
BlomWEB Viewer™ v5.8 Reference Guide

Audience: **Blom partners, clients and developers**

Date	Blom Document
July 2017	BlomWEB Viewer Reference Guide v5.8.0.docx

Notices

Blom expressly retains all intellectual and other property rights with respect to this document and all matters set forth herein.

Some technical assertions of capability included herein are estimates based on limited information gathered from past experience.

The terms, conditions, specifications, and procedures described herein are subject to change in the sole discretion of Blom, ASA and its affiliates. End-User is responsible for requesting and obtaining the latest release of these terms, conditions, specifications, and procedures prior to any purchase or deployment of the products described herein.

Confidentiality

This document and the information contained herein is the proprietary and confidential information of Blom, ASA. It is provided under contract agreement, and may not be reproduced or used for purposes outside the scope of such agreement.

Trademarks

Blom's logo is a registered trademark of Blom, ASA in the Kingdom of Norway and other countries. Other brands and their products are registered trademarks or trademarks of their respective holders and should be noted as such.

Copyrights

© 2017, Blom, ASA • All Rights Reserved

Revision History

Document Number	Issue Date	Reason for Change
BW_RG_1010	Feb 18 th , 2011	Original Document
BW_RG_2010	June 27 th , 2011	Version 2.0 of the application. <ul style="list-style-type: none"> Reordering of some chapters New available URLs for accessing the tool Workspace and custom layer capabilities Additional tools for uploading shape file data and customizing the look and feel of the application Export user-generated layers as shape files Imagery download functionalities availability according to user permissions Integration with BlomURBEX POI contents New geocoding provider: Ubiest BlomSTREET™ data set added. Proof of concept on integration and description of navigation.
BW_RG_2011	July 4 th , 2011	English rewording
BW_RG_2020	July 7 th , 2011	Hi-resolution download function added
BW_RG_2110	Aug 10 th , 2011	Added Go-To button on shapefile selection screen Collapsible categories in POIs SHP attribute visible on screen (if DBF is provided)
BW_RG_3010	Oct 7 th , 2011	Section 2.3 modified to include new geocoding provider and delete the Decarta geocoding option Section 3.1 modified to include selection of maps provider. Section 3.5 modified to include new Demo Scenarios interface Added section 3.6 to describe Routing capabilities Section 4 modified to show the new Annotations interface Section 5.7 modified to include new Vertical Area tool Section 8.3 added to include new vector symbology editor New chapter 10 added to describe BlomWEB LiDAR capabilities Chapter 11 modified to describe measurement methodology on BlomSTREET™ data. New Chapter 12 added to describe the custom plug-in capabilities of BlomWEB
BW_RG_3011	Nov 29 th , 2011	Modified Section 2.1 to include the "Remember me" option in the login page. Modified Section 3.1.1 as map/geocoding providers may vary now

		<p>according to credentials.</p> <p>New demo scenarios added in Section 3.5.</p> <p>Modified section 3.6 to redefine routing options.</p> <p>Added Chapter 13 to include command-line (URL) parameters.</p>
BW_RG_3510	Feb 15th, 2012	<p>New Section 5.9 to describe the layer selection tool</p> <p>Modified Chapter 11 to include full integration with the Cyclomedia API.</p>
BW_RG_5710	Jan 29, 2013	<p>Updated document for version v5.7.</p> <p>Modified section 2.3.5 to include TomTom Geocoding.</p> <p>Updated screenshots</p>
BW_RG_5720	Feb 1, 2016	<p>Updated documentation about automatic login based on source IP address.</p>
BW_RG_5800	July 17, 2016	<p>Updated document for version v5.8.</p> <p>Modified section 6, Map Tools, to include Oblique Layers section.</p> <p>Updated screenshots.</p> <p>Extended command line options to support oblique layers and usertoken.</p>

Table of Contents

1	What is BlomWEB Viewer™?	2
1.1	<i>What is in this document?</i>	3
1.2	<i>Accessing BlomWEB Viewer™</i>	3
1.3	<i>Supported Platforms</i>	3
1.4	<i>Product history</i>	4
1.4.1	Version 1.0 (April 2011)	4
1.4.2	Version 2.0 (June 2011)	4
1.4.3	Version 3.0 (October 2011)	5
1.4.4	Version 3.1 (December 2011)	5
1.4.5	Version 3.5 (February 2012)	6
1.4.6	Version 5.7 (December 2012)	6
1.5	<i>Document Organization</i>	6
1.6	<i>For more information</i>	6
2	BlomWEB Viewer™ Basic Features	8
2.1	<i>Accessing BlomWEB Viewer™</i>	8
2.2	<i>BlomWEB Viewer™ Main Features</i>	9
2.3	<i>Navigating through the Map Interface (2D mode)</i>	11
2.3.1	Panning the map	11
2.3.2	Zooming in and out	11
2.3.3	Switching views (ortho – oblique)	12
2.3.4	Map Locator	15
2.3.5	Searching for an address (geocoding)	17
2.3.6	Searching by coordinates	19
2.3.7	Resizing the screen	20
3	Advanced display and navigation tools	21
3.1	<i>Map View</i>	21
3.1.1	Selection of Map Provider	21
3.2	<i>Hybrid view</i>	23
3.3	<i>Multiview</i>	24
3.4	<i>Display of external WMS services</i>	26

3.5	<i>Demo Scenarios</i>	28
3.6	<i>Routing</i>	31
3.6.1	Selecting a route calculation	31
3.6.2	Routing results.....	33
4	Annotation tools	34
4.1	<i>Drawing shapes</i>	34
4.1.1	Drawing points	34
4.1.2	Drawing lines	35
4.1.3	Drawing polygons	36
4.2	<i>Drawing text</i>	36
4.2.1	Drawing text	37
4.3	<i>Exporting annotations</i>	37
5	Measurement Tools	38
5.1	<i>Length and Length on the ground measurement</i>	38
5.2	<i>Area Measurement</i>	39
5.3	<i>Bearing Measurement</i>	40
5.4	<i>Elevation Measurement</i>	41
5.5	<i>Height Measurement</i>	41
5.6	<i>Diagonal (Ladder) Measurement</i>	42
5.7	<i>Vertical Area tool</i>	43
5.8	<i>Erase Button</i>	44
5.9	<i>Multiple layers on screen</i>	44
6	Map Tools	45
6.1	<i>High Resolution Download tool</i>	45
6.1.1	Downloading Ortho imagery	45
6.1.2	Downloading Oblique imagery	46
6.2	<i>Screenshot tool</i>	46
6.3	<i>Reverse Geocoding tool</i>	46
6.4	<i>Show Coordinates tool</i>	46
6.5	<i>Year Selection tool</i>	47
6.5.1	Year selection and MultiView	48

6.6	<i>Oblique Selection tool</i>	49
6.7	<i>Image Layer Priority tool</i>	50
6.8	<i>Oblique Layer Priority tool</i>	51
6.9	<i>Overlay Selection tool</i>	52
6.10	<i>Points of Interest (POIs)</i>	53
7	Additional Tools	55
7.1	<i>Vector Files uploading</i>	55
7.2	<i>Graphic Profiles Management</i>	57
7.2.1	Skin selection	57
7.2.2	Changing the logo	58
7.2.3	Selection of map provider	58
8	Workspaces and Custom Layers	59
8.1	<i>Workspaces</i>	59
8.1.1	Workspace Layers	60
8.2	<i>Custom layers</i>	60
8.3	<i>Symbology Edition for Vector Layers</i>	62
9	BlomURBEX 3D™ View Controls	63
9.1	<i>Accessing the BlomURBEX 3D™ Viewer</i>	63
9.2	<i>Navigating through the 3D models</i>	64
9.2.1	Navigation Pad	64
9.2.2	Mouse controls	65
9.2.3	Keyboard controls	65
9.3	<i>Level of Detail (LOD) selection</i>	65
9.4	<i>Edit Mode</i>	65
9.4.1	Changing textures in the building	67
9.4.2	Adding new buildings	67
10	LiDAR Viewer	68
10.1	<i>Introduction</i>	68
10.2	<i>Accessing LiDAR data</i>	68
10.3	<i>Navigating through the LiDAR models</i>	69
10.4	<i>Visualization options</i>	69

10.4.1	True Colour	70
10.4.2	Classification-based colour	70
10.4.3	Height-based colour	71
10.4.4	Height HSV colour	71
11	BlomSTREET™ data.....	72
11.1	<i>Accessing BlomSTREET™ data</i>	<i>73</i>
11.2	<i>BlomSTREET™ navigation</i>	<i>74</i>
11.2.1	The map window	74
11.2.2	The BlomSTREET™ window	76
11.3	<i>Measurements on BlomSTREET™ data</i>	<i>76</i>
11.3.1	A note on measurements on BlomSTREET™ data	77
11.3.2	Measuring Points.....	78
11.3.3	Measuring Lines.....	79
11.3.4	Measuring Heights.....	81
11.3.5	Planar measurements.....	82
11.3.6	Volume measurements	82
11.3.7	Export measurements	83
11.3.8	Import measurements.....	83
11.3.9	Deleting measurements	83
11.4	<i>Map Tools for BlomSTREET™</i>	<i>84</i>
11.4.1	Export link.....	84
11.4.2	Save snapshot.....	84
11.4.3	Printing BlomSTREET™ data	85
11.5	<i>Reprojecting vector data on BlomSTREET™.....</i>	<i>86</i>
12	Custom Plug-ins	87
12.1	<i>Creating a Plug-in</i>	<i>87</i>
12.2	<i>Uploading a Plug-in to BlomWEB Viewer™</i>	<i>87</i>
13	Running BlomWEB Viewer™ from the command line	89
13.1	<i>Valid parameters</i>	<i>89</i>
13.2	<i>Examples.....</i>	<i>89</i>

Table of Figures

Figure 1: Blom Products Value Chain	2
Figure 2: Zoom in action	11
Figure 3: Windowed zoom	12
Figure 4: Ortho View to be changed to North View	13
Figure 5: North View	13
Figure 6: South View	14
Figure 7: Natural Oblique Image	14
Figure 8: Orthorectified Oblique	15
Figure 9: Map Locator Window	16
Figure 10: Map Locator in “Map” mode	16
Figure 11: Geocoding Tool	17
<i>Figure 12: OSM Geocoder Results</i>	17
Figure 13: UbiEst Geocoding Interface	18
Figure 14: OYM Geocoding Interface	18
Figure 15: TomTom Geocoding Interface	19
Figure 16: Coordinates Search	19
<i>Figure 17: Hide Tools button</i>	20
Figure 18: Additional Tools -> Manage Graphical Profiles	21
Figure 19: Map Provider Selection	21
Figure 20: Changing to Map View	22
Figure 21: Map View	22
Figure 22: Changing to Hybrid View	23
Figure 23: Hybrid View	23
Figure 24: View selection control	24
Figure 25: Dual View screen with Map and North Oblique	24
Figure 26: Multi View with Ortho and 4 Oblique Views	25
Figure 27: 3D Viewer	25
Figure 28: Connect to WMS Server	26
Figure 29: WMS Server Selection	26

Figure 30: WMS Service displayed on top of Blom Ortho	26
Figure 31: Adding a new WMS server	27
Figure 32: WMS Server Added to the list	27
Figure 33: Selection of Demo Scenarios	28
Figure 34: List of Demo Scenarios	28
Figure 35: Demo scenario. Rasterized LiDAR Data on the O2 Arena (London)	29
Figure 36: Routing Interface. OYM	31
Figure 37: Routing Interface. UbiEst	31
Figure 38: Routing Interface. TomTom	31
Figure 39: Routing options	33
Figure 40: Route Calculation	33
Figure 41: Annotations Tools	34
Figure 42: Annotation colour selection	34
Figure 43: Drawing Points	35
Figure 44: Drawing Lines	35
Figure 45: Drawing Polygons	36
Figure 46: Drawing Text menu	36
Figure 47: Drawing texts	37
Figure 48: Measurement Tools	38
Figure 49: Length Measurement	39
Figure 50: Area Measurement	40
Figure 51: Bearing Calculation	40
Figure 52: Elevation Measurement	41
Figure 53: Height Measurement	42
Figure 54: Diagonal Measurement Results	42
Figure 55: Measuring façade area: Define baseline first... ..	43
Figure 56: ...Then continue defining the area	43
Figure 57: ... Finally, double click to get the measurement	44
Figure 58: Layer selector	44
Figure 59: Map Tools	45
Figure 60: Year Selection Tool	47

Figure 61: Year Selection Tool, text mode	47
Figure 62: Multiview with different imagery years	48
Figure 63: Oblique Views Selection.....	49
Figure 64: Image Layer Priority.....	50
Figure 65: Street Layers Overlay selected over Oblique image.....	52
Figure 66: POIs button	53
Figure 67: POIs Window.....	53
Figure 68: POI database displayed	54
Figure 69: Displaying POI information.....	54
Figure 70: Additional tools.....	55
Figure 71: Accesing attribute information from vector layer.....	56
Figure 72: Skin selection	57
Figure 73: The new skin applied	57
Figure 74: Logo changed	58
Figure 75: Workspace and Custom Layers button	59
Figure 76. Workspace and Custom Layers window	60
Figure 77: Overlays and Custom Layers.....	61
Figure 78: Vector Layer Symbology Edition.....	62
Figure 79: Vector Symbology changed	62
Figure 80: 3D View	63
Figure 81: 3D Navigation Pad.....	64
Figure 82: LOD Selection tool (LOD1, LOD2, LOD3, and LOD4).....	65
Figure 83: 3D Model Selected in the Viewer.....	66
Figure 84: Texture Replacement.....	67
Figure 85: External 3D model dropped on the London 3D city model	67
Figure 86. LiDAR button	68
Figure 87: Selecting the LiDAR area to visualize	69
Figure 88: LiDAR data in true color view	70
Figure 89: LiDAR data in classification-based view	70
Figure 90: LiDAR data with height-based colour.....	71
Figure 91: LiDAR data with height HSV colour	71

Figure 92: Accessing BlomSTREET™ data	73
Figure 93: BlomSTREET™ demo scenario	74
Figure 94: The triangle rotates according to the BlomSTREET™ view.....	75
Figure 95: BlomSTREET™ mode with three opened BlomSTREET™ windows	75
Figure 96: Date of the BlomSTREET™ image	76
Figure 97: BlomSTREET™ Measurements Tools	76
Figure 98: Measurement principles (1)	77
Figure 99: Measurement Principles (2)	78
<i>Figure 100: Point Measurement. Step 1</i>	78
Figure 101: Point Measurement. Step 2.....	79
Figure 102: Line Measurement. Step 1.....	80
Figure 103: Line Measurement. Step 2.....	80
Figure 104: Line Measurement. Step 3.....	81
Figure 105: BlomSTREET™ Height Measurement.....	82
Figure 106: Map Tools for BlomSTREET™ data	84
Figure 107: Exporting BlomSTREET™ imagery.....	85
Figure 108: BlomSTREET™ print options	85
Figure 109: Vector data over BlomSTREET™ image	86
Figure 110: Plug-in tool	87
Figure 111: Plugin upload window	88

SECTION 1

BlomWEB Viewer™ Overview

1 What is BlomWEB Viewer™?

BlomWEB Viewer™ is a web-based application that allows its users to experiment with all the features and power of the BlomURBEX™ and the BlomURBEX 3D™ geoservers.

BlomURBEX™ and BlomURBEX 3D™ are two online services provided by *Blom* from several computing centres worldwide, offering a revolutionary collection of geographical datasets showing urban environments with high-definition imagery and 3D textured models, extracted from at least five different views and accurately geo-referenced to fulfill both end consumer expectations and professional/engineering requirements.

As such, BlomURBEX™ and BlomURBEX 3D™ offer a wide set of APIs, GIS Plug-ins and SDKs for developers to create high added-value applications on a wide range of platforms and technologies on top of the rich and unique geographic content provided by Blom, and other contents provided by Blom partners.

The BlomWEB Viewer™ was developed to supply a convenient, ready-made and easy to use tool that provides access to the geographical content found in BlomURBEX™ and BlomURBEX 3D™, without the need for end user coding.

BlomWEB Viewer™ makes full use of the BlomURBEX™ JavaScript API in order to provide a wide showcase of BlomURBEX™ capabilities in terms of functionality and available datasets. This way, BlomWEB Viewer™ is located at the top of the Blom Product Value Chain.

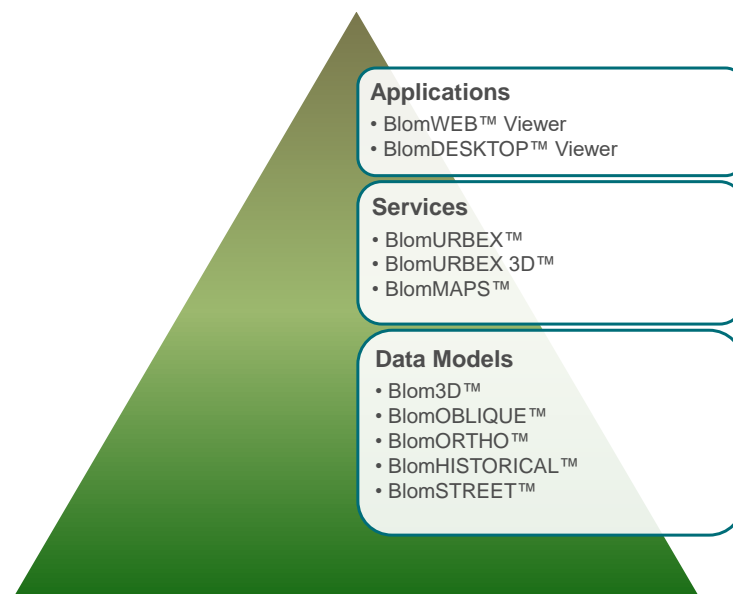


Figure 1: Blom Products Value Chain

BlomWEB Viewer™ has been designed to cover two basic needs:

- a) Provide a simple yet powerful way to showcase BlomURBEX™ and BlomURBEX 3D™ features to Blom customers, and also be a demoing tool for the Blom Sales Force.
- b) Provide a solid basic core for developers to create vertical web applications using the BlomURBEX™ JavaScript API.

Future versions of BlomWEB Viewer™ will include additional tools and functionalities and will allow for greater interface customization capabilities.

1.1 What is in this document?

This document is a reference guide for BlomWEB Viewer™. It provides a simple but detailed user manual covering all of its features.

1.2 Accessing BlomWEB Viewer™

BlomWEB Viewer™ is an online application. It can be accessed from the following URLs¹:

<http://www.blomurbex.com>

<http://www.blomwebviewer.com>

<http://www.blomweb.com>

Accessing BlomWEB Viewer™ requires the use of some valid credentials (user and password). The current version of the tool does not support online creation of credentials, so contact your local Sales Support representative to obtain a personal set of BlomWEB Viewer™ credentials.

Since 2016 automatic IP login is supported to allow automatic access for allowed IP address.

1.3 Supported Platforms

BlomWEB Viewer™ runs on any JavaScript compatible web browser, whatever the operating system. It has been tested and is supported in Internet Explorer (versions 7 to 9), Mozilla Firefox 3.6 and Google Chrome 8.

Some exceptions must be considered:

- BlomURBEX 3D™ is supported **only** on Windows-based computers

¹ The same URL was hosting the previous BlomURBEX™ demo viewer. This old viewer has been substituted with the BlomWEB™ app on Feb.2011

- To run BlomURBEX 3D™ viewer on Google Chrome you need to have Mozilla Firefox installed as some components are shared.
- Support for mobile phone web browsers in BlomWEB Viewer™ is limited. The user will be redirected to a simplified viewer if any of the following strings are detected in the user-agent:

Android | webOS | iPhone | iPad | iPod | BlackBerry | mobile

1.4 Product history

1.4.1 Version 1.0 (April 2011)

Since the release of the BlomURBEX™ service in 2008, a demo viewer has been available for accessing the BlomURBEX™ contents. BlomWEB Viewer™ is an evolution of that demo viewer and version 1.0 has the following new features:

- New Graphical User Interface (GUI)
- New measurement tools
- Blom Geocoding (direct and reverse)
- Coordinate display and coordinates search
- Baselayer control
- Date selection
- Overlay selections
- Display of vector data (Map View)
- Connection to external WMS servers
- Location Map included in the window
- Re-sizable map screen
- Dual and PentaView representation
- Launch of 3D viewer directly from the demo viewer

1.4.2 Version 2.0 (June 2011)

Version 2.0 includes the following new features

- Workspace capabilities allowing user to save and retrieve their configuration
- Uploading of vector data
- User storage area to save custom data layers
- Skin capabilities to customize the look and feel of the application
- Image download capabilities
- Export user-generated layers as shape files
- New geocoding provider: UbiEst
- Integration with the BlomURBEX™ POI rendering functions
- New data layer: BlomSTREET™, 360° high-resolution street imagery

1.4.3 Version 3.0 (October 2011)

Version 3.0 includes the following new features

- New geocoding provider added: On Your Maps (OYM).
- DeCarta geocoding service has been removed
- Routing: Routing capabilities added to BlomWEB Viewer™, from two different providers: Ubiest and OYM.
- Full integration of BlomSTREET™ data including measurement capabilities
- New measurement tool in Oblique Images: Vertical Area measurement
- Custom plugins upload ability providing developers with a new interface for customizing BlomWEB Viewer™.
- Map layer switch, providing the capability to select the street map provider between OYM or Ubiest
- Symbolology editor for vector layers
- New annotations interface
- LiDAR viewer, allowing users to view and interact with LiDAR data online

1.4.4 Version 3.1 (December 2011)

- New DEMO SCENARIOS: BlomSTEREO and BlomMETRO
- DEMO SCENARIOS and GOOGLE do not appear by default on the user interface.
- The login screen has a REMEMBER ME check box.
- Routing allows to select SHORTEST/FASTEST routes
- Selection of geocoding/routing provider is remembered for future sessions
- Only those GEOCODING/ROUTING providers that the usertoken has permissions to will be showed.

- BlomWEB can be now executed with parameters in the command line:

1.4.5 Version 3.5 (February 2012)

- Full integration with the Cyclomedia API for BlomSTREET™ data

1.4.6 Version 5.7 (December 2012)

Version 5.7 includes the following new features

- New geocoding provider added: Open Street Maps (OSM).
- New geocoding and routing provider added: TomTom.
- New map provider: TomTom.

1.4.7 Version 5.8 (July 2017)

Version 5.8 includes the following new features

- New oblique layer priority menu.
- Support for high resolution oblique imagery.

1.5 Document Organization

This document is divided in three sections.

- Section 1 is this introduction, covering an overview of BlomWEB Viewer™ and its role.
- Section 2 is the BlomWEB Viewer™ User Guide, detailing all of its features and tools and providing a simple user manual.

1.6 For more information

The **Product Roadmap** for BlomWEB Viewer™ detailing the content of future releases of the product is available separately by request, as well as the **Product Factsheet**. Contact your local Blom representative for access to these documents.

If you want to know more about the BlomURBEX™ and BlomURBEX 3D™ features and capabilities, please refer to their respective **Whitepapers**, **API References** and **Factsheets**.

