Common Vision Blox Release Notes

1 Common Vision Blox Release Notes

1.1 Image Manager/Foundation Package Release Notes

1.1.1 Common Vision Blox 2022 (14.0)

Following are the Release Notes for **Common Vision Blox 2022 (14.00.xxx)**.

As the CVB CameraSuite is a subset of Common Vision Blox, this document is also valid for the **CVB CameraSuite 2022** (the main difference being the absence of the Foundation Package and tools and the absence of a dongle licensing option on the CVB CameraSuite 2021). The **library version** that will be used to identify Common Vision Blox 2022 and CVB CameraSuite 2022 in this document and in the installers is **14.00.xxx**.

What is New in Version 14.00.xxx

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What is New in Version 14.00.xxx

Common Vision Blox 14.00.xxx is a major upgrade of Common Vision Blox that introduces new features but also breaking changes relative to previous releases. The most relevant changes in version 14.00.xxx are:

.NET Core Support in Linux

Starting with Common Vision Blox 14.00.xxx it is generally possible to use those parts of the CVB.Net API that are not inherently dependent on Windows with the .NET Core 3.1 runtime on Linux. This explicitly includes the possibility to copy a binary built on Windows onto a Linux machine with .NET Core 3.1 and CVB.Net installed and run it there. This will however not work for applications that depend on the following CVB.Net assemblies:

- Stemmer.Cvb.Aux.dll (Managed/Unmanaged hybrid developed with C++/CLI and therefore not portable to Linux)

- Stemmer.Cvb.Barcode.dll (CVCBarcode.dll is not available on Linux)

- Stemmer.Cvb.Forms.dll (depends on Windows Forms which is not supported by .NET Core 3.1)

- Stemmer.Cvb.Wpf.dll (depends on the Windows Presentation Foundation which is not supported by .NET Core 3.1)

- Stemmer.Cvb.Dnc.dll on ARM platforms (CVDNCSearch.dll is not available for the ARM platforms on Linux)

- Stemmer.Cvb.Foundation.dll (CVFoundation.dll is not available on Linux)

- Stemmer.Cvb.Manto.dll (Manto.dll is not available on Linux)

Please note that the following changes have been made to the shared libraries in Common Vision Blox to facilitate interoperability with .NET Core 3.1:

- All instances where functions in the C-API of Common Vision Blox are using the data type `long` on Windows have been switched to using `int32_t` on Linux.
  This makes sure that the binary interface of the C-API matches between Windows and Linux which makes it possible to use the same `DllImport` statements on both platforms. However, it also means that the binary interface of the *.so files on Linux no longer matches that of the older versions of Common Vision Blox (see also Breaking Changes and End-Of-Life Information).

- The CVB.Net DLLs have been updated to require at least .NET Framework 4.7.1 on Windows.
  .NET Framework 4.7.1 introduced methods for properly detecting the operating system at runtime that match those in the .NET Framework 3.1 and which are essential for supporting both operating systems with the same set of DLLs.

- String handling in the CVB.Net DLLs has been modified to match the environment.
  On Linux the default encoding for non-ASCII characters is UTF8 also for .NET applications whereas on Windows UTF16 is usually expected. The updated CVB.Net DLLs route string-related calls to the `char` variant of the respective function on Linux and to the `wchar_t` variant on Windows. As a result, callers will not need to worry about string encoding as long as they just use the runtime environment's default encoding.

New Laser Triangulation Calibration Method

Common Vision Blox 14.0 introduces a new intrinsic calibration method for laser line triangulation systems. The calibration method has been simplified to the point where it is field-capable (i. e. it does not require a high-precision laboratory setup to be carried out) and precise enough to match the quality of other commonly used approaches. It is therefore an excellent choice not only for custom-made laser triangulation setups but also for e. g. compact sensors that frequently lose their calibration due to e. g. temperature drift or mechanical shocks.

The calibration method relies on profile data acquired in-situ with our new "Profile Grabber" application (located in %CVB%\Lib\Python; browser-based Python application; please note that due to 3rd party dependencies the Profile Grabber application is only available on the 64 bit PC platforms - Windows as well as Linux - of Common Vision Blox) using a twisted zig zag target:
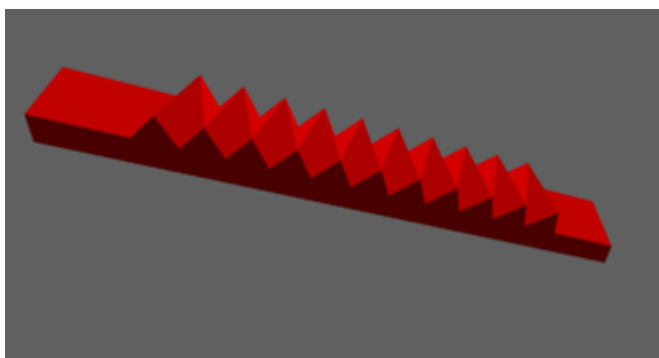
The acquired raw data then needs to be uploaded to the new STEMMER IMAGING calibration web service which will be publicly available starting in Summer 2022. This web service is also a source for STL files with which to create the calibration target. Our servers will then crunch the numbers and generate the data for the calibration model which can then be downloaded as a *.json file which can subsequently be loaded into a `Calibrator3D` object and used for correcting the acquired 3D data.

Unconditional Streaming

Normally, if a GigE vision camera loses the connection to the application that kept the control channel open, the camera will stop streaming and becomes available for connections again. However, this is not always the behavior that is desirable: In multicast applications or more generally in scenarios where accidental loss of the control channel can happen and needs to be recovered as quickly as possible by another client application jumping in *without* interruption of the data stream it is desirable to keep the camera streaming and eventually accept a new control channel connection. The GigE vision standard actually enables this kind of behavior, however few cameras and software packages actually support this. Common Vision Blox is now among them.

To make use of this feature it is sufficient to establish a multi cast session with a GigE Vision camera that supports unconditional streaming as described in the GenICam User Guide - unconditional streaming will automatically take effect.

Pixel Access Visitors in CVB++

Direct access to pixel data is a topic that occasionally turns out to be challenging as it involves pointer arithmetic which is a concept not all programmers are sufficiently familiar with. Part of the complexity also derives from the fact that when implementing direct pixel data access the coder will need to keep in mind the various options for memory layout of the image data (involving such topics as data type sizes, RGB arrangement, interleaved vs. planar layout, padding bytes etc.). And to make things worse, even small mistakes in the implementation will lead to access violations very quickly if the calculated data pointer does point to addresses not owned by the process.

Common Vision Blox traditionally offers two approaches for accessing pixel memory directly:

- "Linear Access" where the address of a pixel is calculated by multiplying its coordinates with the appropriate increments in x and y direction and adding the result to a base pointer

- "VPAT Access" where two offset table entries are selected based on the X and Y coordinate and then added to the base pointer

Both approaches provide a suitably high performance in data access, but suffer from the aforementioned drawbacks. However, starting with Common Vision Blox 14.00.xxx the CVB++ API comes with pixel access visitors, a template construct that greatly simplifies the implementation of pixel access without compromising on performance. These visitors build upon the support for linear access and VPAT and accept functors or lambdas to carry out per-pixel-operations either on an entire image or on a region of it in a simple and easy-to-read syntax:

```cpp
struct DivideByTwo
{
  template<class T, class ACCESS_TRAIT>
  void operator()(Cvb::Block<T, ACCESS_TRAIT> block) const noexcept
  {
    for (int y = 0; y < block.Height(); ++y)
      for (int x = 0; x < block.Width(); ++x)
        block(x, y) /= 2;
  }
};
...
Cvb::Image img = ...;
Cvb::Visit(DivideByTwo{}, img->Plane(0));
```

More details about this construct are available in the CVB++ documentation under "Use Cases" / "Effectively write image and point cloud algorithms using Visit".

Note that performance-wise the visitors incur no penalty compared to direct access through linear access or VPAT and are in fact much faster than scanning approaches like `ScanPlaneUnary` or `ScanPlaneBinary`.

Type Hints in Python

As a weakly typed language, Python does not care too much about the type of data passed to a function - relying mostly on the caller to make the right decisions or at least for issues to sort themselves out on the way. However, when working with complex data types (like e. g. images) this makes it all the more necessary to be very explicit in the documentation about what the function actually expects. Most Python editors add an additional convenience layer by supporting type hints that enable the functions in a python module to report their expected types in the IntelliSense help directly in the editor.

Starting with version 14.00.xxx the CVBpy API makes use of these type hints to make it easier for users to write valid and working Python code:
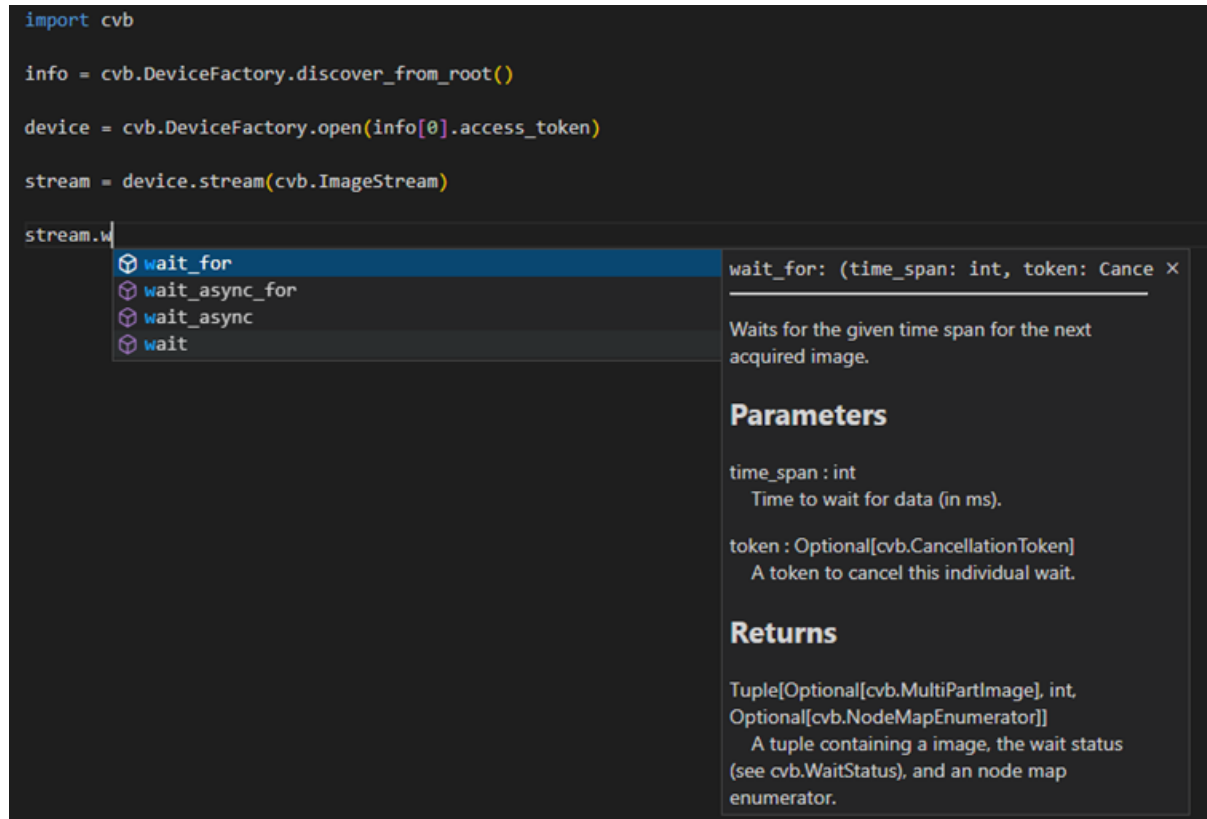
```python
import cvb

info = cvb.DeviceFactory.discover_from_root()

device = cvb.DeviceFactory.open(info[0].access_token)

stream = device.stream(cvb.ImageStream)

stream.w
```

```
wait_for
wait_async_for
wait_async
wait
```

wait_for: (time_span: int, token: Cance ✕

Waits for the given time span for the next acquired image.

Parameters

time_span : int
  Time to wait for data (in ms).

token : Optional[cvb.CancellationToken]
  A token to cancel this individual wait.

Returns

Tuple[Optional[cvb.MultiPartImage], int, Optional[cvb.NodeMapEnumerator]]
  A tuple containing a image, the wait status (see cvb.WaitStatus), and an node map enumerator.

Standardized Stream Statistics

Stream statistics have been available in Common Vision Blox ever since the introduction of the IGrab2 interface (`G2Grab`, `G2Wait`, `G2Freeze`) which introduced the function `G2GetGrabStatus`. When GenICam entered the picture, the information available through `G2GetGrabStatus` was mapped to custom properties (like e. g. `Cust::NumBuffersAcquired`) that could be queried from the driver's node maps. As of version 14.00.xxx this information will also be available under its proper SFNC-name (e. g. `Std::StreamDeliveredFrameCount`).

Breaking Changes and End-of-Life Information

- **Termination of Support for Delphi and C-Builder**
  As announced in the release notes of Common Vision Blox 2021 (13.04.xxx) the support for Delphi and C-Builder will be discontinued with Common Vision Blox 2022 (14.00.xxx). Users who want to continue using Common Vision Blox with these development environments are encouraged to continue using version 13.04.xxx.

- **Common Vision Blox Management Console no longer available**
  The Common Vision Blox Management Console has been deprecated and will no longer be installed. It has over the years been gradually replaced by a set of applications that serve the same purpose but are usable on Linux as well as Windows (namely the GenICam browser, the LicenseManager and - new in version 14.00.xxx - EditBindings.exe).

- **No more registry key for identifying the installed version of Common Vision Blox**
  Up until version 13.04.xxx, Common Vision Blox used a registry key to identify the installed version of Common Vision Blox (HKEY_LOCAL_MACHINE\Software\Common Vision Blox\Image Manager\<version>). This approach is tedious and error-prone to query and to maintain. Therefore this key has been replaced by the REG_SZ value "Version" under HKEY_LOCAL_MACHINE\Software\Common Vision Blox.

- **Change in the binary interface of the Linux Shared Objects**
  As explained <u>earlier</u>, the support for .NET Core 3.1 made it necessary to adapt the binary interface of the C-API to match that on the Windows platform. This means that the version of e. g. the libCVCImg.so shipped with 14.00.xxx is no longer interchangeable with that shipped with 13.04.xxx. This has two consequences:

  a. A shared object file from 14.00.xxx and higher may no longer be swapped in/out for its counterpart from 13.04.000 and vice versa. Doing so is going to result in undefined behavior.

  b. Linux applications that have been compiled using Common Vision Blox 13.04.xxx will absolutely need to be recompiled for 14.00.xxx and higher.

Target Platforms

Common Vision Blox has been tested and is currently supported on the following combinations of operating systems and hardware platforms:

	x86/i686	x64/x64_64	armv7l (hf)	aarch64
Windows 7 SP1 and up	X	X		
Ubuntu 18.04		X	X	X
Ubuntu 20.04		X		X

If you are interested in getting support for Common Vision Blox for combinations of operating systems and hardware platforms not listed here please contact your local distributor or <u>de.support@stemmer-imaging.com</u>.

Tool Availability

	Windows (32 bit)	Windows (64 bit)	Linux (all currently supported platforms)

Image Manager & GenICam	X	X	X
Foundation Package (CVFoundation.dll)	X	X	
Arithmetic	X	X	X
Barcode	X	X	
BayerToRGB	X	X	X
Color	X		
CVC Blob	X	X	X
DNC	X	X	X*
Edge	X	X	X
GEVServer	X	X	X
LightMeter	X	X	X
Manto	X		
Minos	X	X	X
Movie	X	X*	
OpcUa	X	X	X
Polimago	X	X	X
ShapeFinder	X	X	X
TextOut	X	X	X

* module-specific restrictions may apply; see release notes for details

Available Installers

Since Common Vision Blox 13.00.000 the installers for Common Vision Blox **no longer ship on a DVD**.

Instead, all installation packages are available for download from https://www.commonvisionblox.com/en/cvb-download/ or on the Common Vision Blox User Forum's download page (https://forum.commonvisionblox.com/c/downloads).

Currently, the following items are available for download:

<u>**Windows**</u>

The downloads for the latest Common Vision Blox builds for Windows are available here: Download: CVB - Windows 32 bit and 64 bit .

Note that the 32 bit version of Common Vision Blox may also be installed and used on 64 bit versions of Windows.

This page not only give access to the up-to-date installers but also contains

- all the **latest Video Interface Drivers** that are available for the 32 and 64 bit Windows builds of Common Vision Blox
- the **adapter for IPD Sherlock**
- the **runtime-only installers** of Common Vision Blox

The size of the installers and of the installed product differs between installer flavors as well as between system architectures and operating systems. The available installer flavors on Windows are:

	Installer
A	Common Vision Blox CameraSuite Runtime 14.00.xxx
B	Common Vision Blox CameraSuite 14.00.xxx
C	Common Vision Blox Runtime 14.00.xxx
D	Common Vision Blox 14.00.xxx

- Flavors B and D come with developer resources (Tutorials, reference documentation, header files) and are generally intended for development systems.

- Flavors A and C contain files needed during runtime only and are therefore smaller than B and D.
  They are ideally suited for deployment in a system to be shipped to the factory floor as they do not burden the system they are installed on with things that are only of interest for developers.

- Flavors A and B are CameraSuite installers, which means they will install the Image Manager plus GenICam (i.e. GigE Vision and USB3 Vision) support.
  They are intended for those customers who want to merely use Common Vision Blox as a versatile and robust image acquisition SDK. Common Vision Blox CameraSuite may be used **free of charge with any GigE Vision or USB3 Vision camera bought from STEMMER IMAGING**.

- Flavors C and D contain the full set of tools available for the respective target platform and are the ones to be used while developing and/or deploying an application that utilizes the powerful algorithms in Common Vision Blox.

The installer size ranges from about 220 MB (CameraSuite Runtime Setup) to about 670 MB (Full Common Vision Blox Setup).
This includes all the required runtime files (e.g. the .Net runtimes and and Visual C++ runtimes).

Keep in mind that during setup the installation requires a lot more space than the sum of the installer's size and the size of the installed files: The installer package is cached in the C:\Windows\Installer folder for repair/modification setups that may be required later on, and it is temporarily copied to the %temp% folder during execution of the actual setup. Taking this into account and adding the fact, that the files in the installer are typically compressed with a compression ratio of about 2 to 3, one can estimate the disc space requirements during installation to be about 4 to 5 times the size of the installer itself.

Linux Versions

Download links for the installation packages for the supported Linux versions for PC as well as the ARM-based platforms are available on Download: CVB - Linux .

Supported Compilers and Operating Systems and Development Environments

Common Vision Blox for Windows

	32 bit	64 bit
Build Platform	The Image Manager and most of the tools for the 32 bit Windows platform have been built using Microsoft Visual C++ 14.2. The pattern recognition tool Manto has been built using Delphi XE7.	The Image Manager and all tools available on the 64 bit Windows platform have been built using Microsoft Visual C++ 14.2.
Supported Development Environments and Compilers	Visual C++ (Visual Studio 2010 and up) C#, VB.Net (.Net Framework 2.0 and up)	Visual C++ (Visual Studio 2010 and up) C#, VB.Net (.Net Framework 2.0 and up)
Supported Operating Systems	The 32 bit version of Common Vision Blox was tested under Windows 10. It is usable and officially supported to run on the x64 versions of Windows starting with Windows 10. Customers using the 32 bit version of Common Vision Blox may experience compatibility limitations with the Common Vision Blox acquisition drivers (*.vin; *not GenICam.vin*) as not all manufacturers support the Windows on Windows 64 compatibility layer. If in doubt, please refer to your driver's release notes for details.	The 64 bit Windows version of Common Vision Blox was tested under Windows 10 x64. It also generally runs on the Embedded versions of Windows x64 (for best results we suggest building your Windows Embedded image based on the Application Compatibility Template).

All required runtime files are automatically installed by the Common Vision Blox setup.

Hints for Visual Studio users: The tutorial projects and solution files installed by Common Vision Blox cover the Visual Studio version 2010. Users of Visual Studio 2012 and higher please use the Visual Studio 2010 solutions when editing and/or building the tutorial programs. Visual Studio 2012 and higher will automatically convert the project and solution files as necessary when opening Visual Studio 2010 files - a mechanism we have so far found to work without any problems. When experiencing problems with upgrading the Visual Studio 2010 solutions please contact your local distributor or de.support@stemmer-imaging.com.

