BlomURBEX™

Whitepaper

| Audience: | **BLOM ASA partners and developers** |

Date	Blom Document
February 2011	BlomURBEX™ **WhitePaper v5.0r1.0a**

Table of Contents

1   What is BlomURBEX^{TM}

BlomURBEX^{TM} is a geographic information server (geoserver) designed to offer fast, simple access to geospatial models through an extensive set of standardized interfaces on which multiple value-added services can be offered.

With the popularization of the Internet, organisations are increasingly using and depending on geospatial data for their daily activities. However, the processing and management of this information rarely forms part of the company's *core business*. It is therefore necessary to be able to server geospatial data efficiently to applications, organizations, and consumers, so that it can be separated from:

- The location and negotiation of source data
- Upgrades and maintenance
- Problems intrinsic to formats, projections, metadata, etc.

BLOM is aware of this need and seeks to offer its clients a proposal that is clearly distinct from the other offers on the market, complementing it with value-added services that in turn distinguish it even more from the competition. With this in mind, BLOM launched its BlomURBEX^{TM} geospatial service platform in 2008

BlomURBEX^{TM} is an online service able to show the reality to in rich detail. The platform is accessible through a variety of technologies and applications. It is fast and powerful enough to serve millions of users, robust and stable to meet the demands that any ambitious enterprise may require. At the moment BlomURBEX^{TM} covers more than 1.100 urban areas in Europe, which in turn translates into more than 4.000 cities.

1.1   The BlomURBEX^{TM} platform

BlomURBEX^{TM} is a B2B Geoserver solution designed to serve Blom's content as well as third party contents, along with the client's own content, in a unified manner, providing an integrated services and data service.

- Unifying all of the end client's information sources
- Service availability and performance guaranteed by contract
- Allows the client to focus on operating its business, forgetting the problems inherent in spatial data (sources, upgrades, projections, mash-ups, etc.)

Using this concept, BLOM is able to serve its own data models, as well as content from different sources in a unified manner.

All mentioned datasets are available online, and easily accessible from a wide range of platforms and technologies via an HTTP interface, covering all environments from desktop to mobile: JavaScript, .NET, J2ME, Android and Windows embedded platforms. SDKs are provided for mobile platforms, allowing the developers to start

development immediately and obtain impressive results without the need to take care of protocol details. These connectivity tools are described later in this document.

As seen, BlomURBEX^{TM} is able to serve all Blom Data Models online to a whole host of final applications; in this sense, BlomURBEX^{TM} is located in the middle layer of the Blom Product Value Chain.
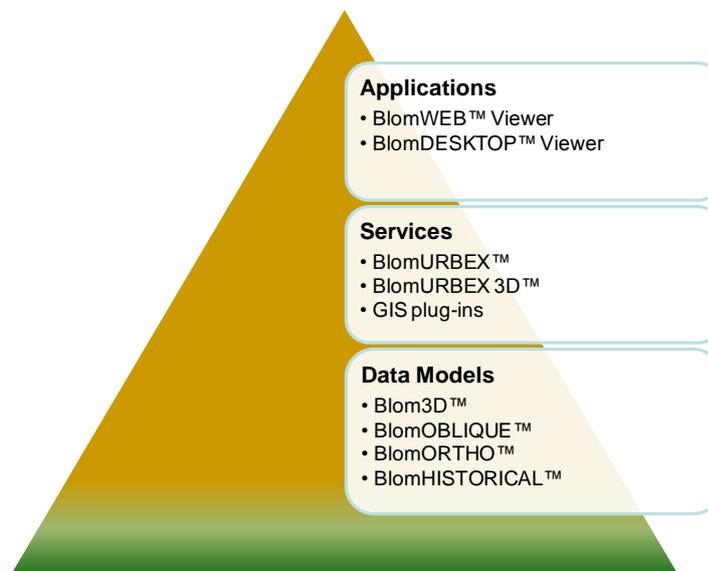
Applications
• BlomWEB™ Viewer
• BlomDESKTOP™ Viewer

