection Network, is located in Pau, south west of the country, and composed of 17 people, mainly engineers. It has been created in 1987 and is a joint venture since 2001 between Meteo France and Vaisala, respectively at 65% and 35%.

The company skills are oriented in 4 directions:

- The exploitation and maintenance of a lightning location network covering France, UK, Switzerland.
- The development of the Computer Aided Thunderstorm Services software, known as CATS. This software has been developed by the company initially for its own needs but in the prospective to be universally operated.
- The exploitation of this CATS software to produce value added services based on the lightning location information to a large range of customers. Meteorage generates services from its own local detection network, as well as from the European detection network known as Euclid, or from the Global Lightning data known as GLD360.
- The engineering of lightning detection network based on technology and known how approach with Vaisala detection devices. Meteorage also helps to develop a marketing strategy with respect to the customer's local market, using the CATS software.
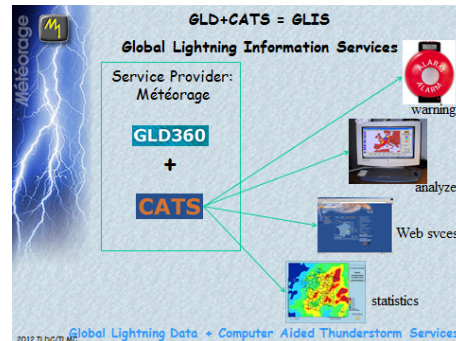
Meteorage is granted with the ISO 9001:2008 Quality Standards.

3. GLD360 + CATS

The Global Lightning Data is a stream of worldwide lightning location data provided by Vaisala, and can feed the CATS system as a local lightning detection network does. This stream is generated by a set of low frequency sensors spread over the world, merged to a location processing system.
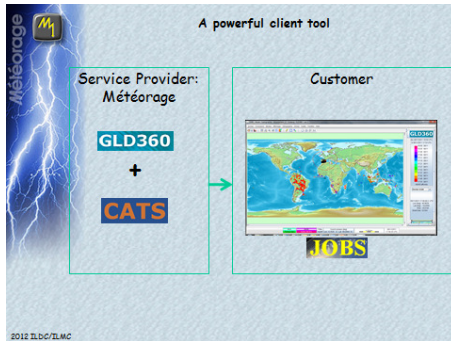
Hereafter are presented different solutions combining Cats and the GLD360, and the related available services in both real time and archived logic. It is presented following an upgrading way from a simple visualization until a complete, multi service and failsafe configuration. Most of the configurations are minimizing the investments while saving the previous ones, and even allowing a potential downgrading. All of the presented configuration can be set up by Meteorage. Contact our marketing manager at contact@meteorage.com to get any more details on "how to do it".

3.1. The Global Lightning Information Service

This first step of combination does not require any specific hardware or software on the customer side. Investments and risks are minimal. Meteorage manage the CATS server and the customer just has to subscribe to the adequate service and gets either a warning or a statistic analyze or an image for his web site or else.

3.2. A powerful client (Jobs)

The customer subscribes to the Jobs service and installs the Jobs software on a Windows or Linux workstation. Then all real time or archived data will be received and treated in different ways (cartography, statistics, listings, images, etc…). A warning by email is also available. Multiple instances of the client software may be set up for archive data, while a real time session is dedicated to a subscription.
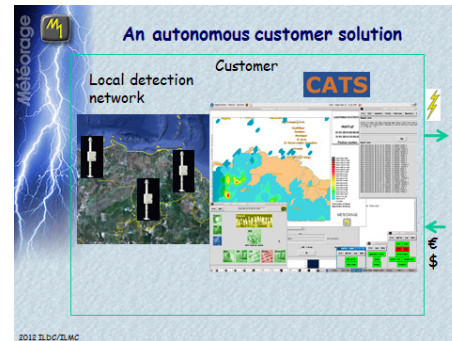
3.3. A complete customer solution (CATS)

The customer buy (or rent) the CATS software, runs it on a Linux server, and subscribe to the GLD data stream to feed his CATS in real time. He has then all autonomy to manage his lightning data base, create his lightning studies, feed his now casting tools, etc. In a rental solution, the investment is minimized.
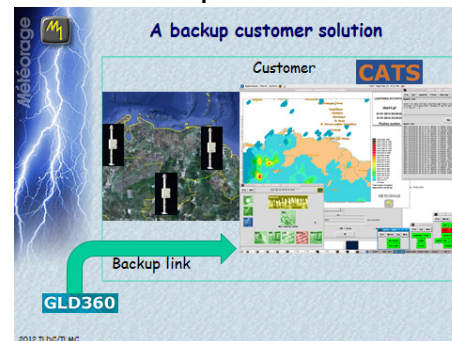
3.4. A service provider

As a lightning service provider, the customer not only benefits locally from the lightning information but change this information to money by providing services to customers. He becomes the 'Meteorage' of his country by managing a lightning market to any entities like power or communication providers, insurances, industrial facilities, defense, civil security, etc.

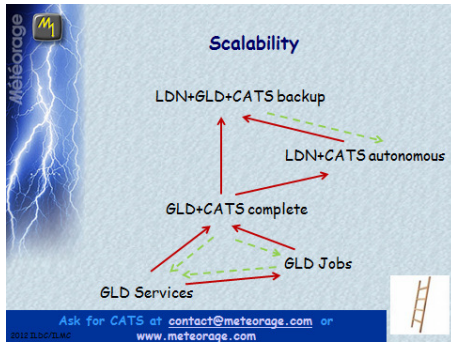### 3.5. An autonomous solution

The customers have (or buy) a local lightning detection network and its location processor from Vaisala Inc. or Meteorage. The CATS service is exactly the same as for a GLD360 configuration, and any previous investment on the application is totally saved. The local networks just replace the GLD360 stream. The investment is substantial and the network maintenance is necessary to keep it efficient. The advantage of this solution is a total control of the system while the detection efficiency and the location accuracy are much better on the covered area. A local detection network offers also quality parameters about the location processing, allowing the owner to optimize his network and make expert or scientific studies.

3.6. A backup solution

The GLD stream may be received as a backup of the local network or combined with it to get high accuracy data in a most critical area and cheaper information on a much larger area. It is a compromise between a complete local detection network, and a "no investment" solution.

3.7. Scalability

All the previous configurations have a compatibility relation on both technical and commercial point of view. Any investment made at a specific level is a step for the following ones. Except in the case of the acquisition of a local detection network, which represents a significant investment, any upgrade may be downgraded if necessary without any lost minimizing the financial risks.

4. Technical issues

During the last year, various optimizations has been implemented such as the management of different origins of data (GLD stream versus a local detection network), speed constraints in real time treatments, reliability from the system entry point until the customer or internal operator level. The CATS application can withstand a real time and continuous high stream for all its treatments (data base, alarm and other services). As a worldwide product it manages any customer language, any geographic data as soon as it is WMS compliant, any geographic projection defined in 'proj4' library (more than 3500 projections defined), any local time zone, etc. Interfaces with 'Synergie' (from Météo France) and 'Meteo Factory' (from Meteo France International) have been implemented and are effective on different CATS customer's sites.

5. Support capabilities

All CATS operators may benefit of our support service through email or phone to get help in the software usage or default corrections depending on the warranty or maintenance contract. Any application enhancement is also available for all operators without additional fees. A yearly operator's workshop allows exchanges between operators and Meteorage and helps defining the future of the software. CATS has followed the technologic evolutions during the last 25 years thanks to its 4 software engineers, and is ready for the future.

6. Compatibility

CATS is a natural and logic complement to Vaisala's lightning location information.