DELIVERING DATA FOR SAFER AIR TRAFFIC

2020-12-03

NGI
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Instituut

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National

LOWAIR & TFC(L)

Aviation charts

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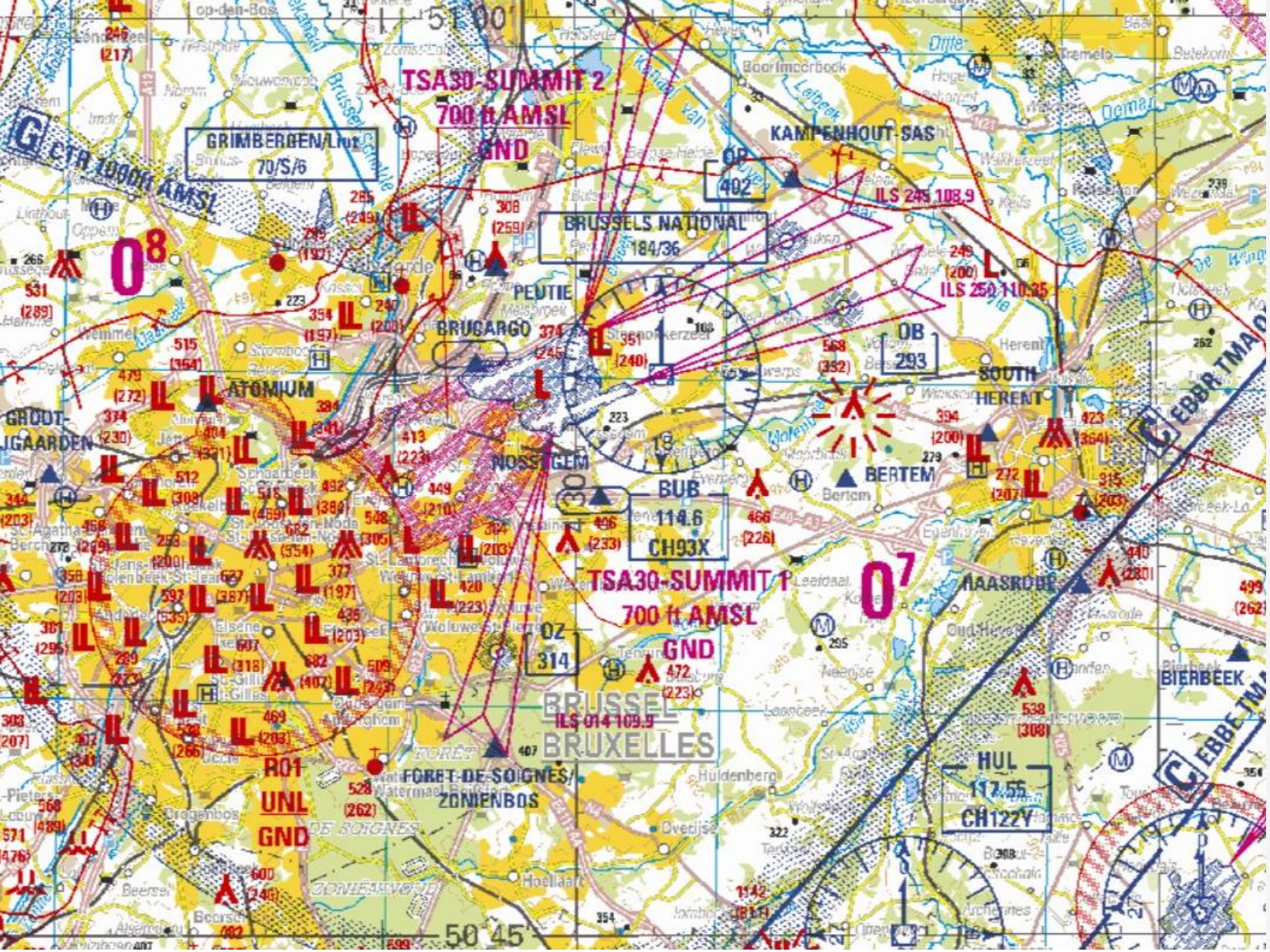

The Belgian National Geographic Institute exists in its current form since 1976. While we are currently no longer a military map agency, strong links with the Ministry of Defense remain.