SECTION 2

BlomWEB Viewer™ Reference Guide

2 BlomWEB Viewer™ Basic Features

2.1 Accessing BlomWEB Viewer™

As stated in the previous section, BlomWEB Viewer™ is hosted at the following URLs:

<http://www.blomurbex.com>

<http://www.blomwebviewer.com>

<http://www.blomweb.com>

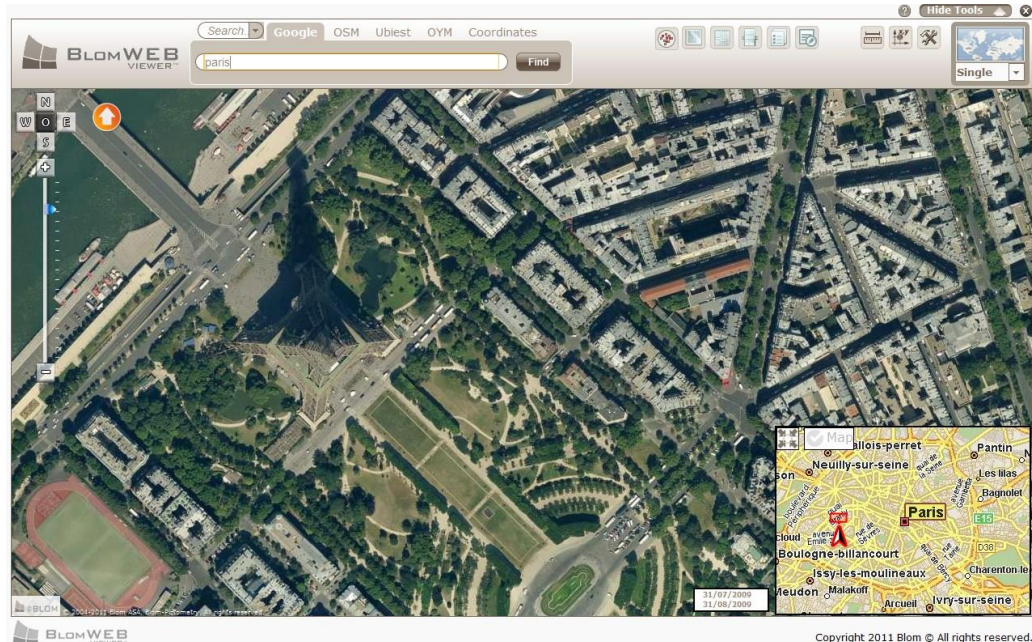
To access the tool you will need to type in your credentials provided to you by a Blom Sales Support representative.



This will lead you to the BlomWEB Viewer™ main screen displayed below. We will refer to this picture in the following sections to locate controls and functions.

The **Remember me** checkbox will allow you to store your credentials on the computer you are using so you will not need to type them on any session. Use this option with caution on shared computers.

Automatic access (without typing user and password) based on source IP address is now supported. You must contact to your Blom Sales Support representative in order to add your public IP address to our white list.



2.2 BlomWEB Viewer™ Main Features

BlomWEB Viewer™ is a web-based viewer built using the BlomURBEX™ JavaScript API and BlomURBEX 3D™ API, which provides full access to more than 4000 cities in Europe and vector map data for all of Europe.

BlomWEB Viewer™ features can be summarized as:

- **Navigation capabilities:** BlomWEB Viewer™ allows users to search information and navigate through it in several ways.
 - Geocoding tool
 - Coordinates search
 - Zoom and pan
 - Map Locator
 - Display of ortho and oblique imagery as well as vector map data.
 - BlomSTREET™: 360° Spherical Images available as demo scenarios
 - BlomLIDAR™: LiDAR data available online
 - Routing capabilities
- **Extended visualization capabilities:** BlomWEB Viewer™ provides features that enhance the user experience when working with the existing geodata.
 - Dual View and Multi View
 - Easy connection to external WMS Servers
 - Street map overlay on Ortho and Oblique imagery
 - Quick selection of historical imagery
 - Multiple Oblique views for every point, easy to select
 - Base Layer selection capability

- Overlay selection capability
- Reverse Geocoding
- Identification of coordinates on screen
- Annotation functions: ability to draw point, lines, polygons and text on screen
- Display of Point of Interest (POI) layer (where available)
- Skin capabilities to customize the look and feel of the application, including the option to upload a custom logo.
- High resolution imagery download available for customer keys
- **Measurement toolkit:** BlomWEB Viewer™ provides a powerful set of measurement tools that allow users to perform calculations directly on the images without the need for coding or use of external GIS Tools.
 - Length tool
 - Length on the ground tool
 - Area tool
 - Height tool
 - Bearing tool
 - Diagonal (ladder) measurement tool
 - Elevation tool
 - Vertical Area Tool
- **Workspace and Custom layers:** BlomWEB Viewer™ lets users upload and store information on the server for later use.
 - Upload of vector files for displaying on top of the imagery
 - Save and retrieve workspace information
 - Export annotation layer to standard formats
- **3D Capabilities:** BlomURBEX 3D™ Viewer is now integrated in the viewer making it possible to:
 - Display a specific model based on the available geo-coding tools.
 - Pan, rotate, zoom and tilt the camera to visualize the models
 - Change between the different available LODs for the models.
 - Select the desired level of quality for displaying
 - Enter editing model to add/delete buildings and change/add new textures

Future versions of BlomWEB Viewer™ will include additional features. Refer to the **BlomWEB Viewer™ Product Roadmap** for additional information.

The following sections detail all of these features.

2.3 Navigating through the Map Interface (2D mode)

The main feature of the BlomWEB Viewer™ is its map screen. This map screen allows the BlomWEB Viewer™ user to navigate through the geographical contents provided by the BlomURBEX™ geoserver, zooming and panning the imagery, adding overlays, performing measurements, and searching and querying for elements and addresses.

This section covers the basic controls for navigating the map control.

2.3.1 Panning the map

To move the image displayed, just left-click with the mouse on any point on the map. The cursor will change to a cross shape, then you can drag the image to the desired location. New map areas will be downloaded from the server and shown on screen automatically.

2.3.2 Zooming in and out

BlomURBEX™ geographic contents are organized in different zoom levels according to the resolution of the imagery. For example, standard 10cm urban areas are located at zoom level 20. There can be additional levels for higher resolution areas.

To change the zoom level of the images displayed you can:

- Use the mouse-wheel.** Scroll upwards to zoom in, and downwards to zoom out.
- Use the zoom control** on the left side of the map. You can click on the '+' or '-' controls to produce a level by level zoom, or move the slide for quicker zooming to the desired zoom level.

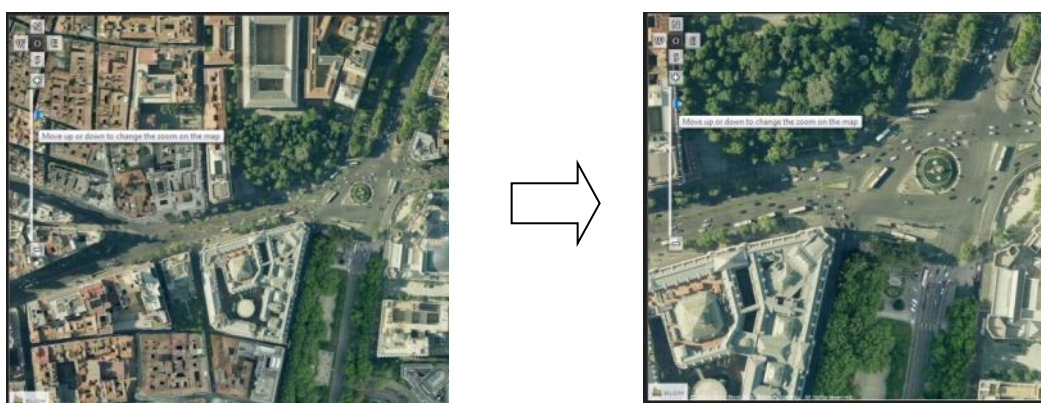


Figure 2: Zoom in action

- Press the **Shift** key and drag and drop with your mouse to draw a rectangle on screen. The map will zoom to the area selected in the rectangle.

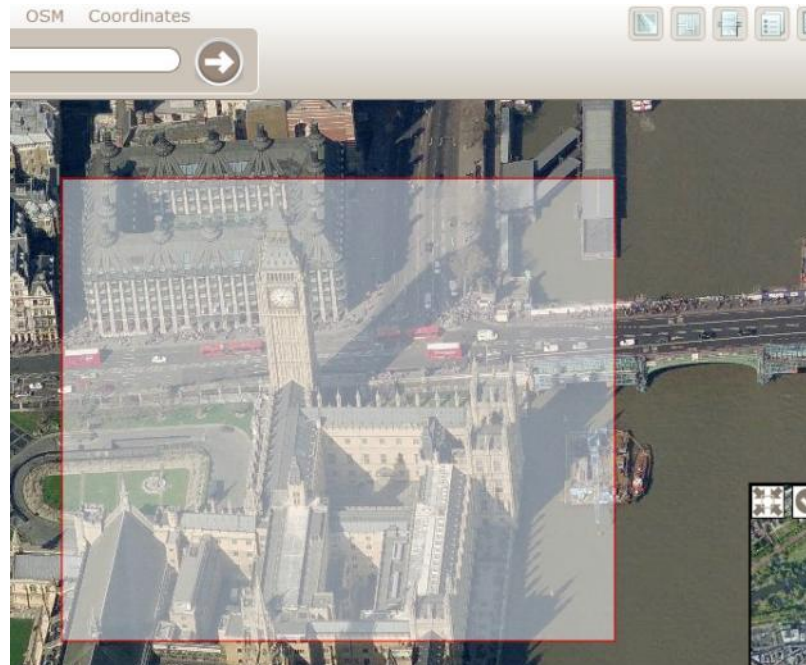


Figure 3: Windowed zoom

2.3.3 Switching views (ortho – oblique)

Blom has the capability to produce oblique georeferenced imagery for the entire territory of Europe. Images generated this way are a discontinuous set of images without re-projection that cover all of the points of the terrain from four angles (north, south, east, west) with a resolution **between 13 and 18 cm. per pixel**. The way in which the data is captured, with several passes over the territory, guarantees that for each point of the terrain, there may be up to 18 different images, because a single point may appear in different oblique images. The BlomURBEX™ platform manages these images, isolating the end applications from the difficulties inherent in working with them. It also provides tools that make it possible to make measurements on the images, so that applications can, for example, calculate the height of buildings right on the images themselves.

In order to switch to a different view, use the view control located on the upper left side of the map viewer.

In this control, 'O' represents an Ortho image (i.e., vertical view) and 'N', 'S', 'E', 'W' are the four different orientations for the existing oblique images.

In the following example there is a vertical image of a city square. Note the 'O' is highlighted in the View Control.



Figure 4: Ortho View to be changed to North View

Clicking on the 'N' for North View on the View Control, you will directly switch to Natural Oblique North View, as seen below. Note that the 'N' control is highlighted after clicking on it to provide visual feedback on the current view. The arrow control, on the right, provides the location of the North according to the current view.



Figure 5: North View

Clicking on other views will change the image accordingly. Below you can see South View for the same area. Note that the 'S' control is now highlighted and the arrow is pointing to the direction of geographical North.



Figure 6: South View

2.3.3.1 ***A note on Oblique Images***

BlomURBEX™ serves two kinds of oblique images: Natural Obliques and Orthorectified Obliques.

Natural Obliques are the unmodified oblique images obtained during the capture process. Natural Obliques are discontinuous images (there is no mosaicing of the imagery, as there is with the vertical ones) and when panning around in the map viewer there can appear areas with vertical or horizontal black strips. This is simply where the oblique image ends. BlomWEB Viewer™ automatically detects if there is another oblique image in the BlomURBEX™ database that better covers the current center of the screen, and it will retrieve it and show it on screen providing the illusion of continuity in the image. When panning oblique images you can sometimes experience a displacement in the image and this is due to a new oblique image downloaded to replace the previous one.



Figure 7: Natural Oblique Image

Orthorectified Obliques are a continuous projected mosaic of oblique views. This mosaic provides a fluid oblique view from 4 angles (North, South, East, and West) with the oblique images projected, transformed, and orthorectified to correct elevation distortion. The resulting images show a certain degree of distortion that is noticeable at close-up zoom levels, but with the

advantage that they are orthoimages, so they can be easily superimposed on other maps and processed continuously, making them ideal for **use in mobile devices and navigators**.



Figure 8: Orthorectified Oblique

Another very important difference between these two sets of oblique images is that Natural Obliques allow for measurements (see section 0) and this is not possible on Orthorectified Obliques.

BlomWEB Viewer™ restricts the view of orthorectified obliques to zoom level 16 or lower, to avoid showing the visible distortion on images at closer zoom levels.

You can visually be aware of the selected oblique set by looking at the “Ortho/Oblique” control on the upper left side of the map. When Oblique is highlighted, the shown image is a natural oblique (see **Figure 6: South View**), otherwise, the control would be highlighted as “Ortho”.

2.3.4 Map Locator

The main map view in BlomWEB Viewer™ includes a smaller window showing a greater extent of the current view and a red box corresponding to the location of the main view on it. This red box will appear flat on Vertical (Ortho) views and slightly distorted when showing vertical view, as it will show the real orientation of the oblique view with relation to the vertical view. An arrow appears in the map pointing in the direction where the user is looking at in the main window.


This Map Locator window can be hidden/show by clicking on the  icon located on its upper left corner. Current version of BlomWEB Viewer™ does not allow for relocating it on the main viewer.



Figure 9: Map Locator Window

The Map Locator can be changed to Map View or Image View by clicking on the “**Map**” Button located on the Map Locator window. The **Map** button will remain highlighted to indicate Map Mode. Press it again to return to Image Mode.

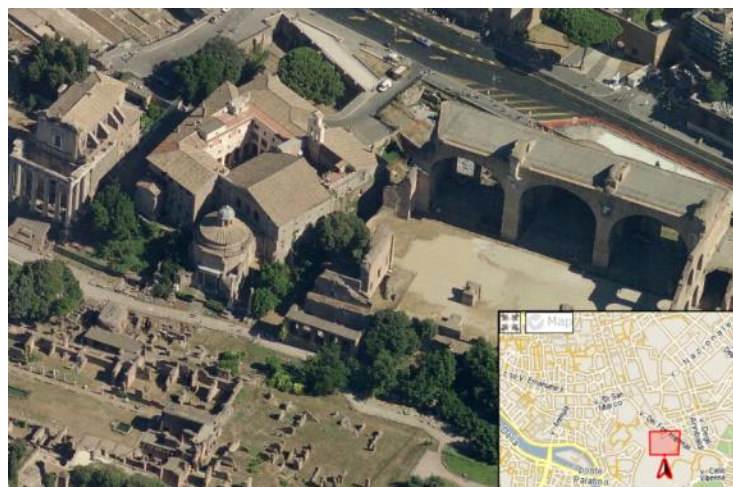


Figure 10: Map Locator in “Map” mode

The arrow in the Map Locator Window points in the direction that the main viewing window is facing.

2.3.5 Searching for an address (geocoding)

Searching for a specific location/site is one of the most common needs for a GIS tool. Blom provides three Geocoding tools integrated within the BlomWEB Viewer™.

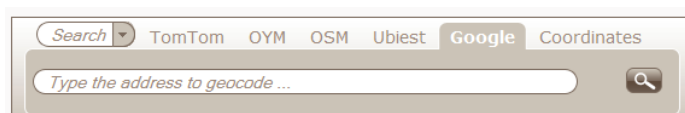


Figure 11: Geocoding Tool

These tools come from external providers and are described here.

Blom disclaims any responsibility derived from outages, poor performance or any other issue related to this service provided by third party organizations.

2.3.5.1 Open Street Map (OSM) Geocoding

This service is available for any user of the BlomURBEX™ platform with a valid user token.

OSM is licensed under the terms of the Creative Commons Attribution Sharealike 2.0 (<http://creativecommons.org/licenses/by-sa/2.0/>) and is a project to provide a free source of data and services at the worldwide level.

OSM-based geocoding follows a free text structure (see **Figure 11**, above). In some countries, the postal addresses may not include numbers and have only street directions.

To use this geocoding server in BlomWEB Viewer™ click on the “**OSM**” tab on top of the geocoding tool. Fill in the required info and press Enter or click the **Find** button. If more than one result exists it will be returned to you. Select the desired address from the list, and the location will be shown on screen.

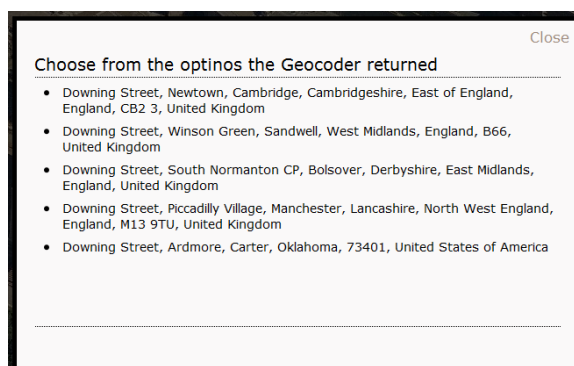


Figure 12: OSM Geocoder Results

2.3.5.2 UbiEst Geocoding

BlomWEB Viewer™ includes the **UbiEst** geocoding service since version 2.0. UbiEst, a partner of Blom also provides one street map layer in BlomWEB Viewer™ (see section 3.1).

UbiEst geocoding is based also upon the cartographic database from TeleAtlas. This also guarantees uniformity of results all over Europe and perfect location with the vector layers provided by BlomURBEX™ which are also based on TeleAtlas data (see section 3.1 for details).



The interface shows a search bar with a dropdown menu. Below it are six input fields: Country..., Region..., Province..., City..., Address..., and Number... A Find button is located to the right of the Number... field. Above the input fields are tabs for Google, OSM, UbiEst (selected), OYM, and Coordinates.

Figure 13: UbiEst Geocoding Interface

The service does not allow free text, but rather is based on searches formatted with the following structure:

- Country
- Region (such as state or community)
- Province
- City/Town
- Street name
- Street number
- Not all fields are required, with the exception of the "City" field

To use this geocoding server in BlomWEB Viewer™ click on the **“UbiEst”** tab on top of the geocoding tool. The screen will change and the search fields will appear. Fill in the required info and press Enter or click the **Find** button. Note that the **City** field is mandatory.

2.3.5.3 On Your Map (OYM) Geocoding

BlomWEB Viewer™ includes the **OYM** geocoding service since version 3.0. This partner of Blom also provides one street map layer in BlomWEB Viewer™ (see section 3.1).

The OYM service is provided by Novasys and is based upon the cartographic database from Navteq. As seen below, the geocoding service is a free text service.



The interface shows a search bar with a dropdown menu. Below it is a single input field with the placeholder text "Type the address to geocode ...". A Find button is located to the right of the input field. Above the input field are tabs for Google, OSM, UbiEst, OYM (selected), and Coordinates.

Figure 14: OYM Geocoding Interface

To use this geocoding server in BlomWEB Viewer™ click on the **“OYM”** tab on top of the geocoding tool. Fill in the required info and press Enter or click the **Find** button. If more than one result exists it will be returned to you. Select the desired address from the list, and the location will be shown on screen.

2.3.5.4 TomTom Geocoding

This service is available for selected BlomURBEX™ users. Contact your local Blom representative for details.

BlomWEB Viewer™ includes the **TomTom** geocoding service since version 5.7. This partner of Blom also provides one street map layer in BlomWEB Viewer™ (see section 3.1).

As seen below, the geocoding service is a free text service.

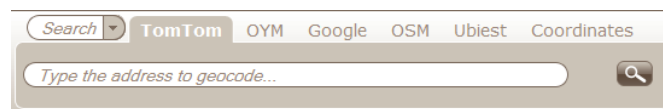


Figure 15: TomTom Geocoding Interface

To use this geocoding server in BlomWEB Viewer™ click on the **“TomTom”** tab on top of the geocoding tool. Fill in the required info and press Enter or click the **Find** button. If more than one result exists it will be returned to you. Select the desired address from the list, and the location will be shown on screen.

2.3.5.5 Google Geocoding

BlomWEB Viewer™ also allows you to use the Google Search Engine for geocoding. This possibility is included **for demonstration purposes only** as the Google Terms of Service does not allow using it in commercial applications without also linking to their own map data.

To use this geocoding server in BlomWEB Viewer™ click on the **“Google”** tab on top of the geocoding tool (Google geocoding is the default option when you enter BlomWEB Viewer™). Fill in the required info and press Enter or click the **Find** button.

2.3.6 Searching by coordinates

BlomWEB Viewer™ also allows for a coordinates search. The Coordinates search tool is also located in the geocoding section of the user interface (**“Coordinates”** tab).

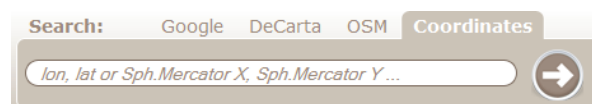


Figure 16: Coordinates Search

The text control provides a simple reminder of the format in which coordinates must be introduced. You can type the desired coordinates:

- As Longitude/Latitude in decimal format. Example: -3.69, 40.42
- As X,Y in Spherical Mercator projection. Example: 225485.2, 6250785.5

Once introduced, just press Enter or click the **Go** button to perform the search.

2.3.7 Resizing the screen

The map screen in BlomWEB Viewer™ resizes itself according to the size of the web browser being used. This is very useful for projector-based presentations, where maximizing the image area is desired.

Remember that you can put most web browsers in full-screen mode, which fully maximises the map viewing area. Usually the F11 key is used for this full-screen mode. Refer to your browser documentation for details.

You can also press the Hide Tools button located in the upper right part of the screen to hide the toolbar and gain additional screen size.



Figure 17: Hide Tools button

3 Advanced display and navigation tools

3.1 Map View

In addition to its huge collection of hi-resolution georeferenced imagery, BlomWEB Viewer™ has the possibility to show a cartographic view of any area in Europe.

This data comes from TeleAtlas and Navteq vector data and is provided by UbiEst and OnYourMap (OYM), two partners of Blom.

3.1.1 Selection of Map Provider

To select the provider of map data, select the **Additional Tools** button, and click on the **Manage Graphical Profiles** button (Refer to Chapter 7 for a detailed description of this menu).

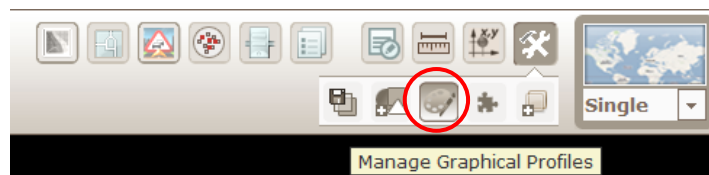


Figure 18: Additional Tools -> Manage Graphical Profiles

Scroll down the window that will open until you reach the Map Provider Selection option. From there, you can select one of the two currently available map providers in BlomWEB Viewer™.

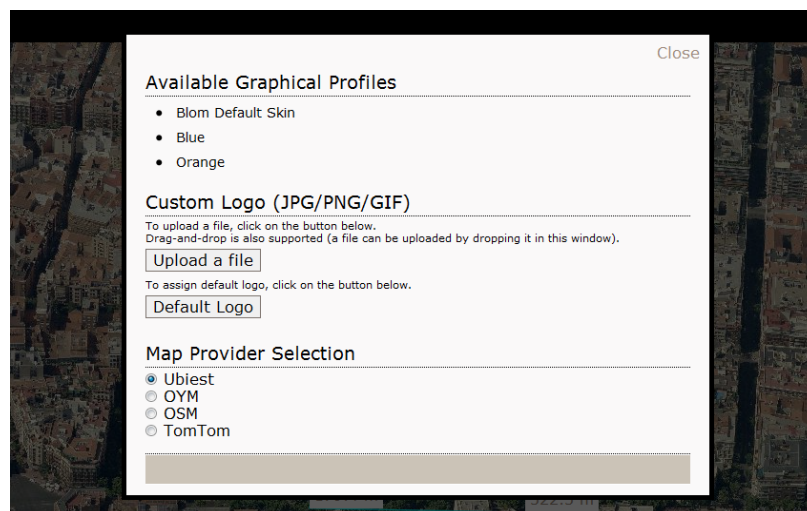


Figure 19: Map Provider Selection

The default option is UbiEst. The selected provider will be remembered for future sessions.

Note: This provider selection option will **only** appear if your BlomWEB user credentials grant you access to one or more providers. Contact your local Blom representative for details.

