

OCX 10 Reference

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1 Introduction

1.1 Structure

The Navigator 10 development kit comes in 5 Active X controls.

CoreOCX - controls which maps are open

MpvViewOCX - controls the mapview (zoom, coordinates displayed, rotation etc.)

MpvDataOCX - lets you add/remove user objects (tracks, icons, lines etc.) and highlights

DbcOCX - lets you search internal Navigator database (including postcodes if you have the correct license)

RtgOCX - lets you create routes

2 CoreOCX

This is the core ocx control; it must be present in every application.

This ocx control provides basic functionality for opening and closing maps. A map must be opened before using other controls' methods.

Each map has an ID (e.g. europe_ta) and language dependent NAME (e.g. Europe) - see mapGetNames method.

Map is composed from several sheets (britain_ta, france_ta,...) - see mapGetSheets method.

To open map with all sheets opened call mapOpenWhole("europe_ta", "ocx_set_1") or mapOpen("europe_ta", "", "ocx_set_1").

To open map with not all sheets opened call mapOpen("europe_ta", "britain_ta;spain_ta", "ocx_set_1").

To open or close sheets in already opened map use mapOpenSheets and mapCloseSheets methods.

Ocx controls (CoreOCX, MpvDataOCX, MpvViewOCX, DbcOCX, RtgOCX) are grouped to sets. Each set has a name (parameter 2 in mapOpenWhole or parameter 3 in mapOpen).

The sets (one CoreOCX control and any number of other controls) work on the same map opened by the CoreOCX control.

Typical usage:

```
CoreOCX.mapOpenWhole("europe_ta", "ocx_set_1");
```

```
MpvDataOCX.connect("ocx_set_1");
```

```
MpvViewOCX.connect("ocx_set_1");
```

Using more ocx controls in one application with different maps or sheets opened:

```
CoreOCX1.mapOpen("europe_ta", "britain_ta", "ocx_set_1")
```

```
MpvDataOCX1.connect("ocx_set_1")
```

```
MpvViewOCX1.connect("ocx_set_1")
```

```
CoreOCX2.mapOpen("europe_ta", "france_ta", "ocx_set_2")
```

```
MpvDataOCX2.connect("ocx_set_2")
```

```
MpvViewOCX2.connect("ocx_set_2")
```

This enables viewing Britain in one view and France in another one in the same application.

2.1 methods

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2.1.1 infoVersion

Get ocx controls version.

Syntax:

C++

HRESULT infoVersion([out,retval] BSTR* version);

Visual Basic

object.infoVersion version

Part	Type	Description
version	String	ocx controls version

Return values:

S_OK (0x00000000) - succeeded
 S_FALSE (0x00000001) - version not found
 E_INVALIDARG (0x80070057) - invalid argument
 E_FAIL (0x80004005) - unspecified error

2.1.2 mapGetNames

retrieve all map ids and names (semicolon-separated values)

Syntax:

C++

HRESULT mapGetNames([out] BSTR* mapIDs, [out] BSTR* mapNames);

Visual Basic

object.mapGetNames mapIDs, mapNames

Part	Type	Description
mapIDs available mapID's	String	output semicolon delimited string containing all available mapID's
mapNames available map names	String	output semicolon delimited string containing all available map names

Return values:

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_DATA_INVALID_MODEL_TYPE (0x80040701) - model type is invalid
 E_FAIL (0x80004005) - unspecified error

2.1.3 mapGetSheets

Retrieves list of sheets ids and names map is composed of (the ids and names are semicolon-separated)

Syntax:**C++**

HRESULT mapGetSheets([in] BSTR mapID, [out] BSTR* mapSheetsIDs, [out] BSTR* mapSheetsNames);

Visual Basic

object.mapGetSheets *mapID*, *mapSheetsIDs*, *mapSheetsNames*

Part	Type	Description
mapID sheets	String	the map ID for which you want to list all available sheets
mapSheetsIDs available sheet ids	String	output semicolon delimited string containing all available sheet ids
mapNames available sheet names	String	output semicolon delimited string containing all available sheet names

Return values:

S_OK (0x00000000) - succeeded
 E_INVALIDARG (0x80070057) - invalid argument
 E_COMMON_OCX_UNINITIALIZED (0x80040101) - ocx has not been initialized (possibly incorrect installation)
 E_MAP_INVALID_MAP_ID (0x80040202) - invalid map id
 E_FAIL (0x80004005) - unspecified error

2.1.4 mapOpen

Open map

mapSheetsIDsToOpen is a semicolon-separated list of sheets ids to be opened
 ocxSetName is the ocx set name

Syntax:**C++**

HRESULT mapOpen([in] BSTR mapID, [in] BSTR mapSheetsIDsToOpen, [in] BSTR ocxSetName);

Visual Basic

object.mapOpen mapID, mapSheetsIDsToOpen, ocxSetName

Part	Type	Description
mapID want to open	String	semicolon delimited string containing the mapID you
mapSheetsIDsToOpen you want to open	String	semicolon delimited string containing all Sheet Id's
ocxSetName disconnect DbsOCX, opened map	String	An string id that will be used to connect and MpvDataOCX, MpvViewOCX and RtgOCX to the

Return values:

S_OK (0x00000000) - succeeded
 E_INVALIDARG (0x80070057) - invalid argument
 E_COMMON_OCX_UNINITIALIZED (0x80040101) - ocx has not been initialized (possibly incorrect installation)
 E_COMMON_OCX_INVALID_INSTALLATION (0x80040103) - missing or improperly installed ocx component
 E_COMMON_OCX_INVALID_CONFIGURATION (0x80040102) - invalid configuration
 E_MAP_INVALID_MAP_ID (0x80040202) - invalid map id
 E_LICENSE_INVALID (0x80040301) - license key is invalid
 E_LICENSE_EXPIRED (0x80040302) - license has expired
 E_LICENSE_OCX_FAILED (0x80040303) - license key does not allow running ocx
 E_LICENSE_MAP_FAILED (0x80040304) - license key does not allow using specified map
 E_LICENSE_DATA_ON_NETWORK (0x80040305) - license key does not allow running data from network
 E_FAIL (0x80004005)

2.1.5 mapOpenWhole

open map (with all sheets)
 ocxSetName is the ocx set name

Syntax:**C++**

HRESULT mapOpenWhole([in] BSTR mapID, [in] BSTR ocxSetName);

Visual Basic

object.mapOpenWhole mapID, ocxSetName

Part	Type	Description
mapID	String	semicolon delimited string containing the mapID you

want to open

ocxSetName disconnect DbsOCX, opened map	String	An string id that will be used to connect and MpvDataOCX, MpvViewOCX and RtgOCX to the
--	--------	---

Return values:

S_OK (0x00000000)	- succeeded
E_INVALIDARG (0x80070057)	- invalid argument
E_COMMON_OCX_UNINITIALIZED (0x80040101)	- ocx has not been initialized (possibly incorrect installation)
E_COMMON_OCX_INVALID_INSTALLATION (0x80040103)	- missing or improperly installed ocx component
E_COMMON_OCX_INVALID_CONFIGURATION (0x80040102)	- invalid configuration
E_MAP_INVALID_MAP_ID (0x80040202)	- invalid map id
E_LICENSE_INVALID (0x80040301)	- license key is invalid
E_LICENSE_EXPIRED (0x80040302)	- license has expired
E_LICENSE_OCX_FAILED (0x80040303)	- license key does not allow running ocx
E_LICENSE_MAP_FAILED (0x80040304)	- license key does not allow using specified map
E_LICENSE_DATA_ON_NETWORK (0x80040305)	- license key does not allow running data from network
E_FAIL (0x80004005)	- unspecified error

2.1.6 mapOpenSheets

opens closed map sheets

mapSheetsIDsToOpen is semicolon-separated list of sheets ids to be opened

Syntax:

C++

HRESULT mapOpenSheets([in] BSTR mapSheetsIDsToOpen);

Visual Basic

object.mapOpenSheets *mapSheetsIDsToOpen*

Part	Type	Description
mapSheetsIDsToOpen you want to open	String	semicolon delimited string containing all Sheet Id's

Return values:

S_OK (0x00000000)	- succeeded
E_INVALIDARG (0x80070057)	- invalid argument
E_MAP_NOT_OPENED (0x80040203)	- there is no map opened (call mapOpen first)
E_FAIL (0x80004005)	- unspecified error

2.1.7 mapCloseSheets

closes opened map sheets
mapSheetsIDsToClose is semicolon-separated list of sheets ids to be closed

Syntax:**C++**

```
HRESULT mapCloseSheets([in] BSTR mapSheetsIDsToClose);
```

Visual Basic

```
object.mapCloseSheets mapSheetsIDsToClose
```

Part	Type	Description
mapSheetsIDsToClose	String	semicolon delimited string containing all Sheet Id's you want to close

Return values:

S_OK (0x00000000) - succeeded
E_INVALIDARG (0x80070057) - invalid argument
E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
E_FAIL (0x80004005) - unspecified error

2.1.8 mapClose

close currently opened map

Syntax:**C++**

```
HRESULT mapClose();
```

Visual Basic

```
object.mapClose
```

Return values:

S_OK (0x00000000) - succeeded
E_FAIL (0x80004005) - unspecified error

2.1.9 mapGetOpenedMap

retrieve currently opened map id

Syntax:**C++**

```
HRESULT mapGetOpenedMap([out,retval] BSTR* mapID);
```

Visual Basic

```
object.mapGetOpenedMap mapID
```

Part	Type	Description
mapID	String	output string containing the currently opened mapID

Return values:

S_OK (0x00000000) - succeeded
 E_INVALIDARG (0x80070057) - invalid argument (mapID is null)
 E_FAIL (0x80004005) - unspecified error

2.1.10 settingsUnitSystem

Change the unit system
 unitSystem - "metric" (km, m) or "gb" (british miles, ...)

Syntax:**C++**

```
HRESULT settingsUnitSystem([in] BSTR unitSystem);
```

Visual Basic

```
object.settingsUnitSystem unitSystem
```

Part	Type	Description
unitSystem	String	"metric" (km, m) or "gb" (british miles, ...)

Return values:

S_OK (0x00000000) - succeeded
 E_INVALIDARG (0x80070057) - invalid argument (unitSystem is invalid)
 E_FAIL (0x80004005) - unspecified error

3 MpvView**Methods**

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Appendix I - relative/absolute zoom concept

relative zoom is value from interval <0;100> - 0 means most detailed view, 100 is whole map. It depends on viewed map scale and map window size. It should be used for zoom setting by the Slider or similar control with fixed minimum/maximum values.

absolute zoom is positive value. It depends only on viewed map scale. It should be used for saving view parameters, because it does not depend on the map window size. After map window re-opening user can see always the same particulars.