Many of our products therefore stem from the needs of Defense. This is also the case for the Lowair and TFC(L) aviation charts that have been ordered by Defense and produced by the NGI for about 30 years.

Both contain roughly the same information: the location of obstacles, terrain height, important zones and information for aviation, all projected on a topographic map with a scale of 1:250000.

The main difference between the two charts is their look. While one is based entirely on enforced NATO standards, the other is tailored to the preferences of our military and civilian customers.

ETOD

electronic Terrain and Obstacle Data

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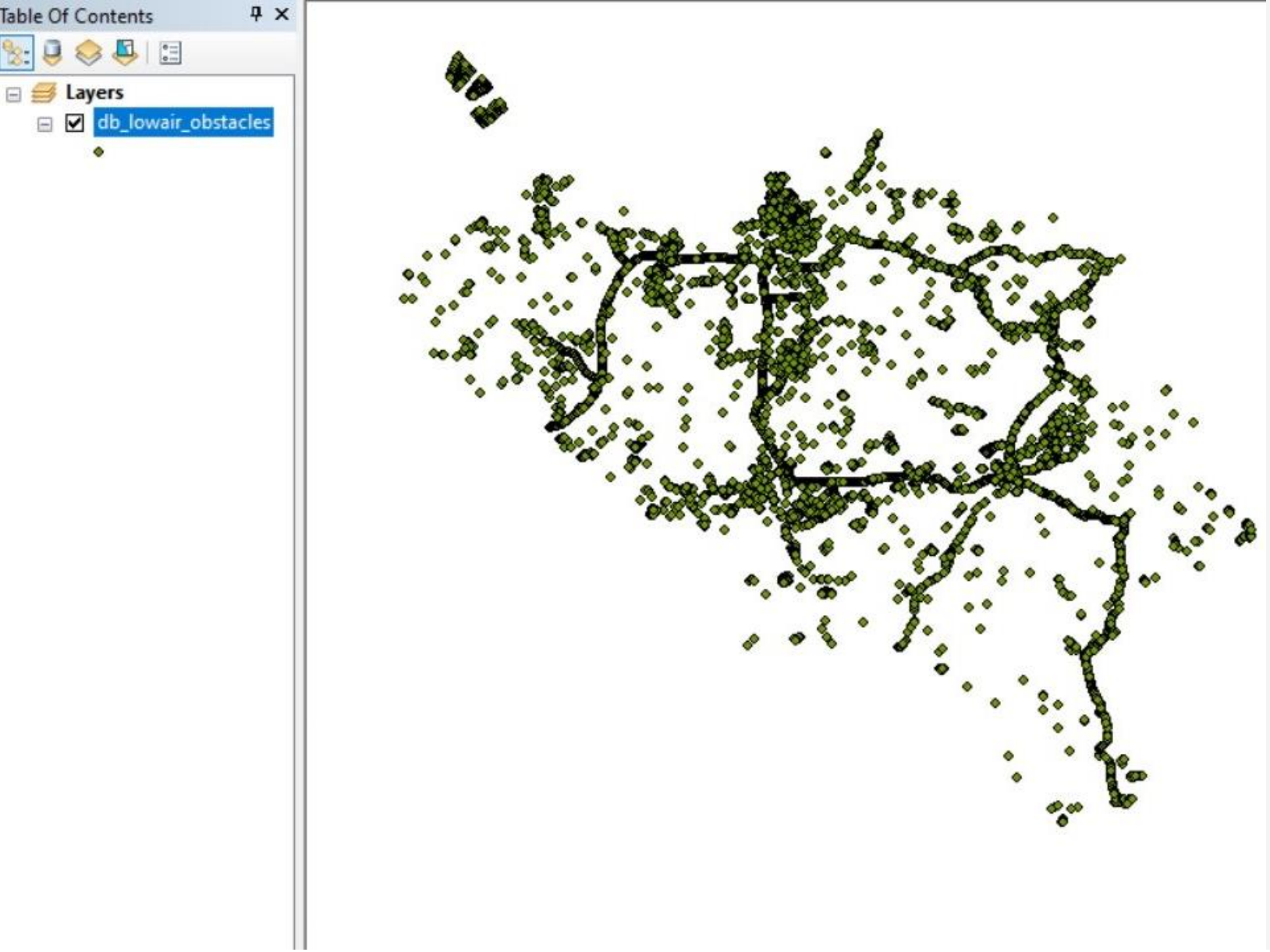
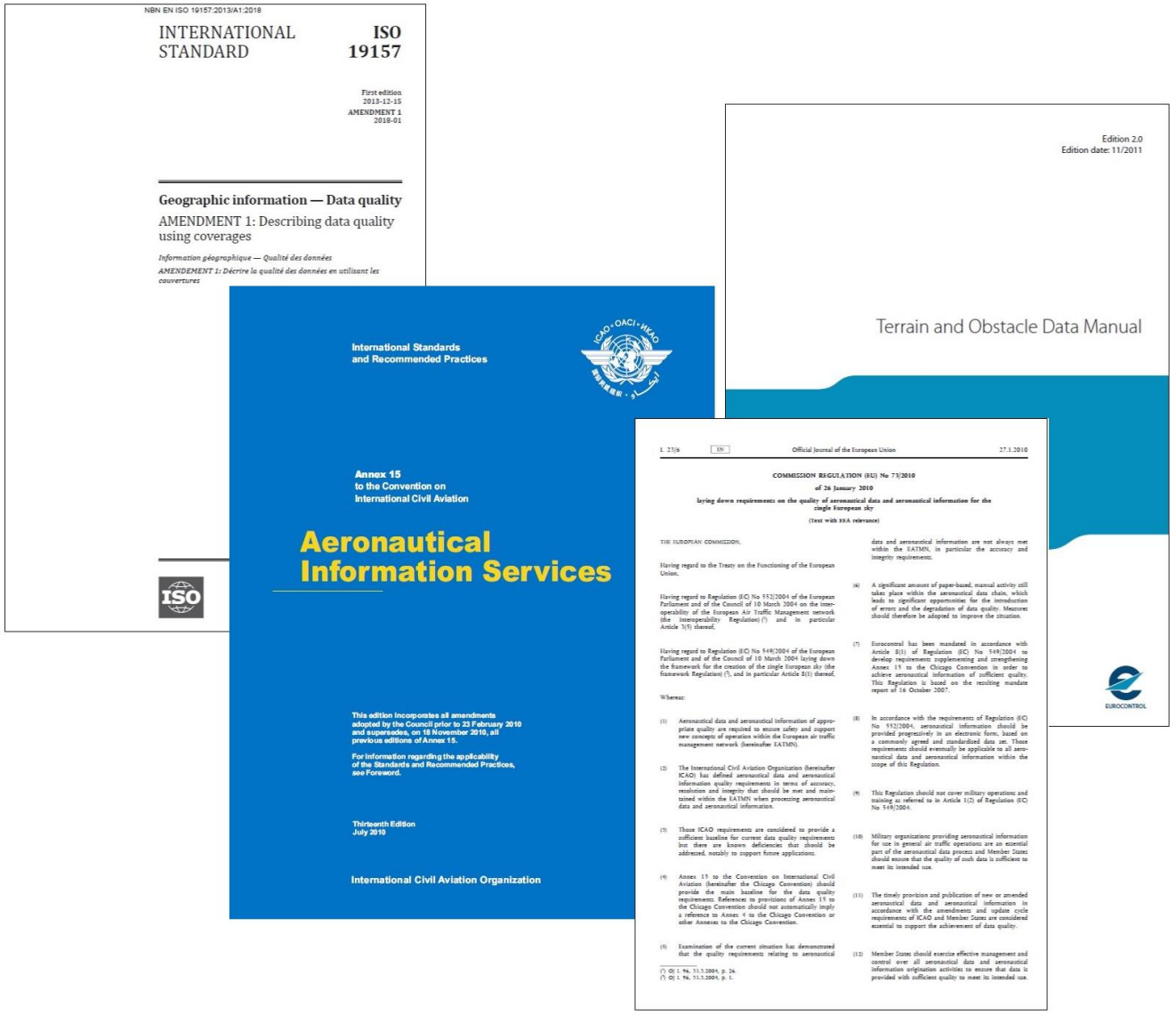


