

Pixel Factory™ for Spot Image needs...

Spot Image is the worldwide leader distributor of geographic information products and services derived from the Earth Observation satellites. For more than 20 years, Spot Image has developed cost-effective solutions for a broad range of applications and customers, through operating and optimizing its satellite resources. The company provides its customers with a unique, complete service, including programming of satellites for image acquisition, receiving and archiving telemetry, making geographic information products.

With its exclusive satellites, Spot Image acquires data through receiving stations around the world and delivers a full range of images from 20 m to 2.5 m resolution, with a location accuracy up to 10 m. Such precise and synoptic coverage is ideal for applications at regional and local scales. Spot Image also distributes complementary optical and radar data acquired by other satellites offering medium and very high resolution images such as Formosat-2, Kompsat-2 or ERS/ENVISAT, as well as Digital Elevation Models.

Spot Image and Infoterra France, until January 2006 known as ISTAR, have a long working history. For almost 20 years, Infoterra has relied upon the excellent quality of SPOT satellite images to create among other things, Digital Terrain Models and Orthoimages for a wide range of applications including Government and Local Authorities, Defence & Civil Security, Risk Management, Photogrammetry and Remote Sensing, and many more.

A homogenous coverage for all processed zones

In order to satisfy the increasing demand of value-added geoinformation products, Spot Image was looking for a solution to process millions of

square kilometres of images acquired with SPOT 5 satellite into 2.5 meter orthomosaics covering several regions in Europe. More importantly, they were searching for an industrial proven technology to create purely homogeneous rendering of natural color mosaics with unparalleled quality.

The Pixel Factory, from Infoterra France, a photogrammetric suite that creates advanced 2D and 3D mapping products was chosen by Spot Image for this ambitious project. Its high level of automation and its parallel architecture allows processing vast volumes of Earth Observation raw data from multiple sensors such as SPOT 5 and other VHR satellites, and producing a wide range of cartographic end products (e.g. Digital Surface Models & Orthoimages, countrywide Orthomosaics, etc).

The innovative algorithms of the Pixel Factory plus its breakthrough geometric features provide a perfect answer to Spot Image needs regarding the production of very high resolution maps for large areas of land.

Pixel Factory automatically processes vast volumes of raw Earth Observation data

- After receiving a large quantity of images, Spot Image performed an initial selection to choose those with the lowest cloud cover and best radiometry in order to ensure the best quality for the final product. Selected images were then processed through the Pixel Factory. With its advanced tool-box of features, the Pixel Factory rapidly completed numerous processing levels:
- **Fast spatial multi-sensor triangulation** was achieved thanks to Ground Control Points (GCPs) coming from Reference3D database and other available cartographic data.



2.5m natural color Orthoimage – Arcachon, Banc d'Arguin – France

- Although the **Pixel Factory can easily process Digital Terrain Models (DTM)** in a higher resolution, it was decided to use DTED2 DEM from Reference3D and SRTM (Shuttle Radar Topography Mission) when Reference3D was not available.
- **Automated mosaic creation (orthoimage, elevation image & second generation mosaic):** SPOT 5 captures images through five different bands (XS1, XS2, XS3, Mir and panchromatic). Therefore, the satellite images supplied needed to be treated to create a realistic representation of land cover.



2.5m natural color Orthoimage - Arcachon, Banc d'Arguin - France

An efficient way to produce natural color Orthomosaics

The Pixel Factory automatically processed the data using a unique image processing workflow that performs the pan-sharpening, dodging, contrast, equalisation, etc., to deliver 2.5m natural color images. All the images were processed all together to maximise the mosaic colors rendering. Mosaic cutlines were automatically created by the system ensuring a seamless result.

Re-establishing realistic colors provides a major advantage over traditional mosaics as natural colors render a scene more realistic, facilitate deciphering objects and provide precise ground information.

1,000,000 square kilometres in less than three months

The project was comprised of two separate regions covering Spain & Portugal in the first instance, and France, Belgium & Luxembourg in the second one. This latter area, covering 600,000 square kilometres, was captured using 400 SPOT scenes. It took Infoterra less than three months to deliver this 2.5 meter orthomosaic to Spot Image. The two final datasets were then seamlessly integrated for delivery.

Spot Image appreciates that the Pixel Factory's modular structure allows easy scalability to meet future requirements as new features can be added when needed. In a world where geographic data can so quickly become obsolete, Spot Image knows that by choosing Infoterra they have made a sound investment that can evolve according to their business needs.

"After so many years of working together, we were well aware of the superior quality of Intoterra France's products and services, but we were truly amazed when we received all the data in such a short delay.

The final images are impeccable and the natural color rendering is very impressive" says Laurent Maggiori, Chief Operating Officer at Spot Image.

"There are not many companies who can deliver such a large quantity of seamless data sets in such a high resolution in such a short delay.

We are fully satisfied and look forward to future opportunities to work with Infoterra France again", he added.



France overview 2.5m natural color Orthomosaic

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