3.1 methods

3.1.1 connect

connects a control to an opened map/sheet set

Syntax:

C++

```
HRESULT connect([in] BSTR ocxSetName);
```

Visual Basic

```
object.connect ocxSetName
```

Part	Type	Description
ocxSetName disconnect DbsOCX, opened map	String	An string id that will be used to connect and MpvDataOCX, MpvViewOCX and RtgOCX to the

Return values:

S_OK (0x00000000) - succeeded
 E_INVALIDARG (0x80070057) - invalid argument
 E_COMMON_OCX_INVALID_INSTALLATION (0x80040103) - missing or improperly installed ocx component
 E_COMMON_OCX_UNINITIALIZED (0x80040101) - ocx has not been initialized (possibly incorrect installation)
 E_FAIL (0x80004005) - unspecified error

3.1.2 disconnect

disconnects a control from an opened map/sheet set

Syntax:**C++**

HRESULT disconnect();

Visual Basic*object.disconnect***Return values:**

S_OK (0x00000000) - succeeded
 E_FAIL (0x80004005) - unspecified error

3.1.3 viewConvertCoord

Coordinates conversion

Syntax:**C++**

HRESULT viewConvertCoord([out] LONG* xConverted, [out] LONG* yConverted, [in] LONG xToConvert, [in] LONG yToConvert, [in] LONG conversionType);

Visual Basic*object.viewConvertCoord xConverted, yConverted, xToConvert, yToConvert, conversionType*

Parts	Type	Notes
<i>xConverted</i>	LONG	converted x coordinate (easting)
<i>yConverted</i>	LONG	converted y coordinate (northing)
<i>xToConvert</i>	LONG	original x coordinate (easting)
<i>yToConvert</i>	LONG	original y coordinate (northing)
<i>conversionType</i>	LONG	1 - WIN_TO_PLAN 2 - PLAN_TO_WIN 3 - GEO_TO_PLAN 4 - PLAN_TO_GEO 5 - GEO_TO_WIN 6 - WIN_TO_GEO

Remarks:

converts xToConvert, yToConvert to xConverted, yConverted between specified coordinate systems. WIN means window coordinates, GEO geographical coordinates, PLAN planar coordinates (e.g. national grid in GB)

Return values:

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_FAIL (0x80004005) - unspecified error

3.1.4 viewSetVisibleRectangle

moves map view to show given rectangle
 all coordinates are in milliseconds

Syntax:

C++

```
HRESULT viewSetVisibleRectangle([in] LONG minLongitude, [in] LONG minLatitude, [in] LONG
maxLongitude, [in] LONG maxLatitude);
```

Visual Basic

```
object.viewSetVisibleRectangle minLongitude, minLatitude, maxLongitude, maxLatitude
```

Part	Type	Description
minLongitude mapview	Long	A longitude value (in milliseconds) of the bottom of the
minLatitude mapview	Long	A latitude value (in milliseconds) of the left of the
maxLongitude mapview	Long	A longitude value (in milliseconds) of the top of the
maxLatitude mapview	Long	A latitude value (in milliseconds) of the right of the

Return values:

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_FAIL (0x80004005) - unspecified error

3.1.5 viewSetCenterPosition

moves map view to show given coordinates
 all coordinates are in milliseconds
 longitude, latitude - view center coordinates
 zoom - either relative or absolute zoom value (zoomIsRelative is true or false) - see appendix I

rotation - roattion of the view

Syntax:

C++

HRESULT viewSetCenterPosition([in] LONG longitude, [in] LONG latitude, [in] LONG zoom, [in] BOOL zoomIsRelative, [in] LONG rotation);

Visual Basic

object.viewSetCenterPosition longitude, latitude, zoom, zoomIsRelative, rotation

Part	Type	Description
longitude mapview	Long	A longitude value (in miliseconds) of the centre of the mapview
latitude mapview	Long	A latitude value (in miliseconds) of the centre of the mapview
zoom	Long	A value representing the zoom level of the mapview between 0 - 100 for relative zoom and 333 - 11560275 for absolute zoom (in europe_ta)
zoomIsRelative zoom	Boolean	TRUE for relative zoom, False for absolute zoom
rotation	Long	the rotation of the map (0 is north up, valueas are between 0 and 360)

Return values:

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_FAIL (0x80004005) - unspecified error

3.1.6 viewIsPointVisible

tests whether given coordinates are currently visible on the map
 all coordinates are in miliseconds

Syntax:

C++

HRESULT viewIsPointVisible([in] LONG longitude, [in] LONG latitude, [out,retval] BOOL* visible);

Visual Basic

object.viewIsPointVisible longitude, latitude, visible

Part	Type	Description
longitude	Long	A longitude value (in miliseconds) of the test position

latitude	Long	A latitude value (in milliseconds) of the test position
visible is not visible	Boolean	TRUE if position is visible, FALSE if position is not visible

Return values:

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_FAIL (0x80004005) - unspecified error

3.1.7 viewRedrawBlock

block redrawing of the view (e.g. when lots of models are being added)
 if you are adding lots of models at once this will speed things up considerably. Use `viewRedrawBlock()`, then add the models. After adding the models use `viewRedrawUnblock()`.

Syntax:**C++**

HRESULT viewRedrawBlock();

Visual Basic*object.viewRedrawBlock***Return values:**

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_FAIL (0x80004005) - unspecified error

3.1.8 viewRedrawUnblock

Unblock redrawing of the view.

If you are adding lots of models at once this will speed things up considerably. Use `viewRedrawBlock()`, then add the models. After adding the models use `viewRedrawUnblock()`.

Syntax:**C++**

HRESULT viewRedrawUnblock();

Visual Basic*object.viewRedrawUnblock***Return values:**

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_FAIL (0x80004005) - unspecified error

3.1.9 viewGetBitmap

retrieve bitmap from currently visible map rectangle
can be used to copy the bitmap to clipboard or for printing

Syntax:

C++

```
HRESULT viewGetBitmap([out] LONG* hBitmap);
```

Visual Basic

object.viewGetBitmap hBitmap,

Part	Type	Description
hBitmap map view	Long	returns handle to the bitmap of the current

Return values:

S_OK (0x00000000) - succeeded
E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
E_FAIL (0x80004005) - unspecified error

3.1.10 viewSaveBitmap

retrieve a bitmap from the currently visible map rectangle and save it to file in .BMP format

Syntax:

C++

```
HRESULT viewSaveBitmap([in] BSTR fileName);
```

Visual Basic

object.viewSaveBitmap fileName,

Part	Type	Description
fileName	String	the file name to which the screen dump will be saved

Return values:

S_OK (0x00000000) - succeeded
E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
E_FAIL (0x80004005) - unspecified error

3.1.11 viewSetCursorMode

set the cursor mode within the mapview
possible modeName values : "zoom", "grabber_hand"

Syntax:

C++

HRESULT viewSetCursorMode([in] BSTR modeName);

Visual Basic

object.viewSetCursorMode modeName

Part	Type	Description
modeName pointer	String	Set to "zoom" to enable zooming with the mouse and to "grabber_hand" to enable moving the map.

Return values:

S_OK (0x00000000) - succeeded
E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
E_VIEW_INVALID_CURSOR_MODE (0x80040901) - unknow cursor mode (modeName
parameter)
E_FAIL (0x80004005) - unspecified error

3.1.12 viewShowCompass

show/hide the compass on the map

Syntax:

C++

HRESULT viewShowCompass([in] LONG bShow);

Visual Basic

object.viewShowCompass bShow

Part	Type	Description
bShow	Long	Se to 0 to hide the compass and 1 to show it

Return values:

S_OK (0x00000000) - succeeded
E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
E_FAIL (0x80004005) - unspecified error

3.1.13 viewShowScrollBars

show/hide view surrounding controls

Syntax:

C++

```
HRESULT viewShowScrollBars([in] LONG bShow);
```

Visual Basic

```
object.viewShowCompass bShow
```

Part	Type	Description
bShow	Long	Se to 0 to hide the scrollbars and 1 to show it

Return values:

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_FAIL (0x80004005) - unspecified error

3.2 events

3.2.1 viewCenterChanged

view center coordinates has changed
 all coordinates are in miliseconds

Syntax:

C++

```
void viewCenterChanged(LONG longitude, LONG latitude);
```

Visual Basic

```
Private Sub object_viewCenterChanged(ByVal longitude As Long, ByVal latitude As Long)
```

Part	Type	Description
longitude position	Long	A longitude value (in miliseconds) of the new centre
latitude position	Long	A latitude value (in miliseconds) of the new centre

3.2.2 viewRotationChanged

view rotation has changed

Syntax:

C++

```
void viewRotationChanged(LONG rotation);
```

Visual Basic

```
Private Sub object_viewRotationChanged(ByVal rotation As Long)
```

Part	Type	Description
rotation	Long	the new rotation of the map (0 is north up, values are between 0 and 360)

3.2.3 viewZoomChanged

view zoom has changed

Syntax:

C++

```
void viewZoomChanged(LONG relativeZoom, LONG absoluteZoom, LONG minimalZoom, LONG maximalZoom);
```

Visual Basic

```
Private Sub object_viewZoomChanged(ByVal relativeZoom As Long, ByVal absoluteZoom As Long, ByVal minimalZoom As Long, ByVal maximalZoom As Long)
```

Part	Type	Description
relativeZoom	Long	The value representing the new zoom level of the mapview between 0 - 100
absoluteZoom	Long	A value representing the new absolute zoom level of the mapview
minimalZoom	Long	A value representing the minimum absolute zoom level of the mapview
maximalZoom	Long	A value representing the maximum absolute zoom level of the mapview

3.2.4 viewLeftClickedWnd

user left clicked on the view - window coordinates

Syntax:

C++

```
void viewLeftClickedWnd(LONG x, LONG y);
```

Visual Basic

```
Private Sub object_viewLeftClickedWnd(ByVal x As Long, ByVal y As Long)
```

Part	Type	Description
x	Long	pixel window x coordinate of the left click event
y	Long	pixel window y coordinate of the left click event

3.2.5 viewLeftClickedGeo

user left clicked on the view - geographical coordinates

Syntax:

C++

```
void viewLeftClickedGeo(LONG longitude, LONG latitude);
```

Visual Basic

```
Private Sub object_viewLeftClickedGeo(ByVal longitude As Long, ByVal latitude As Long)
```

Part	Type	Description
longitude event	Long	A longitude value (in miliseconds) of the left click event
latitude	Long	A latitude value (in miliseconds) of the left click event

3.2.6 viewLeftDoubleClickedWnd

user left doubleclicked on the view - window coordinates

Syntax:

C++

```
void viewLeftDoubleClickedWnd(LONG x, LONG y);
```

Visual Basic

Private Sub *object_viewLeftDoubleClickedWnd*(ByVal x As Long, ByVal y As Long)

Part	Type	Description
x event	Long	pixel window x coordinate of the double left click
y event	Long	pixel window y coordinate of the double left click

3.2.7 viewLeftDoubleClickedGeo

user left clicked on the view - geographical coordinates

Syntax:

C++

void viewLeftDoubleClickedGeo(LONG longitude, LONG latitude);

Visual Basic

Private Sub *object_viewLeftDoubleClickedGeo*(ByVal longitude As Long, ByVal latitude As Long)

Part	Type	Description
longitude click event	Long	A longitude value (in milliseconds) of the left double click event
latitude click event	Long	A latitude value (in milliseconds) of the left double click event

3.2.8 viewRightClickedWnd

user right clicked on the view - window coordinates

Syntax:

C++

void viewRightClickedWnd(LONG x, LONG y);

Visual Basic

Private Sub *object_viewRightClickedWnd*(ByVal x As Long, ByVal y As Long)

Part	Type	Description
------	------	-------------

x	Long	pixel window x coordinate of the right click event
---	------	--

y	Long	pixel window y coordinate of the right click event
---	------	--

3.2.9 viewRightClickedGeo

user right clicked on the view - geographical coordinates

Syntax:

C++

```
void viewRightClickedGeo(LONG longitude, LONG latitude);
```

Visual Basic

```
Private Sub object_viewRightClickedGeo(ByVal longitude As Long, ByVal latitude As Long)
```

Part	Type	Description
longitude event	Long	A longitude value (in milliseconds) of the right click event
latitude	Long	A latitude value (in milliseconds) of the rightclick event