To change the image view to map view, just click on the “**Map**” button located in the upper section of the user interface.

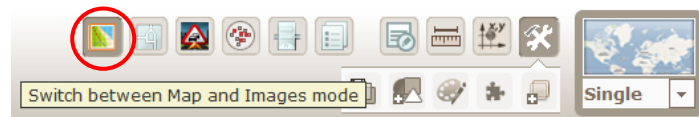


Figure 20: Changing to Map View

The Map View will appear on screen centered in the same point that was previously shown on screen. Note that the screen view must be on **Ortho Mode** for the map view to properly appear.

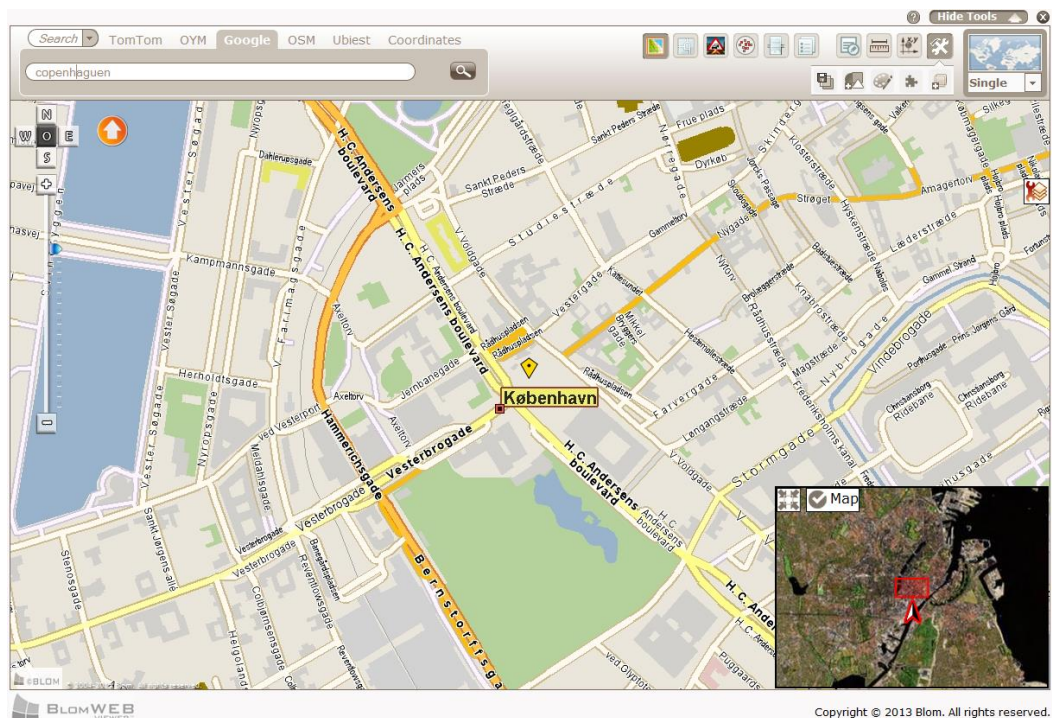


Figure 21: Map View

Also note that the “**Map**” button remains highlighted to show the screen is on Map Mode. Click on it again to return to Image Mode.

3.2 Hybrid view

The TeleAtlas vector data for Europe can be displayed on top of Ortho images creating a Hybrid View mode.

To change the image view to hybrid view just click on the **“Hybrid”** button located in the upper section of the user interface.

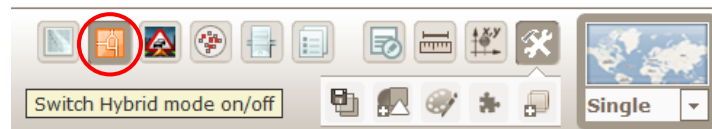


Figure 22: Changing to Hybrid View

The Hybrid View will appear on screen centered in the same point that was previously shown on screen.

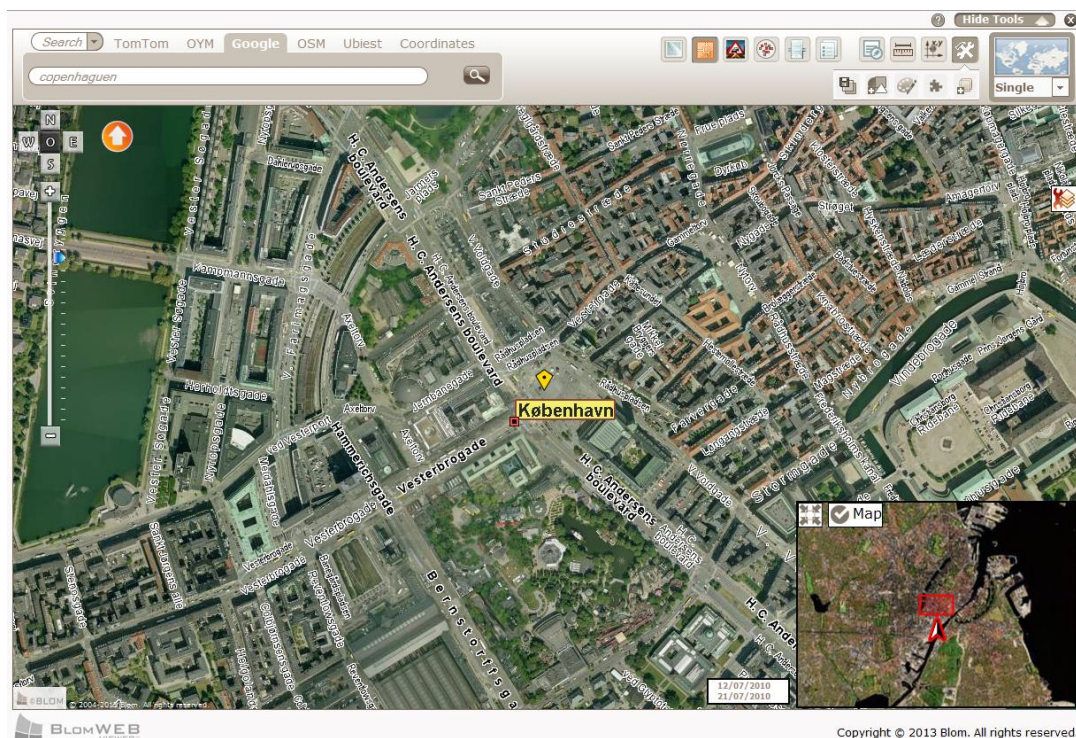


Figure 23: Hybrid View

Note that the **“Hybrid”** button remains highlighted to show the screen is on Hybrid Mode. Click on it again to return to Image Mode.

3.3 Multiview

BlomWEB Viewer™ allows the screen to be split to provide multiple, synchronized, views, . This way, when you zoom/pan on any view, all other views refresh to the same location.

The multiple/single view is selected from the control shown below, located in the upper right corner of the interface.

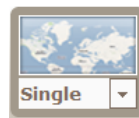


Figure 24: View selection control

Default view in BlomWEB Viewer™ is **Single View**. Available views are:

- **Dual View:** The Screen is split in two. One view is ortho view and the other is North view. You can freely change any view to show the desired views. Left view can be changed to Map view if needed clicking on the **Map** button.

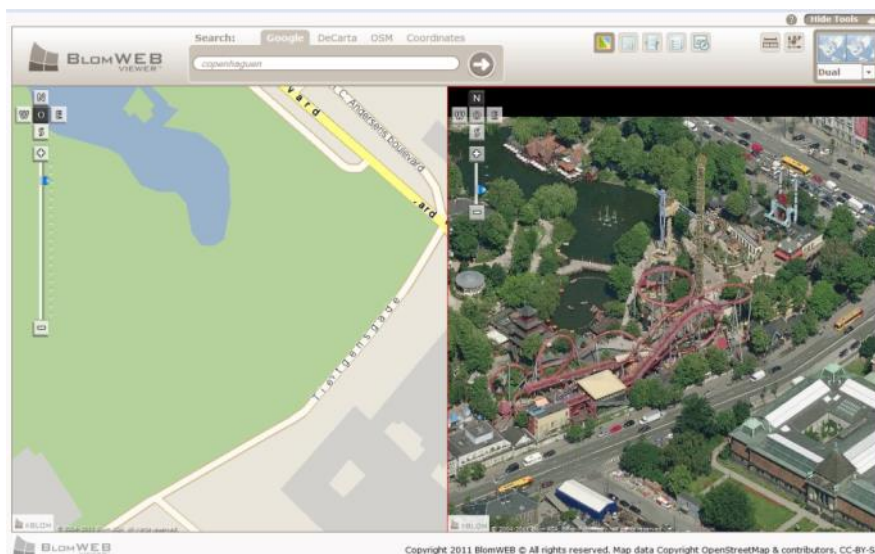


Figure 25: Dual View screen with Map and North Oblique

- **Multi View:** The Screen is split in five, showing the ortho view and the four oblique views for the selected area. You can freely change any view to show the desired views. Central view can be changed to Map view if needed clicking on the **Map** button.

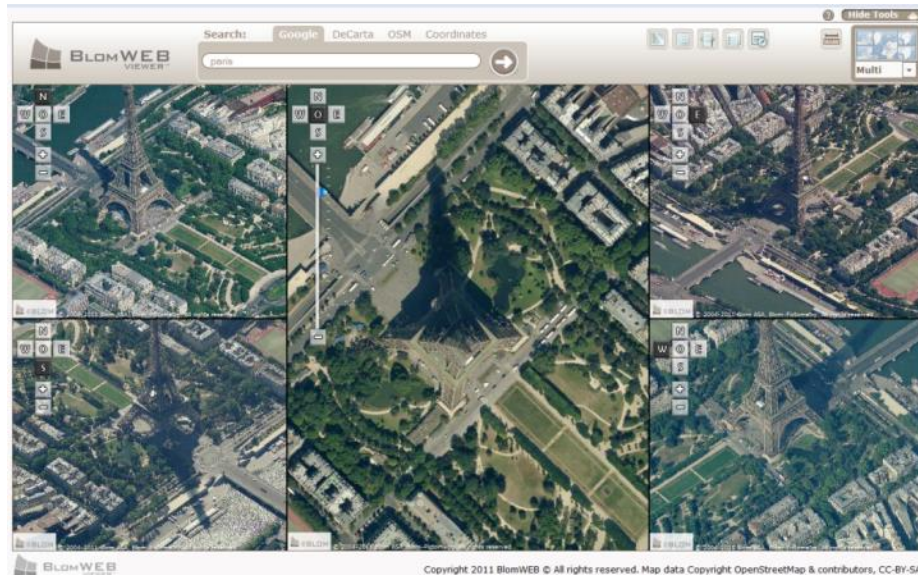


Figure 26: Multi View with Ortho and 4 Oblique Views

- **3D View:** Selecting this view will change the view to show the BlomURBEX 3D™ data for the selected area. The BlomURBEX 3D™ viewer has a different behaviour from the 2D View and is fully described on section 8 of this document.

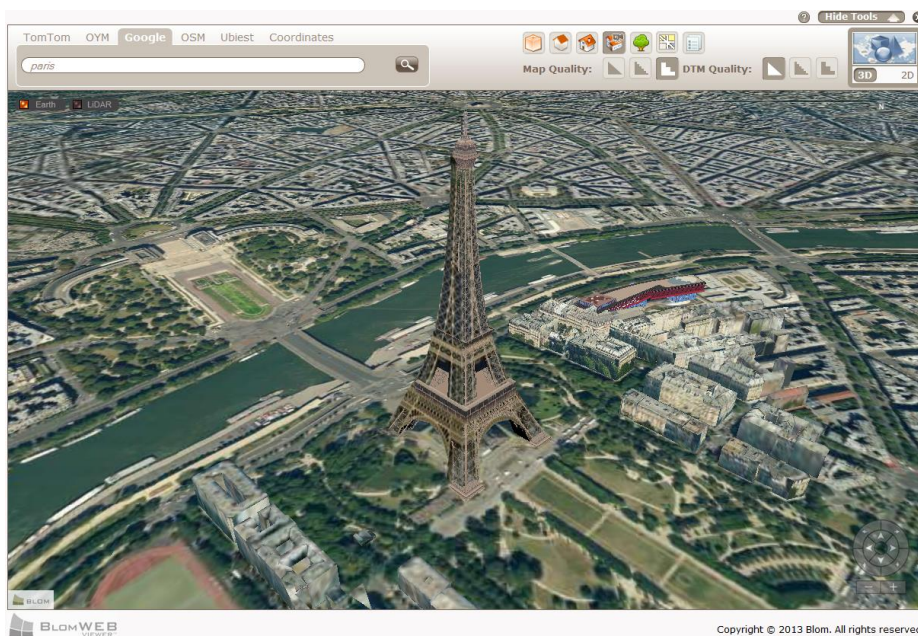


Figure 27: 3D Viewer

3.4 Display of external WMS services

The BlomURBEX™ JavaScript API provides a convenient way to connect to external WMS servers and display their data on top of BlomURBEX™ imagery.

This API functionality is implemented into BlomWEB Viewer™, so it is even easier to connect to external servers.

To connect to an external WMS server from BlomWEB Viewer™ just click on the **WMS** button.



Figure 28: Connect to WMS Server

A pop-up Window will appear showing a list of pre-defined free-access WMS servers.

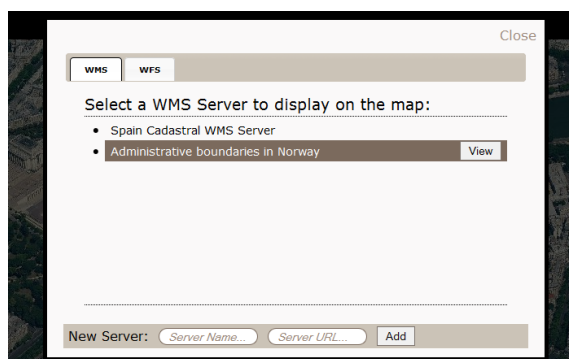


Figure 29: WMS Server Selection

Just select one of them, clicking on the **View** button, to display the data on top of the imagery. The button will become highlighted to show that the service is active. Hide the WMS Window clicking on the “Close” button at the top right corner. If you want to hide the view of the WMS service, open the WMS Window again and click on the **View** button again.

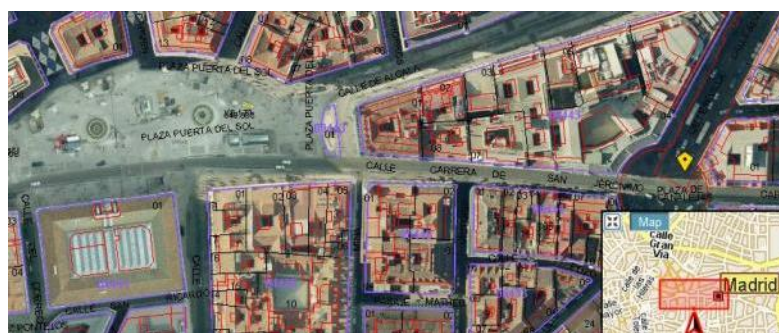


Figure 30: WMS Service displayed on top of Blom Ortho

If you want to display another WMS service, just type its **URL** and required parameters on the text field, including a **Name** for the service, and press the **Add** button (see **Figure 29**). The servers added will be stored in a cookie so they will be accessible on future sessions on the same computers.

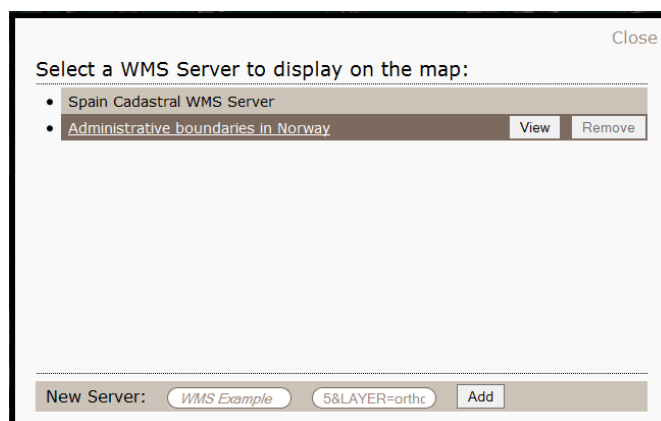


Figure 31: Adding a new WMS server

The server is added to the list of available servers. You can hide its display by clicking on the View button. To remove them from the list just click on the **Remove** button located at the right of every server. Note that the default servers cannot be removed.

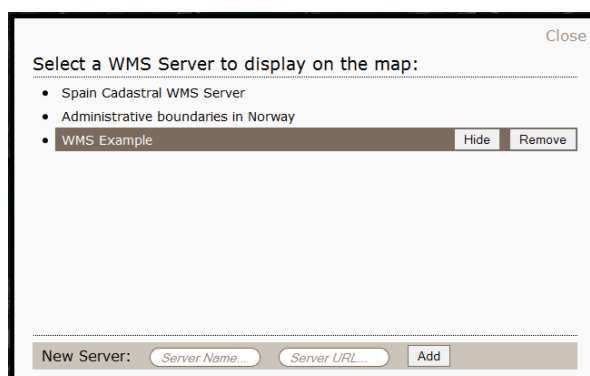


Figure 32: WMS Server Added to the list

3.5 Demo Scenarios

BlomWEB Viewer™ includes an easy way to access different demo datasets included in BlomURBEX™. These datasets include very high resolution (4cm) imagery on certain areas, LiDAR demo datasets, BlomSTREET 360° imagery demo datasets or access to a BlomNAVIGATION™ example.

Access to these layers can be restricted according to your user credentials. Contact your local Blom Sales Support representative for additional details.

To select and view one of the available demo datasets, just click on the **Demo Scenarios** button.

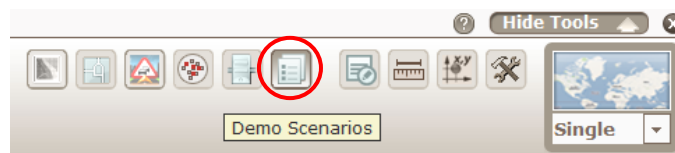


Figure 33: Selection of Demo Scenarios

A pop-up Window will open showing the list of available demos (according to your user credentials)

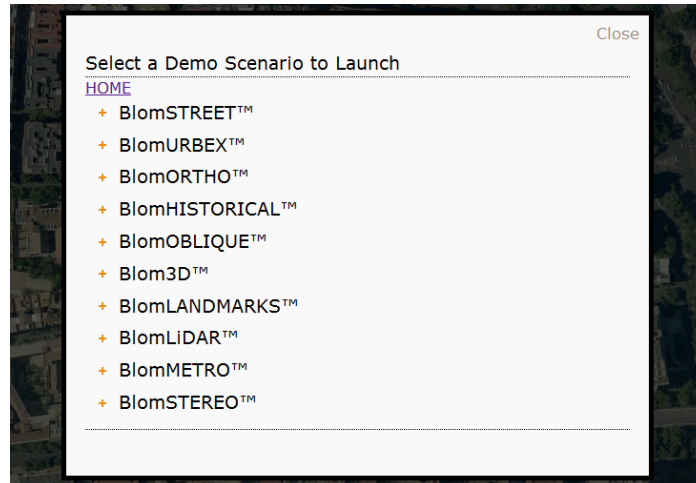


Figure 34: List of Demo Scenarios

Demo scenarios are group by Product Names. Click on the name of a Product to open the tree and display the available demo scenarios. Then click on any one to display it on the BlomWEB Viewer™ screen.

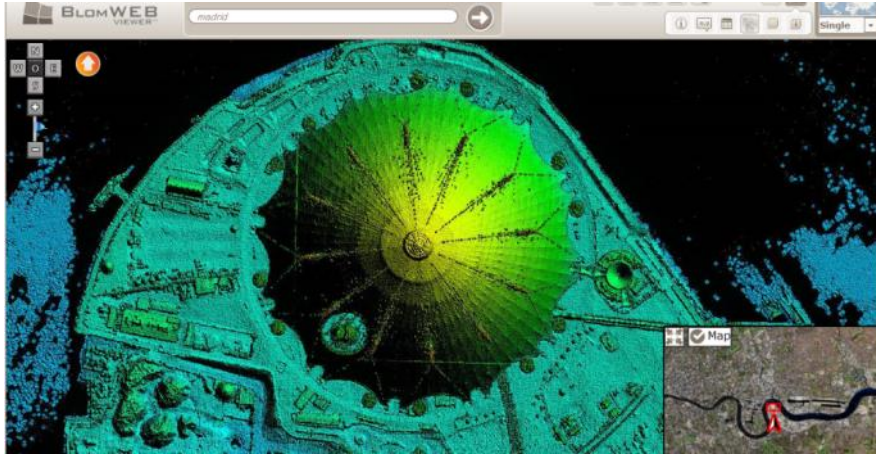


Figure 35: Demo scenario. Rasterized LiDAR Data on the O2 Arena (London)

The list of available demo scenarios is:

- **BlomSTREET™**: street level 360° imagery demonstration. Several cities available. Refer to chapter 10 for additional details
- **BlomURBEX™**
 - **Custom Layer – LiDAR**: Rasterized image of a LiDAR dataset at the O2 Arena, London.
 - **Custom Layer – Solar Panels**: Rasterized layer showing solar potential of roof panels located in Bournemouth, UK. Green represents areas > 30m², Orange is 25-30m² and Red is <25m².
 - **L'Aquila**: comparison of different imagery capture dates at L'Aquila, Italy (before and after the 2008 earthquake)
- **BlomORTHO™**
 - **4cm Oslo**: 4cm Ortho imagery of Oslo.
 - **4cm London**: 4cm Ortho imagery of London.
- **BlomHISTORICAL™**
 - **Historical Data London 1966**
 - **Historical Data Marbella 1956**
- **BlomOBLIQUE™**
 - **Venice**: Oblique imagery of Venice

- **Overlay Street Maps:** Sample of rasterized TeleAtlas maps over Oblique images in Madrid.
- **Blom3D™**
 - **Koblenz:** Blom 3D model of Koblenz, Germany.
 - **Rostock Ads:** Example of advert placement over the 3D model of Rostock.
 - **Munich Enhanced Urban Attributes:** Example of BlomNAVIGATION™ model over a section of Munich, Germany.
 - **Rotterdam:** Blom3D model of the city of Rotterdam, Netherlands.
- **BlomLANDMARKS™**
 - **Amsterdam:** Sample of BlomLANDMARKS™ models located at Amsterdam.
- **BlomLIDAR™**
 - Sample LiDAR data from Málaga, Spain

3.6 Routing

Since version 3.0, BlomWEB Viewer™ includes routing capabilities, making user able to calculate the best route between two locations, and obtain a route summary.

This routing service is provided by Blom partners UbiEst and OnYourMap (OYM).

Also, the TomTom routing provider is available for selected BlomWEB Viewer™ users. Contact your local Blom representative for details.

As such, **Blom disclaims any responsibility derived from outages, poor performance or any other issue related to the service provided by these third party organizations.**

3.6.1 Selecting a route calculation

By default, the BlomWEB Viewer™ user interface is put on “Search” (Geocoding) mode, allowing users to locate addresses on the map (see section 2.3.5). In order to enter “Route” mode, click on the drop-down list on the geocoding interface on the upper section of the application, and select the **Route** option.

The Routing interface will appear. You can select the service provider by selecting its name on the tabs above.



Figure 36: Routing Interface. OYM



Figure 37: Routing Interface. UbiEst



Figure 38: Routing Interface. TomTom

Note: Depending on your user credentials, you may have access to all, some or none of these providers, so your user interface appearance may vary.

3.6.1.1 Defining origin and destination with OYM Routing

OYM geocoding of addresses is based on free text. Enter the description of the origin and destination locations. Once the origin and destination points are set, press the Find Button to calculate the route and display it on screen.