Please also note that starting with Visual Studio 2013, the Visual Studio installer no longer brings along the MBCS build of the MFC library. This causes problems when trying to build those Visual C++ tutorials of Common Vision Blox that still are using the MBCS version of MFC. Users who want to build those tutorials themselves are advised to first download and install the MBCS-version of MFC from Microsoft (http://www.microsoft.com/en-us/download/details.aspx?id=40770).

Note that usage of the CVB++ API requires at least Visual Studio 2015.

Common Vision Blox for Linux

The Image Manager and all available tools for the 32 and 64 bit Ubuntu 18.04 platform have been built using the GNU Compiler Collection 7, Ubuntu 20.04 platform have been built using the GNU Compiler Collection 9. These compilers are also the compilers that are supported by Common Vision Blox on the Linux platform.

Updating Existing Applications

From Common Vision Blox 2021

Upgrading an application from Common Vision Blox 2021 (13.04.xxx) to Common Vision Blox 2022 (14.00.xxx) **will not require any changes to the application on the Windows Platform**.

Binaries compiled versus that version of Common Vision Blox will continue to run with Common Vision Blox 14.00.xxx. On **Linux**, however, a rebuild will definitely be required. Code changes might be necessary to accommodate the type change of `cvbdim_t` from `long` to `int32_t` where `cvbdim_t` has *not* been used in client code.

From Common Vision Blox 2020

Upgrading an application from Common Vision Blox 2020 (13.03.xxx) to Common Vision Blox 2021 (13.04.xxx) **will not require any changes to the application**.

Binaries compiled versus that version of Common Vision Blox will continue to run with Common Vision Blox 13.04.xxx.

From Common Vision Blox 2019

Upgrading an application from Common Vision Blox 2019 (13.02.xxx) to Common Vision Blox 2020 (13.03.xxx) **will not require any changes to the application**.

Binaries compiled versus that version of Common Vision Blox will continue to run with Common Vision Blox 13.03.xxx.

From Common Vision Blox 2018

Upgrading an application from Common Vision Blox 2018 (13.01.xxx) to Common Vision Blox 2020 (13.03.xxx) **will not require any changes to the application**.

Binaries compiled versus that version of Common Vision Blox will continue to run with Common Vision Blox 13.03.xxx.

From Common Vision Blox 2017

Upgrading an application from Common Vision Blox 2017 (13.00.xxx) to Common Vision Blox 2020 (13.03.xxx) **will not require any changes to the application**.

Binaries compiled versus that version of Common Vision Blox will continue to run with Common Vision Blox 13.03.xxx.

From Common Vision Blox 2016

Upgrading an application from Common Vision Blox 2016 (12.00.xxx or 12.01.xxx) to Common Vision Blox 2020 (13.03.xxx) **will not require any changes to the application**.

Binaries compiled versus those versions of Common Vision Blox will continue to run with Common Vision Blox 13.03.xxx - unless they have been using one of the tools discontinued in Common Vision Blox 2017.

From Common Vision Blox 2011

Updating applications based on Common Vision Blox 2011 SP2 (11.02.xxx) to Common Vision Blox 2020 will only require changes if the Barcode OCX is involved (see below) as the API did not introduce any breaking changes. Common Vision Blox 2020 will continue to install the .Net wrapper DLLs of the different Common Vision Blox 2011 versions in the Global Assembly Cache so that applications built with any of the .Net languages will still be able to find their dependencies.

Applications using the Barcode OCX should be updated as the property set of the ActiveX control has changed which may require a regeneration of the property bag used in the application even if you do not want to make use of the new properties.

Applications built with Common Vision Blox 11.00.xxx or 11.01.xxx should also be adjusted to the updated CVDisplay.ocx introduced in Common Vision Blox 11.02.xxx for the same reason.

To update your project to the new ActiveX control please...

- copy the up-to-date C++ ActiveX wrapper files (cvdisplayctrl.h/.cpp; cvcbarcodectrl.h/.cpp) into your project if you are using Visual C++.

- modify the project file to use the newer ActiveX control by modifying the respective COMReference entry in your *.csproj or *.vbproj file if you are using C# or VB.Net.

- update the ActiveX control toolbar to the latest package version found in %CVB%\Lib\Delphi or %CVB%\Lib\C if you are using an Embarcadero product.

- open your development environment and toggle one of the control's properties, then save the changes to update the environment's property bag for that control.

From Older Versions of Common Vision Blox

If you are planning on porting applications built with Common Vision Blox 10.x or even Common Vision Blox 9.x please also read through the porting sections in the release notes of Common Vision Blox 2011 and Common Vision Blox 10.

List of Changes

The following components have changed in Common Vision Blox 14.00.xxx:

Installers

- Due to the changes in CVB.Net the Common Vision Blox setup now installs .NET Framework 4.7.1 if it is not already available on the system.
- Added migration guide PDF that describes how to move from the 2nd generation acquisition stack to the 3rd generation acquisition stack.

Image Manager

CVB++

- Added Visitor and Block access feature.
- Fixed issues in the GevServer wrapper concerning the newly added string node.
- Fixed a problem in the destructor of `NotifyObservable`.
- Improved logging output.
- Added support for CVWebStreaming.dll.
- `DeviceFactory::Open` will no longer return a `nullptr`.

CVB.Net

- Improved zoom handling of large images in the WPF display.
- Fixed a possible `NullReferenceException` in the `ZoomAdorner` object of the WPF display.
- Fixed a few issues in the CVOpcUa.dll wrapper.
- Fixed a problem in saving the configuration for DataMatrix grading.
- Removed overload of `Stream.Wait` that returns a `NodeMapDictionary` as out parameter (error-prone as this cannot be used in a `using` directive).

CVBpy

- Added type hints to all publicly visible functions.
- Rebuilt to include the curve functions introduced in CVFoundation.dll.

CvMgmtSvc.exe

- Corrected a malformed broadcast response parsing that could lead to "phantom CameraSuite Licenses" on some PCs.
- Adapted to new MAC range in AT cameras.

CVCore3D.dll

- Added support for twisted zigzag laser line calibration.
- Added functions for cropping point clouds relative to a ground plane.

CVCDriver.dll

- Implemented a fallback treatment for transport layers that return by nullptr as buffer base.
- Made device discovery more resilient versus broken/malfunctioning Transport Layers.

CVWebstreaming.dll

- Fixed issue with larger image buffers.

GenICam

CVFactory.dll

- Added support for unconditional streaming.
- Broken/malfunctioning Transport Layers will no longer be reported.

CVGenApiGrid.dll

- Added guard versus potential access violations when an error was reported from the underlying entities without an actual error string.
- Fixed problem when reading string properties on Linux.

CVUAL.dll

- Increased number of retries in case of transmission errors on the bus.
- Improved stability with JAI Go cameras.

GenICam.vin

- Added capability for unconditional streaming.
- Fixed an inconsistency in buffer size handling in case of multi part images.
- Fixed ini file handling error.
- Fixed a potential segmentation fault when closing a device.
- Fixed treatment of packed color formats.
- Added FrameID to VIN buffer nodemap and fixed usage of capacity and size.
- Filled device event callbacks with the correct data.
- Fixed device and port registration for events.
- Modified to ignore missing TurboDrive nodes on cameras that claim TurboDrive capability but do not really support it.
- Improved treatment of invalid/unexpected PFNC codes in MultiPart scenarios.

- Implemented a fallback treatment for transport layers that return by nullptr as buffer base.
- Fixed treatment of Bayer pixel formats in 3rd generation acquisition stack.
- Fixed VPAT generation on monochrome formats with more than 8 bits per pixel.
- TurboDrive unpacking no longer segfaults when buffers are still queued for U3V cameras.
- Fixed TurboDrive mode selection.
- Added support for SICK Ranger cameras.

GenICamBrowser

- Changed to heed the registry entry for determining the ini file location.
- Implemented unconditional streaming.
- Fixed treatment of packed color formats.
- Modified to be more tolerant towards transport layers and cameras that do not provide the expected set of displayable information.

GEVFD.dll

- Fixed packet padding and multipart header offset/part parsing.
- Fixed buffer info for regular images.
- Reduced log message output on polled nodes to prevent log message flooding.

GEVSD.dll

- Fixed packet padding and multipart header offset/part parsing.
- Fixed buffer info for regular images.
- Reduced log message output on polled nodes to prevent log message flooding.

GEVTL.cti

- Fixed gateway address setting.
- Completed GenTL 1.5 validation.
- Added Custom extension for GenTL 1.6 buffer part functionality.
- Fixed PacketSizeMode availability
- Added support for unconditional streaming
- Adjusted the log reporting rate of camera events (13.04.000 improved the detail of reporting in the GevTL.cti, however this led to the GenICamBrowser.exe reporting an excessive amount of camera events for purely informative reasons).
- Truncate device event data when necessary.
- Added missing required stream registers under their standard name instead of custom names.

siGevSvc.exe

- Added support for unconditional streaming

Foundation Package

For release notes about the former stand-alone tools that are now part of the Foundation Package (Arithmetic, BayerToRGB, Edge, LightMeter, TextOut) please refer to the tool release notes.

CVFoundation.dll

- Improved robustness of `GetCalibrationLists` versus significant distortion.

CVOpcUa.dll

- Fixed a problem with call argument pass-through on method nodes.

TeachBench

- Corrected some UI elements in the DNC module.
- Improved handling of loaded point clouds.

Known Problems

General

- The scanning functions implemented by the *CVCImg.dll* (typically those functions that take a TArea struct as the area of interest) cannot work on pixel coordinates exceeding 32767 in either direction. This is because internally, a 32 bit based fixed point arithmetic approach is being used that dedicates the lowest 16 bits for the decimal places, leaving only enough room for up to 32767 integer positions.

Foundation Package

- On the Foundation Package's FFilter Control, the property page "User Kernel" is currently not usable in Visual C++ projects.
  Trying to open this page in Visual Studio 2010 will emit an error, trying to open this page in older versions of Visual Studio may terminate the development environment. Only Visual C++ projects are affected by this - the property page opens correctly in C# and VB.Net projects.

Installation

- When running any of the Common Vision Blox Setups on a Windows 7 Embedded x64 system that has neither Service Pack 1 nor KB2393802 installed the Setup will terminate after a few seconds without installing anything on the target system.
  Please make sure you have either Service Pack 1 or KB2393802 installed on the Windows 7 Embedded x64 system before trying to install Common Vision Blox.
  For your convenience, the KB2393802 update is located in the folder \Redist\Windows Updates of the Common Vision Blox DVD.

- On one occasion we have seen the SafeNet Sentinel Parallel Port dongle driver not working after installing the 32 bit version of Common Vision Blox on a 64 bit Windows. In such a case, manual configuration of the driver usually fixes the problem: Under C:\Program Files (x86)\Common Files\SafeNet Sentinel\Sentinel System Driver you can find a simple utility called SetupSysDriver.exe.
  Start it, then select "Configure Driver", then "Add" and generate a new entry with Bus Address and Bus Number incremented by 1 (relative to what is the highest entry in the list so far), set the Type to "Internal" and Port Type to "ECP", Ownership to "Auto" and Use to "yes" - this should make the Parallel Port dongle visible in the system.
  The 64 bit version of Common Vision Blox is of course unaffected by this because it does not support the SafeNet Sentinel dongles.

License

- The SafeNet Sentinel dongles that have been used up until Common Vision Blox 10.02.000 are not usable with the x64 build of Common Vision Blox.
  Owners of a SafeNet dongle who also want to work with the x64 build of Common Vision Blox are encouraged to contact their distributor to get a quote for an upgrade to a WIBU dongle.

- When using a CodeMeter key with an ARM-based device, only one CodeMeter key can be used at a time (on the PC platform it is possible to connect multiple keys and pool their licenses). Use of node-locked licenses is not possible with ARM-based devices.

- On Windows 7 it will be necessary to modify the CodeMeter Runtime settings after installing Common Vision Blox: Open CodeMeter Control Center and from there, open the WebAdmin page (Menu: File - WebAdmin). This will open your default browser and point it to the WebAdmin page of CodeMeter. Click "Configuration", then open the "Proxy" tab and select the option "No proxy", then confirm by pressing "Apply".

Reminder: Filter Driver Requirements

This item is actually neither - strictly speaking - a known problem, nor it is new - it has been introduced in 13.01.000 already. However, given the significance of the matter it makes sense to add a short reminder for the benefit of those users who skipped version 13.01.xxx (Common Vision Blox 2018): The code signing certificate previously used by STEMMER IMAGING for signing the *siNetFilter.sys* had to be renewed in 2018. This has two consequences, one of which might require your attention:

1. The new code signing certificate of STEMMER IMAGING is an SHA2 certificate. This type of certificate is now required for signing kernel mode drivers for newer Windows builds. Older Windows builds, however, do *not* support SHA2 certificates properly. Windows 7 users will therefore need to update their system to Windows 7 Service Pack 1 before working with Common Vision Blox 13.01.xxx and higher.
   On top of Service Pack 1, please make sure that the Security updates KB3035131 and KB3033929 are installed on your system. They are available for download directly from Microsoft:

	Win32	x64
KB3035131	https://www.microsoft.com/en-us/download/details.aspx?id=46017	https://www.microsoft.com/en-US/download/details.aspx?id=46009
KB3033929	https://www.microsoft.com/en-us/download/details.aspx?id=46078	https://www.microsoft.com/en-US/download/details.aspx?id=46148

2. Windows 10 requires drivers signed with code signing certificates issued *after* the release of Windows 10 to be signed with an Extended Validation (EV) signature. However these are not digested by Windows 7. Therefore the Common Vision Blox installer now installs two sets of files for the *siNetFilter.sys* - one for Windows 7 SP1 and one for Windows 10. The Common Vision Blox installer and the *CVBIntallsiNetFilter.bat* and *CVBUninstallsiNetFilter.bat* batch jobs automatically select the correct set. We strongly advise not to use these files with Windows versions other than the ones for which they were intended.

File Versions

Image Manager

The file versions of the ActiveX controls, executables and DLLs currently belonging to the Image Manager are:

(note that file names may differ under Linux)

	Windows	Linux
CVBase.dll	1.4.1.567	1.4.1.567
CVBAvi.dll	3.3.2.953	3.3.2.953
CVCore.dll	1.4.0.214	1.4.0.214
CVCore3D.dll	1.42.4.748	1.42.4.748
CVCDisp.dll	4.4.0.1026	4.4.0.1026
CVCDriver.dll	4.3.6.992	4.3.6.992
CVCError.dll	3.9.2.65	3.9.2.65
CVCFile.dll	4.6.10.910	4.6.10.910
CVCImg.dll	4.19.0.1002	4.19.0.1002
CVCUtilities.dll	4.12.4.766	4.12.4.766
CVCore3DViewer.ocx	1.3.0.239	1.3.0.239
CVDigIO.ocx	1.6.2.977	1.6.2.977
CVDisplay.ocx	3.2.5.1153	3.2.5.1153
CVGrabber.ocx	2.2.12.1144	2.2.12.1144
CVImage.ocx	1.10.2.1402	1.10.2.1402
CVMgmtSvc.exe	2.16.1.878	2.16.1.878
CVRingbuffer.ocx	1.2.8.1106	1.2.8.1106
CVSysTray.exe	2.6.10.3549	2.6.10.3549
CVWebStreaming.dll	1.3.4.55	1.3.4.55
GenICamBrowser.exe	4.8.6.1630	4.8.6.1630
iCVCDriver.dll	3.9.2.65	3.9.2.65
iCVCImg.dll	3.9.2.65	3.9.2.65
iCVCPlugIn.dll	3.9.2.65	3.9.2.65
iCVCUtilities.dll	3.9.2.65	3.9.2.65

LicenseManager.exe	1.1.19.213	1.1.19.213
LogGUI.exe	3.1.25.441	3.1.25.441

Foundation Package

The file versions of the ActiveX controls, executables and DLLs currently belonging to the Foundation Package are:

(note that file names may differ under Linux)

	Windows	**Linux**
Arithmetic.dll	1.10.1.895	1.10.1.895
CVCDrawGraph.ocx	1.6.3.835	1.6.3.835
CVCEdge.dll	2.6.1.708	2.6.1.708
CVCLightMeter.ocx	1.6.1.2336	1.6.1.2336
CVEdge.ocx	1.2.6.2112	1.2.6.2112
CVFoundation.dll	2.11.0.1348	2.11.0.1348
CVMetric.dll	2.5.0.448	2.5.0.448
CVPolarization.dll	1.0.1.261	1.0.1.261
DrawGraph.dll	1.6.1.874	1.6.1.874
etBayerToRGB.dll	1.10.1.859	1.10.1.859
FArithmetic.ocx	1.4.2.2101	1.4.2.2101
FBlob.ocx	1.6.1.2399	1.6.1.2399
FColorSpace.ocx	1.4.2.2107	1.4.2.2107
FFilter.ocx	1.4.2.2088	1.4.2.2088
FLUT.ocx	1.4.2.2113	1.4.2.2113
FThresholding.ocx	1.4.2.2056	1.4.2.2056
iArithmetik.dll	3.9.2.65	3.9.2.65
iBayerToRGB.dll	3.9.2.65	3.9.2.65
iCVCEdge.dll	3.9.2.65	3.9.2.65
iCVCFoundation.dll	3.9.2.65	3.9.2.65
iCVMetric.dll	3.9.2.65	3.9.2.65
iLightMeter.dll	3.9.2.65	3.9.2.65
iTextOut.dll	3.9.2.65	3.9.2.65
LightMeter.dll	2.6.2.869	2.6.2.869

TextOut.dll	3.2.2.289	3.2.2.289

Management Console

The file versions of the ActiveX controls, executables and DLLs currently belonging to the Management Console are:

(note that the Management Console is not available under Linux)

	Windows	Linux
CVBManagementConsole.exe	1.6.3.211	1.6.3.211
CVBMMCCore.dll	1.6.2.41	1.6.2.41
CVBFileVersions.dll	1.6.0.47	1.6.0.47
CVBLicense.dll	1.6.1.4	1.6.1.4
CVBSettings.dll	1.6.2.53	1.6.2.53
GenICamBindings.dll	2.8.0.71	2.8.0.71
GenICamConfig.dll	1.14.5.696	1.14.5.696

GenICam

The file versions of the ActiveX controls, executables and DLLs currently belonging to the GenICam integration are:

(note that file names may differ under Linux)

	Windows	Linux
CVFactory.dll	5.0.9.934	5.0.9.934
CVGenApi.dll	3.1.0.118	3.1.0.118
CVGenApiGrid.dll	2.2.2.453	2.2.2.453
CVGenApiGrid.ocx	2.2.0.369	2.2.0.369
CVMock.vin	1.1.1.264	1.1.1.264
CVRegistry.dll	3.5.0.557	3.5.0.557
CVSetup.dll	2.2.0.1	2.2.0.1
CVSetup.exe	2.3.0.0	2.3.0.0
CVUAL.dll	1.14.2.508	1.14.2.508
GenICam.vin	3.2.25.1668	3.2.25.1668
GEVConfigManager.exe	N/A	N/A

GEVFD.dll	2.5.10.324	2.5.10.324
GEVSD.dll	2.15.12.647	2.15.12.647
GEVTL.cti	1.23.12.690	1.23.12.690
CVUSBTL.cti	1.2.7.624	1.2.7.624
CVMockTL.cti	1.0.0.15	1.0.15
iCVGenApi.dll	3.9.2.65	3.9.2.65
siNetFilter.sys	2.5.10.324	2.5.10.324
siGevSvc.exe	1.7.28.383	1.7.28.383
siLogSvc.exe	2.2.1.203	2.2.1.203

Overlay Plugins

The file versions of the Overlay Plugins currently shipped are:

(note: Overlay Plugins are not available under Linux)

	Windows	**Linux**
CVCArcPlugIn.opi	1.4.1.857	1.4.1.857
CVCAreaPlugIn.opi	1.4.2.857	1.4.2.857
CVCBitmapPlugIn.opi	1.6.1.861	1.6.1.861
CVCCirclePlugIn.opi	2.6.1.860	2.6.1.860
CVCCrosshairPlugIn.opi	2.6.1.858	2.6.1.858
CVCFixBitmapPlugIn.opi	1.6.1.848	1.6.1.848
CVCFixCirclePlugIn.opi	2.6.1.845	2.6.1.845
CVCImgPlugIn.opi	1.6.1.1062	1.6.1.1062
CVCLinePlugIn.opi	2.6.1.844	2.6.1.844
CVCMultipleRotatedRectPlugIn.opi	1.4.1.845	1.4.1.845
CVCNamedCompassPlugIn.opi	1.2.3.853	1.2.3.853
CVCPixelListPlugIn.opi	1.4.1.850	1.4.1.850
CVCPolyLinePlugIn.opi	1.6.1.848	1.6.1.848
CVCRectPlugIn.opi	2.6.1.842	2.6.1.842