3.2.10 viewRightDoubleClickedWnd

user right doubleclicked on the view - window coordinates

Syntax:

C++

```
void viewRightDoubleClickedWnd(LONG x, LONG y);
```

Visual Basic

```
Private Sub object_viewRightDoubleClickedWnd(ByVal x As Long, ByVal y As Long)
```

Part	Type	Description
x event	Long	pixel window x coordinate of the double right click event
y event	Long	pixel window y coordinate of the double right click event

3.2.11 viewRightDoubleClickedGeo

user right clicked on the view - geographical coordinates

Syntax:

C++

```
void viewRightDoubleClickedGeo(LONG longitude, LONG latitude);
```

Visual Basic

```
Private Sub object_viewRightDoubleClickedGeo(ByVal longitude As Long, ByVal latitude As Long)
```

Part	Type	Description
longitude click event	Long	A longitude value (in milliseconds) of the right double click event
latitude click event	Long	A latitude value (in milliseconds) of the right double click event

3.2.12 viewLeftClickedObject

user left clicked on a user object

Syntax:

C++

```
void viewLeftClickedObject(BSTR modelName, LONG objectCode);
```

Visual Basic

```
Private Sub object_viewLeftClickedObject(ByVal modelID As Long, ByVal objectCode As Long)
```

Part	Type	Description
modelID event	Long	A longitude value (in milliseconds) of the left click event
objectCode	Long	A unique code for the object

3.2.13 viewRightClickedObject

user right clicked on a user object

Syntax:**C++**

```
void viewRightClickedObject(BSTR modelName, LONG objectCode);
```

Visual Basic

```
Private Sub object_viewRightClickedObject(ByVal modelID As Long, ByVal objectCode As Long)
```

Part	Type	Description
modelID click event	Long	A longitude value (in milliseconds) of the left click event
objectCode	Long	A unique code for the object

3.2.14 viewLeftClickedSprite

user left clicked on a sprite

Syntax:**C++**

```
void viewLeftClickedSprite(LONG spriteEntityCode);
```

Visual Basic

```
Private Sub object_viewLeftClickedSprite(ByVal spriteEntityCode As Long)
```

Part	Type	Description
spriteEntityCode	Long	A unique srite identifier

3.2.15 viewRepainted

the view has been repainted
(HDC)hPaintDC is map view paint device context handle
the paint DC handle must not be stored for future use

Syntax:**C++**

```
void viewRepainted(LONG hPaintDC);
```

Visual Basic

```
Private Sub object_viewRepainted(ByVal hPaintDC As Long)
```

Part	Type	Description
hPaintDC	Long	map view paint device context handle

4 MpvDataOCX

Methods

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=====
Appendix I - Model Parameter Identifiers:
=====

This is the list of configurable model parameters (features) for use in mapSetModelParam and mapGetModelParam methods.

--Common (all entity types)

```

"model_type"   = "text" | "line" | "area" | "pict"
"enabled"      = "yes" | "no"
"zoom_min"     = <integer(multiplied by ZOOM_DETAIL)> | "minimum"
"zoom_max"     = <integer(multiplied by ZOOM_DETAIL)> | "maximum"

```

--Area entity type

```
"fill_style"    = "null" | "solid" | "horizontal" | "vertical" | "fdiagonal" | "bdiagonal" | "cross" | "diagcross" |
"50percent" | "25percent"
"fill_color"    = "rrggbb"
"frame_color"   = "rrggbb"
"frame_width"   = <integer(in pixels)>
"frame_zoom"    = <integer(multiplied by ZOOM_DETAIL)>
"close_bracket" = "flush" | "merge"
```

--Line entity type

```
"fill_style"    = "null" | "solid" | "horizontal" | "vertical" | "fdiagonal" | "bdiagonal" | "cross" | "diagcross" |
"50percent" | "25percent"
"fill_color"    = "rrggbb"
"frame_color"   = "rrggbb"
"frame_width"   = <integer(in pixels)>
"frame_zoom"    = <integer(multiplied by ZOOM_DETAIL)>
"line_width_min" = <integer(in pixels)>
"line_width"    = <integer(in pixels)>
"size_shrinking" = <integer(in percent)>
"close_bracket" = "flush" | "merge"
"join_type"     = "round" | "bevel" | "miter"
"end_type"      = "round" | "square" | "trapezium" | "flat"
```

--Pict entity type

```
"filename"      = <path(to ICO file)>
```

--Text entity type

```
"text_color"    = "rrggbb"           // font color
"enclosing"     = "yes" | "no"       // bounding rectangle around the text
"fill_color"    = "rrggbb"           // fill color of the bounding rectangle
"frame_color"   = "rrggbb"           // frame color of the bounding rectangle
"horizontal_align" = "left" | "center" | "right" // text horizontal alignment
"vertical_align" = "top" | "middle" | "bottom" // text vertical alignment
"underline"     = "yes" | "no"       // text underlined
"strikeout"     = "yes" | "no"       // text striked out
"font_ratio"    = <integer(letter width/height multiplied by 64)> // (width/height) * 64
"size_shrinking" = <integer(in percent)> // text size shrinking depending on current view zoom
"font_size"     = <integer(in pixels)> // font size
"filename"     = <path(to TTF file)> // font file name
```

```
=====
Appendix II - Entity data formats
=====
```

latitude (lat) or longitude(lon) is in miliseconds
diferrential latitude (lat) or longitude(lon) is in miliseconds - it determines text angle

```
MTYPE_PICT ... "lon,lat"
MTYPE_LINE ... "lon1,lat1;lon2,lat2;lon3,lat3..."
MTYPE_AREA ... "lon1,lat1;lon2,lat2;lon3,lat3..."
MTYPE_TEXT ... "lon,lat;TEXT;lon2,lat2"
```

(Text is placed along a line from lon,lat to lon2,lat2)

=====
Appendix III - Sprite parameters
=====

spriteSetEntityParam method parameters

"IconFile" ... full path to icon file name

"IconIndex" ... index of icon in the icon file (only when there are more icons in one .ico file)

=====
Appendix IV - Track parameters
=====

trackSetParam method parameters

"PositionBuffer" "INFINITE" | number of stored positions (length of trail); 0 means no trail

"IconFile" head icon's ICO file (full path to .ico)

"TrailPosFile" trail position's ICO file (full path to .ico)

"TrailDotFile" trail inter-position dot's ICO file (full path to .ico)

"IconIndex" index of picture in ICO file (for multiple icons .ico file)

"IconColor" "NOCOLOR" | rrggbb color of icon

"TrailPosColor" "NOCOLOR" | rrggbb color of trail position

"TrailDotColor" "NOCOLOR" | rrggbb color of trail inter-position dots

"LabelDifferenceX" label corner horizontal difference from center of icon (in pixels)

"LabelDifferenceY" label corner vertical difference from center of icon (in pixels)

"TrailDifference" maximal length between two inter-position trail dots (in pixels)

=====
Sample code (Visual Basic 6)
=====

```
'open a map
coreOCX.mapOpen("europe_ta", "ocx_set_1")
mpvOCX.connect("ocx_set_1")

'add user icon
mpvOCX.modelCreate 13, "PICT"
mpvOCX.modelSetParam 13, "filename", "c:\something.ico"
mpvOCX.modelAddEntity 13, ListID, "0,187200000" 'longitude,latitude
```

=====
Sample code (Visual C++ .NET)
=====

```
ICoreWrapper is ICore generated wrapper class
ICoreWrapper m_ocxCore;
IMpvDataWrapper is IMpvData generated wrapper class
IMpvDataWrapper m_ocxMpvData;
```

create and load com objects

```
m_ocxCore.CreateDispatch("CoreOCX.Core.1");
m_ocxMpvData.CreateDispatch("MpvDataOCX.Dbs.1");
```

open a map

```
m_ocxCore.mapOpen("europe_ta", "ocx_set_1");
m_ocxMpvData.connect("ocx_set_1");
```

add user icon

```
m_ocxMpvData.modelCreate(13, "PICT"); call m_ocxMpvData.modelDestroy on exit
m_ocxMpvData.modelSetParam(13, "filename", "c:\\something.ico");
m_ocxMpvData.modelAddEntity(13, 42, "0,187200000"); longitude,latitude
```

```
add sprite
m_ocxMpvData.spriteAddEntity(42);
m_ocxMpvData.spriteSetEntityParam(42, "IconFile", "c:\\something.ico");
```

```
move sprite
m_ocxMpvData.spriteMoveEntity(42, aLongitude, aLatitude);
```

```
remove the sprite
m_ocxMpvData.spriteRemoveEntity(42);
```

```
add track
m_ocxMpvData.trackCreate(42);
m_ocxMpvData.trackSetParam(42, "IconFile", "c:\\something.ico");
m_ocxMpvData.trackSetParam(42, "LabelDifferenceX", "16");
m_ocxMpvData.trackSetParam(42, "LabelDifferenceY", "16");
m_ocxMpvData.trackSetParam(42, "PositionBuffer", "100"); trail contains 100 positions
```

```
add track position
m_ocxMpvData.trackNewPosition(42, aLongitude, aLatitude, "bubble text");
```

```
destroy the track
m_ocxMpvData.trackDestroy(42);
```

```
add fence
m_ocxMpvData.fenceAdd(42, aFenceLongitude, aFenceLatitude, aFenceRadius);
m_ocxMpvData.fenceSetParam(42, "fill_color", "0000F0");
m_ocxMpvData.fenceSetParam(42, "frame_color", "0000FF");
```

```
remove fence
m_ocxMpvData.fenceRemove(42);
```

4.1 methods

4.1.1 connect

connects a control to an opened map/sheet set

Syntax:

C++

```
HRESULT connect([in] BSTR ocxSetName);
```

Visual Basic

```
object.connect ocxSetName
```

Part	Type	Description
ocxSetName disconnect DbsOCX, opened map	String	An string id that will be used to connect and MpvDataOCX, MpvViewOCX and RtgOCX to the

Return values:

S_OK (0x00000000)	- succeeded
E_INVALIDARG (0x80070057)	- invalid argument
E_COMMON_OCX_INVALID_INSTALLATION (0x80040103)	- missing or improperly installed ocx component
E_COMMON_OCX_UNINITIALIZED (0x80040101)	- ocx has not been initialized (possibly incorrect installation)
E_FAIL (0x80004005)	- unspecified error

4.1.2 disconnect

disconnects a control from an opened map/sheet set

Syntax:

C++

```
HRESULT disconnect();
```

Visual Basic

```
object.disconnect
```

Return values:

S_OK (0x00000000)	- succeeded
E_FAIL (0x80004005)	- unspecified error

4.1.3 mapMinMaxCoordinates

retrieves bounding rectangle of opened map
all coordinates are in milliseconds

Syntax:**C++**

```
HRESULT mapMinMaxCoordinates([out] LONG* minLongitude, [out] LONG* minLatitude, [out] LONG*
maxLongitude, [out] LONG* maxLatitude);
```

Visual Basic

```
object.mapMinMaxCoordinates minLongitude, minLatitude, maxLongitude, maxLatitude
```

Part	Type	Description
minLongitude extent of the map	Long	A longitude value (in milliseconds) of the bottom
minLatitude the map	Long	A latitude value (in milliseconds) of the left extent of
maxLongitude the map	Long	A longitude value (in milliseconds) of the top extent of
maxLatitude the map	Long	A latitude value (in milliseconds) of the right extent of

Return values:

```
S_OK (0x00000000) - succeeded
E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
E_FAIL (0x80004005) - unspecified error
```

4.1.4 mapHighlightObject

highlights map object, all views (ocxMpvView) are affected
if one of redValue, greenValue, blueValue is invalid (<0 or >255), default color is used

Syntax:**C++**

```
HRESULT mapHighlightObject([in] BSTR objectID, [in] LONG redValue, [in] LONG greenValue, [in]
LONG blueValue, [in] BSTR action, [out,retval] BSTR* highlightID);
```

Visual Basic

```
object.mapHighlightObject objectID, redValue, greenValue, blueValue, action, highlightID
```

Part	Type	Description
objectID other ocx objects return this id	String	object universal identification - several methods from
redValue	Long	red color value in RGB color space - should be 0-255

greenValue 255	Long	green color value in RGB color space - should be 0-
blueValue 255	Long	blue color value in RGB color space - should be 0-
action "repaint"/"showwhole"/"center"/"default"	String	repaint map type - possible values : - "repaint" - repaints map, does not zoom - "showwhole" - zooms map so that whole object is visible
visible the map "repaint"/"showwhole"/"center")		- "center" - moves map so that object is centered on the map - "default" - default behaviour (one of "repaint"/"showwhole"/"center")
highlightID remove highlight later	String	unique highlight identification; store this value to remove highlight later

Return values:

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_HIGHLIGHT_INVALID_OUID (0x80040401) - object id is invalid
 E_FAIL (0x80004005) - unspecified error

4.1.5 mapHighlightManyAddObject

adds object to a "highlight queue" - call mapHighlightManyAddObject as many times you need, then mapHighlightManyFinish to highlight all objects in the queue at once.