The location of the obstacles on the aviation charts came from a database containing more than 6000 point obstacles located in Belgium, including the maritime zone.

The data for these obstacles were all these years obtained and updated using in home photo restitution and field survey.

We trusted these data. Yet…

- our database structure existed of a mix of experience and historical inheritance of unknown origin,
- the only way to keep track of obstacle modifications were monthly exports,
- we didn't have a quality management system and only performed an unstructured quality control.



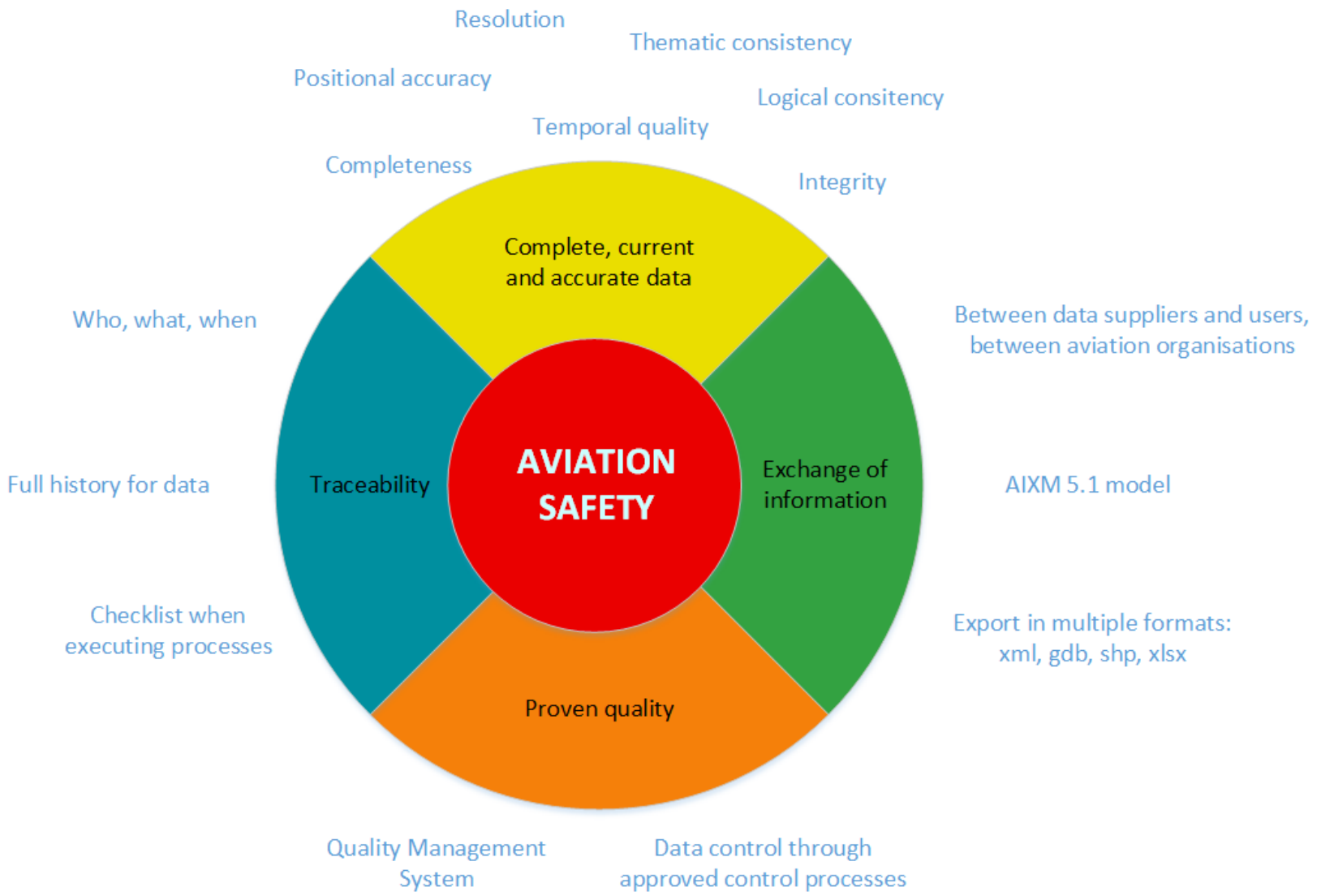
In the meantime, there were various developments on an international level…