Additionally, you can click on a point on the map to use it as origin/destination for the route. To do so, click on the **Point** button, and then click on a location on the map. The coordinates of the selected point will be used as origin/destination for the route. Note that the button name will change to **Text**. Click on it again to return to text input mode.

3.6.1.2 *Defining origin and destination with UbiEst Routing*

UbiEst geocoding of addresses is based on formatted fields. You must enter the Country, City, Address and Number of the origin and destination locations.

Once the origin and destination points are set, press the Find Button to calculate the route and display it on screen.

Additionally, you can click on a point on the map to use it as origin/destination for the route. To do so, click on the **Point** button, and then click on a location on the map. The coordinates of the selected point will be used as origin/destination for the route. Note that the button name will change to **Text**. Click on it again to return to text input mode.

3.6.1.3 *Defining origin and destination with TomTom Routing*

TomTom geocoding of addresses is based on free text. Enter the description of the origin and destination locations.

Next, select the day for the desired route calculation: Today, Tomorrow or any day of the week.

Next, select the time of the day for the expected departure: Now or any hour of the day.

Next, check the “Traffic” checkbox if you want to take into account traffic statistics for the selected day and time, in order to avoid traffic jams.

Then, press the Find Button to calculate the route and display it on screen.

Additionally, you can click on a point on the map to use it as origin/destination for the route. To do so, click on the **Point** button, and then click on a location on the map. The coordinates of the selected point will be used as origin/destination for the route. Note that the button name will change to **Text**. Click on it again to return to text input mode.

3.6.1.4 *Defining the Route Type*

In addition to selecting the origin and destiny for the route, you can also define the kind of route you want to calculate. There are two possible options, common for both current providers:

- **Shortest/Fastest:** this will select the routing using the shortest path (road distance) or the fastest path (considering the roads with higher speed limit first)
- **Car/Pedestrian:** if you select “Car”, the routing algorithm will consider turn and direction restrictions on roads. If you select “Pedestrian”, these restrictions will not be used.

These options can be selected using the drop-down lists on the upper right part of the routing interface.



Figure 39: Routing options

3.6.2 Routing results

The result of the requested route will be displayed on screen, at a zoom level able to show the whole route. You can navigate the imagery using the usual tools and the requested route will remain on screen. To delete the route use the **X** button on the routing interface.

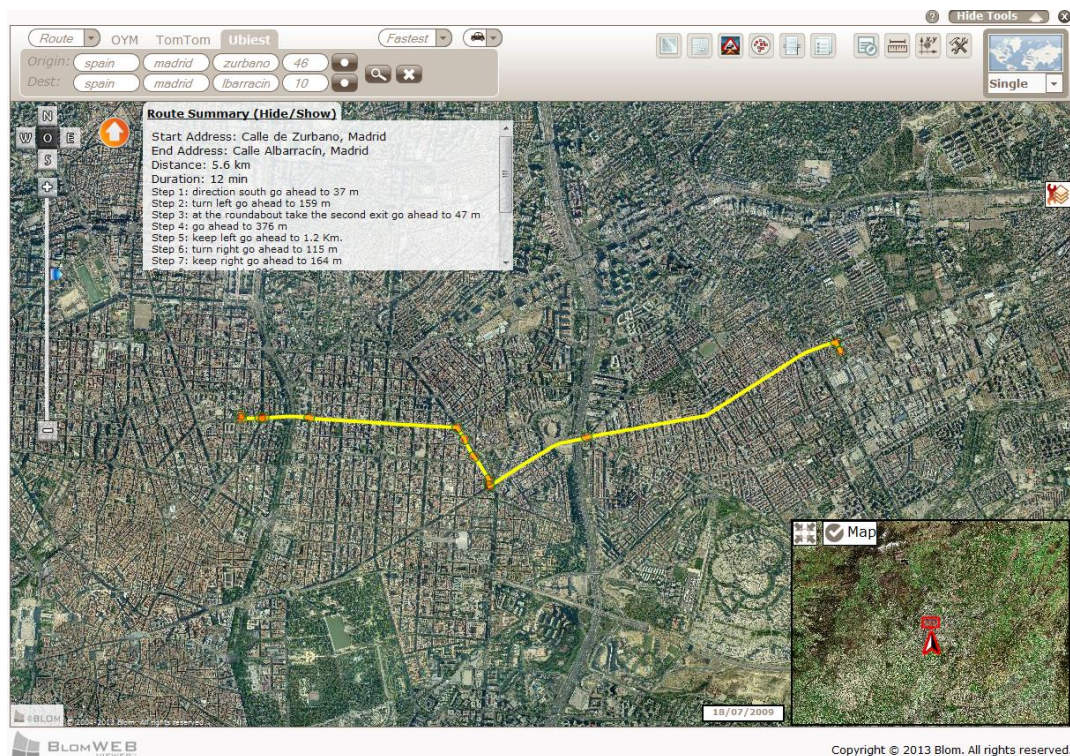


Figure 40: Route Calculation

Note that the route summary is shown on the left. On this route summary you can:

- Scroll the list up and down by clicking and dragging with the mouse
- Hide and Show the Route Summary by clicking on the **Route Summary (Hide/Show)** text
- Go to a given section of the route by double clicking on it on the route summary

4 Annotation tools

BlomWEB Viewer™ allows you to draw vector elements and text on top of the imagery. Possible options are Shapes and Text.

The Annotation tools can be accessed through the annotations button in the top of the screen



Figure 41: Annotations Tools

4.1 Drawing shapes

This is the default option. From the annotations window you can select:

- The shape to draw (point, line or polygon)
- The colour of the shape

4.1.1 Drawing points

- Select the **Draw Point** icon on the Annotations tool
- Click on the **colour select** area to pick the desired colour for the points by clicking again on the colour chart. The selected RGB coded for the picked colour will be shown



Figure 42: Annotation colour selection

- Click on the map to draw a point on the selected position
- Click on the **Clear Annotations** button to erase all annotations
- Click on the tool button again to stop drawing points

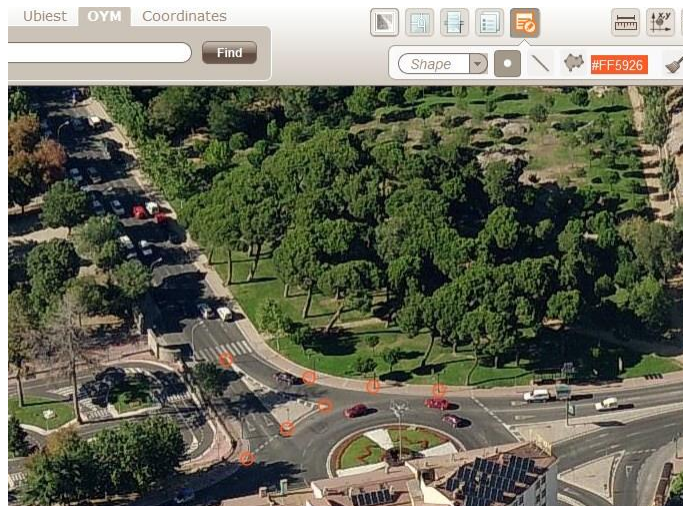


Figure 43: Drawing Points

4.1.2 Drawing lines



- Select the **Draw Line** icon on the Annotations tool 
- Click on the **colour select** area to pick the desired colour for the points by clicking again on the colour chart. The selected RGB coded for the picked colour will be shown
- Click on the map to draw a point on the selected position
- Drag the mouse to start drawing a line
- Click on the map to draw a vertex and continue drawing the line
- Double click on the map or Click to end drawing the line.
- Click on the **Clear Annotations** button to erase all annotations
- Click on the tool button again to stop drawing lines



Figure 44: Drawing Lines

4.1.3 Drawing polygons

- Select the **Draw Line** icon on the Annotations tool 
- Click on the **colour select** area to pick the desired colour for the points by clicking again on the colour chart. The selected RGB coded for the picked colour will be shown
- Click on the map to draw a point on the selected position
- Drag the mouse to start drawing a line
- Click on the map to draw a vertex and continue drawing lines. Note that the polygon will auto-complete
- Double click on the map to end drawing the polygon

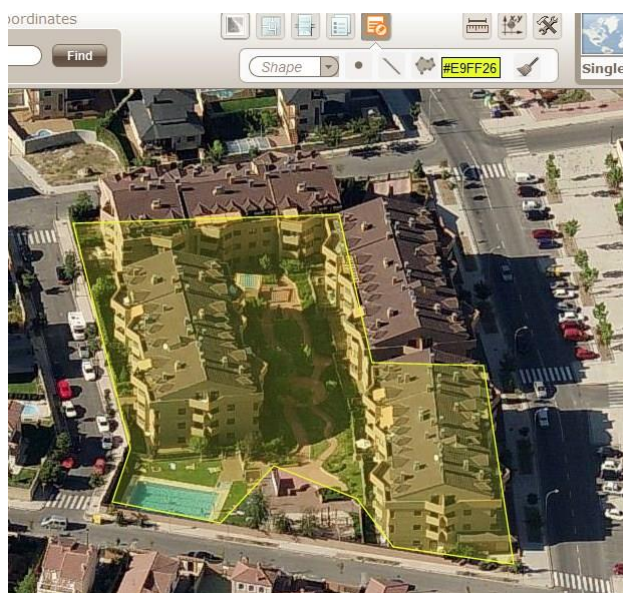


Figure 45: Drawing Polygons

4.2 Drawing text


Default option in the Annotations tool is **Shape**. Click on the arrow near the “Shape” text and select the **Text** option to change the annotations window to text mode. In this mode you can select:

- The text to draw
- The colour of the text
- The background colour of the text



Figure 46: Drawing Text menu

4.2.1 Drawing text

- Type the desired text in the text box and select the foreground and background colours by clicking on the respective text pickers.
- Click the  button to start drawing the text
- Click on the map to select the starting position for the text
- Repeat the procedure as needed

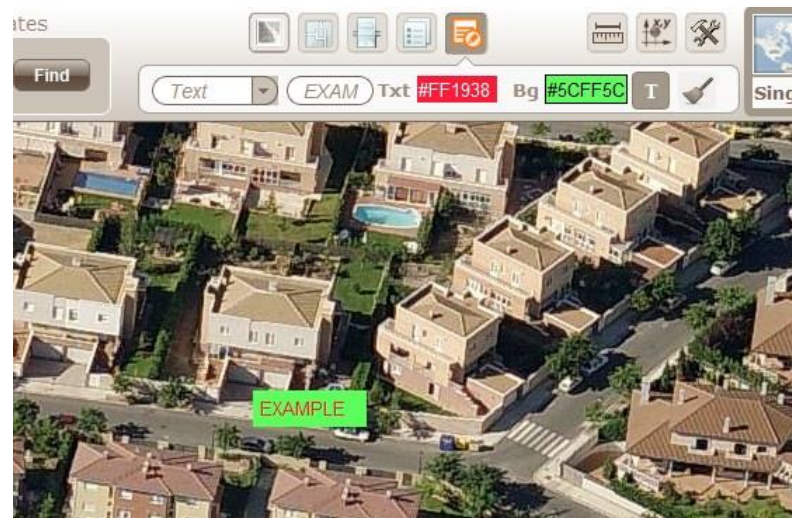


Figure 47: Drawing texts

4.3 Exporting annotations

The annotation layer can be exported to a SHP file. Refer to section 8.2 for details.

5 Measurement Tools










BlomURBEX™ offers a powerful set of measurement tools that can be directly applied on Ortho and Oblique images, providing a great added value for users. All of these tools are integrated into the BlomWEB Viewer™ interface for ease of use and access, and are described in this section.

To display the measurement tools simply click the measurements button in the top of the screen.



Figure 48: Measurement Tools

The available measurement tools in BlomWEB Viewer™ are:

Tool	Description
	Length tool
	Length on the ground tool
	Area tool
	Bearing tool
	Elevation tool
	Height tool
	Diagonal measurement (ladder) tool
	Vertical Area tool
	Erase button

To perform any measurement just click on the desired button, BlomWEB Viewer™ will then enter into Measurement Mode (the mouse behaviour will depend on the tool selected). To exit Measurement Mode click again on the tool button, or click on the **Erase Button**. Note that while a measurement tool is selected, you can perform multiple measurements on screen. Press the **Erase Button** to clean the screen if required.

5.1 Length and Length on the ground measurement

This tool lets you perform length measurements on ortho or oblique images.

The length calculated with the Length on the Ground tool includes the internal DTM data in its calculations, so changes in elevation are considered in the results providing accurate measures at

ground level. The Length tool does not include elevation data so it provides an “as the crow flies” measurement.

Select the desired length measurement tool by clicking on the appropriate icon in the toolbar and follow this procedure for length calculation.

1. Click on a point to start measuring. A blue point will appear on screen
2. Move the mouse to draw a line and click on another point to finish the line
3. Continue the procedure to draw additional lines if needed, or double click on the map to finish the measurement
4. The cumulative length at every individual line will be displayed on screen.



Figure 49: Length Measurement

5.2 Area Measurement

This tool lets you perform area measurements on ortho images by drawing irregular polygons on the BlomWEB Viewer™ screen. To perform area measurements on oblique images see section 5.7.

Select the tool by clicking on its icon in the toolbar and follow this procedure for area calculation.

1. Click on a point to start measuring. A blue point will appear on screen
2. Move the mouse to draw a line then click on another point to finish the line. Note the polygon is created automatically so you don't need to manually close it off.
3. Continue the procedure to draw additional lines if needed, or double-click on the map to finish the measurement
4. The area of the polygon will be displayed on screen.



Figure 50: Area Measurement

5.3 Bearing Measurement

This tool lets you measure the bearing or azimuth (angle relative to the North) of a line.

Select the tool by clicking on its icon in the toolbar and follow this procedure for bearing calculation.

1. Click on a point to start measuring. A blue point will appear on screen
2. Move the mouse to draw a line.
3. Click again on the map to finish the measurement
4. The bearing of the resultant line, in sexagesimal degrees, will be displayed on screen.



Figure 51: Bearing Calculation

5.4 Elevation Measurement

All images available in BlomURBEX™ have been processed using a DTM. The elevation information of those DTMs is included in the server and can be obtained with a simple click with the Elevation Tool.

Select the tool by clicking on its icon in the toolbar and follow this procedure for elevation calculation.

1. Click on a point to start measuring. A blue point will appear on screen
2. The Elevation of the point over the sea level will be displayed on screen



Figure 52: Elevation Measurement

5.5 Height Measurement

This tool lets you measure the vertical height from a point on the ground, on oblique images. This effectively lets you measure the height of any given façade.

Select the tool by clicking on its icon in the toolbar and follow this procedure for height calculation.

1. Click on a point on the ground to start measuring. A blue point will appear on screen
2. Move the mouse to draw a vertical line. Note that BlomWEB Viewer™ will only let you move up the Z axis.
3. Click again on the map to finish the measurement
4. The height of the line will be displayed on screen.



Figure 53: Height Measurement

5.6 Diagonal (Ladder) Measurement

This tool calculates the length of the hypotenuse of the triangle formed by a point on the ground and two points in a façade. This can be used to have an estimate of the length of a Fire Truck ladder/hose needed to reach a certain window or height in a building.

Diagonal Measurement tool is only active in Oblique Image view.

To perform a measurement:

1. Click on a point located on the ground. This will represent the location of the “Fire Truck”
2. Move the mouse and click on a point on the ground directly below the desired window (or height). This will be the corner of the triangle rectangle.
3. Move the mouse up the façade and click on the desired height.
4. The hypotenuse (ladder) will then be drawn in red and its length will be displayed.



Figure 54: Diagonal Measurement Results

5.7 Vertical Area tool

This tool allows to measure areas on façades in oblique images by drawing irregular polygons on the BlomWEB Viewer™ screen. To perform area measurements on ortho images use the Area Tool (section 5.2).

To perform a measurement:

- Click on a point on the floor as the first point for the baseline of the area to measure
- Click on a second point on the floor as the second point for the baseline of the area to measure (**Figure 55**)
- Continue the procedure clicking on additional points over the baseline to complete the polygon, or double-click on the map to finish the measurement. (**Figure 56**)
- The area of the polygon will be displayed on screen. (**Figure 57**)



Figure 55: Measuring façade area: Define baseline first...



Figure 56: ...Then continue defining the area



Figure 57: ... Finally, double click to get the measurement

5.8 Erase Button

This button will erase all measurement data displayed on screen allowing you to start a new batch of measurements if needed. This button will also exit from any Measurement Mode you may be in.

5.9 Multiple layers on screen

With the possibility of having multiple editable layers on screen (annotations, BlomSTREET™ objects – see chapter 11, vector layers – see chapter 7) mouse events can be misinterpreted by the application.

To avoid this, when many layers are visible on the screen, an icon will appear on the right of the image (see figure, below) to let you select which one will be the clickable one.

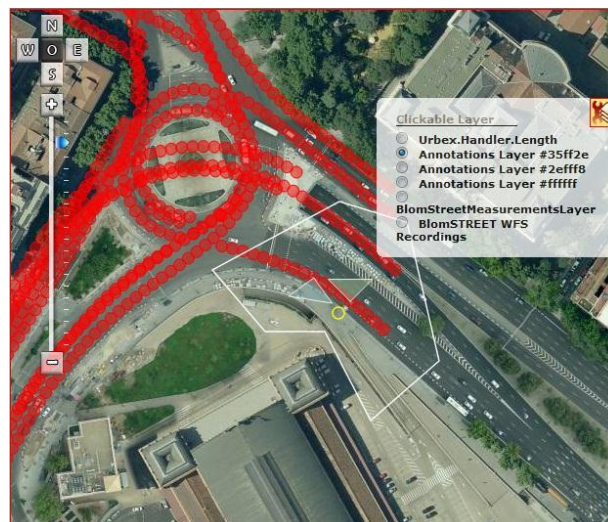











Figure 58: Layer selector

6 Map Tools

On the top of the screen there is a button to access to an extra set of map tools on the available datasets.



Figure 59: Map Tools

Tool	Description
	High Resolution Download tool
	Screenshot tool
	Reverse Geocoding tool
	Show Coordinates tool
	Year Selection tool
	Oblique Selection tool
	Image Layer Priority tool
	Overlays tool
	Display POI Information

6.1 High Resolution Download tool

Since version 2.0, BlomWEB Viewer™ allows downloading high resolution imagery from the BlomURBEX™ geoserver.

This option is only available for selected customer keys or by direct request to Blom. Contact your local Blom representative for details.

The downloading tool has a different behavior depending if you are in ortho (vertical image) mode or in oblique mode. Note that this tool does not work with overlaid data such as street names or vectors. The street map layer cannot be downloaded either.

6.1.1 Downloading Ortho imagery

If the main window is in ortho mode, clicking the **High Resolution Download** button will download a ortho image at the maximum resolution provided by the servers. This normally means 5120x5120 pixels at maximum level, around the center of the view on the BlomWEB Viewer™ screen.

The downloaded image will be opened in a new browser window (or tab, depending on the browser) allowing you to save it with the desired name

6.1.2 Downloading Oblique imagery

If the main BlomWEB Viewer™ is in oblique mode, clicking the **High Resolution Download** button will extract from the BlomURBEX™ the full oblique image that better covers the current center of the screen. Image size will vary according with the parameters of capture.

The downloaded image will be opened in a new browser window (or tab, depending on the browser) allowing you to save it with the desired name

6.2 Screenshot tool

This tool will allow to make captures or screenshots of the imagery currently visualized on the screen without any element that may be overlaid on top, such as annotations or the navigation bars.

The screenshot tool only captures ortho or oblique imagery. It does not make captures of street maps or hybrid views.

The image will be opened in a new pop-up window in your web browser, so will need to allow it to open pop-up windows. Refer to your browser documentation for details on how to do this.

This option is not available for all demo keys. It is only available for customer keys or by direct request to Blom. Contact your local Blom representative for details.

6.3 Reverse Geocoding tool

BlomWEB Viewer™ allows its users to obtain the address of any point in an image corresponding to an urban area with a simple click.

To do this, click on the Reverse Geocoding button to activate the function and then click on any point on the map. The selected address will be displayed on the button text area.

The geocoding is provided according to the selected geocoding tool in the upper part of the interface (UbiEst, OSM). See Section 0 for details. If OSM is selected as geocoder and you are clicking on a Point of Interest (POI), information about it, if available in the OSM database, will be displayed instead of the address of the point.

Note that this function works in any available view (Map, Ortho, Oblique or Hybrid).

6.4 Show Coordinates tool

BlomWEB Viewer™ allows its users to obtain the coordinates of any point in an image corresponding with a simple click.

To do this simply click on the Show Coordinates button to activate the function and then click on any point on the map. The coordinates will be displayed on the button text area in Spherical Mercator projection and Latitude/Longitude format

Note that this function works on any available view (Map, Ortho, Oblique or Hybrid).

6.5 Year Selection tool

As Blom continuously updates the available datasets for the cities in Europe, the BlomURBEX™ geoserver stores all this data providing historical information about them.

BlomWEB Viewer™ lets you select the different available years for any given city with the use of the Year Selection Tool.

When you click on the Year Selection Tool the following pop-up window will appear.

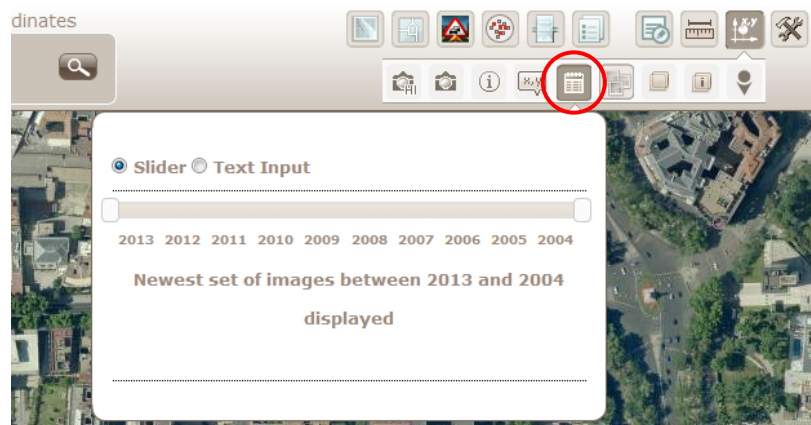


Figure 60: Year Selection Tool

You can also select the years range using a text box:

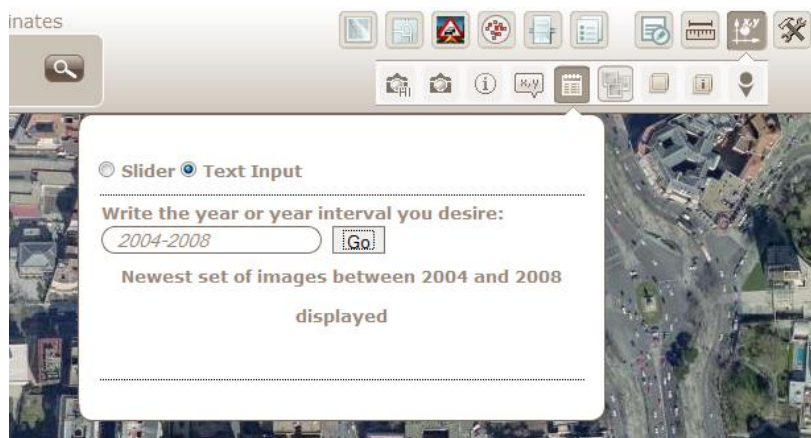


Figure 61: Year Selection Tool, text mode

The system will show images in the current area for the selected range of years, starting on the most recent one. If there are no images for the range the screen will appear black. The interval can be defined by dragging the two sliders located on top of the year's numbers.

6.5.1 Year selection and MultiView

Note that this tool can be easily combined with the MultiView feature on the viewer, so you can easily display two different views of the same city from different years.