Syntax:**C++**

```
HRESULT mapHighlightManyAddObject([in] BSTR objectID);
```

Visual Basic

```
object.mapHighlightManyAddObject objectID
```

Part	Type	Description
objectID methods from other ocx objects return this id	String	object universal identification - several

Return values:

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_HIGHLIGHT_INVALID_OUID (0x80040401) - object id is invalid
 E_FAIL (0x80004005) - unspecified error

4.1.6 mapHighlightManyFinish

Call mapHighlightManyAddObject as many times you need, then mapHighlightManyFinish to highlight all objects in the queue at once.

If one of redValue, greenValue, blueValue is invalid (<0 or >255), default color is used

Syntax:

C++

```
HRESULT mapHighlightManyFinish([in] LONG redValue, [in] LONG greenValue, [in] LONG blueValue,
[in] BSTR action, [out,retval] BSTR* highlightID);
```

Visual Basic

```
object.mapHighlightManyFinish redValue, greenValue, blueValue, action, highlightID
```

Part	Type	Description
redValue	Long	red color value in RGB color space - should be 0-255
greenValue	Long	green color value in RGB color space - should be 0-255
blueValue	Long	blue color value in RGB color space - should be 0-255
action	String	repaint map type - possible values :
"repaint"/"showwhole"/"center"/"default"		- "repaint" - repaints map, does not zoom - "showwhole" - zooms map so that whole object is visible
the map		- "center" - moves map so that object is centered on the map
"repaint"/"showwhole"/"center")		- "default" - default behaviour (one of "repaint"/"showwhole"/"center")
highlightID	String	unique highlight identification; store this value to remove highlight later

Return values:

```
S_OK (0x00000000) - succeeded
E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
E_HIGHLIGHT_INVALID_OUID (0x80040401) - object id is invalid
E_FAIL (0x80004005) - unspecified error
```

4.1.7 mapClearHighlight

clears map object, all views (ocxMpvView) are affected

Syntax:**C++**

```
HRESULT mapClearHighlight([in] BSTR highlightID);
```

Visual Basic

```
object.mapClearHighlight highlightID
```

Part	Type	Description
highlightID mapHighlightObject	String	highlight unique identification, see

Return values:

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_HIGHLIGHT_INVALID_HID (0x80040402) - highlight id is invalid
 E_FAIL (0x80004005) - unspecified error

4.1.8 modelCreate

creates map model

Syntax:**C++**

```
HRESULT modelCreate([in] LONG modelID, [in] BSTR modelType);
```

Visual Basic

```
object.modelCreate modelID, modelType
```

Part	Type	Description
modelID	Long	user object ID
modelType values TEXT, LINE, AREA, PICT	String	set the type of object you want to create - possible

Return values:

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_DATA_INVALID_MODEL_TYPE (0x80040701) - model type is invalid
 E_FAIL (0x80004005) - unspecified error

4.1.9 modelDestroy

Destroys a user model - every created model should be destroyed when not needed any more

Syntax:**C++**

HRESULT modelDestroy([in] LONG modelID);

Visual Basic*object.modelDestroy modelID*

Part	Type	Description
modelID	Long	user object ID

Return values:

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_FAIL (0x80004005) - unspecified error

4.1.10 modelExists

Checks whether a model named modelName exists

Syntax:**C++**

HRESULT modelExists([in] LONG modelID, [out,retval] BOOL* isModel);

Visual Basic*object.modelExists modelID, isModel*

Part	Type	Description
modelID	Long	user object ID
isModel otherwise	Boolean	TRUE if the model already exist, FALSE

Return values:

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_INVALIDARG (0x80070057) - invalid argument (isModel is null)
 E_FAIL (0x80004005) - unspecified error

4.1.11 modelSetParam

Sets model parameters

Syntax:

C++

HRESULT modelSetParam([in] LONG modelID, [in] BSTR variable, [in] BSTR value);

Visual Basic

object.modelSetParam modelID, variable, value

Part	Type	Description
modelID	Long	user object ID
variable	String	name of the parameter
value	String	the value you want to set the parameter to

Return values:

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_DATA_INVALID_MODEL_TYPE (0x80040701) - model type is invalid
 E_FAIL (0x80004005) - unspecified error

4.1.12 modelGetParam

Retrieves model parameters

Syntax:**C++**

HRESULT modelGetParam([in] LONG modelID, [in] BSTR variable, [out,retval] BSTR* value);

Visual Basic

object.modelGetParam modelID, variable, value

Part	Type	Description
modelID	Long	user object ID
variable	String	name of the parameter
value	String	the value that the parameter is set to

Return values:

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_INVALIDARG (0x80070057) - invalid argument (value is null)

E_DATA_MODEL_DOES_NOT_EXIST (0x80040702) - model modelName does not exist
 E_FAIL (0x80004005) - unspecified error

4.1.13 modelAddEntity

Creates new entity (representation of an existing model - entityCode has to be in range <1-0x0FFFFFFF>)

Syntax:

C++

HRESULT modelAddEntity([in] LONG modelID, [in] LONG entityCode, [in] BSTR data);

Visual Basic

object.modelAddEntity modelID, entityCode, data

Part	Type	Description
modelID	Long	user object ID
entityCode	String	code of new entity - unique over the set of entities of one model
<u>data</u>	String	data (coordinates, angles, etc.) of the entity

Return values:

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_FAIL (0x80004005) - unspecified error

NOTE:

When adding multiple entities, use viewRedrawBlock/viewRedrawUnblock methods for each ocxView object - this will significantly speed up the add process see Appendix II for details

4.1.14 modelRemoveEntity

Removes an existing entity

Syntax:

C++

HRESULT modelRemoveEntity([in] LONG modelID, [in] LONG entityCode);

Visual Basic

object.modelRemoveEntity modelID, entityCode

Part	Type	Description
------	------	-------------

modelID	Long	user object ID
entityCode map	String	code of the entity that you want to remove from the map

Return values:

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_FAIL (0x80004005) - unspecified error

4.1.15 spriteAddEntity

Creates new sprite with unique code entityCode (entityCode has to be in range <1-0x0FFFFFFF>)

Syntax:**C++**

```
HRESULT spriteAddEntity([in] LONG entityCode);
```

Visual Basic

```
object.spriteAddEntity entityCode
```

Part	Type	Description
entityCode one model	String	code of new entity - unique over the set of entities of one model

Return values:

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_FAIL (0x80004005) - unspecified error

NOTE:

When adding multiple entities, use viewRedrawBlock/viewRedrawUnblock methods for each ocxView object - this will significantly speed up the add process see Appendix II for details

4.1.16 spriteRemoveEntity

Removes a sprite

Syntax:**C++**

```
HRESULT spriteRemoveEntity([in] LONG entityCode);
```

Visual Basic

```
object.spriteRemoveEntity entityCode
```

Part	Type	Description
entityCode map	String	code of the entity that you want to remove from the map

Return values:

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_FAIL (0x80004005) - unspecified error

4.1.17 spriteMoveEntity

Moves sprite icon to given coordinates, all coordinates are in miliseconds.

Syntax:**C++**

```
HRESULT spriteMoveEntity([in] LONG entityCode, [in] LONG longitude, [in] LONG latitude);
```

Visual Basic

```
object.spriteMoveEntity entityCode, longitude, latitude
```

Part	Type	Description
entityCode one model	String	code of the entity - unique over the set of entities of one model
longitude	Long	the new longitude of the sprite
latitude	Long	the new latitude of the sprite

Return values:

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_FAIL (0x80004005) - unspecified error

4.1.18 spriteSetEntityParam

Sets sprite parameters - see Appendix III for details

Syntax:

C++

HRESULT spriteSetEntityParam([in] BSTR spriteName, [in] LONG entityCode, [in] BSTR variable, [in] BSTR value);

Visual Basic

object.spriteSetEntityParam spriteName, entityCode, variable, value

Part	Type	Description
entityCode	Long	user object ID
variable	String	name of the parameter
value	String	the value you want to set the parameter to

Return values:

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_DATA_INVALID_MODEL_TYPE (0x80040701) - model type is invalid
 E_FAIL (0x80004005) - unspecified error

4.1.19 trackCreate

Creates new named track (trackCode has to be in range <1-0x0FFFFFFF>)

Syntax:**C++**

HRESULT trackCreate([in] LONG trackCode);

Visual Basic

object.trackCreate trackCode

Part	Type	Description
trackCode	Long	code identifying the track you want to create

Return values:

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_LICENSE_MAX_TRACKS_COUNT_EXCEEDED (0x80040307) - maximum tracks count allowed by license has been exceeded
 E_FAIL (0x80004005) - unspecified error

4.1.20 trackDestroy

Destroys named track

Syntax:

C++

HRESULT trackDestroy([in] LONG trackCode);

Visual Basic

object.trackDestroy trackCode

Part	Type	Description
trackCode	Long	code identifying the track you want to remove

Return values:

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_FAIL (0x80004005) - unspecified error

4.1.21 trackSetParam

Sets track parameter (see appendix IV)

Syntax:

C++

HRESULT trackSetParam([in] LONG trackCode, [in] BSTR variable, [in] BSTR value);

Visual Basic

object.trackSetParam trackCode, variable, value

Part	Type	Description
trackCode	Long	user object ID
variable	String	name of the parameter
value	String	the value you want to set the parameter to

Return values:

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_FAIL (0x80004005) - unspecified error

4.1.22 trackNewPosition

Adds new track position

Syntax:

C++

```
HRESULT trackNewPosition([in] LONG trackCode, [in] LONG longitude, [in] LONG latitude, [in] BSTR label);
```

Visual Basic

object.trackNewPosition trackCode, longitude, latitude, label

Part	Type	Description
trackCode one model	String	code of the entity - unique over the set of entities of one model
longitude	Long	the longitude of the new track position
latitude	Long	the latitude of the new track position

Return values:

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_FAIL (0x80004005) - unspecified error

4.1.23 trackNewPositions

Adds new track positions (format lon1,lat1;lon2,lat2;...;lonn,latn)

Syntax:

C++

```
HRESULT trackNewPositions([in] LONG trackCode, [in] BSTR coordinates, [in] BSTR label);
```

Visual Basic

object.trackNewPosition trackCode, coordinates, label

Part	Type	Description
trackCode one model	String	code of the entity - unique over the set of entities of one model
coordinates	Long	track positions (format lon1,lat1;lon2,lat2;...;lonn,latn)

Return values:

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_FAIL (0x80004005) - unspecified error

4.1.24 fenceAdd

Adds new fence - a fence is a circle-like area defined by a radius distance from the given point. fenceCode has to be in range <1-0xFFFFFFFF>. All coordinates are in milliseconds.