2004: the International Civil Aviation Organisation (ICAO) publishes a chapter on *electronic Terrain and Obstacle Data* in Annex 15 to the 'Chicago Convention'.

2010: the European Union publishes Commission Regulation (EU) N° 73/2010 on *Aeronautical Data Quality*, which builds up on the ICAO standard.

2011: EUROCONTROL publishes the Terrain and Obstacle Data Manual, providing guidance for those involved in the origination, processing and provision of these data.

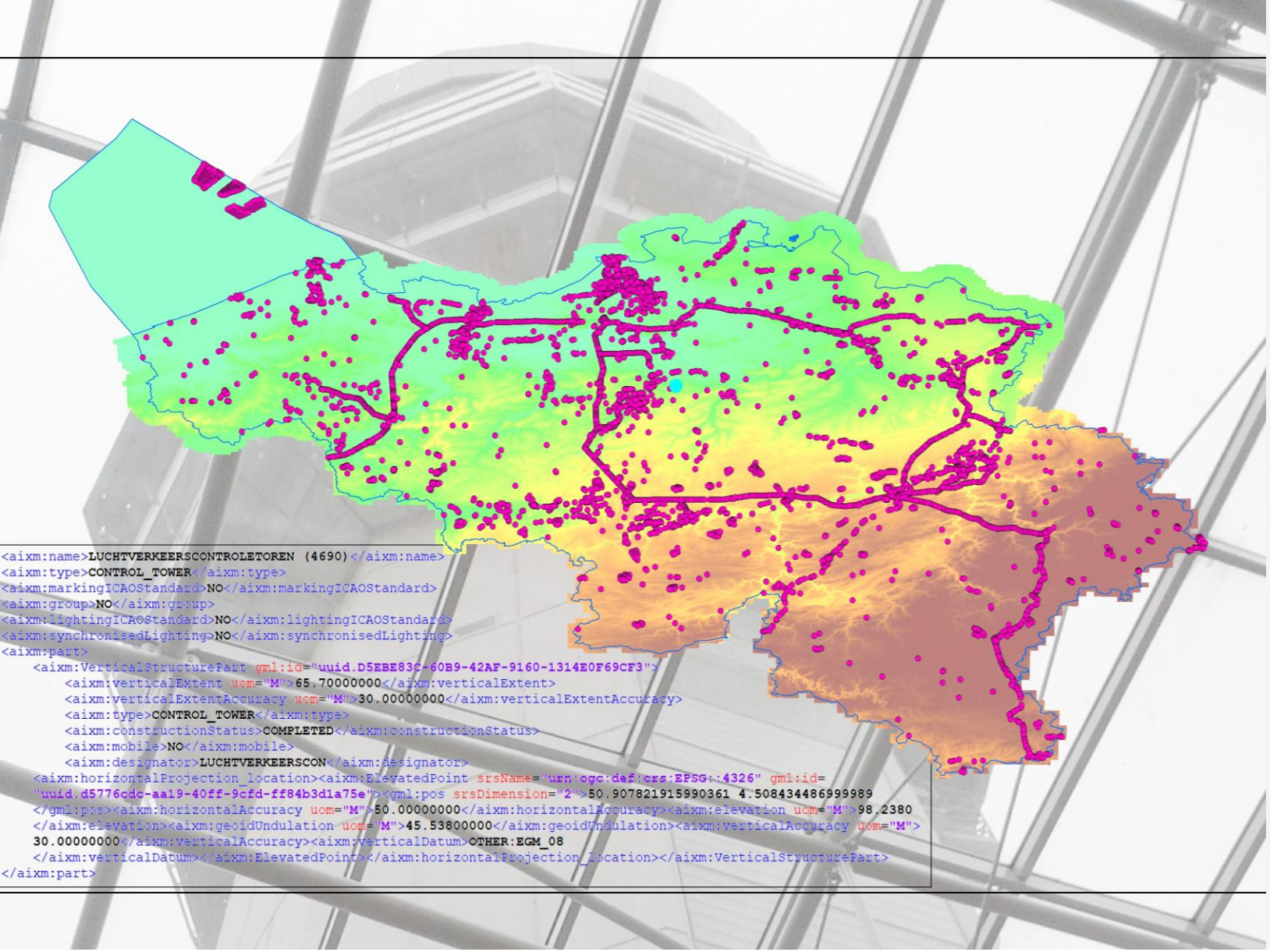
2013: publication of ISO 19157, establishing the principles for describing the quality of geographic data.