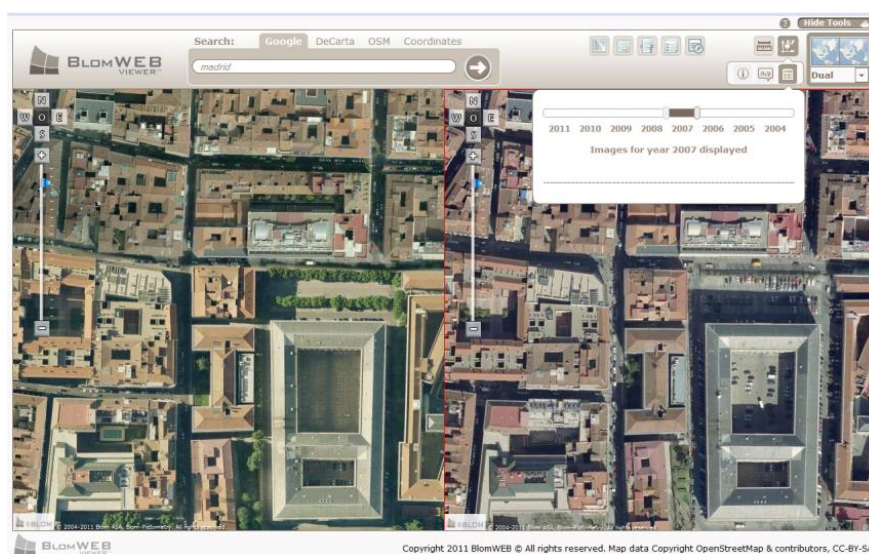


Figure 62: Multiview with different imagery years

6.6 Oblique Selection tool

In order to produce Oblique imagery of urban areas the aircraft capturing the images makes several passes over the cities to ensure enough overlap. This means that a given point in a city is often covered by more than 10 oblique images per year.

The Oblique Selection tool allows you to see how many images that cover the current centre of the screen there are. If you click on the **All Orientations** option the list will display all available oblique images regardless of orientation.

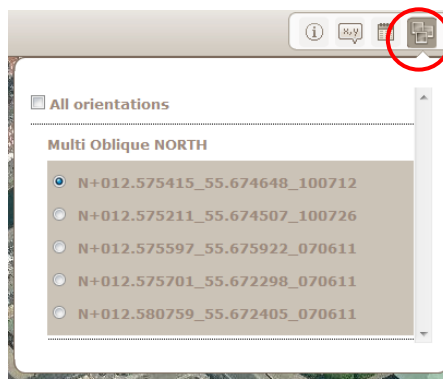


Figure 63: Oblique Views Selection

You can select any Oblique view from the list to display it immediately. Note that the naming of the images includes the coordinates of the central point and the date of its capture in YYMMDD format (Year-Month-Day).

Note that this tool is available only if you are seeing Natural Obliques (as Orthorectified Obliques are Ortho images in all senses).

6.7 Image Layer Priority tool

BlomURBEX™ imagery is composed of Baselayers and Overlays. The simplest difference between them is that Overlays have transparency so they can be displayed on top of other layers, whereas Baselayers cannot.

Baselayers are given a visualization priority, so BlomWEB Viewer™ will display one layer or another depending on the zoom level. Low resolution layers such as Satellite Imagery can be displayed only at very far zoom levels and high resolution layers such as BlomORTHO™ layers can be displayed at close zoom levels.

Baselayer priority is assigned by default but can be changed if needed using the Baselayer Priority tool. Selecting the button will display the following window:

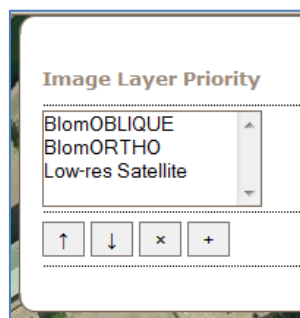


Figure 64: Image Layer Priority

Layers displayed on top of the list will be displayed first if available and layers displayed at the bottom will be displayed last (less priority).



Select a layer and click this button to move it up in the layers list.



Select a layer and click this button to move it down in the layers list.



Select a layer and click this button to delete it from the layers list. It won't be visible any more



Click this button to add a new layer by typing its name

Default layers are:

- **BlomOBLIQUE™**: data layers including 10-15cm vertical and oblique images of urban areas.
- **BlomORTHO™**: national (full country) vertical images with variable resolution owned by Blom or served under licence agreement of the appropriate vendors.
- **Low-res satellite**: Low resolution imagery to serve as reference on far zoom levels.

6.8 Oblique Layer Priority tool

Oblique Layers are similar to Baselayers, so we can adjust visualization priority. BlomWEB Viewer™ will display one layer or another depending on user settings.

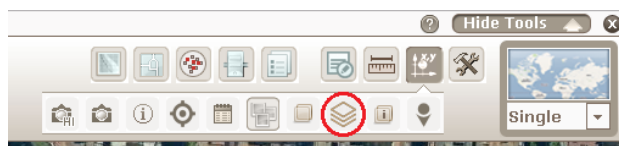


Figure 65: Oblique Layer Priority Tool

BlomWEB Viewer configures by default setting for Oblique Layer priority on startup. Users can change this priority using the Oblique Layer Priority tool. Selecting the button will display the following window:

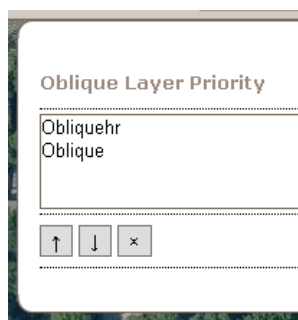


Figure 66: Oblique Layer Priority Menu

Layers displayed on top of the list will be displayed first if available and layers displayed at the bottom will be displayed last (less priority).



Select a layer and click this button to move it up in the layers list.



Select a layer and click this button to move it down in the layers list.



Select a layer and click this button to delete it from the layers list. It won't be visible any more

Default layers are:

- **oblique:** standard resolution oblique imagery
- **obliquehr:** high resolution oblique imagery

6.9 Overlay Selection tool

This tool allows activation and deactivation of different overlays available on BlomURBEX™.

The most important use of this tool is to display the TeleAtlas vector data for Europe. This data has been rasterized in several towns all over Europe and can be displayed on top of Ortho and Oblique images creating a “Hybrid View” mode. Note that not all cities in BlomURBEX™ have its corresponding rasterized street layer yet.

After selecting the tool a list of available layers will appear and you can select/unselect them by clicking on the checkbox on the left.

Layers available by default are:

- **Streets:** Streets overlay layer for urban areas in Europe.
- **BlomNavigation:** same layer as shown on the *Blom 3D Enhanced Urban Attributes* demo scenario.
- **Solar Roofs UK:** same layer as shown on the *BlomURBEX custom layer – solar roofs* demo scenario.
- **Hill Shade:** a hill shade layer created from DTM data. Only available in some regions and for some users.

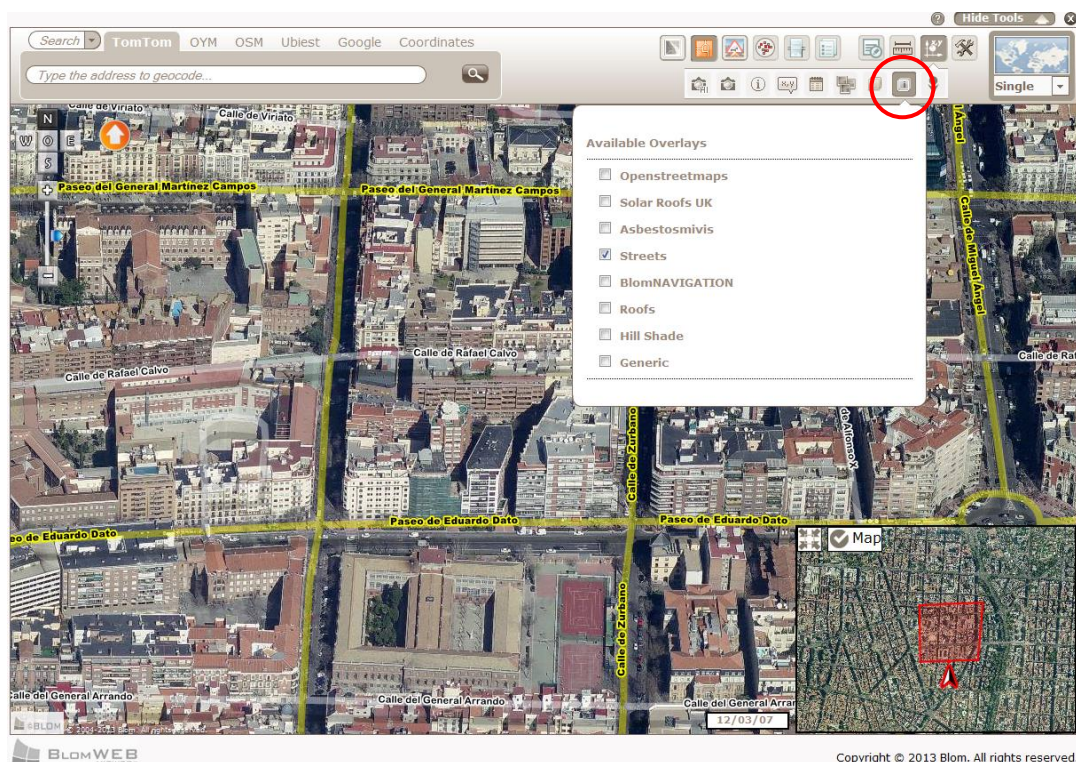


Figure 67: Street Layers Overlay selected over Oblique image

6.10 Points of Interest (POIs)

The BlomURBEX™ JavaScript API allows the management and rendering of Points of Interest (POI) information. This makes the geoserver able to store and retrieve information about the location, type and contents of several categories of POIs that can be accessed by developers for creating high value-added applications. Refer to the BlomURBEX™ JavaScript API documentation for additional details on this.

BlomWEB Viewer™ makes use of the API capabilities to showcase this option using the contents of several POI providers.

Since version 2.0, BlomWEB Viewer™ includes a sample of POI contents from Geomobile in Spain. To access this data simply click on the Display POI Information icon to open the POI Window.

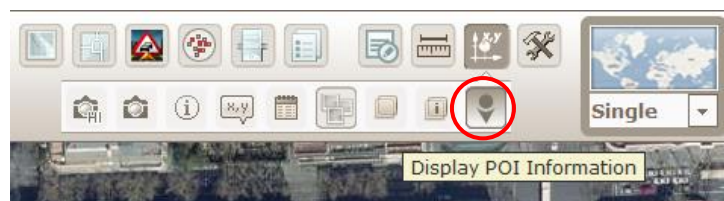


Figure 68: POIs button

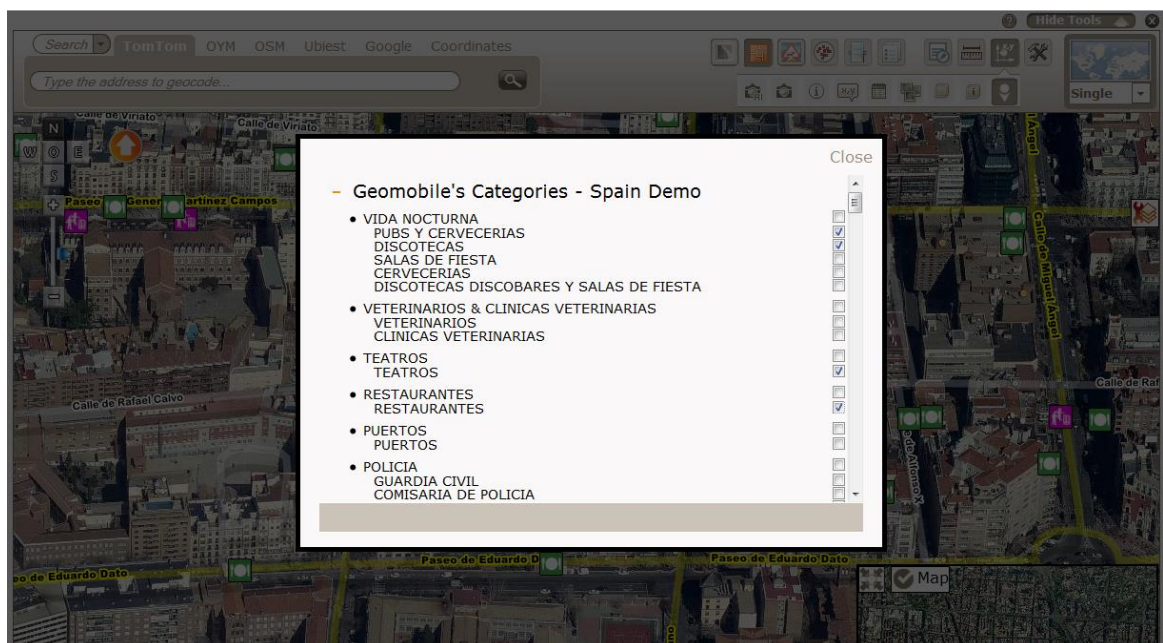


Figure 69: POIs Window

Since version 2.1 of BlomWEB Viewer™, the different providers appear as collapsible tree-views. This way it will be easier to showcase several providers on the window.

By default all existing POI categories are disabled. To show any of them on screen just click on its checkbox on the right. The selected categories will be displayed on screen. Icons shown will depend on the information provided by the POI provider. In some cases there can be proprietary and not generic icons for displaying information.

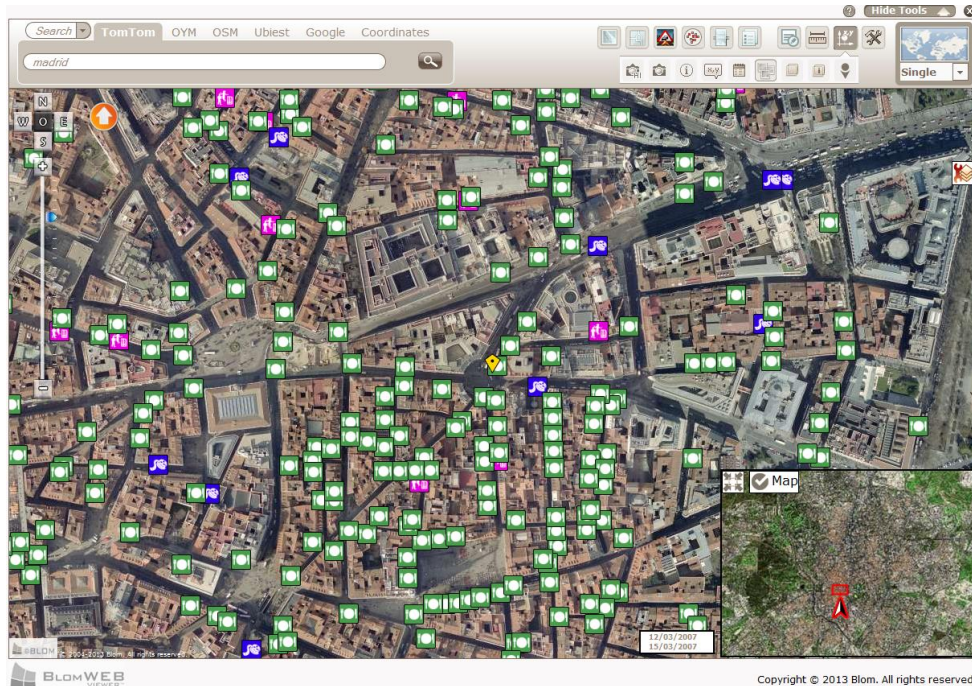


Figure 70: POI database displayed

Clicking on any icon will open a pop-up window showing the available information about the associated POI. Click on the 'X' icon on the upper right corner to close the pop-up.

Note that all POI information shown is part of the provider contents and is shown "as is". Information shown in BlomWEB Viewer™ POI sample is just a sample for demoing purposes. Additional providers will be included in the future as new agreements are signed.








Figure 71: Displaying POI information

7 Additional Tools

A new set of tools has been included in BlomWEB Viewer™, grouped together under the generic Additional Tools button.



Figure 72: Additional tools

Tool	Description
	View and Save Layers and Workspace
	Upload Vector File
	Manage Graphical Profiles
	Execute and Upload Plugins
	Upload JPG/JGW images

Workspaces and Custom layers are described on Chapter 8. Plugins are detailed on Chapter 12. This section covers the capability for uploading shape files and the graphic profile management.

7.1 Vector Files uploading

BlomWEB Viewer™ allows you to upload vector files to be displayed on top of the existing imagery from BlomURBEX™. Formats currently available are SHP, KML and KMZ.

To upload vector data there are several options:

- Upload a ZIP file: the ZIP file must contain:
 - Any number of .SHP files
 - The corresponding companion files for the SHPs (.PRJ, .DBF, .SHX, etc.)
- Upload a single SHP file (you will be asked to provide the file's ESPG:xxxx projection)
- Upload a single KML or KMZ file

Note: uploaded shape files are stored **temporarily** on your BlomWEB User Area (BUA). This means that they will not be available for future sessions and you will need to upload them again if needed. If you need to keep an uploaded shape file for future use you need to convert it to a **Custom Layer**. Refer to Chapter 8 for details.

If you provide a DBF file with the SHP file (using the upload ZIP option), BlomWEB Viewer™ will show the associated attributed of the geometry when selected on screen with the mouse cursor. Refer to chapter 8 for details on how to visualize custom layers in BlomWEB Viewer™.

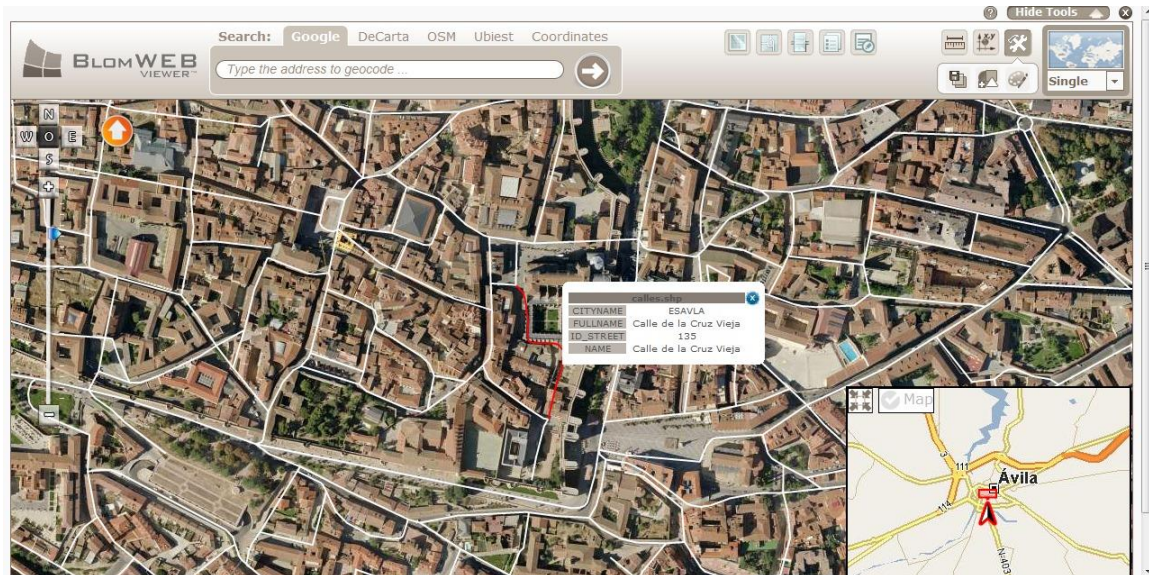


Figure 73: Accesing attribute information from vector layer

7.2 Graphic Profiles Management

Since version 2.0, BlomWEB Viewer™ includes capabilities for customizing the look and feel of the application in the form of predefined skins. It will also allow you to use a company logo to replace the BlomWEB Viewer™ and help customize the tool for your own internal needs.

7.2.1 Skin selection

A different set of graphical skins have been preloaded. To change the application, skin simply select one of the available skins and click the **Apply** button. The application appearance will then change.



Figure 74: Skin selection

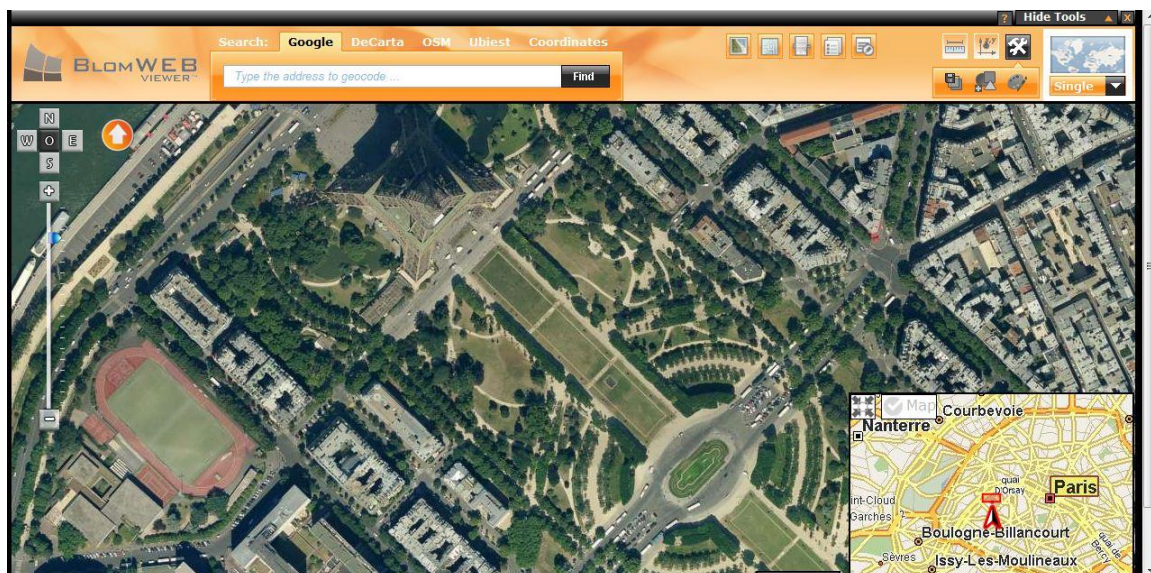


Figure 75: The new skin applied

You can make any one of the existing skin profiles the default. To do this just select a skin and click on the **Save as default** button. If you do not select a skin, the default one will be loaded.

Additional skins can be produced and included into BlomWEB Viewer™. Contact your local Blom support representative for details on the BlomWEB Viewer™ skin definition.

7.2.2 Changing the logo

The BlomWEB Viewer™ logo located on the upper left corner of the screen can be changed for a different one. This allows you to fully customize the appearance of the tool creating a “company-version” of BlomWEB Viewer™.

You can use any JPG, GIF or PNG image as logo. Maximum dimensions for image must be 200x76 pixels with a maximum size of 2Mb. If you upload a bigger image it will be resized to fit the existing area.

To upload a logo you can either:

- Open the **Graphical Profiles Management** window and click the **Upload a File** button to select a suitable logo and upload it.
- Drag and Drop a logo file on the logo area (if your Internet browser allows this option)

To return to the default logo just click on the **Default logo** button.

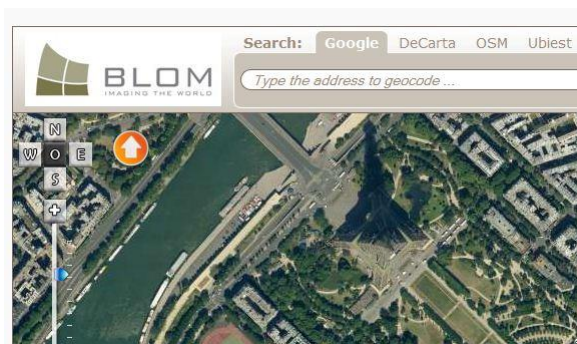


Figure 76: Logo changed

7.2.3 Selection of map provider

The graphic profile management window also allows selecting the map provider. This option is described in section 3.1.1 of the manual.