CVCRotatedCrosshairPlugIn.opi	2.4.1.846	2.4.1.846
CVCRotatedRectPlugIn.opi	1.6.1.846	1.6.1.846
CVCSmartRectanglePlugIn.opi	2.6.1.844	2.6.1.844
CVCStaticTextOutPlugIn.opi	1.6.1.843	1.6.1.843
CVCTargetPlugIn.opi	1.6.1.847	1.6.1.847
CVCTextOutPlugIn.opi	1.4.1.844	1.4.1.844

CVB.Net Bindings

	Windows
Stemmer.Cvb.Aux.dll	1.125.1.923
Stemmer.Cvb.dll	1.125.1.923
Stemmer.Cvb.Barcode.dll	1.125.1.923
Stemmer.Cvb.Extensions.dll	1.125.1.923
Stemmer.Cvb.Forms.dll	1.125.1.923
Stemmer.Cvb.Foundation.dll	1.125.1.923
Stemmer.Cvb.Manto.dll	1.125.1.923
Stemmer.Cvb.Match3D.dll	1.125.1.923
Stemmer.Cvb.Minos.dll	1.125.1.923
Stemmer.Cvb.Movie2.dll	1.125.1.923
Stemmer.Cvb.Polimago.dll	1.125.1.923
Stemmer.Cvb.Sampledatabase.dll	1.125.1.923
Stemmer.Cvb.ShapeFinder.dll	1.125.1.923
Stemmer.Cvb.Spectral.dll	1.125.1.923
Stemmer.Cvb.Wpf.dll	1.125.1.923

TeachBench

The file versions of the files for TeachBench currently shipped are:

	Windows	Linux
TeachBench.exe	1.62.0.1341	N/A

TeachBench.Base.dll	1.62.0.1341	N/A
TeachBench.DNC.dll*	1.62.0.1341	N/A
TeachBench.ImageProcessors.Core.dll	1.62.0.1341	N/A
TeachBench.ImageProcessors.Foundation.dll*	1.62.0.1341	N/A
TeachBench.Minos.dll*	1.62.0.1341	N/A
TeachBench.PolimagoCR.dll *	1.62.0.1341	N/A
TeachBench.PolimagoSearch.dll *	1.62.0.1341	N/A
TeachBench.ShapeFinder2.dll*	1.62.0.1341	N/A
Microsoft.Practices.Prism.Composition.dll	5.0.0.0	N/A
Microsoft.Practices.Prism.Interactivity.dll	5.0.0.0	N/A
Microsoft.Practices.Prism.MefExtensions.dll	5.0.0.0	N/A
Microsoft.Practices.Prism.Mvvm.Desktop.dll	1.0.0.0	N/A
Microsoft.Practices.Prism.Mvvm.dll	1.0.0.0	N/A
Microsoft.Practices.Prism.PubSubEvents.dll	1.0.0.0	N/A
Microsoft.Practices.Prism.SharedInterfaces.dll	1.0.0.0	N/A
Microsoft.Practices.ServiceLocation.dll	1.2.0.0	N/A
System.Windows.Controls.Layout.Toolkit.dll	3.5.50211.1	N/A
System.Windows.Interactivity.dll	3.0.40218.0	N/A
WPFToolkit.dll	3.5.50211.1	N/A
Xceed.Wpf.Toolkit.dll	3.5.0.0	N/A

* file installed to the directory %CVB%\Applications\TeachBench

1.2   Tool Release Notes

CVB Tool Release Notes

Arithmetic

Barcode

BayerToRGB

Blob

Color

DNC

Edge

GEVServer

GPU Processing

LightMeter

Manto

Minos

Movie

OpcUa

Polimago

ShapeFinder

TextOut

CVB Image Manager and Foundation Package Release Notes

1.2.1   Arithmetic

Arithmetic Release Notes

Changes with CVB version 13.4

• Minor changes in build.

	Win32	Win64	Linux
Arithmetic.dll	1.10.1.876	1.10.1.876	1.1001.879
AriActive	1.0.0.3	1.0.0.0	N/A
iArithmetic.dll	3.9.2.3		N/A

Changes with CVB version 13.2

• Added Ubuntu 18.04 Linux builds.

	Win32	Win64	Linux
Arithmetic.dll	1.10.0.806	1.10.0.806	1.1000.806
AriActive	1.0.0.3	N/A	N/A
iArithmetic.dll	3.9.2.3		N/A

Changes with CVB version 13.1

• Added Linux builds.

	Win32	Win64	Linux
Arithmetic.dll	1.10.0.737	1.10.0.737	1.1000.737
AriActive	1.0.0.3	N/A	N/A
iArithmetic.dll	2.2.1.845		N/A

Changes with CVB version 13.0

• Switched to vc14 compiler on Windows.

	Win32	Win64
Arithmetic.dll	1.8.0.685	1.8.0.685
AriActive	1.0.0.3	N/A
iArithmetic.dll	2.2.1.731	

Changes with CVB version 11.2

- The missing prefixes in the iArithmetic.dll's DllImport statement have been added, making the Arithmetic.dll functions accessible again in iArithmetic.dll.

	Win32	Win64
Arithmetic.dll	1.6.0.271	1.6.0.271
AriActive	1.0.0.3	N/A
iArithmetic.dll	2.2.1.323	

Changes with CVB version 11.0

Starting with Common Vision Blox 11.0, Arithmetic will be available on the 32 and 64 bit windows platform.

It now uses the new licensing infrastructure introduced in Common Vision Blox 11.0, nullifying any effect of the license queries on processing time.

Known Limitations:

- AriActive is not available on the 64 bit Windows platform.

	Win32	Win64
Arithmetic.dll	1.5.2.69	1.5.0.56
AriActive	1.0.0.3	N/A
iArithmetic.dll	2.0.0.157	

Changes with CVB version 10.2

The Arithmetic.dll has undergone a few structural changes in preparation of the release of Common Vision Blox for the Windows 64 and Linux platform.

No functional changes have been applied.

The file versions of the ActiveX control(s), executable(s) and DLL(s) currently belonging to Arithmetic are:

Arithmetic.dll	1.4.0.45
AriActive.exe	1.0.0.3
iArithmetic.dll	1.0.1.0

Changes with CVB version 10.1

The Arithmetic.dll has been relinked with an updated dongle protection library that permits remote desktop access to applications built with it.

The file versions of the ActiveX control(s), executable(s) and DLL(s) currently belonging to Arithmetic are:

Arithmetic.dll	1.3.2.0
AriActive.exe	1.0.0.3

iArithmetic.dll	1.0.1.0

Changes with CVB version 10.0

The tool version has changed due to a major change in the setup architecture introduced with Common Vision Blox version 10.0.

A bug in the VPAT-access functions of the Arithmetic DLL has been fixed (all those functions previously ignored the plane index and accessed plane 0 always).

The file versions of the ActiveX control(s), executable(s) and DLL(s) currently belonging to Arithmetic are:

Arithmetic.dll	1.3.1.0
AriActive.exe	1.0.0.3
iArithmetic.dll	1.0.1.0

Changes in version 1.3

The Arithmetic.dll (version 1.2.0.3) fixes a bug in the function MulDiv16To16.
All pixels that have the lower byte set to zero in the 2nd input image are set to zero in the output image as well.

The file versions of the ActiveX control(s), executable(s) and DLL(s) currently belonging to Arithmetic are:

Arithmetic.dll	1.2.0.3
AriActive.exe	1.0.0.3

Changes in version 1.2

The Arithmetic.dll (version 1.2.0.0) contains several new functions. Existing functions have been optimized internally without changing the DLL functions interface.

Important changings:

- Functions (excl. Cut/Ext) do accept allready existing destination images.
  So, if a proper image is available the tool does not need to create a new one, but shares the old. This can make applications easier and faster. The images have to have proper size and type.
- Ari16to16-Functions can combine 10, 12 and 16 Bit images .
- MMX-support optimized.
- New function for image depth extension from 8Bit to 16Bit.
- New function for multiplication and division of 16Bit images.
- New functions for combining one image with a offset and factor.
- New functions for combining 8Bit and 16Bit images.

Please refer to the tool's documentation for detailed description in the Tools Manuals.

The file versions of the ActiveX control(s), executable(s) and DLL(s) currently belonging to Arithmetic are:

Arithmetic.dll	1.2.0.0
AriActive.exe	1.0.0.3

1.2.2   Barcode

Barcode Release Notes

Changes in CVB version 13.2

Changes:

- In previous releases the function `CvcBcGetPharmaCodeEx` and `CvcBcSetPharmaCodeEx` were missing in the exported functions of the CVCBarcode.dll. This has been corrected.
- Switched to C++ based CVCBarcode.ocx to reduce the compatibility issues encountered on the Delphi based control.

Known Problems:

- In Delphi applications under Windows 10 it is currently not possible to use the property pages of the 64 bit build of the CVCBarcode.ocx.

	Win32	Win64
CVCBarcode.dll	2.3.0.5	2.3.0.5
CVCBarcode.ocx	3.0.1.265	3.0.1.265
ZBCLib.dll	2.3.0.5	2.3.0.5
iCVCBarcode.dll	3.9.2.65	

Changes in CVB version 13.1

Changes:

- Fixed a problem in iCVCBarcode.dll that caused an uncaught overflow exception when calling `CreateConfiguration` in a 64 bit application.

Known Problems:

- Under Windows 10 it is currently not possible to use the property pages of the 64 bit build of the CVCBarcode.ocx.

	Win32	Win64
CVCBarcode.dll	2.3.0.4	2.3.0.4

CVCBarcode.ocx	2.3.2.1	2.3.2.1
ZBCLib.dll	2.3.0.4	2.3.0.4
iCVCBarcode.dll	2.7.2.472	

Changes in CVB version 13.0

Changes:

- Increased the maximum image width and height that can be processed to 32000 pixels.
- Increased the number of configurations that can be handled to 1000.

Known Problems:

- Under Windows 10 it is currently not possible to use the property pages of the 64 bit build of the CVCBarcode.ocx.

	Win32	Win64
CVCBarcode.dll	2.3.0.4	2.3.0.4
CVCBarcode.ocx	2.3.2.0	2.3.2.0
ZBCLib.dll	2.3.0.4	2.3.0.4
iCVCBarcode.dll	2.7.1.409	

Changes in CVB version 12.1

- Added support for RSS Expanded and RSS Expanded Stacked codes.
- In the 64 bit installation, the wrapper for the Barcode OCX was missing in version 12.0.

	Win32	Win64
CVCBarcode.dll	2.3.0.2	2.3.0.2
CVCBarcode.ocx	2.3.2.0	2.3.2.0
ZBCLib.dll	2.3.0.2	2.3.0.2
iCVCBarcode.dll	2.7.0.299	

Changes in CVB version 12.0

- Added `CvcBcSet/GetPharmacodeEx` so set/get the newly introduced tolerance and skew parameters in reading Pharmacodes.
- Added `CvbBcSet/GetCodeGrading1DEx` with which it is possible to select the grades on which the grade_overall result should be based.
- Added capability to perform QR Code Grading (see `CvcBcSet/GetQRCodeGrading`).

- Fixed a problem a problem in CvcBcSaveConfiguration that led to malformed files when trying to use a very long file name.
- The Barcode OCX has been updated to include configuration dialog for the symbologies introduced after CVB 9.0.x as well as 1D and 2D grading.
- Starting with Common vision Blox 2016, the Barcode OCX is now available on the x64 platform as well.
Please note that for various reasons the Barcode OCX has - unlike the other ActiveX controls in Common Vision Blox - received a new property called Image64 to support the 64 bit platform.
Customers who wish to build applications that support either platform are advised to use that property rather than the 32 bit property Image to do the assignment of the image.

	Win32	Win64
CVCBarcode.dll	2.3.0.0	2.3.0.0
CVCBarcode.ocx	2.3.1.0	2.3.1.0
ZBCLib.dll	2.3.0.0	2.3.0.0
iCVCBarcode.dll	2.6.0.244	

Changes in CVB version 11.2

- Added documentation for the 1D grading functions and parameters that were present but the documentation was forgotten in the last release.

	Win32	Win64
CVCBarcode.dll	2.2.0.6	2.2.0.6
CVCBarcode.ocx	2.0.1.0	N/A
ZBCLib.dll	2.2.0.7	2.2.0.7
iCVCBarcode.dll	2.4.0.161	

Changes in CVB version 11.1

The MessageBox that is being opened when running the tool without a license is now being opened with different MessageBox flag.

	Win32	Win64
CVCBarcode.dll	2.2.0.6	2.2.0.6
CVCBarcode.ocx	2.0.1.0	N/A
ZBCLib.dll	2.2.0.5	2.2.0.5
iCVCBarcode.dll	2.1.0.38	

Changes in CVB version 11.0

Starting with Common Vision Blox 11.0, CVC Barcode will be available on the 32 and 64 bit windows platform.
It now uses the new licensing infrastructure introduced in Common Vision Blox 11.0, nullifying any effect of the license queries on processing time.

Changes:

- CVC Barcode now supports 1D code grading.

Known Limitations:

- On the 64 bit Windows platform the Barcode OCX is currently not available.

Fixes:

- On very rare occasions CVC Barcode could crash while reading unorthodoxly generated PDF417 barcodes.

- Previously the processing time of CVCDecodeBarcode was offset by about 10 ms when working with USB or parallel port dongles.
  This is no longer the case.

	Win32	Win64
CVCBarcode.dll	2.2.0.5	2.2.0.2
CVCBarcode.ocx	2.0.1.0	N/A
ZBCLib.dll	2.2.0.5	2.2.0.2
iCVCBarcode.dll	2.0.0.26	

Changes with CVB version 10.2 Hotfix

News

- Fixed: CVB Barcode crashed with certain PDF417 codes

The file versions of the ActiveX control(s), executable(s) and DLL(s) currently belonging to Barcode are:

ZBCLib.dll   2.1.8.1

Changes with CVB version 10.2

The new version of CVC Barcode provides support for several new codes and returns more detailed information about 1D codes.

New functionality

- new 1D codes supported: Code32, Code11 and MSI Plessey

- new 2D codes supported: MicroPDF417 (not supported in omni directional mode!)
- new postal codes supported: Four-state KIX, Four-state Royal Mail, Four-state Australian and Four-state USPS codes
- returns the coordinates of the corners of 1D codes as well now, plus the rotation and the center of gravity

The file versions of the ActiveX control(s), executable(s) and DLL(s) currently belonging to Barcode are:

CVCBarcode.dll	2.1.8.0
CVCBarcode.ocx	2.0.1.0
ZBCLib.dll	2.1.8.0
iCVCBarcode.dll	1.3.0.0

Changes with CVB version 10.1

The new version of the Barcode Tool provides new functionality and some fixes or improvements.

Fixed Bugs

- After a version mismatch between dongle driver and dongle library the dongle queries could potentially take very long time in CVB 10.0. This issue has been fixed.
- The number of barcode configurations that is available to applications has been increased from 100 to 200 and a new return value has been introduced to indicate situations where the 200 configurations are all in use already.
- A malformed function signature in the iCVCBarcode.dll managed wrapper has been corrected.

The file versions of the ActiveX control(s), executable(s) and DLL(s) currently belonging to Barcode are:

CVCBarcode.dll	2.1.5.0
CVCBarcode.ocx	2.0.1.0
ZBCLib.dll	2.1.5.0
iCVCBarcode.dll	1.2.2.0

Changes with CVB version 10.0

The new version of the Barcode Tool provides new functionality and some fixes or improvements.

New Functions

- Datamatrix codes: checking of the Padding-Bytes
- Optimization for finding small codes in very big images with the new functions `CvcBcSetReadout` and `CvcBcGetReadout`.
  The detailed function descriptions are available in the CVB Barcode Manual.

- Added functionality to read QR codes, PostNet codes and Planet codes.
- Enabled multithreaded barcode and matrix code reading (note that each thread needs its own configuration and result structure).

Fixed Bugs

- Fix for Code 39, 2of5 industrial and 2of5 interleaved:
  The calculated module sizes were not always passed correctly to the info-structure.
- Codabar

The check digit was not always be checked although the option was enabled.

The file versions of the ActiveX control(s), executable(s) and DLL(s) currently belonging to Barcode are:

CVCBarcode.dll	2.1.1.0
CVCBarcode.ocx	2.0.1.0
ZBCLib.dll	2.1.1.0
iCVCBarcode.dll	1.2.0.1

Version 3.1

The new version of the Barcode Tool fixes problems in the ActiveX control.

Fixed Bugs

- The return code of 'LoadConfiguration' might be undefined.
- The ActiveX control displays a MessageBox when no Image was passed before calling Execute.
- The code in the CVCError Event of the Barcode ActiveX control can not suppress a MessageBox that is displayed by the control.
- A bug in the Delphi runtime (VCL) caused problems when using more than one ActiveX control developed in Delphi in the same application at the same time.

The file versions of the ActiveX control(s), executable(s) and DLL(s) currently belonging to Barcode are:

CVCBarcode.dll	2.0.0.8
CVCBarcode.ocx	2.0.1.0
ZBCLib.dll	2.0.0.8

Version 3.0

The new version of the Barcode Tool now supports RSS-Codes und Code Grading.
New Functions

- Starting with version 3.0, Barcode is able to read the so-called RSS-Codes (RSS-14, RSS-14 Truncated, RSS-14 Stacked, RSS-14 Stacked Omni directional, RSS Limited.
Code-Grading is now available for Data Matrix and 2D-Pharma-Codes. For more information about the new functionality please look at the Manual.

The file versions of the ActiveX control(s), executable(s) and DLL(s) currently belonging to Barcode are:

CVCBarcode.dll	2.0.0.8
CVCBarcode.ocx	2.0.0.6
ZBCLib.dll	2.0.0.8

Version 2.3

- Bug fix regarding an error while reading an PDF417 barcode. This is fixed with a new version of the ZBClib.dll 2.0.0.4
- Bug fix of the Code128 functions (new ZBClib.dll V2.0.0.5)
- Optimizing of the speed of the license-check. This is fixed with a new version of the ZBClib.dll and cvcBarcode.dll.

The file versions of the ActiveX control(s), executable(s) and DLL(s) currently belonging to Barcode are:

CVCBarcode.dll	2.0.0.6
CVCBarcode.ocx	2.0.0.6
ZBCLib.dll	2.0.0.6

Version 2.2.1

The new version of the Barcode Tool brings about a few some minor changes in the Barcode dll and the ZBClib dll (better inkjet decoding).
The new ZBClib-dll also improves the reliability while reading barcodes in very huge images.

Furthermore there are two new tutorials, made with the Borland C++ Builder .
Us usually the necessary header- and library-files for the C++ Builder are installed into the CVB\Lib\C directory.
For general information using the C Builder with Common Vision Blox please refer to the Manual.

The file versions of the ActiveX control(s), executable(s) and DLL(s) currently belonging to Barcode are:

CVCBarcode.dll	2.0.0.2
CVCBarcode.ocx	2.0.0.6
ZBCLib.dll	2.0.0.3

News with Service Pack 1 of CVB 8.0

This version supports the ThinkEye TE-100camera.

The file versions of the ActiveX control(s), executable(s) and DLL(s) currently belonging to Barcode are:

CVCBarcode.dll	2.0.0.1
CVCBarcode.ocx	2.0.0.6
ZBCLib.dll	2.0.0.1

Version 2.2

The new version of the Barcode Tool has new features and changes in the Barcode control, the Barcode dll and the ZBClib dll.

The new version saves the magic number for licensing the tool in the entry [Asentics Barcode Library] of the license.ini file.
Previously this information was stored under [ZESS Barcode Library] .

The Barcode control now supports the context sensitive F1 help for all properties, methods and events.
From now it on appears in a development environment under the name Common Vision Barcode Control.
This change has no effects on existing programs.

New Functionality

- Starting with version 2.2 the tool is able to read Pharma Codes.
  For more information about the new functions, methods and properties please refer to the Manual.

- There is extended functionality for reading Data Matrix codes.
  For example distorted codes are readable now as well as codes which are not covered by the specification (dotted data matrix codes) or codes which are printed with laser or inkjet printers.

Fixed Bugs

- In the previous version it could happen that the application crashed with some PDF 417-barcodes.
  This problem in the ZBClib.dll is fixed.