Syntax:**C++**

HRESULT fenceAdd([in] LONG fenceCode, [in] LONG longitude, [in] LONG latitude, [in] LONG radius);

Visual Basic

object.trackCreate fenceCode, longitude, latitude, radius

Part	Type	Description
fenceCode one model	String	code of the entity - unique over the set of entities of one model
longitude	Long	the longitude of the centre of the fence
latitude	Long	the latitude of the centre of the fence
radius	Long	the radius of the fence

Return values:

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_FAIL (0x80004005) - unspecified error

4.1.25 fenceRemove

Removes a fence

Syntax:**C++**

HRESULT fenceRemove([in] LONG fenceCode);

Visual Basic

object.fenceRemove fenceCode

Part	Type	Description
fenceCode	Long	code identifying the fence you want to remove

Return values:

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_FAIL (0x80004005) - unspecified error

4.1.26 fenceSetParam

Sets fence parameter - see Appendix I (common and area parameters) for description of parameters and values.

Syntax:**C++**

```
HRESULT fenceSetParam([in] LONG fenceCode, [in] BSTR variable, [in] BSTR value);
```

Visual Basic

```
object.fenceSetParam fenceCode, variable, value
```

Part	Type	Description
fenceCode	Long	user object ID
variable	String	name of the parameter
value	String	the value you want to set the parameter to

Return values:

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_FAIL (0x80004005) - unspecified error

4.1.27 fenceGetParam

Retrieves fence parameters. See Appendix I (common and area parameters) for description of parameters and values.

Syntax:**C++**

```
HRESULT fenceGetParam([in] LONG fenceCode, [in] BSTR variable, [out,retval] BSTR* value);
```

Visual Basic

object.fenceGetParam fenceCode, variable, value

Part	Type	Description
fenceCode	Long	user object ID
variable	String	name of the parameter
value	String	the value that the parameter is set to

Return values:

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_FAIL (0x80004005) - unspecified error

5 DbsOCX

Methods

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```
=====
Sample code (Visual Basic 6)
=====
```

```
'open a map
coreOCX.mapOpen("europe_ta", "ocx_set_1")
dbsOCX.connect("ocx_set_1")
```

```
'add categories list to a combobox
Dim categoriesString As String
Dim categoriesList() As String
```

```
categoriesString = dbsOCX.categoriesList
categoriesList() = Split(categoriesString, ";")
For Each category In categoriesList()
    Combo3.AddItem category
Next

'let the user to select a category
...

'get input columns for selected category
Dim inputColumnsString As String
Dim inputColumnsList() As String
Combo4.Clear
inputColumnsString = dbsOCX.categoryInputColumnsList(Combo3.Text)
inputColumnsList() = Split(inputColumnsString, ";")
For Each Column In inputColumnsList()
    Combo4.AddItem Column
Next

'initialize the search
Dim searchID
searchID = dbsOCX.searchInit(Combo3.Text)

'set search restrictions
dbsOCX.searchSetInputColumnValue searchID, <an input column id>, <text to search>

'fetch all results
Dim data As String
Dim dataID As String
dbsOCX.searchFetch searchID, data, dataID
'data contains semicolon delimited list of output column values
'dataID contains UUID (universal object id) - string for communication with other mpfc com objects
While data > ""
    dbsOCX.searchFetch searchID, data, dataID
Wend

'end of search
dbsOCX.searchFree searchID

'highlight one of found records on the map (ocxMpvDataInterface is OcxMpvData.IMpvData object)
Dim highlightID As String
Set highlightID = ocxMpvDataInterface.mapHighlightObject(dataID, redValue, greenValue, blueValue,
"showwhole")
```

```
=====
Sample code (Visual C++ .NET)
=====
```

```
ICoreWrapper is ICore generated wrapper class
ICoreWrapper m_ocxCore;
IDbsWrapper is IDbs generated wrapper class
IDbsWrapper m_ocxDbs;

create and load com objects
m_ocxCore.CreateDispatch("CoreOCX.Core.1");
m_ocxDbs.CreateDispatch("DbSOCX.Dbs.1");
```

```

open a map
m_ocxCore.mapOpen("europe_ta", "ocx_set_1");
m_ocxDbS.connect("ocx_set_1");

add categories to a combobox
CString categoriesList = m_ocxDbS.categoriesList();
CString categoryID, categoryName;
int curPos;

categoryID = categoriesList.Tokenize(";", curPos = 0);
while (categoryID != "")
{
    get category name
    categoryName = m_ocxDbS.categoryID2Name(categoryID);

    add category to combobox
    m_CategoriesComboBox.SetItemDataPtr(m_CategoriesComboBox.AddString(categoryName), new
    CString(categoryID));

    get next categoryID
    categoryID = categoriesList.Tokenize(";", curPos);
}

get input columns for selected category
get selected item
int iSelectedItem = m_CategoriesComboBox.GetCurSel();

get selected category ID
CString categoryID = *(CString*)m_CategoriesComboBox.GetItemDataPtr(iSelectedItem);

get selected category input columns
CString inputColumnsList = m_ocxDbS.categoryInputColumnsList(categoryID);
CString inputColumnID, inputColumnName;
int curPos;

inputColumnID = inputColumnsList.Tokenize(";", curPos = 0);
while (inputColumnID != "")
{
    get input column name
    inputColumnName = m_ocxDbS.categoryInputColumnID2Name(categoryID, inputColumnID);

    add input column to listview
    m_InputColumnsListView.SetItemData(m_InputColumnsListView.InsertItem(m_InputColumnsListVie
w.GetItemCnt(), inputColumnName), (DWORD)(new CString(inputColumnID)));

    get next input column ID
    inputColumnID = inputColumnsList.Tokenize(";", curPos);
}

start the search
long searchID = m_ocxDbS.searchInit(categoryID);

set search restrictions
m_ocxDbS.searchSetInputColumnValue(searchID, <an input column id>, <text to search>);

fetch all results
bool blsPostcodesCategory = m_ocxDbS.categoryIsPostcodes(categoryID);
BSTR data = 0;

```

```

BSTR dataID = 0;
long longitude, latitude;

while (true)
{
    fetch result
    if (blsPostcodesCategory)
        m_ocxDbx.searchPostcodesFetch(searchID, &data, &longitude, &latitude);
    else
        m_ocxDbx.searchFetch(searchID, &data, &dataID);

    test result
    CString strData(data);

    if (blsPostcodesCategory)
    {
        if (CString(data).IsEmpty())
            break; no other postcode
    }
    else
    {
        if (CString(dataID).IsEmpty())
            break; no other search result
    }

    do something with fetched data
    ...
}

end of search
m_ocxDbx.searchFree(searchID);

highlight one of found records on the map (m_ocxMpvDataInterface is OcxMpvData.IMpvData
wrapper class)
long highlightID = m_ocxMpvDataInterface.mapHighlightObject(dataID, redValue, greenValue,
blueValue, "showwhole");

```

5.1 methods

5.1.1 connect

connects a control to an opened map/sheet set

Syntax:

```

C++
HRESULT connect([in] BSTR ocxSetName);

```

Visual Basic

```

object.connect ocxSetName

```

Part	Type	Description
ocxSetName	String	An string id that will be used to connect and

disconnect DbsOCX,

MpvDataOCX, MpvViewOCX and RtgOCX to the

opened map

Return values:

S_OK (0x00000000) - succeeded
 E_INVALIDARG (0x80070057) - invalid argument
 E_COMMON_OCX_INVALID_INSTALLATION (0x80040103) - missing or improperly installed ocx component
 E_COMMON_OCX_UNINITIALIZED (0x80040101) - ocx has not been initialized (possibly incorrect installation)
 E_FAIL (0x80004005) - unspecified error

5.1.2 disconnect

disconnects a control from an opened map/sheet set

Syntax:

C++

HRESULT disconnect();

Visual Basic

object.disconnect

Return values:

S_OK (0x00000000) - succeeded
 E_FAIL (0x80004005) - unspecified error

5.1.3 categoriesList

Retrieve a semicolon-separated list of all database category ids (e.g. "town_minor;hotel;street;bank")

Syntax:

C++

HRESULT categoriesList([out,retval] BSTR* categoryIDs);

Visual Basic

object.categoriesList categoryIDs

Part	Type	Description
categoryIDs ids (e.g.	String	a semicolon-separated list of all database category "town_minor;hotel;street;bank")

Return values:

- S_OK (0x00000000) - succeeded
- S_FALSE (0x00000001) - succeeded but there are no search categories
- E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
- E_INVALIDARG (0x80070057) - invalid argument (categoryIDs is null)
- E_FAIL (0x80004005) - unspecified error

5.1.4 subCategoriesList

Retrieve semicolon-separated list of all database subcategories of given category

Syntax:

C++

HRESULT subCategoriesList([in] BSTR categoryID, [out,retval] BSTR* subCategoryIDs);

Visual Basic

object.categoriesList categoryID, subCategoryIDs

Part	Type	Description
categoryIDs	String	a category id (e.g. "town_minor;hotel;street;bank")
subCategoryIDs	String	a semicolon-separated list of all database subcategories of given category

Return values:

- S_OK (0x00000000) - succeeded
- S_FALSE (0x00000001) - succeeded but there are no search categories
- E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
- E_INVALIDARG (0x80070057) - invalid argument (categoryIDs is null)
- E_FAIL (0x80004005) - unspecified error

5.1.5 categoryID2Name

Translate category id to user acceptable category name (e.g. town_minor -> city (small))

Syntax:

C++

HRESULT categoryID2Name([in] BSTR id, [out,retval] BSTR* name);

Visual Basic

object.categoryID2Name id, name

Part	Type	Description
------	------	-------------

id	String	a database category id
----	--------	------------------------

name	String	Name of the category
------	--------	----------------------

Return values:

S_OK (0x00000000)	- succeeded
S_FALSE (0x00000001)	- succeeded but there is no translation available
E_MAP_NOT_OPENED (0x80040203)	- there is no map opened (call mapOpen first)
E_INVALIDARG (0x80070057)	- invalid argument (name is null)
E_DATABASE_INVALID_CATEGORY(0x80040501)	- category id does not exist
E_FAIL (0x80004005)	- unspecified error

5.1.6 categoryInputColumnsList

Retrieve semicolon-separated list of category input column ids (e.g. "name;county")

Syntax:**C++**

```
HRESULT categoryInputColumnsList([in] BSTR categoryID, [out,retval] BSTR* columnsIDs);
```

Visual Basic

```
object.categoriesList categoryID, columnsIDs
```

Part	Type	Description
categoryID	String	a database category id.
columnsIDs	String	a semicolon-separated list of category input column ids (e.g. "name;county")

Return values:

S_OK (0x00000000)	- succeeded
S_FALSE (0x00000001)	- succeeded but there are no input columns
E_MAP_NOT_OPENED (0x80040203)	- there is no map opened (call mapOpen first)
E_INVALIDARG (0x80070057)	- invalid argument (columnsIDs is null)
E_DATABASE_INVALID_CATEGORY(0x80040501)	- category id does not exist
E_FAIL (0x80004005)	- unspecified error

5.1.7 categoryInputColumnID2Name

Translate input column id to input column name

Syntax:**C++**