8 Workspaces and Custom Layers

BlomWEB Viewer™ 2.0 introduces the concept of user storage space (BlomWEB User Area, or BUA) on the BlomURBEX™ server. This effectively allows the user to store information on the server for use later on. This information can be the workspace configuration (see below), or different files that have been uploaded to be displayed on top of the BlomURBEX™ geodata.

This section covers these two options in detail.

8.1 Workspaces

BlomWEB Viewer™ version 2.0 introduced the concept of Workspaces. As in other GIS tools, a workspace is a simple way to store your tool configuration/layout and retrieve it for future sessions.

In BlomWEB Viewer™, a workspace is comprised of every element that is displayed on screen. This means the following elements, as they were when the workspace is saved on the BUA:

- The coordinates of the centre of the screen
- The zoom level
- The baselayer configuration
- The overlay configuration
- WMS servers (if there are any connected and displayed)
- Demo scenarios (if selected)
- Uploaded vector data (see section 7.1)
- Any custom layer(s) (see section 8.2) displayed

Workspaces are managed on the **Workspace and Custom Layers** button, located under the **Additional Tools** menu.

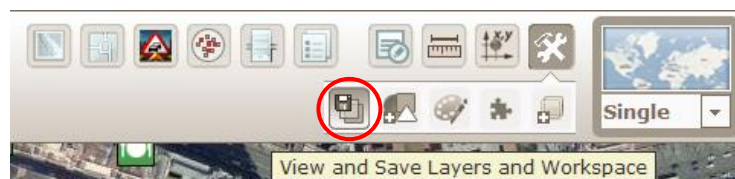


Figure 77: Workspace and Custom Layers button

- To save your current screen configuration as workspace, simply click on the **Workspace and Custom Layers** button and then click on the **Save Workspace** button.
- To retrieve the last saved workspace click on the **Workspace and Custom Layers** button and then click on the **Load Workspace** button

Version 2.0 of BlomWEB Viewer™ only manages one workspace per user. Future versions will include the possibility of managing several workspaces.

The Workspace and Custom Layers window is divided into two main areas: the Workspace Layers area and the Custom Layers area. Both concepts are described in the following sections.



Figure 78. Workspace and Custom Layers window

8.1.1 Workspace Layers

The **Workspace Layers** area displays a list of all layers that are currently visible on screen. These are the layers that will be stored if you decide to save your workspace.

In the example above (Figure 78), there are two data layers on the user configuration: the Ortho image from a given zone and a WMS server.

The layers displayed can be of two different types: Baselayers and Overlays (refer to section 0 for details). Baselayers cannot be edited but there are some options that can be done with overlays. Moving the mouse over the layer name will show three options:

- **Go To:** This will center the screen view on the extent of the selected SHP/KML file. This way it is possible to move quickly to the location of the uploaded file.
- **Export to SHP:** this will save the selected layer to a shape file. A dialog box will appear to let you select the name and location for the output file.
- **Save:** this option will save a copy of this layer into your BlomWEB Viewer™ User Area (BUA). This will convert the layer into a custom layer for later use.
- **Hide:** this option will hide the layer from the view

8.2 Custom layers

BlomWEB Viewer™ allows users to upload or create custom data layers and store them in their user area on the server.

Currently there is a limit of five custom layers per user on the server. The example on Figure 78, above, shows three layers stored in this user BUA: a measurements layer, an annotation layer, and test shape file.

Custom layers are created from the Workspace window (Figure 78). Any overlay displayed on the screen will appear as a layer on the Workspace window. In the example below and in addition to the ortho image, there are three layers displayed: an uploaded shape file called calles.shp, a drawing (in yellow in the background) or annotation vector layer; and a measurement (in blue in the background) layer. Using the **Save** option described in the previous section will allow you to store that data layer into the BlomWEB Viewer™ user area, making it possible to retrieve it at a later date.

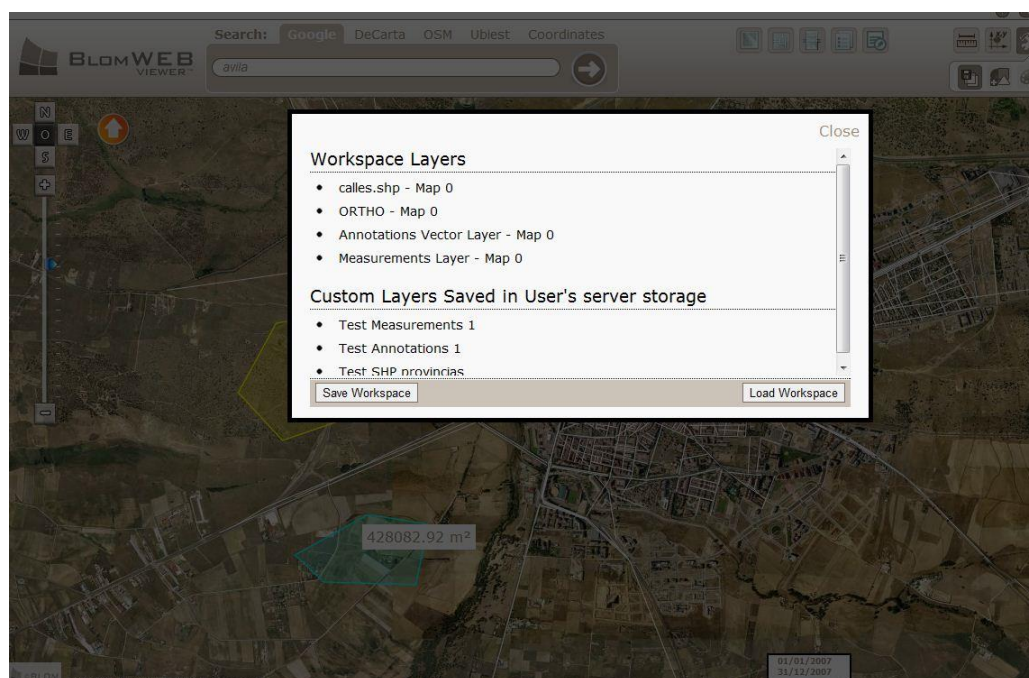


Figure 79: Overlays and Custom Layers

Moving the mouse over the custom layer name will show three options:

- **Export to SHP:** this will save the selected layer to a shape file. A dialog box will appear to let you select the name and location for the output file.
- **Delete:** this will remove the layer from your BlomWEB Viewer™ User Area. This way you can make space for storing additional layers if needed.
- **Show:** this option will load the custom layer on screen. The layer will remain stored on your BUA, but now it will form part of the current workspace and can be saved in it if desired using the **Save workspace** button. Note that custom layers are just stored on the BUA and will not be displayed unless you make them visible on the workspace using this option.

8.3 Symbology Edition for Vector Layers

Custom vector layers that are loaded into the workspace (see above) can have their symbology edited from Version 3.0 of BlomWEB Viewer™.

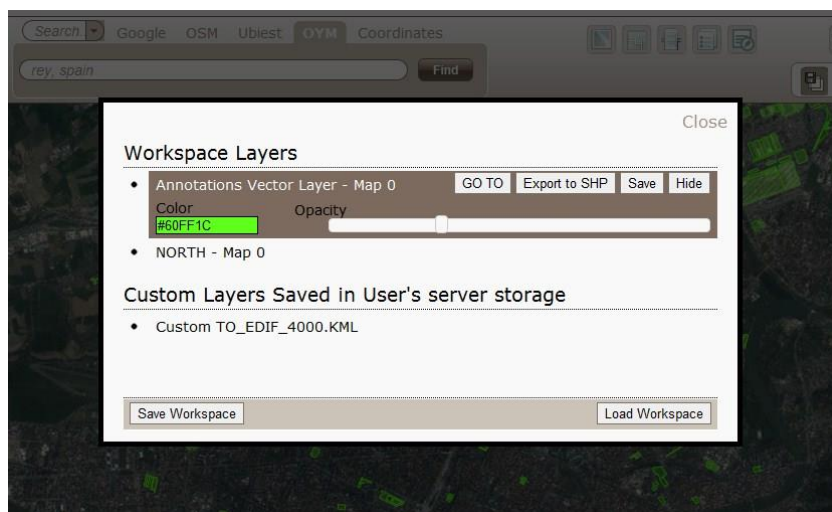


Figure 80: Vector Layer Symbology Edition

As seen in **Figure 80**, above; you can select now the colour of the vector layer as well as the opacity level, so that the vector layer can be display with transparency effect. On the example above, a layer called TO_EDIF_4000.KML has been loaded on the workspace and its base colour is green. Changing the colour and opacity level can lead to results like the one shown below.

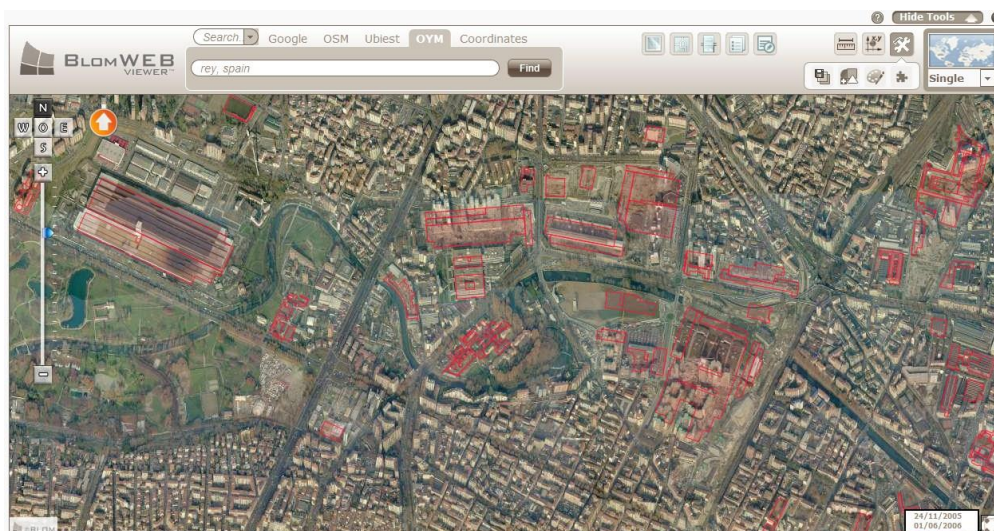


Figure 81: Vector Symbology changed

9 BlomURBEX 3D™ View Controls

BlomURBEX 3D™ is an online platform that streams the photorealistic 3D urban models produced by Blom, allowing integration in different end-user applications with the use of its API and SDKs.

The BlomWEB Viewer™ includes direct access to BlomURBEX 3D™, allowing users to view and navigate through the Blom3D™ model repository without the need to use a different viewer application.

Available data models in BlomURBEX 3D™ are:

- BlomURBEX™ Ortho imagery including overlays.
- Urban 3D models in four different Levels of Detail (LOD)²
- Digital Terrain Models (DTMs)

9.1 Accessing the BlomURBEX 3D™ Viewer

To change to the 3D view in BlomWEB Viewer™, simply select '3D' in the view selection control. The screen will switch to 3D mode and will show the 3D model centred on the coordinates of the previous 2D view.

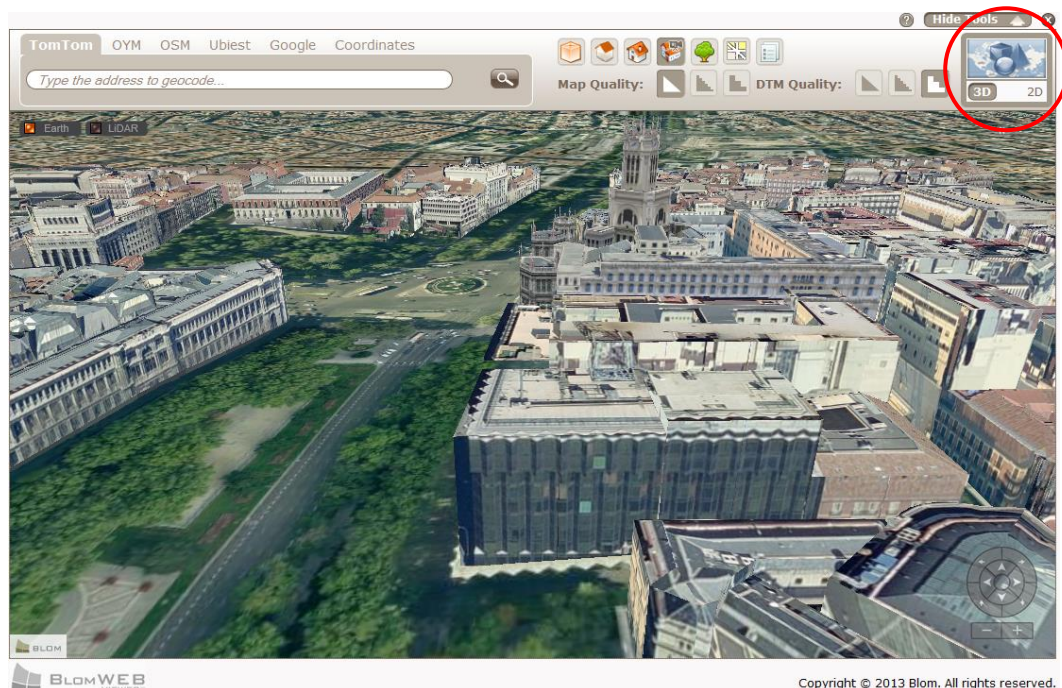


Figure 82: 3D View

² Refer to the BlomURBEX 3D™ Product Description for details on the different LODs for Blom3D™ models.

9.2 Navigating through the 3D models

To move and rotate the models and viewing camera you can use the Navigation Pad located in the bottom right part of the screen, or use the mouse and keyboard.

9.2.1 Navigation Pad

- Use the central arrows to move the models forward, backwards, left and right.
- Use the left side up and down arrows to move the camera up and down (sky/ground)
- Use the arrows located in the central base to spin left and right
- Use the magnifying glasses to zoom in and out.

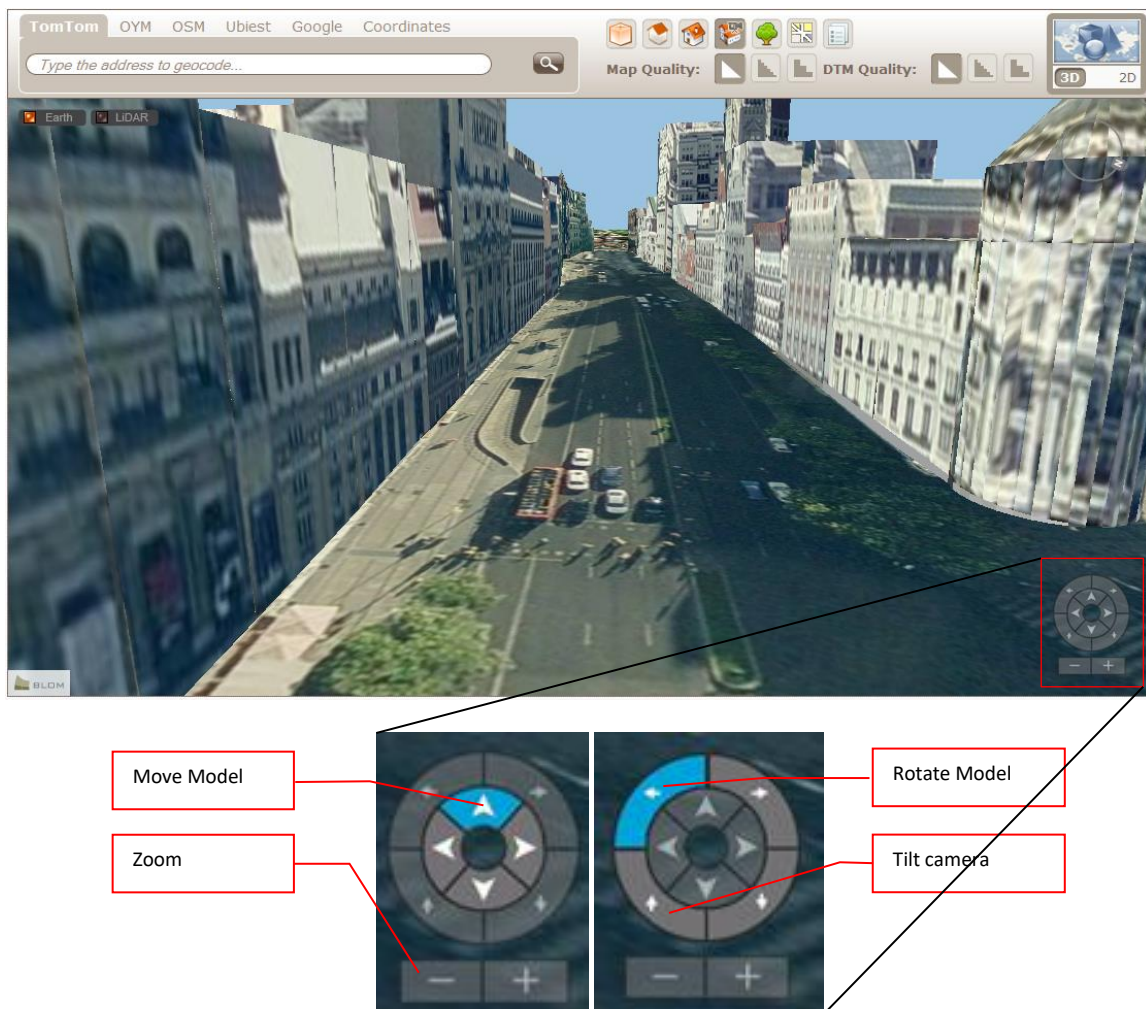


Figure 83: 3D Navigation Pad

9.2.2 Mouse controls

- Use the central mouse wheel to zoom in and out.
- Left-click and drag to move the models forward, backwards, left and right
- Right-click and drag to spin left and right
- Press Shift and right-click, and then drag to move the camera up and down
- Make a double left-click to zoom in
- Make a double right-click to zoom out
- Make a double middle-click to point the camera to North.

9.2.3 Keyboard controls

- Use the arrow keys to move the models forward, backwards, left and right.
- Press shift and the up/down arrow keys to tilt the camera up and down
- Press shift and the right/left arrow keys to rotate the camera clockwise
- Press Ctrl and the right/left arrow keys to rotate the camera counter clockwise
- Press Ctrl and the up/down arrow keys to zoom in and out.

9.3 Level of Detail (LOD) selection

Blom3D™ models are available on 4 different Levels of Detail:

- **LOD 1 (Block Model):** These are 3D buildings represented as parallelogram blocks, with no information on roofs or additional structures.
- **LOD 2 (RoofTop Model):** This model adds roof structure and other constructions present on the buildings.
- **LOD3 (Library Texture Model):** This is a rooftop (LOD2) model to which automated library textures have been added.
- **LOD4 (Photo-realistic Texture Model):** This a rooftop model in which the building textures are applied from the BLOM oblique images.

Refer to the **Blom3D™ Product Description** for a more detailed description of these LODs.

In BlomWEB Viewer™ it is possible to select dynamically the LOD to display by clicking on one of the four **LOD** buttons available. Note that the currently selected LOD will be highlighted.









Figure 84: LOD Selection tool (LOD1, LOD2, LOD3, and LOD4)

9.4 Edit Mode

The BlomURBEX 3D™ Viewer included in BlomWEB Viewer™ includes an Edit Mode. In this mode users can perform different operations on any building, such as retrieve information, move or delete the building, as well as add new buildings from local 3D models located on their computer.

Edits done can be saved on the local machine and then be delivered later to Blom in order to submit changes to the model to the BlomURBEX 3D™ Server.

To enter Edit Mode press the “E” key on your keyboard. A toolbox will appear. The different available options are:

Tool Icon	Action
	Enable/disable edit layer
	Move selected building using the arrow keys
	Delete selected building
	Revert to last saved version, ignoring current changes
	Save into local disk
	Clean all history

To use the Edit Toolbox you need to select a building. Double-click a building to select it.

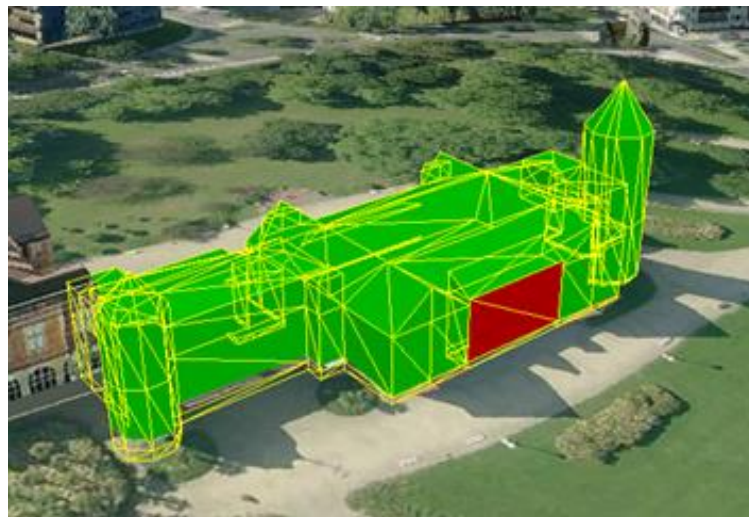


Figure 85: 3D Model Selected in the Viewer

Selected buildings will be painted in green showing the wireframe mode. It is possible to select different polygons in the façade to interact with them. The selected polygon will be displayed in red.

Once the building is selected you can delete or move using the tools described above.

9.4.1 Changing textures in the building

You can select any image file in .JPG, .BMP or .TGA mode and drag and drop it on to the selected 3D model. The image file will be pasted on the selected façade (in red).



Figure 86: Texture Replacement

9.4.2 Adding new buildings

You can drag and drop 3D models to the viewer screen to automatically add them to the model.

Valid formats are OBJ and VRML. The models will be represented according to their orientation and georeference, and can be moved using the arrow keys but not rotated.

Changes will be stored locally and will be lost in later sessions unless they are saved with the Save button.

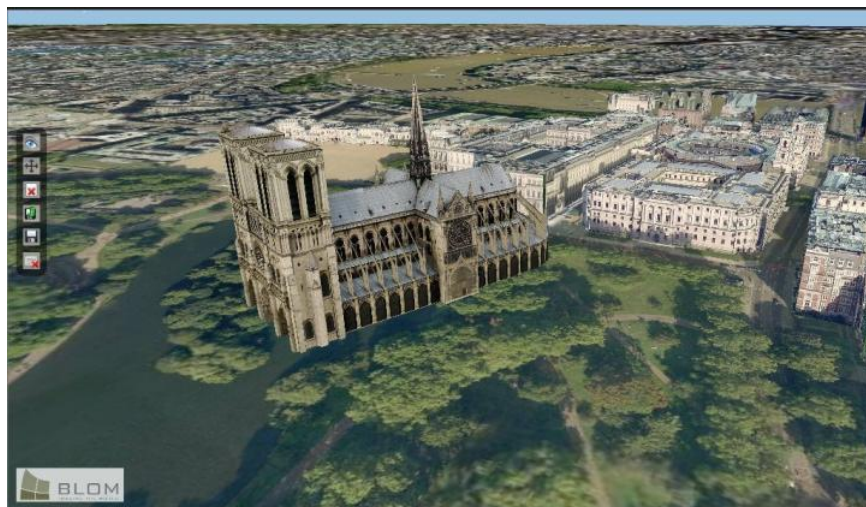


Figure 87: External 3D model dropped on the London 3D city model

10 LiDAR Viewer

10.1 Introduction

BlomWEB Viewer™ introduces LiDAR visualization capabilities with version 3.0.