Services
• BlomURBEX™
• BlomURBEX 3D™
• GIS plug-ins

Data Models
• Blom3D™
• BlomOBLIQUE™
• BlomORTHO™
• BlomHISTORICAL™

Figure 1: Blom Product Value Chain

2 BlomURBEX^{TM} datasets

BlomURBEX^{TM} provides online access to high resolution georreferenced images especially in urban areas. Blom datasets cover all major cities in Europe but BlomURBEX^{TM} contents are not limited to Europe as we are constantly adding more data from reselling agreements with our customers and partners.

All images in BlomURBEX^{TM} are stored and served in **Spherical Mercator projection** (EPSG:3785). Local projections as well as coordinate conversion tools are available too.

This section covers the main basic contents available on BlomURBEX^{TM}

2.1 Vertical (Ortho) images

The orthophoto layer is composed of vertical images in which it is not possible to appreciate the front of buildings.

Figure 2: Ortho Image

This layer is a continuous projected mosaic of vertical views. Most of these images were captured in **high-resolution flights by Blom (15 or 10 cm per pixel)**, although in some European cities, images with a resolution of up to 4 cm per pixel are available.

In addition, through collaboration agreements with different Land Survey Organism and local production **BLOM serves countrywide orthophoto for several countries in Europe, which resolution varies from 10 to 50cm.**

2.2 Oblique images

Oblique images are aerial pictures taken with an inclination of approx. 45º, allowing users to visualize the façades of the buildings. Four views are available for every point (North, East, South and West), and more than one image of any view could cover one particular point, since the images have some overlap between them.

Figure 3: Oblique Image

Blom has the capability to generate oblique georeferenced imagery for the entire territory of Europe and has agreements with other companies to provide oblique imagery for other countries if needed. Images generated this have a resolution **between 13 and 18 cm. per pixel** and measurements on the images can be done directly as the BlomURBEXTM API provides access to the metada. This capability is owned **exclusively by Blom**.

2.3   Ortho-rectified oblique

The ortho-rectified oblique images are oblique images projected, transformed and ortho-rectified to correct the distortion produced by differences in the elevation of the terrain. Due to this process, these images may appear slightly distorted at low zoom leves but offer the advantage of an easier handling. They can be easily superimposed on other maps and processed continuously, making them ideal for **use in mobile devices and navigators**.

Figure 4: Orthorrectified Oblique Image.

2.4   Rasterized vector data

BLOM has a Reseller Agreement with TeleAtlas, which allows it to use its vector information for different operations. BLOM has rasterised most of the Teleatlas data in Europe. This makes it possible to display street information and street names on the vertical and oblique images without degrading performance, generating a "hybrid view" as a result.

Figure 5: Rasterized Vector Data

2.5   Historical Data

One very important characteristic of BLOM's cartographic data is that the system allows access to the date of the flight and capture of the information. This information is not available in other similar systems, and the lack of it prevents the data from being used in legal documents, for example.

BLOM stores all of the cartographic information organized by flight year, so that the applications can display the same geographic area over the course of different years in different ways (in adjacent windows, with a sidebar that fades to the images, etc.).

Using this characteristic, applications based on BlomURBEX™ can show the historic evolution of a particular zone to the users based on the information available in the system, at no additional cost

2.6   Custom datasets

Blom offers the possibility of hosting customer datasets that can be served through the same interfaces and with the same QoS as our own data. The custom datasets that we can import and serve are essentially ortho imagery and different types of vector data.

The customer datasets are then deployed in a secure, controlled environment that only the customer has access to, or they can be incorporated into our product offering to other clients under a reselling agreement.

3   Service architecture

BlomURBEX™ is an online geoserver service with the technology to host and deliver all datasets with the required performance and availability for commercial application giving service to millions of users.