```
HRESULT categoryInputColumnID2Name([in] BSTR categoryID, [in] BSTR columnID, [out,retval] BSTR* columnName);
```

Visual Basic

object.categoryInputColumnID2Name categoryID, columnID, columnName

Part	Type	Description
categoryID	String	a database category id
columnID	String	the column ID for which you want to know the name
name	String	Name of the column

Return values:

S_OK (0x00000000) - succeeded
 S_FALSE (0x00000001) - succeeded but there is no translation available
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_INVALIDARG (0x80070057) - invalid argument (columnName is null)
 E_DATABASE_INVALID_CATEGORY(0x80040501) - category id does not exist
 E_DATABASE_INVALID_COLUMN(0x80040502) - column id does not exist
 E_FAIL (0x80004005) - unspecified error

5.1.8 categoryOutputColumnsList

Retrieve semicolon-separated list of category output column names

Syntax:

C++

HRESULT categoryOutputColumnsList([in] BSTR categoryID, [out,retval] BSTR* columnsIDs);

Visual Basic

object.categoryOutputColumnsList categoryID, columnsIDs

Part	Type	Description
categoryID	String	a database category id
columnsIDs names	String	a semicolon-separated list of category output column names

Return values:

S_OK (0x00000000) - succeeded
 S_FALSE (0x00000001) - succeeded but there are no output columns
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_INVALIDARG (0x80070057) - invalid argument (columnsIDs is null)
 E_DATABASE_INVALID_CATEGORY(0x80040501) - category id does not exist
 E_FAIL (0x80004005) - unspecified error

5.1.9 categoryIsPostcodes

Test if a category is postcodes.

Syntax:

C++

HRESULT categoryIsPostcodes([in] BSTR categoryID, [out,retval] BOOL* isPostcodesCategory);

Visual Basic

object.categoriesList categoryID, isPostcodesCategory

Part	Type	Description
categoryID	String	a database category id

Return values:

S_OK (0x00000000) - succeeded
 E_INVALIDARG (0x80070057) - invalid argument (isPostcodesCategory is null)
 E_FAIL (0x80004005) - unspecified error

5.1.10 searchInit

Initialize search for selected category id.

Returns a search id which can be used in later calls to search interface methods.

Syntax:

C++

HRESULT searchInit([in] BSTR categoryID, [out,retval] LONG* searchID);

Visual Basic

object.searchInit categoryID, searchID

Part	Type	Description
categoryID	String	a database category id
searchID	String	the return search ID

Return values:

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_INVALIDARG (0x80070057) - invalid argument (columnsIDs is null)
 E_DATABASE_INVALID_CATEGORY(0x80040501) - category id does not exist
 E_LICENSE_POSTCODES(0x80040306) - license key does not allow searching postcodes data
 E_FAIL (0x80004005) - unspecified error

5.1.11 searchSubCategoryInit

Initialize search for selected category and subcategory id.
Returns a search id which can be used in later calls to search interface methods.

Syntax:

C++

```
HRESULT searchSubCategoryInit([in] BSTR categoryID, [in] BSTR subCategoryID, [out,retval] LONG* searchID);
```

Visual Basic

object.searchSubCategoryInit *categoryID*, *subCategoryID*, *searchID*

Part	Type	Description
categoryID	String	a database category id
subCategoryID	String	a database subcategory id
searchID	String	the return search ID

Return values:

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_INVALIDARG (0x80070057) - invalid argument (columnsIDs is null)
 E_DATABASE_INVALID_CATEGORY(0x80040501) - category id does not exist
 E_DATABASE_INVALID_SUBCATEGORY(0x80040506) - invalid subcategory
 E_LICENSE_POSTCODES(0x80040306) - license key does not allow searching postcodes data
 E_FAIL (0x80004005) - unspecified error

5.1.12 searchFree

End of search for specified category; must be called after fetching results is done.

Syntax:

C++

```
HRESULT searchFree([in] LONG searchID);
```

Visual Basic

object.searchFree *searchID*

Part	Type	Description
searchID	String	the search ID you want to free up from memory.

Return values:

S_OK (0x00000000) - succeeded

E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_DATABASE_INVALID_SEARCH_ID (0x80040503) - invalid searchID
 E_FAIL (0x80004005) - unspecified error

5.1.13 searchSetModifier

Change search modifier : 1 - value begins with specified text (default), 2 - searched text can be anywhere.

Syntax:

C++

HRESULT searchSetModifier([in] LONG searchID, [in] LONG searchModifier);

Visual Basic

object.searchSetModifier searchID, searchModifier

Part	Type	Description
searchID	String	the search ID you want to work with.
searchModifier	Long	the type of search you want to perform 1 - value begins with specified text (default) 2 - searched text can be anywhere in the string

Return values:

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_DATABASE_INVALID_SEARCH_ID (0x80040503) - invalid searchID
 E_DATABASE_INVALID_MODIFIER (0x80040504) - invalid search modifier
 E_FAIL (0x80004005) - unspecified error

5.1.14 searchSetInputColumnValue

Set string to be searched in specified input column id (see categoryInputColumnsList)

Syntax:

C++

HRESULT searchSetInputColumnValue([in] LONG searchID, [in] BSTR inputColumnID, [in] BSTR inputColumnValue);

Visual Basic

object.searchSetInputColumnValue searchID, inputColumnID, inputColumnValue

Part	Type	Description
searchID	String	the search ID you want to work with.
inputColumnID	String	select which column you want to search

inputColumnValue	String	the search string
------------------	--------	-------------------

Return values:

- S_OK (0x00000000) - succeeded
- E_INVALIDARG (0x80070057) - invalid argument
- E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
- E_DATABASE_INVALID_SEARCH_ID (0x80040503) - invalid searchID
- E_FAIL (0x80004005) - unspecified errorFs

5.1.15 searchClearInputColumnValues

Clear string to be searched in specified input column id

Syntax:

C++

HRESULT searchClearInputColumnValues([in] LONG searchID);

Visual Basic

object.searchClearInputColumnValues *searchID*

Part	Type	Description
searchID strings from.	String	the search ID you want to clear all column search strings from.

Return values:

- S_OK (0x00000000) - succeeded
- E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
- E_DATABASE_INVALID_SEARCH_ID (0x80040503) - invalid searchID
- E_FAIL (0x80004005) - unspecified error

5.1.16 searchFetch

Fetch next database row.

When there is no other data to fetch, data and dataID contains an empty string.

Syntax:

C++

HRESULT searchFetch([in] LONG searchID, [out] BSTR* data, [out] BSTR* dataID);

Visual Basic

object.searchFetch *searchID*, *data*, *dataID*

Part	Type	Description
searchID	String	id of the query (see searchInit).

data	String	a semicolon-separated list of output column values
dataID	String	object id - used to communicate with other ocx components (e.g. highlight object on the map)

Return values:

S_OK (0x00000000)	- succeeded
S_FALSE (0x00000001)	- succeeded but there is no other search result
E_INVALIDARG (0x80070057)	- invalid argument (data or dataID is null)
E_MAP_NOT_OPENED (0x80040203)	- there is no map opened (call mapOpen first)
E_DATABASE_INVALID_SEARCH_ID (0x80040503)	- invalid searchID
E_DATABASE_INVALID_FETCH_USED (0x80040505)	- invalid fetch method used - for postcodes use searchPostcodesFetch
E_FAIL (0x80004005)	- unspecified error

5.1.17 searchPostcodesFetch

Fetch the next database row.

When postcode location is not known, longitude and latitude equal 0.

Syntax:

C++

HRESULT searchPostcodesFetch([in] LONG searchID, [out] BSTR* data, [out] LONG* longitude, [out] LONG* latitude);

Visual Basic

object.searchPostcodesFetch *searchID*, *data*, *longitude*, *latitude*

Part	Type	Description
searchID	String	id of the query (see searchInit).
data	String	a semicolon-separated list of output column values
longitude	Long	postcode position longitude
latitude	Long	postcode position latitude

Return values:

S_OK (0x00000000)	- succeeded
S_FALSE (0x00000001)	- succeeded but there is no other search result
E_INVALIDARG (0x80070057)	- invalid argument (data or dataID is null)
E_MAP_NOT_OPENED (0x80040203)	- there is no map opened (call mapOpen first)
E_DATABASE_INVALID_SEARCH_ID (0x80040503)	- invalid searchID
E_DATABASE_INVALID_FETCH_USED (0x80040505)	- invalid fetch method used - for non postcodes use searchFetch

E_FAIL (0x80004005) - unspecified error

5.1.18 searchResultFindHouseNumber

find house number in a find street search result

Syntax:

C++

```
HRESULT searchResultFindHouseNumber([in] BSTR dataID, [in] BSTR houseNumber, [out] LONG* longitude, [out] LONG* latitude);
```

Visual Basic

object.searchResultFindHouseNumber *dataID*, *houseNumber*, *longitude*, *latitude*

Part	Type	Description
dataID	String	ireult of a street search
houseNumber	String	house number to search for
longitude	Long	postcode position longitude
latitude	Long	postcode position latitude

Return values:

S_OK (0x00000000) - succeeded
 S_FALSE (0x00000001) - house number not found
 E_INVALIDARG (0x80070057) - invalid argument (data or dataID is null)
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_FAIL (0x80004005) - unspecified error

5.1.19 searchResultGetMap

Get the map ID for the search result.

dataID - fetched object id

mapID - returned map name

Syntax:

C++

```
HRESULT searchResultGetMap([in] BSTR dataID, [out,retval] BSTR* mapName);
```

Visual Basic

object.searchResultGetMap *dataID*, *mapName*

Part	Type	Description
------	------	-------------

dataID	String	object id of the object
--------	--------	-------------------------

mapName	String	return map ID
---------	--------	---------------

Return values:

S_OK (0x00000000) - succeeded

E_INVALIDARG (0x80070057) - invalid argument (data or dataID is null)

5.1.20 searchCoordinateGetMap

Get the map ID for the search result.

dataID - fetched object id

mapID - returned map name

Syntax:**C++**

```
HRESULT searchCoordinateGetMap([in] LONG longitude, [in] LONG latitude, [out,retval] BSTR*
mapName);
```

Visual Basic

```
object.searchCoordinateGetMap longitude, latitude, mapName
```

Part	Type	Description
------	------	-------------

longitude longitude	String	position
------------------------	--------	----------

latitude	String	position latitude
----------	--------	-------------------

mapName	String	return map ID
---------	--------	---------------

Return values:

S_OK (0x00000000) - succeeded

E_INVALIDARG (0x80070057) - invalid argument (mapName is null)

5.1.21 nearestFind

Find nearest object in specified category from specified location

Syntax:**C++**

```
HRESULT nearestFind([in] BSTR categoryID, [in] LONG longitude, [in] LONG latitude, [out] LONG*
distance, [out] BSTR* data, [out] BSTR* dataID);
```

Visual Basic