The BlomURBEX 3D™ engine has been enhanced to work with LiDAR point clouds in an internal binary file optimized for online publishing. This way, Blom is able to manage huge LiDAR files and deliver them online for its customers saving them of the needs of costly investments in hardware and storage.

10.2 Accessing LiDAR data

LiDAR data is retrieved from the BlomURBEX™ server and stored on the viewer cache. In order to access LiDAR data you must follow three steps:

1. Locate an area where LiDAR data exists
2. Click on the LiDAR button
3. Define an area to load

Your BlomURBEX™ access will have granted you access to areas where LiDAR data exists. As this data needs to be pre-loaded you need first to move the BlomWEB Viewer™ screen to an area where such data exists. Once done, click on the LiDAR button.



Figure 88. LiDAR button

Once you click this button a tooltip window will appear requesting you to select the center of the area to display with your mouse, and then drag it to draw the radius of the area to load. Current version limits visualization to 1 Km radius models.



Figure 89: Selecting the LiDAR area to visualize

Once you select the area, BlomWEB Viewer™ will switch to 3D mode and load the LiDAR model.

10.3 Navigating through the LiDAR models

To move and rotate the models and viewing camera you can use the Navigation Pad located in the bottom right part of the screen, or use the mouse and keyboard. The visualization control is the same one used for Blom3D™, so all the mouse and keyboard controls described in section 9.2 also apply here.

10.4 Visualization options

LiDAR data in BlomWEB Viewer™ can be visualized in four different modes. These modes can be selected with the four buttons located in the upper section of the user interface.

Tool Icon	Mode
	Height HSV Mode
	Height Mode
	Classification Mode
	True Colour Mode

10.4.1 True Colour

As its name implies, this is a true color representation of the LiDAR dataset taken from the information stored in the original LAS files

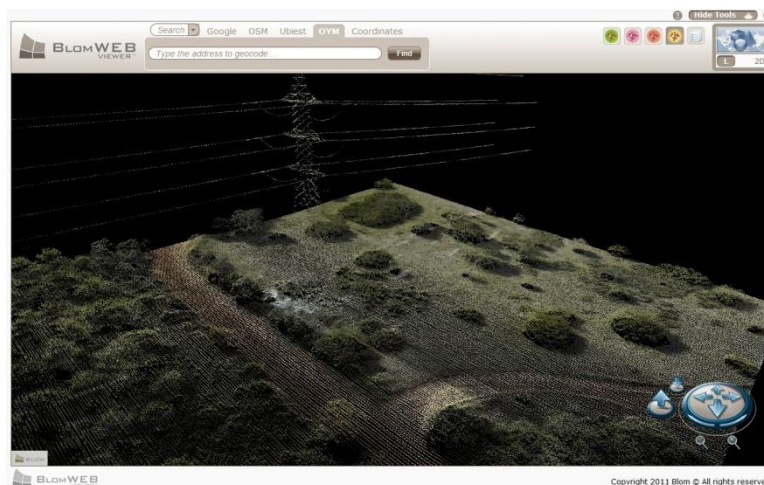


Figure 90: LiDAR data in true color view

10.4.2 Classification-based colour

This view represents LiDAR data based in the classifications information stored in the original LAS file.

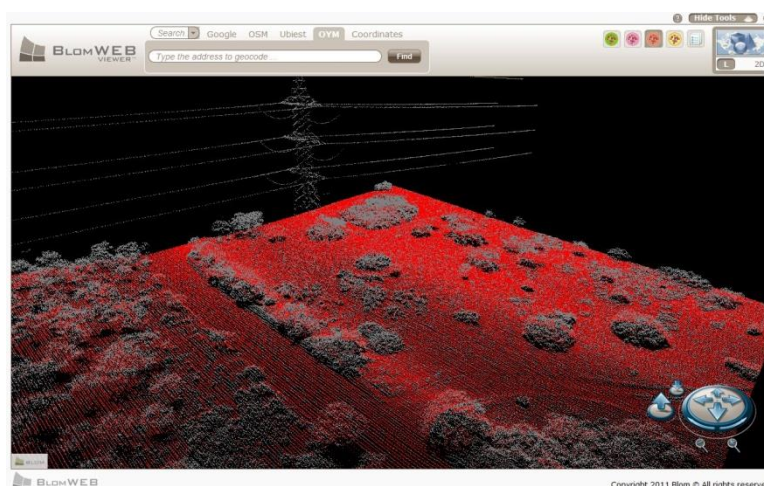


Figure 91: LiDAR data in classification-based view

10.4.3 Height-based colour

This view shows the data with a colour palette based in the range of heights of the data.

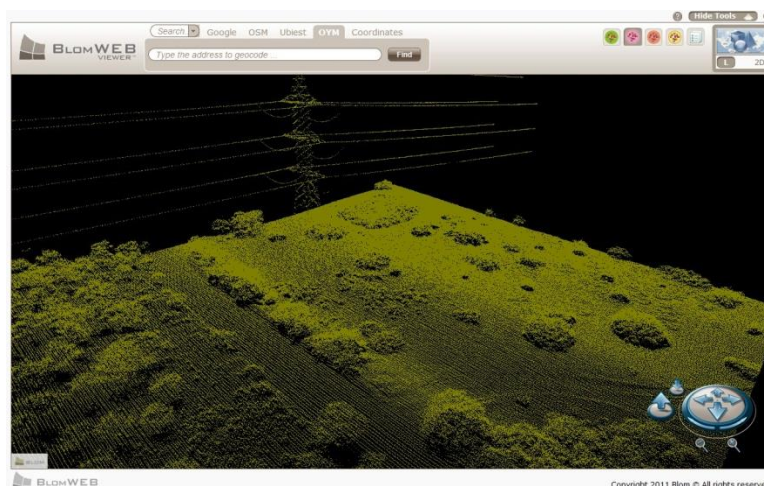


Figure 92: LiDAR data with height-based colour

10.4.4 Height HSV colour

As seen in the example above, when the height difference on the LiDAR zone is not too great, height-based colour can lead to monochrome display. The height HSV colour option provides a cyclic height range of colours that can produce a better display on small height-variation files.

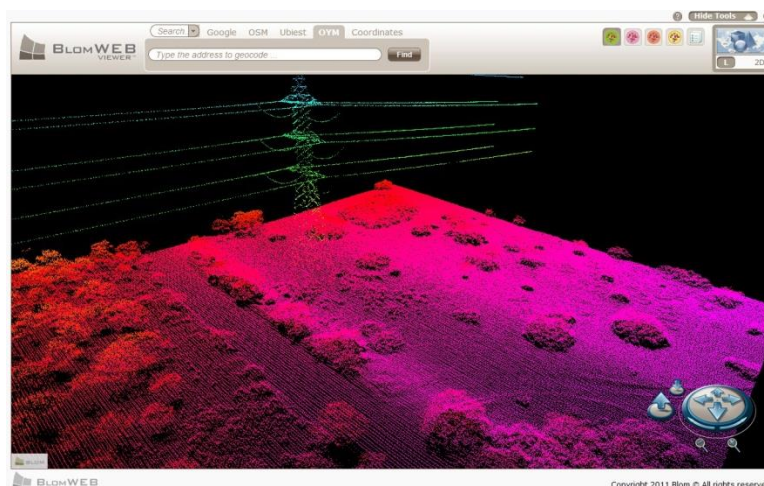


Figure 93: LiDAR data with height HSV colour

11 BlomSTREET™ data

CycloMedia is a Blom partner that specializes in producing large scale and systematic capture of public space using mobile mapping technology to generate 360° panoramic images, called “Cycloramas”. CycloMedia has many years of experience in the in-house development of recording systems, the accompanying processing software, data architectures and the best way to record Cycloramas on a great-scale on a daily basis. Today CycloMedia is a main supplier for the Dutch government; the entire public road network of the Netherlands is being recorded on a yearly basis. Many Dutch municipalities use the imagery of CycloMedia Technology for all kinds of applications.

A Cyclorama is a 360° panoramic image, as shown below:



Every Cyclorama has the following properties:

- A 360° panoramic image with a resolution of 4800 x 2400 pixels
- Recorded at a fixed interval of 5 meters, most objects are therefore visible from three different angles
- Spherical – As well as the ability to look around (360°), you can also look up and down
- Good continuous image – Best of class stitching
- Upright image – when recordings are taken from a talus, this is corrected so that an image is always horizontal (level)
- The file contains a recording date and time
- Geometrically correct – each pixel in the Cyclorama is geometrically positioned
- Outstanding geo reference – precise position and viewing direction

These properties allow the possibility to use Cycloramas for many applications.

Blom is capturing and producing Cyclorama data for its customers since Q2 2011. This new product of Blom is branded BlomSTREET™. As this data will normally be private for the customers requesting its capture, BlomWEB Viewer™ includes a series of demo scenario under the **BlomSTREET™** group (See section 3.5). This demo scenario will allow users of BlomWEB Viewer™ to experience some of the capabilities behind BlomSTREET™ and see the integration with Blom data.

11.1 Accessing BlomSTREET™ data

If your login credentials to BlomWEB Viewer™ grant you access to BlomSTREET™ data, you can enter BlomSTREET™ visualization mode by clicking the upper right corner drop-down menu and selecting the BlomSTREET™ option.

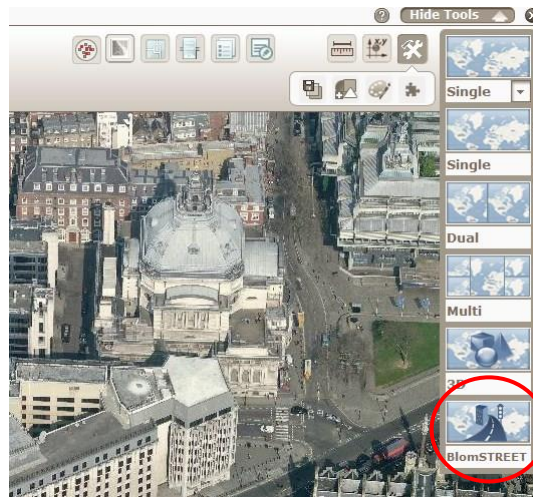


Figure 94: Accessing BlomSTREET™ data

Alternatively, you can access the BlomSTREET™ sample data via the demo scenarios button (see section 3.5).

11.2 BlomSTREET™ navigation

Navigating the 360° imagery is simple and intuitive.

The screen will split into two, showing an ortho image of your current position in the left window, and a BlomSTREET™ viewer in the right window. The right window will appear until you select an image location by clicking on any coloured circle on the ortho view. Every circle represents the location of a BlomSTREET™ image.

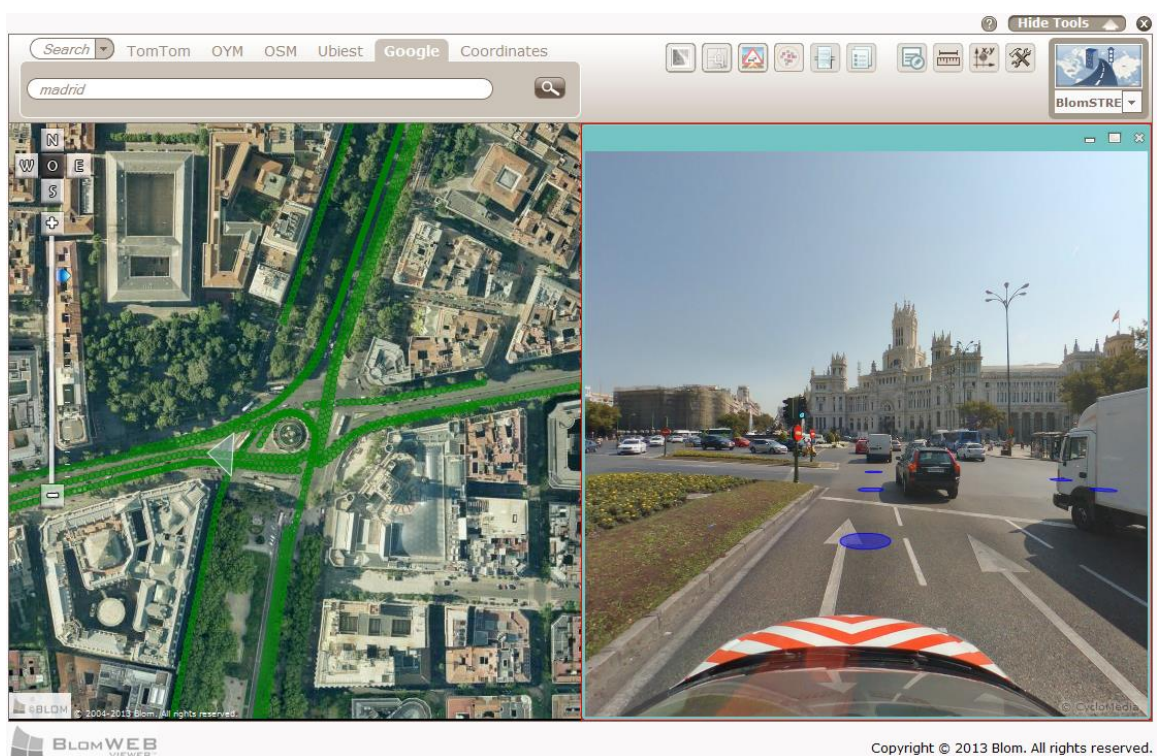


Figure 95: BlomSTREET™ demo scenario

11.2.1 The map window

You can navigate the ortho imagery using all BlomWEB Viewer™ navigation options described on section 2.3.

The coloured circles on the image represent the location of the different BlomSTREET™ spherical images. Different colour circles correspond to different dates of capture: note that moving the mouse cursor over the dots will display the date of the associated BlomSTREET™ image. Future versions of BlomWEB Viewer™ will allow filtering information per date.

The triangle shown on top of the currently selected dot shows the user field of vision according to the selected BlomSTREET™ spherical image on the right-side window. As you move and rotate the image in the BlomSTREET™ image, this triangle will also rotate to represent the direction the viewer is looking at.

Click on any dot to access the associated BlomSTREET™ spherical image on the right-side window.

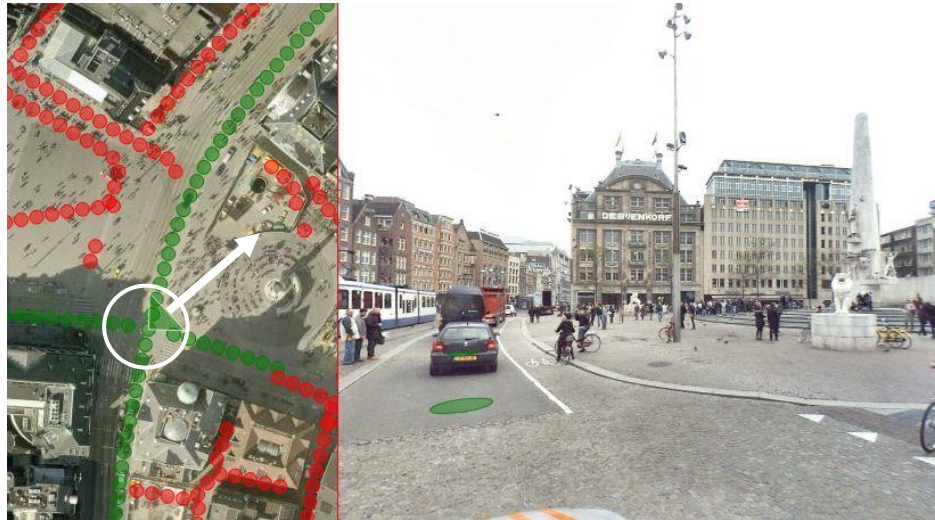


Figure 96: The triangle rotates according to the BlomSTREET™ view

Clicking on additional dots will open new BlomSTREET™ windows up to a limit of four windows. This will prove necessary to perform measures on the images (section 11.3). Different windows will have different frame colours - these correspond to the associated triangle(s) on the ortho window. This makes it easy to track the view angle on different views.

Note that the BlomSTREET™ windows can be resized according to your needs.

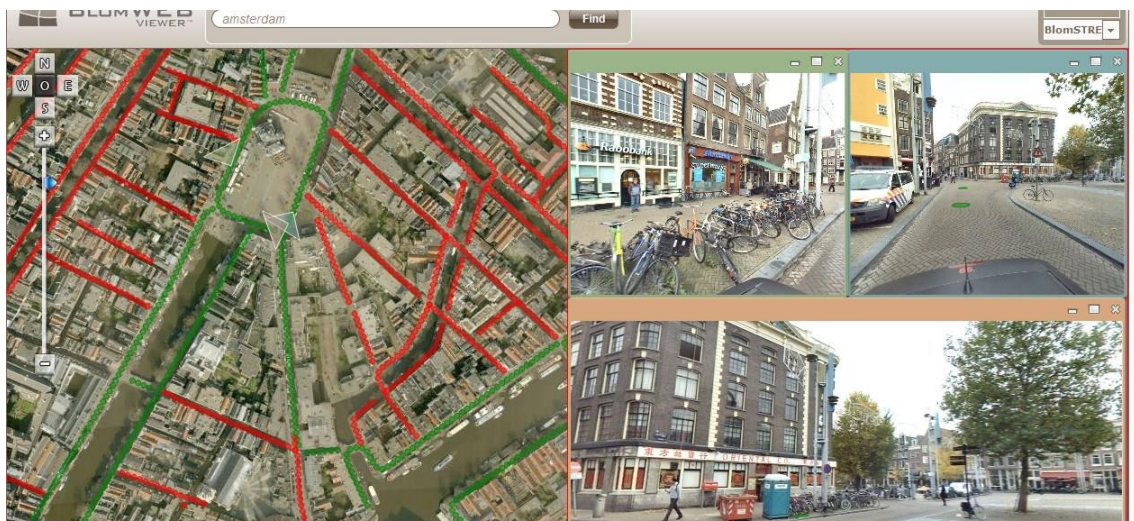


Figure 97: BlomSTREET™ mode with three opened BlomSTREET™ windows

11.2.2 The BlomSTREET™ window

To move around the BlomSTREET™ image, click on it and drag your mouse to move the camera. You can use the following keys for navigating the image:

- Use the left/right arrow keys to rotate the image
- Use the up/down arrow keys to advance to the next/previous BlomSTREET™ spherical image.
- Use the + and – keys to zoom in and out
- Use the PageUp and PageDown keys to tilt up and down

Coloured circles also appear on the BlomSTREET™ window, allowing you to select different views by simply clicking on them. Note that moving the mouse cursor over a circle will show a tooltip with the date of capture of the associated BlomSTREET™ spherical image.

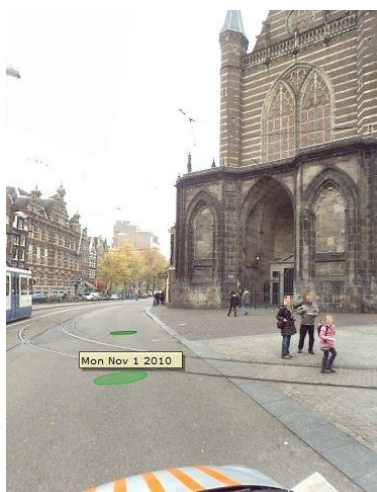


Figure 98: Date of the BlomSTREET™ image










11.3 Measurements on BlomSTREET™ data

One of the main features of BlomSTREET™ is the capability to perform measurements directly on the spherical images. Once you are in the BlomSTREET™ view mode, the **Measurement Tools** button will become selectable, allowing you access to the BlomSTREET™ measurement tools.



Figure 99: BlomSTREET™ Measurements Tools

There are several tools in this submenu, that will be described in this section:

Tool	Description
	Point Measurement
	Line Measurement
	Height Measurement
	Area Measurement
	Volume Measurement
	Finish Measurement
	Clear Measurement
	Export Measurements
	Import Measurements

11.3.1 A note on measurements on BlomSTREET™ data

A BlomSTREET™ image is a flat bitmap where every pixel represents a spatial direction with a known orientation, from a known recorded position.

In order to determine the coordinates of an object point, at least 2 recordings are required. As seen below, with one Cyclorama you can only know the orientation of the point:

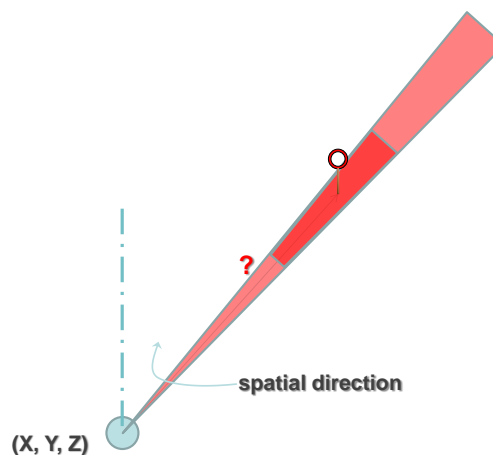


Figure 100: Measurement principles (1)

However, with a second image the point to measure will be located in the intersection of both “direction cones”, so a true measurement can be achieved.

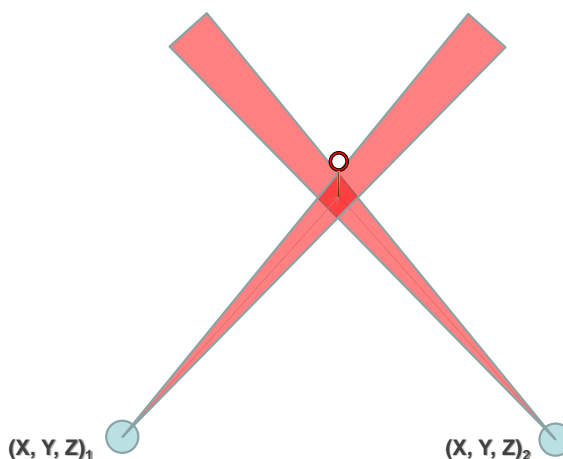


Figure 101: Measurement Principles (2)

As above, the greater the number of BlomSTREET™ images used, the better the accuracy of the measurement results.

11.3.2 Measuring Points

As described above, you will need to open at least two BlomSTREET™ viewing windows in order to perform a measurement. We will demonstrate the process with an easy example. As you can see on the screenshot below, we are going to measure the coordinates of a spot in a building. Two BlomSTREET™ windows have been opened and rotated so that the spot to measure can be seen in both windows simultaneously.

Click on the **Point Measurement** button to begin the procedure, and then click on the location of the desired point you want to measure. You will see a line appear on the other BlomSTREET™ window with the same colour of the frame as the first one. This is a visual guide to locate where the point is located on the second image.

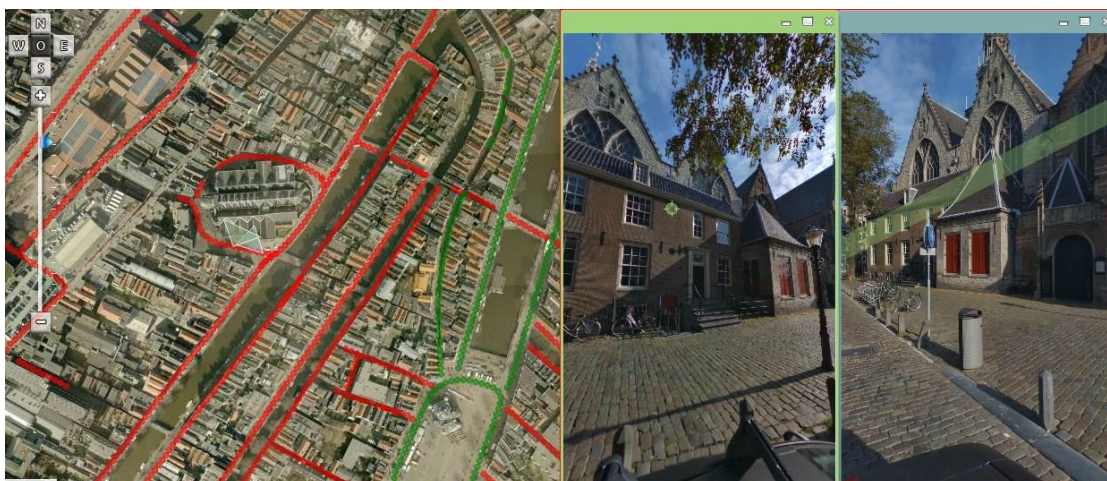


Figure 102: Point Measurement. Step 1

Locate the point on the second BlomSTREET™ Window and click on it. Note that a similar guideline will appear on the first Window.