The service environment is arranged in two tiers: A service tier running the front end functionalities and a storage tier containing the data weight.
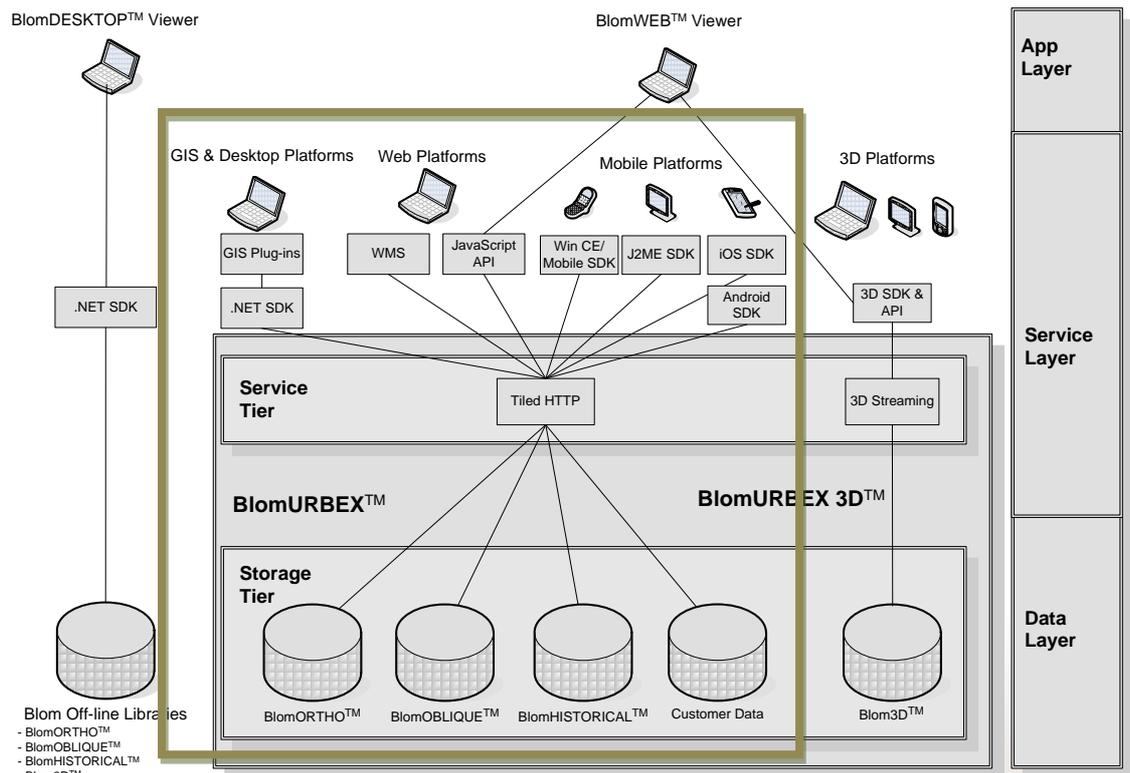

Figure 6: BLOMURBEX™ Conceptual Architecture

The Storage Tier holds all Blom Data Models in a convenient way to manage hundred of terabytes of information with a top-level performance.

BlomURBEX™ is based in a cluster architecture where all of the critical elements are redundant and interconnected independently. Current system architecture was designed to provide up to 18,000 tiles per second or up to 1,500 simultaneous users.

In order to access BlomURBEX™ a User Token (UT) is needed for all API calls. This UT uniquely identifies the user access providing secure access to the required or authorized features and datasets. The usertokens **guarantee the privacy and security of accesses** and exclusive accesses can be defined for users for data that cannot be viewed or consulted by any other users.

4   Application and System Integration Interfaces

The BlomURBEX™ platform is a system that serves spatial data over the internet to be consumed by end applications, regardless of the operational environment. To this end, BlomURBEX™ publishes different external APIs and SDKs that allow advanced applications to be built based on the platform's granular services.