```
object.nearestFind categoryID, longitude, latitude, distance, data, dataID
```

Part	Type	Description
categoryID	String	a database category id
longitude	Long	postcode position longitude
latitude	Long	postcode position latitude
distance searched point	Long	distance of nearest found object in meters from the searched point
data	String	a semicolon-separated list of output column values
dataID components (e.g. highlight object on the map)	String	object id - used to communicate with other ocx

Return values:

- S_OK (0x00000000) - succeeded
- S_FALSE (0x00000001) - succeeded but there is no other search result
- E_INVALIDARG (0x80070057) - invalid argument (data or dataID is null)
- E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
- E_NEAREST_INVALID_NEAREST_CATEGORY (0x80040801) - cannot look for nearest objects in category categoryID
- E_NEAREST_NO_OBJECT_FOUND (0x80040802) - failed to find nearest object in specified category (the category probably does not contain any objects)
- E_FAIL (0x80004005) - unspecified error

5.1.22 nearestFindMaxDistance

Find nearest object in specified category up to maxDistance meters from specified location

Syntax:

C++

HRESULT nearestFindMaxDistance([in] BSTR categoryID, [in] LONG longitude, [in] LONG latitude, [in] LONG maxDistance, [out] LONG* distance, [out] BSTR* data, [out] BSTR* dataID);

Visual Basic

object.nearestFind categoryID, longitude, latitude, maxDistance, distance, data, dataID

Part	Type	Description
categoryID	String	a database category id
longitude	Long	postcode position longitude
latitude	Long	postcode position latitude

distance searched point	Long	distance of nearest found object in meters from the searched point
maxDistance	Long	maximum search distance from search center
data	String	a semicolon-separated list of output column values
dataID components (e.g. highlight object on the map)	String	object id - used to communicate with other ocx components

Return values:

S_OK (0x00000000)	- succeeded
S_FALSE (0x00000001)	- succeeded but there is no other search result
E_INVALIDARG (0x80070057)	- invalid argument (data or dataID is null)
E_MAP_NOT_OPENED (0x80040203)	- there is no map opened (call mapOpen first)
E_NEAREST_INVALID_NEAREST_CATEGORY (0x80040801)	- cannot look for nearest objects in category categoryID
E_NEAREST_NO_OBJECT_FOUND (0x80040802)	- failed to find nearest object in specified category (the category probably does not contain any objects)
E_FAIL (0x80004005)	- unspecified error

5.1.23 nearestFindSubCategoryMaxDistance

Find nearest object in specified category restricted by specified type up to maxDistance meters from specified location

Syntax:**C++**

```
HRESULT nearestFindSubCategoryMaxDistance([in] BSTR categoryID, subCategoryID, [in] LONG longitude, [in] LONG latitude, [in] LONG maxDistance, [out] LONG* distance, [out] BSTR* data, [out] BSTR* dataID);
```

Visual Basic

object.nearestFind categoryID, subCategoryID, longitude, latitude, maxDistance, distance, data, dataID

Part	Type	Description
categoryID	String	a database category id
subCategoryID	String	a database subcategory id
longitude	Long	postcode position longitude
latitude	Long	postcode position latitude

distance searched point	Long	distance of nearest found object in meters from the
maxDistance	Long	maximum search distance from search center
data	String	a semicolon-separated list of output column values
dataID components (e.g. highlight object on the map)	String	object id - used to communicate with other ocx

Return values:

- S_OK (0x00000000) - succeeded
- S_FALSE (0x00000001) - succeeded but there is no other search result
- E_INVALIDARG (0x80070057) - invalid argument (data or dataID is null)
- E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
- E_NEAREST_INVALID_NEAREST_CATEGORY (0x80040801) - cannot look for nearest objects in category categoryID
- E_DATABASE_INVALID_SUBCATEGORY(0x80040506) - invalid subcategory
- E_NEAREST_NO_OBJECT_FOUND (0x80040802) - failed to find nearest object in specified category (the category probably does not contain any objects)
- E_FAIL (0x80004005) - unspecified error

6 RtgOCX

Methods

- [connect](#)
- [disconnect](#)
- [optimizationModes](#)
- [optimizationModelID2Name](#)
- [routeFind](#)
- [routeFindC2O](#)
- [routeFindO2C](#)
- [routeFindO2O](#)
- [routeDelete](#)
- [routeFirstEdge](#)
- [routeNextEdge](#)

=====
Sample code (Visual Basic 6)
=====

```
'open a map
coreOCX.mapOpen("europe_ta", "ocx_set_1")
rtgOCX.connect("ocx_set_1")
```

```
'find a route
Dim routeID As Integer
```

```

Dim roadNumber As String
Dim roadName As String
Dim roadType As String
Dim length As Long
Dim time As Long
Dim azimuth As Long
Dim isUrban As Long
Dim isBridge As Long
Dim isTunnel As Long
Dim isRoundabout As Long
Dim isRamp As Long
Dim isTollway As Long
Dim isPrivate As Long
Dim isJunction As Long
Dim isExit As Long
Dim dataID As String

```

```
routeID = rtgOCX.routeFind("fastest", longitudeFrom, latitudeFrom, longitudeTo, latitudeTo)
```

```
'fetch all route parts, highlight route on map (ocxMpvDataIMpvDataHighlights is kind of
ocxMpvData.IMpvDataHighlights)
```

```
'fetch first route part
```

```
rtgOCX.routeFirstEdge routeID, roadNumber, roadName, roadType, length, time, azimuth, isUrban,
isBridge, isTunnel, isRoundabout, isRamp, isTollway, isPrivate, isJunction, isExit, dataID
```

```
'highlight first route part on the map
```

```
ocxMpvDataIMpvDataHighlights.mapHighlightManyAddObject dataID
```

```
'fetch all other route parts
```

```
If dataID <> "" Then
```

```
Do
```

```
  'next edge
```

```
  rtgOCX.routeNextEdge routeID, roadNumber, roadName, roadType, length, time, azimuth, isUrban,
isBridge, isTunnel, isRoundabout, isRamp, isTollway, isPrivate, isJunction, isExit, dataID
```

```
  If (dataID <> "") Then
```

```
    'highlight next edge on the map
```

```
    ocxMpvDataIMpvDataHighlights.mapHighlightManyAddObject dataID
```

```
  End If
```

```
Loop While dataID <> ""
```

```
'end of highlight (show highlight on map)
```

```
ocxMpvDataIMpvDataHighlights.mapHighlightManyFinish redValue, greenValue, blueValue,
```

```
"showwhole"
```

```
Else
```

```
  MsgBox ("Route was not found")
```

```
End If
```

```
'do not forget to call rtgOCX.routeDelete routeID when the route is not used any more
```

```
=====
Sample code (Visual C++ .NET)
=====
```

```
// ICoreWrapper is ICore generated wrapper class
```

```
// ICoreWrapper m_ocxCore;
```

```
// IRtgWrapper is IRtg generated wrapper class
```

```
// IRtgWrapper m_ocxRtg;
```

```
// create and load com objects
```

```
m_ocxCore.CreateDispatch("CoreOCX.Core.1");
m_ocxRtg.CreateDispatch("RtgOCX.Rtg.1");

// open a map
m_ocxCore.mapOpen("europe_ta", "ocx_set_1");
m_ocxRtg.connect("ocx_set_1");

// fill in optimization modes to a combo
CString optimizationModesList = m_ocxRtg.optimizationModes();
CString optimizationModelID, optimizationModeName;
int curPos;

optimizationModelID = optimizationModesList.Tokenize(";", curPos = 0);
while (optimizationModelID != "")
{
    // get optimization mode name
    optimizationModeName = m_ocxRtg.optimizationModelID2Name(optimizationModelID);

    // add optimization mode to combobox
    m_optimizationsCombo.SetItemDataPtr(m_optimizationsCombo.AddString(optimizationModeName),
    new CString(optimizationModelID));

    // get next optimization mode
    optimizationModelID = optimizationModesList.Tokenize(";", curPos);
}

// find route
long routeID = m_ocxRtg.routeFind(choosedOptimizationMode, longitudeFrom, latitudeFrom,
longitudeTo, latitudeTo);

// fetch the route and highlight it on the map
BSTR roadNumber = 0;
BSTR roadName = 0;
BSTR roadType = 0;
BSTR dataID = 0;
long length, time, azimuth, isUrban, isBridge, isTunnel, isRoundabout, isRamp, isTollway, isPrivate,
isJunction, isExit;

m_ocxRtg.routeFirstEdge(routeID, &roadNumber, &roadName, &roadType, &length, &time, &azimuth,
&isUrban, &isBridge, &isTunnel, &isRoundabout, &isRamp, &isTollway, &isPrivate, &isJunction,
&isExit, &dataID);
while (CComBSTR(dataID).Length() > 0)
{
    // fill in route edge description somewhere

    // highlight
    // use method mapHighlightManyAddObject of ocxMpvData com object and IMpvDataHighlight
interface
    // mapHighlightManyAddObject(dataID)

    // next edge
    m_ocxRtg.routeNextEdge(routeID, &roadNumber, &roadName, &roadType, &length, &time,
&azimuth, &isUrban, &isBridge, &isTunnel, &isRoundabout, &isRamp, &isTollway, &isPrivate,
&isJunction, &isExit, &dataID);
}

// end of highlight
// use method mapHighlightManyFinish of ocxMpvData com object and IMpvDataHighlight interface
```

```
// mapHighlightManyFinish(redValue, greenValue, blueValue, "showwhole");
```

6.1 methods

6.1.1 connect

connects a control to an opened map/sheet set

Syntax:

C++

```
HRESULT connect([in] BSTR ocxSetName);
```

Visual Basic

```
object.connect ocxSetName
```

Part	Type	Description
ocxSetName disconnect DbsOCX, opened map	String	An string id that will be used to connect and MpvDataOCX, MpvViewOCX and RtgOCX to the

Return values:

S_OK (0x00000000)	- succeeded
E_INVALIDARG (0x80070057)	- invalid argument
E_COMMON_OCX_INVALID_INSTALLATION (0x80040103)	- missing or improperly installed ocx component
E_COMMON_OCX_UNINITIALIZED (0x80040101)	- ocx has not been initialized (possibly incorrect installation)
E_FAIL (0x80004005)	- unspecified error

6.1.2 disconnect

disconnects a control from an opened map/sheet set

Syntax:

C++

```
HRESULT disconnect();
```

Visual Basic

```
object.disconnect
```

Return values:

S_OK (0x00000000)	- succeeded
E_FAIL (0x80004005)	- unspecified error

6.1.3 optimizationModes

Retrieve semicolon-separated list of optimization modes (e.g. "fastest;shortest;cheapest")

Syntax:

C++

HRESULT optimizationModes([out,retval] BSTR* modeIDs);

Visual Basic

object.optimizationModes *modeIDs*

Part	Type	Description
modeIDs	String	a semicolon-separated list of all routing modes e.g. "fastest;shortest;cheapest"

Return values:

S_OK (0x00000000) - succeeded
 S_FALSE (0x00000001) - succeeded but there are no modes (should not happen)
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_INVALIDARG (0x80070057) - invalid argument (categoryIDs is null)
 E_FAIL (0x80004005) - unspecified error

6.1.4 optimizationModelID2Name

Translate optimization mode id to optimization name

Syntax:

C++

HRESULT optimizationModelID2Name([in] BSTR modeID, [out,retval] BSTR* modeName);

Visual Basic

object.optimizationModelID2Name *modeid*, *modeName*

Part	Type	Description
id	String	an optimisation id
name	String	Name of the optimisation

Return values:

S_OK (0x00000000) - succeeded
 S_FALSE (0x00000001) - succeeded but there is no translation
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_INVALIDARG (0x80070057) - invalid argument (modeName is null)
 E_ROUTING_INVALID_OPTIMIZATION_MODE (0x80040601) - mode id does not exist
 E_FAIL (0x80004005) - unspecified error

6.1.5 setVehicleType

Set vehicle type to be used for route computation

Syntax:

C++