The file versions of the ActiveX control(s), executable(s) and DLL(s) currently belonging to Barcode are:

CVCBarcode.dll	2.0.0.4
CVCBarcode.ocx	2.0.0.0
ZBCLib.dll	2.0.0.0

Version 2.1

The new version of the Barcode Tool has changes in the Barcode control and the Barcode dll.

Fixed Bugs

- In the previous version it could happen with very large images that the position of 1D barcodes returned by the barcode tool was wrong due to an integer overflow.
  This problem is fixed now.

New Functions

- Starting with version 2.1, Barcode is able to read Sony Codes. Therefore, two new functions have been added, `CvcBcSetSonyCode` and `CvcBcGetSonyCode`.
  For more information refer to the Manual.

The file versions of the ActiveX control(s), executable(s) and DLL(s) currently belonging to Barcode are:

CVCBarcode.dll	1.5.0.0
CVCBarcode.ocx	1.0.20
ZBCLib.dll	N/A

1.2.3   BayerToRGB

BayerToRGB Release Notes

Changes with CVB version 13.2

- Added Ubuntu 18.04 Linux builds.

	Win32	Win64	Linux
etBayerToRGB.dll	1.10.1.772	1.10.1.772	1.1001.772
iBayerToRGB.dll	3.9.2.3		N/A

Changes with CVB version 13.1

- Added Linux builds.

	Win32	Win64	Linux
etBayerToRGB.dll	1.10.0.737	1.10.0.737	1.1000.737
iBayerToRGB.dll	2.2.1.701		N/A

Changes with CVB version 11.2

In CVB 11.0 and 11.1 the documentation of the etBayerToRGB.dll was missing.

	Win32	Win64
etBayerToRGB.dll	1.8.4.254	1.8.4.254
iBayerToRGB.dll	2.2.1.306	

Changes with CVB version 11.0

Starting with Common Vision Blox 11.0, BayerToRGB will be available on the 32 and 64 bit windows platform.
It now uses the new licensing infrastructure introduced in Common Vision Blox 11.0, nullifying any effect of the license queries on processing time.

	Win32	Win64
etBayerToRGB.dll	1.8.2.66	1.8.0.53
iBayerToRGB.dll	2.0.0.82	

Changes with CVB version 10.2

The BayerToRGB tool has been prepared for the up coming 64 bit release of Common Vision Blox and therefore the DLL has been rebuilt.
There were no changes to the programming interface or the functionality of the tool.

The file versions of the ActiveX control(s), executable(s) and DLL(s) currently belonging to BayerToRGB are:

    etBayerToRGB.dll   1.7.0.63
    iBayerToRGB.dll   1.0.1.0

Changes with CVB version 10.1

The etBayerToRGB.dll has been relinked with an updated dongle protection library that permits remote desktop access to applications built with it.

The file versions of the ActiveX control(s), executable(s) and DLL(s) currently belonging to BayerToRGB are:

    etBayerToRGB.dll   1.6.2.0
    iBayerToRGB.dll   1.0.1.0

Changes with CVB version 10.0

The tool version has changed due to a major change in the setup architecture introduced with Common Vision Blox version 10.0.

There are no changes in the Tool itself.
BayerToRGB is now part of the Foundation Package (but will continue to be available as a separate tool as well).

The file versions of the ActiveX control(s), executable(s) and DLL(s) currently belonging to BayerToRGB are:

etBayerToRGB.dll	1.6.1.3
iBayerToRGB.dll	1.0.1.0

Changes prior to CVB version 10

Version 1.4.1: Added .NET support.

Version 1.4: This release is required for all CVB dongles over number 10000.

Version 1.3: Fixes a strange behavior regarding the licensing of the tool.

Version 1.2: This release is required for all CVB dongles over number 5600.

Version 1.1: BayerToRGB has a new function called `etCreateOutputImage`. For more information refer to the Manual.

1.2.4   **Blob**

Blob Release Notes

Changes with CVB version 13.4

- Minor changes in build.

	Win32	Win64	Linux
CVCBlob.dll	4.8.2.427	4.8.2.427	4.802.427
CVBlob.ocx	1.6.1.2491	1.6.1.2491	N/A
iCVCBlob.dll	3.9.2.65		N/A

Changes with CVB version 13.2

- Added Ubuntu 18.04 Linux builds.

	Win32	Win64	Linux

CVCBlob.dll	4.8.2.352	4.8.2.352	4.802.352
CVBlob.ocx	1.6.0.2042	1.6.0.2042	N/A
iCVCBlob.dll	3.9.2.3		N/A

Changes with CVB version 13.1

- Result reporting no longer takes into account the image's coordinate system (this behavior was introduced by an error in Common Vision Blox 13.00.xxx).

	Win32	Win64	Linux
CVCBlob.dll	4.8.1.279	4.8.1.279	4.801.279
CVBlob.ocx	1.6.0.2042	1.6.0.2042	N/A
iCVCBlob.dll	2.3.0.772		N/A

Changes with CVB version 13.0

- A bug in the x64 build in the determination of the minimal convex perimeter has been fixed.
- A bug in the calculation of the convex projection that could lead to inconsistent corner coordinates has been fixed.
- Added Linux builds.

	Win32	Win64	Linux
CVCBlob.dll	4.7.1.230	4.7.1.230	4.701.240
CVBlob.ocx	1.4.2.1796	1.4.2.1796	N/A
iCVCBlob.dll	2.3.0.661		N/A

Changes with CVB version 12.0

- In the CVCBlob.ocx a bug was fixed that caused a reference count leak (and subsequently a memory leak) if the `ResultImage` property was queried.

	Win32	Win64
CVCBlob.dll	4.5.4.357	4.5.4.357
CVBlob.ocx	1.4.2.969	1.4.2.969
iCVCBlob.dll	2.3.0.363	

Changes with CVB version 11.2

- Starting with Common Vision Blox 11.2, Blob is also available for 64 bit platforms.

- New functions (`BlobLSStart`, `BlobLSNext`, `BlobLSEnd`, `BlobLSGetOpenObjects` and `BlobLSGetStartLine`) have been introduced for handling endless material (line scan acquisition).
- The CVCBlob.ocx no longer fires a CVCError event with error code 503 (ERROR_INVALIDRESULTINDEX) when no blob has been found.
- A problem in handling large images where a foreground/background transition occurs on roughly every other pixel has been fixed.
- A cleanup problem on the blob result list has been fixed.

	Win32	Win64
CVCBlob.dll	4.5.3.250	4.5.3.250
CVBlob.ocx	1.4.1.753	1.4.1.753
iCVCBlob.dll	2.3.0.279	

Changes with CVB version 11.0

In Common Vision Blox 11.0, Blob will only be available on the 32 bit platform!

Blob now uses the new licensing infrastructure introduced in Common Vision Blox 11.0, nullifying any effect of the license queries on processing time.

	Win32	Win64
CVCBlob.dll	4.2.2.32	N/A
CVBlob.ocx	1.2.1.34	N/A
iCVCBlob.dll	2.0.0.0	N/A

Changes with CVB version 10.2

The CVC Blob tool has been prepared for the up coming 64 bit release of Common Vision Blox and therefore the DLL and the ActiveX control have been rebuilt.
There were no changes to the programming interface or the functionality of the tool.

The file versions of the ActiveX control(s), executable(s) and DLL(s) currently belonging to Blob are:

CVCBlob.dll	4.1.3.51
CVBlob.ocx	1.2.1.34
iCVCBlob.dll	1.0.1.0

Changes with CVB version 10.1

The CVCBlob.dll has been relinked with an updated dongle protection library that permits remote desktop access to applications built with it.

The file versions of the ActiveX control(s), executable(s) and DLL(s) currently belonging to Blob are:

CVCBlob.dll	4.1.1.1
CVBlob.ocx	1.2.0.0
iCVCBlob.dll	1.0.1.0

Changes with CVB version 10.0

The tool version has changed due to a major change in the setup architecture introduced with Common Vision Blox version 10.0.

There are no changes in the Tool itself.

The file versions of the ActiveX control(s), executable(s) and DLL(s) currently belonging to Blob are:

CVCBlob.dll	4.1.0.1
CVBlob.ocx	1.2.0.0
iCVCBlob.dll	1.0.1.0

Blob version 4.1.4

Fixes and news in the Blob Tool:

- On the CVBlob.ocx AOI parameters were set properly but not activated when reloading a new image.

The file versions of the ActiveX control(s), executable(s) and DLL(s) currently belonging to Blob are:

CVCBlob.dll	4.0.0.22
CVBlob.ocx	1.0.0.11

Blob version 4.1.3

Fixes and Improvements in the Blob Tool:

- A memory leak was fixed.
- An Internal buffer overflow when too many streaks were in one line was fixed.
- In the last release, Blob ignored the setting of "BlobSetObjectTouchBorder" where the right border was involved.
- In the previous version the number of projections defined through the function SetNumFeret was ignored.
- A multithreading problem in BlobSetImage has been fixed.
- The documentation of Sort order of function BlobSetSortMode has been corrected.
- The sort order in the VB and VC demo has been changed.

The file versions of the ActiveX control(s), executable(s) and DLL(s) currently belonging to Blob are:

| CVCBlob.dll | 4.0.0.22 |
| CVBlob.ocx | 1.0.0.9 |

Blob version 4.1.2

Fixes and news in the Blob Tool:

- `SetImage` has become faster.
- Blobs touching the right border of an image have not been ignored according to the filter parameters. This has been fixed.
- Fixed a result sorting problem
- CVBlob.ocx: When no results are found, an error message "Invalid Row Index" popped up after pressing "Execute" on the parameter testing property page.

The file versions of the ActiveX control(s), executable(s) and DLL(s) currently belonging to Blob are:

| CVCBlob.dll | 4.0.0.17 |
| CVBlob.ocx | 1.0.0.9 |

Blob version 4.1.1

Fixes and news in the Blob Tool:

- CVCBlob.dll:

  MinMomentPoints were not calculated correctly with some images

  Wrong sort order when sorting by Y position fixed

  Binarization Error fixed

  `FilterWidthMax` and `FilterBlobHoleCount` didn't work correctly

  Problems with last line/column in result image fixed

  `BlobDestroy(..)` did not decrement the RefCount of the assigned image

- CVBlob.ocx:

  Convex Perimeter Marker fails on some images

  Minor improvements to the property pages

  Bug in `SetBlobIndex` fixed

- New Visual Basic Tutorial using Blob Control and showing the Property Page

The file versions of the ActiveX control(s), executable(s) and DLL(s) currently belonging to Blob are:

| CVCBlob.dll | 4.0.0.14 |
| CVBlob.ocx | 1.0.0.5 |

Blob version 4.1

There are a few fixes and the Blob Tool. A new ActiveX control for Blob (CVBlob.ocx) is now also available.

- fix: sometimes the calculation of moments gave wrong results (coordinates or angles)
- fix: in the previous versions it could happen that not all results were reported when sorting by size was active and the number of results was limited
- new: Blob ActiveX Control available! Fore details refer to the Blob Manual and for usage of the control please have a look at the various CVB Blob Tutorials.

The file versions of the ActiveX control(s), executable(s) and DLL(s) currently belonging to Blob are:

CVCBlob.dll	4.0.0.6
CVBlob.ocx	1.0.0.0

Blob version 4.0.0.3

Fixes in the new release:

- Bug in "Moment Calculation" using large AOIs fixed
- BlobBinariseImage now works properly on multi plane Images. Destination plane is always Plane 0.

The file versions of the ActiveX control(s), executable(s) and DLL(s) currently belonging to Blob are:

CVCBlob.dll	4.0.0.3

General information about Blob version 4.0

The new version of the Blob Tool has several new features:

- a set of new functions (see list below; for details please refer to the CVB Manual)
- processing speed has increased notably
- memory usage has been reduced notably
- support monochrome images with more than 8 bits per pixel (10, 12 or 16 bit images)
- comes with a library and a tutorial for the Borland C++ Builder (see general notes on using the C++Builder with CVB in the Manual)

The necessary header- and library-files for the C++ Builder are installed as usual to the CVB\Lib\C directory.

New and changed functions

New functions

BlobSetMaxMemoryEx	BlobGetMaxMemoryEx
BlobGetCenterEx	

BlobGetNumFeretEx

BlobGetFeretDiameter

BlobGetFeretDiameterAngle

BlobGetFeretDiamMinMax

BlobGetFeretDiamMinMaxAngle

BlobGetFeretDiamMinMaxBBox

BlobGetFeretDiamMin

BlobGetFeretDiamMinAngle

BlobGetFeretDiamMinBBox

BlobGetFeretDiamMax

BlobGetFeretDiamMaxAngle

BlobGetFeretDiamMaxBBox

Obsolete functions

BlobSetMaxMemory

BlobGetMaxMemory

The file versions of the ActiveX control(s), executable(s) and DLL(s) currently belonging to Blob are:

CVCBlob.dll   4.0.0.1

New functions in version 3.0

The new version of the Blob Tool has NO changes and NO additionally functionality.
The new DLL is only there for design reasons (removal of the SmartWeb.dll).
The SmartWeb dll is no longer part of the Blob Tool. This version supports the ThinkEye TE-100 camera.

The file versions of the ActiveX control(s), executable(s) and DLL(s) currently belonging to Blob are:

CVCBlob.dll   3.0.0.0

General information about Blob version 2.0

Reasons for version 2.0 of Blob

Three function names have changed in the new version 2.0 of Blob for functional reasons (see the "Conversion of old applications" section). Some new functions have also been added.

You must have Common Vision Blox 7.0 installed on your computer to use Blob Version 2.0 as it will not run with a CVC 1.4 installation.

The update from CVC Blob version 1.0 to Blob version 2.0 is free of charge.

New functionality

- A new image can be passed to a blob object with the `BlobSetImage` function.
  The internal tables are not recreated in this process. This makes it faster than operating with a new blob object.
  The `BlobCreate` function can also be called with an image handle of NULL if no image handle is available at the time of creation of the blob object.

- `BlobIsBlob` is available to check whether a blob object handle is valid.

- `BlobGetExecTime` returns the execution time of the last instance of the `BlobExec` function.

- An image can be binarized with `BlobBinariseImage` to visualize it.

- A maximum number of blobs to be extracted can be specified with `BlobSetNumBlobs`.
  Let's assume that an image contains 5,000 objects but you only want the three biggest ones.
  In this case you have to call `BlobSetMaxMemory` in such a way that Blob can cope with 5,000 objects. You then use `BlobSetNumBlobs` to tell Blob that you only want three of these 5,000 blobs. It is necessary to perform a sort to get the three biggest objects.

- Parameter settings can be read with the various `BlobGetxxx` functions.

Renamed functions / conversion of old applications

Pay attention to the following functions when converting old applications that were created with CVC Blob 1.0.

BlobGetMaxMemory	Renamed, previous function name: BlobGetMaxNumBlobs
BlobSetMaxMemory	Renamed, debugged, previous function name: BlobSetMaxNumBlobs
BlobGetSize	Renamed, previous function name: BlobGetBlobSize

The parameters for these functions have not been changed.

New and changed functions

New functions

BlobGetMaxMemory	BlobSetMaxMemory
BlobSetImage	BlobIsBlob
BlobGetSize	BlobGetLimitArea
BlobGetLimitHeight	BlobGetLimitWidth

BlobGetHoleLimitArea	BlobGetHoleLimitHeight
BlobGetHoleLimitWidth	BlobGetLimitNoHoles
BlobGetLimitNoMeasHoles	BlobGetObjectFeatureRange
BlobGetObjectTouchBorder	BlobGetExtractionMode
BlobGetExecTime	BlobSetNumBlobs
BlobSetSortParameter	BlobBinariseImage

<u>Obsolete functions</u>

BlobSetMaxNumBlobs	BlobGetMaxNumBlobs
BlobGetBlobSize	

<u>Debugged functions</u>

The error in the `BlobSetMaxNumBlobs` function, which is now named `BlobSetMaxMemory`, has been eliminated.
This means it is also possible to analyze images containing more than 2,000 objects (= default value).

The file versions of the ActiveX control(s), executable(s) and DLL(s) currently belonging to Blob are:

CVCBlob.dll	2.0.0.0

1.2.5   Color

Color Release Notes

Changes with CVB version 13.4

- Minor changes in build.

	Win32	Win64
CVCColor.dll	2.7.2.208	2.7.2.208
CVCColorFilter.ocx	2.0.0.1	N/A
CVCColorSearch.ocx	2.0.0.1	N/A
CVCColorTeach.exe	1.6.0.0	N/A
XSplitter.ocx	1.0.0.0	N/A

iCVCColor.dll	3.9.2.65	N/A

Changes with CVB version 11.2

A problem with filter generation introduced in CVB 11.0 has been fixed.

A problem with CTS serialization introduced in CVB 11.0 has been fixed.

	Win32	Win64
CVCColor.dll	2.7.0.3	N/A
CVCColorFilter.ocx	2.0.0.1	N/A
CVCColorSearch.ocx	2.0.0.1	N/A
CVCColorTeach.exe	1.6.0.0	N/A
XSplitter.ocx	1.0.0.0	N/A
iCVCColor.dll	2.4.0.159	N/A

Changes with CVB version 11.0

In Common Vision Blox 11.0, Color will only be available on the 32 bit platform!

Color now uses the new licensing infrastructure introduced in Common Vision Blox 11.0, nullifying any effect of the license queries on processing time.

	Win32	Win64
CVCColor.dll	2.6.1.48	N/A
CVCColorFilter.ocx	2.0.0.1	N/A
CVCColorSearch.ocx	2.0.0.1	N/A
CVCColorTeach.exe	1.6.0.0	N/A
XSplitter.ocx	1.0.0.0	N/A
iCVCColor.dll	2.1.0.18	N/A

Changes in CVB version 10.0

The tool version has changed due to a major change in the setup architecture introduced with Common Vision Blox version 10.0.

There are no changes to the Tool itself.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Color tool are:

    CVCColor.dll   2.0.0.4

CVCColorFilter.ocx	2.0.0.1
CVCColorSearch.ocx	2.0.0.1
CVCColorTeach.exe	1.6.0.0
XSplitter.ocx	1.0.0.0
iCVCColor.dll	1.0.1.0

Changes in CVB version 8.0.3

The CVCColor.dll was recompiled to accommodate the changes in the licensing concept of Common Vision Blox.

CVCColor.dll	2.0.0.4
CVCColorFilter.ocx	2.0.0.1
CVCColorSearch.ocx	2.0.0.1
CVCColorTeach.exe	1.6.0.0
XSplitter.ocx	1.0.0.0

Changes in version 2.1

No changes.

1.2.6   **DNC**

DNC Release Notes

Changes with CVB version 13.4

- Starting with Common Vision Blox 13.4, "CVB DNC" is a new tool to recognize CAD-based 3D-objects in point clouds. For details about the tool's capabilities and features please consult the tool's documentation.

	Win32	Win64	Linux
CVDNCFind.dll	1.0.0.69		1.0.0
CVDNCSamples.dll	1.0.0.0		1.0.0

1.2.7   **Edge**

Edge Release Notes

Changes with CVB version 13.2

- Added Ubuntu 18.04 Linux builds.

	Win32	Win64	Linux
CVCEdge.dll	2.6.1.694	2.6.1.621	2.601.621
CVEdge.ocx	1.2.6.2112	1.2.6.2112	N/A
iCVCEdge.dll	3.9.2.3		N/A

Changes with CVB version 13.1

- Added Linux builds.

	Win32	Win64	Linux
CVCEdge.dll	2.6.0.539	2.6.0.539	2.600.539
CVBlob.ocx	1.2.5.1745	1.2.5.1745	N/A
iCVCBlob.dll	2.2.1.761		N/A

Changes with CVB version 11.2

- A problem in handling reference counting of objects of type `Cvb.SharedEdge` and `Cvb.SharedProjection` leading to unrecoverable exceptions was fixed in the iCVCEdge.dll.
- A possible memory overwrite (and access violation) when passing a NULL pointer to GetProjection/GetNormProjection has been fixed.

	Win32	Win64
CVCEdge.dll	2.4.0.189	2.4.0.189
CVEdge.ocx	1.2.4.597	1.2.4.597
iCVCEdge.dll	2.2.1.271	

Changes with CVB version 11.0

Starting with Common Vision Blox 11.0, the Edge tool will be available on the 32 and 64 bit windows platform.
It now uses the new licensing infrastructure introduced in Common Vision Blox 11.0, nullifying any effect of the license queries on processing time.

Fixes:

- Depending on the placement of the search area, it was possible for the `OSFindFirstEdge` function to hit uninitialized data which can potentially lead to an application crash.
  This is now fixed.