These integration interfaces services can be classified in three main types:

- Interfaces for web access
- Plugins for GIS systems and desktop applications
- SDKs for mobile devices

4.1   Web access interfaces

BLOM offers two main ways for creating web-applications based on BlomURBEX™.

- WMS Service
- Javascript API

4.1.1   WMS Service

BLOM offers an OGC WMS (Web Map Service) interface that is compatible with specification 1.1.1 and 1.3.0 of the protocol, a standard for the publication of cartography over the internet.

4.1.2   Javascript API

The BlomURBEX™ Javascript API provides a fast and simple mechanism for the development of applications with access to BlomURBEX™ services that is much simpler than the WMS equivalent. This API consists of an object that can be integrated into any HTML/Javascript application, and whose different classes are used to manage the communication with the server, the handling of the data (especially oblique image data), the interaction with the BlomURBEX™ tools, the representation of markers and vector information, and event capture for the execution of additional tasks.

The API services allow for the creation of dynamic map objects, perform measurements on the imagery, create custom controls, display vectors and markers, transform coordinates between different systems, direct and reverse geocoding and much more..

4.2   Plugins for GIS systems and Desktop applications

4.2.1   GIS Plug-ins

The BlomURBEX^{TM} GIS plugins are integrated in the application window of the corresponding GIS system and provide most of the functions that are available in the Javascript API as part of the interface of the GIS in question. The plugins access the BlomURBEX^{TM} data and services over an internet connection.

The following list summarizes the plugins that are currently available.

Desktop Solutions
- ESRI ArcGIS Desktop (ArcMap) 9.2/9.3
- Intergraph Geomedia Prof. 5.2 or higher
- MapInfo Prof. 6.5 or higher
- Autodesk Map 3D 2008/2009
- MicroStation 8.1.x, 2004(8.5.x),XM(8.9) & v8i(8.11)

Web Solutions
- Intergraph Geomedia WebMap 6.1
- ESRI ArcGIS Server 9.2/9.3

4.2.2   .NET SDK

The SDK for MS.NET is a DLL that contains a collection of classes and controls for the development of .NET desktop applications that make use of the BlomURBEX^{TM} services. This SDK offers developers practically all of the BlomURBEX^{TM} Javascript API, as well as a map control that allows the display of vertical and oblique images and different classes and buttons that allow interaction with the map, from the navigation to the vector overlay, including measurements or layer selection.

4.3   SDKs for mobile devices

Blom provides three special SDKs for mobile platforms:

- Windows Mobile
- J2ME (including Android and Blackberry)
- iOS (iPhone, iPod Touch, iPad)

In addition to the API for the interaction with the BlomURBEX^{TM} server, functions are included for handling the specific features of the devices (touchscreen, accelerometer, etc.) and sample applications to increase productivity and accelerate the development of mobile applications based on BlomURBEX^{TM}. The SDK for mobiles also provides data caching to minimize response times and network use, and they have been designed taking into account the restrictions of this type of device in regard to processing power, memory space, and display size, so that the user experience is optimal.

5   Summary

BlomURBEX^{TM} allows online access for customers, developers and partners to a powerful geoserver platform providing high resolution imagery from cities and locations all over Europe. A series of tool are provided that are flexible enough to take full advantage of the delivered data in order to meet the extraordinary demands of today's business climate.

BlomURBEX^{TM} supplies a data service solution available on PC and Mobile platforms and a number of handheld hardware, allowing for a huge amount of data to be delivered in a very convenient and easy way.

BlomURBEX^{TM} is a unique service in this field, an online environment where the up-to-date data of Blom can coexist with a customer's historical and latest data. This creates virtually endless possibilities for different customer scenarios.

BlomURBEX^{TM} collection of APIs, plug-ins and SDKs make it possible to tailor make a solution fit for almost any needs. Deployment time for BLOMURBEX^{TM} based application is minimal as all datasets remain in the BLOMURBEX^{TM} servers, making the investment in data and hardware very economical when compared to traditional geodata deployments.