… which led to the decision to collaborate between different stakeholders:

- **the Ministry of Defense**
  (the military aviation authority)
- **the Federal Public Service for Mobility and Transport**
  (the civil aviation authority)
- **the National Geographic Institute**
  (the data provider)
- **Belgocontrol / skeyes**
  (the responsible for air traffic safety)

Between 2016 and 2019, we implemented these good practices and regulations into the NGI obstacles database and the NGI Digital Terrain Model.



The newly structured dataset went into production in September 2019.

The NGI now collects and maintains the obstacle data in accordance with the ICAO specifications. The expected update cycle is three years.

Currently, approximately 50 percent of the Belgian territory has been updated. Our database now also contains line and polygon obstacles.

Regarding the DTM, feature classes have been added to provide the previously missing attributes.

The creation of a quality management system is ongoing, completion is scheduled for 2021.

The renewed export formats are available and are already shared four-weekly with the stakeholders of the implementation project.

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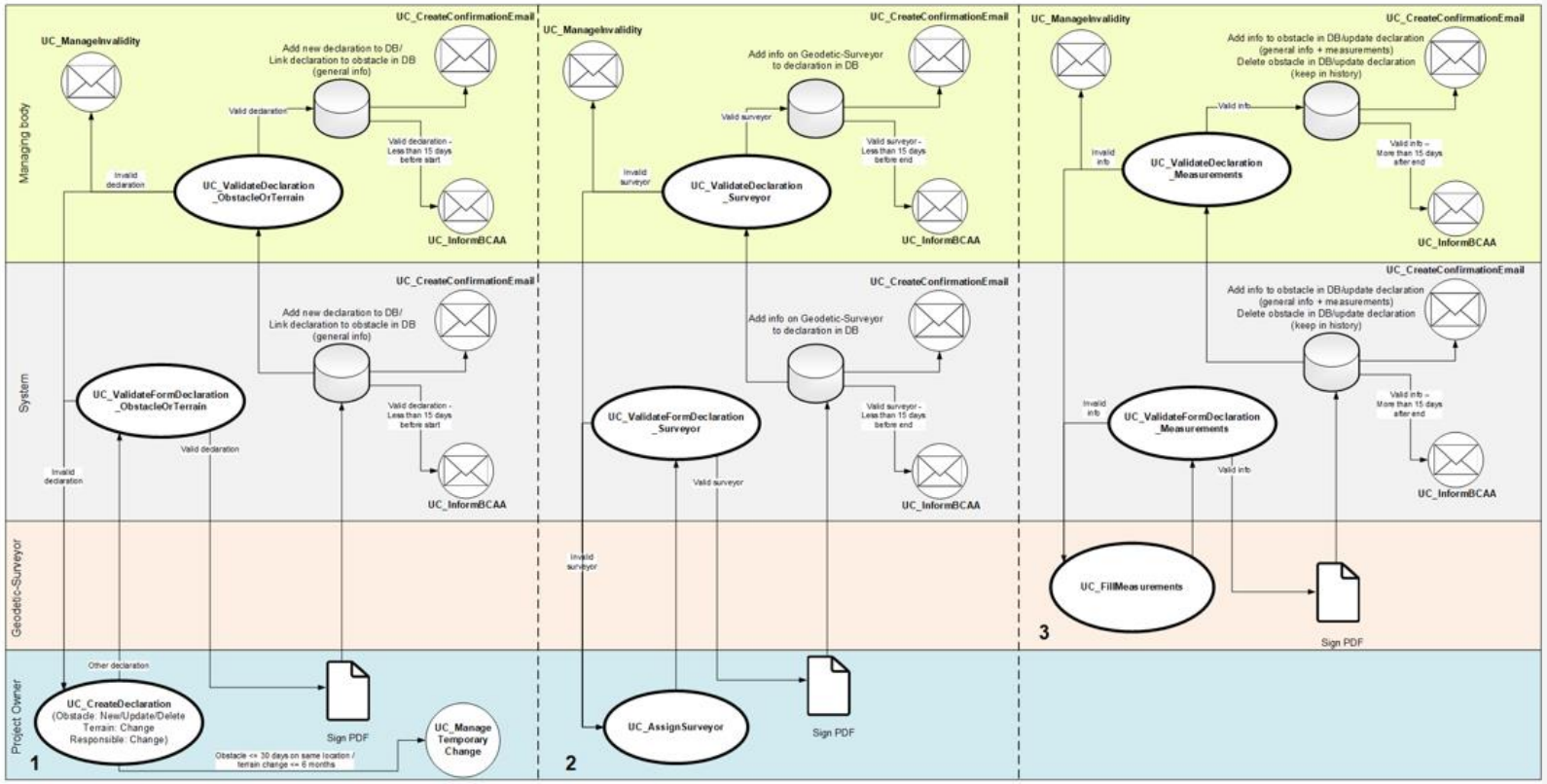
MANDATORY DECLARATION

Keeping the data up to date

MANDATORY DECLARATION – USE CASES V0.7



Because our resources are limited, it is not feasible to timely detect all new and adapted obstacles and all terrain changes ourselves.

Therefore, a new legislation is in development, in order to oblige project owners to report these changes to the National Geographic Institute.