	Win32	Win64
CVCEdge.dll	2.3.5.89	2.3.2.64
CVEdge.ocx	1.2.2.82	1.2.2.85
iCVCEdge.dll	2.0.1.92	2.0.1.82

Changes with CVB version 10.2

The CVC Edge tool has been prepared for the up coming 64 bit release of Common Vision Blox and therefore the DLL and the ActiveX control have been rebuilt.
In the CVCEdge.dll a memory leak occurring with dongle serial numbers > 50000 has been fixed.
Thread safety of the tool has been improved.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Edge tool are:

CVCEdge.dll	2.2.0.40
CVEdge.ocx	1.1.3.29
iCVCEdge.dll	1.0.2.0

Changes with CVB version 10.1

CVCEdge.dll and CVEdge.ocx have been relinked with an updated dongle protection library that permits remote desktop access to applications built with it.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Edge tool are:

CVCEdge.dll	2.1.1.0
CVEdge.ocx	1.1.2.0
iCVCEdge.dll	1.0.2.0

Changes with CVB version 10.0

The tool version has changed due to a major change in the setup architecture introduced with Common Vision Blox version 10.0.0.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Edge tool are:

CVCEdge.dll	2.1.0.0
CVEdge.ocx	1.1.0.1
iCVCEdge.dll	1.0.2.0

Changes in Version 2.1.3

The function `FindBestEdge` returned invalid results when used in 'Don't care Polarity' mode.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Edge tool are:

CVCEdge.dll	2.0.1.4
CVEdge.ocx	1.0.0.2

Changes in Version 2.1.2

When detecting edges in an AOI from top to bottom the returned x coordinate of the edge doesn't match the left or right coordinate of the search area.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Edge tool are:

CVCEdge.dll	2.0.1.2
CVEdge.ocx	1.0.0.7
CVCEdgeX.ocx	1.0.0.2

Changes in Version 2.1.1

A bug in the `TSxxx` and `CSxxx` functions caused inconsistent x positions for edges that have been detected vertically (horizontal edges).
Typically only the y component of such an edge detection would be used, so that the standard user wasn't effected by this bug.

The Execute method of the Common Vision Edge Control returned FALSE if using the `EDGE_PAIR` / `THRESOLD_SUB` function, even if it found the edge pair.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Edge tool are:

CVCEdge.dll	2.0.1.0
CVEdge.ocx	1.0.0.7
CVCEdgeX.ocx	1.0.0.2

Changes in Version 2.1

New

- The new version supports bit depths of more than 8 bit per pixel

- A new function `OSFindBestEdge` returns the position of the strongest edge with sub pixel accuracy (refer to Manual).

- The new managed wrapper supports all .NET languages.
  Add a reference to CVBRoot\LIB\NET\icvcEdge.DLL to your .NET application.

- A new Common Vision Edge Control (cvEdge.ocx) has been added for user under Visual Basic, Visual C++, C++Builder, Delphi and iTuition.
  It supports all edge detection methods of the library as well as high dynamic bit depths.
  The previous Edge Control (cvcEdgeX.ocx Version 1.0.0.2) is still shipped with product but use of the new Edge ActiveX Control (cvEdge.ocx) is recommended.

- New tutorials with source code for
  Delphi: DelphiEdgeOCX
  VC: VCEdgeOCX
  VC.NET unmanaged and CS.NET
  C++Builder

Fixed Bugs

- A bug in the function OSFindEdgePair caused edges not to be detected while they could be detected using the `OSFindFirstEdge` function.

- A bug in all OSxxx and all CSxxx functions caused shifted edge positions if the AOI was rotated. Small rotations caused greater shifts.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Edge tool are

cvcEdge.dll	2.0.0.5
cvEdge.ocx	1.0.0.5
cvcEdgeX.ocx	1.0.0.2

Changes in version 2.0

- The new version supports the ThinkEye TE-100 camera.

- A new set of functions supports edge detection based on the second derivative.

- User defined filter algorithms can be implemented with a new set of projection functions. Projections can be filtered with a user defined filter kernel.

- Detailed information about the new functions can be found in the manual of Edge.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Edge tool are:

cvcEdge.dll	2.0.0.2
cvcEdgeX.ocx	1.0.0.2

Changes in version 1.6

- There are no technical changes in the new version of the Edge Tool.
  Only preparations for the port to the ThinkEye TE-100 have been implemented.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Edge tool are:

cvcEdge.dll	1.3.1.3
cvcEdgeX.ocx	1.0.0.1

Changes in version 1.5

- Due to a bug the tool couldn't find edges if the AOI had negative values. This happens e.g. if the origin is moved.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Edge tool are:

cvcEdge.dll	1.3.1.0
cvcEdgeX.ocx	1.0.0.1

1.2.8   GEVServer

GEVServer Release Notes

For a detailed description see the GigE Vision Server documentation in the CVB Manual.

Changes in CVB version 14.0

- Fixed an issue in string node and string reg node handling.
- Added support for floating-point-valued nodes.

	Win32	Win64	Linux
CVGEVServer.dll	3.7.6.1205	3.7.6.1205	3.706.1205
iCVGEVServer.dll	3.9.2.65		N/A

Changes in CVB version 13.2

- Added `GSNI_EventID` for `GSNGet/SetInfoAsInteger`.
- Fixed dead-lock on `WRITEREG` while stopping transfer.
- A means for resetting the block ID has been added.

	Win32	Win64	Linux

CVGEVServer.dll	3.6.3.1159	3.6.3.1159	3.603.1159
iCVGEVServer.dll	3.9.2.65		N/A

Changes in CVB version 13.0

- Switched to VC14 compiler.
- The message channel is now flushed periodically to avoid allocating too many system resources on the IP stack implementation level.
- Fixed a deadlock that could occur when the CCP was written while the server is stopped.
- Improved acquisition stop handling.

	Win32	Win64	Linux
CVGEVServer.dll	3.4.0.797	3.4.0.797	3.400.797
iCVGEVServer.dll	1.4.0.411		N/A

Changes in CVB version 12.1

- RGBA, BGRA and BGR color formats are now handled properly.

	Win32	Win64	Linux
CVGEVServer.dll	2.6.4.4	2.6.4.4	2.801.116
iCVGEVServer.dll	1.4.0.300		N/A

New in CVB version 12.0

- The code has been optimized to implement a zero-copy strategy that greatly reduces CPU load while GigE Vision Server is running.
- GigE Vision Server now supports packet resend.
- The GigE Vision Server now implements a message channel.
- The GigE Vision Server is now capable of sending arbitrary GEV compatible image data as well as chunk data.

	Win32	Win64	Linux
CVGEVServer.dll	2.6.2.385	2.6.2.385	2.601.370
iCVGEVServer.dll	1.4.0.241		N/A

Changes in CVB version 11.2

- The function GSRemoveNode no longer returns an error after successful completion.
- GEVServer now works fine even if both ends of the communication use the socked driver.

- A potential crash that could occur when a GSStop is called while a client is about to connect has been eliminated.
- Fixed payload size calculation (e.g. wrong values for Mono8 images)
- GenApi Nodes:
  - Added `Cust::BitMaskMax` and `Cust::Compression` under a `Std::Root` category to properly display them in the CVB GenApiGrid.
  - Removed unnecessary imposed access mode read-only from `Std::Width` and `Std:Height` and set min/max values to better inter-operate with third-party receivers.
  -

	Win32	Win64
CVGEVServer.dll	1.4.6.118	1.4.6.118
iCVGEVServer.dll	1.4.0.171	1.4.0.171

Changes in CVB version 11.0

Starting with Common Vision Blox 11.0, the GigE Vision Server will be available on the 32 and 64 bit windows platform.

It now uses the new licensing infrastructure introduced in Common Vision Blox 11.0, nullifying any effect of the license queries on processing time.

The GigE Vision Server complies to the GigE Vision standard 1.2 except for the IP address assignment which is handled by the operating system.

Connection handling, device control and image streaming are fully standard compliant.

It fully complies to GenICam standard 2.1.

Changes:

- The 5000 frames limit is now replaced with a watermark in the image if the license is not valid.
- Default feature names/behavior is adapted to the GenICam Standard Features Naming Convention (SFNC) 1.4.
- Added color formats BGR8, BGRA8 and RGBA8 to improve streaming performance for different RGB memory layouts.
- Added GEV test data for test packet machanism to verify that streaming data is sent correctly.
- Added GEV firewall traversal registers.
- Added sanity checks to catch doubly defined enum entry values and symbolics in Enumeration nodes.

Fixes:

- With the previous version, if the client software connecting to the GigE Vision Server was using the JAI GigE Vision SDK a Server Stop/Start cycle resulted in broken streaming.
- If the previous version of the GigE Vision Server received a unroutable (network-wise) GVCP Packet it crashed.

- Timestamp values were wrong sometimes due to a bug in the MaskedIntReg.

- Fixed an error in feature node serialization to XML for special XML characters.

	Win32	Win64
CVGEVServer.dll	1.3.2.58	1.3.1.53
iCVGEVServer.dll	1.1.0.38	1.1.0.0

Changes in CVB Version 10.2

A service release of the GigE Vision Server tool was published introducing the following changes:

- Fixed CCP timeout problem on multiprocessor systems (not multi core).
  Timer units now always have microsecond granularity with millisecond resolution.
  This also affects timestamp features and inter packet delay.

- Fixed wrong endianness in ReadReg acknowledge packet.

- Added more communication error reporting to comply to GEV Validation Framework.

- Added TLParamsLocked feature to Std::Root category to improve configuration in some third-party transport layers.

CVGEVServer.dll	1.2.6.1
iCVGEVServer.dll	1.0.0.0

New in CVB Version 10.1 SP1

A service release of the GigE Vision Server tool was published introducing the following changes:

- Images with 12 bits per pixel (monochrome) are now handled properly by the GigE Vision Server.

- The GigE Vision Server now also permits the use of Multicast destinations with demo licenses.

- A heap corruption problem that occurred when a GSNODE handle was released after the owning GEVSRV instance has been fixed.

CVGEVServer.dll	1.2.3.0
iCVGEVServer.dll	1.0.0.0

New in CVB Version 10.1

Starting with Common Vision Blox 10.1, GEVServer is a new tool of the Common Vision Package.

The GigE Vision Server complies to the GigE Vision standard 1.0 except for the IP address assignment which is handled by the operating system.
Connection handling, device control and image streaming are fully standard compliant.
It fully complies to GenICam standard 1.1.0.

Known limitations:

- Packet Resend is not implemented

- Message Channel is not implemented

- Remote IP assignment is not possible (LLA, DHCP, static and persistent IP)

    IP management is done by the operating system

- Supported color formats:

    o Mono8

    o Mono10 (for 9 and 10 bits per pixel images)

    o Mono12 (for 11 and 12 bits per pixel images)

    o Mono16 (for 13 to 16 bits per pixel images)

    o RGB8

- IFloat and derived nodes are missing (IFloat, IFloatReg, SwissKnife and Converter)

- MaskedIntReg and IntConverter nodes are missing

- Unnecessary nodes (will not be implemented):

    IIDC 1394 nodes: DcamLock, SmartFeature, ConfRom, TextDesc and IntKey

    Grouping nodes: StructRect and Group element

A header and library file exist for Visual C/C++ and Borland C Builder 6.

Also a .NET assembly for .NET 2.0 or higher is provided.

CVGEVServer.dll	1.0.1.1
iCVGEVServer.dll	1.0.0.0

1.2.9   LightMeter

LightMeter Release Notes

Changes with CVB version 13.4

- Bugfix in Linux x64 build.

	Win32	Win64	Linux
LightMeter.dll	2.6.2.845	2.6.2.845	2.601.783
DrawGraph.dll	1.6.1.807	1.6.1.807	N/A
CVCLightMeter.ocx	1.6.1.2336	1.6.1.2336	N/A
CVCDrawGraph.ocx	1.6.3.835	1.6.3.835	N/A
iLightMeter.dll	3.9.2.3		N/A

Changes with CVB version 13.0

- Added Ubuntu 18.04 Linux build.

	Win32	Win64	Linux
LightMeter.dll	2.6.1.783	2.6.1.783	2.601.783
DrawGraph.dll	1.6.1.807	1.6.1.807	N/A
CVCLightMeter.ocx	1.6.1.2177	1.6.1.2177	N/A
CVCDrawGraph.ocx	1.6.3.791	1.6.3.791	N/A
iLightMeter.dll	3.9.2.3		N/A

Changes with CVB version 13.1

- Added Linux build.

	Win32	Win64	
LightMeter.dll	2.6.0.717	2.6.0.717	2.600.717
DrawGraph.dll	1.6.0.710	1.6.0.710	1.6.0.764
CVCLightMeter.ocx	1.6.0.1965	1.6.0.1965	N/A
CVCDrawGraph.ocx	1.6.2.744	1.6.2.744	N/A
iLightMeter.dll	2.2.1.697		N/A

Changes with CVB version 13.0

- Attempts to build histograms on floating point valued images are now blocked (LightMeter.dll).
- Limited number of grid lines on the property page to 128 (CVCDrawGraph.ocx).

	Win32	Win64
LightMeter.dll	2.2.2.651	2.2.2.651
DrawGraph.dll	1.6.0.710	1.6.0.710
CVCLightMeter.ocx	1.6.0.1743	1.6.0.1743
CVCDrawGraph.ocx	1.6.2.688	1.6.2.688
iLightMeter.dll	2.2.1.697	

Changes with CVB version 11.2

- Changing the background color in the CVCDrawGraph.ocx's property page will now update the actual appearance of the control.

- The default colors for background and foreground for the `DrawGraph` have been changed to `ButtonFace/ButtonShadow`.
- The LightMeter.dll now internally clamps the area of interest to the image coordinates to prevent problems when AOIs are (at least partially) outside the image.

	Win32	Win64
LightMeter.dll	2.2.1.260	2.2.1.260
DrawGraph.dll	1.6.0.279	1.6.0.279
CVCLightMeter.ocx	1.6.0.736	1.6.0.736
CVCDrawGraph.ocx	1.6.0.289	1.6.0.289
iLightMeter.dll	2.2.1.298	

Changes with CVB version 11.1

- The `LMExecute` function no longer returns TRUE if no image to be processed is available (as a Side effect, the LightMeter OCX's Execute method also correctly returns FALSE now if no image can be processed).

	Win32	Win64
LightMeter.dll	2.1.3.56	2.1.3.55
DrawGraph.dll	1.5.3.67	1.5.1.57
CVCLightMeter.ocx	1.5.2.77	1.5.2.80
CVCDrawGraph.ocx	1.5.1.71	1.5.1.74
iLightMeter.dll	2.0.0.90	2.0.0.77

Changes with CVB version 11.0

Starting with Common Vision Blox 11.0, LightMeter will be available on the 32 and 64 bit windows platform.
It now uses the new licensing infrastructure introduced in Common Vision Blox 11.0, nullifying any effect of the license queries on processing time.

Fixes:

- In the previous versions, Magic Number handling was fault for Magic Numbers in serial number range from 50000 to 299999.
  This has been fixed.

	Win32	Win64
LightMeter.dll	2.1.1.37	2.1.0.28
DrawGraph.dll	1.5.3.67	1.5.1.57

CVCLightMeter.ocx	1.5.2.77	1.5.2.80
CVCDrawGraph.ocx	1.5.1.71	1.5.1.74
iLightMeter.dll	2.0.0.90	2.0.0.77

Changes with CVB version 10.2

The CVC LightMeter tool has been prepared for the up coming 64 bit release of Common Vision Blox and therefore the DLL and the ActiveX control have been rebuilt.

There were no changes to the programming interface or the functionality of the tool.

In the LightMeter.dll a reference count leak when setting the image to work on to zero/NIL has been fixed.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Lightmeter tool are:

LightMeter.dll	1.4.3.12
DrawGraph.dll	1.4.2.38
CVCLightMeter.ocx	1.4.0.14
CVCDrawGraph.ocx	1.4.1.34
iLightMeter.dll	1.0.1.0

Changes with CVB version 10.1

The Lightmeter.dll and the DrawGraph.dll have been relinked with an updated dongle protection library that permits remote desktop access to applications built with it.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Lightmeter tool are:

LightMeter.dll	1.4.2.0
DrawGraph.dll	1.4.1.0
CVCLightMeter.ocx	1.4.0.1
CVCDrawGraph.ocx	1.4.0.0
iLightMeter.dll	1.0.1.0

Changes with CVB version 10.0

The tool version has changed due to a major change in the setup architecture introduced with Common Vision Blox version 10.0.

There are no changes to the Tool itself.

A few function signatures in the iLightMeter.bas header file have been fixed.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Lightmeter tool are:

LightMeter.dll	1.4.1.1
DrawGraph.dll	1.4.0.1
CVCLightMeter.ocx	1.4.0.1
CVCDrawGraph.ocx	1.4.0.0
iLightMeter.dll	1.0.1.0

Changes in version 1.3.4.1

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Lightmeter tool are:

LightMeter.dll.dll	1.3.4.1
DrawGraph.dll	1.3.5.1
CVCLightMeter.ocx	1.3.3.0
CVCDrawGraph.ocx	1.3.3.0

Changes in version 1.3.3.1

The DrawGraph.DLL (Version 1.3.3.1) fixes a bug that occurs when it is used with dongles with a serial number >= 50000.
If you are using a dongle with a lower serial number you do not need to update.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Lightmeter tool are:

LightMeter.dll.dll	1.3.3.1
DrawGraph.dll	1.3.3.1
CVCLightMeter.ocx	1.3.3.0
CVCDrawGraph.ocx	1.3.3.0

Changes in version 1.3.3

Recompiled for CVB 8.0 SP2.

- The CVC DrawGraph Control has been renamed to Common Vision DrawGraph Control.
  This has no influence on any existing programs.

- The CVC LightMeter Control has been renamed to Common Vision LightMeter Control.
  This has no influence on any existing program.

New features added in this version (for additional information refer to the CVB Manual):

CVCDrawGraph.ocx

GraphCalculation Property

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Lightmeter tool are:

LightMeter.dll.dll	1.3.3.0
DrawGraph.dll	1.3.3.0
CVCLightMeter.ocx	1.3.3.0
CVCDrawGraph.ocx	1.3.3.0

Changes in version 1.3.2

The CVB image coordinate system is supported now.
Processing speed has been further improved.
Recompiled with CVB 8.0.

New features added in this version (for additional information refer the CVB Manual):

- CVCLightMeter.ocx
- EntireImage Property
- ResetCS Property
- LightMeter.dll

Support for the Dll-version of the tool added in this release.

This version supports the ThinkEye TE-100 camera.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Lightmeter tool are:

LightMeter.dll.dll	1.3.2.0
DrawGraph.dll	1.3.2.0
CVCLightMeter.ocx	1.3.2.0
CVCDrawGraph.ocx	1.3.2.0

Changes in version 1.3.1

The LightMeter.dll is now using the `ShareObject` function for the image object to be sure that the image is valid all the time.
In addition to that small changes were made to adapt to the 7.2.0 Image Manager.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Lightmeter tool are:

LightMeter.dll.dll	1.3.1.0
DrawGraph.dll	1.3.1.0
CVCLightMeter.ocx	1.3.1.0

CVCDrawGraph.ocx	1.3.1.0

Changes in version 1.3

This version fixes a bug that the processed area was 1 pixel smaller than the selected area.

New features added in this version (for additional information refer to the manual):

CVCLightMeter.ocx:

- GetSingleHistogramEntry Method

CVCDrawGraph.ocx:

- New styles valid for GraphStyle Property.
- LabelFont Property
- LabelTextYFormat Property
- ShowTestGraph Property
- AddBufferValue Method
- AddBufferValueVB Method
- AddFIFOValue Method
- AddFIFOValueVB Method
- GetFIFOPosition Method
- SetFIFOPosition Method
- SetAllFIFOPositions Method

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Lightmeter tool are:

LightMeter.dll.dll	1.3.0.0
DrawGraph.dll	1.3.0.0
CVCLightMeter.ocx	1.3.0.0
CVCDrawGraph.ocx	1.3.0.0

Changes in version 1.2.1

This version fixes a bug when the selected area is outside the image area.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Lightmeter tool are:

LightMeter.dll.dll	1.2.1.0
DrawGraph.dll	1.2.0.0
CVCLightMeter.ocx	1.2.0.0

CVCDrawGraph.ocx	1.2.0.0

Changes in version 1.2

This version has a optimized performance (aprox. factor 3) when the selected Area is not rotated and the Density is set to 1000.

