HEXAGON GEOSPATIAL

INTERGRAPH®
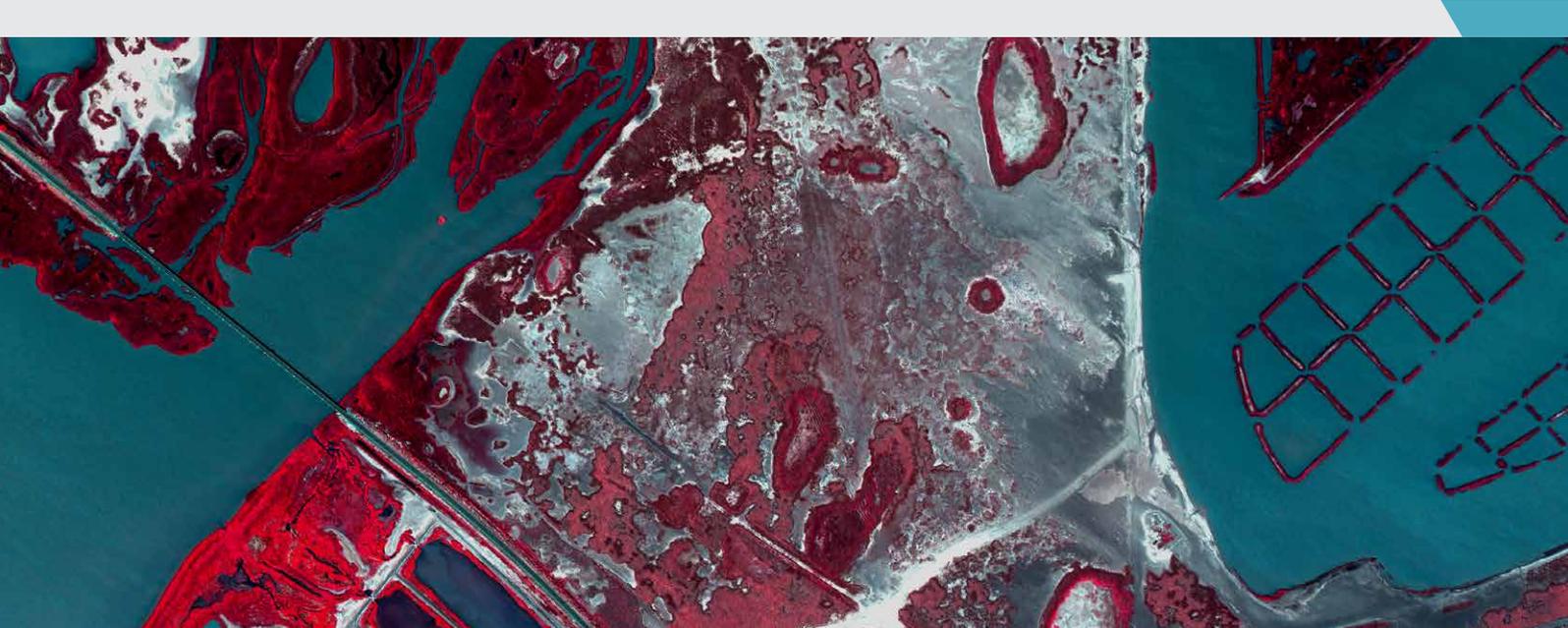
Bluecham Provides Decision-makers with Access to Remote Sensing Information
ERDAS IMAGINE® and IMAGINE Photogrammetry

BLUE CHAM
Understand the Earth to preserve it

"IMAGINE spatial modeler is so easy to use that we now create our own GUI in less than an hour"

- Rémi Andreoli, Head of Space Applications at Bluecham

Bluecham SAS is an IT solution provider based in New Caledonia (located 2,000 km north of New Zealand). They develop and commercialise satellite imagery processing and analysis solutions for public authorities, industrial organisations, and observatories. In 2007, Bluecham won the National Contest for Innovative Company Creation organised by the French Ministry of Research and Higher Education.

For more information, visit www.bluecham.net

Identifying Challenges

Tropical zones host about 80 per cent of the world's bio-diversity, and their protection is a major global issue. With global climate changes accelerated by industrialisation, urbanisation, population surge, and other factors, it is essential to increase the effectiveness of conservation measures. Scientific methodologies and IT solutions enable policymakers to make smarter decisions. Bluecham links scientific production and environmental decision-making with its web-hosted IT solutions.

Mangroves in New Caledonia provide for fisheries and wood, and their economic value is estimated between USD 200,000 – 900,000 per hectare per year. These tidal forests, classified as a natural heritage, are faced with hazards ranging from cyclones to tsunamis that can greatly affect the fragile landscape and ecosystem. Bluecham monitors and classifies mangroves for city planning and mining companies in southern New Caledonia – South Province, City of Dumbéa.