```
HRESULT setVehicleType([in] LONG vehicleType);
```

Visual Basic

object.setVehicleType vehicleType

Part	Type	Description
vehicleType	Long	can be 0 for car or 1 for truck 2 for pedestrian

Return values:

S_OK (0x00000000) - succeeded
 E_INVALIDARG (0x80070057) - invalid argument
 E_FAIL (0x80004005) - unspecified error

6.1.6 setTruckRestrictions

Translate optimization mode id to optimization name

Syntax:

C++

```
HRESULT setTruckRestrictions( [in] LONG weight, [in] LONG weightPerAxle, [in] LONG length, [in] LONG width, [in] LONG height, [in] BOOL transportsHazardousMaterial );
```

Visual Basic

object.setTruckRestrictions weight, weightPerAxle,length, width, height, transportsHazardousMaterial

Part	Type	Description
weight	Long	vehicle
weightPerAxle	Long	parameters
length	Long	go
width	Long	here
height	Long	
transportsHazardousMaterial	Long	

Return values:

S_OK (0x00000000) - succeeded
 E_INVALIDARG (0x80070057) - invalid argument
 E_LICENSE_NO_TRUCKRESTRICTIONS (0x80040308) - no license for truck restrictions data
 E_COMMON_OCX_ARGUMET_OUT_OF_RANGE (0x80040104) - argument value out of range

6.1.7 routeFind

Finds route between specified points [longitudeFrom, latitudeFrom] -> [longitudeTo, latitudeTo]
 Optimization is desired optimization method (fastest, shortest, ...) - see optimizationModes
 Returns found route id; each route is stored in ocx's route cache until deleted by routeDelete method

Syntax:**C++**

HRESULT routeFind([in] BSTR optimization, [in] LONG longitudeFrom, [in] LONG latitudeFrom, [in] LONG longitudeTo, [in] LONG latitudeTo, [out,retval] LONG* routeID);

Visual Basic

object.routeFind optimization, longitudeFrom, latitudeFrom, longitudeTo, latitudeTo, routeID

Part	Type	Description
optimization	String	the optimisation mode that you want to use
longitudeFrom	Long	start point longitude
latitudeFrom	Long	start point latitude
longitudeTo	Long	end point longitude
latitudeTo	Long	end point latitude
routeID	Long	route id - each route is stored in ocx's route cache until deleted by routeDelete method

Return values:

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_ROUTING_INVALID_OPTIMIZATION_MODE (0x80040601) - optimization mode id does not exist
 E_ROUTING_ROUTE_NOT_FOUND (0x80040602) - route was not found
 E_FAIL (0x80004005) - unspecified error

6.1.8 routeFindC2O

Finds route between specified points [longitudeFrom, latitudeFrom] -> [dataIDTo]
 Optimization is desired optimization method (fastest, shortest, ...) - see optimizationModes
 Returns found route id; each route is stored in ocx's route cache until deleted by routeDelete method

Syntax:**C++**

```
HRESULT routeFindC2O([in] BSTR optimization, [in] LONG longitudeFrom, [in] LONG latitudeFrom,
[in] BSTR dataIDTo, [out,retval] LONG* routeID);
```

Visual Basic

object.routeFindC2O optimization, longitudeFrom, latitudeFrom, dataIDTo, routeID

Part	Type	Description
optimization	String	the optimisation mode that you want to use
longitudeFrom	Long	start point longitude
latitudeFrom	Long	start point latitude
dataIDTo method)	String	end point data id (returned by DbsOCX searchFetch method)
routeID until deleted by routeDelete method	Long	route id - each route is stored in ocx's route cache

Return values:

S_OK (0x00000000) - succeeded
E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
E_ROUTING_INVALID_OPTIMIZATION_MODE (0x80040601) - optimization mode id does not exist
E_ROUTING_ROUTE_NOT_FOUND (0x80040602) - route was not found
E_FAIL (0x80004005) - unspecified error

6.1.9 routeFindO2C

Finds route between specified points [dataIDFrom] -> [longitudeTo, latitudeTo]

Optimization is desired optimization method (fastest, shortest, ...) - see optimizationModes

Returns found route id; each route is stored in ocx's route cache until deleted by routeDelete method

Syntax:**C++**

```
HRESULT routeFindO2C([in] BSTR optimization, [in] BSTR dataIDFrom, [in] LONG longitudeTo, [in]
LONG latitudeTo, [out,retval] LONG* routeID);
```

Visual Basic

object.routeFind optimization, dataIDFrom, longitudeTo, latitudeTo, routeID

Part	Type	Description
optimization	String	the optimisation mode that you want to use

dataIDFrom method)	String	start point data id (returned by DbsOCX searchFetch
longitudeTo	Long	end point longitude
latitudeTo	Long	end point latitude
routeID until deleted by routeDelete method	Long	route id - each route is stored in ocx's route cache

Return values:

S_OK (0x00000000)	- succeeded
E_MAP_NOT_OPENED (0x80040203)	- there is no map opened (call mapOpen first)
E_ROUTING_INVALID_OPTIMIZATION_MODE (0x80040601)	- optimization mode id does not exist
E_ROUTING_ROUTE_NOT_FOUND (0x80040602)	- route was not found
E_FAIL (0x80004005)	- unspecified error

6.1.10 routeFindO2O

Finds route between specified points [dataIDFrom] -> [dataIDTo]

Optimization is desired optimization method (fastest, shortest, ...) - see optimizationModes

Returns found route id; each route is stored in ocx's route cache until deleted by routeDelete method

Syntax:

C++

HRESULT routeFindO2O([in] BSTR optimization, [in] BSTR dataIDFrom, [in] BSTR dataIDTo, [out,retval] LONG* routeID);

Visual Basic

object.routeFind optimization, dataIDFrom, dataIDTo, routeID

Part	Type	Description
optimization	String	the optimisation mode that you want to use
dataIDFrom method)	String	start point data id (returned by DbsOCX searchFetch
dataIDTo method)	Long	end point data id (returned by DbsOCX searchFetch
routeID until deleted by routeDelete method	Long	route id - each route is stored in ocx's route cache

Return values:

S_OK (0x00000000)	- succeeded
E_MAP_NOT_OPENED (0x80040203)	- there is no map opened (call mapOpen first)

E_ROUTING_INVALID_OPTIMIZATION_MODE (0x80040601) - optimization mode id does not exist
 E_ROUTING_ROUTE_NOT_FOUND (0x80040602) - route was not found
 E_FAIL (0x80004005) - unspecified error

6.1.11 routeDelete

Deletes found route from routes cache

Syntax:

C++

HRESULT routeDelete([in] LONG routeID);

Visual Basic

object.routeFind routeID

Part	Type	Description
routeID	Long	route id - each route is stored in ocx's route cache until deleted by routeDelete method

Return values:

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_ROUTING_INVALID_ROUTE_ID (0x80040603) - optimization mode id does not exist
 E_FAIL (0x80004005) - unspecified error

6.1.12 routeFirstEdge

Retrieves first edge (link) parameters of specified route

Syntax:

C++

HRESULT routeFirstEdge([in] LONG routeID, [out] BSTR* roadNumber, [out] BSTR* roadName, [out] BSTR* roadType, [out] LONG* length, [out] LONG* time, [out] LONG* azimuth, [out] BOOL* isUrban, [out] BOOL* isBridge, [out] BOOL* isTunnel, [out] BOOL* isRoundabout, [out] BOOL* isRamp, [out] BOOL* isTollway, [out] BOOL* isPrivate, [out] BOOL* isJunction, [out] BOOL* isExit, [out] BSTR* dataID);

Visual Basic

object.routeFind routeID, roadNumber, roadName, roadType, length, time, azimuth, isUrban, isBridge, isTunnel, isRoundabout, isRamp, isTollway, isPrivate, isJunction, isExit, dataID

Part	Type	Description
routeID	Long	route id - each route is stored in ocx's route cache until deleted by routeDelete method

roadNumber	String	the road number of the link if it has one
roadName	String	the street name of the link if it has one
roadType	String	road type
length	Long	length of the link
time	Long	time of travel along the link
azimuth	Long	angle of turn
isUrban	Boolean	TRUE if the link is in an urban area
isBridge	Boolean	TRUE if the link is on a bridge
isTunnel	Boolean	TRUE if the link is in a tunnel
isRoundabout	Boolean	TRUE if the link is part of a roundabout
isRamp	Boolean	TRUE if the link is part of a slip road
isTollway	Boolean	TRUE if the link is on a Toll road
isPrivate	Boolean	TRUE if the link is on a private road
isJunction	Boolean	TRUE if the link is a Motorway Junction
isExit	Boolean	TRUE if the link is part of an exit
dataID	String	object id of the link

Return values:

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_ROUTING_INVALID_ROUTE_ID (0x80040603) - optimization mode id does not exist
 E_FAIL (0x80004005) - unspecified error

6.1.13 routeNextEdge

Retrieves next edge parameters of specified route

Syntax:

C++

HRESULT routeNextEdge([in] LONG routeID, [out] BSTR* roadNumber, [out] BSTR* roadName, [out] BSTR* roadType, [out] LONG* length, [out] LONG* time, [out] LONG* azimuth, [out] BOOL* isUrban, [out] BOOL* isBridge, [out] BOOL* isTunnel, [out] BOOL* isRoundabout, [out] BOOL* isRamp, [out] BOOL* isTollway, [out] BOOL* isPrivate, [out] BOOL* isJunction, [out] BOOL* isExit, [out] BSTR* dataID);

Visual Basic

object.routeNextEdge routeID, roadNumber, roadName, roadType, length, time, azimuth, isUrban, isBridge, isTunnel, isRoundabout, isRamp, isTollway, isPrivate, isJunction, isExit, dataID

Part	Type	Description
routeID	Long	route id - each route is stored in ocx's route cache until deleted by routeDelete method
roadNumber	String	the road number of the link if it has one
roadName	String	the street name of the link if it has one
roadType	String	road type
length	Long	length of the link
time	Long	time of travel along the link
azimuth	Long	angle of turn
isUrban	Boolean	TRUE if the link is in an urban area
isBridge	Boolean	TRUE if the link is on a bridge
isTunnel	Boolean	TRUE if the link is in a tunnel
isRoundabout	Boolean	TRUE if the link is part of a roundabout
isRamp	Boolean	TRUE if the link is part of a slip road
isTollway	Boolean	TRUE if the link is on a Toll road
isPrivate	Boolean	TRUE if the link is on a private road
isJunction	Boolean	TRUE if the link is a Motorway Junction
isExit	Boolean	TRUE if the link is part of an exit
dataID	String	object id of the link

Return values:

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_ROUTING_INVALID_ROUTE_ID (0x80040603) - optimization mode id does not exist
 E_FAIL (0x80004005) - unspecified error

6.1.14 routeDistance

computes the distance of a given point from a route (in meters)

Syntax:**C++**

HRESULT routeDistance([in] LONG routeID, [in] LONG longitude, [in] LONG latitude, [out] LONG* distance);

Visual Basic

object.routeDistance routeID, longitude, latitude, distance

Part	Type	Description
routeID	Long	ID of the route
longitude	Long	longitude of the point
latitude	Long	latitude of the point
distance	Long	distance from the route

Return values:

S_OK (0x00000000) - succeeded
 E_MAP_NOT_OPENED (0x80040203) - there is no map opened (call mapOpen first)
 E_ROUTING_INVALID_ROUTE_ID (0x80040603) - optimization mode id does not exist
 E_INVALIDARG (0x80070057) - invalid argument (distance is null)
 E_FAIL (0x80004005) - unspecified error

Endnotes 2... (after index)

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