If these criteria are not met the tool will run with the standard performance.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Lightmeter tool are:

LightMeter.dll.dll	1.2.0.0
DrawGraph.dll	1.2.0.0
CVCLightMeter.ocx	1.2.0.0
CVCDrawGraph.ocx	1.2.0.0

Changes in version 1.1

The main reason for this new release of the LightMeter tool is the new Common Vision Blox Version 7.0.

To be compliant it was necessary to rebuild the tools to support the new Image Manager of Common Vision Blox.

New features added in this version (for additional information refer to the CVB Manual):

- CVCLightMeter.ocx
- GetSVPixelInLimits Method

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Lightmeter tool are:

CVCLightMeter.dll.dll	1.1.0.0
DrawGraph.dll	1.1.0.1
CVCLightMeter.ocx	1.1.0.1
CVCDrawGraph.ocx	1.1.0.0

1.2.10   Manto

Manto Release Notes

Changes with CVB version 13.4

- Minor changes in build.

	Win32	Win64
Manto.dll	1.1.1.0	N/A
Manto.ocx	1.2.3.844	N/A
MantoTeach.exe	1.0.21.0	N/A
MantoMNIST.dll	1.0.0.1	N/A
iManto.dll	3.9.2.65	N/A

Changes with CVB version 13.0

- Manto.dll has been adapted to the new internal interface structure introduced in Common Vision Blox 13.00.000.

	Win32	Win64
Manto.dll	1.1.0.0	N/A
Manto.ocx	1.2.1.696	N/A
MantoTeach.exe	1.0.21.0	N/A
MantoMNIST.dll	1.0.0.1	N/A
iManto.dll	2.2.2.405	N/A

Changes with CVB version 12.0

- Nothing has changed about the Manto tool in the Common Vision Blox 12.0 release.
  However, with the availability of the Polimago tool (which has a similar set of characteristics but a more extensive set of features) it is likely that this release of Manto is the last one and that future builds of Common Vision Blox will not include Manto any more.

	Win32	Win64
Manto.dll	1.0.23.0	N/A
Manto.ocx	1.2.0.284	N/A
MantoTeach.exe	1.0.20.0	N/A
MantoMNIST.dll	1.0.0.1	N/A
iManto.dll	2.2.2.233	N/A

Changes with CVB version 11.2

- The following functions from iManto.dll did, when called, cause a marshaling error that did silently terminate the running process:
  `MCClassIndexToClassID`, `GetMCControlWord`, `GetMCComment`, `GetMCExcludedClass`, `GetImageListExcludedClass` and `ImageListClassIndexToClassID`.

	Win32	Win64
Manto.dll	1.0.23.0	N/A
Manto.ocx	1.2.0.284	N/A
MantoTeach.exe	1.0.20.0	N/A
MantoMNIST.dll	1.0.0.1	N/A
iManto.dll	2.2.2.163	N/A

Changes with CVB version 11.0

In Common Vision Blox 11.0, Manto will only be available on the 32 bit platform!

Manto now uses the new licensing infrastructure introduced in Common Vision Blox 11.0, nullifying any effect of the license queries on processing time.

Fixes/Changes:

- In cases where very homogeneous surfaces (almost identical gray values on all the pixels) were being investigated, an uncaught floating point overflow exception could occur due to invalid arguments passed to the arctanh function.
  This has been fixed.

- Due to compatibility issues MantoTeach no longer performs license checks.
  This also means that MantoTeach will no longer be able to warn when a file cannot be saved for lack of a license.

	Win32	Win64
Manto.dll	1.0.22.0	N/A
Manto.ocx	1.1.5.55	N/A
MantoTeach.exe	1.0.20.0	N/A
MantoMNIST.dll	1.0.0.1	N/A
iManto.dll	2.0.0.13	N/A

Changes with CVB version 10.2

- The `LoadClassifier` method of the Manto OCX now supports the substitution of environment variables like %CVB%

Known issues:

- Trying to load a corrupt Sample Image List (e.g. the result of a forcibly interrupted save operation) is still likely to crash MantoTeach.

- When using a sample image list with a very big number of very small images, memory allocation will fail during preprocessing already even though in theory there is enough memory available to accommodate the temporary data required during training.
The reason for this seems to be the way in which the runtime treats and allocates small blocks of memory and a solution will probably require a re-implementation of the memory management inside Manto.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Manto tool are:

Manto.dll	1.0.20.0
Manto.ocx	1.1.4.28
MantoTeach.exe	1.0.19.0
MantoMNIST.dll	1.0.0.1
iManto.dll	1.0.2.0

Changes with CVB version 10.1

- Classifiers with only two classes in conjunction with the search method `MCSearch`/`MCSearchEx` did under very rare circumstances lead to a result position outside the region of interest being returned due to an internal overflow during the sub pixel position calculation.
This has been fixed.

- In Manto Teach a crash could occur when trying to train a classifier from a Sample Image List containing an empty class and a mask image.
This has been fixed.

- The reaction of Manto Teach to "out of memory" conditions when learning large Sample Image Lists or using a very large amount of virtual transformations has been improved.

Known issues:

- Trying to load a corrupt Sample Image List (e.g. the result of a forcibly interrupted save operation) is likely to crash MantoTeach.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Manto tool are:

Manto.dll	1.0.20.0
Manto.ocx	1.1.2.0
MantoTeach.exe	1.0.19.0
MantoMNIST.dll	1.0.0.1
iManto.dll	1.0.2.0

Changes with CVB version 10.0

The tool version version number has changed due to a major change in the setup architecture introduced with Common Vision Blox version 10.0.

Furthermore there is a new ActiveX Control, the CV Manto Search Control (Manto.ocx).
Please refer to the Common Vision Blox Manto Manual for all details regarding use and features of the Control.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Manto tool are:

Manto.dll	1.0.18.0
Manto.ocx	1.1.2.0
MantoTeach.exe	1.0.18.0
MantoMNIST.dll	1.0.0.1
iManto.dll	1.0.2.0

Changes in Version 1.3.1

- A multithreading problem has been solved by linking more recent runtime libraries from Borland.
  The execution times of the Manto search functions thereby increased by about 15%.
  Please note that in multithreaded execution each thread should use its own classifier which may mean that you will need to load the same classifier several times (once for each thread).

- In previous versions of Manto an erratic entry of the CVB serial number in the registry could lead to a situation where Manto denied the activation of a license.
  This behavior has been fixed in the latest versions of the Manto DLL and the MantoTeach application (both bearing version number 1.0.19.0).

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Manto tool are:

Manto.dll	1.0.18.0
MantoTeach.exe	1.0.18.0
MantoMNIST.dll	1.0.0.1

Changes in version 1.3

- Attention: SILs that have been saved with the newest version of Manto (Version of Manto DLL: 1.0.17.0) cannot be opened any longer with older Versions of Manto (Version of Manto DLL 1.0.14.0 or older)!

- New functions in the Manto DLL: `GetImageListEnumeration`, `SetImageListEnumeration`, `MCFindCounterExamples`, `MCReadToken`, `SetMCSearchCallback`, `GetSILVersion`

- New features in Manto Teach:

o Support for the new functions of the Manto DLL. Thereby:

o Assistance in automatically extracting sample images for the excluded class

o Possibility to create a deterministic classifier

o Classifier testing with the ReadToken function

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Manto tool are:

Manto.dll	1.0.17.0
MantoTeach.exe	1.0.17.0
MantoMNIST.dll	1.0.0.1

Changes in version 1.2

- Note: There's no need to recompile applications built with previous versions.
  Only the Manto DLL (Manto.dll Version 1.0.12.0) and Manto-Teach (MantoTeach.exe Version 1.0.12.0) need to be replaced with the newer versions (1.0.14.0 for both).

- New functions in the Manto DLL: `GetImageListNumSamplesX, GetImageListItemX`.

- New features in Manto Teach:

  o DirectDraw may be enabled or disabled through the menu 'Options' in case there are problems with RGB display

  o color model (monochrome, RGB, RGB 9 planar) may be selected from the 'Options' menu

  o display of the mask image in the SIL tree

  o drag & drop of bitmaps, SILs and classifiers into Manto Teach now possible

  o in the Search Test dialogue the 'To Training' items are now highlighted in the image

  o the SIL tree now is case sensitive with respect to class names

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Manto tool are:

Manto.dll	1.0.14.0
MantoTeach.exe	1.0.14.0
MantoMNIST.dll	1.0.0.1

Changes in version 1.1.1

- Licensing: The tool can be used by Windows users with none-administrator access (guests) now.

Changes in version 1.1

The new version exports some new functions (refer to manual):

- `GetImageListExcludedClass`
- `SetImageListExcludedClass`
- `MantoColourTransform`

- `MCSearchResultRef`
- `MCSearchAllEx`

furthermore the `SearchResults` class has been introduced to encapsulate search results for use in Visual Basic.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Manto tool are:

Manto.dll	1.0.4.0
MantoTeach.exe	1.0.4.0
MantoMNIST.dll	1.0.0.1

1.2.11   Match3D

Match3D Release Notes

Changes with CVB version 14.0

- A new ICP algorithm has been implemented in CVMatch3D which is faster than the hitherto used classic approach. The new approach can be selected through the `CorrespondenceMethod` field in the `CVM3DMatchExtendedParameters` struct. Note that the new feature will not be accessible through the old-style .Net wrappers.

	Win32	Win64	Linux
CVMatch3D.dll	1.5.0.468	1.5.0.468	1.500.468
iCVMatch3D.dll	3.9.2.65		N/A

Changes with CVB version 13.2

- Adapted license verification code.
- Changed .Net Framework dependency to version 3.5.
- `MatchDownsampledPointClouds()` in *iCVMatch3D.dll* has been fixed to longer longer return a partially uninitialized transformation.

	Win32	Win64	Linux
CVMatch3D.dll	1.4.1.458	1.4.1.458	1.401.458
iCVMatch3D.dll	3.9.2.65		N/A

Changes with CVB version 13.1

Starting with Common Vision Blox 13.1, Match3D is a new component of the Common Vision Blox Package.

It is a tool for aligning 3D point clouds in 3D space using an ICP algorithm.

	Win32	Win64	Linux
CVMatch3D.dll	1.2.0.212	1.2.0.212	1.200.212
iCVMatch3D.dll	1.0.0.37		N/A

1.2.12 Minos

Minos Release Notes

Changes with CVB version 13.4

- Fixed name clash in `FilterLaplace` between *MinosCVC.dll* and *CVFoundation.dll*.

	Win32	Win64	Linux
MinosCVC.dll	3.5.0.888	3.5.0.888	3.500.891
MinosX.ocx	1.2.1.0	1.2.1.0	N/A
TeachNT.exe	1.0.16.0	1.0.16.0	N/A
iMinosCVC.dll	3.9.2.65		N/A

Changes with CVB version 13.2

- Creating a classifier from a training set that contains an empty class will no longer cause problems.

	Win32	Win64	Linux
MinosCVC.dll	3.4.3.821	3.4.3.821	3.403.821
MinosX.ocx	1.2.1.0	1.2.1.0	N/A
TeachNT.exe	1.0.16.0	1.0.16.0	N/A
iMinosCVC.dll	3.9.2.3		N/A

Changes with CVB version 13.1

- In the MinosCVC.dll shipped with Common Vision Blox 13.00.000 a call to `NumMTSClasses` triggered an access violation due to a malformed unicode string comparison. This has been fixed.

- With the MinosCVC.dll shipped with Common Vision Blox 13.00.000 loading a classifier with unicode characters could trigger an access violation due to a missing zero termination. This has been fixed.
- Two access beyond array bounds situations have been fixed, improving the stability of the `LearnCLFFromMTS` call.
- Parameter reporting in `GetCLFLCS` has been fixed.
- A name clash (`FilterLaplace`) between the *CVFoundation.dll* and the *MinosCVC.dll* has been fixed. Use `FilterLaplace3x3` from now on.

	Win32	Win64	Linux
MinosCVC.dll	3.4.2.732	3.4.2.732	3.402.732
MinosX.ocx	1.2.1.0	1.2.1.0	N/A
TeachNT.exe	1.0.16.0	1.0.16.0	N/A
iMinosCVC.dll	2.6.1.715		N/A

Changes with CVB version 13.0

- MinosCVC.dll has been adapted to the new internal interface structure introduced in Common Vision Blox 13.00.000.
- Unicode capability has been added.
- Learning a classifier from an empty MTS will no longer lead to an access violation.
- The hill-climbing algorithm for Minos searches has been modified to prevent it from veering off in situations where the "quality relief" is completely flat.
- The Win32 setup now also installs the C++ build of MinosCVC.dll

	Win32	Win64	
MinosCVC.dll	3.2.3.630	3.2.3.630	3.203.630
MinosX.ocx	1.2.1.0	N/A	N/A
TeachNT.exe	1.0.16.0	1.0.16.0	N/A
iMinosCVC.dll	2.4.0.604		N/A

Changes with CVB version 12.1

- A problem in the 64 bit implementation of the learning routines that did lead to apparently different classifier behavior between 32 and 64 bit has been fixed.
- A malformed range check in the 64 bit implementation of the learning routines was fixed.
  This malformed range check could in some cases lead to a premature interruption of the learning phase without before finishing the classifier generation.

	Win32	Win64	Linux
MinosCVC.dll	1.0.18.2	2.6.7.0	2.610.20

MinosX.ocx	1.2.1.0	N/A	N/A
TeachNT.exe	1.0.16.0	1.0.16.0	N/A
iMinosCVC.dll	2.2.3.421		N/A

Changes with CVB version 12.0

- In the 64 bit build of Minos the implementation of the correlation functions is now thread safe. Please note that this is not true for the 32 bit build. If you require a thread safe implementation of the correlation functions also for your 32 bit application please contact de.support@stemmer-imaging.com.

- Also limited to the 64 bit build of Minos is the correction of a problem in the Consistency check functions: The consistency checks did also pick up on patterns that are located inside a region marked as a "don't care" area.

- The function SetMTSGlobalAdvance was broken in the 64 bit build and did always behave as if the GA parameter had been set to True. This is now fixed.

- In the 64 bit build the model images are now updated every time a model property changes or a new instance has been added (just like in the 32 bit build).

- A classifier created with LearnCLFFromMTS will now by default use normalized quality feedback (in previous builds, classifiers created by LearnCLFFromMTS had no defined quality measure which made and a call to SetCLFQualityType was required before the classifier could actually be used.

- Saving a Minos Training Set no longer requires a valid Minos license (warning: Saving a classifier still requires a valid Minos license!).

- Fixed a malformed integrity check that led to GetCLFModelData failing every time it was called (64 bit build only).

- GetCLFSize now reports the correct classifier size in the 64 bit build as well.

- The function LoadMTSFile no longer checks if the file to be loaded has the extension *.mts and fails if it hasn't.

- The function LoadMTSFile no longer crashes on legacy MTS files (Win64 only; Win32 version still loads Legacy files).

	Win32	Win64	Linux
MinosCVC.dll	1.0.18.2	2.6.4.280	2.601.261
MinosX.ocx	1.2.1.0	N/A	N/A
TeachNT.exe	1.0.16.0	1.0.16.0	N/A
iMinosCVC.dll	2.2.3.348		N/A

Changes with CVB version 11.2

- In previous version, files generated with the function `WriteMTSFile` were not readable because the 64 bit build did write too many bits into the size descriptors, effectively rendering the saved

file unreadable.
The problem did not show when working with TeachNT.exe because this is still a 32 bit application, even when installing Common Vision Blox for the x64 platform.

- In situations where very big patterns with poor contrast have been trained, the sub pixel calculations used by `SubPixelOptimum` could in rare cases lead to significantly wrong results due to a diverging denominator in the parabolic approximation.
  This situation is now detected properly and the sub pixel correction offset is restricted to the range [-0.5, 0.5] in x and y direction.

- In CVB 11.0 and 11.1 a change in the CVCDisp.dll led to Minos being unable to acquire images from a *.vin driver.
  This has been fixed.

- In the 64 bit build of the MinosCVC.dll a problem has been fixed that could lead to classifiers differing from the results obtained under 32 bit and, in some cases, even to a crash of the `LearnCLFFromMTS` function.

- In the 64 bit build of the MinosCVC.dll the function `CLFSetGlobalAdvance` did report an error and not do what was expected regardless of the circumstances.
  This has been fixed.

- The 64 bit implementation of the function `WriteMTS` has been fixed - in previous versions, MTS files saved through the 64 bit implementation of `WriteMTS` could not be loaded any more (please note that this only affected MTS files written using the 64 bit build of the MinosCVC.dll.
  MTS files written using TeachNT.exe were unaffected.

- String marshaling in the .Net wrapper has been fixed on the functions `CLFComment, CLFMTSName, GetModelName` and `MTSComment`.

	Win32	Win64
MinosCVC.dll	1.0.16.0	2.2.10.169
MinosX.ocx	1.2.1.0	N/A
TeachNT.exe	1.0.16.0	1.0.16.0
iMinosCVC.dll	2.1.1.122	

Changes with CVB version 11.1

- A bug in the managed-unmanaged marshaling of the filter functions in iMinosCVC.dll has been fixed.

- In the x64 build of CVB 11.0 an uncaught exception could occur when calling `LearnCLFFromMTS` on an MTS in which an entire image has been trained as a model.
  This has been fixed.

	Win32	Win64
MinosCVC.dll	1.0.16.0	2.2.10.169
MinosX.ocx	1.2.1.0	N/A

TeachNT.exe	1.0.16.0	1.0.16.0
iMinosCVC.dll	2.1.1.122	

Changes with CVB version 11.0

Starting with Common Vision Blox 11.0, Minos will be available on the 32 and 64 bit windows platform.

It now uses the new licensing infrastructure introduced in Common Vision Blox 11.0, nullifying any effect of the license queries on processing time.

Changes:

- Due to compatibility issues TeachNT no longer performs license checks.
  This also means that TeachNT will no longer be able to warn when a file cannot be saved for lack of a license.
  However, MinosCVC.dll will point out this situation.

Known Limitations:

- The Minos ActiveX controls are currently not available on the 64 bit Windows platform.

- TeachNT.exe is currently not available as a 64 bit binary.
  Instead, a 32 bit binary is currently being installed and used on the 64 bit Windows platform for generating the classifiers.

	Win32	Win64
MinosCVC.dll	1.0.16.0	2.2.2.87
MinosX.ocx	1.2.1.0	N/A
TeachNT.exe	1.0.16.0	1.0.16.0
iMinosCVC.dll	2.0.0.108	2.0.0.98

Changes with CVB version 10.0

The tool version has changed due to a major change in the setup architecture introduced with Common Vision Blox version 10.0.

- A problem in the MinosX.ocx that led to access violations when the option "AccumulateToMTS" was used has been fixed.

- A serialization problem affecting all of the MinosX controls has been fixed.

- A wrong declaration of GetImageListSymmetries in the iManto.bas header has been fixed.

- The consistency check dialog in TeachNT.exe will now close properly (inability to close it was caused by a problem in the CVCImg.dll).

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Minos tool are:

MinosCVC.dll	1.0.15.0
MinosX.ocx	1.2.1.0
TeachNT.exe	1.0.15.0
iMinosCVC.dll	1.0.2.0

Changes with CVB version 1.5.6

A bug in the Delphi runtime (VCL) caused problems when using more than one ActiveX control developed in Delphi in the same application at the same time.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Minos tool are:

minosCVC.dll	1.0.15.0
MinosX.ocx	1.1.7.0
TeachNT.exe	1.0.15.0

Changes with CVB version 1.5.5

In the SearchX control, the limitation of the property "Locality" to 20 pixels maximum has been removed.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Minos tool are:

minosCVC.dll	1.0.15.0
MinosX.ocx	1.1.6.0
TeachNT.exe	1.0.15.0

Changes with CVB version 1.5.4

An issue regarding the licensing of the tool has been fixed that might lead to problems under certain conditions.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Minos tool are:

minosCVC.dll	1.0.15.0
MinosX.ocx	1.1.5.0
TeachNT.exe	1.0.15.0

Changes with CVB version 1.5.3

The registration dialog didn't allow registration of the tool for CVB serial numbers greater than 9999.
This was only possible using the CVB SysInfo tool.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Minos tool are:

minosCVC.dll	1.0.14.0
MinosX.ocx	1.1.5.0
TeachNT.exe	1.0.14.0

Minos .Net Compiler support with CVB 8.0.3

CVB 8.0.3 comes with the necessary Minos header files and wrapper dlls for the actual Microsoft .Net compilers.
As usual they are installed to the CVB directory ..\Lib\Net.