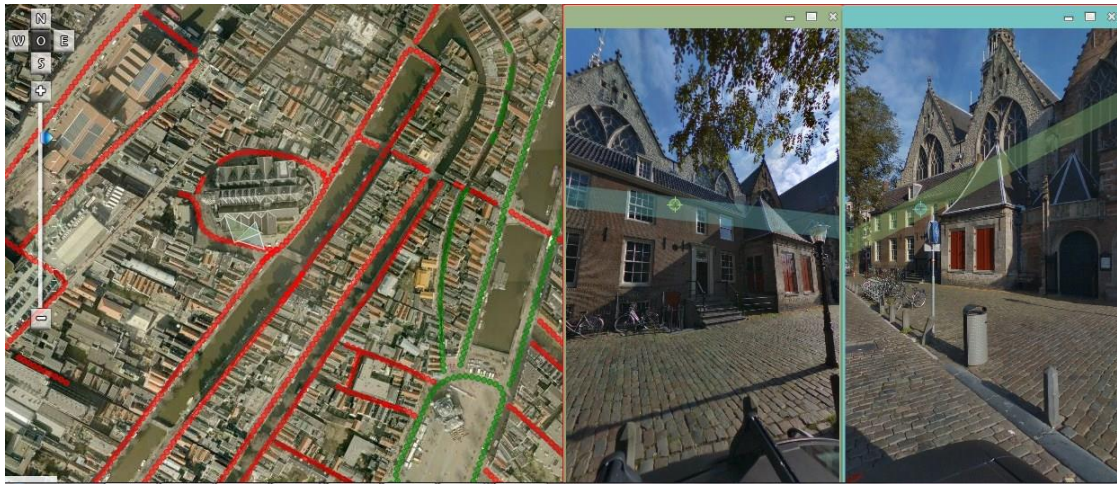


Figure 103: Point Measurement. Step 2

You can click on the selected points as many times as you need until you are happy with the location. When you are ready, click on the **Finish Measurement** button and the results will be displayed in a popup window. These are:

- X, Y, Z coordinates of the point in Spherical Mercator and Lat/Lon

11.3.3 Measuring Lines

As described above in measuring points, you will need to open at least two BlomSTREET™ windows in order to perform a measurement. We will demonstrate the process with an easy example. As you can see on the screenshot below, we are going to measure the height of a window in a building. Two BlomSTREET™ windows have been opened and rotated so that the line to measure can be seen in both windows simultaneously.

Click on the **Line Measurement** button to start the procedure. Now click on the location of the initial point of the line, and then again on the end point of that line. You will see that both spots will appear numbered on the BlomSTREET™ windows, and a line will appear on the other BlomSTREET™ window with the same colour of the frame of the first one. This line is a visual guide to locate where the first point of the line is located on the second image.

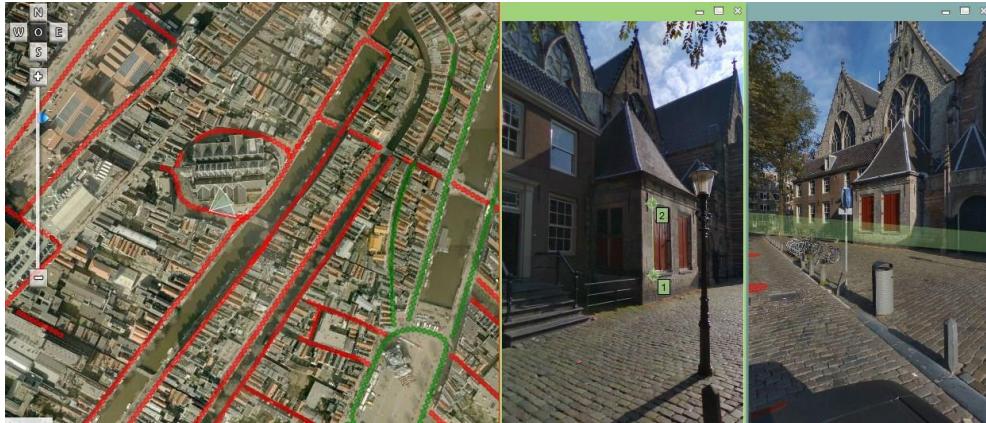


Figure 104: Line Measurement. Step 1

Click on the location of the first point of the line on the second BlomSTREET™ window. Note that the guideline now moves to the possible location of the second point.

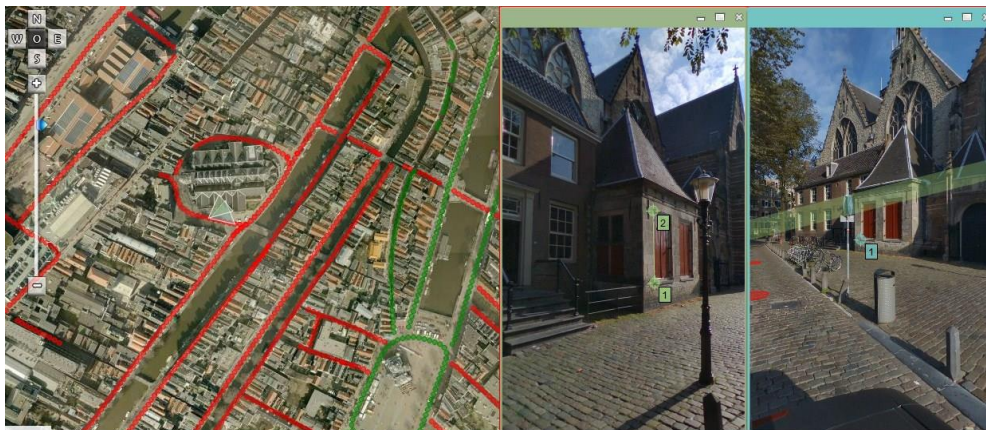


Figure 105: Line Measurement. Step 2

Now click on the location of the second point on the second BlomSTREET™ Window.



Figure 106: Line Measurement. Step 3.

You can now modify the position of the points by clicking on them, or press the **Finish Measurement** button to obtain the results. These are:

- X, Y, Z coordinates of the initial point of the line in Spherical Mercator
- X, Y, Z coordinates of the end point of the line in Spherical Mercator
- Length of the line in meters

11.3.4 Measuring Heights

Although the procedure describe in the previous section can be used to measure vertical lines, that action will only measure the straight distance between two selected points. It is possible to measure actual heights using the Measure Height tool. Once selected, a measurement pole will appear on screen.

To position the height measurement pole, you must first click on its approximate location on the map window. The measuring pole will appear then on the BlomSTREET™ window and you can drag it around with the mouse, by clicking and holding to position it to the ground plane. Note that actual height measurement must be performed within a Cyclorama. Position the pole correctly and confirm its location with additional nearby Cycloramas. Once the location is determined, click and drag the top or bottom red round indicators (the mouse will change to a hand icon to drag the indicators) to reflect the object you want to measure.

When you are ready, click on the Finish Measurement button and the results will be displayed in a popup window. They are:

- The height of the pole (m)

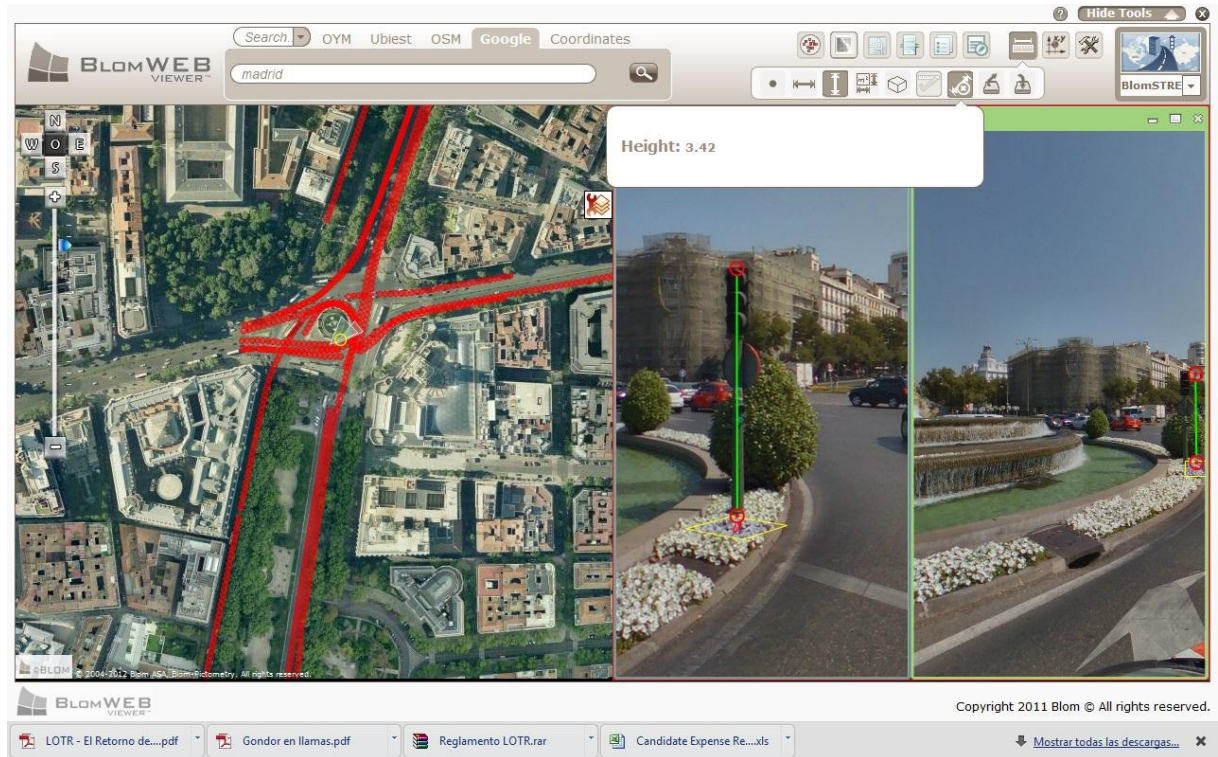


Figure 107: BlomSTREET™ Height Measurement

11.3.5 Planar measurements

Surface measurements can be performed in the same way as height measurements. Instead of one measurement pole you have two which are connected at the top and the bottom. By dragging each pole into position, you can adjust the width of the surface area you want to measure. To adjust the height range of the measurement, click and hold with the left mouse button on the top or bottom edge of the measurement square.

If preferred you can drag the entire tool by clicking and holding with the left mouse button on the grey dot.

Measurements shown are:

- total area in square meters
- height and width of the measurement box in meters.

11.3.6 Volume measurements

Volume measurements are not too dissimilar from surface measurements. It consists of two surface measurement tools connected to each other to form a cube. Adjusting the size of the cube works in the same way as the surface measurement tool. The individual poles can be positioned separately to encompass the object to be measured. The height range of the cube can be changed by dragging one of the top or bottom plane edges. Like the surface measurement tool, the grey dot

at the bottom of the tool can be clicked on to allow dragging of the entire tool without changing its shape.

Results provided are:

- Volume in cubic meters
- Area of the face looking to the camera, in square meters
- Height of the volume.

11.3.7 Export measurements

It is possible to draw several measuring objects on screen, digitizing elements using the BlomSTREET™ data as reference. The objects drawn on the BlomSTREET™ Window can be exported to SHP or XML files.

Click on the Export Measurements button, select the desired format (SHP or XML) and press Ok. A window will appear to let you select the name and location of the exported file.

11.3.8 Import measurements

It is possible to retrieve measuring objects from previously saved files and visualize them on the BlomSTREET™ Window. Supported files are:

- XML files
- ZIP files containing any number of SHP files and their companion files (PRJ, DBF, SHX...)

Click on the Upload file button to select the desired measurements file to upload.

11.3.9 Deleting measurements

Use the **Clear Measurements** button to delete all measurement and start a new measurement if required.




11.4 Map Tools for BlomSTREET™

The Map Tools icons in BlomWEB Viewer™ includes a different set of tools if you select a BlomSTREET™ window.



Figure 108: Map Tools for BlomSTREET™ data

These tools are:

Tool	Description
	Export link
	Save snapshot
	Print snapshot

11.4.1 Export link

If you have a BlomSTREET™ image displayed on your viewer, selecting this option will provide you a URL. You can copy and paste this URL on any browser to open another instance of BlomWEB Viewer™ centered in the selected image.

This is a useful way to share BlomSTREET™ location among members of your organization or send links to other BlomWEB Viewer™ users.

11.4.2 Save snapshot

The BlomSTREET™ viewport contents can be saved as JPG or PNG files.

Simply select the **Save snapshot** button and click on the opened BlomSTREET image you want to export. A dialog box will appear to let you select the desired format and JPG compression level.

You can also select to:

- Export the image in screen resolution or actual (1:1) resolution
- Include the measurement layer on the snapshot
- Include the location (dots) of near recordings in the snapshot

Click **Ok** to save the image.

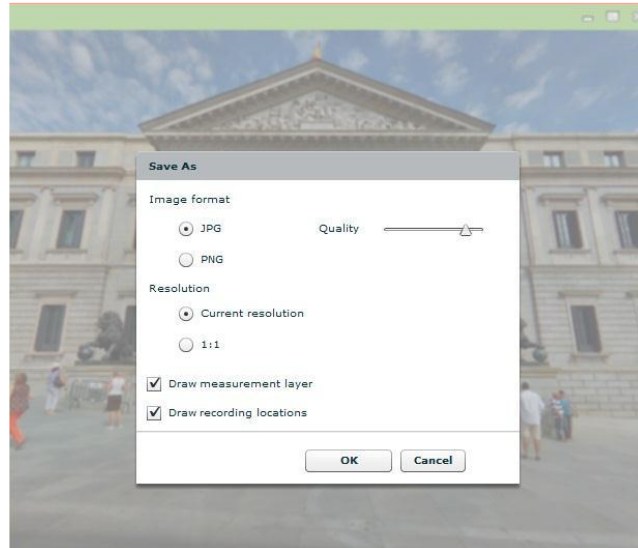


Figure 109: Exporting BlomSTREET™ imagery

11.4.3 Printing BlomSTREET™ data

You can print the contents of the BlomSTREET™ window in any printer connected to your network.

Simply select the **Print snapshot** button and click on the opened BlomSTREET image you want to print. You can select if you want to include the measurements layer and the recordings layer in the image. Then, the system printer dialog box will appear to let you select the desired printing options. Click **Ok** to print the image.

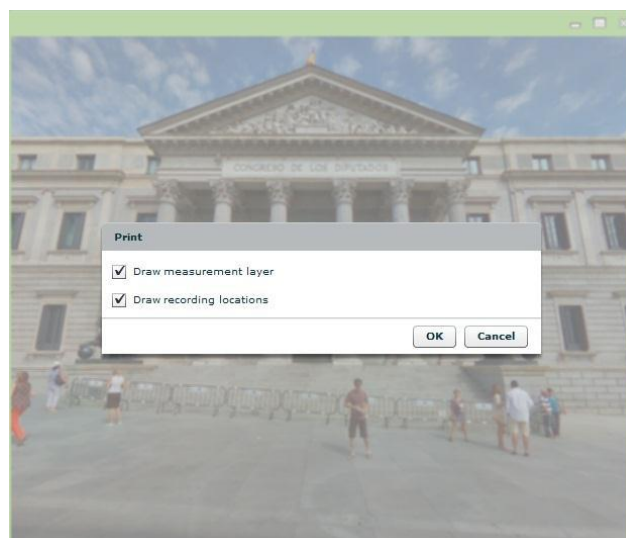


Figure 110: BlomSTREET™ print options

11.5 Reprojecting vector data on BlomSTREET™

BlomWEB Viewer™ can reproject vector datasets and show them over the spherical imagery. This is an immediate action as long as there is vector data overlayed on the main window. Full detail on vector loading on BlomWEB Viewer™ can be found on section 7.1. Note that you need to have the Cyclorama window selected in order to upload the vector file correctly.

Current version of the BlomSTREET™ only supports vector data in SHP and KML format. If you have datasets in other formats, they won't visualize in the BlomSTREET™ window.

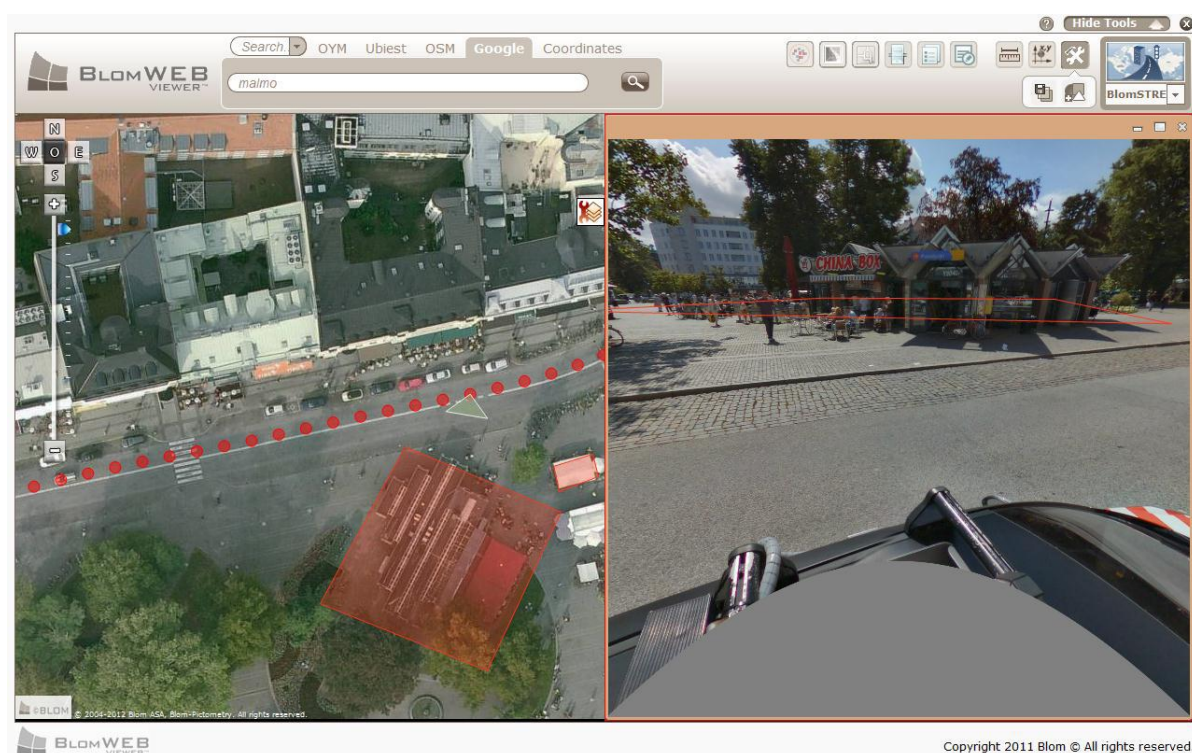


Figure 111: Vector data over BlomSTREET™ image

12 Custom Plug-ins

Version 3.0 of BlomWEB Viewer™ introduced a powerful new feature for developers: the **BlomWEB Plug-in Framework (BPF)**

The BPF tool is designed to allow developers to add extra functionality in the existing BlomWEB Viewer™ application without the need to change the code. This can be helpful when functionality is to be provided to restricted group users, or to create your own version of the tool customizing it with no need to alter the internal coding.

BlomWEB Viewer™ includes an API and triggers several events that custom plug-ins can register to in order to perform actions when these events occur.

One example is to add an extra button in the measurement menu and write a plug-in to define what function that button is going to perform and what events it should handle. This is done in one JavaScript file rather than making changes in the application code.

12.1 Creating a Plug-in

Creating a new plug-in for BlomWEB Viewer™ requires JavaScript coding and as such, is outside the scope of this user manual.

Contact your local Blom representative to obtain the **BlomWEB Plug-in Framework API** documentation and samples.

12.2 Uploading a Plug-in to BlomWEB Viewer™

Once you have a plug-in ready, you will need to upload it to BlomWEB Viewer™ in order to run it. You can do so by opening the **Additional Tools** menu and clicking on the Execute and **Upload Plug-ins** button.



Figure 112: Plug-in tool

This will open the window shown below.

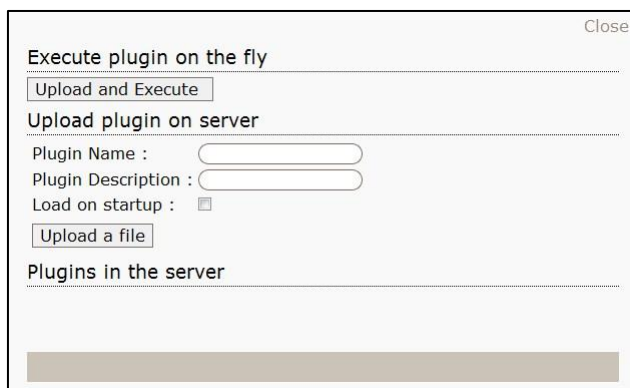


Figure 113: Plugin upload window

There are two possible options:

- a) You can execute the plugin on the fly. This is useful if you are debugging the code. Hit the **Upload and Execute** button to load the plugin and run it. The plugin will not be uploaded on the server and it will be executed locally.
- b) You can upload the plugin to the BlomWEB Viewer™ server. You will need to provide a name and description for the plugin, and you can also choose whether you want the plug-in to be loaded at start-up or not. When ready, click the **Upload a File** button.

All plug-ins are uploaded to your BlomWEB User Area (see chapter 8), and will appear on the plug-in window so you will be able to run or stop them as required.

13 Running BlomWEB Viewer™ from the command line

The URL to open BlomWEB Viewer™ can include parameters. This is new from version 3.1 and allows calling the application from a GIS tool or another kind of application and make it open centered in any desired position.

13.1 Valid parameters

- x = Spherical Mercator X coordinate of the desired center of the image
- y = Spherical Mercator Y coordinate of the desired center of the image
- lat = Latitude in decimal degrees of the desired center of the image
- lon = Longitude in decimal degrees of the desired center of the image
- view = desired view to open the application. Possible values are:
 - DUAL
 - PENTA
 - BLOMSTREET
 - 3D
 - LIDAR
 - SINGLE (default value)
- Orientation = orientation of the image. It only applies to SINGLE view. Possible values are:
 - N
 - S
 - E
 - W
 - O
- Zoom = zoom level (starting at 1)
- Layer = name of the oblique layer to load imagery from:
 - oblique
 - obliquehr
- Usertoken = usertoken of the user

13.2 Examples

In Spherical Mercator:

<http://www.blomwebviewer.com?x=255521.188&y=6250728.549&zoom=17&view=PENTA>

In Latitude, Longitude:

<http://www.blomwebviewer.com?lat=48.51&lon=2.17&zoom=19&view=SINGLE>

Obliquehr in Spherical Mercator:

<http://www.blomurbex.com?&x=1195713.76069&y=8380783.77255&zoom=22&view=SINGLE&layer=obliquehr&orientation=N>

Obliquehr in Spherical Mercator with usertoken:

<http://www.blomurbex.com?&x=1195713.76069&y=8380783.77255&zoom=22&view=SINGLE&layer=obliquehr&orientation=N&usertoken=XXXXXXXXXXXXXXXXXX>