Using satellite data, Bluecham monitors changes, vegetation health, and activities in the mangroves. Due to the nature of its work, Bluecham needs to handle very large satellite image data that can lead to longer processing time. For its specific imagery processing requirements, the company recognised the need for a simple graphical user interface (GUI) that could be customised without back-end coding.

Setting Goals

- Create a customised Graphical User Interface (GUI)
- Integrate Hexagon Geospatial's solution with existing IT systems
- Enable action-based, on-the-fly, dynamic processing that rapidly displays results
- Cut down on processing time and disk space during model creation and editing

Map of mangroves type over the Ondemia Bay (near Nouméa, New Caledonia) derived from Worldview-2 data acquired in Septembre 2011
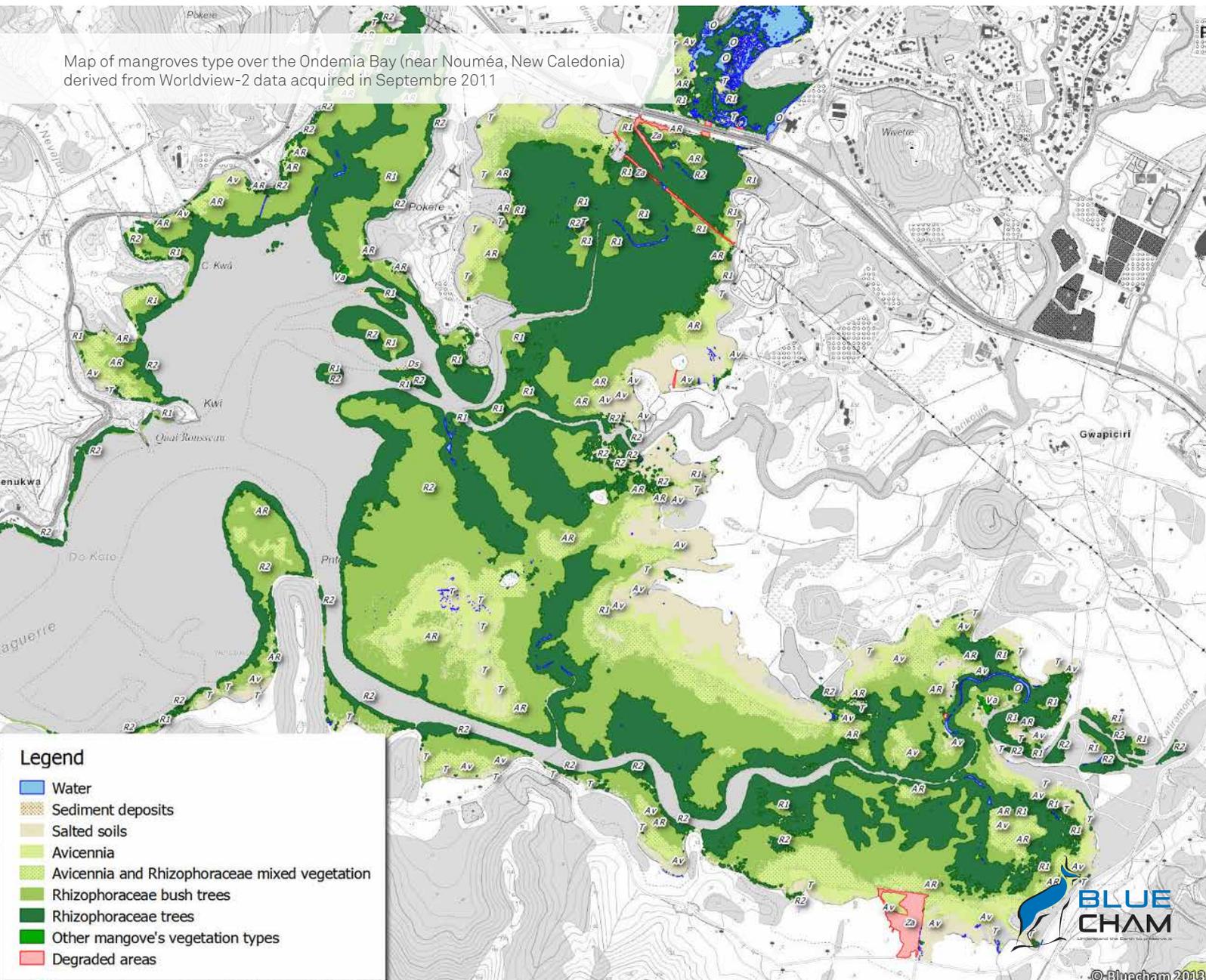
Legend
- Water
- Sediment deposits
- Salted soils
- Avicennia
- Avicennia and Rhizophoraceae mixed vegetation
- Rhizophoraceae bush trees
- Rhizophoraceae trees
- Other mangove's vegetation types
- Degraded areas

© Bluecham 2013

Realising Results

Working with Intergraph, Bluecham implemented ERDAS IMAGINE® Professional and IMAGINE Photogrammetry in its IT environment to tackle slow data analysis workflows as a result of large-sized input imagery. It recognised the need for a simplified and customised GUI to optimise data analysis processes.