Further information regarding programming CVB and the .Net compilers could be found in the CVB Manual in the chapter .Net Programming hints.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Minos tool are:

minosCVC.dll	1.0.12.0
MinosX.ocx	1.1.5.0
TeachNT.exe	1.0.12.0

Service Pack 1 of CVB 8.0 Service Pack1 for CVB 8.0 contains a new version of the Minos Control (MinosX.ocx version 1.1.5.0).

The new Control has no changes in functionality, only the name of the component which you import in your development environment changed to Common Vision Minos Control respectively Common Vision Minos Search Control, Common Vision QuickTeach Control, Common Vision Minos Filter Control, Common Vision Minos Coordinator Control and Common Vision Minos Correlate Control.

Furthermore the new Control supports the context sensitive F1 help for properties, methods and events.

This version supports the ThinkEye TE-100 camera.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Minos tool are:

minosCVC.dll	1.0.12.0
MinosX.ocx	1.1.5.0
TeachNT.exe	1.0.12.0

Changes with CVB version 1.5.2

- Licensing

  The tool can now be used by Windows users with none-administrative privileges (guests) now.

- Reference counting

  In the previous versions of CVB and Minos the functions `ShareObject, ReleaseObject` and `RefCount` could be used with Minos Objects (CLF, MTS und SearchResults).
  By porting the Image Manager libraries to the ThinkEye TE-100 platform this historical connection between the Image Manager and Minos became obsolete.
  `ShareObject, ReleaseObject` and `RefCount` can't be used with any of the Minos objects anymore.
  Instead of this the Minos library now exports the functions `ShareClf, ReleaseClf, ShareResults, ReleaseResults, ShareMts` and `ReleaseMts` that can be used as a replacement for the functions named above.
  This means that any application that uses `ShareObject, ReleaseObject` or `RefCount` needs to be ported to the new version.
  Users of the Minos ActiveX control who do not use any of the functions can use the new version of the Minos ActiveX control which is already ported to the new Minos and Image Manager libraries. Only users of the Minos DLL are affected by this update and they should consider the port carefully and only if they want to use the feature of the new licensing mentioned above.

  Porting an existing code is done in the following steps:

  o Search within your source code for all calls to `ReleaseObject`

  o Verify if the function is called with an image object as a parameter, in this case replace `ReleaseObject` by `ReleaseImage`.

  o If it is called with a Minos Training Set (MTS) object replace `ReleaseObject` by `ReleaseMts`.

  o If it is called with a Minos Classifier (CLF) replace `ReleaseObject` by `ReleaseClf`.

  o If it is called with a Minos Search Result (RESULTS) replace `ReleaseObject` by `ReleaseResults`.

  o Search within your source code for all calls to `ShareObject`

  o Verify if the function is called with an image object as a parameter, in this case replace `ShareObject` by `ShareImage`.

  o If it is called with a Minos Training Set (MTS) replace `ShareObject` by `ShareMts`.

  o If it is called with a Minos Classifier (CLF) replace `ShareObject` by `ShareClf`.

  o If it is called with a Minos Search Result (RESULTS) replace `ShareObject` by `ShareResults`.

  o Search within your source code for all calls to `RefCount`

  o Verify if the function is called with an image object as a parameter, in this case you can keep the call as it is, otherwise you remove the code and use the `ShareXXX` function that returns the actual reference count.

For some reasons it might be useful to ensure which version of the Minos DLL is installed on the system.

You can use the code below to check if Minos version greater or equal 1.5.2 is installed on the system:

VC

```c
BOOL IsMinos152()
{
  HINSTANCE hLib;
  BOOL(__stdcall *pFunc) (void *param);
  BOOL bRes = false;
  if (hLib = LoadLibrary("MINOScvc.DLL"))
  {
    pFunc = (BOOL(__stdcall *)(void *param)) GetProcAddress(hLib, "ShareMts");
    if (pFunc) bRes = true;
  }
  FreeLibrary(hLib);
  return bRes;
}
```

VB

```vb
Function IsMinos152() As Boolean
Dim Library As Long
Dim Func As Long
  IsMinos152 = False
  Library = LoadLibrary("minoscvc.dll")
  If (Library <> 0) Then
  Func = GetProcAddress(Library, "ShareMts")
  If (Func <> 0) Then IsMinos152 = True
  FreeLibrary Library
  End If
End Function
```

Delphi

```delphi
Function IsMinos152(): Boolean;
var Lib: LongInt;
    Func: Pointer;
begin
  IsMinos152 := false;
  Lib := LoadLibrary('minoscvc.dll');
  If (Lib <> 0) Then
  begin
    Func := GetProcAddress(Lib, 'ShareMts');
    If (Func <> nil) Then IsMinos152 := True;
    FreeLibrary (Lib);
  end;
End;
```

Using this function you can write intelligent code to handle the `ShareXXX` and `ReleaseXXX` functions.

- File format

  Due to the changes described above the file format of the Minos Training Set (MTS) changed as well.
  The new version of the Minos Teach program can still read old MTS files, but it saves them in a new format which can't be read by previous versions.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Minos tool are:

minosCVC.dll	1.0.12.0
MinosX.ocx	1.1.4.0
TeachNT.exe	1.0.12.0

Changes with CVB version 1.5.1

The new version stores the registration information's under HKEY_LOCAL_MACHINE while the previous version uses HKEY_CURRENT_USER.
This allows an easier change of the user name.
The new version still supports the old location if the new key cannot not be read.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Minos tool are:

minosCVC.dll	1.0.6.0
MinosX.ocx	1.0.4.0
TeachNT.exe	1.0.6.0

Changes with CVB version 1.5

The register dialog of the previous version allows only Magic Numbers with a maximum length of 4 characters.
This bug is fixed in this new release.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Minos tool are:

minosCVC.dll	1.0.6.0
MinosX.ocx	1.0.3.0
TeachNT.exe	1.0.6.0

1.2.13 Movie

Movie2 (Movie) Release Notes

Changes with CVB version 13.2

Changes:

- Movie2.dll now supports raw video recording into a proprietary container file format that Common Vision Blox can read from and write to. This format has been optimized for high speed recording, making it possible to achieve 2GB/s and more depending on the storage system that is being used.

	Win32	Win64
Movie2.dll	2.6.0.1239	2.6.0.1239
Movie2.ocx	2.2.1.1239	2.2.1.1239
iMovie2.dll	3.9.2.65	
MovieInteractive2.exe	1.7.2.2517	1.7.2.2517
MovieInteractive2PlugIn.dll	1.3.0.82	1.3.0.82
MIAPaoiCut.dll	1.7.2.2517	1.7.2.2517
MIAPBayerConversion.dll	1.7.2.2517	1.7.2.2517
MIAPFrameSkipping.dll	1.7.2.2517	1.7.2.2517
MIAPHistoTrigger.dll	1.7.2.2517	1.7.2.2517
MIAPNormalization.dll	1.7.2.2517	1.7.2.2517
MIAPResize.dll	1.7.2.2517	1.7.2.2517

Changes with CVB version 13.1

Changes:

- Movie Interactive 2 now uses TextOut for generating destructive image time stamps.

	Win32	Win64
Movie2.dll	2.5.1.1033	2.5.1.1033
Movie2.ocx	2.2.0.1077	2.2.0.1077
iMovie2.dll	2.4.2.942	2.4.2.942
MovieInteractive2.exe	1.7.1.2054	1.7.1.2054
MovieInteractive2PlugIn.dll	1.4.0.2019	1.4.0.2019

MIAPaoiCut.dll	1.4.0.2054	1.4.0.2054
MIAPBayerConversion.dll	1.4.0.2054	1.4.0.2054
MIAPFrameSkipping.dll	1.5.1.2054	1.5.1.2054
MIAPHistoTrigger.dll	1.4.0.2054	1.4.0.2054
MIAPNormalization.dll	1.4.0.2054	1.4.0.2054
MIAPResize.dll	1.4.0.2054	1.4.0.2054

Changes with CVB version 13.0

Changes:

- Switched to VC14.
- Added Unicode support.

Known Limitations:

- As the TextOut tool is not available on the Win64 platform, it is not possible to embed timestamps (or other textual data) in the *.avi files recorded with MovieInteractive2.

	Win32	Win64
Movie2.dll	2.4.1.947	2.4.1.947
Movie2.ocx	2.2.0.992	2.2.0.992
iMovie2.dll	2.4.2.827	2.4.2.827
MovieInteractive2.exe	1.6.0.1626	1.6.0.1626
MovieInteractive2PlugIn.dll	1.4.0.1626	1.4.0.1626
MIAPaoiCut.dll	1.4.0.1626	1.4.0.1626
MIAPBayerConversion.dll	1.4.0.1626	1.4.0.1626
MIAPFrameSkipping.dll	1.5.1.1626	1.5.1.1626
MIAPHistoTrigger.dll	1.4.0.1626	1.4.0.1626
MIAPNormalization.dll	1.4.0.1626	1.4.0.1626
MIAPResize.dll	1.4.0.1626	1.4.0.1626

Changes with CVB version 11.2

Changes:

- In some situations, the Movie2 tool did emit a message box indicating lack of a license even though a valid license is available on the system.
  This happens if one of the runtimes loaded into the process changes the accuracy at which the

FPU and SSE units carry out floating point calculations by means of modifying the respective unit's control register.

This behavior is known to occur with the Embarcadero Delphi runtimes as well as some older versions of Direct3D.

As a workaround, the Movie tool now resets the SSE and FPU control registers to default values prior to verifying the tool Magic Number.

- `Movie2GetNumDroppedFrames` now returns the correct result since it internally now also reads out GRAB_INFO_NUMBER_IMAGES_LOST_LOCKED.

- The browse button on the property page of the Movie2 OCX has been fixed.

Known Limitations:

- As the TextOut tool is not available on the Win64 platform, it is not possible to embed timestamps (or other textual data) in the *.avi files recorded with MovieInteractive2.

	Win32	Win64
Movie2.dll	2.2.4.81	2.2.2.65
Movie2.ocx	2.0.4.175	2.0.4.178
iMovie2.dll	2.0.0.77	2.0.0.67
MovieInteractive2.exe	1.2.1.35	1.1.2.18
MovieInteractive2PlugIn.dll	1.2.0.50	1.1.0.43
MIAPaoiCut.dll	1.2.0.36	1.1.0.29
MIAPBayerConversion.dll	1.2.0.29	1.1.0.22
MIAPFrameSkipping.dll	1.2.0.26	1.1.0.19
MIAPHistoTrigger.dll	1.2.0.27	1.1.0.20
MIAPNormalization.dll	1.2.0.27	1.1.0.21
MIAPResize.dll	1.2.0.26	1.1.0.20

Changes with CVB version 11.1

Fixes:

- In the previous release of MovieInteractive2 a problem occurred when recording sequences of files, and the issued file name was also part of the destination path.

Known Limitations:

- As the TextOut tool is not available on the Win64 platform, it is not possible to embed timestamps (or other textual data) in the *.avi files recorded with MovieInteractive2.

	Win32	Win64

Movie2.dll	2.2.4.81	2.2.2.65
Movie2.ocx	2.0.4.175	2.0.4.178
iMovie2.dll	2.0.0.77	2.0.0.67
MovieInteractive2.exe	1.2.1.35	1.1.2.18
MovieInteractive2PlugIn.dll	1.2.0.50	1.1.0.43
MIAPaoiCut.dll	1.2.0.36	1.1.0.29
MIAPBayerConversion.dll	1.2.0.29	1.1.0.22
MIAPFrameSkipping.dll	1.2.0.26	1.1.0.19
MIAPHistoTrigger.dll	1.2.0.27	1.1.0.20
MIAPNormalization.dll	1.2.0.27	1.1.0.21
MIAPResize.dll	1.2.0.26	1.1.0.20

Changes with CVB version 11.0

Movie2 now uses the new licensing infrastructure introduced in Common Vision Blox 11.0, nullifying any effect of the license queries on processing time.

When running without a valid license, the duration of the recorded *.avi file is no longer limited, but the recorded AVI file will be watermarked with the Common Vision Blox logo.

As of Common Vision Blox 11.0, the previous version of **Movie (marked deprecated in the release of Common Vision Blox 10.2** - see release notes below) **is no longer being distributed**.

Customers still wanting to use the outdated version need to stay on Common Vision Blox 10.2.

Fixes:

- In some cases, where width and height were at odds with the requirements of DirectShow, a crash of the Movie2.dll did happened when starting AVI recording.
  This did typically happen when recording Bayer-converted images and has been fixed.

- The previous version of MovieInteractive2 was unable to record into any other single image format than *.bmp (*.avi files were unaffected by this!).
  This has been fixed.

- The previous version of the Movie2.ocx did cause an access violation when trying to record text meta data into an *.avi file in one of the .NET languages.

- The MovieInteractive2 Plugin that does histogram normalization did in the last release always hand on the unprocessed image.
  This has been fixed.

- When recording monochrome AVI files the palette was offset by 12 bytes, resulting in the colors in the palette being 0, 0, 0, 0, 1, 2, 3, ..., 252.
  This effect is barely visible to the eye, but will result in slightly modified pixel values when the AVI file is being used in software outside Common Vision Blox.
  Note that the actual pixel values have always been recorded correctly, and if such a file was

being used inside Common Vision Blox no error was visible because Common Vision Blox disregards the palette when reading monochrome AVI files.

Known Limitations:

- As the TextOut tool is not available on the Win64 platform, it is not possible to embed timestamps (or other textual data) in the *.avi files recorded with MovieInteractive2.

	Win32	Win64
Movie2.dll	2.2.4.81	2.2.2.65
Movie2.ocx	2.0.4.175	2.0.4.178
iMovie2.dll	2.0.0.77	2.0.0.67
MovieInteractive2.exe	1.2.0.26	1.1.2.18
MovieInteractive2PlugIn.dll	1.2.0.50	1.1.0.43
MIAPaoiCut.dll	1.2.0.36	1.1.0.29
MIAPBayerConversion.dll	1.2.0.29	1.1.0.22
MIAPFrameSkipping.dll	1.2.0.26	1.1.0.19
MIAPHistoTrigger.dll	1.2.0.27	1.1.0.20
MIAPNormalization.dll	1.2.0.27	1.1.0.21
MIAPResize.dll	1.2.0.26	1.1.0.20

Changes with CVB version 10.2

Movie2

In Common Vision Blox 10.2 version 2 of CVB Movie was introduced, henceforth called Movie2.

Due to several improvements and architectural changes that have been made, **Movie2 is not code compatible with CVB Movie**, but it overcomes some of the limitations of the previous version:

- the recorder initialization and de-initialization process has been made simpler and more robust; apart from the creation function (`CreateMovie2Recorder`) only `Movie2StartRecording`, `Movie2StopRecording` and (optionally) `Movie2PreStartRecording` are now necessary to control the state of the AVI recorder object

- with Movie2 frame-accurate recording has finally become possible thanks to an architectural change and a more granular control over the synchronization options between the acquisition part of an application and the recording to disc

- a wider range of frame rates for playback of the recorded AVI file has become available with Movie2, as it allows the specification of the replay frame rate rather than the specification of an only millisecond-precise frame time as in the previous version

- Movie2 supports the recording of textual data along with the video stream into a standard AVI container; the tool also comes with tutorials showing how to access these data in an application

- the support for variable-framerate-recording has been removed to make the programming interface simpler (variable-framerate-recording is not supported by the AVI container, therefore maintaining the extraneous functions involved for this feature made no sense)

- the customized color plane ordering by means of the functions `SetRedPlane`, `SetGreenPlane` and `SetBluePlane` has been removed in favor of a slight increase in the performance of the copy process involved in recording the video stream; input images are now always assumed to have a Red-Green-Blue plane order

- the .Net wrapper for Movie2 (iMovie2.dll) now employs an object oriented approach for easier integration of the tool into a .Net application

- a new MovieInteractive2 application has been created as an extensible and flexible replacement for the tool MovieInteractive

- the internal architecture has been modified to enable support for different streaming formats in the future (currently Movie2 still uses Microsoft's DirectShow infrastructure as the foundation of its implementation and therefore basically supports the same range of codecs as CVB Movie and the AVI file format as the container format for the recorded files)

As Movie2 is not code compatible with the previous version, we also include the "classic" CVB Movie tool in the 10.2 release of Common Vision Blox.

It is however highly recommended that new applications henceforth be based entirely on Movie2 as all future development are going to be performed on the newer version.

Also, only Movie2 will be available on the 64 bit release of Common Vision Blox.

As the basic usage concept of the CVB Movie recording tool has not been changed, anyone familiar with the previous version is likely to find the transition to Movie2 very straightforward.

As usual, CVB Manual gives detailed information about the programming interface.

If you require assistance please feel free to contact your local distributor or the support of Stemmer Imaging.

Movie2 is using the same Magic Numbers as the classic version of CVB Movie.

This means that everybody who in the past purchased a license for CVB Movie is entitled to use Movie2 from now on at no additional cost.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Movie2 tool are:

Movie2.dll	2.1.1.16
Movie2.ocx	2.0.2.96
iMovie2.dll	1.0.0.5
MovieInteractive2.exe	1.0.0.0
MovieInteractive2PlugIn.dll	1.0.0.0
MIAPaoiCut.dll	1.0.0.0
MIAPBayerConversion.dll	1.0.0.0
MIAPFrameSkipping.dll	1.0.0.0
MIAPResize.dll	1.0.0.0

Movie (deprecated)

The only change to the classic CVB Movie tool concerns the utility "MovieInteractive":

- minor changes have been made to the graphical user interface

- it is now possible to specify the time span over which recording should take place

- the Common Vision Blox GenApi Grid has been added to MovieInteractive so that the parameters of GenICam compliant cameras may now be changed from within MovieInteractive

- MovieInteractive may now be used with a USB hand switch (order code "CVX Hand switch") to control start and stop of the video recording

- a bug in the handling of the acquisition ring buffer has been fixed

- first time starting the MovieInteractive Demo Error loading image file occurs, problem fixed

- problem in hardware timestamp according to HDD Recording fixed

-

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Movie tool are:

CVAVIRec.dll	1.0.2.0
CVAVIRec.ocx	1.0.1.0
CVBSourceDS.ax	1.0.2.1
MovieInteractive.exe	1.0.6.0
iCVAVIRec.dll	1.0.1.0

Changes with CVB version 10.1

The "MovieInteractive" tool has been expanded:

- It is now possible to use an USB hand/ food switch to start and stop the recording to hard disc.
  In the other case to write the images from the RAM memory into an avi file to hard disc.
  The key short cut STRG + R can be pressed to start/ stop recording or write images from RAm memory to hard disc into an avi file.

- timestamp for avi files in bayer format and converted to RGB has been added.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Movie tool are:

CVAVIRec.dll	1.0.2.0
CVAVIRec.ocx	1.0.1.0
CVBSourceDS.ax	1.0.1.2
MovieInteractive.exe	1.0.4.0
iCVAVIRec.dll	1.0.1.0

Changes with CVB version 10.1

The "MovieInteractive" tool, newly introduced in Common Vision Blox 10.0, has been expanded to now support converting Bayer-filtered input automatically into RGB images including White

Balancing. This is particularly useful when working with cameras or frame grabbers that do not perform this conversion on their own either due to lack of processing hardware or for performance reasons.

For this feature CVB BayerToRGB Tool is used.

Also a problem in the usage of the CLAllSerial Dll of Camera Link acquisition devices has been resolved.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Movie tool are:

CVAVIRec.dll	1.0.2.0
CVAVIRec.ocx	1.0.1.0
CVBSourceDS.ax	1.0.1.2
MovieInteractive.exe	1.0.3.0
iCVAVIRec.dll	1.0.1.0

Changes with CVB version 10.0

The tool version has changed due to a major change in the setup architecture introduced with Common Vision Blox version 10.0.

The default synchronization mode for `AddFrame` has been changed: In previous versions, `AddFrame` returned immediately while the image was being copied in the AVI stream in the background.
If the subsequent image arrived too fast, this could lead to a situation where images were lost and not written to the stream.
Now, by default the AddFrame method does not return the before the complete image has been copied and sent into the AVI processing pipeline.

A new Movie Interactive Application is added to the Movie package.
The program allows recording to hard disc or recording via RAM and writing the streams as AVI-file as well as loading and replaying sequences.
It uses the CVB Textout Tool for the Timestamp option.

For details see the CVB Movie Manual (refer CVB manual) chapter Movie Interactive Application.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Movie tool are:

CVAVIRec.dll	1.0.2.0
CVAVIRec.ocx	1.0.1.0
CVBSourceDS.ax	1.0.1.2
MovieInteractive.exe	1.0.0.0
iCVAVIRec.dll	1.0.1.0

Version 1.1 (CVB 8.0 Service Pack 3)

Fixed Bugs

- A problem in the integration of Movie into iTuition has been fixed.