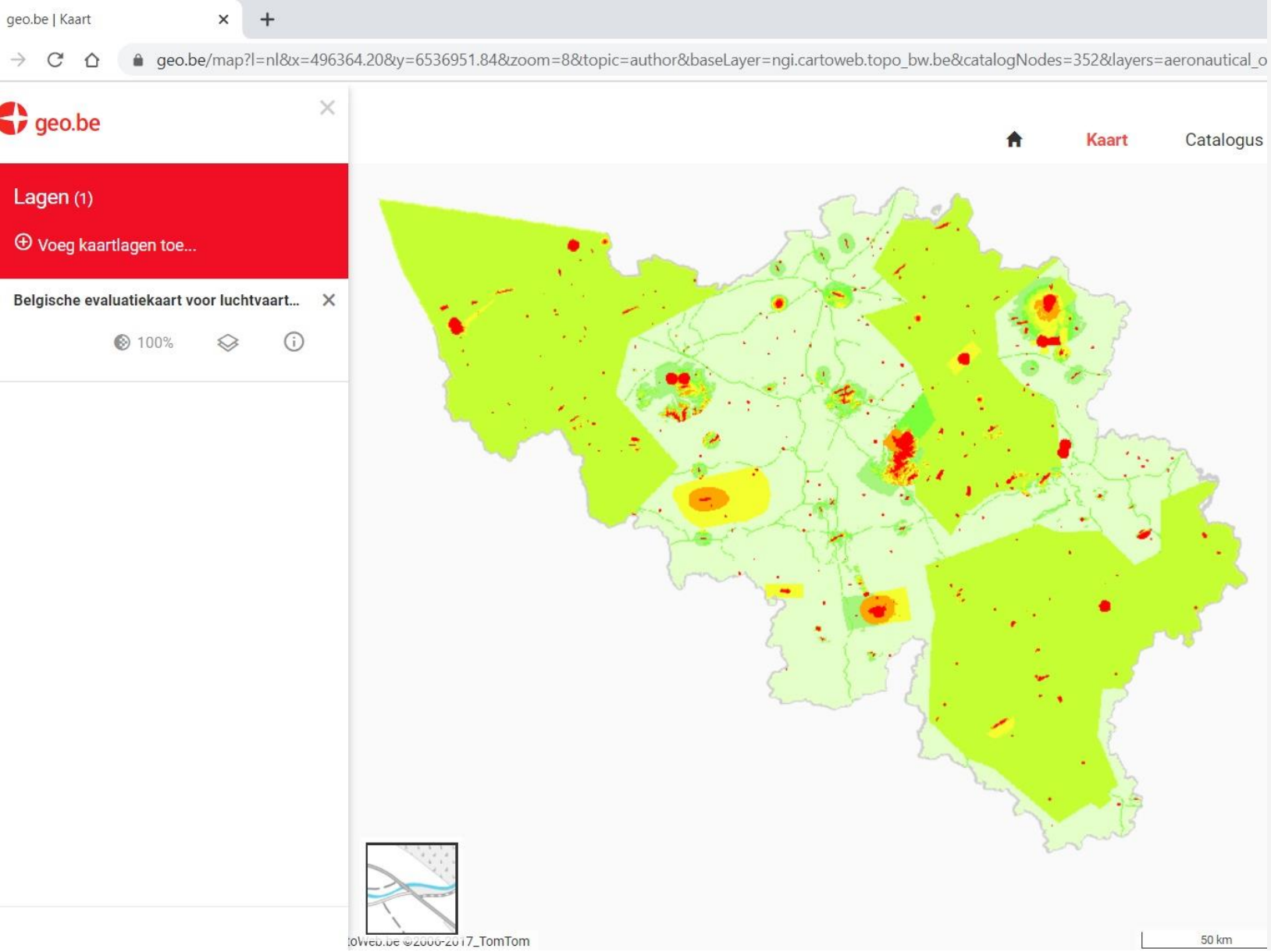
The team is now working on a platform where information of changes being planned or built can be directly uploaded.

The objectives are to

- **improve the data quality by receiving the data directly from a reliable source**
- **reduce the delay between realization of the change and its entry into the database**
- **transfer part of the responsibility to the project owners and their appointed geodetic surveyors**
- **reduce the cost for maintaining our database**

AOEM

Aeronautical Obstacle Evaluation Maps



As a useful tool for the civil aviation authority, several maps were created.

These maps show the height from which an advice from the civil aviation authority is required to be allowed to build or modify a structure.

Five sub-maps focusing on individual aspects are only available to the civil aviation authority,

One compiled map is also publicly available via geo.be.

All this with the ultimate goal of…

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