The improved IMAGINE spatial modeler allows users to graphically develop data models. Building a flow chart in a GUI environment to process spatial data is easier than composing long complicated modelling scripts. The script is generated either on-demand from the GUI or automatically when the model is run without requiring any coding or scripting languages.

Bluecham migrated its data processing workflow from the IMAGINE spatial modeler language to a user friendly GUI by defining inputs, outputs and variables. The new 'preview' option, based on a pull-architecture, was utilised in some models to visualise the result before running the large output datasets. The pull architecture is on-the-fly dynamic processing, allowing Bluecham to visualise output in real time without creating a new dataset, thereby saving processing time and disk space during model creation and editing. Bluecham is optimising its time and resources by reusing data models, and have created a library of data models to use the same models with different data from a variety of sensors from different years.

Rémi Andreoli, Head of Space Applications at Bluecham says, "The IMAGINE spatial modeler is so easy to use that we now create our own GUI in less than an hour. In previous versions, using the Toolkit, the same development could take several days." The new and improved spatial modeler has helped Bluecham save large amounts of time, speed up processing, and increase overall efficiency.

Satellite imagery is ortho-rectified or calibrated using IMAGINE Photogrammetry, then mosaicked and colour-balanced for change detection studies and vegetation mapping. Orthorectification in ERDAS IMAGINE has proven to be 20 times faster than other remote sensing software packages. The software has helped Bluecham achieve X, Y, and Z precision accuracies of less than 50 centimetres. "With the Hexagon Geospatial solution, we can process all remote sensing data types (including those from the latest satellites) very quickly. For example, we can process 50 GB of Worldview-2 data 10 times faster than with our previous data processing chain. We have also increased the accuracies of geographical location from 1.5 m to less than 50 cm." says Remi.

Vegetation type map Result is from a ERDAS IMAGINE model. derived from Quickbird imagery acquired in october 2013

> With the Hexagon Geospatial solution, we can process all remote sensing data types (including those from the latest satellites) very quickly.

Key Benefits

- Faster data analysis
- Increased accuracy and precision in orthorectification
- Simplified and customised GUI
- Reduced cost of operations

Moving Forward

Bluecham considers remote sensing as a major source of accurate and scientifically viable environmental data. Information extracted from remote sensing is growing more and more important in decision-making procedures. However, the need of the hour is automation – products that can be used easily and on the fly. Cognizant of Hexagon Geospatial solution's flexibility, Bluecham aims to further customise the software to enhance functionalities and add buttons that would suit its data models.

In addition, Bluecham is looking to "integrate elevation for many reasons – increase the precision of monitoring services (mangroves trees heights monitoring, vegetation growth, erosion, etc.) and provide updated data elevation models (DEM) to mining companies," says Remi.

BlueCham intends to upgrade to the next version of ERDAS IMAGINE to make use of the spatial modeler's new point cloud operators. Any .las that's either captured with a LiDAR sensor or point clouds generated from stereo pairs by photogrammetric means such as by the semi-global matching algorithm in IMAGINE Photogrammetry will be able to be used in their native format in the spatial modeler. This will allow users to create customised models using Raster, Vector, and Point Cloud data for more advanced use of all data types in the modelling process.

HEXAGON GEOSPATIAL

Hexagon Geospatial helps you make sense of the dynamically changing world. Known globally as a maker of leading-edge technology, we enable our customers to easily transform their data into actionable information, shortening the lifecycle from the moment of change to action. Hexagon Geospatial provides the software products and platforms to a large variety of customers through direct sales, channel partners, and Hexagon businesses, including the underlying geospatial technology to drive Intergraph® Security, Government & Infrastructure (SG&I) industry solutions. Hexagon Geospatial is a division of Intergraph® Corporation. For

more information, visit www.hexagongeospatial.com. Contact us at marketing@hexagongeospatial.com.

Intergraph® Corporation is part of Hexagon (Nordic exchange: HEXA B). Hexagon is a leading global provider of design, measurement and visualisation technologies that enable customers to design, measure and position objects, and process and present data.

Learn more at www.hexagon.com.