New Functions

- A new acquisition mode for grabbers with IGrab2 interface has been added (see documentation of `SetAcquisitionMode` for details).

-

.Net support

- Movie supports the MS.NET Compiler.
  The cvAVIRec Control and also the cvAVIRec Library (from CVB 8.0.3b on) are supported.

- The setup includes also a new tutorial for CS.Net (CSharp) with sourcecode.
  For further information please have a look at the CVB Manual.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Movie tool are:

CVAVIRec.dll	1.0.1.0
CVAVIRec.ocx	1.0.1.0
CVBSourceDS.ax	1.0.1.0

Version 1.0 (CVB 8.0 Service Pack 1)

Fixed Bugs

- A minor bug in the DirectShow filter CVBDShowSource.ax was fixed.
  This bug did lead to problems, when images from RGB sources were streamed, if the color ordering was different from BGRBGRBGR...
  Another consequence of this bug was that the color plane settings were ignored.

New Functions

- No functionality added.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Movie tool are:

CVAVIRec.dll	1.0.0.0
CVAVIRec.ocx	1.0.0.1
CVBSourceDS.ax	1.0.0.2

Version 1.0

Initial Release. No Bugs known and no functionality added.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Movie tool are:

CVAVIRec.dll	1.0.0.0
CVAVIRec.ocx	1.0.0.1
CVBSourceDS.ax	1.0.0.0

1.2.14   OpcUa

OpcUa Release Notes

Changes with CVB version 13.4

- Starting with Common Vision Blox 13.2, "CVB OpcUa" is an implementation of the OPC UA Standard. For details about the tool's capabilities and features please consult the <u>tool's documentation</u>.

	Win32	Win64	Linux
CVOpcUa.dll	1.1.0.264		1.100.264

1.2.15   Polimago

Polimago Release Notes

Changes with CVB version 13.3

- Fixed a memory leak when saving xsil files.

	Win32	Win64	Linux
Polimago.dll	3.0.7.535	3.0.7.535	3.7.540
iPolimago.dll	3.9.2.65		N/A

Changes with CVB version 13.2

- Starting with CVB version 13.2 Polimago is available in Linux.
- Added `PMInterpretSpecification()` method to *Polimago.dll*.
- Added `InterpretSpecification()` method in *iPolimago.dll*.

- `PMOpenSearchClf()` will no longer run into an access violation when trying to load a file that is not a search classifier.
- Images with nonlinear memory arrangement (hitherto incompatible with Polimago) will now be linearized automatically prior to processing.
- `SilCreateDataTypeImageEx()` and `SilAddNamedImageItem()` have been added to the *Sil.dll* to make fringe handling easier (fringe handling is not needed for Polimago and is therefore unnecessarily confusing).
- The *Sil.dll* is now capable of properly loading and saving an empty Sample Image List.
- Support for Linux has been added.

	Win32	Win64	Linux
Polimago.dll	3.0.5.5	3.0.5.5	3.5.5
iPolimago.dll	3.9.2.3		N/A

Changes with CVB version 13.0

- Increased the processing speed of the preprocessing filters used in learning as well as classification, increasing overall performance .
- Fixed a problem that led to a lockup when the grid step size was chosen too small in `PMGridSearch`.
- The function `PMOpenSearchClf` no longer crashes when trying to load a non-existent file.
- Functions for testing a learning data access callback structure have been added.
- Learning with a data access callback structure from just two images now works.

	Win32	Win64
Polimago.dll	2.4.1.310	2.4.1.310
PolimagoLib.dll	1.0.1.0	1.0.1.0
iPolimago.dll	1.6.2.527	1.6.2.527

Changes with CVB version 12.1

- Fixed a pointer truncation in the Win64 build that could lead to crashes during training or search.
- Fixed a problem with uninitialized variables in the Win64 build.
- Added the possibility to carry out training on a user-defined database.
- Added new tutorial that demonstrates pose estimation in C#.

	Win32	Win64
Polimago.dll	1.6.4.6	1.6.4.6
PolimagoLib.dll	1.0.0.6	1.0.0.6
iPolimago.dll	1.4.4.174	1.4.4.174

Changes with CVB version 12.0

Starting with Common Vision Blox 12.0, Polimago is a new component of the Common Vision Blox Package.

It is a tool for fast classifying a potentially polymorphic pattern and/or determine its rotation, scale and potentially 3D pose state.

	Win32	Win64
Polimago.dll	1.4.5.81	1.4.5.81
PolimagoLib.dll	1.0.0.2	1.0.0.2
iPolimago.dll	1.0.0.68	1.0.0.68

1.2.16 **ShapeFinder**

ShapeFinder Release Notes

Changes with CVB version 14.0

- Fixed access violation that could occur when the region of interest was touching the bottom edge of the image and did not cover the entire width of the image.

- The SF_cuda.dll introduced in version 13.2 is no longer needed and will no longer be shipped. Instead, the Win64 build now natively supports CUDA if a suitable GPU was detected at runtime (CUDA runtime has been statically linked and won't need to be installed on the system; a CUDA-capable and up-to-date graphics card driver will be sufficient). The function `SF2UseCuda` can be used to override the decision to use a GPU and to query the current status.
  This does *not* apply to Win32 and the Linux builds. A CUDA-enabled SF.dll for aarch64 devices is available upon request (please contact your sales representative).

	Win32	Win64	Linux
SF.dll	3.0.12.505	3.0.12.505	3.12.505
CVShapeFinder2Search.ocx	1.6.2.609	1.6.2.609	N/A
SF2TeachNET.exe	11.1.7142.19197	11.1.7142.19197	N/A
iSF.dll	3.9.2.65		N/A

Changes with CVB version 13.2

- Starting with Common Vision Blox 13.2, a CUDA-based version of the SF.dll is available for the Windows x64 platform as well as for the nVidia Tegra TX1 system. On the Windows platform, the

SF_cuda.dll is installed into the %CVB% directory. It may either be used by renaming it to "SF.dll" (it is drop-in compatible with the regular SF.dll) or - if you are developing with C/C++ - by linking your application versus SF_cuda.lib in the %CVB%\Lib\C directory. For getting the TX1 build please contact de.support@stemmer-imaging.com.

	Win32	Win64	Linux
SF.dll	3.0.8.453	3.0.8.453	3.8.455
SF_cuda.dll	N/A	3.0.0.0	N/A
CVShapeFinder2Search.ocx	1.6.2.609	1.6.2.609	N/A
SF2TeachNET.exe	11.1.7142.19197	11.1.7142.19197	N/A
iSF.dll	3.9.2.65		N/A

Changes with CVB version 13.1

- Using scale limits in the `TSymmetryParams` structure that are more restrictive than the scale limits embedded in the classifier no longer leads to results being missed.

	Win32	Win64	Linux
SF.dll	3.0.7.268	3.0.7.268	3.7.268
CVShapeFinder2Search.ocx	1.6.1.514	1.6.1.514	N/A
SF2TeachNET.exe	11.1.6754.26295	11.1.6754.26295	N/A
iSF.dll	3.4.0.584		N/A

Changes with CVB version 13.0

- Starting with Common Vision Blox 13.00.000 the ShapeFinder tool will also be available for the x64 build of Common Vision Blox.
  For this to be possible, the tool has effectively been rewritten using C++.
  The Delphi and the C++ build generally will yield the same results when using the same classifiers on the same data, with the following two exceptions:

  o Result qualities and position may differ slightly for those results that lie close enough to an image boundary for features to reside outside the image.

  o The exact sorting order for results with identical quality may differ between the Delphi and the C++ build as the sorting algorithms used are different.

- In the 32 bit Linux builds the release build shows a small rounding error that may lead to the results of `GetSFImage` differing slightly between the Windows and the Linux build. However, the result of `GetSFImage` is more of cosmetic value - the actual classification results are not affected.

	Win32	Win64	Linux
SF.dll	3.0.3.178	3.0.3.178	3.203.630

CVShapeFinder2Search.ocx	1.6.1.446	1.6.1.446	N/A
SF2TeachNET.exe	11.1.6256.3929	11.1.6256.3929	N/A
iSF.dll	3.4.0.465		N/A

Changes with CVB version 12.0

- In iSF.dll the `GetSFComment` function has been modified to properly handle the string returned from unmanaged code.

	Win32	Win64
SF.dll	2.0.22.0	N/A
CVShapeFinder2Search.ocx	1.2.0.248	N/A
SF2TeachNET.exe	11.1.5683.29983	N/A
iSF.dll	3.2.2.240	N/A

Changes with CVB version 11.2

- A bug in the treatment of color images in ShapeFinder has been fixed:
  When passing color images with interleaved memory layout to the `SF2Search` function and using a correlation-based fine processing step ("Precision Boost" set to "Low" or "High") the position and quality results were different from when copying the same color plane into a different image before passing it to `SF2Search`.
  Now ShapeFinder verifies the assumptions about memory layout and reports the correct result.

	Win32	Win64
SF.dll	2.0.22.0	N/A
CVShapeFinder2Search.ocx	1.2.0.173	N/A
SF2TeachNET.exe	11.1.5074.26081	N/A
iSF.dll	3.2.1.166	N/A

Changes with CVB version 11.0

In Common Vision Blox 11.0, ShapeFinder will only be available on the 32 bit platform!

Shapefinder now uses the new licensing infrastructure introduced in Common Vision Blox 11.0, nullifying any effect of the license queries on processing time.

Two issues in the VB.NET ShapeFinder 2 Teach Example has been fixed:

- Models can now be opened by double-clicking a SF2 file

- In some cases an uncaught exception occurred when loading a workspace file, depending on the settings made therein.
These exceptions are not handled properly.

	Win32	Win64
SF.dll	2.0.20.0	N/A
CVShapeFinder2Search.ocx	1.1.2.0	N/A
SF2TeachNET.exe	2.2.4156.15533	N/A
iSF.dll	3.0.0.19	N/A

Changes with CVB version 10.2

A faulty interpretation of the VPATs of rotated images has been fixed (this did lead to problems with drivers that do support the RotateImage setting).

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Shapefinder tool are:

SF.dll	2.0.18.0
cvShapeFinder2Search.ocx	1.1.2.0
SF2TeachNET.exe	2.0.3629.21147
iSF.dll	2.0.1.0

Changes with CVB version 10.1

The following issues have been addressed in the new version of ShapeFinder

- On the ShapeFinder2 Search OCX's the "Correlation Threshold" property was previously ignored with a PrecisionBooster setting of "Low".
This error has been fixed.

- The ShapeFinder2 Search OCX has been relinked with an updated dongle protection library that permits remote desktop access to applications built with it.

- A minor mistake in the way the Overlay Plugins are being used has been changed in the ShapeFinder Teach application (`AddOverlayObject` was used previously instead of `AddOverlayObjectNET`; however, under the circumstances in which ShapeFinder Teach uses it this did not really make a difference).

-

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Shapefinder tool are:

SF.dll	2.0.17.0
cvShapeFinder2Search.ocx	1.1.2.0
SF2TeachNET.exe	2.0.3278.27660
iSF.dll	2.0.1.0

Changes with CVB version 10.0

The tool version has changed due to a major change in the setup architecture introduced with Common Vision Blox version 10.0.

- Learning objects in a very thin rectangular AOI could produce an access violation in previous versions.

- Loading a corrupted SF2 model could produce an exception in the previous versions.

- A memory leak in the learning functions has been fixed.

- Thread-safety has been improved.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Shapefinder tool are:

SF.dll	2.0.17.0
cvShapeFinder2Search.ocx	1.1.0.1
SF2TeachNET.exe	2.0.3075.22694
iSF.dll	2.0.1.0

Changes in version 2.1.0

- Extensions have been made for the new SF2 Teach program.
  The features of a found object for instance can be displayed as an overlay at the found position according to the found scaling and rotation.
  The image of the object used for the coarse search can now be displayed. This is done by using a new DLL function called `PyramidImage`.

- The SF2 Teach program supports now Drag And Drop for the EMU file format.

- You can now add a string comment to a model. The comment is stored together with the model in the same file and can be retrieved afterwards.
  Refer to `SetSFComment` and `GetSFComment` in the manual.

- The new function CreateSF2Ex can be used to limit the zoom factor of the search.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Shapefinder tool are:

SF.dll	2.0.11.0
cvShapeFinder2Search.ocx	1.0.0.6
SF2TeachNET.exe	2.0.x.x.

Changes in version 2.0.2

- An issue regarding the licensing of the tool that might lead to problems under certain conditions.

- The previous versions generated a bitmap file with the name 'xfsz.bmp' when learning new objects.
- In the previous versions the SF2 search function crashed depending on the settings of the rotation- and scale invariance.
- In the previous versions the SF2 search function couldn't find objects if the reference point was far away to the center of the feature window.
  It specially happened when searching for very big objects in small areas.
- The creation of models with don't care points has been sped up.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Shapefinder tool are:

SF.dll	2.0.6.0
cvShapeFinder2Search.ocx	1.0.0.6
SF2TeachNET.exe	2.0.x.x

Changes in version 2.0.1

- The new version fixes a bug regarding the returned quality of the object been found.
  When using the Precision Booster the quality could increase the maximum value of 1.0 or reach values near 0.0 (even if the object was obviously the same).
- The Visual Basic definition of the CreateSF2 function changed caused by a structure miss-alignment in the previous version.
- The new function SF2SearchEx allows the user to specify angle- and scale limits for the search task.
- The SF2 Teach program now supports Drag And Drop for image and SF2 model files.
- The registration dialog didn't allow registration of the tool for CVB serial numbers greater than 9999. This was only possible using the CVB SysInfo tool.

Furthermore there is a new Tutorial in the CVB Shapefinder Manual available.
It shows how to use Shapefinder2, e.g. how to use the Teach-program step by step and other useful hints.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Shapefinder tool are:

SF.dll	2.0.2.0
cvShapeFinder2Search.ocx	1.0.0.4
SF2TeachNET.exe	2.0.x.x

Changes in version 2.0

- rotation- and scale- invariant pattern searches

- enhanced sub-pixel accuracy

- simplified programming interface with an easier implementation of training and execution

- new tutorials for the use of Shapefinder 2 with VB.Net, Delphi,VB, VC and C++Builder

- new: SearchControl for Shapefinder cvShapeFinder2Search.ocx

- new: Teach program in .Net for Shapefinder2: SF2TeachNET.exe

The new library is backward compatible to previous versions of Shapefinder, but the new classifiers can be used exclusively with the new functions.

To use the Teach application of Shapefinder V 2.0 and higher the Microsoft .NET runtime needs to be installed on your system.
You can find a version of this runtime on the CVB CD in the directory\WinTools\MicrosoftRuntimes\NET Framework Runtime.
Other localized versions of the .NET Runtime are available from Microsoft under www.microsoft.com.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Shapefinder tool are:

SF.dll	2.0.0.0
cvShapeFinder2Search.ocx	1.0.0.3
SF2TeachNET.exe	2.0....

Shapefinder .Net Compiler support with CVB 8.0.3

CVB 8.0.3 comes with the necessary Shapefinder header files and wrapper dlls for the actual Microsoft .Net compilers.
As usual they are installed to the CVB directory ..\Lib\Net.

Further information regarding programming CVB and the .Net compilers could be found in the CVB Manual in the chapter .Net Programming hints.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Shapefinder tool are:

SF.dll	1.0.12.0

Changes in version 1.0.3

- Licensing: The tool can be used by Windows users with non-administrator access (guests) now.

- Sample program "VCSearchAll"to detect several times the same objects.
  The relevant source code can be found in the Tool's Manual in the chapter "Practice of Operation".

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Shapefinder tool are:

SF.dll   1.0.12.0

Changes in version 1.0.2

- Version 1.0.3.0 of the SF.dll fixes a memory leak in the function `CreateSelectedSF`.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Shapefinder tool are:

SF.dll   1.0.3.0

Changes in version 1.0.1

The new version stores the registration information under HKEY_LOCAL_MACHINE while the previous version uses HKEY_CURRENT_USER.
This allows a more consistent licensing across different user accounts.
The new version still supports the old location if the new key cannot not be found.

- The coordinate system of the model image was incorrect.
  This didn't affect the processing but the display.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the Shapefinder tool are:

SF.dll   1.0.1.0

1.2.17   Spectral

Spectral Release Notes

Changes with CVB version 13.2

- Starting with Common Vision Blox 13.2, "CVB Spectral" is a new tool for processing and handling hyperspectral image data. For details about the tool's capabilities and features please consult the <u>tool's documentation</u>.

	Win32	Win64	Linux
CVSpectral.dll	1.0.6.244	1.0.6.244	1.6.8
iCVSpectral.dll	3.9.2.65		N/A

1.2.18 **TextOut**

TextOut Release Notes

Changes with CVB version 13.2

Starting with Common Vision Blox 13.02.000 the TextOut tool will also be available for the Ubuntu 18.04 builds of Common Vision Blox.

	Win32	Win64	Linux
TextOut.dll	3.2.2.282	3.2.2.282	3.202.282
FontGenerator.exe	1.1.0.1	1.1.0.1	N/A
FontGeneratorW.exe	1.1.0.1	1.1.0.1	N/A
iTextOut.dll	3.9.2.3		N/A

Changes with CVB version 13.2

Starting with Common Vision Blox 13.02.000 the TextOut tool will also be available for the Ubuntu 18.04 builds of Common Vision Blox.

	Win32	Win64	Linux
TextOut.dll	3.2.2.219	3.2.2.219	3.202.219
FontGenerator.exe	1.1.0.1	1.1.0.1	N/A
FontGeneratorW.exe	1.1.0.1	1.1.0.1	N/A
iTextOut.dll	3.9.2.3		N/A

Changes with CVB version 13.1

Starting with Common Vision Blox 13.01.000 the TextOut tool will also be available for the Linux builds of Common Vision Blox.

	Win32	Win64	Linux
TextOut.dll	3.2.1.144	3.2.1.144	3.201.144
FontGenerator.exe	1.1.0.1	1.1.0.1	N/A
FontGeneratorW.exe	1.1.0.1	1.1.0.1	N/A
iTextOut.dll	3.9.1.57		N/A

Changes with CVB version 13.0

Starting with Common Vision Blox 13.00.000 the TextOut tool will also be available for the x64 build of Common Vision Blox.

	Win32	Win64
TextOut.dll	3.0.1.52	3.0.1.52
FontGenerator.exe	1.1.0.1	1.1.0.1
FontGeneratorW.exe	1.1.0.1	1.1.0.1
iTextOut.dll	2.4.0.439	

Changes with CVB version 11.1

- In Common Vision Blox 11.1, TextOut will only be available on the 32 bit platform!
- In the iTextOut.h file from the Common Vision Blox 11.00.001 release a comma was missing, resulting in a syntax error when this file was included.

	Win32	Win64
TextOut.dll	2.1.0.1	N/A
FontGenerator.exe	1.1.0.1	N/A
FontGeneratorW.exe	1.1.0.1	N/A
iTextOut.dll	1.1.0.1	N/A

Changes with CVB version 11.0

- In Common Vision Blox 11.0, TextOut will only be available on the 32 bit platform!
- TextOut now uses the new licensing infrastructure introduced in Common Vision Blox 11.0, nullifying any effect of the license queries on processing time.

	Win32	Win64
TextOut.dll	2.1.0.1	N/A
FontGenerator.exe	1.1.0.1	N/A
FontGeneratorW.exe	1.1.0.1	N/A
iTextOut.dll	1.1.0.1	N/A

Changes with CVB version 10.0

- The tool version has changed due to a major change in the setup architecture introduced with Common Vision Blox version 10.0.
- There are no changes to the Tool itself.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the TextOut tool are:

TextOut.dll	2.0.0.1
FontGenerator.exe	1.1.0.1
FontGeneratorW.exe	1.1.0.1
iTextOut.dll	1.0.1.0

Changes in version 2.0

- Textout now supports unicode.Please refer to the tool's documentation for detailed description.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the TextOut tool are:

TextOut.dll	2.0.0.0
FontGenerator.exe	1.1.0.1
FontGeneratorW.exe	1.1.0.1

Changes in version 1.1.1

- Added .NET support.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the TextOut tool are:

TextOut.dll	1.0.1.1
FontGenerator.exe	1.0.0.1

Changes in version 1.1

- The TextOut.dll has been modified to support Windows-Users with none-administrative privileges now.

The file versions of the ActiveX control(s), executable(s) and DLL(s) that are currently part of the TextOut tool are:

TextOut.dll	1.0.1.1
FontGenerator.exe	1.0.0.1