BlomURBEX^{TM} most important part is its innate power to deliver what the end-customer deems as interesting. It is, more than anything, a set of tools and services that gives extraordinary freedom to customers and developers alike.
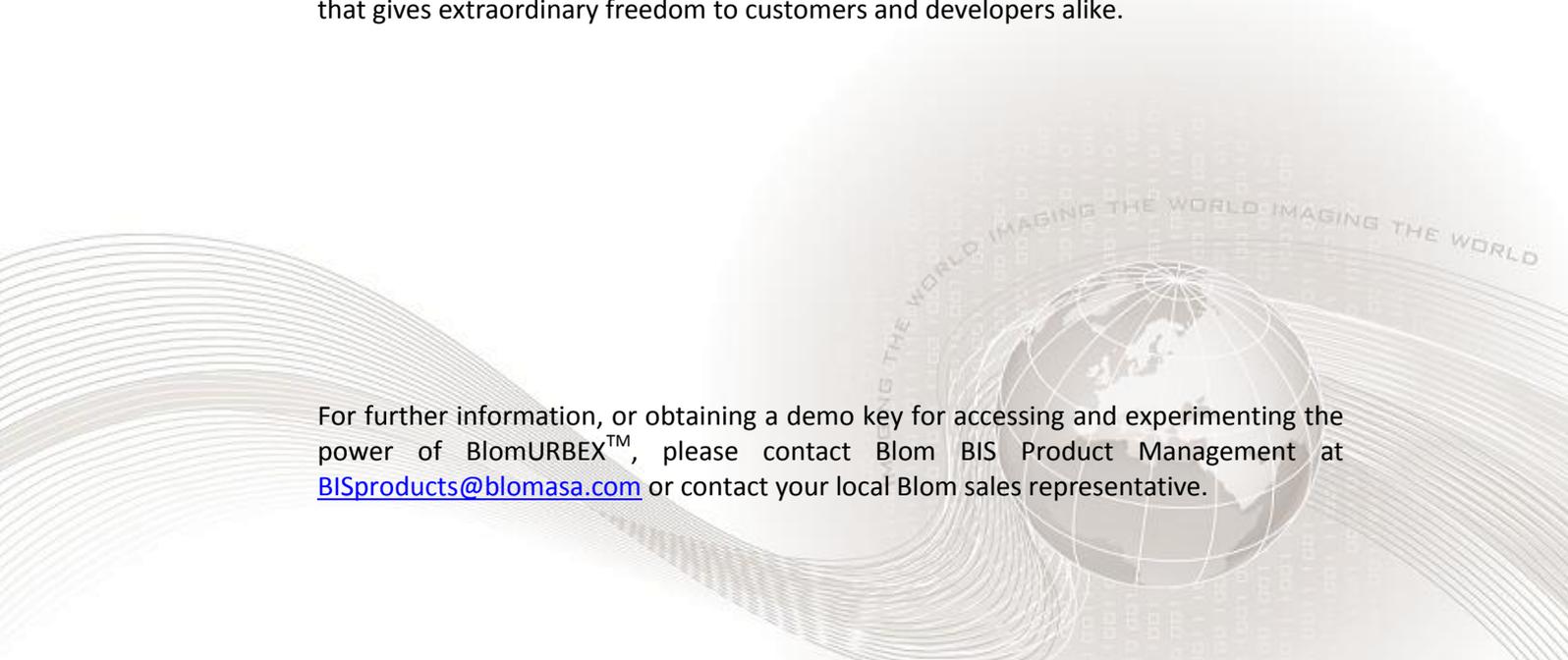
For further information, or obtaining a demo key for accessing and experimenting the power of BlomURBEX^{TM}, please contact Blom BIS Product Management at BISproducts@blomasa.com or contact your local Blom sales representative.